

One Line, Then the Next

What Spain’s high-speed rail experience does, and does not, tell us about ALTO

October 2026 • Prompted by Fareed Zakaria GPS, CNN, 18 October 2026

On 18 October 2026, Fareed Zakaria closed his CNN programme with a segment presenting Spain’s high-speed rail network as evidence that a democracy can still build large infrastructure [1]. Spain is also the example most often offered for what a Toronto–Québec City line could become. This brief takes the conditions Zakaria credits for Spain’s result (building one line at a time, public finance, low construction cost, routing through less populated land, cross-party support and, since 2021, competition between train operators) and sets each beside what has been published about ALTO. It also examines the two caveats the segment mentions briefly: low use of parts of the Spanish network, and the cost of keeping it safe.

On the sources set out here, ALTO shares few of the conditions Zakaria identifies. Spain opened a single 471 km line in 1992 and did not open its second until 2003 [3]. ALTO’s published plan is a 1,000 km network, with property acquisition on its first segment, Ottawa–Montréal, reported to begin in late 2026 or early 2027 [16][18]. Spain’s average construction cost has been reported at €17.7 million per kilometre [6]. ALTO’s \$60–90 billion working assumption, divided by 1,000 km and converted at the 1 October 2026 exchange rate, comes to about €38–56 million per kilometre; this is an Initiative calculation, set out with its limits in Section 4. Spain financed its network publicly, with a substantial share from the European Union [7][9]. ALTO is structured as a public-private partnership and has no comparable outside funder [13].

The Spanish case also carries findings that bear directly on ALTO. Spain’s independent fiscal authority and the European Court of Auditors have both found that much of the network carries few passengers relative to its cost [7][8][9], and the January 2026 derailment at Adamuz, on the original 1992 line, has made track maintenance a national question [11][12]. Research on Spain also finds the network’s gains concentrated in the largest cities and at stations, with none of the studies reviewed finding that it reversed the long decline of the rural areas between them. These are findings about a network that was built cheaply. The comparison implies that a network costing two to three times as much per kilometre would face the same questions with a narrower margin.

11 years between Spain’s first high-speed line (1992) and its second (2003)	2.1–3.2× ALTO’s working-assumption cost per km against Spain’s reported average (Initiative calculation, Section 4)
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1 — The commentary and what it claims

The segment attributes Spain’s result to six conditions [1]:

- **Framing.** Spain presented high-speed rail as economic and political renewal and as a way to connect urban and rural Spain, rather than as a climate measure. Zakaria draws this from historian Christian Wolmar’s new book, *Fast Track*.

- **Sequence.** The government opened one line, Madrid–Seville, in 1992, and the network grew after people saw results.
- **Finance.** Construction relied almost entirely on tax revenue, EU funds and public borrowing rather than private finance.
- **Cost.** Costs were kept down by building at scale and routing lines through less populated land; Zakaria cites official data placing Spain's cost per kilometre lowest in the EU and at less than half the average of other high-speed rail countries.
- **Consensus.** Citing journalist María Ramírez, he describes high-speed rail as a rare subject of cross-party agreement in Spain.
- **Competition.** Since 2021 the network has been open to private operators, which has lowered fares; he gives an average Barcelona–Madrid fare of roughly US\$60 in the first quarter of 2026.

The segment also names two caveats: some argue that Spain overbuilt relative to rural demand, and maintenance has proved costly. It refers to the January 2026 collision in the south, which officials said may have been caused by a faulty section of track, and gives the toll as more than 40 deaths [1].

The segment is a commentary rather than a study, and its figures are summary figures. Each is checked below against the underlying sources where they could be found. Where the sources give a different number, the source figure is used: later reporting puts the Adamuz toll at 46 [12], and ADIF, Spain's infrastructure manager, gives the network length as 3,973 km as of March 2026, consistent with the segment's "nearly 2,500 miles" [2][3].

2 — At a glance

Condition	Spain	ALTO, as published
First step	One 471 km line, Madrid–Córdoba–Seville, opened April 1992; second line opened 2003 [3]	1,000 km network planned as a whole; first segment Ottawa–Montréal, construction start reported for 2029 [16][18]
Network	3,973 km (ADIF, March 2026), including some sections built or upgraded for 200–250 km/h [2][3]	1,000 km, 300 km/h or more, passenger-dedicated, electrified [16]
Construction cost	€17.7M/km network average (Ineco); €6–19M/km by line (ADIF study) [5][6]	C\$60–90B working assumption, 2024 dollars [13] [14]; about C\$60–90M per km (Initiative calculation)
Finance	Public: national budget, EU funds (€14.09bn, 25.2% of about €55.9bn spent) and public borrowing [7]	Public-private partnership with the Cadence consortium; ALTO, a Crown corporation, funded by appropriations during development [13]
Builder	ADIF, the state infrastructure manager, building continuously since the early 1990s [3]	First high-speed line in Canada; design and development with the private partner during co-development [13]
Stations	Madrid–Seville calls at Ciudad Real, Puertollano and Córdoba [3]	Seven stations on 1,000 km, four of them in Québec [15][17]
Operators	Renfe, plus Ouigo (from 2021) and Iryo (from 2022) competing on the same track [10]	One consortium to develop and operate, including SNCF Voyageurs, Keolis and Air Canada [13][17]

Condition	Spain	ALTO, as published
Use	44.5M commercial high-speed passengers in 2025 (CNMC) [10]; least used of the large networks (AIReF) [7]	Forecast 24M trips a year by 2055 and 43M by 2084 [15]
Maintenance record	Adamuz derailment, 18 January 2026, 46 deaths reported; final investigation report pending [11] [12]	Not yet built

Sources are numbered in the Sources & notes section. ALTO per-kilometre figures are Initiative calculations from ALTO's published range and route length.

3 — One line at a time

3.1 Spain's sequence

The Madrid–Seville line was inaugurated on 14 April 1992, timed to Seville's Expo 92, with intermediate stops at Ciudad Real, Puertollano and Córdoba [3]. The next new line, the first section of Madrid–Barcelona as far as Lleida, did not open until 2003. The network then grew line by line over the following two decades:

Year	Lines or sections opened	Note
1992	Madrid–Córdoba–Seville (471 km)	First line; Expo 92
2003	Madrid–Zaragoza–Lleida	First section of Madrid–Barcelona
2005	Madrid–Toledo; Zaragoza–Huesca	Short spurs
2007	Córdoba–Málaga; Madrid–Segovia–Valladolid	Includes the 28 km Guadarrama tunnel
2008	Camp de Tarragona–Barcelona	Completes Madrid–Barcelona (621 km)
2010	Madrid–Cuenca–Valencia; Cuenca–Albacete	First Madrid–Levante sections
2013	Albacete–Alicante; Barcelona–Figueres	Link to the French network
2015	Valladolid–León; Olmedo–Zamora	
2019	Antequera–Granada	
2021	Madrid–Galicia completed	After about 20 years of works
2022	Venta de Baños–Burgos; to Murcia; Plasencia–Badajoz	Plasencia–Badajoz built for 200 km/h

Source: Wikipedia, “High-speed rail in Spain”, drawing on ADIF and Renfe [3]. Selected openings only.

Spain's record is incremental, but it is not uniformly fast. Construction of the Basque high-speed line began in 2006 with completion forecast for 2016, and completion is now forecast for 2027; the Madrid–Galicia line took about two decades [3]. Part of the network also consists of lines built or upgraded for 200–250 km/h rather than 300 km/h, such as Plasencia–Badajoz and the upgraded Vandellòs–Castellón section [3]. The European Union counts more than 3,100 km of Spanish line for speeds above 250 km/h [4], against ADIF's total of 3,973 km [2].

3.2 ALTO's sequence

The federal government chose a high-speed option and selected Cadence as private development partner in February 2025, and the co-development phase began in March 2025 [13]. The plan is for a

1,000 km network from Toronto to Québec City [16]. The first segment, Ottawa–Montréal, is the subject of the first property estimates: about 1,700 properties, about 500 of them farms, with acquisition to begin in late 2026 or early 2027 and construction in 2029 [18]. ALTO’s chief executive told a Senate committee in February 2026 that the \$60–90 billion figure is an internal working assumption, a class 5 figure, rather than a cost estimate [14]. Ridership has been forecast to 2084 [15].

3.3 What the comparison implies

Spain’s decision to build its second line was taken with years of operating evidence from the first: what it carried, what it cost to run and how it held up. ALTO’s structure commits to a network before any segment has carried a passenger. On this sequence, the evidence Zakaria credits with building support in Spain, which came “once people saw results” [1], would not exist for ALTO until after the network’s scope, delivery model and land acquisition are settled. The structure the Spanish case illustrates is one in which a first segment is built and operated before later segments are committed. The Initiative’s HPR framework sets out building in stages as one of its principles for the same reason.

4 — Cost per kilometre

4.1 What Spain spent

Four published sources give Spanish construction costs. They use different methods and periods, but each places Spain well below other European builders, consistent with the segment’s statement [1]:

Source	Measure	Figure
ADIF study, reported by Next City [5]	Cost per km, by line	€6M (Madrid–Seville, 1992) to nearly €19M (Madrid–Valladolid)
AIReF spending review of transport infrastructure (2020), reported by International Railway Journal [7]	Network average	€14.7M per km; €15.3M including stations
Ineco, <i>Efficiency of the Spanish Sector in High-Speed Rail Development</i> , reported by Global Railway Review and Forbes España [6]	Network average against other high-speed countries	€17.7M per km in Spain against €45.5M elsewhere
European Court of Auditors, Special Report 19/2018 [8]	Average of ten audited lines in six member states, excluding the costliest tunnelling	€25M per km

4.2 ALTO’s figure in the same units

ALTO’s published range is \$60–90 billion in 2024 dollars [13] for a network of about 1,000 km [16]. The table below is an Initiative calculation: the range divided by 1,000 km, converted at the market rate of 0.62526 euro per Canadian dollar on 1 October 2026 [19], and set against each Spanish average and Ineco’s figure for other countries.

Item	Low	High
ALTO working assumption (C\$, 2024 dollars) [13]	60 billion	90 billion

On this arithmetic, ALTO's range is two to three times Spain's average, and close to the average Ineco reports for other high-speed countries. Spain is the low outlier in this comparison; the ALTO range is not an outlier against the international figures. The question the Spanish example raises is therefore not whether ALTO's range is unusually high, but whether the conditions that let Spain build at half the international average are present in ALTO's corridor.

4.3 Limits of the comparison

- **Price years.** The Spanish figures cover construction from 1992 onward and are not, in the sources found, stated in a single current price year. Expressed in 2024 prices, they would be higher, and the ratios above lower.
- **Scope.** The published ALTO sources reviewed for this brief do not set out what the \$60–90 billion range includes (land, stations, rolling stock, systems or financing costs). The Spanish sources found do not define their scope in the same terms, so a like-for-like scope cannot be confirmed.
- **Status.** ALTO's range is a class 5 working assumption [14]. The ratios indicate an order of magnitude, not a measured gap.

4.4 Why Spain was cheap, and which reasons travel

Ineco attributes part of Spain's efficiency to labour and land costs below the EU average, the latter partly reflecting low population density, while noting that these items carry limited weight in the total; it also reports that Spain's choice of ballasted track has not raised long-term cost [6]. Zakaria adds building at scale and routing through less populated land [1]. Spain also built through a single state infrastructure manager over three decades [3]. Set against ALTO's corridor:

Factor	Spain	ALTO's corridor
Continuous programme	One infrastructure manager building line after line since the early 1990s [3]	A first line, with no domestic high-speed construction programme behind it
Land and density	Land and labour costs below the EU average [6]	About 1,700 properties on the first segment, about 500 of them farms; a project-specific expropriation regime under the High-Speed Rail Network Act [18]
Terrain	Mountain crossings, including the Sierra Morena and the 28 km Guadarrama tunnel [3]	Northern route option reported to cross about 85 km of Canadian Shield granite [17]
Regulation	EU performance-based technical standards	North American regulatory regime, which the Initiative's earlier brief found adds capital cost [20]
Design speed	Many lines at 300 km/h; some at 200–250 km/h, including upgrades [3]	300 km/h or more throughout [16]

5 — Who pays, and who builds

Spain's fiscal authority, AIReF, reported more than €55.89 billion spent on high-speed lines over 35 years, of which €14.09 billion (25.2%) came from EU funding [7]. The European Court of Auditors found that the EU had put €23.7 billion into high-speed rail since 2000 [8]; as reported, Spain

received more than €11 billion of it between 2000 and 2017, or 47.3% [9]. The state infrastructure manager, ADIF, owns and manages the lines; Renfe was the sole operator until 2021 [3].

ALTO is described by Transport Canada as among the largest public-private partnerships the Government of Canada has sponsored [13]. Cadence, the winning consortium, comprises CDPQ Infra, AtkinsRéalis, SYSTRA, Keolis, SNCF Voyageurs and Air Canada [17]. ALTO itself is an agent Crown corporation funded by parliamentary appropriations, with \$597 million in the 2025–26 Main Estimates to support its and Cadence’s work [13]. The terms on which construction would be financed, and how cost risk would be shared, are not set out in the published sources reviewed for this brief.

Two differences follow. Canada has no outside funder in the position the EU occupied for Spain, so the whole capital cost would fall on Canadian sources. And Spain’s model kept design and cost control with a public builder that carried its experience from one line to the next; in ALTO’s model the private partner develops and designs the project with ALTO during co-development [13].

6 — Where the line runs

Zakaria credits part of Spain’s low cost to routing through less populated land, and part of its appeal to connecting urban and rural Spain [1]. Spain’s first line stopped at Ciudad Real and Puertollano, and the link has drawn Madrid commuters to settle in Ciudad Real [3].

ALTO’s published station list is Québec City, Trois-Rivières, Laval, Montréal, Ottawa, Peterborough and Toronto [15]: seven stations on 1,000 km, four of them in Québec [17]. In Eastern Ontario, routing through less populated land means routing through farmland. On the first segment alone, ALTO’s chief executive has estimated about 1,700 property acquisitions, about 500 of them farms, under a statute that removes the standard requirement to attempt a purchase before expropriating and the standard public hearing on objections [18].

The routing choice that lowered Spain’s costs is, in ALTO’s corridor, the source of its acquisition and expropriation questions. On the published station list, the communities between Peterborough and Ottawa would be crossed by the line without a station on it, carrying the land cost without the access that Spain’s framing emphasised.

7 — Consensus

The segment describes high-speed rail as one of the few subjects on which Spain’s parties agree [1], and Ineco reports a strong national consensus on its role in modernising the country [6]. Consensus and value for money are, however, different measures. The European Court of Auditors found that decisions to build high-speed lines across the EU were often based on political considerations, and that cost-benefit analysis was not generally used to support cost-efficient decisions [9].

In ALTO’s case, consensus has not formed. The Ontario Federation of Agriculture and l’Union des producteurs agricoles (27 February 2026), the Canadian Federation of Agriculture (25 February 2026) and Beef Farmers of Ontario (3 March 2026) have each called for the project to be halted or suspended pending assessment [18]. At a Senate committee in February 2026, senators asked whether a cost-benefit analysis had been carried out; ALTO’s chief executive referred to a high-level document published on ALTO’s website [14]. In Spain, cross-party support followed a working line. For ALTO, support is being sought before any line exists.

8 — Fares and competition

Spain opened its high-speed lines to competing operators in May 2021, when Ouigo began Madrid–Barcelona services; Iryo followed in November 2022 [10]. Spain’s competition authority, the CNMC, reported that the average Madrid–Barcelona ticket fell by about €25 after liberalisation, and its data for 2025 show 44.5 million commercial high-speed passengers, with fares on the main routes about 40% below 2019 levels in real terms [10]. The change has had costs as well: Spain’s transport minister has described the competition as a price war that has hurt operators’ results [10].

In ALTO’s published structure, one consortium develops the project and operates the trains [13][17]. The sources reviewed for this brief do not describe a model in which other operators would compete on the new line. Air Canada, which operates air services between the corridor’s cities, is a member of the consortium [17]. Spain’s lower fares came from a structural change, independent operators competing on publicly owned track, that ALTO’s published structure does not include. Because ALTO’s ridership, benefit and cost-recovery claims all depend on the fare, as the Initiative’s earlier brief *Three Claims, One Fare* sets out [20], this is not a minor difference.

9 — The two caveats

9.1 Use

As reported, the European Court of Auditors put the cost of Spain’s high-speed lines at €1,159 per inhabitant, about twice France’s €603, while Spain’s passengers per kilometre of line were about a quarter of France’s (5 million against 19.2 million) [9]. The Court’s benchmark is that a high-speed line should ideally carry nine million passengers a year to be successful [8]. AIREF found Spain’s network the least used of the world’s large high-speed networks, with 30 million passengers in 2018, and found socio-economic returns between zero and minimal in all four corridors it evaluated [7]. Use has grown since liberalisation [10].

ALTO’s forecast of 24 million trips a year by 2055 [15] would exceed the Court’s benchmark if achieved. Demand may be the point on which ALTO’s setting compares most favourably with Spain’s: the corridor has about 18 million residents [16]. The difference is that Spain’s demand record is observed, while ALTO’s is a forecast for three decades ahead, made before a cost estimate exists [14] [15].

9.2 Upkeep

On 18 January 2026, an Iryo train derailed near Adamuz, Córdoba, on the Madrid–Seville line, and collided with an oncoming Renfe train; 46 deaths have been reported [12]. The railway accident investigation commission, CIAF, stated in an interim note that its working hypothesis was a rail fracture at a weld that occurred before the Iryo train passed [11]. Spain’s transport minister said the section had been renovated in May 2025 at a cost of about €700 million [12]. The train drivers’ union, SEMAF, had written to ADIF in August 2025 about wear on that section, and the CIAF has reported inconsistencies in the documentation on the welds [12]. As of the most recent reporting found, the final investigation report has not been published [12]. This brief makes no finding on the cause.

The line involved was Spain’s first, 34 years old at the time. Maintenance is a lifecycle cost that grows as a network ages, and it is the cost least visible when a project is announced. The Initiative’s earlier operating-cost work estimates ALTO’s recurring lifecycle cost at about \$1.8 billion a year at ALTO’s 3.5% discount rate [20].

10 — Who gains, and who does not

10.1 The demographic background

Rural depopulation in Spain is long-running and well documented, and it predates the high-speed network by most of a century. A 2023 study in the *Vienna Yearbook of Population Research* reports that the share of Spaniards living in municipalities under 2,000 inhabitants fell from 27.5% in 1900 to 5.7% in 2021, while such municipalities still make up 72.2% of all municipalities (5,871 of 8,131) [21]. Small municipalities grew in 2001–2009 on foreign immigration, then resumed losing population after 2009. Of the 5,678 studied, 56.9% lost population in both the post-crisis periods examined, a combined loss of about 404,000 people. The authors describe natural decrease in these places as structural, note that the growth recorded in 2020 was partly people registering at second homes, and conclude that about 3,300 municipalities, around 40% of the national total, face a bleak demographic outlook [21].

The territorial picture is stark. Using 2018 data from the INE, Spain's national statistics institute, elDiario.es reported that 4,375 municipalities covering 53% of Spain's area have fewer than 12.5 inhabitants per km², a common threshold for depopulation risk, and together hold about 5% of the population; the government's own summary is that 30% of the territory holds 90% of the population [22]. The most extreme cases lie along the Portuguese border and in the interior uplands of Teruel, Cuenca, Guadalajara and Soria [22].

The evidence reviewed for this brief does not show that high-speed rail caused this decline, and the timing makes it an unlikely main cause. The question it can answer is narrower: whether the network changed the pattern, and for whom.

10.2 What the research finds

Study	Scope	Finding
Shen, Zhao, de Abreu e Silva & Martínez, TRB (2016) [23]	Madrid–Seville cities, 1990–2006	High-speed rail associated with a relevant population increase in Ciudad Real; seldom benefited Puertollano; Seville residents moved out of the centre to suburbs and other cities; Córdoba's growth tied to station-linked redevelopment rather than accessibility
Shen, de Abreu e Silva, Zhao & Martínez, TRB (2015) [24]	Madrid–Seville, 15 years	Population growth and land development “concentrate mostly towards the two largest cities, Madrid and Seville”; smaller served cities also benefited
Carbo, Graham, Anupriya, Casas & Melo (2019) [25]	Madrid–Barcelona corridor provinces	Provinces with stops: about 2.4% higher output, 3.3% more firms and 1.1% higher labour productivity on average
Miralles i Garcia, WIT Transactions (2019) [26]	Spanish cities served since 1992	Service associated with greater population growth overall, but not in every case; infrastructure a required condition for development, not a guarantee of it
Naranjo Gómez et al., <i>Infrastructures</i> (2020) [27]	All peninsular municipalities	Coverage gap greatest for smaller, peripheral municipalities and those between lines; strengthening links among the largest could further isolate the smallest
Albalade & Bel, ADBI (2026) [28]	Network as a whole	Activity concentrates in the most developed nodes; areas without a station can see service degradation; earlier warnings to this effect largely ignored

Read together, the studies point the same way. Gains are real but are concentrated: in the largest cities at each end, in served cities close enough to commute from, and in provinces that received a station. None of the studies reviewed finds that high-speed rail reversed population decline in the rural areas between stations.

10.3 The places between the stations

Local evidence from those places is largely advocacy and press reporting rather than research, and is presented as such. A rail users' association in Linares-Baeza reports that the station went from 56 passenger trains a day before 1992 to 14, with Jaén province losing 217 daily services; Renfe was reported to attribute conventional cuts to slow journeys and low demand, while an ADIF works-committee representative attributed the slowness to maintenance funds being redirected to high-speed lines [29]. Soria, reported to be the only province the high-speed line crosses without a stop, has had no operating rail service since its line to Madrid was suspended for works in April 2025, with reopening now reported for 2027 [30]. In May 2025, farm unions in Sanabria, Zamora, protested a proposal to remove high-speed stops there to shorten journeys to Vigo, citing depopulation, commuting and access to medical appointments [31].

The last case illustrates a tension built into any high-speed line. Each intermediate stop slows the trains for everyone travelling end to end. The intermediate stops that provide the access are also the first to come under pressure when journey time is the measure of the service.

10.4 What this implies for ALTO

ALTO's published plan has seven stations on 1,000 km, with none between Peterborough and Ottawa [15][17]. On the Spanish evidence, the gains would be expected to concentrate in the end cities and at those stations, and the rural communities between them would carry the land acquisition described in Section 6 without a station of their own. Transport Canada's 2025 briefing also records funding for the planning and eventual transfer of VIA Rail's Québec City–Windsor corridor services to the private partner [32]. The published sources reviewed for this brief do not set out what service, if any, would continue at the intermediate stations VIA serves today. On the Spanish record, that is the question that decides whether the places between the stations gain or lose.

11 — What the Spanish case implies for ALTO

11.1 What it supports

- That a democracy can build an extensive high-speed network at a cost per kilometre well below the international average. On the sources here, the segment's central point holds.
- That building in stages lets each later decision use evidence from the lines already running.
- That open competition between operators on publicly owned track can lower fares and raise use.

11.2 What it does not support

- That ALTO would reproduce Spain's costs. The conditions behind those costs are, on the comparison in Sections 4 to 6, largely absent from ALTO's corridor and delivery model.
- That high-speed lines generate strong use wherever they are built. Spain's own fiscal authority and the EU's auditors found otherwise on much of the network.
- That a network can be judged by its construction alone. The Adamuz investigation concerns the upkeep of the oldest line.

- That high-speed rail spreads its benefits evenly. The research reviewed in Section 10 finds gains concentrated in the largest cities and at stations, and none finds that it reversed rural decline between them.

On the arithmetic and sources set out here, the Spanish case is better read as a description of a method than as evidence for a particular project. ALTO's published plan differs from that method in sequence, cost, finance, routing, station spacing and market structure. The comparison implies that the question raised by the commentary, whether Canada can build, depends less on whether high-speed rail is built than on how it is built.

Status of the figures

Published figures in this brief are quoted from the named sources and can be checked there. All other figures, including every per-kilometre figure and ratio for ALTO, are Initiative calculations from those inputs, with the inputs named where each appears. Reconstructions are estimates rather than measurements. Where ALTO has not published something, such as a component breakdown of its cost range or the terms of construction financing, the text says so rather than inferring it. No claim is made about why any particular figure was or was not published, and this brief makes no statement about the motives or conduct of any person or organisation.

Sources & notes

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