

A Comparative Study of U.S. and Swiss Transportation Systems

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While I was studying environmental sciences and urban studies in Switzerland, I was shocked by the general consensus that seems to prevail in the French literature about the failure of the United States to build efficient cities. Relentlessly, U.S. land use and transportation systems were cited as the “worst that could happen” and the “example to avoid.” For this reason, I decided to study urban planning in the U.S. in order to truly experience what is the American way of life, its shortcomings and its advantages. Today, I am more able to compare my native country with my temporary adoptive country, but I caution the reader that this study will inevitably be influenced by my cultural background and that this could result in a few biases.

Introduction

The United States has been perceived as the “nation of cars” throughout the 20th century, and this has not changed as the country has entered a new century. However, where it was once positively seen as a leader in automotive technology, opinions worldwide over the last few decades are changing as environmental and social concerns have grown stronger. The U.S. performs weakly in both domains: it has the second largest ecological footprint per person in the world (WWF International, 2008) and its Gini index of family income, measuring in percentage the inequality of income distribution, is 45, comparable to Cameroon, Jamaica, and Uruguay (CIA World Factbook). In comparison, the European Union has an ecological footprint per person of 4.7, exactly half the U.S. average of 9.4. In Switzerland, the figure is 5.0 (WWF, 2008). Concerning the Gini index, the European Union is performing better than the U.S. again, with an index of 30.3 in 2003; Switzerland’s was 33.7 in 2008. These are only arbitrary examples, but are frequently used as indicators of sustainability.

In the transportation field, these issues of sustainability are taken very seriously and literature is abundant on that theme. Smart growth, alternative modes of transportation, densification, and social equity—among many others—are commonly studied by American scholars and taught at universities. Reference is sometimes made to the European continent because its countries are perceived to be more ecologically viable and socially equitable. The

indicators presented above show that this assumption is, at least arguably, true. However, not everyone agrees that Europe would be useful as a model. In the report prepared by the Committee for an International Comparison of National Policies and Expectation Affecting Public Transit (2001), the view is well described: “Reports ... [written by teams of transit managers from across the U.S. who visited cities in West Europe and Canada] describe many innovative practices, services, and technologies with potential for application in the United States. The teams often prefaced their reports, however, by noting the distinct differences in the urban environments and transportation policies they witnessed abroad.”

Others remain less skeptical of the U.S. applicability of European policies. Vukan Vuchic, in the provocative book “Transportation for Livable Cities” (1999), enumerates a number of “common misconceptions in urban transportation” (chapter 5). He argues that outcomes in this area often involve powerful lobbies supporting one particular mode of transportation; as a result, the opinions of transportation experts have a weak impact and biases or misconceptions are often at the center of decisions. Vuchic mentions two misconceptions about what is happening in peer countries and describes how these relate to the situation in the United States. These two misconceptions will structure this paper. First, Vuchic criticizes U.S. Department of Transportation (DOT) officials who claimed that “There is no fundamental difference between Europe and the United States in urban

transportation conditions and trends. In spite of all efforts to balance modes, European countries continue to follow the same trends” (Vuchic 1999, 221). According to Vuchic, European policies are successful and modal distribution is better balanced on the Old Continent. Second, he attacks authors like Anthony Downs and Martin Wachs who argue that “Political realities do not allow the introduction of auto-use disincentives measures” (Vuchic 1999, 223 (emphasis added)). In his opinion, such policies could also be applicable in the U.S.

In order to discuss these two statements, I will compare the United States to another well-developed nation with which I am familiar: Switzerland. Contrary to the U.S. and as noted earlier, Switzerland is often viewed as one of the leaders in public transportation and ecological preservation, with a “transportation system [that] is terrific and well integrated” (Marty, 2009). The purpose of the paper is to discuss the differences between the two countries with regard to transportation, and also highlight the similarities. Using statistics, literature, and personal experience, I try to demonstrate that the statements cited by Vuchic are indeed misconceptions, but that they also reflect a part of reality that cannot be ignored.

The Two Countries and their Transportation Systems

Switzerland and the United States are very similar in many ways. First of all, both countries are democratic, federal states with a decentralized government that roughly functions at three levels (local, regional and national) and operates nationally via a bicameral legislative assembly (CIA World Factbook). Second, both countries are highly developed: using the human development index of the United Nations, Switzerland occupied the seventh place and the U.S. the twelfth according to the 2007/08 world rankings (UNDPa). And, finally, the two countries experience relative constant economic growth. The Gross

Domestic Product growth rate was 2.2 percent in the United States in 2007 and 2.6 percent in Switzerland the same year (CIA World Factbook).

However, numerous dissimilarities also exist. The most important is the difference in size: 7,581,520 inhabitants and a total area of 41,290 square kilometers in 2008 in Switzerland, versus 303,824,640 inhabitants for a total area of 9,826,630 square kilometers the same year in the United States – making it the third largest country in the world in size and population (see table 1). In comparison, Switzerland is about the size of the Michigan Upper Peninsula and has fewer inhabitants than the city of New York. The population density is also very different, as Switzerland has 190 inhabitants per square kilometers and the U.S. only 33. Both countries are crossed by major mountain ranges (The Alps and The Jura in Switzerland (Swissworld); the Appalachian, Cascade, Klamath, Rocky, and Sierra Nevada Mountain Ranges in the U.S. (University of Oregon)) and, with the addition of arid zones in the U.S., this implies that a consistent part of their territory is hard to colonize.

In terms of transportation, the two systems are greatly different. We will explore this in more detail later in this paper, but we can note here two interesting similarities. To begin, both countries have an extensive rail network. Surprisingly, the U.S. has the longest national railway system in the world (CIA World Factbook). On the other hand, Switzerland has a smaller network in absolute terms, but its density is one of the highest in the world. This fact is certainly linked to the second similarity: the two countries have a very high percentage of rail freight compared to other countries (see Table 1). In 2005, 42 percent of the total freight tons per kilometer were transported by train in Switzerland, while in the U.S. the figure was 38 percent. The comparable European Union figure was only 10 percent in that same year (UIC).

Table 1
General Characteristics of the Two Countries

	Switzerland	USA
Population (2008 estimate)*	7,581,520	303,824,646
Total Area [square kilometers]*	41,290	9,826,630
National Density [people/sq km of land]	190.1	33.2
Percentage of Rail Freight in Total Freight (2005a)**	42%	38%
Part of the Federal Budget dedicated to Transportation on****	14.5%	2.3%
Part of Transit in the Transportation Budget****	3%	13.5%
Part of Rail in the Transportation Budget****	57%	1.5%
Part of Roads in the Transportation Budget****	35.5%	60%

a Calculated from tons-km and tons-miles

* CIA World Factbook

** Swiss Federal Statistical Office - Online Statistical Encyclopedia & Bureau of Transportation Statistics, 2008

*** Swiss Federal Finance Administration, 2007 & US Office of Management and Budget, 2008

**** Swiss Federal Finance Administration, 2007 & US Department of Transportation, 2007

Table 2
Basic Transportation Infrastructure in the Two Countries

	Switzerland	USA
National Density [people/sq km of land]*	190.1	33.2
Railways Length [km] (2006-2005)***	5,062	162,256
Km Railways per 100 square km of Land	12.3	1.6
Km Railways per 1000 Inhabitants	0.7	0.5
Total Roads Length [km] (2006-2005)**	71,321	6,456,096
Highways Length [km] (2006-2005)***	1,361	261,314
Km Highways per 100 square km of Land	3.3	2.7
Km Highways per 1000 Inhabitants	0.2	0.9
Percentage Growth of Railways 1995-2005****	0.4	-10.9
Percentage Growth of Highways 1995-2005****	13.5	2.13

*: Calculated for all public roads in USA

* Calculated from CIA World Factbook

** Swiss Federal Statistical Office - Online Statistical Encyclopedia & CIA World Factbook

*** Swiss Federal Statistical Office - Online Statistical Encyclopedia & Bureau of Transportation Statistics 2008

**** Swiss Federal Statistical Office - Online Statistical Encyclopedia & Bureau of Transportation Statistics 2006

As for finances, the federal budget allocated to the transportation sector varies considerably between the two countries (see Table 1). In the U.S., 2.3 percent of the federal budget went to transportation in 2007. Of this, 13.5 percent went to transit, 1.5 percent to rail, and 60 percent to highways. In Switzerland, in 2006, 14.5 percent of the federal budget was dedicated to transportation, from which 35.5 percent went to roads and 60 percent to public transportation (57 percent to trains and three percent to transit). Both sets of statistics take into account passenger and freight transportation.

Transportation Infrastructure

In terms of transportation infrastructure, we can note again that the Swiss railway network is considerably denser than in America. There are 162,256 km of railways in the US and 5,062 km in Switzerland (see Table 2). This means that there are 12.3 km of railroad per 100 square kilometers in Switzerland and 1.6 km per 100 square kilometers in the United States. In terms of kilometers per inhabitants, the difference is less notable: 0.7 km per 1000 persons in Switzerland and 0.5 km in the U.S. However, this difference is amplified by the fact that the compactness of Switzerland implies shorter distances between cities (or any other places), so the need of railway kilometers is smaller to result in the same connectivity.

Concerning roads, Switzerland had 71,321 km of roads in 2006 of which 1,361 km were highways. In the same year, the U.S. had 6,456,096 km of roads of which 261,314 km were highways. Compared to the total area of the countries, one sees little difference: 3.3 km of highway per 100 square kilometers in Switzerland, and 2.7 km per 100 square kilometers in the U.S. This contrasts

with the significant difference between the densities of railroad. In terms of roads relative to population, we find 0.2 km per 1000 inhabitants in Switzerland and 0.9 km in the U.S. These indicators taken separately are somewhat hard to interpret because of overall density issues, but the comparison between roads and railways shows that the rail network is comparatively more developed in Switzerland while highways are relatively more developed in the United States.

Looking to trends over time, transportation infrastructure experienced differing rates of growth and decline between the two countries over the last decade. Railway growth almost stagnated in Switzerland (perhaps due to the already high density of the network) and heavily decreased in the U.S. However, one should note for the U.S. that while traditional rail infrastructure decreased, rail transit as a modal category is increasing. As for roads, the highway network grew considerably in Switzerland and slowly in the U.S., again as one might expect given the initial state of each network. This seems to contradict the opinion of Vuchic that Europe is better able to balance different modes over time, but as we will see later this disproportionate growth recently in roads over railways can be explained by more than modal preferences.

Another good transportation indicator is the number of vehicles per inhabitant. Again, this number varies significantly between the two countries: from 522 passenger cars per thousand inhabitants in Switzerland to 763 in the U.S. Regarding trends, the number of cars in Switzerland, importantly, shows an annual growth of 16.2 percent between 1960 and 1990. Comparatively, the population growth has been very small – less than one percent annually over that period. In the U.S., the growth in passenger cars per inhabitant was significantly lower in those decades, while the population grew faster. From 1990 to the present, however, the growth in passenger car ownership in the two countries was more similar, at around two to three times the rate of population growth (see Table 3).

According to the Committee for an International Comparison of National Policies and Expectation Affecting Public Transit (2001), the increase in vehicles on the road has been different between North America and Europe because of the consequences of the two World Wars: “recovering from two devastating world wars, few Western Europeans could afford automobiles before the 1960s, and fewer still could afford new homes farther outside the city” (3). At the same time, the wealthier nations of North America could afford cars, suburban homes, and

Table 3
Number of Passenger Cars and Growth

	Switzerland	USA		
Passenger cars ^a per 1000 inhabitants (2007-2005)	522	763		
Passenger Cars in 1960*	509,279	61,671,390		
Passenger Cars in 1990*	2,985,397	181,975,051		
Passenger Cars in 2000*	3,545,247	212,706,399	Comparati ve Growth of Populati on**	
Passenger Cars in 2005*	3,861,442	231,904,922		
Average Annual Growth Percentage 1960-1990	16.2	6.5	0.9	1.3
Average Annual Growth Percentage 1990-2000	1.9	1.7	0.7	1.3
Average Annual Growth Percentage 2000-2005	1.8	1.8	0.7	0.5

^a Include personal light trucks for USA

* Swiss Stati sti cal Offi ce - Online Stati sti cal Encyclopedia & Bureau of Transportati on Stati sti cs, 2008

** Calculated from Swiss Stati sti cal Offi ce - Online Stati sti cal Encyclopedia & US Census Bureau - American FactFinder

the freeways necessary for this type of expansion. Over time, the growth in the number of cars slowed in the U.S. at the same time that cars started to flourish in Switzerland. However, despite this recent growth, cars are still less present in Switzerland than in the U.S. and trends would seem to predict an overall slower growth in the number of cars relative to the population in Switzerland.

Modal Distribution of Travels

More relevant than infrastructure indicators in the transportation sector is the modal split of travels, which reflects actual usage of the infrastructure. Unfortunately, easily comparable data are few as the two countries use different measurements, so providing a straightforward overview of the subject is difficult. In Switzerland, a survey among a sample population gives statistics on the number of kilometers traveled by person including journey outside the country. In the U.S., only travels within the country are counted. The statistics provided also come from several different sources, which may decrease accuracy because the metric of passenger-miles does not result from a single, unique survey but rather from various counts. One should note, additionally, that Swiss statistics take into

account non-motorized transportation but the chosen U.S. statistics do not include pedestrians and cyclists.

However, these data can be compared with care, and this is presented in Table 4. Calculations show that the modal split of total travels is very different between the two countries. Journeys by car only represent 55 percent of the total distance traveled by Swiss people annually, while the share of passenger-miles for cars and light trucks in the U.S. is 85 percent. Distance traveled by transit accounts for almost 20 percent in Switzerland while the same modes represent less than 3.5 percent of U.S. passenger-miles. The high percentage of air travel in the average modal split in Switzerland is due to the fact that travels outside the country are taken into account. Flights represent long distance compared to the relatively small distances that the national area allows. Moreover, low-cost air companies—which are still not widespread in the U.S.—considerably changed European habits about intra-continental travel, because the cost was significantly lower than for other modes.

From Table 4, we can also note that the average American travels longer distance annually than the average Swiss. This is especially noticeable for car travel—the

Table 4
Modal Split of Total Travels -2005

Kilometers per Year per Person	Switzerland*		Passenger-miles per year in millions	USA*		
	Total	Modal Split		Total	Modal Split	Calculated km per person
By Air	3,411	17.9	Air	583,689	11.1	3,093
By Car	10,576	55.3	Cars and Light Trucks	4,507,133	85.4	23,884
By Bus & Tram	789	4.1	Buses	140,910	2.7	747
By Motorcycle	255	1.3	Motorcycles	13,677	0.3	72
By Train	2,806	14.7	Rail	30,972	0.6	164
By Non-Motorized Modes	757	4.0	Other Transit	2,485	0.05	13
Others	515	2.7	Total	5,278,866		27,973
Total	19,109					

* Swiss Stati sti cal Offi ce - Online Stati sti cal Encyclopedia

** Bureau of Transportati on Stati sti cs, 2008

kilometers per person per year traveled in the U.S. are more than double the Swiss figure. But, again, these results should be taken with care as the comparability of data is questionable. Fortunately, statistics about work commuting are also available in the two countries and are somewhat more comparable, though U.S. statistics only count the “principal” mode of transportation to commute and Switzerland takes into account all used modes.

Once again, we see that cars represent a smaller share of the modal split, even if the difference is less clear. Basically, we can say that almost all Americans commute to work by car and that two thirds of Swiss people commute by car, while one third use other means (predominantly public transportation).

Concerning the trends, the share of individual motorized transportation in total daily distance has been decreasing in Switzerland since 1994, but overall stayed relatively constant. The share of public transportation increased considerably between 2000 and 2005, mostly because of train ridership (FSO, ARE & Ecoplan, 2006). In the U.S., the share of car commuting actually decreased slightly between 2000 and 2005, though the public transportation and non-motorized share also decreased. This has an easy explanation: the sector that increased the most significantly was the share of people working at home.

Reviewing the data overall, one can see that across many indicators Switzerland is less dependent on the car than is the U.S. Moreover, the trends are not showing any patterns that public transportation is becoming deficient in Switzerland, while the U.S. continues to show a strong dependence on the automobile without a significant increase in public transit’s share in the modal split.

In the Cities

Urban transportation is usually perceived as a better indicator than data at the national level, probably because modal choice is greater in urban areas. Moreover, urban population represents the majority of citizens in both countries (75 percent in Switzerland and 80 percent in the U.S. (UNDPb)), so I decided to analyze the transportation

Table 5
Work Commuting - 2005

Switzerland*		USA**	
Percentage of Total Distance to Work	Modal Split	Means of Transportation to Work (16 years and over)	Modal Split
Car	66.5	Car, Truck, Van	87.7
Train	19.9	Public Transportation	4.7
Bus & Tram	4.9	Non-Motorized	2.9
Motorcycles	2.3	Taxicab, Motorcycles & Others	1.2
Non-Motorized	4.6	Work at Home	3.6
Others	1.9		

* Source of data: Swiss Federal Statistical Office - 2000 Federal Population Census

** Source of data: US Census Bureau - 2005 American Community Survey

behavior in the five largest metropolitan areas for the two countries to further investigate differences and similarities. Data availability restricted the analysis to commuting travel, but as noted earlier this is still a very good indicator of modal split patterns as it represents a large part of the total movement of people. The Swiss data set is very similar to the American as it takes into account the main transportation used to commute; however, it is characterized by a high level of missing data (between 10 and 20 percent).

Upon examining the figures in Table 6, one can clearly see the predominance of car travel in the United States. The variance is much greater among U.S. metropolitan areas than in Switzerland, but this is largely due to the inclusion of New York—the perpetual American outlier (among the other four cities, the range in percents is from 81.8 to 92.0). In Switzerland, the share of transit in all five metropolitan areas is higher than in the American cities, as are the share of non-motorized modes and people working at home. Moreover, the share

Table 6
Commuters in the Five Larger Metropolitan Areas

	Rank	Car	Transit	Non-Motorized		Worked at Home	Without Indication	
				Motorized	Others			
Switzerland*	1	Zurich	37.4	33.7	9.4	1.1	6.6	11.9
	2	Basel	31.5	33.3	15.2	1.6	6.3	12.1
	3	Geneva	38.7	23.8	9.5	4.2	5.6	18.2
	4	Berne	30.0	35.5	13.4	1.5	6.8	12.7
	5	Lausanne	45.3	24.8	8.9	2.3	6.8	11.8
USA**	1	New York	59.1	29.8	6	1.7	3.5	
	2	Los Angeles	85.8	5.7	3	1.4	4.1	
	3	Chicago	81.8	10.8	3	1.1	3.3	
	4	Dallas	92	1.5	1.3	1.3	3.8	
	5	Philadelphia	83.5	8.8	3.7	0.8	3.3	

* Source of data: Swiss Federal Statistical Office - 2000 Federal Population Census

** Source of data: US Census Bureau - 2005 American Community Survey

of car usage in all five of the largest Swiss cities is lower than the national average, while the Dallas Metropolitan Statistical Area actually has a car share higher than the U.S. national average. One would expect urban transportation conditions to be “better” in larger cities, and while this is always true in Switzerland it is not necessarily so in the United States.

To better understand these differences, it is interesting to investigate the land use patterns among the ten metropolitan areas. A good general indicator is the proportion of the population living in the central city (see Table 7). Again, New York City appears as an outlier, even when compared to the Swiss cities. It is not surprising if we take into consideration the fact that this is one of the densest cities in the world.

Table 7
Populati on in the Five Bigger Metropolitan Area

	2005		Percentage of Central City	
	MSA	City		
USA*	New York	18,351,099	7,956,113	43.4
	Los Angeles	12,703,423	3,731,437	29.4
	Chicago	9,272,117	2,701,926	29.1
	Dallas	5,727,391	1,144,946	20.0
	Philadelphia	5,644,383	1,406,415	24.9
	Total	51,698,413		
	Percentage of Total Urban Populati on			23.3
	2005		Percentage of Central City	
	Metro. Area	Commune		
Switzerland**	Zürich	1,101,710	365,378	33.2
	Geneva	493,445	183,889	37.3
	Basel	486,146	168,871	34.7
	Bern	343,789	127,529	37.1
	Lausanne	310,028	124,420	40.1
	Total	2,735,118		
	Percentage of Total Urban Populati on:			50.0

^a: Compared to the 2000 Urban Populati on found in the 2000 US Census

* Source of data: US Census Bureau - 2005 American Community Survey

** Source of data: Swiss Federal Stati sti cal Offi ce - ESPOP (Annual Populati on Stati sti cs)

Except for the New York case, all Swiss central cities represent a higher share of the total metropolitan population. This can be taken as an indicator of lower rates of urban sprawl. From these tables, we can also see that even if a greater proportion of the population lives in the city center in New York, the share of cars is still higher there than in any Swiss metropolitan area. Therefore, it would be wrong to draw a perfect correlation between assumed urban sprawl and the resulting modal split.

Politics and Government

In the governmental sector, Switzerland when compared to the U.S. has an interesting particularity: the Federal Office of Transport only takes care of public

transit. This Office was officially created in 1998, but railroads have been part of the Swiss administration since 1879. Roads and car-related affairs are included in the Federal Roads Authority (both offices belong to the Department of the Environment, Transports, Energy and Communication (DETEC)). Another important office related to the transportation field is the Federal Office for Spatial Development (ARE), which deals with planning issues. Urban transportation is becoming gradually a federal concern managed by the ARE, which is also part of the DETEC. However, except for national roads (mainly highways) and national railroads, the most significant part of passengers’ transportation is managed by the governments of the regions (Cantons) and locales (Communes), while freight is mainly managed at the federal level (DETEC Website).

With regard to policy, one should note the higher level of taxes on everything related to cars or similar modes of transport in Switzerland. The policy of cost internalization leads to a complete independence of the road sector as motorized transportation taxes cover the total costs of road-related expenses, although some environmental and social costs are probably still external. A variety of different taxes apply to the automobile in Switzerland, but the most important is the petroleum tax, an excise tax encompassing: (1) a petroleum tax on crude oil, other mineral oils, natural gas, their processed products, and engine fuels and (2) a petroleum surtax on engine fuels that has been collected since 1996. In January 2009, the petroleum tax and surtax on gas was 73.12 Swiss Francs cents per liter (or about 83 U.S. Dollars cents per liter) and 75.87 Swiss Francs cents on diesel (or about 86 U.S. Dollars cents). In addition to this tax, the Swiss pay a national value added tax (7.6 percent of the fuel price), the “climatic cent” (which is actually 1.5 cents), and other taxes such as 0.5 cents for fuel and 1.5 cents for diesel. In January 2009, 84.49 Swiss Francs cents per gas liter were taxes, out of a total price of 134.00 Swiss Francs cents per gas liter (or 63 percent of the price of every liter). For diesel, the figures were 89.96 out of 157.00 per liter, or 57 percent. These taxes seem very high but are still relatively low compared to other European countries.

In addition to these taxes, one pays a 40 Swiss Francs per year user fee for highways and relatively high registration fees depending on the type of car driven and the region. These taxes could increase in the coming years as the national parliament has discussed a CO2 tax if Kyoto targets are not reached (WWF). Public transportation used to rely on the Federal tax revenue, but recently, an “infrastructure fund” has been created which can be used for urban transportation improvement, primarily focusing on the transit sector. This fund is fed by diverse road taxes like the petroleum tax and the highway user fee.

I will assume the reader is more familiar with

transportation politics in the U.S., but for comparison a quick review is helpful. In the United States, the Department of Transportation—created in 1966—is divided into eleven administrations including the Federal Highway Administration, the Federal Railroad Administration and the Federal Transit Administration (U.S. DOT Office of the Historian). The first mention of railroads in the United States Administration was the Pacific Railway Act in 1862. Like in Switzerland, the Federal Highway Administration is in charge of the national roads and the Federal Transit Administration provides incentives to develop urban mass transit, but the transit management is mostly local or regional (US DOT Website). The main difference in the administration of the two countries resides in the railroad affairs that are consequently more important in Switzerland. The U.S. Federal Railroad Administration mainly deals with safety issues and, in addition, rail is almost non-existent at the lower levels of government (USFRA).

On the American side, innovative policies to support sustainable transportation are few. Roads are still heavily subsidized and taxes designed to internalize costs in the transportation sector are very small compared to those in most European countries. There is a Federal Gas Tax of 18.4 cents per gallon and state taxes vary. For example, in Michigan the state tax is 19 cents per gallon for gas and 15 cents per gallon for diesel, plus a six percent sales tax and 0.875 cents per gallon environmental regulation fee for a refined petroleum fund. But in New York, the tax is 31.9 cents per gas gallon. The average gas tax in the country, federal and state tax combined, is 45 cents per gallon, or 12 cents per liter. As in Switzerland, vehicle license fees vary by vehicle type and state.

The Cultural Component

It would be easy to conclude this report by saying that the U.S. should adopt Swiss policies to increase the modal share of transit and non-motorized transportation and to decrease the auto-dependency of the population. However, this conclusion would fail to address the issue of culture. Transit does not only work in Switzerland because of high automobile-related taxes and a comprehensive railway network. Kaufmann (2003) showed that the implementation of transit-oriented policies and building of supportive infrastructure in several cities in France and Switzerland led to varying results. He concludes that while the transportation supply is an important component in

individual decisions, it does not totally shape people's habits.

Kaufmann mentioned the high environmental awareness of Germanic people as a way to explain differences between cities in the German and the French parts of Switzerland, the latter being usually more auto-oriented. But he also noted a general tendency to use transit more frequently in Switzerland than in France. In other words, both culture and policy have an effect on transportation patterns, and one policy would not automatically erase cultural differences. We can extend this finding and predict that divergent underlying culture in the U.S. and Swiss would bring divergent outcomes, even with the same policy implementation.

To begin, and this can apply to many other countries in Europe, one sees an obvious space issue. Americans do not face a major territorial constraint; they have arguably enough space to accommodate many times the current population. In Europe, which faces such constraints, densities are understandably much higher and land is often seen as a much scarcer resource. In a very small country like Switzerland, where almost all accessible land is used, this concern is particularly important.

Also, one finds a level of environmental awareness among Swiss people that is not found in every country. The presence of the Alps as one of the national symbols contributes to this awareness. For example, in 1994 the

Alps initiative, which put the modal transfer of freight from road to rail into the Constitution, was accepted by 51.9 percent of the population even if it implied heavy costs and a total freeze of the construction of new roads across the Alps (Alps Initiative). This initiative in part made possible the continuation of the AlpTransit project begun two years prior, which involved building two base tunnels through the mountains, one of which will be the longest railway tunnel in the world after its expected completion in 2018 (Swiss Federal Transport Office). In addition to this high-profile example, most votes on issues involving public transportation have been accepted by the Swiss population (Swiss Public Transport Union).

Finally, the overall perception of transit seems completely different in Switzerland. The trains are a source of national pride—almost like the Matterhorn—and are full of businesspeople who use them to commute to work since parking is not available or extremely expensive in the city centers. I have often heard Swiss people claim that they can go from every point of the country to another

using transit, and that people can be 95 percent sure to arrive on time at their destination.

This cultural background, along with a set of very efficient policies, shapes the Swiss transportation systems. The consequences of this are easily visible in the above-noted national statistics, especially when compared to the United States. The cultural component should not be overestimated. The differences that exist between the German- and French-speaking parts of Switzerland create differing transportation outcomes, as Kaufmann (2003) noted, and these differences are relatively small compared to the gaps existing between the U.S. and Switzerland. For this reason, while many if not most of the policies in place in Switzerland could be successfully implemented in the United States, one must be cognizant that the implementation of such policies would have to account for cultural realities.

A Vision for the Future of the United States

As the Committee for International Comparison of National Policies and Expectation Affecting Public Transit (2001) clearly states, it will take several decades to reshape American cities to make them suitable for a complete, viable transit network. However, as Vuchic would agree, the extent of the task should not be used as an excuse to avoid actions. As international pressure and individual awareness among Americans grows stronger, we can hope that this is the dawn of a new era where transit will become more popular in the U.S. However, the government must not only support the change, but rather initiate it, as it is often the case in Switzerland. To begin, in the country where the free market is often advocated as the solution to all problems, the internalization of transportation cost could bring many benefits while still being justifiable in the capitalist context. Internalization through the various means outlined above has been successfully implemented in Switzerland—which has what one would call a right-wing government—so in theory it should have some potential for success in the U.S.

This paper does not seek to give a set of recommendations to improve transit in the U.S., but rather to try to emphasize the fact that there is space for improvement in the transportation systems and that well-designed policies could have significant benefits. However, the importance that the cultural background plays cannot be denied. Vuchic argues that auto-use disincentives as used in Europe are indeed conceivable in the United States, but this should not mean that policies have to be modeled exactly after those in Europe. Indeed, well-tailored policy must bear in mind its target population in order to find continuing support.

In conclusion, this comparison of Switzerland and the U.S. revealed two very different current situations and trends within the transportation sector. Not surprisingly,

Switzerland has a diversified transportation system where cars are common but are not the only viable mode, while in the U.S. cars are sometimes used by more than 90 percent of the population. As I emphasized at the beginning of this paper, environmental and social issues are still newer elements to consider in transportation research. As the U.S. likely adapts its overall system to address these new concerns, the benefit will in part flow to the transit sector. The future is still unclear, but changes are probably on their way...



Geneva, Switzerland Photo: Allison Craddock

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