Commission Briefing Paper 4M-02
Comparative Global Performance Trends

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Introduction

This paper is part of a series of briefing papers to be prepared for the National Surface Transportation Policy and Revenue Study Commission authorized in Section 1909 of SAFETEA-LU. The papers are intended to synthesize the state-of-the-practice consensus on the issues that are relevant to the Commission's charge outlined in Section 1909, and will serve as background material in developing the analyses to be presented in the final report of the Commission.

This paper presents information on how the U.S. compares to other similar nations in terms of highway, rail, and transit infrastructure. Using similar countries, in the case of highway and rail, and similar international cities, in the case of transit, the paper provides performance measures and statistics for comparison purposes. The paper presents only a rudimentary narrative regarding these measures and minimal analysis, allowing readers to draw their own conclusions based on the data presented.

Background and Key Findings

- The extent and usage of the U.S. highway and road network far exceeds that of comparable countries, vastly dominating other nations' road systems in absolute terms and often on a per capita basis as well.
- The fatality rate on the U.S. highway system generally is on par with comparable developed nations, but lags slightly behind those of the United Kingdom and Australia
- U.S. fuel economy standards are less rigorous than those of comparable nations, and, unlike Europe, Australia, and Japan, the U.S. has not adopted a CO2 emissions standard.
- The U.S. rail system is more extensive than those of other nations with similarly sized land masses (e.g., China, Russia) and ahead of other advanced industrial nations on a per capita basis.
- The U.S. rail system carries far more freight than comparable nations, and a higher portion of freight in the U.S. moves by rail than in other densely-populated advanced industrial nations.
- The U.S. rail system carries fewer passengers per capita, and a smaller portion of total intercity passenger traffic, than comparable nations.
- The U.S. shows higher worker productivity in its rail system than comparable nations, although this is due at least in part to the dominance of freight service over passenger service in the U.S. rail industry.
- Transit usage in even the biggest and oldest American cities tends to be lower on a modal share basis than comparable cities internationally.
- Farebox recovery varies widely among comparable world urban transit systems with American cities generally falling in the middle of the range

- New York and Chicago receive similar levels of capital assistance from their national government as comparable cities internationally, but unlike those cities they do not receive any federal operating assistance.

Highways and Roads

This section uses selected countries from North America, Europe, East Asia, and Australasia for which the level of infrastructure development is sufficient to provide a basis for meaningful comparison, and for which reliable data is readily available. Figure 1 provides an overview of these countries through a set of general socio-economic indicators, some of which are used to make additional calculations throughout this paper.

Figure 1: General Socio-Economic Indicators

	USA	UK	France	Australia	China	Japan	Mexico
Population (millions) [1]	298	61	61	20	1,313	127	108
GDP per Capita (PPP USD)	41,600	30,100	29,600	31,600	6,800	31,600	10,000
Vehicles per 1000 people[2]	780	390	575	605	10	570	160
Land Area (million sq. km)	9.2	0.2	0.5	7.6	9.3	0.4	1.9
Population density (population / sq-km)	33	251	112	3	141	340	56

Infrastructure Provision and Usage

Roadways tend to be the dominant form of transportation in most industrialized nations, which means that there is good data available with which to make comparisons across countries. Figure 2 compares the basic characteristics of the U.S. road system to the selected countries, showing the overall extent of the network and its density.

Figure 2: Infrastructure Provision

	USA	UK	France	Australia	China	Japan	Mexico
Paved Road Network Length (km) [3]	4,165,000	388,000	891,000	811,000	1,448,000	925,000	117,000
Paved Network per 100 people / sq-km	0.15	2.65	2.68	0.53	0.01	1.94	0.06

As Figure 2 shows, the total road network of the U.S. far exceeds that of the comparison countries on an absolute basis. On a per person per square km (population density) basis, the U.S. road network is less extensive than in most Western European and other high-income countries, including sparsely populated Australia. When population is put aside, the overall density of the U.S. network relative to area is quite high compared to other geographically large countries such as Australia and Mexico.

Figure 3: Roadway Use

	USA	UK	France	Australia	China	Japan	Mexico
Registered Passenger Vehicles Per Capita.[4]	0.46	0.46	0.49	0.63	0.01	0.43	n/a
Registered Goods Vehicles per cap. [5]	0.34	0.06	0.10	0.02	0.01	0.15	n/a
Road Passenger Movement (billion passenger-km)[6]	7,400	770	860	300	800	1,340	n/a
Road Freight Movement (billion-ton km) [7]	1,800	160	200	160	680	320	200
Passenger-Km Per Capita	24,800	12,670	14,050	14,550	590	10,510	1,680
Ton-Km Per Capita	6,180	2,570	3,240	8,010	520	2,530	1,860

The U.S. vastly dominates the other countries listed in Figure 3 in terms of road use statistics on an absolute basis and to a large extent on a per capita basis as well. Although the selected countries tend to have similar rates of vehicle registration, they use those vehicles far less. Australia moves more freight per capita on its roadways, but otherwise the U.S. is well ahead of the comparison countries in terms of ton-km per capita and passenger-km per capita. This implies a heavier demand for and reliance upon the highway network.

Safety Performance

Accident rates can often be difficult to compare across nations due to differences in reporting. Fatality rates are a more accurate measure of safety, and the U.S. performs adequately compared to other industrialized nations on this basis. Only Australia and the U.K. have a lower fatality rate than the U.S. (Figure 4).

Figure 4: Safety Performance

	USA	UK	France	Australia	China	Japan	Mexico
Fatalities / billion passenger-km[8]	5.8	4.2	6.5	5.4	140.1	11.4	n/a

Energy and Environment[9]

Methods for applying national fuel economy standards differ across the world. For example, the U.S. relies upon CAFE standards, which require individual auto manufacturers to meet specified fuel economy targets. In the EU and Australia, the entire automobile industry collectively and voluntarily agrees to meet fleet-wide CO_2 emissions targets by a specified year. In China (which has roughly adopted EU targets) and Japan, fuel economy standards are based on a weight classification system.

Figure 5: Emissions and Fuel Economy Statistics

	USA	UK	France	Australia	China	Japan
Emissions[x]						
CO_2 Transport Emissions (million Mt per Registered Vehicle) (2000)	7.25	4.22	3.88	2.95	10.89	3.46
CO_2 Transport Emissions as % Total Emissions (2000)	30%	25%	36%	22%	7%	21%
Emissions Standards						
CO_2 Emissions Standard (g/km) [xi]	n/a	166	166	212	211	133
2002 Fleet Fuel Economy Averages for New Vehicles (mpg) [xii]	24.1	37.2	37.2	29.1	29.3	46.3

Based on recent reports from the Pew Center and the European Environment Agency, of all the sample countries (excluding Mexico, where data is less readily available), the U.S. ranks the lowest in terms of fuel economy (Figure 5). Although the U.S. does not have specific CO_2 emissions targets or standards, a standard might be calculated based on the amount of CO_2 that would be released given current U.S. fuel economy standards (or approximately 256 grams per km). According to these figures, the 2002 average fleet fuel economy for new vehicles in Japan is highest at 46.3 miles per gallon; nearly double that in the U.S. By 2010, based on current targets for each of the sample countries, we can expect Europe to have the most stringent standards, followed by Japan, China, Australia, and then the U.S. (California alone would fall between China and Australia).

Railways

The data collected for this section compares nine countries: the United States (USA), the United Kingdom (UK), France (FR), Australia (AUS), China (CN), Japan (JP), Mexico (MX), Russia (RU), and Canada (CA). This group contains countries similar to the U.S. in both size and economic productivity, which hopefully provides a useful cross-section for comparison purposes.

Infrastructure Provision and Usage

Figure 6: Rail Network Details

	USA	UK	FR	AUS	CN	JP	MX	RU	CA
Network (km)[13]	226,605	17,156	29,085	47,738	74,408	23,556	17,562	81,157	48,467
Rail km Per km of Land	24.73	71.01	53.31	6.27	7.98	62.86	9.13	4.78	5.33
Rail km Per Capita	0.76	0.28	0.48	2.36	0.06	0.18	0.16	0.57	1.46
VHSR Network (km)[14]	0	74	1,395	0	30	2,388	0	0	0
HSR Network (km)	362	1,485	5,091	0	n/a	0	n/a	650	0
High Speed Percentage	0.2%	9.1%	22.3%	0.0%	n/a	10.1%	n/a	0.8%	0.0%

The U.S. has a more extensive total rail network than any other country listed (Figure 6), despite the fact that China, Russia, Canada, and Australia all have similarly sized land-masses. On a per-land basis the U.S. ranks well below the U.K., France, and Japan, but well above the remaining countries. On a per-capita basis the U.S. ranks well below Australia and Canada, which have very low populations and large land masses, but ranks well above the other populous nations.

High-Speed rail networks reveal large differences between the U.S. and other countries. Very High Speed Rail (VHSR) is defined as speeds of 250 km/hr or greater, High Speed Rail (HSR) is defined as between 150 km/hr and 250 km/hr, and the High Speed percentage counts both VHSR and HSR. The meager 362 km of HSR in the U.S. accounts for a miniscule percentage of its rail network. This contrasts strongly with the U.K., France, and Japan, all of which have substantial high speed networks. However, note that the other geographically large countries - Australia, China, Mexico, Russia, and Canada - do not have substantial high speed networks either.

Safety Performance

It is very difficult to compile accurate and comparable data on rail accidents and fatalities. The primary reason for this is that some countries count trespassing/suicide deaths separately from other accidents, while others do not, and it is not always clear which counting method is being employed. These deaths often account for a very large percentage of overall fatalities. Also, fatality data can often fluctuate wildly between years and the data shown below is simply from the most recent year available. Therefore, this limited fatality data should not be used for anything more than the most rudimentary comparison.

Moreover, accident and fatality data is typically not something a country wants to broadcast, and thus they often do not make such data readily available. For example, there was no data at all available for China and Russia. The accident data that is available is accurate enough to allow for comparison on the basis of a measure combining freight and passenger kilometers, and this is shown below.

Figure 7: Rail Safety Performance

	USA	UK	FR	AUS	JP	MX	CA
Fatalities[15]	888	254	89	43	318	193	103
Accidents[16]	2,048	58	86	n/a	456	n/a	1,053
Accidents/Trillion Ton-Pax Km	750	900	730	n/a	1,700	n/a	3,100

Although the limited and flawed fatality data available (Figure 7) shows much higher fatalities for the U.S., this must be considered in the context of the fact that the U.S. is much larger in terms of population than any of the countries for which we have data. Also, note that the U.S. has a lower accident rate than any other country listed with the exception of France.

Operational Performance and Modal Split

Operational performance indicators are more accurate and reliable than any other rail data in this section because they are compiled by a singular organization (the International Union of Railways) in one place. Therefore, we can be relatively confident of their comparability, assuming that each country is reporting their data correctly.

Figure 8: Rail Operations[17]

Operations

	USA	UK	FR	AUS	CN	JP	MX	RU	CA
Freight Ton-km (millions)	2,717,513	20,300	41,898	46,164	1,934,612	22,632	54,387	1,801,601	338,661
Passenger-Km (millions)	8,869	44,036	76,159	1,290	583,320	245,957	74	164,262	1,421
Freight Tons (000,000)	1,899	93	108	176	2,309	37	88	1,212	252
Passengers (000,000)	25	1,093	963	50	1,107	8,684	0	736	4
Freight Tons/Population	6.36	1.60	1.77	8.67	1.76	0.29	0.82	8.48	7.61
Passengers/Population	0.08	18.03	15.81	2.45	0.84	68.13	0.00	5.15	0.12

The indicators (Figure 8) show that the U.S. carries far more freight than comparable nations. In terms of freight-km, the U.S. surpasses every nation listed and most likely every nation on earth. In terms of freight-tons, only China, the world's most populous nation, carries more. Russia and Australia both carry more freight per capita, but far less freight overall.

Figure 9: Freight Modal Split[18]

Country	USA	UK	FR	AUS	CN	JP	MX	CA
Road	51.0%	90.0%	79.0%	72.0%	22.0%	54.6%	85.1%	26.0%
Rail	20.4%	10.0%	18.0%	26.0%	51.0%	4.0%	7.6%	23.9%
Pipeline	17.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	42.0%
Water	11.5%	0.0%	3.0%	2.0%	27.0%	41.3%	7.3%	8.1%
Air	0.2%	0.0%	0.0%	1.0%	0.2%	0.0%	0.0%	0.1%

Figure 9 above shows freight modal split across nations in terms of ton-km. Again, the U.S. proclivity for freight rail is evident in the modal split data, which shows that other geographically large countries, including Australia, China, and Canada also tend to favor rail. The U.S. moves a much smaller proportion of freight by road than one might expect, due to heavy reliance on railways and pipeline.

Passenger operations tell the opposite story. The U.S. carries fewer rail passengers per capita than any country listed besides Mexico. Countries shown of all populations and sizes tend to carry more passengers than the U.S. on rail, and by a large margin. Not surprisingly, Japan (340.1 persons/square-km), France (111.6), and the U.K. (250.9), all of which are much more densely settled than the U.S.(32.6), have vastly greater numbers of passengers per capita. However, even Australia (2.7) and Russia (8.4), which are much less dense, have far greater per capita passenger ridership.

Data on passenger modal splits for surface transportation can often be challenging to interpret due to the mixing of local and intercity traffic on the highway mode. To resolve this problem it is simpler to collect data from one source that considers intercity traffic only, and unfortunately that source did not include data for China, Mexico, Australia, or Russia. Data for China from another source is included below, but it has limited comparability.

Figure 10: Passenger Modal Split[19]

	USA	UK	FR	CN	JP	CA
Rail	0.1%	5.6%	8.5%	35.0%	31.4%	1.1%
Bus and Coach	3.5%	6.4%	5.0%	n/a	7.0%	16.5%
Private Auto	96.4%	88.0%	86.5%	55.0%	61.6%	82.4%

The U.S. shows a greater percentage of passengers traveling by private automobile than any other nation, and the lowest percentage of rail passengers by far (Figure 10). The Bus and Coach percentages are also slightly lower than the comparison countries, showing a general bias in the U.S. against intercity mass transit.

Worker Productivity

Productivity is challenging to measure across nations because it is difficult to know whether workers are part of a freight railroad, passenger railroad, or both. Typically more workers are required to move passengers the same distance as freight. Therefore, a country like the U.S. with an extensive freight network could appear to be more efficient even if its overall network were actually very inefficient.

Figure 11: Rail Network Productivity

	USA	UK	FR	AUS	CN	JP	MX	RU	CA
Rail Workers (thousands)[20]	183.3	35.2	10.3	13.7	1,419.1	135.6	13.4	1,204.3	15.0
Ton-Pax Km Per Worker (millions)	14.9	1.8	11.5	3.5	1.8	2.0	4.1	1.6	22.7

As expected, the U.S. and Canada, both of which are dominated by freight, show higher productivity levels than the other nations. One country that shows unexpected productivity is France, where there are low numbers of workers given the extensive nature of their passenger rail system.

Urban Transit

For this section, three cities were selected from North America (Chicago, New York, and Toronto), two from Europe (London and Paris), and one from Asia (Singapore). These cities were chosen for their status as global cities that are home to substantial innovation in urban transport.

Figure 12: Urban Transit Performance Indicators*

	Chicago	New York	London	Paris	Singapore	Toronto
City Population (millions)[21]	3.09	8.01	2.91	2.14	4.50	2.50
Service Area (square km)[22]	570	520	320	120	680	640
Population Density (people per sq. km)	6,470	15,500	9,050	17,850	6,580	3,870
Car Ownership (Cars / 1000 pop.)[23]	770	770	370	440	100	580
City / Regional GDP per Capita[24]	45,090	50,480	44,870	52,540	28,600	36,200
Modal Split[25]						
% Trips on Transit	26%	53%	85%	62%	56%	22%
% Trips Other	74%	47%	15%	38%	44%	78%
Public Transit Network Infrastructure						
Urban Rail (per capita/sq km)[26]	0.05	0.05	0.05	0.02	0.02	0.10
Road Length (per cap./sq km)[27]	6.07	2.21	1.63	1.19	0.49	2.23
Urban Population per Bus[28]	2,170	2,080	430	500	1,300	1,660
Public Transit Use (per year)[29]						
Total Passenger km (billions)	26	64	42	21	25	15
Bus Passenger km / capita	340	320	2,340	1,200	2,090	970
Rail Passenger km / capita	470	1,680	2,470	2,340	1,050	370
Other Indicators						
Avg. Age Bus Fleet (years)[30]	6.0	8.8	6.7	9.0	12.5	13.0
1 month parking as % GDP per cap.[31]	1.1%	1.6%	2.5%	1.2%	2.4%	1.1%
Cycle Path (% Road km)[32]	1.6%	0.7%	4.0%	1.5%	n/a	1.0%

***Note: Figures apply to city area, as opposed to metropolitan area (e.g., Inner-London as opposed to Greater London, Paris versus Ile de France), except in the case of Singapore, which refer to the entire city-state.**

Infrastructure Supply

Among the sample cities, more road network is provided per person per square meter in the U.S. cities than in all of the others, and this figure almost perfectly correlates with the cities' car ownership rates. Also of note is that in terms of urban rail (light rail and subway) network, each of the sample cities provide about the same length of rail per person per sq. km, despite very different rates of transit use.

Although there is no internationally accepted standard for fleet age, we can still draw general conclusions about a system's state of repair based on the age of its fleet – for example, older fleets imply larger operations and maintenance costs and potentially less attractive vehicles. Among the sample cities, Toronto and Singapore's average bus fleet ages are the oldest at about 13 years, while Chicago and New York's are about only about 6 and 9 years, respectively.

Infrastructure Usage

Cities with the lowest rates of car ownership see the highest transit usage. However, in the developed countries, higher GDPs per capita do not necessarily correlate with higher rates of urban car ownership. In Paris, for example, GDP per capita is higher than many North American cities, yet, its car ownership rate is half that of these same cities.

While modal splits in North America tend to favor the car more than in foreign cities of similar size, the magnitude of difference is not always immediately obvious. For example, work commuting transit ridership rates in New York are the highest in the U.S. at 53 percent, which pales in comparison to London where ridership is as high as 85 percent.

Environment and Energy
According to a study endorsed by the International Association of Public Transport (UITP), on average, cars consume about 4 times as much energy per passenger as public transit.[33] In Chicago and New York, at least 66 and 38 percent of all passenger traffic, respectively, is on private transport, compared to only 10 and 22 percent in London and Singapore. This implies, given the total passenger-km traveled in each city, that energy-use per passenger in the American cities is significantly higher and could be reduced through a modal shift.

Funding and Farebox Operations Ratio
Foreign cities rely on national government funding for urban transport to varying degrees. In many European cities, for example, national governments will provide funding for urban transit operations and maintenance, while in the U.S., this is very rarely the case. Note that in the North American cities, zero of funding for operations came from the national government, whereas in London and Paris, 43 and 11 percent, respectively, came from national sources (Figure 13)

In terms of contributions to capital expenditures, it seems most cities in developed countries can expect between 40 and 60 percent of funding to come from national governments. However, in the sample cities Toronto is a distinct exception, with only four percent (most capital funding in Toronto comes from provincial and local sources).

Figure 13: Transit Funding

	Chicago	New York	London	Paris	Toronto
Operations[34]					
% Operations Budget from National Gov't	0%	0%	43%	11%	0%
% Operations Budget from Farebox[35]	35%	58%	50%	22%	80%
% Operations Budget from Other Sources	50%	60%	7%	89%	20%
Capital					
% Capital Budget from National Gov't	55%	50%	65%	39%	4%
% Capital Budget from Other Sources	45%	50%	35%	61%	96%
Operating Efficiency					
Operating Cost per Passenger (USD)	1.85	1.50	3.41	2.50	2.15

Interestingly, although the operating cost per passenger in Toronto is higher than in the selected U.S. cities, its farebox recovery ratio is much higher, at 80 percent versus 35 and 58 percent, respectively, in Chicago and New York. Also notable is that London has almost twice the operating cost per passenger than the listed U.S. cities, which have the lowest of the group.

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[1] Population, GDP Per Capita, and Land Area are all from Central Intelligence Agency. 2006. "The World Factbook." https://www.cia.gov/cia/publications/factbook/index.html
[2] This figure includes cars, buses, and freight vehicles. World Resources Institute. Accessed December, 2006. "Earth Trends: Energy and Resources." http://www.earthtrends.wri.org/searchable_db/index.php?theme=6
[3] Central Intelligence Agency. 2006. "The World Factbook."

[4] All data except China and Australia is from the UK Department for Transport. 2 November 2006. "TSGB 2006: International Comparisons."
http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/divisionhomepage/041560.hcsp.
Data on China is from The World Bank. 1 March 2004. "China: Transport Sector Brief."
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[5] UK Department for Transport. 2 November 2006. "TSGB 2006: International Comparisons." The World Bank. 1 March 2004. "China: Transport Sector Brief."
Australian Bureau of Statistics. October 2004. "Survey of Motor Vehicle Use, Australia."
[6] OECD. 2006. "OECD in Figures -- 2006-2007 Edition." China data is from The World Bank. 1 March 2004. "China: Transport Sector Brief."
[7] OECD. 2006. "OECD in Figures -- 2006-2007 Edition." China data is from The World Bank. 1 March 2004. "China: Transport Sector Brief."
[8] OECD. September 2006. "Working Group on Achieving Ambitious Road Safety Targets: Country Reports on Road Safety Performance." http://www.cemt.org/jtrc/WorkingGroups/RoadSafety/Performance/TS3-report.pdf. China data is from The World Bank. 1 March 2004. "China: Transport Sector Brief."
[9] Much of the data from this section is from the Pew Center on Global Climate Change. December 2004. "Comparison of Passenger Vehicle Fuel Economy and Greenhouse Gas Emission Standards around the World." http://www.pewclimate.org/docUploads/Fuel%20Economy%20and%20GHG%20Standards%5F010605%5F110719%2Epdf.
[x] World Resources Institute. 2007. "Climate Analysis Indicators Tool (CAIT) Version 4.0."
[xi] European Environment Agency. 2005. "Comparison of international greenhouse gas emission standards for new passenger cars." http://dataservice.eea.europa.eu/atlas/viewdata/viewpub.asp?id=2112
[xii] Pew Center on Global Climate Change. December 2004. "Comparison of Passenger Vehicle Fuel Economy and Greenhouse Gas Emission Standards around the World."
[13] The network length, land area, population figures are all from the Central Intelligence Agency. 2006. "The World Factbook."
[14] Most of the data on high speed rail is from the International Union of Railways, 2005: http://www.uic.asso.fr/stats/article.php3?id_article=4, Data is actually from 2004 except for the UK and Russia which are from 2003, and China and Mexico which represent estimates based on compilations of evidence from recent news articles.
[15] Fatality data is for the most recent year available. For the U.S. this is from the Federal Railroad Administration: http://safetydata.fra.dot.gov/officeofsafety/, 2005. For the UK this is from the Office of Rail Regulation, Annual Assessment of Network Rail, 2005-2006. http://www.rail-reg.gov.uk/upload/pdf/302.pdf, 2005. For France, Australia, Japan and Mexico these are 1999 figures from Australian Transport Safety Bureau, Railway Accident Fatalities: Australia Compared with other OECD Countries, 1980-1999. http://www.atsb.gov.au/publications/publications_list.aspx?mode=rail. For Canada data are from 2005 North American Transportation Statistics, Transport Fatalities by Mode. http://nats.sct.gob.mx/nats/sys/tables.jsp?i=3&id=12,.
[16] All accident and operations data is from International Union of Railways, 2004: http://www.uic.asso.fr/stats/article.php3?id_article=4.
[17] All operations data from this table is 2004/2005 data from the International Union of Railways except freight data for the UK, which is 2004 data from the updated World Bank Railways Database, courtesy of Louis Thompson. Population data is from the CIA World Factbook.
[18] U.S., Mexico, and Canada data are from 2003, in the 2005 North American Transportation Statistics: http://nats.sct.gob.mx/nats/sys/tables.jsp?i=3&id=15. The UK and France are from 2003, European Union Road Federation, European Road Statistics 2006, http://www.erf.be/images/stat/2006_chap5.pdf. Japan is from OECD 2003: http://ocde.p4.siteinternet.com/publications/doifiles/012005061T015.xls. China data is from The World Bank. 1 March 2004. "China: Transport Sector Brief."
[19] Based on passenger-kilometers. U.S., U.K., France, Canada, and Japan data are from 2003 in OECD. 2006. "OECD in Figures -- 2006-2007 Edition." China figures are from 2002 in The World Bank. 1 March 2004. "China: Transport Sector Brief." The China figures do not differentiate between Private Auto and Bus, and include Waterways (1%) and Air (9%).

[20] International Union of Railways, 2004.

[21] Federal Transit Administration. 2004. "National Transit Database: 2004 Transit Profiles - All Reporting Agencies." EU Commission Directorate General for Energy and Transport. July 2006. "Urban Transport Benchmarking Initiative Year Three: Review of the Common Indicators." Central Intelligence Agency. 2006. "The World Factbook."

[22] Federal Transit Administration. 2004. "National Transit Database: 2004 Transit Profiles - All Reporting Agencies." EU Commission Directorate General for Energy and Transport. July 2006. "Urban Transport Benchmarking Initiative Year Three: Review of the Common Indicators." Central Intelligence Agency. 2006. "The World Factbook."

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