# The Balanced Scorecard

## A Tool for Health Policy Decision-making

Nathalie Auger, MD, MSc[1]

Denis A. Roy, MD, MPH, MSc, FRCPC[2]

Health policy officials are increasingly relying on surveillance data to inform health policy.[1] Unfortunately, providing clear and understandable surveillance information can be complicated.

The Balanced Scorecard has historically been used in the business sector to provide visual overviews of company performance. It is a specific framework which aims to assist in translating strategy into action.[2] In public health, the Balanced Scorecard has been adapted to summarize surveillance data which can be used by policy makers to facilitate evidence-based decision-making in the health sector.

The purpose of this paper is to highlight the limitations of the Balanced Scorecard and to recommend ways in which it could be improved. To do so, we will use the example of data published by the Quebec Public Health Institute.[3] One major purpose of the Institute's data is to support and orient decision-making at the provincial and regional levels (e.g., resource allocation). In the document, the Institute presents provincial surveillance data to facilitate comparisons among the 18 health regions of Quebec. The main text is followed by an 8-page Balanced Scorecard summarizing the preceding information.

In this Balanced Scorecard, 63 health indicators are cross-tabulated against the 18 regions of Quebec. For a given indicator, each region is compared to the remainder of the province and assigned a colour score (light, dark, or shaded). Light scores mean a good performance compared to the rest of Quebec; dark scores represent an unfavourable performance for the region; shaded scores represent no significant difference from the rest of Quebec. Scoring was done in two ways: 1) For socio-demographic/economic and hospitalization data, a visual inspection was done for each region compared to the rest of Quebec. Indicators could only be scored light or dark; 2) For data derived from surveys, in which a sample of the population was taken, regions were compared to the rest of Quebec with a statistical test. If the test was significant, a light or dark score was given; for non-significant tests, shaded scores were given.

For simplicity, we will discuss the scores for three representative health regions: one major urban area (Montreal-Centre), one highly populated semi-urban area (Montérégie), and one rural area (Saguenay–Lac-Saint-Jean). We classified the 63 indicators in the Balanced Scorecard as 44 health determinants and 19 health outcomes: Health determinants included socio-demographic/economic, behavioural risk factors, social adaptation, health services, and environmental indicators. Health outcomes included general health and well-being, disability, morbidity, and mortality indicators. [For a complete list of indicators, refer to http://www.inspq.qc.ca or to the document.[3]] Our underlying assumption was that health determinants predict health outcomes.

After examining the Balanced Scorecard, we found the following:

1. Montreal tends to have scores opposite to other regions, particularly Montérégie, with Montreal having poorer health determinants.

2. Montreal has fewer favourable health determinants than favourable health outcomes (43.2% vs. 47.4%).

3. Saguenay–Lac-Saint-Jean has more favourable health determinants than favourable health outcomes (59.1% vs. 15.8%).

These findings imply that there is an inverse relationship between health determinants and health outcomes among regions in Quebec. This is counterintuitive and is an example of ecological fallacy, which occurs when population level data are compared without having individual level measurements. The findings are easily explained by factors not accounted for by the Balanced Scorecard.

### Why did this happen?

First, this Balanced Scorecard lacks indicators of cultural diversity, population mobility, or socio-economic heterogeneity. For example, it does not show that social inequality is more pronounced in Montreal. It also does not portray important social demographics:[4] Montreal has more international immigrants, who are generally healthier and more educated than the general population, but who have lower incomes. Montreal attracts intra-provincial migrants who may have a greater need for community services and be of lower socio-economic status.[4] Montreal attracts students who are younger, have lower incomes, and are healthier. Emigration of young, healthy families to surrounding areas of Montreal-Centre also contributes to the changing demographics.

Second, the Balanced Scorecard does not address effects of time on the health determinant-outcome relationship. If health determinants change over time (e.g., after new policy interventions are introduced), we expect a delayed effect on health outcome indicators. The Balanced Scorecard implicitly suggests that determinants have been stable over time. In fact, we know this is not the case for Montreal.[4] This limitation may partly explain the inverse relationship seen between health determinants and health outcomes in this Balanced Scorecard.

Third, the Balanced Scorecard does not distinguish between differences that are statistically significant and differences that are meaningful for policy. The data may be statistically significant, yet the differ-

ences may be small and irrelevant for policy. Alternatively, the data may not reach statistical significance, yet may be highly relevant for policy. Thus the methodology of Balanced Scorecard creates distinctions that may mask the underlying meaning of the data.

Fourth, there are methodological limitations of this particular Balanced Scorecard: 1) The scoring method tells the reader how one region performs relative to another, but does not give an idea of the absolute performance. 2) Performance relative to comparable regions outside Quebec is missing. This information may be important if Montreal performs well compared to other regions in Quebec, but poorly compared to other Canadian cities. For example, Montreal has lower suicide rates compared to the rest of Quebec, but higher rates compared to most other Canadian urban centres.[5] 3) The scoring method is based on the comparison of one region to the rest of Quebec, and so regions with a larger population could affect the score. For Montreal, whose population is approximately 1.8 million, the comparison is heavily influenced by Montérégie, the second most populated region in Quebec, with a population of 1.3 million. This explains the observation that Montreal and Montérégie often have opposite scores for determinants. 4) Statistical power issues are not addressed. Even though regions with smaller populations may perform just as

well as their more populous neighbours, the smaller regions may not be statistically significant because of lack of power. This information may be important for a decision-maker. Furthermore, survey-derived indicators tend to have little variability in this scorecard. For example, the indicator for suicidal ideation is shaded for every region in Quebec; suicide rates actually differ across Quebec. Statistical power may not have been high enough to detect differences between regions.

To address these issues, some changes could be made to the Balanced Scorecard. It may be possible to take into account socio-demographic differences by, for example, stratifying by homogeneous regions or by making comparisons to other similar cities in Canada. If available, past determinants could be linked to current health outcomes in order to see trends more clearly over time. Less informative indicators, such as some derived from surveys, could be replaced by more informative ones, such as cultural indicators. In order to distinguish between statistically significant differences and differences meaningful for policy, it may be possible to create a grey zone around values in which differences too small to have an impact on policy would remain shaded (in which case all data would be subject to the light/dark/shaded coding, regardless of origin).

Despite these suggested changes, it is unrealistic to expect policy makers to fully understand the limitations of the Balanced Scorecard. Surveillance data are inherently complex and difficult to interpret. It is unlikely that the Balanced Scorecard can ever adequately portray surveillance data. Policy makers will ultimately have to depend on the interpretations of experts. Nevertheless, the Balanced Scorecard is a potential tool for improving health policy. In Quebec, as in other Canadian provinces, it is likely to play an important role in future evidence-based decision-making. Public health practitioners must learn how to appropriately use this strategy for influencing population-based health policy.

## REFERENCES

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