Uncertainty-Certainty Risk Predictor Pyramid Proposal

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This proposal will combine two methodologies that are utilized in the human services regulatory science field to monitor program's regulatory compliance dealing with predicting overall compliance with all rules/regulations and the relative risk to clients if noncompliance is determined in specific rules/regulations (Fiene, 2025a,b).

This paper builds off the Uncertainty-Certainty Matrix (UCM) (Fiene, 2025c) and the Regulatory Compliance Scale (RCS) (Fiene, 2025d). It attempts to combine these tools into an enhanced model that suggests reducing uncertainty as the potential risk of harm increases. This model utilizes the 2x2 matrix proposed to explain the UCM and the 3x3 matrix which explains the relative risk continuum involving risk and prevalence (Risk Assessment Matrix (RAM))(Fiene, 2019, 2022). Both these matrices are depicted below in Table 1: UCM Logic Model and Chart 1: Risk Assessment Matrix (RAM).

The table and chart need some explanation in and of themselves and then how they will be combined together in a three-dimensional model: the Uncertainty-Certainty Risk Predictor Pyramid Model.

The UCM is a licensing decision making model in which individual inspector decisions are measured against a standard in the licensing field, an expert. It is then determined if the decision being made by the individual inspector in the field is actually accurate. The individual inspector decision goes along the horizontal axis while the actual state of compliance (expert) goes along the vertical axis. The matrix shows what the potential results can be in that there is agreement between the decision regarding regulatory compliance and the actual state of compliance. This is the desired result; it is a true positive result. Also, a determination could be made that there is non-compliance and this is the actual state of compliance. Again, this would be a desired agreement although the result of non-compliance is not what you want to see but it is still a desired result from a decision-making perspective; it is a true negative result.

The other two cells where there are disagreements are not results one wants to see when it comes to decision making. These two cells fall into a false positive and a false negative which is diametrically opposed to the true positive and true negative cells addressed in the previous paragraph. False positives occur when the inspector determines that there is a rule violation when in reality there is not. Not a good situation but it does not place clients at additional risk which occurs with the false negative. In the false negative the inspector determines that the rule is in compliance when in reality it is not. Now, this does place clients at additional risk because

there really is a rule violation but the inspector has determined that the facility/program is in compliance with the rule.

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**

Now let's turn our attention to Chart 1 which deals with a risk assessment matrix (RAM). This matrix measures the relative risk of a rule violation along with the prevalence of the rule being out of compliance. Risk is on the vertical axis while prevalence is on the horizontal axis. The matrix has 9 levels with 1 being low risk and low prevalence while 9 is a high risk and high prevalence rule. These are highlighted with a color coding to enhance this change in the matrix cells from green (low risk) to yellow (medium risk) to red (high risk).

Chart 1 – Risk Assessment Matrix

		Probability/	Prevalence		
	Levels	High	Medium	Low	Weights
Risk/	High	9	8	7	7-8
Severity	Medium	6	5	4	4-6
	Low	3	2	1	1-3
	# of Rules	8 or more	3-7	2 or fewer	

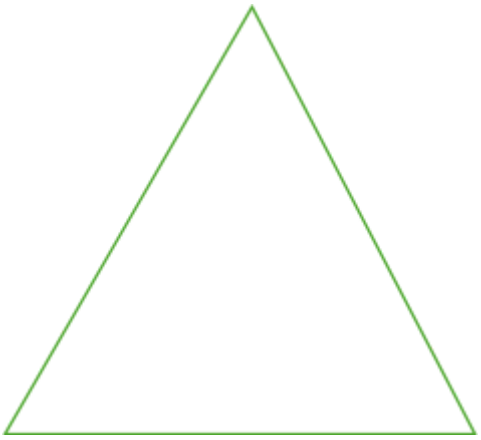
Having dealt with the reliability of the decision making via UCM and the validity of the rule being at a particular risk level (RAM), what would this pyramid model: Uncertainty-Certainty Risk Predictor Pyramid look like in combining the two matrices? As I said, it is a three-dimensional model with the UCM as the base and the RAM as the sides moving up to the top of the pyramid from low risk to high risk (See the below graphic: Figure 1).

The pyramid starts at its base with very low risk rules/regulations where if false negatives were to occur it would not adversely affect clients. It then begins to move up the pyramid with increasing risk and with less tolerance for making errors. For example, false positives are the next level followed by true negatives. Still not great outcomes but situations where either clients are not at increased risk or the licensing decision making is accurate even though the result is not compliant rules. The top of the pyramid, the pinnacle, are the greatest risk rules and this is where only true positives should be occurring. It is at this level where we do not want to have errant licensing decision making in which regulatory compliance is not correct.

The reason for proposing this new model is to add to the theoretical foundations of regulatory science and to build a series of tools that can be used at a practical level in regulatory compliance, monitoring and decision making. Hopefully this latest model will join an ever

growing series of methods and approaches that should enhance the regulatory science field, such as differential monitoring, key indicators for licensing and quality, risk assessment, uncertainty-certainty matrix, regulatory compliance scale, and the early childhood program quality improvement and indicator model.

Figure 1: Uncertainty-Certainty Risk Predictor Pyramid Model



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