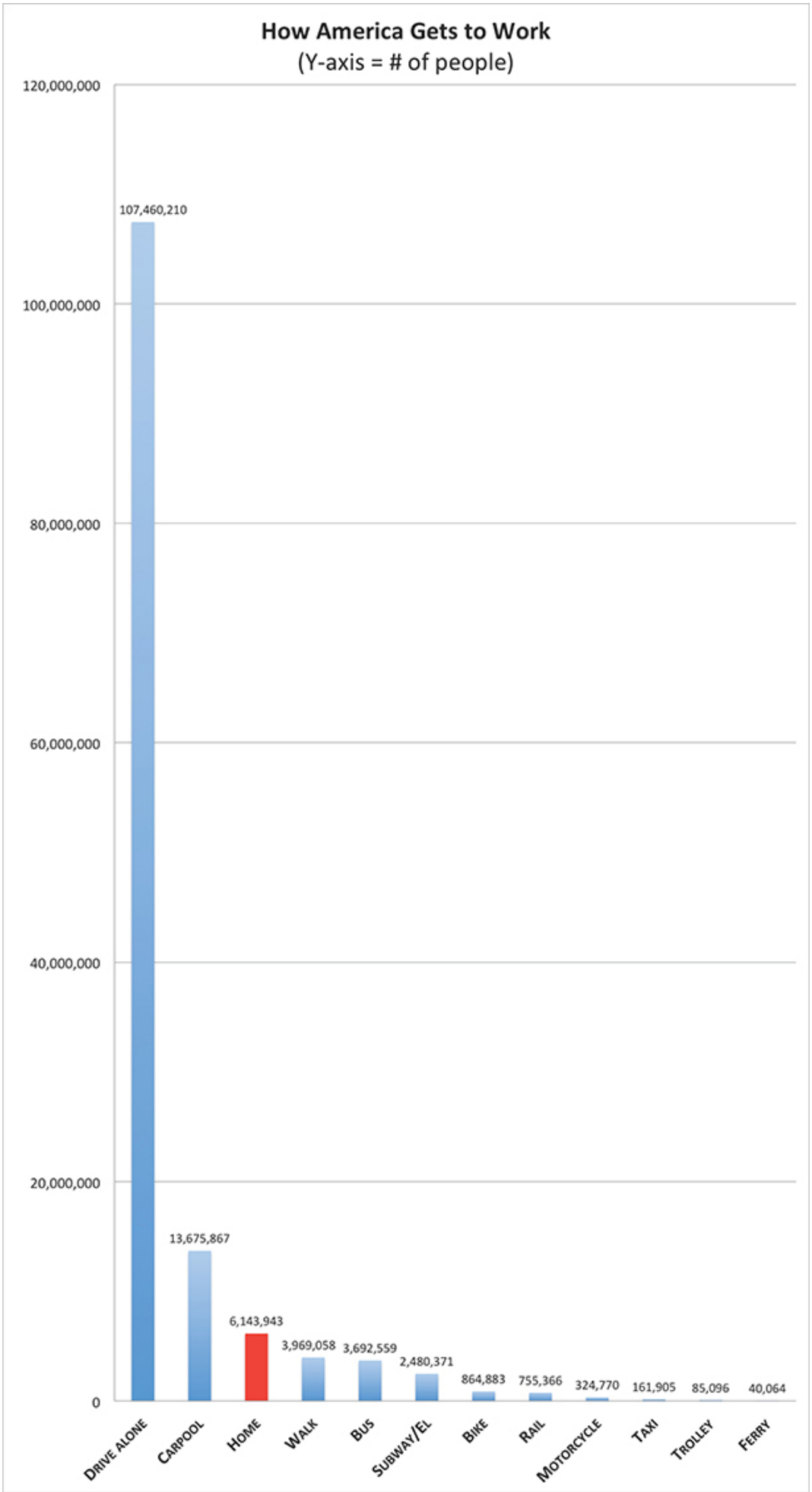

The problem isn't the number of single-occupant drivers; it's the design of the cars they're driving.

They are carrying with them four or more empty seats, taking up an entire lane instead of half of one. Until now, the right tool for the job of commuting on freeways has not existed. Motorcycles are not even 0.2% of the commuter market due to their drawbacks.

Workers who can afford cars will use them, unless less convenient than other modes of travel. The vast majority of workers want the freedom to go where and when they want to, and want the security of a traveling locker.

Lane capacity can be increased from 2,000 vehicles per hour to 4,520 VPH with Narrow Track Vehicles (NTVs) according to a Booz-Allen-Hamilton / University of California, Berkeley study. They can meet all federal automotive regulations (FMVSS) while increasing safety beyond that of other cars due to the ability to avoid pedestrians, bicyclists and other vehicles.

Note in the chart that over the last 28 years, single occupant driving has increased, while carpooling, despite all of the incentives, has decreased over the same time period from 11.8% to only 8.9% of all workers, a decrease of 25% despite taxpayer expense for HOV lanes of over $250-billion.

Public transit in 28 years increased from 4.6% to 5.2% and then fell back to 5.0% over the last 2 years. At that trajectory, it would take 1,750 years to achieve 25% of workers.

Bicycling increased from 0.4% to 0.6% in 14 years despite the huge investment of capital and real estate for bicycle lanes, yet dropped back to 0.5% in the last year. At that trajectory it would take 3,750 years to achieve 25% of the commuter market.

Table 1-41: Principal Means of Transportation to Work (Thousands)

	1989		1993		1997		1999		2001		2002		2003	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All workers	**106,630**	**100.0**	**103,741**	**100.0**	**116,469**	**100.0**	**118,041**	**100.0**	**119,896**	**100.0**	**128,618**	**100.0**	**129,142**	**100.0**
Automobile, total	93,943	88.1	91,301	88.0	101,908	87.5	103,467	87.7	105,450	88.0	112,941	87.8	113,900	88.2
Drives self	81,322	76.3	79,449	76.6	90,207	77.5	92,363	78.2	93,819	78.3	99,575	77.4	100,417	77.8
Carpool, total	12,621	11.8	11,852	11.4	11,701	10.0	11,104	9.4	11,631	9.7	13,367	10.4	13,483	10.4
2-person	9,708	9.1	9,105	8.8	9,294	8.0	8,705	7.4	9,012	7.5	NA	NA	NA	NA
3-person	1,748	1.6	1,684	1.6	1,526	1.3	1,454	1.2	1,642	1.4	NA	NA	NA	NA
4+ person[a]	1,165	1.1	1,063	1.0	881	0.8	945	0.8	977	0.8	NA	NA	NA	NA
Public transportation[b]	4,880	4.6	4,740	4.6	5,337	4.6	5,779	4.9	5,602	4.7	6,202	4.8	6,072	4.7
Taxicab	152	0.1	117	0.1	139	0.1	144	0.1	133	0.1	183	0.1	159	0.1
Bicycle[c]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	465	0.4	483	0.4
Motorcycle	795	0.7	744	0.7	738	0.6	749	0.6	846	0.7	139	0.1	148	0.1
Walks only	3,634	3.4	3,227	3.1	3,869	3.3	3,627	3.1	3,405	2.8	3,184	2.5	2,934	2.3
Other means[d]	491	0.5	474	0.5	867	0.7	987	0.8	1,052	0.9	1,056	0.8	927	0.7
Works at home	2,736	2.6	3,137	3.0	3,611	3.1	3,288	2.8	3,409	2.8	4,448	3.5	4,518	3.5

	2004		2005		2006		2007		2008		2009		2010	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All workers	**130,831**	**100.0**	**133,091**	**100.0**	**138,266**	**100.0**	**139,260**	**100.0**	**143,996**	**100.0**	**138,592**	**100.0**	**136,941**	**100.0**
Automobile, total	114,819	87.8	116,659	87.7	119,898	86.7	120,442	86.5	124,177	86.2	119,393	86.1	118,124	86.3
Drives self	101,635	77.7	102,458	77.0	105,046	76.0	105,955	76.1	108,776	75.5	105,476	76.1	104,858	76.6
Carpool, total	13,183	10.1	14,200	10.7	14,852	10.7	14,488	10.4	15,402	10.7	13,917	10.0	13,266	9.7
2-person	10,328	7.9	10,981	8.3	11,408	8.3	11,139	8.0	11,846	8.2	10,813	7.8	10,294	7.5
3-person	1,702	1.3	1,911	1.4	1,992	1.4	1,963	1.4	2,088	1.5	1,822	1.3	1,733	1.3
4+ person[a]	1,154	0.9	1,308	1.0	1,451	1.0	1,385	1.0	1,467	1.0	1,282	0.9	1,239	0.9
Public transportation[b]	5,978	4.6	6,202	4.7	6,684	4.8	6,801	4.9	7,210	5.0	6,922	5.0	6,769	4.9
Taxicab	154	0.1	176	0.1	178	0.1	179	0.1	167	0.1	157	0.1	151	0.1
Bicycle[c]	490	0.4	535	0.4	623	0.5	665	0.5	786	0.5	766	0.6	731	0.5
Motorcycle	192	0.1	248	0.2	272	0.2	284	0.2	397	0.3	294	0.2	267	0.2
Walks only	3,116	2.4	3,291	2.5	3,952	2.9	3,954	2.8	4,061	2.8	3,966	2.9	3,797	2.8
Other means[d]	1,060	0.8	1,184	0.9	1,247	0.9	1,258	0.9	1,301	0.9	1,176	0.8	1,178	0.9
Works at home	5,023	3.8	4,796	3.6	5,411	3.9	5,677	4.1	5,897	4.1	5,918	4.3	5,924	4.3

	2011		2012		2013		2014		2015		2016		2017	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All workers	**138,270**	**100.0**	**140,863**	**100.0**	**142,962**	**100.0**	**145,871**	**100.0**	**148,324**	**100.0**	**150,377**	**100.0**	**152,803**	**100.0**
Automobile, total	119,027	86.1	121,136	86.0	122,664	85.8	125,007	85.7	126,924	85.6	128,348	85.4	130,341	85.3
Drives self	105,639	76.4	107,460	76.3	109,277	76.4	111,525	76.5	113,576	76.6	114,771	76.3	116,737	76.4
Carpool, total	13,388	9.7	13,676	9.7	13,387	9.4	13,481	9.2	13,348	9.0	13,577	9.0	13,604	8.9
2-person	10,382	7.5	10,548	7.5	10,266	7.2	10,348	7.1	10,234	6.9	10,368	6.9	10,308	6.7
3-person	1,759	1.3	1,830	1.3	1,824	1.3	1,840	1.3	1,830	1.2	1,902	1.3	1,924	1.3
4+ person[a]	1,246	0.9	1,298	0.9	1,297	0.9	1,293	0.9	1,283	0.9	1,307	0.9	1,372	0.9
Public transportation[b]	6,956	5.0	7,053	5.0	7,393	5.2	7,600	5.2	7,761	5.2	7,649	5.1	7,637	5.0
Taxicab	165	0.1	162	0.1	161	0.1	166	0.1	188	0.1	227	0.2	303	0.2
Bicycle[c]	778	0.6	865	0.6	882	0.6	904	0.6	885	0.6	864	0.6	837	0.5
Motorcycle	288	0.2	325	0.2	296	0.2	285	0.2	266	0.2	251	0.2	239	0.2
Walks only	3,888	2.8	3,969	2.8	4,000	2.8	4,011	2.7	4,114	2.8	4,086	2.7	4,055	2.7
Other means[d]	1,175	0.8	1,209	0.9	1,337	0.9	1,354	0.9	1,343	0.9	1,360	0.9	1,397	0.9
Works at home	5,994	4.3	6,144	4.4	6,229	4.4	6,543	4.5	6,843	4.6	7,592	5.0	7,994	5.2

a From 2004 onward, the Carpool categories are 2-person and 3+ person; 4+ person is the sum of 4-person, 5-6 persons, and 7+ persons from the source data.
b Public transportation refers to bus, streetcar, subway, railroad, and elevated trains for years 1989-2001, and includes ferryboats from 2002-14.
c From 1989 to 2001,Bicycle data are included under Motorcycle.
d Other means include ferryboats, surface trains, and van service and other means not classified for years 1989-2001, and excludes ferryboats from 2002-14.

NOTES

Principal means of transportation to work refers to the mode of travel used to get from home to work most frequently. If more than one means of transportation was used each day, those surveyed were asked to specify the one used for the longest distance during the trip from home to work.
Component values may not add to totals due to rounding.

SOURCES

1989-2001:U.S. Department of Housing and Urban Development, American Housing Survey for the United States: 2005 (Washington, DC: 2006), table 2-24 and similar tables in earlier editions, available at http://www.census.gov/hhes/www/ahs.html as of Oct. 12, 2006.
2002-17: U.S. Department of Commerce, Bureau of Census, American Community Survey, table B08301, 1-Year estimates, available at http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t as of Oct 1, 2018.

COMMUTER CARS
CORPORATION

CALIFORNIA PATH PROGRAM
INSTITUTE OF TRANSPORTATION STUDIES UNIVERSITY OF CALIFORNIA, BERKELEY
Studies of Road Infrastructure Requirements for Small Innovative Vehicles
William L. Garrison UCB-ITS-PRR-93-16

Pages 26-27

A modern highway lane on a multi-lane facility can accommodate about 2,000 conventional passenger vehicles per hour.

Suppose Lean Machine type commuter cars begin to appear on such a lane. One possibility is that Lean Machines travel in single file. In this case, there is modest increased capacity of the lane as the fraction of Lean Machines increases, for the capacity increase to 2260 vph is only due to the shorter length of Lean Machines.

Another possibility is that Lean Machines are paired at random, say, just as they happen to join the traffic stream, and drivers move side-by-side in a happenstance-joining way. A third possibility is that drivers of Lean Machines rearrange their positions in traffic to form pairs of vehicles. In the random-paired and rearranged-paired cases the capacity of the lane increases to 4520 vph as the percentage of Lean Machines in the traffic stream reaches 100 percent (Figure 5).

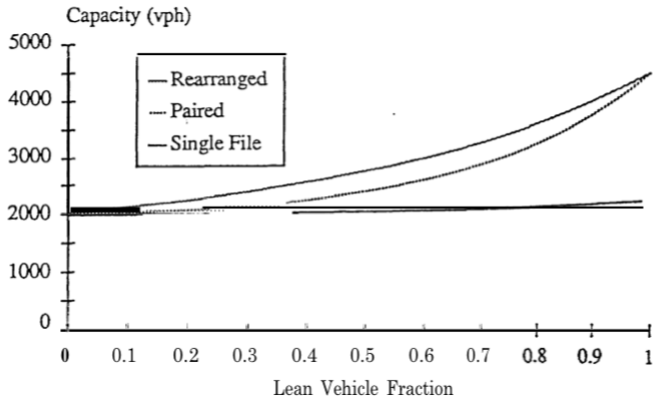

Figure 5: Capacity of a Lane of Multi-lane Highway as a Function of the Fraction of Commuter Vehicles in the Traffic Stream.

NEW ATLAS

URBAN TRANSPORT

New research indicates motorcycle commuting reduces traffic congestion and emissions

Mike Hanlon February 12th, 2012

The answer to the world's urban traffic congestion may be as simple as creating policies to promote motorcycle commuting. A detailed study by Belgian consultancy Transport & Mobility Leuven has found that a slight shift in traffic composition from cars to motorcycles significantly reduces traffic congestion and emissions.

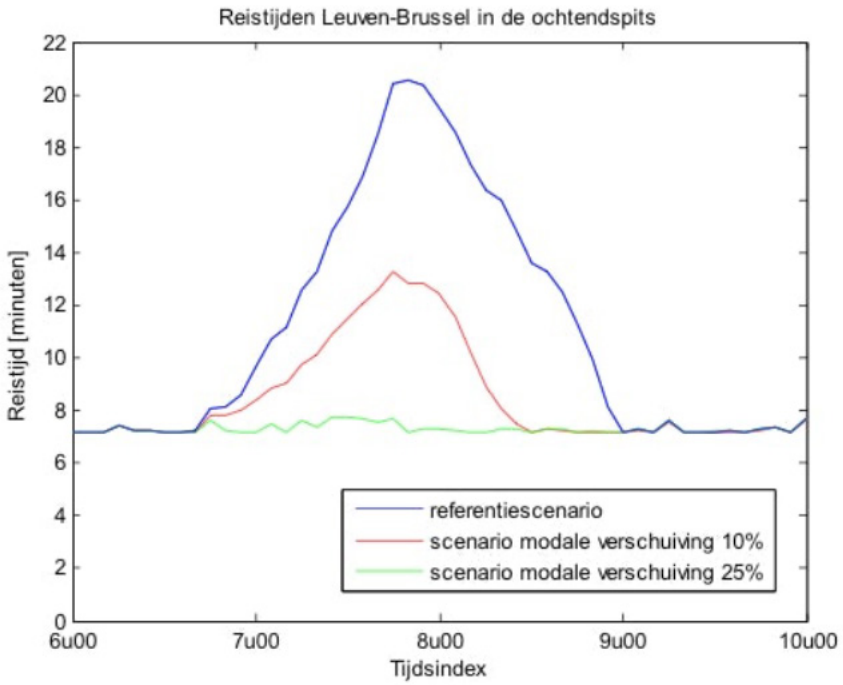

Figure 14: Travel times on the E40 between Leuven and Sint-Stevens-Woluwe/Woluwe Saint Etienne in the morning rush hour in the reference scenario and in the modal shift scenarios

The study, which was presented at the Association des Constructeurs Européens de Motocycles (ACEM) 2012 Conference in Brussels, found that if 10 percent of all private cars were replaced by motorcycles in the traffic flow of the test area, total time losses for all vehicles decreased by 40 percent and total emissions reduced by 6 percent (1 percent from the different traffic com–position of more emission-reduced motorcycles and 5 percent from avoided traffic congestion). A 25 percent modal shift from cars to motorcycles was found to eliminate congestion entirely.