Oregon DMLMA, Risk Assessment, & Key Indicator Blueprint Report

Richard Fiene, Ph.D.

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ABSTRACT

This report will provide a blueprint for Oregon's Early Care and Education/Child Care program monitoring system in developing a Differential Program Monitoring, Risk Assessment, and Key Indicator approach to help streamline their present licensing process. The report will be organized into the following major headings: an introduction to the differential monitoring methodology; how key indicators and risk assessment fit into the larger program monitoring of early care and education programs; how key indicators and risk assessment will be applied to Oregon's system in particular; the technical aspects of differential monitoring, risk assessment and key indicator methodology, the sample to be drawn from the population, potential results from the analyses; a timeline for this developmental effort; and potential cost savings from the approach.

INTRODUCTION

The Risk Assessment, Key Indicator, and Differential Program Monitoring Methodologies were developed to help streamline the program monitoring of early care and education programs. It was first applied in child care licensing (Fiene & Nixon, 1985) but has been used in many other service types, such as: Head Start Performance Standards (Fiene, 2013a), National Accreditation (Fiene, 1996), and child and adult residential programs (Kroh & Melusky, 2010). The methodologies are based upon statistical protocols that have been developed in the tests and measurements literature in which an abbreviated set of items is used to statistically predict as if the full test was applied. This methodology has been used in regulatory analysis and more recently has been proposed for use in Quality Rating and Improvement Systems (QRIS) (Fiene, 2013b).

DIFFERENTIAL PROGRAM MONITORING

Risk Assessment and Key Indicators are important components of differential program monitoring which employs an abbreviated review rather than a comprehensive or full review of a program. It is one of several key elements that have been identified in the research literature to help improve the cost effectiveness and efficiency of the program monitoring of early care and education programs (Fiene, 2013b, c)(See the Appendix). A recent addition to differential monitoring are QRIS – Quality Rating and Improvement Systems. Key indicators have a long history of development within the licensing literature (Fiene & Kroh, 2000) but have only recently been proposed to be used with QRIS. This proposed blueprint is to assist Oregon to develop a fully functional differential program monitoring, risk assessment, and key indicator approach to their child care licensing system and then determine the feasibility of using the these approaches with its QRIS system.

The other key elements of the differential program monitoring approach are the following: program compliance/licensing which is generally a state's health and safety rules/regulations that govern child care. At the national level this would be *Caring for Our Children: National Performance Standards for Health and Safety in Child Care (2012).* The program quality key element is generally represented by the state's QRIS. At the national level it is represented by accreditation, such as NAEYC, NECPA, or NAFCC. The key indicator element is represented by the state's statistical predictor rules/regulations drawn from their comprehensive set of health and safety rules/regulations that govern child care. At the national level, an example is the *13 Indicator of Quality Child Care (2002).* This element can also represent a state's statistical predictor QRIS standards drawn from the comprehensive set of QRIS standards. The purpose of this Blueprint Report is to develop these statistically predictor standards first for Oregon's child care licensing system and explore the possibility of expanding this to their QRIS system. The last key element to be addressed in this report is the risk assessment key element in which these are the high risk rules/regulations that place children at greatest risk of mortality or morbidity. At the national level, an example is *Stepping Stones to Caring for Our Children (2013).* These are generally determined via a weighting system in licensing or a point system with QRIS.

KEY INDICATORS APPLIED TO OREGON'S CHILD CARE LICENSING SYSTEM

Oregon's licensing and QRIS systems are very similar to many other states' licensing and QRIS systems so that the methodologies employed in the past for developing risk assessment and key indicators will be employed in this blueprint. There are some significant challenges because of the psychometric properties of licensing data because of the severe skewness and kurtosis present in state data systems. These challenges will be addressed later in this blueprint in how to deal skewness and kurtosis.

The risk assessment and key indicators can eventually be tied to the professional development/training/technical assistance system to link resources to specific needs of the programs. It also has the capability of tying them to an early learning benchmarking and child outcomes at some point in the future. This would be accomplished in the full implementation of the Differential Monitoring Logic Model and Algorithm (DMLMA©) as depicted in the Appendix.

TECHNICAL ASPECTS OF THE KEY INDICATOR METHODOLOGY

This section provides the technical and statistical aspects of the key indicator methodology. It will provide the roadmap in taking the Oregon licensing and QRIS data bases through the necessary steps to generating the respective key indicators.

One of the first steps is to sort the data into high and low groups, generally the highest and lowest ratings can be used for this sorting. In very large states this is done on a sampling basis which will be described later in the blueprint. Frequency data will be obtained on those programs in the top level (usually top 20-25%) and the bottom level (usually the bottom 20-25%). The middle levels are not used for the purposes of these analyses. These two groups (top level & the bottom level) are then compared to how each program scored on each item within the specific assessment tool (see Figure 1). An example would be the following: Item 16 from the ECERS – Encouraging Children to Communicate. Sort all the providers by the number in the highest group and the lowest. Then determine how each program scored on item 16, did they get a 5 or higher or a 3 and lower? Fill in the cells within Figure 1 accordingly (see Figure 2).

Figure 1	***Providers In Compliance or Top 25%***	***Programs Out Of Compliance or Bottom 25%***	***Row Total***
Highest level (top 20-25%)	***A***	***B***	***Y***
Lowest level (bottom 20-25%)	**C**	**D**	***Z***
Column Total	***W***	***X***	***Grand Total***

Figure 2 depicts that all programs that were in the top 25% (5+ on ECERS, Item 16) were also in the highest rating while the bottom 25% (3 or lower on the ECERS, Item 16) were also in the lowest rating. The data depicted in Figure 2 are taken from studies completed in Pennsylvania in 2002 (Fiene, etal) and 2006 (Barnard, Smith, Fiene & Swanson) in which their quality rating and improvement system (QRIS), Keystone STARS, was validated. The reason for selecting this particular item from the ECERS is that it demonstrates a perfect phi coefficient in discriminating between the highest level and the lowest level. Most, if not all, of the licensing items that will attain the threshold levels to become key indicators will not approach this phi coefficient.

Figure 2 – Pa. Study (Fiene, etal, 2002).	***Providers In Compliance or Top 25%***	***Programs Out Of Compliance or Bottom 25%***	***Row Total***
Highest Star level in Pa.	***117***	***0***	***117***
Lowest Star level in Pa.	**0**	**35**	***35***
Column Total	***117***	***35***	**152**

Once the data are sorted in the above matrix, the following formula (Figure 3) is used to determine if Item 16 is a key indicator or not by calculating its respective Phi coefficient. Please refer back to Figure 1 for the actual placement within the cells and Figure 2 for the data within the cells. The legend (Figure 4) below the formula shows how the cells are defined.

Figure 3 – Formula for Phi Coefficient

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

Figure 4 – Legend for the Cells within the Phi Coefficient

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.

Once the data are run through the formula in Figure 3, the following chart (Figure 5) can be used to make the final determination of including or not including the item as a key indicator. Based upon the chart in Figure 5, it is best to have a Phi Coefficient approaching +1.00 since we are dealing with normally distributed data[1]. This requirement is relaxed with licensing rules & QRIS selected standards only (+.26 and higher) because the data are more skewed but this should not be the case as much with Oregon's Quality Rating and Improvement System (QRIS).

Continuing with the chart in Figure 5, if the Phi Coefficient is between +.25 and -.25, this indicates that the indicator is unpredictable in being able to predict overall compliance with the quality rating assessment tool. Either a false positive in which the indicator appears too often in the low group as being in compliance, or a false negative in which the indicator appears too often in the high group as being out of compliance[2]. This can occur with Phi Coefficients above +.25 but it becomes unlikely as we approach +1.00 although there is always the possibility that other standards/rules/regulations could be found out of compliance (this was demonstrated in a study conducted by the author (Fiene, 2013c) with Head Start programs). Another solution is to increase the number of key indicators to be reviewed but this will cut down on the efficiency which is desirable and the purpose of the key indicators.

The last possible outcome with the Phi Coefficient is if it is between -.26 and -1.00, this indicates that the indicator is a terrible predictor because it is doing just the opposite of the decision we want to make. The indicator would predominantly be in compliance with the low group rather than the high group so it would be statistically predicting overall non-compliance. This is obviously something we do not want to occur.

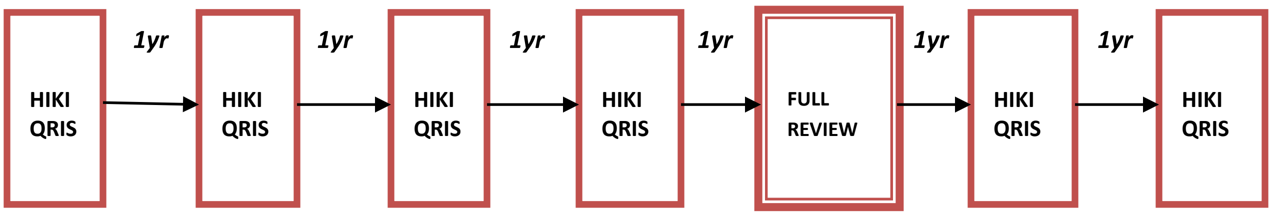
Figure 5 – Thresholds for the Phi Coefficient (Fiene & Nixon, 1983, 1985)

Phi Coefficient Range	Characteristic of Indicator	Decision
(+1.00) – (+.26)	**Good Predictor**	**Include**
(+.25) – (-.25)	**Unpredictable**	**Do not Include**
(-.26) – (-1.00)	**Terrible Predictor**	**Do not Include**

The key indicators should then only be used with those programs who have attained the highest rating. It is not intended for those programs that have attained lower ratings. However, even with those programs that have attained the highest rating, every 3-5 years a full, comprehensive review using the full set of rules/standards for licensing and QRIS should occur (see Figure 6 for a graphical depiction). It is intended that a re-validation of the key indicators occur on a periodic basis to make certain that the key indicators have not changed because of differences in compliance history. This is an important and necessary step for the state to engage in to ascertain the overall validity and reliability of the assessment system. Also there should not have been any major changes in the program while the key indicators are being administered, such as the director leaving or a large percentage of teachers leaving or enrollment increasing significantly, or a change in the licensing status of the program.

Figure 6 - Proposed DMLMA System with Key Indicators (KI)

Use of Oregon Key Indicators (ORKI) for Licensing and/or QRIS with a Full Review every 4th Year



TECHNICAL ASPECTS OF THE RISK ASSESSMENT METHODOLOGY

The risk assessment methodology is very different from the key indicator methodology in that compliance history data are not utilized but rather a best practice ranking according to risk is used to determine which rules become core rules which have the greatest likelihood to place children at significant risk of morbidity or mortality. This is done by having a group of experts rank order all the rules on a Likert Scale from low risk to high risk of mortality or morbidity that non-compliance with the rule places children at. This is generally done on a 1-10 scale with 1 = low risk; 5 = medium risk; and 10 = high risk (see Figure 6A). The experts selected include but are not limited to licensing staff, policy makers, researchers, child care providers, advocacy groups, parents, and other significant stakeholders who will be impacted by the weighting of the rules.

Figure 6A – Example of a Likert Scale for Measuring Risk to Children

Low Risk **Medium Risk** **High Risk**

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

Once the data are collected from all the experts, it is averaged for each rule to determine its relative rank in comparison to all the other rules. A significantly high threshold or cut off point is determined so that no more than 5-10% of the rules become core rules. These core rules can then be used in a differential monitoring approach (to be described more fully in the next section) and/or with the key indicators to complete abbreviated reviews of child care programs. It is recommended that such a practice of using both core rules and key indicators be used together because than the state has the benefits of both methodologies in measuring risk and being able to statistically predict overall compliance with a very short list of rules.

TECHNICAL ASPECTS DIFFERENTIAL MONITORING METHODOLOGY

There are a couple of other key technical aspects that need to be in place for a differential monitoring system to work. The Differential Monitoring Logic Model and Algorithm (DMLMA©)(see the Appendix) is a 4th generational Early Childhood Program Quality Indicator Model4 (ECPQIM4©) in which the major monitoring systems in early care and education are integrated conceptually so that the overall early care and education system can be assessed and validated. With this new model, it is now possible to compare results obtained from licensing systems, quality rating and improvement systems (QRIS), risk assessment systems, key indicator systems, technical assistance, and child development/early learning outcome systems. The various approaches to validation are interposed within this model and the specific expected correlational thresholds that should be observed amongst the key elements of the model are suggested (see Figure 6B).

Figure 6B – Inter-Correlational Threshold Matrix

	PQ	RA	KI	DM	PD	CO
CI	**0.3**	**0.5**	**0.7**	**0.5**	**0.5**	**0.3**
PQ				**0.3**	**0.3**	**0.3**
RA			**0.5**	**0.5**	**0.5**	**0.3**
KI				**0.5**	**0.5**	**0.3**
DM					**0.5**	
PD						**0.3**

Key Elements (see the Appendix): 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 (Fiene, 2007). 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.

Once the above key elements are in place, it is then possible to look at the relationships amongst them to determine if the system is operating as it was intended. This is done through a validation of the overall system and assessing the inter-correlations (Table 6B) to determine that the DM system is improving the health, safety, program quality and ultimately the overall development of the children it serves.

Oregon should use the following plan to implement the above approach:

STATE AGENCY PLAN (These Steps can be viewed as an overall plan as outlined in Zellman & Fiene (2012):

The first step in utilizing the DMLMA 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) to determine the overlap and coverage between the two. This is the first approach to validation which involves Standards review (Zellman & Fiene, 2012).

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 (Zellman & Fiene, 2012).

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 (Zellman & Fiene, 2012). The correlation between CI and RA should be at the .50 level or higher (.50+)(see Figure 6B).

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 (Zellman & Fiene, 2012). 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.

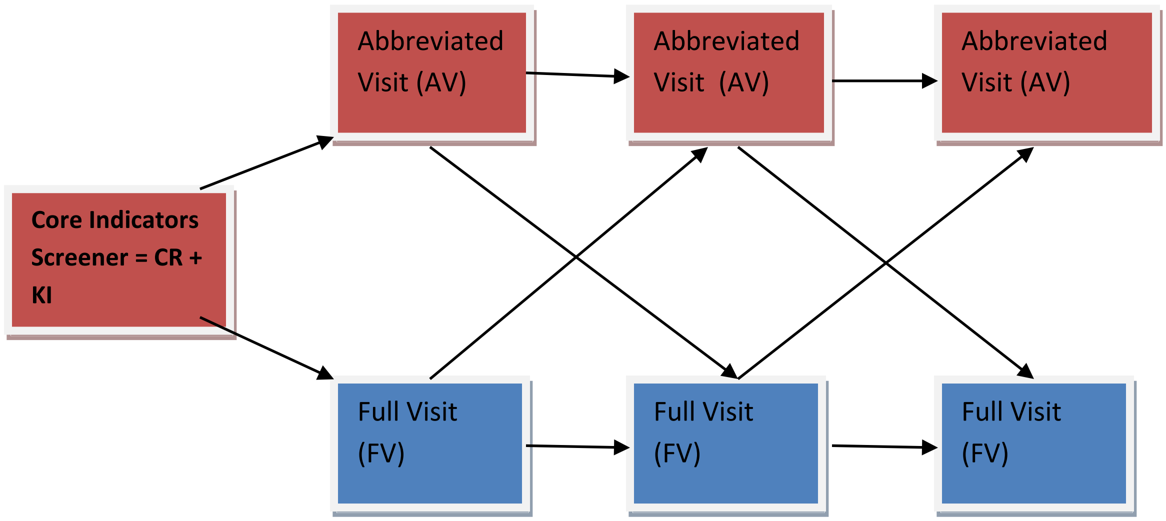
The sixth step is for the state to generate a Key Indicator (KI) tool from the CI data base. Please see Fiene & Nixon (1985) and Fiene & Kroh (2000) for a detailed explanation of the methodology for generating a KI tool. This step is also part of the second approach to validation which involves Measures. 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 (Fiene, 2002).

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 forth approach to validation which involves Outcomes (Zellman & Fiene, 2012). 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.

The last step is to present a logic model which depicts how a differential monitoring system could potentially be actually used in Oregon (see Figure 6C).

Figure 6C – Logic Model for Compliance Decisions



Compliance Decisions:

Core Indicators *= Core Rules + Key Indicators – this becomes a screening tool to determine if a program receives a AV or FV visit.*
Core Indicators (100%) *= the next visit is a Abbreviated Visit.. Every 3-4 years a Full Licensing Visit is conducted.*
Core Indicators (not 100%) *= The next visit is a Full Licensing Visit where all rules are reviewed.*
Compliance *= 96%+ with all rules which indicates substantial to full compliance with all rules and 100% with Core Indicators. The next visit is an Abbreviated Visit.*
Non-compliance *= less than 96% with all rules which indicates lower compliance with all rules. The next visit is a Full Visit Study.*

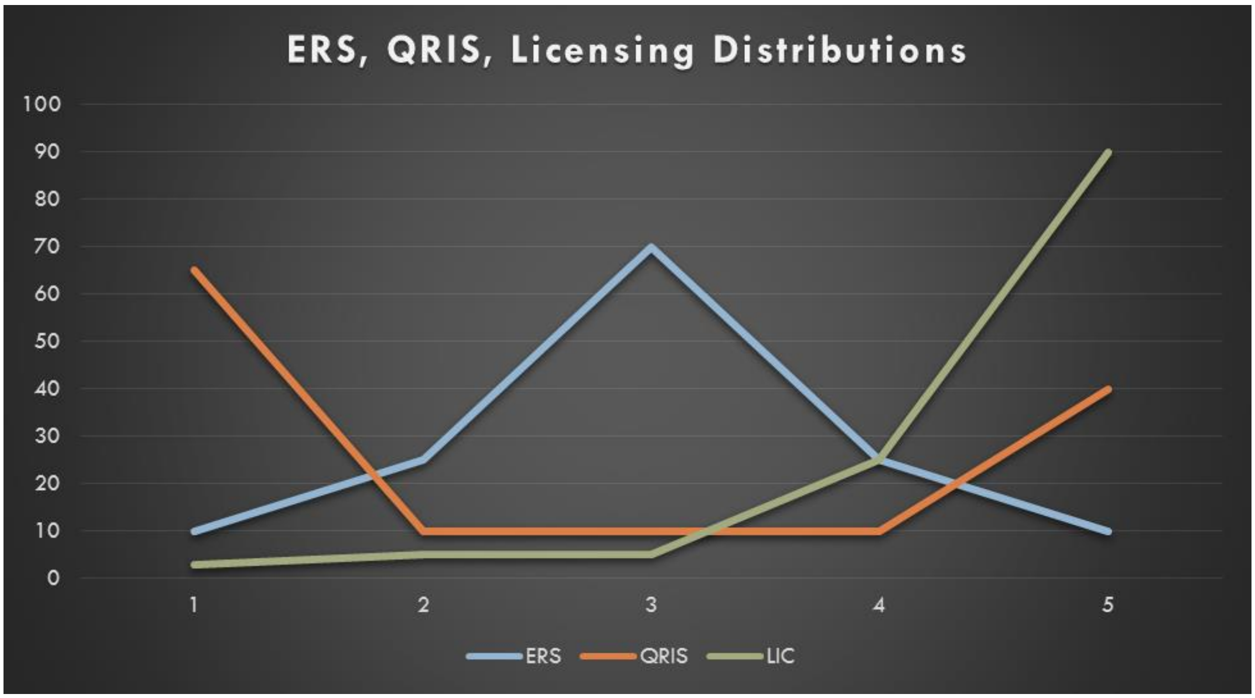
SAMPLE

Generally a sample is drawn from the population of early care and education facilities in respective states. Oregon will not be any different because of the size of the overall child care program. A random sample will be selected that represents the state population of child care programs. This will be determined by the number of programs, how the programs are distributed throughout the state, the size of the programs, the type of programs, etc… This will need to be determined once the actual implementation of this blueprint report is started. The author of this report can assist Oregon staff in how best to select the sample of programs.

POTENTIAL CHALLENGES

As mentioned earlier, the measurement issues with licensing data will provide challenges because of their data distributions. In the past when key indicators have been generated with licensing data which are highly skewed, dichotomization of the data is regularly done[3]. Generally dichotomization of data should not be done with normally distributed data[4]; however, in this case with QRIS systems, it is appropriate to do so since the data lend themselves to being sorted into discrete categories, such as rating levels. The dichotomization will compare the lowest rating level with the highest rating level in order to generate the key indicators.

Figure 7 – Data Distribution Comparisons of ERS, QRIS, and Licensing Data



TIMELINE

As soon as all early care and education programs have gone through their assessment phase, it will be possible to do the calculations to determine the Phi Coefficients and generate the key indicators. I am guessing that this should not take any longer than 1 year but could be completed in a much shorter period of time if the assessments on individual programs could be moved up (see Figure 8). The analytical phase should take no longer than a month with an additional month to write up the report. A face to face presentation of the analyses could be done after these two months.

The timeline presented in Figure 8 can be adjusted to the specific needs for the Oregon system. The timeline is based upon previous projects and the average time to generate risk assessment core rules and key indicators. Another consideration or task is the development of the policies and procedures to be developed and implemented regarding the use of key indicators. This was not specifically listed on the timeline because it is something that is generally developed throughout the project with feedback from all the stakeholders who will be impacted by the use of this new approach to assessment and monitoring.

Figure 8 - OREGON DMLMA PROJECT TIMELINE

TASK	MONTHS						
Collect Data	M1-M3						
Sort Data		M2-3					
Run Analyses			M3-5				
Generate KI/RA				M6			
Train on KI/RA					M6-7		
KI/RA Reliable						M7-9	
Implementation							M10-12

Legend:
KI – Key Indicators
RA – Risk Assessment
Collect Data – identify participant programs via sampling for KI and the stakeholders for RA.
Sort Data – KI - the individual programs are sorted into high and low groups representing the top 25% and the bottom 25% of programs as they have scored on the respective rules/standards.
Run Analyses – KI - each individual item within each of the assessment tools for every program will be compared to the sorting process of the high and low groups. RA – aggregate data into means for each rule, rank order the rules.
Generate KI/RA – a 2 x 2 matrix is constructed and the key indicators (KI) are generated from this matrix through the use of a phi coefficient. A final report will be delivered to Oregon executive staff for both KI and RA core indicator rules.
Training on KI/RA – all staff who will be using the KI/RA will be trained on its use.
KI/RA Reliability – reliability will be established by having two staff go out together and administer the key indicators separately and comparing their results.
Implementation – once reliability has been established, full implementation will begin.

COST SAVINGS

Again based upon previous studies most recently completed in California in 2010 (http://www.myccl.ca.gov/res/docs/12022010HandoutStakeholderMeeting.pdf), time savings of 50% have been attained by using a key indicator or abbreviated tool in completing assessments. It only makes sense that if an assessment can be completed in one hour rather than 2 – 4 hours that a state will see time savings. It is being assumed that equivalent savings should also be the case with Oregon's licensing/QRIS although this cannot be made certain until the new key indicator or abbreviated tool is actually used for a period of time. Once the new key indicators are used for several months, comparisons could be made to when the full assessments were done.

CONCLUSION AND NEXT STEPS

This blueprint report has given the basic parameters to develop a differential monitoring, risk assessment, and key indicator approach to Oregon's Licensing/QRIS systems. By following this blueprint Oregon staff should be able to fully implement the approach. Oregon staff would also need to determine if they have the internal capability for the development of the key indicators or if there will be the need to outsource certain aspects of the development. This will be an important consideration as Oregon moves forward with this project. I have provided two options for your consideration in moving forward.

Option 1 – Development of System Internally:

This would require either information systems or research & evaluation staff to analyze the data, generate core key indicator rules, and training of staff. I could provide the necessary consulting services to help the staff work through the methodology. This would probably require at least one face to face meeting with regular monthly conference calls between myself and staff. Discussions of the formatting of data and the types of analyses would be discussed and demonstrated.

Option 2 – Development of System Externally:

In this option I could do all the methodological work demonstrating how I would need the data sent to me, the analytical work in generating core key indicator rules, a report detailing the methodology and results. The only thing that Oregon staff would need to do is get the data to me, all other aspects of what is delineated in the timeline in Figure 8 would be completed by me. This would probably require several face to face trips to explain the process, the results, and do training of staff. Once everything was in place, Oregon staff would have a fully implemented system.

If the above options are of interest I can provide detailed budgets for either one or both.

Notes:

1, 4. The reason for pointing out the need to have a higher Phi Coefficient than what has been reported previously (Fiene & Nixon, 1983, 1985) is the fact that the dichotomization of data should only be used with skewed data and not normally distributed data because it will accentuate differences. However, since the purpose of the dichotomization of data is only for sorting into a high and low group, it would appear to be acceptable for this purpose (MacCallun, etal, 2002. On the practice of dichotomization of quantitative variables, *Psychological Methods*, *7*, *1*, 19-40.).

2. These results would show an increase in cells B and C in Figure 1 which is undesirable; it should always be the case where A + D > B + C for key indicators to maintain their predictive validity.

3. The distinction between making decisions with skewed (Licensing) as versus normally distributed (ERS) data is an important one because there is a greater likelihood with skewed data of introducing less than optimal programs into the high group when sorting programmatic data into high and low groups. This then makes it more difficult to identify the best programs. However, because of the distribution with skewed data the same cannot be said with the low group in which case it is relatively easy to identify the problem programs. This is not as much of a concern when the data are more normally distributed in which it is relatively easy to identify both the optimal and problem programs. This is an excellent example of the need of weighting of standards in order to increase the normal distribution of the data.

REFERENCES AND ADDITIONAL RELATED READINGS REGARDING DMLMA:

- ☐ Barnard, Smith, Fiene, Swanson (2006). Evaluation of Pennsylvania's Keystone STARS Quality Rating and Improvement System, Pittsburgh: Pennsylvania, Office of Child Development.
- ☐ Fiene (2013a***).*** A comparison of international child care and US child care using the Child Care Aware – NACCRRA (National Association of Child Care Resource and Referral Agencies) child care benchmarks, *International Journal of Child Care and Education Policy, 7(1),* 1-15.
- ☐ Fiene (2013b). *Differential monitoring logic model and algorithm.* Middletown: Pennsylvania, Research Institute for Key Indicators.
- ☐ Fiene (2013c). Head Start Key Indicators. Middletown: Pennsylvania, Research Institute for Key Indicators.
- ☐ Fiene (2013d). Kansas Child Care Key Indicators. Middletown: Pennsylvania, Research Institute for Key Indicators.
- ☐ Fiene (2013e). Validation of Georgia's core rule differential monitoring system. Middletown: Pennsylvania, Research Institute for Key Indicators.
- ☐ Fiene (2007). Child Development Program Evaluation & Caregiver Observation Scale, in T Halle (Ed.), *Early Care and Education Quality Measures Compendium*, Washington, D.C.: Child Trends.
- ☐ Fiene (2003). Licensing related indicators of quality child care, *Child Care Bulletin*, winter 2002-2003, pps 12-13.
- ☐ Fiene (2002a). *Thirteen indicators of quality child care: Research update*. Washington, DC: Office of the Assistant Secretary for Planning and Evaluation, US Department of Health and Human Services.
- ☐ Fiene (2002b). Improving child care quality through an infant caregiver mentoring project, *Child and Youth Care Forum, 31*(2), 75-83.
- ☐ Fiene, Iutcovich, Johnson, & Koppel (1998). Child day care quality linked to opportunities for professional development: An applied community psychology example. *Community Psychologist, 31*(1), 10-11.
- ☐ Fiene (1996). Using a statistical-indicator methodology for accreditation, in *NAEYC Accreditation: A Decade of Learning and the Years Ahead*, S. Bredekamp & B. Willer, editors, Washington, D.C.: National Association for the Education of Young Children.
- ☐ Fiene (1995). Utilizing a statewide training system to improve child day care quality: The other system in a program quality improvement model. *Child Welfare*, Volume LXXIV, #6, November-December, 1189-1201.

- Fiene (1985). Measuring the effectiveness of regulations, *New England Journal of Human Services, 5*(2), 38-39.

- Fiene (1981). A new tool for day care monitoring introduced by children's consortium, *Evaluation Practice, 1*(2), 10-11.

- Fiene, Greenberg, Bergsten, Carl, Fegley, & Gibbons (2002). *The Pennsylvania early childhood quality settings study*, Harrisburg, Pennsylvania: Governor's Task Force on Early Care and Education.

- Fiene & Kroh (2000). Licensing Measurement and Systems, *NARA Licensing Curriculum*. Washington, D.C.: National Association for Regulatory Administration.

- Fiene & Nixon (1985). Instrument based program monitoring and the indicator checklist for child care, *Child Care Quarterly, 14*(3), 198-214.

- Griffin & Fiene (1995). *A systematic approach to policy planning and quality improvement for child care: A technical manual for state administrators*. Washington, D.C.: National Center for Clinical Infant Programs-Zero to Three.

- Kontos & Fiene (1987). Child care quality, compliance with regulations, and children's development: The Pennsylvania Study, in *Quality in Child Care: What Does Research Tell Us?* Phillips, editor, Washington, D.C.: National Association for the Education of Young Children.

- Zellman, G. L. and 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. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services

For additional information regarding this report, please contact:

Richard Fiene, Ph.D., Director/President
Research Institute for Key Indicators (RIKI)
41 Grandview Drive
Middletown, PA. 17057
DrFiene@gmail.com
RIKI.Institute@gmail.com
717-944-5868 Phone and Fax
http://RIKInstitute.wikispaces.com
http://pennstate.academia.edu/RickFiene

Appendix

DIFFERENTIAL MONITORING LOGIC MODEL & ALGORITHM (DMLMA©) (Fiene, 2012): A 4th Generation ECPQIM – Early Childhood Program Quality Indicator Model

CI x PQ => RA + KI => DM + *PD => CO*

<u>Definitions of Key Elements</u>:

PC = Program Compliance/Licensing (Health and Safety) (***Caring for Our Children***)
PQ = QRIS/Accreditation/Caregiver/Child Interactions/Classroom Environment Quality (***ERS/CLASS/PAS/BAS***)
RA = Risk Assessment, (High Risk Rules) (***Stepping Stones***)
KI = Key Indicators (Predictor Rules***) (13 Key Indicators of Quality Child Care***)
DM = Differential Monitoring (How often to visit and what to review)
PD = Professional Development/Technical Assistance/Training (Not pictured but part of Model)
CO = Child Outcomes (Not pictured but part of Model)