
Child and residential care facility regulations ranked by the Fiene key indicator methodology_Supplementary Analysis

FROM: Fraser Health, Population Health Observatory
TO: Oonagh Tyson, Director, Health Protection; Amy Lubik, CCFL, Policy Analyst, HEPHU
CC: Rahul Chhokar, Manager, Population Health Observatory; Emily Newhouse, MHO, Health Protection;
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REQUEST: To repeat the Fiene key indicator methodology using the 'First Inspection' sample selection approach on 2018/19 fiscal data ("supplementary analysis"), with the intention of using the most recent fiscal period with complete inspection data (2018/19) to generate the 'Key Indicators' for the project moving forward. Findings will be compared to the 2017/18 fiscal period results and the results of the former analysis on 2014/15 fiscal data (both provided in previous report).

SUMMARY

- Following the project team meeting on January 13, 2020, the decision was made to proceed with the "First Inspection" approach, whereby the Fiene Coefficients are calculated based on inspections during a single fiscal period, with the following conditions/exceptions:
 - Where multiple inspections have taken place in the fiscal period, only the first inspection was used
 - When a facility did not have an inspection during the fiscal period being analyzed, the first inspection occurring in the subsequent fiscal period was used (if available*)
- Fiene coefficients were calculated for each of 249 regulations, and "good predictors" were identified (*see APPENDIX B for more detail*).
- Child Care and Residential Care licensing inspection data from Data from April 1, 2018 to January 13, 2020* were extracted from Healthspace and included in this supplementary analysis.

*note: inspection data incomplete for 2019/20 fiscal period

KEY FINDINGS:

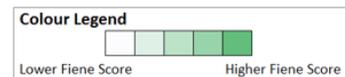
Table 1. Regulations identified as “good predictors” (Fiene Coefficient of $\geq .26$) of overall compliance by facility type: Childcare (left) and Residential care (right). Two recent fiscal periods are compared, in addition to previous findings from 2017.

CHILD CARE FACILITIES				
REGULATION CODE	FIENE COEFFICIENT			2014/15 Fiscal (previous analysis)
	2017/18 Fiscal	2018/19 Fiscal		
11010	0.43	0.51		
19090	0.45	0.46		0.46
19070	0.47	0.44		0.43
12140	0.39	0.44		0.49
12040	0.45	0.44		
11200	0.37	0.42		0.41
19100	0.42	0.42		0.34
12090	0.42	0.38		0.39
12050	0.38	0.37		0.45
11020	0.35	0.36		0.42
13050	0.31	0.34		0.34
19080	0.38	0.33		0.31
10050	0.27	0.32		0.31
19160	0.34	0.30		
15030	0.28	0.29		0.35
12060	0.27	0.29		
<i>Differed between fiscal periods</i>				
12430	---	0.29		
13060	---	0.29		
13020	---	0.28		0.30
14030	0.26	---		0.30
Total "Good" Predictors	17	19		14*

*In total, 16 regulations were identified in the 2017 analysis (2 not listed here)

RESIDENTIAL CARE FACILITIES				
REGULATION CODE	FIENE COEFFICIENT			2014/15 Fiscal (previous analysis)
	2017/18 Fiscal	2018/19 Fiscal		
31300	0.39	0.48		0.46
33280	0.423	0.45		---
31290	0.48	0.44		0.48
31260	0.37	0.38		0.41
32320	0.48	0.37		0.38
32100	0.41	0.33		0.29
30240	0.29	0.30		0.36
32110	0.46	0.29		0.34
<i>Differed between fiscal periods</i>				
32010	---	0.27		---
31100	0.31	---		0.35
33230	0.40	---		0.36
Total "Good" Predictors	10	9		9**

**In total, 18 regulations were identified in the 2017 analysis (9 not listed here)



*note: inspection data incomplete for 2019/20 fiscal period

APPENDIX A: Background (adapted from the 2017 request memo)

The Fiene key indicator methodology is highlighted in a Federal Office of Child Care publication series on contemporary licensing highlights as part of a differential monitoring approach along with the risk assessment methodology. Key Indicators statistically predict or are predictor rules of overall compliance with all the rules for a particular service type¹.

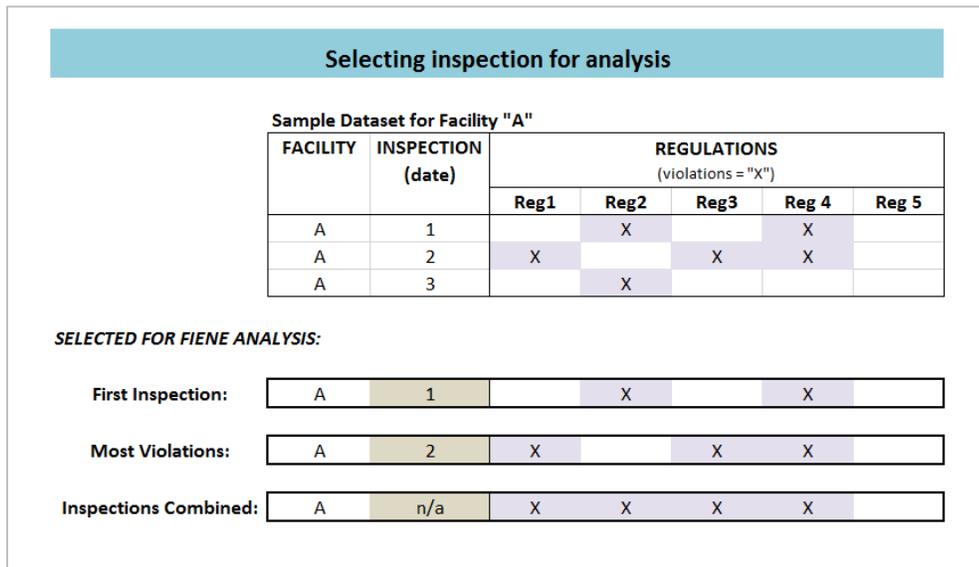
The health protection department is looking to more efficiently track child and residential care compliance by monitoring the regulations that are the best predictors for the facilities in the Fraser Health authority. There are currently 271 regulations applicable to childcare facilities and 473 regulations applicable to residential facilities.

APPENDIX B: Methodology (adapted from the 2017 request memo)

- An extract from Healthspace was provided by the Health Protection department containing all the monitored childcare and residential facilities inspections from April 1, 2017 to March 31, 2019 and whether they passed each individual regulation.
- Around 80% of facilities had more than one inspection during the two year study period. As a result, three approaches to selecting inspections for analysis were performed and compared:

Approach	Rationale
“First Inspection” Select only the first inspection in the study period	To replicate the methodology of the original analysis performed in 2017. Provides a more ‘cross sectional’ picture of compliance at the <u>inspection level</u> .
“Most Violations” Select only the inspection with the most violations	Maintains independence of observations, and mitigates bias (see “Inspections Combined”). Compares compliance at the <u>inspection level</u> .
“Inspections Combined” Combine all violations across all inspections for a given facility.	Summarizes compliance at the <u>facility level</u> . Consistent with the Fiene methodology whereby facilities are ranked to identify ‘high compliance’ vs. ‘low compliance’. However, may introduce selection bias: facilities with multiple inspections may be more likely to have a greater number of regulations violated and thus receive a low compliance ranking.

The following figure represents these three approaches visually:



- The facilities were sorted into quartiles (25%) based on their compliance across all the regulations. Only the highest and lowest quartiles were used in the analysis. (1. Research Institute for Key Indicators. Technical Detail Updates to the Fiene Key Indicator Methodology, January 2015.)

- Based on the results for the highest level and lowest level of facilities, the following matrix (Figure 1) was calculated for each individual regulation:

Figure 1	<i>Providers In Compliance on Rule</i>	<i>Programs Out Of Compliance on Rule</i>	<i>Row Total</i>
<i>Highest level (top 20-25%)</i>	<i>A</i>	<i>B</i>	<i>Y</i>
<i>Lowest level (bottom 20-25%)</i>	<i>C</i>	<i>D</i>	<i>Z</i>
<i>Column Total</i>	<i>W</i>	<i>X</i>	<i>Grand Total</i>

- The Fiene key indicator coefficient was then calculated for each regulation based on the following formula: $\phi = ((A * D) - (B * C)) \div \sqrt{W * X * Y * Z}$
- The Fiene coefficient for each regulation was categorized based on figure 2. All the regulations that were in the range of being good predictors were kept and summarized in the results.

Figure 2: Thresholds for the Fiene Key Indicators for Licensing Rules

<u>Key Indicator Range</u>	<u>Characteristic of Indicator</u>	<u>Decision</u>
(+1.00) – (+.26)	Good Predictor	Include
(+.25) – (-.25)	Unpredictable	Do not Include
(-.26) – (-1.00)	Terrible Predictor	Do not Include

- SAS and Microsoft Excel were used for these analyses.