

Introduction to the Mobility Wellness Index (MWI)

As individuals, our quality of life and well-being are influenced by many factors. One of these factors is our commuting experience, which is often perceived as both unpleasant and fatiguing, as well as a mandatory part of life. But as research indicates, altering our mobility habits can not only increase our quality of life and subjective well-being, but also save us significant money.

The South Island Prosperity Partnership (SIPP) recently developed the Mobility Wellness Index (MWI). The MWI is the world's first comprehensive measurement framework that links how any given city or region is performing on overall wellbeing as it relates to transportation and mobility. As trends show, Canada (and the world) is getting more and more urbanized. Cities are sprawling. Obesity rates are going up. Household transportation costs show no sign of slowing down. On top of that, transportation contributes up to 24% of Canada's GHG emissions and is the fastest growing contributor.¹

Did you know?

- North America is the most urbanized continent in the world with 82% of population living in cities, compared to 55% globally.²
- Researchers in California learned that there is an ideal commute time. People who commute to work within 15-19 minutes have higher levels of life satisfaction.³
- In Canada, the number of commuters since 1996 has increased by 30.3% to 15.9 million in 2016. The number of people using public transit is increasing; however, their average commute is 44.8 minutes compared to 24.1 minutes for car commuters.⁴

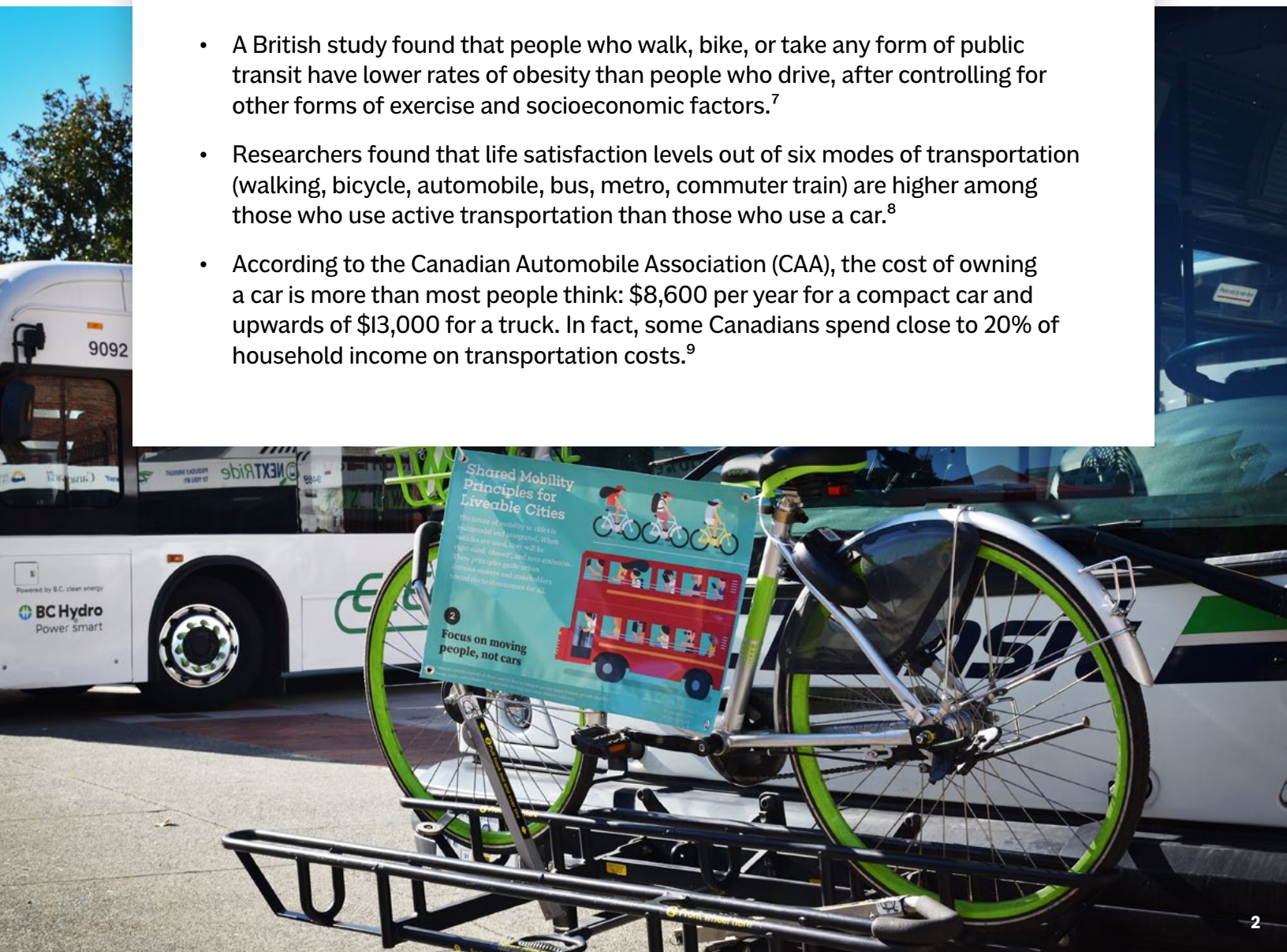
Background

Since 2017, SIPP has been working on an initiative called Smart South Island. While Smart South Island is a holistic perspective⁵ on how our entire Greater Victoria region can use data and connected technologies (or “smart cities” approaches) to achieve meaningful results across five theme areas (housing and affordability, environmental health, human health, transportation and mobility, and economic resiliency), the immediate priority is SIPP’s Smart Mobility Program (SMP).

The SMP is all about using data and technology to ‘move the needle’ on citizen access to mobility freedom. Doing this effectively will result in higher quality of life, higher subjective well-being, lower household expenses on transportation, and reduced Greenhouse Gas (GHG) emissions. These outcomes are explained in the SMP plan⁶ in greater detail. One of the most innovative developments of the SMP is SIPP’s Mobility Wellness Index.

Did you know?

- A British study found that people who walk, bike, or take any form of public transit have lower rates of obesity than people who drive, after controlling for other forms of exercise and socioeconomic factors.⁷
- Researchers found that life satisfaction levels out of six modes of transportation (walking, bicycle, automobile, bus, metro, commuter train) are higher among those who use active transportation than those who use a car.⁸
- According to the Canadian Automobile Association (CAA), the cost of owning a car is more than most people think: \$8,600 per year for a compact car and upwards of \$13,000 for a truck. In fact, some Canadians spend close to 20% of household income on transportation costs.⁹





Creating the Mobility Wellness Index (MWI)

In March 2019, SIPP submitted a detailed plan to Canada's first-ever Smart Cities Challenge in a bid to win \$10 million to implement the SMP. The full plan can be found on SIPP's website www.southislandprosperity.ca/scc. Among the many contributors to SIPP's SMP was the Mobility Wellness Taskforce¹⁰. This group oversaw the creation of the MWI, working with internationally respected civic engineering and design company, Arup (www.arup.com), to lead its development. In addition to taskforce members with expertise in city leadership, transit planning, psychology, economics, and social determinants of health, Arup was supported by Happy City (www.thehappycity.com), an urban planning consultancy with a focus on using the science of wellbeing to create happier, healthier and more inclusive communities.

After several months of research, development and collaboration, the first MWI report is now complete and the full document is available upon request.

How does the MWI work?

The Mobility Wellness Index (MWI) is the first performance measurement system designed to meaningfully measure the effects that mobility systems have on the physical, emotional and financial wellbeing of their users. The MWI is a composite score based on region or city-wide performance across 20 indicators. It is informed by 40 metrics derived from six theme areas that are deemed essential to the ultimate outcome of holistic citizen wellbeing.

The MWI composite score combines different themes, indicators and metrics—including both quantitative and qualitative data—that indicate progress resulting from investments and improvements to mobility systems.

The MWI is shown graphically as a polar diagram (Figure I). This diagram offers three critical layers of information for monitoring our progress:

1) Themes are represented in the inner layer closest to the centre of the circle. There are six themes: one for each outcome statement (Convenience, Affordability, Wellbeing, Greener, Inclusivity), plus a sixth, labelled Policy and Governance (relating specifically to how governments are developing and implementing policies and programs that help improve wellbeing).

2) Indicators are associated with each theme on the outer layer of the diagram. There are 20 indicators, each forming a slice within the polar diagram. These are linked to specific goals and sub-themes listed under each outcome statement. For example, the Greener theme has resource efficiency, cleaner air, and citizen engagement indicators.



3) Metrics are the data that produces the score for each indicator (located as the middle layers of the circle). The score for each indicator is represented by a coloured location within each indicator slice. Indicators that are performing poorly will have a coloured location closer to the centre of the circle, whereas indicators that are performing well will have coloured location closer to the outer layer of the circle. These are measured either in quantitative or qualitative form and scored as averages to inform indicators.

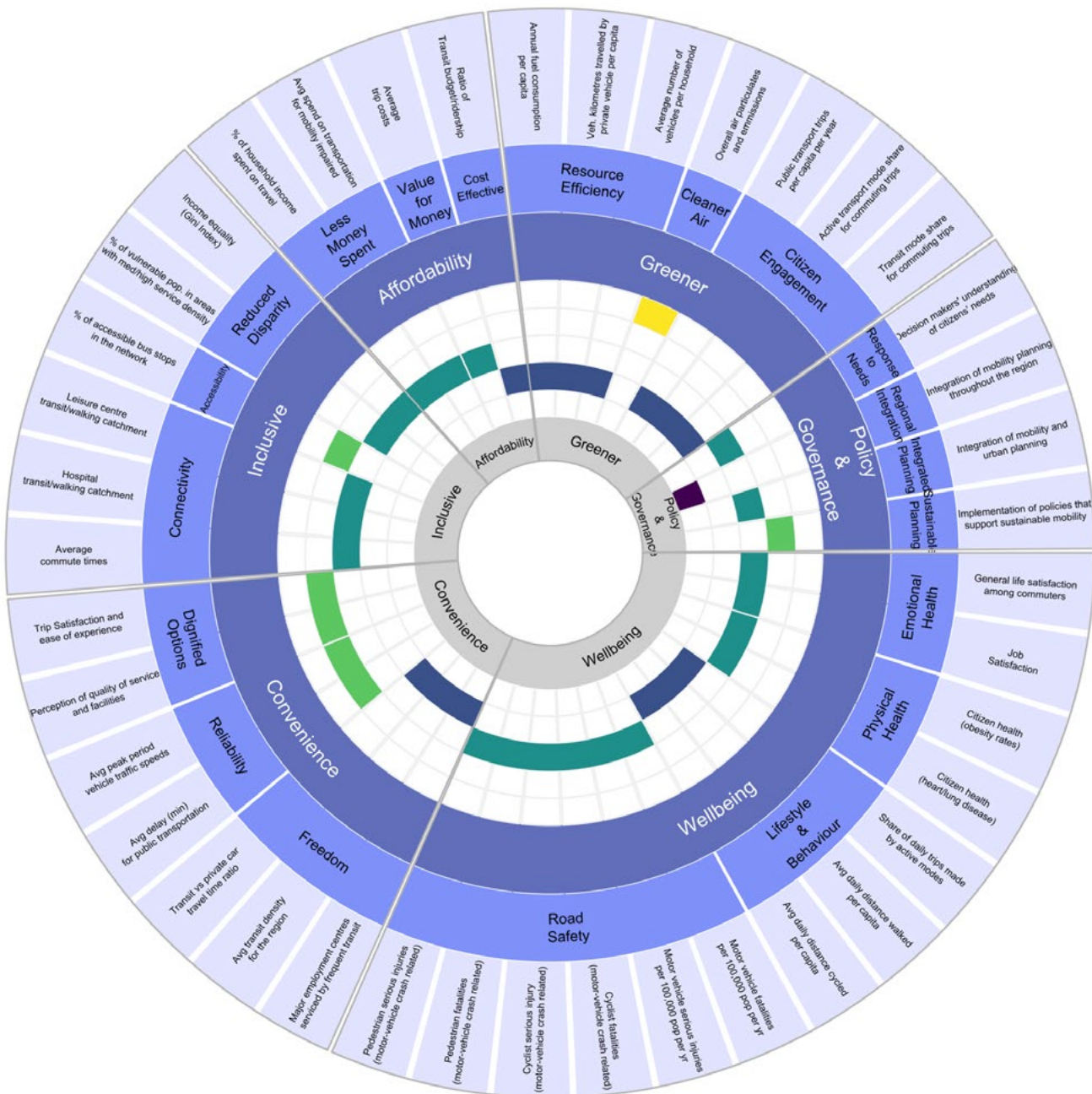
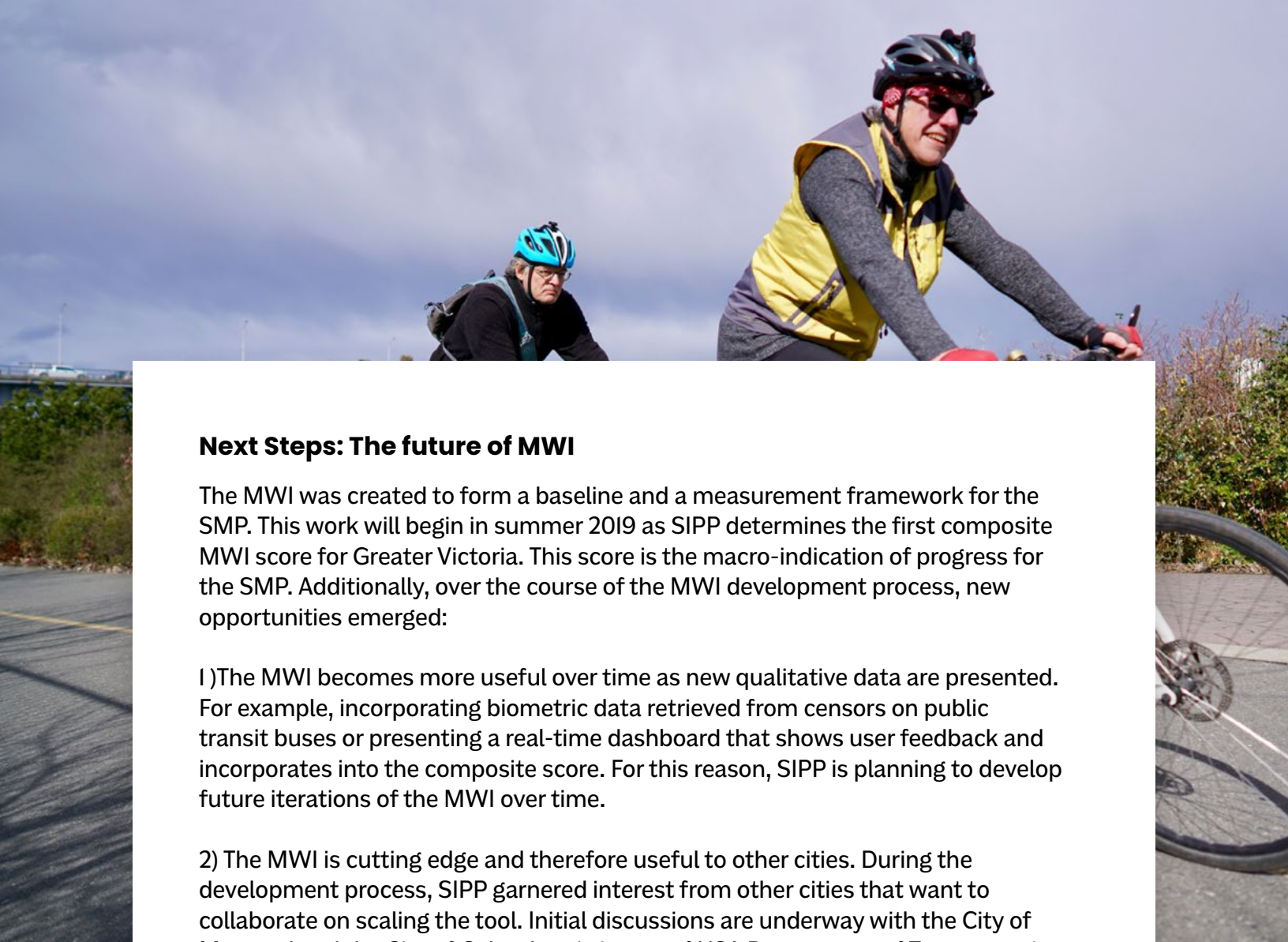


Figure 1¹¹



Next Steps: The future of MWI

The MWI was created to form a baseline and a measurement framework for the SMP. This work will begin in summer 2019 as SIPP determines the first composite MWI score for Greater Victoria. This score is the macro-indication of progress for the SMP. Additionally, over the course of the MWI development process, new opportunities emerged:

1) The MWI becomes more useful over time as new qualitative data are presented. For example, incorporating biometric data retrieved from sensors on public transit buses or presenting a real-time dashboard that shows user feedback and incorporates into the composite score. For this reason, SIPP is planning to develop future iterations of the MWI over time.

2) The MWI is cutting edge and therefore useful to other cities. During the development process, SIPP garnered interest from other cities that want to collaborate on scaling the tool. Initial discussions are underway with the City of Montreal and the City of Columbus (winners of USA Department of Transportation Smart Cities Challenge).

While the MWI does not make a useful tool to compare cities against each other (due to several factors ranging from data availability/consistency to how each indicator score is weighted), it makes a scalable tool that is based on whatever outcome the city or region is trying to achieve as it relates to mobility wellbeing.

For additional information and to learn more visit SIPP's website at <http://www.southislandprosperity.ca/scc/>

ENDNOTES

¹ <https://www.canadianfuels.ca/Blog/February-2016/How-does-transportation-contribute-to-Canada-s-GHG-emissions/>

² <https://www.statista.com/statistics/270860/urbanization-by-continent/>

³ <https://link.springer.com/article/10.1023/A:1010366321778>

⁴ <https://www150.statcan.gc.ca/nl/en/daily-quotidien/171129/dq171129c-eng.pdf?st=2zeWDA8d>

⁵ To learn more, read the Smart South Island Vision 2040: <https://static1.squarespace.com/static/59dcb467268b96b747e9f85d/t/5b047f726d2a73a2f0b7da0b/1527021437348/Vision+2040.pdf>

⁶ Read the full plan here: <http://www.southislandprosperity.ca/scc/>

⁷ <https://www.bmj.com/content/349/bmj.g4887>

⁸ <https://www.sciencedirect.com/science/article/abs/pii/S1369847814001107?via%3Dihub>

⁹ <https://globalnews.ca/news/3832649/car-ownership-costs-public-transit-canada/>

¹⁰ Mobility Wellness Taskforce was comprised of: Greg Hill, Mayor Lisa Helps, Dallas Gislason, Dr. Danesh Shahnazian, Dr. Elizabeth Borycki, Dr. Chen Qian, and Dan Ruscheinski

¹¹ Scores shown are for demonstration purposes and are not yet based on actual data.