An Economic Ambition

HOW ALTO'S HIGH-SPEED TRAIN CAN TRANSFORM CANADA'S ECONOMY

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AVISEO
strategy + economics



Executive Summary

An assessment of the economic benefits of Alto's high-speed rail project

Alto commissioned Aviseo Consulting to examine how, and to what extent, the step change in connectivity that high-speed rail would bring between Québec City and Toronto could create lasting economic value for Canada. Drawing on international experience, an analysis of the corridor's transportation challenges and an economic impact analysis, the study identifies the channels through which better connectivity can benefit Canadians. It is not a cost-benefit analysis; its purpose is to show where these benefits come from and how they materialize.

Canada's main economic region remains insufficiently connected

The Québec City–Toronto corridor is home to some 17 million people, or 41% of Canada's population, and generates about 40% of national GDP. It concentrates many of the country's leading financial, technological, academic and industrial hubs. Yet these hubs still lack a reliable, fast, frequent and affordable way to travel between them, which limits the gains from bringing businesses, workers and institutions closer together.

Economic benefits of HSR documented abroad

Productivity growth
Shorter travel times help businesses coordinate and reach larger markets.

Labour mobility
Workers gain access to more jobs, and employers to a larger talent pool.

Innovation
Easier face-to-face meetings foster the exchange of knowledge and ideas.

Investment
Lower coordination costs make regions more attractive to businesses and investors.

Tourism
Destinations become accessible for short stays and multi-destination trips.

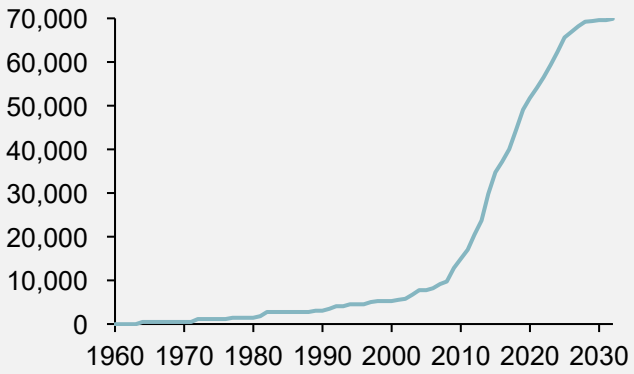
Regional development
Well-connected stations can strengthen the role of cities within the regional economy.

50+ years of high-speed rail experience in over 20 countries

A proven and mature technology

Since the Tokaido Shinkansen opened in 1964, high-speed rail has expanded to more than 20 countries. International experience points to three lessons. First, demand depends on service quality and the markets connected. Second, economic benefits depend on how stations and the network are integrated into the territory. And third, rigorous planning and cost control are what make these benefits possible.

Evolution and projected expansion of HSR networks
World, 1960 to 2032, track kilometers



More than **67,700 track kilometers** of high-speed lines were recorded worldwide in 2025 according to the International Union of Railways.

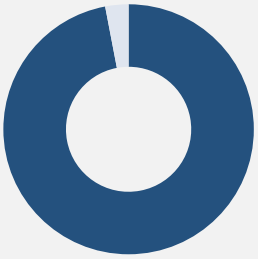
Current modes of transportation in Alto's corridor are under pressure

Intercity travel in the Québec City–Toronto corridor relies mainly on the car, the plane and conventional rail. All three face growing constraints that are increasing costs for travellers, in money, in time and in reliability. Air travel suffers from limited competition: the domestic market is highly concentrated, and IATA ranks Canada 101st out of 116 countries for price competitiveness. Conventional rail, for its part, is held back by infrastructure it does not control. VIA Rail owns only 3% of the tracks it uses, its trains must yield to freight traffic, and its on-time performance fell to 51% in 2024. With the corridor's population expected to grow by about 3 million people by 2050, these pressures will intensify in the absence of a structuring new option.

The corridor lacks an intercity option that is **fast, frequent, reliable, affordable and connected** to other modes of transportation. This is the value proposition offered by Alto's high-speed rail.

Inaction is not cost-free

Intercity trips between the cities served could grow from about 80 million today to 115 million by 2059. Without high-speed rail, this growth would be absorbed by existing networks, whose investment needs could exceed $50 billion for Québec and Ontario combined by 2050 under a status quo scenario. The question therefore is not so much whether to invest, but in which infrastructure.

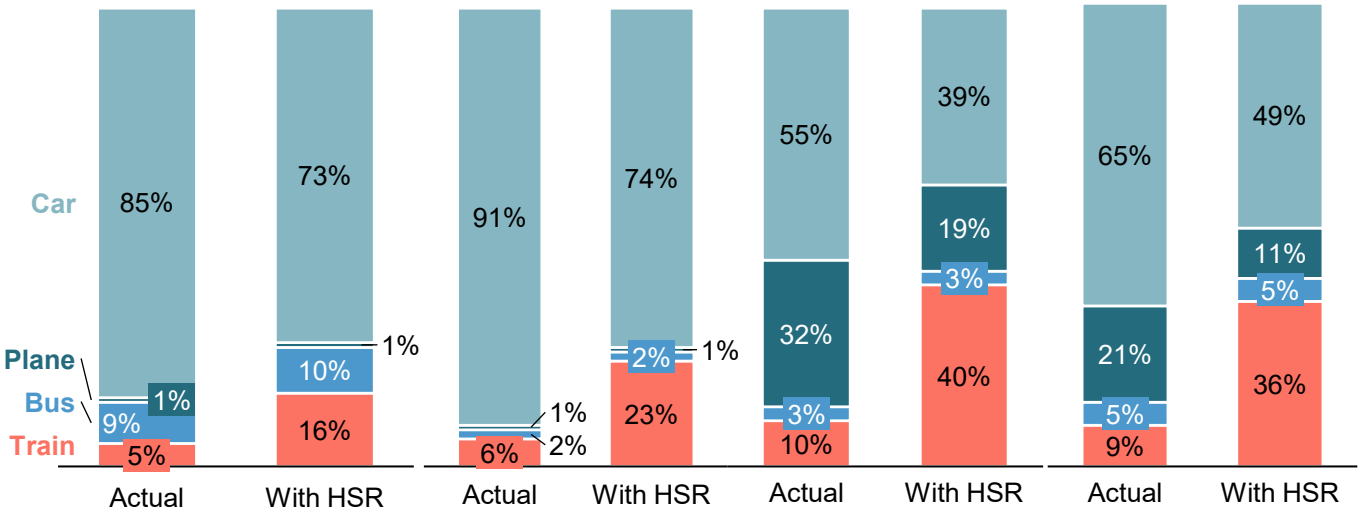


97%

97% of corridor trips rely on the road network; rail accounted for just 2% of trips in 2019.

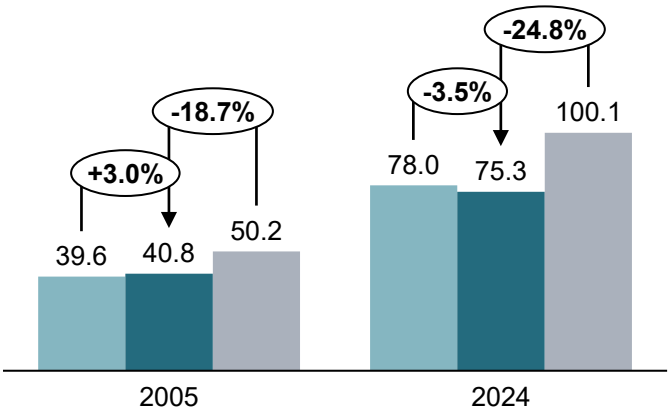


According to Alto's ridership forecasts, high-speed rail would increase rail's share of intercity trips three- to fourfold on the corridor's main routes. Between Montréal–Toronto, for example, rail's share would rise from 10% to 40%, mainly at the expense of air travel and the car.



Canada’s productivity imperative

For decades, Canada’s productivity performance has lagged that of leading advanced economies. Labour productivity has grown by only 0.6% per year on average since 2005, and the gap with the United States widened to nearly 25% in 2024. Canada, which was still above the OECD average in 2005, now stands 3.5% below it. Canada's productivity gap is driven in part by underinvestment in productive assets. While investment in residential real estate has remained strong, spending on machinery, equipment and intellectual property has lagged. Closing this gap is critical to maintaining living standards.



With an aging population, Canada’s future prosperity will increasingly depend on **productivity gains**, that is creating more value with the talent, businesses and resources already in place.

Why productivity matters

Productivity is one of the main drivers of living standards. When workers and businesses produce more value per hour worked, wages can rise, prices can fall and governments can collect more revenue without raising tax rates thanks to higher economic output. These gains are the most sustainable way to increase collective prosperity, provided they are broadly shared.

Infrastructure as a productivity lever

Infrastructure that connects major economic centres is a proven lever for productivity. By bringing businesses closer to their customers, suppliers, talent and partners, high-speed rail generates agglomeration effects without requiring firms to locate in the same city. Alto is aligned with the federal government’s goal of directing public spending toward productive, nation-building investments.

60% **of the corridor’s economic activity is concentrated in knowledge-intensive sectors**

A larger, more integrated labour market

By halving travel times, Alto would bring together labour markets that account for 36% of Canada’s labour force. Trips such as Montréal–Ottawa, Montréal–Québec City or Toronto–Ottawa would become compatible with regular commuting. Workers could access more job opportunities without moving, and employers could recruit from a much larger pool of qualified talent, improving the match between skills and needs.

High-speed rail can mitigate the effects of **labour shortages that stem from distance**. The same job can become accessible to more workers, and the same talent to more businesses.

Quantifying Alto's economic impacts

To estimate the project's economic impacts, Aviseo used a computable general equilibrium (CGE) model. Unlike an input-output analysis, this approach captures the interactions between households, businesses and governments, and measures the net effect of high-speed rail on the economy. The impacts were modelled through three channels: productivity gains, a larger effective labour supply and higher international tourism spending. They reflect the period once the network is fully operational and exclude construction spending.

Productivity drives the gains

Once fully operational, Alto would raise Canada's real GDP by an average of $24.5 billion a year. Productivity gains from a better and faster connectivity between the corridor's regions account for 86% of this effect. The rest comes from a larger effective labour supply and higher international tourism spending. This is not a one-time gain, but a permanently higher level of economic activity.

$24.5B

permanent annual increase in Canada's real GDP

Note : estimates based on 2024 modelling; updated results to be released in 2027.

Tangible gains for households, businesses and governments

$11.2B
Households' disposable income

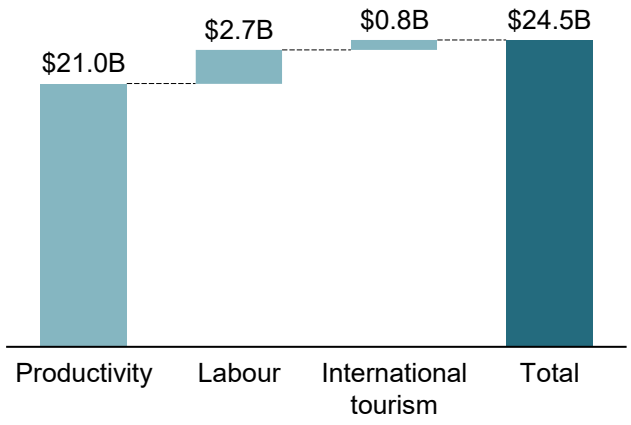
$10.1B
Business revenues

$6.4B
Government revenues

$15.4B
Private investments

Breakdown of high-speed rail economic spinoffs

Canada, in $ billions per year, constant 2019 dollars



Benefits beyond GDP

Alto would improve quality of life in ways that GDP does not capture. It would broaden people's choices: a new transportation option that would stimulate competition, and greater freedom in choosing a career and a place to live. By shifting trips to an electrified network, it would also reduce emissions and pollution for the benefit of the entire population, while lowering the number of road accidents.

These benefits are not automatic. They depend on a service that is fast, frequent, reliable, affordable and connected, on stations well integrated with local transit and airports. Coordinating transportation, housing, land-use and economic development policies across governments will be key.

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Introduction

A New Economic Vision

Major transportation infrastructure does more than move people and goods: it helps reshape a country's economic geography. In Canada, transportation investment has historically brought markets closer together, facilitated trade and improved access to workers, businesses and institutions, helping to sustain long-term prosperity. This logic remains particularly relevant today. In an economy where value creation increasingly depends on the flow of people, knowledge and ideas, connectivity itself becomes a driver of productivity and competitiveness. The ability to efficiently connect major economic hubs shapes access to talent, markets, partners and investment opportunities.

Alto is part of this perspective. Beyond its transportation function, the project aims to reduce the economic distance between the main cities of the Québec City–Toronto corridor and to strengthen the links between markets that concentrate a significant share of the country's population, economic activity, talent and innovation capacity. It is, therefore, not only an investment in mobility, but an infrastructure that could have a lasting influence on how the Canadian economy functions and develops.

The Strategic Importance of the Québec City–Toronto Corridor

The Québec City–Toronto corridor is Canada's main economic centre. It is home to approximately 17 million people, or 41% of the Canadian population, generates 40% of national GDP and concentrates several of the country's leading financial, technological, academic, industrial and logistics hubs. Ontario and Québec also maintain close economic ties within the corridor, as businesses, workers, institutions and the production and distribution of goods and services are spread across several highly interdependent urban centres.

This concentration gives particular value to any improvement in connectivity. The potential benefits do not rest solely on the ability to move travellers more quickly between two cities. They also lie in the capacity to bring together labour markets, businesses, educational and research institutions, and innovation networks that remain separated today by several hours of travel.

Alto's economic potential therefore depends as much on the performance of the service as on the strength of the markets it will connect. By reducing travel times and the cost of distance between the corridor's main hubs, the project could transform relative geographic proximity into much stronger economic proximity.

Purpose of This Report

This report was commissioned by Alto to examine a central question: how, and to what extent, can a major improvement in connectivity between Québec City and Toronto be transformed into lasting economic value for Canada?

The analysis is therefore not limited to the immediate benefits associated with travel. It examines the mechanisms through which a fast, frequent and reliable rail service can influence productivity, labour markets, market access, investment, innovation, tourism and regional development.

It also seeks to understand how these effects can spread beyond the cities directly served, strengthen the economic integration of the corridor and contribute to long-term prosperity. This perspective is at the heart of the report: Alto is assessed not only as a new transportation option, but as an economic infrastructure capable of durably changing the interactions between businesses, workers and regions.

Scope and Analytical Framework

To capture the full extent of this value, the report draws on several complementary approaches. It should be noted at the outset that this report is not a cost-benefit analysis. Rather, the objective is to document the various dimensions through which better connectivity can create value, in order to highlight how Canadians could benefit from the positive impacts of high-speed rail. A project of this scale may also involve risks and potential adverse effects that warrant consideration. While we acknowledge these risks and effects, they fall more properly within the scope of a comprehensive cost-benefit analysis, which this study does not undertake. Their omission should therefore not be taken to mean that the authors fail to recognize them. The extent of the benefits described in this report also depends on the fares that will be charged. A service that is too expensive, and whose ridership is therefore limited, would reduce the scope of the benefits of high-speed rail. However, because fare information remains unknown at the time of writing, this question is not taken into account in the analysis.

Accordingly, the report is structured as follows:

- First, the report presents an analysis of international experience and of the economic benefits observed internationally. Direct benefits for users, such as time savings, improved reliability and accessibility gains, are then examined in the Canadian context, illustrating how high-speed rail can help address the challenges facing Canada.
- Structural and permanent economic effects, particularly those associated with productivity, labour supply and economic activity, are assessed using a computable general equilibrium model. This approach takes into account the interactions between households, businesses and governments, and estimates the net effects of the project on the economy rather than simply tallying the activity generated. The spinoffs associated with construction and operating expenditures can, for their part, be documented using an input-output analysis.
- These quantitative approaches are complemented by an examination of effects that are not fully reflected in GDP. The report thus also considers accessibility, opportunities available to workers and households, well-being and longer-term effects on regions.

In this report, Aviseo Consulting presents the most up-to-date data possible. Data availability nevertheless remains a significant limitation in this type of exercise, particularly when the subject requires the use and presentation of numerous data series covering an extended period. This report therefore uses the data available as of October 30, 2026. Although every effort has been made to ensure the accuracy of the information contained in the report, there is no guarantee that it will still be accurate when the report is consulted, or that it will remain so in the future.

Acknowledgements

Aviseo Consulting wishes to thank the members of the independent review committee, Trevor Tombe (University of Calgary), Ryan Katz-Rosene (University of Ottawa), Florence Paulhiac (Université du Québec à Montréal) and Jean Dubé (Université Laval), for their valuable contribution to this report. Their careful reading, critical comments and expertise helped strengthen the rigour and clarity of the analysis. The committee's independence was ensured throughout the process. Its members participated in a personal capacity and received no direction regarding the content of their comments. Aviseo Consulting is solely responsible for the analyses, findings and conclusions presented in this report, as well as for any errors or omissions. The participation of committee members does not imply that they endorse its content.

Lessons from 50 Years of Experience

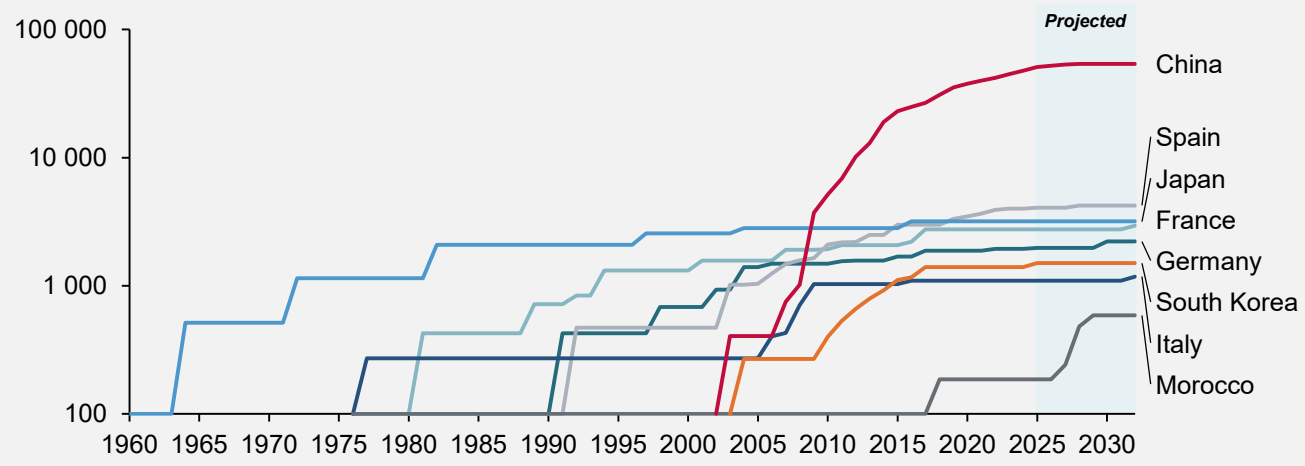
More than 50 years of international experience shows that high-speed rail can provide lasting support for mobility, productivity and regional development. High-speed rail is a proven, reliable, and mature form of infrastructure. The experience of roughly 20 countries has demonstrated a broad range of benefits, and Canada has an opportunity to reap those benefits as well. In fact, three main lessons emerge: demand depends on service quality and the markets connected; economic benefits rely on the integration of stations, the network and land-use policies; and effective planning, cost control and schedule management make it possible to realize these benefits.

The Global Evolution of High-Speed Rail

Since the Tokaido Shinkansen opened in Japan in 1964, high-speed rail has evolved from a revolutionary innovation into a mode of transportation deployed on a large scale in several regions of the world. Its development was initially concentrated in Japan and Europe before accelerating sharply elsewhere over the past few decades. According to the International Union of Railways (UIC), more than 67,700 track kilometers of high-speed lines were recorded worldwide in 2025 across 22 countries[1]. In addition to these, more than 16,000 track kilometers were under construction at the time. [2].

Reflecting the potential appeal of this mode of transportation, some densely populated corridors have recorded demand above initial forecasts. On the Paris–Lyon line, for example, ridership exceeded projections to the point of saturating the existing infrastructure, leading to added capacity. Similar pressures have been observed in other European corridors, where demand growth has supported reinvestment and the gradual expansion of networks (Figure 1). Trends by country therefore show that high-speed rail generally develops in stages: an initial backbone connection enters in service, and the network expands as new corridors are added.

Figure 1: Evolution and projected expansion of high-speed rail networks
World, 1960 to 2032, track kilometers



Sources: UIC, High-Speed Rail Atlas 2024 and High-Speed Rail Atlas 2025; Aviseo Consulting analysis, 2026.

[1] *UIC, High-Speed Rail Atlas 2025.*

[2] *Ibid.*

This expansion has been accompanied by sustained use of high-speed rail networks. Expressed per 1,000 residents, ridership varies considerably from one country to another but reaches particularly high levels in several markets where the service is well established. Japan, South Korea and France, for example, record more trips per capita than China despite having much smaller networks (Figure 2).

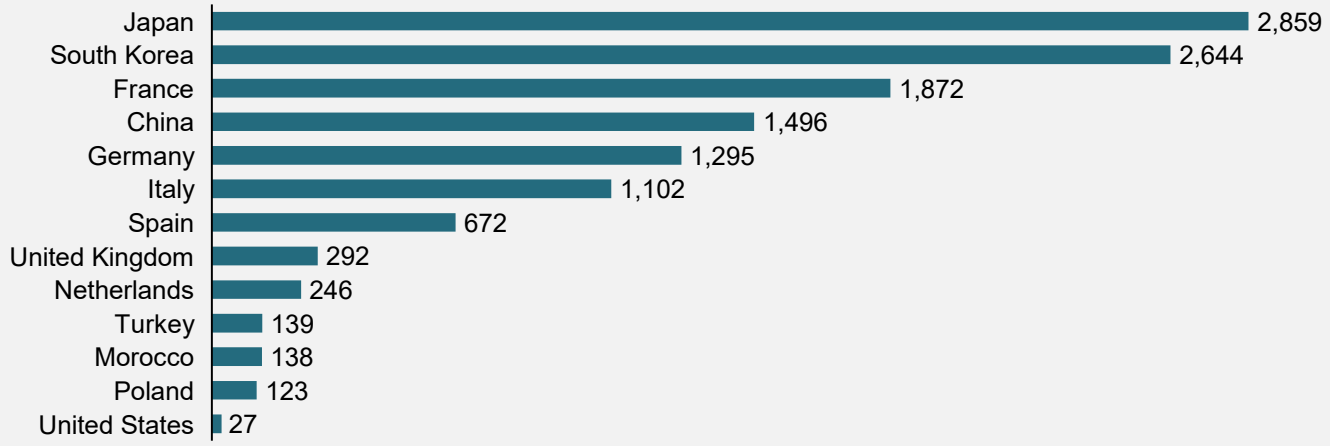
This comparison shows that network size alone does not explain use.

These differences partly reflect the characteristics of the territories served, as ridership tends to be higher where population and economic activity are densely concentrated along the corridors, and where the high-speed network is extensive and interconnected relative to the size of the country. Ridership therefore reflects not only the quality of service but also the geography and the structure of each network. Corridor density, service quality, integration with other modes of transportation and network maturity therefore play a decisive role. It also illustrates the ability of a mature, high-performing and well-integrated network to generate strong demand.

Beyond service levels such as frequency or the length of track in operation, the physical structure of the network also shapes demand. A network made up of several interconnected lines, with hubs where passengers can transfer between routes, offers a far wider range of possible trips than a single line, and therefore tends to generate more ridership. However, a single high-speed rail corridor can also generate substantial ridership when it connects major population and economic centres. This network effect partly explains the high levels of use observed in Japan, South Korea and France, where high-speed lines converge on major hubs and connect to conventional rail and urban transit.

Figure 2 : High-speed rail ridership per 1,000 residents

Selected countries, 2023, number of passengers per 1,000 residents



Sources: UIC, High-Speed Rail Atlas 2025; World Bank, Aviseo Consulting analysis, 2026.

After more than six decades of operation, the question is no longer whether high-speed rail can work on a large scale. The analysis now focuses on what happens after service begins: how travel patterns evolve, how businesses and workers respond to shorter travel times, and why some cities capture more benefits than others.

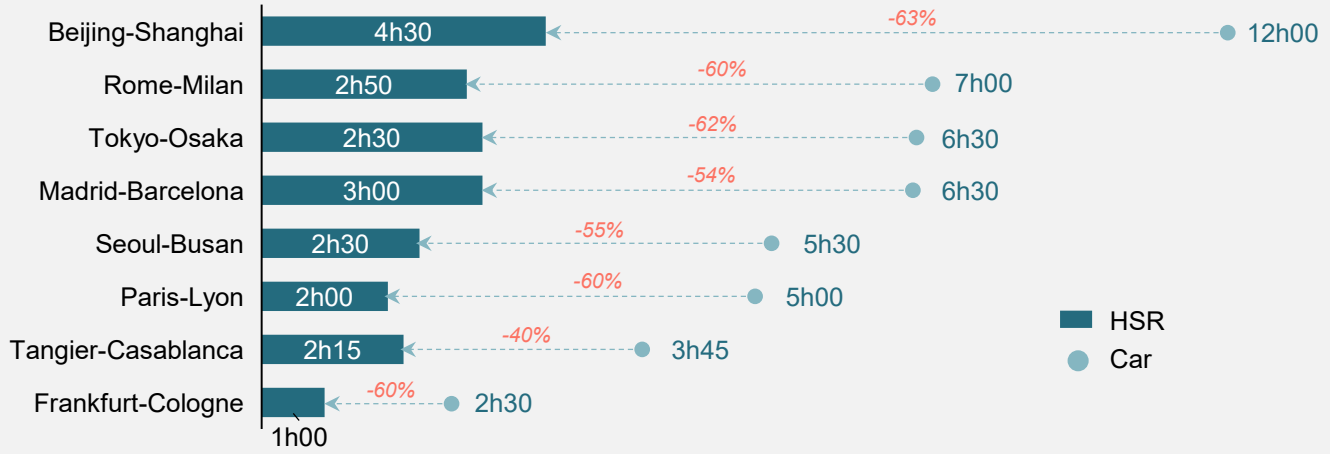
International precedents show that there is no single approach to developing a high-speed rail network, as networks have been developed in widely differing economic, geographic and institutional contexts. This diversity indicates that benefits depend less on the model selected than on how the network is integrated into the territory. Experience around the world shows that a fast, frequent and reliable intercity service can reduce the economic distance between cities. However, the scale of the benefits remains dependent on network design, integration with other modes of transportation and development around stations[3].

[3] *Preston (2013).*

International Case Studies

The experience of countries that have deployed high-speed rail shows that a fast, frequent and reliable service can attract high ridership and become firmly established in travel patterns. On major corridors, high-speed rail reduces travel times by 40% to 70% compared with driving (Figure 3), often saving several hours. These time savings facilitate intercity travel and can make same-day return trips possible. Although these networks were developed in different contexts, their experience highlights a common lesson: performance depends less on a single institutional model than on the fit between the markets connected, operating quality and the network's integration into the territory.

Figure 3 : Travel times of selected high speed rail connections
World, 2026



Sources: Google Maps, Deutsche Bahn, SNCF, Renfe and ItaliaRail; Aviseo Consulting analysis, 2026.

France

Opened in 1981, the Paris–Lyon high-speed line (LGV) was one of Europe's first major high-speed rail projects. More than 40 years after opening, it remains France's busiest high-speed line. The 460 km line accommodates approximately 240 trains per day and accounts for 33% of high-speed traffic on the French rail network. It connects Paris and Lyon in about 2 hours, compared with nearly 5 hours by car. This sustained use shows that high-speed infrastructure can become an enduring component of the mobility system. In 2024, SNCF Réseau[4] estimated that approximately 50 million passengers used the Paris–Lyon LGV each year.

In response to high traffic levels and future capacity needs, the line is now undergoing a major modernization program[5]. Under this program, maximum capacity will increase from 13 to 16 trains per hour in each direction during peak periods by 2030. This represents a capacity increase of approximately 25%, achieved primarily through upgrades to signalling and traffic management.

The modernization now underway highlights the maturity of France's high-speed rail network. One of the main challenges is now to increase capacity on the busiest lines and optimize heavily used infrastructure[6].

The success of the Paris–Lyon connection subsequently supported the gradual expansion of the high-speed network to other regions of France. Service was extended toward the Atlantic coast, northern France, the Mediterranean and eastern France, progressively connecting Paris with cities such as Lille, Bordeaux, Marseille, Strasbourg and Rennes. This expansion transformed an initial backbone

[4] *SNCF : Société nationale des chemins de fer français.*
[5] *SNCF Réseau, projet de modernisation de la LGV Paris–Lyon.*
[6] *Ibid.*

connection into a national high-speed network that now covers much of the country.

Figure 4: HSR network in France



Source: UIC, High-Speed Rail Atlas 2025

Japan

With the opening of the Tokaido Shinkansen between Tokyo and Osaka in 1964, Japan provides the world's longest historical perspective on high-speed rail. At opening, the line covered 515 km and connected the two cities in approximately four hours. The network then expanded gradually across the country, notably with the opening of the Sanyo line between 1972 and 1975, extending the Tokaido route from Osaka to Hakata. The Tohoku and Joetsu lines followed beginning in 1982, connecting Tokyo with northern regions[7].

Japan's high-speed rail network has continued to expand in recent years, including the 2024 opening of a 125 km extension of the Hokuriku line between Kanazawa and Tsuruga. An approximately 212 km extension of the Hokkaido Shinkansen is also under construction between Hakodate-Hokuto and Sapporo, the largest city in northern Japan currently not connected to the high-speed network. Approximately 80% of the route is in tunnels. Japan's high-speed rail network now comprises more than 3,000 km of lines.

Figure 5: HSR network in Japan



Source: UIC, High-Speed Rail Atlas 2025

The network's expansion has been accompanied by high ridership. In 2023, the Shinkansen network carried 356 million passengers, while the Tokaido Shinkansen between Tokyo and Osaka alone carried 168 million passengers in 2024. Since opening in 1964, approximately 7 billion passengers have travelled on this line.

The intensity of operations is another important feature of the Japanese network. The Tokaido Shinkansen operated an average of 383 trains per day in 2024, with up to 12 trains per hour during peak periods[8]. The fastest trains now connect Tokyo and Osaka in around 2 hours 30 minutes, at a maximum operating speed of 285 km/h, compared with 6 hours 30 minutes by car. Despite this high frequency, the average delay was only 1.4 minutes per train, including delays caused by natural disasters. After six decades of operation, Japan's Shinkansen illustrates a mature network that continues to expand while combining high ridership, frequent service and remarkable operational reliability.

Italy

Italy was one of the first European countries to develop high-speed rail infrastructure. The first section of the Direttissima line between Florence and Rome entered service in 1977, before the line was fully completed in the early 1990s. The network then

[7] *UIC, High-Speed Rail Atlas 2025.*

[8] *JR Central – Annual Report 2025, Tokaido Shinkansen (FY2024)*

developed around a north–south axis progressively connecting Turin, Milan, Bologna, Florence, Rome, Naples and Salerno.

Expansion accelerated during the 2000s. The Rome–Naples line opened in 2005, followed notably by the Turin–Milan, Milan–Bologna and Bologna–Florence connections. This sequence of openings created a continuous high-speed axis between Turin, Milan, Rome and Naples. The Italian network now includes approximately 1,100 km of high-speed lines, integrated into a national rail network of nearly 17,000 km[9].

Figure 6: HSR network in Italy



Source: UIC, High-Speed Rail Atlas 2025

High-speed services are provided mainly by Trenitalia's Frecciarossa trains and by Italo. On the main corridors, they have sharply reduced travel times between major cities. Rome and Milan can be connected in approximately 3 hours, while Rome and Naples are just over an hour apart, compared with 7 hours and 2 hours 30 minutes by car, respectively. Use of long-distance rail services remains high. In 2024, the FS Group's commercial long-distance services accounted for approximately 21.5 billion passenger-kilometers, up 6.6% from 2023. Network expansion is also continuing in southern Italy, where several projects aim to extend high-speed service to areas that remain less well served. According to FS's strategic plan, these investments could increase the population served by Italy's high-speed system by approximately 30%.

Germany

High-speed rail developed later in Germany than in France or Japan. Intercity Express (ICE) service was launched in 1991 with the opening of the Hannover–Würzburg and Mannheim–Stuttgart lines. These initial corridors formed the basis of a network that subsequently expanded among the country's main metropolitan regions. The Cologne–Frankfurt connection, opened in 2002, is one of the most important corridors in the German network. Approximately 177 km long, it was the first German line designed for speeds of 300 km/h and connects the two cities in about 1 hour by ICE[10], compared with 2 hours 30 minutes by car. Since then, nearly 1,100 km of high-speed lines have been built in Germany, within a network that now totals 1,941 km[11].

Major extensions include the Cologne–Frankfurt line, which entered service in the early 2000s, followed by new infrastructure that accelerated connections among Berlin, Munich, Frankfurt, Cologne and other major urban centres. Opening the Berlin–Munich high-speed connection via Erfurt reduced travel time between the two cities from more than six hours to under four. The gradual development of this infrastructure created a national network that now links Germany's main urban and economic centres. The German network differs from the French and Spanish systems in one important respect: ICE trains operate both on newly built high-speed lines and on upgraded conventional lines. Deutsche Bahn, the state-owned company that operates ICE services, estimates that approximately 2,700 km of the network support speeds of at least 200 km/h, including approximately 1,000 km that support speeds of 250 km/h or more.

ICE is now Germany's primary long-distance rail service. In 2024, approximately 105.6 million passengers used ICE trains. Deutsche Bahn also operates more than 500 ICE connections per day, generally with hourly or two-hourly service between major cities. After more than thirty years of development, the German network continues to be modernized and expanded, with nearly 750 km of lines under construction or in planning.

[9] *FS Group, Piano Strategico 2025-2029.*

[10] *Deutsche Bahn.*

[11] *UIC, High-Speed Rail Atlas 2025.*

Figure 7: HSR network in Germany



Source: UIC, High-Speed Rail Atlas 2025.

Spain

In just over three decades, Spain has developed Europe's most extensive high-speed rail network. Commercial service began in 1992 with the opening of the 471 km Madrid–Seville line, then the country's only high-speed corridor. The network subsequently expanded toward Spain's main regions. High-speed service reached Barcelona in 2008, completing the Madrid–Barcelona connection, and Valencia in 2010. Travel on the Madrid–Barcelona corridor now takes approximately 3 hours by high-speed train[12], compared with 6 hours 30 minutes by car. The network then continued expanding to medium-sized cities.

- The connection between Barcelona and Figueres, toward the French border, was completed in January 2013.
- Expansion then continued with the arrival of high-speed service in Ourense, Galicia, in 2021 and Murcia in 2022.
- In November 2023, the opening of the approximately 50 km Pajares bypass also improved high-speed rail connections to Asturias.

This sequence of openings brought the network managed by Adif Alta Velocidad to approximately 4,000 km, making it the most extensive high-speed network in Europe. Development continues today through work on new corridors and extensions to existing lines.

Network expansion has been accompanied by strong growth in use. Nearly 40 million passengers used commercial high-speed services in 2024, an increase of 77% compared with 2019.

- The Madrid–Barcelona corridor remains the busiest, with 14.6 million passengers in 2024, followed by Madrid–Valencia with 5.6 million and the Madrid–Seville and Madrid–Málaga/Granada corridors with approximately 5 million each.

Operating intensity has also increased substantially. In 1992, 12 high-speed trains operated daily on the initial Madrid–Seville corridor. By 2022, approximately 365 trains per day operated across the Spanish network.

Figure 8 : HSR network in Spain



Source: UIC, High-Speed Rail Atlas 2025.

[12] *Renfe.*

After more than thirty years of development, Spanish high-speed rail has grown from a single 471 km line into an approximately 4,000 km network connecting many of the country's principal regions[13]. Its evolution has been characterized by sustained geographic expansion, a growing number of trains and strong ridership growth.

China

China has developed its high-speed rail network at a pace unmatched internationally. Deployment of the modern network began in 2008 with the opening of the 120 km Beijing–Tianjin intercity connection, China's first line designed for speeds of 350 km/h, the world's highest commercial operating speed for a high-speed train[14]. This marked the country's entry into the high-speed rail era and the beginning of exceptionally rapid network development. The Beijing–Shanghai line, opened in 2011, is one of the network's most important corridors. The 1,318 km line connects two of the country's main economic regions and was designed for a maximum speed of 350 km/h, reducing travel time from 12 hours by car to around 4 hours 30 minutes by high-speed train, a 63%[15] reduction. Since opening, it has carried more than 2.3 billion passengers[16].

The network subsequently expanded across the country around a system of major corridors known as the "eight vertical and eight horizontal" network[17]. By the end of 2025, China had approximately 50,400 km of high-speed lines in operation, compared with 37,900 km at the end of 2020. It therefore has the world's most extensive high-speed rail network.

– Between 2021 and 2025 alone, the high-speed network expanded by more than 12,000 km. Development continues, with China State Railway Group planning to increase its length to approximately 60,000 km by 2030[18].

Figure 9 : HSR network in China



Source: UIC, High-Speed Rail Atlas 2025.

The network's development has profoundly transformed accessibility across China. By the end of 2024, it served more than 96% of Chinese cities with populations above 500,000, connecting most of the country's major urban centres within an integrated rail system[19]. Network expansion has been accompanied by exceptionally high ridership. In 2024, high-speed trains accounted for nearly 3.3 billion trips, or approximately 76% of all passenger rail trips in China[20]. Operating intensity is another key feature of the Chinese network, with more than 11,000 passenger trains operating daily on average across the national system in 2025[21].

After less than two decades of large-scale operation, China has evolved from an emerging network into the world's largest high-speed rail system. Its development stands out both for the breadth of its geographic coverage and the intensity of its use, with several billion trips annually and a network that continues to expand.

[13] *UIC, High-Speed Rail Atlas 2025.*

[14] *National Railway Administration of China, China High-Speed Intercity Railway 2014.*

[15] *National Railway Administration of China (2017)*

[16] *China Railway Beijing Group (2026)*

[17] *National Development and Reform Commission, Ministry of Transport and China Railway Corporation (2016)*

[18] *China State Railway Group (2026).*

[19] *China State Railway Group (2024).*

[20] *National Railway Administration of China (2025)*

[21] *China State Railway Group (2025)*

Morocco

In Morocco, Al Boraq, the first high-speed line on the African continent, has connected Tangier and Casablanca since November 2018. As one of the most recent high-speed rail projects to enter service, it shows that it is not a technology of the past. Countries are still choosing to build it today, and are seeing results within a few years of opening. The trip between the two cities takes approximately 2 hours 15 minutes by high-speed train, compared with 3 hours 45 minutes by car. The project is part of a broader strategy to modernize Morocco's rail network and strengthen connections among the country's main urban and economic centres. Rapid ridership growth reflects the successful introduction of high-speed rail in Morocco. The service carried approximately 3 million passengers one year after opening; this figure rose to 5.2 million in 2023 and 5.5 million in 2024, an increase of more than 80% compared with 2019. This growth was accompanied by a high level of reliability, with the service recording an on-time performance rate of 95.5% in 2024[22].

Figure 10: HSR network in Morocco



Source: UIC, High-Speed Rail Atlas 2025.

This growth suggests that a fast and reliable service can quickly become part of travel patterns when it connects major urban centres. The service makes same-day return trips between Tangier and Casablanca possible, broadening travel options for workers, businesses and business travellers. Morocco's National Railway Office (ONCF) explicitly highlights use of the service by business customers.

Building on the success of high-speed rail, Morocco's strategy is now entering a new phase. Launched in 2025, the extension of the high-speed line between Kenitra and Marrakech will add approximately 430 km to the current network, extending the high-speed corridor to Rabat, Casablanca and Marrakech. ONCF has allocated $7.8 billion for the infrastructure and equipment associated with this extension. The expansion is part of a $14.1 billion national rail program that also includes the acquisition of 168 new trains and investments in the existing network.

South Korea

The Korea Train eXpress (KTX) entered service in 2004 on the Gyeongbu corridor between Seoul and Dongdaegu, and was extended to Busan in 2010, completing the link between the country's two largest cities[23]. The line covers approximately 400 km and connects the two cities in 2 hours 30 minutes by high-speed train, compared with 5 hours 30 minutes by car, at a maximum speed of 300 km/h. The network then expanded gradually, notably with the Honam line to Gwangju in 2015 and new services to other regions[24]. Overall, South Korea's high-speed rail network extends 874 km.

In 2024, KTX operated on eight lines, with approximately 369 trips per day and nearly 230,000 daily passengers. The network, which served 20 stations when it launched in 2004, had 77 stations by 2025. Annual ridership reached nearly 89.9 million passengers in 2024 and a record 92.7 million in 2025. After twenty years of operation, cumulative ridership had exceeded one billion passengers. This level of use is substantial relative to the size of the network. Although South Korea has one of the shortest high-speed rail networks by route length among the countries examined, it records the second-highest ridership per 1,000 residents, behind Japan. This reflects the effectiveness of the Korean network.

[22] *ONCF, Rapport financier annuel (2024)*

[23] *UIC, High-Speed Rail Atlas 2025.*

[24] *Korea National Railway.*

Figure 11: HSR network in South Korea



Source: UIC, High-Speed Rail Atlas 2025.

United Kingdom

High Speed 1 (HS1), the United Kingdom's first high-speed line, connects London with the Channel Tunnel over 109 km. An initial section entered service in 2003, and the full line opened in 2007. Since 2009, it has also accommodated domestic high-speed services between London and Kent.

In 2019, Eurostar, the company operating high-speed services in the United Kingdom, carried more than 11 million passengers. For domestic connections, the British government's evaluation estimates that high-speed services generated approximately 15.8 million additional trips compared with a scenario without HS1. International traffic, however, remained below the forecasts prepared when the project was approved, leaving part of the line's capacity unused.

The United Kingdom began construction of High Speed 2 (HS2) in 2020. In its current configuration, the new line will cover approximately 225 km between London and Birmingham, with trains capable of reaching 320 km/h. Initial service between Old Oak Common and Birmingham is now expected between 2036 and 2039, while full opening to London and connection to the existing network are anticipated between 2040 and 2043. The extensions originally planned to Manchester and Leeds have been cancelled.

The HS2 project has experienced major cost overruns and delays. In 2019 prices, its cost is now estimated at between £88 billion and £103 billion, compared with an initial estimate of £35 billion to £45 billion[25]. According to the British government, approximately two-thirds of the increase stems from work that was initially omitted or underestimated and from poor execution, while the remaining third is mainly related to inflation, an impact partly driven by planning deficiencies that caused significant delays.

Figure 12: HSR network in the United Kingdom



Source: UIC, High-Speed Rail Atlas 2025.

California

The California high-speed rail project was approved in 2008. Its first phase is intended to connect San Francisco with Los Angeles and Anaheim over approximately 800 km. With a top speed above 300 km/h, it would be the fastest train in the United States, where high-speed rail is not deployed on the same scale as in Europe and Asia. Construction officially began in 2015.

[25] *UK Department for Transport et HS2 Ltd (2026), HS2 6-monthly report to Parliament: May 2026.*

Like HS2 in the United Kingdom, the California high-speed rail project has encountered several obstacles that have delayed delivery. Legislation had required the project to be completed by 2020, and the California High-Speed Rail Authority's initial business plan estimated its cost at US$33 billion. After years of legal disputes, cost overruns, leadership changes and political conflict, the cost has risen to US$126 billion, with a high estimate of US$231 billion, and full service is not expected before 2040[26].

These delays and cost increases stem in part from repeated changes to the route. In addition, construction contracts were awarded before all land had been acquired, generating hundreds of millions of dollars in delay-related claims. These issues were compounded by multiple lawsuits under various environmental laws and by "Buy American" domestic procurement rules that could not be met because no U.S. manufacturer produces high-speed rolling stock[27]. Construction, which began in 2015, therefore remains at an early stage. In 2026, the priority is an initial 275 km corridor between Merced and Bakersfield. The first commercial service between these cities is planned for 2033, initially with eight round trips per day. The 2026 plan then calls for gradual expansion toward the state's major metropolitan regions.

The high-speed rail projects in the United Kingdom (HS2) and California illustrate cases in which implementation encountered numerous obstacles and costs were repeatedly revised upward. However, each project developed in its own context, limiting direct comparability with Alto's high-speed rail project. **In the United Kingdom**, HS2 was designed for speeds of 360 km/h, above international norms, increasing the project's technical requirements and costs[28]. The schedule was also compressed by legislative delays: construction began nearly two years later than planned without a corresponding adjustment to the intended opening date[29]. Several sections of the HS2 route topography are also relatively more complex compared with the Québec-Toronto corridor.

In California, the problems have been more closely tied to financing. Because of delays and legal proceedings, the California High-Speed Rail Authority will exhaust its current funding resources by December 2027 unless it secures additional financing, placing completion of the project in its current form at risk[30]. The funding shortfall was compounded by a route choice that eroded political support, as construction began in the Central Valley, far from major urban centres. As delays accumulated, this route choice increased skepticism about the benefits of high-speed rail relative to the costs incurred[31].

Illustrating that these two projects are isolated cases, the Office of the Parliamentary Budget Officer notes in its report on high-speed rail costs elsewhere in the world that their costs were much higher than those of projects carried out in other regions. For example, the cost per kilometer of the HS2 project reaches $877 million, more than ten times the median cost of high-speed rail projects worldwide[32].

The cases of the United Kingdom and California are a reminder that some projects encounter major obstacles, such as cost overruns, legal challenges and waning political support. These obstacles should be recognized as factors that can limit the scope of a project and delay its completion, which underscores the importance of sustained political commitment and a broad coalition of support.

[26] *Wall Street Journal (2026).*

[27] *Cato Institute (2024).*

[28] *Institute for Government.*

[29] *Winch (2025).*

[30] *Office of the Inspector General, High-Speed Rail (OIG-HSR).*

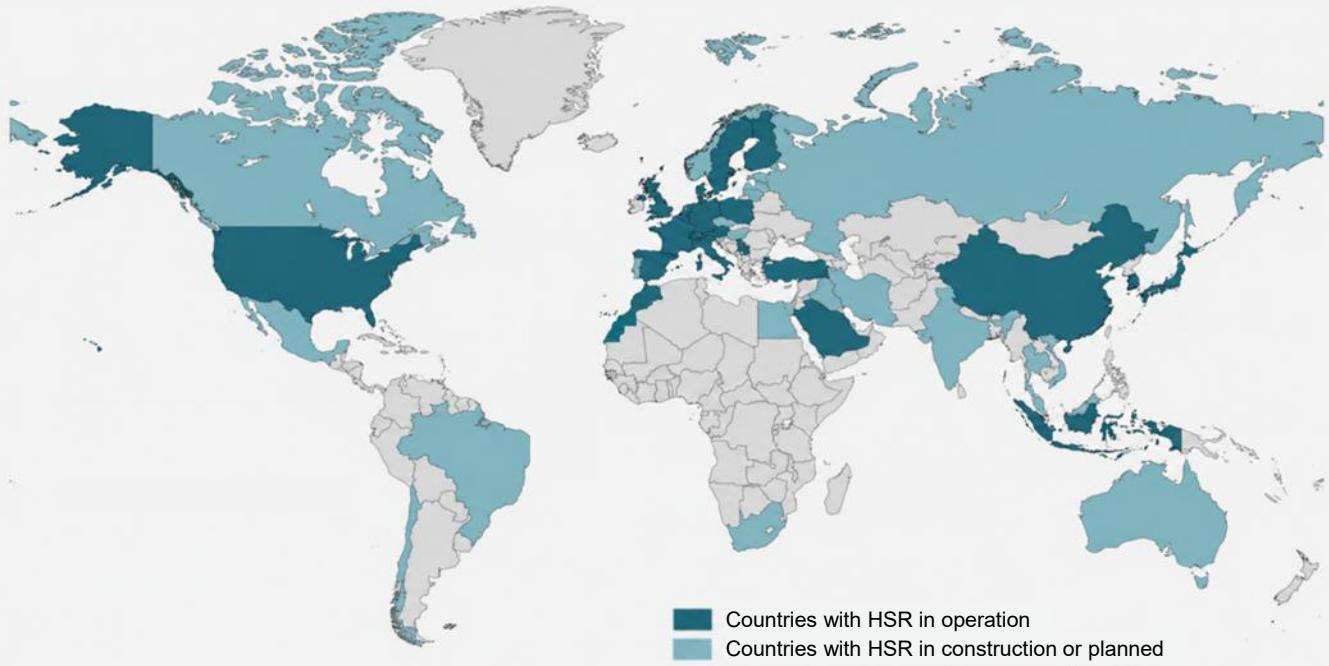
[31] *University of Toronto, Keeping high-speed rail on track: Learning from other North American projects.*

[32] *In constant 2024 dollars.*

Other Countries

The countries presented above represent only a portion of those that have deployed high-speed rail infrastructure. Internationally, 22 countries have one or more high-speed lines, while another 25 countries, including Canada, have such infrastructure under construction or in planning (Figure 13).

Figure 13 : High-speed rail around the world in 2025



Sources: UIC, High-Speed Rail Atlas 2025; Aviseo Consulting analysis, 2026.

Economic Benefits Observed Internationally

The economic benefits associated with high-speed rail arise through several channels, including productivity, labour mobility, innovation, investment, tourism and regional economic development. The literature on the impacts of high-speed rail indicates that these effects are positive. Their scale varies and depends, among other factors, on the quality of the connections created, economic structures, changes in travel patterns and the ability of jurisdictions to take advantage of this new accessibility through appropriate economic development policies.

Table 1: Summary of the Economic Benefits of High-Speed Rail

Impact Category	Main Benefits
Productivity Growth	High-speed rail boosts productivity by reducing travel times, allowing businesses to accomplish more with the same resources. Evidence from France, Spain, Italy, Germany, and South Korea shows productivity gains among both regions and firms with stronger connectivity, driven in part by easier coordination and access to larger markets.
Labour Mobility	Shorter travel times expand the range of jobs accessible to workers while also enlarging the labour pool available to employers. It supports intercity commuting, facilitates the mobility of skilled workers, and improves the alignment between workforce skills and employer needs.
Innovation and Knowledge Spillovers	By making it easier for businesses, researchers, and institutions to meet and collaborate, high-speed rail promotes the exchange of knowledge and ideas across cities. Experiences in Japan and China show increases in patent activity and innovation partnerships following the introduction of high-speed rail connections.
Investment Attraction	Improved accessibility lowers coordination costs and reduces information barriers between regions, making territories more attractive for businesses, investors, and visitors. Evidence from Spain and China shows that high-speed rail has supported the creation of new firms and business locations, particularly in service industries, tourism, and sectors where in-person interactions are important.
Tourism Development	High-speed rail expands the potential visitor market by reducing travel times and making destinations more accessible for short stays, day trips, and domestic tourism. It also brings destinations closer together, allowing visitors to experience more places within a single trip. Studies from the European Union, Japan, and China have documented increases in domestic tourism, alongside growth in visitor arrivals and spending across served destinations.
Regional Transformation	High-speed rail can reshape the role of cities within regional economies by improving connectivity to major urban centres and economic corridors. Experience from Montabaur in Germany, as well as elsewhere in Europe, indicates that stations well connected to urban areas and local transit systems can support real estate development, attract businesses, and strengthen economic activity hubs.

Source: Aviseo Consulting analysis, 2026.

Productivity Growth

Productivity growth is one of the main channels through which high-speed rail generates economic benefits. This relationship refers to the concept of **agglomeration effects**, meaning the productivity gains that businesses and workers derive from proximity to a critical mass of economic activity. These gains arise through three mechanisms: better access to customers, suppliers and partners; improved matching between employers and workers across a larger labour pool; and greater knowledge diffusion[33].

- This improved accessibility facilitates meetings with customers and suppliers, broadens the pool of skills available to businesses and enables them to benefit more fully from the advantages associated with concentrated economic activity, without necessarily being located in the same city.
- The scale of these gains varies by context, notably according to the economic structure of the cities served and their integration with local transportation networks.

What is productivity?

Productivity measures the amount of wealth produced for a given amount of work. When productivity increases, an economy can produce more with the same number of hours worked. It depends notably on technology, business organization, worker skills and access to markets. Productivity therefore does not mean *working more*, but rather *working better* with the tools available to workers, for the same number of hours.

Productivity gains have been observed in several countries where high-speed rail has been introduced.

- On Spain's Madrid–Barcelona corridor, high-speed rail was associated with an average increase of 2.4% in GDP and 1.1% in labour productivity in the provinces served. Productivity gains were also observed in Lleida and Tarragona, two intermediate provinces along the corridor[34].
- In South Korea, productivity at manufacturing establishments located in areas served by KTX increased by approximately 5% relative to comparable establishments that were not served. Better connections to major centres can facilitate exchanges with customers, suppliers and specialized workers, as well as coordination among establishments located in different regions[35].
- In Italy, the opening of the Reggio Emilia high-speed station was associated with an increase of approximately 5% in total factor productivity among the businesses concerned. Gains were larger for businesses located near the station[36].
- In Germany, areas that became more accessible after the Cologne–Frankfurt line opened recorded 0.04% higher output per worker for every 1% increase in a region's economic concentration. Part of this effect appears to result from better-connected areas also attracting more productive businesses and workers[37].

Businesses with multiple locations also become more productive when connectivity among their establishments improves. In France, shorter travel times encouraged administrative employees at head offices to commute to establishments in other cities. This more frequent travel allowed those establishments to devote more time to high-value-added activities and less to administrative tasks, which were reassigned to head offices. This dynamic increased business profits, with a stronger effect in service industries[38].

Overall, studies indicate that high-speed rail can support productivity growth. These gains are neither automatic nor evenly distributed; they depend on the ability of businesses to take advantage of better access to markets, workers, suppliers and partners.

Labour Mobility

By reducing travel times between cities as well as costs, high-speed rail simultaneously expands the number of jobs accessible to workers and the labour pool available to businesses. Jobs that were previously too distant for daily consideration can therefore become accessible without relocation. This improved accessibility enhances the match between workers' skills and business needs. These effects have been widely documented in jurisdictions with high-speed rail. In Germany, for example, a 1% reduction in travel time between two regions was

[33] *A more detailed discussion of agglomeration effects is presented in Agglomeration Effects, Economic Density and Market Reach.*

[34] *Carbo et al. (2019).*

[35] *Baek and Park (2022).*

[36] *Bottasso et al. (2023).*

[37] *Ahlfeldt and Feddersen (2018).*

[38] *Charnoz et al. (2018).*

associated with a 0.25% increase in the number of commuters travelling between them[39].

These commuting effects work in both directions. High-speed rail allows workers to take jobs in an intermediate city along the corridor while continuing to live in a major city, and the reverse is also true. For example, extensions of France's high-speed rail network toward Bordeaux and Rennes encouraged skilled workers to relocate to secondary cities while maintaining some employment ties with Paris[40].

- Commuting is most responsive to shorter travel times on trips between 200 and 500 km[41], a range that includes many city pairs in the Québec City–Toronto corridor. In China, connection to the high-speed rail network increased the mobility of highly skilled workers, with a stronger effect in large cities[42].

These differences show that high-speed rail can broaden labour markets by reducing the economic distance between regions, facilitating mobility and improving the match between available skills and business needs. Gains may take the form of new commuting patterns, sectoral restructuring, redistribution of activity among cities and increased labour-force participation[43]. In this context, a city's position in the network, its existing employment base and access to the station influence the effects observed. Beyond improved labour matching, connection to a high-speed rail network can also increase labour supply, because time saved in transit may be reallocated to paid work. As such, studies indicate that 35% to 40%[44] of the travel time eliminated may be devoted to primary or secondary employment.

Innovation and Knowledge Spillovers

In-person interactions remain important for transmitting complex knowledge, developing collaborations and supporting learning, even in the era of digital communications. They are particularly useful when information changes rapidly or is difficult to convey remotely[45]. By reducing travel times between cities, high-speed rail facilitates these meetings and increases knowledge exchange among businesses, researchers and regions.

- In particular, the opening of Japan's Nagano Shinkansen in 1997 led to a 4.6% increase in patent applications by establishments located along the line[46]. Patents jointly developed by multiple establishments also increased. At the regional level, Shinkansen development was associated with increased innovation, measured by patent filings across 1,741 municipalities. The effect was also larger in small cities and villages than in major cities[47].
- In China, a direct high-speed rail connection increased patent citations between connected cities by approximately 8.5%[48]. Connection to high-speed rail also increased the number and quality of co-patents and the frequency of collaborative partnerships, although the effect diminished with distance. Gains were larger for city pairs less than 250 km apart and declined thereafter[49]. Establishing subsidiaries in other cities also facilitated knowledge exchange across regions.

The effects on innovation are not uniform. They depend notably on initial accessibility, regional size and the ability to benefit from the new interactions created by high-speed rail. In Japan, some of the largest effects were observed in smaller or initially less accessible areas.

Investment Attraction

By reducing travel times and the cost of exchanging information, the introduction of high-speed rail influences business location and investment decisions. It makes certain areas more accessible to a range of economic actors, including head offices, customers, partners and investors. This effect is particularly important in activities where in-person interaction plays a major role.

However, the effect varies substantially across sectors and regions. In Spain, connection to the high-speed rail network supported business creation, particularly in services, tourism and knowledge-intensive activities, while the effect was almost

[39] *Heuermann and Schmieder (2019).*
[40] *Loumeau and Russo (2023).*
[41] *Heuermann and Schmieder (2019).*
[42] *Feng et al. (2023).*
[43] *Wang et al. (2025).*
[44] *Bloom and Davis (2020), Aksoy et al. (2023).*
[45] *Storper and Venables (2004).*
[46] *Inoue et al (2017).*
[47] *Miwa et al. (2022)*
[48] *Long and Yi (2024)*
[49] *Yao et Li (2022)*

negligible in manufacturing[50]. The authors also found that business creation tended to be more concentrated in larger cities. Recent research in China reaches a similar conclusion: direct high-speed connections increased the number of subsidiaries established between connected cities by publicly listed companies by approximately 15%[51]. This effect resulted mainly from reduced information asymmetries and coordination costs due to improved connectivity[52].

- Investment flows may nevertheless be directed more heavily toward developed cities that already attract substantial investment. High-speed rail can therefore improve a region's attractiveness without guaranteeing an even distribution of new investment.

Tourism Development

The tourism effects of high-speed rail begin with lower generalized travel costs to the destinations served. By reducing travel times and improving service reliability, high-speed rail expands the pool of potential visitors and can affect destination choice, mode choice and travel frequency. Tourism impacts arise through two complementary channels: international and domestic tourism. International experience shows that effects on **foreign visitors** are positive but vary across countries. In China, increases of approximately 20% in the number of international tourists were attributed to the introduction of high-speed rail[53], compared with only about 1% in Spain[54].

Effects on **domestic tourism** have been more pronounced, as high-speed rail makes some destinations accessible for short stays, business travel and cultural visits.

- In the European Union, the number of domestic tourists increased by 16.6%[55].
- In Japan, opening the Hokuriku Shinkansen led to an increase of more than three million visitors per year in Ishikawa Prefecture, as well as a 78% increase in visitors from the Kanto region[56].
- In China, the introduction of high-speed rail was associated with a 42.8% increase in the number of domestic tourists[57].

Overall, the existence of a tourism channel associated with high-speed rail is well documented. Studies show that high-speed rail can increase tourist arrivals, encourage short stays and support revenues in certain urban or cultural destinations[58]. These effects depend on visitor profiles, length of stay, the destination's ability to capture spending, local connections to stations and competition from other modes[59]. The extent of tourism benefits will also hinge on the project's integration with other transport modes and hubs, especially airports and regional transit centres.

High-speed rail should therefore be viewed as a factor that improves accessibility rather than as a tourism driver in itself. Benefits depend notably on a destination's initial attractiveness, tourism offering and ability to convert this new accessibility into visits, overnight stays and local spending.

Regional Transformation

High-speed rail can transform regions by changing their relative accessibility. By reducing travel times to major centres, it allows previously peripheral cities to improve their position within the urban network. This new proximity can influence travel, business location, real estate development and the organization of activity around stations. Benefits are generally greater when stations are integrated into the existing urban fabric, well connected to local transportation and supported by conditions conducive to new activity[60].

- The 2002 opening of Germany's Cologne–Frankfurt line improved connections for three intermediate areas, including Montabaur. Their GDP increased by an average of approximately 8.5% as a result of this new accessibility. In Montabaur, the business park located near the station has since attracted more than 50 companies[61].
- An analysis of 232 stations in 11 European countries shows that stations located near existing urban areas and integrated with local and regional

[50] *Matas, Raymond et Roig (2020).*
[51] *Wen, Hu and Xin (2026).*
[52] *Ibid.*
[53] *Campa et al. (2016, 2017).*
[54] *Campa et al. (2018, 2019).*
[55] *Castillo-Manzano et al. (2018).*
[56] *Takashi (2022).*
[57] *Cheng and Chen (2024).*
[58] *Cheng and Chen (2024), Pagliara and Mauriello (2019), Chen and Haynes, (2015) and Takashi (2022).*
[59] *Albalate and Fageda (2016), Bazin et al (2013), Gutiérrez et al. (2019).*
[60] *Ahlfeldt and Feddersen (2018); Wenner and Thierstein (2022)*
[61] *Ahlfeldt and Feddersen (2018)*

transportation networks are associated with greater development in their surroundings. In contrast, peripheral stations outside metropolitan regions generally attract fewer new projects[62].

These regional effects may vary across territories. While some regions may benefit more than others, the extent to which communities without a station benefit from improved connectivity depends on their access to the broader transportation network, particularly through connections to high-speed rail stations. The distribution of benefits therefore depends largely on choices regarding stations, service levels and regional connections.

Lessons for Canada

This section has shown how high-speed rail can generate positive effects on worker mobility, productivity, innovation and regional development. The scale of these benefits depends on many factors and varies across the regions served. There is no single model to replicate, as outcomes differ according to the markets connected, service quality, station locations, network structure and the public policies accompanying the project.

For Canada, maximizing these benefits will require coordination of transportation, housing, land-use planning and economic development policies among the federal, Québec, Ontario and municipal governments, so that decisions made around the network support rather than constrain the new accessibility.

Maximizing these benefits begins with selecting the markets to be connected. High-capacity infrastructure alone does not guarantee strong ridership. Its value depends on the intensity of travel and economic ties between the cities served and on its ability to offer a genuinely attractive alternative to other modes of transportation.

- Morocco illustrates this importance. Al Boraq carried 5.5 million passengers in 2024, more than 80% above its 2019 level, while connecting several of the country's major urban centres[63]. This growth shows that high-speed rail can be adopted rapidly when it responds to substantial demand and is integrated into a broader transportation network, whether rail-based or not.

Demand must also be served by a high-quality service that is fast, frequent and reliable. A substantial and predictable reduction in travel times can broaden labour markets, facilitate business travel and increase interactions among businesses. A passenger-dedicated network also avoids conflicts with freight traffic and makes it easier to adjust train frequency to demand, unlike the current situation on VIA Rail's network.

Service quality is not sufficient, however, if the stations themselves are poorly located or poorly integrated into the surrounding area. Benefits are generally greater when stations are easily accessible from urban centres and well connected to local transportation. Conversely, a peripheral or poorly connected station can limit the number of workers, businesses and travellers who truly benefit from the new accessibility.

For intermediate cities to benefit fully from the network, the new connectivity must be accompanied by policies adapted to their economic and urban realities. Housing supply, public transit, the availability of industrial and commercial land, and local development strategies determine their ability to convert network access into investment, jobs and new activity. Coordination among levels of government is therefore essential to make the infrastructure a lever for regional development.

- The way cities are connected to one another and to major economic centres strongly influences the distribution of benefits. An overall improvement in accessibility does not necessarily mean that every region will benefit to the same extent.

What Is an Intermediate City?
Intermediate cities generally refer to medium-sized urban centres that serve as a link between large metropolitan regions and surrounding areas, concentrating economic, institutional and service functions at the regional level[64].

Finally, these benefits remain conditional on sound and rigorous project management. Weak planning that leads to construction beginning prematurely tends to result in major delays or repeated changes in project scope, increasing costs and postponing the

[62] *Wenner and Thierstein (2022)*
[63] *ONCF (2024), Rapport ESG 2024.*
[64] *Nadou (2010).*

expected benefits. The California and British projects are compelling recent examples.

Taken together, these lessons point to the conditions under which high-speed rail delivers its full potential, namely a service that is **fast, frequent and reliable**, offered at **affordable fares**, and **well connected to the cities, transport networks and communities** it serves. Applying them consistently, together with coordinated public policies and rigorous project management, will be key to ensuring that the project's benefits are realized and widely shared across the regions served.



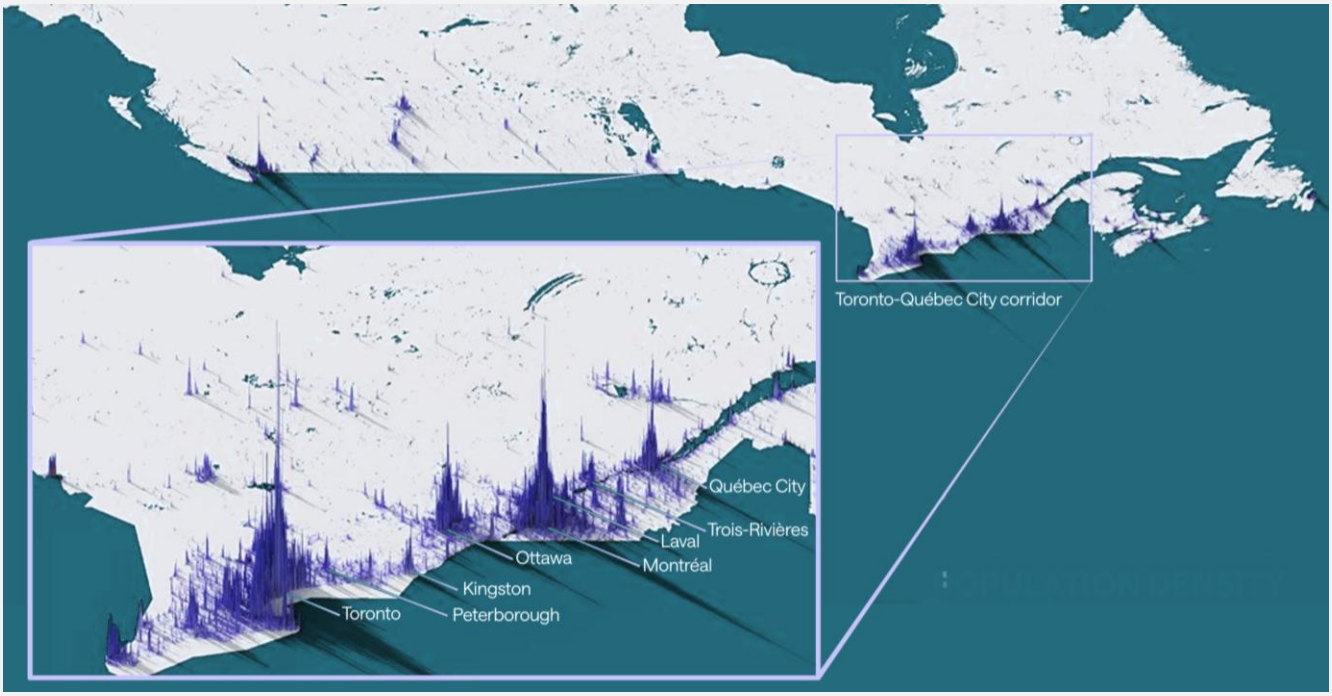
Why Alto Matters for Canada's Economy

Alto plans a 1,000-kilometer high-speed rail network in Canada's most densely populated corridor. With a fast, frequent, reliable and electrified service, it would offer a solution to the growing constraints of the current road, air and rail networks. By reducing travel times and the cost of distance, the project would encourage modal shift and new trips. It would also strengthen market integration, productivity and exchanges between businesses and workers. The project comes at a time when major investments will be needed to increase the capacity of existing networks if a structuring transportation alternative such as high-speed rail is not built.

Vision and Project Overview

Alto is a high-speed rail network designed to connect seven cities in the Québec City–Toronto corridor: Québec City, Trois-Rivières, Laval, Montréal, Ottawa, Peterborough and Toronto[65]. As the country's most densely populated region and its largest economic region, this corridor is home to 41% of Canada's population and generates 40% of GDP (Figure 14). Despite this significant footprint on Canada's economy, the cities along the route are poorly integrated with one another, due to currently limited connectivity that makes travel long and inefficient. Canada's immense territory is both an economic strength and a weakness, although population and economic activity remain highly concentrated within the Québec City–Toronto corridor. The associated natural capital is an obvious advantage, but it comes with distances that limit, among other things, the gains from the concentration of economic activity. The distance between Canada's major cities is a structural weakness.

Figure 14 : Canada's population density



Source: Adapted from Alto.

[65] *At the time of writing, an additional station in Kingston is being assessed, at the request of the Minister of Transport made in June 2026.*

By offering a high-speed rail alternative between Québec City and Toronto, Alto essentially aims to cut distances in half, “to fold the map in two.” To this end, the high-speed rail project stands out for:

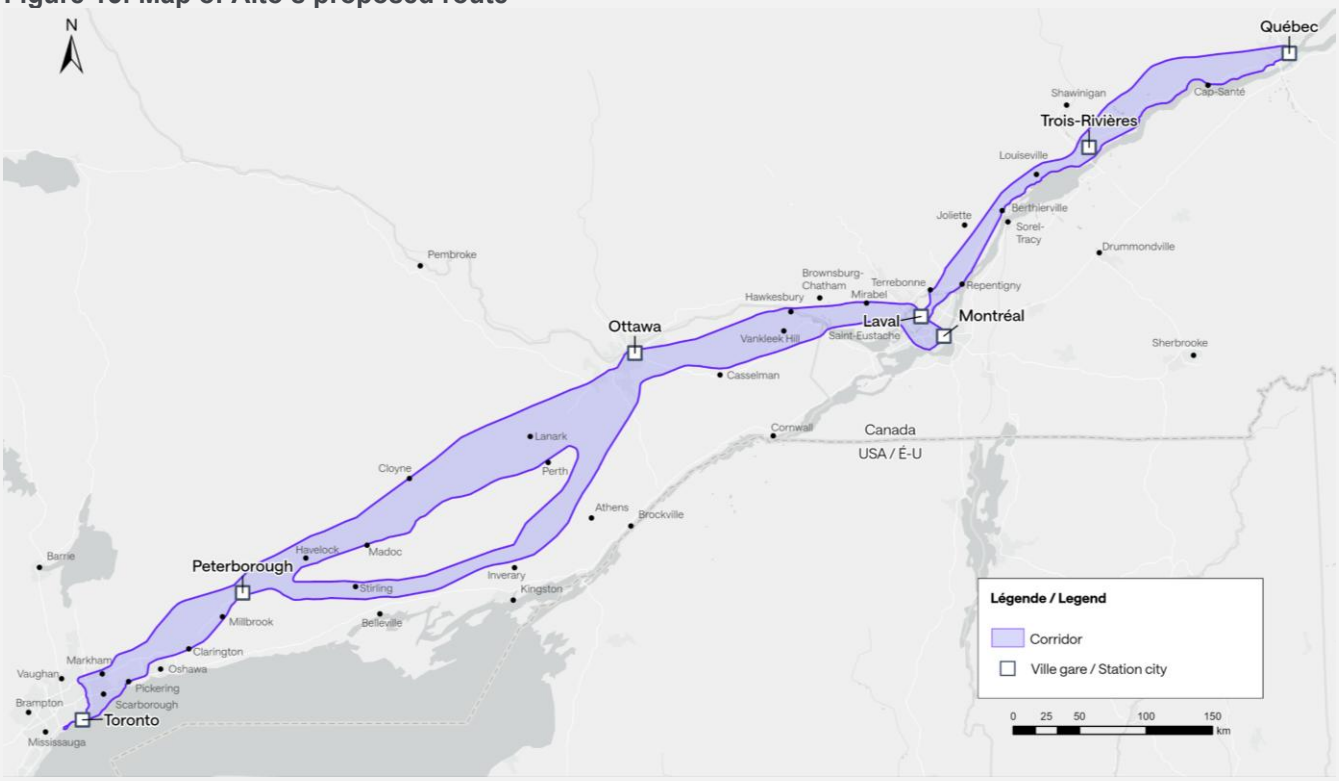
– **a fully dedicated network** of approximately 1,000 kilometers of new track, fully electrified and with no road crossings, with seven multimodal stations connected to local and regional transportation networks, in addition to the maintenance and control centres required for operations;

– **a design focused on speed,** with fully electric trains running at 300 km/h, cutting travel time between Montréal and Toronto in half;

– **a frequency adapted to demand,** made possible in particular by the fact that the high-speed train will run on a dedicated network. Departures between the main city pairs are planned at hourly intervals, or even every half hour, depending on the line and the final service design.

The Québec City–Toronto high-speed rail project has been identified by Prime Minister Mark Carney as a transformative, nation-building project for Canada. In this sense, it is aligned with government objectives aimed at increasing Canada’s economic potential and resilience.

Figure 15: Map of Alto’s proposed route



Source: Alto.

A Market Comparable to International Routes

The Québec City–Toronto corridor has the structural characteristics of routes where high-speed rail has been successfully deployed elsewhere in the world. The region is home to major economic hubs, among the most important in Canada, high value-added knowledge industries and a highly educated population. With a population served of approximately 17 million people, Alto even reaches a larger catchment area than most major existing lines (Table 2).

– According to Statistics Canada, the Québec City–Toronto corridor is the most densely populated and most industrialized region in Canada, reinforcing the relevance of improving connectivity between the cities that make it up[66].

– With a length of approximately 1,000 km, the Alto project would place Canada among the countries with the longest high-speed rail networks in the world. According to the UIC, only eight countries had high-speed rail networks longer than 1,000 km in 2024.

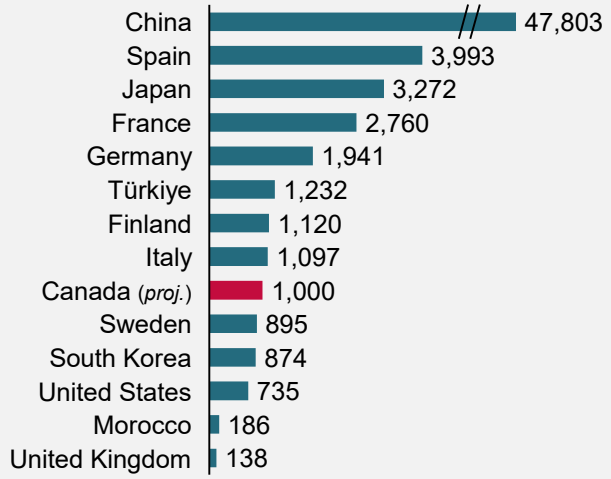
Table 2: Main high-speed rail corridors in the world and population served

Country	Corridor	Population served (millions)
France	Paris–Lyon–Valence–Avignon–Marseille	17.9
Italy	Turin–Milan–Bologna–Florence–Rome–Naples–Salerno	16.2
Spain	Madrid–Zaragoza–Lleida–Tarragona–Barcelona–Girona–Figueres	13.3
Germany	Frankfurt–Cologne	13.0
Japan	Tokyo–Osaka	61.1
Morocco	Tangier–Casablanca	4.5
South Korea	Seoul–Busan	17.4
United Kingdom	London–Channel Tunnel (HS1)	9.2
	London–Birmingham (HS2 Phase 1)	13.0
United States	San Francisco–Anaheim (Phase 1)	19.8
Canada	**Québec-Toronto**	**17.0**

Sources: Alto, Aviseo Consulting analysis, 2026.

[66] *Alto (2026).*

Figure 16: High-speed rail lines in the world
World, 2024, track kilometers



Sources: UIC, High-Speed Rail Atlas 2025, Aviseo Consulting analysis, 2026.

Economic Challenges Facing the Corridor

Congestion and Capacity Constraints

The transportation network in the Québec City–Toronto corridor faces capacity constraints that limit the region's ability to achieve its economic potential. These constraints are partly attributable to a long-standing imbalance between economic growth and infrastructure investment. Since 1981, Canadian GDP has grown at a rate nearly 1.5 times faster than public and private investment in transportation infra-structure, helping to create capacity constraints and bottlenecks throughout the network[67].

First and foremost, the road network, which carries 97% of trips in the Québec City–Toronto corridor, operates beyond capacity at its critical points. In particular, intercity links between Toronto, Ottawa and Montréal rely on a limited number of routes, essentially Highways 401 and 417, which exposes the network to the risk of disruptions during one-off events such as an accident, a storm or an emergency.

Beyond these risks, congestion is increasingly pronounced on these major routes. Congestion is concentrated at either end of the trip, where most of the time is lost. For example, in 2025, drivers lost 100 hours in traffic in Toronto, 89 hours in Montréal and 69 hours in Québec City[68], all up from 2024. This is time that cannot be devoted to productive activities such as paid work, or to leisure or family time. More broadly, the Ontario Ministry of Transportation recorded more than 5,000 hours of delays on Highway 401 alone between June 2020 and June 2025, where the average speed is 47.8 km/h over 292 kilometers[69]. In Québec, five of the 20 worst highway bottlenecks in Canada are in Montréal. The largest affects a 10-kilometer section of the Metropolitan Autoroute (A-40) between Pie-IX Boulevard and Autoroute 520. It is the busiest segment of the Trans-Canada Highway, where congestion costs drivers nearly 2 million hours a year[70].

– Although Montréal's bottlenecks generally rank behind Toronto's among the worst in the country, travel speeds there are lower. On the Metropolitan Autoroute, for example, the average speed almost always remains at or below 50 km/h during business hours[71].

In total, the Québec City–Toronto corridor has 16 of the 20 worst highway bottlenecks in Canada.

Road congestion also has tangible impacts on the transportation of goods, which relies heavily on trucking. In Ontario, more than $600 million worth of goods pass through the busiest section of Highway 401, between Highways 427 and 404 in Toronto, every day, where some 41,000 trucks travel daily and which carries up to 44% of Ontario's interprovincial trade by road[72]. In Québec, road congestion costs $6 billion a year in Greater Montréal, and the trucking industry bears up to 7% of this cost[73]. In the Québec City region, this cost to the road freight industry amounts to at least $207 million[74].

It should be noted that most of this congestion stems from daily commuting within metropolitan regions rather than from long-distance intercity travel. High-speed rail alone would therefore not resolve urban congestion. Its contribution would rather come from reducing the number of motorists travelling between

[67] *Transport Canada (2026).*
[68] *TomTom traffic index, based on congestion time for a distance of 10 kilometers.*
[69] *Alto (2026).*
[70] *CAA (2017).*
[71] *Ibid.*
[72] *Ontario Ministry of Transportation (2022)*
[73] *Ministère des Transports du Québec (2018) and Communauté métropolitaine de Montréal (2024).*
[74] *Communauté métropolitaine de Québec (2026).*

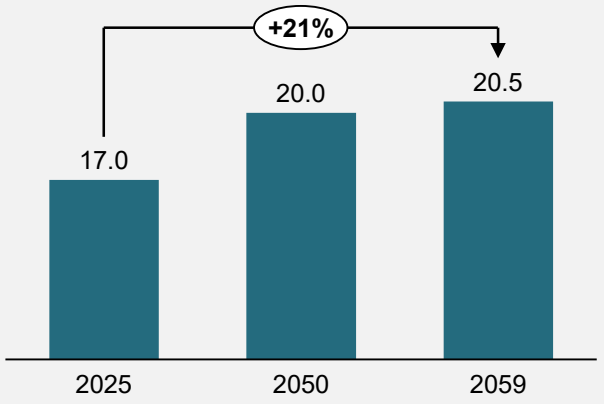
metropolitan regions, who add to traffic on the most congested highway segments as they enter and leave major urban centres. By freeing up some road capacity, this modal shift could also indirectly benefit road freight transportation, which would continue to rely on these highways.

The air network is also under capacity pressure. Montréal-Trudeau Airport is expected to handle approximately 25 million passengers by 2028, then between 30 and 35 million by 2035[75], while Toronto Pearson is expected to reach 65 million passengers in the early 2030s, an increase of nearly 40% that would push it to the limits of its current capacity[76]. This growth, in both Montréal and Toronto, will require significant investment to keep operations running smoothly.

These pressures on transportation infrastructure in the high-speed rail corridor will intensify in the coming decades, along with population growth. According to Alto's latest projections, the population along the Québec City–Toronto corridor is expected to grow from approximately 17 million to nearly 21 million by 2059.

Figure 17: Population projections along the Alto corridor

2025 to 2059, in millions of people



Sources: Institut de la statistique du Québec, Government of Ontario, Aviseo Consulting analysis, 2026.

Rising Mobility Costs

Intercity travel in the corridor is mainly by car, plane and conventional train. However, the capacity constraints facing these three modes are increasing costs for travellers. These costs, both monetary and non-monetary, have been rising in recent years, and this trend is expected to continue in the absence of a structuring transportation option. This reinforces the relevance of high-speed rail as an additional transportation option on the Québec City–Toronto axis.

The Car

Today, every kilometer travelled by car costs drivers more than it did just a few years ago. Beyond gasoline, two distance-related costs have risen sharply since the pandemic: depreciation (the loss of a vehicle's value) and maintenance Recent research also suggests that motorists tend to underestimate the costs of owning and operating a vehicle. A study conducted in Ireland found that more than 70% of motorists underestimated their annual motoring expenses, potentially distorting comparisons with alternative modes of transportation[77].

First of all, it is important to distinguish between the two types of car operating costs. On the one hand, there are fixed costs, i.e., those that vary little or not at all with use, such as insurance, driver's licence, registration or depreciation. On the other hand, there are variable costs, which increase with use. Gasoline and maintenance are the two main variable cost items for a car. The line between fixed and variable costs is, however, more nuanced than it appears. While some fixed costs remain entirely independent of use, such as the driver's licence or registration fees, others are, on the contrary, closely linked to it.

– Car insurance is one example. The premium varies according to the declared annual mileage, but this effect remains marginal overall in the total bill, which depends on many other factors such as location, driver profile or vehicle model.

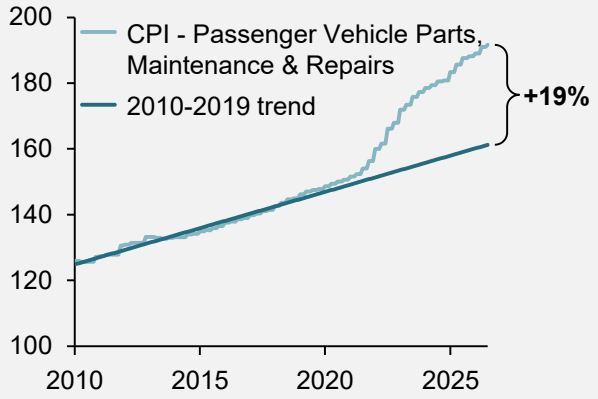
Depreciation, on the other hand, is much more sensitive to the distance travelled. All else being equal, a vehicle with a higher odometer reading will have a lower resale value, since each additional kilometer translates directly into an additional loss of value. This is in a context where vehicle price growth has accelerated sharply in recent years (Figure 18), so that vehicle prices are now 13% above the pre-pandemic trend. The cost of depreciation associated with each kilometer travelled has therefore increased for drivers travelling along the corridor.

[75] *Canada Infrastructure Bank (2025).*

[76] *Toronto Pearson Airport (2024).*

[77] *Shier et al. (2026).*

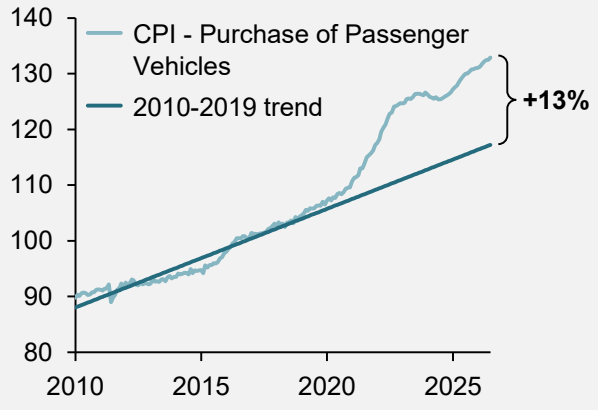
Figure 18: Price index for new and used vehicles
Canada, 2010 to 2026, index 2002 = 100



Sources: Statistics Canada, Aviseo Consulting analysis, 2026.

Maintenance follows a complementary dynamic, having also been subject to strong inflationary pressures (Figure 19) due to rising vehicle prices. A substantial share of maintenance and repair needs remains directly linked to the distance travelled, so that using a car for trips along the high-speed rail route also translates into rising maintenance costs for drivers in the corridor.

Figure 19: Price index for motor vehicle parts and maintenance
Canada, 2010 to 2026, index 2002 = 100

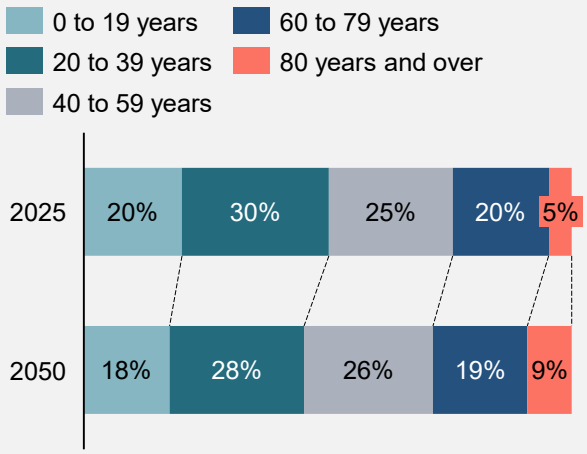


Sources: Statistics Canada, Aviseo Consulting analysis, 2026.

Population aging also creates a growing cost for individuals travelling along the route, since older drivers must exert greater cognitive effort, which results in increased fatigue during the trip[78]. This increase is observed despite the fact that the opportunity cost of time decreases with age, since fewer hours worked fully or partially eliminate the trade-off between leisure time and work time. The cost of travel thus shifts from time sacrificed to effort expended. High-speed rail, therefore, remains attractive to seniors, but for a different reason than the one that makes it attractive to active workers. Modal choice reflects this dynamic.

Aging therefore broadens the pool of travellers for whom the car becomes costly in terms of effort. Therefore, in a context where the share of the population aged 60 and over in the high-speed rail corridor will increase from 25% to 29% between 2025 and 2050 (Figure 20), this transportation infrastructure will offer an alternative to the car. Capturing this demand will nevertheless depend on the fare chosen.

Figure 20: Distribution by age group along the Québec City–Toronto route
High-speed rail corridor, 2025 and 2050, in %



Sources: Government of Ontario, Institut de la statistique du Québec, Aviseo Consulting analysis, 2026.

The Train

The train service currently operating between Québec City and Toronto also generates growing costs for users. Unlike a car, these costs are mainly non-monetary, as they manifest primarily as lost time and stress due to the service's lack of reliability. These costs stem from the fact that the passenger train, operated by VIA Rail, runs mainly on tracks owned by freight companies, where freight trains have priority. VIA Rail in fact owns only 3% of the 12,500-kilometer rail network it uses[79]. This particularity is a major obstacle to the reliability, frequency and speed of the service.

[78] *Getzmann et al. (2018).*

[79] *Office of the Auditor General of Canada (2026).*

– Between 2022 and 2024, the on-time performance of passenger rail in Canada ranged between 51% and 59%, compared with approximately 90% in most European countries, mainly due to track priority given to freight transportation[80]. In the first quarter of 2025, VIA Rail's on-time performance even fell to 30%.

– In this sense, the gradual lengthening of travel times since the 1980s has contributed to stagnating annual ridership, even though the pool of potential travellers has grown significantly over the period[81]. A look at the past 15 years (Figure 21) shows, at best, a stagnation in the appeal of conventional rail.

Reflecting the impact of sharing tracks with freight, a third-party asset owner imposed a speed limit in 2024 on VIA Rail's new trains in the Québec City–Toronto corridor to ensure the proper functioning of level crossing warning systems. This speed limit had a considerable impact on the on-time performance of VIA Rail trains[82].

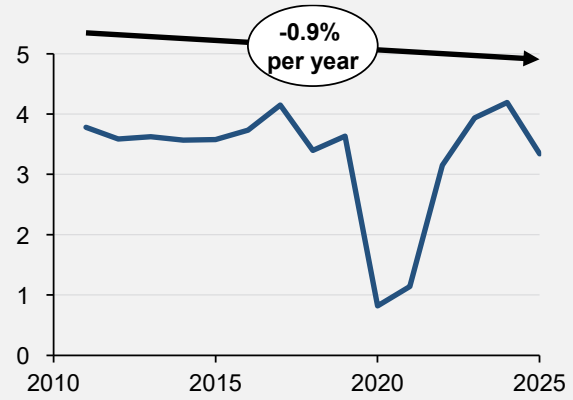
In addition, the two busiest stations, Montréal and Toronto, are also owned by third parties. These two main stations have undergone major expansion and redevelopment work on their infrastructure in recent years, which has caused disruptions to the rail network, further affecting the on-time performance of VIA Rail trains.

Reflecting these constraints, passenger rail accounted for only 2% of all trips in the corridor in 2019[83]. By comparison, high-speed rail's market share on major routes in Spain is close to 50% on average, and reaches 69% in Italy on the Rome–Milan route[84].

These shortcomings are not primarily attributable to VIA Rail's management. In its 2026 special examination, the Office of the Auditor General of Canada concluded that there were no significant deficiencies in the corporation's systems and practices and that VIA was well managed overall. The audit notes that VIA does not own most of the tracks and stations it uses, which are therefore outside its direct control. It also points out that, under Canadian law, passenger trains do not have priority over freight traffic, so VIA trains frequently have to yield to freight operations, which can cause substantial delays[85].

Figure 21: Passengers per year on VIA Rail's Eastern Corridor

Québec City–Windsor, 2011 to 2025, in millions



Sources: VIA Rail annual reports, 2011 to 2025.

As travellers using VIA Rail trains migrate to high-speed rail, capacity could be freed up on existing freight networks. A study conducted by CPCS on behalf of Alto estimates that this shift could help reduce pressure on existing rail corridors, improve the performance and resilience of the freight network and defer certain needs for additional investment in rail infrastructure. This issue is all the more important given that demand for freight transportation in the Montréal–Toronto corridor could grow by about 55% over the next 30 years[86].

The potential benefits for freight transportation are not limited to the rail network. By encouraging a shift of some passenger trips from road to high-speed rail, Alto would also help reduce road congestion and improve traffic flow in the corridor, which could also benefit freight transportation by truck.

The Plane

As for air transportation, Canada ranks among the developed countries with the highest fares. According to the International Air Transport Association (IATA), Canada ranks 101st out of 116 for price competitiveness[87]. This situation stems in particular from limited competition in air transportation in the country. Indeed, the domestic flight market in Canada is highly concentrated, with two airlines, Air Canada and

[80] *Alto (2026), Gosselin et al. (2026)*

[81] *Gosselin et al. (2026).*

[82] *Office of the Auditor General of Canada (2026).*

[83] *Alto (2026).*

[84] *FS Italiano (2018) and CNFC (2023).*

[85] *Office of the Auditor General of Canada (2026).*

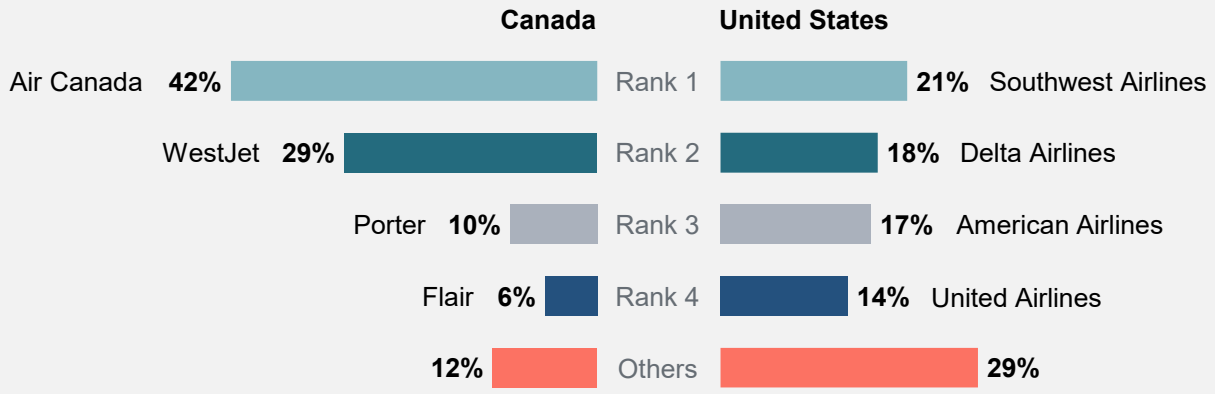
[86] *CPCS (2026), Potential Benefits of Alto for Freight.*

[87] *Fraser Institute (2025).*

WestJet, sharing 71% of the market (Figure 22)[88]. Although market concentration decreased between 2019 and 2023 with the arrival of airlines such as Porter and Flair, the Competition Bureau of Canada considers that average concentration remains high and that competition from new sources remains fragile[89].

– By comparison, the same market share (71%) of domestic flights is shared among the four largest airlines in the United States, and none of them has a market share above 21%.

Figure 22: Share of seats on scheduled domestic flights
Canada and the United States, 2025 and 2026

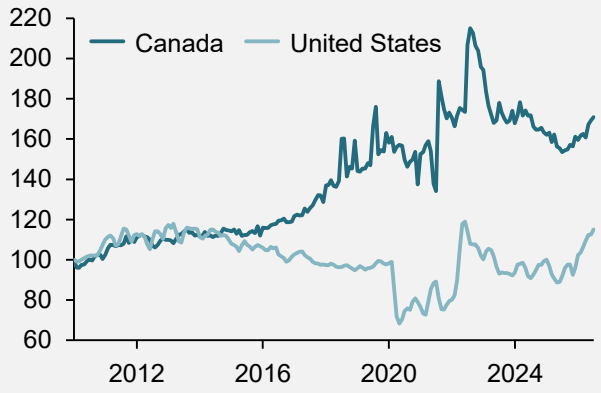


Sources: Transport Canada, U.S. Bureau of Transportation Statistics, Aviseo Consulting analysis, 2026.

In this context, the evolution of passenger airfares in Canada reflects this lack of competition and diverges sharply from that observed in the United States[90]. Since 2010, airfares in the United States have remained relatively stable, rising by only 15% between 2010 and 2026. In Canada, the picture is quite different, as Canadian travellers have had to absorb a 71% increase in airfares over the same period (Figure 23).

Additionally, short-distance air travel does not bring time savings. Over distances of 300 km to 800 km, flying offers little time advantage once all stages of the trip are taken into account, such as getting to the airport, check-in, security and boarding. Flights within the corridor could therefore prove less efficient than high-speed rail.

Figure 23: Change in passenger airfares
Canada and the United States, 2010 to 2026, index January 2010 = 100



Sources: Macrobond, Aviseo Consulting analysis, 2026.

[88] *Transport Canada (2026).*

[89] *Competition Bureau Canada (2025).*

[90] *Europe was excluded from the comparison because of the significant impact on airfares of the energy crisis in Europe following the war in Ukraine. Although also affected, Canada and the United States did not experience impacts as significant.*

By offering an alternative to air transportation in the Québec City–Toronto corridor, high-speed rail will increase competition between modes of transportation, which could help lower costs while stimulating quality improvements and innovation.

The rising costs of the car, conventional rail and air travel all point to the same conclusion: the corridor lacks an intercity option that is fast, reliable, frequent and competitive. The car dominates travel, but exposes travellers to congestion and rising operating costs. This congestion also affects freight transportation by truck, whose fluidity depends directly on the capacity of the road network. Conventional rail, for its part, remains limited by sharing tracks with freight, while air travel combines high fares with a reduced time advantage on several routes when the entire trip is taken into account. Alto therefore does not address the weakness of a single mode; it adds structural capacity to a system whose main components, for both passenger and freight transportation, are all under pressure.

The Cost of Inaction

The Status Quo Scenario

Building a high-speed rail network requires significant investment. However, the absence of high-speed rail does not mean the absence of investment for governments; rather, it implies a different investment trajectory. With the corridor's population expected to grow by 3 million people between 2025 and 2050, demand for mobility in the Québec City–Toronto corridor will increase in the coming decades, regardless of whether high-speed rail is built. The status quo scenario therefore does not mean maintaining the system in its current state. Rather, it refers to the development path of the transportation system that will have to be followed if high-speed rail is not built, in which population, economic activity and mobility demand continue to grow, while governments must maintain and expand existing transportation networks to meet this demand. Without new major transportation infrastructure such as high-speed rail, additional mobility demand will have to be absorbed by existing modes of transportation.

Travel projections in the Québec City–Toronto corridor can therefore provide an assessment of the growing pressures that transportation infrastructure will face. According to Alto's preliminary estimates, approximately 80 million intercity trips are currently made each year between the cities that would be served by the network, and this number could reach 115 million by 2059. This increase of approximately 35 million trips would add to the pressure on existing networks, resulting in deteriorating travel times and new needs for expansion or modernization.

A large share of this pressure would fall on the road network. According to Alto's estimates, 6.8 million high-speed rail boardings would come from travellers who would otherwise have used a car by 2055. Without high-speed rail, these trips would remain on the corridor's road network, adding to the pressures already observed. In Ontario, government projections indicate that without new interventions, travel times on several highways connecting major hubs would increase substantially by 2051[91]. This anticipated growth on existing networks helps explain the expansion projects and new corridors included in the government's long-term planning[92].

– Ontario's long-term planning already includes several responses to this situation, including the widening of Highways 401, 400, 403 and 404 and the QEW, as well as the construction of new corridors such as Highway 413, the Bradford Bypass and a new Highway 7 between Kitchener and Guelph[93].

– In Québec, Autoroute 20 between Sainte-Julie and Belœil is the subject of work that includes a 13-kilometer reserved lane, the extension of a traffic lane over four kilometers and the addition of a third lane on the Arthur-Branchaud bridge. A project to widen Autoroute 30 between Brossard and Boucherville provides, once it can resume, for a third lane in each direction dedicated to public transit and carpooling. At the same time, phase 3 of the Autoroute 35 extension, completed in September 2025, added 8.9 km of new divided highway with two lanes in each direction.

These interventions show that the scenario without Alto would also require major investments to gradually add capacity to existing networks, which would not produce the same gains in travel time, reliability and market integration. Adding road capacity has a well-documented limitation, namely that part of the newly created capacity can generate new trips. The work of Duranton and Turner shows

[91] *Ontario Ministry of Transportation (2021).*

[92] *Government of Ontario (2022)*

[93] *Ibid.*

that, in the U.S. cities studied, the increase in highway lane-kilometers was accompanied in the long run by a comparable increase in vehicle-kilometers travelled. This induced demand does not mean that road widening is useless, but that adding lanes alone does not guarantee a lasting reduction in congestion[94]. The challenge therefore lies not only in adding capacity to each of the existing networks, but in providing a system-wide response for the transportation network as a whole, one capable of absorbing travel growth while offering a genuine alternative to the car.

Therefore, while additional solutions can increase capacity, they do not reduce the economic distance between the corridor's main markets in the same way as a high-speed rail network. The trade-off therefore concerns not only the number of trips that can be absorbed, but also the time savings, the expansion of accessible markets and the degree of economic integration that each investment can generate.

Beyond infrastructure spending, the status quo carries a growing opportunity cost. As the population will grow faster than network capacity, congestion and travel times are likely to worsen. This deterioration will reduce the time available for productive activities and limit interactions between businesses, workers and institutions in the corridor. The cost of inaction therefore also corresponds to the exchanges, productivity gains and economic integration opportunities that the corridor would forgo.

Finally, the carbon footprint must also be put into perspective, since Alto's high-speed rail would be 100% electrified, although its construction and infrastructure would generate embodied carbon emissions. Its operation would therefore generate far fewer emissions per passenger-kilometer than competing modes of transportation such as air travel and the car. For example, according to UK emission factors, a domestic flight generates about 61 times more emissions per passenger-kilometer than a trip on the Eurostar, while a gasoline car with a single occupant generates about 42 times more[95]. Alto is in line with this logic. This gap should narrow over time in the status quo scenario, as the gradual electrification of the vehicle fleet would reduce emissions from road travel. This transition would nonetheless be gradual, given the time required to renew the fleet, and would leave short-haul air travel largely unaffected, as it remains difficult to decarbonize in the medium term. Electric vehicles would also not resolve congestion.

The issue is also not limited to greenhouse gases. The combustion of fossil fuels in transportation generates air pollutants, including nitrogen oxides, carbon monoxide, volatile organic compounds and fine particulate matter[96]. The scenario without high-speed rail is therefore not neutral in terms of emissions. Additional trips will have to be absorbed by different modes whose greenhouse gas and air pollutant emissions vary widely. The choice of infrastructure thus influences not only the corridor's future capacity, but also its environmental footprint.

Growing Infrastructure Pressures: Impacts on Public Finances

This pressure on network capacity translates directly into financing needs for governments, since the growth in travel in the Québec City–Toronto corridor will require them to devote additional financial resources to the maintenance, modernization and expansion of existing infrastructure. This financial pressure will first and foremost affect the road network, since the car is by far the preferred mode of transportation along the Québec City–Toronto corridor. Additional road investments will therefore be significant over the coming decades to meet demand, and will be added to the investments already planned.

- For example, Ontario already plans to invest $27.4 billion over 10 years to build and expand its roads and highways[97].
- In Québec, the Québec Infrastructure Plan (QIP) 2026–2036 provides $35.7 billion for the road network, including $31.6 billion for asset maintenance and $4.1 billion for enhancements[98].

These amounts are already included in government plans and are therefore not expenditures that would automatically be avoided thanks to Alto. They nevertheless illustrate the scale of the needs that governments must already meet to maintain and improve existing networks. The Government of Québec has repeatedly increased planned investments in the road network, which have doubled over the past 10 years (Figure 24). This trend is not expected to reverse. On the contrary, in a context where 44% of the replacement value of Québec's road

[94] *Duranton and Turner (2011).*

[95] *Department for Energy Security and Net Zero (2026).*

[96] *Environment and Climate Change Canada (2026).*

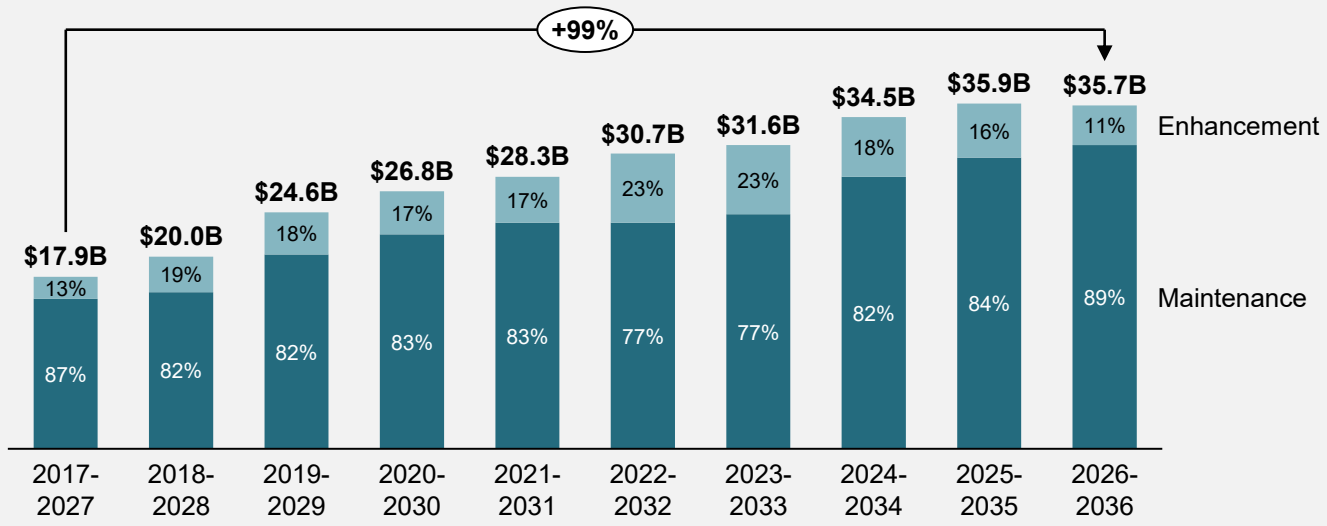
[97] *Ontario Budget (2024).*

[98] *Government of Québec.*

network infrastructure is in poor or very poor condition, additional investments are to be expected[99].

Over a longer time horizon, under the status quo scenario in which no new structuring transportation infrastructure is built, transportation infrastructure investment in Québec and Ontario combined is projected to exceed $50 billion per year by 2050, more than double its 2025 level[100]. Governments in the corridor will therefore face growing financial pressure to maintain and expand their transportation networks. The question is thus less whether to invest than which investments will deliver the greatest value for the travel growth they are meant to absorb.

Figure 24: Change in investments in Québec's road network
Québec, 2017–2027 to 2026–2036, in $ billions



Sources: Government of Québec, Aviseo Consulting analysis, 2026.

The status quo scenario implies that significant financial resources from the governments of Québec and Ontario will have to be mobilized for the maintenance and improvement of transportation infrastructure, first and foremost the road network. These are amounts that cannot be allocated to meet the needs of other public infrastructure such as schools and hospitals. There is therefore also a budgetary opportunity cost for public infrastructure investment in not building high-speed rail.

Agricultural and Land Use Trade-offs

The cost of the status quo is not limited to financial and economic choices; it also has a territorial dimension. Whether it involves widening existing infrastructure or building new infrastructure, adding capacity requires additional rights-of-way and creates trade-offs in land use. The analysis must therefore compare the effects of Alto's land use with those of the other infrastructure that would be required to meet the same growth in mobility.

In this context, a new rail line can lead to the fragmentation or loss of farmland, as well as alter access to fields. It goes without saying that these effects must be taken into account in designing Alto's route. They must, however, be compared with those of the alternatives in the absence of high-speed rail, namely the construction of new transportation infrastructure and the expansion of existing infrastructure, which would be needed to absorb the growth in travel.

– For example, an initial estimate by Aviseo Consulting for Autoroute 20 between Longueuil and Lévis suggests that widening it could require a few hundred additional hectares of agricultural land. This exercise provides only an order of magnitude. Widening a highway is not directly comparable to the construction of a new rail line, but both options can have impacts on agricultural land.

[99] *Secrétariat du Conseil du trésor du Québec (2026), Plan québécois des infrastructures 2026-2036 – Bilan de l'état des infrastructures publiques.*

[100] *Aviseo Consulting (2026).*

Additionally, the impact of a specific infrastructure does not depend solely on the area it directly occupies. The way it fits into the landscape can also affect how farms function. In this regard, the French experience provides some lessons on measures to limit these effects.

– In the case of the Bretagne–Pays de la Loire high-speed line, nearly 90% of the areas crossed were agricultural, and approximately 50,000 hectares were consolidated in operations aimed in particular at reorganizing plots around the new infrastructure[101].

Feedback shows that the reorganization of farm land can help limit certain disruptions. Eight out of 10 farmers surveyed viewed the redistribution of parcels of land positively. Concerns nevertheless remained about some related work[102]. These results show that the agricultural issue is not limited to the area directly occupied. The choice of route, the reorganization of farm land, the maintenance of access and the involvement of producers can help reduce disruptions to farms.

From this perspective, Alto's agricultural impact should be assessed not only in terms of its own right-of-way, but also in relation to the othe r ways of meeting future mobility needs, whether through new infrastructure or through levers that could moderate demand growth, such as tele-work, denser land-use planning or a shift toward existing modes. Alto could also limit its footprint on agricultural land by following existing trans-portation corridors wherever possible rather than breaking new ground.



[101] *Observatoire de la LGV Bretagne–Pays de la Loire, 2023*

[102] *Observatoire de la LGV Bretagne–Pays de la Loire, 2023*

From Faster Connections to Economic Value

By cutting travel times in half on the corridor's main routes, Alto will transform mobility between the cities that are part of it. This reduction in travel times will change travel behaviour by encouraging travellers to shift to rail, while generating additional demand from new trips that have become faster and more accessible. By bringing businesses, workers, institutions and markets closer together, Alto will produce agglomeration effects, i.e., productivity gains resulting from greater proximity between economic players.

Reducing the Cost of Distance

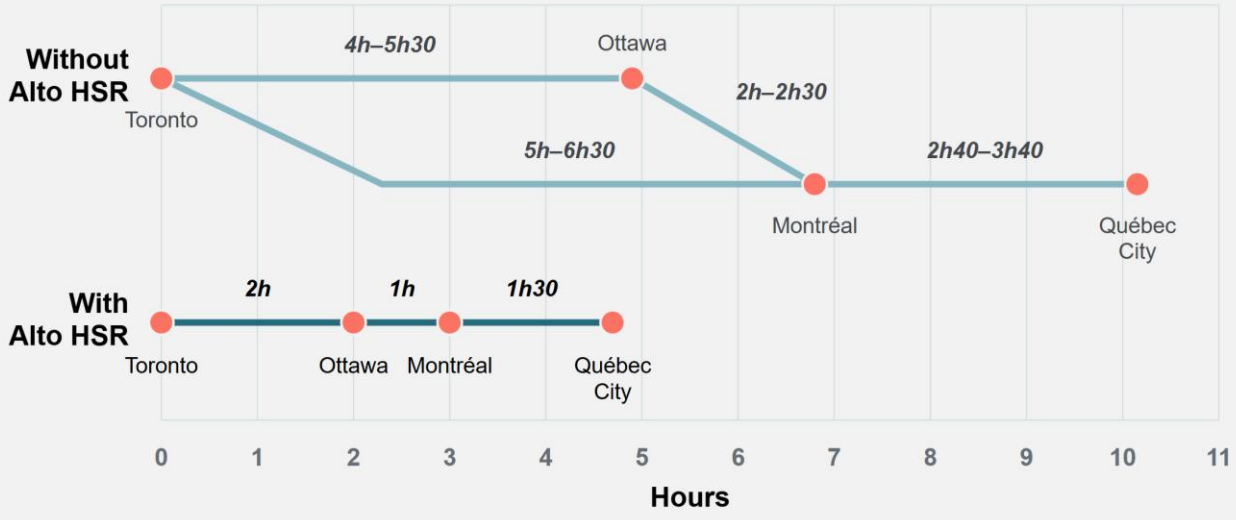
Economic distance corresponds to the time, cost and effort needed to connect two markets. By reducing travel times between the corridor's cities, Alto's high-speed rail project can bring economically closer markets that remain geographically distant. Time savings would be particularly significant on several routes in the corridor (Figure 25).

– Between Toronto and Montréal, travel time would be cut by nearly half compared with the car, from 5h30 to about 3h, a saving of nearly 2h30.

– Between Montréal and Québec City, it would go from about 3h to 1h30.

These time savings have economic value, since they allow travellers to devote more time to work, leisure or other activities. Over the first 60 years of operation, the present value of time savings is estimated at $38.4 billion, according to Alto. This is an economic value attributed to time saved, not a monetary saving directly pocketed by travellers.

Figure 25: High-speed rail time savings
For illustration

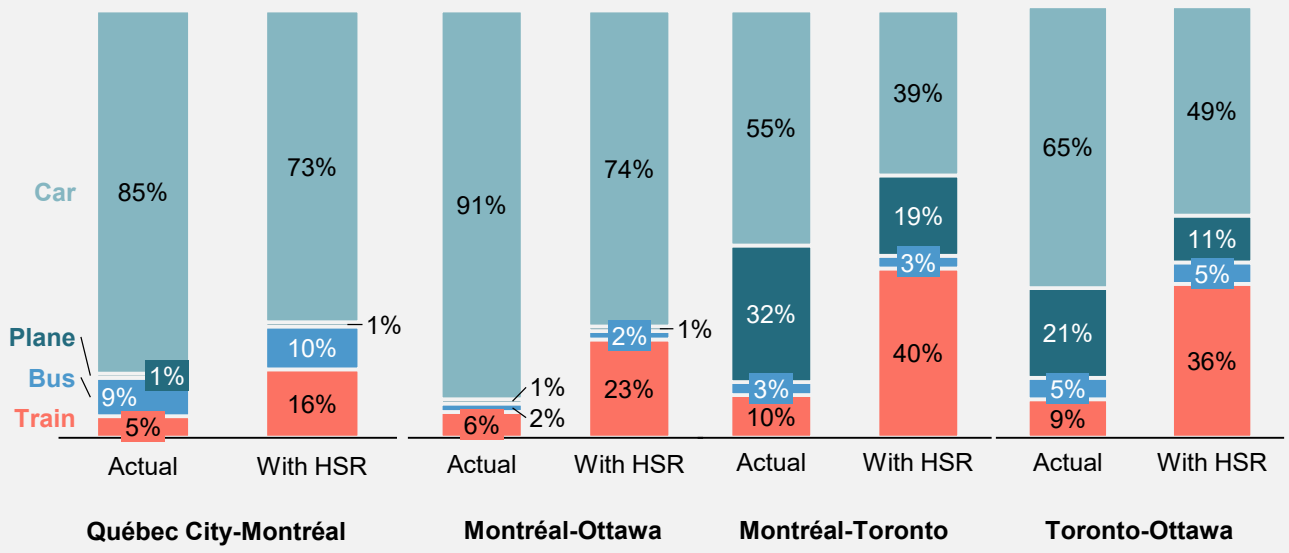


Sources: Alto, Aviseo Consulting analysis, 2026

A faster service alone is not enough to reduce the cost of distance if its price severely limits the number of people who can use it. For Alto, the project's economic value will therefore depend as much on its performance as on its affordability. This potential for time savings translates into expected use of the network through two mechanisms: modal shift and induced demand[103]. **According to Alto, ridership will reach 24 million passengers in 2055.**

Modal shift is the main driver of high-speed rail ridership, accounting for 80% of projected trips. By reducing travel times and offering a more reliable service, Alto will increase competition among modes of transportation along the corridor and, as a result, change the distribution of trips between the car, the plane, conventional rail and high-speed rail. Based on ridership forecasts, Alto estimates that rail's modal share along the corridor will be three to four times higher than it is today (Figure 26). This modal shift will nevertheless depend on the relative cost of the options, service frequency, station accessibility and total travel time. Increased competition will benefit users. In this regard, international experience shows, for example, that airlines may adjust their offering and prices when high-speed rail becomes a sufficiently fast and attractive alternative[104].

Figure 26: Modal share by trip along the high-speed rail corridor
Canada



Source: Alto.

[103] *The concept of induced demand refers to the additional traffic generated by an improvement in the transportation supply, as distinct from traffic simply diverted from another mode.*

[104] *Zhang et al. (2019).*

The lower generalized cost of travel would not merely shift travellers from existing modes. It will also generate induced demand, arising from new trips that would not otherwise have taken place without the improved transportation offering between two destinations. Indeed, travellers attach a monetary value to comfort and the time spent travelling between two destinations. If travel time decreases, this encourages them to make trips they would not have considered in the absence of faster transportation infrastructure. The additional interactions resulting from this induced demand are an important source of economic value creation.

– In Italy, a 1% decrease in transportation time following the opening of high-speed rail was associated with an increase in demand of between 1.5% and 2.1%, confirming the presence of an induced demand effect[105].

To reduce the overall cost of distance, however, it is the entire trip between two destinations that matters. A very fast train creates less value if access to stations is difficult, frequencies are low, connections add a lot of time or fares are too high. Reducing the cost of distance therefore means offering fast, reliable and sufficiently affordable door-to-door accessibility in order to put in place the incentives needed for a lasting change in travel behaviour.

Agglomeration Effects, Economic Density and Market Reach

Agglomeration effects are the economic benefits that arise from greater proximity between businesses and individuals. They generate productivity gains that add to the direct benefits to users. Three mechanisms explain agglomeration economies:

– The first is the **sharing of specialized resources**. Greater economic density gives businesses access to a wider pool of suppliers, intermediate services, infrastructure and customers, which supports specialization and reduces certain production costs[106].

– The second relates to the **labour market**. Better accessibility broadens the labour pools available to both businesses and workers and can improve the match between the skills offered and employers' needs[107]. This mechanism is a matter of productivity insofar as it improves the quality of matches, and not only the quantity of labour available[108].

– The last is **knowledge spillovers**. More frequent interactions between businesses, specialized workers, educational institutions and research centres facilitate the flow of knowledge and learning[109].

The agglomeration of economic players reduces economic distance and produces long-term gains. By bringing businesses, universities and research centres closer together, it fosters their collaboration, which in turn stimulates R&D, supports innovation and enables the emergence and growth of new industries.

The widespread adoption of communication technologies has not diminished the scope of agglomeration effects. Digital tools certainly make remote collaboration possible, but physical proximity is difficult to replace. Bill Gates, the cofounder of Microsoft, considers that an important measure of success is developing new friendships and deepening old ones[110]. Cities foster informal exchanges, the rapid sharing of ideas and the creation of professional networks that stimulate innovation. Chance encounters, spontaneous discussions and the mobility of skilled workers spread knowledge more effectively than virtual platforms.

In addition, many activities rely on complex interactions that benefit from direct contact, particularly in the knowledge, research, professional services and high-tech sectors. Businesses therefore continue to cluster in economic hubs where they can access a pool of talent, specialized suppliers and strategic partners. Telecommunications tools thus complement agglomerations rather than replace them, extending their reach without eliminating the advantages of proximity.

[105] *Cascetta, Coppola and Velardi (2013)*

[106] *Graham (2007), Combes and Lafourcade (2012), Chèze and Nègre (2016).*

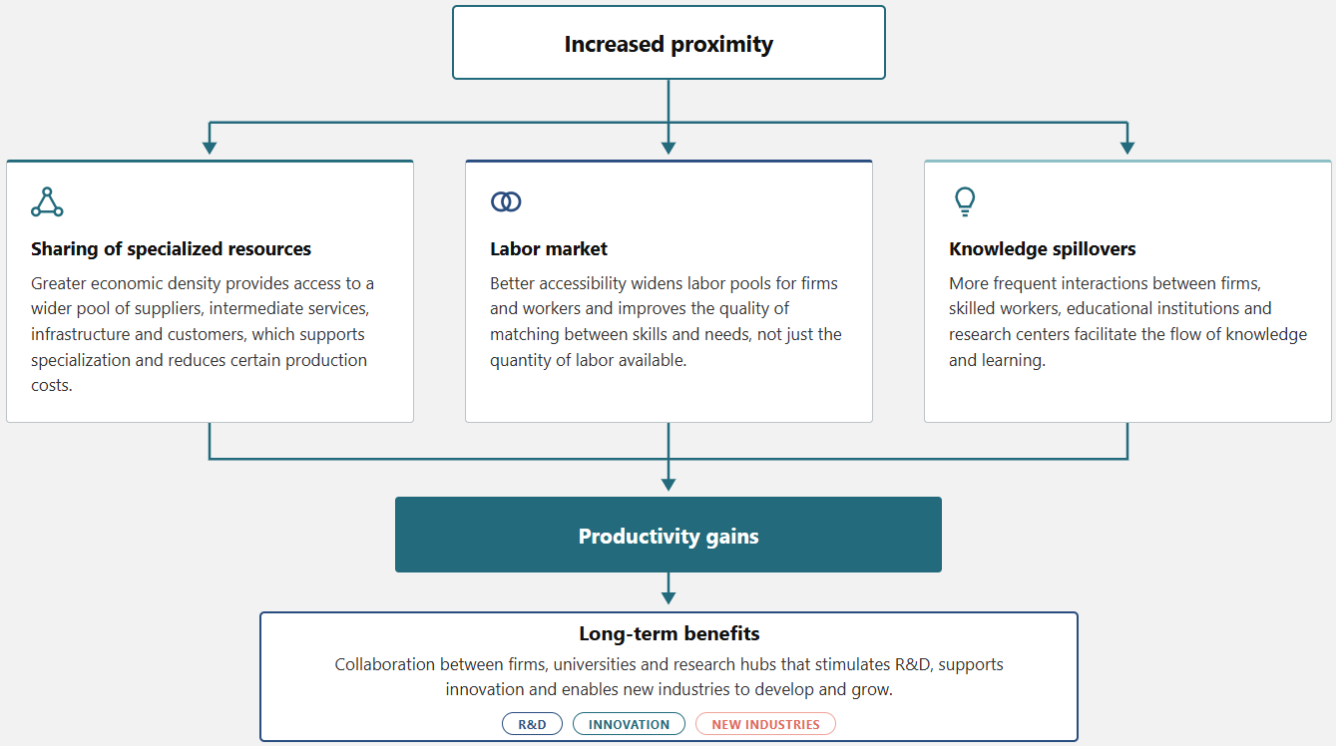
[107] *Rice et al. (2006), Legaspi et al. (2015).*

[108] *Graham and Melo (2011), Ahlfeldt and Feddersen (2018), Bottasso et al. (2023)*

[109] *Wetwitto and Kato (2017), Wang and Cai (2020), Bhatt and Kato (2021), Sun et al. (2021).*

[110] *Inc. "Bill Gates Says He Now Asks Himself 1 Crucial Question He Would Not Have Asked in His Microsoft Days".*

Figure 27: Agglomeration effects
For illustration



Source: Aviseo Consulting analysis, 2026.

Studies focusing directly on high-speed rail show that this type of infrastructure has positive agglomeration effects. In particular, it increases the market potential of the areas served, raises economic density, broadens accessible labour pools and facilitates intercity interactions[111].

- The Cologne–Frankfurt line is one of the cases most often used to identify this effect. The improvement in market potential linked to high-speed rail has been associated with an increase in GDP and productivity.
- The Chinese studies reviewed point in the same direction. The World Bank notably estimates a positive relationship between productivity and economic mass, with a doubling of access to economic mass increasing productivity per worker by about 10%[112].

These results demonstrate that market access is a measurable channel between high-speed rail and the economic performance of its region. They also show that the magnitude of the effects depends on the context studied.

The value of a network can increase as more cities and connections become accessible through it. A Montréal–Ottawa link, for example, creates a connection between two markets, but when it is part of a network that also connects Québec City, Trois-Rivières, Laval, Peterborough and Toronto, it opens up a much wider range of possible trips and relationships.

Research indicates that the economic benefits of high-speed rail depend more on improved network accessibility and connectivity than on the mere presence of a station. A city well connected to several other markets can benefit from a much wider range of opportunities than a city with an isolated link[113].

[111] *Ahlfeldt and Feddersen (2018); Wetwitto and Kato (2017); Kim and Yi (2019); Bottasso et al. (2023).*

[112] *World Bank (2014).*

[113] *Jiao et al. (2020); Ahlfeldt and Feddersen (2018)*

For Alto, this means that the project’s economic value could grow as the different segments are connected to one another. The complete network can offer more than the sum of its individual links, because the same infrastructure gradually allows more combinations of origins, destinations, businesses and workers.



An Engine of Long-Term Prosperity

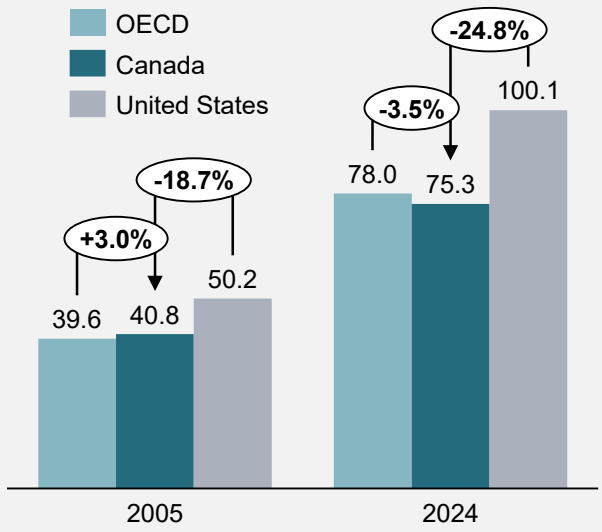
In the context of an aging population and Canada persistently lagging behind its peers in productivity, future economic growth will depend more on the ability to create more value with the resources, talent and businesses already in place. This is why Alto's high-speed rail is a structuring project for Canada. By reducing the economic distance between the corridor's main hubs, the project will strengthen productivity, broaden market access and create new development opportunities for the cities and regions connected to it. The project is directly aligned with the long-term economic challenges facing Canada.

Canada's Productivity Imperative

For several decades, Canada has lagged behind the leading advanced economies in productivity, a gap that has widened over time. In 1995, labour productivity was already 16.5% lower than in the United States[114]. Yet, despite productivity growth averaging 1.9% per year between 1996 and 2005[115], the gap with the United States nonetheless widened to 18.7%. At that time, Canada was still performing well internationally, with productivity still about 3% above the OECD average[116]. Since the early 2000s, however, the situation has deteriorated, as Canadian productivity grew by only 0.6% per year on average from 2005 to 2025. This slowdown helped further widen the gap with the United States, which reached 24.8% in 2024. Even more worrying, Canada's productivity is now 3.5% below the OECD average (Figure 28).

This gap is explained in particular by weak productive investment in Canada. Compared with the United States and the European Union, a larger share of Canadian investment has been directed toward residential real estate, while investment in machinery and equipment and in intellectual property products has grown more modestly. Strong population growth in recent years has heightened housing needs, but it explains only part of this investment mix. Yet it is precisely the investments that increase the capital available per worker, foster the adoption of new technologies and support innovation that play a central role in productivity growth.

Figure 28: Labour productivity
Canada, United States, OECD, 2005, 2024, in US$ PPP[1]



1. PPP: Purchasing power parity
Source: OECD, Aviseo Consulting analysis, 2026.

In a context of an aging population, economic prosperity increasingly depends on productivity gains, hence the importance for governments of investing in strategic infrastructure that catalyzes productivity gains. **Alto is directly aligned with this objective.**

Raising productivity is of great importance because of its direct link with people's standard of living. In general, productivity gains are one of the main drivers of improved living standards because when a business, a worker or an economy becomes more productive, it creates more value without having to

[114] *BDC (2024).*
[115] *Statistics Canada, Table 36-10-0206-01, 2026.*
[116] *OECD, 2025.*

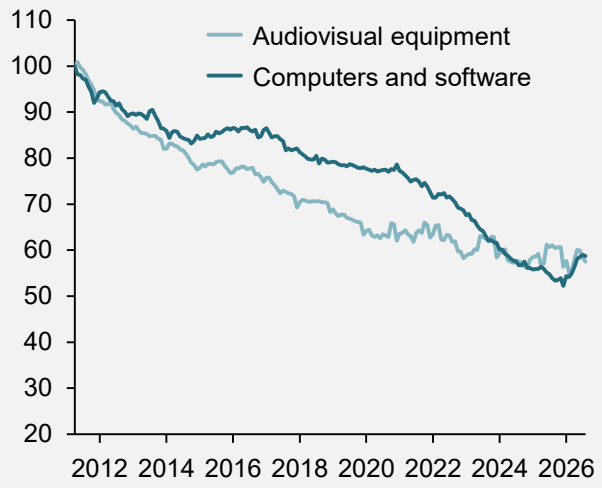
use more resources. For workers, productivity gains translate into higher wages because if an employee produces more value in an hour of work, their employer has more room to offer better pay. In the long run, productivity growth largely explains rising incomes in developed countries. This relationship is not automatic, as the extent to which productivity gains translate into higher wages depends on factors such as labour market conditions, workers' bargaining power and public policy. These gains may therefore be unevenly distributed across workers, sectors and regions.

Productivity gains also help reduce production costs through innovation. Businesses can then offer higher-quality products and services or lower prices. Computers and audiovisual equipment, such as televisions, are examples, with their prices each falling by more than 40% in recent years (Figure 29). This is why productivity allows businesses to increase their output and pay their employees better without having to raise their selling prices. Productivity therefore enables so-called non-inflationary growth. For citizens, the benefits translate into higher wages, more affordable goods and more job opportunities.

In short, productivity gains are not just an abstract economic concept: they allow people to live better. They are the most sustainable way to increase collective prosperity without having to work more or consume more resources provided that the resulting gains are broadly shared.

Figure 29: Change in prices of electronic products

Canada, April 2011 to August 2026, index April 2011 = 100



Sources: Statistics Canada, Aviseo Consulting analysis, 2026.

For governments, a more productive economy generates more wealth and tax revenue without necessarily raising tax rates. This makes it easier to fund the state's core missions, such as health and education.

Figure 30: Mechanisms behind productivity gains

For illustration



Source: Aviseo Consulting analysis, 2026.

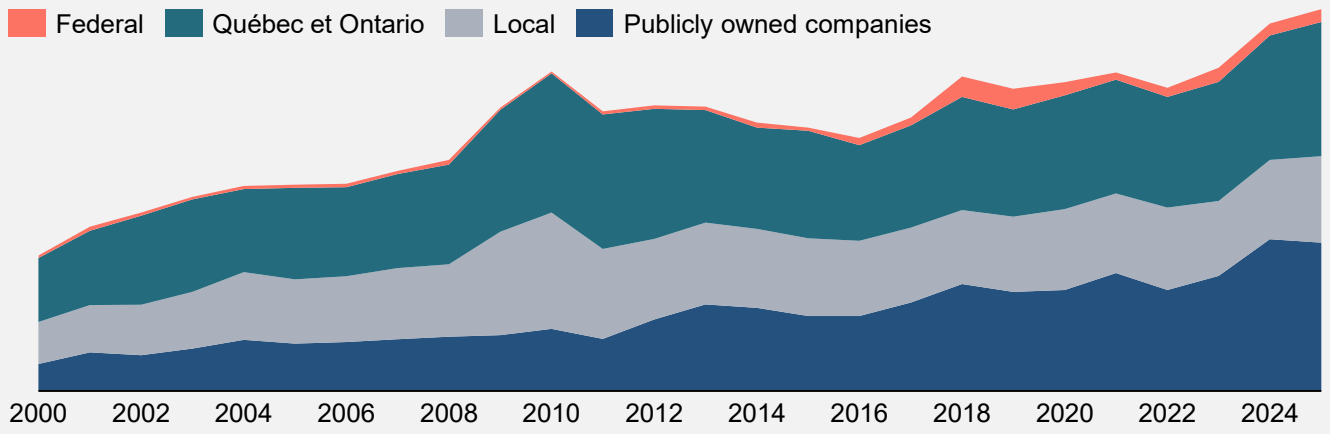
The Role of Public Infrastructure

Public infrastructure is part of what allows the economy to function well. Roads, railways, energy networks, hospitals, schools, water systems and digital connections allow citizens to get to work and access services. They also allow businesses to transport their goods and reach their customers, and make communities more attractive places to live, invest and grow. Investment in this infrastructure is a key driver of productivity growth and living standards. Countries that build strong public infrastructure tend to be more prosperous and, as they become wealthier, are better able to keep improving these assets. As such, governments invest to improve the lives of citizens, and that translates to higher welfare.

Infrastructure that strengthens connectivity between major economic centres, as Alto's high-speed rail will do, is therefore a strategic development lever. Over the past few decades, several advanced economies have consequently invested heavily in structuring transportation infrastructure to support their productivity and competitiveness. High-speed rail is a clear example, with many countries around the world having built such infrastructure.

The federal government, for its part, invests relatively little in infrastructure. It does so indirectly through certain transfers to the provinces, but its constitutional responsibilities keep it removed from water treatment plants, water mains, sewers and roads. As a result, within the Corridor, it is the Ontario, Québec and municipal governments that invest the bulk of the funds (Figure 31)[117].

Figure 31: Public sector infrastructure investment, by level of government
Québec and Ontario, 2000–2025, in millions of constant 2017 dollars



Source: Statistics Canada, 2026.

The federal government has, of course, made some significant infrastructure investments over the years. The following table shows the main examples (Table 3). More recently, recognizing the challenge posed by its productivity gap, the federal government adopted a new approach, "Spending less to invest more"[118]. This approach aims to free up greater fiscal capacity for productive and structuring investments. Capital investment is now a Canadian priority and must support the country's long-term economic growth, productivity and economic sovereignty. Alto's high-speed rail project is aligned with this objective.

[117] *Statistics Canada, Table 36-10-0608-01, 2026.*
[118] *Government of Canada, Our plan: Building Canada Strong, 2025.*

Table 3: Examples of infrastructure projects in Canada

Infrastructure	Year	Description
St. Lawrence Seaway	**1959**	The Seaway connects the industrial and agricultural regions of the continental interior to domestic and export markets, linking regional producers with their customers and suppliers. In 2022, Great Lakes–St. Lawrence maritime shipping supported 94,000 Canadian jobs and generated $12.6 billion in economic activity across Canada.
Confederation Bridge	**1997**	At 13 km long, Confederation Bridge transformed the connection between Prince Edward Island and the rest of Canada. It replaced reliance on ferry schedules with a fixed, year-round link, generating greater predictability and reliability for individuals and businesses in Prince Edward Island.
Trans Mountain Expansion Project	**2024**	The project tripled the pipeline's capacity, improved Canadian oil producers' access to domestic and international markets, and helped narrow the price differential between Canadian and U.S. crude oil. This translated into higher government revenues.
Gordie Howe International Bridge	**2026**	The Gordie Howe International Bridge is a new direct road connection between Ontario's Highway 401 and Michigan's Interstate 75, along one of North America's busiest trade corridors. The crossing will facilitate the movement of people and goods and strengthen long-term ties between communities in Canada and the United States.

Source: Aviseo Consulting analysis, 2026.

Unlocking the Corridor's Economic Strengths

As international precedents have shown, high-speed rail improves productivity through better access to suppliers, customers, talent and knowledge. This dynamic is particularly important in knowledge-intensive activities, where value creation depends more on the exchange of expertise, research, innovation and interactions between organizations than on proximity to natural resources and consumers alone. In this regard, the Québec City–Toronto corridor concentrates a large share of knowledge-intensive activities, which account for more than 60% of the corridor's economic activity[119].

In particular, the Québec City–Toronto axis is home to several of the country's leading innovation hubs, nearly 20 universities with approximately 580,000 students, including more than 100,000 graduate students[120], as well as more than $4.5 billion in annual university research spending[121]. In 2023, more than 140,000 students graduated from a university in the corridor, nearly one in four (23%) in a STEM field, contributing to the pool of highly qualified talent located there[122].

The corridor also concentrates a large share of Canada's research capacity. In 2025, Québec and Ontario alone received nearly 80% of the funding awarded under the Canada Research Chairs program, for a total of $118.4 million, nearly three quarters of which went to universities located along the Alto corridor[123]. Businesses also play a central role, accounting for more than half of the funding and nearly two-thirds of research and development activities in both Québec and Ontario[124].

Together, the universities, businesses and research institutions of the Québec City–Toronto corridor form one of Canada's main hubs for training, applied research, technology transfer and the commercialization of innovation.

Despite this concentration of economic assets, the corridor's various hubs do not yet function as a fully integrated market. Businesses, workers, universities and institutions are spread across several urban centres whose complementarities remain limited by

[119] *Authors' compilation.*
[120] *Statistics Canada, Table 37-10-0277-01*
[121] *Research Infosource (2025)*
[122] *Statistics Canada, Table 37-10-0278-01*
[123] *Canada Research Chairs (2025)*
[124] *Statistics Canada, Table 27-10-0273-01*

travel times. The potential gains associated with better connectivity therefore depend less on creating new assets than on making better use of those already present in the region.

Strategic Industries of the Corridor

This dynamic is particularly important in several strategic sectors of the corridor, including life sciences and health technologies (LSHT), finance and insurance, information and communications technology (ICT) and advanced manufacturing.

In each of these sectors, value creation depends heavily on the ability of businesses, workers and institutions to collaborate, exchange information, build trust and easily access specialized expertise. Better connectivity will strengthen the complementarities already present within the country's main economic region and act as a driver of productivity improvement.

Life sciences and health technologies

Several of Canada's main LSHT assets are concentrated along the corridor. These include significant university research capacity, innovation centres, biopharmaceutical companies and hubs specializing in artificial intelligence applied to health.

In Québec City, LSHT are a major driver of the knowledge economy, with 121 companies, more than 9,200 jobs and 84 research and development (R&D) centres, chairs and research laboratories. This ecosystem draws on recognized expertise in biopharmaceuticals, medical technologies, nutraceuticals and cosmeceuticals, as well as on the presence of leading research and care institutions[125].

Greater Montréal, which is home to nearly 85% of Québec's LSHT ecosystem, is organized around several complementary hubs, including downtown, the West Island, Saint-Laurent and Laval. Coordinated notably by Montréal InVivo, this ecosystem brings together universities, university hospital centres, research institutes and major companies such as Moderna, Merck, Pfizer and Biodextris[126]. The ecosystem is further strengthened by the presence of Mila, a global leader in artificial intelligence, whose health applications contribute in particular to drug discovery, precision medicine and improved diagnostics.

Further west, the Toronto region is also one of North America's largest LSHT hubs, with more than 1,400 companies active in the sector. It is home to the MaRS Discovery District, one of Canada's largest health innovation hubs, which fosters collaboration among researchers, businesses, investors and health care institutions[127]. This concentration of players, talent and capital makes Toronto a major centre of innovation and commercialization.

Although currently less well positioned in LSHT, the corridor's intermediate cities can also play a complementary role[128]. For example, Trois-Rivières could leverage its expertise in chemical and machinery manufacturing, which accounts for about 12% of its manufacturing GDP, to support certain activities related to the production of pharmaceuticals, medical devices or specialized equipment[129].

By bringing these players closer together, the Alto project could facilitate the formation of intercity research teams, clinical trial execution across multiple hospital centres, the joint development of new medical technologies, and their commercialization and manufacturing on a larger scale. In a sector where value rests above all on knowledge, research and innovation, this intensification of exchanges would translate directly into productivity gains.

Finance and insurance

The Alto corridor connects several of the country's main decision-making and financial centres. Toronto is home to five of Canada's six largest banks[130] and employs nearly 8% of its workforce in finance and insurance[131]. Ottawa is home to the Bank of Canada, while Montréal hosts major head offices, administrative, technology and operations centres of large Canadian banks and insurance companies. Downtown Montréal is also the main business and management hub of Desjardins Group. The Québec City region, for its part, has a significant concentration of insurance head offices, as well as the head office of the Autorité des marchés financiers. Together with Lévis, home to the head office of Desjardins Group, the region thus also forms a major financial hub,

[125] *Québec International (2026)*

[126] *Montréal International (2026)*

[127] *Toronto Global, Life Sciences in the Toronto Region (2026)*

[128] *In the Alto corridor, Trois-Rivières and Peterborough fall into this category of cities.*

[129] *Institut de la statistique du Québec, Gross domestic product,*

[130] *Government of Ontario (2025)*

[131] *Statistics Canada, 14-10-0460-01*

where finance, insurance, real estate, rental and leasing, and management of companies account for 18% of regional GDP[132].

These hubs already perform complementary functions within the Canadian financial industry. Banking, regulatory, insurance, technology and administrative activities are currently spread across several cities in the corridor, which creates significant needs for coordination, sharing of expertise and mobility of specialized workers.

Faster travel between these hubs would facilitate exchanges between these players, support the delivery of intercity projects and improve coordination between the various financial centres. It could also strengthen collaboration between financial institutions, universities, research centres and technology startups active in fintech, cybersecurity and artificial intelligence, to the benefit of the performance of the sector as a whole. Finally, by reducing information asymmetry between investors and businesses through shorter travel times, high-speed rail could act as an accelerator of venture capital investment. This positive effect could be even greater for startups, which are traditionally more penalized by economic distance than more mature companies[133].



Advanced manufacturing

The Québec City–Toronto corridor is Canada's economic heartland and its main manufacturing hub. It is home to nearly half (47%) of manufacturing workers and engineering personnel[134]. It also hosts two of the three largest tech talent pools in Canada[135], namely Montréal and Toronto, as well as several industrial hubs specializing in sectors such as aerospace, automotive, chemicals, machinery, and electrical and electronic products[136,137].

This concentration of manufacturers, research capacity and technical expertise creates an environment conducive to the development and adoption of advanced technologies. The corridor's major centres concentrate a large share of research, engineering and technology development activities, while several intermediate cities have a significant manufacturing base. Trois-Rivières stands out in particular in the manufacturing of chemicals, metals and machinery, while Peterborough is home to activities related to aerospace, nuclear and clean technologies.

Connecting these technology, research and manufacturing hubs more efficiently could foster technology transfer, the adoption of advanced processes and the automation of manufacturing activities. It could also facilitate collaboration between engineering teams spread across several cities, accelerate the development and industrialization of new products, and support the integration of specialized supply chains across the corridor. Organizations such as PRIMA Québec, which leads and supports the advanced materials ecosystem, notably in areas such as additive manufacturing, would thus be even better positioned to strengthen links between research and industry needs. As a result, businesses could better organize their value chains and become more efficient.

Both the major centres and the intermediate cities of the corridor could therefore benefit from the project. This dynamic could also benefit leading manufacturing centres located near the corridor, such as Hamilton, known for its steel and machinery industry and accessible in about an hour from Toronto[138].



Information and communications technology

Québec City, Montréal, Ottawa and Toronto are among the country's leading technology hubs and are home to large concentrations of businesses and workers specializing in ICT. These hubs have complementary specializations, ranging from artificial intelligence and digital technologies to telecommunications, cybersecurity and video game development.

The corridor also benefits from its proximity to Waterloo, which together with Toronto forms the third-largest technology hub in North America[139]. Although Waterloo is not directly served by Alto, its proximity to Toronto could allow it to benefit indirectly from improved connectivity with the corridor's other technology hubs. By reducing the distance between these hubs with complementary specializations, high-speed rail would foster the flow of talent, ideas and business opportunities throughout the corridor.

[132] *Institut de la statistique du Québec, Gross domestic product at basic prices by industry*

[133] *Duan et al. (2021)*

[134] *Statistics Canada, Table 14-10-0467-01*

[135] *CBRE, Scoring Tech Talent (2026)*

[136] *MEIE, Portrait manufacturier des régions du Québec (2023)*

[137] *Ontario Advanced Manufacturing Council (2024)*

[138] *Invest in Hamilton (2026)*

[139] *WaterlooEDC (2026)*

– For example, Luqia, based in Québec City and Montréal and created from the merger of the Institut national d'optique (INO) and the Centre de recherche informatique de Montréal (CRIM), will benefit from easier access to various Ontario markets for its industrial innovation services in artificial intelligence, photonics and quantum technologies.

The defence sector is once again emerging as a national priority. In 2025–2026, Canada met NATO's military spending target of 2% of GDP, with more than $63 billion in expenditures[140], and has further committed to raising that effort to 5% by 2035. This ambition represents nearly $500 billion in investment over the next decade[141]. To that end, the Defence Industrial Strategy unveiled in February 2026 aims to strengthen Canada's defence industry by reserving 70% of procurement for Canadian companies, increasing R&D spending in the sector by 85%, and at least tripling industry revenues within ten years[142].

The Québec City–Toronto corridor is home to a large share of the country's military installations. Near Québec City, Garrison Valcartier hosts the Defence Research and Development Canada (DRDC) research centre, whose new $166-million complex bringing together more than 80 laboratories was inaugurated in June 2026[143]. On Montréal's South Shore, Garrison Saint-Jean trains more than 7,000 recruits each year, right next to the Royal Military College Saint-Jean[144]. Ottawa is home to National Defence Headquarters, while Eastern Ontario has CFB Kingston as well as CFB Trenton, the main air mobility hub of the Canadian Armed Forces, located within Peterborough's area of influence[145].

Ecosystems with distinct specializations are taking shape around these installations. Ottawa and Gatineau have adopted a joint strategy to make their region Canada's hub for defence innovation. The region is home to some 330 companies and 10,000 specialized workers[146]. On Montréal's South Shore, Saint-Jean-sur-Richelieu created innosecur, a hub dedicated to dual-use technologies in security and land defence[147]. Longueuil, for its part, is one of the three hubs of the Espace Aéro aerospace innovation zone[148]. In Québec City and Lévis, Davie has secured $11.3 billion in federal contracts to build six icebreakers under the National Shipbuilding Strategy, and draws on a network of more than 1,500 Canadian suppliers[149]. Toronto brings together prime contractors, suppliers and a large pool of SMEs in artificial intelligence, cybersecurity, space technologies and autonomous systems. Like Ottawa and Montréal, the city is a candidate to host the headquarters of the Defence, Security and Resilience Bank[150].

Far from competing with one another, these hubs prove to be complementary. Ottawa-Gatineau concentrates federal decision-makers as well as expertise in C4ISR and cybersecurity. Montréal and Longueuil excel in aerospace, Saint-Jean in land defence, Québec City in naval and optics-photonics, and Toronto in finance and dual-use technologies. By linking these hubs, Alto would foster defence-sector collaboration among research centres such as DRDC Valcartier, major integrators and specialized SMEs. It would also make it easier for Québec and Ontario suppliers to join the supply chains of major federal military spending programs.

Other Sectors

Beyond the specific sectors mentioned above, several large Canadian companies already operate across the Québec City–Toronto corridor. Among the large companies headquartered along the route, about 75% have offices or facilities in at least one other city served by Alto[151].

This geographic organization reflects the corridor's strong economic integration. Management, research and development, production, sales and support functions are often spread across several facilities. Better connectivity could facilitate travel between these sites, improve coordination between teams and reduce certain distance-related constraints in managing organizations present in several markets.

Opportunities for Intermediate Cities

Intermediate cities play a particular role in the economic organization of a territory. Located between

[140] *National Defence (2026).*

[141] *Prime Minister of Canada's Office (2026).*

[142] *Ibid, National Defence (2026).*

[143] *Ibid.*

[144] *National Defence, Canadian Forces Leadership and Recruit School, Royal Military College Saint-Jean.*

[145] *Ontario East Economic Development Commission (2026).*

[146] *City of Ottawa (2025), Invest Ottawa (2025).*

[147] *Innosecur (2026).*

[148] *Government of Québec (2024).*

[149] *Government of Québec (2026), Davie.*

[150] *Government of Ontario (2026), Global News (2026).*

[151] *Authors' compilation.*

large metropolitan areas and smaller communities, they often concentrate jobs, services, institutions and regional functions that serve an area much larger than their own population. The OECD notes that these cities act as “bridges” within regional systems, facilitating flows between major centres and the surrounding areas[152].

A significant improvement in accessibility can strengthen this regional role. By reducing economic distance with major centres, high-speed rail can allow intermediate cities to expand their sphere of influence, better serve the people and businesses of their region and consolidate certain economic, institutional or residential functions. This is how smaller urban areas can become integrated into much larger markets that are now more easily accessible.

In concrete terms, economies such as Québec City ($63 billion) and Trois-Rivières ($11 billion) are brought “closer” to Montréal and Laval, whose economy totals some $310 billion[153]. The Ottawa-Gatineau region ($105 billion) will find itself not only a stone’s throw from Québec’s metropolis, but also in the wake of Toronto’s economy ($522 billion). With a GDP of about $6 billion, Peterborough could also see its potential improve[154,155].

International experience shows, however, that these benefits are neither automatic nor uniform. They depend in particular on how well the station is integrated into the urban fabric, the quality of local connections and the capacity of communities to take advantage of the new accessibility.

Spillovers Beyond Station Cities

The benefits of a high-speed rail network are not limited to the cities directly served. When stations are well connected to regional and local networks, accessibility gains can also benefit communities located outside the immediate corridor[156]. Part of Alto’s economic value could thus spread to an area much larger than that directly served by the network.

These effects occur mainly through three mechanisms. First, communities efficiently connected to stations can benefit indirectly from the improved accessibility offered by the network. By reducing travel times to the corridor’s major economic centres, high-speed rail broadens access to jobs, specialized services, educational institutions and markets, even for areas that are not directly served.

Second, they can participate more in the value chains of businesses and industries that will be better connected thanks to high-speed rail. Reduced distance constraints facilitate business relationships, partnerships, business travel and the integration of specialized suppliers into projects carried out elsewhere in the corridor.

Finally, the growth in economic activity in the cities served can generate additional needs for labour, suppliers, industrial space or specialized services that neighbouring areas are likely to meet. Businesses across the corridor could, in particular, contribute to the operation, maintenance and upkeep of the network, generating economic spinoffs in a variety of communities, whether or not they are directly served by high-speed rail.

However, the magnitude of these effects varies depending on the size and economic role of the cities connected to the network. The studies reviewed suggest that spillovers can extend up to about 110 km around certain stations, as businesses and households seek to take advantage of new economic opportunities while benefiting from access to the main hubs served[157]. Other work shows that the reach of the effects can be even greater around large metropolitan regions, where economic interactions, worker flows and business networks are more numerous[158]. The benefits of better connectivity can thus extend well beyond the route itself.

For Alto, this means that a city without a station could still benefit indirectly from the new connectivity. Its ability to take advantage of the project will depend on its accessibility to stations, its integration into the supply chains of the corridor’s industries and the complementarity of its economy with those of the main centres served.

[152] *OECD (2026), Unlocking the Potential of Intermediary Cities for Regional Development.*

[153] *Institut de la statistique du Québec.*

[154] *GDP figures for Québec regions are ISQ estimates for 2024. For Ontario regions, GDP figures are from Statistics Canada for 2022.*

[155] *Statistics Canada, Table 36-10-0468-01*

[156] *OECD.*

[157] *Meng et al. (2018).*

[158] *Shi and Wang (2024).*

Figure 32: Mapping of the regional impact radius of high-speed rail
For illustration



Source: Aviseo Consulting analysis, 2026.

Tourism Opportunities Across the Corridor

Recent research suggests that, for longer-distance trips, travellers generally place more value on time savings than on cost reductions[159]. The improvement in travel times with Alto could encourage some travellers to shift from their car to the train, even when the latter is more expensive, while allowing visitors to include more destinations in a single stay, contributing to greater tourism spinoffs across the corridor.

The Québec City–Toronto corridor is home to several of Canada's main urban tourist destinations. The six census metropolitan areas (CMAs) located along the corridor, namely Québec City, Trois-Rivières, Montréal, Ottawa-Gatineau, Peterborough and Toronto, already attract more than 20% of the country's domestic visitors and more than 40% of its international visitors, generating more than $31 billion in tourism spending per year. Together, these destinations already support $33.7 billion in GDP and more than 377,000 jobs[160].

Beyond leisure tourism, the corridor attracts a large share of business tourism in Canada, which accounts for about a quarter of total tourism spending. Toronto, Montréal, Ottawa and Québec City are major economic, government and institutional centres that attract travellers for meetings, conventions, conferences and professional activities. In 2025, Toronto hosted 74 major conventions and events bringing together some 378,000 delegates[161], while the 477 business events held in Montréal attracted more than one million participants and visitors[162]. In Québec City, the Centre des congrès welcomed more than

[159] *Bursa (2024).*
[160] *CPCS, Tourism in the Alto Corridor (2026).*
[161] *Destination Toronto (2026).*
[162] *Palais des congrès de Montréal (2026).*

250,000 visitors at 209 events[163], while conventions held at the Rogers Centre Ottawa alone attracted 37,000 visitors from outside the city[164]. This activity relies on substantial hosting capacity, with at least 28 convention, conference and exhibition centres identified in the corridor's CMAs.

Tourism in the corridor relies mainly on a nearby clientele. The vast majority of visitors are same-day visitors from Québec or Ontario who make a trip without an overnight stay. Although they account for most visitors, their economic contribution per visit remains more limited due to shorter stays and lower spending on accommodation and transportation. This predominance of short-distance trips suggests that travel cost and time remain important factors in the choice of tourist destinations within the corridor.

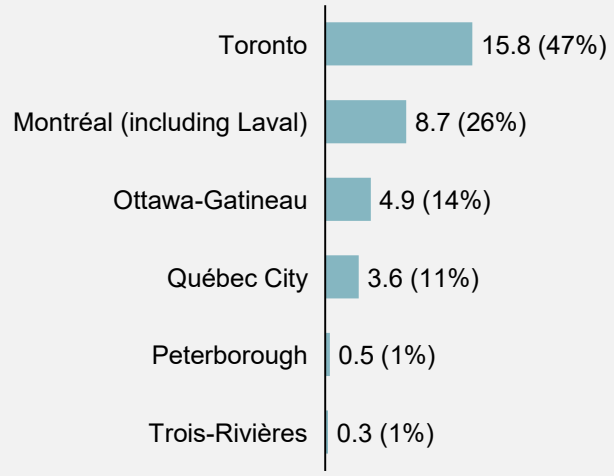
This reality is also reflected in the modes of transportation used. Domestic visitors arrive almost exclusively by car, which accounts for 85% of arrivals in Toronto. This dependence on the car tends to favour destinations located within a reasonable distance of the place of residence. International visitors, on the other hand, more often arrive by plane, with a share ranging from about 36% in Peterborough to 65% in Toronto. They therefore tend to concentrate their stay in major centres with direct air access[165]. As a result, tourism spinoffs are currently heavily concentrated in the corridor's two main metropolitan areas. Toronto and Montréal alone generate nearly 73% of the corridor's total tourism spinoffs (Figure 33). This concentration partly reflects their role as the corridor's main gateways and their greater accessibility compared with other destinations[166].

Alto will foster greater integration of the corridor's tourism and business destinations, and help diversify tourist destinations beyond Toronto and Montréal. By reducing travel times between several of the country's main tourism and economic hubs, high-speed rail will facilitate multi-destination stays, reduce domestic visitors' dependence on cars and offer international visitors an efficient alternative for reaching several cities in the corridor without a car.

Intermediate cities could thus become more integrated into existing tourist circuits and capture a larger share of the spinoffs generated by visitor flows currently concentrated mainly in Montréal and Toronto. In the case of business tourism, better connectivity could also facilitate events, meetings and collaborations between the corridor's main economic centres.

Figure 33: Economic spinoffs of tourism in the Alto corridor CMAs

Alto corridor CMAs, 2023, in 2025 $ billions



Source: CPCS, 2026.

In a study on the impact of high-speed rail on tourism in the Québec City–Toronto corridor, the firm CPCS confirms these mechanisms in its models. The specialists note that the impact also depends on the coordination of tourism attraction measures among the various stakeholders, hence the development of intensity scenarios.

Based on the scenarios, the number of tourists, their length of stay and their daily spending are expected to increase, with magnitudes varying across markets.

The results of the CPCS study suggest that the Québec City region would benefit most from an increase in overnight tourists and day trippers, with increases of 6% and 8%, respectively, in the central scenarios (Figure 34). The Ottawa-Gatineau region ranks second.

[163] *Centre des congrès de Québec (2025).*

[164] *Conference & Meetings World (2026).*

[165] *CPCS (2026).*

[166] *Ibid.*

Figure 34: Change in the number of tourists and average length of stay
Québec City–Toronto corridor, low, medium and high coordination, in %



Source: CPCS, Tourism in the Alto Corridor, 2026.

Arts and Culture Will Benefit

Similarly, high-speed rail can have a positive effect on arts and culture by reducing the time-distance between cities, artists, institutions and their audiences. It thus broadens the potential pool of visitors to museums, monuments, festivals and performance venues, while facilitating day trips and short cultural stays.

However, an econometric study of Spain's main museums and monuments between 1988 and 2017 concludes that the opening of a high-speed line is not, on its own, enough to increase tourist attendance. The positive effects are more evident in destinations that already have strong cultural appeal. The study also highlights the importance of a central, accessible station and the potential to extend tourism spinoffs to surrounding municipalities[167].

High-speed rail can also help showcase local heritage. An analysis of Reims, Metz, Tours and Le Mans shows that these intermediate cities use their rail service to attract visitors from Paris, particularly for weekend stays or cultural excursions[168]. The train then becomes a lever for promoting local heritage, provided that it is part of a coherent territorial strategy.

Beyond tourism, better rail accessibility can foster participation in cultural life and strengthen interactions between cities. For the Québec City–Toronto corridor, the main expected effect would therefore be a broadening of audiences rather than an increase in cultural activities. Spinoffs would depend on programming, marketing, access between stations and cultural venues, and the capacity of intermediate cities to turn their heritage into distinctive experiences. This interpretation is consistent with the CPCS work, which emphasizes coordination among governments, municipalities and tourism organizations.

Expanding Access to Markets

By reducing the economic distance between cities, Alto will expand the potential market of businesses located along the corridor, as they will be able to more easily reach the entire vast market represented by the Québec City–Toronto corridor. Small and medium-sized enterprises could be the main beneficiaries. Since they generally have fewer resources to absorb the costs of geographic distance, more of them could potentially expand their customer base, partnerships and activities across the country's main economic region. Conversely, they could also face additional competition from other businesses.

Trade and Economic Connectivity

Trade is one of the important mechanisms through which improved connectivity can generate economic spinoffs. The economic research shows that distance acts as a friction that limits interactions between businesses, workers and institutions. By reducing travel times between the corridor's main economic centres, Alto would help reduce these frictions and strengthen existing economic ties.

The effects of reducing economic distance are not uniform across sectors. Since high-speed rail carries

[167] *Cascales et al. (2019).*

[168] *Bazin-Benoît et al (2014).*

people rather than goods, its main economic effect rests on improved worker mobility and lower costs associated with business travel. By facilitating meetings between customers, suppliers, partners and investors, Alto primarily helps accelerate the flow of information and knowledge. For this reason, the most direct effects are generally expected in service sectors, where human interaction, trust and coordination play a central role in economic exchanges[169]. Trade in goods could also benefit from this improved connectivity, even in the absence of a direct reduction in freight transportation costs. Research shows that the movement of people plays an essential role in creating and maintaining trade relationships. In China and Japan, the development of the high-speed rail network allowed businesses to develop new buyer-supplier relationships, fostering increased trade in goods between regions[170].

This dynamic is particularly relevant in the case of trade between Québec and Ontario, which is already one of Canada's main trade axes, generating 54% of intra-Canadian trade[171]. The two provinces already have close trade ties. Ontario is by far Québec's main trading partner within Canada, receiving nearly 60% of its intra-Canadian exports. Québec, which receives one third of Ontario's intra-Canadian exports, is also Ontario's main Canadian trading partner[172]. Despite this integration, trade between Québec and Ontario remains modest compared with their trade with international markets, particularly the United States. In 2022, Ontario accounted for about 23% of Québec's total exports, while Québec received only about 11% of Ontario's total exports[173]. These proportions suggest that there is still potential to deepen economic exchanges between the two provinces.

The nature of trade between Québec and Ontario differs from that observed in their international trade. In 2022, services accounted for about 43% of Québec's exports to Ontario and nearly 64% of Ontario's exports to Québec. By comparison, services accounted for only about 31% of Québec's international exports and 33% of Ontario's[174] (Figure 35).

Trade ties between the two provinces already rely more on services than their trade with the rest of the world. This is particularly relevant in the context of Alto, since services are among the activities most sensitive to the costs associated with business travel. Improved connectivity could help strengthen trade that is already heavily oriented toward service activities. This issue is particularly important in the current geopolitical context. About 70% of Québec's and Ontario's international exports of goods and services go to the United States, making them particularly sensitive to changes in U.S. trade policy[175]. In an environment marked by growing trade tensions and greater economic uncertainty, developing internal trade is a way to diversify business opportunities and strengthen the resilience of the Canadian economy.

By reducing the economic distance between the main markets of Québec and Ontario, Alto could help deepen trade within the country's main economic corridor and make better use of the potential of the Canadian domestic market.

In addition to supporting more intensive trade between the corridor's main economies, this perspective is in line with Canada's trade diversification objectives. The federal government aims to double exports to markets other than the United States over the next decade, generating nearly $300 billion in additional trade[176]. In a context where a larger share of economic flows could move across the country rather than along a north–south axis, smoother travel in the Québec City–Toronto corridor could help ease certain pressures on existing transportation infrastructure and support the competitiveness of Canadian supply chains.

[169] *Boulatoff et al. (2021).*

[170] *Bernard et al. (2019); Niu et al. (2020).*

[171] *Government of Québec, Trade in goods and services between Québec and Ontario, 2026.*

[172] *Statistics Canada, Supply and Use Tables, 2022.*

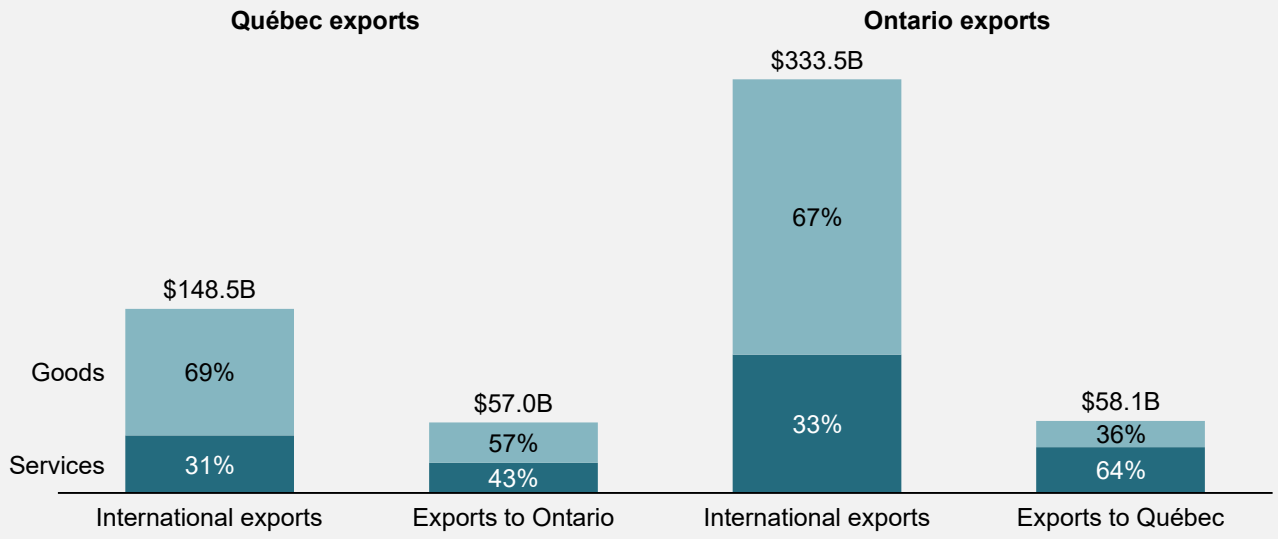
[173] *Idem.*

[174] *Idem.*

[175] *Idem.*

[176] *Global Affairs Canada, Canada's Trade Diversification (2026).*

Figure 35: Exports from Québec and Ontario
Québec and Ontario, 2022, in billions of dollars and as a percentage



Source: Statistics Canada, Supply and Use Tables, 2022.

Diffusing Knowledge Beyond Major Centres

The Québec City–Toronto corridor already has a large concentration of universities, research centres, innovative businesses and highly skilled workers. An economy's capacity to innovate depends not only on the presence of these assets, but also on how easily knowledge, ideas and expertise flow between them. By reducing travel times between cities, Alto could foster the in-person interactions that remain important for the transfer of complex knowledge, the development of collaborations and the emergence of new innovation projects[177]. The widespread adoption of telework since 2020 has certainly reduced the need for some business travel. These tools are better suited to routine exchanges than to building trust, developing new partnerships or transferring tacit knowledge, which still largely rely on face-to-face contact. High-speed rail could thus complement remote work by making occasional in-person meetings easier to organize.

Research on high-speed rail networks shows that improved connectivity can foster the diffusion of knowledge between regions. The gains observed come not only from the creation of new knowledge in major centres, but also from its diffusion to other cities connected to the network.

Several studies suggest that the benefits can be particularly large in smaller cities or in areas initially less well connected to major innovation centres. The effects observed are also greater in cities with lower scientific and educational levels. This dynamic is explained in particular by a catch-up effect: while major centres already have extensive access to talent, research networks and specialized partners, smaller cities can benefit more from improved connectivity by accessing knowledge and expertise that were previously harder to mobilize[178].

In the context of Alto, this dynamic could particularly benefit intermediate cities such as Trois-Rivières and Peterborough. The new connectivity could facilitate the participation of local businesses, researchers or institutions in projects developed elsewhere in the corridor, while accelerating the diffusion of knowledge and innovation to these areas.

The benefits associated with knowledge diffusion would not be limited to intermediate cities. Among the large companies headquartered along the route, three quarters have offices or facilities in at least one other city served by Alto. In activities where value creation relies heavily on knowledge and coordination

[177] *Zheng, Li & Xin (2022).*

[178] *Miwa (2022), Lu (2022).*

between teams, these mechanisms can help improve productivity by allowing organizations to make better use of the skills and knowledge already present in their various facilities. This greater proximity could also intensify competition. Universities and research centres in the corridor could find themselves competing more directly to attract students, researchers and funding, which could benefit the most attractive institutions at the expense of others.

Positioning Canada for Long-Term Success

Alto's potential benefits come in an economic context marked by profound transformations. For several decades, Canada's economic growth relied largely on an increasing number of workers, abundant natural resources and privileged access to the U.S. market. These drivers sustained economic growth even in a context where productivity gains remained modest.

This dynamic is becoming harder to sustain. Population aging and slower growth in the labour force limit the economy's ability to increase output simply by adding workers. At the same time, the global economic environment has become more uncertain, marked in particular by trade tensions. In this context, the ability to take full advantage of the resources, talent and markets already present in Canada is becoming an increasingly important determinant of long-term prosperity.

Infrastructure that strengthens connectivity between major economic centres is one of the levers used by several countries to support their competitiveness. By bringing together the businesses, workers, institutions and markets of the Québec City–Toronto corridor, Alto would help strengthen the integration of the country's main economic region and increase Canada's capacity to generate more value from the assets it already has. Alto alone would not create the talent, businesses or innovation capacity that support Canadian economic growth. It could, however, allow businesses, workers and institutions to make better use of the complementarities that already exist between the corridor's various hubs.

The project is not only a transportation infrastructure, but also an investment aimed at strengthening Canada's productivity, economic resilience and competitiveness over the coming decades.



Expanding Labour Markets and Economic Opportunity

By reducing travel times between cities, Alto will expand the labour pools accessible to businesses and the job opportunities available to workers. This improved connectivity will foster intercity mobility, the attraction and retention of talent, and a better match between available skills and employers' needs. While it will not solve structural labour shortages, high-speed rail will nevertheless be able to mitigate those issues that stem from distance and the fragmentation of labour markets.

Transportation infrastructure can expand the labour market by reducing travel costs and bringing workers and employers closer together[179,180]In the Alto corridor, this effect could be significant. By cutting travel time between Québec City and Toronto in half, high-speed rail would bring together 36% of Canada's labour force[181]. As travel times decrease, employers gain access to workers located farther away, while workers can consider job opportunities over a larger geographic area without necessarily moving. The economic value will therefore come from the fact that the same job offer would become accessible to more workers, and the same talent would become available to more businesses.

Impacts on intercity mobility

Alto will facilitate forms of labour mobility that do not necessarily involve moving. By making intercity travel faster, more frequent and more reliable, it could allow some workers to live in one city and work regularly in another[182], with shorter segments more likely to see these effects. Alternatively, workers could more readily split their time between several workplaces while keeping their place of residence and current lifestyle.

In this regard, intercity labour mobility mainly involves three behaviours with distinct economic effects on which high-speed rail will have a positive impact: regular commuting, business travel and relocation (Table 4).

Table 4: Illustration of Alto's impacts on intercity mobility

For illustration

Type	Frequency	How Alto changes it
Regular commuting	Daily or weekly	Makes previously impractical trips viable (e.g., Montréal–Toronto in 3 hours)
Business travel	Occasional	Enables smoother and faster same-day round trips than air travel
Relocation	One-time	Reduces the need to relocate

Source: Aviseo Consulting analysis, 2026.

[179] *Andersson et al. (2007).*

[180] *Feng et al. (2023).*

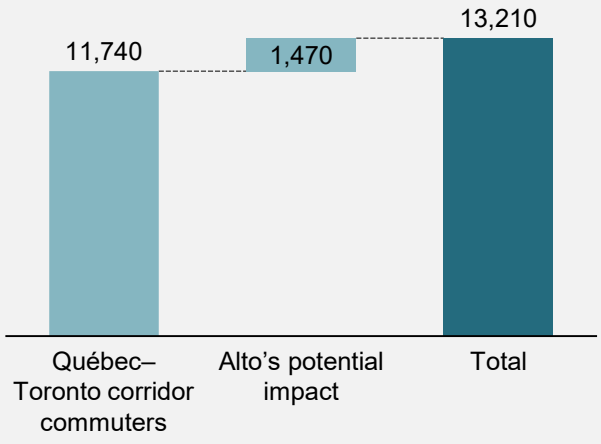
[181] *Statistics Canada, Table 98-10-0006-01.*

[182] *Savage (2025).*

The current low level of intercity commuting suggests significant room for growth. In 2021, only 0.3% of employed people in the cities where stations are planned worked in another of these cities. Yet it has been shown that high-speed rail can be a catalyst for intercity commuting[183]. In Germany, the expansion of the high-speed network shows that a 1% reduction in travel time is associated with a 0.25% increase in the number of interregional commuters. By way of illustration, applying this impact to the Québec City–Toronto corridor, the reduction in travel times on the main routes could increase the number of commuters by 12.5%, or some 1,470 additional commuters[184] (Figure 36). This estimate should, however, be interpreted as a conservative order of magnitude. It is based on employment observed in 2021 and on applying a relationship estimated in another context. The very low initial level of commuting in the corridor, 0.3%, could also leave more room for growth than in markets where intercity commuting is already more developed. The calculation presented here nevertheless remains illustrative and is based on the assumption of a linear relationship.

Figure 36: Illustration of Alto's potential impact on commuting in the Québec City–Toronto corridor

Commuters in 2021, in number



Sources: Statistics Canada – 2021 Census of Population, Aviseo Consulting analysis, 2026.

Beyond individual commuting, shorter travel times could also ease certain constraints related to choices of residence and employment. In households with two workers, they could make it easier to coordinate careers pursued in different cities. They could also broaden access to specialized or management positions for workers who wish to remain in smaller communities, while giving employers access to a wider pool of candidates.

Alto also comes in a context of a gradual return to in-person work after several years marked by increased use of telework. Many organizations now require office attendance several days a week, particularly in professional and technical services, finance and public administration (e.g., the Government of Canada).

Figure 37: The return to the office is accelerating in Canada

Press excerpts, 2026

FT FINANCIAL TIMES 2026

Companies push for stronger return-to-office rules despite pushback

Major employers are tightening their office attendance requirements, despite resistance from some employees.

RADIO-CANADA January 2026

Towards a widespread decline in remote work in 2026

Remote work is declining in the public service: 3 days in the office in Quebec, 5 days in Ontario and 4 days at the federal level starting in July.

Global NEWS February 2026

Return-to-work mandates sparks 'renewed demand' for Canadian offices

Return-to-office mandates at RBC, Rogers and Starbucks Canada (3 to 5 days a week) are reviving demand for office space across the country.

Sources: Financial Times, Radio-Canada, Global News, 2026.

In Québec, the share of employees teleworking decreased by 4.3 percentage points between 2023 and 2026 (from 26.3% to 22.0%), compared with a decrease of 3.8 percentage points in Ontario between

[183] *Heuermann and Schmieder (2019).*

[184] *Assuming that the relationship between travel time and the number of commuters is linear.*

2023 and 2026 (from 27.3% to 23.5%)[185]. This trend could continue, particularly in the federal public service, where employees eligible for hybrid work have been required to work on site four days a week since July 6, 2026[186].

– High-speed rail is particularly well suited to this type of labour market. For example, a round trip between Ottawa and Toronto or Montréal and Québec City could now be possible for a worker, which current modes of transportation do not allow.
– In this context, Alto will help reduce the barrier of distance between workers and their workplace thanks to shorter and more predictable travel times.

However, travel time is not the only friction limiting labour market integration between Québec and Ontario. Workers in both provinces are much less likely to move to another province than workers elsewhere in Canada, even after controlling for other individual characteristics. Recent data confirm this pattern, as Québec and Ontario have the lowest interprovincial labour mobility rates in the country[187]. Language is a plausible part of the explanation, at least for Québec, as French speakers are considerably less likely than English speakers to move between provinces[188]. Provincial occupational licensing and other internal barriers also limit labour mobility and trade, and their economic cost is substantial[189]. These frictions could limit how much a reduction in travel time changes commuting, hiring and relocation patterns across the provincial boundary.

Attracting and retaining workers

Alto's high-speed rail project will also be able to strengthen the attractiveness of the corridor's cities by broadening the range of career opportunities available to workers. As mentioned previously, this improved mobility could notably allow workers to remain in their community while accessing jobs located in other cities[190]. This effect could be particularly important in smaller communities, where certain opportunities for career advancement, particularly to specialized or management positions, are fewer. By facilitating access to employers and professional opportunities spread across the corridor, Alto could support worker retention while expanding businesses' recruitment pools. This dynamic could be particularly relevant in knowledge-intensive sectors, which account for about 60% of the corridor's economic activity[191].

– The decision to move does not depend solely on salary, but also on career prospects, quality of life and family considerations. By increasing the number of jobs accessible without requiring a change of residence, Alto could offer more career opportunities within the corridor and reduce one of the reasons that may lead some workers to look for opportunities elsewhere.

In a context where the corridor has nearly 20 universities and approximately 580,000 students, the ability to retain graduates who studied in the corridor is an important issue[192].

An integrated corridor could then be part of a broader talent retention proposition. Rather than depending on the job opportunities available in a single city, workers could have real access to a much larger share of the corridor's economic activity, including leading companies in finance, technology, the creative industries and real estate. High-speed rail alone does not create talent and does not guarantee its retention. It can, however, reduce the geographic barriers that limit career choices. For workers whose skills are in demand in several major centres, better connectivity could increase access to opportunities while making it easier to stay in the corridor rather than seek opportunities farther away.

Addressing labour shortages

High-speed rail is also a tool businesses can use to address labour shortages. At first glance, labour shortage is a concept with a single outcome for businesses, in that it results in an inability to fill available positions. However, this shortage can take different forms: a shortage in the *quantity of workers*, meaning there are not enough available workers to fill the positions offered, and a shortage in the *quality of workers*, meaning that a pool of workers is available, but their profile does not match what businesses are

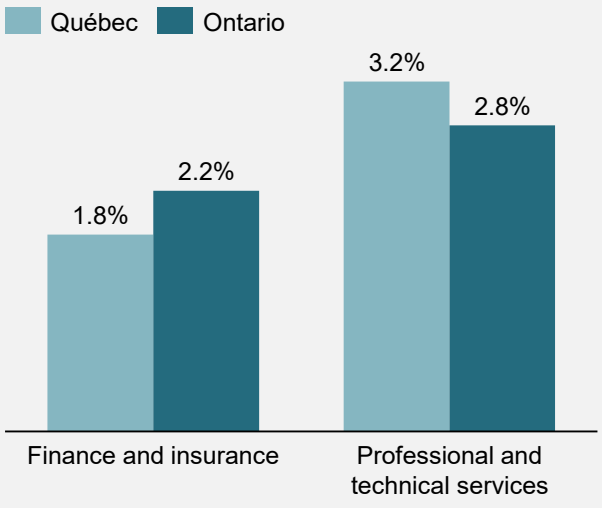
[185] *Vailles (2026).*
[186] *Government of Canada (2026).*
[187] *Statistics Canada (2026). Interprovincial Labour Mobility in Canada: An overview.*
[188] *Statistics Canada (2023). Interprovincial and interregional migration of Canada's French- and English-speaking populations*
[189] *Alvarez, J. et al (2019).*
[190] *Savage (2025).*
[191] *Data obtained via Signal49.*
[192] *Statistics Canada, Table 37-10-0277-01*

looking for, for example, due to insufficient skills or experience. High-speed rail mainly affects this second type of shortage, by allowing employers to recruit in several labour markets rather than depending on a single city or region, thus broadening the pool of qualified workers to fill available positions.

– As travel times decrease, workers gain access to opportunities better aligned with their skills, while employers draw on a larger and more diverse talent pool. This improved match between jobs and skills contributes to overall productivity by reducing inefficiencies in the allocation of labour across the economy.

The potential benefits of a more integrated labour market could be particularly relevant when labour demand and supply are unevenly distributed across the corridor. For example, Ontario has a higher job vacancy rate than Québec in the finance and insurance industry, while the reverse is observed in the professional and technical services industry[193]. Better labour mobility could make a larger share of Ontario's financial services job market accessible to Québec workers, and vice versa for those in professional and technical services, thereby helping to connect available talent with areas where demand is stronger.

Figure 38: Job vacancy rate in the financial intermediation industry
Québec and Ontario, 2026Q1



Sources: Statistics Canada, Aviseo Consulting analysis, 2026.

On several routes, the travel times planned by Alto would bring intercity trips closer to durations compatible with some home-to-work commutes. The Montréal–Trois-Rivières trip would take about 50 minutes, Toronto–Peterborough about 40 minutes and Montréal–Ottawa about one hour. These travel times could make regular trips feasible between labour markets that are currently more separated by distance.

High-speed rail alone cannot solve structural labour shortages, such as those resulting from a lack of workers due to an aging population. Its contribution is rather to reduce shortages that stem from geographic separation and an imperfect match between where workers live and where job opportunities are located.

[193] *Statistics Canada, Table 14-10-0442-01*

Quantifying Economic Impacts

Alto's economic benefits are not limited to travellers' time savings. Once the network is fully operational, the project could generate recurring spinoffs across the Canadian economy, mainly through higher productivity, a higher effective labour supply and increased tourism spending. These effects would translate into real GDP growth, higher household incomes, more revenue and investment for businesses, and additional government revenue.

Objectives and interpretation

The objective of this section is to assess the long-term economic impacts associated with the entry into service of high-speed rail in the Québec City–Toronto corridor. These economic impacts are calculated using a static computable general equilibrium (CGE) model, a methodology that offers several advantages.

- A computable general equilibrium (CGE) model is a mathematical representation of the economy that models all the interactions between economic agents (households, businesses and governments).
- This approach makes it possible to analyze how an economic shock, such as a change in productivity or a public policy, alters the allocation of resources between sectors and economic agents[194].
- In the case of the Alto project, the spinoffs are therefore those related to the nature of the transportation infrastructure, its use and the resulting effects. The spinoffs go beyond the effects of construction alone.
- CGE modelling makes it possible to estimate realistically and rigorously the **net impact** of high-speed rail on the economy, unlike input-output models.

CGE models vs. input-output models

The distinction between the results of a computable general equilibrium model and those of an input-output framework in the context of an investment spending shock is important. An input-output analysis measures the direct, indirect and induced activity supported by construction spending, but these spinoffs cannot be equated with net wealth creation. Estimating the net effect requires taking into account how the spending is financed, the availability of resources, price adjustments and the potential crowding out of private investment. The CGE model explicitly represents these mechanisms and thus allows the results to be interpreted as deviations from a reference path without the project. For these reasons, CGE models are better suited to assessing the net economic effects of a large-scale structuring project such as high-speed rail, whose impacts unfold over several decades.

It should be noted that the economic impacts calculated refer to the period when high-speed rail is fully in service. The economic impacts of spending during the construction phase, as well as those associated with operations (maintenance, repairs, etc.), are not included. The rationale behind this methodological choice is that the economic benefits of transportation infrastructure such as high-speed rail are structural in nature, i.e., they materialize over several decades. As a result, **the economic impacts are long-term impacts.**

- High-speed trains influence the economy mainly by reducing the overall cost of intercity travel, thanks to shorter travel times and greater reliability.

[194] *For more details on the economic effects of the mechanisms presented, see the document "Semi-technical Summary": https://www.altotrain.ca/sites/default/files/2026-06/aviseo-cge-macro-summary_en.pdf*

– In economic terms, this reduction improves accessibility between places, businesses and workers, thereby changing market access and the spatial organization of economic activity.

These accessibility gains generate structural impacts that go well beyond the direct spending related to construction and operation.

The economic shock was therefore calibrated through three positive and complementary shocks attributable to the entry into service of high-speed rail: an increase in productivity, labour supply and tourism[195]. Since the shock was modelled only for the regions along the corridor, the results presented in the following section are concentrated in Québec and Ontario. The indirect economic impacts on the rest of Canada were therefore not modelled.

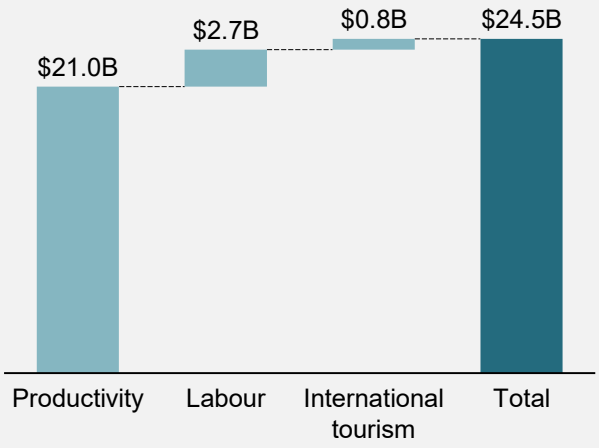
Overall Economic Impacts

According to Aviseo's estimates, the Québec City–Toronto high-speed rail project will generate a permanent increase in Canada's real GDP of about $24.5 billion per year on average once the system is fully operational, or about 1.1% of Canadian real GDP. For reference, Canada's real GDP was around $2,330 billion in 2025, according to Statistics Canada's accounts by industry. This increase is not a one-time gain, but rather a higher level of economic activity sustained over the long term[196]. The GDP impact refers to a single indicative year of operation and should not be interpreted as cumulative impacts over the full life of the project.

The magnitude of this effect is considerable. An annual increase of $24.5 billion represents more than half of the growth generated by a typical year of expansion of the Canadian economy, based on an average pace of about 2.0% between 2000 and 2025. In other words, once fully operational, high-speed rail would add to the Canadian economy each year the equivalent of more than six months of a typical year's worth of economic growth.

Figure 39: Breakdown of high-speed rail economic spinoffs

Canada, in $ billions per year, constant 2019 dollars



Sources: Aviseo Consulting modelling and analysis, 2026.

The results presented in this section are based on modelling carried out in 2024. These estimates have since been updated using an updated computable general equilibrium (CGE) model and refined assumptions. The results of the new modelling will be released in 2027.

Enhancing Productivity

In the case of Alto's high-speed rail, productivity gains stem mainly from agglomeration effects. These gains will translate into a $21.0 billion increase in GDP, or 86% of the project's economic spinoffs, making productivity the main channel through which Alto creates economic value. The impact of the productivity increase attributable to high-speed rail occurs in two stages.

– First, higher productivity translates into lower production costs, since businesses can produce more with the same amount of labour and capital. This reduction in production costs allows businesses to lower their selling prices.

– Lower prices then stimulate demand from households, businesses and, in some cases, export markets. To meet this increased demand, businesses increase their output, which generates new income, supports employment and stimulates

[195] *These shocks were calibrated based on an exhaustive literature review. For more information, see the document "Semi-technical Summary" : https://www.altotrain.ca/sites/default/files/2026-06/aviseo-cge-macro-summary_en.pdf*

[196] *Statistics Canada, Table 36-10-0434-01.*

activity throughout the economy, so that aggregate real GDP increases.

The effects of this productivity increase then carry through to several economic indicators. Output growth contributes to the increase in real GDP through the incomes of households, businesses and governments. As incomes and profits rise, private saving also increases, which supports higher private investment.

The productivity channel therefore acts as an economic multiplier. By allowing businesses and workers to interact more efficiently, high-speed rail generates gains that gradually spread throughout the corridor's economy.

Employment Effects

By reducing travel times between the corridor's various economic hubs, Alto will increase the effective labour supply in the economy. High-speed rail makes more jobs accessible within a reasonable travel time, encouraging some people to enter the labour market, participate more, accept jobs farther away or increase their hours worked.

– Specifically, the labour market channel is modelled as an exogenous increase in labour supply, combining (i) travel time savings (through modal shift to the high-speed rail network) and (ii) induced demand (additional trips and, potentially, additional workers).

The number of full-time equivalent jobs increases following the entry into service of high-speed rail. With more workers available, businesses can increase their output to meet increased demand from households, other businesses and export markets. This growth in activity in turn supports employment, labour income and overall economic activity. In total, this employment cascade effect results in annual GDP gains of about $2.7 billion.

In addition, the project would help create 50,000 jobs during the construction phase, then 5,000 permanent jobs to operate and maintain the network. The effects would also be felt among suppliers and businesses in the project's value chain, which have the potential to increase their workforce to meet the demand for materials, goods and services for the project. These impacts were not taken into account in modelling the project's economic spinoffs.

Increase in Tourism

By improving accessibility between the corridor's major cities, Alto could stimulate both international and domestic tourism. In the CGE modelling presented here, the tourism shock considered relates only to the increase in spending by international visitors in Canada. Shorter travel times and better connectivity between major tourist hubs will facilitate multi-destination stays, increase the appeal of certain cities to international visitors and encourage longer stays.

The effect of international tourism is thus modelled as an exogenous increase in tourism spending in Canada attributable to better accessibility along the corridor. This results in increased tourism spending in Ontario and Québec, mainly in accommodation, food services, transportation, retail and recreation, which will translate into an increase in GDP of $0.8 billion per year on average. Without Alto's HSR, this spending would not have occurred.

The Alto project could also stimulate domestic tourism in the corridor's cities. These spinoffs should, however, be interpreted differently from those associated with international tourism. In many cases, they would correspond more to a reallocation of tourism spending within Canada than to the net creation of new spending. For example, a traveller from Toronto who chooses to visit Québec City rather than another Canadian destination generates spinoffs for the destination visited, but their spending would likely have occurred elsewhere in the country.

Net gains for the Canadian economy would mainly be observed when improved connectivity encourages Canadians to replace a trip abroad with a destination in the corridor. Alto could nevertheless increase the economic value of domestic tourism by fostering multi-destination stays and a better distribution of tourism spinoffs among the corridor's cities, which are currently heavily concentrated in Toronto and Montréal.

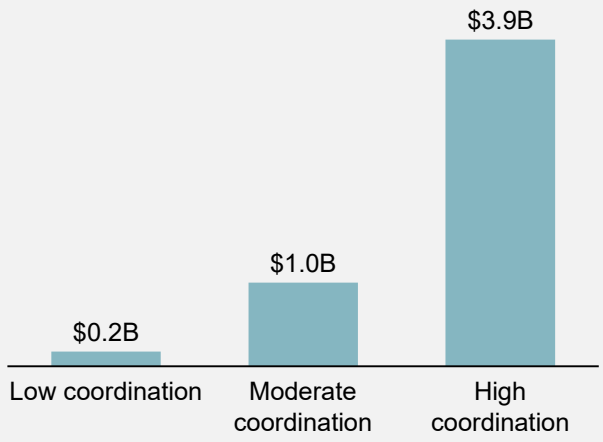
The study conducted by CPCS on behalf of Alto also sheds light on the potential spinoffs of increased domestic and international tourism in the Québec City–Toronto corridor using an input-output model. International experience shows that the ability of a high-speed rail network to stimulate tourism over the long term depends largely on coordination between the destinations served. Gains are generally greater when tourism stakeholders collaborate to develop joint itineraries, coordinate their promotional efforts, improve local connections around stations and

facilitate travel between attractions. Conversely, in the absence of such coordination, the benefits tend to concentrate in the destinations that are already the most established.

On this basis, CPCS estimates that Alto could support between $177 million and $3.9 billion in additional GDP, as well as between 2,000 and 43,000 jobs, depending on the degree of coordination achieved between the corridor's destinations (Figure 40). Although it is not possible to precisely isolate the share of spinoffs attributable to domestic tourism alone, the report suggests that Alto's benefits would come primarily from an increase in travel between the cities of the Québec City–Toronto corridor. The spinoffs associated with international visitors appear more limited, as most of them continue to access the corridor by air. Improved connectivity could, however, strengthen the corridor's appeal to this clientele by facilitating multi-destination stays, particularly in a context of strong coordination of tourism strategies[197].

Figure 40: Impact of additional tourism spending on GDP by degree of coordination among tourism stakeholders

Alto corridor CMAs, 2023, in 2025 $ billions



Note: CPCS estimates represent economic spinoffs supported by additional tourism activity in the corridor. They do not necessarily correspond to net spinoffs created for the Canadian economy.
Source: CPCS, 2026.

What those gains mean for Canadians

The permanent increase in economic activity as measured by GDP will generate tangible gains for households and businesses.

Higher incomes for households

Increased economic activity, and the resulting increase in hours worked, will translate into an $11.2 billion annual increase in the disposable income of households located along the corridor once the network is fully operational. This income corresponds to the amount households have after taxes to consume, save or invest. In concrete terms, higher incomes can translate into a greater capacity to cover day-to-day expenses, save for retirement or carry out major projects such as buying a home, education or renovations. Across the economy, this increase in purchasing power also supports household consumption, which is one of the main drivers of economic growth.

More Investment and Revenue for Businesses

Estimates show that the increase in business output, which is needed to meet higher household demand, will lead to a $10.1 billion increase in business revenues, as well as a $15.4 billion increase in private investment. For businesses, higher revenues mean more resources to finance their growth, modernize their equipment, develop new products or invest in research and development. Private investment includes spending on the acquisition of buildings, equipment, technologies, software or other productive assets that increase businesses' production capacity and long-term competitiveness.

Additional government revenue

As wages, consumption and business revenues increase with the expansion of economic activity, the tax base broadens, so that government revenues increase alongside the output gains related to productivity, labour and tourism. The economic growth expected thanks to Alto will generate $6.4 billion in additional government revenue[198] per year. This revenue, which comes from income taxes, consumption taxes and corporate income taxes, can

[197] *CPCS.*

[198] *Government revenues are aggregated and therefore represent the revenues of the governments of Canada, Québec and Ontario.*

then be used to fund public programs and services such as health, education, infrastructure, social programs or the reduction of public debt. The increase in tax revenue will benefit the entire population, not only those located along the corridor.

The additional tax revenue would be captured by the governments of Québec, Ontario and Canada, in the amounts of $1.6 billion, $2.1 billion and $2.6 billion per year[199], respectively. To put these amounts in perspective, Québec's share is equivalent to the expenditure budget of the Ministère de l'Économie, de l'Innovation et de l'Énergie, and Ontario's share to the budget of the Ministry of Economic Development, Job Creation and Trade.

Although Alto would be located in Québec and Ontario, its fiscal benefits would extend well beyond the corridor. More than 40% of the additional revenue would accrue to the federal government, which funds programs and services for the entire population and redistributes a significant share of its revenue to all provinces and territories. It is therefore largely through federal public finances that the rest of the country would benefit from the spinoffs of high-speed rail, whether by supporting national programs or financing infrastructure projects elsewhere in Canada.

In other words, it means that governments have more revenue, or do not need to raise taxes, to fund health care, education, transportation, or social programs. As such, it is a lever that allows governments to invest more without necessarily increasing tax rates.

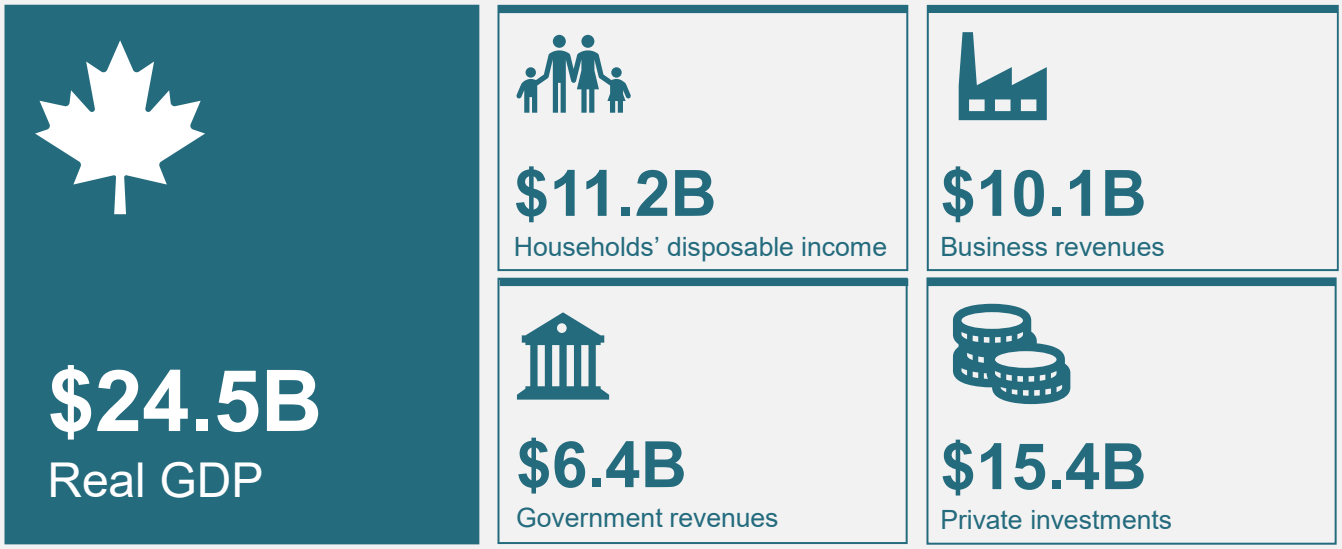
How these amounts will be used will depend on the budgetary decisions of the governments concerned.

In this regard, it is important to distinguish the role of transportation infrastructure from that of governments in matters of equity. The primary function of a project like Alto is to reduce the cost of distance, regardless of how the spinoffs are distributed among regions or population groups. It is normal, and expected, that a linear infrastructure such as high-speed rail will benefit populations and businesses located near the corridor more, whether in terms of access, mobility or local economic development.

This geographic concentration of direct benefits is not an equity problem in itself, insofar as governments have the tools needed to redistribute the economic gains generated to the entire population, regardless of proximity to the corridor. This is precisely the role of taxation, as the additional revenue collected by governments is used to fund programs and services accessible to all citizens, wherever they live. In other words, the responsibility for ensuring equity in the overall benefits of a project like Alto does not rest with the infrastructure itself, but with governments' budgetary choices and redistribution policies. However, it must be noted that financing costs would likely be borne nationally, which underscores the need to redistribute the additional tax revenue generated by HSR as equitably as possible.

[199] *Totals may not add up to $6.4B due to rounding.*

Summary of the annual economic impacts of high-speed rail on the Canadian economy
Canada, in billions of constant 2019 dollars

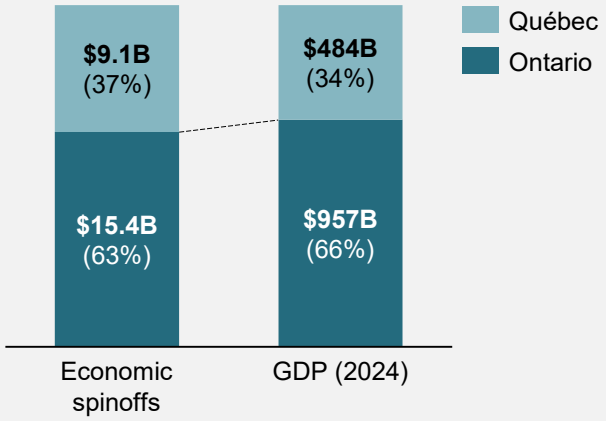


Note: Government revenues are aggregated. The values shown on the right are concepts distinct from GDP. They therefore cannot be added together to represent the economic impact in terms of GDP.
Source: Aviseo Consulting simulations and analysis, 2026.

Regional Gains

The project's economic spinoffs will spread within the Québec City–Toronto corridor. It is estimated that more than a third (37%) of the annual GDP gains generated by Alto would be captured by Québec, compared with nearly two thirds (63%) by Ontario (Figure 41). This distribution is broadly similar to the economic weight of these two provinces.

Figure 41: Comparison between economic weight and share of spinoffs
Québec and Ontario, in $ of real GDP



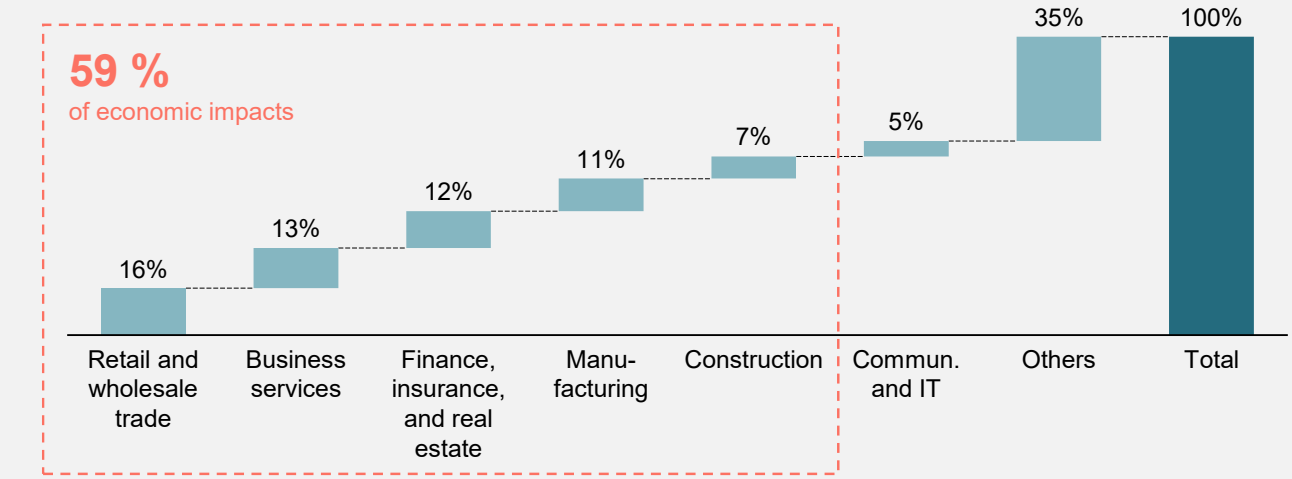
Source: Statistics Canada, Aviseo Consulting modelling and analysis, 2026.

Sectoral Gains

From a sectoral perspective, the economic gains associated with Alto would be concentrated mainly in industries whose performance depends more heavily on access to markets, customers and talent. While the benefits will be seen across the economy, services, trade and activities with a high intensity of business travel will be the main beneficiaries of high-speed rail. According to Aviseo's estimates, five industries alone would account for nearly 60% of the annual increase in GDP attributable to the entry of Alto into service: wholesale and retail trade (16%), professional services (13%), finance, insurance and real estate (12%), manufacturing (11%) and construction (7%).

These results suggest that Alto's benefits will be concentrated mainly in the sectors that already form the core of the corridor's economy. Together, these five industries account for nearly 58.5% of the combined GDP of Québec and Ontario, a proportion very close to their weight in the projected economic gains.

Figure 42: Sectoral breakdown of economic spinoffs
Canada, in % of economic spinoffs



Source: Aviseo Consulting modelling and analysis, 2026.

Beyond GDP: Improving Quality of Life and Well-Being

The Québec City–Toronto high-speed rail project will generate benefits that go well beyond the economic spinoffs measured by GDP, an incomplete measure of the population's well-being. In addition to stimulating economic activity, Alto will allow travellers to save time and travel more safely, access services more easily and enjoy a wider choice of travel modes, while generating environmental benefits. These well-being gains are an important part of the value created by the project, and are different than the monetary benefits presented in the previous section.

This section provides an overview of these benefits. It should be noted, however, that no comprehensive measure of the project's well-being impacts over its full lifetime is available yet. The elements presented here should therefore be seen as a first step, as they illustrate the nature and potential scale of these benefits, without capturing their full value.

Measuring Prosperity Beyond Economic Output

GDP is the benchmark indicator for measuring economic activity, but it has several limitations. First and foremost, it records the value of goods and services produced in an economy over a given period, without reflecting the positive or negative effects that result from the production process. In this sense, GDP is an imperfect measure of the population's well-being[200] (Figure 43).

- For example, the production of a car contributes to GDP, while the greenhouse gas emissions it generates are not deducted from it.
- An economy can thus generate more output while simultaneously creating costs for society that remain largely invisible in GDP[201].

This limitation is particularly relevant in the field of transportation. Congestion, pollution or accident-related costs can directly affect quality of life without being reflected in the measurement of economic output. Conversely, faster travel, more reliable service or better accessibility can generate significant gains in citizens' well-being without necessarily translating into an equivalent increase in GDP. The assessment of a project like Alto therefore benefits from complementing traditional economic spinoffs with a broader analysis of its effects on the population's well-being and quality of life.

Contemporary methods for evaluating transportation infrastructure increasingly reflect this reality[202]. In particular, they consider travel time, service reliability, accessibility, inclusion and effects on communities as relevant dimensions of well-being, even when they do not translate directly into higher GDP. For example, faster travel frees up time for other activities, and more reliable service reduces uncertainty as well as the safety margin for which travellers must allow. For its part, better accessibility increases the number of services, activities and destinations that can be reached within a reasonable time. **These benefits increase travellers' well-being, but are not fully captured by GDP.**

The project's benefits also extend to road safety. By shifting part of travel from road to rail, Alto reduces exposure to collisions. Over the evaluation horizon, Alto estimates that the project will prevent up to 26,000 injuries and 400 deaths, for road safety benefits valued at approximately $610 million.

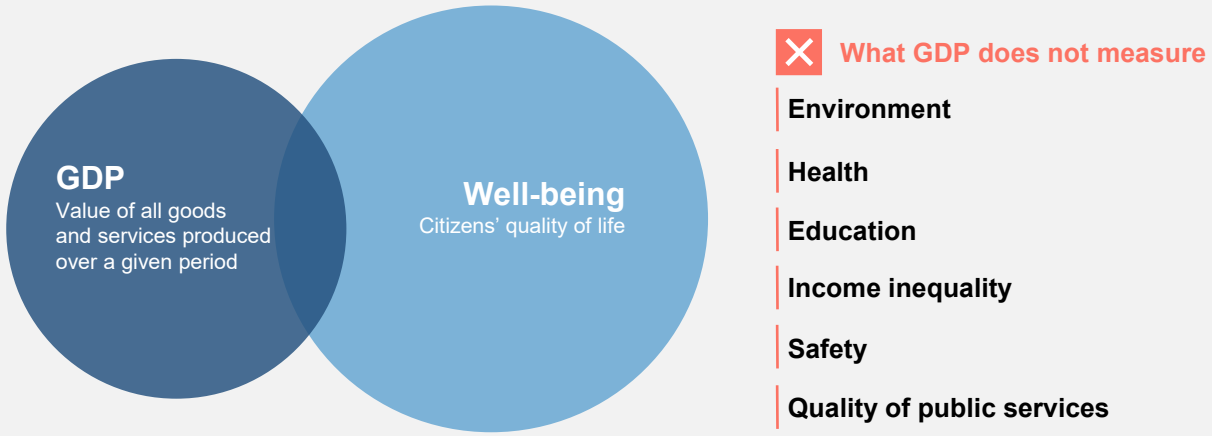
Measuring prosperity beyond GDP makes it possible to complement the effects on output and productivity with dimensions that more directly affect citizens' daily lives, including available time, travel reliability, accessibility, safety and environmental quality.

[200] *Harvard Business Review (2019).*

[201] *These costs are called "negative externalities".*

[202] *U.K. Department for Transport (2024).*

Figure 43: Diagram of GDP and quality-of-life measurement
For illustration



Source: Aviseo Consulting analysis, 2026.

Benefits for Future Generations

High-speed rail infrastructure is designed to be used for several decades. Part of its value therefore concerns future generations, who will benefit over the long term from the new mobility opportunities it makes possible. This issue is particularly important in the Québec City–Toronto corridor, where the population of the regions served is expected to grow by nearly 18% between 2025 and 2050, or nearly 3 million additional people. This population growth will increase mobility needs and the pressure on transportation networks over the coming decades. The project's benefits will not, however, be limited to high-speed rail users. By shifting part of travel to rail, Alto will also help free up capacity on existing infrastructure and reduce certain transportation-related externalities, to the broader benefit of the corridor's population.

In this context, environmental benefits are an important dimension of this long-term value. They rest in particular on the shift of part of the trips made by car or plane to an electrified rail network. According to Alto's projections, the car's average modal share across the corridor's various segments will fall from about 74% to 59%, while that of air travel will fall from about 14% to 8%. This change in travel habits will directly reduce the emissions associated with intercity travel.

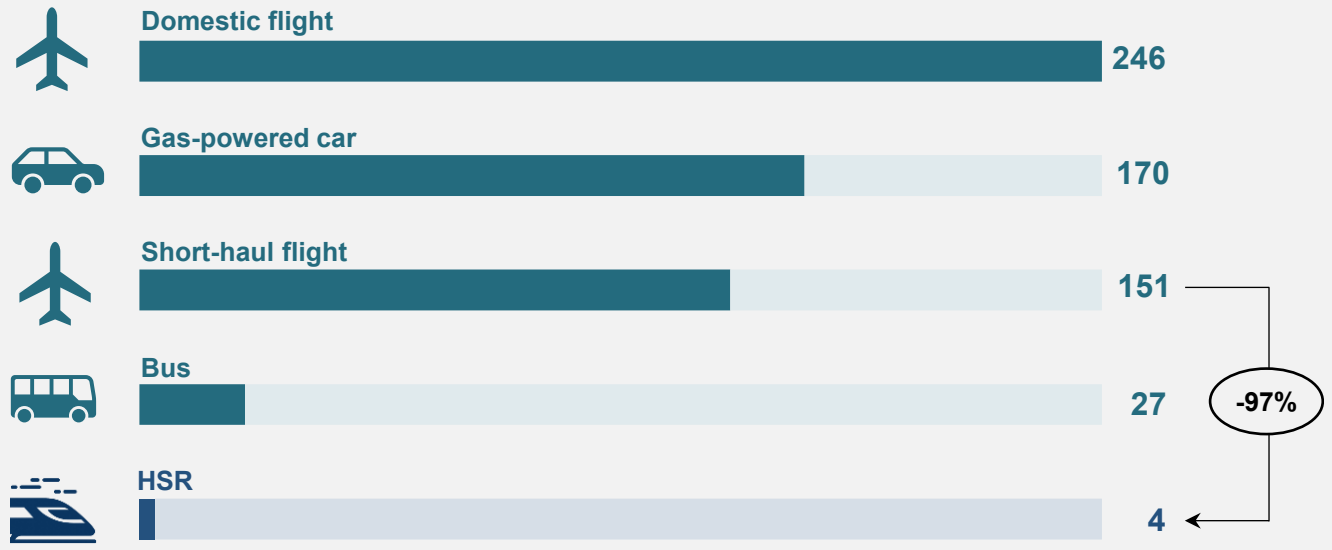
By comparison, UK emission factors show that, during operation, a trip on Eurostar high-speed rail generates 4 gCO_2e per passenger-kilometer, compared with 27 g for a bus, 170 g for a gasoline car and between 151 g and 246 g for a domestic flight, depending on distance. As a result, for a trip between Montréal and Toronto, high-speed rail will represent a reduction of about 97% in greenhouse gas emissions. This GHG reduction should also be interpreted as a minimum, since electricity in the United Kingdom is more emissions-intensive than in Québec and Ontario.

– In the United Kingdom, more than 30% of electricity is generated from natural gas[203].
– In Québec and Ontario, more than 90% of electricity is generated from zero-emission sources, namely hydroelectricity and nuclear power. It is therefore likely that Alto's high-speed rail will emit less than 4 gCO_2e per passenger-kilometer.

These orders of magnitude illustrate the difference in carbon intensity between modes of transportation and the advantage that shifting part of travel to an electrified rail network can represent.

[203] *International Energy Agency.*

Figure 44: GHG emissions by mode of transportation
United Kingdom, emissions per passenger-kilometer, in gCO_2e



Source: Our World in Data, Government of the United Kingdom, Department for Energy Security and Net Zero (2022), Aviseo Consulting analysis, 2026.

In total, the shift in modal share from cars and planes to high-speed rail will avoid up to 39.1 million tonnes of greenhouse gas emissions over the 60-year evaluation horizon[204]. In monetary terms, the value of this reduction is estimated at up to $7.2 billion[205]. It should be noted that these environmental benefits extend to the entire population, since lower emissions improve the environmental record across the country.

Environmental benefits do not concern greenhouse gases alone. Fewer car trips also reduce emissions of air pollutants that affect air quality and health, including fine particulate matter, sulphur oxides, nitrogen oxides, hydrocarbons and carbon monoxide. The reduction in emissions of these air pollutants represents a gain of $27 million, which will benefit the entire population of the corridor exposed to these pollutants, including those who will not use high-speed rail.

More broadly, the development of an electrified rail network is in line with the ecological transition and transportation decarbonization policies pursued in Québec and Canada. Québec's 2030 Plan for a Green Economy makes transportation electrification a pillar of GHG emission reductions, while the federal government's 2030 Emissions Reduction Plan highlights the role of modal shift and cleaner modes of transportation in decarbonizing the sector[206]. Alto's value for future generations therefore does not lie solely in the longevity of the infrastructure. It also lies in its capacity to respond sustainably to growing mobility demand while offering an electrified alternative to cars and planes, with long-term benefits for greenhouse gas emissions, air quality and the transition to lower-carbon mobility.

It should however be noted that the analysis does not account for the induced effects of HSR: by stimulating new economic activity, the project is likely to generate additional energy consumption and transport demand beyond the corridor itself.

The Value of Choices

Beyond day-to-day travel, the value of a transportation network also lies in the possibilities it makes accessible. In transportation economics, this notion is called "option value"[207]. In the Québec City–Toronto corridor, a high-speed rail link would add an alternative to cars, planes, and existing rail services. This option can be useful when the usual mode becomes less attractive or unavailable due to price, traffic

[204] *These projections take into account an increase in the market share of zero-emission vehicles.*

[205] *In 2024 dollars. Monetary values are estimated based on the social cost of carbon as calculated by the Government of Canada.*

[206] *Government of Québec (2020), 2030 Plan for a Green Economy; Environment and Climate Change Canada (2022), 2030 Emissions Reduction Plan.*

[207] *U.K. Department for Transport (2022)*

conditions, disruptions or simply the traveller's preferences. The availability of an additional option therefore has a value that goes beyond its day-to-day use.

In the Canadian case, this additional option is particularly important because of the limitations of current modes of transportation. As mentioned previously, the Canadian domestic air market is characterized by limited competition, which restricts supply, while rail transportation operated by VIA Rail faces reliability and on-time performance issues. Beyond transportation, Canada also stands out for weak competition in several other industries, such as telecommunications and food.

In this context, the addition of a rail alternative that is faster and more reliable thanks to its fully dedicated network should strengthen competition between modes of transportation, to the benefit of users. Study of the European markets shows that this competition can change the capacity offered and the frequency of air services. In particular, airlines may reduce the number of seats offered on routes competing with high-speed rail, while reducing their frequencies less sharply, or even increasing them in some cases, in order to preserve the attractiveness of their service. The effects vary depending on the characteristics of the routes and networks, particularly the presence of a hub airport. In some cases, high-speed rail can even play a complementary role by feeding long-haul flights at major airports[208].

In terms of fares, European research also shows that more intense rail competition can put downward pressure on airfares. Increased rail competition can lead airlines to lower their fares, while improvements in rail's competitiveness in terms of travel time increase this pressure. Recent research also shows that the arrival of new high-speed rail operators can exert pressure on airfares comparable to that resulting from the arrival of an additional airline. This effect appears more pronounced on longer routes and those serving hub airports, and seems to stem in part from increased rail service frequency[209]. The benefits of a new transportation option can also extend to some travellers who continue to fly, through price or service adjustments by airlines.

High-speed rail also broadens career choices from a well-being perspective. By bringing the corridor's main hubs closer together, it allows more workers to access career opportunities without necessarily having to give up their community. The value created therefore lies not only in access to a larger pool of jobs, but also in being able to pursue one's professional ambitions while preserving family, social and community ties.

The same reasoning applies to residential choices. By bringing the corridor's main hubs closer together, high-speed rail broadens the range of communities from which households can choose while maintaining access to their job market. This greater freedom of choice is a benefit in itself, since it offers more flexibility to choose where to live according to one's preferences, ties and priorities.

The value created by Alto does not rest solely on trips made on board the train. It also lies in the broader range of possibilities offered by better connectivity between the corridor's main hubs, whether in terms of choice of transportation mode, career or place of residence. This greater freedom of choice is in itself a dimension of well-being that is not fully reflected in GDP or in the number of passengers alone.

[208] *Dobruszkes (2011); Albalate et al. (2015)*

[209] *Bergantino et al. (2015); Capozza (2016); Borsati et al. (2026).*

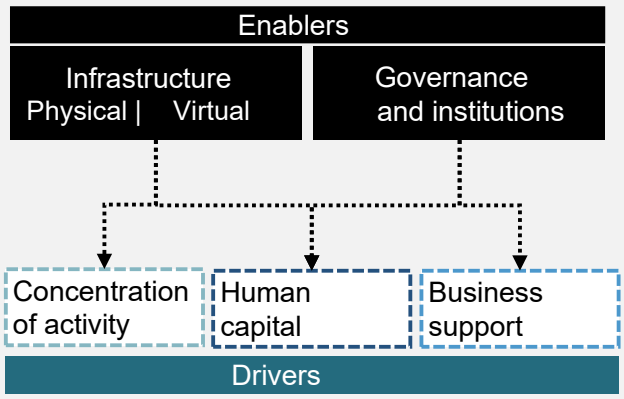
Maximizing the Benefits of Alto

International experience shows that high-speed rail does not automatically generate economic spinoffs. While a new station improves a territory's accessibility, the capacity to convert this accessibility into regional development depends largely on the policies and planning choices that accompany it. Alto's benefits will therefore depend as much on its integration into the territory as on the performance of the rail service. To maximize the project's spinoffs, stations will need to be efficiently connected to local, regional and intercity transportation networks, while being part of dense, mixed-use and accessible communities.

All Boxes Checked

When it comes to economic development, there is no set recipe, but the key success factors are well known. The literature on regional economic development shows that infrastructure does not create prosperity on its own, but that it is a powerful growth enabler when it is part of a supportive ecosystem. Infrastructure creates the conditions that allow economic players to grow, invest and collaborate effectively.

Figure 45: Key success factors in economic development
Aviseo Consulting



Sources: Brookings Institution and Mid-America Regional Council; Aviseo Consulting analysis, 2026.

The diagram above illustrates this logic. Physical and virtual infrastructure, along with civic and public institutions, act as enabling conditions that allow development drivers such as human capital, entrepreneurship, innovation and productivity to emerge. Infrastructure improves the mobility of people, goods and information, reduces transaction costs and expands the markets accessible to businesses. It thus contributes to the concentration of economic activity and the formation of critical masses conducive to innovation. Conceptually, then, the high-speed rail planned by Alto activates all the levers needed to foster economic development.

From Accessibility to Regional Development

The advantage of high-speed rail technology is that it is possible to learn from the experience of recent decades. Its potential economic benefits are clear. The economic benefits associated with a high-speed rail network rest first and foremost on its capacity to improve accessibility between cities. By reducing travel times, new infrastructure can bring workers, businesses, institutions and markets closer together. International experience shows, however, that this improvement in accessibility does not automatically translate into economic or urban development.

Station planning, particularly station accessibility, and the provision of space for the regional economic ecosystem are essential success factors.

The presence of a station alone guarantees neither the arrival of new investment, nor job creation, nor a lasting transformation of the territory. The results observed in different countries vary considerably from one city to another, even when they are served by the same high-speed rail network. Some cities have succeeded in attracting new economic activities, revitalizing certain neighbourhoods or strengthening their regional role, while others have seen more limited spinoffs. Research on European experiences shows that the benefits associated with a new station depend more on communities' capacity to take

advantage of the new accessibility than on the infrastructure itself[210].

This reality is particularly important for intermediate cities. A better connection with major centres can increase their attractiveness, broaden their markets and facilitate access to talent, customers and partners. However, these benefits are neither automatic nor evenly distributed. They depend in particular on the capacity of communities to accommodate new households and businesses, develop their housing supply and leverage their existing economic strengths.

International experience also shows that the gains associated with high-speed rail are generally greater when it is part of a broader land development strategy. Transportation, housing, land-use planning and economic development policies often play a decisive role in cities' capacity to take advantage of improved accessibility to attract new investment, support job creation and develop new economic activities[211].

For Alto, the challenge will therefore be not only to connect the corridor's cities more quickly, but also to convert this new accessibility into sustainable development. In this regard, two factors appear particularly important in light of international experience:

– The efficient integration of stations with other modes of transportation to facilitate door-to-door travel
– The development of complete communities around stations, allowing housing, jobs and services to be concentrated.

Integration with Other Modes of Transportation

For a user, it is not only the time spent on the train that counts, but the complete door-to-door trip, from the starting point to the final destination. The value of a high-speed rail network therefore depends not only on the individual performance of the train itself, but also on its capacity to integrate effectively with other modes of transportation[212].

A fast high-speed train that is poorly connected to the rest of the catchment area delivers only a fraction of its full potential.

For Alto, this means that the value created will be highly dependent on its connectivity with the urban public transit networks of the cities served, VIA Rail's rail network, intercity bus services and air transportation. Travellers must be able to easily reach their final destination without the time savings achieved on board high-speed rail being cancelled out by long or complex connections.

– Although Alto cannot control the individual performance of complementary modes of transportation, the location of stations must be determined in coordination with these existing networks to maximize interconnections.
– A poorly connected station, where connections are long, unreliable or poorly synchronized with high-speed rail schedules, would reduce the pool of people and businesses for whom Alto becomes a realistic option. Productivity gains would be reduced accordingly.

This integration is particularly important for intermediate cities and areas located outside the immediate corridor. A station well connected to regional networks can considerably extend Alto's area of influence and allow a greater number of communities to benefit from the new accessibility.

Multimodal integration also plays an important role for tourism. An efficient connection between high-speed rail, public transit networks and the main airports can facilitate multi-destination travel and broaden car-free access to the corridor's various attractions. International experience shows that there is no single model for ensuring effective integration between high-speed rail and other modes of transportation, particularly air travel. Some networks favour direct integration of high-speed rail with airports, while others rely instead on stations located in downtown areas or major urban hubs, efficiently connected to airports and public transit networks. In both cases, the objective remains the same: reduce connection time, facilitate door-to-door travel and maximize network accessibility.

[210] *Wenner and Thierstein (2022).*

[211] *OECD (2026), Unlocking the Potential of Intermediary Cities for Regional Development*

[212] *Cervero (1998)*

– **In Lyon,** the direct integration of the Lyon-Saint-Exupéry station with the airport allows quick connections between high-speed rail services and air transportation. This configuration aims to expand the airport's catchment area by allowing travellers to access it efficiently from a vast territory served by the TGV network.
– **The case of Cologne** also illustrates this logic of multimodal integration. High-speed rail links are used to expand the catchment area and facilitate access to short-haul flights. Rail and air are designed as complementary modes within a single mobility system rather than as competing modes.
– **In Turin**, Porta Susa station, located in the heart of the city, is connected to the airport by a dedicated rail link, while offering connections with the national and regional rail network and urban public transit. This approach prioritizes access to the downtown core and major activity hubs while maintaining an efficient link with air transportation.

In several European countries, high-speed rail stations have become true mobility platforms, making it easy to combine rail, public transit and air travel within a single trip.

For Alto, the quality of these connections will therefore directly influence the network's capacity to spread its benefits beyond the cities served.

Transit-Oriented Development and Station Areas

While multimodal integration maximizes the accessibility offered by the network, the development of the areas surrounding stations is a second important lever for transforming this accessibility into lasting economic spinoffs.

International experience shows that a high-speed rail station generally generates more spinoffs when it is part of a dynamic urban environment where housing, jobs, shops and services are easily accessible. This approach, known as *transit-oriented development (TOD)*, aims to make the station a true hub of activity rather than a simple boarding point.

A well-connected station allows travellers to continue their trip; a well-designed station area also allows them to live, work and access services nearby.

For citizens, the concentration of housing, jobs and services near the station makes daily travel easier. It allows more trips to be made on foot, by bike or by public transit and can thus reduce car dependence and its associated costs, leaving more room for purchases with greater local content. The proximity of shops, public services and recreational venues also saves time by bringing several destinations closer to home, work and the station[213,214].

– The concentration of residents, workers and destinations near stations can also broaden the user base and support ridership throughout the day.

In addition to simplifying daily travel and activities, a station can act as a lever for attraction and economic development. The concentration of residents, workers and travellers can increase traffic in the station area and support the presence of local shops and services, in line with the concept of transit-oriented development. These facilitate access to shopping and services from home and work, while contributing to the vitality of public spaces[215].

The station's location will influence the nature of its effects on the urban landscape. A downtown station generally fits into an already densified area, with better connectivity to complementary transportation networks and greater walkability. A pericentral station, i.e., one located on the immediate edge of downtown, often benefits from greater land availability, which can facilitate the creation of a new mixed-use neighbourhood around the station. Depending on the context, high-speed rail can therefore support the transformation of an existing neighbourhood or help structure a new urban hub[216].

– **In Lille**, France, the arrival of the TGV helped develop the Euralille business district, transforming former underused spaces into a new tertiary hub directly connected to rail networks, the metro, the tramway and buses. Lille-Europe station thus served as a foundation for the expansion of the downtown core and the redevelopment of the area[217].

[213] *Freemark (2026).*
[214] *Wang et al. (2023).*
[215] *Valley Transportation Authority.*
[216] *Facchinetti-Mannone (2011).*
[217] *École Normale Supérieure (2011).*

– **In Reims**, also in France, urban development associated with the TGV differed significantly between the downtown station and the one located on the outskirts. While the central station benefited from strong integration into the existing urban network, development around the Champagne-Ardenne TGV station, located 8 km from downtown, required complementary investments in public transit, housing, offices and public spaces to take full advantage of the new accessibility[218,219].

These examples show that the spinoffs associated with station areas depend less on the presence of the infrastructure itself than on communities' capacity to plan their long-term development (Figure 45). The areas surrounding stations thus represent an opportunity to convert accessibility gains into new investment, housing and economic activity. The magnitude of these spinoffs varies, however, depending on the context. International experience shows that they are generally maximized when stations are located in densified and well-connected areas, rely on a diversified economy and strengthen urban hubs that are already attractive. Early planning of multimodal integration and station area development therefore remains essential to transform accessibility gains into sustainable growth[220].

Figure 46: International examples of urban development around high-speed rail stations
For illustration



Quartier Euralille, Lille, France



Champagne-Ardenne station, Reims, France

[218] *Grand Reims Mobilité.*
[219] *Université de Reims, n. d.*
[220] *Weiß and Münter (2022).*

Conclusion

The Québec City–Toronto corridor occupies a unique place in the Canadian economy. It is home to a large share of the country's population, economic activity, talent, research institutions and decision-making centres. This exceptional concentration of economic assets is one of Canada's main strengths, but it also comes with growing challenges. Population growth, rising mobility needs, capacity constraints on existing infrastructure and the productivity gap with other developed economies are putting increasing pressure on the region's capacity to effectively support Canada's economic growth. The decisions made today regarding mobility, connectivity and investment will largely determine the corridor's capacity to meet these challenges and remain a driver of growth, innovation and competitiveness for the Canadian economy.

While building high-speed rail incurs costs, it is important to remember that inaction is not a cost-free scenario. Even without Alto, governments will have to continue investing heavily to increase the capacity of existing infrastructure and meet mobility demand that is set to grow over the coming decades. The real choice is therefore not about the need to invest, but about the type of infrastructure that will best support the corridor's economic development.

Alto is first and foremost a mobility infrastructure, but its importance does not lie solely in its transportation function. By bringing together the workers, businesses, institutions and markets that make up the corridor, the project could strengthen productivity, broaden labour markets, facilitate Québec–Ontario trade, foster the spread of knowledge and support regional economic development. In this sense, the project's value does not rest solely on the trips it would make possible, but also on the new economic opportunities it could create.

These benefits are not merely theoretical. They also translate into tangible economic spinoffs for workers, businesses and governments. According to Aviseo's estimates, the full entry into service of Alto could generate a permanent increase in Canadian real GDP of about $24.5 billion per year, including $21.0 billion attributable to productivity gains, $2.7 billion to the effective expansion of the labour market and $0.8 billion to increased tourism spending. These spinoffs reflect Alto's potential to durably increase the productive capacity of the country's main economic region.

Alto's potential benefits go beyond the economic spinoffs measured by GDP. Faster and more reliable travel can increase access to jobs, services and tourist destinations, while offering more flexibility in mobility choices. Shifting part of travel to an electrified rail network could also help improve travel safety, reduce greenhouse gas emissions and support Canada's energy transition objectives. A large part of the value created by Alto thus lies in benefits that are not fully captured by traditional economic indicators.

Ultimately, the questions raised by Alto go beyond transportation. They concern more broadly how Canada intends to develop, connect and grow its main economic region in the 21st century. Beyond the infrastructure itself, it is the possibilities that Alto makes accessible that will ultimately shape the Québec City–Toronto corridor over the long term.

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