

Study: Working from home: Potential implications for public transit and greenhouse gas emissions

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A transition to telework might lead to a non-negligible reduction in greenhouse gas emissions

The increase in telework observed in the wake of the COVID-19 pandemic has shown that far more Canadian workers can work from home than had been observed before the pandemic. While the long-term effects of telework on workers' well-being and productivity remain to be seen, working from home has the potential to reduce daily commuting times for many workers. This, in turn, could reduce traffic congestion, affect the demand for public transit and reduce greenhouse gas (GHG) emissions.

To shed light on these questions, a new Statistics Canada study, "[Working from home: Potential implications for public transit and greenhouse gas emissions](#)," documents the degree to which a transition to full telework capacity—a situation in which all potential teleworkers would work from home most of the time—could reduce commuting times, the demand for public transit and GHG emissions.

Using data from the 2016 Census of Population, the study shows that a transition to full telework capacity could reduce annual GHG emissions attributable to transportation by about 8.6 megatonnes of carbon dioxide equivalent. This represents 6.0% of the direct GHG emissions from Canadian households in 2015 and 11.0% of their emissions attributable to transportation that year.

It should be emphasized that if personal homes are less energy efficient than large office buildings, part of this reduction in GHG emissions could be offset by emissions associated with households' increased energy use required for heating or air conditioning. The study does not quantify this effect.

Before the pandemic, one in three Canadian workers was a potential teleworker

Before the pandemic, roughly one in three Canadian workers (36%) was a potential teleworker, i.e., held a job that could plausibly be done from home but was usually not working from home most of the time.

Because office jobs—many of which can be done from home—are predominantly found in large cities, this unused telework capacity was the largest in large cities.

For example, 44% of workers living in Toronto were potential teleworkers in 2015. The corresponding percentage living in Ottawa–Gatineau was even higher at 48%. In contrast, 25% of workers in Wood Buffalo, Alberta, were potential teleworkers.

A transition to telework might significantly reduce public transit use

A transition to full telework capacity could reduce the total number of commutes made in a given year by workers who were previously using public transit by roughly one half (52%), which would reduce demand for public transit by a significant amount.

The reduction in public transit use would likely vary across cities. For example, the annual number of public transit commutes—as a percentage of all commutes done by workers who use public transit—could fall by 24% in St. John's, Newfoundland and Labrador; by 26% in Windsor; by 56% in Montréal and Toronto; and by 62% in Ottawa–Gatineau.



Potential teleworkers might save close to one hour per day by no longer commuting

The study also shows that if all Canadians who can work from home started teleworking instead of commuting, they could save about 55 minutes per day, on average.

Workers living in large cities would likely experience the largest time savings. Those living in Toronto could save an average of 72 minutes per day, while their counterparts living in Montréal (64 minutes) or Vancouver (60 minutes) could also experience higher-than-average time savings. In contrast, the average time savings for workers living in St-John's or Regina could amount to roughly 36 minutes per day.

Considerable uncertainty surround these estimates

All of these numbers must be interpreted carefully. They measure the potential direct impact of a transition to full telework capacity but do not take into account behavioural changes that might result from the COVID-19 pandemic or from other factors.

For example, once the pandemic is over, risk-averse workers may choose to abandon public transit and travel to work by car if a vaccine does not provide complete immunity from the risk of infection. Others might decide to use their own cars as a result of the initial decrease in traffic congestion. Such behavioural changes would tend to limit the reduction in commuter traffic and GHG emissions associated with a transition to full telework capacity. They would also exacerbate the decline in demand for public transit documented in this study.

The analysis is also based on the assumption that the economy transitions to a point where telework capacity is fully utilized. Whether such transition to full telework capacity will materialize once the COVID-19 pandemic is over remains to be seen.

For a visual representation of these findings, please see the infographic, "[A look at the potential impact of telework on public transit and greenhouse gas emissions using 2015 data.](#)"

The research article titled, "[Working from home: Potential implications for public transit and greenhouse gas emissions](#)," is now available in the April 2021 online issue of *Economic and Social Reports*, Vol. 1, no. 4 ([36280001](#)).

Also released today is an infographic titled, "[A look at the potential impact of telework on public transit and greenhouse gas emissions using 2015 data](#)," available as part of the series *Statistics Canada – Infographics* ([11-627-M](#)).

For more information, contact us (toll-free 1-800-263-1136; 514-283-8300; STATCAN.infostats-infostats.STATCAN@canada.ca).

To enquire about the concepts, methods or data quality of this release, contact René Morissette (rene.morissette@canada.ca), Social Analysis and Modelling Division.