

Data, to better understand the past and future of carsharing

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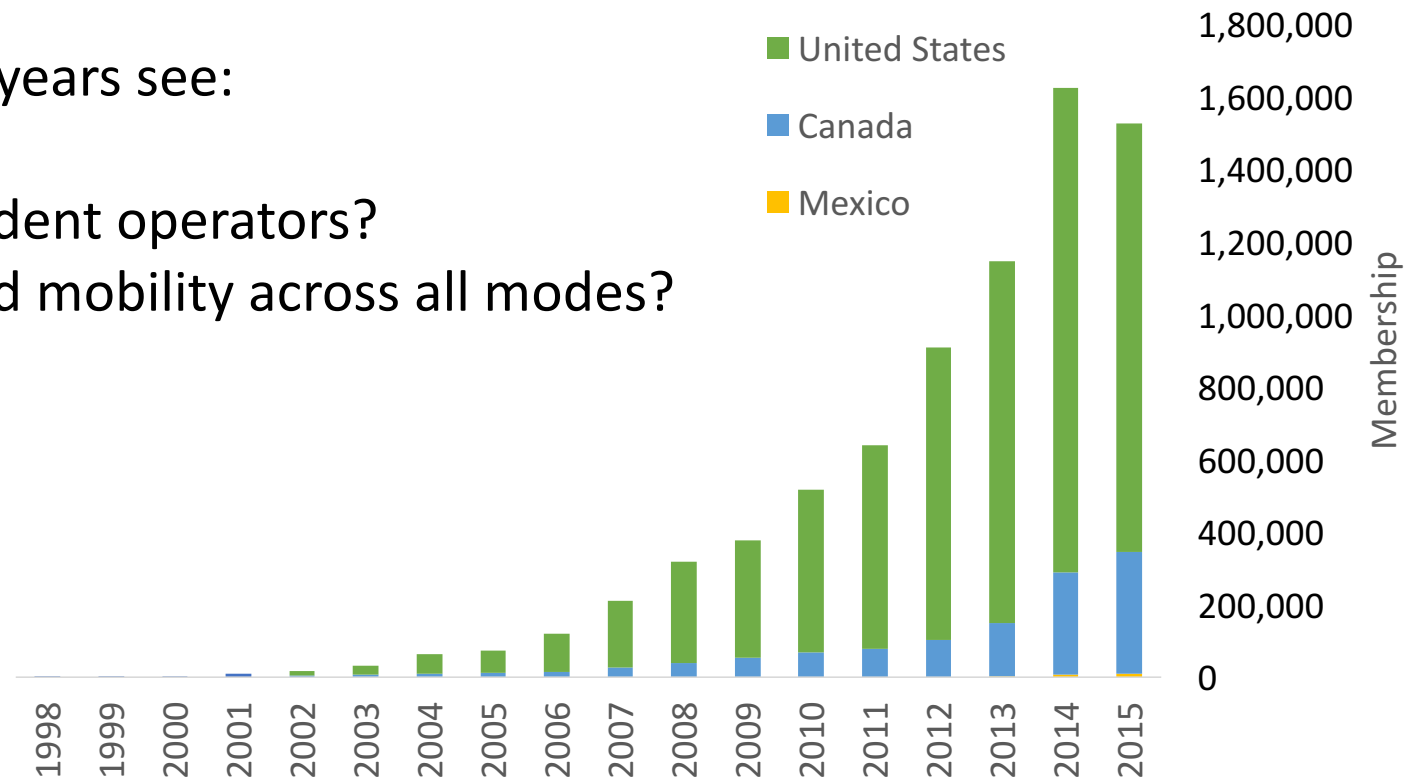
Adjunct Prof of Engineering & Public Policy, Carnegie Mellon University

University Fellow, Resources for the Future, Washington DC

CS membership in North America: 1998-2015

Will the next 15 years see:

- More growth?
- More independent operators?
- Fully integrated mobility across all modes?



modified from Shaheen & Cohen, 2012; 2013; 2014; University of California Berkeley Transportation Sustainability Research Center, 2015

Trend of Preferences or Constraints?

- Are millennials choosing not to drive or have a car?

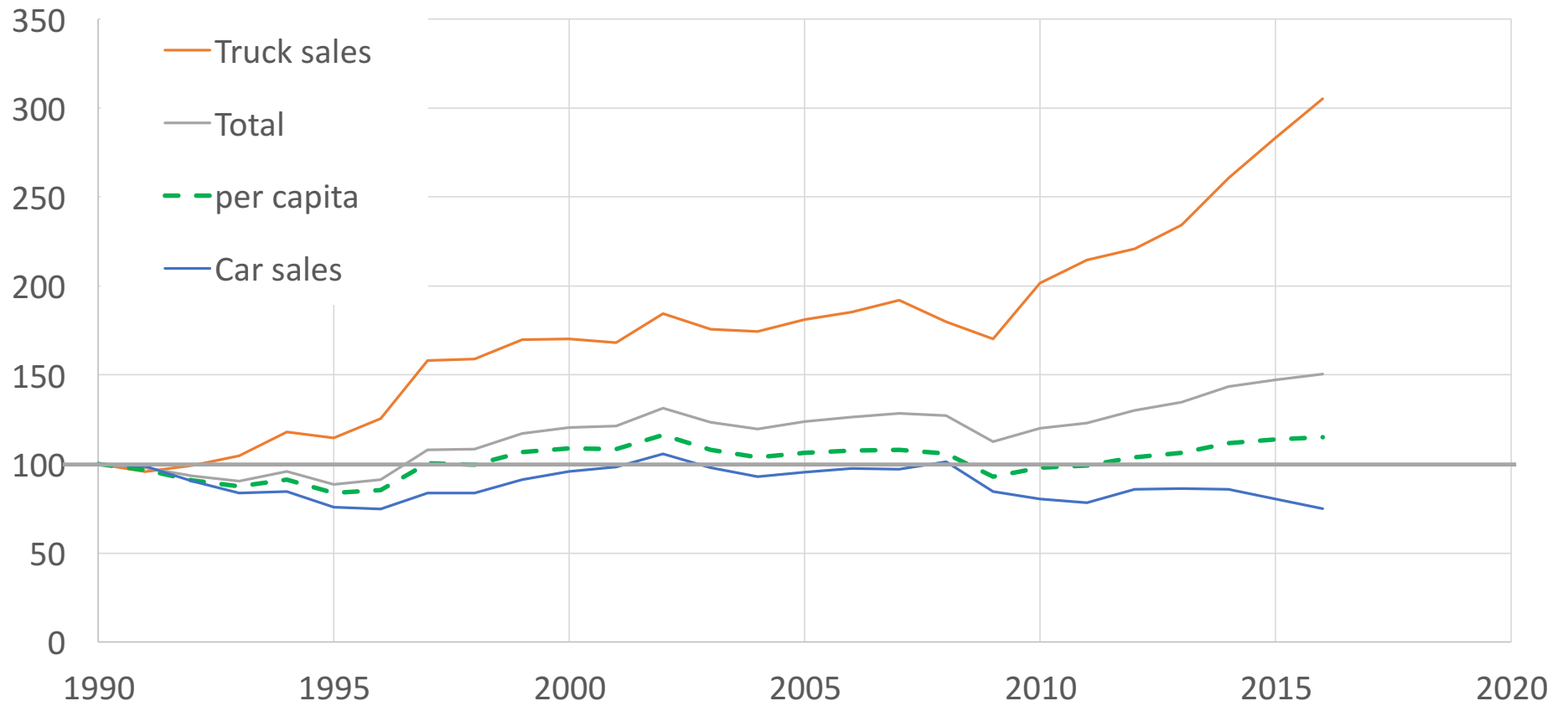
or

- Are millennials unable to afford private cars?

And going forward:

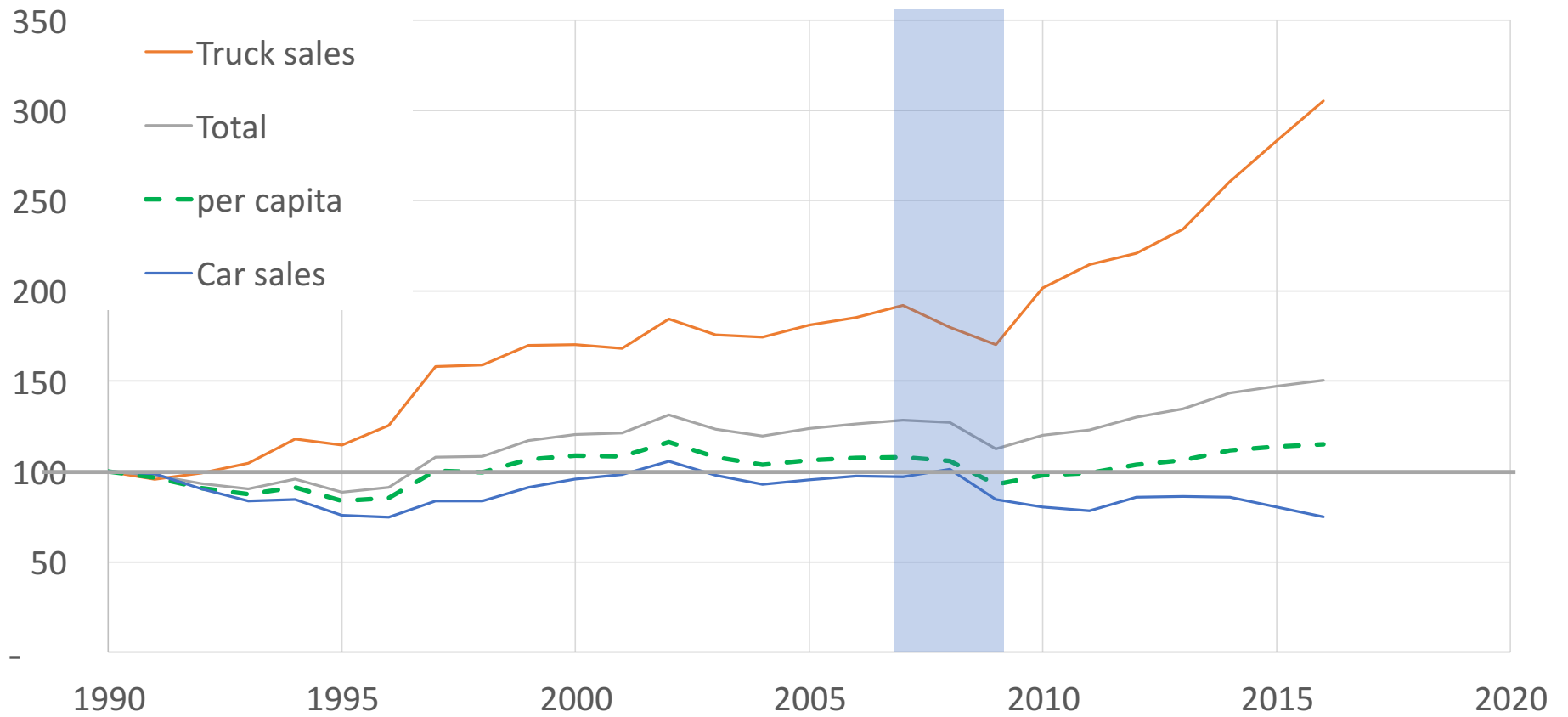
- How do other mobility options meet trip requirements?

Canada New Vehicle Sales (1990=100)



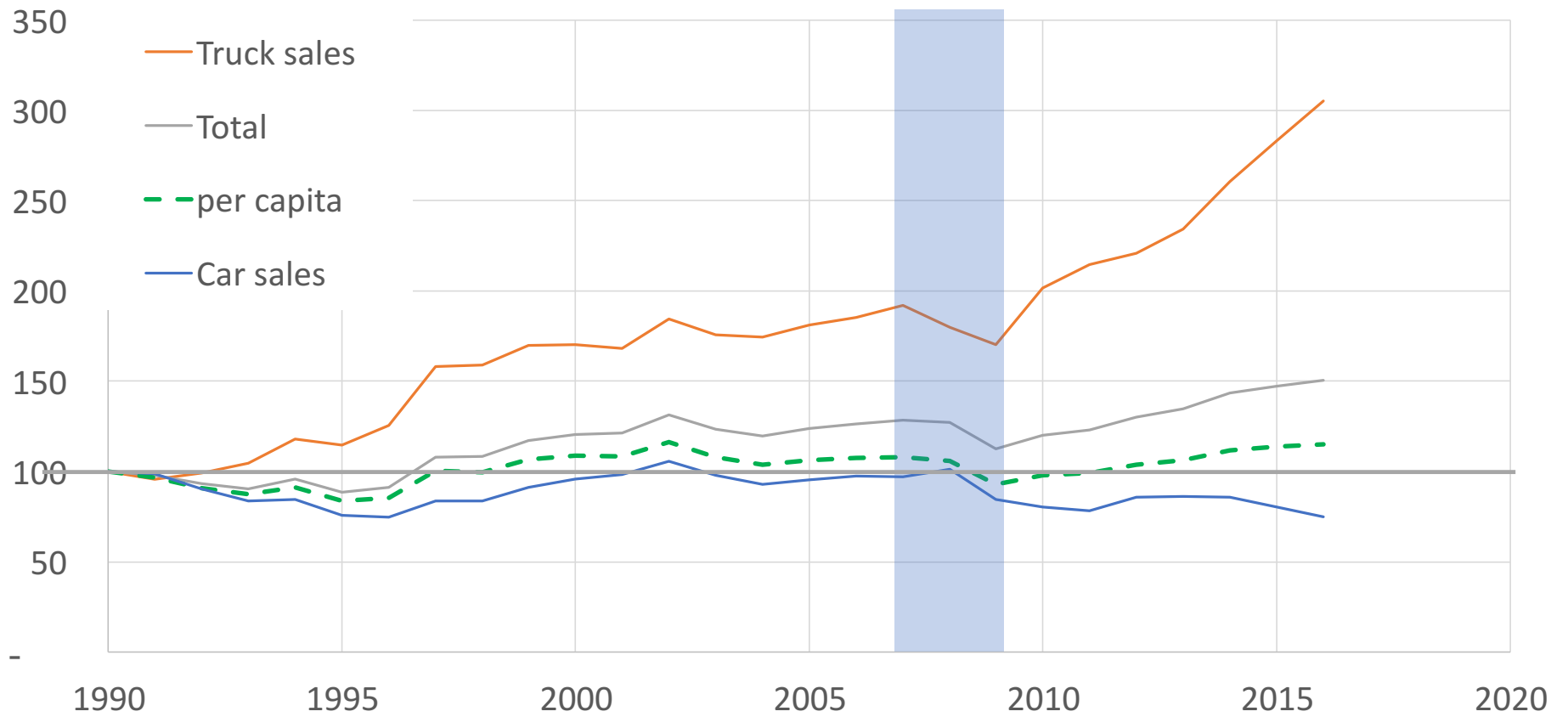
In Canada, “truck” expenses are tax deductible

Canada New Vehicle Sales (1990=100)



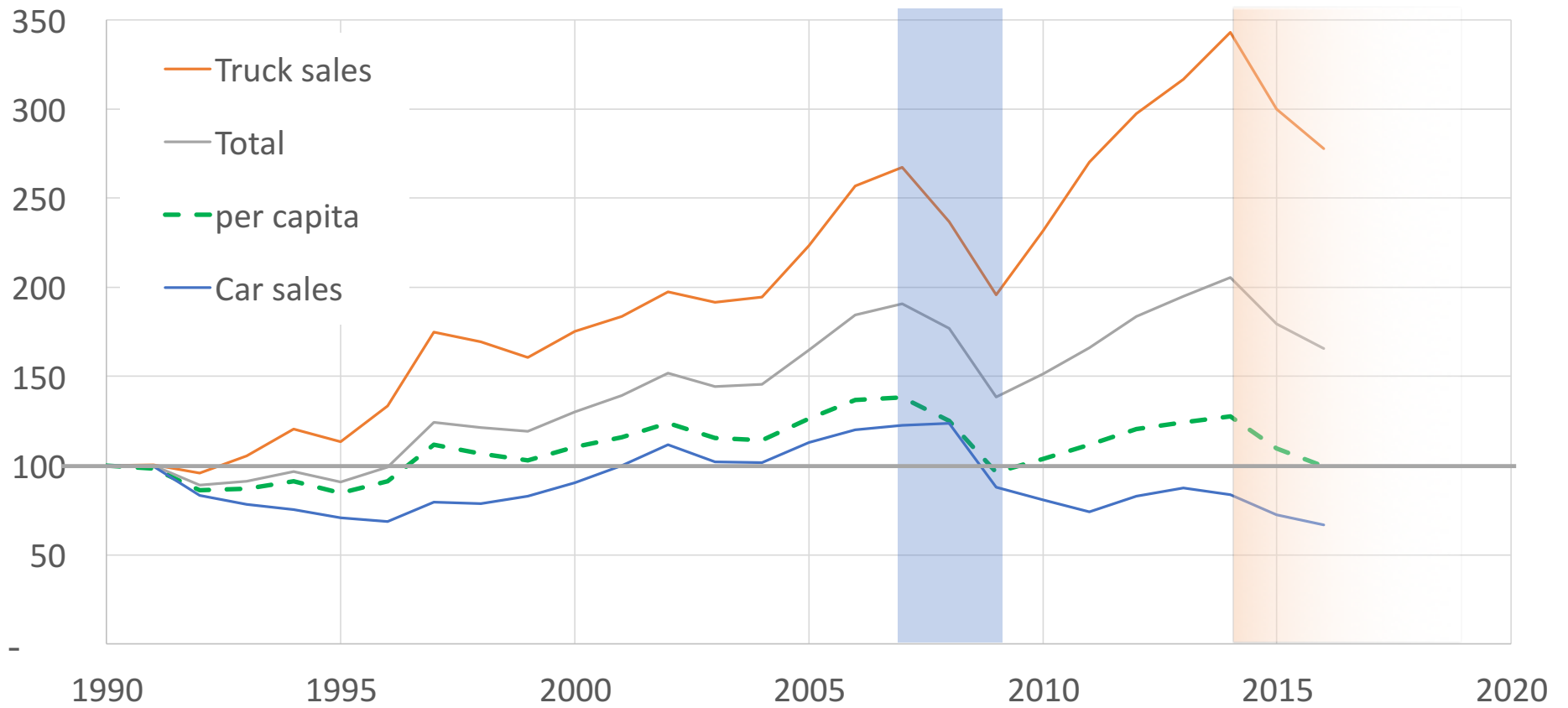
and the financial crisis was not too deep and did not last long

Canada New Vehicle Sales (1990=100)



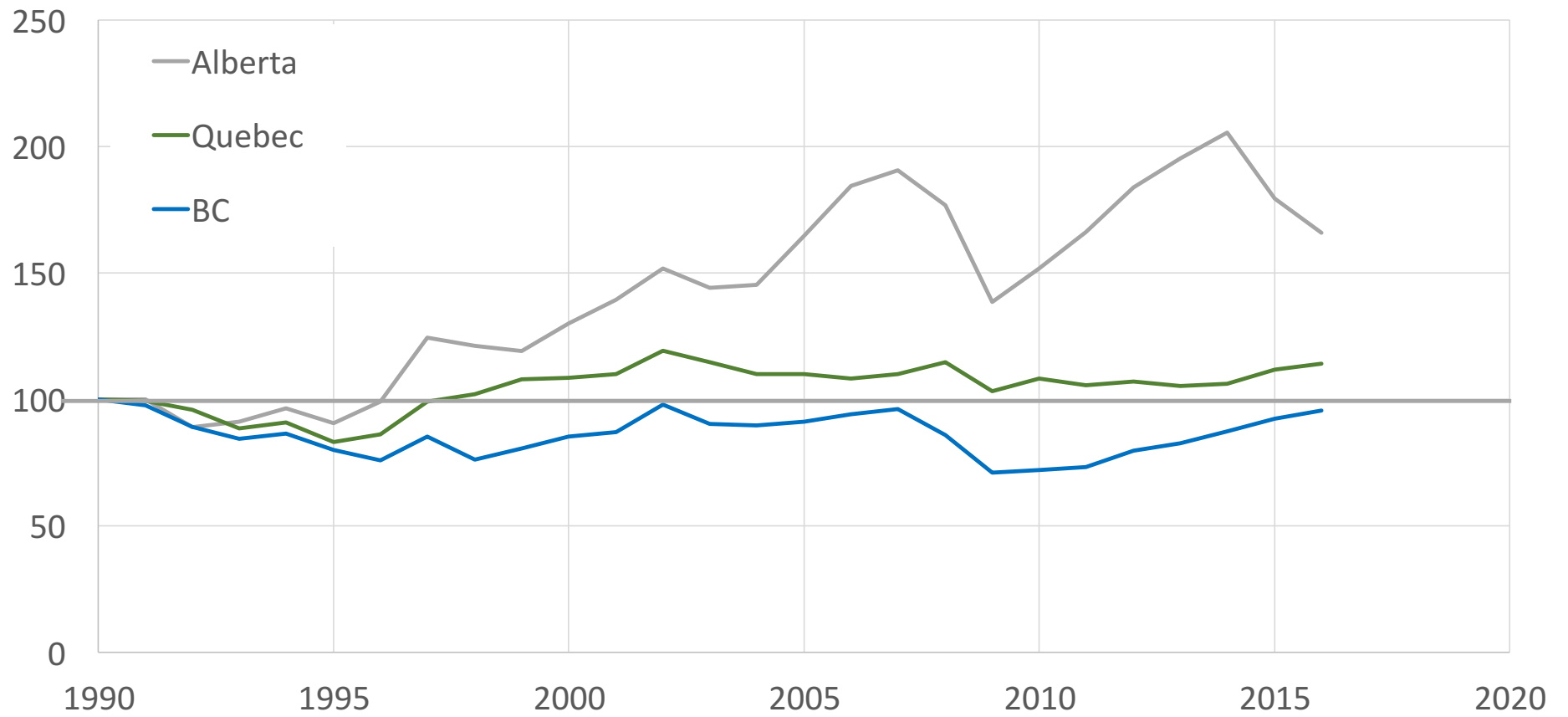
and the financial crisis was not too deep and did not last long

Alberta New Vehicle Sales (1990=100)



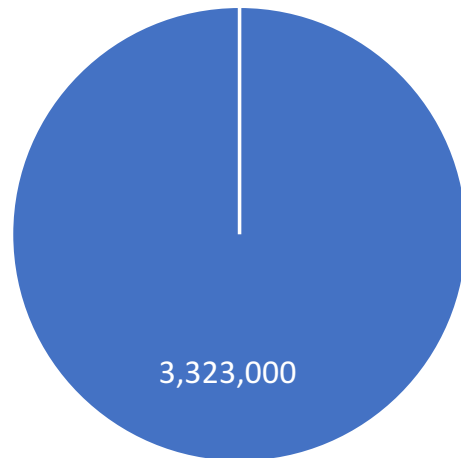
...and local prospects shape local choices

New Cars per Capita: a tale of three Provinces

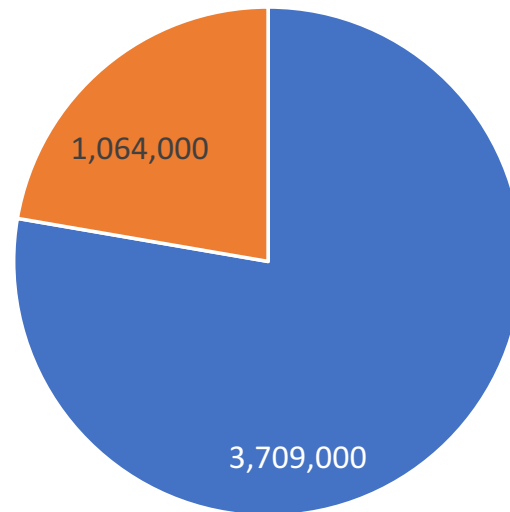


BC demographics

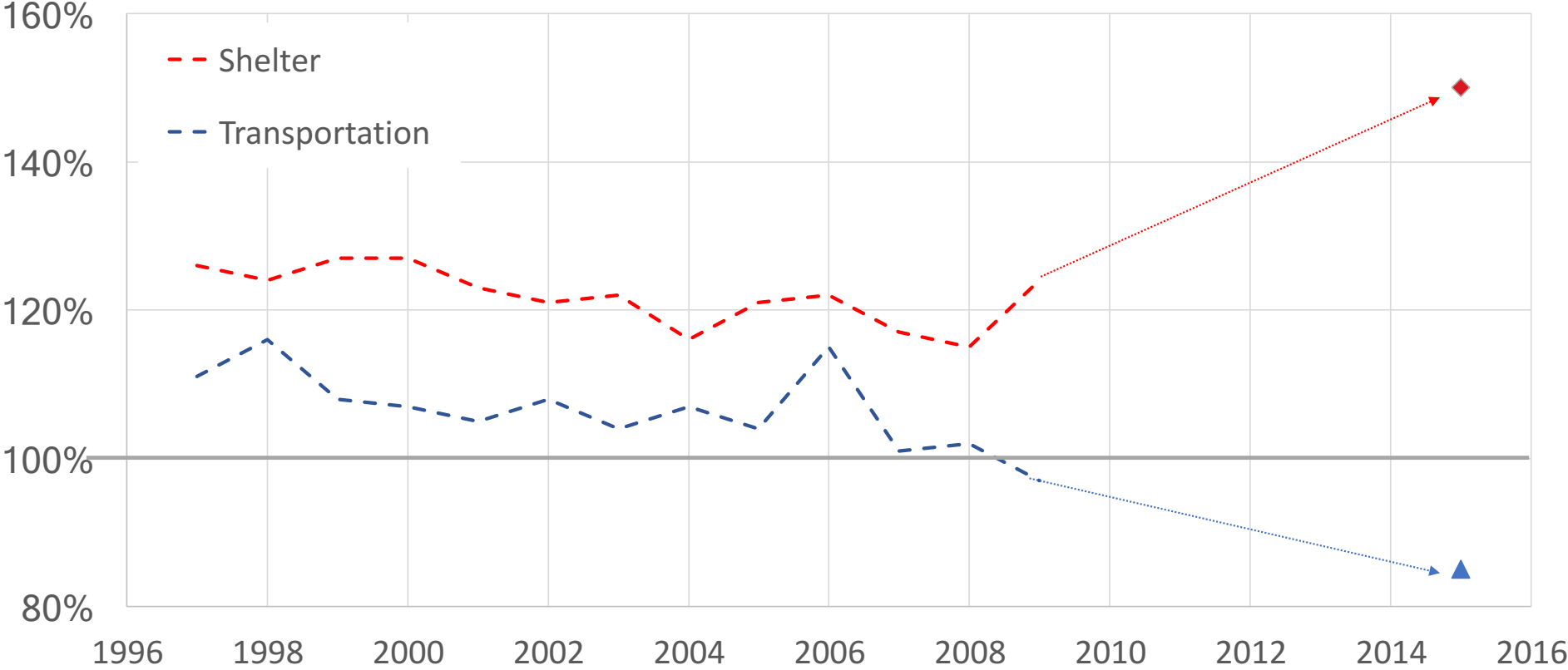
1990



2016



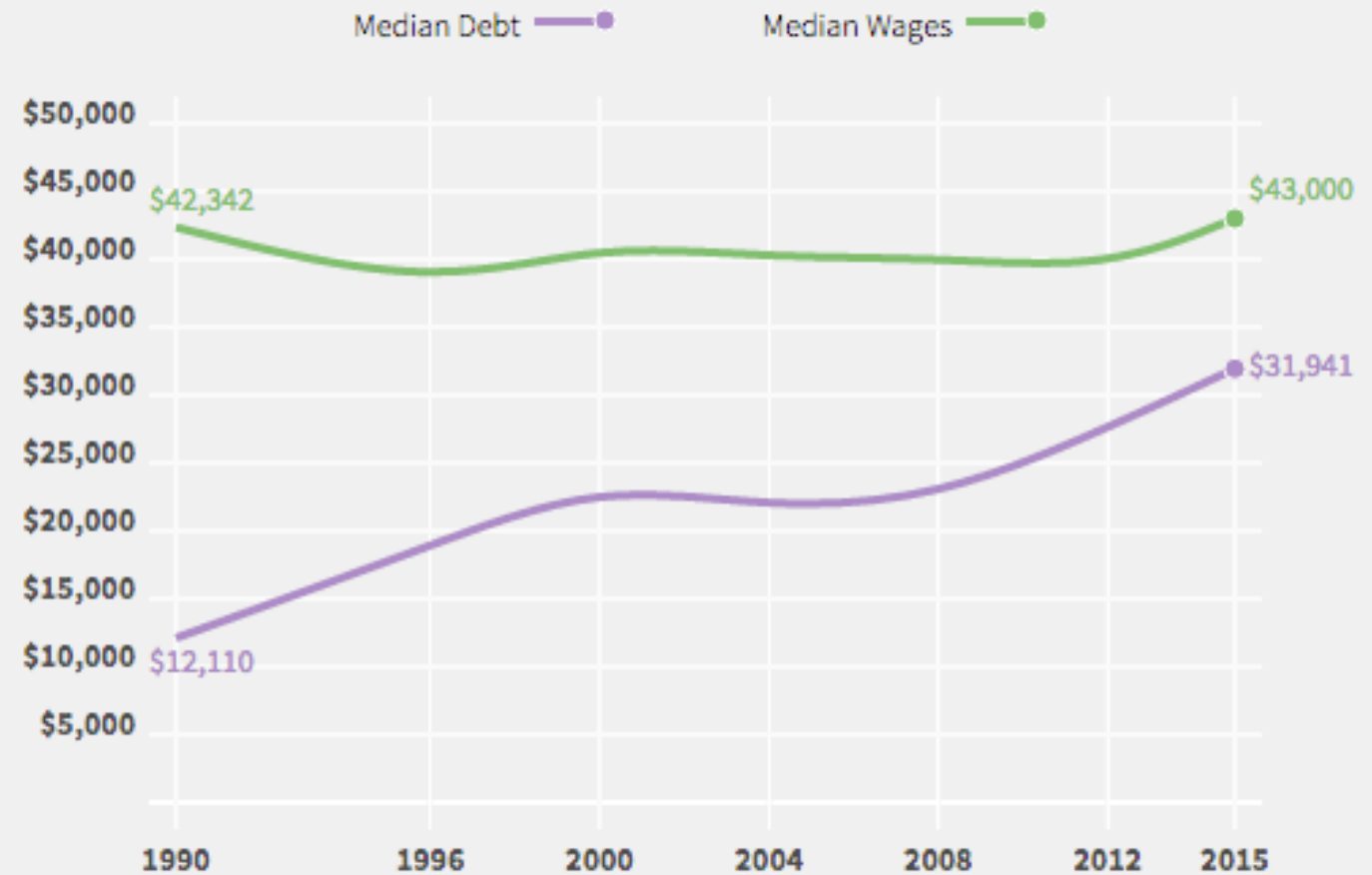
Vancouver Household Expenditures *cf.* Canada



...and cost of living has an impact

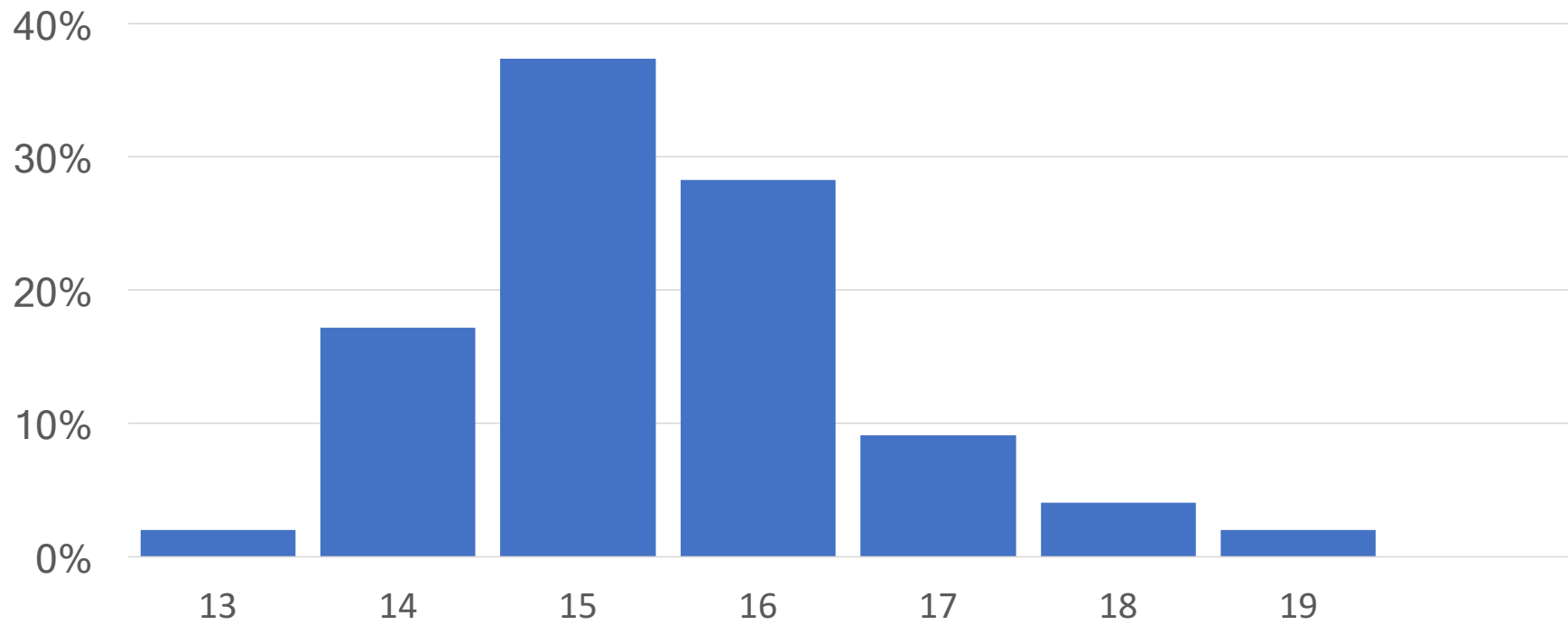
Student Debt Significantly Outpacing Wage Growth

Median wages have increased 1.6% over the last 25 years while median debt has risen 163.8%

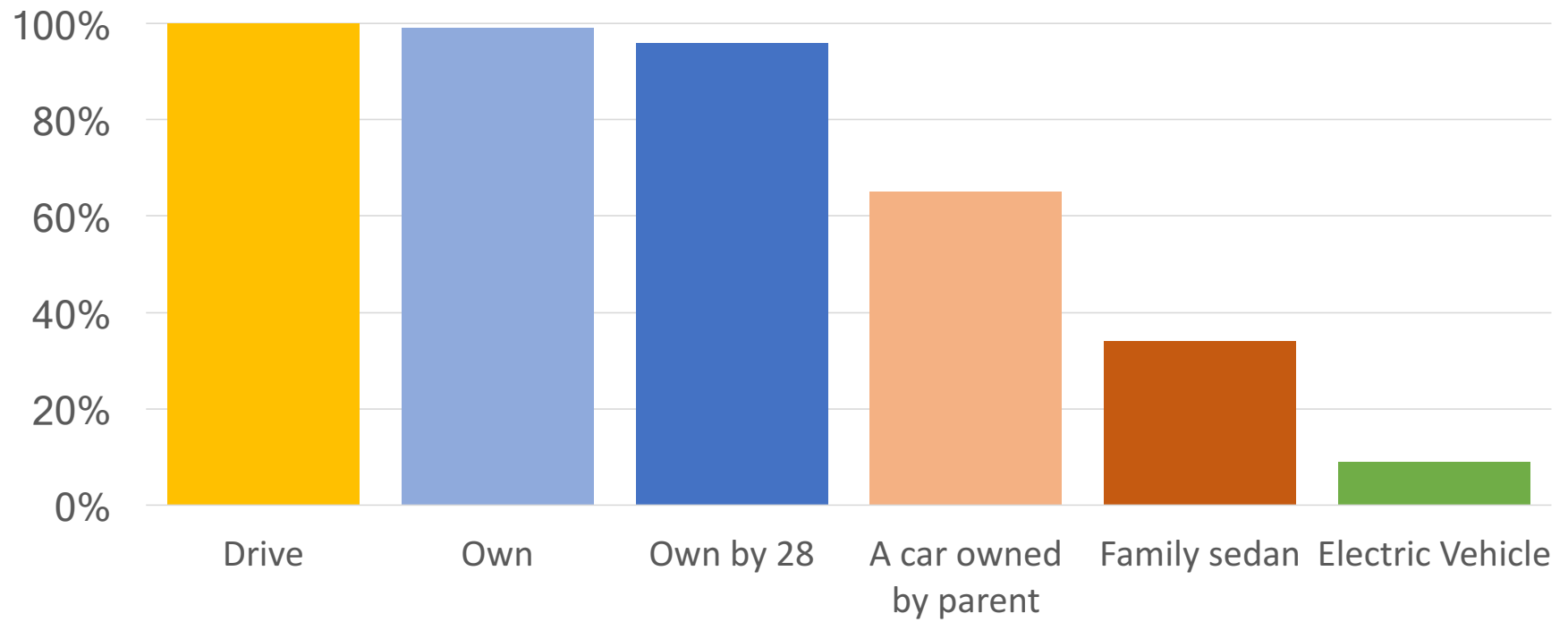


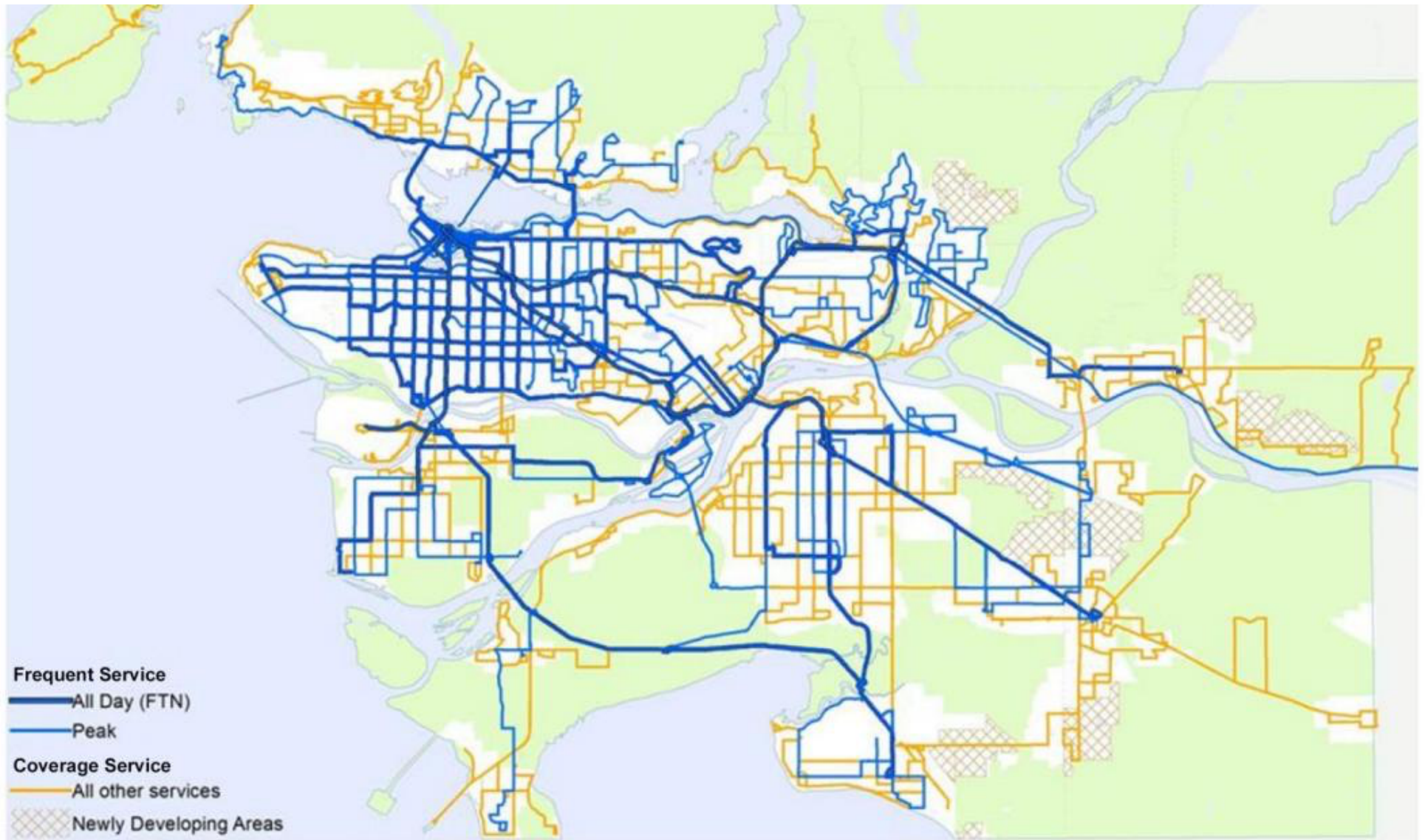
Millennials
not getting a
driver's
licence is
likely a forced
choice

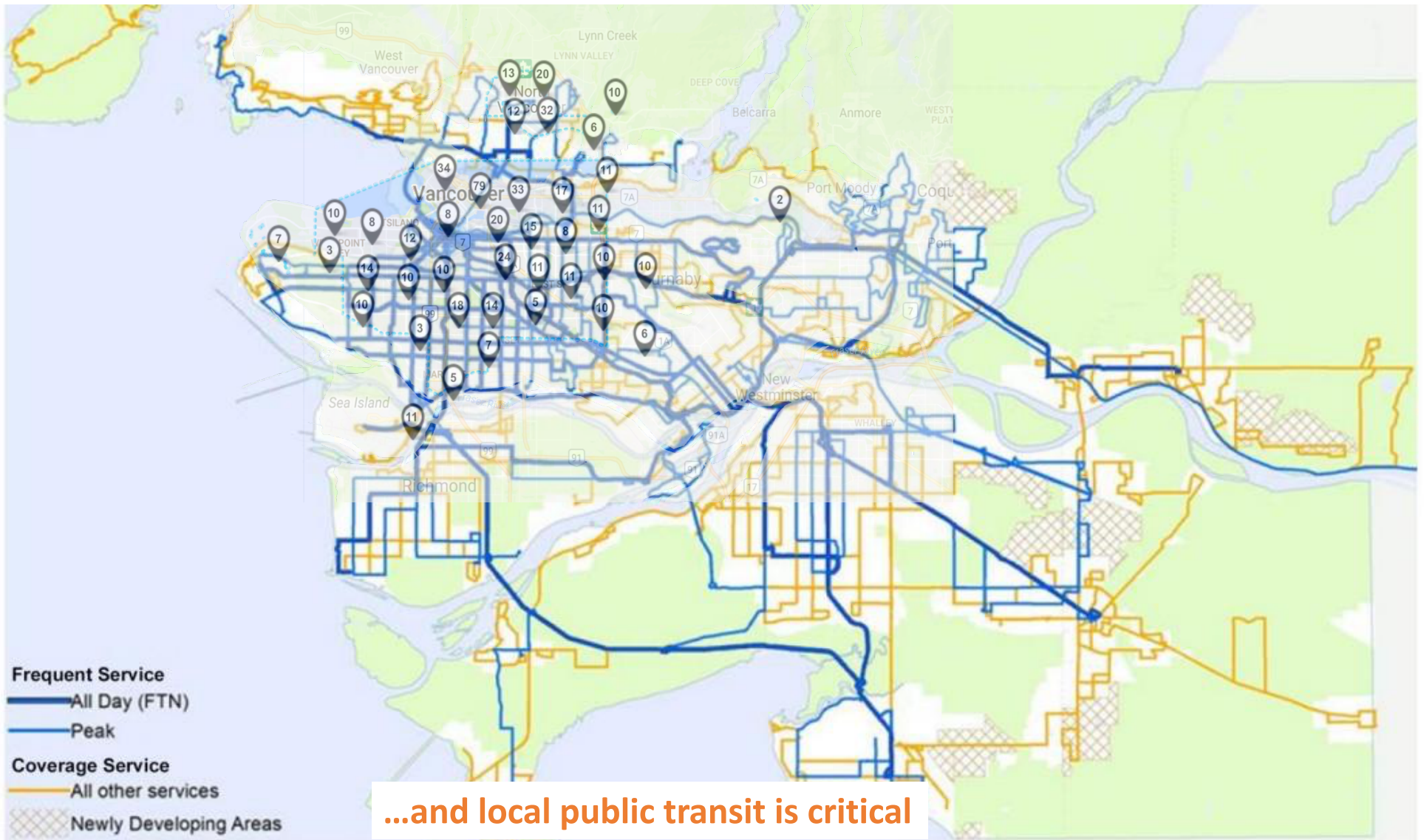
A 2016 Survey of Generation Z



Gen Z Expectations







4 Factors shaping the future of CS

- Evolution of preferences
 - determines aspiration about different mobility forms
- Income, non-discretionary spending + cost of driving
 - determines capacity for private vehicle ownership & operation
- Housing density + Investment in public transit
 - determines quality of public transit
- Hardware and software innovators
 - Alternatives in mobility service offerings

My expectation for 2030: Dystopian

- AI will drive cars and occupy jobs,
- Universal Minimum Income will be insufficient to own cars, ...
- Public transit will be under-funded and over-crowded.
- OEMs will offer a range of mobility services at different price points.

OEMs (may) use CS to connect with consumers.

My expectation for 2030: Utopian

- AI will drive cars *in traffic* and occupy *boring* jobs,
- Universal Minimum Income will be enough for *healthy consumerism*
- Public transit will evolve to *on-demand private pods*.
- OEMs will offer a range of mobility services at different price points.

OEMs (may) use CS to connect with consumers.

What is missing?

- Tracking data on:
 - Why trends are as they are.
 - Relative impacts of one-way and two-way carsharing on mobility choices
 - Broad array of factors that influence CS utilization rates
- Systems innovations:
 - New financial models for supporting CS vehicles
 - Integration of CS with public transit for seamless integrated operation



Thank you!

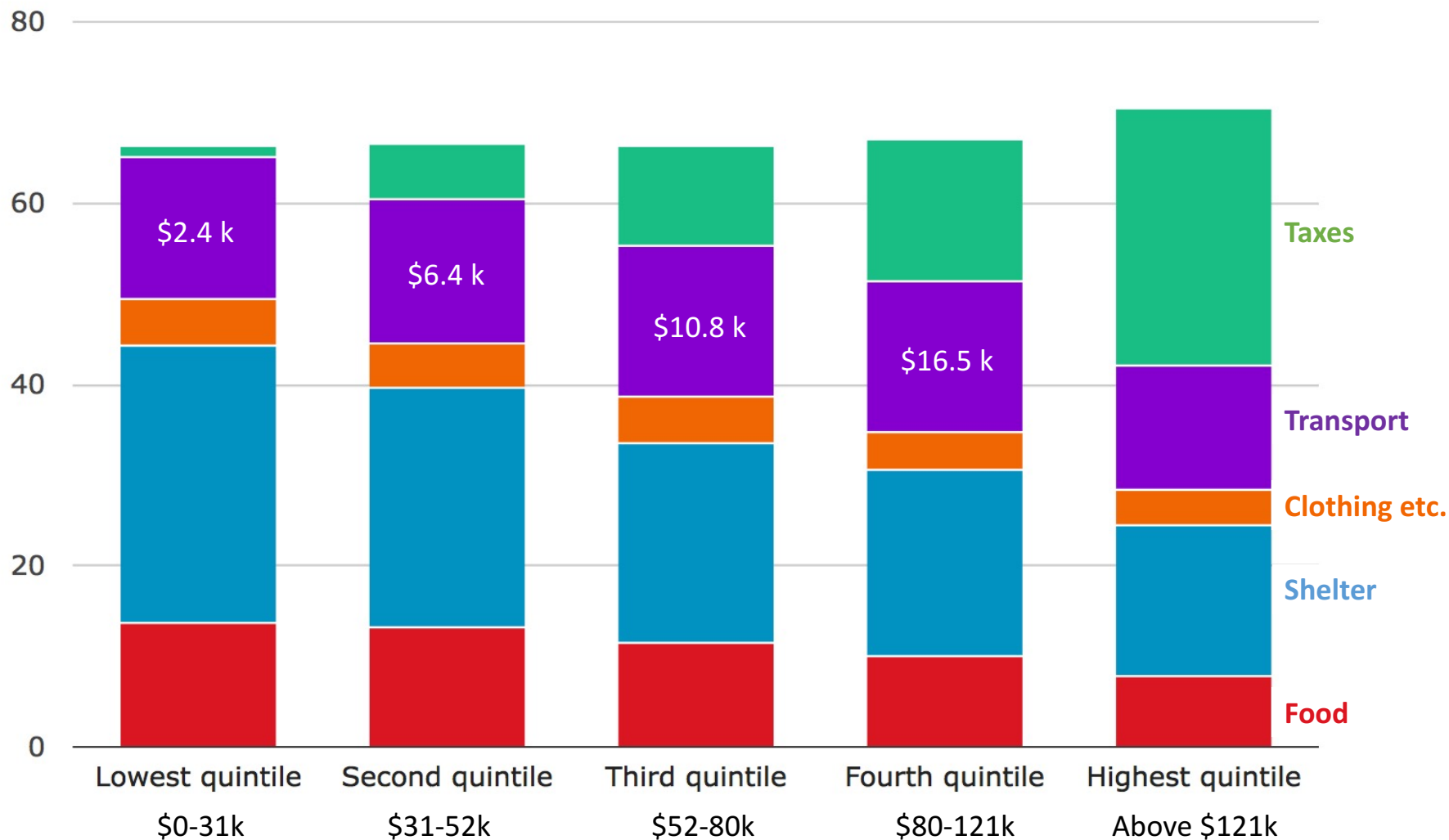
To CSA for inviting us here.

IMHO,
Guinan was
more insightful
than Data.

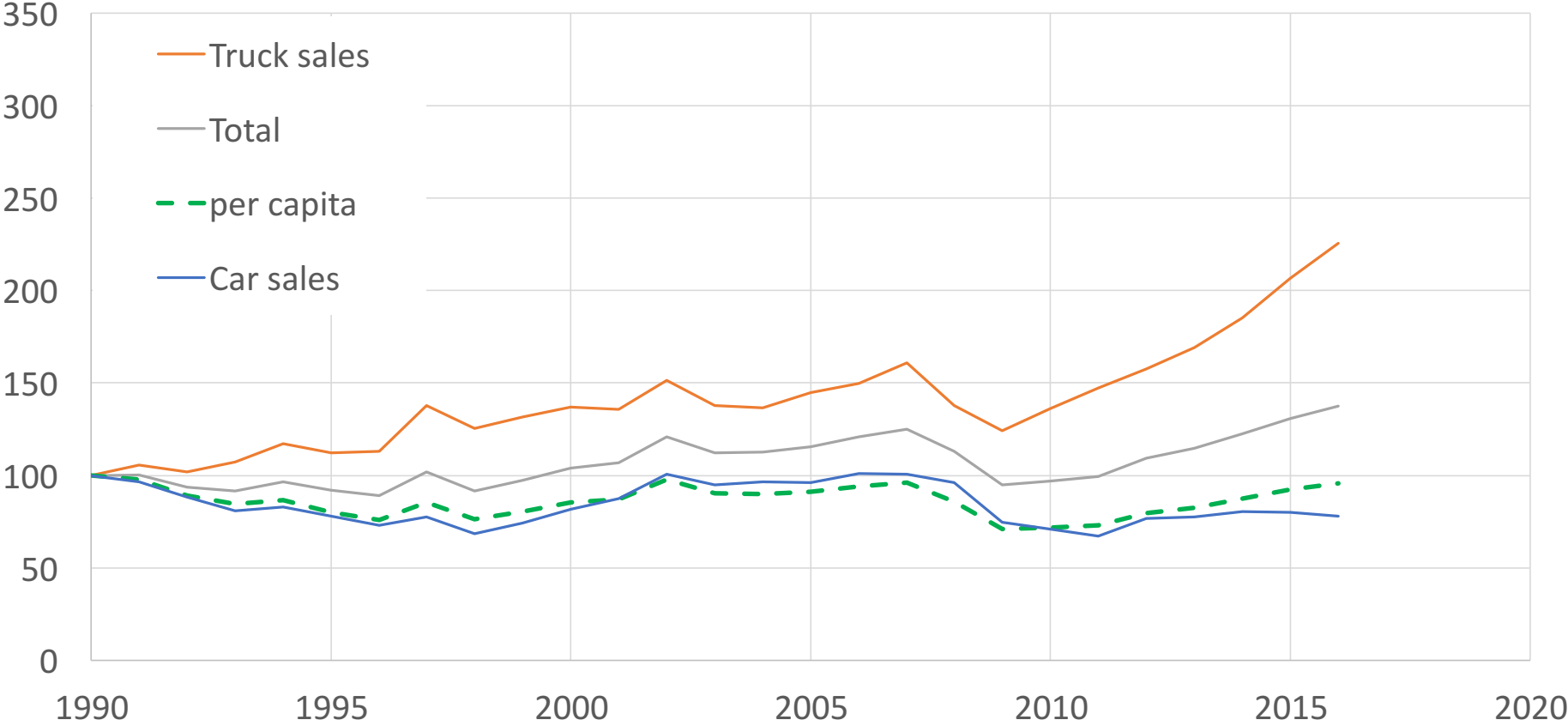
Even if we had all the data we could wish for, we could not predict reliably.

Additional slides

Canadian Household % Expenditures by Income Group(2013)



BC New Vehicle Sales (1990=100)



...and local cultures and geography has an impact

New Building Permits by Type: Vancouver (1990=100)

