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Regulatory Compliance

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This eHandBook is the text to be used along with the NARA: National Association for Regulatory Administration's Licensing Measurement and Systems course which is part of the *NARA Licensing Curriculum*. This text will provide the learner with a basic introduction to regulatory compliance, licensing measurement and program monitoring state of the art key elements and principles. *The Early Childhood Quality Indicators Project* highlighted in this book was designated as a recognized project of the World Forum Foundation's *Child Impact Initiative*.

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NATIONAL ASSOCIATION FOR REGULATORY ADMINISTRATION

THE PENNSYLVANIA STATE UNIVERSITY PREVENTION RESEARCH CENTER

Preface

The reason for writing this eHandBook is to provide a short easy to read introduction to regulatory compliance, licensing measurement and monitoring systems for licensing researchers and administrators, and for regulatory scientists and policymakers. It is not intended to be a comprehensive, in-depth analysis of regulatory compliance and licensing measurement. This eHandBook provides only a basic introduction to licensing measurement. For those readers who are interested in doing a deeper dive into licensing measurement, I recommend NARA's - National Association for Regulatory Administration's *Licensing Curriculum* and their online courses offered through the University of Southern Maine.

This eHandBook will provide the basics to get the interested learner pointed in the direction of learning more about the topic. As one will see regulatory compliance and licensing measurement has its challenges and idiosyncrasies which will need to be addressed by researchers and scientists. When I started this journey 50 years ago, I was somewhat taken aback by the different data distributions I encountered in regulatory science. Back then, regulatory science was not well formulated and program monitoring related to licensing was more qualitative (case notes) rather than quantitative. It was also very uniform in its application. But I got really interested in public policy and macro-systems which seemed to have more and more impact on children and their families. This was the beginning of governmental rule promulgation, and it was an exciting time to be on the cusp of this new research area.

I learned very quickly that I had to make several adjustments to the statistical methods I learned in graduate school to be able to analyze licensing data and measure regulatory compliance. Several of the theories and methodologies were controversial when I proposed them because they went counter to the prevailing paradigms at that point in the 1960-70's. However, over time with many replications and validations, the new conceptual framework was accepted in the licensing and the regulatory science research literatures.

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There are many people to thank over the years and obviously this has been a group effort in applying regulatory science to early care and education and then expanding it to human services and hopefully beyond. What I have found in my most recent readings is that regulatory science is being applied in many different content silos from the FDA, to economics, to banking, and of course within the human services, particularly adult and child residential services. What appears to be lacking is a unifying theory that goes across these disparate content areas. That is why I think the introduction of the Regulatory Compliance Theory of Diminishing Returns is such an important contribution when we think about licensing/regulatory measurement and monitoring systems. The theory has become the foundation for the development of the methodologies and metrics presented in this eHandBook such as key indicators, risk assessment, differential monitoring, instrument-based program monitoring, integrative quality monitoring, skewed data distributions, nominal and ordinal measurement scaling, how best to deal with false negatives in decision making, and the balancing act between regulatory compliance & quality programming.

As I said earlier this eHandBook needs to be read along with the published materials on the Research Institute for Key Indicators: RIKI (https://RIKInstitute.com) and the National Association for Regulatory Administration: (https://www.naralicensing.org/key-indicators) websites. It is not intended as a standalone text for licensing measurement.

So, let's start this intriguing journey together into the world of regulatory compliance in order to understand the idiosyncracies and nuances of this emerging field within regulatory science.

Rick Fiene, PhD, Research Psychologist & Regulatory Scientist
Research Institute for Key Indicators, Edna Bennett Pierce Prevention Research Center, Penn State University, & National Association for Regulatory Administration
July 2024

Chapter 1

Introduction to Regulatory Compliance, Licensing Measurement and Monitoring Systems

This first chapter provides the learner with an introduction and overview to regulatory compliance, licensing measurement and systems. The ehandbook is sponsored by NARA – National Association for Regulatory Administration. NARA is the prominent international organization dealing with human services licensing and regulatory administration. This ehandbook is part of the *NARA Licensing Curriculum* which you can find out more about by visiting NARA's website (https://www.naralicensing.org/nara-licensing-curriculum). NARA also offers a course by the same name and this book is the eTextBook for that course; it is intended to be used in conjunction with the *NARA Licensing Measurement course*.

The NARA course will provide the learner with the major tenets of licensing measurement. The learner will discover as they go through this book that measurement in licensing is very different than other measurement systems found in many of the various social and human services and sciences. It has some very unique and idiosyncratic aspects which will provide us with increasing challenges in coming up with specific metrics in determining regulatory compliance.

The field of regulatory science is a very young field. Although regulations have been kicking around for well over 100 years, the science behind regulations is probably a quarter of this time. So, there is not a great deal of empirical evidence to draw upon

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which is discouraging but it is very encouraging and exciting at the same time because so much needs to be accomplished in establishing regulatory science theory.

A great deal has been written in the past 20 years about regulatory science but there has not been a book written about measurement and regulatory compliance. It is hoped that this book will begin that discussion. It is also hoped that data driven via regulatory science will begin to inform regulatory administration and policy more clearly as we move forward.

This specific chapter will provide the conceptual framework and overview to regulatory compliance, licensing measurement and systems of regulatory compliance. It will provide the parameters of the book's organization and what will be covered throughout.

The other chapters to be covered in this book are the following:

1. ***Overview/Introduction***
2. ***Conceptual/Theoretical Framework***
3. ***Principles of Instrument Design***
4. ***Regulatory Compliance and Program Quality***
5. ***Coordinated, Differential Monitoring & Integrated Monitoring***
6. ***What Research Tells Us; What Research Doesn't Tell Us***
7. ***Future Directions***

The book is organized into the above 7 chapters and appendices. The book is short and provides the basics to licensing measurement and systems. It is a quick read for regulatory scientists and regulatory policy makers as well as licensing administrators. It can be read as a standalone text although it was intended as the textbook for the *NARA Licensing Measurement* course, and it is recommended to be used with that course.

The *NARA Licensing Measurement* course is approximately 15 hours in length and is organized into anywhere from 5 - 10 classes. It is equivalent to a one-credit course offered at most institutions of higher education. Each class is organized into the following: an overview to what will be covered in the specific class followed by annotated PowerPoint slides, followed by a series of readings to support the specific lecture/PowerPoint slides (I will be referring to these various resources throughout this text). For the learner who wants to get a thorough grounding in licensing measurement and its accompanying program monitoring systems, I highly recommend them taking the course.

This book and the course are self-paced and are geared to the individual learner. It is totally self-contained meaning that all the necessary content is contained with the ten classes. If a learner just wants to get an overview of what licensing measurement is all about, then reading this short ebook will be a great start. You can always check out any of the publications that are available on the RIKI Institute website (https://rikinstitute.com/publications/). However, if a learner does have a specific question related to this textbook or if they are interested in taking the course and would like to get in touch with Dr Fiene, here is his contact information to reach out (email address is the best way to contact Dr Fiene):

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Also, this ehandbook and the course will draw heavily from both the NARA and RIKI websites where many of the publications and research reside. Please feel free to go to https://RIKInstitute.com/blog/ to download any additional blog posts that may be of interest to you. As I said, all the research is in the public domain and follows an open science sharing arrangement.

The links for additional publications (see the references listed at the end of this book) for the NARA course are listed throughout this book or within the course format in the handouts section on the NARA website which you can download in their entirety or do it chapter by chapter. All course materials will be provided in either the lectures section or the handouts section of the class.

I thought it would be helpful to provide a bit of my background which will help the reader to put in context the content of this text and the course. This textbook is written by a research psychologist who has spent his career in improving childcare quality through an early childhood program quality indicator model of training, technical assistance, quality rating and improvement systems, professional development, mentoring, licensing, risk assessment, differential program monitoring, key indicators, and accreditation. While content wise, I spent my career in early care and education, I evolved into a regulatory scientist because of the various positions I held within governmental service and interest area that focused on public policy, macro systems, and licensing rules.

Here are some additional commentaries taken from my NIH Bio Sketch that might help to fill in some details related to my background:

Dr Fiene is an emeritus professor of human development & psychology (Penn State University) where he was department head and founding director of the Capital Area Early Childhood Research and Training Institute. He is presently President & Senior Research Psychologist/Regulatory Scientist for the Research Institute for Key Indicators.

Dr Fiene is regarded as a leading international researcher/scholar on human services licensing measurement and differential monitoring systems. His regulatory compliance law of diminishing returns has altered human services regulatory science and licensing measurement dramatically in thinking about how best to monitor and assess licensing rules and regulations through targeted and abbreviated inspections.

His research has led to the following developments: identification of herding behavior of two-year old's, national early care and education quality indicators, mathematical model for determining adult child ratio compliance, solution to the trilemma (quality, affordability, and accessibility) in child care delivery services, Stepping Stones to Caring for Our

Children, online coaching as a targeted and individualized learning platform, validation framework for early childhood licensing systems and quality rating & improvement systems, an Early Childhood Program Quality Improvement & Indicator Model, Caring for Our Children Basics, and has led to the development of statistical techniques for dealing with highly skewed, non-parametric data distributions in human services licensing systems.

Organization of the eHandBook

In the following chapters, the reader will find how licensing measurement is very unique when it comes to regulatory science. By knowing these unique characteristics, it will be easier to administer and monitor programs governed by licensing rules. This can be of benefit to those who administer licensing agencies and to those who are asked to conduct research on regulatory policies and compliance.

In Chapter 1, this chapter, provides the basic introduction and overview to the ehandbook as well as a short history of licensing measurement and a timeline for early care and education standards focusing on *Caring for Our Children: Basics (CFOCB)*. CFOCB is a key document and set of standards providing a core set of rules that can govern all early care and education programs which is the goal of any monitoring system.

In Chapter 2, the reader will be introduced to the theoretical and conceptual foundations to regulatory compliance and licensing measurement. The regulatory compliance theory of diminishing returns will be introduced which has had a

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tremendous impact on human services regulatory science and administration. Paradigm alternatives will be suggested that have guided regulatory science over the past several decades.

In Chapter 3, the principles of instrument design will be addressed. Obviously without a reliable and valid system of measurement it will be simply garbage in and garbage out. This is an area when it comes to instrument design that gets the short end of the stick many times. The level of measurement will be addressed and its impact on the types of statistics selected. Also, how best to design data bases will be addressed.

In Chapter 4, regulatory compliance and program quality will be discussed presenting it on a dichotomous ten-point polemic for the regulatory science field to consider. This is a very important chapter building off the theory of regulatory compliance of diminishing returns introduced in chapter 2.

In Chapter 5, the essence of program monitoring systems is introduced along with differential monitoring and its two major methodologies of key indicators and risk assessment. This chapter gets us thinking about what a licensing measurement will look like administratively.

Chapter 6 deals with the research literature what we know and what still needs to be addressed, the gaps in our regulatory science knowledge base. Examples are provided of success stories across the USA and internationally.

The last chapter, Chapter 7, provides us with where do we go from here with regulatory compliance, licensing measurement and monitoring systems. What are the next steps?

There are a series of technical research notes that form an appendix which help to clarify the body of the text and add some details. This is followed by a comprehensive reference listing and then several figures, charts, graphs, and displays which depict various concepts presented in the text. And lastly, there is an example of a validation study report from Saskatchewan which provides the reader with how all this would look when the contents of this ehandbook are utilized and played out in a research study.

A Brief History of Licensing Measurement, Monitoring Systems and Regulatory Compliance

The history of licensing measurement and regulatory compliance has a rather long lineage but is still in its infancy in terms of development. In the early stages most licensing visits and inspection results were recorded via anecdotal records/case records with the licensing staff recording their results in more social work note taking. It was a qualitative type of measurement with very little quantitative measurement occurring except for basic demographics, number of clients, number of caregiving staff, etc… This qualitative approach worked very well when there were not many programs to be monitored and there were sufficient licensing staff to do the monitoring and conduct the inspections.

This all started to change in the 1980's when Instrument Based Program Monitoring (IPM) was introduced and started to be adopted by state licensing agencies throughout the United States. Just as a footnote, this brief history is pertinent to the USA and does not include other countries although the

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Canadian Provinces have followed a similar route as the USA. The reason for the introduction of an IPM approach was the tremendous increase in early care and education programs in the 1960's and 1970's. It was difficult for licensing staff to keep up with the increased number of programs in their monitoring efforts. There needed to be a more effective and efficient methodology to be employed to deal with these increases.

A very influential paper was written in 1985 and published in *Child Care Quarterly* which introduced IPM along with Licensing Key Indicators, Risk Assessment (Weighting), and Differential Monitoring (Abbreviated Inspections). This paper outlined the various methodologies and their use by a consortium of states to test the viability of this new approach to licensing measurement, regulatory compliance, and program monitoring. Also, the terminology has changed over the decades. Back in 1985 weighting was used rather than risk, abbreviated inspections were used rather than differential monitoring, targeted monitoring, or inferential monitoring. All these terms can be used interchangeably as they have been over the years, but the first introduction of them back in 1985 utilized weighting and abbreviated inspections.

In the early 1990's the risk assessment methodology was used to develop *Stepping Stones to Caring for Our Children*, the comprehensive national health and safety standards for early care and education (ECE) programs in the USA. This was a major development in attempting to develop national voluntary standards for child care in the USA.

It was during this time that two other very significant discoveries occurred related to licensing data distributions: 1) Licensing data are extremely skewed and do not follow a normal curve distribution. This fact has a significant impact on the statistics that can be used with the data distributions and how data analyses are performed. For example, data dichotomization is warranted with licensing data; 2) Regulatory compliance data are not linear when compared to program quality measures but are more plateaued at the substantial and full regulatory compliance levels. The data appear to follow the Law of Diminishing Returns as compliance moves from substantial to full (100%) regulatory compliance. This finding has been replicated in several studies and has been controversial because it has led to the issuing of licenses to programs with less than full compliance with all rules/regulations/standards. These two discoveries have been very influential in tracking developments in licensing measurement since their discoveries.

In the new century as states began to adopt the various methodologies it became necessary to have a standardized approach to designing and implementing them. The National Association for Regulatory Administration (NARA) took up this role and in 2000 produced a chapter on Licensing Measurement and Systems which helped to guide states/provinces in the valid and reliable means for designing and implementing these methodologies. In 2002 a very important study was conducted by the Assistant Secretary's Office for Planning and Evaluation (ASPE) in which they published the *Thirteen Indicators of Quality Health and Safety and a Parent's Guide* to go along with the research. This publication further helped states as they revised their licensing and program monitoring systems for doing inspections of early care and education facilities based upon the specific indicators identified in this publication. Both publications have been distributed widely throughout the licensing world.

During the first decade of the new century, *Stepping Stones for Caring for Our Children* went through a second edition. This publication and the ASPE publications were very useful to states as they prepared their Child Care Development Fund (CCDF) plans based upon Child Care Development Block Grant (CCDBG) funding.

From 2010 to the present, there have been many major events that have helped to shape licensing measurements for the future. *Caring for Our Children Basics (CFOCB)* was published and immediately became the default voluntary early care and education standards for the ECE field. The *CFOCB* is a combination of the risk assessment and key indicator methodologies. Three major publications by the following Federal agencies: HHS/ACF/USDA: Department of Health and Human Services/Administration for Children and Families/United States Department of Agriculture, OCC: Office of Child Care, and ASPE: Assistant Secretary's Office for Planning and Evaluation dealing with licensing and program monitoring strategies were published. These publications will guide the field of licensing measurement for years to come. The Office of Head Start developed and implemented their own Head Start Key Indicator (HSKI) methodology. And in 2016, CCDBG was reauthorized and differential monitoring was included in the legislation being recommended as an approach for states to consider.

Most recently, the Office of Head Start is revising their monitoring system that provides a balance between compliance and performance. This system revision will go a long way to enhancing the balance between regulatory compliance and program quality. Also, there has been experimentation with an *Early Childhood Program Quality Indicator* instrument

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combining licensing and quality indicators into a single tool. These two developments help with breaking down the silo approach to measurement where licensing and quality initiatives are administered through separate and distinct approaches such as licensing versus professional development systems versus quality rating and improvement systems. A paradigm shift in which an *Early Childhood Program Quality Improvement and Indicator Model* is proposed. The paradigm shift should help to make licensing measurement more integrated with other quality initiatives.

The licensing field continues to make refinements to its measurement strategies in building a national/international regulatory compliance data base. More and more is being learned about the nuances and idiosyncrasies of licensing data, such as moving from a nominal to an ordinal driven data system. For example, NARA and the Research Institute of Key Indicators (RIKI) have entered into an exclusive agreement for the future development of licensing measurement strategies via differential monitoring, key indicators for licensing and program quality, and risk assessment approaches. Several validation studies have been completed in testing whether the various methodologies work as intended. A significant Office of Program Research and Evaluation (OPRE) *Research Brief* which developed a framework for conducting validation studies for quality rating and improvement systems has been adapted to be used in licensing measurement.

For additional updates to licensing measurement, please check out and follow these RIKINotes Blog posts. There are and will be many examples of licensing measurement enhancements. Also, although much of the research on licensing measurement has been completed in the ECE field, the methodologies, models, systems, and approaches can be utilized in any human service arena, such as child residential or adult residential services. Also, NARA's chapter in their Licensing Curriculum has been developed into a full-blown course, please go to the following web page for additional information (https://www.naralicensing.org/key-indicators).

A Timeline of ECE Standards and Program Monitoring in the United States: *Caring for Our Children Basics—probably the best example of a health and safety standards tool*

It all started in and around 1965 when the Federal government got into early care and education (ECE) in earnest with Head Start and federally funded day care for low-income families. It started off slowly but began to pick up momentum with exciting studies and research applying principles from developmental psychology to policy making. Researchers and policy makers wanted to make sure that these new programs were not detrimental to young children since our frame of reference were children being raised in orphanages and the ultimate outcome for children was not positive. Would ECE have the same impact?

Issues around quality, appropriateness of standards, and demonstration programs became the focal point of federal research funding. The focal point of this essay is on the appropriateness of the ECE standards and the resulting monitoring systems that were to become key to the federal involvement in early care and education. This essay will be organized by the following 50 years neatly broken out by each decade to get us from this beginning in 1965 until the publication of *Caring for Our Children Basics* in 2015 by the federal government, the Administration for Children and

Families, U.S. Department of Health and Human Services. A look at the 2020 decade with a future note is also appended to this essay.

1970s

During the 1970's, the federal government became concerned about what were to be the standards for this new national program related to federally funded ECE for low-income families and their children. Head Start was a separate entity and we will revisit Head Start later but our focus for now is on the federally funded programs which became known back then generically as day care. This nomenclature changed to child care and to finally early care and education (ECE) during this 50-year history. The initial standards for day care were the *Federal Interagency Day Care Requirements (FIDCR)*. A very large appropriateness research study led by Abt Associates to determine what were the most salient standards and their intended impact on children while in day care was conducted during this decade. These standards were to be federally mandated requirements for any program receiving federal funding. This is where group size and adult-child ratios standards became such important safeguards and surrogates for children's health and safety in day care programs.

It also became of interest for the federal government to design the monitoring system that would determine compliance with the FIDCRs. But it became clear to the original designers of this new system that the monitoring of the FIDCR was going to be difficult to do across the full USA. So, the question became, is there a way to monitor the standards in the most effective and efficient manner? This question and the future of the FIDCR were to be altered and put on hold once we moved into the next decade.

1980s

A change in federal administration and a resulting change in philosophy related to the federal role in America altered many things and one of them was the relationship of the federal government and the states. Rather than the federal government mandating day care requirements, the focus changed with the locus of control moving from the federal level to the state level via block grant funding with very few federal requirements. This meant a moratorium to FIDCR and its ultimate demise. The federal government was not going to be in the business of providing day care, this was going to be the jurisdiction of the states. Head Start did become the exception to this rule with its own standards and monitoring system.

The focus of federal funding switched from the national to the state level in determining compliance with each state's respective child care licensing rules and not with an overarching FIDCR. There was still interest in making these state monitoring systems as effective and efficient but there was no interest in the federal government determining what these requirements would be. Two monitoring approaches grew out of this need for effectiveness and efficiency: risk assessment and key indicators. These two approaches were originally designed and implemented as part of a federally funded project called the Children's Services Monitoring Transfer Consortium in which a group of five states: New York, Michigan, Pennsylvania, West Virginia, and California teamed up to explore their most effective and efficient monitoring systems and begin transferring these systems to one another and beyond.

These two monitoring approaches were tested in the above respective states and it was determined that their impact had a positive effect on the children who were in those day care centers. This was a major finding, similar to the FIDCR appropriateness study, in which these approaches provided safeguards related to the health and safety of children while in day care.

1990s

By the 1990s, it became clear that the federal government had pretty much drawn back from any leadership role in having mandated federal requirements when it came to health and safety in child care. It was left to national ECE advocates who were positioned within the federal government (Administration for Children and Families; Maternal and Child Health Bureau) as well as throughout the USA with national and state agencies and organizations (American Academy of Pediatrics; American Public Health Association, National Resource Center for Health and Safety in Child Care) that saw a need for child care health and safety recommendations at least. If we could not have requirements, we could at least have recommendations and provide guidance to child care programs throughout the USA.

This led to the first edition of *Caring for Our Children* which was a comprehensive set of childcare health and safety standards. It was a major game changer for the ECE field because now there was a universal set of standards based upon the latest research literature for states to use as they considered revising and updating their respective state licensing childcare rules.

But there was a problem. *Caring for Our Children* was a comprehensive set of health and safety standards which was their strength but at the same time it was their weakness. They were so comprehensive (well over 500 well researched standards) that they were intimidating, and it was difficult to determine where to begin for the states.

Several researchers remembered the two approaches to monitoring designed in the previous decade and wondered if they could be helpful in focusing or targeting which of the standards were the most critical/salient standards. The risk assessment approach to monitoring appeared to have the most immediate applicability and *Stepping Stones* to *Caring for Our Children* was born. This document clearly articulated which of the 500+ *Caring for Our Children* standards placed children at greatest risk for mortality or morbidity by not being in compliance with the respective standard. Since the early 1990s, *Caring for Our Children* and *Stepping Stones to Caring for Our Children* have gone through three editions and have become very important resources to state licensing agencies as they revise, update and improve their ECE rules.

2000s

In this decade several federal and national organizations began to use *Caring for Our Children* standards in innovative ways to measure how well ECE looked at a national level. The Assistant Secretary's Office for Planning and Evaluation in the U.S. Department of Health and Human Services published the *Thirteen Indicators of Quality Child Care* based upon a core set of predictor standards from *Caring for Our Children*. These were standards that predicted overall compliance with all the standards and were seen as an efficient monitoring system. NACCRRA (National Association for Child Care Resource and Referral Agencies) began publishing a national report card on

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how well states met specific standards and monitoring protocols based upon similar predictor standards from *Caring for Our Children*.

These efforts helped states to make significant changes in their ECE rules in their respective states and in a very voluntary way suggested a means for national standards for the ECE field although we would need to wait until the next decade in order to see such a published document of national ECE health and safety standards for early care and education: *Caring for Our Children Basics*. It would not be until 2015 when *Caring for Our Children Basics* was published by the Administration for Children and Families, U.S. Department of Health and Human Services.

2010s

By the 2010s, ECE had grown into a very large but unwieldly assortment of programs with varying levels of quality. Again because of major federal funding, the Child Care Development Block Grant, along with changes and enhancements in professional development, accreditation systems, quality rating and improvement systems, the ECE landscape had become more complex and less easy to navigate. And rather than coming together it was clearly more fragmented than ever.

We had very minimal requirements for the federal funding and most of these requirements were geared to the state agency using the state's respective licensing rules as the threshold for standards. This approach worked well with states with excellent licensing rules, but it wasn't working as well with states who did not have equally excellent licensing rules. We still did not have a core set of standards for ECE programs. Enter *Caring for Our Children Basics* which took the best aspects of the above two monitoring approaches, risk assessment and key indicators and molded it into this new document. This work was led by the federal government's Administration for Children and Families, U.S. Department of Health and Human Services and although the standards are still recommendations and guidance, it is our best attempt at having national standards for early care and education. It is an attempt to provide guidance to the full ECE field, child care, Head Start, preschool, and center based as well as home-based care. It would be nice to have *Caring for Our Children Basics* as the health and safety foundation for early care and education throughout the USA. I don't see this happening in my lifetime.

2020s: Looking to the Future

As a footnote to this essay, the new decade has been dealt with a major curve ball with COVID19 rearing its ugly head and ECE has been impacted greatly because of this pandemic. As of this writing we are nowhere closer to a solution to getting ECE programs back on line. If anything, the pandemic really demonstrated the fragility of the ECE system we have built over the past 50 years and it clearly has not done very well. My hope is that we can learn from the past 50 years and not continue another 50 years along the same route; although I am guessing that many ECE advocates would be glad to have what we had before the pandemic because what we have right non-sustainable. We know a lot more today than what we knew back in 1965 when we were worried about would day care hurt children's development. We know today that quality ECE benefits children but unfortunately, we are no closer to attaining this today than we were 50 years ago.

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Two programs that have been very successful in avoiding these pitfalls are Head Start and the national Military Child Care program. Both programs are exemplary examples of quality early care and education being provided with separate funding streams and standards. Interesting enough when the Administration for Children and Families published *Caring for Our Children Basics*, both these programs were part of the reach of the published standards. As we re-invent and re-structure ECE we should be looking to both these very successful programs for guidance.

The above history and timeline have been drawn from the early care and education field but very honestly that is where the majority of the research and development has been over the past 50 years related to regulatory compliance. There have been some excursions into other human services but they don't have the details as with early care and education.

Chapter 2
Conceptual and Theoretical Underpinnings, Program Monitoring Paradigms

This second chapter provides the learner with the key conceptual and theoretical foundations related to licensing measurement. As you have seen from the first chapter and will continue to see throughout this book, licensing measurement does have some idiosyncrasies which are not present in other data distributions.

Well, the same thing can be said when it comes to the conceptual and theoretical underpinnings. One of the first limitations that will be noted is the regulatory compliance theory of diminishing returns which has tremendous implications when implementing and enforcing rules. It had always been assumed that full 100% regulatory compliance with rules was what made a high-quality program. However, in the late 1970's and into the early 1980's, it became clear that this was not the case. When this hypothesis was tested it became clear that moving from low regulatory compliance to substantial regulatory compliance did demonstrate that program quality differed significantly in the substantial regulatory compliant programs being of a higher quality than those of lower regulatory compliance. However, when one moved from the substantial regulatory compliance level to the full 100% regulatory compliance level, there was a definite plateauing effect in which the programs were not increasing in quality as previously and in some cases, actually decreased in quality.

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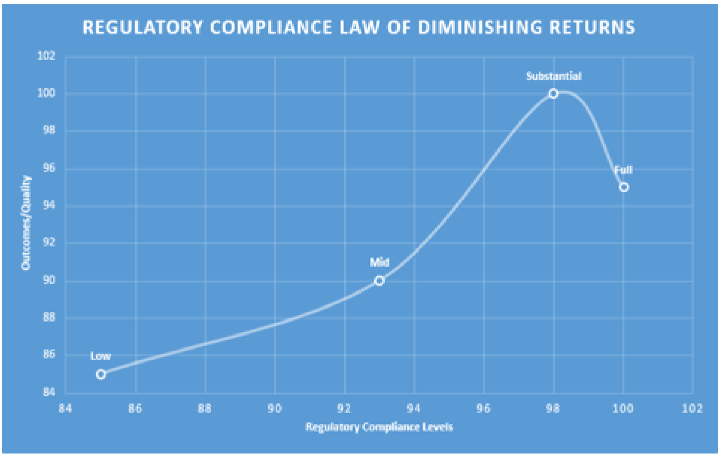
This above result was surprising and very controversial when it was first published in the mid 1980's. Many, if not most, regulatory compliance specialists did not agree with the finding. However, this relationship has held up in many other studies conducted since then and in other human service areas. It became the new rule in clearly demonstrating if not a decline, always a plateauing effect in moving from substantial to full compliance. Today because of all these supporting studies, the result is generally accepted and has influenced public regulatory compliance policy formulation throughout the world.



This regulatory compliance theory of diminishing returns has had tremendous impacts in how we have come to measure regulatory compliance in the licensing field. Rather than viewing it in a linear modality, it suggested that a more targeted, non-linear modality or metric might be more effective and efficient. Rather than focusing on full regulatory compliance it

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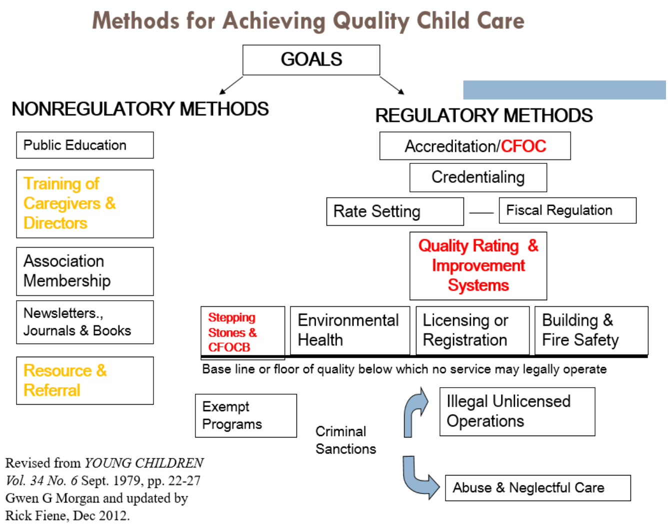
suggested that a key indicator, abbreviated, or targeted monitoring of rules was a better approach.

Without the regulatory compliance theory of diminishing returns, the focus on what has become differential monitoring or targeted monitoring would never have occurred. There would have been no need to move from always requiring full 100% regulatory compliance with all rules. This is a very important distinction and you, the learner, will see many applications and implications as you move through the chapters in this text.

Moving from the Theory to the Conceptual

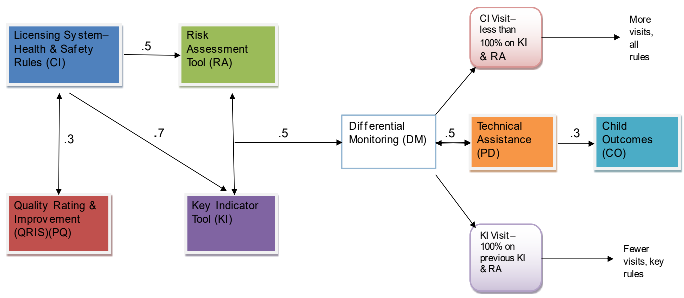
Conceptually, licensing measurement is built around obviously licensing but there are other systems which impact on licensing which are demonstrated in the first licensing measurement class when one compares the various regulatory and non-regulatory systems in the *Morgan Model - Methods for Achieving Quality Child Care.* There are contractual systems, such as QRIS (Quality Rating and Improvement System) or other types of quality initiatives. These other types of quality initiatives are non-contractual systems, such as professional development or training or technical assistance systems; or accreditation systems.

Morgan Model: Methods for Achieving Quality Child Care



These above systems can be integrated into a unified model called the ***Early Childhood Program Quality Improvement/Indicator Model or Differential Monitoring Logic Model and Algorithm (ECPQI2M/DMLMA)*** which is depicted in the lecture slides from the NARA Licensing Measurement Course that accompanies this text if you desire to utilize those resources and is detailed in several of the handouts. Since this will become the unifying framework when discussing licensing measurement, I would suggest that you as the learner spend a good deal of time reviewing those slides and handouts. I would think that you will want to return to them as you move through the upcoming chapters and classes as part of the NARA course to make certain you continue to understand how all the disparate pieces fit together into a uniformed whole.

Early Childhood Program Quality Indicator Model (ECPQIM)



$$\sum CI \times \sum PQ \Rightarrow \sum RA + \sum KI \Rightarrow \sum DM + \sum PD \Rightarrow CO$$

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By using the ***ECPQI2M/DMLMA*** (also see chapter 5 which provides a more detailed step by step guide for the development within a state licensing agency) it offers all the key elements to building an effective and efficient program monitoring system by integrating regulatory compliance and program quality and professional development systems along with differential monitoring's risk assessment and key indicator methodologies.

There are readings related to professional development that are important components to making sure that the ECPQI2M is working as it should. One of the consistent key indicators deals with professional development/training. There are examples of creative and innovative ways the training can be delivered over the internet. Pay particular attention to the iLookOut program, especially to its delivery system. Check out the https://RIKInstitute.com/publications/ website for these publications and reports, there are several articles that describe the program as well as its innovative cognitive mapping and online delivery platform.

Program Monitoring Paradigms

This section provides some key elements to two potential regulatory compliance monitoring paradigms (Differential/Relative versus Absolute/Full) for regulatory science based upon the Regulatory Compliance Theory of Diminishing Returns (See Figure below which depicts the differences between the two paradigms).

As one will see, there is a need within regulatory science to get at the key measurement issues and essence of what is meant by regulatory compliance. There are some general principles that need to be dealt with such as the differences between individual rules and rules in the aggregate. Rules in the aggregate are not equal to the sum of all rules because all rules are not created nor administered equally. And all rules are to be adhered to, but there are certain rules that are more important than others and need to be adhered to all the time. Less important rules can be in substantial compliance most of the time but important rules must be in full compliance all of the time.

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Regulatory Paradigms

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Absolute (Class, 1957)	Relative/Differential (Fiene, 1985)
All rules are created equal.	All rules are not created equal.
100% Compliance = Full License.	Full 100% + Substantial Compliance = Full License.
PC + PQ = Linear.	PC + PQ = Not Linear.
All rules are reviewed all the time.	Selected key rules are reviewed all the time.

Rules are everywhere. They are part of the human services landscape, economics, banking, sports, religion, transportation, housing, etc... Wherever one looks we are governed by rules in one form or another. The key is determining an effective and efficient modality for negotiating the path of least resistance in complying with a given set of rules2. It is never about more or less rules, it is about which rules are really productive and which are not. Too many rules stifle creativity, but too few rules lead to chaos. Determining the balance of rules is the goal and solution of any regulatory science paradigm.

Differential/Relative versus Absolute/Full Regulatory Compliance Paradigms: this is an important key organizational element in how rules are viewed when it comes to compliance. For example, in an absolute/full approach to regulatory compliance either a rule is in full compliance or not in full compliance. There is no middle ground. It is black or white, no shades of gray as are the cases in a differential/relative paradigm. It is 100% or zero. In defining and viewing these two paradigms, this dichotomy is the organizational key element for this paper. In a differential/relative regulatory compliance paradigm full compliance is not required and emphasis on substantial regulatory compliance becomes the norm.

Based upon this distinction between differential/relative and absolute/full regulatory compliance paradigms, what are some of the implications in utilizing these two respective approaches. Listed below are the basic implications that occur when selecting either of the two approaches on program monitoring systems: differential/relative versus absolute/full regulatory compliance paradigms.

There are ten basic implications that will be addressed: 1) Substantial versus Monolithic. 2) Differential Monitoring versus One size fits all monitoring. 3) "Not all standards are created equal" versus "All standards are created equal". 4) "Do things well" versus "Do no harm". 5) Strength based versus Deficit based. 6) Formative versus Summative. 7) Program Quality versus Program Compliance. 8) 100-0 scoring versus 100 or 0 scoring. 9) QRIS versus Licensing. 10) Non-Linear versus Linear.

1) Substantial versus Monolithic: in monolithic regulatory compliance monitoring systems, it is one size fits all, everyone gets the same type of review (this is addressed in the next key element below) and is more typical of an absolute paradigm orientation. In a substantial regulatory compliance monitoring system, programs are monitored on the basis of their past

compliance history and this is more typical of a relative paradigm orientation. Those with high compliance may have fewer and more abbreviated visits/reviews while those with low compliance have more comprehensive visits/reviews.

2) Differential Monitoring versus One Size Fits All Monitoring: how does this actually look in a program monitoring system. In differential monitoring (Differential/Relative Paradigm), more targeted or focused visits are utilized spending more time and resources with those problem programs and less time and resources with those programs that are exceptional. In the One Size Fits All Monitoring (Absolute/Full Paradigm), all programs get the same type/level of review/visit regardless of past performance.

3) "Not all standards are created equal" versus "All standards are created equal": when looking at standards/rules/regulations it is clear that certain ones have more of an impact on outcomes than others. For example, not having a form signed versus having proper supervision of clients demonstrates this difference. It could be argued that supervision is much more important to the health and safety of clients than if a form isn't signed by a loved one. In a differential/relative paradigm, all standards are not created nor administered equally; while in an absolute/full paradigm of regulatory compliance, the standards are considered created equally and administered equally.

4) "Do things well" versus "Do no harm" (this element is dealt with in the 4th chapter below as well): "doing things well" (Differential/Relative Paradigm) focuses on quality of services rather than "doing no harm" (Absolute/Full Paradigm) which focuses on protecting health and safety. Both are important in

any regulatory compliance monitoring system but a balance between the two needs to be found. Erring on one side of the equation or the other is not in the best interest of client outcomes. "Doing no harm" focus is on the "least common denominator" – the design and implementation of a monitoring system from the perspective of focusing on only 5% of the non-optimal programs ("doing no harm") rather than the 95% of the programs that are "doing things well".

5) Strength based versus Deficit based: in a strength-based monitoring system, one looks at the glass as “half full” rather than as “half empty” (deficit-based monitoring system). Emphasis is on what the programs are doing correctly rather than their non-compliance with standards. A strength-based system is non-punitive and is not interested in catching programs not doing well. It is about exemplars, about excellent models where everyone is brought up to a new higher level of quality care.

6) Formative versus Summative: differential/relative regulatory compliance monitoring systems are formative in nature where there is an emphasis on constant quality improvement and getting better. In absolute/full regulatory compliance monitoring systems, the emphasis is on being the gate-keeper (more about the gate-keeper function in the next section on regulatory compliance/licensing and program quality) and making sure that decisions can be made to either grant or deny a license to operate. It is about keeping non-optimal programs from operating.

7) Program Quality versus Program Compliance: (this element is dealt with in greater detail in the fourth chapter)

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differential/relative regulatory compliance monitoring systems focus is on program quality and quality improvement while in absolute/full regulatory compliance monitoring systems the focus in on program compliance with rules/regulations with the emphasis on full, 100% compliance.

8) "100 – 0 scoring" versus "100 or 0 scoring": in a differential/relative regulatory compliance monitoring system, a 100 through zero (0) scoring can be used where there are gradients in the scoring, such as partial compliance scores. In an absolute/full regulatory compliance monitoring system, a 100% or zero (0) scoring is used demonstrating that either the standard/rule/regulation is fully complied with or not complied with at all (the differences between nominal and ordinal measurement is dealt with in the next section on regulatory compliance/licensing and program quality).

9) QRIS versus Licensing: examples of a differential/relative regulatory compliance monitoring system would be QRIS – Quality Rating and Improvement Systems. Absolute/full regulatory compliance systems would be state licensing systems. Many programs talk about the punitive aspects of the present human services licensing and monitoring system and its lack of focus on the program quality aspects in local programs. One should not be surprised by this because in any regulatory compliance system the focus is on "doing no harm" rather than "doing things well". It has been and continues to be the focus of licensing and regulations in the USA. The reason QRIS - Quality Rating and Improvement Systems developed in early care and education was to focus more on "doing things well" rather than "doing no harm". This is not the case in many Canadian Provinces and European countries in which they have

incorporated program quality along with specific regulatory requirements.

10) Non-Linear versus Linear: the assumption in both differential/relative and absolute/full regulatory compliance monitoring systems is that the data are linear in nature which means that as compliance with rules increases, positive outcomes for clients increases as well. The problem is the empirical data does not support this conclusion. It appears from the data that the relationship is more non-linear where there is a plateau effect with regulatory compliance in which client outcomes increase until substantial compliance is reached but doesn't continue to increase beyond this level. There appears to be a "sweet spot" or balancing of key rules that predict client outcomes more effectively than 100% or full compliance with all rules – this is the essence of the Theory of Regulatory Compliance – substantial compliance with all standards or full compliance with a select group of standards that predict overall substantial compliance and/or positive client outcomes.

As the regulatory science and administrative fields in general continue to think about the appropriate monitoring systems to be designed and implemented, the above structure should help in thinking through what these measurement systems' key elements should be. Both paradigms are important, in particular contexts, but a proper balance between the two is probably the best approach in designing regulatory compliance monitoring systems.

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Chapter 3
Instrument Design, Reliability and Validity, Statistical Methods and Databases

This third chapter provides the learner with the key principles of instrument design as it relates to regulatory compliance and licensing measurement. As you have seen there are idiosyncrasies' conceptually and theoretically and there are limitations as well, when it comes to instrument design. A major limitation with licensing data is that it is basically, nominal in nature. It fits the format of Yes or No responses. It is not ordinal in any fashion, or at least it hasn't been for the past 50 years. In fact, it is only in the past 30 or so years that licensing data moved from being predominantly qualitative to quantitative. This change started in the 1980's with the publication of Instrument based program monitoring. Prior to that most licensing studies were written as social work case studies with a great deal of narrative detail but short on data utilization that could be used at the macro level.

Instrument based program monitoring has its critics who are not overly excited about its checklist type approach. However, if a state is going to track where there are specific issues related to regulatory compliance it will be difficult unless an instrument/tool/checklist is not used in data collection. If there is continued reliance on narrative reports solely it will be difficult if not impossible to find any real patterns in the data. It is possible with the latest developments in qualitative analyses but it is not recommended as the sole means for tracking regulatory compliance. I prefer a mixed methods approach

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which focuses on the strengths from both the quantitative and qualitative and combines both together.

Without an instrument-based program monitoring approach it would be impossible to utilize the risk assessment and especially the licensing key indicator predictor methodologies. In fact, it is really a pre-requisite for designing and implementing a targeted monitoring or differential monitoring approach.

In instrument design it is important to utilize the triangulation measurement strategy that looks for observation first, followed by record/document review, and then lastly by doing interviews of staff or parents. The majority of data collection should be through observations made in the classroom or facility. When observations cannot be made look for policies, files, documents that contain the necessary data and then lastly do interviews.

Reliability and Validity

This section provides the learner with the key principles of reliability and validity which are the mainstay of any measurement system. Without these two key principles we do not have a measurement system we can rely on. Reliability deals with consistency across inspectors to make certain that what is to be measured is measured accurately. Validity demonstrates that the system is working as it is supposed to. The results are what should be expected from a licensing or regulatory compliance system.

The readings and handouts provide many examples of validation studies conducted in the past decade demonstrating

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the validity and reliability of the licensing key indicator predictor and risk assessment methodologies (State of Washington and the Province of Saskatchewan (see the Appendix) are the best examples of these validation studies).

Since the large influx in the use of these methodologies over the past couple of decades it was incumbent upon us to determine if these methodologies were both reliable and valid. Based upon these validation studies, it can now be said with a great deal of certainty that the methodologies do what they were intended to do. They statistically predict overall regulatory compliance and they focus on those rules that place children in greatest risk of morbidity or mortality keeping them safe. So, the tenet, which will be emphasized throughout this course "Do No Harm" is upheld!

The NARA Licensing Measurement course provides the lecture slides where an overview and the key elements to doing validation studies, while the readings and handouts provide more of the details and the results from these studies. (https://www.naralicensing.org/key-indicators)

Statistical Methods and Data Bases

This section deals with the statistical methods used and the construction of the databases in licensing. As I have said repeatedly in my writings over the years there are many limitations related to licensing measurement. The statistical methods that can be used with licensing data are limited also, because we are dealing with nominal data that are severely skewed. Non-parametric statistics is warranted and to deal with

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the severely skewed data, dichotomization of the data base is warranted.

Dealing with data that are not normally distributed poses some real challenges in analyzing licensing data sets. It is paramount that one runs basic descriptive statistics in assessing the mean, standard deviation, variance, skewness, and kurtosis. It will help in identifying how badly the data has outliers in a very quantitative manner. It will also help in determining where the cut scores or thresholds should be for defining the high regulatory compliance and the low regulatory compliance groups. The Fiene Licensing Predictor Rules and their respective Fiene Coefficients are determined by using the phi coefficient in determining correlations between each rule and the high/low groups for regulatory compliance. This is a statistic used with nominal data and is used a great deal in the tests and measurement research literature invalidating testing procedures.

The databases should be saved in .csv formatting from an Excel file. It is easier to import a .csv file into SPSS or PSPP which is the preferred statistical package for conducting these analyses. But definitely any statistical package can be used as well, such as SAS for example. Outside of generating Fiene Coefficients, there are no other statistical techniques that are needed in analyzing the database.

The readings list (https://RIKInstitute.com/publications/) provides most, if not all, of the technical research notes generated by the Research Institute for Key Indicators. These tech research notes provide the latest and most up to date information about any changes in the methodologies for

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generating licensing key indicator predictor rules and risk assessment rules. These technical research notes are really intended for the serious licensing research and regulatory scientist to delve into. They provide the specifics to the various statistical methodologies with specific algorithms and logic modeling.

But it still important to address some of the specific statistical formulae pertinent to licensing and regulatory science data. For example, not all statistics will be relevant to licensing data because of its measurement limitations. Licensing data are nominal in nature with some instances of ordinal measurement. And there are other significant considerations, such as the skewness of the data distributions in most licensing data, non-linear nature of the regulatory compliance data when compared to quality data. So let's start with the most pertinent statistical formulae to be addressed when analyzing licensing and regulatory compliance data.

The first statistic we need to address is that of the skewness of the data. The below formula provides the basic formula for determining the skewness of the data distribution. Skewness is with out a doubt the most prominent feature of regulatory compliance data, so the following formula is critical as one thinks about analyzing their data distribution.

$$G_1 = \frac{n}{(n-1)(n-2)} \sum_{i=1}^{n} \left(\frac{x_i - \bar{x}}{s} \right)^3$$

This formula is called the adjusted Fisher-Pearson standardized moment coefficient and is generally used behind the scenes in most software.

Another formula you will encounter with licensing data will be for determining the kurtosis. The following formula provides the basic formula for determining the kurtosis of the licensing data distributions.

Kurtosis = n * Σni (Yi − Ȳ) 4 / (Σni (Yi − Ȳ) 2) 2

Another statistic that will be of importance is the variance of the data distribution. I have included both the population and sample variance formulae because in some cases we need to draw a sample and in other cases we have the population data. Variance is important with licensing data because it is very lacking when you really examine the data distributions which is not a good thing from a statistical point of view.

Population Variance	**Sample Variance**
$\sigma^2 = \frac{\sum_{i=1}^{N}(x_i - \mu)^2}{N}$	$s^2 = \frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}$
$\sigma^2 =$ population variance $x_i =$ value of i^{th} element $\mu =$ population mean $N =$ population size	$s^2 =$ sample variance $x_i =$ value of i^{th} element $\bar{x} =$ sample mean $n =$ sample size

One of the most encountered statistic is the "mean" which is the average of the data distribution. Unfortunately with most licensing data the mean is not as meaningful as the "median" which is the mid point of the data distribution. I have included both because the mean is so predominant and the median and quartiles are more prevalent in licensing research. The reason for using the median over the mean is that the licensing data distributions are so severely skewed.

But the mean formula is provided below:

Mean of Grouped Data:

$$\bar{x} = \frac{\sum fx}{n}$$

where: $\bar{x}$ = *mean*

f = *frequency of each class*

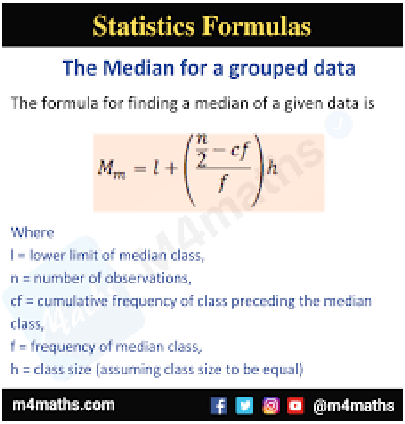
x = *mid-interval value of each class*

n = *total frequency*

$\sum fx$ = *sum of the producst of mid − interval values and their corresponding frequency*

In the majority of cases, the following formula for the median will be used as a better measure of central tendency and the average score for licensing data. Also, the data are nominal in measurement which means we will be collecting frequency data, the data are not continuous, they are very discrete. Either a rule or regulation is in compliance or out of compliance. There are no metrics in between these two extremes. Data will be organized and displayed in frequency tables or cross-tabs.

Formula for calculating the median for licensing data:



Also, keep in mind that the types of analyses you will be able to accomplish will be limited because of the nature of the data measurement. When it comes to looking at relationships between data sets you will be limited to cross-tabulations and the use of the chi-square statistic. I have provided the chi-square statistic below to be used with licensing data. Other statistics which require a normal distribution or a continuous distribution cannot and should not be used.

A methodology that has been successful with licensing data has been the dichotomization of the data distribution because of the nominal measurement of compliance vs non-compliance. Generally dichotomization of data is not recommended nor warranted but I have found that this approach is very successful with licensing data distributions.

The formula for Chi-Square which is critical in analyzing regulatory compliance data:

The Formula for Chi Square Is

$$\chi_c^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

where:

c = degrees of freedom

O = observed value(s)

E = expected value(s)

As one can see these statistics provide a basic grounding from an analytical point of view but it is limited because of the real limitations in the licensing data measurement characteristics.

The formula for Key Indicators is provided here and in the last section of this book within the Graphs, Charts, Figures, and Display Section.

Key Indicator Statistical Methodology

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$$\phi = (A)(D) - (B)(C) \div \sqrt{(W)(X)(Y)(Z)}$$

A = High Group + Programs in Compliance on Specific Compliance Measure.
B = High Group + Programs out of Compliance on Specific Compliance Measure.
C = Low Group + Programs in Compliance on Specific Compliance Measure.
D = Low Group + Programs out of Compliance on Specific Compliance Measure.

W = Total Number of Programs in Compliance on Specific Compliance Measure.
X = Total Number of Programs out of Compliance on Specific Compliance Measure.
Y = Total Number of Programs in High Group.
Z = Total Number of Programs in Low Group.

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Chapter 4

Regulatory Compliance and Program Quality

This fourth chapter provides the learner with the similarities and differences between regulatory compliance and program quality. In the second chapter the regulatory compliance theory of diminishing returns was presented which demonstrated a non-linear relationship between regulatory compliance and program quality. In this chapter, additional concepts will be presented to deal with this dynamic tension between regulatory compliance and program quality and how we can build one upon the other.

In fact, the future of licensing and regulatory compliance will be heavily influenced by this relationship between regulatory compliance and program quality. Many jurisdictions are attempting to build in quality to their rules/regulations. They are being very creative in either building separate systems (Quality Rating and Improvement Systems: QRIS) or attempting to build them right into the rules themselves in more of an ordinal format.

QRIS: Quality Rating and Improvement Systems and other Quality Initiatives

This section provides the learner with key examples from the program quality arena, such as QRIS and professional development. The ECPQI2M model presented here has these two systems prominently displayed along with the regulatory compliance or licensing system. Together they form the solid foundation for providing a very effective delivery system of services. When these are combined with risk assessment and the key indicator methodologies one can add efficiency to the effectiveness side of the equation. The next chapter, Chapter 5, will get into more details about how to design an ECPQI2M model along with its associated logic model (DMLMA: Differential Monitoring Logic Model and Algorithm).

As was mentioned in the previous section, there is a delicate balance between regulatory compliance and program quality. At all times, the ECPQI2M is to keep both regulatory compliance and program quality in balance, to keep health & safety and quality on an even keel; but as we have seen and will see later in this course, this balancing act can get out of kilter at times.

One of the publications produced for OPRE about QRIS Validation is directly applicable to licensing measurement and has been used within this context in the validation studies that will be described in this course. This is an important application of this new framework when it comes to validation. It is not just for QRIS but can be applied to licensing as well. The state of Washington has probably some of the best examples. Please check out these resources and readings later on the RIKI website for additional examples. Look specifically for the Validation Framework Research Brief (Zellman & Fiene, 2012) published by OPRE and the state of Washington Research Agenda Report (Stevens & Fiene, 2015).

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Regulatory Compliance/Licensing and Quality

This section of the chapter will delineate the differences between regulatory compliance and quality. It will provide the essential principles and elements that clearly demonstrate the differences and their potential impact on program monitoring. Obviously, there is some overlap between this section and the above section dealing with regulatory compliance monitoring paradigms. When we think about regulatory compliance measurement, we are discussing licensing systems. When we think about quality, we are discussing Quality Rating and Improvement Systems (QRIS), accreditation, professional development, or one of the myriad quality assessment tools, such as the Classroom Assessment Scoring System (CLASS) or Environment Rating Scales (ERS's). All these systems have been designed to help improve the health and safety of programs (licensing) to building more environmental quality (ERS), positive interactions amongst teachers and children (CLASS), enhancing quality standards (QRIS, accreditation), or enhancing teacher skills (professional development).

There are ten basic principles or elements to be presented (they are presented in a binary fashion demonstrating differences): 1) "Do no harm" versus "Do good". 2) Closed system versus Open system. 3) Rules versus Indicators. 4) Nominal versus Ordinal measurement. 5) Full versus Partial compliance. 6) Ceiling effect versus No Ceiling effect. 7) Gatekeeper versus Enabler. 8) Risk versus Performance. 9) Structural versus Process Quality. 10) Hard versus Soft Data.

1) Let's start with the first principal element building off what was discussed in Chapter 2, "Do No Harm" versus "Do Good".

In licensing, the philosophy is to do no harm, its emphasis is on prevention, to reduce risk to children in a particular setting. There is a good deal of emphasis on health and safety and not so much on developmentally appropriate programming. In the quality systems, such as QRIS, accreditation, professional development, Environmental Rating Scales, CLASS, the philosophy is to do good, its emphasis is looking at all the positive aspects of a setting. There is a good deal of emphasis on improving the programming that the children are exposed to or increasing the skill set of teachers, or improving the overall environment or interaction that children are exposed to.

2) Closed system versus Open system. Licensing is basically a closed system. It has an upper limit with full compliance (100%) with all rules. The goal is to have all programs fully comply with all rules. However, the value of this assumption has been challenged over the years with the introduction of the Regulatory Compliance Theory of Diminishing Returns. With quality systems, they have a tendency to be more open and far reaching where attaining a perfect score is very difficult to come by. The majority of programs are more normally distributed where with licensing rules the majority of programs are skewed positively in either substantial or full compliance. It is far more difficult to distinguish between the really best programs and the mediocre programs within licensing but more successful in quality systems.

3) Rules versus Indicators/Best Practices. Licensing systems are based around specific standards/rules/regulations that either are in compliance or out of compliance. It is either a program is in compliance or out of compliance with the specific rule. With

quality systems, there is more emphasis on indicators or best practices that are measured a bit more broadly and deal more with process than structure which is the case with licensing. It is the difference between hard and soft data as many legal counsels term it. There is greater flexibility in quality systems. With this said, if we can look at other service types, such as adult-residential services, there has been some limited success with blending structural and process elements but it still remains a measurement issue on the process side.

4) Nominal versus Ordinal measurement. Licensing systems are nominally based measurement systems. Either you are in compliance or out of compliance. Nothing in-between. It is either a yes or no response for each rule. No maybe or partial compliance. With quality systems, they are generally measured on an ordinal level or a Likert scale. They may run from 1 to 3, or 1 to 5, or 1 to 7. There is more chances for variability in the data than in licensing which has 1 or 0 response. This increases the robustness of the data distribution with ordinal measurement.

5) Full or None versus Gradients or Gray Area. Building off of the fourth element, licensing scoring is either full or not. As suggested in the above elements, there is no in-between category, no gradient or gray area. This is definitely not the case with quality systems in which there are gradients and substantial gray areas. Each best practice can be measured on a Likert scale with subtle gradients in improving the overall practice.

6) Ceiling effect versus No Ceiling. With licensing there is definitely a ceiling effect because of the emphasis on full 100%

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compliance with all rules. That is the goal of a licensing program, to have full compliance. With quality systems, it is more open-ended in which a ceiling effect is not present. Programs have many ways to attain excellence.

7) Gatekeeper versus Enabler: Licensing has always been called a gatekeeper system. It is the entry way to providing care, to providing services. It is a mandatory system in which all programs need to be licensed to operate. In Quality systems, these are voluntary systems. A program chooses to participate, there is no mandate to participate. It is more enabling for programs building upon successes. There are enhancements in many cases.

8) Risk versus Performance: Licensing systems are based upon mitigating or reducing risks to children when in out of home care. Quality systems are based upon performance and excellence where this is rewarded in their particular scoring by the addition of a new Star level or a Digital Badge or an Accreditation Certificate.

9) Structural Quality versus Process Quality: when we think of structural quality, we generally think of things we can count easily, such as the number of children or teachers present in a classroom or the number of smoke alarms, etc. These are items that form the basis of rules within a licensing system. However, when we think of process quality, we generally think of things that are not as ease to measure, such as interactions between teachers and children that are warm and engaging. This is much more difficult to measure and generally not part of licensing systems but rather program quality tools, such as the ERS and CLASS tools.

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10) Hard Data versus Soft Data: this dichotomy is similar to number 9 structure quality versus process quality but adds a small dimension not present in number 9. It deals with the ease with which legal counsel can defend a specific rule or standard in a court of law. Hard rules or standards are easy to measure while soft rules or standards are more difficult to measure or evaluate. Again, they fall along the continue of being structural versus process oriented as mentioned in 9 above.

There has been a great deal of discussion in the early care and education field about the relationship between licensing, accreditation, QRIS, professional development, and technical assistance. It is important as we continue this discussion to pay attention to the key elements and principles in how licensing and these quality systems are the same and different in their emphases and goals, and about the implications of particular program monitoring paradigms and measurement strategies. For other regulatory systems outside the human services field, the same type of model can be applied positioning compliance and quality as a continuum one building from the other because I feel that with the introduction of more quality into a regulatory context will help to ameliorate the ceiling and plateau effect of diminishing returns on performance and outcomes.

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Chapter 5

Coordinated Program Monitoring, Differential Monitoring, Key Indicator, Risk Assessment, and Integrative Monitoring

This chapter demonstrates the national/federal initiatives addressing coordinated program monitoring. There are several excellent reports produced by the Administration for Children and Families (ACF), Office of Child Care (OCC), Office of Planning, Research and Evaluation (OPRE), Assistant Secretary's Office of Planning and Evaluation, and the Federal Department of Health and Human Services (HHS) which goes a long way in addressing this key issue. In any system where there are limited resources, we need to be as cost effective and efficient as possible. The handouts which accompany this text through the NARA Licensing Measurement course will provide you with many examples of how best to do this. These handouts/reports are all available of the RIKI and NARA websites as well as within the *NARA Licensing Curriculum (2000).*

With a closed system and limited resources, a coordinated program monitoring system is critical to make certain that we have the necessary resources to effectively and efficiently protect the clients in the facilities we are mandated to license. The key term is "Do No Harm". The federal agency reports in this class will provide you with the parameters for building a program monitoring system that accomplishes this goal.

The lecture from the NARA licensing measurement course for this section of the chapter consists of a slide that builds upon *Caring for Our Children Basics (CFOCB*)(go to https://RIKInstitute.com) and how that publication came into existence. Personally, I think it is one of the most significant publications (*CFOCB*) related to early care and education (ECE) standards development that has ever been produced.

CFOCB provides voluntary standards for all ECE to follow. It is the very essence of what coordinated program monitoring is all about in providing basic safeguards for all children while in out of home care.

Differential Monitoring, Risk Assessment, and Key Indicators

This ehandbook text has gotten into the details of differential monitoring, risk assessment, and the key indicator methodologies. We have tangentially addressed these methodologies throughout the text, but this chapter provides the step-by-step process of their development and implementation (see the following paragraphs and figure for ECPQIM). Also, there are several other publications that deal with this detail on the RIKI and NARA Websites.

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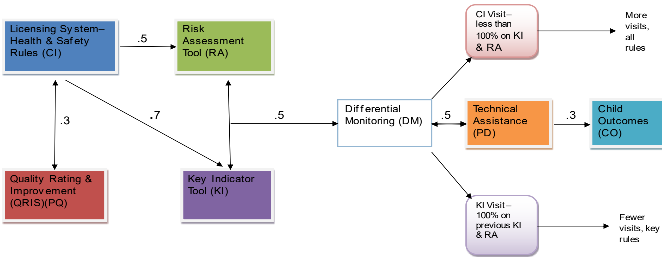
Early Childhood Program Quality Indicator Model (ECPQIM)



$$\sum CI \times \sum PQ \Rightarrow \sum RA + \sum KI \Rightarrow \sum DM + \sum PD \Rightarrow CO$$

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The first step in utilizing the DMLMA (Differential Monitoring Logic Model and Algorithm) for a state is to take a close look at its Comprehensive Licensing Tool (CI) that it uses to collect violation data on all rules with all facilities in its respective state. If the state does not utilize a tool or checklist or does not review all violation data than it needs to consider these changes because the DMLMA is based upon an Instrument Based Program Monitoring System (IPM) which utilizes tools/checklists to collect data on all rules.

The second step for the state is to compare their state's rules with the National Health and Safety Performance Standards (*Caring for Our Children*)(available through https://RIKInstitute.com) to determine the overlap and coverage between the two. This is the first approach to validation which involves Standards review.

The third step for the state if it utilizes a Risk Assessment (RA) tool is to assess the relationship between this tool and Stepping Stones to determine the overlap and coverage between the two. This is a continuation of the first approach to validation which involves Standards review.

The fourth step for the state is to compare the results from the CI with the RA tools. This step is the second approach to validation which involves Measures. The correlation between CI and RA should be at the .50 level or higher (.50+).

In the fifth step, if a state is fortunate enough to have a QRIS – Quality Rating and Improvement System in place and has sufficient program quality (PQ) data available then they will have the ability to compare results from their CI tool with their PQ tool and validate outputs by determining the relationship between compliance with health and safety rules (CI) and program quality (PQ) measures, such as the ERS's, CLASS, CDPES, etc… This is a very important step because very few empirical demonstrations appear in the research literature regarding this relationship. This step is the third approach to validation which involves Outputs. It would be expected that lower correlations (.30+) would be found between CI and PQ because these tools are measuring different aspects of quality such as health & safety versus caregiver-child interactions or overall classroom quality.

The sixth step is for the state to generate a Key Indicator (KI) tool from the CI data base. Please see Fiene & Nixon (1985) and Fiene & Kroh (2000) publications available through the National Association for Regulatory Administration & Research Institute for Key Indicators Websites (https://RIKInstitute/com) for a detailed explanation of the methodology for generating a KI tool. This step is also part of the second approach to validation which involves Measures. The correlation between the CI and KI should be very high (.70+) because the KI is a subset of predictor rules taken from the CI data base. If a state did not want to use the KI methodology, a direct comparison could be drawn from The *Thirteen Indicators of Quality Child Care* – this publication is available on the RIKI website.

The seventh step for the state is to use the RA and KI tools together to determine overall compliance of facilities and how often and which rules will be monitored for future visits. This is the basic component of a Differential Monitoring (DM) approach and continues the second approach to validation (Measures). Also, this step should drive decisions within the technical assistance/training/professional development (PD) system in what resources are allocated to a particular facility. It would be expected that moderate correlations (.50+) would be found amongst RA, KI, DM, and PD.

The eighth and final step for the state is to compare the results from the various monitoring tools (CI, PQ, RA, KI) with any child development outcome (CO) data they collect. This is a relatively new area and few, if any, states at this point have this capability on a large scale. However, as Early Learning Networks and Standards are developed, this will become more common place. This step is the fourth approach to validation which involves Outcomes. The correlations between CI, PQ, RA, KI and CO will be on the lower end (.30+) because there are so many other variables that impact children's development other than child care facilities.

Key Element Definitions: CI = state or federal standards, usually rules or regulations that measure health and safety - Caring for Our Children or Head Start Performance Standards will be applicable here. PQ = Quality Rating and Improvement Systems (QRIS) standards at the state level; ERS (ECERS, ITERS, FDCRS), CLASS, or CDPES. RA = risk assessment tools/systems in which only the most critical rules/standards are measured. Stepping Stones is an example of this approach. KI = key indicators in which only predictor rules/standards are measured. The Thirteen Indicators of Quality Child Care is an example of this approach. DM = differential monitoring decision making in which it is determined if a program is in compliance or not and the number of visits/the number of rules/standards are ascertained from a scoring protocol. PD = technical assistance/training and/or professional development system which provides targeted assistance to the program based upon the DM results. CO = child outcomes which assesses how well the children are developing which is the ultimate goal of the system.

Validation is a continuous approach and is not a once and done process. States should look at their monitoring systems on an on-going basis and make the necessary adjustments as data are collected and compared in order to keep program monitoring as cost effective and efficient.

In the readings/handouts, the learner will find several report examples which provide the details of the various methodologies. There are more than enough examples, so pick the ones you are most interested in seeing. For those of you who would like to see more, please go to the RIKI website and look under the report's webpage for additional examples.

Just as differential monitoring helped to change the landscape of program monitoring in making it more sensitive to targeted reviewing, integrative monitoring introduces a new conceptual lense in how program monitoring should be done. Just as coordinated monitoring focuses more on the type of care provided, integrative monitoring focuses on the actual standards and how they should be formatted. It is more of a delicate balancing act between regulatory compliance and quality programming when it comes to integrative monitoring which is very different from coordinated monitoring which emphasizes the facility type.

An interesting future research area is combining differential and integrative monitoring into a new approach to program monitoring which would emphasize risk assessment, key indicators, and quality programming into this new paradigm. Once this is done, it would be relatively easy to take those results and apply them within a coordinated monitoring approach. To a certain extent, ***Caring for Our Children Basics*** accomplishes this but without the increased emphasis on the quality programming side.

Integrative Monitoring

In the previous chapter, Chapter 4, the delineations between regulatory compliance and program quality were dichotomized showing how they were different and similar. This section of Chapter 5 introduces the notion of integrative monitoring where

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regulatory compliance and program quality are joined together in a cohesive management system.

The concept of integrative monitoring was introduced by Freer and Fiene (2023) in a ***Journal of Regulatory Science*** article in which they propose the concept along with specific constraints in implementing the approach.

In the past regulatory compliance and quality programming had their respective silos and were not integrated within the monitoring function. In fact, in ECE separate quality initiatives, such as Quality Rating and Improvement Systems (QRIS), accreditation, and professional development systems have been developed and implemented separate from licensing systems in most jurisdictions. In some cases, there were attempts to integrate the two arenas but generally these meant that there was acknowledgement that both existed but standards remained separated and assessors measuring compliance with the standards or rules were in different departments.

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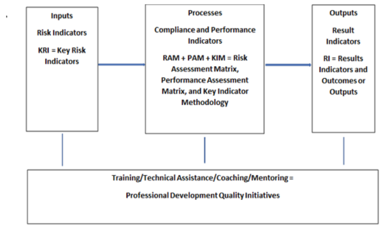
ECPQIM5: Early Childhood Program Quality Improvement/Indicator Model Version 5



The Freer and Fiene (2023) model provides a unique means for combining regulatory compliance and quality programming into one comprehensive, effective, and efficient approach. The above graphic provides the basic elements in thinking about how all the various early care and education systems can fit together in a unified way.

Freer & Fiene (2023). Regulatory compliance and quality programming: Constraints and opportunities for integration, ***Journal of Regulatory Science, Volume 11, Number 1***, pps 1-10.

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Chapter 6

What Research Tells Us, What We Don't Know, and Examples

This ehandbook text has summarized what we know from the research literature about licensing measurement and regulatory compliance. There have been several advances in licensing measurement over the past couple of decades. Clearly the Regulatory Compliance Theory of Diminishing Returns has taken hold of policy development in licensing and regulatory administration. We have seen statutes change from requiring full 100% compliance in order to receive a license to operate to statutes that are requiring substantial regulatory compliance with all rules rather than full 100% compliance. Getting to those right rules rather than more or less rules. *Caring for Our Children: Basics* is an excellent example of this approach.

Another example is from developing countries, especially in Africa as so evidence by the work of researchers in Kenya who have utilized the theory of regulatory compliance repeatedly in various industries in order to develop and promulgate effective and efficient regulatory policy. In fact, we have a lot to learn from these initiatives because they are becoming part of a new way of doing policy research that is on a cutting edge.

Licensing key indicators and risk assessment rules are being used on a much larger scale as the differential monitoring and targeted monitoring approach has expanded. The latest Licensing Study conducted by NARA and the National Center

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for Early Childhood Program Quality has demonstrated that the majority of states are using one of these approaches.

The differential monitoring approach and its respective methodologies have gone through many enhancements in dealing with measurement and statistical nuances related to licensing data distributions, such as severe skewness, kurtosis, dichotomization of data groups, eliminating false negatives, limitations of nominal data analysis, moving from a nominal measurement scale to an ordinal measurement scale, identifying generic licensing key indicators, and the relationship between regulatory compliance & program quality (Chapters 3 & 4 highlighted this).

Eliminating false negatives had been a design issue in the key indicator methodology when substantial compliance is utilized for the high group dichotomization. It is not an issue when 100% full regulatory compliance is used but there will be instances when substantial compliance will have to be used. When this occurs a revision to the original methodology and algorithms has to be instituted which has been outlined in a RIKINotes Post (January 29, 2023). Utilizing this revision eliminates or at least mitigates the false negative effect.

All these above enhancements are basically dealt with and addressed in the *RIKI Technical Research Notes* found in the *ECPQIM/DMLMA text* as well as on the RIKI website Blog/Notes Page (https://RIKInstitute.com/blog/), or the National Association for Regulatory Administration website which was cited at the beginning of the eHandBook. The interested reader should find all these technical research notes in one of those venues. Just look towards the end of the webpage to find the research notes.

What Research Doesn't Tell Us

So, what are the gaps in the research related to licensing measurement that licensing researchers and regulatory scientists should be paying attention to? This text has provided some of the key gaps that have been identified to date. One area for further research is the relationship between regulatory compliance and outcomes for clients. Are clients healthier and safer in highly compliant programs? Are we seeing fewer injuries in those programs of high regulatory compliance? This is a critical question that still needs definitive research and empirical evidence to confirm.

There still needs to be additional research that continues to validate the rules/standards selected, the measures themselves, and the relationship between regulatory compliance and QRIS systems. There has been considerable movement in the past decade with validation studies being completed in many states and provinces and this trend needs to continue. The results to date definitely appear to validate all these respective components in that they are working as expected, but I would feel more confident with additional replication studies being completed.

International, National, and State Examples

This section provides us with examples mainly through the specific tools that have been designed by different jurisdictions for the differential monitoring, key indicator and risk assessment methodologies described in this text. The readings and handouts provide many such examples which are available at https://RIKInstitute.com. You will find examples both from the USA as well as Canada. The methodologies have really taken off in the last decade as demonstrated by the number of contracts NARA has entered into with states and provinces throughout the United States (Montana, Michigan, Illinois, Indiana, Kansas, Florida, New York, Minnesota, California) and Canada (British Columbia, Alberta, Saskatchewan). Reports written describing these efforts are available on both the RIKI and NARA websites. See the graphic display at the end of this ebook in the Display, Graphs, Figures, and Charts Section.

All of these jurisdictions have demonstrated a certain consistency when it comes to licensing key indicator predictor rules and risk assessment rules. There are common themes that have emerged over the past 4 decades.

Here are key elements that should be present in a high-quality early care and education (ECE) program that any parent should be looking for when selecting their child care arrangement:

- Qualified ECE teachers.
- There is a stimulating and dynamic classroom environment where children are viewed as competent learners.
- A developmentally appropriate curriculum is used based upon the assessed individual needs of children.
- Opportunities for families and staff to get to know each other.

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- Families receive information on their children's progress regularly using a formal process.
- Early childhood educators encourage children to communicate.
- Early childhood educators encourage children to develop reasoning skills.
- Early childhood educators listen attentively when children speak.
- Early childhood educators speak warmly to children

You will witness this consistency in the readings you have access to at https://RIKInstitute.com. Please check out the website because there are numerous publications and reports available to you. All the publications are in the public domain, so you are free to download them as you see fit.

The plan is to continue validating the methodologies to make certain that they are keeping children healthy and safe and are doing no harm. That is the key element of licensing measurement with a focus on health and safety similar to the approach taken by the Nuclear Regulatory Commission (NRC) in keeping surrounding communities safe where nuclear power plants are located.

As has been repeatedly demonstrated in this ehandbook text, there is a delicate balance between regulatory compliance and program quality (remember chapter 4). Some industries are more geared towards the health and safety side of the equation while others seek a more balanced approach of regulatory compliance and program quality. I have attempted to address both in this text and hopefully have done an equally balanced approach in addressing both sides of the equation. It will be interesting to see how things play out as regulatory science continues to grow as a science and the impact of licensing measurement on the development of this very important science.

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Chapter 7

Future Directions/Next Steps

This last chapter deals with where do we go from here. What are the next steps for licensing measurement. How do we combine the quantitative and the qualitative? How do we have a mixed methods approach? How do we combine the best aspects of regulatory compliance with program quality elements? Are there more effective ways to deal with terribly skewed data other than dichotomization? Does it make sense to move from a nominal to an ordinal measurement scale with regulatory compliance? All these are critical questions for the field of regulatory science and its accompanying licensing measurement. If we are truly going to build a science, we need to spend the requisite time on developing and implementing a solid scientific measurement strategy that is both reliable and valid.

Two of the most critical concepts that will need addressing are the ceiling effect/plateauing of quality data and the variance in the data distribution. The ceiling effect led to the regulatory compliance theory of diminishing returns and has had a major impact on the regulatory science field. Without a solution to this ceiling effect, it will continue to be difficult to distinguish between mediocre quality in programs and high quality in programs. At this writing, it appears that this ceiling effect is an inherent characteristic of regulatory compliance systems. This same ceiling effect does not appear to be present in quality-

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based program monitoring systems nor is the lack of variance present in those systems as well.

Lack of variance in data distributions can and should be addressed by building off weighting systems that look at risk or performance indicators. This can be a very effective and efficient approach to increase the variance in a regulatory compliance data distribution. But it does need to be robust enough so that differences can be ascertained at the substantial regulatory compliance and the full regulatory compliance levels. It has always been easy to distinguish between low regulatory compliance and substantial regulatory compliance but that is not the case with substantial and full regulatory compliance when comparisons are made to program quality measures, such as the ERSs and CLASS tools.

And these two above issues lead us to another key balancing act between effectiveness and efficiency. As you have seen throughout this ehandbook text there are several concepts that need to be balanced with other domains in order to be both effective and efficient. A good example is the use of risk assessment and key indicators together when designing and implementing a differential monitoring system. However, it is always possible to put this delicate balance out of sync by placing too much emphasis on one or the other domain.

For example, a jurisdiction could become so efficient in utilizing key indicators that the tool has so few indicators that it begins to jeopardize the overall effectiveness of the monitoring system. And the other scenario is also a concern in which too many indicators are included on the tool in which effectiveness might increase but efficiency will decrease substantially.

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Finding that correct balance is an individual study into attempting various strategies where clients are not placed at additional risk but at the same time we don't want to jeopardize the overall quality of the program.

So this leads us to a balance between regulatory compliance and program quality which is the essence of the last sentence of the previous paragraph. It is also the essence of integrative monitoring which is attempting to focus both on regulatory compliance and quality. On the surface, this sounds really easy to develop a balance between regulatory compliance and program quality; but in reality, it is difficult to pull off. The reason is that licensing and regulations are just not geared to deal with program quality. It is all about health and safety and focusing on risk aversion. So in moving forward this is going to be a difficult balancing act for most jurisdictions.

What are some of the other issues that we will need to address as we move forward? Validation studies are going to be key in moving forward as we determine if the monitoring systems we have designed are working as we intended. For the one size fits all, this probably will not be a heavy lift; but for differential monitoring and integrative monitoring I think these are going to be heavy lifts for most jurisdictions. These systems are not just descriptive based systems but have inferences built in and this is always more difficult to validate.

And in speaking of validation studies, a key validation study will be to validate the use of quality indicators which is the new kid on the block. Licensing key indicators have been around for some time, but quality key indicators have not and will need a good deal of research to determine what really are predictive

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indicators. I think we do have a good start based upon the studies that have been done with QRIS, accreditation, and professional development, our major quality initiatives in the USA. But additional research is still needed to validate the initial results. It is interesting to note that the first pilot testing and validation of quality key indicators has occurred in a Canadian Province and not in the USA. Our hats are off to the Province of Saskatchewan for being the first to pilot test and to validate this new approach.

And then there are the key measurement and statistical methods that need further development and refinement as it relates to licensing data. If we do move regulatory compliance attempting to balance it with program quality, there will most likely be experimentation in moving from a nominal measurement to an ordinal measurement scale. This idea has been suggested in the likes of a Regulatory Compliance Scale. But it is still theoretical and has not been attempted yet. But for the future, this will become an important area of research.

On the statistical side, there will be the need to develop techniques to deal more effectively with skewed data distributions, false negatives, and other licensing data idiosyncracies. As I have said many times in this eHandBook licensing data are very unique. Part of this uniqueness is the fact that the data distributions are anything but normally distributed with very little variance. This is a major area of concern when it comes to statistical analysis and will need to be dealt with heads on in the coming years by regulatory scientists and licensing researchers.

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This short ehandbook text is a first step in providing that scientific base for building a sound regulatory science, but I am hopeful that other licensing researchers and regulatory scientists build upon what has been presented and suggested in this eBook.

For those interested in pursuing any of these topics, please don't hesitate to go to the RIKI Institute or the NARA websites for additional detailed information. Here are the pertinent websites for your ease of access: https://rikinstitute.com
or https://www.naralicensing.org/key-indicators.

Research has been going on for approximately 50 years when the first kernels of what a regional model for monitoring would look like as it related to the human services, in particular early care and education. I never thought it would lead to its own statistical methodologies and altering how licensing and monitoring decision making would occur. And definitely did not think that "differential monitoring" would be referenced in Federal legislation with the re-authorization of CCDBG. And the regulatory science field which spans all industries and domains concerned with the application of rules and regulations to our everyday existence has only coalesced over the last 20-25 years.

As I said earlier, the purpose of this ehandbook was as a short guide for those in the regulatory science and licensing research arenas to get a basic understanding of licensing measurement and program monitoring. By starting with it and using it in conjunction with all the publications and materials on the RIKI and NARA websites as well as the NARA Licensing

Measurement course, it will provide an introduction to the state of the art regarding licensing measurement.

Let me leave you with a Regulatory Compliance Matrix (see table below) which summarizes the key points in this ehandbook when it comes to principles of regulatory compliance measurement, paradigms, and the quality continuum; but also points us in the direction for future research as these are the key elements for licensing measurement and monitoring systems.

The principles detail is provided in the appendix in the last document listed: *Ten Principles of Regulatory Compliance Measurement.* The paradigms detail can be found in chapter 2 of this ehandbook; while the quality continuum is in chapter 4. There is a good deal of overlap with the 10 principles, the 10 elements related to paradigms, and the 10 elements of the quality continuum. I would suggest focusing on these common elements and principles because they are the most significant pieces of the puzzle as it relates to regulatory compliance measurement. Taken together, these 30 principles and elements provide the basic parameters regulatory scientists, licensing researchers, and licensing administrators and policymakers should be focusing on when it comes to future research studies related to regulatory science.

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Regulatory Compliance Matrix

Principles	***Paradigms***	***Quality Continuum***
Lack of variance	Substantial vs monolithic	Hard vs soft data
Ceiling effect	**One size fits all vs differential**	**Full vs partial compliance**
Difficulty between full and high	Rules are equal vs not equal	Rules vs indicators
Nominal measurement	**Do things well vs do no harm**	**Do no harm vs do good**
Moving nominal to ordinal	**Strength based vs deficit**	Open vs closed system
Dichotomization	Formative vs summative	**Structural vs process quality**
Lack of reliability and validity	**Program quality vs compliance**	**Risk vs performance**
Skewed data	**100-0 vs 100 or 0**	**Nominal vs ordinal**
Ease between high and low	QRIS vs licensing	Gatekeeper vs enabler
False negatives	Linear vs non-linear	**Ceiling effect**

Although most of the research presented in this ebook is from the early care and education field, the many principles and discoveries, such as the ceiling effect, skewness of data, and lack of variance in data can be applied to other human service industries and beyond possibly in other economic fields. This is the particular challenge in searching out these other arenas to determine if these same observations will be made.

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Appendices

- **The Theory of Regulatory Compliance and Its Implications for Regulatory Science**
- **The Relationship between Early Care & Education Quality Initiatives and Regulatory Compliance**
- **Regulatory Compliance, Licensing, and Monitoring Measurement Principles: Rule Compliance Versus Rule Performance**
- **What is the Relationship between Regulatory Compliance and Complaints in a Human Services Licensing System?**
- **The Implications in Regulatory Compliance Measurement When Moving from Nominal to Ordinal Scaling**
- **So Which Is Better: Differential Monitoring & Abbreviated Inspections or Comprehensive Inspections?**
- **The Dichotomization and Bi-Polarization of the Matrix Data Base**
- **Enhanced Dichotomization Model for Generating Licensing Key Indicator**
- **The Relationship of Licensing, Head Start, Pre-K, QRIS, Accreditation, and Professional Development and their Potential Impact on Child Outcomes**
- **Policy Commentary: Regulatory Science Measurement Issues of Skewness, Dichotomization of Data, and Nominal versus Ordinal Data Measurement**

- **A Potential Reason for Skewed Regulatory Compliance Data Distribution**
- **Data Distribution in Regulatory Science**
- **Ten Principles of Regulatory Compliance Measurement**

These appendices provide additional detail to the above chapters in delving deeper into some of the key points made in Chapters 1-7.

References follow the appendices and RIKINotes listing pertinent publications and posts related to licensing measurement and monitoring systems.

Figure, Charts, Graphs, and Displays supporting the text in this eHandBook follow the Reference Section. This is followed by a Validation Report, UCM Research Abstract, Timeline, and Glossary of Terms.

For additional updates before the next edition of this ehandbook is published, please go to either the NARA website https://www.naralicensing.org/key-indicators

or the RIKI website https://rikinstitute.com/blog/

In addition to the NARA and RIKI websites, regular updating through blog posts are maintained on Medium and Substack for the interested reader.

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The Theory of Regulatory Compliance* and Its Implications for Regulatory Science

The theory of regulatory compliance has appeared in a series of articles in the *Journal of Regulatory Science* and its spin off methodologies in other journals, *Child Care Quarterly, Child and Youth Forum*, *International Journal of Child Care and Education Policy, and Early Childhood Research Quarterly*. The theory has had a large impact on the human services, in particular the early care and education field. The purpose of this article is to reach a larger audience that may be representative of some of the other regulatory areas in the physical sciences, medical sciences and the economic sciences.

The organization of this section will first deal with the theory itself, explaining it in simple, non-mathematical terms and its implications for public policy and licensing decision making. Then we will delve into the implications and spin off methodologies of the theory, such as differential monitoring, risk assessment rule formulation, key predictor rules, the uncertainty-certainty matrix, ceiling effect, and dichotomization of skewed licensing data distributions.

Regulatory science is a relatively new science appearing on the scene in the past 20 years. Regulatory compliance and the licensing of programs, industries, etc. has been around for quite some time. The first licensing law was passed over 100 years ago governing orphanages in Pennsylvania. But as is clearly evident the science behind licensing and regulatory compliance lagged by many decades. Licensing grew at a slow pace in the human services during the twentieth century

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and it was not until the late 1960's to early 1970's that human services began to really expand and grow in terms of the number of programs. Other industries grew in a corresponding way with most of the growth in later portions of the previous century. The pharmaceutical industry is a perfect example of this. In fact, regulatory science has really grown out of this need to regulate the pharmacological industry. The Food and Drug Administration is the leading federal agency in pursuing the expansion and dissemination of regulatory science with the establishment of national centers across the USA.

Let me provide some historical context to the theory and how it has evolved over the past several decades based upon empirical evidence. The original standard paradigm when it came to regulatory compliance and its relationship to program quality was that there is a linear relationship between the two components. As one goes up, the other goes up in a corresponding way. From a public policy standpoint this made a great deal of sense. Any licensing agency wants to see increased quality of services based upon their rules and regulations. I will only be addressing the human services, in particular early care and education programs, that is where all the research has been done. In the future, it will be necessary to determine if what is being described in the human services applies to industries outside of this domain.

The problem with the standard paradigm was that it was not based on empirical evidence but rather on expert opinion and anecdotal evidence, but there were no well-designed studies that looked at the relationship between regulatory compliance and program quality in any of the human services. Fast forward to the 1970's as the number of early care and

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education programs were increasing dramatically because of the influx of federal dollars as part of the Great Society and the creation of Head Start and a major expansion of child care. It became clear that the standard paradigm which included doing case studies as their major means for data collection was not going to be a viable measurement strategy. This ushered in a new form of program monitoring and data collection called Instrument based Program Monitoring which utilized checklists, tools, and instruments for their data collection and licensing measurement.

Another thing that happened also in the movement from qualitative to quantitative measurement was that larger studies could be done to evaluate the relationship between regulatory compliance and program quality. Finally, there would be a chance to collect scientific data on this relationship and prove the linear relationship between regulatory compliance and program quality. When these studies were done, sure enough, when low levels of regulatory compliance which essentially means rule or regulatory violations are being found and comparing these data to the overall quality of the respective programs there was a direct linear relationship and that continued to be so right up to substantial regulatory compliance which means being 98-99% in compliance with all rules and regulations. However, then a very interesting change occurred in moving from substantial regulatory compliance to full (100%) regulatory compliance in which the respective programs did not follow the linear relationship and there was a plateauing or a ceiling effect in which it was difficult to distinguish the quality of programs that were in substantial vs full regulatory compliance. It was in some cases in subsequent studies (2010's) which replicated these initial

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studies in the 1970's where the relationship followed more of a diminishing returns type of curve. Not always but definitely a ceiling effect was always observed in the data.

These results obviously upset the proverbial public policy apple cart and the standard paradigm which was based upon a linear model and that licenses should only be issued to those programs that were in full regulatory compliance, no exceptions. The data did not support this claim nor the public policy. Substantial regulatory compliance was clearly demonstrating that these programs were providing the same level of quality care as those programs that were in full regulatory compliance and in some cases were doing an even better job of providing quality care. This is the major finding of the theory of regulatory compliance demonstrating these diminishing returns and/or ceiling effect and introduces substantial regulatory compliance as a licensing decision point rather than relying only on full 100% regulatory compliance. The original paradigm still holds in that regulatory compliance is very accurate in distinguishing between low and higher quality, but it is not as accurate when it comes to distinguishing quality at the substantial regulatory compliance and the full regulatory compliance levels.

The following figure/graphic (Figure 1) depicts the relationship between regulatory compliance levels and program quality scores. This graphic is a summary depiction of the various studies that have been completed starting in the 1970's through to the 2010's in looking at this relationship. The graphic also shows the relationship to several other concepts that will be addressed in this article, dealing with differential and integrative monitoring, key indicator predictor rules, risk assessment rules, nominal data, and

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dichotomization of data. All these additional concepts will be dealt with in the following sections of this article.

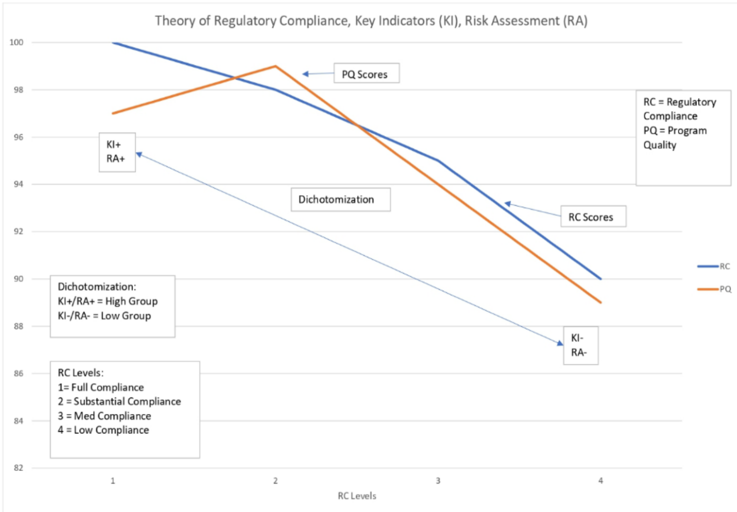


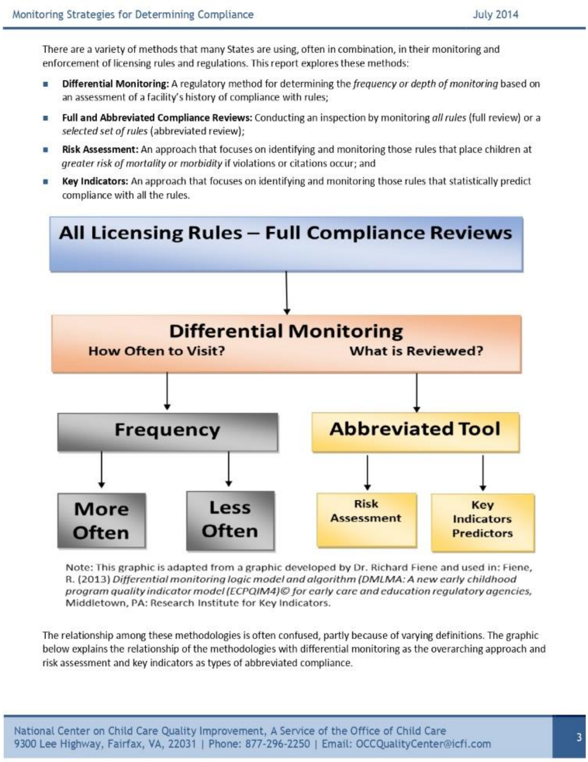
Figure 1: Theory of Regulatory Compliance

Let's turn our attention to some of the spin off methodologies and approaches from the theory of regulatory compliance. The first one to consider is differential monitoring because it is the most significant in altering the licensing landscape in how programs are monitored, reviewed, and inspected. Differential monitoring is about focused reviews rather than a one size fits all approach which again was predominant in the standard program monitoring paradigm. Because the theory of regulatory compliance introduced the importance of substantial regulatory compliance into the new and revised paradigm when it comes to program monitoring, it ushered in more targeted inspections or reviews which focused on key predictor rules or rules that placed clients at particular risk, more so than other rules and regulations. There was also part of this new paradigm the notion of reviewing programs less often but that was removed from the differential monitoring approach because all the research into program monitoring indicated that just reviewing the program more frequently brought about more positive change in regulatory compliance and quality.

In Figure 2, the differential monitoring approach is depicted along with the definitions of each of the methodologies which are part of the approach.

Risk assessment is one of the methodologies which is part of the differential monitoring approach. It focuses on those specific rules and regulations which place clients/children are greatest risk of morbidity or mortality. These are the rules that deal with supervision, hazardous materials being in locked cabinets, etc. Generally, jurisdictions/states/provinces can identify these rules through an empirical weighting approach where a Likert Scale is used to weight each rule or regulation on the basis of this morbidity and mortality dimension. Those rules that are determined to be highly weighted are part of the risk assessment rules and are to be measured in every differential monitoring focused review or inspection. There are no exceptions to this.

Key indicator predictor rules is the other methodology which is part of the differential monitoring approach. Key indicator or predictor rules statistically predict overall regulatory compliance and are a very efficient metric for determining the overall regulatory compliance of a facility but in a summary, targeted, and focused fashion without having to do a comprehensive inspection in looking at all the rules and regulations.


Monitoring Strategies for Determining Compliance July 2014

There are a variety of methods that many States are using, often in combination, in their monitoring and enforcement of licensing rules and regulations. This report explores these methods:

- **Differential Monitoring:** A regulatory method for determining the *frequency or depth of monitoring* based on an assessment of a facility's history of compliance with rules;
- **Full and Abbreviated Compliance Reviews:** Conducting an inspection by monitoring *all rules* (full review) or a *selected set of rules* (abbreviated review);
- **Risk Assessment:** An approach that focuses on identifying and monitoring those rules that place children at *greater risk of mortality or morbidity* if violations or citations occur; and
- **Key Indicators:** An approach that focuses on identifying and monitoring those rules that statistically predict compliance with all the rules.

Note: This graphic is adapted from a graphic developed by Dr. Richard Fiene and used in: Fiene, R. (2013) *Differential monitoring logic model and algorithm (DMLMA: A new early childhood program quality indicator model (ECPQIM4)© for early care and education regulatory agencies*, Middletown, PA: Research Institute for Key Indicators.

The relationship among these methodologies is often confused, partly because of varying definitions. The graphic below explains the relationship of the methodologies with differential monitoring as the overarching approach and risk assessment and key indicators as types of abbreviated compliance.

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Figure 2: Differential Monitoring Approaches

Using the combined methodologies of key indicator predictor rules and risk assessment rules makes the differential monitoring approach the most effective and efficient program monitoring system because it focuses on those rules where clients/children may be injured while at the same time predicting overall regulatory compliance with all the rules. It is the perfect balance of effectiveness and efficiency. This is the highly recommended way to utilize differential monitoring, but many jurisdictions/states/provinces use either the risk assessment or the key indicator methodologies, few are utilizing both. Hopefully this will change as the regulatory science field matures over the upcoming decades.

Let's move from the theory, program monitoring approaches and methodologies to the actual measurement of licensing data. Licensing data are at the nominal measurement level. This is important which will be pointed out shortly in the specific approach being taken here. The approach we will take is to use the Confusion Matrix, which is a well-known metric in the decision-making computer research literature and refocus it for regulatory science within the context of the definition of regulatory compliance and licensing measurement. It will also deal with the policy implications of this particular metric. It is being proposed that this new Uncertainty-Certainty Matrix (UCM) is a fundamental building block to licensing decision making. The 2 x 2 matrix has been written about a great deal in the development of the various methodologies described above and is the center piece for determining key indicator predictor rules, but it is also a core conceptual framework in licensing measurement and ultimately in program monitoring and reviews.

The reason for selecting this matrix is the nature of licensing data, it is binary or nominal in measurement. Either a rule/regulation is in-compliance or out of compliance.

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Presently most jurisdictions deal with regulatory compliance measurement in this nominal level or binary level. There is to be no gray area, this is a clear distinction in making a licensing decision about regulatory compliance. The UCM also takes the concept of Inter-Rater Reliability (IRR) a step further in introducing an uncertainty dimension that is very important in licensing decision making which is not as critical when calculating IRR. It is moving from an individual metric to a group metric involving regulatory compliance with rules.

The key pieces to the UCM are the following: the decision (D) regarding regulatory compliance and actual state (S) of regulatory compliance. Plus (+) = In-compliance or Minus (-) = Out of compliance. So, let's build the matrix:

<u>Table 1: Uncertainty-Certainty Matrix (UCM) Logic Model</u>

UCM Matrix Logic		**Decision (D) Regarding**	**Regulatory Compliance**
		(+) In Compliance	(-) Not In Compliance
Actual State (S) of	(+) In Compliance	Agreement	Disagreement
Compliance	(-) Not In Compliance	Disagreement	Agreement

The above UCM matrix demonstrates when agreement and disagreement occur which establishes a level of certainty (Agreement Cells) or uncertainty (Disagreement Cells). In a perfect world, there would only be agreements and no disagreements between the decisions made about regulatory compliance and the actual state of regulatory compliance. But from experience, this is not the case based upon reliability testing done in the licensing research field in which a decision is made regarding regulatory compliance with a specific rule or regulation and then that is verified by a second observer who generally is considered the measurement standard.

Disagreements raise concerns in general, but the disagreements are of two types: false positives and false negatives. A false positive is when a decision is made that a rule/regulation is out of compliance when it is in compliance. Not a good thing but its twin disagreement is worse where with false negatives it is decided that a rule/regulation is in compliance when it is out of compliance. False negatives need to be avoided because they place clients at extreme risk, more so than a false positive. False positives should also be avoided but it is more important to deal with the false negatives first before addressing the false positives.

The next logical question after dealing with the measurement issues of licensing data and the fact that it is measured nominally is how best to deal with a data distribution which is severely skewed. In Figure 1, dichotomization was introduced in the graphic in depicting the differences between high and low regulatory compliance. As presented above in attempting to eliminate false negatives and reduce false positives, the same can be done by dichotomizing the licensing data distribution in order to accentuate the differences between low regulatory compliance and substantial + full regulatory compliance. Dichotomization of data is generally not recommended from a statistical point of view but because of the nature of licensing data being measured at the nominal level and being so severely skewed, it is warranted.

Regulatory Compliance has been always approached as an all or none phenomenon, whether a rule is in-compliance, or it is not. There is no in-between or shades of gray or partial compliance. This worked when the prevailing paradigm was that full regulatory compliance and program quality were a linear relationship. This was the assumption but not empirically verified until the later 1970's-1980's. When this assumption was put to an empirical test, it did not hold up but rather a curvilinear relationship between regulatory compliance and program quality was discovered. This upset the prevailing paradigm and suggested we needed a new approach to addressing the relationship between regulatory compliance and program quality as mentioned earlier in this article.

It became clear after these findings in the 1970's-80's and then in the 2010's when replication studies were completed that substantial regulatory compliance could not be ignored based upon this new theory of regulatory compliance in which substantial compliance acted as a "sweet spot" of best outcomes or results when comparing regulatory compliance and program quality scores. The nominal metric needed to be revised and more of an ordinal metric was to be its replacement. Because now it wasn't just being in or out of compliance, but it mattered which rules were in or out of compliance and how they were distributed. This revised application involved aggregate rules and does not apply to individual rule scoring. The studies completed between 1970's and 2010's involved aggregate rules and not individual rules. To determine if the nominal to ordinal metric needs to be revised still needs empirical data to back this change.

The introduction of substantial compliance into the regulatory compliance measurement strategy moved the field from an instrument-based program monitoring into a more differential monitoring approach. With differential monitoring this approach considered which rules and how often reviews should be done. Also, a new Regulatory Compliance Scale was proposed to consider the importance of substantial compliance based upon the regulatory compliance theory of diminishing returns. As this Regulatory Compliance Scale has evolved within the licensing health and safety field it needs further revision in which program quality can be infused into the decision making related to individual rules. Remember that the original studies were concerned about rules in the aggregate and not individual rules. It has now become apparent that in dealing with the infusion of quality into rule formulation, a return to the individual rule approach makes the most sense.

The next iteration of the Regulatory Compliance Scale will contain the following categories: Exceeding Full compliance, Full compliance, Substantial compliance, and Mediocre compliance to adjust for the infusion of the quality element. This differs slightly from the original aggregate rule Regulatory Compliance Scale where the categories were Full compliance, Substantial compliance, Mediocre compliance, and Low compliance where only licensing health and safety elements were considered (see the Table 2 below which depicts the regulatory compliance scales and program monitoring systems side by side).

Without the theory of regulatory compliance, differential and integrative monitoring would not be needed because regulatory compliance would have had a linear relationship with program quality and full compliance would have been the ultimate goal. There would have been no need for targeted rule enforcement or reviews because all rules would have had an equal weight when it came to protecting clients and any individual rule would have predicted overall compliance. But it "just ain't so" as it is said. The need to make adjustments is brought about by the theory and it has not been the same ever since.

<u>Table 2: Regulatory Compliance Scales and Program Monitoring Systems</u>

<u>Scoring Level</u>	**<u>Individual Rule</u>**		**<u>Aggregate Rules</u>**	**<u>Individual Rule</u>**
<u>Scale</u>	**Instrument based**	***<u>Scale</u>***	**Differential**	**Integrated**
7	Full Compliance	7	Full Compliance	Exceeds Compliance
-	---	5	Substantial	Full Compliance
-	---	3	Mediocre	Substantial
1	Out of Compliance	1	Low	Mediocre/Low

The above table attempts to summarize in tabular form the previous paragraphs in describing the relationship between program monitoring and licensing measurement scaling via a proposed Regulatory Compliance Scale. As one can see this moves the paradigm from a nominal to an ordinal measurement rubric and depicts the differences in the measurement focus either at the individual rule or aggregate rules scoring levels. It also considers the significance of substantial compliance given the theory of regulatory compliance in which substantial compliance focus is a "*sweet spot*" phenomenon as identified in the regulatory science research literature. It is hoped that the regulatory science field takes these paradigm shifts into consideration in moving forward with building licensing decision making systems and how licenses are issued to facilities.

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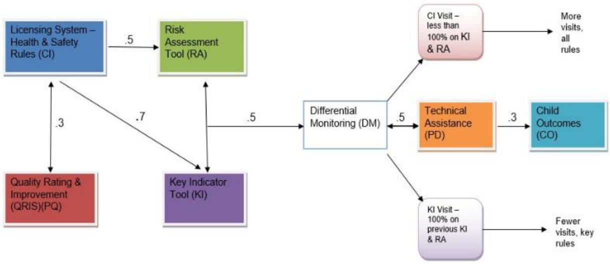
As a final footnote, keep in mind that the theory of regulatory compliance applies to the relationship between regulatory compliance and program quality and does not apply to regulatory compliance in and of itself related to health and safety. When dealing with regulatory compliance, full compliance is the ultimate goal with individual rules and in determining which rules are predictive rules. It is the preferred methodology in order to eliminate false negatives and decreasing false positives in making licensing decisions related to regulatory compliance.

So, what are the takeaways from the theory of regulatory compliance and its implications for regulatory science.

1) The theory of regulatory compliance has ushered in a new paradigm demonstrating the importance of substantial compliance and putting it on equal footing with full 100% regulatory compliance.
2) Regulatory compliance will not get us to quality on its own, rules and regulations need an infusion of quality so there is the need to balance regulatory compliance and quality standards in any future promulgation of rules and regulations.
3) How does all this fit together? An Early Childhood Program Quality Improvement and Indicator Model has been proposed to build off the results of the theory of regulatory compliance and to build a robust program monitoring system that both differentiates and integrates. See the following Figure 3 which provides a logic model for how the model would play out.



$$\sum CI \times \sum PQ \Rightarrow \sum RA + \sum KI \Rightarrow \sum DM + \sum PD \Rightarrow CO$$

1

Figure 3: Early Childhood Program Quality Improvement and Indicator Model

4) All the studies and research presented in this article are from the human services area. It will be interesting to see if other industries in the medical, scientific, and economic arenas demonstrate the same type of relationship between regulatory compliance in their respective industries and sets of rules and regulations and the ultimate quality of the products they produce.
5) The ceiling effect, diminishing returns, plateauing all depict a curvilinear relationship rather than a linear relationship. As additional studies are completed, this relationship needs to be fine-tuned. Hopefully moving from a nominal measurement strategy to one that is more ordinally based via the Regulatory Compliance Scale will help to fine-tune that relationship.

6) The idiosyncratic nature of licensing data distributions needs to be dealt with statistically because of severe skewness in the data which limits the analytical frames that can be used. Various weighting schemes are being attempted in order to build in more variance in the data and the infusion of more quality standards into rule formulation should help.
7) Hopefully, this article has given the reader the necessary background to understand this new paradigm for licensing measurement and monitoring systems with all its intricacies and foibles.

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Fiene, R. (2022). Regulatory Compliance Monitoring Paradigms and the Relationship of Regulatory Compliance/Licensing with Program Quality: A Policy Commentary. ***Journal of Regulatory Science 10, no. 1, 1-7.*** https://doi.org/10.21423/JRS-V10A239

Fiene, R. (2019). A treatise on theory of regulatory compliance, ***Journal of Regulatory Science, 7, no. 1, 1-3.*** https://doi.org/10.21423/JRS-V07FIENE

Note:

In the regulatory science research literature and in this section, both the theory of regulatory compliance as well as the regulatory compliance theory of diminishing returns are used interchangeably.

The Relationship between Early Care & Education Quality Initiatives and Regulatory Compliance

Over the past couple of decades there has been many early care and education initiatives, such as Quality Rating and Improvement Systems (QRIS), Professional Development, Training, Technical Assistance, Accreditation, and Pre-K programs to just name a few. Validation and evaluation studies have begun to appear in the research literature, but in these studies, there has been few empirical demonstrations of the relationship between these various quality initiatives and their impact on regulatory compliance or a comparison to their respective regulatory compliance. This brief technical research note will provide examples of these comparisons taken from the Early Childhood Program Quality Improvement and Indicator Model (ECPQI2M) Data Base maintained at the Research Institute for Key Indicators (RIKIllc).

I have written about this back in 2014 (Fiene, 2014) in how the various quality initiatives were having a positive impact on the early care and education delivery system but at that point regulatory compliance data were not available. Today, in 2019, with many changes and developments in state data systems, this is no longer the case. Now it is possible to explore the relationships between data from the various quality initiatives and licensing. Several states in multiple service delivery systems have provided replicable findings in which I feel comfortable reporting out about the relationships across the data systems.

What we now know is that there is a positive and statistically significant relationship between regulatory compliance and moving up the QRIS Quality Levels. In other words, facilities have higher compliance in the higher QRIS Quality Levels and lower compliance in the lower QRIS Levels or if they do not participate in their state's respective QRIS ($F = 5.047 – 8.694$; $p < .0001$). Other quality initiatives, such as being accredited, shows higher compliance with licensing rules than those facilities that are not accredited ($t = 2.799 - 3.853$; $p < .005 - .0001$).

This is a very important result clearly demonstrating the positive relationship between regulatory compliance and quality initiatives. I have some additional state data sets that I will add to the ECPQI2M data base and will continue to analyze these relationships.

Regulatory Compliance, Licensing, and Monitoring Measurement Principles: Rule Compliance Versus Rule Performance

The purpose of this short paper is to delineate the parameters of regulatory compliance, licensing and monitoring measurement principles (throughout this paper the term "regulatory compliance" will be used to encompass these principles). Regulatory compliance is very unique when it comes to measuring it because it is very different from other measurement systems and this impacts how one uses various statistical analyses. In this paper, the limitations of the measurement system will be highlighted with potential solutions that have been devised over the past several decades. Hopefully this paper will add to the measurement and statistical analysis licensing research literature. It is meant for those agency staff who are responsible for designing regulatory compliance, licensing and monitoring systems. Its focus is the human services but the basic principles can be applied to any standards-based system that is based upon a compliance or performance model.

The organization of this paper is as follows. First, let's introduce what is included when we talk about measurement principles for regulatory compliance, licensing and monitoring systems. Second, provide examples that should be familiar to most individuals who have been involved in the human services, in particular the early care and education field. Third, what are the limitations of these various systems that have been identified in the research literature. Fourth, what are some potential solutions to these limitations. And, fifth, what are the next steps and where do we go to build reliable and valid measurement systems dealing with regulatory compliance, licensing, and program monitoring as these relate to the human services delivery system.

So, what is included in this approach. I can be any rule, regulation, or standard based measurement system. Generally, these systems are focused on a nominally based system, sometimes they will be ordinally based. By a nominally based system, either the facility being assessed is in compliance with a particular set of rules, regulations, or standards or it is not. In an ordinally based system, a facility may attain a score on a Likert scale, such as 1 through 5 where 1 is non-optimal and 5 is excellent. These types of measurement scales involve a performance component and are not limited to more of a

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compliance focus as is the case with a nominally based system. These distinctions are important as one will see later in this paper when it comes to the selection of the appropriate statistics to measure data distributions and the subsequent analyses that can be undertaken.

What are examples of these types of systems? For nominally based systems, just about all the licensing systems in the USA, Canada and beyond employ this type of measurement strategy. As has been said in the previous paragraph, either there is compliance or there is not. It is very black or white, there are not shades of gray. For ordinally based systems, these systems are a bit more diverse. Accreditation, Quality Rating and Improvement Systems (QRIS), the new Head Start Grantee Performance Management System (GPMS), the Environmental Rating Scales, and the CLASS are all examples of ordinally based systems based upon a Likert type measurement system. There are many others, but as a research psychologist whose total career (50 years) has been spent in early care and education, this has been the focus of my research.

The limitations of the above systems are numerous and, in some ways, are difficult to find solutions. In the past, these measurement systems have focused more on the descriptive aspects of data distributions rather than attempting to be predictive or inferential. The first major limitation of the data from regulatory compliance systems is the fact that the data distribution is markedly skewed. What does skew data mean? Most data distributions are normally distributed with very few occurrences at the extremes with the majority of the cases in the middle section of the measurement scale. IQ is an example of a normally distributed data distribution. In a skew data distribution, the majority of data are at one end of the data

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distribution, either at the positive end or the negative end of the distribution. With regulatory compliance data, it is at the positive end with the majority of facilities being in full or 100% compliance with the rules. Very few of the facilities are at the negative end of the distribution.

What is the big deal? The big deal is that statistically we are limited in what we can do with the data analyses because the data are not normally distributed which is an assumption when selecting certain statistical tests. Basically, we need to employ non-parametric statistical analyses to deal with the data. The other real limitation is in the data distribution itself. It is very difficult to distinguish between high and mediocre facilities. It is very easy to distinguish between high and low performing facilities because of the variance between the high performing facilities and the low performing facilities. However, that is not the case between high and mediocre preforming facilities. Since the majority of facilities are either in full or substantial compliance with the rules, they are all co-mingled in a very tight band with little data variance. This makes it very difficult to distinguish differences in the facilities. And this only occurs with regulatory compliance data distributions. As will be pointed later in this paper, this is not the case with the second measurement system to be addressed dealing with ordinal measurement systems.

There is also a confounding factor in the regulatory compliance data distributions which has been termed the theory of regulatory compliance or the law of regulatory compliance diminishing returns. In this theory/law, when regulatory compliance data are compared to program quality data, a non-linear relationship occurs where either the facilities scoring at the substantial compliance level score better than the fully

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compliant facilities or there is a plateau effect and there is no significant difference between the two groups: substantial or fully compliant facilities when they are measured on a program quality scale. From a public policy stand point, this result really complicates how best to promulgate compliance with rules. This result has been found repeatedly in early care and education programs as well as in other human service delivery systems. It is conjectured that the same result will be found in any regulatory compliance system.

Another limitation of regulatory compliance data is the fact that it is measured at a nominal level. There is no interval scale of measurement and usually not even an ordinal level of measurement. As mentioned above, either a facility is in compliance or not. From a statistical analytical view, again this limits what can be done with the data. In fact, it is probably one of the barriers for researchers who would like to conduct analyses on these data but are concerned about the robustness of the data and their resulting distributions.

Let's turn our attention to potential solutions to the above limitations in dealing with regulatory compliance data. One potential solution and this is based upon the theory of regulatory compliance in which substantial compliance is the threshold for a facility to be issued a license or certificate of compliance. When this public policy determination is allowed, it opens up a couple of alternate strategies for program monitoring and licensing reviews. Because of the theory of regulatory compliance/law of regulatory compliance diminishing returns, abbreviated or targeted monitoring reviews are possible, differential monitoring or inferential monitoring as it has been documented in the literature. This research literature on differential monitoring has been dominated by two approaches: licensing key indicators and weighted risk assessments.

A second solution to the above limitations deals with how we handle the data distribution. Generally, it is not suggested to dichotomize data distributions. However, when the data distribution is significantly skewed as it is with regulatory compliance, it is an appropriate adjustment to the data. By essentially having two groups, those facilities that are in full compliance and those facilities that are not in full compliance with the rules. In some cases, the fully compliant group can be combined with those facilities that are in substantial compliance but this should only be employed when there are not sufficient fully compliant facilities which is hardly never the case since population data and not sampled data are available from most jurisdictions. When data samples were drawn and the total number of facilities were much smaller, substantial compliant facilities were used as part of the grouping strategy. The problem in including them was that it increased the false negative results. With them not being included, it is possible to decrease and eliminate false negatives. An additional methodological twist is also to eliminate and not use the substantial compliant facilities at all in the subsequent analyses which again helps to accentuate the difference scores between the two groups of highly compliant and low compliant scoring facilities.

The next steps for building valid and reliable regulatory compliance systems are drawing upon what has been learned from more ordinally based measurement systems and applying this measurement structure to regulatory compliance systems. As such, the move would be away from a strict nominally based measurement to more ordinal in which more of a program quality element is built into each rule. By utilizing this paradigm shift, additional variance should be built into the measurement structure. So rather than having a Yes/No result, there would be a gradual Likert type (1-5) scale built in to measure "rule performance" rather than "rule compliance" where a "1" indicates non-compliance or a violation of the specific rule. A "5" would indicate excellent performance as it relates to the specific rule. A "3" would indicate compliance with the specific rule meeting the specifics of the rule but not exceeding it in any way.

This paradigm shift has led to the creation of Quality Rating and Improvement Systems (QRIS) throughout the USA because of a frustration to move licensing systems to more quality focused. The suggestion being made here is to make this movement based upon the very recent developments in designing such systems as is the case with Head Start monitoring. Head Start GPMS is developing an innovative Likert based ordinal system which incorporates compliance and performance into their monitoring system. Other jurisdictions can learn from this development. It is not being suggested as a replacement for QRIS or accreditation or ERS/CLASS assessments but as a more seamless transition from licensing to these various assessments. As indicated by the theory of regulatory compliance and the law of regulatory compliance diminishing returns, this relationship between licensing and program quality is not linear. By having this monitoring system approach in place, it may be able to reintroduce more of a linear relationship between licensing and program quality.

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What is the Relationship between Regulatory Compliance and Complaints in a Human Services Licensing System?

Within licensing measurement and the validation of licensing systems it is particularly difficult to have specific outcome metrics that can be measured within a human services licensing system. The purpose of this technical research note is to propose a potential solution to this problem.

Probably the most accurate measures of licensing outcomes focuses on improvements in the health and safety of clients within human services licensed facilities, such as: fewer injuries (safety) or higher levels of immunizations (health). Another measure related to client satisfaction is the number of complaints reported about a licensed facility by clients and the general public. The advantage of using complaints is that this form of monitoring is generally always part of an overall licensing system. In other words, the state/provincial licensing agency is already collecting these data. It is just a matter of utilizing these data in comparing the number of complaints to overall regulatory compliance.

The author had the opportunity to have access to these data, complaint and regulatory compliance data in a mid-Western state which will be reported within this technical research note. There are few empirical demonstrations of this relationship within the licensing research literature. The following results are based upon a very large sample of family child care homes (N = 2000+) over a full year of licensing reviews.

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The results of comparing the number of complaints and the respective regulatory compliance levels proved to show a rather significant relationship ($r = .47$; $p < .0001$). This result is the first step in attempting to understand this relationship as well as developing a methodology and analysis schema since directionality (e.g., did the complaint occur before or after the regulatory compliance data collection?) can play a key role in the relationship (this will be developed more fully in a future technical research note). The focus of this research note was to determine if any relationship existed between regulatory compliance and complaint data and if it is worth pursuing.

It appears that looking more closely at the relationship between complaint and regulatory compliance data is warranted. It may provide another means of validating the fourth level of validation studies as proposed by Zellman and Fiene's OPRE Research Brief (Zellman, G. L. & Fiene, R. (2012). Validation of Quality Rating and Improvement Systems for Early Care and Education and School-Age Care, Research-to-Policy, Research-to-Practice Brief OPRE 2012-29. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services) in which four approaches to validation are delineated for Quality Rating and Improvement Systems (QRIS). This author has taken this framework and applied it to licensing systems (Fiene (2014). Validation of Georgia's Core Rule Monitoring System, Georgia Department of Early Care and Learning) and more recently proposed as the framework for Washington State's Research Agenda (Stevens & Fiene (2018). Validation of the Washington State's Licensing and Monitoring System, Washington Department of Children, Youth, and Families).

The Implications in Regulatory Compliance Measurement When Moving from Nominal to Ordinal Scaling

The purpose of this paper is to provide an alternate paradigm for regulatory compliance measurement in moving from a nominal to an ordinal scale measurement strategy. Regulatory compliance measurement is dominated by a nominal scale measurement system in which rules are either in compliance or out of compliance. There are no gradients for measurement within the present licensing measurement paradigm. It is very absolute. Either a rule is in full compliance to the letter of the law or the essence of the regulation or it is not. An alternate paradigm borrowing from accreditation and other program quality systems is to establish an ordinal scale measurement system which takes various gradients of compliance into account. With this alternate paradigm, it offers an opportunity to begin to introduce a quality element into the measurement schema. It also allows to take into consideration both risk and prevalence data which are important in rank ordering specific rules.

So how would this look from a licensing decision making vantage point. Presently, in licensing measurement, licensing decisions are made at the rule level in which each rule is either in or out of compliance in the prevailing paradigm. Licensing summaries with corrective actions are generated from the regulatory compliance review. It is a nominal measurement system being based upon Yes/No responses. The alternate measurement paradigm I am suggesting in this paper is one that is more ordinal in nature where we expand the Yes/No response to include gradients of the particular rule. In the next paragraph,

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I provide an example of a rule that could be measured in moving from a nominal to ordinal scale measurement schema.

Rather than only measuring a rule in an all or none fashion, this alternate paradigm provides a more relative mode of measurement at an ordinal level. For example, with a professional development or training rule in a particular state which requires, let's say, 6 hours of training for each staff person. Rather than having this only be 6 hours in compliance and anything less than this is out of compliance, let's have this rule be on a relative gradient in which any amount of hours above the 6 hours falls into a program quality level and anything less than the 6 hours falls out of compliance but at a more severe level depending on how far below the 6 hours and how many staff do not meet the requirement (prevalence). Also throw in a specific weight which adds in a risk factor and we have a paradigm that is more relative rather than absolute in nature.

From a math modeling perspective, the 1 or 0 format for a Yes or No response becomes -2, -1, 0, +1, +2 format. This is more similar to what is used in accreditation systems where 0 equals Compliance and -1 and -2 equals various levels of Non-Compliance in terms of severity and/or prevalence. The +1 and +2 levels equal value added to the Compliance level by introducing a Quality Indicator. This new formatting builds upon the compliance vs non-compliance dichotomy (C/NC) but now adds a quality indicator (QI) element. By adding this quality element, we may be able to eliminate or at least lessen the non-linear relationship between regulatory compliance with rules and program quality scores as measured by the Environmental Rating Scales (ERS) and CLASS which is the essence of the Theory of Regulatory Compliance (TRC). It

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could potentially make this a more linear relationship by not having the data as skewed as it has been in the past.

By employing this alternate paradigm, it is a first demonstration of the use of the Key Indicator Methodology in both licensing and quality domains. The Key Indicator Methodology has been utilized a great deal in licensing but in few instances in the program quality domain. For example, over the past five years, I have worked with approximately 10 states in designing Licensing Key Indicators but only one state with Quality Key Indicators from their QRIS – Quality Rating and Improvement System. This new paradigm would combine the use in both. It also takes advantage of the full ECPQI2M – Early Childhood Program Quality Improvement and Indicator Model by blending regulatory compliance with program quality standards.

A major implication in moving from a nominal to an ordinal regulatory compliance measurement system is that it presents the possibility of combining licensing and quality rating and improvement systems into one system via the Key Indicator Methodology. By having licensing indicators and now quality indicators that could be both measured by licensing inspectors, there would be no need to have two separate systems but rather one that applies to everyone and becomes mandated rather than voluntary. It could help to balance both effectiveness and efficiency by only including those standards and rules that statistically predict regulatory compliance and quality and balancing risk assessment by adding high risk rules.

I will continue to develop this scale measurement paradigm shift in future papers but wanted to get this idea out to the regulatory administration field for consideration and debate. This will be a very controversial proposal since state regulatory agencies have spent a great deal of resources on developing free standing QRIS which build upon licensing systems. This alternate paradigm builds off my Theory of Regulatory Compliance's key element of relative vs absolute measurement and linear vs non-linear relationships. Look for additional information about this on my website RIKI Institute Blog - https://rikinstitute.com/blog/.

So Which Is Better: Differential Monitoring & Abbreviated Inspections or Comprehensive Inspections?

During 2019 and 2020, several validation studies have been or are being completed in the states of Washington, Indiana, and in the Province of Saskatchewan. These validation studies are determining if the key indicator and risk assessment methodologies are valid approaches to conducting abbreviated inspections in comparison to more comprehensive inspections in which all rules are assessed. These abbreviated inspections are a form of differential or targeted monitoring. This technical research note focuses on the empirical evidence to determine the efficacy of these approaches, are they better than doing comprehensive reviews when it comes to health and safety outcomes.

When the key indicator and risk assessment methods were originally proposed in the 1980's, an outcome validation study was completed in Pennsylvania during 1985 – 1987 by Kontos and Fiene to determine what impact those methods had on children's development. In that original study, it was determined that the Child Development Program Evaluation

Indicator Checklist (CDPEIC) was more effective and efficient in predicting child development outcomes than the more comprehensive Child Development Program Evaluation. In fact, the CDPEIC and the accompanying Caregiver Observation Scale (COFAS) were as effective and more efficient than the ECERS – Early Childhood Environmental Rating Scale in that study.

Fast forward to 2019 – 2020, in the province of Saskatchewan, Canada, and a similar study was undertaken but in this case the outcomes were more based upon health and safety rather than child development developmental outcomes. In this case, again the key indicator and risk assessment tool was both a more effective and efficient model over the more comprehensive inspection approach giving credence to utilizing differential monitoring with abbreviated inspections.

In both of the above validation studies involving either child development assessment outcomes or health & safety outcomes, a 16 to 28% increase in effectiveness was observed in the outcome data. In the abbreviated or targeted inspections, 33% of the total rules or less are used to make the determination of regulatory compliance. It is like having the best of both worlds when it comes to effectiveness (16 – 28% increase in outcomes) and in efficiency (66% fewer rules being used). These studies help to validate the use of differential monitoring as a viable alternative to the more comprehensive one-size-fits-all monitoring reviews.

The Dichotomization and Bi-Polarization of the Matrix Data Base

This latest technical note updates the thresholds for the high and low groups within the key indicator matrix. This technical note is based upon the latest studies during the early 2015 time frame in which very large data distributions were available to test certain criteria with the key indicator methodology. Because of the extreme skewness present in licensing/regulatory data, certain statistical adjustments need to be made so that the analyses performed reflect the distribution of data. One of these statistical adjustments is the dichotomization of data which is generally not suggested with the exception of very skewed data. Since licensing data are so skewed, this adjustment has been used throughout the key indicator methodology. However, an additional adjustment is now warranted given not only the skewness of data but also because of the data being nominal in nature. This additional adjustment I am calling the bipolarization of data in order to accentuate the differences between the high and low groups within the key indicator matrix.

I have tested several data sets utilizing bi-polarization and found that the results are more significant with its use than without its use. Please keep in mind that licensing data is very different from other forms of data found in the early care and education (ECE) research literature. It is not like the ERS or CLASS data which is more normally distributed and lends itself to more parametric statistical analyses. Licensing data are nominal in nature and always very skewed which means that more non-parametric methods are warranted, such as phi coefficient and dichotomization of data. An example of how this actually works may help.

Licensing data are measured as either being in or out of compliance. There is no middle ground, it is not measured on a Likert scale. Therefore it is nominal in nature, either it is all there or it is not. Licensing data are also measured in the sense that all rules are created equally, in other words, they all have the same weight or importance, such as 1 = compliance; 0 = non-compliance. Being in full 100% compliance which means 0 violations is the goal of a regulatory/licensing system. One does not want to see many violations of the rules because this will place children at risk of harm and the purpose of an early care and education (ECE) licensing/regulatory system is to reduce the potential harm to children. In the licensing measurement literature, this 100% compliant group is generally labeled or considered the high compliant group. With some licensing laws which allow substantial but not full 100% compliance with the full set of rules, it would then be allowable to have possibly 1 or 2 violations and still be considered in this high compliant group. The low compliant group has been generally any program that had any non-compliance or had 2 or more violations. When these two groups were compared to each individual rule utilizing the phi coefficient formula it was found that a more accurate approach was to accentuate or increase the difference between the high and low groups by eliminating the intervening violations in following manner: high group of 0 violations; 1-4 violations being eliminated; 5+ violations defined as the low group. This additional bi-polarization of data helped to accentuate the differences in calculating the phi coefficient and provided a more sensitive key indicator tool.

Another data distribution issue that should be addressed here that justifies the above cutoffs is that there is very little variance in licensing/regulatory data. Generally the frequency distribution is 20 or less and the average set of rules is over 200 rules. So the frequency distribution is extremely skewed within less than 10% of the potential data distribution. Also, the majority of programs are 100% in compliance with all the rules. And an additional complication is that the scoring of each rule is scored as if it had an equal risk value when in reality the rules can place children at either great risk to relatively little risk if found non-compliant. These measurement issues are very different than in other measurement systems such as ERS or CLASS. The important message to take from this is that rules are not a ruler, they do not measure things equally and cannot be analyzed or compared to other measurement systems that are more normally distributed.

Although licensing is part of the program quality continuum in establishing basic health and safety standards for children, it is a system with measurement limitations that can only be compared on a nominal basis making several statistical adjustments as suggested above necessary.

Enhanced Dichotomization Model for Generating Licensing Key Indicators

The licensing key indicator methodology has been evolving over the past decade in making it more sensitive to the selection process of the specific rules to be included as key indicators. Some of the enhancements can occur because of state licensing data systems being able to provide population data rather than having to select sample data. Because of the nominal nature of licensing data and the severe skewness of the data distributions, non-parametric statistical approaches need to be employed in the analysis of the data.

A key component in the analysis of the licensing data distributions is to dichotomization of the data which is generally not warranted but is acceptable with very skewed data distributions. The dichotomization that has been most successful is a H25/M50/L25 distribution in which H25 represents the High Group of regulatory compliance, M50 which represents the Mediocre or Middle Group of regulatory compliance, L25 which represents the Lowest Group of regulatory compliance. In the past, the methodology allowed for full and substantial compliance within the High Group. This decision is no longer recommended. Rather, in order to decrease the number of False Negatives, it is now recommended that only Full (100%) regulatory compliance is used in defining the High Group. This eliminates the possibility of False Negatives.

By making this above change and in using the full distribution of licensing data, it enhances the results for generating the licensing key indicator rules. For additional information on this modeling please see: Fiene, Richard (2018), "***ECPQIM National Data Base", Mendeley Data, V1. http://dx.doi.org/10.17632/kzk6xssx4d***.1 This data base provides the detailed ECPQIM data distributions for the above changes. The enhancements increase the phi coefficients and reliability in either moving or not moving from abbreviated inspections to full comprehensive inspections. This data base also contains clear demonstrations of the efficacy of the ECPQIM – Early Childhood Program Quality Improvement and Indicator Model as a vehicle for improving early care and education programs.

The Relationship of Licensing, Head Start, Pre-K, QRIS, Accreditation, and Professional Development and their Potential Impact on Child Outcomes

This short paper will provide some thoughts about the various public policy initiatives/systems to improve early care and education, such as licensing, Head Start, Pre-K, QRIS, accreditation, and professional development and their potential impact on child outcomes. Early care and education is at a major crossroads as a profession in attempting to determine which quality initiatives have the greatest impact on children. Results are starting to come in from early studies which may provide some guidance as policy makers begin making decisions about where to focus their limited funding resources.

Improving early care and education programs has a long public policy history as we attempt to find the most cost effective and efficient means for attaining this lofty goal. There have been many ups and downs over the years where funding was adequate and when it was not, but our desire to accomplish this goal has always been front and center. Now, as a profession, we are at somewhat of a cross-roads in determining which of the many quality initiatives appear to have the greatest impact on children's development. When I refer to children's development, I am looking at the whole child from the perspective of a child's developmental status as well as the child's health and safety.

Presently we have many quality initiatives to look at which is a very good thing since at times in the past we did not always have so many choices. Probably the one constant throughout the history of early care and education in the past century has been licensing or regulations/rule formulation. Some many argue

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that licensing is not a quality initiative but I would suggest that licensing has many of the structural aspects of quality that have been identified in the research literature. The other quality initiatives I will discuss have really started and been implemented in the very later part of the 20th century so we are talking about a relatively new science when we think about having its intended impact on children. Also, I am talking about large public policy initiatives rather than highly structured, single focused research studies involving small samples of children.

Let's start with licensing since this system has been present for the longest period of time. The purpose of licensing is to act as the gatekeeper to the early care and education field in which only those providers who meet specific standards, generally called rules or regulations are permitted to operate and care for children. The rules are dominated by health and safety concerns with less emphasis on curriculum planning and staff-child interactions. The rules measure more structural aspects of quality than the process aspects of quality; dealing with what attorney's call the "hard data" rather than the "soft data".

Since licensing rules allow entry into the early care and education field to provide services usually the rules are not overly stringent with the majority of providers being in high compliance if not full compliance with all the rules. This would be expected since these are basic health and safety standards. And in fact when one looks at compliance data, it is extremely skewed with the majority of providers having very high compliance scores with relatively few violations of the rules. However, this does introduce a certain difficulty in using these data for decision making purposes at an aggregate level because so many providers score at a high level it becomes increasingly

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difficult to distinguish between the really excellent providers and the somewhat mediocre providers. Another way of looking at this skewing of the data is to term it as a plateau effect in which there is very little variance at the upper ends of the compliance spectrum. This is a major issue with skewed data and basic standards which is an important consideration with licensing but will also be an important consideration when one looks at the other quality initiatives to be addressed shortly.

Because of this plateau effect with licensing data, it may explain much of the lack of relationships found between compliance with rules and any types of outcomes related to children's outcomes and provider's overall quality. However, with licensing data and making comparisons to children's outcomes we should be looking at general health data such as immunization status and safety data such as the number of injuries at programs with varying levels of compliance with health and safety rules.

A significant development over the past two decades has been the development of national health and safety standards with the publication of Caring for Our Children (CFOC3) and Stepping Stones (SS3). Although these standards are not required but are only recommended practice that provides guidance to states as they revise their rules, these two documents have been embraced by the licensing/regulatory administration field. Although unlikely, if not impossible, to comply with all the CFOC3 standards, it would be interesting to compare states on this set of standards which may add a good deal of variance to the basic health and safety data that has been missing with licensing rules.

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The next system to look at is the national Head Start program. Out of the major programs that are national in scope, Head Start has a long history of providing services to low-income children and their families. Head Start Performance Standards are definitely more stringent than licensing rules but not as stringent as accreditation standards. Based upon Head Start's more stringent standards and the additional supports that are part of its program, Head Start generally scores higher on program quality tools (e.g., CLASS or ERS) than licensed child care in states.

With Head Start programs, we at times find skewing or plateauing of data when we compare compliance with the Head Start Performance Standards (HSPS) and program quality tools such as the CLASS. However, this is dependent upon the various subscales within the CLASS in which the plateauing of data does not occur all of the time. I think that has a lot to do with the HSPS being fairly stringent standards as compared to state licensing rules in general.

A program that has gotten a good deal of support at the state level are Pre-K programs. These programs come with stricter standards than licensed child care with an emphasis on the professional development of staff. There is more concern about the process aspects of quality which focus more on teacher-child interactions. This emphasis on teacher-child interaction has paid off in which these programs generally are high performers when you compare Pre-K funded classrooms to licensed child care classrooms. In fact, Pre-K funding appears to have a positive impact on licensed child care in raising overall quality scores on the ECERS-R for all classrooms in programs that receive Pre-K funding even if some of the classrooms are not the direct beneficiaries of the funding. This is a very significant finding because we knew that Pre-K funding increased the quality of care in classrooms receiving those funds, but now, it appears that there is a spillover effect to all classrooms co-located with Pre-K funded classrooms. I must admit that I was initially skeptical when Pre-K funding was first proposed because I thought it would take funding and the focus away from improving licensed child care at the state level; but it appears that the advocates for Pre-K were right in their assertion that Pre-K would increase the quality of all early care and education which includes licensed child care.

A more recent entry into the state funding scene are QRIS (Quality Rating and Improvement Systems) which build upon licensing systems, are voluntary, and have substantial financial incentives for participating in this quality improvement system. It is too early to really determine if QRIS is having the intended impact because the program is so new (50% of states have a QRIS), and the penetration rate is usually below 50% in any given state (remember the system is voluntary). However, in the few studies done, the results are mixed. It does appear that programs which move up the various star levels do increase the quality of care they provide; but in a most recent study looking at child outcomes, no relationship was found between increasing levels of compliance with QRIS standards and how well children did in those programs with the exception of CLASS scores in which teacher-child interactions were measured and emphasized – here there were significant relationships between higher scores on the CLASS and child outcomes.

Accreditation systems come in many varieties but there are only three that I know of in which empirical studies have been done to validate their systems: NAEYC, NECPA for centers and

NAFDC for homes. Also reliability testing has been done in each of these systems. Accreditation is a rigorous self-study that really improves programs through the self-study process. This should come as no surprise because we have known for some time that program monitoring all by itself leads to program improvements. Now when you couple that with technical assistance you see even more improvement. Accreditation is usually the other pillar of a QRIS system with licensing being the first pillar. The QRIS standards fill the gap from licensing to accreditation. Accreditation is a voluntary system just as in most cases with QRIS. However, in accreditation we are reaching less than 10% of the programs with the majority of these attaining NAEYC accreditation. NECPA and NAFDC have much smaller market shares.

The last system to be addressed is the professional development systems that have been established in all states. This is one quality improvement initiative that has 100% penetration in all states. It is usually tied to QRIS through technical assistance and mentoring (coaching). When it focuses on mentoring rather than workshops, it has demonstrated its effectiveness in changing teachers behaviors in how they interact with children in their care in a very positive fashion. This is very important because the research literature is clear about the importance of the teacher-child interaction when it comes to child outcomes. Professional development runs the gamut from pre-service (University based programs) to in-service (training, technical assistance, mentoring, coaching) programming for teachers and directors.

So where does this leave us when policy makers begin to try to determine which quality improvement initiatives should be invested in to start with, which to increase in funding, and maybe even which ones should be defunded. I think there are some trends we need to begin to look at, such as the following:

1) Having stringent and rigorous standards is very important. The more that we do not, the more opportunities for mediocre programs to score artificially higher on whatever scale that is used. This is evident with licensing data where the data are significantly skewed with a major plateau effect at the upper end of compliance rules/regulations.

2) Emphasis on teacher-child interaction needs to be paramount in our quality improvement initiatives. Working with teachers through mentoring/coaching appears to be most effective in changing teachers' behaviors in interacting more positively with children.

3) Making sure we are measuring the right outcomes. Match health and safety standards with health and safety outcomes for children. Match developmental outcomes for children with standards that emphasize positive teacher-child interactions.

4) Building upon #1 above, find what the key indicators are with all the data that we collect. We are spending too much time in looking at too many things which in many cases are simply just not the right things to look at. As states' data systems become more sophisticated, and they are, this will be easier to do. Let's begin to utilize the data we have already collected.

Policy Commentary: Regulatory Science Measurement Issues of Skewness, Dichotomization of Data, and Nominal versus Ordinal Data Measurement

The purpose of this policy commentary is to provide some context for regulatory scientists in pursuing regulatory policy analysis, especially as it relates to regulatory compliance and human service licensing data. Regulatory scientists have dealt with non-parametric data in the past but in dealing with regulatory compliance and human service licensing data are just so different from previously measured data in that the nature of the data is nominal and extremely skewed to the point that several adjustments need to be made in order to analyze the data.

Although the examples being referred to in this policy commentary are from the human services field and discipline, I am certain that many of the basic concepts presented will pertain to other disciplines and fields of study that are impacted by regulatory science. These concepts are not unique to a particular discipline but rather are unique to regulatory science which has particular parameters, concepts, and truths which are pertinent to how regulations/rules/standards are formulated and then implemented in various jurisdictions or disciplines.

There are very logical reasons why regulatory compliance and licensing data are so extremely skewed. These data represent compliance with basic health and safety rules and regulations which provide the basic safeguards for children, youth, and adults while being cared for in a form of human services, such as child care, youth residential, or adult assisted living care.

Very honestly a state agency would not want to find their regulatory compliance data being normally distributed because this would be an indication that the facilities were in low compliance with the state's rules and regulations. Having the regulatory compliance data be highly negatively skewed is actually a good result from a public policy standpoint but not from a statistical analytical standpoint. Having 50-60% of your scores within a three-to-five-point range when there may be as many as 300-400 data points leaves very little variance in the data. It also leads to being very difficult to distinguish between the high performers and the mediocre performers. This finding has led to a theory of regulatory compliance in which substantial compliance but not full compliance with all rules and regulations is in the best interests of the clients being served (Fiene, 2019).

In the regulatory science field, this has led to public policies emphasizing substantial compliance in order to be a licensed human service facility, such as a child care center, youth residential program, or an adult assisted living center. The other aspect of regulatory compliance and licensing data for regulatory scientists to consider is that the data are nominal in measurement, either a facility is in compliance or out of compliance with a specific rule or regulation. There are no gray areas, no measurement on an ordinal scale.

There has been some discussion in the regulatory science field for the use of weighted risk assessment methodologies which could introduce more variance in the data based upon the assumption that all rules or regulations are not created equal nor are they administered equally (Stevens & Fiene, 2019). Another discussion revolves around the introduction of more program quality into the basic health and safety rules and regulations that could extend the nominal compliance determination to an ordinal scale that goes beyond the basic compliance level (Fiene, 2018).

These measurement idiosyncrasies of regulatory compliance and licensing data are presented for regulatory scientists to consider if they begin to analyze public policies that involve basic health and safety rules and regulations which are very different from other public policies being promulgated by state and national governments. For the interested reader, an international data base for regulatory compliance and human services licensing data has been established and maintained by the Research Institute for Key Indicators and Penn State University over the past 40 years at the following URL - (http://RIKInstitute.com)

However, the hope is that other disciplines will begin to look at their data more closely to determine the natural data distributions and ascertain if they are equally as skewed as has been found in human service regulatory data. Are you measuring the data at a nominal level? Could they be measured at an ordinal level based upon a Likert scale? The data being referred to are regulatory compliance data which are pegged to specific rules/regulations/standards. It is not based upon other types of data collected within a regulatory frame of reference, such as basic demographic or descriptive data.

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A Potential Reason for Skewed Regulatory Compliance Data Distributions

One thing that is ever present with regulatory compliance data distributions is that they are terribly skewed. See the previous post which provides a definition of skewed distributions and their implications. This post is going to attempt to provide a potential answer to why the data base is skewed.

At first, I was led to believe that potentially the skewness in the data was a result of the rules not being stringent enough, in other words, the health and safety standards were too easy to comply with. That could definitely be a contributing factor but this is not the case in all instances when one compares state human service rules and regulations and the Head Start Performance Standards. I think a much deeper structure may be operating that is more philosophical rather than practical.

The philosophy of regulatory compliance and rule formulation is one of risk aversion. In other words, how do we mitigate risk that potentially increases the chances of mortality or morbidity in the clients being served when a specific rule is out of compliance. This philosophy emphasizes the elimination of a risk, taking something away rather than adding to it. It is essentially, "Do No Harm". It is interesting to note that generally regulatory compliance scoring is nominal in being either "Yes" or "No"; and a lower score is better than a higher score, there are fewer violations of rules. Not the way most assessment tools are designed.

For example, when one looks at program quality, this system is based upon the open-endedness adding to rather than taking away. It is all about, "Do Good" rather than "Do No Harm". Generally when you look at the data distributions here, they are more normally distributed without the skewed nature of regulatory compliance data distributions. Generally program quality scoring is ordinal in nature on a Likert Scale. A higher score is better than a lower score. Makes sense in that when you have more of a good thing, the higher the score. And the philosophy of program quality is one of improvement with relatively little emphasis on risk aversion.

This is an alternate explanation to why regulatory compliance data distributions are so terribly skewed in comparison to other program quality measures.

Data Distributions in Regulatory Science

Data distributions in the human services as they relate to regulatory compliance are generally very skewed distributions which means that the majority of facilities being assessed/inspected will usually fall very close to the 100% compliance level. There will also be an equally large number of facilities that are in substantial regulatory compliance (99% - 98% compliance levels). And then there are much fewer facilities that are either at a mid or low level of regulatory compliance (97% or lower compliance levels). One might say that getting a score of 97% on anything doesn't sound like it is mediocre or low but keep in mind we are addressing basic health and safety rules and not quality standards. So having several health and safety rules out of compliance is a big deal when it comes to risk assessment. It could be argued that a state licensing agency was not upholding its gatekeeper function by allowing programs to operate with such regulatory non-compliance.

Why is the regulatory compliance data distribution important from a statistical point of view. Generally when we are dealing with social science data, the data are normally distributed or pretty close to being normally distributed. It is a trade mark of a well designed assessment tool for example. So when data are compared to other normally distributed data, there is a good chance that some form of a linear relationship will be ascertained, albeit, not reaching statistical significance in many cases but linear regardless.

When a very skewed data distribution is one of the variables as in the case with regulatory compliance data and it is compared with a normally distributed data set such as a program quality tool, ERS or CLASS. Well, the result is generally a non-linear relationship with a marked ceiling effect or plateau effect. In other words, the data distribution is more curvilinear than linear. From a practical standpoint this creates selection problems in the inability to identify the best programs that have full regulatory compliance. This can create a public policy nightmare in that those programs which are in substantial but not full regulatory compliance are as good or in some cases of higher quality than those programs in full regulatory compliance. The interesting question is does the combination of normally distributed data distributions with variables that have skewed data distributions always produce this nonlinear result?!

And lastly, will having two variables that are skewed data distributions produce a more random result than if one of the two above conditions are present?

The Ten Principles of Regulatory Compliance Measurement

The first principle deals with the lack of Variance in data distributions. Data are found to be tightly grouped at high compliance levels (upper 90% level). This will lead to another principle addressed later in this paper dealing with skewness of the data distribution. In fact, the majority of scores are at a full regulatory compliance level, in other words, 100% in compliance with all rules and regulations. This led to variance statistics showing little movement and the majority of programs being in very close proximity. This makes for difficult statistical analyses when there is little variance in the data set.

The second principle is finding a ceiling or plateau effect in data distributions. It was like there was a diminishing returns effect as one moves from substantial regulatory compliance (upper 90%+) to full regulatory compliance (100%) with all rules and regulations. This was especially true when one compares the regulatory compliance levels with program quality scores on those same programs which is addressed more in the next principle.

The third principle is the difficulty distinguishing levels of quality between full and substantial compliance. This principle builds off of the previous principle dealing with a ceiling or plateau effect. Because so much of the data, as much as 70-80% of programs, are grouped so tightly at the substantial and high levels of regulatory compliance when one begins to go beyond regulatory compliance and begin to look at quality there is a great deal of difficulty distinguishing levels of quality. In other words, the full regulatory compliant level programs are not necessarily the highest quality programs.

The fourth principle is the fact that rules and regulations are measured at a nominal measurement level: the rules and regulations are either In-Compliance or Out-of-Compliance. The rule or regulation is measured at a "Yes" or "No" level or a "1" or "0" level. There are no in-between measures, no ordinal measurement going on. Either you got it, or you don't. It is black or white, no shades of gray. It is just the nature of measurement when it comes to rules and regulations which are very different in other measurement systems. The data are very discrete and not continuous. They are frequency counts and not a ruler type of measurement. One will not find an interval level of measurement in any regulatory science data distribution.

A fifth principle is attempting to move to an ordinal measurement level when quality is included. This principle builds off of the previous principle in which in some cases it has been suggested to add a quality component to particular rules or regulations. This is an interesting development and moves the philosophy from one of "Do no harm" to one of "Do things well". It will be interesting to see how much this concept moves forward and changes a basic tenet in the regulatory science field which is more based upon health & safety, gatekeeper, hard data, risk aversion, and deficit based.

The sixth principle of regulatory compliance measurement is the ability to dichotomize the data can be warranted because of the data distribution. Data dichotomization is generally not recommended because it accentuates differences in a data set. However, given the nature of regulatory compliance measurement being at a nominal level, fitting into a bucket

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format, the lack of variance, and the skewness of the data distribution all lead to the ability to dichotomization of the data set.

The seventh principle has to do with the problem with false negatives and positives, especially false negatives. Because of the data being measured in a nominal In-Compliance vs Out-of-Compliance dichotomy it can lead to false negatives in which In-Compliance decisions are made that in reality are not In-Compliance. False positives are a problem as well but not as much of a problem as false negatives. In false positives, Out-of-Compliance may be determined when in reality the rule or regulation is actually In-Compliance. This is not a good scenario for the provider of services, but it potentially doesn't harm the client as much as when a false negative occurs.

The eighth principle is the lack of reliability and validity testing. This principle builds from the previous principle in that there are very few examples of scientific testing of instrumentation and the administration of protocols to make certain that everything is running as it should. Because of this, it leads to the above problem of false positives and negatives. All jurisdictions need to build in regular reliability and validity testing to ascertain that the final decision making is within the ranges that are acceptable.

The ninth principle is the ease in distinguishing levels of quality between low and substantial compliance. The one result that has been consistent over the years is the ability to see differences in programs that score low on regulatory compliance versus those that are at a substantial or high compliant level. From a licensing or regulatory administration point of view this is a real plus in being able to be an effective gatekeeper and keeping non-optimal programs out of service. But as indicated in the third principle this advantage is short-lived as one moves up the regulatory compliance scale to substantial and finally to full regulatory compliance. When one gets to these levels it becomes increasingly difficult to distinguish differences in quality in those programs that are in substantial regulatory compliance versus those that are in full regulatory compliance. It appears that the regulatory compliance theory of diminishing returns is rearing its plateau/ceiling effect. The policy implications are immense since the assumption is that there is a linear relationship between program quality and regulatory compliance. How do we more effectively deal with this non-linear relationship in formulating public policy regarding licensing decision making?

And the final tenth principle is that regulatory compliance data are always skewed data. The majority of programs are in substantial or full regulatory compliance. And in many cases, this can be rather severe. There generally is a long tail which contains some low regulatory compliant programs, but these are usually few in number. The data distribution just does not approach a normally distributed curve as we see in many other examples of social science data distributions.

It is important as the regulatory science field moves forward that we remain cognizant of the limitations of regulatory compliance measurement. There are some severe limitations that need to be addressed (e.g., skewed data, lack of variance in data, ceiling effect, nominal metrics) and building in mitigation strategies (e.g., data dichotomization) or it will continue to lead to problems in our analyses (e.g., false positives and negatives).

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The next two papers provide summaries of licensing measurement, regulatory compliance, and monitoring systems, and the importance of the theory of regulatory compliance; but with the lens of a much broader perspective going well beyond the human services and including and addressing other industries.

Licensing Measurement, Regulatory Compliance and Monitoring Systems: Regulatory Science Applied to Human Services Regulatory Administration Summary

In the realm of human services regulatory administration, ensuring compliance with licensing requirements is crucial for maintaining quality standards and safeguarding the well-being of individuals receiving care. As regulatory agencies strive to enhance their oversight and monitoring capabilities, the integration of measurement and monitoring systems has emerged as a valuable tool.

This paper explores the significance of licensing measurement, regulatory compliance, and monitoring systems and delves into the application of regulatory science in the context of human services regulatory administration. It will deal with several issues related to this topic and expand its content beyond early care and education which has been more of the focus previously.

Licensing measurement and monitoring systems play a crucial role in regulatory administration for several reasons:

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Compliance Verification: Regulatory agencies need to ensure that businesses and individuals comply with specific laws, regulations, and standards. Licensing measurement and monitoring systems provide a means to verify compliance by collecting data and measuring various parameters. These systems help regulators determine whether license holders are meeting the required standards and taking appropriate actions to mitigate risks.

Quality Assurance: Licensing measurement and monitoring systems contribute to quality assurance efforts by assessing the performance of licensed entities. They enable regulators to monitor the quality of services and activities associated with the licensing process. By establishing measurement criteria and tracking the relevant metrics, regulators can ensure that license holders maintain the desired level of quality and meet the expectations of consumers or the public.

Risk Management: Many industries involve inherent risks that need to be managed effectively. Licensing measurement and monitoring systems allow regulatory agencies to assess and monitor the risks associated with licensed activities. By continuously monitoring key indicators, regulators can identify potential risks, deviations from safety standards, or non-compliance issues. This information helps regulators take appropriate actions to minimize risks and ensure public safety.

Data-Driven Decision Making: Licensing measurement and monitoring systems generate substantial amounts of data that can be analyzed to make informed decisions. Regulators can analyze trends, patterns, and performance metrics to identify areas of concern or improvement. Data-driven insights enable regulators to make evidence-based decisions, allocate resources effectively, and prioritize enforcement actions where they are most needed.

Enforcement and Remediation: When non-compliance or deviations from regulations are identified, licensing measurement and monitoring systems provide evidence to support enforcement actions. Regulators can use the data collected to take appropriate enforcement measures, such as issuing warnings, imposing penalties, or revoking licenses. These systems also help in tracking the progress of remedial actions taken by license holders to address any identified issues or deficiencies.

Transparency and Accountability: Licensing measurement and monitoring systems enhance transparency and accountability in regulatory administration. By implementing these systems, regulators can demonstrate their commitment to fair and consistent enforcement of regulations. The data collected and analyzed can be made accessible to the public, stakeholders, and policymakers, fostering trust, and allowing for external scrutiny of regulatory processes.

Licensing measurement and monitoring systems are vital in regulatory administration as they facilitate compliance verification, quality assurance, risk management, data-driven decision making, enforcement, and accountability. These systems help regulators ensure that licensed entities operate within the set standards, mitigate risks effectively, and safeguard the interests of the public.

Regulatory Science is relevant to human services regulatory administration in all industries. Regulatory science is the scientific discipline that combines various fields, including law, public policy, data analysis, and risk assessment, to inform and guide regulatory decision-making. Measurement and monitoring systems are regulatory science aids in the development and implementation of evidence-based regulations and policies.

Regulatory agencies overseeing a wide range of human services, such as healthcare facilities, child care centers, mental health institutions, and more, face several challenges in their oversight role. Some of the key challenges include:

Diverse and Complex Landscape: The human services sector encompasses a broad range of industries, each with its unique complexities, regulations, and standards. Regulatory agencies must navigate and understand this diverse landscape to effectively oversee and enforce compliance. The sheer variety of services, settings, and stakeholders involved makes it challenging to develop uniform regulations and monitoring approaches that address the specific needs of each sector.

Rapidly Evolving Practices and Technologies: The human services field is constantly evolving, with new practices, technologies, and treatments emerging. Regulatory agencies need to keep pace with these changes to ensure that the regulations remain relevant and up-to-date. However, this can be a challenging task, as it requires continuous monitoring, research, and adaptation of regulations to address emerging risks and advancements adequately.

Resource Constraints: Regulatory agencies often face resource constraints in terms of staffing, funding, and technological capabilities. Insufficient resources can limit their capacity to conduct thorough inspections, investigations, and monitoring activities. Additionally, limited resources may also impact the frequency and intensity of oversight, making it difficult to identify and address compliance issues effectively.

Compliance Variability: Human services facilities and institutions can vary significantly in terms of size, ownership, resources, and compliance history. Regulatory agencies need to develop oversight strategies that account for these variations while ensuring consistent enforcement and quality standards across the board. Balancing the need for flexibility with the need for uniformity is a constant challenge for regulatory agencies. And this becomes increasingly complex when dealing with the regulatory compliance theory of diminishing returns/ceiling effect.

Stakeholder Engagement and Resistance: Regulatory oversight often involves engaging with various stakeholders, including facility owners, professionals, service recipients, advocacy groups, and the public. These stakeholders may have different interests, priorities, and perspectives, leading to potential conflicts or resistance to regulatory measures. Balancing the diverse viewpoints and managing stakeholder expectations is essential for effective oversight.

Data Management and Analysis: The vast amount of data generated by human services facilities can pose challenges in terms of data management, analysis, and interpretation. Regulatory agencies need robust systems and processes to

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collect, store, analyze, and make sense of the data to identify trends, patterns, and areas of concern. The integration and interoperability of data systems across different sectors and agencies can be complex and time-consuming.

Legal and Ethical Considerations: Regulatory agencies must operate within legal frameworks and adhere to ethical standards while overseeing human services. They need to strike a balance between protecting public health and safety and respecting individual rights and privacy. Navigating legal complexities, ensuring due process, and maintaining confidentiality can be challenging in an environment where ethical dilemmas may arise.

Addressing these challenges requires a proactive and adaptive approach from regulatory agencies. They need to foster collaboration with stakeholders, invest in capacity-building efforts, leverage technology for efficient data management, and engage in continuous evaluation and improvement of their oversight strategies.

Inadequate monitoring in the human services can have significant risks and consequences, highlighting the need for robust systems that ensure compliance and promote accountability. Human services encompass a wide range of sectors, including healthcare, social welfare, child protection, and criminal justice. Monitoring in these areas is essential to safeguard the well-being and rights of individuals, prevent abuses, and ensure the effective delivery of services. Here are some potential risks and consequences of inadequate monitoring:

Abuse and neglect: Without proper monitoring, vulnerable individuals may be at a higher risk of abuse, neglect, or exploitation. For instance, in healthcare settings, inadequate monitoring can lead to medical errors, mistreatment of patients, or substandard care. Similarly, in child protection services, insufficient monitoring can result in children remaining in abusive or neglectful environments.

Violation of rights: Inadequate monitoring can lead to violations of individuals' rights, including their civil liberties, privacy, and dignity. For example, in criminal justice systems, inadequate monitoring can result in wrongful convictions, excessive use of force, or violations of prisoners' rights. In social welfare programs, lack of monitoring can lead to discrimination, improper denial of benefits, or infringement of recipients' rights.

Inefficiency and ineffective service delivery: Monitoring is crucial for evaluating the effectiveness and efficiency of human services. Without robust monitoring systems, it becomes challenging to identify gaps, assess performance, and make informed decisions for improvement. Inadequate monitoring may lead to wastage of resources, duplication of efforts, or the continuation of ineffective programs that fail to meet the needs of the intended beneficiaries. This is where risk assessment rules and key indicator rules play an important role in increasing the effectiveness and efficiency of the monitoring process by utilizing a more differential monitoring approach.

Lack of accountability: Monitoring plays a vital role in ensuring accountability within human service systems. It helps identify and address instances of misconduct, malpractice, or non-

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compliance with regulations and standards. Inadequate monitoring can result in a lack of transparency and accountability, allowing misconduct to go unnoticed, perpetrators to go unpunished, and systemic problems to persist.

Loss of public trust: Inadequate monitoring erodes public trust in human service systems. When people perceive that their well-being, rights, or safety are compromised due to poor monitoring, it undermines their confidence in these services. Public trust is crucial for the effective functioning of human services, as it promotes cooperation, engagement, and participation of individuals and communities.

To mitigate these risks and consequences, robust monitoring systems are essential. Such systems should include clear guidelines, regular inspections, audits, reporting mechanisms, and independent oversight bodies. They should also leverage technology and data analysis to enhance monitoring capabilities and identify patterns or anomalies. Additionally, staff training on monitoring protocols and the establishment of a culture of accountability are crucial components of an effective monitoring framework.

Inadequate monitoring in human services poses significant risks and consequences. It can lead to abuse, neglect, rights violations, inefficiencies, lack of accountability, and loss of public trust. Robust monitoring systems, incorporating clear guidelines, regular inspections, technology, and independent oversight, are necessary to ensure compliance, protect individuals, and promote accountability within human service sectors.

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The integration of measurement and monitoring systems into the licensing process in human services is a crucial development that leverages technology and data analytics to track, evaluate, and verify compliance with licensing standards. These systems provide real-time monitoring capabilities, enabling early detection of non-compliance, improved transparency, and enhanced accountability. Let's delve into the details of how these systems work and the benefits they bring.

Measurement and monitoring systems in the context of human services licensing involve the use of advanced technologies, such as sensors, cameras, electronic record-keeping systems, and data analytics tools. These technologies are integrated into the licensing process to collect, analyze, and interpret relevant data in real-time. The aim is to ensure that organizations and individuals providing human services comply with the established licensing standards and regulations.

One significant advantage of integrating measurement and monitoring systems is the early detection of non-compliance. With real-time monitoring, regulatory agencies can identify potential violations promptly. For example, if a human services facility is required to maintain a specific temperature range, sensors can continuously monitor the temperature levels. If there is a deviation from the acceptable range, an alert can be triggered, enabling swift corrective action. This early detection mechanism helps prevent potential risks and harm to individuals receiving those services.

Moreover, these systems improve transparency by providing accurate and objective data. Instead of relying solely on

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periodic inspections or self-reported information, regulatory agencies can access real-time data collected by the monitoring systems. This data-driven approach ensures a more comprehensive and accurate assessment of compliance with licensing standards. It reduces the reliance on subjective observations and minimizes the possibility of information gaps or bias.

Furthermore, integrating measurement and monitoring systems enhances accountability for organizations and individuals providing human services. By continuously monitoring and recording data, these systems create an audit trail that can be used for accountability purposes. The collected data provides evidence of compliance or non-compliance with licensing standards, which can be used in regulatory investigations or legal proceedings if necessary. This level of accountability fosters a culture of responsibility and incentivizes compliance with licensing requirements.

The benefits of these systems extend beyond regulatory agencies. Service providers themselves can benefit from real-time monitoring by gaining insights into their own operations and performance. By analyzing the data collected, they can identify areas for improvement, optimize resource allocation, and make evidence-based decisions to enhance the quality of their services. This data-driven approach supports continuous improvement and helps providers meet and exceed licensing standards.

The integration of measurement and monitoring systems into the licensing process in human services offers significant advantages. It leverages technology and data analytics to enable

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real-time monitoring, early detection of non-compliance, improved transparency, and enhanced accountability. These systems provide regulatory agencies with objective data to ensure compliance with licensing standards and promote the safety and well-being of individuals receiving human services. Simultaneously, service providers benefit from insights gained through data analysis, allowing them to optimize their operations and deliver higher quality services.

Licensing measurement and monitoring systems in human services play a crucial role in ensuring compliance with regulations, tracking licensing activities, and monitoring the quality and safety of services provided. These systems typically consist of several key components that work together to enable effective measurement and monitoring. Here are the main components:

Comprehensive Databases: A central database is essential for storing all licensing-related information, including provider details, facility data, licensing standards, inspection reports, and compliance history. These databases provide a foundation for data collection, analysis, and reporting.

Example: The Child Care Licensing System (CCLS) developed by the Administration for Children and Families in the United States is a comprehensive database that tracks and manages child care licensing information. It allows agencies to manage licensing processes, track violations, and generate reports.

Automated Data Collection Tools: Automation tools streamline the process of data collection by capturing information electronically, reducing manual effort, and improving accuracy.

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These tools can include online application forms, electronic submission of documentation, and automated notifications.

Example: The Integrated Regulatory Information System (IRIS) used by the California Department of Social Services enables online application submissions, digital document management, and automated notifications for licensing updates. It simplifies the data collection process and enhances efficiency.

Risk Assessment Algorithms: Risk assessment algorithms help identify high-risk facilities or providers that require increased monitoring or intervention. These algorithms analyze various factors such as compliance history, complaint data, inspection results, and other relevant indicators to prioritize resources effectively.

Example: The Risk Assessment and Management Tool (RAM) implemented by the Australian Government's Department of Health is used to assess and manage risks associated with aged care services. RAM employs algorithms that analyze data on quality indicators, complaints, and non-compliance to determine risk levels and allocate resources accordingly.

Data Visualization Platforms: Data visualization platforms present licensing data in a user-friendly and meaningful way, allowing regulatory agencies to monitor trends, identify patterns, and make data-driven decisions. These platforms often include interactive dashboards, charts, and reports.

Example: The Licensing Information System (LIS) developed by the Department of Health and Human Services in the state

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of Maine provides a data visualization platform that allows users to generate customized reports, view interactive charts, and track licensing compliance trends.

Compliance Monitoring Tools: Compliance monitoring tools assist in conducting inspections, audits, and other monitoring activities efficiently. These tools can include mobile applications for inspectors to collect data on-site, electronic checklists, and automated scheduling of inspections.

Example: The Licensing Automation System (LAS) implemented by the Minnesota Department of Human Services offers mobile applications for licensing staff to perform inspections, record findings, and generate inspection reports on the go. It simplifies the monitoring process and improves accuracy.

Overall, these components work together to create effective licensing measurement and monitoring systems in human services. By leveraging comprehensive databases, automated data collection tools, risk assessment algorithms, data visualization platforms, and compliance monitoring tools, regulatory agencies can enhance their oversight capabilities, improve efficiency, and ensure the provision of high-quality services while maintaining compliance with regulations.

Licensing measurement and monitoring systems have had a significant impact on regulatory administration and the human services sector. These systems play a crucial role in enabling regulators to proactively identify potential risks, address compliance issues promptly, and ensure the safety and quality of services provided. In this response, we will discuss the

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impact of these systems and provide case studies and examples that illustrate the positive outcomes achieved through their implementation.

One of the primary benefits of licensing measurement and monitoring systems is their ability to provide regulators with real-time data and insights. These systems collect and analyze various metrics and indicators, allowing regulators to monitor the performance and compliance of service providers. By having access to accurate and up-to-date information, regulators can proactively identify potential risks and address them before they escalate into serious problems.

For instance, let's consider the case of a regulatory agency responsible for overseeing childcare facilities. By implementing a licensing measurement and monitoring system, the agency can track key indicators such as staff-to-child ratios, health and safety inspections, and educational programs. If the system detects any deviations from the established standards, it can alert regulators, enabling them to intervene promptly. This proactive approach helps prevent incidents and ensures that children receive appropriate care and support.

Another positive outcome of licensing measurement and monitoring systems is improved compliance management. These systems streamline the process of monitoring and assessing compliance with regulations and standards. Service providers can input data directly into the system, reducing the administrative burden and ensuring accuracy. Regulators can then use this data to identify patterns, assess compliance levels, and take appropriate actions if non-compliance is detected.

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For example, let's consider the case of a regulatory agency overseeing healthcare facilities. With a licensing measurement and monitoring system in place, the agency can track indicators such as medication errors, infection rates, and patient satisfaction scores. If the system identifies a healthcare facility with consistently high medication error rates, regulators can conduct targeted inspections and work closely with the facility to implement corrective measures. This proactive approach not only improves patient safety but also helps service providers enhance the quality of care they deliver.

Furthermore, licensing measurement and monitoring systems contribute to transparency and accountability in the human services sector. These systems provide a centralized platform where regulators, service providers, and the public can access information about licensing status, compliance records, and performance metrics. By promoting transparency, these systems help build trust among stakeholders and empower individuals to make informed decisions about service providers.

For instance, in the context of elder care services, a licensing measurement and monitoring system can provide a public database that includes information on the licensing status of assisted living facilities, compliance records related to safety standards, and ratings based on resident satisfaction surveys. This enables families and individuals seeking care for their loved ones to make informed choices and select facilities that meet their specific needs.

Licensing measurement and monitoring systems have had a transformative impact on regulatory administration and the human services sector. These systems enable regulators to

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proactively identify potential risks, address compliance issues promptly, and ensure the safety and quality of services provided. Through case studies and examples, we have seen how these systems have improved oversight in childcare, healthcare, and elder care, leading to positive outcomes such as enhanced safety, improved compliance, and increased transparency. The implementation of such systems has the potential to further strengthen regulatory efforts and promote the well-being of individuals receiving human services.

Licensing measurement and monitoring systems can present various challenges and considerations, including privacy concerns, data security, resource constraints, and the need for ongoing system updates and maintenance. Addressing these challenges is crucial to ensure the effective implementation and operation of these systems. Additionally, collaboration between regulatory agencies, stakeholders, and technology providers is essential to overcome these challenges and maximize the benefits of these systems.

Privacy concerns: Measurement and monitoring systems often involve the collection and analysis of sensitive data, such as personal information or proprietary business data. It is important to establish robust privacy policies and legal frameworks to protect individuals' privacy rights and ensure compliance with relevant data protection regulations. Implementing anonymization techniques, data minimization principles, and obtaining appropriate consent can help mitigate privacy concerns.

Data security: The storage, transmission, and analysis of measurement and monitoring data require robust security measures to prevent unauthorized access, data breaches, or cyber-attacks. Encryption, access controls, regular security audits, and adherence to industry best practices can help safeguard the data and maintain its integrity and confidentiality.

Resource constraints: Licensing measurement and monitoring systems can pose financial and logistical challenges, particularly for smaller organizations or developing countries with limited resources. These systems may require substantial investments in infrastructure, equipment, and skilled personnel. Adequate funding mechanisms, public-private partnerships, and capacity-building initiatives can help address resource constraints and ensure broader access to these systems.

Ongoing system updates and maintenance: Measurement and monitoring systems must be regularly updated to keep pace with evolving technologies, regulatory requirements, and scientific advancements. This necessitates ongoing maintenance, software updates, calibration, and quality control procedures. Collaboration between regulatory agencies, technology providers, and stakeholders is crucial to establish effective mechanisms for system maintenance, ensuring that the systems remain accurate, reliable, and up-to-date.

Collaboration between regulatory agencies, stakeholders, and technology providers: Overcoming the challenges associated with licensing measurement and monitoring systems requires a collaborative approach. Regulatory agencies should engage in constructive dialogues with stakeholders, including industry representatives, environmental organizations, and community groups. Collaboration can help address concerns, establish common standards, and promote transparency and accountability. Technology providers can contribute by developing user-friendly and interoperable systems that meet regulatory requirements while minimizing the burden on end-users.

Collaboration among regulatory agencies, stakeholders, and technology providers is critical to ensure the successful implementation of measurement and monitoring systems. By working together, these entities can develop robust policies, address privacy concerns, enhance data security, allocate necessary resources, and establish mechanisms for ongoing system updates and maintenance. This collaborative approach will maximize the effectiveness of these systems in monitoring and safeguarding various aspects of public health, environmental quality, and regulatory compliance.

Licensing measurement and monitoring systems play a crucial role in human services regulatory administration by ensuring compliance, enhancing service quality, and protecting individuals receiving care. Integrating regulatory science principles into licensing processes further strengthens these benefits.

One significant aspect of licensing measurement and monitoring systems is their ability to promote compliance. These systems provide a standardized framework for evaluating and assessing the compliance of service providers with established regulations and standards. By implementing these systems, regulatory authorities can systematically track and measure compliance levels, identify areas of non-compliance, and take appropriate actions to rectify any deficiencies. This helps maintain a high level of accountability among service

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providers, ensuring they adhere to the required standards and regulations.

Moreover, integrating regulatory science principles into licensing processes brings several advantages. Regulatory science applies scientific knowledge and methodologies to inform regulatory decision-making. By incorporating these principles into licensing, regulators can leverage evidence-based approaches to establish standards, design measurement tools, and set performance benchmarks. This approach promotes objectivity, transparency, and consistency in the licensing process, ensuring that decisions are based on sound scientific evidence rather than subjective judgment.

Another key benefit is the potential for improved service quality. Licensing measurement and monitoring systems enable regulators to gather comprehensive data on service providers' performance, outcomes, and service quality indicators. This information allows for a thorough assessment of service delivery, identifying strengths and weaknesses in the system. By analyzing this data, regulators can provide feedback, guidance, and support to service providers, fostering continuous improvement in service quality. This leads to better outcomes for individuals receiving care and enhances overall service provision within the human services sector.

Furthermore, licensing measurement and monitoring systems are instrumental in protecting the well-being of individuals receiving care. These systems help identify potential risks, such as violations of safety protocols or instances of abuse or neglect. By closely monitoring service providers, regulators can swiftly respond to any issues, take necessary corrective actions, and

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ensure the safety and well-being of vulnerable populations. Regular monitoring also acts as a deterrent, encouraging service providers to maintain high standards and comply with regulations to avoid penalties or sanctions.

Looking ahead, the field of regulatory science and measurement and monitoring systems is continually evolving. Advances in technology, data analytics, and artificial intelligence present opportunities for further advancements in these systems. For example, the integration of real-time data collection and analysis can enhance the effectiveness and efficiency of monitoring processes. Predictive analytics and risk assessment models can help regulators proactively identify potential areas of concern and allocate resources accordingly. Additionally, the incorporation of feedback from individuals receiving care and other stakeholders can further refine measurement systems, ensuring they capture the most relevant and meaningful indicators of service quality.

In conclusion, licensing measurement and monitoring systems are vital components of human services regulatory administration. By integrating regulatory science principles, these systems promote compliance, improve service quality, and protect individuals receiving care. As regulatory science continues to evolve, the potential for further advancements in measurement and monitoring systems is promising, enabling regulators to better fulfill their mandate of safeguarding the well-being of vulnerable populations.

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Importance of the Theory of Regulatory Compliance

Introduction

Regulatory compliance refers to the process by which individuals, organizations, or entities adhere to and fulfill the requirements set forth by relevant laws, regulations, and industry standards. It involves ensuring that policies, procedures, and practices align with the specific legal and regulatory frameworks applicable to a particular industry or jurisdiction.
Compliance involves actively identifying and understanding the relevant regulations, establishing internal controls and processes to meet those requirements, and consistently monitoring and reviewing operations to ensure ongoing adherence. It encompasses various aspects, such as legal, financial, operational, and ethical considerations, and aims to ensure that organizations operate within the boundaries of the law, maintain ethical standards, and fulfill their responsibilities to stakeholders, customers, and the public.

The theory of regulatory compliance provides a framework for understanding the underlying principles and concepts that guide the compliance process. It encompasses several key elements that shape the approach to achieving and maintaining compliance. Here is an overview of the theory of regulatory compliance:

Legal and Regulatory Environment: The theory recognizes that regulatory compliance is rooted in the legal and regulatory landscape. It acknowledges the importance of identifying and

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understanding applicable laws, regulations, and standards that govern an industry or jurisdiction.

Risk Management: The theory emphasizes the proactive identification, assessment, and management of risks associated with non-compliance. It highlights the need to establish robust risk management processes to mitigate legal, financial, operational, and reputational risks.

Policies and Procedures: Effective compliance requires the development and implementation of comprehensive policies and procedures. The theory underscores the significance of clear, well-documented, and communicated policies that guide employees in adhering to regulatory requirements.

Internal Controls: The theory emphasizes the establishment of internal controls to ensure compliance. This involves designing and implementing systems, processes, and checks that monitor and mitigate risks, detect and prevent non-compliance, and promote accountability.

Training and Awareness: Recognizing the role of individuals in compliance, the theory highlights the importance of training programs and awareness initiatives. It emphasizes educating employees about applicable regulations, ethical standards, and the organization's compliance obligations.

Monitoring and Auditing: The theory acknowledges the need for ongoing monitoring and auditing to assess compliance effectiveness. Regular internal audits, reviews, and assessments help identify gaps, weaknesses, and areas for improvement, ensuring continuous compliance efforts.

Reporting and Documentation: The theory stresses the significance of accurate and timely reporting of compliance activities. It underscores the need to maintain proper documentation, records, and evidence of compliance processes, actions taken, and outcomes achieved.

Compliance Culture: The theory recognizes that compliance is not solely a set of rules and processes but also a cultural mindset. It highlights the importance of fostering a culture of compliance within an organization, where integrity, ethics, and adherence to regulations are valued and embedded in the organizational DNA.

Accountability and Enforcement: The theory acknowledges that compliance requires accountability for non-compliance. It recognizes the role of regulatory bodies, internal enforcement mechanisms, and disciplinary actions in promoting compliance and deterring violations.

Continuous Improvement: Finally, the theory emphasizes the need for continuous improvement in compliance efforts. It encourages organizations to learn from past experiences, adapt to evolving regulations, embrace emerging best practices, and strive for excellence in their compliance initiatives.

By understanding and applying the theory of regulatory compliance, organizations can establish a solid foundation for effective compliance management, minimize risks, and uphold legal and ethical standards in their operations.

Ensuring Legal and Ethical Practices

Compliance with laws and regulations is a fundamental aspect of the theory of regulatory compliance. It recognizes that adherence to legal and regulatory requirements is crucial for organizations to operate within the boundaries set by governing bodies and to fulfill their obligations to stakeholders. Here are key points related to compliance with laws and regulations in the context of the theory of regulatory compliance:

Understanding Applicable Laws: The theory emphasizes the importance of identifying and comprehending the specific laws and regulations that pertain to an organization's industry, jurisdiction, and operational activities. This involves staying updated with changes in regulations and interpreting their implications for the organization.

Regulatory Research and Analysis: Organizations need to conduct thorough research and analysis to determine how laws and regulations apply to their operations. This includes examining regulatory frameworks, guidance documents, legal precedents, and industry-specific requirements.

Compliance Obligations: The theory recognizes that compliance obligations vary based on the nature of the organization's activities. It stresses the need to determine the specific requirements, obligations, and standards that the organization must meet to ensure legal and regulatory compliance.

Compliance Program Development: To achieve compliance, the theory highlights the importance of developing a

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comprehensive compliance program tailored to the organization's needs. This involves establishing policies, procedures, and controls that align with legal and regulatory requirements.

Regulatory Reporting and Filings: Compliance entails fulfilling reporting obligations to regulatory authorities. The theory emphasizes the significance of timely and accurate reporting, including financial statements, disclosures, permits, licenses, certifications, and other regulatory filings.

Compliance Monitoring and Auditing: The theory underscores the need for ongoing monitoring and auditing of compliance efforts. Regular reviews help identify potential compliance gaps, assess the effectiveness of controls, and ensure corrective actions are taken to address non-compliance.

Compliance Documentation: Documentation plays a critical role in compliance. The theory highlights the importance of maintaining accurate and comprehensive records of compliance activities, including policies, procedures, training materials, audit reports, incident reports, and evidence of compliance.

Compliance Risk Assessment: Organizations should conduct compliance risk assessments to identify and evaluate potential risks associated with non-compliance. This allows for the implementation of risk mitigation strategies, such as internal controls, training programs, and monitoring systems.

Enforcement and Consequences: The theory acknowledges that non-compliance can lead to legal and financial consequences. It emphasizes the need for organizations to understand the

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potential penalties, fines, sanctions, and reputational damage that can result from violations of laws and regulations.

Regulatory Engagement and Communication: Organizations should actively engage with regulatory authorities and maintain open lines of communication. The theory emphasizes the importance of understanding regulatory expectations, seeking guidance when needed, and participating in industry consultations.

By emphasizing compliance with laws and regulations, the theory of regulatory compliance aims to ensure that organizations operate within legal boundaries, mitigate risks, protect stakeholders, and maintain a strong ethical foundation in their operations.

Protection of Consumers and Public Interest

Protection of consumers and the public interest is a fundamental objective of regulatory compliance. Regulatory compliance refers to the adherence of individuals, organizations, or businesses to laws, regulations, and guidelines set forth by governing bodies or regulatory authorities. It aims to ensure that entities operate in a manner that safeguards the interests of consumers and the general public.

The theory behind regulatory compliance is rooted in the belief that certain industries or activities require oversight and regulation to prevent harm, ensure fair competition, and maintain public trust. By establishing rules and standards, regulatory bodies seek to create a level playing field, promote transparency, and protect the well-being of consumers.

Key principles and considerations associated with regulatory compliance for the protection of consumers and public interest include:

Consumer Protection: Regulatory compliance frameworks typically include provisions to safeguard consumers from fraudulent, deceptive, or unfair practices. This involves regulations related to product safety, labeling, advertising, pricing, warranties, and consumer rights.

Public Health and Safety: Compliance regulations often address public health and safety concerns. For instance, in the pharmaceutical industry, compliance with drug safety regulations ensures that medications meet quality standards and do not pose unreasonable risks to patients.

Market Integrity: Regulatory compliance helps maintain the integrity of markets by prohibiting anti-competitive behavior, ensuring fair trading practices, and preventing market manipulation or insider trading. These regulations promote fair competition and protect consumers from monopolistic practices.

Data Protection and Privacy: With the increasing prevalence of data-driven technologies, regulatory compliance frameworks emphasize the protection of personal information and privacy rights. Regulations like the European Union's General Data Protection Regulation (GDPR) aim to safeguard consumer data and establish guidelines for its lawful collection, storage, and use.

Financial Stability: Regulatory compliance plays a crucial role in the financial sector to prevent fraud, money laundering, and unethical practices that can destabilize markets or harm consumers. Regulations impose standards for capital adequacy, risk management, disclosure, and consumer financial protection.

Ethical Considerations: Compliance regulations often incorporate ethical considerations to ensure responsible and ethical behavior by individuals and organizations. This may involve guidelines on corporate governance, social responsibility, environmental sustainability, or labor practices.

To ensure effective regulatory compliance, regulatory bodies conduct inspections, audits, and enforcement actions. Non-compliance can result in penalties, fines, or legal actions against the offending parties. Moreover, compliance management systems, internal controls, and self-regulatory mechanisms are employed by organizations to proactively adhere to regulatory requirements and promote a culture of compliance.

Overall, the theory of regulatory compliance revolves around the idea that by setting and enforcing rules, regulators can protect consumers, preserve public interest, and maintain the stability and fairness of various sectors in society.

Financial Stability and Risk Management

Financial stability and risk management are critical components of regulatory compliance. The theory of regulatory compliance emphasizes the importance of establishing and enforcing regulations to ensure the stability and integrity of financial systems, protect consumers, and mitigate systemic risks.

Here are some key aspects of the theory of regulatory compliance related to financial stability and risk management:

Prudential Regulation: Prudential regulation focuses on ensuring the soundness and stability of financial institutions, such as banks, insurance companies, and investment firms. Regulatory compliance frameworks impose requirements related to capital adequacy, risk management, liquidity, and asset quality to prevent excessive risk-taking and protect the financial system from disruptions.

Systemic Risk Mitigation: Regulatory compliance measures aim to identify and mitigate systemic risks that can have widespread adverse effects on the financial system. This includes regulations on risk concentration, interconnectedness, and exposure limits to prevent the domino effect of failures and contagion across institutions.

Risk Assessment and Monitoring: Regulatory compliance frameworks often require financial institutions to conduct thorough risk assessments and implement robust risk management practices. This involves identifying, measuring, and monitoring various types of risks, including credit risk, market risk, liquidity risk, and operational risk. Compliance regulations may prescribe specific methodologies, reporting requirements, and stress testing to ensure that risks are adequately identified and managed.

Transparency and Disclosure: Regulatory compliance promotes transparency in financial markets by requiring financial institutions to provide accurate and timely disclosure of relevant information to investors, regulators, and the public. This includes financial reporting, disclosures of risk exposures, and information about the institution's financial health. Transparent reporting helps stakeholders make informed decisions, enhances market efficiency, and fosters trust in the financial system.

Consumer Financial Protection: Regulatory compliance frameworks incorporate measures to protect consumers in financial transactions. This includes regulations on fair lending practices, disclosure requirements for financial products and services, and regulations against abusive or predatory practices. These regulations aim to ensure that consumers are treated fairly, have access to transparent information, and are protected from fraudulent or deceptive practices.

Regulatory Oversight and Enforcement: Regulatory compliance is reinforced by regulatory bodies that oversee financial institutions, enforce compliance, and impose penalties for non-compliance. These regulatory authorities monitor institutions' compliance with regulations, conduct audits and examinations, and take enforcement actions when violations are identified. Such oversight ensures accountability and promotes a culture of compliance within the financial industry.

By adhering to regulatory compliance requirements, financial institutions are expected to minimize risks, enhance stability, and maintain the confidence of investors and the public. Compliance management systems, internal controls, and risk management frameworks are utilized by financial institutions to meet regulatory obligations and proactively manage risks.

Overall, the theory of regulatory compliance underscores the role of regulations in promoting financial stability, mitigating risks, protecting consumers, and maintaining the integrity of financial systems. Compliance with these regulations helps build a resilient financial sector that can withstand shocks and contribute to overall economic stability.

Preserving Competitive Market Environment

Preserving a competitive market environment is essential for fostering innovation, encouraging efficiency, and benefiting consumers. The theory of regulatory compliance is closely linked to this objective, as it involves establishing and enforcing rules and regulations that promote fair competition and prevent anti-competitive practices.

The theory of regulatory compliance is based on the idea that regulatory frameworks can help create a level playing field for all market participants. By setting clear rules and standards, regulators aim to ensure that businesses operate within the bounds of fair competition. Compliance with these regulations helps prevent monopolistic behavior, collusion, price-fixing, and other practices that could harm competition.

Here are a few key principles related to preserving a competitive market environment and the theory of regulatory compliance:

Anti-Trust Laws: Anti-trust laws are designed to promote competition by preventing the abuse of market power. They prohibit practices such as monopolies, cartels, price-fixing, and mergers that may substantially lessen competition. Regulators enforce these laws to preserve a competitive landscape and protect consumer interests.

Market Entry and Exit: Regulatory frameworks should facilitate the entry of new businesses into the market while allowing existing ones to exit if they are unable to compete effectively. Barriers to entry, such as excessive licensing requirements or unfair regulations, can hinder competition. Regulatory compliance should aim to reduce these barriers and ensure fair access for all participants.

Consumer Protection: A competitive market environment should prioritize consumer welfare. Regulatory compliance plays a crucial role in safeguarding consumer interests by ensuring transparency, fair pricing, quality standards, and adequate information disclosure. Consumer protection laws and regulations address issues such as misleading advertising, product safety, and fair dispute resolution mechanisms.

Enforcement and Monitoring: Regulatory agencies are responsible for enforcing compliance with regulations. They monitor market activities, investigate potential violations, and take appropriate enforcement actions when necessary. Effective enforcement requires sufficient resources, expertise, and collaboration among regulators, ensuring a level playing field for all participants.

International Cooperation: In a globalized economy, preserving a competitive market environment requires international cooperation. Collaboration between regulatory authorities across jurisdictions can help address cross-border anti-competitive practices, harmonize regulatory standards, and promote fair competition in the global marketplace.

Overall, the theory of regulatory compliance supports the notion that well-designed and effectively enforced regulations can foster a competitive market environment. By promoting fair competition, preventing anti-competitive practices, and protecting consumer interests, regulatory compliance contributes to a healthy and vibrant marketplace.

Establishing Trust and Credibility

Establishing trust and credibility is crucial for regulatory compliance efforts. The theory of regulatory compliance recognizes that trust is essential in fostering cooperation between regulatory authorities, businesses, and other stakeholders. Trust is built when regulations are transparent, consistently enforced, and perceived as fair and unbiased.

Here are some key aspects of establishing trust and credibility in the context of regulatory compliance:

Transparency: Transparency is a fundamental principle in regulatory compliance. Regulations and their enforcement processes should be clearly communicated and accessible to all stakeholders. Openness helps build trust by ensuring that the rules are known and understood by businesses and individuals, reducing uncertainty and promoting voluntary compliance.

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Consistency: Consistency in applying regulations is critical for building trust. Regulators should strive to enforce regulations uniformly and without favoritism or discrimination. Consistent enforcement establishes a level playing field, fostering trust among market participants who know that everyone is subject to the same rules.

Accountability: Regulatory authorities should be accountable for their actions. This includes being transparent about decision-making processes, justifying regulatory actions, and providing avenues for recourse and appeal. Accountability mechanisms help prevent abuse of regulatory power and build trust by demonstrating fairness and impartiality.

Collaboration and Engagement: Regulatory compliance efforts benefit from collaboration and engagement with various stakeholders. This includes businesses, industry associations, consumer groups, and experts. Involving stakeholders in the regulatory process helps ensure that regulations are practical, effective, and well-understood. Collaboration also enhances trust by incorporating diverse perspectives and building consensus.

Risk-Based Approach: A risk-based approach to regulation can contribute to trust and credibility. It involves assessing risks, prioritizing enforcement efforts based on the potential harm to the public or the market, and proportionately allocating regulatory resources. This approach demonstrates that regulatory actions are driven by objective evaluations and the need to address significant risks, enhancing trust in the regulatory system.

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Continuous Improvement: Regulatory compliance should be a dynamic and evolving process. Regular evaluation and improvement of regulations and enforcement mechanisms are essential for maintaining trust and credibility. Regulators should engage in periodic reviews, solicit feedback from stakeholders, and adapt regulations to changing market dynamics and emerging challenges.

Effective Communication: Clear and effective communication is vital for establishing trust. Regulators should communicate expectations, obligations, and changes in regulations in a timely and accessible manner. Communication channels should be open to addressing queries, providing guidance, and clarifying regulatory requirements, fostering trust by ensuring transparency and promoting compliance.

In summary, trust and credibility are foundational elements of successful regulatory compliance. By promoting transparency, consistency, accountability, collaboration, and effective communication, regulatory authorities can establish a trusted regulatory framework that fosters compliance and cooperation among stakeholders.

Penalties and Consequences of Non-Compliance

Regulatory compliance refers to the act of adhering to laws, regulations, guidelines, and standards set forth by governing bodies or regulatory agencies. Non-compliance occurs when individuals, organizations, or businesses fail to meet these requirements. The penalties and consequences of non-compliance can vary depending on the specific regulations and jurisdictions involved. Here are some common penalties and consequences:

Fines and Monetary Penalties: Regulatory agencies often have the authority to impose fines and monetary penalties for non-compliance. The amount of the penalty may vary depending on the severity of the violation and the regulatory framework in place. These fines can be substantial and can significantly impact the finances of non-compliant entities.

Legal Proceedings and Lawsuits: Non-compliance may lead to legal action, including lawsuits filed by affected parties or regulatory bodies. This can result in costly litigation, potential damages, and a tarnished reputation.

License Revocation or Suspension: Certain industries and professions require licenses or permits to operate legally. Non-compliance can lead to the revocation or suspension of these licenses, effectively shutting down the business or preventing individuals from practicing their profession.

Regulatory Audits and Inspections: Regulatory agencies may conduct audits and inspections to assess compliance. Non-compliant entities may face increased scrutiny, additional audits, or more frequent inspections, leading to disruption of operations and additional costs.

Reputational Damage: Non-compliance can harm an organization's reputation, leading to loss of customer trust, decreased sales, and difficulty attracting new customers. Negative publicity and media attention can have long-lasting effects on brand value and perception.

Corrective Actions and Remediation Costs: In many cases, non-compliant entities are required to take corrective actions to address the violations. This may involve implementing new policies, procedures, or systems, as well as investing in training and education. The costs associated with these remediation efforts can be significant.

Criminal Charges and Penalties: In cases of serious non-compliance, intentional violations, or fraudulent activities, criminal charges may be pursued. This can result in fines, imprisonment, or both, depending on the severity of the offense.

The theory of regulatory compliance seeks to understand why individuals or organizations choose to comply or not comply with regulations. Factors influencing compliance behavior include perceived legitimacy of regulations, trust in regulatory agencies, the presence of effective enforcement mechanisms, and the perceived costs and benefits of compliance. The theory emphasizes the importance of clear communication, consistent enforcement, and proportionate penalties to achieve higher compliance rates.

Compliance Programs and Frameworks

Compliance programs and frameworks are designed to help organizations establish and maintain a culture of regulatory compliance. They provide a structured approach to understanding and meeting regulatory requirements, mitigating risks, and promoting ethical behavior. Additionally, compliance programs help organizations detect and address non-compliance issues promptly and effectively.

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Here are some common compliance programs and frameworks:

Compliance Management System (CMS): A CMS is a comprehensive framework that encompasses policies, procedures, processes, and controls to manage compliance within an organization. It includes elements such as risk assessment, compliance training, monitoring and auditing, incident reporting, and corrective action planning.

ISO 19600: This international standard provides guidelines for establishing, implementing, evaluating, and improving a compliance management system. It emphasizes a risk-based approach to compliance and provides a framework for organizations to identify, analyze, and address their compliance obligations effectively.

COSO Framework: The Committee of Sponsoring Organizations of the Treadway Commission (COSO) developed a framework that focuses on internal controls and risk management. While not specifically geared towards compliance, it provides a solid foundation for managing compliance risks within an organization.

Federal Sentencing Guidelines (FSG): The U.S. Federal Sentencing Guidelines provide guidance for organizations on establishing effective compliance programs. They outline specific factors that organizations should consider when developing compliance programs, such as conducting risk assessments, implementing training and communication programs, and monitoring compliance.

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Principle-Based Approach: The principle-based approach to compliance focuses on establishing a set of core principles and values that guide an organization's compliance efforts. It emphasizes ethical conduct, integrity, and accountability as the foundation for compliance programs. This approach encourages employees to make ethical decisions and act in accordance with the organization's values.

The theory of regulatory compliance explores the factors that influence compliance behavior and the effectiveness of compliance programs. It recognizes that compliance is not solely driven by the fear of penalties but also by factors such as organizational culture, perceived legitimacy of regulations, and the presence of strong internal controls. The theory suggests that effective compliance programs should:

Clearly communicate regulatory requirements and expectations to employees and stakeholders.

Foster a culture of compliance by promoting ethical behavior, accountability, and integrity.

Provide training and education to employees to enhance their understanding of compliance obligations.

Implement monitoring and auditing mechanisms to detect and address non-compliance promptly.

Establish strong internal controls and risk management processes to mitigate compliance risks.

Encourage reporting of potential compliance issues and provide channels for anonymous reporting.

Continuously evaluate and improve the compliance program based on feedback and changes in regulations.

By understanding the theory of regulatory compliance and implementing effective compliance programs, organizations can enhance their ability to meet regulatory requirements, manage risks, and uphold ethical standards.

Role of Technology in Regulatory Compliance and monitoring and reporting tools

Technology plays a crucial role in regulatory compliance by providing tools and systems that help organizations monitor and report their adherence to regulatory requirements. Here are some key ways technology supports regulatory compliance:

Automation and Workflow Management: Technology enables the automation of various compliance processes, such as data collection, analysis, and reporting. Workflow management systems help streamline compliance tasks by providing clear processes and guidelines, ensuring consistent and efficient execution.

Data Management and Analysis: Compliance often involves handling large volumes of data. Technology solutions, such as data management systems and analytics tools, facilitate the collection, storage, organization, and analysis of data for compliance purposes. These systems can identify patterns, anomalies, and trends in the data, helping organizations detect and address compliance risks.

Monitoring and Surveillance: Technology enables real-time monitoring and surveillance of activities, transactions, and communications to identify potential compliance violations. Advanced monitoring tools use algorithms and machine learning techniques to detect suspicious behavior, fraud, market manipulation, or any non-compliant activities.

Reporting and Documentation: Compliance requires accurate and timely reporting to regulatory authorities. Technology offers reporting tools that help automate the creation of regulatory reports, ensuring the required information is captured, organized, and submitted in the appropriate format. These tools often include templates, data mapping capabilities, and integration with existing systems.

Audit Trail and Documentation Management: Technology allows organizations to maintain a comprehensive audit trail and documentation of compliance activities. Digital systems enable the secure storage, retrieval, and tracking of compliance-related documents, making it easier to demonstrate compliance during audits or investigations.

Risk Assessment and Compliance Monitoring: Technology supports risk assessment processes by providing tools for identifying, assessing, and prioritizing compliance risks. Compliance monitoring tools can continuously track regulatory changes and updates, ensuring organizations stay informed and adapt their compliance programs accordingly.

Training and Education: Technology can be utilized to deliver compliance training and educational materials to employees and stakeholders. Online learning platforms, webinars, and interactive modules can provide accessible and engaging compliance training programs, ensuring widespread understanding of regulatory requirements and promoting a culture of compliance.

Overall, technology plays a vital role in enhancing the efficiency, accuracy, and effectiveness of regulatory compliance efforts. By leveraging technology, organizations can better manage compliance requirements, mitigate risks, and ensure adherence to regulations in an increasingly complex regulatory landscape.

Conclusion Recap of the importance of the theory of regulatory compliance

The theory of regulatory compliance is of great importance in various domains, particularly in legal and business contexts. It refers to the set of rules, regulations, and standards that individuals, organizations, and industries must follow to ensure compliance with applicable laws and regulations.

Here are some key points highlighting the importance of the theory of regulatory compliance:

Legal Compliance: Regulatory compliance ensures that individuals and organizations adhere to laws and regulations set forth by governing bodies. This helps maintain law and order in society and promotes fairness, transparency, and accountability.

Risk Mitigation: Compliance measures help identify and mitigate potential risks associated with non-compliance. By following regulations, organizations can minimize legal, financial, reputational, and operational risks. Compliance frameworks often include risk assessment and management components, enabling proactive risk mitigation.

Consumer Protection: Compliance regulations often aim to protect consumers' rights and interests. Compliance with consumer protection laws ensures fair business practices, prevents fraud, and enhances consumer trust in products and services.

Data Privacy and Security: In the digital age, data privacy and security have become crucial concerns. Regulatory compliance frameworks, such as the General Data Protection Regulation (GDPR), enforce strict guidelines for handling personal data. Compliance helps safeguard sensitive information, maintain privacy, and prevent data breaches.

Ethical Standards: Compliance extends beyond legal obligations and encompasses ethical standards. It encourages organizations to adopt ethical business practices, such as fair competition, anti-corruption measures, and environmental sustainability. Compliance frameworks often incorporate ethical guidelines to promote responsible conduct.

Industry Standards: Many industries have specific regulatory compliance requirements tailored to their unique characteristics and risks. Compliance with industry-specific regulations ensures safety, quality, and standardization within the sector.

Examples include regulations in healthcare, finance, energy, and manufacturing.

Reputation and Trust: Compliance with regulations builds a positive reputation for individuals and organizations. It demonstrates commitment to legal and ethical standards, fostering trust among customers, investors, and other stakeholders. A strong reputation for compliance can lead to increased business opportunities and competitive advantage.

Legal Consequences: Non-compliance with regulatory requirements can have severe legal consequences, including fines, penalties, sanctions, and legal liabilities. Violations can result in damaged reputation, loss of business licenses, and even criminal charges. Compliance helps organizations avoid legal pitfalls and maintain a good standing with regulatory authorities.

Global Business Landscape: With increasing globalization, organizations often need to navigate complex regulatory frameworks across multiple jurisdictions. Understanding and complying with international regulations is essential for expanding businesses, facilitating international trade, and avoiding legal disputes.

Continuous Improvement: The theory of regulatory compliance emphasizes the need for continuous improvement. Compliance programs encourage regular monitoring, self-assessment, and adaptability to evolving regulations. This fosters a culture of compliance and enables organizations to stay up to date with changing legal requirements.

In summary, the theory of regulatory compliance plays a vital role in promoting legality, ethical conduct, risk management, and trust in various domains. It ensures adherence to laws, protects consumers, mitigates risks, and helps organizations thrive in a complex regulatory landscape.

Here are additional more recent posts from RIKINotes that I wanted to include in this handbook because they really help to round out the discussion on regulatory compliance, licensing measurement and monitoring systems and keep it current.

When it comes to licensing measurement and monitoring systems, risk assessment is the driving force in making licensing decisions, remembering the mantra: "Do No Harm". There have been several posts giving examples in how one does this with risk assessment and key indicator methodologies which are the predominant approaches to differential monitoring. These methodologies are derived by two very different mathematical models, one based upon Likert scaling and weighting; the other based on predictive scaling and regulatory compliance history. However, what they have in common is a basic risk aversion.

With risk assessment rules, the selection process via a weighting methodology is critical in selecting those rules that place individuals at greatest risk of harm, and then making certain that these rules are always in regulatory compliance. With predictive rules, the selection process is through regulatory compliance history in general as well as with each individual rule. The key here is to make certain that the effect size is sufficiently large so that there are no false negatives.

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The licensing decision process needs to ensure at all times that there is no regulatory non-compliance with the risk assessment rules and that there are no false negatives where general regulatory non-compliance is found with some other rule when the predictive rules are all in-compliance. In order to have an effective and efficient differential monitoring approach both these conditions must be met for the licensing system to work as it is intended with abbreviated inspection reviews. It is only by having this in place will a licensing agency feel confident that the necessary risk mitigation has been implemented in making licensing decisions.

The next two posts are intimately tied together and should be read in close proximity of each other to understand the methodologies presented.

Risk Assessment and Key Indicator methodologies are two approaches utilized in differential monitoring systems for generating an abbreviated inspection by only looking at a core set of rules based upon statistical predictor or risk assessment algorithms. In this post the matrix (pictured below) utilized to generate these core sets of rules are depicted and with a matrix that determines their respective validation status based upon subsequent studies.

The first matrix display (KIM Matrix) deals with the Key Indicator Methodology (KIM) and demonstrates how key indicator rules are determined by measuring each potential rule and comparing it to the regulatory compliance history for the respective set of all rules for a given jurisdiction in which the programs are grouped into either a high (Full or substantial regulatory compliance with all rules) or low compliant groups (several or more violations of rules). From the matrix, it is clear that for a rule to become an indicator rule, there needs to be a very high correlation between the rule being in compliance with the high group and out of compliance with the low group. It is only when this occurs that the rule will distinguish between high and low compliance and be a predictor rule. The other two cells should occur less frequently but there will be some occurrences when these do occur and when they do, these rules will not make the threshold of becoming indicator rules. So Key Indicator Predictor Rules increase performance by predicting overall regulatory compliance.

The second matrix display (RAM Matrix) deals with the Risk Assessment Methodology (RAM) and demonstrates how risk assessment rules are determined by measuring each potential rule by the amount of risk of morbidity or mortality a client is placed in because of non-compliance with the specific rule and how likely will this occur. As one can see, the cell which contains high risk rules, and they are likely to occur would be included on the risk assessment tool. All the other cells are color coded in decreasing risk and likelihood categories and a jurisdiction can determine the appropriate thresholds. More risk rules would be included for a risk aversive approach while less risk rules would be included for a more lenient approach or because the number of key indicator rules are sufficient to ensure the health and safety of the clients being served. So, Risk Assessment Rules decrease risk to clients but are not predictive rules of overall regulatory compliance.

The last matrix display (KIM/RAM Validation Matrix) is used after the KIM and RAM tools are actually used to validate that they are working as intended. KIM should be statistically predicting overall compliance with all the rules (Rules in

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Compliance cell), while RAM should be mitigating risk in the program by always having the high-risk rules in compliance (also Rules in Compliance cell). Part of the KIM validation strategy is that the opposite should also occur in that when the KIM tool has indicator rules out of compliance, it should statistically predict rules out of compliance with other rules (the Rules Out of Compliance cell). Something that can occur but needs to be eliminated are the false negatives in which the KIM is in compliance but there is non-compliance detected elsewhere in the rules. When full compliance is used for the high compliant group in the KIM Matrix, this eliminates this from happening. But if substantial compliance is used as the criterion for the high compliant group, then this can become problematic. If substantial compliance is used as the threshold for the high compliant group, a multiplier needs to be applied to rule out the likelihood of false negatives (please see the blog post on this algorithm adjustment posted back in January of this year or look at the description provided below the matrices). False positives are possible also but are not of overall concern from a safety point of view but are a concern from a psychometric standpoint and additional research needs to be done to determine the cause.

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KIM Matrix

KIM Generator	**High Compliant Group**	**Low Compliant Group**
Rule In Compliance	**Yes: OK**	**No**
Rule Out of Compliance	**No**	**Yes: OK**

RAM Matrix

High Risk/High Likely	**High Risk/Med Likely**	**High Risk/Low Likely**
Med Risk/High Likely	**Med Risk/Med Likely**	**Med Risk/Low Likely**
Low Risk/High Likely	**Low Risk/Med Likely**	**Low Risk/Low Likely**

KIM/RAM Validation Matrix

KIM/RAM Validator	**Rules In Compliance**	**Rules Out of Compliance**
KIM/RAM In Compliance	**Yes/Yes: OK KIM/RAM**	**Yes/No: False Negative**
KIM/RAM Out Compliance	**No/Yes: False Positive**	**No/No: OK KIM**

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Hopefully this post helps licensing administrators, licensing researchers, and regulatory scientists to see the logic behind the differential monitoring methodologies of key indicator and risk assessment and how best to take advantage of both.

There are two other blog posts on the risk assessment (RAM) and key indicator (KIM) matrices posted last year (2022) and the year before (2021) demonstrating differences and similarities. In this post, there is an attempt to build upon the previous posts and to enhance some of these differences and similarities. Let's start with a narrative description followed by a chart/matrix comparison.

Risk Assessment (RAM) is generally depicted as a 3 x 3 matrix (pictured below) with risk on one axis and prevalence on the other axis; while Key Indicators (KIM) is generally depicted as a 2 x 2 matrix in which one axis measures individual rule compliance and the other axis measures overall regulatory compliance or compliance history. RAM deals with individual rules with a weight while KIM deals with aggregate rules and high and low regulatory compliance. RAM rules are heavily weighted while KIM rules are medium weighted. RAM is hardly ever out of compliance while KIM has a good deal of non-compliance to distinguish the high compliant group from the low compliant group. RAM uses likert scale and means; KIM uses correlational analyses and prediction. RAM is expert opinion while KIM is data driven

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RAM/KIM Matrix: Risk Assessment and Key Indicators: 3×3 Matrix
Demonstrating Relationships between **KIM** and *RAM*

High Risk/High Prevalence	High Risk/Med Prevalence	*High Risk/Low Prevalence*
Med Risk/High Prevalence	**Med Risk/Med Prevalence**	Med Risk/Low Prevalence
Low Risk/High Prevalence	Low Risk/Med Prevalence	Low Risk/Low Prevalence

In the above 3 x 3 Matrix: Risk x Prevalence are listed across the axis, in which *RAM* is preventing high risk, high prevalence but in reality *RAM rules* are very low prevalence, low non-compliance. **KIM rules** are usually med risk and prevalence.

The above matrix and narrative provides additional enhancements to the differences and similarities between risk assessment and key indicator rules. As one can see, there are some basic differences but at the same time there is a deep common structure that underlies both. These are important attributes to consider before using these statistical methodologies as part of a differential monitoring approach. But the bottom line when using either RAM or KIM, or RAM+KIM, all RAM and KIM rules must be in compliance at all times. Remember it is not about more or less rules in total, it is about compliance with the right rules.

Let's take this to the next step and think about this more broadly and relate it to the larger research literature dealing with businesses. Risk assessment and key performance indicators (KPIs) are two important concepts in business management. Risk assessment is the process of identifying, evaluating, and managing risks to an organization's objectives. KPIs are metrics that measure an organization's performance against its objectives.

The two concepts are related in that risk assessment can help organizations identify and prioritize risks that could impact their KPIs. For example, if an organization's KPI is to increase sales by 10%, then risk assessment can help the organization identify risks that could prevent it from achieving this goal, such as a competitor launching a new product or a change in customer behavior.

Once risks have been identified, organizations can develop mitigation strategies to reduce the likelihood or impact of those risks. KPIs can be used to track the effectiveness of these mitigation strategies. For example, if an organization is concerned about a competitor launching a new product, it could track its sales data to see if there has been a decrease in sales since the competitor launched its product.

By integrating risk assessment and KPIs, organizations can improve their ability to identify, manage, and mitigate risks to their objectives. This can help organizations achieve their goals and objectives more effectively.

Here are some examples of how risk assessment and KPIs can be used together:

- A bank might use risk assessment to identify the risks of fraud and theft. The bank could then use KPIs to track the number of fraudulent transactions and the amount of money lost to fraud. This information could be used to develop mitigation strategies, such as implementing new security measures or training employees on how to spot and prevent fraud.
- A manufacturing company might use risk assessment to identify the risks of product recalls and safety incidents. The company could then use KPIs to track the number of product recalls and the number of safety incidents. This information could be used to develop mitigation strategies, such as improving product quality or implementing new safety procedures.
- A retail company might use risk assessment to identify the risks of natural disasters and supply chain disruptions. The company could then use KPIs to track the number of natural disasters that occur in its region and the number of supply chain disruptions that occur. This information could be used to develop mitigation strategies, such as developing contingency plans or building up inventory.

By integrating risk assessment and KPIs, organizations can improve their ability to identify, manage, and mitigate risks to their objectives. This can help organizations achieve their goals and objectives more effectively.

I want to continue the discussion related to the relationship between risk assessment and key performance indicators. I have posted about this relationship and other assorted concepts and ideas related to it in several previous blog posts I posted earlier this year. In this post I would like to see if I can tie some of these ideas and concepts together and show how risk and performance are more closely related and how to take advantage of this relationship.

These ideas percolated from a conversation and discussions I have been having with a colleague about a webinar we will be doing together where he suggested the use of a graphic to help to explain the essence of key performance indicators. His graphic was to be an airplane cockpit and all the gauges present on the dashboard that a pilot is looking at. A great deal of data and information to process but s/he focused on about 5-6 gauges that were the most important in flying the plane and really told the pilot if things were ok or not and when s/he needed to check the other gauges because these key performance indicator and risk assessment gauges were telling s/he something was not quite right. I would guess that two of these gauges were the altimeter and speed gauges which I would include as risk assessment gauges and a third gauge would have been the fuel gauge which I would include as a key performance indicator.

Why did I break these gauges down into the two major areas of risk assessment and key performance? Here is my thinking: the altimeter tells the pilot how close to the ground and a potential crash and the speed helps to prevent a stall of the aircraft. Both are high risk factors and things we would want to mitigate. The fuel tank is important to know how much fuel the pilot has left; in, and of itself, not necessarily a risk factor unless it becomes too low but will impact performance because it determines how far the pilot can fly the plane.

A similar scenario could be played out with driving a car. Speed is the risk factor as it increases, while the gas tank gauge is the key performance indicator determining how far we can go and how much we are getting per gallon of gas which is an indicator on many newer models.

Let's try this out in a totally different industry and scenario, such as the pharmaceutical/drug industry. When finding out if a new drug will work or not, there is a delicate balance of risk-benefit or risk-performance. Same concept, just different terminology being used. For risk assessment, either not taking the drug or taking too much of the drug will not be in the best interest of the patient. Too little or not at all the patient dies because the disease progresses. If the patient takes too much of the drug, given the side effects, the patient dies. The key performance indicator or benefit is finding the right target dosage of the drug which effectively keeps the patient alive and gets better or at least not any worse.

Another example, one that I share somewhat reluctantly because some people may take offense but I think it is an effective example, the Ten Commandments. I actually have posted this earlier in a blog post as an example if one is interested in looking at this in more detail (May 2022). With the Ten Commandments, think of "Thou Shalt not Kill" as a risk assessment rule and "Thou Shall not Steal" as a key performance indicator. Obviously the consequences of the first are much greater than the second where one is literally stealing someone's life, which is the underlying structure of the relationship between risk assessment and key performance indicators.

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So let's delve into this relationship of performance and risk mitigation based upon the above examples and see how they are all tied together. Risk mitigation (Do No Harm) is sort of the book ends of the relationship, too much or too little is not a good thing, while key performance (Do Good) is somewhere in between balancing effectiveness with efficiency and finding the right balance of rules and recommended standards (The essence of the Theory of Regulatory Compliance). Remember I am addressing regulatory compliance data and not social science data in general although it would be interesting to see how this relationship of performance and risk assessment plays out in the larger context of the social sciences. I have a funny feeling that many relationships of social science variables are more nonlinear than linear in nature.

How are risk assessment and key performance indicators determined? Risk assessment rules are generally determined by expert opinion and group consensus either using or not using a Likert type Scale (***Stepping Stones to Caring for Our Children*** and ***Caring for Our Children Basics*** are examples). Key performance indicators are determined from actual data, generally regulatory compliance history utilizing a regulatory compliance statistical methodology that results in the rule's predictive ability (the statistical methodology is highlighted on this website in the publications section as well as on the **National Association for Regulatory Administration's (NARA) website** https://www.naralicensing.org/key-indicators)(***ASPE's Thirteen Quality Indicators*** and the ***Early Childhood Program Quality Indicators Scale*** are examples (see previous blog posts on all these)). From a licensing measurement perspective, risk assessment rules are generally always in regulatory compliance because the rules place clients at such great risk; while key performance indicators do not place clients at high risk as with risk assessment rules, generally have some non-compliance, just enough to distinguish between the high performers and the mediocre performers.

This relationship is made possible because of the regulatory compliance theory of diminishing returns/the ceiling effect between regulatory compliance and program quality where we are really forced to look for a paradigm shift when it comes to licensing and program monitoring. The "One Size Fits All" a very absolute approach needs to be replaced with a more relative approach, such as "Differential Monitoring" and once this paradigm shift is made it naturally leads us to identifying risk assessment rules and key performance indicator rules. It really changes our frame of reference in establishing a proper balance between regulatory compliance and program quality standards.

To summarize, too few or too many rules are not a good outcome, it is finding the proper balance of the "right rules", finding that balance between effectiveness and efficiency, between risk mitigation and optimun performance. Let me leave you with this statement as an algorithm where TRC = Theory of Regulatory Compliance; RA = Risk Assessment; KI = Key Performance Indicator; RC = Regulatory Compliance; and PQ = Program Quality: ***TRC = ∑(RA + KI) => ∑(RC + PQ)***

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The Public Policy Implications of the Regulatory Compliance Theory of Diminishing Returns, Regulatory Compliance Scaling, and the Program Quality Scoring Matrix along with Integrative Monitoring

This technical research note/abstract provides a data matrix (below table) depicting the relationship between regulatory compliance and program quality. The data clearly demonstrate the regulatory compliance theory of diminishing returns which depicts the ceiling or plateau effect in this relationship between regulatory compliance data and program quality data. It also shows the difficulty one will have in distinguishing program quality differences at the full and high regulatory compliance levels but the ease in distinguishing program quality between low regulatory compliance and high regulatory compliance levels.

This abstract unifies several separately developed regulatory compliance metrics and concepts by combining them into a single technical research note. The Regulatory Compliance Theory of Diminishing Returns (2019), The Regulatory Compliance Scale (2022), Integrative Monitoring (2023), and the Ten Principles of Regulatory Compliance Measurement (2023) have all been presented separately (all these papers are available for the interested reader on ***SSRN* (https://www.ssrn.com/index.cfm/en/) or the *Journal of Regulatory Science* (https://regsci-ojs-tamu.tdl.org/regsci/)**). This abstract shows how they are all related and their importance in moving forward with regulatory compliance measurement in the future. The four jurisdiction's (US National, Southern State, Western State, Canada) final reports are available at https://www.naralicensing.org/key-indicators for the interested reader.

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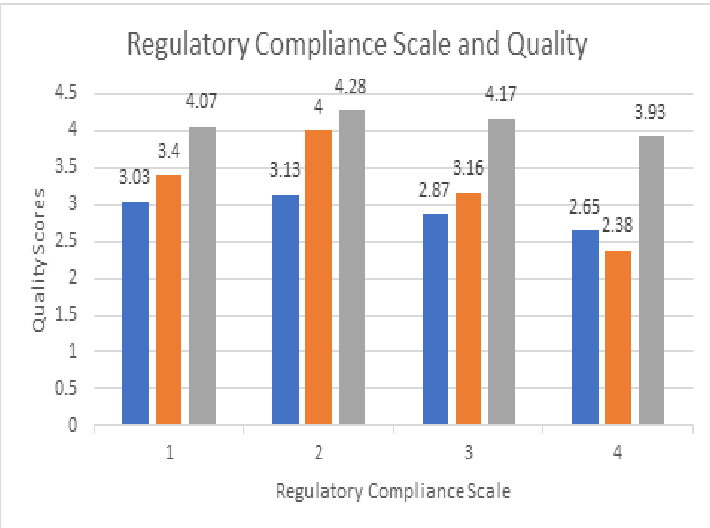
Relationship of Regulatory Compliance Scale and Program Quality in Four Jurisdictions Matrix

Reg Comp Scale	US National	Southern State	Western State	Canada
Full	3.03 (75)	3.40 (15)	4.07 (82)	37.4 (44)
High	3.13 (135)	4.00 (20)	4.28 (69)	38.5 (33)
Mid	2.87 (143)	3.16 (32)	4.17 (163)	29.1 (36)
Low	2.65 (28)	2.38 (2)	3.93 (71)	-----------
Significan	***p < .001***	***p < .05***	***p < .001***	***p < .01***

Legend:
US National = CLASS-IS scores
Southern State and Western State = ECERS-R scores
Canada = Canadian Program Quality Tool scores
One-way ANOVA was performed on the data in each jurisdiction.
Regulatory Compliance Scale (Reg Comp Scale (RCS)):
Full = 0 violations (100% regulatory compliance with all rules/regulations)
High = 1-2 violations; Mid = 3-9 violations; Low = 10+ violations
The number in parentheses is the number of programs assessed in each jurisdiction.



Legend: *1 = Full; 2 = High; 3 = Mid; 4 = Low.*

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Blue = US National; Orange = Southern State; Gray = Western State. Canada was left off because of different scaling.

The above data matrix display is important for the early care and education (ECE) field because it demonstrates the relationship between licensing via regulatory compliance data measurement and program quality scores via CLASS, ERS, and the Canadian Quality Tool. The CLASS and ERS are well grounded ECE program quality tools while the Canadian Quality Tool is a new addition to the field.

The data displayed show that a ceiling or plateau effect (quality scores did not change significantly as was generally the case with lower levels of regulatory compliance) occurred in all four jurisdictions when the regulatory compliance levels or the absence of rule/regulatory violations were compared to program quality scores as one moves from high regulatory compliance to full regulatory compliance (0 violations or 100% regulatory compliance with all rules). From a public policy point of view, it would lead us to believe that licensing is not the best avenue to program quality and that another intervention, such as Quality Rating and Improvement Systems (QRIS), would be necessary to enhance quality programming. What regulatory compliance and licensing does do is prevent harm and keep children in healthy and safe environments (please go to https://rikinstitute.com for examples to support this claim). So, from a public policy point of view, licensing is accomplishing its goals. But don't expect licensing to address quality programming. For that to occur, either we need to continue our present system of licensing and Quality Initiatives, such as QRIS, as an add on; or infuse quality into the rules and regulations which has been suggested via a new form program monitoring called: integrative monitoring.

There are some other takeaways from the above data matrix that are significant contributions to the regulatory compliance measurement research literature, such as, how skewed the data are. Focus more on the number of programs rather than their quality scores for each of the Regulatory Compliance Scale levels. You will notice that most programs in each of the jurisdictions are either in full or high regulatory compliance and that there are few programs at the low end of the regulatory compliance scale. There is an unusually very high percentage of programs at full compliance. This also contributes to a lack of variance in the upper end of the regulatory compliance scale which can be problematic as indicated in the previous paragraph in distinguishing between the quality levels of programs.

The importance of these four studies and the summary matrix above is to provide a context in how licensing and regulatory compliance data should be used in making public policy decisions, for example: is it more effective and efficient to require high or substantial regulatory compliance than full regulatory compliance with all rules and regulations to be granted a full license to operate? It appears prudent to continue with the US emphasis on QRIS as an add on quality initiative, especially in states where rules/regulations are at a minimal level. In Canada their emphasis has been more in line with an integrative monitoring approach in which quality elements are built in or infused within the rules and regulations themselves. This approach appears to work in a similar fashion and is an effective public policy initiative. Either approach appears to be an effective modality to increasing program quality; but are both equally efficient.

The purpose of this last RIKINotes post is to point out the intersections, differences and similarities of integrative, differential/inferential and coordinated monitoring as used in the monitoring of human service programs. Program monitoring has changed over the years in that not only has it grown in the types of monitoring done, such as process, compliance, outcome monitoring, etc.; but also, in the functional aspects of monitoring as delineated with integrative, differential, and coordinated monitoring. Much has been written in the research literature about the types of monitoring but not as much regarding the functional aspects of monitoring probably because it is much newer and has grown with the various types of monitoring being used in different contexts.

Coordinated monitoring deals with monitoring across similar service types, for example, in early care and education, monitoring would be done using similar standards in Head Start, child care, preschool, etc. This is an effective and efficient approach which has been demonstrated through the creation and dissemination of *Caring for Our Children Basics* as a core set of standards for all these various settings. The US Dept of Health and Human Services has advocated this particular approach.

Differential monitoring focusing on the use of abbreviated or targeted inspections of programs that have a history of high regulatory compliance with specific rules or standards. It means spending more time and doing a more comprehensive review of those programs having difficulty complying with specific rules, these can be based upon risk assessment or predictive value of overall compliance. This is a very efficient approach which has been demonstrated to save time in monitoring reviews. Many states in the USA and provinces in Canada use this approach. The US Office of Head Start has experimented with the approach.

Instrument-based program monitoring utilizes instruments, tools, or checklists for recording all data when a review or inspection is completed. It is different from the case review or anecdotal type of record keeping. This approach started in the late 1970's, early 1980's when it was introduced by the Children's Services Monitoring Transfer Consortium, a federally funded research project consisting of California, Michigan, West Virginia, Pennsylvania and New York City. Its development occurred parallel with the development of differential monitoring but with particular emphasis on the metrics or measurement domain when it came to tool development. The ***Child Development Program Evaluation Scale*** was a major tool developed from this initiative.

Integrative monitoring is a relatively new approach to monitoring in which the emphasis is on integrating regulatory compliance rules with quality programming standards. Note the emphasis is on the rules and standards and not on who gets applied to those rules and standards nor how they get applied. However, combining integrative monitoring with differential monitoring is an interesting research focus which could be a very effective and efficient approach in combining these two perspectives. In the past, licensing and quality programming have generally been in their own silos when it comes to program monitoring. Integrative monitoring removes them from these silos and suggests building a continuous metric that starts with the health and safety aspects of rules and adds in the quality pieces on top of the rules. Presently, quality initiatives, such as

Quality Rating and Improvement Systems, Accreditation, and Professional Development systems are examples of standards that could be used to build upon health and safety licensing rules.

There appears to be interest in pursuing an integrative monitoring approach in several jurisdictions in the early care and education field but this interest extends beyond and has been suggested more broadly by a recent article published in the *Journal of Regulatory Science* by Freer & Fiene (2023). *Regulatory compliance and quality programming: Constraints and opportunities for integration*, Volume 11, Number 1, 1-10 (***Journal of Regulatory Science***). The interested reader may want to take a look at the article, it does provide a unique model for pursuing integrative monitoring. Also, this eHandBook on *Licensing Measurement and Monitoring Systems: Regulatory science applied to human services regulatory administration* available at **https://RIKInstitute.com.** provides the basics of licensing measurement and program monitoring metrics.

So where does all this lead to. Potentially to an expansion of the ***Regulatory Compliance Scale*** to a new proposed ***Licensing and Quality Scale.***

Previous RIKINotes posts have introduced the Regulatory Compliance Scale (RCS), in this post, based upon the latest regulatory science research, this RCS can be expanded to a more comprehensive and all-inclusive Licensing and Quality Scale (LQS) which will seven components related to licensing the program quality.

The seven components are the following: the Regulatory Compliance Scale, risk assessment rules, key indicator rules, quality indicator standards, complaints about the facility, key indicator criteria being satisfied, and overall regulatory compliance history.

The Regulatory Compliance Scale (RCS-see table below) is a Likert type scale that has 1 – 7 scaling where 7 = full regulatory compliance (no rule violations); 5 = substantial regulatory compliance (1-2 rule violations); 3 = moderate regulatory compliance (3-9 rule violations); and 1 = low regulatory compliance (10+ rule violations). The RCS is based upon 40 years of research and the corresponding international regulatory compliance and quality databases.

Regulatory Compliance Scale (RCS)

RCS	Level	Violations
Full	7	0 violations
Substantial	5	1-2 violations
Moderate	3	3-9 violations
Low	1	10+ violations

Risk Assessment Rules (RAR) are those rules which have been determined to place children at greatest risk for mortality/morbidity. These identified rules are generally always in full regulatory compliance.

Key Indicator Rules (KIR) are those rules that are statistically predictive of overall regulatory compliance with all rules. These identified rules are generally in the mid-range of regulatory compliance and are very predictive between distinguishing those high-quality programs vs those that are not.

Quality Indicator Standards (QIS) are those standards that are statistically predictive of overall program quality on various dimensions such as staffing, curriculum, parental involvement, and teacher behaviors in the classroom.

Complaints can be any indications that there are issues at the specific facility that a concerned individual is reporting to the state licensing agency which require follow up and an abbreviated inspection review.

Key Indicator Criteria are the specific criteria which make programs eligible for a Key Indicator Abbreviated Inspection. Examples of Key Indicator Criteria are the following: no change in director, less than 10% enrollment change, less than 20% staff turnover, no change in corporate sponsorship, etc…
And lastly, Compliance History should either demonstrate a very low level of non-compliance or a constant regulatory compliance improvement over time. See following equation.

LQS = ∑RCS + ∑RAR + ∑KIR + ∑QIS + ∑Complaints +∑KI Criteria + ∑Compliance History

The RCS should have a score either at a 7 or 5 level, Full or Substantial regulatory compliance. This should occur both at the aggregate and individual rule levels.
The RAR should have no violations.
The KIR should have no violations.
The QIS should have a score in the range of 28-36+ on the Quality Scale.
There should be no complaints about the program.
All KI Criteria should have been met.
And the Compliance History should have very few non-compliances and always be improving

Differential Monitoring x Integrated Monitoring Matrix

Presented below is a proposed matrix depicting the relationship of integrated monitoring (IM) and differential monitoring (DM). Both integrated monitoring and differential monitoring have been discussed separately in previous posts. This 2 x 2 matrix provides a visualization of how the two approaches potentially intersect and can be used in tandem. Just as a reminder, differential monitoring involves doing an abbreviated inspection instead of a full licensing inspection utilizing either a risk assessment or a key indicator predictor methodology. Integrated monitoring is the infusion of quality elements into a given set of rules or regulations, most likely through the use of ***Caring for Our Children***.

The 2 x 2 matrix provides four possibilities: A = Regulatory Compliance (RC) rules which results in a full inspection; B = Program Quality (PQ) standards which results in a full inspection; C = Regulatory Compliance rules which results in an abbreviated (Abb) inspection; and D = Program Quality standards which results in an abbreviated inspection. The essence of any model should be its relevance and hopefully its elegance. The below 2 x 2 matrix is relevant because the two monitoring approaches are the most salient ways of conducting inspections for human services regulatory administration. But hopefully it is also elegant in its simplicity and direct modeling, that we will need to see if it resonates with licensing administrators & researchers as well as regulatory scientists.

This matrix should help licensing administrators think through the appropriate use of these various approaches and what it means when combining them. Differential monitoring is an encouraged approach via CCDBG/CCDF, integrated monitoring is too new to make a determination regarding its use. I think it is the next evolution of program monitoring related to regulatory science and administration by providing a balance and continuum along the quality domain with regulatory compliance/licensing as the foundation of this continuum. **TRLECE: The Role of Licensing in Early Care and Education** has developed a wonderful research brief on program monitoring which highlights how states are using differential monitoring that I highly recommend (The Report).

		IM	
		RC	**PQ**
DM	**Full**	***A***	***B***
	Abb	***C***	***D***

IM x DM Matrix

Also, you may want to consult ***Licensing Measurement and Monitoring Systems: Regulatory Science Applied to Human Services Regulatory Administration*** which has a chapter about integrated monitoring (Licensing Measurement and Monitoring Systems ebook)

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(Please go to the above website if you are interested in downloading any of the publications listed here)

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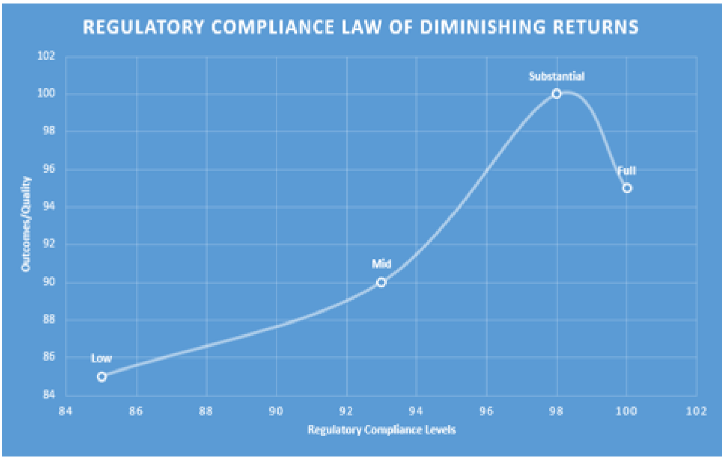
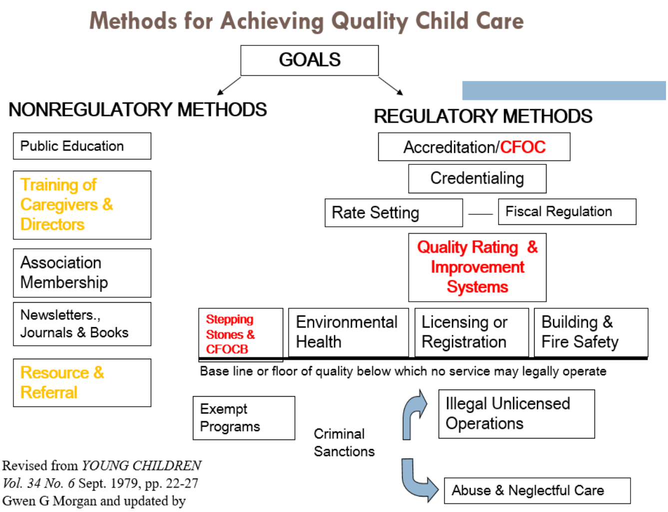
The below graphics, figures and displays help to support and depict various portions of text in Chapters 1-7.

They depict the regulatory compliance theory of diminishing returns, the overall regulatory compliance and program quality model as described by Gwen Morgan, the ECPQIM: Early Childhood Program Quality Improvement and Indicator Model that depicts the relationship of regulatory compliance and program quality monitoring systems; a brief logic model of when risk assessment and key indicator methods can and cannot be used; the RAM: Risk Assessment Matrix decision matrix; the relationship of comprehensive reviews and abbreviated reviews, such as, risk assessment and key indicator reviews; data distributions for regulatory compliance, and program quality as depicted with QRIS and ERSs; ECPQIM theory; Key indicator and non-compliance relationship depicting the relationship between effectiveness and efficiency; the key indicator and risk assessment methodologies within a single matrix format; the use of Caring for Our Children in depicting the relationship between compliance and quality; the Regulatory Compliance Scale; the absolute and differential regulatory paradigms key elements; International study of child care comparing rules and regulations; Key indicator formula; examples of two data distributions from Head Start (skewed) and ECERS (normally distributed); ECPQIM version 5 which demonstrates the use of integrated monitoring.

There are also a series of figures that summarize the contents of this ehandbook and have been used in various formats for webinars and presentations. And, finally, there is a trilogy of matrices that depict the key logic of KIM and RAM and are key to several of the RIKINotes posts in the Appendices as well as key indicator examples.

Figures, Graphs, Charts, Displays





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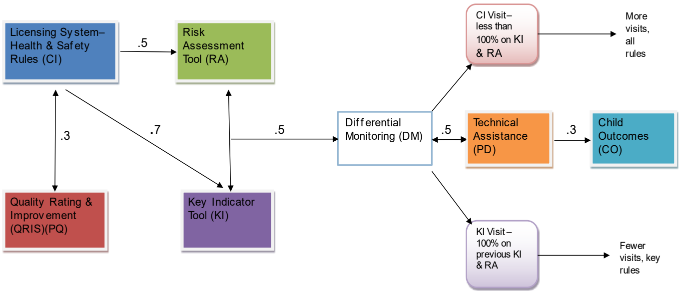

$$\sum CI \times \sum PQ \Rightarrow \sum RA + \sum KI \Rightarrow \sum DM + \sum PD \Rightarrow CO$$

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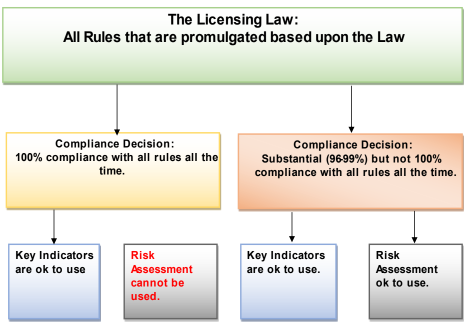
When Key Indicators and Risk Assessments Can Be Used



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Risk Assessment Matrix (RAM)

Risk Assessment (RA) Matrix Revised

	Levels	High	Medium	Low
Risk/Severity	Immediate	9	8	7
	Short-term	6	5	4
	Long-term	3	2	1
			Probability	
	Regulatory Compliance (RC): # of Rules out of compliance and In compliance	8+ rules out of compliance. 92 or less regulatory compliance.	3-7 rules out of compliance. 93 – 97 regulatory compliance.	2 or fewer rules out of compliance. 98 – 99 regulatory compliance.

***Regulatory Compliance (RC)(Prevalence/Probability/History + Risk/Severity Level)**

Tier 1 = ((RC = 93 – 97) + (Low Risk)); ((98 – 99) + (Low Risk)) = Tier 1

Tier 2 = (RC = 92 or less) + (Low Risk) = Tier 2

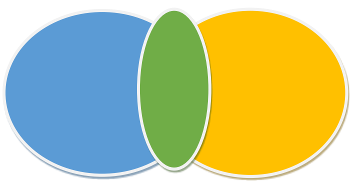
Tier 3 = ((RC = 93 – 97) + (Medium Risk)); ((98 – 99) + (Medium Risk)) = Tier 3

Tier 4 = (RC = (92 or less) + (Medium Risk)) = Tier 4; ((93 -97) +(High Risk)) = Tier 4; ((98 – 99) + (High Risk)); ((92 or less) + (High Risk)) = Tier 4+

Using RAM to make licensing decisions

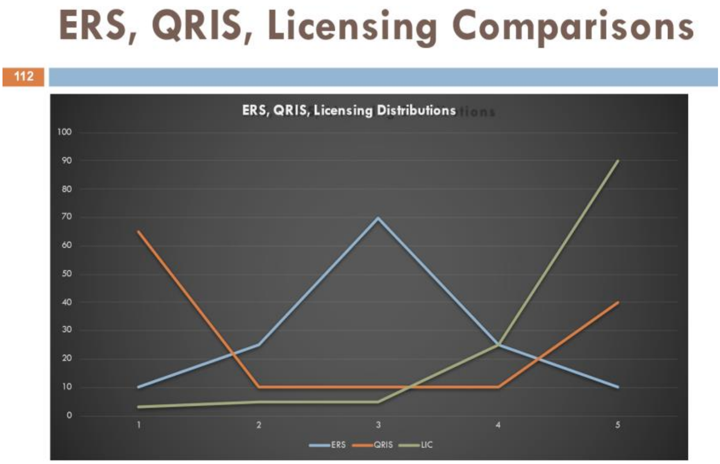
Relationship of Comprehensive Reviews (CR) to Key Indicator (KI) or Risk Assessment (RA) Rule Non - Compliance

Key Indicator Rule | Both | Risk Assessment Rule



Prediction | **Risk to Children**

Non-Compliance	***Non-Compliance***	***Non-Compliance***
2+ Rules = CR	1 Rule = CR	Point System = CR
1 Rule = Section		1 Extreme Rule = CR
Absolute scoring 1/0		Relative scoring 1/9


ERS, QRIS, Licensing Comparisons
112
ERS, QRIS, Licensing Distributions
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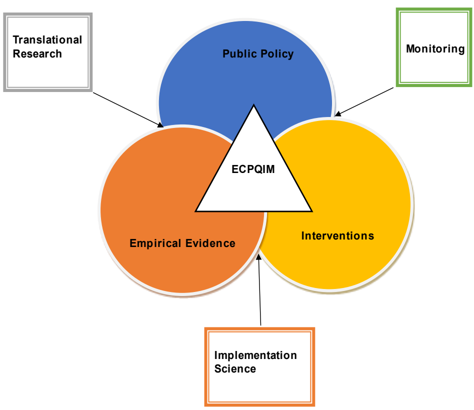
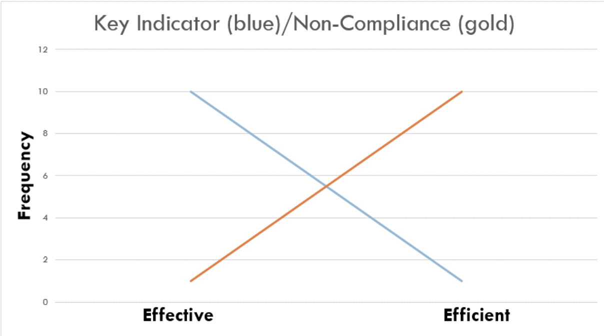
QRIS
LIC


Translational Research
Public Policy
Monitoring
ECPQIM
Empirical Evidence
Interventions
Implementation Science

137

Key Indicator/Non-Compliance Relationship

84



KIM (Key Indicator Matrix) and RAM (Risk Assessment Matrix) Matrices Integration Into One Platform

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KIM	Low Group	High Group		Severity:
Compliance	1	2	3	Low
Non-Compliance	4	5	5	Medium
	7	8	9	High
Prevalence:	Low	Medium	High	RAM

This technical research note will integrate the Key Indicator Matrix (KIM) and the Risk Assessment Matrix (RAM) into one platform to clearly demonstrate their statistical modeling overlap. Key Indicators deal with the ability to predict overall compliance or performance based on existing data. Risk Assessment Indicators do not predict but determine a risk score based upon prevalence and severity measures. Their purposes are different but when integrated together the two matrices are a powerful tool in determining the health of the measured entity.

The above matrix integrates the two matrices of KIM and RAM and shows that KIM scores are generally at the lower end of risk but having sufficient prevalence when it comes to non-compliance. RAM scores have a larger variance and are most concerning at the higher end of the continuum

Relationship of Health and Safety Rules/Regulations, Standards, and Guidelines in Early Care and Education by using the Caring for Our Children Publications

ASPE Key Indicators .13 *Standards*

Caring for Our Children: Basics as the risk assessment/key indicator tool. *55 Standards*.

Stepping Stones as the risk assessment tool based upon morbidity/mortality. *138 Standards*.

Caring for Our Children standards/guidelines as the comprehensive set of health and safety standards/guidelines for the early care and education field. *650 Standards*.

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Regulatory Compliance Scale (RCS)

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Regulatory Compliance Scale Levels	Definitions & Compliance Levels	Number of Rule Violations
7	Full 100% Compliance	0 Violations
5	Substantial Compliance	1-3 Violations
3	Mediocre Compliance	4-9 Violations
1	Low/Non-Optimal Compliance	10+ Violations

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Regulatory Paradigms

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Absolute (Class, 1957)

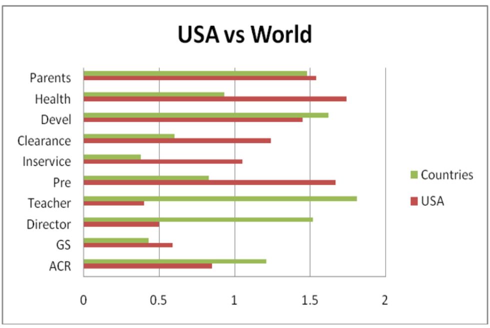
- All rules are created equal.
- 100% Compliance = Full License.
- PC + PQ = Linear.
- All rules are reviewed all the time.

Relative/Differential (Fiene, 1985)

- All rules are not created equal.
- Full 100% + Substantial Compliance = Full License.
- PC + PQ = Not Linear.
- Selected key rules are reviewed all the time.

International Study of Child Care Rules (Fiene, 2013a)

59



Key Indicator Statistical Methodology

87

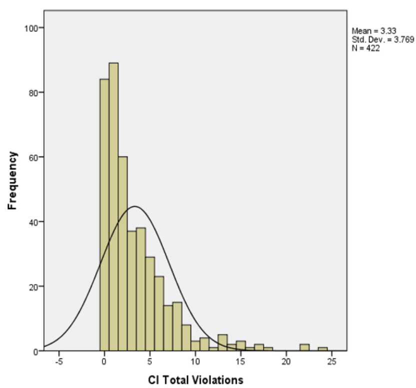
$$\phi = (A)(D)-(B)(C) \div \sqrt{(W)(X)(Y)(Z)}$$

A = High Group + Programs in Compliance on Specific Compliance Measure.
B = High Group + Programs out of Compliance on Specific Compliance Measure.
C = Low Group + Programs in Compliance on Specific Compliance Measure.
D = Low Group + Programs out of Compliance on Specific Compliance Measure.

W = Total Number of Programs in Compliance on Specific Compliance Measure.
X = Total Number of Programs out of Compliance on Specific Compliance Measure.
Y = Total Number of Programs in High Group.
Z = Total Number of Programs in Low Group.

Head Start Performance Standards

111



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ECERS Total Scores

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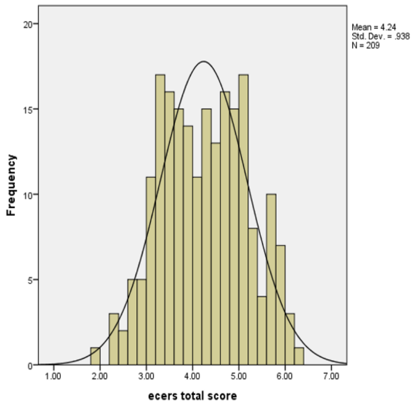
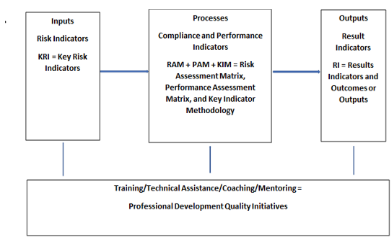


ECPQIM5: Early Childhood Program Quality Improvement/Indicator Model Version 5



Introduction to Licensing Measurement

- The need for addressing licensing measurement and monitoring systems. Why now?
- Regulatory science is a relatively new science.
- Regulatory science, the FDA, and the medical arena.
- History of licensing measurement.
- History of standards/rule development in early care & education.
- NARA's *Licensing Curriculum.*
- NARA's Course on licensing measurement and systems.
- The bottom line: Licensing data are very unique, not like most of the social science data we encounter.

Conceptual/Theoretical Foundation

- Regulatory compliance theory of diminishing returns.
- Differential monitoring.
- From theory to conceptual.
- Methods for achieving quality child care model.
- Early childhood program quality improvement & indicator model.
- Regulatory compliance paradigms: Absolute vs Differential.
- Ten elements of regulatory compliance paradigms.
- The balancing act.

Ten Elements of Regulatory Compliance Paradigms

- 1) Substantial versus Monolithic.
- 2) Differential Monitoring versus One size fits all monitoring.
- 3) Not all standards are created equal vs All standards are created equal.
- 4) "Do things well" versus "Do no harm".
- 5) Strength based versus Deficit based.
- 6) Formative versus Summative.
- 7) Program Quality versus Program Compliance.
- 8) 100-0 scoring versus 100 or 0 scoring.
- 9) QRIS versus Licensing.
- 10) Non-Linear versus Linear

Regulatory Compliance & Program Quality

- Quality initiatives
- Quality rating and improvement systems.
- Accreditation.
- Professional development.
- Relationship of regulatory compliance and program quality based upon the regulatory compliance theory of diminishing returns.
- The ten elements of regulatory compliance and program quality continuum.
- Implications for monitoring systems.

Principles of Instrument Design

- Anecdotal & case record keeping.
- Introduction of instrument-based program monitoring.
- Reliability.
- Validity and validation studies.
- Statistical methods.
- Data bases.
- Nominal data measurement.
- Nominal to ordinal measurement.
- Lack of variance in the data.
- Need for weighting.
- Limitations of nominal measurement.

Ten Elements of Regulatory Compliance and Program Quality Continuum

- 1) "Do no harm" versus "Do good".
- 2) Closed system versus Open system.
- 3) Rules versus Indicators.
- 4) Nominal versus Ordinal measurement.
- 5) Full versus Partial compliance.
- 6) Ceiling effect versus No Ceiling effect.
- 7) Gatekeeper versus Enabler.
- 8) Risk versus Performance.
- 9) Structural versus Process Quality.
- 10) Hard versus Soft Data

Evolution of Monitoring Systems

- **Compliance monitoring, process monitoring.**
- **Coordinated monitoring systems.**
- **Qualitative monitoring systems.**
- **Instrument-based program monitoring**
- **Differential/Inferential program monitoring.**
- **Key indicator approach.**
- **Risk assessment approach.**
- **Integrative program monitoring: Regulatory compliance x quality.**

What Research Tells Us and Doesn't

- **Idiosyncracies of licensing data.**
- **Skewed distributions and potential reasons why.**
- **Ceiling/plateau effect.**
- **Curvi-linear/non-linear data vs linear data: Common assumption.**
- **The dichotomization of data, why it is warranted.**
- **Limitations of nominal data measurement.**
- **Dealing with false negatives and false positives.**
- **The need for validation studies.**
- **Exploring regulatory compliance and quality interactions.**
- **International data base is available for researchers.**

Future Directions

- Continue validating monitoring systems.
- Nominal to ordinal measurement.
- Balance between efficiency and effectiveness.
- Balancing act between regulatory compliance and quality.
- Continued development and validation of quality indicators.
- Further development of the international data base of regulatory and quality indicators.
- Continued development of statistical methods to deal with skewed data distributions, false negatives, and the other licensing data idiosyncracies.
- Ability to better distinguish between the high quality performers and mediocre performers because of the ceiling/plateauing effect.

Licensing and Quality Scale (LQS) (Fiene, 2023)

- **LQS = RCS + RAR + KIR + QIS + Complaints + KI Criteria + Compliance History**
- ***The RCS should have a score either at a 7 or 5 level, Full or Substantial regulatory compliance.***
- ***The RAR should have no violations.***
- ***The KIR should have no violations.***
- ***The QIS should have a score in the range of 28-36+ on the Quality Scale.***
- ***There should be no complaints about the program.***
- ***All KI Criteria should have been met.***
- ***And the Compliance History should have very few non-compliances and always be improving.***

KIM Matrix

KIM Generator	High Compliant Group	Low Compliant Group
Rule In Compliance	Yes: OK	No
Rule Out of Compliance	No	Yes: OK

RAM Matrix

High Risk/High Likely	High Risk/Med Likely	High Risk/Low Likely
Med Risk/High Likely	Med Risk/Med Likely	Med Risk/Low Likely
Low Risk/High Likely	Low Risk/Med Likely	Low Risk/Low Likely

KIM/RAM Validation Matrix

KIM/RAM Validator	Rules In Compliance	Rules Out of Compliance
KIM/RAM In Compliance	Yes/Yes: OK KIM/RAM	Yes/No: False Negative
KIM/RAM Out Compliance	No/Yes: False Positive	No/No: OK KIM

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Examples of Health and Safety Key Indicators

- **Program is hazard free in-door and out-doors.**
- **Adequate supervision of children is present.**
- **Qualified staff.**
- **CPR/First Aid training for staff.**
- **Hazardous materials are inaccessible to children.**
- **Staff orientation and training.**
- **Criminal Record Checks.**
- **Ongoing monitoring of program**
- **Child immunizations**

Examples of Key Indicator Applications

- **Health and Safety Licensing Key Indicators planned or implemented in the following states and provinces: Pennsylvania, Kansas, California, Illinois, Indiana, West Virginia, Michigan, Ontario, British Columbia, Saskatchewan, Montana, Oregon, Washington, New York, Maine, Texas.**
- **Stepping Stones Key Indicators**
- **Office of Head Start Key Indicators.**
- **Accreditation Key Indicators – NECPA – National Early Childhood Program Accreditation.**
- **Environmental Rating Scale Key Indicators – Centers.**
- **Environmental Rating Scale Key Indicators – Homes.**
- **Caregiver Interaction Scale Key Indicators.**
- **Quality Rating & Improvement System Key Indicators – QualiStar.**
- **Footnote: Child & Adult Residential Care Key Indicators.**
- **Footnote: Cruising Industry in general and Royal Caribbean in particular.**

This last section has an example validation report, the UCM research abstract, timeline, and glossary of terms

The Saskatchewan Early Care and Education Quality Indicators Tool and Validation: The Last Piece of the Puzzle in Creating a Differential Monitoring Approach

Abstract

This validation study involved 30 programs, 90 classrooms and 180 observations of infant, toddler, and preschool classrooms utilizing the ECERS/ITERS and the SKECPQI instruments. Six trained observers collected the data over a two-month period. The analyses clearly demonstrated that the new SKECPQI instrument is a valid and reliable measure of program quality. PQI #2 clearly showed it predictive power in this study. The SKECPQI and PQI #2 correlated very highly with the ITERS and ECERS. The SKECPQI appears to correlate more highly with regulatory compliance violations than the ECERS or ITERS. The ceiling/plateauing effect is not as evident with the SKECPQI as it is with ECERS/ITERS. The Regulatory Compliance Scale (RCS) is a better sorter for regulatory compliance than the violation data. There is a good deal of internal consistency within the SKECPQI Tool just as it is with the ERSs. The Regulatory Compliance Theory of Diminishing Returns was validated in comparing RCS with ECERS/ITERS. Both the SKECPQI Scale and the Regulatory Compliance Scale are introduced as new improvements to measuring quality and regulatory compliance.

INTRODUCTION

This article will delineate the development, piloting and validating of the Saskatchewan Early Care and Education Quality Key Indicators (SKECPQI) Tool. The purpose of the tool is to assess the overall program quality in centered based childcare programs in the Province of Saskatchewan, Canada. The evolution of the tool resulted from a multi-year effort by the Ministry of Education in the Province of Saskatchewan to build an effective and efficient differential monitoring system. This effort in building a new differential monitoring system started in 2019 and was completed in 2023. The first component of this restructuring was the Saskatchewan Licensing Key Indicator System (2019). This was followed by the Saskatchewan Risk Assessment Rules (2019). Once these were in place and operational, a validation study was conducted to measure that the two methodologies were operating as they should (2020). A work group was initiated in 2019 and completed its work in 2020 on an Early Care and Education Quality Key Indicator Tool (SKECPQI). The tool was put on hold for 2021 because of the pandemic and a new Canadian Federal initiative to expand childcare services across the province. The tool initiative began again in 2022. The pilot testing and validation occurred in 2023.

The work and these studies in the Province of Saskatchewan by the Ministry of Education is the first demonstration of a full-blown differential monitoring system involving licensing key indicator rules, risk assessment rules, and quality indicators. Besides the development of each tool, each of these tools have been validated as well. All this work was done as a collaborative effort between the Ministry of Education staff and the National Association for Regulatory Administration (NARA) consultant pool. Presently, Saskatchewan's overall system is the best example of a fully developed differential monitoring system for the early care and education field.

This was a monumental effort involving many individuals at the local, provincial, and national levels and many hours of data collection and analysis. All the reports are available on the NARA Website (https://www.naralicensing.org/key-indicators) and the full data set will be available via Mendeley Data Sources (https://data.mendeley.com/datasets/kzk6xssx4d/1).

BACKGROUND HISTORY

This study and tool grew out of an interest by Saskatchewan Ministry of Education policy makers to establish a balance between regulatory compliance and program quality in the most effective and efficient manner. The Province of Saskatchewan did not have a QRIS (Quality Rating and Improvement System) in place nor plans on developing one. Generally, when a jurisdiction wants to develop a balance between regulatory compliance and program quality with rules/regulations/standards, QRIS's are generally developed and implemented.

In reviewing the research literature on regulatory science, differential monitoring has been a developing approach used by many other jurisdictions in the human service licensing field, especially in the United States and in several other Canadian

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Provinces. Based upon this review of the research literature and the work of the National Association for Regulatory Administration (NARA) which has been a long-term promoter of this approach and the resulting methodologies of licensing key indicators, risk assessment rules, and most recently quality indicators, a contract was entered into between the Ministry of Education and NARA.

The tool is the direct result of research into identifying licensing and quality key indicators over a 50-year (1970-2022) research effort in which specific methodologies were developed and the differential monitoring approach was tested and implemented in the 1970's. Since that time, a national database which expanded to an international database of common key indicators from jurisdictions' respective key indicator tools. These key indicators resulted in a very similar tool that Saskatchewan is using. In fact, in 2019 when the Saskatchewan work group was established, they started with that specific tool that had been developed (Fiene, 2019). During the 2019-2020 period, the work group made the tool into a more user-friendly tool for Saskatchewan childcare programs.

The big deal with utilizing the key indicator methodology is its ability to statistically predict as if one administered the full tool in question. Therefore, when one administers the first quality indicator in the Saskatchewan Early Care and Education Quality Indicator tool, it is as if they have administered a licensing based regulatory compliance instrument since the quality of staff is a statistically predictive rule (Fiene, 2002a). The same is true in administering the curriculum quality indicator because it is a statistically predictive standard when looking at overall program quality (Fiene, 2002b). When it

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comes to QRIS, having communication between staff and parents and parental involvement is a statistically predictive standard for an overall set of QRIS standards (Fiene, 2014). And finally, when administering the ECERS and ITERS or the CIS quality item indicators these are all statistically predictive items for their respective scales as if you had administered the full scales (Fiene, 2002b).

So, as a state/provincial administrator, I would be interested in focusing my efforts on these indicators which reflect compliance with high quality rules/regulations/standards for early care and education. This would be my starting point. I would make sure that my standards reflected quality teachers with the necessary supports such as coaching/mentoring, an early care and education philosophy based upon an emergent curriculum where children are viewed as competent learners, developmentally appropriate curriculum and child assessments, parental and staff communication and participation, and teacher language based/communicative focus when interacting with children in a give and take manner. All this done within a warm and loving style.

An even more efficient and effective way of using the new program quality tool is to pair it with the National Center for Health and Safety in Child Care's *Parental Guide to Choosing Safe and Healthy Child Care (DHHS: Assistant Secretary's Office for Planning and Evaluation, 2019)*. This is a more aggressive and controversial approach, but it is the most efficient way of conducting monitoring visits in the most abbreviated way. However, as efficiency increases, effectiveness may decrease; so, it is a delicate balancing act. This suggested approach builds off a similar suggestion in which only using *Caring for Our Children: Basics (ACF, 2015)* a DHHS Administration for Children and Families publication would be used as the base for regulatory compliance in the United States.

Differential monitoring grew out of a need for jurisdictions to be more effective and efficient in their oversight and inspection efforts of early care and education programs. This started to occur in the late 1960's and 1970's as many more programs were being established. It was becoming clear that the old one size fits all approach to program monitoring was being overwhelmed by the increasing numbers of programs. Also, from an efficiency standpoint it did not make sense to spend the same amount of time with programs that were performing well as those that really needed additional attention. The birth of differential monitoring occurred which at that time it was called inferential inspections (Fiene & Kroh, 2000). Different terminology, same concept.
Since then, differential monitoring has two basic methodologies that have been used successfully over the years: risk assessment and key indicators. The two methodologies have the same results, shortened or abbreviated reviews but they differ in their approaches. Risk assessment as the name implies identifies specific standards that place clients/children at greatest risk or morbidity or mortality if not complied with. Key indicators are specific standards that statistically predict overall regulatory compliance with all rules. Each has their place in the differential monitoring approach depending on the jurisdictions' emphasis. Most recently, to balance the emphasis on regulatory compliance has been the introduction of quality indicators which are specific standards drawn from quality

initiatives, such as professional development, program quality tools, and quality rating & improvement systems.

It is and always has been recommended that these methodologies be used together and not separately. This final study undertaken in the Province of Saskatchewan completes the cycle of doing just that in developing a fully functional differential monitoring system with key licensing and quality indicators as well as risk assessment rules.

THE STUDY DESIGN AND METHOD

The design of this study was to provide a validation study of the use of the Saskatchewan Early Care and Education Quality Key Indicators Tool. A convenience sample was selected in which a good variation of overall quality would be present. There were to be three buckets of quality: High, Middle, and Low. These would be defined via ERS scores. Because this was a validation study it was critical to have sufficient variation in the overall quality of programs to test the sensitivity of the new assessment tool.

The below table (Table 1) provided the guidance to the Saskatchewan Ministry of Education policy staff in determining how to collect the program quality data for the research pilot study related to early childhood quality indicators.

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Table 1: Selection Process for Study Programs

Quality	Center	Class room	Ages	Levels	ERS	SKEC PQI
High	10	30	10	Infant	A	1
			10	Toddler	B	2
			10	Preschool	C	3
Middle	10	30	10	Infant	A	1
			10	Toddler	B	2
			10	Preschool	C	3
Low	10	30	10	Infant	A	1
			10	Toddler	B	2
			10	Preschool	C	3

Notes:

A = ITERS (Infants) (B-1yr)
B = ITERS (Toddlers) (1yr-2yrs)
C = ECERS (Preschoolers) (3+yrs)
1 = SKECPQI/Infant (QI items 1-5, 7, 9-10)
2 = SKECPQI/Toddler or Preschool (QI items 1-5, 7, 9-10) or (QI items 1-6, 8-10)
3 = SKECPQI/Preschool (QI items 1-6, 8-10)
SKECPQI = Saskatchewan Early Childhood Program Quality Indicators tool

A total of 6 trained data collectors were needed, 3 for the ERSs and 3 for the SKECPQI. Each observer collected data from 30 classrooms. A data coordinator was utilized who collected all the data, reviewed the scores from the various tools and sent them to NARA. The data collectors were not aware of which centers are in which group, such as High, Middle, or Low.

See the Appendix for the Draft of the SKECPQI tool that was used during data collection.

As said earlier, this study involves the validation of the Saskatchewan Early Childhood Quality Indicators Tool (SKECPQI) and involved the collection of new data utilizing the new tool and collecting Early Childhood Environmental Rating Scale (ECERS/ITERS) data as well. Independent contract staff were trained in the use of the SKECPQI as well as having had training on the ECERS/ITERS and were proficiently reliable on the ECERS/ITERS.

A sample of 30 childcare programs who volunteer to be part of this study was selected with 1/3 identified as high quality, 1/3 identified as medium quality, 1/3 identified as low quality. Each program had both the SKECPQI and the ECERS/ITERS administered to them utilizing two independent observers. The data from the SKECPQI was compared to the ECERS/ITERS to determine the relationship between the two/three scales. The research hypothesis is that there will be a positive relationship between the two/three scales in which those programs that score high on the SKECPQI will score high on the ECERS/ITERS and those that score low on the SKECPQI will score low on the ECERS/ITERS. The ECERS/ITERS will be used as the reference tool for establishing the validity of the SKECPQI.

A training program and all necessary revisions to policies and procedures was conducted as part of this project by a NARA Consultant on both phase 1 and 2. It will be determined later if the SKECPQI will be administered on an ongoing basis by contracted staff or by Ministry staff. Reporting templates were developed as part of this implementation stage. The implementation stage was evaluated to make certain that all components are in place and working as they should.

Timeline: Phase 1: 6 months; Phase 2: 9 months; Training and Implementation Phase: 12 months, will overlap with phase 1 and 2 and extend beyond both. The total time frame will be 24 months (about 2 years), this will include the final report and final evaluation of the implementation stage

RESULTS

The ECERS and ITERS were used to validate the new Saskatchewan Early Care and Education Quality Indicators Tool (SKECPQI). This is standard procedure when conducting a validation study, a recognized empirically based and accepted standard tool is used in correlational analyses to determine if the new tool is measuring the same dimensions as the standardized tool.

The target tool, the Saskatchewan Early Care and Education Quality Indicators, was to be validated against the ECERS and ITERS to determine if there was a quality relationship between the two tools.

The validation analyses involved detailed correlational analyses between the various scales to determine if a relationship existed and how strong that relationship was. But before delving into this relationship and these analyses, an additional analysis was performed given the sophisticated nature of the Saskatchewan monitoring system. Saskatchewan's Ministry of Education's designed differential monitoring system is by far the most analyzed of all jurisdictions to date, so it was suggested to take advantage of this level of detail and build in an additional series of analyses to further test the regulatory compliance theory of diminishing returns in conducting this study. By doing so, Saskatchewan joins the ranks of the Provinces of Alberta and Ontario, the US States of Georgia and Washington, and the US

National Head Start program in conducting studies to either confirm or not this theory of regulatory compliance (please see the NARA website on key indicators which contains all the research reports). The following results delineate the data from that portion of the study.

As part of the data collection in addition to collecting data on the ECERS and ITERS as well as the Saskatchewan Early Childhood Program Quality Indicators scale, a summary sheet containing regulatory compliance data was also obtained on each program. These data contained essential demographic information as well as violations from the last inspection along with a rating of the program which was cross referenced to the regulatory compliance data to generate a Regulatory Compliance Scale. This Regulatory Compliance Scale (RCS) had four levels of regulatory compliance: Full, Substantial, Medium, and Low. This RCS is like the regulatory compliance structure used in the previous studies in the above-mentioned jurisdictions in the US and Canada and has been further developed as a more valid means for measuring and analyzing regulatory compliance (Fiene, 2022). In the Fiene RCS, the following rubric was used: ***Full = 0 violations; Substantial = 1-3 violations; Medium = 4-9 violations; and Low = 10+ violations.***

The first set of analyses was to determine if a correlation existed between the RCS and the ECERS and ITERS. This was the case with the following results: RCS x ITERS for the infant classrooms = .54; $p < .002$; RCS x ITERS for the toddler classrooms = .42; $p < .03$; and RCS x ECERS for the preschool classrooms = .75; $p < .0001$.

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The second level of analyses (ANOVA) was to determine if the RCS levels of Full, Substantial, Medium, and Low demonstrated any significant differences in the ECERS and ITERS. The results were the following: Infant classrooms: Low = 3.07; Medium = 4.89; Substantial = 5.06; Full = 4.69; $F = 11.43$; $p < .0001$. Toddler classrooms: Low = 3.50; Medium = 4.56; Substantial = 4.62; Full = 5.06; $F = 2.27$; $p < .11$. Preschool classrooms: Low = 2.78; Medium = 4.39; Substantial = 4.90; Full = 5.12; $F = 16.27$; $p < .0001$. Apart from the toddler classrooms, both the infant and preschool classrooms support the regulatory compliance theory of diminishing returns ceiling and plateauing effect when it comes to measuring program quality as one moves up the regulatory compliance scale.

Table 2: Regulatory Compliance Scale (RCS) and ECERS/ITERS Scores

RCS	Infant Classrooms	Toddler Classrooms	Preschool Classrooms
Low	3.07	3.50	2.78
Medium	4.89	4.56	4.39
Substantial	5.06	4.62	4.90
Full	4.69	5.06	5.12
Significance	F=11.43 .0001	F=2.27; .11	F=16.27 .0001

ECERS, ITERS for Infant classrooms, ITERS for Toddler classrooms (n = 90):

The ECERS score ranged from 1.41 to 6.00. The ITERS for infant classrooms ranged from 2.16 to 5.77; and the ITERS for toddler classrooms ranged from 2.14 to 5.90. The respective means for the ECERS, ITERS-Infant classrooms, and the

ITERS-Toddler classrooms were the following: 4.09, 4.39, 4.39. The means and ranges were all consistent.

The correlations of the infant, toddler and preschool classrooms in each of the 30 facilities were the following: Infant and Toddler classrooms = .65; $p < .0001$; Infant and Preschool classrooms = .74; $p < .0001$; and Toddler and Preschool classrooms = .52; $p < .005$. The classrooms demonstrated a great deal of consistency across the various facilities which one would expect.

SKECPQI for Preschool, Infant, and Toddler Classrooms (n = 90):

The SKECPQI score ranged from 13 to 100. The SKECPQI for infant classrooms ranged from 31 to 91 (Mean=60.10); the SKECPQI for toddler classrooms ranged from 13 to 100 (Mean=55.07); and the SKECPQI for preschool classrooms ranged from 25 to 100 (Mean=57.48).

The correlations of the infant, toddler, and preschool classrooms in each of the 30 facilities were the following: Infant and Toddler classrooms = .74; $p < .0001$; Infant and Preschool classrooms = .85; $p < .0001$; and Toddler and Preschool classrooms = .75; $p < .0001$. The classrooms demonstrated a great deal of consistency across the various facilities which one would hope to be the case with this type of tool or scale. Based upon these results, the inter-correlations were extremely high and show a great deal of stability and are a reliable measure of quality indicators.

SKECPQI #2 showed a great deal of promise as a standalone quality indicator. SKECPQI#2 correlated significantly with ITERS (.56; $p < .0001$), and ECERS (.61; $p < .0001$) and with the overall SKECPQI scores for infant classrooms (.88; $p < .0001$), toddler classrooms (.81; $p < .0001$), and preschool classrooms (.90; $p < .0001$). This quality indicator dealt with philosophy, curriculum planning and programming. This is not the first time that such an indicator was an excellent predictor. This result has been the case in other program quality studies as well (Fiene, Greenberg, Bergsten, Fegley, Carl, Gibbons, 2002b).

The SKECPQI scale demonstrated a great deal of robustness in the data distribution and a good deal of variation in the data set. These are the characteristics of a new tool that you would hope to find in the scale construction and implementation.

Regulatory Compliance Data for Each of the Programs (n = 30):

The Regulatory Compliance Scale (RCS) distributions were the following: Full = 13%; Substantial = 20%; Medium = 37%; and Low = 27%. Generally regulatory compliance data are more skewed than this distribution but because of the nature of this study, facilities were deliberately selected breaking them up into these categories/levels.

The Regulatory Compliance Scale (RCS) actual regulatory compliance violations played out in the following table, these results for the average number of violations were statistically significant ($F = 3.69$; $p < .03$):

Table 3: Regulatory Compliance Scale by the Number of Violations

RCS	Regulatory Compliance Means	Number of Facilities
Low	4.75	8
Medium	3.90	10
Substantial	1.60	5
Full	0	4

Comparing the ECERS and ITERS with SKECPQI and Regulatory Compliance (RCS) Data:

These are the correlations between RCS and SKECPQI for infants, toddlers, and preschool classrooms. RCS x PQI for the infant classrooms = .58; $p < .001$; RCS x SKECPQI for the toddler classrooms = .51; $p < .005$; and RCS x SKECPQI for the preschool classrooms = .60; $p < .001$. The SKECPQI clearly demonstrates its relationship with regulatory compliance. Also, when the SKECPQI is compared with regulatory compliance violation data, the correlations are higher than those obtained in comparing the ERSs to regulatory compliance violation data. And, in fact, the SKECPQI when compared with the RCS appears not to have a ceiling or plateauing effect. It would appear that the SKECPQI is measuring quality in a different way since this effect does not appear evident in the RCS distributions. This result will need to be confirmed in other studies to make certain this relationship holds up. This is a first for comparing regulatory compliance data with program quality data. In the past, either a ceiling or plateauing effect was always present when looking at the relationship between regulatory compliance and program quality.

Here are the correlations between SKECPQIs and ERSs for infant, toddler, and preschool classrooms: PQI x ITERS for the infant classrooms = .66; $p < .0001$; PQI x ITERS for the toddler classrooms = .53; $p < .003$; and PQI x ECERS for the preschool classrooms = .66; $p < .0001$. These inter-correlations most suggest that the SKECPQI is a valid tool measuring program quality on a different dimension (quality indicators) than the ERS but measuring quality, nonetheless.

A regression analysis determined that with RCS as the dependent variable, ECERS and regulatory violations were statistically significant at the $p < .0001$ with an $R = .91$. This accounted for practically 75% of the variance in being able to determine regulatory compliance.

DISCUSSION

Last piece of the puzzle in creating a differential monitoring system, that is how this report is being characterized. The Province of Saskatchewan has undertaken all the other methodologies utilized in a differential monitoring approach (Please see the NARA website for these reports, the link is hot linked on the first page of this report). Licensing key indicators and risk assessment rules have been implemented successfully. What remained were the Quality Indicators. This report completes the full cycle of validating these last indicators.

With the completion of this validation study, the Saskatchewan Early Childhood Program Quality Indicators Scale could be adapted by other jurisdictions and utilized as a screener methodology. The reason for suggesting this approach is that all the quality indicators are taken from the Key Indicator Methodology and therefore have predictive value when it comes to determining overall quality (Fiene, 2019a). Also, the indicators are drawn from several early care and education delivery systems and quality initiatives, such as licensing, QRIS, quality scales, accreditation, and professional development.

The other significant finding from this study was the additional confirmation of the regulatory compliance theory of diminishing returns in which the results from this study are consistent with the findings from other studies conducted in Canada and the United States. This continues to be a major finding when it comes to comparing regulatory compliance with program quality and the resulting ceiling and/or plateauing effect related to quality scores. Again, from a public policy viewpoint, this finding has significant implications in how licensing decisions are or should be made.

A very interesting finding which was not expected was the fact that when the SKECPQI scores were compared with the regulatory compliance violation data the usual ceiling/plateauing effect did not emerge as in previous studies when these types of analyses were performed. This result needs further exploration to determine why this occurred. In future studies utilizing the SKECPQI, it will be necessary to do similar analyses with regulatory compliance data to ascertain if this same result occurs. At this point, it is difficult to determine if it is characteristic within the SKECPQI that is producing this result, such as a better balance between regulatory compliance and program quality. Only with further study will we be better able to determine the cause of this different result.

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CONCLUSION

This article will be read with a certain amount of skepticism in that it suggests using differential monitoring on a much broader scale; however, this report is like several other validation studies conducted by NARA over the past decade which have now clearly demonstrated the validity of the differential monitoring approach. And because of these validation studies, the differential monitoring approach has been utilized by many jurisdictions and has been cited in the United States Federal Legislation that reauthorized the Child Care and Development Block Grant. In the legislation, it is suggested but not required that states entertain the use of the approach. Based upon the latest childcare licensing data, it appears that many states have attempted to utilize the approach.

This study fits with the other regulatory compliance theory reports from states and provinces that have been completed over the past decade by NARA. As mentioned in the **Results and Discussion Sections**, this study is the most comprehensive of the group since the Province of Saskatchewan developed not only risk rules and key indicator rules for licensing but also quality indicators that could be used within their differential monitoring system. This is the first demonstration of this comprehensive approach.

This study completes what was to be a three-year effort but turned into a five-year effort because of the COVID19 Pandemic. Each component of this overall project is well documented on the NARA Key Indicator website. The three major results of this study: confirmation of the regulatory compliance theory of diminishing returns, the introduction of the regulatory compliance scale and the introduction of the

Saskatchewan Early Childhood Program Quality Indicators Tool/Scale are all significant contributions to the licensing research literature, but it is this last contribution that needs further development.

The Saskatchewan Early Childhood Program Quality Indicators Tool/Scale is a new program quality tool that is rather robust in measuring quality using key indicators which are taken from various quality initiative studies conducted over the past several decades. The hope is that it will continue within the early care and education field being validated by other researchers and being used to determine the relative scope of program quality in various early care and education settings. We could see the scale being utilized throughout the United States and Canada. It would be an excellent supplement to either the ERS or CLASS tools. It is a simple, straightforward tool that can be easily trained on and administered. It could provide an interesting supplement for licensing staff when they are doing their licensing reviews. In fact, it is intended to be used in conjunction with licensing key indicators and risk rule tools.

Although this was not reported in the **Results Section**, we think it is vitally important to highlight the significant contributions of the licensing staff and others who helped to develop the groupings and levels of regulatory compliance and quality. It was only because of their level of early childhood expertise and their knowledge of the programs that made the sequencing so effective and impactful as an analytical frame of reference.

One last thought is the introduction of the Regulatory Compliance Scale (RCS) as a more logical and robust rubric when comparing regulatory compliance data with program quality. This thought has been presented elsewhere as a

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possible improvement within licensing measurement and monitoring systems (Fiene, 2022). The scale has been piloted in the past, but this is the first formal test of it in a specific jurisdiction.

For additional information regarding this research validation study, please contact: Richard Fiene PhD, Research Psychologist & Regulatory Scientist, Research Institute for Key Indicators, Penn State University, rfiene@rikinstitute.com

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Also, check out the following websites for additional Differential Monitoring Reports: https://rikinstitute.com or https://www.naralicensing.org/key-indicators

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Saskatchewan's Early Learning and Child Care Program Quality Key Indicator Instrument (SKECPQI) The Saskatchewan Program Quality Work Group[1]

INTRODUCTION and BACKGROUND to SKECPQI

Ten Quality Key Indicators (QKI) make up the Saskatchewan's Early Learning and Child Care Program Quality Key Indicator Instrument (SKECPQI). The details about each of the Quality Indicators and data collection instructions in order to obtain the necessary data to determine if a program meets the Key Quality Indicators are delineated below for each quality key indicator. Part 1 - Quality Key Indicators (QKI) 1 – 5 will be collected via record or document review, interviewing individuals, or observation. Part 2 - Quality Key Indicators (QKI) 6 – 10 will be collected via observations in the classrooms throughout the assessment.

These ten quality key indicators were taken from previous studies conducted over the past 40 years by Dr Richard Fiene utilizing the Regulatory Compliance Key Indicator metric (RCKIm) that he developed in the late 1970's. These QKI have held up over time and have now been coupled together into this tool and being pilot tested in the Province of Saskatchewan. The original tool was reviewed by a Provincial Ministry of Education Work Group who met during 2019-2020 and made some revisions to the original tool. All these changes are reflected in this version of the SKECPQI (2023).

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PART 1 – Record/Document Review, Interview, Observation

Quality Indicators

INDICATOR 1): Number of ECE III Educators

Assessors will review staff records to determine the number of staff who have these credentials in early childhood education. Record the number of ECEs with the appropriate qualifications and divide them by the total number of ECEs to come up with a percent for the center.

How to Measure:

Go to the ***Staff Information Summary*** form to obtain the data for this item. There are two columns that will do this. Under Certification: *Certification Date and Certification Level* (Highest ECE Level Certified). The certification date should be earlier than the date of the review and the actual level of the certification. In this case, we are interested in the number of (ECEIII's). Record the number of ECEIII working at least 65 hours/month. Then record the number of total teaching staff working at least 65 hours/month below as well. Teaching staff is defined as staff who have a responsibility for working with the children and the programming. Determine the percentage by dividing the total number of staff into the total number of ECEIII Certified teaching staff, ECEIII Certified teaching staff is the numerator, and the total number of teaching staff is the denominator (ECEIII/Total number of teaching staff x 100% = Percent).

Scoring for PQI 1:

The total number of ECEIII Certified teaching staff ________ (1.1)

The total number of teaching staff __________ (1.2)

Total ECEIII teaching staff divided by the total number of teaching staff _______________ (%).

Then based on the percentage, you can find the score of 1-4 as per the chart below.

Circle the Appropriate Level	***1 = 0 to 25%***	***2= 26 to 50%***	***3 = 51 to 75%***	***4 = 76 to 100%***

INDICATOR 2): Stimulating and Dynamic Environment

The criteria for measuring this are drawn from ***Play and Exploration Guide.*** The program is child centered. Children are viewed as competent learners, and they have the freedom to access classroom materials independently without adult intervention. The children are provided with meaningful choices through activity/learning centers. There is evidence of the children's interests and their projects in the learning environment.

How to Measure:

Below is the checklist of items that should be present to assess if the environment is both stimulating and dynamic for the children. You will want to observe that the following items are occurring in the classroom first. If you do not actually observe it occurring, then check the program plan to find documentation that it normally occurs but you just did not observe today. The checklist items would be found in *Play and Exploration* foundational materials.

<u>Quality Early Learning Environments (Please record all that you observe Y or N):</u>

1. Co-teaching is evident. Y/N _____ (2.1)
2. Children are viewed as competent learners & can access materials independently. Y/N ___ (2.2)
3. Authentic and meaningful materials are used with children. Y/N _____ (2.3)

4. Children are provided with meaningful choices. Y/N _____ (2.4)
5. Children's work, art and photos are displayed respectfully. Y/N _____ (2.5)
6. Family photos are displayed in the early learning program. Y/N _____ (2.6)
7. Documentation of learning is displayed and discusses holistic development. Y/N _____ (2.7)
8. Environment reflects the culture and beliefs of the children, families and staff. Y/N _____ (2.8)
9. Variety of books & other print materials are available throughout the classroom Y/N ____ (2.9)
10. A variety of writing materials are accessible to children most of the time. Y/N _____ (2.10)
11. There is evidence of the children's interests & projects in the classroom. Y/N ___ (2.11)

Scoring for PQI 2:

Total up the number of items where you recorded a "Y" above that you observed (curriculum or in classrooms), divide by 11 x 100% to come up with a percent and record here _______________ %. Then based on the percentage, you can find the score of 1-4 as per the chart below.

Circle the Appropriate Level	***1 = 0 to 25%***	***2= 26 to 50%***	***3 = 51 to 75%***	***4 = 76 to 100%***

INDICATOR 3): Developmentally Appropriate Curriculum Based on Assessments of Each Child

The key for this quality key indicator is that the program is following an individualized prescribed planning document when it comes to curriculum. It does not mean it is a canned program, in fact, it shouldn't if it is based upon the individual needs of each child's developmental assessment. The assessor will ask to see what is used to guide the curriculum. There should be a written document that clearly delineates the parameters of the philosophy, activities, guidance, and resources needed for the particular curricular approach. There should also be a developmental assessment which is clearly tied to the curriculum. The developmental assessment can be home-grown or a more standardized off-the-shelf type of assessment, the key being its ability to inform the various aspects of the curriculum. The purpose of the assessments is not to compare children but rather to compare the developmental progress of individual children as they experience the activities of the curriculum.

The following key elements should be present when assessing this quality indicator.

- 1) The program practices emergent curriculum, allowing the interests of the children to determine the learning content. The curriculum is informed by individual developmental assessments of each child in the respective classrooms.
- 2) The children and educators are co-learners in the exploration of projects.
- 3) Learning activities of the children are documented, displayed in the learning environment and used to plan further learning activities. This can be assessed developmentally.

How to Measure:

Take a sample of 10 individual children's records and consider the above three elements for EACH record. You should be asking yourself if there is a clear link between an assessment and the developmentally appropriate curriculum so that an individualized learning approach is being undertaken and each child's developmental needs are taken into consideration. These records could be formal, such as portfolios kept for each child or a more informal, anecdotal type of record keeping. The key is that there is a record that can be looked at. It is not adequate if the teacher says they do it from memory – it needs to be written down and documented.

Cross check the child's record to the actual curriculum. Record all the instances (Y's) in which this occurs. All three blocks need to be checked for each record (1-10).

Emergent Curriculum is Practiced (3.1)

1	2	3	4	5	6	7	8	9	10
Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N

Key Element 1 +

Children and Educators are Co-learners (3.2)

1	2	3	4	5	6	7	8	9	10
Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N

Key Element 2 +

Learning Activities are Documented and Displayed and Used to

Plan Future Learning (3.3)

1	2	3	4	5	6	7	8	9	10
Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N

Key Element 3 +

All three key elements must have a Y to get an overall score of Y. If all three key elements have a Y for that individual record, then record Y in the corresponding block in the overall score.

1 Ys =	2 Ys =	3 Ys =	4 Ys =	5 Ys =	6 Ys =	7 Ys =	8 Ys =	9 Ys =	10 Ys =

= Total of All Three Key Elements (3.4)

Scoring for PQI 3:

The number of positive records (all Ys for all three elements) where there is a crosswalk from developmental assessment to curriculum __________

Percent of positive records (all Ys) (divide the number of positive records by 10 x 100%) ____________ %. Then based on the percentage, you can find the score of 1-4 as per the chart below.

Circle the Appropriate Level	***1 = 0 to 25%***	***2= 26 to 50%***	***3 = 51 to 75%***	***4 = 76 to 100%***

INDICATOR 4): Opportunities for Staff and Families to Get to Know Each Other

There should be activities both within the center as well as off site where staff and parents have opportunities to meet and greet each other. Communication with family members is documented and enables early childhood providers to assess the need for follow-up. Early childhood providers hold regular office hours when they are available to talk with family members either in person or by phone.

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Family members are encouraged to lead the conversation and to raise any questions or concerns.

How to Measure:

Look for the following 3 examples in policies developed by the program and determine if they have been carried out with families. It will be necessary to interview staff to complete this indicator if you do not find the three examples in policies:

1. The program provides communication, education, and informational materials & opportunities for families that are delivered in a way that meets their diverse needs. Y/N_____ (4.1)
2. The program communicates with families using different modes of communication, and at least one mode promotes two-way communication. Y/N _______ (4.2)
3. The program demonstrates respect and engages in ongoing two-way communication. The program respects each family's strengths, choices, & goals for their children. Y/N ____ (4.3)

Scoring for PQI 4:

Record the number of Yes's (Y's): _______ (Range: 0 – 3) (Divide by 3 x 100% = ______%). Then based on the percentage, you can find the score of 1-4 as per the chart below.

Circle the Appropriate Level	***1 = 0 to 25%***	***2= 26 to 50%***	***3 = 51 to 75%***	***4 = 76 to 100%***

INDICATOR 5): Families Receive Information on Their Child's Progress Regularly Using a Formal Mechanism

Based upon Indicator #3 above, the information gleaned from the developmental assessments should be the focus of the report or parent conference. Parental feedback about the assessment and how it compares to their experiences at home would be an excellent comparison point. All these interactions should be done in a culturally and linguistically appropriate way representing the parents being served.

How to Measure:

Look for the following four examples in policies developed by the program and determine if they have been carried out with families. Record the number of reports completed or parent conferences over the past year. It will be necessary to interview staff to complete this indicator if you cannot determine from records that the conferences or reports were completed.

NOTE: The examples are mutually exclusive and are not additive; the first example is the highest scored, the third example the least scored. After 1-3 are determined, then do the last example.

- 1) The program does have regularly scheduled (at least 2xs/year) parent conferences in which the children's developmental progress is discussed AND provides the family with a report of their child's developmental progress. Y/N _____ (5.1) (Score 3 points). If "Yes" then go to Number 4. If "No", then go to numbers 2 and 3.
- 2) The program has regularly scheduled (at least 2xs/year) parent conferences in which the children's developmental progress is discussed, but it does not provide a report to the parents on their child's developmental progress. Y/N _____ (5.2) (Score 2 points).
- 3) If the program does not have regularly scheduled (at least 2xs/year) parent conferences, does it provide the family with a report of their child's developmental progress. Y/N _____ (5.3) (Score 1 point). Go to Number 4.
- 4) All these interactions are done in a culturally and linguistically appropriate way representing the parents being served. Y/N _____ (5.4) (Score 1 point)

Scoring for PQI5:

Add up the total points based on the Ys; this will range from “0” to “4”. The only way a program can receive a “4”, is if a program has regularly scheduled parent conferences at least 2xs/year and provides the family with a report of their child’s progress; and it is done in a culturally and linguistically appropriate way.

Record the number of points: _______ (Range: 0 - 4)

Total Score for Part 1 = _________

PART 2 - OBSERVATIONS:

For quality key indicators 6, 7 and 8, it is recommended that the licensing consultant refer to the appropriate Environmental Rating Scale (ERS) tool as a reference tool because these indicators are taken directly from these tools. It is also recommended that these be assessed/observed throughout the assessment and not just during key activity times. Please follow the specific instructions and examples as delineated below and in the appropriate ERS tool: ECERS (Items 12 and 13) or ITERS (Item 12). These specific instructions and examples are provided within this tool for ease of administration and data collection. If there are several preschool aged classrooms randomly select one to do your observations.

INDICATOR 6): Educators Encourage Children to Communicate (Preschool Class)

Assessors will need to observe this item when they do their classroom observations. Initially you can ask educators or the director how children are encouraged to communicate but in order to gather reliable and valid information regarding this question/standard, it needs to be observed in the various interactions between staff and children. Things to look for would be more back and forth conversations rather than one-way conversations where educators are telling children what to do. Look for opportunities where children can describe what they are doing, how they feel about what they are doing, and why they are doing particular activities. Educators expand upon children's conversations. These opportunities can occur anywhere in the classroom or outside, such as in dramatic play, tabletop activities or on the playground. Materials should be present that encourage communication such as toy telephones, puppets, flannel boards, dolls and dramatic play props, small barns, fire stations, or dollhouses. These create a lot of conversation among children as they assume many different roles. Children also talk when there is an interested person who listens to them. The staff in a high-quality early childhood classroom will use both activities and materials to encourage growth in communication skills.

How to Measure:

Observe the classroom for a minimum of 15 minutes. Once completed, consider where the classroom falls based on the following scale;
Score the classroom a 1 if the following occur:

- No activities used by staff with children to encourage them to communicate, for example: nontalking about drawings, dictating stories, sharing ideas at circle time, finger plays, singing songs. Y/N _____ (6.1)
- Very few materials accessible that encourage children to communicate. Y/N _____ (6.2)

Score the classroom a 2 if the following occur (If the classroom does not have all 3 indicators but has 2 of the indicators then score this item 1+):

- Some activities are used by staff w/children to encourage them to communicate. Y/N _____ (6.3)
- Some materials are accessible to encourage children to communicate. Y/N ____ (6.4)
- Communication activities are generally appropriate for the children in the group. Y/N _____ (6.5)

Score the classroom a 3 if the following occur (If the classroom does not have both indicators but has one of the indicators then score this item 2+):

- Communication activities take place during both free play and group times, for example: child dictates story about painting; small group discusses trip to store. Y/N _____ (6.6)
- Materials that encourage children to communicate are accessible in a variety of interest centers, for example: small figures and animals in block area; puppets and flannel board pieces in book area; toys for dramatic play outdoors or indoors. Y/N _____ (6.7)

Score the classroom a 4 if the following occur (If the classroom does not have both indicators but has one of the indicators then score this item 3+):

- Staff balance listening and talking appropriately for age and abilities of children during communication activities, for example: leave time for children to respond; verbalize for child with limited communication skills. Y/N _____ (6.9)
- Staff link children's spoken communication with written language, for example: write down what children dictate & read it back to them; help them write notes to parents. Y/N _____ (6.10)

Scoring for PQI 6:

Total up the number of "Y's" and record the appropriate level. In order for a classroom to receive a particular score, all "Y's" must be checked for the appropriate level (1 - 4) from above or partial credit given in order to obtain a "+". If there is a "+" please also mark it in the box.

Circle the Appropriate Level	***1***	***2***	***3***	***4***

INDICATOR 7): Infant Toddler Observation (if applicable)

(Infant Classroom)

NOTE: If there is an infant, toddler or combined infant/toddler classroom that needs to be assessed, then use the following ITERS item directly from the ITERS Tool (Item 12), if there is not an infant toddler classroom, then skip to Indicator 8.
Conversations and questions should be used with all children, even young infants. Conversations using verbal and nonverbal turn-taking should be considered when scoring. Most conversations and questions initiated by infants will be nonverbal, such as widening of baby's eyes or waving arms and legs. Observe staff response to such nonverbal communication. For infants and toddlers, the responsibility for starting most conversations and asking questions belongs to the staff. As children become more able to initiate communication, staff should modify their approach in order to allow children to take on a greater role in initiating conversations and asking questions. Staff should provide answers to questions used by children if children cannot answer, and as children become more able to respond, questions should start to include those that the child can answer. If there was not an infant classroom, skip this Indicator and please note that here and on the summary score sheet by marking N/A: _____
How to Measure:
Observe the classroom for a minimum of 15 minutes. Once completed, consider where the classroom falls based on the following scale;
Score the classroom a 1 if the following occurs:

- Staff never initiate turn-taking conversations with children, for example: rarely encourage baby to babble back; simple back and forth exchanges with verbal children never observed. Y/N _____ (7.1)
- Staff questions are often not appropriate for children, or no questions are asked, for example: too difficult to answer; carry a negative message. Y/N _____ (7.2)

- Staff respond negatively when children can't answer questions, for example: "You should know this"; "You did not listen". Y/N _____ (7.3)

Score the classroom a 2 if the following occurs (If the classroom does not have all 3 indicators but has 2 of the indicators then score this item 1+):

- Staff sometimes initiate conversations with children, for example: babble back and forth with baby; copy baby's sounds; respond to baby's crying with verbal response; have short back and forth toddler interactions. Y/N _____ (7.4)
- Staff sometimes ask children appropriate questions and wait for the child to respond, for example: ask baby if she likes toy and pay attention as baby smiles; ask toddler what he is eating and wait for him to think of word. Y/N _____ (7.5)
- Staff respond neutrally or positively to children who can't answer questions. Questions asked are sometimes meaningful to children, for example: child responds with interest; does not ignore staff questions. Y/N _____ (7.6)

Score the classroom a 3 if the following occurs (If the classroom does not have all 4 indicators but has 2 or more of the indicators then score this item 2+):

- Staff initiate engaging conversations with children throughout the observation, for example: show enthusiasm; use tone that attracts child's attention. Y/N _____ (7.7)
- Staff often personalize questions and/or conversations for individual children, for example: talk about children's families, preferences, interests; what they are playing with; what they did over weekend; child's mood; use child's name. Y/N _____ (7.8)
- Staff often pay attention to children's questions, verbal or nonverbal, and answer in a satisfying manner for the child. Y/N _____ (7.9)
- Staff ask questions in which children show interest in answering, for example: make the questions funny or

mysterious; use attractive tone; meaningful and not too difficult to answer. Y/N _____ (7.10)

Score the classroom a 4 if the following occurs (If the classroom does not have both indicators but has one of the indicators then score this item 3+):

- Staff frequently have turn taking conversations with children throughout the observations. Many appropriate questions are used throughout the observation, during both play and routines. Y/N _____ (7.11)
- Staff ask children appropriate questions, wait a reasonable time for child response, and then answer if needed, for example: "Are you hungry? . . . Yes, you are!"; "Where's the ball? . . . These it is! You found the ball". Y/N _____ (7.12)

Scoring for PQI 7:

Total up the number of "Y's" and record the appropriate level. For a classroom to receive a particular score, all "Y's" must be checked for the appropriate level (1 - 4) from above or partial credit given in order to obtain a "+".

Circle the Appropriate Level	***1***	***2***	***3***	***4***

INDICATOR 8): Educators Use Language to Develop

Reasoning Skills (Preschool)

Assessors will need to observe very carefully as this standard can be difficult to determine because it is tying language and cognition together. Again, this opportunity can occur in any setting in or out of the classroom because it is the basis for problem solving through the use of language. Also look for educators redirecting children's conversations when appropriate. Staff should use language to talk about logical relationships using materials that stimulate reasoning.

Through the use of materials, staff can demonstrate concepts such as same/different, classifying, sequencing, one-to-one correspondence, spatial relationships, and cause and effect.

How to Measure:
Observe the classroom for a minimum of 15 minutes. Once completed, consider where the classroom falls based on the following scale;
Score the classroom a 1 if the following occur:

- Staff do not talk with children about logical relationships, for example: ignore children's questions and curiosity about why things happen, do not call attention to sequence of daily events, differences and similarity in number, size, shape, cause and effect. Y/N _____ (8.1)
- Concepts are introduced inappropriately, for example: concepts too difficult for age and abilities of children, inappropriate teaching methods used such as worksheets without any concrete experiences; teacher gives answers w/o helping children to figure things out. Y/N _____ (8.2)

Score the classroom a 2 if the following occur (If the classroom does not have both indicators but has one of the indicators then score this item 1+):

- Staff sometimes talk about logical relationships or concepts, e.g.: explain that outside time comes after snacks, point out differences in sizes of blocks children use. Y/N _____ (8.3)
- Some concepts are introduced appropriately for ages and abilities of children in group, using words and experiences, for example: guide children with questions and words to sort big and little blocks or to figure out why ice melts. Y/N _____ (8.4)

Score the classroom a 3 if the following occur (If the classroom does not have both indicators but has one of the indicators then score this item 2+):

- Staff talk about logical relationships while children play with materials that stimulate reasoning, for example: sequence cards, same/different games, size and shape toys, sorting games, numbers and math games. Y/N _____ (8.5)

- Children are encouraged to talk through or explain their reasoning when solving problems, for example: why they sorted objects into different groups, in what way two pictures are the same or different. Y/N _____ (8.6)

Score the classroom a 4 if the following occur (If the classroom does not have both indicators but has one of the indicators then score this item 3+):

- Staff encourage children to reason throughout the day, using actual events and experiences as a basis for concept development, e.g.: children learn sequence by talking about their experiences in the daily routine or recalling the sequence of a cooking project. Y/N _____ (8.7)
- Concepts are introduced based upon children's interests or needs to solve problems, for example: talk children through balancing a tall block building, help children figure out how many spoons are needed to set a table. Y/N _____ (8.8)

Scoring for PQI 8:

Total up the number of "Y's" and record the appropriate level. In order for a classroom to receive a particular score, all "Y's" must be checked for the appropriate level (1 - 4) from above or partial credit given in order to obtain a "+".

Circle the Appropriate Level	***1***	***2***	***3***	***4***

For quality key indicators 9 and 10 it is recommended that these be assessed/observed throughout the observation period and not just during key activity times. These two quality key indicators should be observed in two-minute blocks over ten sequences for a total of 20 minutes. These two items should also be used with each age group you are assessing.

INDICATOR 9): Educators Listen Attentively When Children Speak

This quality indicator focuses on the early childhood educator(s) looking directly at the children with nods, rephrases their comments, engages in conversations. Children should have the undivided attention of the specific educator they are addressing. Educators should not be looking away or pre-occupied with others. They should be at the child's level making eye contact. The intent is to observe all children and educators in the room.

How to Measure:

Do this in timed 2-minute observations recording each time you observe this occurring. Record at least 10 different observation periods. These do not need to be consecutive in order to fully observe classrooms and educators. Please use the following scale to assess your recordings: Likert Scale (1-4) where 1 = Never/Not at All; 2 = Somewhat/Few Instances; 3 = Quite a Bit/Many Instances; 4 = Very Much/Consistently):
Make the actual recordings using the Likert Scale (1-4) above for each individual observation and record in each cell below.
10 Observations:

1	2	3	4	5	6	7	8	9	10

Scoring for PQI 9:

Once all the observations are made, add up the results from the Likert Scale (1-4) and record the total number here: _________________ (Range: 10 - 40)(Divide this result by 10) = ______________ (1-4)(Round upward or downward to the whole number (3.7 = 4; 2.2 = 2)).

Circle the *Appropriate Level*	*1*	*2*	*3*	*4*

INDICATOR 10): Educators Speak Warmly to Children

This quality indicator focuses on the early childhood educator(s) always engaging in a caring voice and body language with every child. Educators do not use harsh language or commands in speaking to children, but rather again are on the child's level making eye contact. Think of the way Fred Rogers would engage his audience where you always felt you were the most important person in the world when he talked to the TV.

How to Measure:
Do this in timed 2-minute observations recording each time you observe this occurring. Record at least 10 different observation periods. Please use the following scale to make your recordings: (This item is on a Likert Scale (1-4) where 1 = Never/Not at All; 2 = Somewhat/Few Instances; 3 = Quite a Bit/Many Instances; 4 = Very Much/Consistently):
Make the actual recordings using the Likert Scale (1-4) above for each individual observation and record in each cell below.
10 Observations:

1	2	3	4	5	6	7	8	9	10

Scoring for PQI 10:

Once all the observations are made, add up the results from the Likert Scale (1-4) and record the total number here:
_________________ (Range: 10 - 40) (Divide this result by 10) =

___________ (1-4). (Round upward or downward to the whole number (3.7 = 4; 2.2 = 2)).

Circle the *Appropriate Level*	*1*	*2*	*3*	*4*

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SKECPQI Scoring Protocol

LEVEL	Standardized Scores	Actual Scores
High Quality	Mixed Age: 36+ Preschool: 32+ Infant-Toddler: 28+	Mixed Age: _______________ Preschool: ________________ Infant-Toddler: ____________
High - Mid Quality	Mixed Age: 30 – 35 Preschool: 26 - 31 Infant-Toddler: 22 - 27	Mixed Age: _______________ Preschool: ________ InfantToddler: __________
Mid – Low Quality	Mixed Age: 20 – 29 Preschool: 16 - 25 Infant-Toddler: 12 - 21	Mixed Age: _______________ Preschool: ________________ Infant-Toddler: ____________
Low Quality	Mixed Ages: 19 or less Preschool: 15 or less Infant-Toddler: 11 or less	Mixed Age: _______________ Preschool: _______________ Infant-Toddler: ____________

Note:

<u>Members of the Original Saskatchewan Program Quality Work Group are the following:</u>

Ministry of Education: Kim Taylor, Derek Pardy, Cindy Jeanes, Tanya Mengel, Samantha Ecarnot, Karen Heinrichs, Michelle Vellenoweth, Kristin Jarvis, and NARA Consultant: Rick Fiene.

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10/2020; 4/2021; 1/2023; 2/2023; 3/2023 versions

After completing your observations, reviewing all documentation, and interviewing staff, when necessary, please transfer all your results to the Summary Table below. If there was not an infant classroom, please note here, no infant classroom: _____. If there was not a toddler classroom, please note here, no toddler classroom: ______. If there was not a preschool classroom, please note here, no preschool classroom: ______.

Key Q Indicator	***Quality Indicator Content***	***Scale Source***	***Potential Score***	***Actual Score***
QKI 1	Professional Development	NAEYC	1-4	1, 2, 3, 4
QKI 2	The Environment	SK	1-4	1, 2, 3, 4
QKI 3	Curriculum and Assessment	NAEYC	1-4	1, 2, 3, 4
QKI 4	Family Engagement I	QRIS	1-4	1, 2, 3, 4
QKI 5	Family Engagement II	QRIS	1-4	1, 2, 3, 4
QKI 6	Communication (Preschool)	ECERS	1-4 or NA	1, 2, 3, 4, +, NA
QKI 7	*Infant Classroom*	*ITERS*	*1-4 or NA*	1, 2, 3, 4, +, NA
QKI 8	Reasoning Skills (Preschool)	ECERS	1-4 or NA	1, 2, 3, 4, +, NA
QKI 9	Listen Attentively	CIS	1-4	1, 2, 3, 4
QKI 10	Speak Warmly	CIS	1-4	1, 2, 3, 4

Notes:

Use ITERS if: (Infants) (B-1yr)
Use ITERS if: (Toddlers) (1yr-2yr)
Use ECERS if: (Preschoolers) (3yr+)

SKECPQI/Infant (administer QKI items 1-5, 7, 9-10) (Scores 8-32)

SKECPQI/Toddler or Preschool (administer QKI items 1-5, 7, 9-10) (Scores 8-32) or (administer QKI items 1-6, 8-10) (Scores 9-36). Mixed age group (administer QKI items 1-10) (Scores 10-40)

SKECPQI/Preschool (administer QKI items 1-6, 8-10) (Scores 9-36)

All the above 10 quality indicators (SKECPQI) have been taken from other sources having been identified in Quality Indicator Studies conducted by Dr Richard Fiene from 1980 – 2020. Please refer to the source documents for details on their creation: *ECERS, ITERS, QRIS/INQUIRE, CIS/Arnett, NAEYC, SASKATCHEWAN PLAY & EXPLORATION.* For additional information, reports, and publications related to these studies, please go to https://www.naralicensing.org/key-indicators Or https://rikinstitute.com/publications/

On July 27, 2023 this Early Childhood Quality Indicators Project was recognized by the World Forum Foundation as a Child Impact Initiative.

SKECPQI: SASKATCHEWAN EARLY CHILDHOOD PROGRAM

QUALITY INDICATORS CHART/GRAPH

	Scores
QKI1	
QKI2	
QKI3	
QKI4	
QKI5	
QKI6	
QKI7	
QKI8	
QKI9	
QKI10	
TOTAL	

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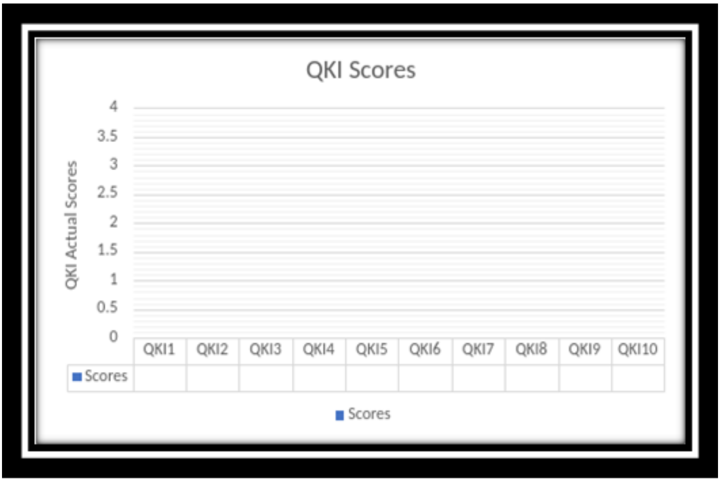

Quality Key Indicators (QKI)	Elements/Items	Data Collection
1	1.	Record Review
2	11	Policy, Records, Interviews
3	4	Policy, Records, Interviews
4	3 . . .	Policy, Records, Interviews
5	4	Policy, Records, Interviews
6	9	Observation
7	12	Observation
8	8	Observation
9	10	Observation
10	10	Observation
TOTAL	**Potential Score = 78**	**Actual Score Obtained = ______**

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The Uncertainty-Certainty Matrix for Licensing Decision Making, Validation, Reliability, and Differential Monitoring Studies

This research abstract will take the Confusion Matrix which is a well-known metric in the decision-making research literature and refocus it on regulatory science within the context of the definition of regulatory compliance and licensing measurement. It will also deal with the policy implications of this particular metric. In this abstract, it is proposed that the Uncertainty-Certainty Matrix (UCM) is a fundamental building block to licensing decision making. The 2 x 2 matrix has been written about in several posts in this blog and is the center piece for determining key indicator rules, but it is also a core conceptual framework in licensing measurement and ultimately in program monitoring and reviews.

The reason for selecting this matrix is the nature of licensing data, it is binary or nominal in measurement. Either a rule/regulation is in compliance or out of compliance. Presently most jurisdictions deal with regulatory compliance measurement in this nominal level or binary level. There is to be no gray area, this is a clear distinction in making a licensing decision about regulatory compliance. The UCM also takes the concept of Inter-Rater Reliability (IRR) a step further in introducing an uncertainty dimension that is very important in licensing decision making which is not as critical when calculating IRR. It is moving from an individual metric to a group metric (See Figures 1 & 2) involving regulatory compliance with rules. The key pieces to the UCM are the following: the decision (D) regarding regulatory compliance and actual state (S) of regulatory compliance. Plus (+) = In-compliance or Minus (-) = Out of compliance. So, let's build the matrix:

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Table 1: Uncertainty-Certainty Matrix (UCM) Logic Model

UCM Matrix Logic		**Decision (D) Regarding**	**Regulatory Compliance**
		(+) In Compliance	(-) Not In Compliance
Actual State (S) of	(+) In Compliance	Agreement	Disagreement
Compliance	(-) Not In Compliance	Disagreement	Agreement

The above UCM matrix demonstrates when agreement and disagreement occur which establishes a level of certainty (Agreement Cells) or uncertainty (Disagreement Cells). In a perfect world, there would only be agreements and no disagreements between the decisions made about regulatory compliance and the actual state of regulatory compliance. But from experience, this is not the case based upon reliability testing done in the licensing research field in which a decision is made regarding regulatory compliance with a specific rule or regulation and then that is verified by a second observer who generally is considered the measurement standard.

Disagreements raise concerns in general, but the disagreements are of two types: false positives and false negatives. A false positive is when a decision is made that a rule/regulation is out of compliance when it is in compliance. Not a good thing but its twin disagreement is worse where with false negatives it is decided that a rule/regulation is in compliance when it is out of compliance. False negatives need to be avoided because they place clients at extreme risk, more so than a false positive. False positives should also be avoided but it is more important to deal with the false negatives first before addressing the false positives.

Let's look at this from a mathematical point of view in the following matrix. In order to better understand the above relationships and determine when ameliorative action needs to occur to shore up the differences between the agreements and disagreements, it is easier to do this mathematically than trying to eyeball it.

Table 2: Uncertainty-Certainty Matrix (UCM) Math Model

UCM Matrix Math Model		**Decision (D) Regarding**	**Regulatory Compliance**	**Totals**
		(+) In Compliance	(-) Not In Compliance	
Actual State (S)	(+) In Compliance	A	B	Y
Of Compliance	(-) Not In Compliance	C	D	Z
Totals		W	X	

Formulae based upon above: Agreements = (A)(D); Disagreements = (B)(C); Randomness = sqrt ((W)(X)(Y)(Z))

UCM Coefficient = ((A)(D)) - ((B)(C)) / sqrt ((W)(X)(Y)(Z)) in which a coefficient closer to 1 indicates agreement (certainty) and a coefficient closer to –1 indicates disagreement (uncertainty). A coefficient closer to 0 indicates randomness. Obviously, we want to see (A)(D) being predominant and very little in (B)(C) which are false positives and negatives where decisions and the actual state of regulatory compliance are not matching. If (WXYZ) is predominant then there is just randomness in the data. Also, not an intended result.

The reason for even suggesting this matrix is the high level of dissatisfaction with the levels of reliability in the results of program monitoring reviews as suggested earlier. If it were not so high, it would not be an issue; but with it being so high the field of licensing needs to take a proactive role in determining the best possible way to deal with increasing inter-rater reliability among licensing inspectors. Hopefully, this organizational schema via the UCM Matrix will help to think through this process related to licensing measurement and monitoring systems.

$$UCM = ((A)(D)) - ((B)(C)) / sqrt((W)(X)(Y)(Z))$$

The above formula provides a means to calculate when action needs to be taken based upon the respective UCM coefficients. A UCM coefficient from +.25 to +1.00 is in the acceptable range; +.24 to -.24 is due to randomness and needs to be addressed with additional inter-rater reliability training; -.25 to –1.00 indicates a severe disagreement problem that needs to be addressed both in reliability training and a full review of the targeted rules/regulations to determine if the specific rule needs additional clarification.

Table 3: Uncertainty-Certainty Matrix (UCM) Licensing Decision Coefficient Ranges

UCM Coefficient	**Licensing Decision**
+.25 to +1.00	Acceptable, No Action Needed, In or Out of Regulatory Compliance Verified through mostly Agreements. (Generally, 90% of cases)
+.24 to -.24	Random, Agreements + Disagreements, Needs Reliability Training. (Generally, 5% of cases)
-.25 to – 1.00	Unacceptable, Mostly Disagreements, Needs Training & Rule/Regulation Revision. (Generally, 5% of cases)

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Figure 1: Kappa Coefficient

Observed agreement

$$\kappa = \frac{p_o - p_e}{1 - p_e}$$

Expected agreement if random judgment

Figure 2: Uncertainty-Certainty Coefficient

$$\phi = \frac{ad - bc}{\sqrt{(a+b)(c+d)(a+c)(b+d)}}$$

$$\phi = \sqrt{\frac{\chi^2}{n}}$$

Let's provide an example of how this could work. A standard/rule/regulation that is common is the following:

Do all caregivers/teachers and children wash their hands often, especially before eating and after using the bathroom or changing diapers?

This is obviously an observation item where the licensing staff would observe in a sample of classrooms in a child care center for a set period of time. During their observations, there were several opportunities where the necessary behavior was required, and the staff complied with the rule and washed their hands. So, on the surface this specific rule was in compliance and there would appear to be full compliance with this rule based upon the observation.

A second scenario is where the observation is made, and the licensing staff observes the child care staff not washing their hands on several occasions. Then this specific rule would be out of compliance, and it would be duly noted by the licensing staff. These two scenarios establish a certain level of certainty during this observation session. However, there are other outcomes, for example, possibly one of the classrooms that was not observed had the opposite finding than what was observed in these particular classrooms. If data were being aggregated and a specific percentage was to be used the final decision about this rule could be different. Now we are getting into the uncertainty cells of the matrix where a false positive or negative could be the result. The licensing staff records the rule as being in compliance when in reality it is not = false negative or the rule is recorded as being out of compliance when in reality it is in compliance = false positive.

Another example which involves either Random Clinical Trials (RCT) or the use of abbreviated inspections (AI) and the results from these two interventions. The decision making in both RCT and AI is basically the same. We want to make sure that the results match reality. Every time an abbreviated review is done the following four regulatory compliance results should occur based upon the UCM matrix: 1) no additional random non-compliance is found; 2) there are no false negatives (abbreviated review finds no non-compliance but in reality there is); 3) when there is non-compliance found in abbreviated inspections, other related non-compliance is found; and 4) lastly the level of false positives (abbreviated review finds non-compliance but in reality there are no other related non-compliances) is kept to a minimum. This last result based upon copious research is that it is difficult to obtain but as the regulatory science moves forward hopefully this will become more manageable.

Hopefully these above examples provided some context for how the Uncertainty-Certainty Matrix (UCM) can be used in making specific licensing decisions based upon the regulatory compliance results.

Uncertainty-Certainty Matrix for Validation and Reliability Studies

The purpose of this part of this research abstract is to explore the possibility of utilizing the Uncertainty-Certainty Matrix (UCM) in validation and reliability studies in licensing decision making. The UCM has been proposed for use in licensing decision making but this would be an extension of this thinking to studies that involve validating licensing decisions such as when key indicators are used in comparison with comprehensive reviews of rules, and in reliability studies to determine individual inspector bias in regulatory compliance.

The basic premise of the UCM is that individual decision-making matches reality. When it comes to regulatory compliance decision making a 2 x 2 matrix can be drawn with the possible outcomes as is indicated in the following table:

Table 4

UCM Matrix Logic		**Decision Regarding**	**Regulatory Compliance**
		(+) In Compliance	(-) Not In Compliance
Actual State of	(+) In Compliance	Agreement (++)	Disagreement (+-)
Compliance	(-) Not In Compliance	Disagreement (-+)	Agreement (--)

In using this table, the hope is that the decision regarding regulatory compliance matches the actual state of compliance where the coefficient is as close to +1.0 as possible, in other words, perfect agreement. So, the agreement cells are heavily weighted. We do not want to see all the cells, both agreement and disagreement cells, equally weighted. That would indicate a random response rate and a coefficient close to 0.0.

But there is another possibility which involves bias on the part of the licensing inspector in which they have certain biases or tendencies when it comes to making regulatory compliance decisions about individual rules. So, it is possible that decisions made regarding regulatory compliance could be either overall (+) positive In-Compliance or (-) negative Not-In-Compliance when in reality the actual state of compliance is more random.

When this occurs, the coefficient falls off the range category and is not between 0 and +/-1.0 because there is no variance detected in the data. It is always biased either positively or negatively.

The UCM can be used for both reliability and validity testing as suggested in the above. Just look for different results. For validity, false positives and negatives should either be eliminated or reduced as well as possible and the remaining results should show the typical diagonal pattern as indicated by the agreement cells.

For reliability, the same pattern should be observed as in the validity testing above but there is an additional test in which bias is tested for. Bias will be ascertained if the patterns in the results indicate a horizontal or vertical pattern in the data with little or no diagonal indication. Bias can be found at the individual inspector level as well as at the standard level or the actual state of compliance.

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In both reliability and validity testing, random results in which each of the cells are equally filled are not a desirable result either. The following tables 5-10 depict the above relationships with results highlighted in red:

Table 5

Valid & Reliable Results	(+) In Compliance	(-) Not In Compliance
(+) In Compliance	Agreement (++)	Disagreement (+-)
(-) Not In Compliance	Disagreement (-+)	Agreement (--)

Table 6

Random Results	(+) In Compliance	(-) Not In Compliance
(+) In Compliance	Agreement (++)	Disagreement (+-)
(-) Not In Compliance	Disagreement (-+)	Agreement (--)

Table 7

Positive Bias Results Individual	(+) In Compliance	(-) Not In Compliance
(+) In Compliance	Agreement (++)	Disagreement (+-)
(-) Not In Compliance	Disagreement (-+)	Agreement (--)

Table 8

Negative Bias Results Individual	(+) In Compliance	(-) Not In Compliance
(+) In Compliance	Agreement (++)	Disagreement (+-)
(-) Not In Compliance	Disagreement (-+)	Agreement (--)

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Table 9

Positive Bias Results Standard	(+) In Compliance	(-) Not In Compliance
(+) In Compliance	Agreement (++)	Disagreement (+-)
(-) Not In Compliance	Disagreement (-+)	Agreement (--)

Table 10

Negative Bias Results Standard	(+) In Compliance	(-) Not In Compliance
(+) In Compliance	Agreement (++)	Disagreement (+-)
(-) Not In Compliance	Disagreement (-+)	Agreement (--)

Tables 5 – 10 demonstrate the different results based upon individual response rates when making regulatory compliance decisions about rules. Table 5 is what needs to be attained and tables 6 – 10 need to be avoided. Only in table 5 are false negatives and positives eliminated or avoided. In tables 6 – 10, false negatives and/or false positives are introduced which is not desirable when making validity or reliability decisions.

Table 6 results clearly indicate that a great deal of randomness has been introduced in the regulatory compliance decision making in which the individual licensing inspector decisions do not match reality. Tables 7 and 8, demonstrate bias in the decision-making process either positively (inspector always indicates in compliance) or negatively (inspector always indicates out of compliance). It is also possible that the standard being used has bias built into it, this is less likely but is still a possibility. The results in Tables 9 and 10 demonstrate where this could happen.

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All these scenarios need to be avoided and should be monitored by agency staff to determine if there are patterns in how facilities are being monitored.

Uncertainty-Certainty Matrix for Differential Monitoring Studies

The purpose of this part of the research abstract is to explore the possibility of utilizing the Uncertainty-Certainty Matrix (UCM) not only in validation and reliability studies in licensing decision making but also with differential monitoring studies. The UCM has been proposed for use in licensing decision making but this would be an extension of this thinking to studies that involve validating licensing decisions such as when key indicators are used in comparison with comprehensive reviews of rules, and in the development of risk rules as part of the risk assessment methodology. This new Differential Monitoring 2x2 Matrix can also be used to depict the relationship between full and substantial regulatory compliance and the nature of rulemaking.

The basic premise of the DMM: Differential Monitoring Matrix is similar to the original thinking with the UCM but there are some changes in the formatting of the various cells in the matrix (see Table 11). When it comes to regulatory compliance decision making a 2 x 2 matrix can be drawn with the possible outcomes as is indicated in Table 11 where each individual rule is either in (+) or out (-) of compliance. Also, there is the introduction of a high regulatory compliant group (+) and a low regulatory compliant group (-) which is different from the original UCM.

Table 11

DMM Matrix	High Group (+)	Low Group (-)
(+) Rule is In Compliance	(++)	(+-)
(-) Rule is Not In Compliance	(-+)	(--)

By utilizing the format of Table 11, several key components of differential monitoring can be highlighted, such as key indicators and risk assessment rules, as well as the relationship between full and substantial regulatory compliance.

Regulatory compliance is grouped into a high group (+), generally this means that there is either full or substantial regulatory compliance with all rules. The low group (-) usually has 10 or more regulatory compliance violations. Individual rules being in (+) or out (-) of regulatory compliance is self-explanatory.

Tables 12-18 below will demonstrate the following relationships:

Table 12 depicts the key indicator relationship between individual rules and the high/low groups as indicated in red. In this table, the individual rule is in compliance with the high group and is out of compliance with the low group. This result occurs on a very general basis and should have a .50 coefficient or higher with a p value of less than .0001.

Table 13 depicts what most rules look like in the 2x2 DMM. Most rules are always in full compliance since they are standards for basic health and safety for individuals. This is especially the case with rules that have been weighted as high-

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risk rules. Generally, one never sees non-compliance with these rules. There will be a substantial number of false positives (+-) found with high-risk rules but that is a good thing.

Table 14 depicts what happens when full compliance is used as the only criterion for the high group. Notice that the cell right below (++) is eliminated (-+). This is highly recommended since it eliminates false negatives (-+) from occurring in the high group. As will be seen in Table 5, when substantial compliance is used as part of the high group sorting, false negatives are re-introduced. If possible, this should be avoided, however in some cases because of the regulatory compliance data distribution it is not always possible where not enough full compliant programs are present.

Table 15 depicts what occurs when substantial compliance is used as part of determining the high group. False negatives can be reintroduced into the matrix which needs to be either eliminated or reduced as best as possible. If substantial compliance needs to be used in determining the high group, then there is a mathematical adjustment that can be made which will impact the equation and essentially eliminate false negatives mathematically (see the research note at the end of this research abstract).

Table 16 depicts what happens if the individual rule is particularly difficult to comply with. Both the high performers as well as the low performers are out of compliance with the rule.

Table 17 depicts a situation where the programs are predominantly in a low group with few at full or substantial regulatory compliance which is indicative of poor performing programs. Very honestly, this is generally not seen in the research literature, but it is a possibility and one to be in tune with.

Table 18 depicts a terrible individual rule which predicts just the opposite of what we are trying to do with programs. Obviously, this rule would need to be rewritten so that it fits with the essence of regulatory compliance in helping to protect individuals.

The following tables 12-18 will depict the above relationships with results highlighted in red:

Table 12

Key Indicators	High Group (+)	Low Group (-)
(+) Rule is In Compliance	(++)	(+-)
(-) Rule is Not In Compliance	(-+)	(--)

Table 13

Risk Rules	High Group (+)	Low Group (-)
(+) Rule is In Compliance	(++)	(+-)
(-) Rule is Not In Compliance	(-+)	(--)

Table 14

Full Compliance	High Group (+)	Low Group (-)
(+) Rule is In Compliance	(++)	(+-)
(-) Rule is Not In Compliance		(--)

Table 15

Substantial Compliance	High Group (+)	Low Group (-)
(+) Rule is In Compliance	(++)	(+-)
(-) Rule is Not In Compliance	(-+)	(--)

Table 16

Very Difficult Rule	High Group (+)	Low Group (-)
(+) Rule is In Compliance	(++)	(+-)
(-) Rule is Not In Compliance	(-+)	(--)

Table 17

Poor Performing Programs	High Group (+)	Low Group (-)
(+) Rule is In Compliance	(++)	(+-)
(-) Rule is Not In Compliance	(-+)	(--)

Table 18

Terrible Rule	High Group (+)	Low Group (-)
(+) Rule is In Compliance	(++)	(+-)
(-) Rule is Not In Compliance	(-+)	(--)

Tables 12 – 18 demonstrate the different results based on the relationship between individual regulatory compliance and if a program is either a high performer or a low performer. These tables are provided as guidance for understanding the essence of differential monitoring and regulatory compliance which has various nuances when it comes to data distributions. This research abstract hopefully can be used as a guide in determining from a data utilization point of view how to make important regulatory compliance policy decisions, such as: ***which rules are excellent key indicator rules, which are performing as high risk rules, importance of full compliance, what to do when substantial compliance needs to be employed, are there difficult rules to comply with, how well are our programs performing, and do we have less than optimal rules that are in need of revision.***

<u>Research Note:</u>

Over the past decade in doing research on the Regulatory Compliance Key Indicator Metric (RCKIm) it has become very clear that false negatives needed to be controlled for because of their potential to increase morbidity and mortality. When dealing with regulatory compliance and full compliance as the threshold for the high grouping variable in the 2 x 2 Regulatory Compliance Key Indicator Matrix (RCKIm) (see matrix below in Table 19), false negatives could be either eliminated or reduced to the point of no concern.

However, if substantial compliance rather than full compliance is used as the threshold for the high grouping variable in the 2 x 2 Regulatory Compliance Key Indicator Matrix (RCKIm) this becomes a problem again. There is the need to introduce a weighting factor. In utilizing the RCKIm, the following equation/algorithm is used to produce the Fiene Coefficient (FC):

FC = ((A)(D)) – ((B)(C)) / sqrt (WXYZ)

This RCKIm needs to be revised/updated to the following to consider the need to again eliminate false negatives being generated by the results of the equation/algorithm; this can be accomplished by cubing C:

FC* = ((A)(D)) – ((B)(C^3)) / sqrt(WXYZ)

By this simple adjustment to cube (C = False Negatives) it will basically eliminate the use of any results in which a false negative occurs when substantial compliance is determined. The table below (Table 19) displays the variables of the Regulatory Compliance Key Indicator Matrix (RCKIm).

Table 19: RCKIm	High RC Group	RC Low Group	
KI In Compliance	A	B	Y
KI Violations	C^3	D	Z
Totals	W	X	

In the above examples, FC can be used when the High RC Group is at full regulatory compliance, but FC* needs to be used when the High RC Group is including substantial as well as full regulatory compliance. By using both equations/algorithms, it better deals with the results of the Regulatory Compliance Theory of Diminishing Returns.

The results should clearly show that only positive (+) coefficients will become Regulatory Compliance Key Indicators versus those rules that do not show any relationship to overall regulatory compliance (0), but now the negative (-) coefficients will more clearly show when any false negatives appear and clearly not include them as Regulatory Compliance Key Indicators (see Figure 2). This is a major improvement in the Regulatory Compliance Key Indicator methodology which clearly demonstrates the differences in the results. It provides a gateway in regulatory compliance data distributions where substantial regulatory compliance is heavily present while full regulatory compliance is not. This could become a problem as the regulatory science field moves forward with the use of the Regulatory Compliance Theory of Diminishing Returns.

Regulatory Compliance Scale Weighted (RCSw)

The Regulatory Compliance Scale (RCS) has been proposed as a more effective and efficient means of measuring regulatory compliance rather than adding up the number of regulatory violations for a specific program. It improves upon the measurement of rules by moving from a nominal to an ordinal level. However, it does have a limitation in that in its present form it is based upon violation frequency data that are not weighted according to the specific risk factor of each rule. This brief technical research abstract will attempt to correct this deficiency by moving the scaling of the RCS by considering weighting and relative weighting of rules based upon the risk of rule non-compliance for clients.

In the following table, three models for RCS are displayed based upon violation data, weights, and relative weights. Violation (Violations Model) data have no weights or another way of thinking about it as all rules have the same weight, a weight of one (1); weighting (Weights Model) is done on a Likert Scale generally using 1-9 scaling, while relative weighting (RWeights Model) is a new approach utilizing the Fibonacci Sequence which uses a 1-100 scaling.

Table Comparing the Regulatory Compliance Scale Models

				Models	
Scale	***Compliance***	***Risk Level***	***Violations***	***Weights***	***RWeights***
7	**Full**	**None**	**0**	**0**	**0**
5	**Substantial**	**Low**	**1-3**	**1-3**	**1-3**
3	**Medium**	**Medium**	**4-9**	**4-6**	**4-19**
1	**Low**	**High**	**10+**	**7+**	**20+**

With these new models proposed, it tremendously improves upon the Regulatory Compliance Scale (RCS) by considering the relative risk of each rule which was not the case in the original RCS. The new RCSw versions do this through the weights or relative weights applied to each rule based upon an equal Weighting Schema or a Fibonacci Sequence. The addition of the weights to the RCS should make for a more accurate determination of regulatory compliance. However, these new models have not been tested empirically as of this writing. It is planned in the upcoming year to test them out side by side and compare them to the original RCS Violation Model.

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Uniform, Differential, and Integrated Program Monitoring

This technical section demonstrates the key similarities and differences amongst uniform, differential, and integrated monitoring. The similarities and differences will be depicted in the following table. The table depicts how each monitoring approach addresses the specific key element presented. Explanations are provided after the summary table. It builds off several other papers* that dealt with regulatory compliance paradigms and the relationship between regulatory compliance and program quality; but this paper deals more specifically with program monitoring systems that are being utilized within the human services.

Program Monitoring System's Key Elements Comparison

Key Element	**Uniform**	**Differential**	**Integrated**
1Risk	Absolute	Relative	Relative
2Rules	Equal	Not equal	Not the focus
3Quality Standards	Not the focus	Not the focus	Focus
4Measurement	Nominal	Nominal	Ordinal
5Approach	Everyone gets the same	Based on need	Open ended
6Weights	None	Equal or Relative	Balance
7Philosophy	Do no harm	Do no harm	Do things well
8Data distribution	Linear	Non-linear	Linear
9Risk/Performance	Risk	Risk	Performance
10Scaling	100 or 0	100 or 0	100 - 0
11Function	Gatekeeper	Gatekeeper	Enabler
12Quality	Structural	Structural	Process
13Compliance	Full	Substantial	Full/Substantial

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1. Risk is defined in a uniform monitoring system with all rules at an equal risk level. In differential monitoring, risk changes to be more relative in that certain rules are more of a concern than others. In an integrated monitoring system with the influx of quality elements, risk is relative also because of this added dimension.
2. Rules are either created equally, which is the case with uniform monitoring systems, or they are not equal in differential monitoring systems where weights are employed to demonstrate the relative risk of specific rules. In integrated monitoring systems, rules are replaced with standards and specific health and safety rules are not the focus.
3. Quality standards are the focal point of integrated monitoring systems but not so with uniform and differential monitoring systems which emphasize health and safety rules.
4. Measurement at both the uniform and differential monitoring systems levels are nominal in which either a rule is in or out of compliance. Integrated monitoring systems which deal with program quality are generally at an ordinal, Likert level of measurement.
5. The approach of each of the monitoring systems varies from everyone gets-the- same for uniform monitoring systems to based-on-need for differential monitoring systems, and more open ended for integrated monitoring systems where both compliance and quality are equally important.
6. Weights are not an issue with uniform monitoring systems because all rules are dealt with equally and therefore are dealt with as strictly violation data with an

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equal weight. With differential monitoring systems that is not the case and is the focal point in this approach where weights can be either equally applied with a Likert Scale with an equal interval or relatively applied with the Fibonacci Sequence. Integrated monitoring systems have a more balanced approach dependent upon the balance of compliance and quality.

7. Philosophy for the uniform and differential monitoring systems deals more with rules and "do no harm" while integrated monitoring systems focus on quality and "doing good" or best practices.
8. Data distributions are linear when dealing with uniform and integrated monitoring systems, but differential monitoring systems have clearly demonstrated a non-linear data distribution based upon the theory of regulatory compliance**.
9. Risk/Performance plays out with risk being predominant with uniform and differential monitoring systems but performance being predominant with integrated monitoring systems where quality is central.
10. Scaling is at a nominal level in both uniform and differential monitoring systems where measurement is based upon either being in or out of compliance with rules (100 or 0). Integrated monitoring systems are at an ordinal level where various levels of quality are being assessed (100 –0).
11. Function of the approach is either as gatekeeper at both the uniform and differential monitoring systems levels and as an enabler at the integrated monitoring systems where it is more of an open system rather than a closed system which is based upon licensing. Open systems

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are represented by voluntary systems dealing with quality standards.

12. Quality at the uniform and differential monitoring systems is more structural than process-oriented, as with integrated monitoring systems. In legal terms, it is the difference between soft data in the case of process-oriented quality as versus hard data in the case of structural quality.
13. Compliance needs to be fully or 100% compliant in uniform monitoring systems, which is not the case in differential monitoring systems where substantial regulatory compliance is sufficient based upon the results of the theory of regulatory compliance**. With integrated monitoring systems there is more of a balancing act between full and substantial compliance levels.

Hopefully, this clarifies how the various program monitoring systems used within the human services are similar and different. This paper should be read with the other technical research papers dealing with regulatory compliance and program quality paradigms which enhance upon these above stated elements.

References:

***Regulatory Compliance Monitoring Paradigms and the Relationship of Regulatory Compliance/Licensing with Program Quality: A Policy Commentary, Fiene, 2023. *Journal of Regulatory Science*. (https://doi.org/10.21423/JRS-V10A239).**

****Treatise on Regulatory Compliance, Fiene, 2019. *Journal of Regulatory Science* https://doi.org/10.21423/jrs-v07fiene**

Regulatory Compliance Scale Trials and Tribulations

The Regulatory Compliance Scale (RCS) was introduced several years ago and has been used in a couple of validation studies for differential monitoring and regulatory compliance's ceiling effect phenomenon. RCS buckets or thresholds were statistically generated based upon these studies, but it is time to validate those buckets and thresholds to determine if they are really the best model in creating a regulatory compliance scale. Since proposing the RCS, there has been a great deal of interest from jurisdictions in particular from Asian and African nations. Additional statistically based trials were conducted, and this brief report is the compilation of those trials over the past year.

The data used are from several jurisdictions that are part of the international database maintained at the Research Institute for Key Indicators Data Laboratory at Penn State University focusing on program quality scores and rule violation frequency data. These data from the respective databases were recoded into various thresholds to determine the best model. The jurisdictions were all licensing agencies in the US and Canada geographically dispersed where both regulatory compliance and program quality data was obtained from a sample of early care and education programs.

METHODOLOGY

The following methodology was used starting with the original RCS buckets/thresholds of Full, Substantial, Medium, and Low regulatory compliance:

Table 1: RCS Models used for analyses

RCS				Models			
		Original	***1***	***2***	***3***	***4***	***5***
	Full	100	100	100	100	100	100
Scaling	***Substantial***	99-98	99-97	99-97	99-98	99-98	99-97
	Medium	97-90	96-90	96-93	97-95	97-85	96-85
	Low	89>	89>	92>	94>	84>	84>

Five alternate models were used to compare the results to the original RCS. The numbers indicate the number of violations subtract from a perfect score of 100. Full regulatory compliance indicates no violations and a score of 100 on the scale. The next bucket of 99-98 indicates that there were 1 or 2 regulatory compliance violations which resulted in a 99-98 score on the scale. This logic continues with each of the models.

The scale score was determined in the following manner: Full Regulatory Compliance = 7; Substantial Regulatory Compliance = 5; Medium Regulatory Compliance = 3; and Low Regulatory Compliance =1. This rubric is how the original RCS scaling was done on a Likert type scale similar to other ECE program quality scales, such as the Environmental Rating Scales.

RESULTS

The following results are correlations amongst the respective RCS Models from Table 1 compared to the respective jurisdictions program quality tool (Quality1-3): ERS or CLASS Tools.

Table 2: RCS Model Results compared to Quality Scales

RCS results	Models	Quality1	Quality2	Quality3
Jurisdiction1	**RCS0**	**.26***	**.39***	**.39***
	RCS3	.21	.32*	.33*
	RCS5	.20	.36*	.33*
Jurisdiction2	**RCS0**	**.76****	**.46****	**---**
	RCS3	.12	-.07	---
	RCS5	.18	-.02	---
	RCSF1	.55**	.29*	---
	RCSF2	.63**	.34	---
Jurisdiction3	RCS0	.19	.18	.16
	RCS3	**.21**	**.21**	**.15**
	RCS5	.18	.16	.07
	RCSF1	.17	.17	.10
	RCSF2	.18	.18	.19
Jurisdiction4	RCS0	.24*	---	---
	RCS3	.28*	---	---
	RCS5	**.30***	**---**	**---**
	RCSF1	.21	---	---
	RCSF2	.29*	---	---
Jurisdiction5	RCS0	.06	-.02	.07
	RCS3	.06	-.01	.05
	RCS5	**.08**	**.00**	**.09**
	RCSF1	.00	-.03	.05
	RCSF2	.05	-.03	.05

*Statistically significant .05 level;

**Statistically significant .01 level.

In the above table starting under Jurisdiction2, two new models were introduced based upon the Fibonacci Sequence (Fibonacci1 = RCSF1; Fibonacci2 = RCSF2) and their model structure is in the following Table 3. The reason for doing this is that the Fibonacci Sequence introduces additional variation into the scaling process.

Table 3: RCS Fibonacci Models

RCS Fibonacci			Models	
		Original	***Fibonacci1***	***Fibonacci2***
	Full	100	100	100
Scaling	***Substantial***	99-98	40	90
	Medium	97-90	20	20
	Low	89>	13	13

A second series of analyses were completed in comparing the RCS models with program quality (Quality1) by running ANOVAs with the RCS models as the independent variable and program quality as the dependent variable (Table 4). The reason for doing this was the nature of the data distribution in which there was a ceiling effect phenomenon identified which would have had an impact on the correlations in Table 2 above. All results are significant at $p < .05$ level with the exception of Jurisdiction2.

Table 4: ANOVAs Comparing the RCS Models with Program Quality

Jurisdictions	Model	Level 1	Level 3	Level 5	Level 7
Jurisdiction1	**RCS0**	**2.85**	**3.34**	**4.05**	**3.40**
	RCS3	3.24	3.23	4.05	3.40
	RCS5	2.73	3.32	3.77	3.40
Jurisdiction2	RCS0	4.81	4.31	4.80	4.10
	RCS3	**4.59**	**4.25**	**4.80**	**4.10**
	RCS5	---	4.26	4.64	4.10
Jurisdiction3	RCS0	4.59	4.68	4.86	4.87
	RCS3	**4.38**	**4.67**	**4.83**	**4.87**
	RCS5	4.38	4.83	4.83	4.87
Jurisdiction4	RCS0	37.81	37.01	44.28	41.96

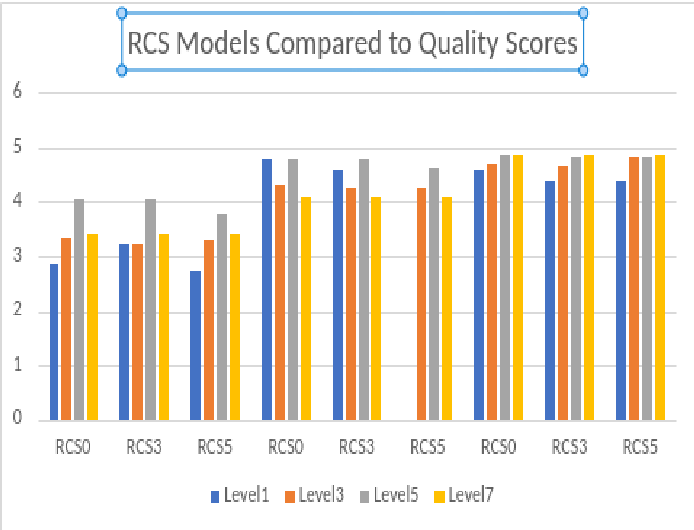
	RCS3	36.57	38.60	44.28	41.96
	RCS5	**33.46**	**36.53**	**43.10**	**41.96**
Jurisdiction5	RCS0	3.93	4.17	4.28	4.07
	RCS3	4.02	4.24	4.28	4.07
	RCS5	**3.75**	**4.13**	**4.26**	**4.07**

DISCUSSION

Based upon the above results, it appears that the original RCS model proposed in 2021 is still the best model to be used, although the Fibonacci Sequence model is a close second in some of the jurisdictions. This model will need further exploration in determining its efficacy as a replacement or enhancement to the original RCS Model.

The bottom line is that the original RCS Model is as good as any and no other model is consistently better than all the rest. The RCS Model does have a slight edge over Regulatory Compliance Violation RCV frequency counts in some jurisdictions but not in others. It is much easier to interpret the relationship between quality and the RCS models than it is to interpret the results from the quality scores and the RCV data distribution. So, the recommendation would be for licensing agencies to think in terms of using this new scaling technique in one of its model formats in order to determine its efficacy. Pairing up RCS and RCV data side by side by licensing agencies would be important studies to determine which approach is the better approach.

The below graphic depicts the relationship between the RCS Models (0, 3, 5) when compared to the quality scores (1-6) clearly showing the ceiling effect and diminishing returns effect phenomenon so typical of regulatory compliance data when compared to program quality. These graphs are from the first three jurisdictions (1, 2, 3) from the above tables.



*Fiene Methodologies Timeline**

1970's Original Conceptual Phase

1971 Original Concept of Fiene Methodologies.

1972 Early Childhood Program Quality Indicator Model ECPQIM created which is a comprehensive program monitoring system measuring regulatory compliance and quality initiatives through math modeling via the Fiene Methodologies.

1973 Research methodology studies begun. Master's Thesis

1974 ECPQIM presentations done nationally.

1975 ECPQIM applied to PA ARC child development programs, EMIS: Ecological Monitoring Information System created (ECPQIM0).

1976 EMIS utilized throughout PA ARC child development programs.

1977 Child Development Program Evaluation (CDPE) monitoring system created and implemented in Pennsylvania.

1978 Research methodology studies completed. Doctoral Dissertation.

1980's State Transfer Phase

1980 Federal Grant to develop Fiene Methodologies to be applied at the state level.

1981 Children's Services Monitoring Transfer Consortium created.

1982 Instrument Based Program (IPM) Monitoring created.

1983 Key Indicator Methodology fully developed. Theory, Implementation, Software are all developed and begin transfer to state agencies.

1984 Validation studies completed on key indicators (KIM), risk assessment (RAM) and differential monitoring (DM) in five states: Pennsylvania, California, West Virginia, Michigan, and New York.

1985 ***Child Care Quarterly*** article published introducing IPM, KIM, RAM, and DM; and the ***New England Journal of Human Services*** article published introducing the Regulatory Compliance Theory of Diminishing Returns.

1986 Expansion of the Fiene Methodologies to other interested states and to Canadian Provinces.

1987 Expansion of the Fiene Methodologies to child welfare services through the publications of ***Instrument Based Program Monitoring for Child Welfare***, published by the University of Southern Maine.

1990's National Transfer Phase

1991 ***Caring for Our Children*** created and published.

1992 NECPA: National Early Childhood Program Accreditation adopts the Fiene Methodologies in developing their early childhood program accreditation system.

1993 ***Stepping Stones for Caring for Our Children*** created utilizing the Risk Assessment Methodology.

1995 ***Solution to the Child Care Trilemma*** published by Child Care Information Exchange utilizing the Key Indicator Methodology to solve the trilemma of affordability, accessibility, and quality.

1998 Creation of the Pennsylvania Office of Human Services Licensing with a research division devoted to the development and implementation of the software development of the Fiene Methodologies

1999 Development of the software for the Fiene Methodologies. Pilot tested but never went statewide.

2000's Professional Development Phase

2000 Capital Area Early Childhood Research and Training Institute (CAECTI) created at Pennsylvania State University.

2001 New coaching intervention implemented and evaluated at CAECTI and extended to Pennsylvania's QRIS KeyStone STARS technical assistance program.

2002 ***Coaching study*** published, Assistant Secretary Office of Planning and Evaluation's ***13 Indicators of Quality Child Care Research Report*** published, and ***Pennsylvania Early Childhood Quality Study*** published. All three reports support the Key Indicator Methodology identification of quality indicators.

2008 New coaching intervention approach implemented in the new Human Development and Family Relations program at Penn State Harrisburg that emphasized a problem solving approach rather than one size fits all.

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2010's National Monitoring and QRIS Validation Phase

2010 Cruise Industry started to use the Key Indicator Methodology in the monitoring of their youth programs.

2012 ***Conceptual Framework for QRIS Validation*** and the ***ECPQIM Differential Monitoring Logic Model and Algorithm*** published.

2013 The state of Washington began to use the term "Fiene Key Indicators". RIKI: Research Institute for Key Indicators created and becomes an affiliated data laboratory to the Edna Bennett Pierce Prevention Research Center at the Pennsylvania State University. RIKI becomes the international repository for the Fiene Methodologies.

2014 Head Start revises their grantee monitoring system utilizing the Key Indicator Methodology resulting in the ***Head Start Key Indicator Tool***.

2015 Exclusive partnership with NARA in the future development of the Fiene Methodologies. This partnership did not apply to software development because at the time NARA did not have that capability. Therefore, a batch-oriented research file analysis plan was utilized with the hope to develop the necessary site-specific online software in the future. ***Caring for Our Children Basics*** published by Administration for Children and Families at the Federal Level.

2017 CCDBG reauthorization with reference to encouraging states to explore differential monitoring and key indicators & risk assessment methodologies. It was determined in a Federal Report that most states were using a form of differential monitoring.

2018 The Province of British Columbia, Canada started to use the term "Fiene Coefficients" to describe Phi Coefficients generated by the Key Indicator Methodology.

2020's Software Development Phase

2020 Final validation studies started with NARA via the Province of Saskatchewan to prove the effectiveness and efficiency of the Fiene Methodologies.

2021 It became clear that the software validation would need to occur with a software company and not with NARA.

2022 Development and implementation of the Early Childhood Program Quality Indicator Tool for the Province of Saskatchewan. First use of the ***Regulatory Compliance Scale*** utilized in the Saskatchewan Studies.

2023 Final Saskatchewan validation report completed and published. This completes the theory for the Fiene Methodologies but the Software still needs to be fully developed and validated moving it from a batch-oriented research file platform. ***Regulatory Compliance Monitoring Systems*** etextbook published.

2024 Exclusive partnership developed with SansWrite/Outlier Tech to validate the Fiene Methodologies: Key Indicator, Risk Assessment, and Differential Monitoring software.

2025 Software Validation Studies proposed.

2026 Proposed launch of the Fiene Methodologies software as part of SansWrite. This will totally complete the Fiene Methodology validation of both the theory through NARA and the software through Outlier Technologies. In moving forward,

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a joint partnership between the two organizations makes the most sense in maintaining the Fiene Methodologies.

2024 and beyond are proposed that is why they are italized and we will see where the journey actually ends. I have made suggestions based upon my background as a research psychologist and regulatory scientist but I have learned over the years that other forces can be more influential than science. So we will see!?

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*The Fiene Methodologies were started to be referred to in the research literature in the 2010's in various jurisdictions. Initially when they were created, the Fiene appellation was not used since it was implied via citations since Fiene was the author and creator of the methodologies.

Glossary to the Fiene Methodologies

Key Indicators. Also known as predictor rules. ***Caring for Our Children Basics*** is an example of key indicators at the national level as well as the Head Start Key Indicator Tool. ***CDPES: Child Development Program Evaluation Scale*** is an example of both licensing and program quality indicators. The ***The Early Care and Education Quality Indicators Scale*** is an example of the program quality indicator tool. Key indicator rules predict overall regulatory compliance. In the most recent ***NARA Licensing Study,*** 10 states use some form of the key indicator methodology. In certain jurisdictions (states and provinces), key indicators have been referred to as Fiene Indicators or the Fiene 13 Indicators as well as the results being termed the Fiene Coefficients. The Assistant Secretary's Office for Planning and Evaluation published a summary of key indicator research entitled: ***The 13 Indicators of Quality Child Care: Research Update*** which highlights the factor analyses of key indicator results from several jurisdictions. The research brief focuses on health and safety standards. The National Center for Health and Safety in Child Care published a ***Parent's Guide to Choosing Safe and Healthy Child Care*** which is based upon the key indicator methodology. There is also a national accreditation program ***NECPA: National Early Childhood Program Accreditation*** based upon the key indicator methodology utilized by the National Child Care Association.

From National Association for Regulatory Administration NARA's materials: Key indicator system. A licensing measurement system utilizing a shortened or abbreviated version of a comprehensive checklist measuring compliance with rules through a statistical methodology. Only key predictor rules are included on an indicator checklist. It is a form of differential monitoring or inferential inspections where only a portion of the full set of rules is measured.

Risk Assessment. Also known as risk assessment rules or weighted rules. These are rules that place clients at greatest risk of morbidity or mortality. They do not predict regulatory compliance as do key indicator rules. Risk assessment rules are determined through a Likert type measurement methodology. ***Stepping Stones to Caring for Our Children*** is an example of a national risk assessment tool. In the most recent NARA Licensing Study, 35 states use some form of the risk assessment methodology.

From NARA's materials: Risk Assessment/Weighting System. A Risk Assessment/Weighting system is a Likert type of measurement that utilizes a modified Delphi technique to determine the relative risk to individuals if there are violations with specific rules. Risk assessment/weighting systems are developed by sending a survey to a selected sample of persons/stakeholders in order for them to rank the relative risk of violation with specific rules.

Differential Monitoring. Also known as abbreviated inspections or inferential inspections. Differential monitoring includes both key indicator and risk assessment methodologies as it relates to this approach. But differential monitoring can be either of these two methodologies or it can focus on the number of inspections that are done, for example, there may be fewer inspections if a provider is eligible for a differential monitoring approach. Differential monitoring when utilized within a validation framework approach may be referred to as the ***Differential Monitoring Logic Model and Algorithm (DMLMA)*** which incorporates a mathematical modeling approach to dealing with the four stages of validation.

From NARA's materials: Differential monitoring/inferential inspections. An abbreviated inspection utilizing a select set of rules to be reviewed. A key indicator system or a risk assessment system are two examples of differential monitoring approaches. The use of differential monitoring/inferential inspections by licensing agencies was developed as a time saving technique and a technique to focus regulatory efforts on facilities that required additional inspections or technical assistance.

Quality Indicators. These are key indicators generated utilizing the key indicator methodology but with program quality standards rather than licensing rules and regulations. Examples include the ***Child Development Program Evaluation Scale*** and the ***The Early Care and Education Quality Indicators Scale***. Both tools go beyond the standard key indicator methodology for rules and regulations.

Early Childhood Program Quality Indicator Model (ECPQIM). The ***ECPQIM*** is a comprehensive program monitoring model that measures regulatory compliance and quality initiatives: professional development systems and Quality Rating & Improvement Systems (QRIS). It utilizes comprehensive tools taken from ***Caring for Our Children***, State Regulations, and the ***Environmental Rating Scales*** as well as the predominant differential monitoring approaches of key indicator and risk assessment methodologies. The ***DMLMA*** mentioned above is a key component of the ***ECPQIM*** in that it provides the mathematical backbone of the model as well as providing the algorithms for the ***Validation Conceptual Framework*** as outlined by Zellman and Fiene (2012).

From NARA's materials: Instrument based program monitoring. A movement within licensing and regulatory administration from qualitative measurement to a very quantitative form of measurement that includes the use of checklists. This move to more quantitative has been encouraged as more and more states develop electronic data systems.

From NARA's materials: Checklist. A checklist is a simple measurement tool that measures compliance with state rules in a yes/no nominal format. Either the facility is in compliance with rules or not in compliance. Generally, there is no partial compliance with checklists. Having regulatory compliance data being at a nominal measurement level creates limitations statistically in the types of tests that can be completed.

From NARA's materials: Rating Scale. A rating scale is a more complex measurement tool in which a Likert type of rating is employed going from more to less or high to low. A rating scale is always used in the development of weighting/risk assessment systems. It is not used in measuring compliance with rules or at least it hasn't been used in the past.

From NARA's materials: Outcome based Systems. Outcome based systems are measurement systems based upon outcomes, not processes. A facility would be assessed by the outcomes it produced with individuals. For example, the number of consumers (children or adults) developing normally, free from abuse, not in placement, involved actively in the community, properly immunized, free from injuries, etc. are outcome-based measures.

I hope you enjoyed your journey in learning about regulatory compliance and came across some new ideas and concepts. For the interested reader, I encourage you to check out the NARA and RIKI websites which contain a great deal more resources to support this book. I have mentioned both repeatedly throughout the text providing their websites.

I plan on continuing to research enhancements to the methodologies which now bear my name to determine the most effective and efficient approaches as we enter Version 2.0.

Thank you,

Rick

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I just couldn't resist sharing with you a potential extension that I hope becomes part of Version 2.0. The theory of regulatory compliance has been critical in the development of differential monitoring. Here it is extended into another arena in the development of the regulatory compliance scale.

The Theory of Regulatory Compliance, Regulatory Compliance Scale, and Differential Monitoring

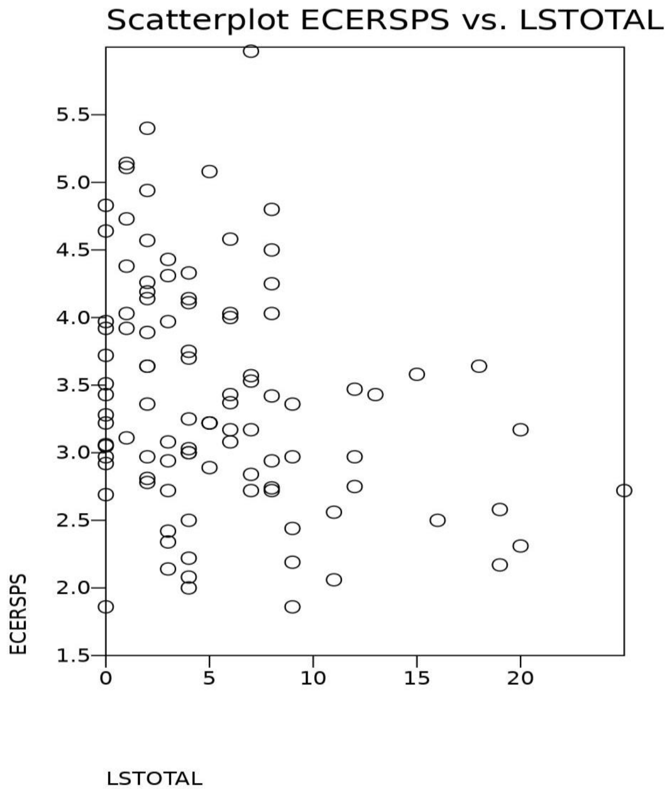
The theory of regulatory compliance has been proven in multiple studies over the past four decades and has been utilized extensively in the creation of differential monitoring and its spin off methodologies of risk assessment and key indicators. In fact, differential monitoring would not have been possible without the theory of regulatory compliance because the paradigm which it replaced, one of one-size-fits-all monitoring or uniform monitoring would have predominated. However, with the theory of regulatory compliance which introduced the importance of substantial regulatory compliance and the search for the right rules/regulations that made a difference in client's lives, rather than emphasizing more or less regulations or rules.

The theory of regulatory compliance has another application when it comes to regulatory compliance measurement in helping to move the licensing field from a nominal based measurement strategy to one of ordinal based measurement. The new measurement strategy is the Regulatory Compliance Scale (RCS) and it is depicted in the following table.

RCS	*Compliance*	*Risk*	*Model*	*Model*
Scale	***Level***	***Level***	***Violations***	***Weights***
7 = A	**Full**	**None**	**0**	**0**
5 = B	**Substantial**	**Low**	**1-3**	**1-3**
3 = C	**Medium**	**Medium**	**4-9**	**4-6**
1 = D	**Low**	**High**	**10+**	**7+**

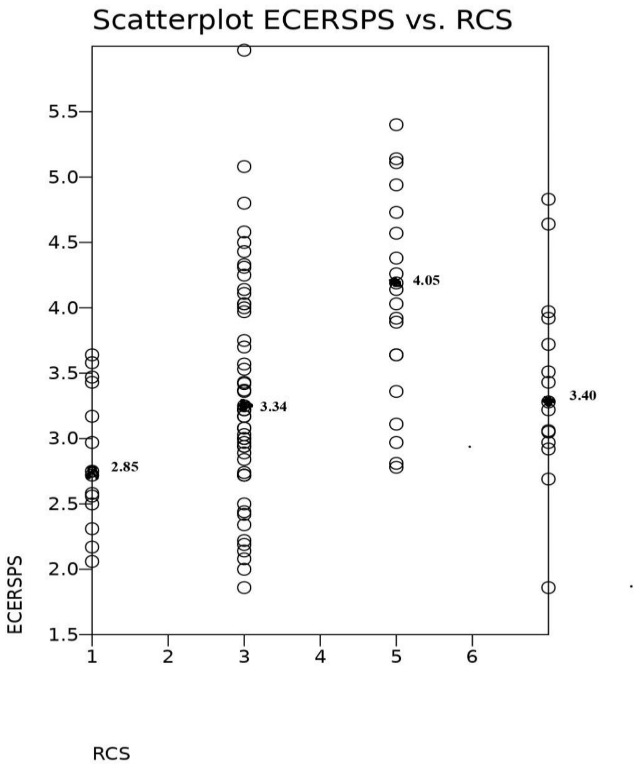
The above table needs some explanation. The first column is the proposed ordinal scale similar to other scales utilized in the program quality measurement research literature on a 1 – 7 Likert Scale where 7 = Full Regulatory Compliance, 5 = Substantial Regulatory Compliance, 3 = Medium Regulatory Compliance, and 1 = Low Regulatory Compliance. It could also be thought of as an Alpha Scale of A – D as well. The next column has the compliance levels that run from full 100% regulatory compliance to low regulatory compliance. The third column depicts the risk level from none to high which corresponds with the compliance levels. The next two columns depict two models, one unweighted and one in which the rules are weighted with corresponding weights. These models are based upon the two prevailing approaches to rank ordering rules or regulations in the research literature.

The following figures will depict how the scale was conceived based upon empirical evidence in the various studies supporting the theory of regulatory compliance. The first figure shows the actual individual violation data (LSTOTAL) of the programs compared to their corresponding ECERS (ECERSPS) scores. There is not a significant relationship between the two as depicted in the graphic.



The following figure below depicts what occurs when the individual violation data are grouped according to the theory of regulatory compliance in which a substantial compliance category is introduced and the data are moved from a nominally based metric to an ordinally based metric of full, substantial, medium, and low regulatory compliance categories (RCS). This grouping more clearly reflects the theory of regulatory compliance. It also clearly demonstrates the ceiling effect which is an outcome of the theory of regulatory compliance in which substantial and full regulatory compliance levels are basically equivalent when quality is taken into account. Or at the extreme level which is depicted here where full regulatory compliance quality scores are actually lower than the substantial regulatory compliance quality scores. A footnote about the figures and the scaling: the scales for the first figure are on a lower to higher progression but the higher LSTOTAL represents higher non-compliance where the second figure is also based upon lower to higher scaling but the higher scores represent increased quality (ECERSPS) and increased regulatory compliance (RCS). So, in reading the change from left to right, the two figures are reversed images of each other. This is just a quirk of the scaling and not a mistake in the plotting of data.

The RCS has been pilot tested in both the non-weighted and weighted models and based upon these studies it appears to be more effective in distinguishing quality amongst the various categories rather than utilizing violation count data. This would be a significant improvement when it comes to licensing measurement. Of course, additional replication studies need to be completed before it would be recommended as a new Scale to be used for making licensing decisions.



The above figure is dramatically different than the prevailing paradigm which predicts a linear relationship between regulatory compliance and quality which is the paradigm of a uniform monitoring approach. The above results clearly indicate a reconsideration with the introduction of substantial regulatory compliance as an important contributor to overall quality if not the most important contributor to quality. As stated above, these findings have been replicated in several studies conducted over the past several decades.

This would be a major paradigm shift in moving from individual violation data counts to an ordinal scale metric but it does warrant additional research. The problem with individual violation data is that it doesn't take into account the relative risk of the individual rule which could place clients at increased risk of morbidity or mortality. Risk assessment has worked really well when coupled with key indicators in the differential monitoring approach and it appears to be an asset in the development of a Regulatory Compliance Scale (RCS).

And here is another thought for you to think about when it comes to risk assessment for Version 2.0:

Could the Fibonacci Sequence be Superior to the Equal Interval Weighting for Risk Assessment?

Risk assessment (RA) has generally used a 3 x 3 matrix similar to the one depicted in Table 1 below where an equal interval weighting was utilized in describing the nine cells that constituted the 3 x 3 matrix. The matrix considers the risk levels and compares that to the probability of the actual risk occurring, so there were nine possibilities (1 – 9).

Table 1: RA Likert Absolute Equal Interval Weighting

Uniform Risk		Risk Levels		
		High	**Medium**	**Low**
Probability of Occurring	**High**	9	6	3
	Medium	8	5	2
	Low	7	4	1

More recently, a proposed change has been suggested to utilize the Fibonacci Sequence in place of the equal interval weighting. There is a great deal of merit in considering this because the Fibonacci Sequence has an interesting effect in introducing a differential risk function rather than a more uniform risk as is the case with equal interval weighting as depicted in table 1. In table 2, it is clear the Fibonacci Sequence has a tremendous impact on the increasing value of the various risk/probability cells within the 3 x 3 matrix. It mirrors the increasing risk, which considers the risk already present in the previous cell and then increases it by the next numeric increase. This increase changes markedly as the risk/probability goes up by a factor of over 10 at the highest risk level. The nine cells range from 1 – 100 rather than 1 - 9.

Table 2: RA Relative Weighting: The Fibonacci Sequence

Differential Risk		Risk Levels		
		High	**Medium**	**Low**
Probability of Occurring	**High**	100	13	3
	Medium	40	8	2
	Low	20	5	1

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The above sequence is not an exact Fibonacci Sequence and modifies the cell results at the high-risk levels to accentuate this level. A potential proposal is depicted in table 3 in how this could play out with the weighting of rules/regulations related to the health and safety of clients and their relative risk of mortality and/or morbidity because of non-compliance with such rules/regulations either directly or indirectly.

Table 3: RA Relative Weighting: The Fibonacci Sequence Proposal

Differential Risk		**Risk Levels**		
		Direct (Causality)		**Indirect (Correlation)**
		Mortality	**Morbidity**	**Mortality/Morbidity**
		High	Medium	Low
Probability of Occurring	High	100	13	3
	Medium	40	8	2
	Low	20	5	1

This proposal needs to be tested and compared to the more prevalent equal interval weighting approach to see if it is a better predictor in identifying the risk level of rules and regulations when it comes to health and safety.

Some final thoughts about the enhancements for DMS 2.0 that I think are important take aways from what we are learning in moving from DMS 1.0 to DMS 2.0.

Relative weighting is a group exercise, not an individual one which is the case with absolute equal interval weighting as represented in DMS 1.0. This aligns with the latest research in the psychological literature about how much more effective a group-oriented process is when statistically comparing consensus on a new concept, such as weighting rules/regulations.

The theory of regulatory compliance highlighted the importance of substantial regulatory compliance as being as effective as full regulatory compliance and in some cases more effective when it comes to identifying quality programs. This result has led to a major revision in the development of a scoring system for regulatory compliance, the Regulatory Compliance Scale which reflects the theory.

There appears to be an important relationship between relative weighting and substantial compliance. In DMS 1.0 it was necessary to make adjustments to the key indicator methodology when substantial compliance was introduced into the high regulatory compliance group. It increased the number of false negatives. In an unweighted or an absolute equal interval weighting approaches this makes sense because higher risk rules may slip into the equation. The work around was two-fold: 1) Only include full regulatory compliance programs in the high group or 2) Increase the false negative cell to the point that it was relatively impossible not to include the results from this cell because of regulatory compliance non-compliance.

However, with relative weighting, this is not the case. The relative weighting because of the increased variance in the data and pushing the regulatory compliance scale that accounts very sensitively to high-risk rules. This is not the case with unweighted or absolute equal interval weighting approaches.

A real advantage in using the regulatory compliance scale is that it moves licensing measurement from a nominal to an ordinal level of measurement based upon the theory of regulatory compliance where there are four levels of regulatory compliance: full, substantial, medium, and low. These levels fit perfectly with the theory, especially with the introduction of the substantial regulatory compliance level as its own individual level.

DMS 1.0 clearly demonstrated the importance of the Regulatory Compliance Scale. The limitations of just using violation counts were demonstrated in DMS 1.0 as well and should be replaced now with relative weighting within the Key Indicator methodology.

Risk rules are generally always in compliance. Because of their greater chance to be associated with mortality or morbidity, these risk rules are usually not out of compliance. Key Indicator rules are generally somewhere in the mid-range when it comes to regulatory compliance. Not particularly high non-compliance but also no high compliance either; they are generally somewhere in between and to be key indicator rules they are generally in compliance with the high regulatory compliant group and out of compliance with the low regulatory compliant group. So, these are the good discriminator rules in determining overall comprehensive regulatory compliance. In conclusion, full regulatory compliance equates to a healthy and safe environment, but it does not necessarily mean it is of the highest quality. Within a regulatory compliance schema, substantial compliance appears more related to program quality. Risk assessment rules are always in regulatory compliance in either one of these scenarios.

The Risk Rule Matrix generally has risk values that fall within the mid risk level with fewer instances in the high and low risk levels. In general rule of thumb is 25% low risk, 50% mid level

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risk or higher, and 25% high risk or lower; however, there are jurisdictions which weight their rules and regulations a bit higher and you will see a higher percentage in the higher risk level. In DMS 2.0, these results will need to be monitored closely to see how this plays out with relative weighting in comparison to equal interval weighting.

And lastly, the regulatory compliance scale which moves licensing measurement from a nominal level to an ordinal level provides an enhanced measurement strategy more similar to the program quality scales such as the Environmental Rating Scales and the CLASS. It is a major improvement over just using violation count data but still needs additional empirical evidence to continue to prove its efficiency and effectiveness, especially now with the introduction of relative weighting of rules and regulations.

Summary generated by CoPilot:

- Purpose: The eHandBook provides an introduction to regulatory compliance, licensing measurement, and program monitoring systems for researchers, administrators, and policymakers.

- Content Overview: It covers topics such as conceptual frameworks, instrument design, program quality, coordinated monitoring, and future directions.

- Historical Context: The preface discusses the evolution of regulatory science and the development of licensing measurement methodologies over the past 50 years.

- Target Audience: The book is intended for those involved in regulatory science, particularly in early care and education, and is part of the NARA Licensing Curriculum.

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About the Author:

After a long career in governmental service and academia, mostly in Pennsylvania; and consulting, nationally and internationally, Dr Rick Fiene continues to write and research about regulatory science topics (such as measurement, instrument development, math & statistical modeling, differential monitoring, risk assessment, key performance indicators) as they relate to early care and education, the human services, and has been delving into other social sciences as well.

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