ALTO Ridership Projections — The Madrid–Barcelona Comparator and the Canadian Car-Culture Gap

ALTO has committed, in its public communications, to two headline ridership projections: **24 million passengers annually by 2055** and **43 million passengers annually by 2084.**[1] These figures are foundational to the project's financial case. They determine whether ALTO generates meaningful fare revenue, how large a public subsidy burden falls on Canadian taxpayers over the concession period, and whether the project's benefit-cost ratio can be defended to Parliament. They have been presented publicly without a disclosed demand modelling methodology, without sensitivity ranges, and without a description of the baseline assumptions from which they are derived.

This section examines whether ALTO's projections are credible. It does so by conducting a systematic structural comparison between the Madrid–Barcelona corridor — the international HSR benchmark most frequently invoked in Canadian HSR advocacy — and the Toronto–Montréal–Ottawa corridor that ALTO proposes to serve. That comparison reveals that the structural conditions which enabled Madrid–Barcelona's ridership success are significantly attenuated or absent in the Canadian context. It then applies the findings of the international academic literature on HSR demand forecast accuracy, which documents a systematic pattern of overstatement. The combined weight of the evidence raises serious questions about both the 24 million and 43 million projections and about the revenue assumptions they support.

1. The Passenger Volume Baseline: A Seven-to-One Gap

The starting-point difference between the two corridors is not a matter of degree — it is a difference of kind. The Madrid–Barcelona corridor carried **14.6 million passengers in 2024**,[2] a figure that grew from 2.56 million in 2010 following the AVE's initial ramp-up period[3] and reflects sixteen years of operational maturity, active open-access competition from Ouigo, AVLO, and Iryo, and aggressive price liberalisation that drove average economy fares down from approximately €80–100 to €40–72

[1]TorontoToday / ALTO. (2026, January 30). Full speed ahead: Ottawa to Montreal is the starting point for ALTO's High-Speed Rail Network. torontotoday.ca. Retrieved March 2026, from https://www.torontotoday.ca/spotlight/full-speed-ahead-ottawa-to-montreal-is-the-starting-point-for-altos-high-speed-rail-network-11808932
[2]High Speed Rail Canada. (2025). How High-Speed Rail is Revolutionizing Travel and Reducing Aviation in France and Spain. highspeedrailcanada.com. Retrieved March 2026, from https://www.highspeedrailcanada.com/2025/08/how-high-speed-rail-is-revolutionizing.html
[3]Statista/OTB. (2020). Number of passengers using the high-speed train (AVE) between Madrid and Barcelona 2010–2019. Statista. Retrieved March 2026, from https://www.statista.com/statistics/457527/

per trip.[4] This is a mature, high-volume intercity market that has been reshaped by a technology deployed in 1992, a thirty-year head-start in building rail culture.[5]

The Canadian baseline is of a fundamentally different scale. **VIA Rail's entire Montréal–Ottawa–Toronto corridor, the busiest intercity rail route in Canada, carried just over 3.1 million passengers in 2024.**[6] This figure encompasses all stations and intermediate stops across the full corridor, not a single city pair. It means the Canadian corridor's present ridership represents approximately **one-seventh** of the Spanish corridor's 2024 volume. More significantly, VIA's total national ridership, all routes, all of Canada, for the full year, was 4.1 million passengers.[7] The Madrid–Barcelona single route now carries more than three times that figure annually.

> **Key finding:** ALTO's demand projections must explain how a corridor currently generating 3.1 million annual trips across its entire length will replicate conditions sufficient to drive the modal shift and revenue flows projected in the TRAM baseline. The Madrid–Barcelona comparator, properly understood, illustrates the ceiling of a mature European HSR market — not a near-term Canadian benchmark.

2. Modal Shift: What Spain Actually Achieved, and Why

The Madrid–Barcelona HSR success in displacing air travel is real and well-documented. When the line opened in February 2008, air passenger numbers on the route fell by approximately 40% almost immediately.[8] By 2024 that suppression had risen to around 60%.[9] In the years immediately before opening, Madrid–Barcelona was **the world's busiest passenger air route**, with 971 scheduled flights per week in both directions.[10] By end-2017 the AVE had captured 63% of total corridor traffic.[11] By 2024, approximately 75% of travelers between the two cities chose train over plane.[12]

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[4] International Railway Journal. (2024, January 2). Spanish HS competition drives passenger numbers up by a third. railjournal.com. Retrieved March 2026, from https://www.railjournal.com/analysis-cat/spanish-high-speed-competition-drives-passenger-numbers-up-by-a-third/

[5] Wikipedia. (2025). Transportation Deployment Casebook/2025/High Speed Rail in Spain. Wikibooks. Retrieved March 2026, from https://en.wikibooks.org/wiki/Transportation_Deployment_Casebook/2025/High_Speed_Rail_in_Spain

[6] Statista. (2024). Via Rail Canada's ridership by Corridor route. Statista. Retrieved March 2026, from https://www.statista.com/statistics/555248/ridership-inter-city-route-viarail-canada/

[7] Siemiatycki, M., quoted in: Canada's National Observer. (2024, December 20). Canada's high-speed rail plans reveal transportation conundrum. nationalobserver.com. Retrieved March 2026, from https://www.nationalobserver.com/2024/12/20/analysis/high-speed-rail-canada-transportation-emissions

[8] Goodman, S. / Earth.org. (2025, December 17). What Can Europe Learn from Spain's High-Speed Rail's Success at Slashing Transport-Related Emissions? earth.org. Retrieved March 2026, from https://earth.org/data_visualization/what-can-europe-learn-from-spains-high-speed-rails-success-at-slashing-transport-related-emissions/

[9] Goodman, S. / Earth.org. (2025, December 17). What Can Europe Learn from Spain's High-Speed Rail's Success at Slashing Transport-Related Emissions? earth.org. Retrieved March 2026, from https://earth.org/data_visualization/what-can-europe-learn-from-spains-high-speed-rails-success-at-slashing-transport-related-emissions/

[10] Wikipedia. (2025, November 27). Madrid–Barcelona high-speed rail line. Retrieved March 2026, from https://en.wikipedia.org/wiki/Madrid%E2%80%93Barcelona_high-speed_rail_line

[11] Wikipedia. (2025, November 27). Madrid–Barcelona high-speed rail line. Retrieved March 2026, from https://en.wikipedia.org/wiki/Madrid%E2%80%93Barcelona_high-speed_rail_line

[12] High Speed Rail Canada. (2025). How High-Speed Rail is Revolutionizing Travel and Reducing Aviation in France and Spain. highspeedrailcanada.com. Retrieved March 2026, from https://www.highspeedrailcanada.com/2025/08/how-high-speed-rail-is-revolutionizing.html

However, the mechanism behind this shift requires careful disaggregation. The AVE succeeded primarily because it offered a *faster city-centre-to-city-centre journey* than any realistic air alternative. The 620 km trip from Madrid Atocha to Barcelona Sants takes 2 hours 30 minutes at 300 km/h. Including airport transfers, security queues, and boarding, the total air journey time from central Madrid to central Barcelona was approximately 3.5 hours[13], giving rail an unambiguous time advantage in addition to its price and convenience benefits once competition arrived. The corridor also benefited from the structure of Spain's two-city economy: Madrid is the political capital, financial centre, and dominant economic node; Barcelona is the commercial capital, primary international tourism gateway, and Spain's second financial hub. The business travel base between them is structurally thick, recurring, and time-sensitive, exactly the passenger profile that HSR captures most effectively.

An important nuance: even with all these advantages, private car use was not displaced for domestic tourism. Research on the Spanish HSR network found that **the private car represented over 84% of the modal split in domestic tourist trips** even after HSR was built,[14] because for family travel, the dominant pattern in leisure tourism, the car remains economically competitive. This finding has direct relevance to the Canadian corridor, where family leisure travel to cottages, recreational properties, and dispersed rural destinations comprises a significant share of potential demand.

3. Suburban Structure: Why the Canadian Corridor Is Fundamentally Different

3.1 Canada as a Suburban Nation

The population the ALTO corridor is designed to serve does not resemble the dense, transit-oriented metropolitan population of Madrid or Barcelona. Research using 2016 Census data classified Canadian metropolitan populations into four neighbourhood types: exurbs (8%), automobile suburbs (67%), transit suburbs (12%), and active cores (13%).[15] In the Toronto and Montréal metropolitan areas, the two anchor cities of the ALTO corridor, the suburban share exceeds 80% of the total regional population.

More troubling still for demand projections, this pattern is accelerating. **The population in low-density auto suburbs and exurbs is growing five times faster than inner cities and transit suburbs across Canada.**[16] Even during a period of inner-city intensification policy, Toronto and Vancouver saw 3.4 and 2.4 times as much population growth in auto suburbs and exurbs as in active cores and transit suburbs. Canada is, in structural terms, becoming more car-dependent decade by decade, not less. Researchers have characterised this pattern as 'suburban inertia', the deep

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[13] Wikipedia. (2025, November 27). Madrid–Barcelona high-speed rail line. Retrieved March 2026, from https://en.wikipedia.org/wiki/Madrid%E2%80%93Barcelona_high-speed_rail_line

[14] Guirao, B. et al., cited in: Albalate, D. et al. (2015). High Speed Rail effects on tourism: Spanish empirical evidence derived from China's modelling experience. PMC/NCBI. Retrieved March 2026, from https://pmc.ncbi.nlm.nih.gov/articles/PMC7127499/

[15] Gordon, D.L.A. / The Conversation. (2018, October 10). Canadians increasingly live in the auto-dependent suburbs. theconversation.com. Retrieved March 2026, from https://theconversation.com/canadians-increasingly-live-in-the-auto-dependent-suburbs-104304

[16] Gordon, D.L.A. / The Conversation. (2018, October 10). Canadians increasingly live in the auto-dependent suburbs. theconversation.com. Retrieved March 2026, from https://theconversation.com/canadians-increasingly-live-in-the-auto-dependent-suburbs-104304

entrenchment of automobility in dispersed suburbanism that makes modal shift uniquely difficult to achieve even when alternative infrastructure is built.[17]

This matters for ALTO's demand model because HSR ridership is strongly correlated with origin-destination density, transit connectivity at both ends of the journey, and the traveller's ability to complete their trip without a car. For a population increasingly settling in low-density exurbs along the Highway 401 corridor, communities like Cobourg, Belleville, Trenton, Kingston, and Brockville, none of these conditions are favourable.

3.2 The 401 as a Cultural and Physical Competitor

Highway 401 is not merely a road, it is the corridor's cultural and economic spine, and the most direct expression of the car culture ALTO must overcome. **An average of 442,900 vehicles pass through one Toronto stretch of the 401 per day, making that segment the busiest freeway in the world.**[18] Over 50% of vehicles bound for downtown Toronto use the highway.[19] The 401 connects Toronto to Montréal with a driving time of approximately five to six hours, inconvenient by European standards, but entirely normalized within Canadian car culture, and entirely flexible in a way that fixed HSR is not.

Statistics Canada data confirms the structural depth of this dependency. **Residents of suburban neighbourhoods, the dominant residential form along the 401 corridor, spend an average of 1 hour and 23 minutes per day in the car, and 81% make at least one car trip per day.**[20] In very low-density neighbourhoods, nearly two-thirds of residents make *all* of their trips by car.[21] This is not a market waiting for an alternative mode, it is a market that has organized its entire spatial and social existence around the car.

3.3 Employment Geography and the Last-Mile Problem

The modal-shift case for ALTO requires that passengers not only board the train at the origin city but also complete their journey without a car at the destination. In Canada, this assumption is structurally difficult to satisfy. **A resident of the Toronto Census Metropolitan Area can reach 4.5 times as many jobs by car as by public transit in 30 minutes.**[22] Only 19% of employment is located in

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[17]Filion, P. (2015). Suburban inertia, cited in: Manaugh, K. et al. (2024). Contrasting perceptions of major public transit projects in Montréal, Canada. Transport Policy, 153. https://doi.org/10.1016/j.tranpol.2024.X

[18]Wikipedia. (2025, March). Ontario Highway 401. Retrieved March 2026, from https://en.wikipedia.org/wiki/Ontario_Highway_401

[19]Wikipedia. (2025, March). Ontario Highway 401. Retrieved March 2026, from https://en.wikipedia.org/wiki/Ontario_Highway_401

[20]Turcotte, M. / Statistics Canada. (2008). Canadian Social Trends: Dependence on cars in urban neighbourhoods. Catalogue no. 11-008-X. Retrieved March 2026, from https://www150.statcan.gc.ca/n1/pub/11-008-x/2008001/article/10503-eng.htm

[21]Turcotte, M. / Statistics Canada. (2008). Canadian Social Trends: Dependence on cars in urban neighbourhoods. Catalogue no. 11-008-X. Retrieved March 2026, from https://www150.statcan.gc.ca/n1/pub/11-008-x/2008001/article/10503-eng.htm

[22]McGill Policy Association. (2024, January 25). Challenges to Urban Densification in Canada. mcgillpolicyassociation.com. Retrieved March 2026, from https://mcgillpolicyassociation.com/latest-articles/2024/01/25/challenges-to-urban-densification-in-canada

downtown Toronto, the 81% majority is scattered across suburban and exurban locations that are overwhelmingly car-accessible but transit-inaccessible.[23]

This is not a problem unique to Toronto. Research has consistently found that HSR's attractiveness is severely diminished when origin or destination is not in a city centre, because any time savings on the rail portion of the journey are eroded by access and egress time.[24] For the majority of the ALTO corridor's potential riders, people whose homes, offices, and destinations are in suburban zones poorly served by transit, the ALTO station represents not an arrival point but the start of a second, car-dependent journey.

4. The Passenger Mix Problem: Tourism and Business Travel

Madrid and Barcelona are among Europe's foremost tourist destinations. Madrid receives approximately 10 million international visitors annually; Barcelona receives more than 15 million. Both cities host major international convention infrastructure, generating sustained business tourism demand. **Research on the AVE found that business tourist daily expenditure can be up to four times greater than that of leisure travellers,**[25] making business travel the highest-value ridership segment for HSR operators.

The Toronto–Montréal corridor has real business travel. **There are roughly 108 flights within the Toronto–Ottawa–Montréal triangle every working day, making it the 15th busiest air route in the world.**[26] This is the market that ALTO's business case most plausibly addresses. However, the leisure and tourism segments tell a different story. Unlike Madrid–Barcelona, which captures substantial international tourism flows along a compact, destination-rich corridor, the Toronto–Montréal corridor traverses an economically diverse region where tourist traffic is highly dispersed, largely car-dependent, and oriented toward destinations, cottages, national parks, rural heritage sites, that HSR cannot serve.

The most directly relevant Spanish finding is that even on the AVE's own network, domestic leisure tourism remained predominantly a car activity. If Spanish families with a mature, affordable, high-speed rail network still chose cars for 84% of domestic tourist trips,[27] the assumption that Canadian

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[23]McGill Policy Association. (2024, January 25). Challenges to Urban Densification in Canada. mcgillpolicyassociation.com. Retrieved March 2026, from https://mcgillpolicyassociation.com/latest-articles/2024/01/25/challenges-to-urban-densification-in-canada

[24]Vázquez Varela, C. & Martínez Navarro, J.M. (2016). High-Speed Railway and Tourism: Is There an Impact on Intermediate Cities? Evidence from Two Case Studies in Castilla-La Mancha (Spain). Jura Review, 18. Retrieved March 2026, from https://www.jurareview.ro/resources/pdf/volume_18_high-speed_railway_and_tourism:_is_there_an_impact_on_intermediate_cities_evidence_from_two_case_studies_in_castilla-la_mancha_(spain)_abstract.pdf

[25]Guirao, B. et al., cited in: Albalate, D. et al. (2015). High Speed Rail effects on tourism: Spanish empirical evidence derived from China's modelling experience. PMC/NCBI. Retrieved March 2026, from https://pmc.ncbi.nlm.nih.gov/articles/PMC7127499/

[26]Wikipedia. (2025, December 14). Quebec City–Windsor Corridor. Retrieved March 2026, from https://en.wikipedia.org/wiki/Quebec_City%E2%80%93Windsor_Corridor

[27]Guirao, B. et al., cited in: Albalate, D. et al. (2015). High Speed Rail effects on tourism: Spanish empirical evidence derived from China's modelling experience. PMC/NCBI. Retrieved March 2026, from https://pmc.ncbi.nlm.nih.gov/articles/PMC7127499/

families, with no rail culture, higher car dependency, and dispersed rural destinations, will shift modal behaviour at the rates implied by the TRAM baseline must be considered optimistic absent specific supporting evidence.

5. Open-Access Competition, Post-Pandemic Price Wars, and Canada's Single-Operator Problem

One dimension of the Madrid–Barcelona success story that is routinely under-examined in Canadian HSR advocacy is the role of **open-access competition** in driving the post-pandemic ridership surge. The AVE's 14.6 million annual passengers in 2024 are not the product of a state monopoly offering premium fares, they are the product of a liberalised market in which three operators compete aggressively on price, frequency, and service quality. Understanding this mechanism is essential because **ALTO will have no such competition. The Cadence consortium (CDPQ Infra, AtkinsRéalis, SNCF Voyageurs, Keolis, and Air Canada) will operate under an integrated design-finance-operate-maintain model with no structural provision for open-access entry.**

5.1 Spain's Liberalisation: What Competition Actually Did

Prior to December 2020, Renfe held a monopoly on Spanish high-speed rail. Average economy fares on Madrid–Barcelona ranged between €80 and €100 per trip.[28] In May 2021, French operator Ouigo entered the market. Renfe responded by launching its own low-cost brand, AVLO. Italian operator Iryo joined in 2022. The results were immediate and dramatic.

Following liberalisation, average economy fares on Madrid–Barcelona fell to a range of **€40–72**, representing a reduction of 25–50% from the monopoly-era baseline.[29] Importantly, prices in the business segment were more resilient, Renfe maintained a premium on higher-willingness-to-pay travellers, but the structural effect on mass-market leisure demand was transformative.[30] On the Madrid–Valencia corridor, where all three operators competed for the first time in December 2022, average fares fell to approximately €22.[31]

The ridership response was proportional. **In the third quarter of 2023, passenger numbers on competitively operated Spanish high-speed routes increased by 33% to over 8.4 million in a single quarter**, with some newly competitive corridors showing year-on-year growth exceeding 90%.[32] The Madrid–Valencia route, where competition launched latest, recorded **96% growth** year-

[28] Albalate, D., Campos, J. & Jiménez, J.L. (2023). Intercity Railfares After HSR Liberalisation in Spain: Pricing in the Madrid–Barcelona Corridor. Multimodal Transportation, 5(2). https://doi.org/10.3390/multimodaltransp5020066

[29] Albalate, D., Campos, J. & Jiménez, J.L. (2023). Intercity Railfares After HSR Liberalisation in Spain: Pricing in the Madrid–Barcelona Corridor. Multimodal Transportation, 5(2). https://doi.org/10.3390/multimodaltransp5020066

[30] Albalate, D., Campos, J. & Jiménez, J.L. (2023). Intercity Railfares After HSR Liberalisation in Spain: Pricing in the Madrid–Barcelona Corridor. Multimodal Transportation, 5(2). https://doi.org/10.3390/multimodaltransp5020066

[31] International Railway Journal. (2024, January 2). Spanish HS competition drives passenger numbers up by a third. railjournal.com. Retrieved March 2026, from https://www.railjournal.com/analysis-cat/spanish-high-speed-competition-drives-passenger-numbers-up-by-a-third/

[32] International Railway Journal. (2024, January 2). Spanish HS competition drives passenger numbers up by a third. railjournal.com. Retrieved March 2026, from https://www.railjournal.com/analysis-cat/spanish-high-speed-competition-drives-passenger-numbers-up-by-a-third/

on-year, adding 1.4 million passengers in a single quarter.[33] On Madrid–Barcelona, revenue per passenger-kilometre, the key commercial efficiency metric, fell from €0.11–0.13 in the monopoly era to **€0.066**, a drop of nearly 40%.[34] This price compression is not a sign of commercial weakness. It is evidence that lower fares induced substantially greater volumes, expanding the total market.

The post-pandemic recovery data underscores just how much competition drove the rebound. Ridership on Madrid–Barcelona in Q2 2022 was already 9.5% *above* pre-pandemic 2019 levels, a recovery rate that significantly exceeded the European average for intercity rail corridors still operating under monopoly conditions.[35] The presence of Ouigo and AVLO, with low-cost fares targeting price-sensitive travellers who would otherwise have driven or not made the trip at all, was the primary driver of this induced demand.

5.2 Canada's Monopoly Model: The Cadence Risk

ALTO's governance structure under the Cadence consortium represents the opposite of the Spanish liberalisation model. Rather than a publicly owned infrastructure layer with open access for competing operators, ALTO combines infrastructure ownership, train operations, and maintenance within a single integrated private consortium under a long-term concession. No regulatory framework for open-access competition on the ALTO corridor has been announced or proposed. Industry analysts have noted that HSR routes linking major cities in under three hours do not merely compete with air and car travel, they tend to emerge as the dominant mode. However, achieving that dominance requires competitive pricing that a single-operator concession structure is unlikely to generate organically.[36]

This has direct implications for ridership projections. If the Madrid–Barcelona corridor's post-2020 ridership growth was materially driven by competitive price pressure, and the evidence strongly suggests it was, then applying those ridership levels as a comparator for a Canadian monopoly corridor involves a **category error**. A single operator with a long-term concession and no competition faces structurally different incentives: it will price to maximize yield from the existing willing market rather than to expand that market through demand-inducing price reductions.

The historical VIA Rail experience is instructive here. VIA has operated as Canada's sole intercity rail operator for nearly fifty years, during which time it has consistently generated operating deficits funded by federal subsidy, maintained premium pricing relative to the bus and air alternatives it nominally competes with, and failed to capture meaningful modal share from car travel. VIA's fares have not declined in real terms over time; they have risen. The structural logic of monopoly rail, absent

[33] International Railway Journal. (2024, January 2). Spanish HS competition drives passenger numbers up by a third. railjournal.com. Retrieved March 2026, from https://www.railjournal.com/analysis-cat/spanish-high-speed-competition-drives-passenger-numbers-up-by-a-third/

[34] International Railway Journal. (2024, January 2). Spanish HS competition drives passenger numbers up by a third. railjournal.com. Retrieved March 2026, from https://www.railjournal.com/analysis-cat/spanish-high-speed-competition-drives-passenger-numbers-up-by-a-third/

[35] Railvolution. (2022). Madrid To Barcelona – Rail Wins Over Plane. railvolution.net. Retrieved March 2026, from https://www.railvolution.net/news/madrid-to-barcelona-rail-wins-over-plane

[36] Faulkner, B. / Ricardo Rail & Transit. (2025). Canada enters the high-speed era. ricardo.com. Retrieved March 2026, from https://www.ricardo.com/en/news-and-insights/ricardo-blog/canada-high-speed-rail

regulatory intervention, is to serve the high-willingness-to-pay traveller and let the price-sensitive majority drive.

> **Key finding:** The Madrid–Barcelona corridor now carries 14.6 million passengers annually in a market with three competing operators and fares as low as €40. The TRAM baseline appears to model Canadian ridership against this ceiling without adjusting for the fact that ALTO will have no competitors, no obligation to price for demand expansion, and a concession structure that rewards yield management over volume growth. A monopoly corridor in a car-dependent country is a fundamentally different commercial proposition.

6. Cold-Weather Reliability: The VIA Rail Precedent and What It Means for ALTO

Any assessment of demand assumptions for ALTO must confront a question that European HSR comparators cannot answer: **what happens to ridership when the trains do not run?** Canada's existing intercity passenger rail network offers a direct and recent body of evidence on this question, and the picture it presents is deeply unfavourable to the optimistic demand projections embedded in the TRAM baseline.

6.1 VIA Rail's On-Time Performance: A System in Chronic Distress

VIA Rail's on-time performance has been chronically poor and has deteriorated sharply in recent years. In the 2023 fiscal year, **only 59% of VIA Rail trains reached their destination on time**, a figure that is worse than Air Canada's 63% on-time rate, which itself earned the airline the distinction of finishing last among the ten largest airlines on the continent.[37] For context, the industry standard for rail on-time performance is generally cited at 90% or above.

The situation deteriorated further in 2025. Following CN Rail's imposition of speed restrictions on VIA's Venture trainsets in late 2024, a dispute rooted in a technical safety disagreement about axle counts and level-crossing detection, **punctuality on the Québec City–Windsor corridor fell from 72% in Q1 2024 to just 30% in Q1 2025.**[38] On the Ottawa–Québec City segment, fewer than 6% of trains arrived on time. On the Montréal–Toronto run, **only 17% of trains were on time in February 2025, compared to 72% the previous February.**[39] Passenger satisfaction plummeted, and VIA's own internal documents acknowledged drops in ticket sales and passengers switching to other modes.

Transport Canada and Transport Minister Steven MacKinnon acknowledged the scale of the crisis before Parliament in February 2026: *“The service has not been as customer-friendly, reliable or as*

[37] CBC News / Tasker, J.P. (2024, November 7). Via Rail's performance has gone from bad to worse — and it's costing the company millions. cbc.ca. Retrieved March 2026, from https://www.cbc.ca/news/politics/via-rail-on-time-performance-1.7374337

[38] International Railway Journal. (2025, June 16). Via Rail blames CN for drop in punctuality. railjournal.com. Retrieved March 2026, from https://www.railjournal.com/passenger/main-line/via-rail-blames-cn-for-drop-in-punctuality/

[39] The Canadian Press. (2025, March 14). Via Rail on-time performance plunges after CN imposes new speed rules. thecanadianpressnews.ca. Retrieved March 2026, from https://www.thecanadianpressnews.ca/business/via-rail-on-time-performance-plunges-after-cn-imposes-new-speed-rules/article_558fe6f2-17f5-54ef-b91f-1e6618b861ee.html

punctual in recent years as it has needed to be.”[40] This is not a fringe critique from citizen researchers, it is a ministerial admission that Canada's existing intercity rail network cannot reliably deliver the punctuality that HSR demand projections implicitly assume.

6.2 Cold-Weather Equipment Failure: The Siemens Venture Crisis

The most operationally significant cold-weather failure in the VIA Rail record occurred during the winter of 2025–2026 and directly involves the new Siemens Venture trainsets — the same class of modern equipment that was supposed to transform corridor performance. This is not a story about ageing infrastructure. It is a story about brand-new rolling stock failing in Canadian winter conditions.

According to Transport Action Canada, **fleet availability for VIA Rail's Siemens Venture trainsets dropped below 50% during the winter of 2026**, well below the 90% industry standard, leading to a series of cancellations spanning at least seven consecutive days beginning February 7, 2026.[41] The mechanism of failure was specific to cold-weather operations: snow was entering equipment bays and causing the trainsets to shut down. VIA began running the trains locomotive-first to reduce snow ingestion, but this introduced terminal delays at each end of the run.

A spokesperson for Teamsters Canada, representing VIA Rail engineers, described the pattern: snow causes the trainsets to shut down several times a month. When a shutdown occurs, the heating system and USB ports fail while lights remain on battery power.[42] The December 2025 overnight stranding incident, in which more than 100 passengers spent the night on a disabled train in Eastern Ontario, near Brockville, was directly attributable to this pattern.[43] Passengers were left stranded for approximately 10 hours with limited food and deteriorating facilities. Transport Canada subsequently required VIA to update its emergency management action plan.

> **Critical context for ALTO:** The Siemens Venture trainsets are modern equipment, ordered new and delivered from 2022 onwards, designed for North American conditions. If brand-new rolling stock on today's corridor is failing at a 50% fleet availability rate during a Canadian winter — on conventional tracks, at conventional speeds — the cold-weather engineering demands on a 300 km/h electric HSR system operating on dedicated open-country infrastructure through Eastern Ontario's freeze-thaw cycle are substantially more severe. The VIA experience does not suggest that cold-weather reliability is a solved problem for Canadian rail.

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[40] CP24 / The Canadian Press. (2026, February 24). Transport minister calls on Via Rail to improve customer service, reliability. cp24.com. Retrieved March 2026, from https://www.cp24.com/news/canada/2026/02/24/via-rail-must-improve-customer-service-reliability-transport-minister-says/

[41] Transport Action Canada / Trains Magazine. (2026, February 8–9). Weather issues with Siemens equipment lead to VIA Rail cancellations. trains.com. Retrieved March 2026, from https://www.trains.com/pro/passenger/intercity/weather-issues-with-siemens-equipment-lead-to-via-rail-cancellations/

[42] Transport Action Canada / Trains Magazine. (2026, February 8–9). Weather issues with Siemens equipment lead to VIA Rail cancellations. trains.com. Retrieved March 2026, from https://www.trains.com/pro/passenger/intercity/weather-issues-with-siemens-equipment-lead-to-via-rail-cancellations/

[43] VIA Rail Canada / Transport Canada. (2023). Recent VIA Rail Service Disruptions. tc.canada.ca. Retrieved March 2026, from https://tc.canada.ca/en/binder/52-recent-via-rail-service-disruptions

6.3 Weather, Ice Storms, and the Eastern Ontario Corridor

The ALTO southern corridor through Eastern Ontario is not a climatically benign operating environment. The region experiences sustained freeze-thaw cycling, ice storms, heavy snowfall events, and spring flooding conditions that are structurally more demanding than the thermal environment of the Madrid–Barcelona corridor in central Spain. VIA Rail's service record on the existing Ottawa–Toronto–Kingston segment of the corridor documents this plainly.

In April 2023, a late-winter ice storm affecting Ontario and Québec caused power outages for over 120,000 Hydro One customers and 676,000 Hydro-Québec customers. VIA Train 645 (Ottawa–Toronto) was stopped for several hours between Ottawa and Kingston after a fallen tree struck the train.[44] In February 2025, a series of snowstorms and cold temperatures resulted in 35 train trip cancellations across eight routes in the Ottawa–Montréal–Toronto corridor in a single week.[45] These are not outlier events, they are recurring features of the Canadian winter operating calendar.

What distinguishes ALTO's exposure from VIA's is speed. At 300 km/h, the consequences of snow, ice, rail contamination, and overhead line icing are qualitatively different from those at the 160 km/h that VIA's Venture trains are designed to achieve on conventional track. Ballast throw, catenary icing, switch heating failures, and track geometry degradation under freeze-thaw cycling all become more severe as operating speed increases. The TRAM financial baseline's O&M assumptions have been stress-tested elsewhere in this document for cold-climate cost escalation; the demand side of that same cold-climate risk, cancelled or delayed trains driving passengers back to their cars, is equally material and equally absent from the baseline modelling.

6.4 Reliability as a Demand Prerequisite

European HSR demand models are built on an assumption of operational reliability that Canadian rail has never achieved and has recently moved further from. The Madrid–Barcelona corridor operates at above 95% punctuality under normal conditions, which is a prerequisite for the business traveller modal shift that drives its revenue. A business traveller who cannot rely on train punctuality does not switch from plane to rail, they stay on the plane, or they drive.

VIA Rail's own internal documents, obtained through Access to Information requests, show that the Venture train's reliability problems on the existing corridor caused passengers to switch away from rail to other modes.[46] This is an observed behaviour on the very corridor ALTO proposes to serve, a corridor where the newest available equipment has demonstrated sub-50% fleet availability in winter conditions. Demand projections calibrated against European performance benchmarks must account for a Canadian baseline where reliability has been the system's most persistent structural weakness, winter is its most challenging operating season, and the correlation between unreliability and mode-switching is now documented.

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[44] VIA Rail Canada / Transport Canada. (2023). Recent VIA Rail Service Disruptions. tc.canada.ca. Retrieved March 2026, from https://tc.canada.ca/en/binder/52-recent-via-rail-service-disruptions

[45] CP24 / The Canadian Press. (2026, February 24). Transport minister calls on Via Rail to improve customer service, reliability. cp24.com. Retrieved March 2026, from https://www.cp24.com/news/canada/2026/02/24/via-rail-must-improve-customer-service-reliability-transport-minister-says/

[46] The Canadian Press. (2025, March 14). Via Rail on-time performance plunges after CN imposes new speed rules. thecanadianpressnews.ca. Retrieved March 2026, from https://www.thecanadianpressnews.ca/business/via-rail-on-time-performance-plunges-after-cn-imposes-new-speed-rules/article_558fe6f2-17f5-54ef-b91f-1e6618b861ee.html

7. Structural Comparison: Madrid–Barcelona vs. Toronto–Montréal

Table 4.3 — Structural Demand Factors: Madrid–Barcelona and Toronto–Montréal Compared

Demand Factor	Madrid–Barcelona	Toronto–Montréal
Annual HSR passengers	14.6 million (2024)	3.1 million all modes, full corridor (2024)
Modal shift achieved (air)	~75% (train over air)	Not established; VIA chronically delayed and unreliable
Population in auto suburbs	Spain's suburbanization rate lower; dense urban cores dominant	67–80%+ of CMA populations in auto suburbs or exurbs
Urban transit at destination	Excellent (Madrid Metro 300+ km; Barcelona Metro integrated)	Moderate in core only; poor beyond downtown in both cities
Employment geography	Dense city centres, high transit-accessible job density	81% of Toronto jobs outside downtown; suburban job sprawl
Business travel base	Capital-to-commercial-capital; thick recurring demand	Real but thinner; 108 triangle flights/day is ceiling indicator
Leisure tourism profile	International tourists; city-to-city; low car dependency	Dispersed; cottage/rural destinations; 84%+ car modal split even in Spain post-HSR
Car competitiveness	Congested cities; parking expensive; car disadvantaged	401 corridor normalized; suburban parking free; car culturally dominant
Established rail culture	AVE operational since 1992; 30+ years of travel behaviour change	VIA Rail chronically underfunded; no HSR precedent in Canada
Eastern rural stations	Zaragoza, Lleida intermediate cities served along corridor	No proposed stations in Eastern Ontario between Toronto and Ottawa
Operator competition	3 operators post-2021: Renfe/AVLO, Ouigo, Iryo; fares fell 25–50%	Single operator (Cadence consortium); no open-access framework proposed
Post-pandemic fare range	€40–72 economy Madrid–Barcelona; €22 on newly competitive routes	No competitive precedent; VIA Rail fares risen in real terms
Demand induced by competition	+33% ridership in single quarter post-liberalisation; +96% on some routes	No mechanism for competitive demand induction under concession model
Winter on-time performance	Madrid–Barcelona >95% punctuality; thermally mild corridor	VIA fleet availability fell below 50% winter 2026; 17% OTP Feb 2025
Cold-weather equipment record	AVE Velaro operates reliably at 300 km/h in established temperate climate	Siemens Venture (new fleet) failed in snow; overnight stranding, Brockville Dec 2025

Demand Factor	Madrid–Barcelona	Toronto–Montréal
Reliability impact on demand	High reliability sustains business traveller modal shift	VIA documents confirm passengers switched modes due to unreliability

Source: ALTO HSR Citizen Research Initiative synthesis, March 2026. See footnotes 1–19 for primary sources.

8. Assessment of ALTO's Ridership Projections: 24 Million by 2055 and 43 Million by 2084

ALTO has staked its public case for the project on two headline ridership projections: **24 million passengers annually by 2055** and **43 million passengers annually by 2084.**[47] These figures appear in ALTO's own communications and have been cited widely in media coverage of the project. They are presented without any disclosed demand modelling methodology, without sensitivity ranges, and without a baseline description that would allow independent verification. As projections underpinning one of the largest infrastructure commitments in Canadian history, a project with a cost baseline of CAD $60–90 billion and a design phase alone of $3.9 billion, they warrant rigorous independent scrutiny.

This section examines what those two numbers actually require, benchmarks them against the best available comparable evidence, applies the international academic literature on HSR demand forecasting accuracy, and identifies the structural conditions that would need to hold for the projections to be valid. The conclusion is that both figures are materially inconsistent with the evidence base and carry the hallmarks of the optimism bias that the academic literature has documented systematically across passenger rail megaprojects globally.

8.1 The Arithmetic of the 24 Million Target

The 2055 target of 24 million annual passengers requires examination of what that number actually demands. ALTO's full corridor (Toronto to Québec City) is expected to be complete by approximately 2043.[48] That means the 24 million figure would need to be achieved approximately 12 years after full-corridor opening. The baseline from which growth begins is VIA Rail's current corridor ridership of **3.1 million passengers on the Montréal–Ottawa–Toronto route in 2024**[49], the existing intercity passenger market that ALTO proposes to capture and grow.

Reaching 24 million from a 3.1 million baseline in roughly 11 years of full-corridor operation would require an **eight-fold increase** in corridor ridership. The most directly comparable precedent, Madrid–Barcelona, operating since 2008 in a far more favourable structural environment, took **sixteen years** to reach 14.6 million passengers, starting from an air-dominated market with over 4

[47] TorontoToday / ALTO. (2026, January 30). Full speed ahead: Ottawa to Montreal is the starting point for ALTO's High-Speed Rail Network. torontotoday.ca. Retrieved March 2026, from https://www.torontotoday.ca/spotlight/full-speed-ahead-ottawa-to-montreal-is-the-starting-point-for-altos-high-speed-rail-network-11808932

[48] Wikipedia. (2025, March). ALTO (high-speed rail). Retrieved March 2026, from https://en.wikipedia.org/wiki/ALTO_(high-speed_rail) [Full corridor expected complete 2041–2044; construction start projected 2029–2030]

[49] Statista. (2024). Via Rail Canada's ridership by Corridor route. Statista. Retrieved March 2026, from https://www.statista.com/statistics/555248/ridership-inter-city-route-viarail-canada/

million existing intercity travellers on the route before HSR opened.[50] The ALTO corridor, starting from a weaker baseline, with no competitive pricing mechanism, in a more car-dependent society, is being asked to surpass the 2024 Madrid–Barcelona figure in approximately three-quarters of the time.

For context, Spain's *entire national HSR network*, 47 cities, 3,100 km of high-speed track, the AVE plus all regional and inter-city HS services, carried approximately **39 million passengers in 2024.**[51] ALTO's 2084 projection of 43 million would require a single 1,000 km Canadian corridor to exceed what Spain's entire mature national HSR network carries today. That projection places ALTO in territory that, as of 2026, no single HSR corridor in the world outside Japan and China has achieved.

> **Scale check:** 24 million by 2055 = 11× current corridor ridership in ~12 years of operation. 43 million by 2084 = more than Spain's entire 2024 national HSR network, on a single corridor. Neither figure has been publicly supported by a disclosed demand modelling methodology.

8.2 Independent Modelling: What Other Analysts Project

The only independent academic modelling exercise for a Toronto–Montréal HSR corridor that has been published with a disclosed methodology is the Global Economic Policy Lab (GEPL) analysis produced by the Munk School of Global Affairs, University of Toronto. That analysis projected that HSR on the Toronto–Montréal segment would increase annual ridership from an existing base of approximately 2.7 million to **9.44 million passengers by year 20** and **10.45 million by year 30** of operation.[52] The GEPL model incorporated both induced demand and dynamic demand effects and represents the most comprehensive disclosed methodology available for this corridor.

The GEPL projection for year 20 of operation, 9.44 million, is less than **40% of ALTO's 24 million target** for a roughly comparable timeframe, and covers only the Toronto–Montréal segment, which GEPL identified as generating 57% of total corridor ridership. Scaling the GEPL full-corridor equivalent to account for the Ottawa and Québec City extensions would imply a full-corridor figure of approximately 16–17 million by year 20, still well below ALTO's 24 million. The gap between the GEPL figure and the ALTO projection is not a minor modelling difference, it is a factor of 1.5 to 2.5, depending on the timeline and corridor scope assumed.

8.3 The Optimism Bias Literature: A Systematic Warning

ALTO's projections do not exist in an analytical vacuum. There is a substantial and well-established academic literature documenting systematic overestimation of ridership in major transit and HSR projects. The most important finding comes from the work of Bent Flyvbjerg and colleagues, whose large-sample analysis of megaproject forecasting found that **projected ridership on passenger rail**

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[50] High Speed Rail Canada. (2025). How High-Speed Rail is Revolutionizing Travel and Reducing Aviation in France and Spain. highspeedrailcanada.com. Retrieved March 2026, from https://www.highspeedrailcanada.com/2025/08/how-high-speed-rail-is-revolutionizing.html

[51] Wikipedia / Transportation Deployment Casebook. (2025). High Speed Rail in Spain. Wikibooks. Retrieved March 2026, from https://en.wikibooks.org/wiki/Transportation_Deployment_Casebook/2025/High_Speed_Rail_in_Spain [39 million passengers across Spain's entire HSR network in 2024]

[52] Global Economic Policy Lab (GEPL), Munk School of Global Affairs. (n.d.). High-Speed Rail: Toronto–Montreal. University of Toronto. Retrieved March 2026, from https://munkschool.utoronto.ca/media/1560/download [Ridership projections: 9.44M by year 20, 10.45M by year 30; baseline 2.7M]

projects is on average 65% above actual patronage.[53] This is the most widely replicated finding in transport planning economics, confirmed across multiple continents and decades of project data.

The academic literature identifies two reinforcing mechanisms behind this pattern. The first is *optimism bias*, the tendency of project planners to make systematically over-positive assumptions about population growth, modal shift, and induced demand. The second is *strategic misrepresentation*, the deliberate inflation of projections by project promoters who have a vested interest in securing political approval and public funding.[54] Research on HSR specifically has found that political incentives for strategic misrepresentation are amplified in megaprojects, where high stakes encourage boosters to inflate projections for voter and federal support.

The California HSR project is the most extensively documented recent case. The original 2008 cost estimate was USD $33 billion; current estimates exceed $135 billion.[55] Ridership forecasts have been revised downward multiple times: the initial projection of 37 million annual riders was progressively scaled back, and the U.S. Federal Railroad Administration's 2025 compliance review concluded that ridership forecasts had been sharply reduced and the project showed no viable path to its stated objectives.[56] Italian and Spanish HSR programmes have shown similar patterns, with a 2018 ScienceDirect analysis concluding that even in apparent HSR success stories, demand forecasts were systematically neglected and networks planned at scales exceeding actual traffic.[57]

8.4 Structural Conditions That Were Assumed, Not Modelled

ALTO's ridership projections, to the extent their methodology can be inferred from public statements, appear to assume a set of enabling conditions that are either unresolved or structurally absent in the Canadian context. Each represents a compounding risk to the 24 million and 43 million figures.

- **Full corridor completion on schedule.** The 24 million figure implicitly assumes the entire Toronto–Québec City corridor is complete and operational well before 2055. Given that construction has not begun, the first phase (Ottawa–Montréal) will take 6–8 years after a 2029–2030 construction start, and the full corridor is projected for 2041–2044, any delay pushes the ridership ramp-up window shorter and the 24 million target further out of reach.

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[53]Flyvbjerg, B. et al., cited in: Washington Examiner / McShane, C. (2025, September 25). A public-private partnership could've saved California's bullet trains. washingtonexaminer.com. Retrieved March 2026, from https://www.washingtonexaminer.com/restoring-america/faith-freedom-self-reliance/3822286/public-private-partnership-california-bullet-train/ [Average projected ridership 65% above actual; California HSR original estimate $33B, current $135B+]

[54]Kahn, M.E. (2025, August 21). Prospective Rosy Predictions of the Benefits of Costly Megaprojects Result in the Misallocation of Capital. Substack. Retrieved March 2026, from https://matthewekahn.substack.com/p/prospective-rosy-predictions-of-the [Optimism bias and strategic misrepresentation in megaproject HSR forecasting; political incentives amplify overstatement]

[55]Flyvbjerg, B. et al., cited in: Washington Examiner / McShane, C. (2025, September 25). A public-private partnership could've saved California's bullet trains. washingtonexaminer.com. Retrieved March 2026, from https://www.washingtonexaminer.com/restoring-america/faith-freedom-self-reliance/3822286/public-private-partnership-california-bullet-train/ [Average projected ridership 65% above actual; California HSR original estimate $33B, current $135B+]

[56]Wikipedia. (2025). California High-Speed Rail. Retrieved March 2026, from https://en.wikipedia.org/wiki/California_High-Speed_Rail [FRA 2025 compliance review: ridership forecasts sharply reduced, no viable path to stated objectives, $4B federal grant termination recommended]

[57]Beria, P. & Grimaldi, R. (2018). Delusions of success: Costs and demand of high-speed rail in Italy and Spain. Transport Policy, 65, 72–82. ScienceDirect. https://doi.org/10.1016/j.tranpol.2017.X [Demand forecasts systematically neglected in Spanish HSR; network planned out-of-scale relative to actual traffic]

- **Urban transit connectivity at stations.** ALTO's network has been criticised for the absence of suburban stations in the GTA and for uncertainty over Montreal Central Station access. Studies consistently show that poorly sited HSR stations in suburban locations — without robust onward transit, generate significantly lower ridership than city-centre stations.[58]
- **Population growth in the corridor cities.** Long-horizon ridership projections are sensitive to population growth assumptions over 30–60 year periods. At 60 years, compounding errors in growth forecasts can dwarf the underlying model uncertainty. Canada's immigration-driven growth is real, but it is heavily concentrated in suburban auto-dependent zones that HSR does not efficiently serve.
- **No competitive pricing mechanism.** As documented in Section 4.5, the post-2020 Spanish ridership surge was substantially driven by open-access competition that drove prices down 25–50%. ALTO's single-operator concession model has no equivalent mechanism for demand-inducing price reduction.
- **Reliable winter operations.** As documented in Section 4.6, Canada's existing corridor rail service has demonstrated sub-50% fleet availability with modern equipment in winter conditions. The demand model must account for service interruptions suppressing ridership, particularly in the business travel segment that European HSR depends upon most heavily.

8.5 A Stress-Tested Range

Applying the Flyvbjerg 65% overestimation finding as a reference class adjustment to ALTO's 24 million 2055 projection yields an adjusted central estimate of approximately **8.4 million annual passengers**, broadly consistent with the GEPL independent modelling figure of 9.44 million for the Toronto–Montréal segment alone by year 20. Applying the same adjustment to the 2084 projection of 43 million yields an adjusted figure of approximately **15 million** — less than half the official projection and still below the 2024 Madrid–Barcelona single-corridor level.

These adjusted figures are not predictions. They are reference-class benchmarks that any credible independent review of the ALTO demand projections should be required to account for. The gap between ALTO's official figures and the Flyvbjerg-adjusted range is not a rounding error in the revenue model, it is the difference between a corridor that generates meaningful fare revenue and one that requires structural federal subsidy for its operational lifetime. At a CAD $79.8B capital cost baseline, the revenue implications of a 60% ridership shortfall are financially catastrophic in net present value terms and would fundamentally alter the public interest case for the project.

> **Central finding of this section:** ALTO's 24 million and 43 million ridership projections are not independently supported by disclosed modelling, are inconsistent with the most comparable independent academic analysis (GEPL: ~9-10M by year 20-30), require structural enabling conditions that are currently absent or unresolved, and sit within a class of megaproject forecasts that the academic literature finds overstated by an average of 65%. These projections should not be treated as a

[58]Mineta Transportation Institute / Kim et al. (2018), cited in: Cohen, J. et al. (2021). Economic Impacts of High-Speed Rail. Mineta Transportation Institute. transweb.sjsu.edu. Retrieved March 2026, from https://transweb.sjsu.edu/sites/default/files/2255-Cohen-Economic-Impacts-HSR.pdf [Suburban HSR stations without onward transit significantly reduce ridership and economic impact]

> reliable basis for financial planning without independent demand audit with full methodology disclosure.

9. Implications for the TRAM Baseline: Revenue-Side Risk

The McGill TRAM report's CAD $79.8B baseline has been stress-tested in earlier sections of this document for construction cost overruns and cold-climate O&M escalation.[59] The structural comparison in this section identifies a third risk dimension: **demand shortfall risk**. If the ridership projections underpinning the baseline are calibrated against European modal-shift analogues without adequate adjustment for Canadian structural conditions, revenue projections may be materially optimistic, and the public subsidy burden correspondingly greater.

The key adjustment factors that any robust Canadian demand model must address include: (a) the deeply entrenched car culture of the 401 corridor's suburban population; (b) the absence of adequate last-mile transit at destination in both anchor cities; (c) the dispersed, car-dependent nature of Canadian leisure tourism; (d) the lack of any established HSR travel behaviour in Canada against which to calibrate induced demand; and (e) the complete exclusion of Eastern Ontario's small-city and rural population from the proposed station network.

The Madrid–Barcelona corridor is an instructive comparator, but it must be used carefully. Its 14.6 million annual passengers in 2024 represent *sixteen years of operational maturity, open-access competition, aggressive price liberalisation, and modal shift in a society with dense urban structure and mature transit networks at both ends of the journey.*[60] Those conditions do not currently exist in Canada. A demand model that treats the European ceiling as a Canadian near-term benchmark is not a conservative estimate, it is an optimistic one. The parametric risk this generates should be made explicit in any public financial analysis of the ALTO project.

> **Recommendation:** The ALTO HSR proponents and the Cadence consortium should publish the full demand modelling methodology, including the modal-shift assumptions applied to Canadian conditions, the elasticity parameters used, and the sensitivity of projected ridership to car-culture and suburban-structure adjustments. Absent this transparency, the revenue projections in the TRAM baseline cannot be independently validated.

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[60] High Speed Rail Canada. (2025). How High-Speed Rail is Revolutionizing Travel and Reducing Aviation in France and Spain. highspeedrailcanada.com. Retrieved March 2026, from https://www.highspeedrailcanada.com/2025/08/how-high-speed-rail-is-revolutionizing.html

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