

COALITION FOR SMARTER GROWTH

Transportation Safety: Comparing Rail Transit and Driving

The Metrorail collision in June 2009 prompted a spate of articles about the Metrorail system. To evaluate the relative safety of Metrorail compared to driving, the Coalition for Smarter Growth collected the following statistics.

Nationwide Comparison of Driving and Rail Safety

1) Highway crashes are the leading cause of death among Americans 3 to 34 years old, and the third leading cause of death in the U.S. among all persons under the age of 70.¹

2) In 2007, 41,059 people were killed and 2,491,000 people were injured in the estimated 6,024,000 police-reported motor vehicle traffic crashes. On average, that translates to one crash every 5.2 seconds, one injury every 12.7 seconds, and one death every 12.8 minutes.²

3) Passenger car, vans, SUVs and light truck deaths are nearly nine times greater than heavy rail transit passenger deaths (from collisions and derailments) per billion passenger miles (Table 1).

Table 1: U.S. Transportation Fatalities (2004-2006)³

	Fatalities	Billion Vehicle Miles	Fatalities per Billion Vehicle Miles	Billion Passenger Miles	Fatalities per Billion Passenger Miles
Passenger Car, Vans, SUVs & Light Truck Occupants	94,101	8,248.2	11.4	13,517.4	7.0
Heavy Rail Transit Passengers	34	1.9	17.6	43.5	0.8

Source: *National Transportation Statistics*, Bureau of Transportation Statistics, USDOT

4) In 2005, the odds of a passenger dying from a vehicle collision were 1 in 20 thousand (20,331) compared to 1 in 42 million (42,358,152) from a heavy rail transit accident.

The National Safety Council determined the odds of dying in 2005 from transportation accidents for various modes, as shown in Table 2 below. Following the methodology used by the National Safety Council in Table 2 and described in endnote 3 and 4, the odds of dying in an accident for each of the various forms of rail transit -- heavy rail, LRT, and commuter rail -- were calculated in Table 3 below.

Table 2: National Safety Council -- 2005 – “the odds of dying from...”⁴

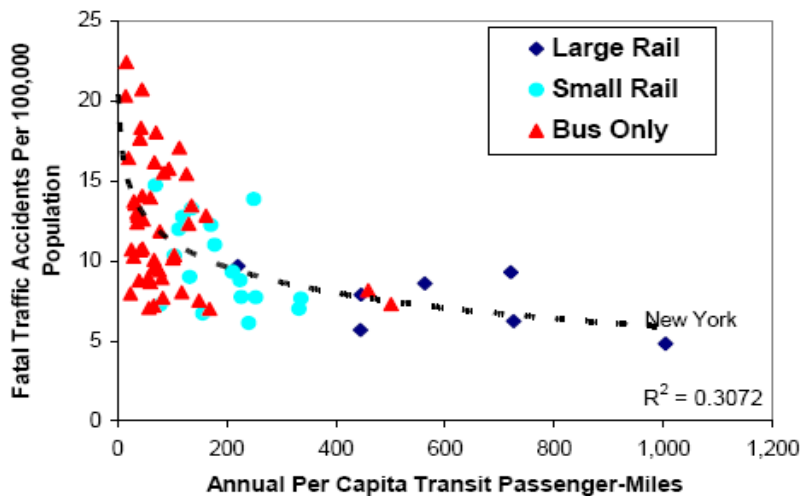
Type of Accident	Deaths (2005)	One Year Odds	Lifetime Odds
Passenger Car Occupants	14,585	20,331	261
Pedestrian	6,074	48,816	627
Motorcycle Rider	4,387	67,588	869
Pick-up Truck or Van Occupants	3,797	78,090	1,004
Pedalcyclist	927	319,857	4,111
Heavy Transport Vehicle Occupants (<i>Large Trucks</i>)	450	658,905	8,469
Bus Occupants	59	5,025,543	64,596
Railway Vehicle Occupants (<i>Amtrak</i>)	33	8,985,062	115,489
Lightning (<i>provided for comparison</i>)	48	6,177,230	79,399

Table 3: Rail Transit “the odds of dying from...”⁵

Type of Accident	Deaths (2005)	One Year Odds	Lifetime Odds
Heavy Rail Transit Occupants (<i>Metrorail</i>)	7	42,358,152	544,449
LRT Occupants	15	19,767,137	254,076
Commuter Rail Occupants (<i>VRE, MARC</i>)	28	10,589,538	136,112
Heavy, LRT, & Commuter Occupants Total	50	5,930,141	76,223

5) According to Todd Littman at the Victoria Transportation Policy Institute, as transit ridership increases, per capita traffic fatalities tend to decline. Cities with rail systems tend to have lower traffic fatalities.⁶

Figure 26 Traffic Deaths (FTA 2001)



Per capita traffic fatalities (including automobile occupants, transit occupants and pedestrians) tend to decline with increased transit ridership. Rail cities tend to have lower traffic fatalities.

6) Highway deaths fell significantly in 2008, estimated at a 10.7 percent decrease by the Governors Highway Safety Association (GHSA). The GHSA report states that high gas prices and the recession led people to drive less, reducing vehicle miles traveled and resulting in fewer fatalities.⁷

D.C. Regional Comparison of Driving and Rail Safety

- 1) WMATA has reported the following information regarding the June 22 Red Line Collision.⁸
 - a) Nine people, including the train operator of the second train, died as a result of the Metrorail collision in June 2009. Seventy-six people reported injuries from the collision and 51 people were taken to area hospitals for treatment, according to emergency first responders who transported the injured people.
 - b) WMATA (Metro) reports that between 1976 and 2009, a period of 33 years, eleven passengers have died due to collisions and derailments.⁹

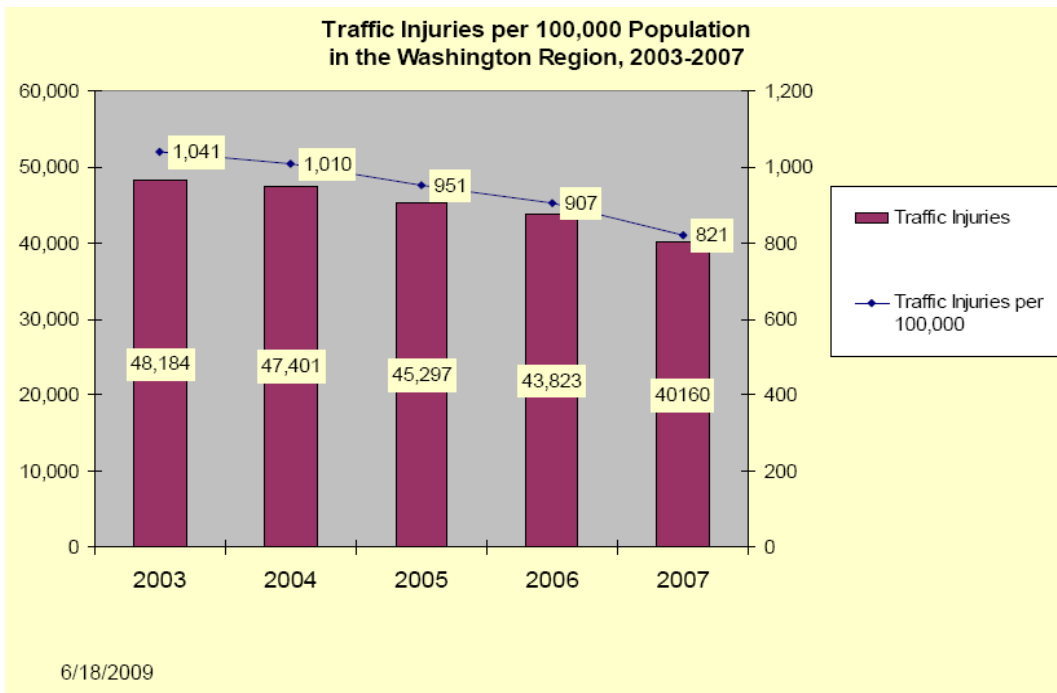
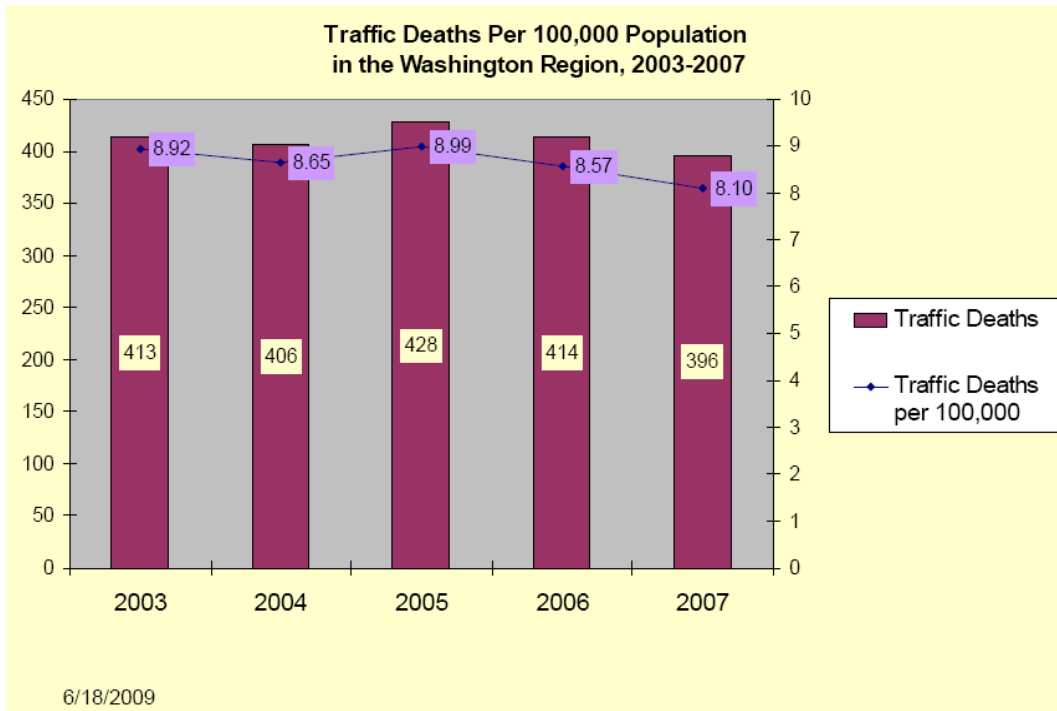
- 2) Metrorail deaths and injuries from 2003 through July 2009 are reported in Table 4 below, accounting for the June 22 Red Line Collision. There were no rail passenger deaths between 2003 and 2008. On average from 2003 to 2008, 155 rail passengers were treated for injuries each year.

Table 4: WMATA Rail Passenger Deaths and Injuries (2003-2009)¹⁰

	2003	2004	2005	2006	2007	2008	2009 (thru July)
Rail Passenger Deaths	0	0	0	0	0	0	8
Rail Passenger Injuries	174	182	179	120	161	113	131

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3) According to the Metropolitan Washington Council of Governments, 2057 people died in vehicle crashes in the five years between 2003 and 2007, and about 225,000 have been injured.¹¹ That compares to the eight passengers who have died in Metrorail accidents and the 1060 passengers injured in the seven years between 2003 and 2009.



4) In 2007, 396 people were killed and 40,160 people were injured in 82,054 vehicle crashes in the D.C. region. On average, that translates to one crash every 6.4 minutes, one injury every 13.1 minutes, and one death every 22.1 hours, more than one death each day.¹²

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- 5) D.C. regional traffic deaths in 2007 totaled 396, a rate of 9.2 deaths per billion vehicle miles, below the national average rate of 13.7 deaths. Calvert County, Charles County and Prince George's County in Maryland have the greatest number of fatalities per billion vehicle miles. The District of Columbia fatalities include nineteen pedestrian deaths, but as shown in the Coalition for Smarter Growth's *Washington Area's Mean Streets*, the actual risk of death for pedestrians is higher in the suburbs than in the city.¹³

Traffic Deaths per Billion Vehicle Miles in the D.C. Region (2007)¹⁴

County/City	Fatalities	Billion Vehicle Miles	Fatalities per Billion Vehicle Miles
District of Columbia	44	3.6	12.2
Alexandria City, VA	5	0.7	6.8
Arlington County, VA	6	1.7	3.6
Fairfax County, VA	54	10.1	5.3
Loudoun County, VA	21	2.4	8.7
Prince William County, VA	28	3.2	8.9
Calvert County, MD	17	0.8	22.3
Charles County, MD	23	1.3	17.9
Frederick County, MD	25	3.0	8.3
Montgomery County, MD	48	7.5	6.4
Prince George's County, MD	125	8.8	14.3
Regional (11-jurisdiction area)	396	43.0	9.2
National	41,059	2,996.0	13.7

Source: FARS 2007 Final, NHTSA; USDOT/VDOT/MSHA Mileage Reports

Note (Added 10/22/09):

Data for passenger miles in the D.C. region were not available; instead, vehicle miles were used to determine the regional traffic fatality rates above. Without the data on passenger miles, we could not directly compare the traffic and transit fatality rates per passenger miles for the region the way we did for the national statistics. Therefore, we have only presented the relative magnitude of deaths and injuries for Metrorail and driving but not the comparative rates per passenger miles traveled.

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SOURCES (Step by step methodologies available upon request).

¹ Source: National Center for Injury Prevention and Control. 2006. WISQARS leading cause of death reports, 2000-2006. Atlanta, GA: Centers for Disease Control and Prevention. Available: <http://webappa.cdc.gov/sasweb/ncipc/leadcaus10.html>.

² Deaths, Injuries, and Crashes from *Traffic Safety Facts, 2007 Data Overview*, National Highway Traffic Safety Administration. Available: <http://www-nrd.nhtsa.dot.gov/Pubs/810993.PDF>

³ Calculation of nine times the number of deaths from Table 1 is: $6.961 / 0.782 = 8.90$

Passenger car, vans, SUVs & light truck occupant deaths from Table 2-1: Transportation fatalities by mode for passenger car occupants and truck occupants, light, *National Transportation Statistics*, Bureau of Transportation Statistics, USDOT. Available: http://www.bts.gov/publications/national_transportation_statistics/html/table_02_01.html

Heavy rail transit passenger deaths due to collisions and derailments, *Transit Safety and Security Statistics*, Federal Transit Administration. Available: <http://transit-safety.volpe.dot.gov/Data/Samis.asp>

Passenger car, vans, SUVs & light truck occupant vehicle miles from Table 1-32: U.S. vehicle-miles for passenger cars and other 2-axle 4-tire vehicles, *National Transportation Statistics*, Bureau of Transportation Statistics, USDOT. Available: http://www.bts.gov/publications/national_transportation_statistics/html/table_01_32.html

Heavy rail transit vehicle miles from Table 1-32: U.S. vehicle-miles for transit, heavy rail, *National Transportation Statistics*, Bureau of Transportation Statistics, USDOT. Available: http://www.bts.gov/publications/national_transportation_statistics/html/table_01_32.html

Passenger car, vans, SUVs & light truck occupant passenger miles from Table 1-37: U.S. passenger-miles for passenger cars and other 2-axle 4-tire vehicles, *National Transportation Statistics*, Bureau of Transportation Statistics, USDOT. Available: http://www.bts.gov/publications/national_transportation_statistics/html/table_01_37.html

Heavy rail transit passenger miles from Table 1-37: U.S. passenger-miles for transit, heavy rail, *National Transportation Statistics*, Bureau of Transportation Statistics, USDOT. Available: http://www.bts.gov/publications/national_transportation_statistics/html/table_01_37.html

⁴ Table 2: Source: The National Safety Council (2005). *The odds of dying from...* Available: <http://www.nsc.org/research/odds.aspx>

The National Safety Council estimates are based on data from National Center for Health Statistics and U.S. Census Bureau. Deaths are classified on the basis of the Tenth Revision of the World Health Organization's "The International Classification of Diseases"(ICD). One year odds are approximated by dividing the 2005 population (296,507,061) by the number of deaths. Lifetime odds are approximated by dividing the one-year odds by the life expectancy of a person born in 2005 (77.8 years).

⁵ Fatalities due to collisions and derailments in 2005, *Transit Safety and Security Statistics*, Federal Transit Administration. Available: <http://transit-safety.volpe.dot.gov/Data/Samis.asp>
Methodology: The National Safety Council (2005). *The odds of dying from...* Available: <http://www.nsc.org/research/odds.aspx>

⁶ Litman, T. (2009). *Rail Transit In America: A Comprehensive Evaluation of Benefits*, Figure 26, p. 30. Available: <http://www.vtpi.org/railben.pdf>

⁷ GHSA. *State-by-State Survey Reveals Dramatic Highway Fatality Reduction*. News release on February 6, 2009. Available: http://www.ghsa.org/html/media/pressreleases/2009/20090206_fatality_data.html

⁸ WMATA. *News Q & A: June 22 Red Line Collision*. Available: http://www.wmata.com/about_metro/news/faqs/accident_english.cfm?#c3q2

⁹ Note: deaths are for passengers only.

In the agency's 33-year history, eighteen Metro employees have died on the job.
Employee deaths up to November 2006:

WMATA. Two Metro employees struck by Yellow Line train, one dead. News release on November 30, 2006.
Available: http://www.wmata.com/about_metro/news/PressReleaseDetail.cfm?ReleaseID=3947

Employee deaths from November 2006 to September 2009:

WMATA. Second Metro employee dies after being struck by train last week. News release on December 7, 2006. Available: http://www.wmata.com/about_metro/news/PressReleaseDetail.cfm?ReleaseID=3955
WMATA. Metro announces "Safety Stand Down" following employee fatality. News release on August 10, 2009. Available: http://www.wmata.com/about_metro/news/PressReleaseDetail.cfm?ReleaseID=3955
WMATA. Metro employee dies four days after being struck by train. News release on September 14, 2009. Available: http://www.wmata.com/about_metro/news/PressReleaseDetail.cfm?ReleaseID=4060

¹⁰ WMATA. Personal communication with A. Dupigny-Samuels and N. Bottingheimer. September 15, 2009.

Note: Rail passenger injuries are for patrons that have been transported from the facility or received medical attention.

¹¹ Source: MWCOG. *The Regional Transportation Safety Picture*. Briefing to the Transportation Safety Subcommittee on June 18, 2009. Available: <http://www.mwcog.org/uploads/committee-documents/IF5bXV9b20090618104417.pdf>

¹² Regional Deaths, Injuries, and Crashes from MWCOG. *The Regional Transportation Safety Picture*. Briefing to the Transportation Safety Subcommittee on June 18, 2009. Available: <http://www.mwcog.org/uploads/committee-documents/IF5bXV9b20090618104417.pdf>

¹³ For more information on pedestrian fatalities in the D.C. region, see the Coalition for Smarter Growth's 2008 report *Washington Area's Mean Streets: Where pedestrians face the most danger and what is being done about it*. Available: <http://www.smartergrowth.net/anx/index.cfm/8,126,527,11/csgfullpedreport.pdf>

¹⁴ Regional Deaths from State Traffic Safety Information For Year 2008, FARS 2007 Final, National Highway Traffic Safety Administration. Available: <http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/STSI/USA%20WEB%20REPORT.HTM>

National Deaths from *Traffic Safety Facts, 2007 Data Overview*, National Highway Traffic Safety Administration. Available: <http://www-nrd.nhtsa.dot.gov/Pubs/810993.PDF>

Maryland vehicle miles from Maryland State Highway Administration, 2007 Annual Mileage Report, Table HISD-FCAVMT-All. Available: http://www.marylandroads.com/OPPEN/2007_HISD_REPORTS.pdf

Virginia vehicle miles from Virginia Department of Transportation, 2007 Traffic Data Daily Vehicle Miles Traveled, Table 1206: DVMT by Physical Jurisdiction, with Towns Combined into Counties. Available: <http://virginiadot.org/info/ct-TrafficCounts-VMT2007.asp>

District of Columbia vehicle miles from Federal Highway Administration, 2007 Annual Vehicle - Miles of Travel, Table VM-2. Available: http://www.fhwa.dot.gov/policyinformation/statistics/vm02_summary.cfm