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Dear Members of Parliament,

Thank you for the opportunity to present testimony to the Standing Committee on Transport, Infrastructure and Communities of the House of Commons.

I am pleased to be able to share my thoughts on high-frequency rail in Canada. I have been studying intercity rail investments and outcomes for more than 15 years as a scholar and expert. In my role at the Urban Institute—a nonprofit, nonpartisan research organization in the United States—I routinely review planned investments in transportation to evaluate their relative benefits for the society, the environment, and the economy.

I have attached my planned opening statement as well as a more extensive briefing book, with references, for the committee's information in advance of the meeting. All views expressed here are my own and should not be attributed to the Urban Institute, its trustees, or its funders. I hope that this information is useful in your deliberations on the subject. I look forward to discussion with the committee during the question-and-answer session following the planned testimony and would be happy to follow up afterward with additional discussion if useful.

Sincerely,

Dr. Yonah Freemark

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Opening statement

Members of Parliament,

Thank you for the opportunity to discuss the high frequency rail project with you today. My name is Yonah Freemark; I hold a PhD in urban studies and have been researching topics related to transportation, land use, and housing for 15 years. I speak here as an individual researcher, not as a representative of my employer, the Urban Institute, which does not take positions on specific policies.

In undertaking its rail project, which I will hereafter refer to as HFR, Canada is taking a major step forward in improving train service for the populations of Ontario and Québec. This comes after decades of underinvestment. In my research, I have demonstrated that Canada's per capita rail investment has been the lowest of all G7 members in every year but one since at least 1995. In recent decades, its investment levels have been less than half and sometimes as low as one-tenth the levels of those in countries like France, Italy, and Japan.

This underinvestment has consequences: Rail ridership in Canada is extremely low compared to that in other G7 nations, with the average Canadian taking an intercity rail trip only once every 10 years. That compares to rail travel in a country like Germany, where the average resident takes 25 intercity rail trips a year.

Lack of rail system use, in turn, has negative impacts on Canada's society, environment, and economy. Unavailability of frequent, rapid, and affordable intercity rail access limits the ability of people without a car, with inadequate funds to afford a flight, or living far from an airport to move around the country. It forces residents to travel to airports far from the center of population to get around the country. The nation's dependence on flights and cars, moreover, has resulted in Canada having some of the highest per capita transportation sector carbon emissions in the world—up to three times as high as in peer countries. And poor rail service has limited the ability of Canada's major cities to capitalize on the agglomeration effects of concentrating rail service in the country's downtowns.

The government's proposed HFR project would improve service considerably along the Toronto-to-Québec corridor, expanding options for residents of those cities and also Ottawa, Montréal, and other cities along the way. My review of comparable corridors in other countries shows that rail lines serving similarly large metropolitan areas feature far more frequent rail service than VIA does today, suggesting the benefit of such improvements. These benefits would be particularly useful in the Toronto-to-Montréal, via Ottawa, section of the corridor, where flights currently dominate the market.

Nonetheless, my examination of evidence from international examples suggests that the HFR project would fail to live up to the full potential of the central section of the line, whose length and distribution of metropolitan areas is similar to those of the Paris–Marseille, Madrid–Barcelona, and Milan–Naples corridors. Thanks to considerable investment in high-speed rail infrastructure allowing travel at speeds up to 300 kilometers per hour, those routes operate at far higher average speeds than those proposed for Canada after the completion of the HFR project.

This difference in average speeds is very important for attracting riders away from polluting, expensive flights. Based on evidence from corridors around the world, the HFR project may be expected to increase the rail share of the market on the Toronto-to-Montréal segment to between 30 and 60 percent. However, an investment in faster high-speed rail service could expand that market share to 70 to 90 percent. High-speed rail service would make most air travel from Toronto and Montréal to Ottawa superfluous. This investment could allow a significant reduction in the number of flights operating in this section of the corridor and reduce carbon emissions in the process.

I encourage the committee to consider the potential missed opportunity of *not* investing in truly rapid high-speed rail service in Canada, particularly along the Toronto-to-Montréal, via Ottawa, segment.

Thank you. I look forward to discussion with the committee.

Appendix: Briefing Book on High-Speed Rail

Introduction

In preparation for my testimony for the Standing Committee on Transport, Infrastructure and Communities of the House of Commons, I reviewed information about the high-frequency rail (HFR) project, examined current conditions on the Windsor-to-Québec corridor, and compared the project with what we know about the impact of improved intercity rail investments on countries and metropolitan areas around the world. The summary of this information can be found below. My eight major findings are as follows:

- Compared with other G7 countries, Canada has systematically underinvested in its railway system. Notably, as other countries have added new high-speed rail services and attracted millions of passengers, because of a lack of improvements, intercity train ridership in Canada is now substantially lower than it was in the early 1980s.
- Investments in intercity railways can reduce carbon emissions and accelerate economic growth, particularly for second-tier regions. These effects are magnified with higher train service speeds. To benefit society at large, however, intercity rail must have fares that are affordable to most people and avoid inequitable access.
- Canada's best-served intercity rail corridor is that between Québec and Windsor, with VIA providing a particularly large number of seats on a typical weekday between Montréal, Ottawa, and Toronto. VIA also offers more than 1,000 daily seats in each direction on trains extending from Montréal northeast to Québec and from Toronto southwest to Windsor.
- Airlines provide substantially *more* seats in the central section of the corridor. This suggests that the current travel market between Montréal, Ottawa, and Toronto is dominated by air travel, which is much faster. For example, flights between Montréal and Toronto take about 1 hour and 15 minutes, compared with about 5 hours on VIA's fastest current intercity rail option.
- The HFR route between Québec, Montréal, Ottawa, and Toronto is quite similar to rail corridors in other countries, such as Paris to Marseille, Milan to Naples, and Madrid to Barcelona, in terms of the distribution of metropolitan areas—and the distance between those metropolitan areas. This indicates that the experience implementing intercity rail in France, Italy, and Spain can provide useful precedent for Canada.
- VIA offers far less daily train service along the route between Toronto and Québec than do rail operators in France, Spain, and especially Italy on similar routes. Canadians must currently wait more than two hours between trains in the middle of the day between Montréal and Toronto. There are multiple trains per hour between the similarly sized metropolitan areas of Rome and Milan.
- Average travel speeds along the HFR route is currently far slower by rail than on similar routes in Europe. While the HFR project would improve speeds, travel would remain far slower than the international high-speed standard.
- Evidence from around the world shows that rail ridership increases proportionally to reduced travel time between origin and destination. While the HFR project as currently proposed would likely increase rail mode share, true high-speed rail investment could build train ridership even more effectively and could eliminate the need for air service entirely on routes along the corridor.

Below, I provide additional details that corroborate these findings.

Canadian Rail Infrastructure Investment and Train Ridership

Over the past 30 years, Canada has had limited commitment to investing in its railways. Compared with the other members of the G7, Canada has had the lowest per capita infrastructure spending on railways for every year but one since 1995 (figure 1). In total, Canada's intercity rail investments have been less than a third of those in France, Germany, Italy, or the United Kingdom, once adjusted on a per capita basis. Canada's lack of investment is the consequence of a collective lack of funding from federal, provincial, and local governments—as well as limited private-sector involvement in funding railways in the country.

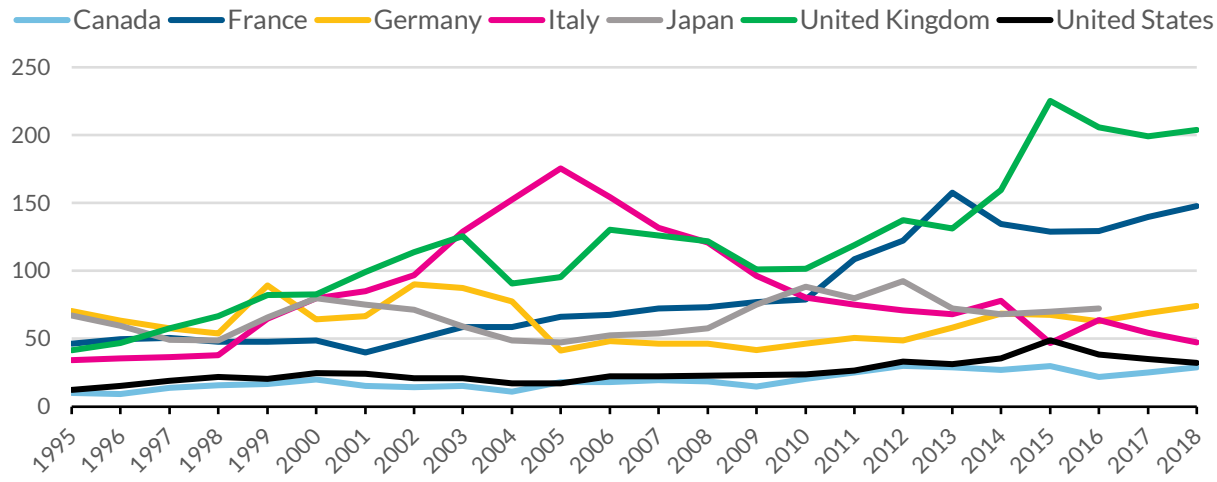
Unlike other G7 members—including the United States—Canada has directed few public resources toward the substantial improvement of rail service on any intercity passenger rail corridor in the nation. Federal subsidies for VIA declined by more than half between the early 1980s and mid-2010s.[1] In the United States, there has been a concerted effort to improve service along the Northeast Corridor linking Boston, New York City, and Washington; there are now up to 34 trains a day in each direction between Washington and New York City (by comparison, VIA offers 6 trains a day between Montréal and Toronto).[2] The US federal government has now committed to new intercity rail improvements that will total $66 billion over five years, with a substantial share going to improvements in the speed of existing rail corridors.[3]

France, Germany, Italy, and Japan, meanwhile, have each built more than 1,000 kilometers of railways that allow trains to operate at more than 240 kilometers per hour, considered the international benchmark for high-speed rail.[4] Those services sometimes connect cities at speeds higher than 300 kilometers per hour. The Chinese government has built out an even larger network of high-speed rail systems, which now spans more than 40,000 kilometers.[5]

FIGURE 1

Canada's Infrastructure Investment in Railways Has Been Lower Than That Elsewhere in the G7

Per capita investment in rail (euros)



Source: "Infrastructure Investment," Organisation for Economic Co-operation and Development, 2021, https://data.oecd.org/transport/infrastructure-investment.htm.

Notes: Not adjusted for inflation. Data for Japan not available after 2016.

[1] Jean Dupuis, "VIA Rail Canada Inc. and the Future of Passenger Rail in Canada," August 31, 2015, https://lop.parl.ca/sites/PublicWebsite/default/en_CA/ResearchPublications/201555E.

[2] Amtrak, accessed November 16, 2023, https://www.amtrak.com/tickets/departure.html; VIA Rail Canada, accessed November 16, 2023, https://www.viarail.ca/en.

[3] Yonah Freemark, "Congress's Infrastructure Plan Could Be a Major Step toward Improved Intercity Rail—But Long-Term Commitment and Targeted Investments Are Necessary to Build Ridership," *Urban Wire* (blog), Urban Institute, August 10, 2021, https://www.urban.org/urban-wire/congresss-infrastructure-plan-could-be-major-step-toward-improved-intercity-rail-long-term-commitment-and-targeted-investments-are-necessary-build-ridership.

[4] Yonah Freemark, "World High-Speed Rail Kilometers by Country," *The Transport Politic*, accessed November 16, 2023, https://www.thetransportpolitic.com/databook/world-high-speed-rail-kilometers-by-country/.

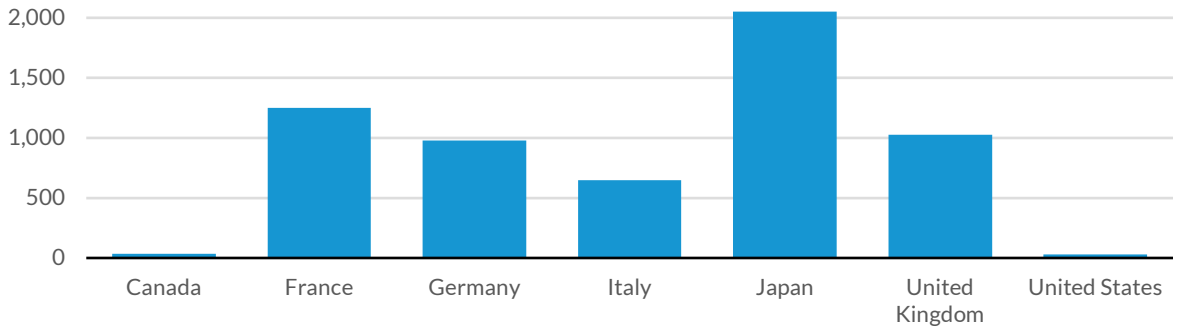
[5] Dennis Wong, "How China Built the World's Largest High-Speed Rail Network," *South China Morning Post*, November 24, 2022, https://multimedia.scmp.com/infographics/news/china/article/3200811/high-speed-railway/index.html.

One major consequence of Canada's limited investment in railways has been very low ridership on the nation's intercity rail lines (figure 2). On average, Canadians ride intercity railways at about 1–33rd the rate of people in France—and 1–55th the rate of people in Japan. And Canada's train ridership is headed in the wrong direction compared with many of the other G7 countries—even as they have taken different approaches to investing in their rail systems. France has largely maintained a public-sector railway network, and its high-speed system increased ridership by more than 50 percent between 2000 and 2010.[6] In the United Kingdom, which largely privatized the operations of its railway network in the early 1990s, intercity railway ridership more than doubled between the mid-1980s and today.[7] Both countries shared a focus on public investment in their railways. In Canada, on the other hand, the number of passenger kilometers traveled by railway declined substantially between 1988 and 2008—despite the fact that air travel almost doubled during that period and motor vehicle travel increased by 50 percent.[8] In 2019, the year before the COVID-19 pandemic, VIA carried just over 5 million passengers. This was higher than in recent years but far fewer than the agency carried in the early 1980s.[9] By comparison, the high-speed rail line between Paris and Lyon carried more than 44 million riders in 2017 alone.[10]

FIGURE 2

Canadians Rarely Ride Intercity Trains Compared with Residents of Other G7 Nations

Per capita annual intercity railway passenger miles



Source: "Railway Statistics 2015 Synopsis," International Union of Railways, 2015, https://uic.org/IMG/pdf/synopsis_2015_print_5_.pdf.
Notes: Population data based on 2010 national totals. Reporting years for passenger kilometers vary between 2010 and 2015.

Environmental, Economic, and Social Impacts of Intercity Rail Investments

The limited use of railways in Canada has had nefarious impacts on the nation's contributions to global climate change. Among large, wealthy countries, Canada's per capita transportation emissions are higher than those in all nations except the United States. Compared to residents of Germany, for example, Canadians emit 2.6 times as much carbon dioxide due to their travel. This to a large degree reflects the car- and plane-dependence of Canada; these transportation modes pollute substantially more than trains, particularly those powered by clean electricity sources.[11] Canada's transportation-sourced carbon

[6] "Nombre de Personnes Transportées par la SNCF," Globometer, accessed November 16, 2023, https://globometer.com/trains-voyageurs-france.php.

[7] Department for Transport, "Rail Factsheet," December 2020, https://assets.publishing.service.gov.uk/media/5fd0a1ebd3bf7f5d02b2195a/rail-factsheet-2020.pdf.

[8] Dupuis, 2015, op. cit.

[9] VIA Rail Canada, Annual Report 2022, available at https://media.viarail.ca/sites/default/files/publications/VIA%20Rail_2022%20Annual%20Report_0.pdf; Dupuis, 2015, op. cit.

[10] Marc Carémantran, "La LGV Paris - Lyon Va Gagner en Capacité," *Rail Passion*, September 6, 2018, https://www.railpassion.fr/grande-vitesse/lgv-paris-lyon-va-gagner-capacite/.

[11] Ian Tiseo, "Per Capita Carbon Dioxide Emissions of the Transportation Sector Worldwide in 2022, by Select Country," *Statista*, September 20, 2023, https://www.statista.com/statistics/1291769/per-capita-transportation-co2-emissions-worldwide-by-country/;

emissions have also been worsening in recent years; between the early 1990s and 2019, overall transport sector emissions increased by more than 40 percent in the country.[12]

Investments in intercity rail can play an important role in improving these environmental outcomes, if they are implemented appropriately. There is substantial evidence that high-speed rail is linked with mode shift to train travel.[13] In China, the opening of new high-speed rail lines is associated with a substantial and statistically significant decline in driving as well as a diversion of freight from trucks to rail; both these changes resulted in a reduction of overall carbon emissions.[14] At the same time, new rail infrastructure has successfully diverted people from aviation, thus resulting in fewer emissions from that sector.[15] The reduction in emissions due to investment in railways is particularly strong in the large cities that the new rail systems serve—and the emissions rates decline further years after the opening of new railway projects.[16] Similar findings have been made of new railway investments in Turkey.[17] These effects on pollution can be magnified if associated with the use of renewable energy to power the intercity rail system.

Intercity rail can also play an important role in increasing the economic performance of metropolitan areas. A study of Japanese regional economies identified the presence of high-speed rail as a key generator of economic innovation in previously poorly accessible metropolitan areas. This suggests that such projects help generate what is often referred to as "agglomeration"—the positive impacts resulting from people and firms being located close to one another.[18] Indeed, investment in high-speed rail has been associated with increased investment in second-tier cities owing to the increased accessibility made possible by railway systems; effective railway systems are associated with less economic disparity between regions.[19]

If new investments in intercity rail—particularly high-speed rail—are associated with increased economic connectivity and thus growth, do they also result in beneficial social outcomes, such as addressing income and wealth inequities? Here, the story is a bit more complicated. Because improved railway service is often associated with higher fares, trains using faster lines are sometimes too expensive for people with low incomes, and often even more expensive than equivalent flights.[20] In recent years, operators such as France's SNCF have begun operating "low-cost" high-speed rail services that attempt to remedy this issue, but equitable fare policies remain a concern for choices about investment in improved rail service globally.

Hannah Ritchie, "Which Form of Transport has the Smallest Carbon Footprint," *Our World in Data*, August 30, 2023, https://ourworldindata.org/travel-carbon-footprint.

[12] Government of Canada, "Greenhouse Gas Emissions from the Transport Sector," June 29, 2023, https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/greenhouse-gas-emissions.html#transport.

[13] Peter J. Haas (2014) *Modal Shift and High-Speed Rail*, San José: Mineta Transportation Institute.

[14] Yatang Lin, Yu Qin, Jing Qu, and Mandi Xu (2021) "Impact of High-Speed Rail on Road Traffic and Greenhouse Gas Emissions," *Nature Climate Change* 11: 952–7.

[15] Bojun Wang, Aidan O'Sullivan, and Andreas W. Schäfer (2019) "Assessing the Impact of High-Speed Rail on Domestic Aviation CO_2 Emissions in China," *Transportation Research Record* 2673(3): 176–88; Zhenhua Chen (2017) "Impacts of high-speed rail on domestic air transportation in China," *Journal of Transportation Geography* 62: 184–96.

[16] Lexuan Sun and Wei Li (2021) "Has the opening of high-speed rail reduced urban carbon emissions? Empirical analysis based on panel data of cities in China," *Journal of Cleaner Production* 321: 128958.

[17] Gulcin Dalkic, Osman Balaban, Hediye Tuydes-Yaman, and Tümay Celikkol-Kocak (2017), "An Assessment of the CO2 Emissions Reduction in High Speed Rail Lines: Two Case Studies from Turkey," *Journal of Cleaner Production* (165): 746–61.

[18] Hiroshi Komikado, So Morikawa, Ayushman Bhatt, and Hironori Kato (2021) "High-Speed Rail, Inter-Regional Accessibility, and Regional Innovation: Evidence from Japan," *Technological Forecasting and Social Change* 167: 120697.

[19] Mi Diao (2018) "Does Growth Follow the rail? The Potential Impact of High-Speed Rail on the Economic Geography of China," *Transportation Research Part A* 113: 279–90; Zhenhua Chen and Kingsley E. Haynes (2017) "Impact of High-Speed Rail on Regional Economic Disparity in China," *Journal of Transport Geography* 65: 80–91.

[20] Julia Buckley, "Train Fares Are Up to 30 times More Expensive Than Planes in Europe, says Greenpeace," CNN, July 20, 2023, https://www.cnn.com/travel/trains-more-expensive-than-planes-europe-greenpeace-climate/index.html; Frédéric Dobruszkes, Chia-Lin Chen, Amparo Moyano, Francesca Pagliara, and Peter Endemann (2022) "Is High-Speed Rail Socially Exclusive? An Evidence-Based Worldwide Analysis," *Travel Behaviour and Society* 26: 96–107.

The HFR Corridor

The corridor between Windsor and Québec is the most densely populated in Canada. It concentrates the country's capital at Ottawa, as well as its two most populous metropolitan areas surrounding Toronto and Montréal. It is also the only corridor in the country with intercity rail services provided more than once or twice a day. The entire corridor extends across more than 1,000 kilometers between Windsor, at the border with the United States, and Québec City.

VIA currently operates a series of different routes along the corridor, with a mainline extending from Toronto to Montréal via Oshawa, Kingston, and Cornwall. VIA makes that 541-kilometer trip in as little as about 5 hours, typically about six times a day. The rail service also offers services from each of Montréal and Toronto to Ottawa, both served by a similar number of trains a day. Fewer trains run between Toronto and Windsor (some run via Kitchener, others run via Brantford), and between Montréal and Québec.

In total, I calculate that VIA provides almost 2,000 daily seats in both directions between Québec and Montreal, about 1,400 between Toronto and London, and about 1,100 between London and Windsor (figure 3). VIA operates a triangular configuration between Montréal, Ottawa, and Toronto, with all those services providing several thousands of seats between the destinations. These are the travel markets best served by intercity rail in Canada.

Interestingly, VIA provides *more* service in terms of seats between Montréal and Québec and between Toronto and Windsor than do airlines (figure 3). These travel markets have limited offerings by plane but more options by rail. This is not true for the Montréal, Ottawa, and Toronto travel market, where there is two to three times as much air service provided in terms of seats than rail service. One explanation for this difference is that these are larger and wealthier markets than Québec and Windsor, with better connections to international flights at their airports. Moreover, flight times are considerably shorter than via rail travel: 1 hour and 15 minutes versus 5 hours for Montréal to Toronto; 49 minutes versus 2 hours for Montréal to Ottawa; and 1 hour versus 4 hours and 30 minutes for Toronto to Ottawa. Long train travel times, frequent flights, and affordable flights combine to encourage people onto planes.

Canada's government announced the HFR project to improve service along the Québec to Toronto section of the corridor, with an estimated cost of $6 to $12 billion. (The project was initiated by VIA.[21]) The project would improve service through the construction of new tracks paralleling existing rail lines used by freight companies, with the goal of increasing speeds to up to 200 kilometers per hour (current VIA services max out at 160 kilometers per hour). The route would change somewhat compared to that currently used by VIA, notably serving Peterborough instead of Oshawa and Kingston in Ontario and Trois-Rivières instead of Drummondville in Québec province; new, dedicated tracks would speed the journey to several new stations. The project could be completed by the mid-2030s and reduce travel time between Montréal and Toronto to 4 hours.[22]

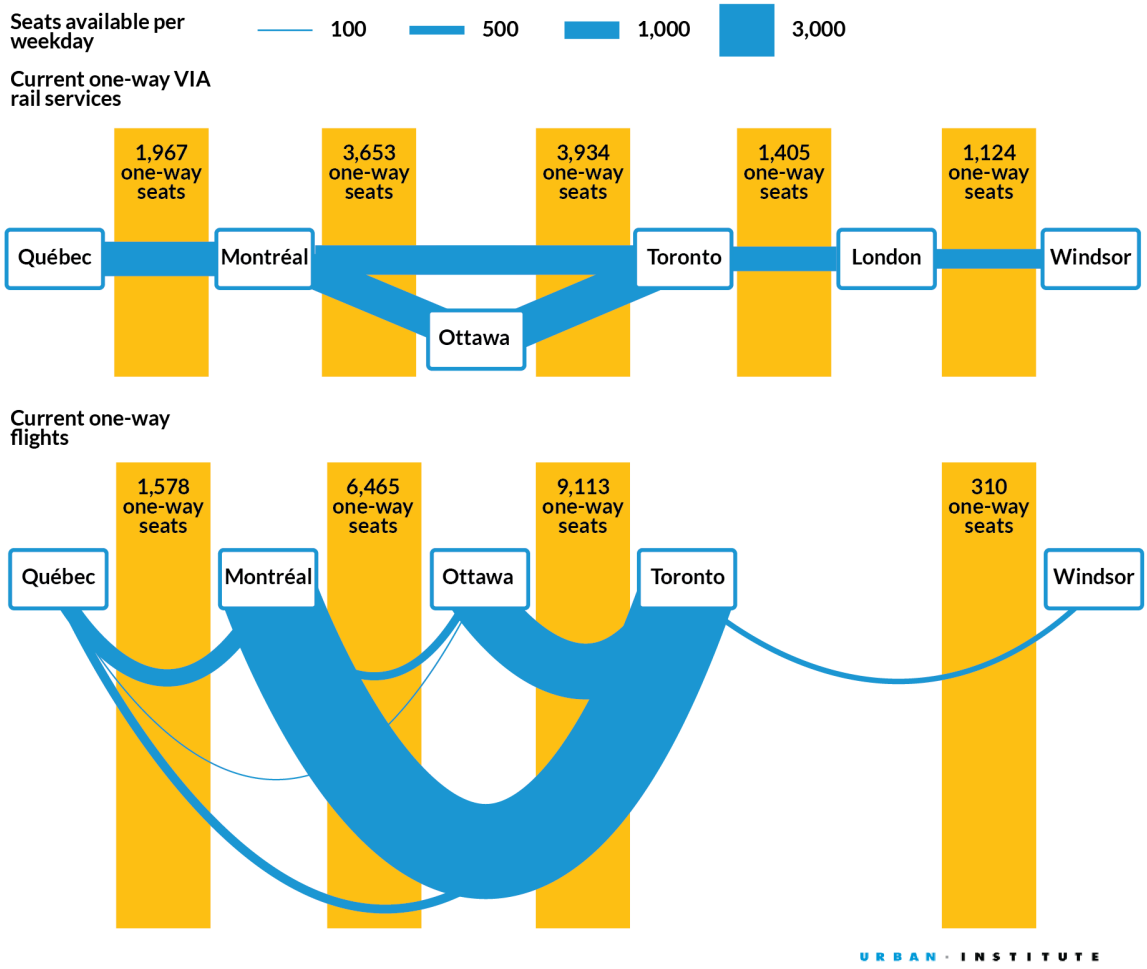
[21] Bill Stephens, "Why VIA Rail Canada's High Frequency Rail Plan Is a Dud," *Trains*, July 11, 2019, https://cs.trains.com/trn/b/observation-tower/archive/2019/07/11/why-via-rail-canada-s-high-frequency-rail-plan-is-a-dud.aspx.

[22] Christopher Reynolds, "Feds Slow Down Timeline for Faster Toronto-Quebec City Railway," *CBC*, July 20, 2023, https://www.cbc.ca/news/canada/montreal/via-rail-toronto-quebec-city-consortia-1.6912715.

FIGURE 3

Airlines Offer Far More Service Than VIA between Toronto and Montréal

One-way seats available by air and rail between major destinations along Québec–Windsor corridor



Source: Yonah Freemark, based on data from VIA and Kayak about one-way flights between cities on Wednesday, November 22, 2023.
Notes: Assumes VIA Rail seats based on Siemens Venture trainset data (281 seats per car). Seat figures for airlines calculated based on aircraft used for each flight. Does not include several branches of the VIA corridor, including the branch to Niagara Falls and to Sarnia.

Since the HFR project was first announced, there has been some disagreement about the right way to serve the corridor. The government's plan has been supported by Siemens, a train manufacturer, which argues that a high-speed project would cost too much to be implemented. Another train manufacturer, Alstom, has noted that high-speed trains, at least on portions of the line, are more likely to generate increased ridership because they could much more significantly reduce travel times than the HFR project.[23]

The government has moved forward with project procurement. It selected three consortia as qualified to design and develop the project, with the goal of selecting a contractor in 2024.[24] The new service will not be

[23] Desjardins-Siciliano, 2023, op. cit.; Alstom, "Speed and Frequency: A Project for the XXIst Century," November 2022, https://drive.google.com/file/d/13dz3mo91nVOH7EYxYAI1p6Kod7wbry0Q/view.

[24] William C. Vantuono, "Three Consortiums Qualify for Canada's HFR Project," *Railway Age*, July 21, 2023, https://www.railwayage.com/passenger/intercity/three-consortiums-qualify-for-canadas-hfr-project/.

operated by VIA, which will continue serving its existing routes along the corridor.[25] The general goal of the project is to provide somewhat faster, more reliable, more frequent, and mostly electrified rail services between Québec and Toronto; the exact characteristics of that service improvement has yet to be defined. The project team estimates that the line will carry 17 million riders annually by 2059.[26]

The travel market for the corridor is currently weighted toward car travel; a recent estimate identified 65 million automobile travelers in the area, compared with only 3 million air travelers and somewhat more train travelers.[27] (I could not find better sources on any of these data; these specifics should be taken as subject to large margins of error.) This suggests that any rail project in the area will only be partly successful if it encourages people out of planes and onto trains—it must also get people out of cars.

The HFR Corridor in the International Context

The HFR corridor shares features with major rail corridors in several other countries that have implemented substantial railway improvements. Canada is a large and, overall, lightly populated country. But those *nationwide* conditions do not apply along the route between Québec, Montréal, Ottawa, Toronto, and Windsor. There, the size and distribution of metropolitan areas is similar to what is common along high-speed rail routes in France, Italy, and Spain (figure 4). This suggests that implementing improved rail service in the Canadian context would likely attract riders on par with what we have seen in other countries.

The HFR's ambition to increase the frequency of railway services substantially fills a pressing need for more options for rail travel along the route. At the moment, there are flights virtually every half-hour between Montréal and Toronto, whereas a rider unlucky enough to miss the 1:23 pm train would have to wait until 5:00 pm to catch the next VIA service. The HFR project promises to improve these conditions—though the specific manner by which it will do so has not yet been identified.

Indeed, compared with the international examples I pointed to above, Canada's rail services are truly inadequate in frequency (figure 5). Consider the following comparisons with the Montréal-to-Toronto route, which is about 541 kilometers:

- Paris and Marseille, France—660 kilometers apart—are linked by 18 direct high-speed trains a day, some of which have no intermediary stops, but others of which serve smaller destinations. Customers have the choice of an additional 4 trains involving short transfers.
- Milan and Naples, Italy—659 kilometers apart—are linked by 51 direct high-speed trains a day, most of which also stop at Rome, Florence, and several other major cities along the route.
- Madrid and Barcelona, Spain—506 kilometers apart—are linked by 32 direct high-speeds a day, of which 13 have no intermediary stops.

The above are just examples of the array of choices available to train travelers in other countries. Even Lille and Lyon, France—two metropolitan areas that are far smaller than Montréal and Toronto—are linked by 10 direct trains a day that connect the cities 556 kilometers apart in as little as 2 hours and 53 minutes. These options help ensure that people feel comfortable that if they miss a train they will be able to get onto another one within a reasonable amount of time. If the HFR project substantially improves the frequency of travel choices for people on the route between Québec and Toronto, it will likely be able to attract many more passengers.

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[25] David Thomas, "Canada to Create Separate Railway for Corridor HFR," *Railway Age*, November 11, 2022, https://www.railwayage.com/regulatory/canada-to-create-separate-railway-for-corridor-hfr.

[26] High Frequency Rail, "Frequently Asked Questions," accessed November 16, 2023, https://hfr-tgf.ca/faq/.

[27] Yves Desjardins-Siciliano, "Why High Frequency Rail Is A Better Project Than High Speed Rail for the Québec City to Toronto Corridor," *Siemens*, accessed November 16, 2023, https://www.mobility.siemens.com/ca/en/company/newsroom/short-news/why-high-frequency-rail-is-a-better-project-than-high-speed-rail-for-the-quebec-city-to-toronto-corridor.html.

The goal of improving service cannot stop at higher frequency of service, however. Trains that come more often are useful for convincing people to ride—but also important are the travel times needed to connect destinations. The 5-hour train travel time between Montréal and Toronto is hard for many to countenance given the much shorter flight between the destinations—even if the flight requires getting out to the airport and sometimes-long security lines.

In figure 6, I compare the travel times for several major origin and destination pairs in Canada with several in France, Italy, and Spain. At the moment, the average travel speeds along the Québec–Toronto segment of the corridor range from 82 kilometers per hour (Montréal to Québec) to 107 kilometers per hour (Montréal to Toronto). That is far slower than average train speeds in the other countries, which rise as high as an average of 215 kilometers per hour on the fastest Paris–Marseille trains.

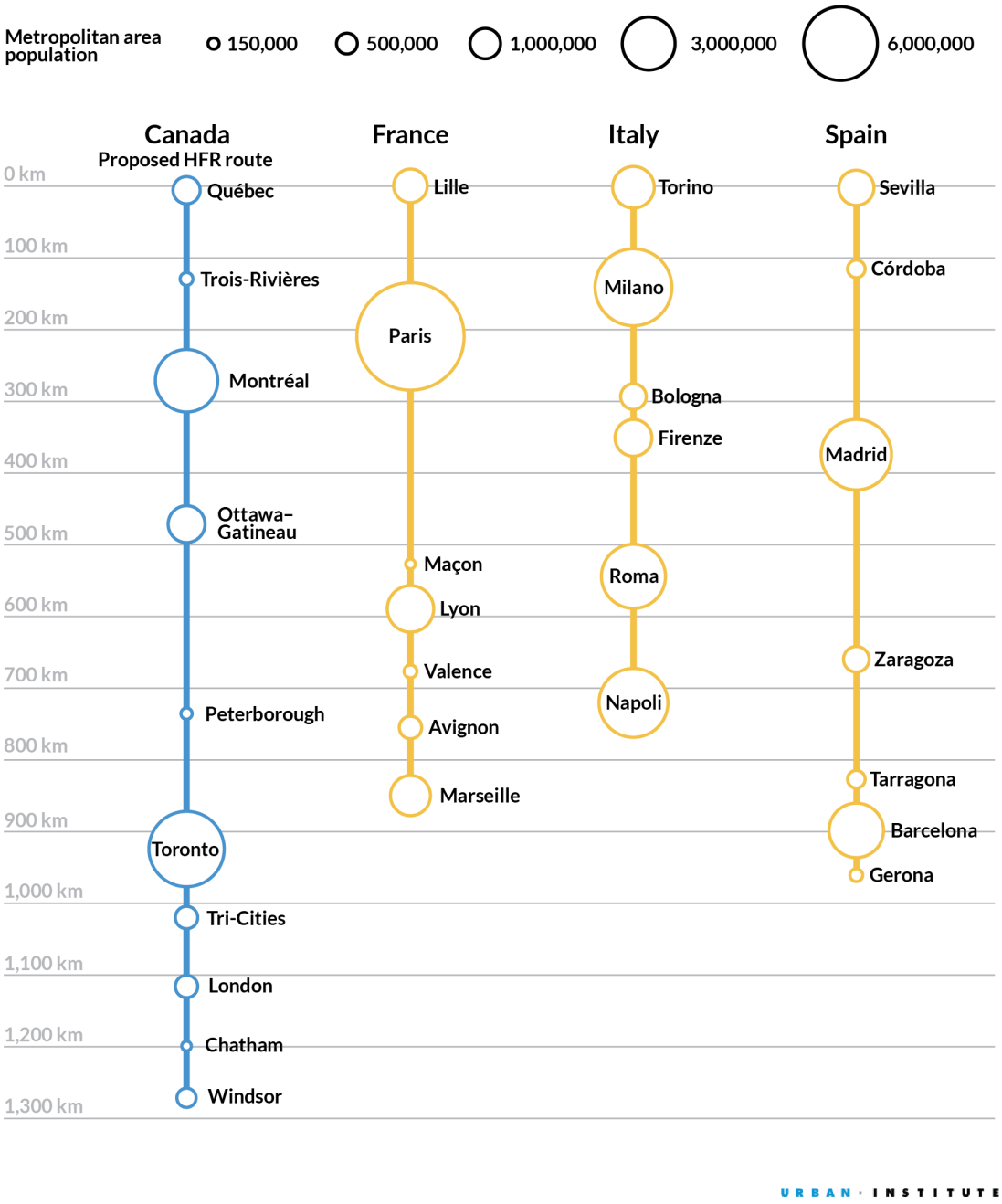
The HFR project proposes to improve these travel speeds substantially, notably increasing the average speed between Toronto and Ottawa to 148 kilometers per hour, and thus reducing that journey time from 4 hours and 20 minutes to 3 hours. The HFR proposal would reduce the Montréal–Toronto trip from about 5 hours to 4 hours, also a major improvement.

Even so, were these routes to be upgraded to the infrastructure quality that is achieved on the Paris–Marseille route, meaning an average of 215 kilometers per hour, travel times could be shortened even more, with the Toronto–Ottawa journey reduced to 2 hours and the Montréal–Toronto one to 2 hours and 30 minutes. The trip from Montréal to Québec could decline from 3 hours and 15minutes to just 1 hour and 15 minutes, a massive improvement in connectivity between these two cities.

FIGURE 4

Canada's Corridor Serves Metropolitan Areas with Similar-Sized Populations as in European Countries

Major destinations along example rail lines, sized by metropolitan area population



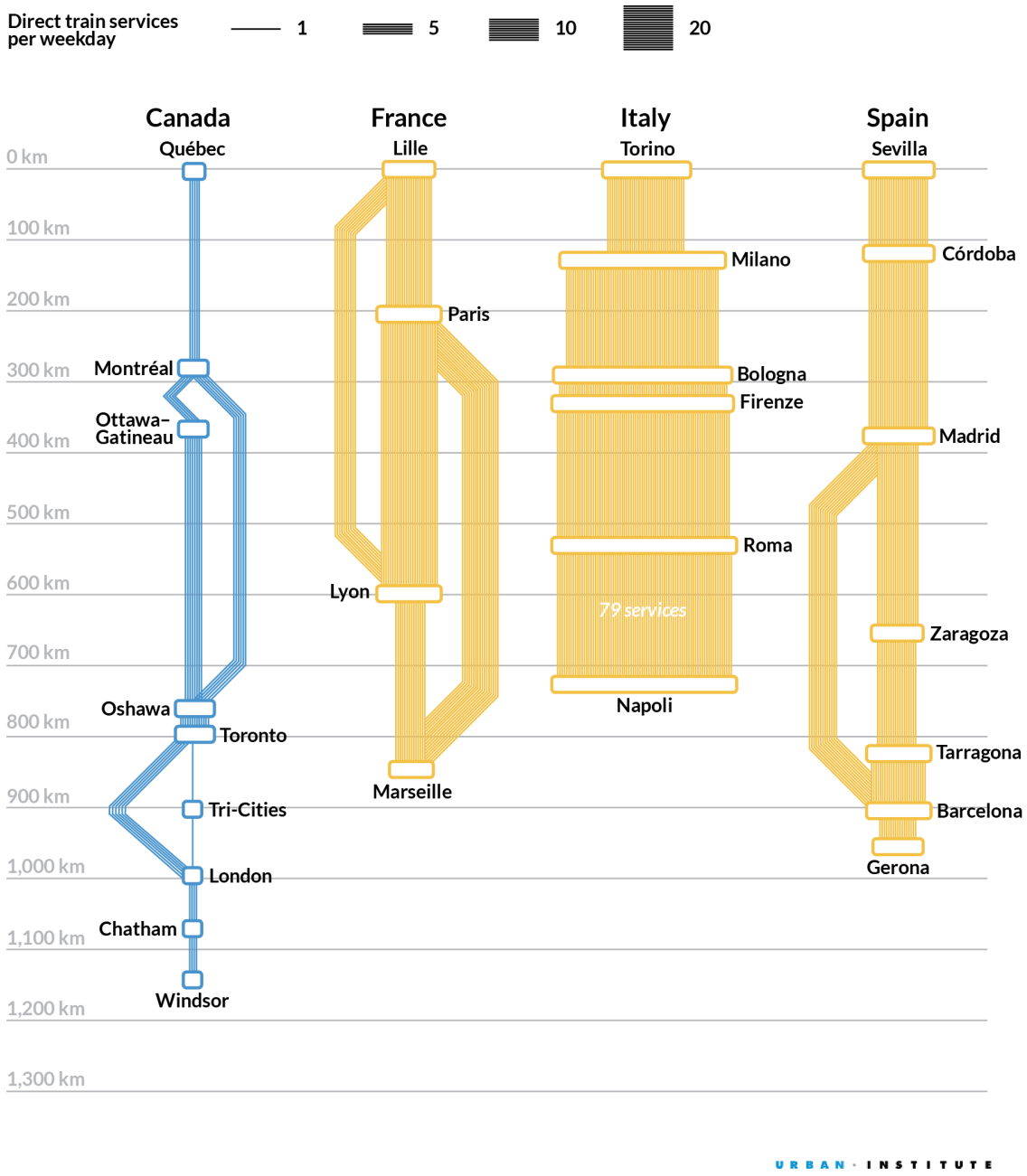
Source: Yonah Freemark, based on data from the Canadian, French, Italian, and Spanish census.

Notes: Does not include all station stops. Some services do not stop at all stations. The HFR route may include some services that bypass Ottawa between Montréal and Toronto; the exact details of the service have yet to be determined. Distances calculated from Toronto, Paris, Rome, and Madrid, respectively.

FIGURE 5

Major Rail Corridors in European Countries Are Served by Much More Frequent Train Options

Number of direct one-way trains between major city pairs along example rail lines



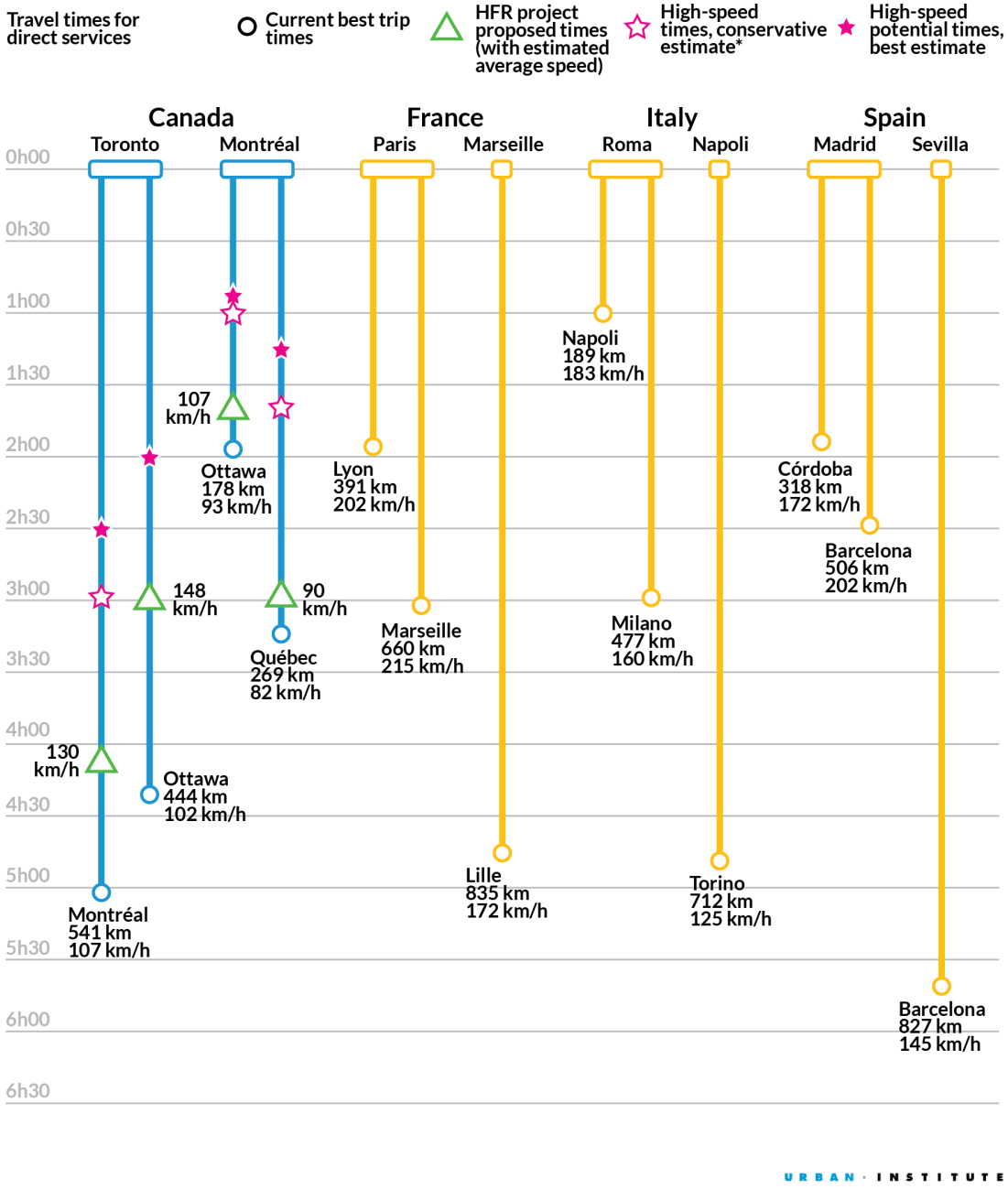
Source: Yonah Freemark, based on searching for trains between city pairs on the Via Rail website and on trainline (https://thetrainline.com).

Notes: Direct train services on Wednesday, November 22. Only showing high-speed services for France, Italy, and Spain (does not include slower-speed lines). Does not show regional or commuter rail lines in any country. May not include some additional routes outside of Canada. Distances calculated from Toronto, Paris, Rome, and Madrid, respectively. Not all trains travel along full corridors shown.

FIGURE 6

VIA Rail Services Now Operate at Significantly Lower Speeds Than European Equivalents

Fastest rail trip travel times currently available between city pairs, showing distance and average speed



Source: Yonah Freemark, based on data from Via Rail website and on trainline (https://thetrainline.com).

Notes: Direct train services on Wednesday, November 22. High-speed services only for France, Italy, and Spain. * Conservative estimate based on Alstom projections, which also provided source for HFR travel times (Alstom, "Speed and Frequency: A Project for the XXIst Century," November 2022, https://drive.google.com/file/d/13dz3mo91nVOH7EYxYAl1p6Kod7wbry0Q/view). Best estimate assumes 215 kilometers per hour average speeds for each origin–destination pair.

There is compelling evidence to suggest why reducing travel times can play an important role in growing train ridership. Across routes researchers have examined in the United States, Europe, and Japan, there is a strong correlation between a train trip's travel time and the share of riders who choose it rather than fly (figure 7). Trips that take more than 4 hours by train are unlikely to attract more than 50 percent of the total trips taken by train or by air. Trips that take 2 hours or less are likely to attract 90 percent or more of those total trips.

We can make some hypotheses about how this relationship between travel times and route ridership might play out in the context of the Toronto-to-Québec route. The HFR improvements between Montréal and Toronto could reduce travel times to about 4 hours, which might mean the route could attract 30 to 60 percent of the combined trips taken by train or by air. But improving service to high speed could mean the route could attract 70 to 90 percent of such trips. Similar increases in ridership can be expected for the Toronto–Ottawa and Montréal–Québec origin-destination pairs, among others. Of course, these estimates deserve further study than this sketch-level analysis.

As a final note, however, two additional factors are worth emphasizing related to mode share made possible through intercity rail improvements. The first is that, as described, the majority of trips between metropolitan areas that are reasonably close to one another are taken not by train or by plane but rather by car. There has been less study of the mode shift out of private automobiles and onto trains than there has been related to plane travel.[28] Additional research on the matter of how to encourage car-to-train mode shift, such as related to the fare policies, is needed.

Second, many cities served by rail systems simply do not have much air service in the first place. London, Ontario, has four air departures on a typical day—three to Toronto and one to Calgary or Cancun, depending on the day. Trois-Rivières, Québec—129 kilometers from Québec and 140 kilometers from Montréal—has no commercial air service to speak of. Rail service of any kind can play an essential role in connecting communities without access to air travel.

Note

The short analysis presented in this briefing book is based on assumptions about the rollout of the HFR project and a potential high-speed rail alternative. Because neither of these projects have been fully defined—including in terms of their specific routes and travel times—elements of this analysis may be not reflective of the final project.

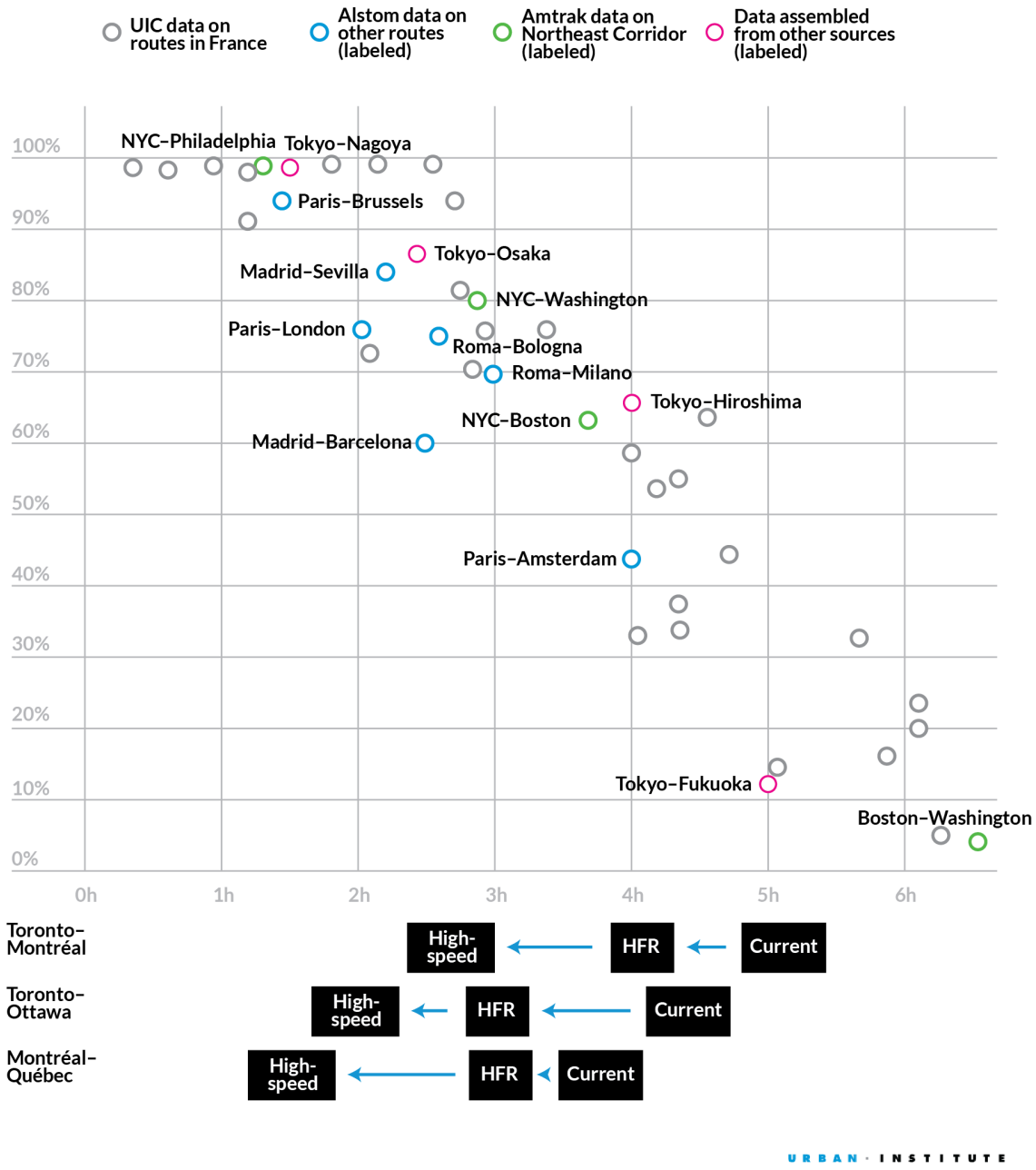
For the committee's background, I mapped the HFR route based on the best-available information I could find about the proposed project (figure 8).

[28] Haas, 2014, op. cit.

FIGURE 7

Shorter Rail Journeys Are Associated with Considerably Higher Rail Ridership

Rail share of overall air–rail travel market for origin–destination pairs, based on rail travel time

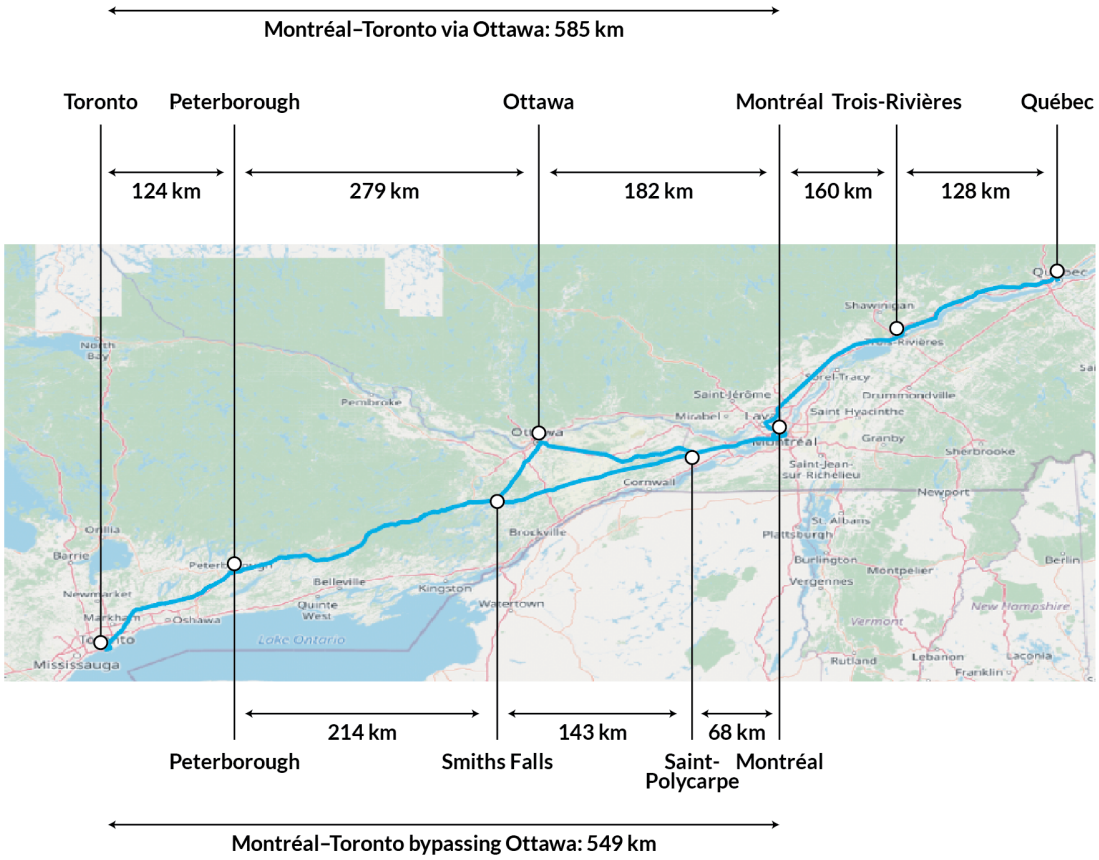


Source: Yonah Freemark, based on data from Northeast Corridor Infrastructure and Operations Advisory Commission, *Northeast Corridor Intercity Travel Study*, September 2015, available at https://nec-commission.com/app/uploads/2018/04/2015-09-14_NEC-Intercity-Travel-Summary-Report_Website.pdf; International Union of Railways, *High Speed Rail: Fast Track to Sustainable Mobility*, 2018, available at https://www.slideshare.net/UICcom/uic-high-speed-rail; Alstom, "Speed and Frequency: A Project for the XXIst Century," November 2022, https://drive.google.com/file/d/13dz3mo91nVOH7EYxYAI1p6Kod7wbry0Q/view.

Notes: UIC = International Union of Railways. Estimates for HFR and high-speed travel times for Canada origin-destination pairs are based on sources described in figure 6.

FIGURE 8

Route Map of Proposed HFR Investment, Showing Estimated Travel Distances



Source: Yonah Freemark, based on best-known information about the HFR project, using Open Street Map background data.
Notes: Final route for HFR project has yet to be established.