Three Claims, One Fare

August 2026 · citizenresearch.ca · draws on Modal Shift Notes 1–3 and revised O&M Notes 1–3

THE ARGUMENT IN PLAIN TERMS

ALTO promises three things at once:

- **that 24 million people a year will ride the new railway;**
- **that they will save 9.3 billion hours of travel time, worth $49.5 billion; and**
- **that ticket sales will cover the cost of running and maintaining the line.**

Each promise sits in a different part of the report, backed by different evidence.

All three depend on one number the report never gives: **the price of a ticket**. Cheap tickets fill trains, which is what the first two promises need. Expensive tickets bring in the revenue the third promise needs. A fare cannot be cheap and expensive at the same time, so the three promises pull against one another.

Work out the single fare at which all three could hold, and it comes to about **19 cents per kilometre travelled** — roughly $83 for a typical 428-kilometre journey. At that price the railway breaks even only if 24 million people ride it, and 24 million people ride it only if the corridor is generating about 74 million intercity trips a year, by all modes. On ALTO's own population figures, the corridor will generate about 34 million.

So making all three promises at once means making a fourth one that is never stated: that by 2055 the corridor would have to be generating more than twice the intercity travel that ALTO's own population figures produce. Nobody forecasts travel on that scale, and that is exactly the difficulty. This note sets out the arithmetic step by step, so that any part of it can be checked or rejected.

*A note on units. Fares here are given **per kilometre travelled**, because that is how railway revenue is calculated. Multiply by 428 km — the average journey — for a rough ticket price: $0.15 is about $64, $0.22 about $94, $0.28 about $120, and the $0.193 break-even fare about $83.*

Modal Shift Notes and O&M Notes, referred to throughout, are earlier papers in this series and are available at citizenresearch.ca.

2.19×

How much more intercity travel the corridor would have to generate for all three of ALTO's claims to hold together: 73.9 million trips a year, against the 33.7 million expected in 2055. That would take 44.0 million people living in the corridor, or 3.68 trips each instead of 1.68

$0.193

The *only* fare at which all three claims could hold — about 19 cents per kilometre travelled, or roughly $83 for a typical journey. In the real corridor it attracts about 11 million riders, not 24 million

63%

The most of its running costs the railway can recover from fares at *any* price in the real corridor. This is the solid half of the finding: it needs no guesswork beyond the range of fares the modelling actually covers. At best, fares pay about 63 cents of every dollar it costs to run the railway; the rest comes from the public

1 — Three claims that are only ever made separately

Three numbers do the persuasive work in *Canada's Moment*. They appear in different chapters, rest on different evidence, and are never set side by side.[1]

The three claims, and what each one quietly needs the fare to do

Claim	Figure	What it needs the fare to do
Ridership	24 million passengers a year by 2055, rising thereafter	Be **low**. The cheaper the ticket, the more people ride — and for a family of three or more, driving already costs almost nothing extra
Economic benefit	9.3 billion hours saved, $49.5 billion in benefits at a 3.5 per cent discount rate	Be **low**. Every benefit counted in the appraisal — time, car costs, safety, congestion, emissions — depends on how many people actually switch to the train
Cost recovery	"The railway pays for its own operations and maintenance"[2]	Be **high**. Most of the cost of running the railway stays the same whether the trains are full or empty, so covering it depends on how much each passenger pays

The first two claims pull the fare down. The third pulls it up. That is not a criticism of high-speed rail; every high-speed railway ever built faces the same squeeze. The criticism is that the report presents all three as true at the same time without ever showing the fare that would deliver them.

The rest of this note does two things with that observation. Sections 2 to 5 set out the arithmetic that links the three. Section 6 then solves them *together*, which turns out to be the more useful exercise: instead of asking which claims survive, it asks what the world would have to look like for all three to survive at once. There is an answer, there is only one, and it is a statement about the corridor rather than about the railway.

2 — Why these are one claim, not three

The fare is not a detail to be settled later, once the business case is agreed. It is the number the business case turns on. It enters the arithmetic twice, pulling in opposite directions, and everything else follows automatically.

1	The **fare** sets how expensive the train is next to driving or flying, which sets the **share of trips that choose rail**
2	That share, applied to the **total number of intercity trips in the corridor** (population × trips per person), gives **annual ridership**
3	Ridership × the length of the average journey gives **total passenger-kilometres**, which drives both **hours saved** and **ticket revenue**
4a	Hours saved × the value of an hour, plus the savings from cars taken off the road, gives the **economic benefit** — ALTO's $49.5 billion. It rises as fares fall
4b	Passenger-kilometres × the fare gives **revenue**, set against a running cost that barely moves with ridership — the **cost-recovery** claim. It falls as fares fall

Steps 4a and 4b share step 3. That is the whole argument. Improving one damages the other, because both are worked out from the same passenger-kilometres and the same fare.

Two consequences follow, and both are worth stating before any numbers appear.

First, the ridership claim and the benefit claim are the same claim. If the hours saved per passenger are held at ALTO's own figure — and Section 4 explains why that is the generous choice — then the economic benefit is simply the number of riders multiplied by a fixed amount. The $49.5 billion *is* the 24 million riders, restated in dollars. That leaves two propositions, not three: one about demand, one about cost recovery.

Second, the two remaining propositions do not contradict one another; they have a joint answer. Two equations with two unknowns — the fare and the number of riders — will usually have a solution. The question is not whether the claims are consistent with each other. They are. The question is what that solution demands of the corridor, and that is what Section 6 works out.

3 — From fare to riders

3.1 How big the travel market is

The corridor's total travel market is its population multiplied by the number of intercity trips each resident makes on the routes the railway would serve. Modal Shift Note 3 puts the 2025 corridor population at about 14.9 million across the cities directly served, growing at 1.0 per cent a year following the 2024–25 change in immigration policy, and puts intercity travel at about 1.68 trips per resident per year.[3]

THE CORRIDOR'S TRAVEL MARKET IN 2055	
Corridor population, 2025	14.9 million
Growth over 30 years at 1.0 per cent a year	× 1.348
Corridor population, 2055	20.1 million
Intercity trips made by each resident, per year	× 1.68
Total intercity trips in the corridor, all modes	**33.7 million**
ALTO's 24 million as a share of that market	**71 per cent**

Seventy-one per cent of all intercity travel is a share no high-speed railway anywhere in the world has won against a car that costs its driver almost nothing extra. Nor is it a forecast that fails at some fares and works at others. As Section 7 shows, no fare produces it.

3.2 What each fare level actually delivers

Modal Shift Note 3 sets out three combinations of fare and subsidy, spanning the realistic range of policy, and reports the share of the market each one wins. Note 3 calls them Regimes A, B and C; this note calls them fare levels A, B and C.[4] The dollar figures in the third column are this note's translation of those descriptions into a fare per kilometre; Note 3 publishes no dollar figures, so the translation is an inference, flagged again in Section 10.[5]

The three fare levels, the market share each wins, and the riders that follow

Fare level	Fare posture	Fare, $ per km travelled	Share of the market won	Riders in 2055, service fully grown	MS Note 3 2055 · 2080
A — Heavy subsidy	Fares held at today's VIA Rail levels; **$2.5–4.5B a year of public money covering construction costs**	$0.15	38–42%	13.5M	13.6M · 17.5M
B — Moderate subsidy	Fares matched to airfares; **$1.5–2.5B a year of public money covering construction costs**. The arrangement the published business case appears to assume	$0.22	28–32%	10.1M	9.2M · 12.5M
C — Minimal subsidy	Fares set by a private operator to maximise revenue, above airfare levels; **$0.5–1.5B a year of residual public support**. Closest to a commercially structured P3; ALTO has published no payment mechanism.	$0.28	20–23%	7.3M	4.6M · 8.5M
ALTO as published	Not stated	—	71%	24.0M	—

The fifth column applies each level's mid-range market share to the 2055 market above, giving the figure for a mature service. The sixth reproduces Modal Shift Note 3's own published paths, which are lower in 2055 because they include the slow build-up of the opening years.[6] The two agree closely for fare level A — 13.5 against 13.6 million — and the mature figures are the more generous for fare levels B and C. This note uses the mature figures throughout, so every number that follows is the version most favourable to the project.

4 — From riders to hours to dollars

ALTO's 9.3 billion hours and its $49.5 billion of benefits are not separate from the ridership forecast; they are calculated from it. Dividing one by the other shows what the report is assuming about each journey:

HOURS SAVED PER PASSENGER IMPLIED BY ALTO'S OWN FIGURES	
Total travel time saving claimed	9.3 billion hours
Annual passengers	÷ 24 million
Number of years counted in the appraisal	÷ 60 years
Hours saved on every journey, every year, for sixty years	**6.46 hours**

This note leaves ALTO's 6.46 hours where it stands. It holds that figure fixed and changes only the number of journeys, so that everything below tests the ridership claim on its own. Whether a saving of six and a half hours on every journey, every year, for sixty years is plausible is a separate question, and not one this note takes up.

Benefit delivered at each fare level, using ALTO's own hours saved per passenger

Fare level	Riders	Hours saved, 60 years	Total benefit, today's $
A — Heavy subsidy	13.5M	5.2B	$27.8B
B — Moderate subsidy	10.1M	3.9B	$20.9B
C — Minimal subsidy	7.3M	2.8B	$15.0B
ALTO as published	24.0M	9.3B	$49.5B

Even on the most generous treatment — the heaviest subsidy, the mature ridership rather than the ramped-up figure, and ALTO's own hours per journey accepted exactly as published — the economic benefit is $27.8 billion, not $49.5 billion. That is a reduction of 44 per cent arising from the ridership side alone.

5 — From fare to paying the running costs

The cost figures come from revised O&M Note 3 §2.4, spread over the life of the assets at ALTO's own 3.5 per cent rate rather than the 7 per cent used in the original note.[7] Running costs fall into two parts: a block that does not change with how many trains run — track, structures, signalling, stations, head office, buying the trains — and a block that grows with the service.[8]

YEARLY RUNNING COSTS, SPREAD OVER THE LIFE OF THE ASSETS AT 3.5 PER CENT	
Costs that do not change with ridership (infrastructure, fixed operations, buying trains)	$1,130M per year
Costs that grow with the service	$8.91M per train-per-day
Reference check at 80 trains a day	$1,843M per year
Share of the cost that does not change with ridership	**61%**

Because 61 per cent of the cost does not move with ridership, cutting fares to fill the trains does not improve the finances proportionally. It helps a little at first — more passengers spread across the same fixed cost — and then makes matters worse, because each extra passenger is paying less. Section 8 shows exactly where that turns.

Turning riders into trains and costs needs two assumptions about the service: a 450-seat train running 65 per cent full over a 1,000-kilometre corridor, which gives 106.8 million passenger-kilometres a year for each daily return train,[9] and an average journey of 428 kilometres, taken from revised O&M Note 3 §3.[10]

WORKED EXAMPLE — FARE LEVEL B, FARES MATCHED TO AIRFARES	
Riders	10.1 million
× average journey of 428 km	4.32 billion passenger-km
Service required	41 trains per day
Running cost: $1,130M + (41 × $8.91M)	$1,492M
Revenue: 4.32 billion passenger-km × $0.22	$951M
Share of running costs covered by fares	**64%**

6 — The three claims joined up

Putting the demand side, the benefit side and the cost side in a single table is the point of this note. Every column is worked out from the fare in the second column, using the chain set out in Section 2.

Fare, ridership, benefit and cost recovery, worked out together

Fare level	Fare $/km	Riders	Trains per day	Running cost $M/yr	Revenue $M/yr	Share of cost covered	Hours saved	Benefit, today's $
A — Heavy subsidy	$0.15	13.5M	54	1,612	866	54%	5.2B	$27.8B
B — Moderate subsidy	$0.22	10.1M	41	1,492	951	64%	3.9B	$20.9B
C — Minimal subsidy	$0.28	7.3M	29	1,389	869	63%	2.8B	$15.0B
ALTO as published	$0.193 required	24.0M	96	1,988	1,988	100%	9.3B	$49.5B

The bottom row runs the arithmetic backwards from ALTO's own claims. At 24 million riders and 428-kilometre journeys, running costs come to $1,988 million a year, and breaking even needs a fare of **$0.193 per kilometre travelled** — about $83 for a typical journey. That is a perfectly coherent number. The difficulty is what it does to the first column: at $0.193 the train wins about 33 per cent of the market, which is roughly 11 million riders, not 24 million.

6.1 Solving the claims together

The obvious next step is to check the claims one at a time and report that none of them survives. That is true in the corridor as forecast, and Section 6.3 sets it out. But it is the weaker exercise, because it invites the reply that the whole thing is merely a disagreement with three forecasts.

The stronger exercise is to solve the two propositions together and ask what corridor would satisfy them. Cost recovery fixes a relationship between the fare and the number of riders; so does the ridership claim. Two equations, two unknowns, one answer.

THE ONE FARE, AND THE ONE MARKET SIZE, THAT SATISFY ALL THREE CLAIMS	
Fare needed to cover 100 per cent of running costs at exactly 24 million riders	$0.1935 per km
Share of the market the train wins at that fare	32.5 per cent
Intercity trips the corridor must therefore make: 24 million ÷ 32.5 per cent	73.9M trips
Trips the corridor is actually forecast to make in 2055, from §3.1	33.7M trips
Ratio	**2.19×**

There is only one such point, and it is worth being clear about why. Above $0.193 the railway covers its costs but carries fewer than 24 million people; below it, it carries more but cannot pay for them. Only at $0.193 do the two meet, and where they meet is fixed by the size of the market. **The three claims do not contradict each other. They contradict the corridor.**[11]

Taken together, then, the three claims amount to a single unstated assertion about the size of the Québec City–Toronto travel market. That assertion has a value, and it can be put in whichever units a reader finds easiest to judge.

What a 73.9-million-trip corridor would require, against the corridor as forecast

Expressed as	Required by the three claims	Central forecast	Ratio
Intercity trips a year, all modes	73.9M	33.7M	2.19×
People living in the corridor in 2055, at 1.68 trips each	44.0M	20.1M	2.19×
Intercity trips per resident, at a population of 20.1M	3.68	1.68	2.19×
Population growth in the corridor, 2025–2055	3.68% a year	1.0% a year	—

A corridor population of 44 million by 2055 would make the Québec City–Toronto axis alone larger than Canada's entire population today,[12] and would need growth of 3.7 per cent a year sustained for three decades — against a central forecast of 1.0 per cent and a high forecast of 1.6. Put the other way, 3.68 intercity trips per resident per year would mean corridor residents travelling more than twice as often as the evidence supports, at a time when the shift to remote and hybrid working is pushing the other way.

6.2 What this does and does not establish

It establishes that anyone wishing to defend all three claims has exactly one thing to defend, and that it is a claim about demand rather than about engineering or financing. Cheaper construction, faster trains and a different discount rate do not reach it. Only a larger travel market does.

It also survives the most obvious objection to this note. A reader who rejects the translation of the three fare levels into dollars per kilometre in §3.2 has not escaped the requirement, because the market figure follows from the share of trips won at whatever fare balances the books — not from the particular fares assigned to the three levels.

6.3 The claims taken one at a time

For completeness, here is the same table read claim by claim, in the corridor as forecast:

Which of the three claims each fare level satisfies, in the corridor as forecast

Claim	Fare level A $0.15	Fare level B $0.22	Fare level C $0.28	$0.193 break-even fare
24 million riders a year	No — 13.5M	No — 10.1M	No — 7.3M	No — 11.0M
$49.5B in economic benefits	No — $27.8B	No — $20.9B	No — $15.0B	No — $22.7B
Fares cover the cost of running and maintaining the railway	No — 54%	No — 64%	No — 63%	No — 60%

Not one cell in that table is a yes, and none becomes one at any other fare either: across the whole range, the best the railway can do is 13.5 million riders, $27.8 billion of benefit, and 64 per cent of its running costs covered. But the three rows are not equally solid, and the difference matters.

> **WHICH HALF OF THIS IS LOAD-BEARING**
>
> The **ceiling on cost recovery, 63–64 per cent, is solid**. It sits inside the range of fares the modal-shift work is built on, and does not depend on projecting beyond it. The **ceilings on riders and on benefits are softer**. Push the fare below $0.15 — outside that range — and the fitted curve eventually reports the train winning more than 60 per cent of the market, which would mean roughly 21.8 million riders and $44.9 billion. Those numbers still fall short of ALTO's, but they are projections beyond the evidence and a proponent is entitled to challenge them. Nothing in §6.1 rests on them: the joint answer is worked out at $0.193, comfortably inside the range the modelling covers.

7 — The gap that does not close

Section 6 found the single point at which the claims could all hold, and showed what corridor that would take. This section asks the other half of the question: within the corridor as forecast, is there some fare — between the three levels above, or beyond them — that escapes the problem? There is not, and the reason is structural rather than a matter of forecasting.

Raising the fare lowers the number of riders needed to break even, because each remaining passenger contributes more. But raising the fare also lowers the number of riders available, and it does so faster. The first effect tails off gradually. The second accelerates, because once the train loses its price advantage over a car that costs almost nothing extra to fill, passengers fall away sharply. The second effect always wins.

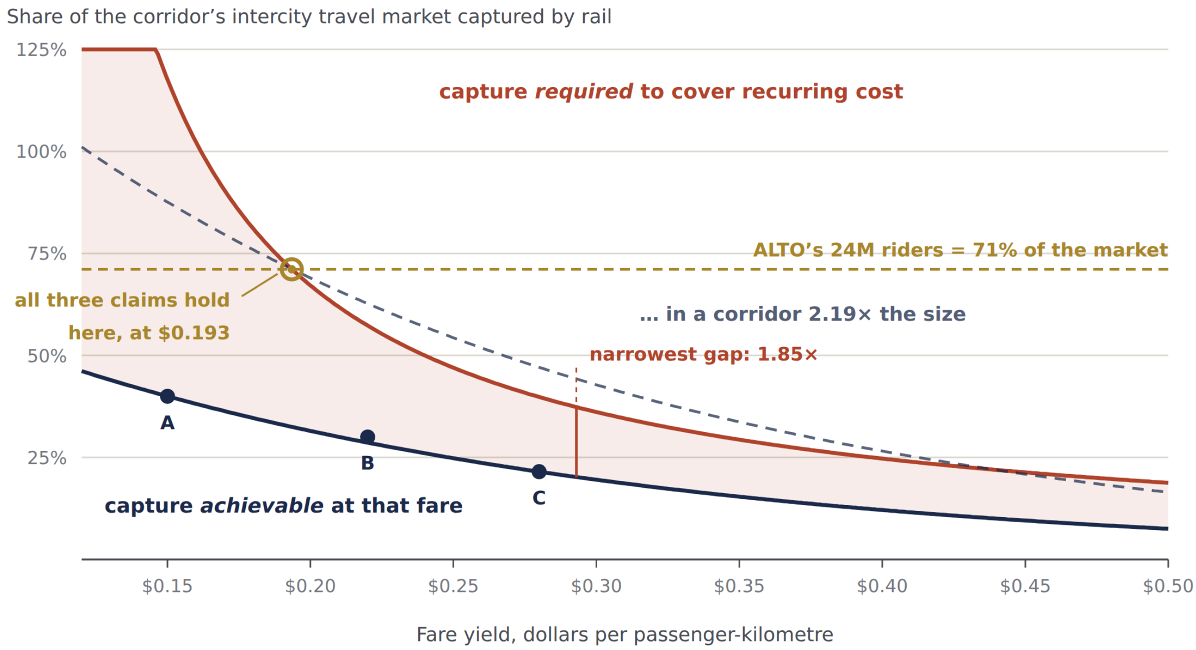

Figure 1. The two curves never meet at any fare. The share of the market the railway needs in order to cover its costs, against the share it can actually win, at each fare. The rust curve is the share needed to break even; the solid navy curve is the share the corridor's travel modelling says the train can win, drawn through the three fare levels of Modal Shift Note 3. In the corridor as forecast the two never meet, and the shaded area is the gap. The dashed navy curve is the same curve in the corridor of §6.1, with its travel market 2.19 times larger; it touches the required curve at exactly one point, $0.193, and that point sits exactly on the gold line marking the 71 per cent share ALTO's 24-million forecast implies. That single meeting point is the joint answer, and the distance between the solid and dashed navy curves is the whole of what the three claims assert about the corridor.

Market share needed against market share achievable, at each published fare level

Fare, $ per km	Market share needed to break even	Market share achievable at that fare	Shortfall
$0.15 — fare level A	117.7%	40%	2.94×
$0.18	81.1%	34.7%	2.34×
$0.22 — fare level B	57.3%	30%	1.91×
$0.28 — fare level C	39.8%	21.5%	1.85×
$0.40	24.7%	12.1%	2.04×

At $0.15 per kilometre the railway would have to carry more trips than exist in the corridor at all — 118 per cent of the entire intercity market, across every mode — simply to cover its running costs. The gap narrows as fares rise, reaches its narrowest at **1.85 times** at about $0.29, and then widens again as the ridership base collapses faster than the break-even requirement falls. There is no fare at which it closes. Read the last column as the size of that gap: at every fare, the railway needs between roughly twice and three times the market share it can actually win.

8 — The two objectives move apart

The same arithmetic, expressed in the two things the report actually cares about, shows why this is a three-way squeeze rather than a dispute about forecasting.

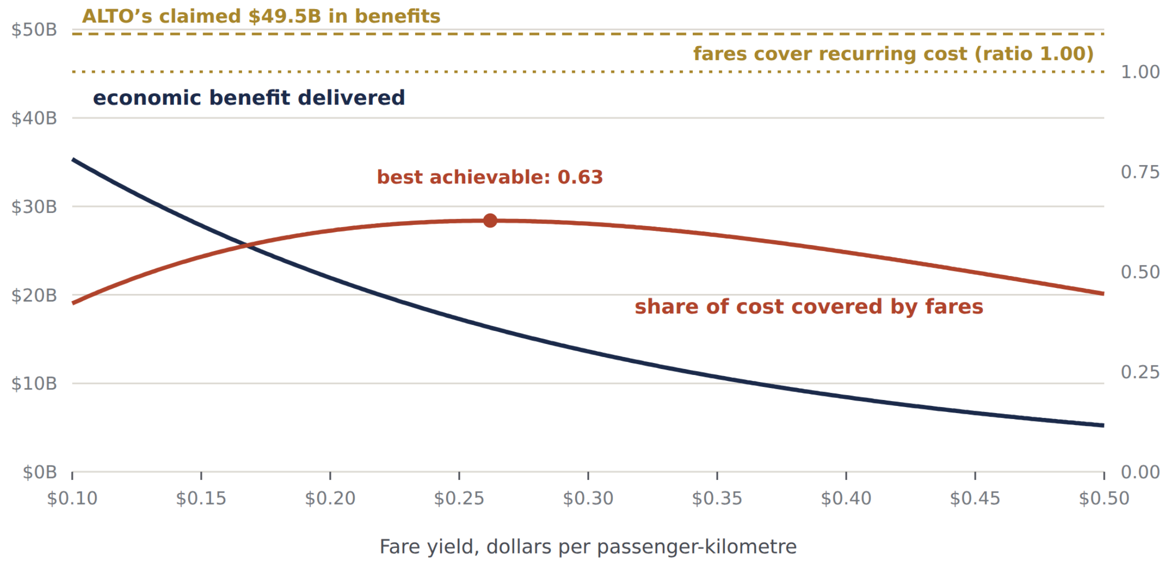

Figure 2. The economic benefit delivered (navy, left axis) and the share of running costs covered by fares (rust, right axis), at each fare. The two gold lines are ALTO's two claims. Benefit falls steadily as fares rise; cost recovery rises, peaks well short of covering everything, then falls away as the number of riders erodes. Neither gold line is ever reached, and the fare that comes closest to one is far from the other.

Cost recovery does not simply improve as fares rise. It improves, peaks, and then falls back.

Raising the fare from a low starting point improves the finances, because each passenger contributes more towards costs that barely move. Keep raising it and the finances get worse again, because passengers start leaving faster than the extra revenue from those who remain can make up. The turning point sits at a fare near $0.26 per kilometre, where fares cover about **63 per cent** of running costs. The best of the three published levels, fare level B at $0.22, covers **64 per cent**. The small difference between the two is an artefact of the two methods — one reads the fitted curve, the other the discrete table of fare levels — rather than a real feature of the finances. Either way the ceiling is about two-thirds. And it is reached at a fare that delivers roughly $16 billion of the claimed $49.5 billion in benefits: the fare that comes closest to paying for the railway is nowhere near the fare that would justify building it.

The same benefits can also be set against what the railway costs to build. Construction of roughly $75 billion, spread across 2027–2037 and discounted at 3.5 per cent, is worth about $57 billion in today's dollars — money spent ten years from now counts for less than money spent today, and discounting is what puts the two on the same footing.[13] Measured against that $57 billion, every dollar returns 49 cents of benefit under fare level A, 36 cents under fare level B and 26 cents under fare level C. ALTO's own published benefits return 86 cents. None of them reaches a dollar — and none of these figures counts the operating shortfall of Section 6, which the public would have to fund on top.

9 — Repairing one claim at a time

Section 6.1 gives the repair that rescues all three claims at once, and it is a repair on the demand side, because only demand puts passengers on trains. It is still worth setting out what it would take to rescue each claim *on its own*, since those are the terms a proponent is most likely to reply in — and since three of the four repairs below turn out not to reach the joint answer at all.

Fixing one thing at a time, and what each fix actually reaches

Repair	What it would take	Rescues
A larger market	A corridor population of 34.0 million by 2055, or 2.85 trips per resident, brings 24 million riders within reach of fare level A's ceiling. Covering the running costs *as well* takes the 44.0 million of §6.1	Ridership and benefit; all three at 44.0M
Longer journeys	An average journey of 793–1,259 km depending on the fare level, against the 428 km assumed — meaning essentially every passenger riding Toronto to Québec City end to end, and under fare level A a journey longer than the line itself	Cost recovery; benefit rises with journey length too. Does not move ridership
Lower running costs	Running costs 37–46 per cent below the O&M Note estimates; the fixed block down from $1,130M to about $564M	Cost recovery only
A stronger switch to rail	The whole demand curve lifted by a factor of 2.19 at every fare — arithmetically the same thing as a bigger market, and equally a claim about demand	All three

This is the asymmetry the note turns on. Repairs on the cost side rescue the cost-recovery claim and leave the ridership claim exactly where it was, because nothing on the cost side puts passengers on trains. Only a larger travel market reaches all three, and both routes to one — more people, or a greater willingness to switch — are the same claim in different units.

10 — What this note does not claim

— **The translation of the three fare levels into dollars is an inference.** Modal Shift Note 3 defines the three levels by how much subsidy they need and how they compare with airfares, not in dollars per kilometre. The $0.15, $0.22 and $0.28 figures are this note's reading of what those descriptions imply. Anyone who rejects the reading should supply the fares the business case actually assumes; the point of Sections 7 and 8 is that the conclusion holds across the whole range of fares, not only at those three points.

— **The 428-kilometre average journey is an assumption**, carried over from revised O&M Note 3 §3. It matters a great deal: revenue and hours saved both rise and fall with it. Section 9 shows how far it would have to move.

— **The construction cost figure is not ALTO's.** The $75 billion is the midpoint of the $60–90 billion range used elsewhere in this series, spread evenly over 2027–2037 and discounted at 3.5 per cent. ALTO publishes no comparable figure. The returns per dollar in Section 8 should be read as indicative.

— **Modal Shift Note 3's subsidy figures are not operating subsidies.** Its $0.5–4.5 billion a year refers to public money absorbing construction costs, not to the operating shortfalls calculated in Section 6. The two should not be added together or compared directly.

— **The model of the train service is coarse.** A single 450-seat train type, uniformly 65 per cent full over a 1,000-kilometre corridor, is a simplification. A real railway would vary train length and frequency by section, which would cut the ridership-related costs somewhat when ridership is low. It would not touch the fixed costs, which is where the problem lies.

— **Nothing here depends on the 9.3-billion-hour figure being correct.** It is held at ALTO's own value throughout Sections 4 to 8. If it is correct, the findings stand as stated. If it turns out to be overstated, the benefit column falls further still and every conclusion here becomes firmer, not weaker.

— **The claims do not contradict one another, and this note does not say they do.** Section 6.1 finds a genuine joint answer. The argument is that the answer describes a corridor that does not exist, not that the three statements are logically inconsistent. Anyone who accepts a 73.9-million-trip market is entitled to hold all three claims at once, and should be asked to say so plainly.

— **The ceilings in §6.3 involve projecting beyond the tested range; the joint answer does not.** Statements about what happens at fares below $0.15 push the demand curve outside the range Modal Shift Notes 1 and 2 are built on, and should be treated as indicative. The $0.193 joint answer, the 32.5 per cent market share at that fare, and the 63 per cent ceiling on cost recovery all sit inside the range the modelling covers.

HOW THIS FITS THE REST OF THE SERIES

All cost figures in this note come from revised O&M Note 3 §2.4 at 3.5 per cent and are not recalculated here. All demand figures come from Modal Shift Note 3 §§2–4 and Figures 2a–2c. The hours saved per passenger are ALTO's own, not this series'. Where this note calculates something that appears in no earlier note — the break-even fare at 24 million riders, the curve of market share required, and the ceiling on cost recovery — the arithmetic is set out in full above.

Notes

1 ALTO, *Canada's Moment: The Economic Opportunity of High-Speed Rail*, August 2026. The 24-million ridership forecast, the 9.3 billion hours of travel time saved and the $49.5 billion total benefit figure at a 3.5 per cent discount rate.

2 Martin Imbleau, statements on the railway funding its own operations and maintenance. The claim is examined in detail in revised O&M Note 3 §§5–6, which finds that it depends entirely on what is counted: true for day-to-day operations alone, marginal once renewals are included, and failing once the trains themselves have to be replaced.

3 Modal Shift Note 3, §2 (corridor population, starting point and growth path) and §3 (intercity trips per resident). The 1.68 figure is the 2025 baseline; the note's working range is 1.6–1.8 with a central case nearer 1.7. Using 1.68 rather than 1.7 is marginally conservative against this note's own conclusion.

4 Modal Shift Note 3, §4. Market shares of 38–42, 28–32 and 20–23 per cent for Regimes A, B and C respectively.

5 The fares of $0.15, $0.22 and $0.28 per kilometre are this note's inference from those descriptions, anchored on VIA Rail corridor fares at the low end and on European high-speed fares after market opening at the high end. See §10.

6 Modal Shift Note 3, Figures 2a–2c, central demographic path. 2055 readings of 13.6, 9.2 and 4.6 million and 2080 readings of 17.5, 12.5 and 8.5 million for Regimes A, B and C. These include the three-phase opening ramp from §5 of that note; the mature figures used here do not.

7 Revised O&M Note 3, §2.4. Infrastructure $1,016M, operations $700M and fleet $127M a year, spread over the life of the assets at 3.5 per cent real.

8 The split between fixed and variable costs treats 77 per cent of infrastructure, 31.5 per cent of operations and 100 per cent of fleet capital as independent of traffic, giving $1,130M fixed and $8.91M for each train per day. The split reproduces the $1,843M mid-case total at 80 trains a day reported in revised O&M Note 3.

9 450 seats × 0.65 load factor × 1,000 km × 365 days = 106.8 million passenger-kilometres per year per daily train pair.

10 Revised O&M Note 3, §3. The 428-kilometre average reflects a plausible mix of ALTO's own city pairs weighted by expected demand, and is the reason the note distinguishes trip counts from full-corridor equivalents.

11 The joint answer in §6.1 solves two equations in two unknowns. Covering 100 per cent of running costs gives $R(Ly - c_vL) = F$, where R is annual riders, L the average journey length, y the fare per kilometre, c_v the variable cost per passenger-kilometre and F the fixed block; setting R = 24 million and L = 428 km gives y = $0.1935. The demand curve then returns a 32.5 per cent market share at that fare, and the implied market is 24 million ÷ 0.325 = 73.9 million trips. Because both equations bind at the same time only at that fare, the answer is unique.

12 Statistics Canada estimated Canada's total population at 41,417,056 on 1 April 2026, a decrease of 55,025 over the preceding quarter (*The Daily*, 17 June 2026). A Québec City–Toronto corridor of 44.0 million by 2055 would therefore exceed the country's entire present population, on the directly-served census metropolitan areas alone.

13 $75 billion nominal spread evenly across 2027–2037 and discounted to a 2024 base at 3.5 per cent gives a present value of $57.3 billion. See §10.