Like clockwork

Fifty years ago, Switzerland was poised to become as car-dependent as anywhere in North America. Now it has the best transit system in the world. What's the secret to this alpine nation's transport success?

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I've spent a lot of time in Switzerland over the last two decades, a fact that would have astonished my 30-year-old self. As a young man, I was more inclined to travel in the soulful, sunny parts of the world. Switzerland struck me as being picturesque, but boring: the sensible shoe of nations. Sure, hiking in the Alps was amazing – but, hell, Canada has the Rockies. As for cheese and chocolate, I could get those in France or Belgium, where the hotel rooms were cheaper and I didn't have to invest in a Schweizerdeutsch phrase book.

Funny how your perspective can change. Over the years, as research trips took me to a dozen Swiss cantons, I've come to appreciate that, though Switzerland is a landlocked country lacking in natural resources, it is rich in something vanishingly rare in the rest of the world: common sense.

This is most apparent in the way the Swiss travel. I'm at once deeply envious, but also convinced that North America should look no farther than this alpine nation for a model of sensible, sustainable – and, dare I say, enjoyable – transit. It's simply the best transportation system in the world.

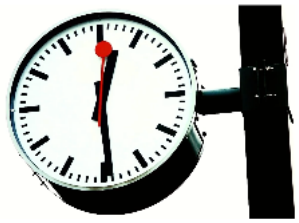
This really began to sink in two years ago, when I spent a month-and-a-half in the canton of Vaud, in the French-speaking west of the country. After flying into Geneva, I rode an escalator to a railway platform located directly beneath the airport terminal. After waiting less than five minutes, I boarded a double-decker intercity train, which featured a play area for kids, complete with a slide, on the upper level. Within seven minutes, we had arrived at Geneva's main station.

Twenty-seven minutes after that, I disembarked at Morges, a town on the north shore of Lac Léman, where I walked a few dozen paces to an adjoining platform, where a smaller, three-carriage electric train, run by the private rail company MBC, was already waiting. Exactly as the second-hand of the platform clock hit the top of the dial, the train pulled out of the station.

We wended our way through a landscape of grapevines and Simmental cows in their summer pastures, to the end of the line, a village with the charming name of Apples. There,

on the far side of a gabled stationmaster's house, a two-carriage train was waiting for us. It only pulled away when the last of the passengers had transferred from one train to the other.

We passed through four villages, spaced three to five kilometres apart, before I arrived at my stop. A short walk from the end of the open platform, a small green-and-white bus collected the disembarking passengers, which included a half-dozen students returning from high school. I was whisked, along with my backpack and suitcase, uphill to my final destination, the village of Montricher (population: 900).



The entire journey went like clockwork, with each mode of transport – from heavy-hauling intercity train to that 49-passenger rural bus – meshing with the next with gear-like precision.

Fearing I'd be isolated in a small hilltop village, I'd arranged to borrow a road bicycle. As pleasant as pedalling the foothills of the Jura Mountains turned out to be, I needn't have bothered. Any time I decided to leave the village, I could walk to the middle of the village, and take a bus back to Montricher's rail station. Trains left hourly from six in the morning until 1:46 a.m. From there, I could get to larger hubs like Geneva, Lausanne or Montreux, and travel by train all around Switzerland (and, by high-speed rail, to Italy, France and Germany).

A Swiss friend suggested I download the official trip-planning app offered by SBB, Switzerland's state-run railways. After linking it to my credit card, I was able to plan a trip anywhere in the country with just a few swipes on my iPhone screen. This wasn't limited to trains. SBB allows you to buy a through ticket on gondolas, river boats, funiculars and city buses, even those run by private companies, and provides you with a QR code to show to ticket inspectors. By swiping right on the "EasyRide" tab, the app would use GPS to track my position, and automatically charge the best available fare to my account when the trip ended.

Visitors complain about the prices of train tickets in Switzerland, which are among the most expensive in Europe. (One Swiss transit professional I talked to considers the high prices a "tax on tourists.") But one can also pay a yearly subscription, currently 170 francs ($273) which gives you half-price fares on all trains. Many Swiss citizens opt for the "abonnement général," an annual pass that, for 3995 francs, gives them free

transportation on all modes, everywhere in the country. (Gondolas and cable-cars, more likely to be used by skiers, are 50 per cent off.)

By federal law, every village in Switzerland with a population of more than 100 has to be served by some form of public transportation: a bus, a train, cog railway, or PostBus – the national system of mail-delivery buses which serves both cities and remote villages – on a daytime schedule of one hour or better,

This is a way of keeping rural areas connected to the rest of the country, but it also allows city dwellers, and visitors, to reach remote villages, and even national parks – places with a population density of zero inhabitants per hectare – without ever getting behind the wheel of a car.

This was a revelation. For just over $6,000 a year, the Swiss can travel anywhere, reliably, in comfort, and get where they're going on time. (In neighbouring Austria, where the cost of living isn't so high, the equivalent national rail pass costs just €1,100 – or $1,600.) In Canada and the United States, the average cost of car ownership – including payments, parking tickets, insurance, parking, and gas – is more than $12,000 a year. That's a high price to pay for a system that delivers congestion, traffic deaths and injuries, air pollution – and, more often than not, gets us to work or school late. For half the price North Americans pay, the Swiss get reliable, anywhere-to-anywhere mobility.

But it turns out the Swiss weren't always so well served by transit. Fifty years ago, Switzerland was poised to become as car-dependent as anywhere in North America. The pivot began in Zurich, with a revolt against urban highways, and the refusal to give up on tramways – a mode that we in North America know as the streetcar.

In the 1960s, Switzerland experienced its own version of America's proverbial "love affair" with the automobile. Car ownership rose at a rate that would later be rivalled by the breakneck motorization of China in the first decade of this century. To accommodate the flood of Volkswagens, Opels and Fords, the country began an ambitious program of road-building.

The proposal was soundly defeated in a canton-wide referendum, which brought highway construction to a sudden stop. (Autobahstummel, or "highway stubs," where elevated expressways end abruptly, still stand as testaments to the referendum's results on the outskirts of Zurich.)

Inspired by the principles set forth in economist E.E. Schumacher's Small is Beautiful, the citizens of Zurich came up with "a radical priority plan" to give a decades-old transit mode new life. The historic tramways would be given absolute precedence over cars. The plan was implemented in the 1980s, along with the construction of an S-Bahn (short for Schnellbahn, as in "fast-railway"), a mostly above-ground commuter-rail network whose 32 lines now extend into five cantons, and even into Germany.

“In Zurich,” marvels Dr. Garrick, “the tram is king of transportation. That’s true for how it’s physically accommodated in the city, and how it’s treated in law. When a tram approaches a stoplight, the light changes, and goes red for cars. Almost everywhere, trams run on their own rights-of-way.”

In the few North American cities that have retained historic routes, notably Philadelphia and Toronto, streetcars too often share streets with cars, trucks and buses. Snarled by traffic, they become the slowest vehicles on the road – lumbering stop-and-go advertisements for transit inefficiency.

“You can go from one end of Zurich to the other in 15 minutes,” says Antoine Belaieff, an urban planner who, after working at Ontario’s Metrolinx for a decade, has returned to work on ticketing systems in his native Switzerland. “It’s almost magical. In cities where trams are common, like Zurich and Bern, they’ve taken an almost inch-by-inch approach to removing obstacles, ensuring the trams circulate unimpeded.”

Key to this success is the way automobile access is limited in city streets. Surface parking was capped in the centre of Zurich in a 1993 initiative known as the “Historic Compromise,” and since then, spaces have gradually been reduced. (Underground lots are permitted, but they are prohibitively costly to build.) Zurich also monitors the number of cars in the city using sensors in the pavement, which relay the data to a single small control room. Once the limit has been reached, traffic lights on exterior roads hold back cars trying to enter, preventing gridlock in the city centre. While London and Stockholm use congestion charges, in the hopes that market-based fees will reduce traffic, Swiss cities have opted to combine the stick of traffic management with the carrot of superior public transport.

The results are impressive. Over two-thirds of Zurich residents now commute by S-Bahn or tram; less than a fifth rely on private automobiles, and per-capita car ownership has plummeted. (Outside of Bern, arguably Switzerland’s leader in bicycle commuting, bike infrastructure is nowhere near as developed as it is in Paris, Copenhagen, or Amsterdam. Not surprising, given the mountainous terrain, though e-bikes have become wildly popular.)

On a week-long stay in Zurich, I learned to love the tramway system, which, thanks to high frequencies and easy transfers between routes, actually functions more like a heavy-hauling metro. Most of the trams I rode on dated from the 1970s; while some of the fleet has since been upgraded to newer models, the operator prefers to keep its perfectly functional half-century-old trams running with regular overhauls.

Transit in the canton of Zurich is administered by an organization that has no counterpart in North America: the Verkehrsverbund, or “public transport federation.” Adapted from a model pioneered in Hamburg in the 1960s, the ZürcherVerkehrsverbund (ZVV) has overseen transit since 1990. Responsible for strategic planning, the ZVV is a lean organization, with a few dozen employees, and it leaves day-to-day operations to the canton of Zurich’s 18 separate transit agencies, which range from the state railway, to the

private operators of single-line funiculars. ZVV oversees ticketing, schedule co-ordination, and trip planning, and then distributes revenues from fares to the different operators.

Without having to think about it, passengers use buses and trams run by different companies, with Verkehrsverbund ensuring that their journey from one mode to the next is seamless.

A well-known series of ads for ZVV showed an image of a tram painted with the slogan "I am also a bus," a ferry with "I am also a tram," and a tram with "I am also a train." The campaign got across the idea that it wasn't the mode that mattered, but the idea of mobility itself.

Open this photo in gallery:

A poster from an ad campaign for transit in the Zurich area, from the city's transit provider, ZVV, the Zürcher Verkehrsverbund, by the advertising agency Publicis.SUPPLIED

"The accountability is much higher than in Canadian metro areas," points out Mr. Belaieff. "In Toronto, there's an executive committee for planning, one for infrastructure, but no one is responsible for strategic transport planning." (The metro area that gets closest to getting it right is Vancouver, whose TransLink gives its users access to a region-spanning network

– which includes the SeaBus, the Skytrain, and trolleybuses – with a single fare-card, and now with the tap of a credit card.)

The real genius of the Swiss system, though, lies in the co-ordination between all the moving parts, at the municipal, cantonal and national levels.

“Every December, a new national railway schedule is released, and throughout the year there’s a continual process by which the schedules of local buses and trams are hung on this master schedule.” The railway lines of SBB, which link all major cities, provide the master schedule from which the smaller agencies take their cues. “In Canadian cities like Toronto, the transit agencies hardly talk, and they definitely don’t co-ordinate schedules.”

Mr. Belaieff notes that Switzerland almost never makes headlines for spending billions of francs on glamorous new transport technology. In fact, Zurich shows a budget-breaking metropolitan light-rail megaproject isn’t a prerequisite for great transit: you can even have a high-functioning system using half-century old trams. A German expression sums it up: Organisation vor Elektronik vor Beton –“Organization before electronics or concrete.” In other words, the latest tech and expensive infrastructure projects are less important than strategizing a master plan for mobility – and being really, really, well organized about implementing it.

The real secret to Switzerland’s transport supremacy is hidden in plain sight, on every railway platform. The “Swiss Railway Clock,” with its signature white-and-black face, was designed by Hans Hilfiker, an SBB employee, in 1944. The red dot at the end of the second hand represents the baton that platform attendants still use to signal the departure and arrival of trains. As the dot approaches the top of the dial, it pauses for exactly one and a half seconds, as an electronic pulse is sent out to synchronize the other clocks in the station.

This is the symbolic foundation for the Taktfahrplan, inexactly translated as “clockface timing.” It may be Switzerland’s least-known contribution to civilization. The idea is that all rail lines should run trains so they converge on key interchange stations, arranged in a hub-and-spoke pattern, arriving at roughly the same time, at regular intervals on the clockface – say, at the top of the hour, then 20 minutes after, then 40 after.

If you sit outside a train station in any mid-sized town, you’ll see the system at work. Buses are timed to pull into the station just before the trains’ arrival; waves of passengers alight from the buses, and then walk, rather than run, to their platforms.

The transfer functions like a heartbeat, sending pulses of satisfied customers coursing through the veins of the system, from city centres to remote villages. If you’re a commuter, you only have to remember a couple of numbers on the clock, rather than consulting an ever-changing timetable.

The New York subway, the Paris métro, Vancouver’s SkyTrain, and other high-capacity transit systems rely on high frequencies to function; with headways of a few minutes, you

can be sure there's always another train coming. Such brute force is effective, but costly to keep up. Switzerland compensates for longer headways by putting the emphasis on the smoothness of the connection, which in turn is based on clockface-driven punctuality. The trains, buses, and trams are where they're supposed to be, when they're supposed to be – largely because they're given absolute priority over cars, trucks, and anything else that might get in their way.

I saw this in action last September, as I stood at the front of an articulated trolleybus in Lucerne. It was rush hour, and we were using one of two lanes that paralleled the lakefront in the direction of the city-centre train station. To our left, there was a lane filled with a line of virtually motionless cars. Yet our bus rushed past these idling Audis and BMWs in its own dedicated lane; when we approached a signal, the light automatically turned green to let us pass. There was no physical separation between the lanes: bulky traffic-cameras on the roadside ensured compliance. Any driver who dared to pull into the bus lane, and interfere with our progress, would be guaranteed a hefty ticket.

The origin of the Taktfahrplan, which is planned by an independent organization known as Trasse Schweiz, lies in a proposal to bring high-speed rail to Switzerland, after Japan launched its first Shinkansen bullet train in 1964. Critics pointed out that, given the corrugated topography, there were few straightaways where a train could actually attain their top speeds of 300 kilometres an hour. A small country would be better served by a reasonably fast, but always predictable, intercity train network.

"There are still some people who say we need high-speed trains in Switzerland," Peter Füglistaler, who directed the federal department of transportation from 2010 to 2024, told me. "Really, there are only a few clients who have to go that fast. But there are a lot of people who want to get to work on time every day. We've provided trains that can go two hundred kilometres an hour. That's better, and faster, than driving a car. It's enough."

For Mr. Füglistaler, who earned the nickname "The Train Accelerator," ubiquity of service is just as important as speed and reliability. Even if an unprofitable rural bus route or funicular requires hefty subsidies from the canton and the federal state, it remains worth keeping alive. "We have to have public transport everywhere, in the cities and small towns. Because if you do nothing for the rural regions, they will vote against investments in the cities."

The strategy continues to produce results that drive down emissions. Late last November, even as Ontario Premier Doug Ford was making global headlines by promising to rip out bike lanes while widening highways, the people of Switzerland voted to reject a $7.9-billion plan to expand expressways in a national referendum. Suburban voters were in favour; the vote was decided by the cities, and, crucially, people in remote rural areas who have come to value their links to the national transport network.

Everyone I talked to agreed that, geographically, culturally and historically, Switzerland was unusual. It was one of the first countries in the world to assume federal control of a rail network, nationalizing most of its private lines in 1902. You'd think such uniqueness – all those 4,000-metre peaks and charming mountain villages – would be an impediment to building transit. But instead of using low population densities as an excuse to rely on roads and private automobiles, the Swiss got to work building the ingenious cog railways, funiculars, and cable-cars that would ensure every citizen had access to high-quality public transport.

The experience of this small European country is more relevant to Canada than you might think. Consider this: Switzerland has almost the same number as inhabitants as Quebec, nine million. Superimpose it on the map of Quebec, and it would cover the dense, linear band of settlement from Gatineau to Quebec City, which is home to more than 80 per cent of Quebec's population. The same exercise could be applied to the GTA, which has about 10 million inhabitants; the width of Switzerland is roughly the distance between Hamilton and Kingston. (Indeed, the logic applies to the Bay Area, "Chicagoland," New York and many other metro areas that tend to have as many inhabitants as Switzerland.) The difference is that the most densely peopled areas of eastern Canada, home to half the country's population, are relatively flat, meaning they would be far easier to serve with a well-organized system of trains, light-rail and buses than Switzerland.

Even more so if the proposed high-speed, and, one hopes, high-frequency, rail line between Toronto and Quebec City becomes a spinal cord around which municipal and regional transit services could be structured.

That, of course, would require long-term planning and organization, as well as interagency and interprovincial communication: all things that resource-rich Canada has proven itself poor in. It turns out the thing we are richest in – at least when it comes to sustainable transport – is excuses.

All this was on my mind last autumn, on my latest trip to Switzerland, as I stood on a viewing platform looking out over the Aletsch Glacier. Nestled in a valley among alpine peaks, it is a curving tongue of ice, 800 metres at its thickest point. At 23 kilometres, the Aletsch is the longest glacier in Europe, and one of the main sources of the Rhone, the river that supplies drinking water to Geneva, Avignon and Lyon. Higher temperatures mean it has been shrinking at an alarming rate; in the last 40 years it has lost 1.3 kilometres in length, and 200 metres in thickness. By the end of the century, global warming means that nine of ten glaciers in the Swiss Alps are expected to disappear. The main driver of the higher temperatures, according to NASA, is no longer power generation – the global grid is actually getting greener – but emissions from the transportation sector, which now mostly come from private automobiles.

I thought about the journey that had brought me to that staggering vista. Using an eight-day Swiss Travel Pass, I'd taken a panoramic-windowed cog railway from the town of Brig, and then transferred to a cable-car that took me to the car-free village of Bettmeralp.

Small electric buses were waiting at the station, timed, following the Taktfahrplan, to take passengers to the next gondola, which whisked us up to 2,600 metres; from there it was a short walk to the viewing platform. That night, back in Bettmeralp, I would sleep in a gabled, chalet-style inn, in an atmosphere of perfect tranquility. Because there was no car traffic, all I heard was the sound of children laughing, birds chirping, and the clanging of distant cow bells. It was a comfort, and a marvel, to think that I could use my affordable travel pass to get to anywhere else I decided to go in this beautiful, and admirably sensible, country.

All of the transit I'd ridden was powered by electricity, not fossil fuels. As of 2025, one hundred per cent of the electricity that drives SBB's trains comes from hydroelectricity, solar and other renewable sources. All that week, I'd been talking to a wide range of Swiss people about their travel habits. The younger ones didn't own cars, and told me they probably never would.

Everybody I met either had a national rail pass or the subscription that gave them half price on trains. Some cited the environmental benefits. But everyone told me they used transit because it was affordable, and it worked.

I thought of something Norman Garrick, the American expatriate living in Zurich, had told me: "I think we've really been sold a bill of goods in North America. We have the most expensive transportation system in the world. Not because it's any good. But because it's car-based."

Even though the Swiss can rely on a transport system that isn't a significant contributor to global emissions, they live on the front lines of climate change, which is manifest to them in the Aletsch and other shrinking glaciers. That's definitely not fair. But – for now, at least – it's us, the car-dependent citizens of Canada and the United States, who should be pitied.