

Getting Home Safely:
***Strategies to make our communities safer for
motorists, pedestrians and bicyclists***

December 2001

PREPARED BY:

THE ROAD INFORMATION PROGRAM
1726 M STREET, N.W., SUITE 401
WASHINGTON, D.C. 20036
202-466-6706 (voice)
202-785-4722 (fax)
www.tripnet.org

Founded in 1971, The Road Information Program (TRIP)® of Washington, DC is a nonprofit organization that researches, evaluates and distributes economic and technical data on highway transportation issues. TRIP is sponsored by insurance companies, equipment manufacturers, distributors and suppliers; businesses involved in highway engineering, construction and finance; labor unions; and organizations concerned with an efficient and safe highway transportation network.

EXECUTIVE SUMMARY

Every day Americans travel 7.5 billion miles in their communities, mostly in cars and trucks, but also by foot or on bicycle. Unfortunately, an average of 44 Americans are killed every day in urban traffic accidents. These accidents are often caused by mistakes made by travelers or poor roadway conditions. Improving the design and condition of urban roadways is an effective strategy to reduce traffic fatalities.

This report looks at the latest urban traffic fatality data in the nation's largest 50 urban areas from 2000, the unique characteristics of these fatalities and at a comprehensive set of steps that can be taken to reduce traffic deaths in our communities.

Urban fatality rates were determined by dividing the number of traffic fatalities in the counties that made up each urban area by the population of those counties. Full data for each 50 urban areas and a list of the counties that were used to define each urban area can be found in appendix A and B.

The key findings of this report are:

Urban traffic fatalities claimed 15,947 lives in 2000.

- The 10 urban areas with the highest fatality rates in 2000 were Orlando, Tampa – St. Petersburg, West Palm Beach, Memphis, Austin, Phoenix, Kansas City, Jacksonville, Fort Lauderdale and Las Vegas.
- Urban traffic fatalities accounted for 38 percent of the 41,821 traffic fatalities that occurred in 2000.
- The factors impacting individual traffic fatality rates include the behavior of drivers, pedestrians and bicyclists; the design of a region's transportation facilities, particularly its roads and key intersections; the level of traffic congestion, which might actually reduce some fatalities by slowing traffic; the amount of regional tourism and the level of overall travel within a region.
- Increased population density within communities does not appear to result in lower fatality rates. Areas with high and moderate density are among the regions with the highest fatality rates and several regions with low density are among the regions with the lowest fatality rates.

Traffic fatalities which occur in urban communities are more likely than traffic fatalities in rural areas to occur at lower speeds and to be of pedestrians or bicyclists.

- While approximately 70 percent of rural traffic fatalities occurred on routes with a speed limit of 55 miles per hour or greater, only approximately 30 percent of urban traffic fatalities occurred on routes with a speed limit of 55 miles per hour or greater. In fact, 47 percent of urban traffic fatalities occurred on roads with posted speed limit of 40 miles per hour or less.
- Pedestrians and bicyclists account for approximately one in four of every urban traffic death. Motorists account for 76 percent of traffic deaths and pedestrians account for 21 percent and bicyclists 3 percent.

Increased educational and enforcement efforts can reduce traffic fatalities by improving the behavior of urban travelers. The Road Information Program (TRIP) recommends that regions also implement the following steps to improve urban traffic safety. Regions should prioritize these improvements to insure that scarce transportation dollars are spent on the projects that will provide the greatest safety benefits. Areas should also select the set of improvements that best balances the safety and access needs of its motorists, pedestrians and bicyclists.

Steps to improve motorists safety:

- Provide a median or a median barrier to separate traffic, when practical.
- Build, widen or pave shoulders and widen lanes on major routes to 12 feet.
- Repair potholes and improve pavement conditions to reduce sudden swerving and improve vehicle control.
- Improve intersection safety by constructing turn lanes, clearly marking lanes, improving signalization, improving lighting and using larger lettering on street signs and directional signs.
- Reduce roadside hazards such as trees and utility poles by removing or relocating them, when appropriate.
- Modify sign-supports and light poles near roadways with breakaway devices or crash cushions.
- Keep roads deiced during inclement weather. Preventative deicing prior to a winter storm is preferable and more cost-effective than deicing following a storm.

Steps to improve pedestrian and bicyclist safety:

- Improve pedestrian safety at intersections by installing pedestrian signals and marked crosswalks. At intersections on wider roads, median islands and curb extensions may be appropriate to improve pedestrian safety without restricting traffic flow.
- Install bike lanes on busier routes by adding a paved shoulder or widening the outside lane of four or more-lane roads to 14 feet to accommodate bicyclists safely.
- Install sidewalks, preferably not immediately adjacent to the road, when potential demand warrants.

Improving safety in our communities has taken on an even greater significance in the wake of September 11. As the nation works to enhance homeland security, it is critical that we take steps to further safeguard Americans by taking action to improve community traffic safety.

A critical challenge in improving the safety of Americans will be to reduce significantly the number of people killed every year in urban traffic accidents. The National Highway Traffic Safety Administration reports that 15,947 people were killed in 2000 in urban traffic accidents. Reducing the number of motorists, pedestrians and bicyclists killed in our communities in traffic accidents will require not only further improvements in vehicle safety and improvements in driver, pedestrian and bicyclist behavior, but also a variety of improvements in roadway safety features.

This report is based on analysis of highway traffic safety data from the National Highway Traffic Safety Administration and also includes a variety of recommendations for roadway safety improvements based on studies by the U.S. Department of Transportation, the Federal Highway Administration and the Texas Transportation Institute.

Urban Traffic Fatalities

Although urban traffic fatalities occur at a lower rate than rural traffic fatalities, they still accounted for 38 percent of the 41,821 traffic fatalities in 2000. Urban traffic fatalities patterns have several differences from rural traffic deaths. Urban fatalities are more likely than rural accidents to occur at lower speeds. In fact, the majority of urban traffic fatalities occur on roads with posted speed limits less than 55 miles per hour. While approximately 70 percent of rural traffic fatalities occurred on routes with a posted speed limit of 55 miles per hour or greater, only approximately 30 percent of urban traffic fatalities occurred on routes with a posted speed limit of 55 miles per hour or greater. In fact, 47 percent of urban traffic fatalities occurred on roads with a posted speed limit of 40 miles per hour or less.

Chart 1. Persons killed in motor vehicle traffic crashes by posted speed limit and land use, 2000

Speed limit	Rural	Urban
30 mph or less	1,021	2,902
35 or 40 mph	1,990	4,548
45 or 50 mph	3,683	3,368
55 mph	10,829	2,365
60 mph or higher	6,465	2,365
No statutory limit	153	16
Unknown	383	383
Total	24,524	15,947

Source: National Highway Traffic Safety Administration

Another difference between rural and urban traffic accidents is the higher rate of pedestrian and bicyclist fatalities in urban accidents. While the majority of urban traffic

fatalities are motorists, either drivers or passengers, 3,768 urban traffic deaths in 2000 were either pedestrians or bicyclists. Of the 15,947 urban traffic fatalities in 2000, 12,179 were motorists, 3,268 were pedestrians and 421 were bicyclists (79 of the fatalities were listed as unknown non-motorist). As a result, 76 percent of urban traffic fatalities in 2000 were motorists, 21 percent were pedestrians and 3 percent were bicyclists.

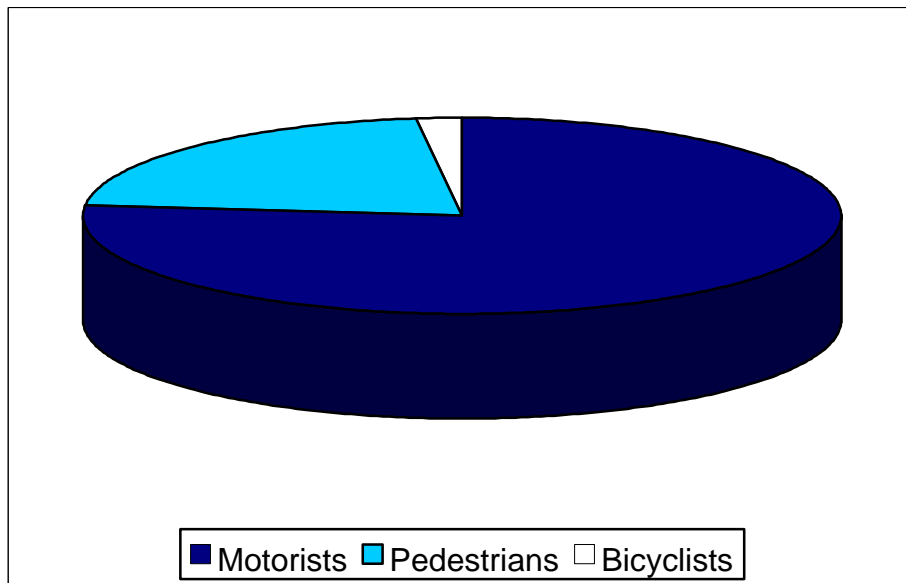


Chart 2. Share of urban traffic fatalities, 2000

Source: TRIP analysis of National Highway Traffic Safety Administration data

Urban Traffic Fatality Rates

To estimate the rate of traffic fatalities by urban area, TRIP analyzed traffic fatality data for the nation's 50 most populous urban areas for 2000. The fatality data was gathered by the National Highway Traffic Safety Administration, which maintains the Fatality Analysis Reporting System (FARS), which includes data on every traffic fatality which occurs in the U.S. TRIP defined each of the urban areas by the county or counties

that make up the urbanized area because the FARS database only tracks fatalities by either the county or the actual municipality in which it occurred (a list of which counties were used for each urban area can be seen in Appendix B). For this report, for example, urban Boston is defined as Middlesex, Norfolk and Suffolk Counties. The total number of fatalities in each urban area was then compared to the region’s population to determine the rate of traffic fatalities, which occurred in the region in 2000 per 100,000 persons.

The TRIP analysis found that the urban areas with the highest traffic fatality rates per 100,000 persons in 2000 were Orlando, Tampa – St. Petersburg, West Palm Beach, Memphis and Austin. A listing of the fatality rates for each of the nation’s largest 50 urban areas can be found in appendix A. This list also includes the total number of motorist, pedestrian and bicyclist traffic fatalities, which occurred in each region in 2000.

Chart 3. Urban areas with greatest number of traffic fatalities per 100,000 persons, 2000

Orlando	17.2
Tampa-St. Petersburg	16.7
West Palm Beach	15.4
Memphis	14.3
Austin	14.2
Phoenix	14.1
Kansas City	14.0
Jacksonville	13.9
Fort Lauderdale	13.7
Las Vegas	13.7

Source: TRIP analysis of National Highway Traffic Safety Administration data

The reasons that there are significant differences in fatality rates among large urban areas are complex and beyond the scope of this report to examine fully. It is likely that each region's fatality rate is the result of a complex set of factors. It is also unlikely that the differences in regional safety rates can be blamed largely on one or two factors. The factors likely impacting urban traffic fatality rates include: the behavior of drivers, pedestrians and bicyclists; the design of a region's transportation facilities, particularly its roads and key intersections; the level of traffic congestion, which might actually reduce some fatalities by slowing traffic; the amount of regional tourism, and the level of overall mobility within a region.

While the design of a community may play some factor in a region's fatality rate, land density does not appear to be a significant factor in regional traffic safety. If land density had a significant impact on urban traffic safety data, high density areas (3,500 persons per square mile and above) and medium density areas (2,500 to 3,499 persons per square mile) would have the lowest fatality rates, while areas with lower density (below 2,500 persons per square mile) would have the highest fatality rates. Instead, two areas with high density, Las Vegas and Fort Lauderdale, as well as three areas with moderate density, Orlando, Tampa – St. Petersburg and West Palm Beach are among areas with the highest fatality rates. Conversely, four areas with low density, Cleveland, Norfolk – Virginia Beach, Minneapolis – St. Paul and Pittsburgh are among the regions with the lowest traffic fatality rates.

Improving urban traffic safety

Reducing the number of motorists, pedestrian and bicyclists killed annually in urban traffic accidents will require the implementation of a comprehensive set of safety improvements. These solutions should be prioritized to insure that scarce transportation dollars are spent on the projects that will provide the greatest safety benefits. While educational and police activity to improve the traveling behavior of motorists, pedestrians and bicyclists continues to be needed, the following set of recommendations are aimed at making our urban transportation system safer.

When people drive, it is likely that they will occasionally make errors or leave the roadway either through inexperience, inattention or inclement conditions. When driving errors do occur, it is important that the design of the roadway reduces the chance that such an error will result in an injury either to the occupants of the vehicle or to other motorists, pedestrians and bicyclists. The following recommendations are designed to increase urban safety. Adopting an appropriate set of safety measures for a community will require deciding which mix of solutions will best balance the safety and access needs of motorists, pedestrians and bicyclists.

Roadway Safety

Improve the design and condition of highways and roads

- Provide a median or a median barrier to separate traffic. The Federal Highway Administration has found that the construction of median barriers can reduce fatalities at a location by 73 percent.
- Build, widen or pave shoulders. Shoulder improvements have been found to reduce fatalities on that facility by 22 percent.
- Improve pavement conditions. Potholes and rough roads can cause drivers to swerve suddenly or lose control of a vehicle. Improved pavement conditions can also improve traction and improve vehicle handling.
- Widen lanes on high-volume routes. For freeways and major arterial roads, a lane-width of 12 feet is optimum for traffic safety.
- Keep roads deiced during inclement weather. A Marquette University study found that accidents on ice and snow covered roads decreased by 88 percent following deicing. Preventative deicing prior to a winter storm is preferable and more cost-effective than deicing following snow or ice.

Improve the design of intersections

- Construct turn lanes and improve lane channelization. Adding turning lanes and improving lane markings have been found to reduce fatalities by 47 percent.

- Install traffic lights or stop signs if warranted by traffic. Improved traffic control at intersections has been found to reduce fatalities by 53 percent at that site.
- Improve lane markings and signage. Better lighting and clearer and larger sign markings such as street names can improve safety by reducing the complexity of an intersection.

Reduce roadside hazards

Approximately one-third of all traffic fatalities are the result of a vehicle leaving the roadway and striking an object. The following improvements can help protect motorists when a vehicle leaves the roadway.

- Remove or relocate hazardous fixed objects when possible. Removing or relocating trees, utility poles or large boulders can reduce the likelihood of a vehicle leaving the roadway resulting in a fatality.
- Modify highway hardware with breakaway features. Modify rigidly-mounted sign supports and light poles near roadways with breakaway devices to minimize the impact on vehicles of a collision.
- Shield fixed objects with highway barriers. Crash cushions can be installed around bridge supports or other fixed items that cannot be removed or relocated.

Improve pedestrian and bicycle safety by improving intersection crossings and providing appropriate facilities

Pedestrians and bicyclists are most vulnerable when crossing a street. But their safety can be improved greatly if they cross at a well-designed intersection. Good intersection design may encourage pedestrians to cross at intersections rather than away from them, where they are at greater risk.

- Install traffic signals, which include pedestrian signals, or stop signs, when traffic volume warrants.
- Improve lighting at intersections to better illuminate pedestrians and bicyclists.
- Build median islands or extend curbs at intersection on larger roads to provide greater refuge for crossing pedestrians, without restricting traffic flow.
- Install a well-marked crosswalk at busier intersections.
- Install bike lanes on busier routes. Bike safety can be greatly improved by providing bicyclists with a lane by adding a paved shoulder to a road or by widening its outside lane to 14 feet. The bike lane may be indicated with distinctive markings.
- Areas designated for bike use should be maintained free of potholes, pavement joints or other surface irregularities.
- Install sidewalks, preferably not immediately adjacent to the road, when potential demand warrants.

Appendix A	Total	Total	Total	Total	Fatalities
2000 Fatalities	vehicle	pedestrian	bicyclist	traffic	per 100,000
	fatalities	fatalities	fatalities	fatalities	people
Anaheim	115	39	8	162	5.7
Atlanta	248	51	2	301	12.9
Austin	99	14	2	115	14.2
Baltimore	92	27	2	121	8.6
Boston	95	45	3	143	5.1
Buffalo	50	16	3	69	7.3
Chicago	362	121	9	492	7.8
Cincinnati	60	10	0	70	7.0
Cleveland	57	11	1	69	4.9
Columbus	58	14	1	73	6.8
Dallas-Fort Worth	332	76	3	411	11.2
Denver	167	50	5	222	11.5
Detroit	268	96	8	372	9.2
Fort Lauderdale	176	40	6	222	13.7
Grand Rapids	91	8	8	107	13.2
Hartford	66	16	1	83	9.7
Houston	302	78	9	389	11.4
Indianapolis	61	11	0	72	8.4
Jacksonville	82	21	5	108	13.9
Kansas City	123	17	0	140	14.0
Las Vegas	147	38	3	188	13.7
Long Island	190	63	7	260	9.4
Los Angeles	495	217	29	741	7.8
Louisville	84	21	0	105	13.7
Memphis	127	24	0	151	14.3
Miami	216	79	7	302	13.4
Milwaukee	39	13	1	53	5.6
Minneapolis - St. Paul	117	15	3	135	6.2
New York	217	191	15	423	4.7
Norfolk - Virginia Beach	65	10	4	79	6.1
North Jersey	128	70	3	201	7.2
Oklahoma City	86	13	1	100	10.0
Orlando	113	37	4	154	17.2
Philadelphia	172	25	5	202	8.4
Phoenix	330	82	22	434	14.1
Pittsburgh	66	15	0	81	6.3
Portland, OR	37	20	0	57	5.7
Raleigh	81	10	3	94	9.7
Rochester	47	6	0	53	7.2
Sacramento	90	19	7	116	9.5
Salt Lake City	62	22	4	88	9.8
San Antonio	134	32	1	167	12.0
San Diego	198	65	2	265	9.4
San Francisco-Oakland	179	82	12	273	7.0
San Jose	70	32	3	105	6.2
Seattle	94	20	6	120	6.9
St. Louis	91	33	0	124	9.1
Tampa-St. Petersburg	229	77	14	320	16.7
Washington, DC	204	71	2	277	8.1
West Palm Beach	138	32	4	174	15.4

Appendix B	
	Counties
Anaheim	Orange
Atlanta	Clayton, Cobb, DeKalb, Fulton,
Austin	Travis
Baltimore	Baltimore County, Baltimore City
Boston	Middlesex, Norfolk, Suffolk
Buffalo	Eire
Chicago	Cook, DuPage
Cincinnati	Hamilton, Kenton (KY)
Cleveland	Cuyahoga
Columbus	Franklin
Dallas-Fort Worth	Dallas, Tarrant
Denver	Adams, Arapahoe, Denver, Jefferson
Detroit	Macomb, Oakland, Wayne
Fort Lauderdale	Broward
Grand Rapids	Kent, Ottawa
Hartford	Hartford
Houston	Harris
Indianapolis	Marion
Jacksonville	Duval
Kansas City	Clay, Jackson, Wyandotte (KS)
Las Vegas	Clark
Long Island	Nassau, Suffolk
Los Angeles	Los Angeles
Louisville	Jefferson, Floyd (IN)
Memphis	Shelby, Crittenden (AR), DeSoto (MS)
Miami	Dade
Milwaukee	Milwaukee
Minneapolis - St. Paul	Dakota, Hennepin, Ramsey, Washington
New York	Bronx, Kings, New York, Queens, Richmond, Westchester
Norfolk-Virginia Beach	Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, Virginia Beach
North Jersey	Bergen, Essex, Hudson, Union
Oklahoma City	Canadian, Cleveland, Grady, Oklahoma
Orlando	Orange
Philadelphia	Bucks, Delaware, Montgomery, Camden (NJ)
Phoenix	Maricopa
Pittsburgh	Alleghany
Portland, OR	Multnomah, Clark (WA)
Raleigh	Durham, Orange, Wake
Rochester	Monroe
Sacramento	Sacramento
Salt Lake City	Salt Lake
San Antonio	Bexar
San Diego	San Diego
San Francisco-Oakland	Alameda, Contra Costa, San Francisco, San Mateo
San Jose	Santa Clara
Seattle	King
St. Louis	St. Louis County, St. Louis City
Tampa-St. Petersburg	Hillsborough, Pinellas
Washington, DC	District of Columbia, Arlington, Fairfax, Montgomery, Prince Georges
West Palm Beach	Palm Beach