DANGEROUS BY DESIGN 2011

Solving the Epidemic of Preventable Pedestrian Deaths

Transportation for America

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The Surface Transportation Policy Partnership
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This report, including data for each state and an interactive map of 40,000+ pedestrian fatalities from 2000-2009, can be accessed online at: t4america.org/resources/dangerousbydesign2011

Transportation for America

About Transportation for America

Transportation for America (T4 America) is the largest, most diverse coalition working on transportation reform today. Our nation's transportation network is based on a policy that has not been significantly updated since the 1950's. We believe it is time for a bold new vision — transportation that guarantees our freedom to move however we choose and leads to a stronger economy, greater energy security, cleaner environment and healthier America for all of us. We're calling for more responsible investment of our federal tax dollars to create a safer, cleaner, smarter transportation system that works for everyone.

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Executive Summary

The decades-long neglect of pedestrian safety in the design and use of American streets is exacting a heavy toll on our lives. In the last decade, from 2000 through 2009, more than **47,700** pedestrians were killed in the United States, the equivalent of a jumbo jet full of passengers crashing roughly every month.

On top of that, more than **688,000** pedestrians were injured over the decade, a number equivalent to a pedestrian being struck by a car or truck every 7 minutes.[1] Still more Americans are getting far less exercise in their daily lives than they would be if they felt safer getting about on foot or bicycle.

Despite the magnitude of these avoidable tragedies, little public attention – and even less in public resources – has been committed to reducing pedestrian deaths and injuries in the United States. On the contrary, transportation agencies typically prioritize speeding traffic over the safety of people on foot or other vulnerable road users.

Nationwide, pedestrians account for nearly **12 percent** of total traffic deaths. But state departments of transportation have largely ignored pedestrian safety from a budgetary perspective, allocating only **1.5 percent** of available federal funds to projects that retrofit dangerous roads or create safe alternatives.[2]

This bias is also evident in the trends in U.S. traffic-related fatalities over the last ten years. From 2000 to 2009, the number of motorists and their passengers who have died in traffic crashes dropped a remarkable **27 percent** over the decade. Worthy efforts to improve vehicle design, encourage seat belt and child booster seat use, eliminate drunk driving and end distracted driving have helped save the lives of thousands of motorists and their passengers.

Unfortunately, pedestrian fatalities have not received the same kind of attention or response.

Pedestrian fatalities have fallen at only half the rate of motorists, dropping by just over **14 percent** during the period. In many places, including **15** of the country's largest metro areas, pedestrian fatalities have actually ***increased***, even as overall traffic deaths fell. And a recent report from the National Highway Traffic Safety Administration found that pedestrian crashes are becoming deadlier, with the probability of a collision resulting in the death of a pedestrian increasing by more than one-third in just ten years.[3]

Children, older adults, and racial and ethnic

1 NHTSA. National Pedestrian Crash Report. 2008. <http://www-nrd.nhtsa.dot.gov/Pubs/810968.pdf>

2 Federal funds categorized as a bicycle or pedestrian improvement type. Includes funds for sidewalks, bicycle paths and lanes, crosswalks, and other projects or programs that improve existing, or provide new infrastructure, or promote safe walking and bicycling. Data is derived from the Federal Highway Administration's Fiscal Management Information System for the fiscal years 2005 through 2008.

3 ibid.

minorities are disproportionately represented in this figure, but people of all ages and all walks of life have been struck down in the simple act of walking. These deaths typically are labeled "accidents," and attributed to error on the part of motorist or pedestrian. In fact, however, the majority of these deaths share a common thread: they occurred along "arterial" roadways that were **dangerous by design**, streets engineered for speeding traffic with little or no provision for people on foot, in wheelchairs or on bicycles.

The Most Dangerous Large Metro Areas for Pedestrians

This report spotlights the issue of pedestrian safety and the factors that make walking dangerous. Using ten years of pedestrian fatality data, as well as newly-released Census data on walking, we calculate a **Pedestrian Danger Index (PDI)** to rank the country's largest metropolitan areas according to their relative risk to walkers. Further, we mine the data for details on who is most likely to be killed, and what types of roads are most dangerous for pedestrians.

Researchers at the Surface Transportation Policy Partnership in the 1990s developed the PDI in an effort to establish a level playing field for comparing metropolitan areas based on the danger to pedestrians. The PDI computes the rate of pedestrian deaths relative to the amount of walking in that area, correcting for the fact that the cities where more people walk on a daily basis are likely to have a greater number of pedestrian fatalities. The chart below, ranking major metros by the PDI, demonstrates that the most dangerous places to walk are the communities failing to make smart infrastructure investments that make roads safer for everyone.

There is a growing recognition that Americans must increase physical activity, including walking or bicycling, if we are to nudge the needle on ballooning health care costs, reducing obesity and overweight, cardiovascular and other chronic illnesses linked to a lack of exercise. At the same time, it is increasingly clear that these low-cost, active modes of transportation are an essential component of efforts to limit the negative impacts of traffic congestion, oil dependency and climate change.

Over the last decade, a growing number of communities have gotten the message, and begun to retrofit their more dangerous roadways to be safer for people on foot, on bicycles and in cars, an effort that has helped reduce total pedestrian deaths.

Still, **most Americans continue to live in places where walking is risky business for their health and safety, where roads are designed solely to move traffic and where pedestrians are viewed as an obstacle.** For the nation as a whole, the pedestrian death rate remains stubbornly high and tops most of our international peers by a significant margin. Canada and Australia, both developed countries with a similar infrastructure to the U.S., have pedestrian fatality rates of **1.1** and **0.9** per 100,000, respectively, compared to **1.6** for the U.S.

The Most Dangerous Large Metro Areas, Ranked by PDI

Rank	Metro area	Total pedestrian deaths (2000-2009)	Avg. annual pedestrian deaths per 100,000 (2000-2009)	Percent of workers walking to work (2005-2009)	**Pedestrian Danger Index**
1	Orlando-Kissimmee, FL	557	3.0	1.2%	**255.4**
2	Tampa-St. Petersburg-Clearwater, FL	905	3.5	1.6%	**212.7**
3	Jacksonville, FL	342	2.8	1.6%*	**177.8**
4	Miami-Fort Lauderdale-Pompano Beach, FL	1,555	2.9	1.7%	**167.9**
5	Riverside-San Bernardino-Ontario, CA	938	2.5	1.8%	**139.2**
6	Las Vegas-Paradise, NV	421	2.5	1.9%	**135.2**
7	Memphis, TN-MS-AR	266	2.1	1.6%*	**132.6**
8	Phoenix-Mesa-Scottsdale, AZ	867	2.3	1.7%	**132.4**
9	Houston-Sugar Land-Baytown, TX	1,024	2.0	1.5%	**128.2**
10	Dallas-Fort Worth-Arlington, TX	942	1.6	1.4%	**119.4**

**These two metros have a margin of error of over 10 percent for the Journey To Work data.*

This has left us with a dilemma: Public health officials encourage Americans of all ages to walk and bike more to stem the costly and deadly obesity epidemic – yet many of our streets are simply not safe. **Americans get to pick their poison**: less exercise and poor health, or walking on roads where more than 47,000 people have died in the last ten years.

Why pedestrian safety is in the federal interest

Both the traffic safety and related health crises are of *national* significance.

For decades, federal dollars have been invested in thousands of miles of state and local highways. Pedestrian safety is often perceived as a strictly local issue, but **67 percent of all 47,000+ pedestrian fatalities from 2000 to 2009 occurred on federal-aid roadways** — major roads eligible to receive federal funding for construction and improvements with federal guidelines or oversight for design.

Taxpayer money that goes to the federal government and is distributed to the states for transportation should be used to build streets, roads and highways that are safe for all users. With millions of Americans walking along and crossing these federally funded roads each day, the billions in federal dollars spent on them each year must result in safer conditions for pedestrians.

Fortunately, improving the pedestrian environment requires a relatively small public investment, one greatly outweighed by the cost savings that would result from reducing traffic-related fatalities and improving health. Congress has

an opportunity to help communities fix past mistakes and make our streets safer – not just for people on foot, but for everyone who uses them.

We recommend that the next federal transportation spending bill include the following provisions:

- **Retain dedicated federal funding for the safety of people on foot or on bicycle.** Congress is currently contemplating elimination of dedicated funding for **Transportation Enhancements** and the **Safe Routes to School** program, the two largest funding sources for bike and pedestrian facilities. Without these committed funding streams, states will likely reduce spending for safety features like sidewalks, crosswalks and trails.
- **Adopt a national complete streets policy.** Ensure that all federally funded road projects take into account the needs of all users of the transportation system, including pedestrians, bicyclists and public transportation users, as well as children, older adults, and individuals with disabilities.
- **Fill in the gaps**. Beyond making new and refurbished roads safer for pedestrians, we need to create complete networks of sidewalks, bicycle paths and trails so that residents can travel safely throughout an area. To this end, the Rails-to-Trails Conservancy has gathered testimony from 53 communities outlining how they could fill in strategic gaps to make walking and bicyling to routine destinations more safe and convenient with small targeted federal grants.
- **Commit a fair share for safety**. In 2008, only two states spent any of their Highway Safety funding to improve infrastructure for bicycling and walking. Yet, pedestrians and bicyclists make up 14 percent of all traffic-related fatalities. Federal, state and local governments should set safety goals that not only reduce fatalities overall, but also reduce fatalities for individual modes, with separate safety goals for pedestrians, bicyclists, motorcyclists and motorists.

In a complete streets project in historic downtown Pottstown, Pa., a lane each way was removed, and a center lane, more (angled) parking and bike lanes were added.

- **Hold states accountable for creating communities that are safe for walking**. Congress must hold states accountable to ensure that transportation funds are spent wisely, by ensuring that:
  - New streets are built to be safe for pedestrians, bicyclists, public transportation users, and motorists alike;
  - The most dangerous roads are retrofitted for safety; and,
  - Federal safety dollars result in lives saved and a more active population.

NYC used federal dollars to save lives of pedestrians

New York City used federal dollars to help make their streets safer for older pedestrians, resulting in dramatic decreases in crashes and fatalities.

Though older adults comprise just 12 percent of New York City's population, 39 percent of pedestrian fatalities are seniors. This disturbing trend prompted City transportation officials to launch a pedestrian safety initiative based on statistical analysis and mapping with pilot runs in every borough. The challenges for older adult pedestrians were clear: 1) not enough time to cross the streets; 2) broken or missing pedestrian ramps; 3) faded and hard-to-see markings; 4) turning vehicles failing to yield; and 5) poor drainage or ponding in crosswalks.

The city was able to improve safety with many low-cost solutions. They created 35 pedestrian refuge islands; 55 new left turn lanes to better manage traffic; 12 curb extensions to shorten crossing distances; 8 median tip extensions to provide safer crossings; 4 pedestrian fences to encourage pedestrians to use crosswalks; and 600 intersections allowed for more time to cross the street.

The initiative was an enormous success, with the numbers to prove it. **Fatalities and pedestrian crashes decreased in almost all areas, by as little as 9 percent and as much as 60 percent.** Targeted spending to make walking safer has tangible results.

Source: http://www.nyc.gov/html/dot/html/sidewalks/safeseniors.shtml

With sporadic sidewalks, numerous curb cuts, seven lanes and crosswalks spaced a half mile or more apart, this arterial road in Atlanta, Georgia is all too common in many urban and suburban areas. For example, residents of the apartment complex at right— perhaps like the pedestrian in the turning lane — have no convenient safe option to reach the store across the street on foot, just a few hundred feet away.

The Most Dangerous Places for Walking

A city or town where many people walk may see a higher absolute number of pedestrians killed than a place where road conditions dissuade people from walking, simply because there are more people walking in that city's population. But the fatalities per trip taken on foot in these places are typically lower than in places where road conditions are hostile to those who do walk.

In analyzing the relative danger to pedestrians, the share of people who walk to work[1] in a given place can serve as a proxy for the total number of walkers in the population.[2] Many of the areas with the most dangerous roads have both a high proportion of pedestrian traffic deaths and a low percentage of people walking to work. These are places where pedestrians have a high chance of being killed while walking, a risk captured by the Pedestrian Danger Index.

Researchers at the Surface Transportation Policy Partnership in the 1990s developed the Pedestrian Danger Index (PDI) in an effort to establish a level playing field for comparing metropolitan areas based on the danger to pedestrians. The PDI computes the rate of pedestrian deaths relative

1 The percentage of commuters walking to work acts as a measure of exposure to the risk of being killed as a pedestrian. It is derived from the 2005-2009 American Community Survey Journey-to-Work data collected by the U.S. Census Bureau.

2 In order to address concerns that Journey-to-Work data captures only a small share of total trips made, Transportation for America calculated a regression analysis of the American Community Survey's Journey-to-Work data and the National Household Travel Survey (NHTS) data on all trips by all people. We determined the two measures show a good correlation, with an R-squared of 0.67. This means that about two-thirds of the variation in the ACS data can be explained by the NHTS.

Is Florida Particularly Dangerous for Seniors?

The top four most dangerous metropolitan areas for walking are in Florida, known as a haven for retirees. Is there a connection? An analysis of the pedestrian fatality statistics reveals that Florida's senior population is not overrepresented compared to the national average: 22 percent of pedestrian deaths in Florida in the years studied were older adults (65 years and older), the same as the national average of 22 percent. More than half of the states had rates higher than Florida's. In fact, over one-third of all pedestrian deaths in Hawaii, New Hampshire, Massachusetts, Maine and New York were older adults.

to the amount of walking in that area, correcting for the fact that the cities where more people walk on a daily basis are likely to have a greater absolute number of pedestrian fatalities. The PDI demonstrates that the most dangerous places to walk are the communities failing to make smart infrastructure investments that make roads safer for everyone.

For this edition of the report, we analyze ten years (2000 to 2009) of pedestrian fatalities in each county of the United States, and calculate the PDI for 52 of the largest metropolitan areas (over 1 million population) in the U.S. The ten-year PDI reveals long-term trends in the pedestrian safety problem and is the most reliable way to use existing data.

Orlando tops the list of most dangerous places because of its high pedestrian fatality rate of 3.0 per 100,000 people,[3] despite only 1.2 percent of people walking to work. In other words, the few people who do walk in Orlando face a relatively high risk of being killed in a traffic crash.

The list of the most dangerous metro areas for walking is striking in that all of the ten metro areas are in the South or West, and have seen rapid growth in recent decades of low-density development, characterized by high-speed urban roads that are particularly hazardous for walking. A national FHWA survey of how travelers feel about the nation's transportation system affirms these results, finding that respondents in the South rank their pedestrian safety worse than their counterparts in the rest of the country.[4]

Table 1 ranks the largest metro areas (those with at least 1 million residents as of 2009) according to their ten-year Pedestrian Danger Index. The safest places for walking are those with a lower

3 Orlando's tourism industry draws nearly 50 million visitors to the area every year, which may skew the PDI score if significant numbers of tourists are killed as pedestrians. The Fatality Analysis Reporting System data we analyze for this report does not provide residence information for victims, making this difficult to verify. However, few pedestrian fatalities occur near Orlando's tourist destinations, which would seem to indicate that tourists do not comprise a significant portion of the metro area's pedestrian fatalities.

4 FHWA. Traveler Opinion and Perception (TOP) survey. 2005.

Table 1: The most dangerous large metro areas for pedestrians (ranked by Pedestrian Danger Index)

Rank	Metro area	Total pedestrian deaths (2000-2009)	Avg. annual pedestrian deaths per 100,000 (2000-2009)	Percent of workers walking to work (2005-2009)	**Pedestrian Danger Index**
1	Orlando-Kissimmee, FL	557	3.0	1.2%	**255.4**
2	Tampa-St. Petersburg-Clearwater, FL	905	3.5	1.6%	**212.7**
3	Jacksonville, FL	342	2.8	1.6%*	**177.8**
4	Miami-Fort Lauderdale-Pompano Beach, FL	1,555	2.9	1.7%	**167.9**
5	Riverside-San Bernardino-Ontario, CA	938	2.5	1.8%	**139.2**
6	Las Vegas-Paradise, NV	421	2.5	1.9%	**135.2**
7	Memphis, TN-MS-AR	266	2.1	1.6%*	**132.6**
8	Phoenix-Mesa-Scottsdale, AZ	867	2.3	1.7%	**132.4**
9	Houston-Sugar Land-Baytown, TX	1,024	2.0	1.5%	**128.2**
10	Dallas-Fort Worth-Arlington, TX	942	1.6	1.4%	**119.4**
11	Atlanta-Sandy Springs-Marietta, GA	798	1.6	1.4%	**119.3**
12	Detroit-Warren-Livonia, MI	799	1.8	1.5%	**118.4**
13	Raleigh-Cary, NC	162	1.7	1.5%*	**117.2**
14	Nashville-Davidson--Murfreesboro--Franklin, TN	204	1.4	1.3%	**109.7**
15	New Orleans-Metairie-Kenner, LA	300	2.4	2.3%	**107.1**
16	Birmingham-Hoover, AL	136	1.2	1.2%*	**104.3**
17	Charlotte-Gastonia-Concord, NC-SC	208	1.4	1.4%	**99.6**
18	Austin-Round Rock, TX	231	1.6	1.6%	**96.1**
19	Louisville/Jefferson County, KY-IN	192	1.6	1.7%	**95.7**
20	Richmond, VA	167	1.4	1.6%*	**90.9**
21	Sacramento-Arden-Arcade-Roseville, CA	377	1.9	2.1%	**90.7**
22	Oklahoma City, OK	167	1.4	1.6%	**89.5**
23	St. Louis, MO-IL	387	1.4	1.6%	**88.2**
24	San Antonio, TX	354	1.9	2.2%	**87.5**
25	Tucson, AZ	212	2.3	2.7%	**84.7**
26	Kansas City, MO-KS	234	1.2	1.4%	**83.3**
27	Los Angeles-Long Beach-Santa Ana, CA	2,533	2.0	2.6%	**76.0**
28	San Diego-Carlsbad-San Marcos, CA	623	2.1	2.8%	**74.7**
29	Denver-Aurora, CO	397	1.7	2.3%	**74.3**
30	San Jose-Sunnyvale-Santa Clara, CA	274	1.6	2.3%	**68.4**

Rank	Metro area	Total pedestrian deaths (2000-2009)	Avg. Annual pedestrian deaths per 100,000 (2000-2009)	Percent of workers walking to work (2005-2009)	**Pedestrian Danger Index**
31	Indianapolis-Carmel, IN	180	1.1	1.7%	**63.5**
32	Baltimore-Towson, MD	481	1.8	2.9%	**62.2**
33	Salt Lake City, UT	131	1.3	2.1%	**60.2**
34	Washington-Arlington-Alexandria, DC-VA-MD-WV	854	1.7	3.0%	**54.6**
35	Columbus, OH	171	1.0	2.0%	**49.2**
36	Buffalo-Niagara Falls, NY	163	1.4	2.9%	**49.0**
37	Hartford-West Hartford-East Hartford, CT	135	1.2	2.4%	**47.9**
38	Chicago-Naperville-Joliet, IL-IN-WI	1,322	1.4	3.0%	**46.8**
39	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	965	1.7	3.8%	**43.6**
40	Providence-New Bedford-Fall River, RI-MA	186	1.2	2.8%	**41.6**
41	San Francisco-Oakland-Fremont, CA	685	1.6	4.3%	**38.5**
42	Cincinnati-Middletown, OH-KY-IN	172	0.8	2.2%	**37.7**
43	Milwaukee-Waukesha-West Allis, WI	165	1.1	2.9%	**37.3**
44	Virginia Beach-Norfolk-Newport News, VA-NC	170	1.0	2.8%*	**37.0**
45	Portland-Vancouver-Beaverton, OR-WA	243	1.2	3.2%	**36.3**
46	Seattle-Tacoma-Bellevue, WA	398	1.2	3.5%	**35.9**
47	Rochester, NY	122	1.2	3.4%	**35.1**
48	Minneapolis-St. Paul-Bloomington, MN-WI	254	0.8	2.3%	**35.1**
49	Pittsburgh, PA	269	1.1	3.7%	**30.4**
50	New York-Northern New Jersey-Long Island, NY-NJ-PA	3,485	1.9	6.1%	**30.4**
51	Cleveland-Elyria-Mentor, OH	139	0.7	2.2%	**29.4**
52	Boston-Cambridge-Quincy, MA-NH	483	1.1	5.0%	**21.6**

**These six metros have a margin of error of over 10 percent for the Journey-To-Work data.*

An interactive look at a decade of fatalities

For the first time, we were able to map more than 40,000 pedestrian deaths from 2001-2009 for which geographic data are provided. These online maps allow users to get a localized view of where pedestrians have been dying in their own communities. See the interactive map online at **http://t4america.org/resources/dangerousbydesign2011**

PDI – places with relatively more walking, yet fewer deaths per capita. These metros tend to be older Northeastern or Northern areas, or places with a generally compact development pattern. Metros such as Boston, New York and Minneapolis-St. Paul are investing to build a well-developed network of sidewalks and crosswalks and already have many people walking and bicycling.

The PDI was developed to gauge risk in a way that accounts for the amount of walking in a community. However, in some communities pedestrian deaths represent an unusually high portion of all traffic deaths, which merits special safety attention. Table 2 lists the metro areas with the highest percentage of pedestrian deaths, not controlling for the number of walkers.

Pedestrians make up a high percentage of all traffic deaths in New York. The metropolitan area, with an average of just under 350 annual pedestrian deaths over the ten-year period, has the highest absolute number of pedestrian deaths of any metropolitan area in the U.S. Further, the percent of traffic deaths that were pedestrians in New York is nearly three times the national average.

Table 2: Large metro areas, ranked by percentage of traffic deaths that were pedestrians

Rank	Metropolitan area	Number of pedestrian fatalities (2000-2009)	Number of traffic-related fatalities (2000-2009)	Percent of workers walking to work (2005-2009)	Pedestrian Danger Index	**Percentage of traffic deaths that were pedestrians**
1	New York-Northern New Jersey-Long Island, NY-NJ-PA	3,485	11,194	6.1%	30.4	**31.1%**
2	Los Angeles-Long Beach-Santa Ana, CA	2,533	9,313	2.6%	76.0	**27.2%**
3	San Francisco-Oakland-Fremont, CA	685	2,627	4.3%	38.5	**26.1%**
4	San Jose-Sunnyvale-Santa Clara, CA	274	1,100	2.3%	68.4	**24.9%**
5	San Diego-Carlsbad-San Marcos, CA	623	2,856	2.8%	74.7	**21.8%**
6	Miami-Fort Lauderdale-Pompano Beach, FL	1,555	7,212	1.7%	167.9	**21.6%**
7	Tampa-St. Petersburg-Clearwater, FL	905	4,210	1.6%	212.7	**21.5%**
8	Detroit-Warren-Livonia, MI	799	3,788	1.5%	118.4	**21.1%**
9	Buffalo-Niagara Falls, NY	163	844	2.9%	49.0	**19.3%**
10	Las Vegas-Paradise, NV	421	2,200	1.9%	135.2	**19.1%**

With by far the highest portion of commuters walking to work of any large metropolitan area, the relative risk to pedestrians in the New York metro area is the 11th lowest in the country. Perhaps more troubling are the metro areas with both a high portion of pedestrian traffic deaths and a low percentage of residents walking to work – Miami, Tampa and Detroit. These are places where pedestrians are at a greater risk of being killed while walking, a risk that is captured by the PDI and reflected in that ranking.

Where Safety Is Getting Worse

Pedestrian fatalities have declined over the last decade in most of the country's largest metro areas, mirroring or surpassing the national 14 percent drop in those deaths. But some metro areas have failed to make progress, with pedestrian fatalities actually increasing significantly over the period. In fact, pedestrian fatalities increased in 16 metro areas, wheras total traffic deaths increased in only 4 of the 52 metro areas we examined.

For three examples, annual pedestrian fatalities in the greater Atlanta metro area inched up over the ten-year period, from a low of 71 in 2000, peaking at 94 in 2004 and finishing out the decade at 77. Yet during the same period, overall traffic-related fatalities declined by nearly 14 percent. Similarly, in the Baltimore metropolitan area, pedestrian fatalities grew more than 16 percent over the decade, from 43 in 2000 to 62 in 2009, while all traffic deaths fell by nearly 6 percent. And in the greater Philadelphia metro area, pedestrian fatalities held more or less steady, at approximately 100 deaths annually, over the period, while total traffic deaths plummeted by nearly 22 percent in ten years.

Just as at the national level, it would seem that concerted local efforts to stem motorist fatalities have resulted in a dramatic decline in fatalities over past ten years, while pedestrian fatalities have received less attention.

Pedestrian Safety in Rural Areas

Rural areas are not typically considered dangerous for pedestrians, yet more than 27 percent of pedestrian fatalities occur in rural areas, even though only 24 percent of Americans live in rural areas. This rate has held even as the American population continues to shift from rural to urban.[5] In fact, rural areas, even more so than many metropolitan areas, are characterized by dangerous, high-speed roads, and are far less likely to have sidewalks, crosswalks, and other basic pedestrian infrastructure. Yet, a significant share of the rural population, more than 1.6 million rural households, lacks access to a car. And rural areas and small towns tend to have higher concentrations of older adults and low-income citizens, groups that are less likely to drive.[6]

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5 U.S. Department of Agriculture, "Rural American at a Glance, 2009 Edition" <http://www.ers.usda.gov/Publications/EIB59/EIB59.pdf>

6 National Complete Streets Coalition. "Rural Areas and Small Towns" <http://www.completestreets.org/complete-streets-fundamentals/factsheets/rural-areas-and-small-towns/>

Our analysis of FARS (Fatality Analysis Reporting System) data by county reveals that the highest pedestrian fatality rates per 100,000 people tend to be in less populated, less prosperous and more racially and ethnically diverse counties.

Poor safety rankings in 2009 report yield substantive policy shift in Lee County, Florida

Within a day of the release of Transportation for America's previous Dangerous by Design report in November 2009 that showed the four most dangerous metro areas for pedestrians were in Florida, a key region in the Sunshine State had already adopted one of the report's key recommendations.

In an editorial following the report release, the Ft. Myers News-Press encouraged officials in Lee County, located in Southwest Florida, to adopt a "Complete Streets" resolution, committing the region to making roads safe for all users. The editorial cited the Dangerous by Design report in its recommendation.

BikeWalkLee, a countywide coalition and T4 America partner advocating for safer, complete streets, led the charge for passage.

"During the public comment period, Commissioners heard from senior citizens who want to maintain mobility after they no longer drive; parents who want a place for their children to safely walk and bike; high school and college students who want a more livable community as they make their careers here; public health officials concerned about the obesity epidemic and emergency room doctors who see the tragic results every day of Lee's dangerous roads," said Darla Letourneau, a leader of BikeWalkLee.

By a unanimous vote, the Lee County Commission adopted a resolution endorsing complete streets principles. Commissioner Frank Mann called the measure "forward thinking" and "something that we should have been doing for a number of years."

Data Limitations

Our ability to assess the dangers of walking is hampered by significant data challenges. While relatively good data are collected on the number of pedestrian fatalities through the National Highway Traffic Safety Administration's fatality database (FARS), there is only spotty information on how many pedestrians are injured in particular states and metro areas.

Even if we had complete information on how many pedestrians were killed and/or injured in a given location, the lack of reliable information on how people travel makes it difficult to evaluate the true danger to pedestrians. For this report we use the Census Bureau's American Community Survey Journey-to-Work data as a proxy for how much walking occurs in a place. The data are limited in that they provide information only on the mode people choose most often and for the greatest distance to travel to and from work. A better measure of exposure would include all types of trips (including to the store, to school, to the doctor, to the subway, etc.), as well as trips taken by the non-usual mode for an individual. Unfortunately, no reliable nationwide source of that data at the metro area level is available (sample sizes for the 2009 National Household Travel Survey tend to be small).

Further, with the elimination of the Decennial Census long form, Journey-to-Work data is only available through the American Community Survey, which suffers from much smaller sample sizes, and therefore larger margins of error. Walking rates at the county level are unreliable. And even at the metro area level, only the largest metros had acceptably low margins of error.

The geographic coarseness of our analysis presents its own problems. There can be extreme variability in the walking environment within such large areas. A single metropolitan area will often include both relatively walkable districts, as well as neighborhoods with a hostile pedestrian environment. We attempt to address that limitation by providing county-level fatality data, as well as by mapping more than 40,000 pedestrian deaths for which geographic data is provided.

Clearly, we need better data by which we can accurately test the effectiveness of policies and infrastructure investments on improving pedestrian safety. This should be a priority for Congress and the U.S. Department of Transportation.

Dangers to Pedestrians with Few Options

Walking is the first and most basic method of transportation. Nearly everyone is a pedestrian at some point each day, even if it is simply walking from the car to the office. Americans make about 10.5 percent of all trips on foot,[7] and 107 million American adults walk regularly to get to work, school, run errands or visit friends.[8]

Walking is even more critical for a large number of Americans. At least one-third of Americans cannot or choose not to drive and, and for most of them, being a pedestrian is an integral part of their daily life.[9] This group includes children and young adolescents, older adults who no longer drive, people with disabilities, low-income individuals and a growing number who seek to avoid the costs of owning and maintaining a car.

Racial and Ethnic Minorities

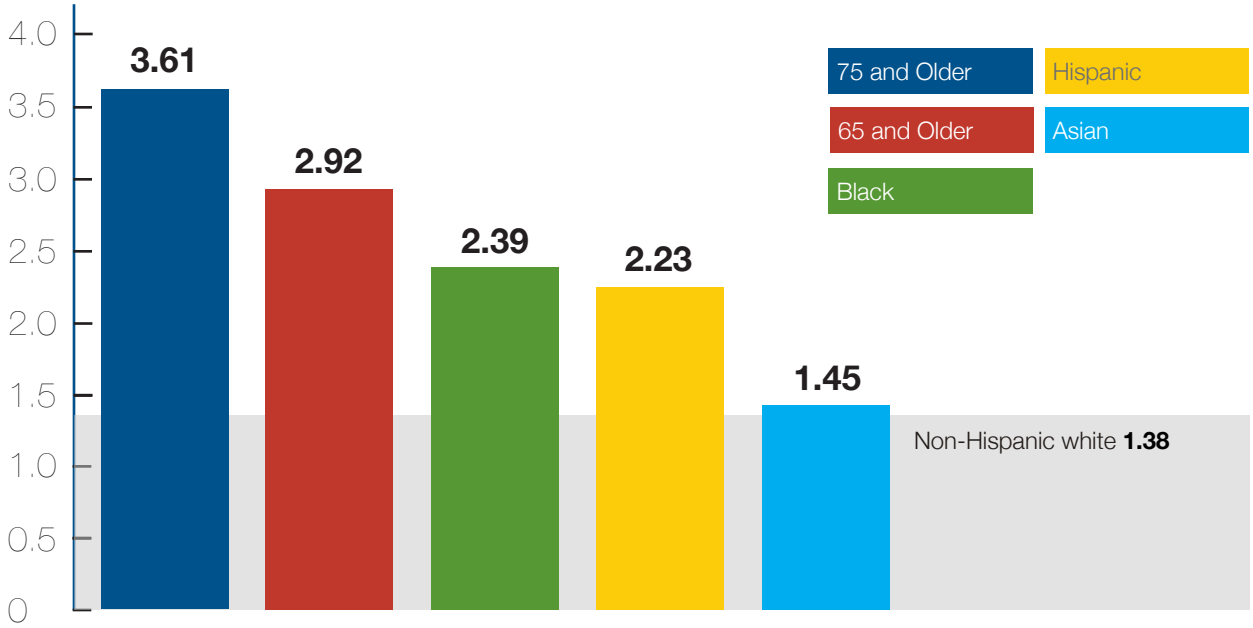
Hispanics and African Americans, on average, drive less and walk more than other groups. Walking is a critical means of transportation for these groups – nearly 20 percent of African American households and 14 percent of Hispanic

7 NHTS 2001. A trip is defined as travel from one address to another, with switches to different modes, and each stop along the way counted as separate trips.

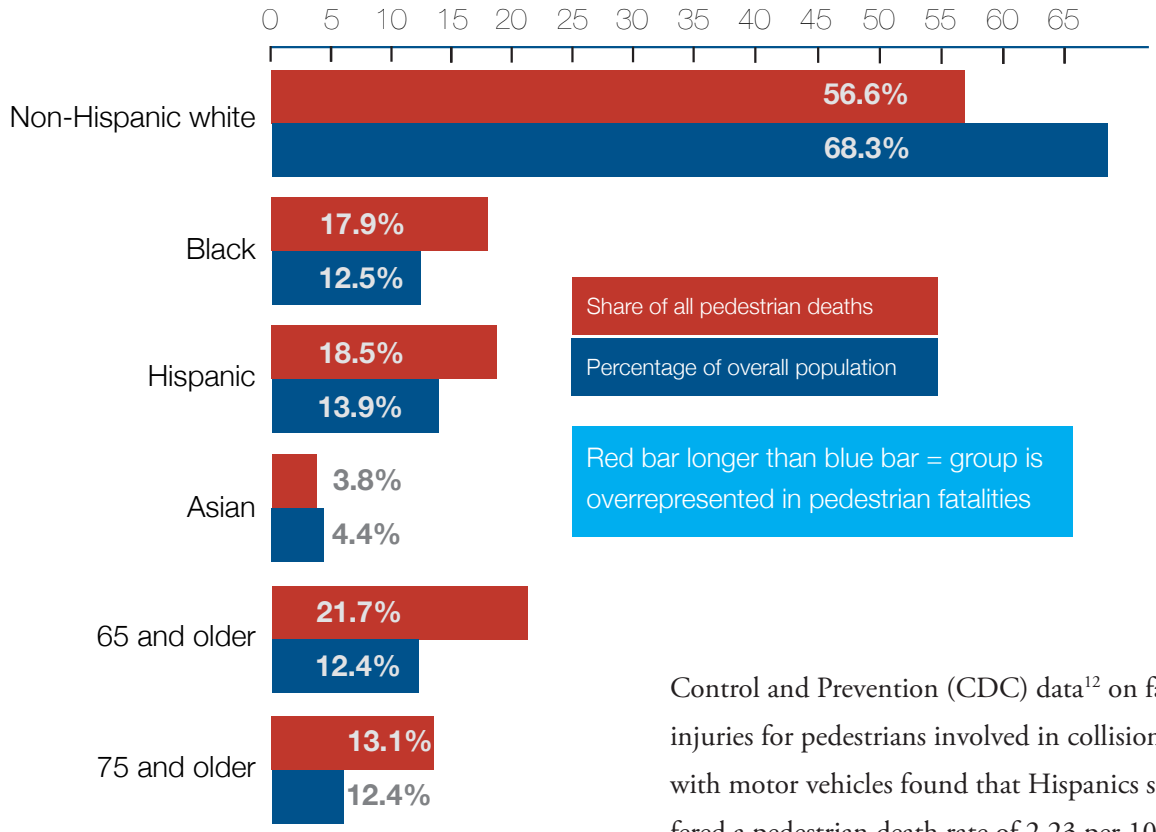
8 FHWA. Travelers Opinion Survey 2005.

9 According to the most recent (2009) FHWA Highway Statistics Series (Table DV-1C), only 68 percent of Americans currently hold a driver's license. One-third is probably an underestimate, because we can assume that a number of the 68 percent of Americans who have a license do not drive.

Pedestrian fatality rate per 100,000 persons by race and age



Percentage of pedestrian deaths compared to share of population



households live without a car.[10] African Americans walk for 26 percent more trips than whites, and the Hispanic walking rate is close to 45 percent higher. While whites made only 9.4 percent of trips on foot in 2009, African Americans made 11.9 percent of trips on foot, and Hispanics made nearly 14 percent of trips on foot.[11]

These groups also experience far more pedestrian injuries and fatalities. Centers for Disease Control and Prevention (CDC) data[12] on fatal injuries for pedestrians involved in collisions with motor vehicles found that Hispanics suffered a pedestrian death rate of 2.23 per 100,000 persons from 2000 through 2007, a rate nearly 62 percent higher than the 1.38 per 100,000 persons rate for non-Hispanic whites. The same data show that rates for African Americans were even higher, at 2.39 per 100,000 persons, a rate more than 73 percent higher than for non-Hispanic whites. Asian Americans died at a rate of 1.45 per 100,000 people.

(In absolute terms, 22,062 Non-Hispanic whites,

10 Brookings Institution and UC-Berkeley, "Socioeconomic Differences in Household Automobile Ownership Rates."

11 2009 National Household Travel Survey.

12 These data are made publicly available in the CDC's Web-based Injury Statistics Query and Reporting System (WISQARS). It differs slightly from NHTSA's FARS data in that it is based on death certificates rather than crash reports. We relied on the CDC for our analysis of pedestrian race and ethnicity because that particular information is more accurately recorded than in FARS.

6,983 African-Americans, 7,223 Hispanics and 1,485 Asian Americans died from 2000-2007.)

The disproportionately high pedestrian fatality rates among racial and ethnic minorities are even more apparent when looked at by age group. Hispanic children suffer a pedestrian fatality rate more than 40 percent higher than the rate for white children. The pedestrian fatality rate for black children is well over twice that of white children. Older Hispanics are far more likely to die as pedestrians than whites and blacks of the same age. Compared to their peers of the same age, Hispanics aged 65 and older have a fatality rate that is twice that of blacks, and 173 percent higher than for whites. The oldest (75 years and older) Hispanics suffer a pedestrian fatality rate of 8 per 100,000 people, compared to 3.08 for whites and 3.84 for blacks.

Low-Income Individuals

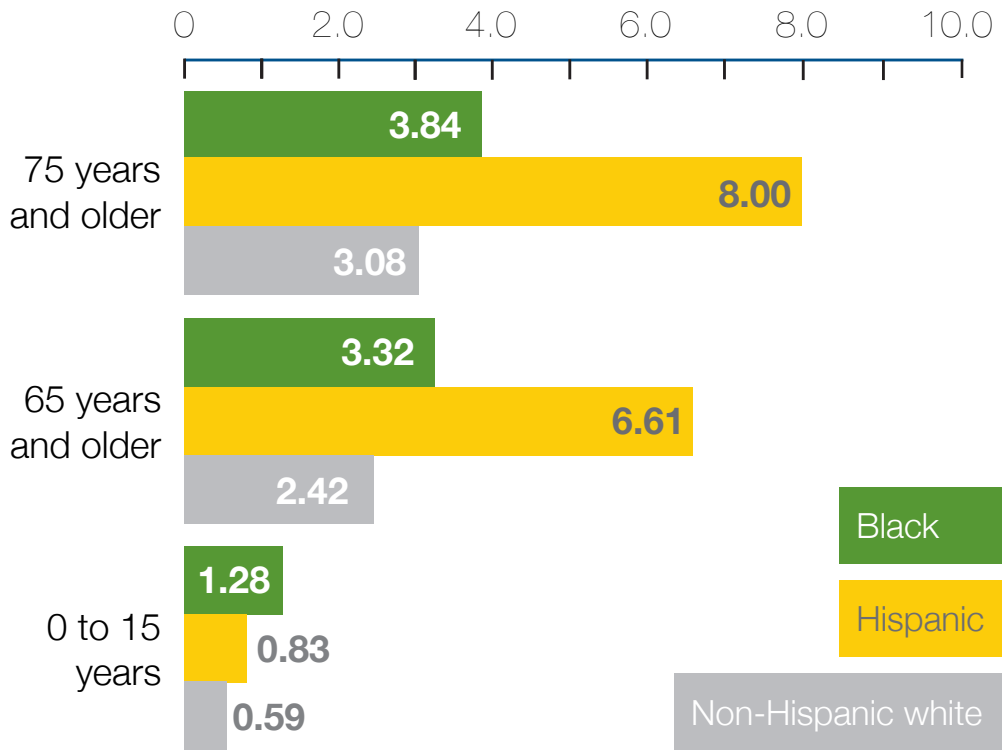
More than 19 percent of households make less than $25,000 per year and do not own a vehicle.[13] In the 234 counties nationally where more than 1 in 5 families has a household income lower than the poverty level,[14] the pedestrian fatality rate averages 2.91 per 100,000 persons, significantly greater the national rate of 1.6.[15]

13 Brookings Institution and UC-Berkeley, "Socioeconomic Differences in Household Automobile Ownership Rates"

14 234 counties are only those with at least five pedestrian fatalities over the decade for more reliable data

15 U.S. Census Bureau, 2005-2009 American Community Survey.

Fatality rates by age, broken up by race



Older Adults

Older adults are 96 percent more likely to be killed while walking than those under 65 years of age. Between 2000 and 2007, nearly 8,460 pedestrians aged 65 years or older were killed in traffic crashes, according to data from the CDC.[16] Older pedestrians represent nearly 22 percent of total pedestrian fatalities over that period, despite comprising less than 13 percent of the nation's population. The oldest pedestrians (75 years and older) suffered from pedestrian fatality rates of 3.61 per 100,000 people, a rate well more than twice that for people under 65 years of age.[17]

The higher fatality rate for older pedestrians can probably be attributed to several factors: 1) older pedestrians are more likely to die than young people in a similar crash; 2) existing pedestrian infrastructure, such as the duration of crosswalk signals, ignores the needs of older walkers; and, 3) older pedestrians are more likely to have physical impairments that decrease their ability to avoid oncoming traffic.

Recognizing that pedestrian safety is a critical issue for their members, the AARP has worked to enact complete streets policies that take older pedestrians into account, winning new complete streets policies in Hawaii, Louisiana, Michigan and Puerto Rico; and working for them now in Alabama, Vermont and several other states. The AARP-sponsored bills in New York's legislature are named Brittany's Law, in honor of a girl killed while walking. The AARP is also encouraging states to implement the Federal Highway Administration's roadway design guidelines for older drivers and pedestrians.

Older adults have much to gain when walking is safe. Many older Americans who cannot or

Table 3: Highest average annual pedestrian fatalities per 100,000 people 65 and older

Rank	State	Pedestrian Fatalities per 100,000 People 65 and Older (2000-2007)
1	Hawaii	**7.21**
2	Alaska	**5.42**
3	California	**4.72**
4	New York	**4.57**
5	Nevada	**4.53**
6	District of Columbia	**4.14**
7	Florida	**3.65**
8	New Jersey	**3.47**
9	New Mexico	**3.39**
10	Massachusetts	**3.37**
	National Average	**2.92**

16 CDC data was used to compare pedestrian fatality rates by age group as that data was deemed to more reliably record the correct age information.

17 For state rankings, Alaska scored a fatality rate of 5.42 per 100,000 persons according to the CDC data, making the state the second most dangerous for older pedestrians. However, because the state had fewer than 20 total pedestrian fatalities for this age group, the CDC cautions that the fatality rate may be unstable. Other states with unstable fatality rates were: the District of Columbia (for 75+), New Hampshire (for 75+), Vermont, Delaware, South Dakota, Wyoming, North Dakota and Nebraska.

choose not to drive rely on others for transportation. Absent sufficient alternatives, they often become stranded in their home. The percentage of Americans aged 65 and over is expected to rise from 12 percent in 2005 to 18 percent in 2025, requiring new approaches to reflect the mobility challenges that increase with age.

While Americans aged 65 and older make only about nine percent of their trips by walking or bicycling, older adults in other countries make substantially larger shares of similar trips by walking and bicycling: 44-48 percent in Germany, and 50-55 percent in the Netherlands, for example. Their experience shows that age need not be a barrier to walking when people feel safe.[18]

18 FHWA. 2009 National Household Travel Survey. Pucher, J., and L. Dijkstra. "Making Walking and Cycling Safer: Lessons from Europe." Transportation Quarterly, Vol. 54, No. 3, Summer 2000.

Children

Pedestrian injury is the third leading cause of death by unintentional injury for children 15 and younger, according to CDC mortality data. Nearly 3,900 children 15 years and younger were killed while walking from 2000 through 2007, representing between 25 and 30 percent of all traffic deaths.

These numbers are especially high considering that only a fraction of children today walk or bicycle to school, in large part because of their parents' fears of traffic. When surveyed, parents express concerns about a range of perceived safety hazards: the amount of traffic on roads (71.3 percent), the speed of traffic (69.8 percent), inadequate or missing sidewalks (48.6 percent) and poor quality or missing crosswalks (39 percent)

— all factors influenced by street design.[19]

Unfortunately, a de facto solution to the dangers faced by children on our roads has been to drive children everywhere instead – as evidenced by daily traffic jams at schools. Yet this practice carries other serious dangers. Obesity and overweight significantly threatens the health of children and families today, and physical inactivity is a primary cause. Current estimates from the CDC show that nearly 17 percent of children aged 2 through 19 – more than 11 million kids – are obese.

Walking and bicycling to school can help: elementary and middle school-age boys and girls who walk to and from school are more physically active overall than those who travel to school by car or bus. A study of 1,596 middle school-age girls in six states found that those who reported walking before and after school had 13.7 more minutes of total physically activity than those who did not report doing so.[20] And, children who walk or bicycle to school have better cardiovascular fitness than do children who do not actively commute to school.[21] The potential for health cost savings when children can safely walk and bicycle is significant. The costs of obesity and overweight account for approximately nine percent of total U.S. health care spending, and a portion of these costs are attributable to auto-oriented transportation that inadvertently limits opportunities for physical activity for the nation's children.[22]

Making walking safer for school children can also help school districts struggling to meet the high (and rising) cost of busing children to and from school. Nationally, schools spend about $21 billion annually on bus transportation. As gasoline prices rise, many school districts will be forced to cut busing. For those children losing access to bus transportation, ensuring safe walking routes to school is critical.

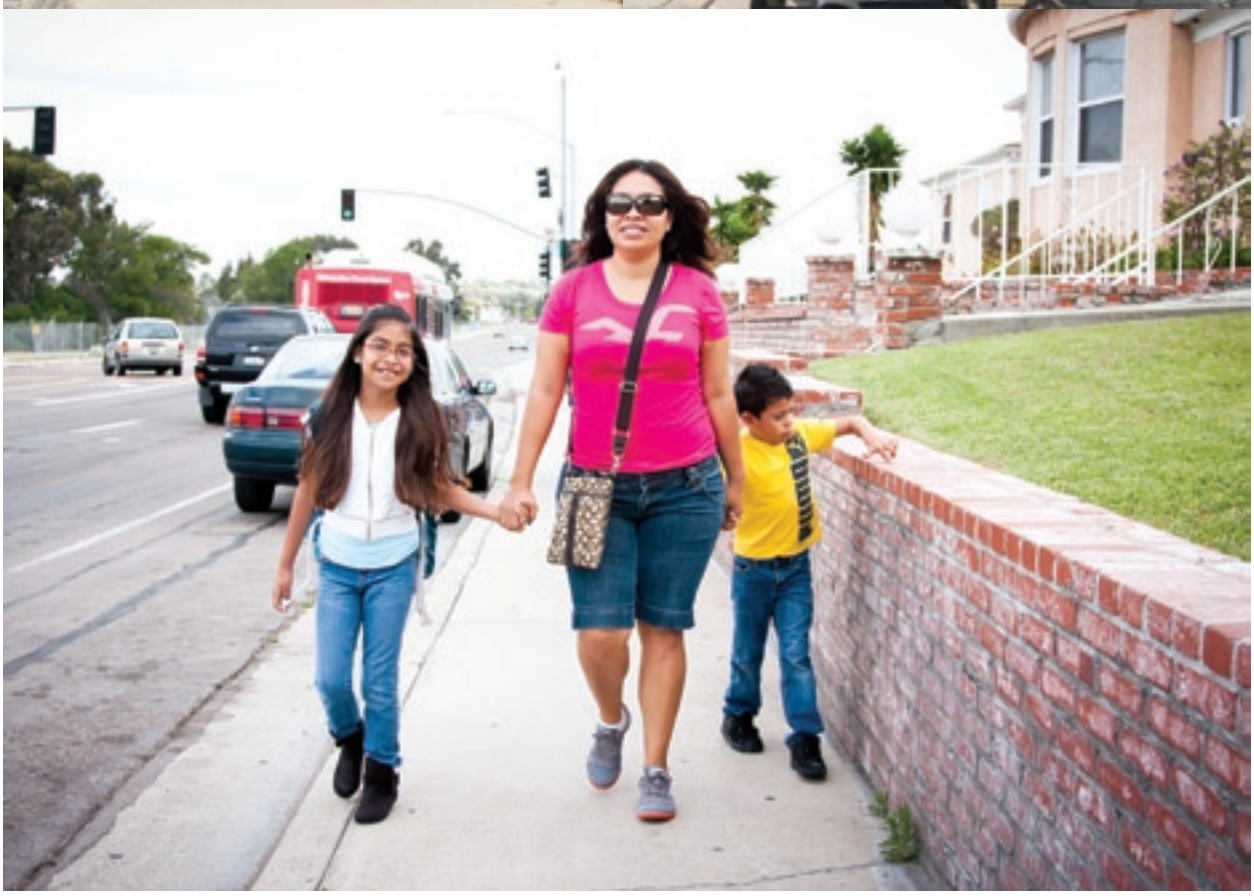
Neighborhoods and communities that are designed for walking and bicycling can make a big difference in encouraging all Americans, regardless of age, race and ability, to incorporate much needed exercise into their daily routines. Safe Routes to School is a small federally funded program that seeks to increase the number of children walking and bicycling to schools by constructing new bike lanes, pathways and sidewalks, as well as offering safety education and enforcement campaigns in elementary and middle schools.

19 Vaughn, Amber E., Ball, Sarah C., Linnan, Laura A., Marchetti, Lauren M., Hall, William L. and Ward, Dianne S. "Promotion of Walking for Transportation: A Report From the Walk to School Day Registry." Journal of Physical Activity and Health. 6.3 (2009): 281-288.

20 Saksvig, B.I., Catellier, D.J., Pfieffer, K., et al. "Travel by Walking Before and After School and Physical Activity Among Adolescent Girls." Archives of Pediatrics and Adolescent Medicine. 161(2): 153-158, 2007.

21 Davison, K.K., Werder, J.L., and Lawson, C.T. "Children's Active Commuting to School: Current Knowledge and Future Directions." Preventing Chronic Disease. 5.3 (2008): A100.

22 American Public Health Association; The Hidden Health Costs of Transportation. 2010.



Poor street design can result in poor health

There is an explicit link between local street design and the health of residents, according to a recent study by a University of Chicago researcher. The importance of regular exercise and physical activity is widely acknowledged, but less discussed is the impact of where a person lives. This Chicago study analyzed the frequency of physical activity in over 5,000 CARDIA (Coronary Artery Risk Development in Young Adults study) participants alongside characteristics of the 'street networks' where they reside. They considered the density of intersections, the connectivity of streets and the type of roads in each participant's neighborhood.

In an outcome that was perhaps not that surprising, the study found a link between health and the design of the streets where a person lives. People who want to exercise may get less than the desired amount because of the conditions of the streets and sidewalks around their house.

"Good intentions are often thwarted by factors outside of one's control," according to the study. "A person might decide to jog or bike several times a week, but if the neighborhood outside their door is not conducive to physical activity, it can be easier said than done. Whether you live out in the country or deep in the heart of the city, the design of the neighborhood around you can have an effect on your ability to exercise out of doors."

Source: Health and Place, study by University of Chicago, http://sciencelife.uchospitals.edu/2011/04/20/the-influence-of-healthy-and-unhealthy-streets/

Streets Designed for Traffic, Not Pedestrians

Over the past 50 years, traffic engineers have taken it as their mandate to move the most traffic as rapidly as possible, often at the expense of safety and quality of life. Research and experience, however, shows that making streets safer for pedestrians can help bring other benefits. A recent study in San Antonio showed that the streets safest for pedestrians were also safest for drivers.[23]

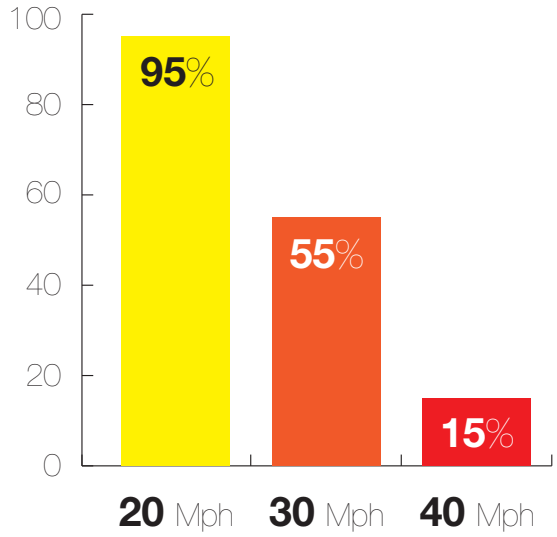
This emphasis on traffic movement at the expense of pedestrians and other travel modes has shifted daily activities away from Main Streets toward higher speed arterials. These arterial roads and highways have drawn shopping centers, drive-through eateries, apartment complexes and office parks, increasing traffic and further straining existing capacity. However, the pressure to move as much traffic through these areas as quickly as possible has led state departments of transportation to squeeze in as many lanes of traffic as possible, while designing out sidewalks, crosswalks and crossing signals, on-street parking and even street trees. As a result, more than half of fatal pedestrian crashes occur on these wide, high capacity and high-speed thoroughfares.

Engineering Wide Roads

Our analysis of NHTSA's Fatality Analysis Reporting System (FARS) database reveals that most pedestrians are killed on the wider, higher capacity and higher-speed roads called arterials.

23 Eric Dumbaugh and Wenhao Li. Design for the Safety of Pedestrians, Cyclists, and Motorists in Urban Environments. Journal of American Planning Association. Vol.7, No.1, Winter 2011.

Pedestrian Survival Rate by Vehicle Speed



These roads are called arterials because they connect major destinations within an urban or rural area. More than 52 percent of the 47,067 pedestrians killed (for whom roadway classification data were recorded) over the ten-year period died on principal or minor arterials. These arterials are all federal-aid roads — roads eligible to receive federal funding for construction or improvement and with federal oversight or guidance for their design.

In urban areas, the dangers of walking along or crossing arterials are even more starkly apparent: Nearly 60 percent of the 34,260 pedestrian deaths in urban areas (for whom road type data were collected) occurred on arterial roads.

New research by Eric Dumbaugh of Texas A&M finds that traditional safety practices, such as designing roads to be "forgiving" of driver error, may backfire on urban arterials, where higher design speeds and an increased number of conflict points creates a deadly combination. His new study makes clear that these safety problems are not limited to pedestrians and other vulnerable users, but apply to motorists as well.[24]

These roads, typically designed with four or more lanes and high travel speeds, have been shown to encourage distracted driving habits. In fact, a study of street widths and injury collisions found that risk of injury from crashes increases exponentially once street widths exceed 24 feet, because of increased vehicle speed.[25] Many states persist in requiring a minimum of 12-foot lanes on all roadways, though research shows that in urban areas, 12-foot lanes show no safety benefit over 10-foot lanes —and despite the fact that the American Association of State Highway and Transportation Officials (AASHTO) allows 10-foot travel lanes on arterials in their "Green Book" manual governing street design.

Drivers respond to wider roadways by driving faster and less cautiously. And even where arterials have sufficient sidewalks and crosswalks, their width makes them difficult to cross, even for the most able-bodied adults.

Designing for Speed

Especially when combined with poor design, vehicle speed presents the greatest threat to pe-

24 Eric Dumbaugh and Wenhao Li. Design for the Safety of Pedestrians, Cyclists, and Motorists in Urban Environments. Journal of American Planning Association. Vol.7, No.1, Winter 2011.

25 Swift, Painter, and Goldstein, 2006.

destrians. A recent NHTSA report on pedestrian safety finds that a pedestrian is 16 times more likely to be killed in a crash occurring on a road with a posted speed limit of 50 mph or higher, than on a road with a speed limit of under 30 mph.[26] At higher vehicle speeds, a collision is not only more deadly, but far more likely. Even without the distractions of cell phones and PDAs, a driver needs 164 feet to stop a vehicle moving at just 40 mph.[27]

Confirming the risk of vehicle speed, our analysis of NHTSA's Fatality Analysis Reporting System (FARS) database shows that nearly 60 percent of pedestrian fatalities occurred on roads with speed limits of 40 mph or greater. In contrast, only 1 percent of the 45,294 pedestrian deaths for which roadway speed limit was known from 2000 through 2009 occurred on roads with a speed limit of 20 mph or lower.

Insufficient Pedestrian Infrastructure

Too many arterial roads, in rural, suburban, and urban areas alike, are simply not built with pedestrians in mind. They lack sidewalks, crosswalks, pedestrian refuges, street lighting and school and public bus shelters. Even neighborhoods that do provide sidewalks often lack crosswalks or have crosswalks spaced too far apart to be convenient for pedestrians. A recent AARP poll sheds light on how widespread this problem is: nearly half of respondents reported that they could not safely cross the main roads close to their home.

Another survey of more than 1,000 transportation planners and engineers found that nearly two-thirds do not yet consider the needs of older Americans in their multimodal transportation planning.

All too often, the consequences of this lack of basic infrastructure are fatal. Of the 40,037 pedestrian fatalities for which the location of the collision was known, more than 40 percent were killed where no crosswalk was available. Nearly one-quarter of pedestrian deaths were recorded outside an available crosswalk and just 10 percent of pedestrian fatalities occurred inside a crosswalk. Even arterials with sidewalks and crosswalks may still treat pedestrians as an afterthought, requiring pedestrians to walk long distances to reach a signalized crossing point, the cause of some of these fatalities outside crosswalks. These data point to at least one common problem of dangerous streets – there simply are not enough safe places to walk or cross the street.

Fast-moving traffic on highways may literally divide communities, especially those with a larger share of older adults and persons with disabilities. Beyond the high number of direct pedestrian fatalities and injuries, the isolation that results from the construction of dangerous roads through a community has been associated with higher mortality and morbidity in seniors.

26 NHTSA. National Pedestrian Crash Report, 2008. <http://www-nrd.nhtsa.dot.gov/Pubs/810968.pdf>

27 http://www.jmu.edu/safetyplan/vehicle/generaldriver/stoppingdistance.shtml

Cost-Effectiveness Benefits of Safe Streets

Transportation is the second largest expense for American households, costing more than food, clothing, health care and even housing in some metro areas. Even prior to the recent increase in gasoline prices, Americans spent an average of 16 cents of every dollar on transportation, with the poorest fifth of families spending more than double that figure. These hefty transportation expenses can be reduced if local infrastructure decisions result in more travel options for residents. Unfortunately, most states spend only a fraction of available federal funds to make walking and bicycling safer. Recent analysis puts the amount at just 1.5 percent of federal roadway funds.

Controlling Health Care Costs

The money saved by preventing pedestrian injuries and fatalities more than offsets the costs of improving our streets and roads. The National Safety Council estimates the comprehensive cost — including both economic costs and diminished quality of life — for each traffic death at $4.3 million, up from $3.1 million in 2000. Multiplying those figures by the 47,740 pedestrians killed nationwide from 2000 to 2009 equates to a cost of $180 billion.

Sparking Neighborhood Reinvestment

The economic downturn has taught us that the most resilient local economies are those with lively downtowns and village centers – walkable places with a variety of shops, services and restaurants. A recent survey by the National Association of Realtors found that most Americans would like to live in walkable communities where shops, restaurants and local business are within an easy walk from their homes, regardless of what type of neighborhood or house they live in.

A movement has emerged to convert deadly arterials and lifeless strip malls into more walkable urban centers. Developers recognize these new walkable places can command a higher purchase price. A recent CEOs for Cities report found that "homes located in more walkable neighborhoods — those with a mix of common daily shopping and social destinations within a short distance — command a price premium over otherwise similar homes in less walkable areas. Houses with above average walkability command a premium of about $4,000 to $34,000 over houses with just average levels of walkability in the typical metropolitan areas studied." Similarly, an analysis of office, retail, apartment and industrial properties found higher values for properties in more walkable areas.

Making places more walkable not only improves safety and encourages physical activity, but also helps restore local tax bases and boosts local economies.

Conclusion and Recommendations

Americans clearly recognize that safety for pedestrians needs to be a higher priority. A February 2011 survey conducted for the Rockefeller Foundation found that voters' top goal by far is "safer streets for our communities and children." Congress is currently considering the goals and objectives for a federal transportation bill that will guide the funding priorities for states and cities. Now more than ever, there is a clear need for strong leadership, greater resources for pedestrian safety and more accountability from states on how those funds are spent.

As this report has shown, there is strong evidence that greater resources must be dedicated to projects and programs that promote and improve pedestrian safety. Streets designed for speeding traffic rather than people contribute to these preventable deaths. Now, we must call on Congress to change transportation funding and policy to ensure roads are safe for everyone.

We recommend that the next federal transportation spending bill include the following provisions:

- **Retain dedicated federal funding for the safety of people on foot or on bicycle.** Congress is currently contemplating elimination of dedicated funding for Transportation Enhancements and the Safe Routes to School program, the two largest funding sources for bike and pedestrian facilities. Without these committed funding streams, states will likely reduce spending for safety features like sidewalks, crosswalks and trails.
- **Adopt a national complete streets policy.** Ensure that all federally funded road projects take into account the needs of all users of the transportation system, including pedestrians, bicyclists, and public transportation users, as well as children, older adults, and individuals with disabilities.
- **Fill in the gaps**. Beyond making new and refurbished roads safer for pedestrians, we need to create complete networks of sidewalks, bicycle paths, and trails so that residents can travel safely throughout an area. To this end, the Rails-to-Trails Conservancy has gathered testimony from 53 communities outlining how they could fill in strategic gaps to make walking and bicyling to routine destinations more safe and convenient with small targeted federal grants.

With a large number of American children not getting the recommended daily amount of exercise, walking to school is good way to fill the gap. The Safe Routes to School program has already helped 10,000 schools make walking to school safer.

An example of a complete streets project from S. Columbian Way in Seattle, courtesy of the Seattle Department of Transportation. A street with an inadequate sidewalk, lanes that were too wide and no safe place to bike received curbs, sidewalks, narrower lanes, and a curb bike lane. Complete streets policies ensure that new roads and refurbished roads account for the needs of all users.

- **Commit a fair share for safety.** In 2008, only two states spent any of their Highway Safety funding to improve infrastructure for bicycling and walking. Yet, pedestrians and bicyclists make up 14 percent of all traffic-related fatalities. Federal, state, and local governments should set safety goals that not only reduce fatalities overall, but reduce fatalities for individual modes, with separate safety goals for pedestrians, bicyclists, motorcyclists and motorists.

- **Hold states accountable for creating communities that are safe for walking**. Congress must hold states accountable to ensure that transportation funds are spent wisely, by ensuring that:
  - New streets are built to be safe for pedestrians, bicyclists, public transportation users and motorists alike;
  - The most dangerous roads are retrofitted for safety; and,
  - Federal safety dollars result in lives saved and a more active population.

Appendix A: Detailed Recommendations

Transportation Enhancements

Transportation Enhancements is a primary source of federal funding for pedestrian infrastructure. Enhancements funding can be used for a number of things, including building pedestrian infrastructure such as sidewalks, crosswalks, or trails, and funding bicycling and pedestrian safety and education work. These funds are highly sought and, like Safe Routes to School, oversubscribed by local and regional government. However, Transportation Enhancements are at risk of total removal from the transportation bill by Congress this year.

Safe Routes to School

At its current funding level of $950 million from FY2005-FY2011, the federal Safe Routes to School program is oversubscribed. While 10,000 schools have received funding thus far, that represents just 10 percent of schools – and the award size will only allow funded schools to address a portion of the needed safety improvements around each school. The Safe Routes to School program has provided a critical prioritization of safety improvements for vulnerable children in and around schools, where children spend a large part of their day. Because of this funding source, local governments and school districts are collaborating to assess the infrastructure around schools and agree upon projects needed to improve safety. Expanding the Safe Routes to School program would allow more communities and schools across the country to address critical safety concerns and make it safer for students walking and bicycling to school and in their neighborhoods.

National Complete Streets Policy

The Safe and Complete Streets Act of 2011 (HR 1780) was introduced by Representatives Doris Matsui (D-CA) and Steven LaTourette (R-OH) in May 2011 and a Senate version is expected shortly. The bill would ensure that all future federally-funded road projects will take into account the needs of all users of the transportation system, including pedestrians, bicyclists, and public transportation users, as well as children, older adults, and individuals with disabilities. The bill reflects complete streets policies that states, counties, and cities are adopting at a quickening pace in almost every state in the nation. Complete streets policies mean an end to the construction of roads that are needlessly dangerous to pedestrians, and gradually improve existing roads as they are retrofitted. The U.S. Department of Transportation and the Centers for Disease Control and Prevention have both recognized the safety benefits of the complete streets approach, and a federal policy would accelerate and strengthen the adoption of complete streets policies.

Fill in the Gaps

Beyond making new and existing roads safer for pedestrians, we need to create complete networks of sidewalks, bicycle paths, and trails so that residents can travel safely throughout an area. To this end, the Rails-to-Trails Conservancy has gathered testimony from 53 communities outlining how they could fill in strategic gaps to make walking and bicyling to routine destinations more safe and convenient with small targeted federal grants. The Active Communities Transportation Act (HR 4722 in the 111th Congress) would provide competitive grants to deliver enormous progress in these 53 communities and many more; it garnered 76 House cosponsors last year.

Fair Share for Safety

Currently, only two states, California and Florida, spend any of the Federal Highway Safety Improvement Program funds on pedestrian infrastructure. Federal policy should require that states use their funding to reduce fatalities, making sure those reductions occur across every mode, including pedestrians, bicyclists, motorcyclists and motorists. With the decrease in pedestrian fatalities lagging behind the reduction in motor vehicle deaths, it's imperative that states spend safety funds on pedestrian safety.

Accountability Measures

Congress must demand accountability from state governments to ensure transportation safety funds are spent wisely on streets that are dangerous for walking and bicycling. At a minimum, Congress and state governments should adopt measures to improve pedestrian safety and create livable communities, including increased walking, bicycling, and public transportation usage.

Speed

Vehicle speed is often a deciding factor in whether or not a pedestrian is killed or walks away from a collision. And speed is goverrned in large part by design — how wide lanes are, how wide a road is or how far apart intersections and crosswalks are spaced.

America Walks is in the process of launching a national campaign of low-cost solutions, including reducing speed limits in pedestrian areas, such as business districts and school zones, and installing technology, such as red light and speed traffic cameras to enforce and reduce speeds on dangerous arterial streets. States may need to pass enabling legislation for these solutions to be employed.

Data Collection

Understanding and measuring the problem is the first step toward solving it. But federal data on this subject, especially for pedestrian injuries, is limited and needs to be improved. An improved uniform methodology to collect fatality and injury data would greatly enhance our collective understanding of where to focus resources to improve pedestrian safety.

Appendix B: Methodology

The National Highway Traffic Safety Administration (NHTSA) collects data on every traffic-related fatality occurring on U.S. roadways. To determine how many pedestrians were killed in a given year and county, we queried NHTSA's Fatality Analysis Reporting System (FARS) for pedestrians who suffered fatal injuries from 2000 through 2009. We then aggregated the county-level data to the state and Metropolitan Statistical Area for 360 metro areas. Dividing this figure by the appropriate population estimate from the U.S. Census Bureau, and multiplying by 100,000 gave us a yearly fatality rate per 100,000 persons. (See the U.S. Census Bureau for definitions of MSA, http://www.census.gov/population/www/metroareas/metrodef.html)

We utilized the "Pedestrian Danger Index" to compare metro areas while taking into account the exposure to injury that pedestrians face in a given metro area. This exposure measure is derived from the U.S. Census Bureau's American Community Survey which asks respondents to indicate the mode they most often used to get to work. This data is limited in that it only captures the pedestrian trips to work, excluding trips made by walking to school, to the corner grocery, or to visit friends. It also fails to capture trips that are partially made on foot and partially by some other mode, for example, the walking trip to the bus stop or train station.

Small sample sizes in the American Community Survey are corrected for by aggregating data across a five-year period, so that the journey-to-work data reported by metro area is for the period 2005 to 2009. Nevertheless, some medium and smaller-sized metropolitan areas show high margins of error in the walk-to-work rate and are excluded from our analysis.

We calculated the PDI by dividing the average yearly fatality rate for a metro area by the percentage of commuters walking to work in that metro area. The PDI calculation looks like this:

$$\frac{\text{Average 2000-2009 (annual pedestrian fatalities/population)*100,000}}{\text{Percentage of commuters walking to work}}$$

Breakdowns of pedestrian fatality data by race and ethnicity was pulled from the Centers for Disease Control and Prevention Web-based Injury Statistical Query and Reporting System (WISQARS). This data was determined to be a more reliable source of race and ethnicity than the FARS data, which had an unacceptably high percentage of records without race or ethnicity information.

Other breakouts of the data – by victim age, road type, crosswalk availability, etc. – were made using the FARS online query system (http://www-fars.nhtsa.dot.gov/QueryTool/QuerySection/SelectYear.aspx), and in some cases combining these data with U.S. Census population estimates. Information on total trips taken by foot was derived from the 2009 National Household Travel Survey.

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Cover

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Top: Stephen Lee Davis, Transportation For America
Bottom: Scott Crawford, Jaskcon, Miss.

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Top Left: Stephen Lee Davis, T4 America
Top Right: Dan Burden, Walkable.org
Bottom: The Safe Routes To School National Partnership

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The Safe Routes to School National Partnership

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Seattle Department of Transportation via
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Appendix C: State statistics, ranked by Pedestrian Danger Index

Rank	State Name	Total Traffic Fatalities (2000-2009)	Total Ped Fatalities (2000-2009)	Ped Fatalities as % of All Fatalities (2000-2009)	Avg Ped Fatalities per 100,000 (2000-2009)	**State PDI**
1	Florida	31,186	5,163	16.6%	3.0	**182.8**
2	South Carolina	10,224	981	9.6%	2.3	**124.1**
3	Louisiana	9,344	1,040	11.1%	2.3	**122.2**
4	New Mexico	4,417	548	12.4%	2.9	**121.1**
5	Alabama	10,465	696	6.7%	1.5	**116.7**
6	Arizona	10,776	1,479	13.7%	2.5	**113.1**
7	Mississippi	8,599	557	6.5%	1.9	**107.9**
8	Nevada	3,579	541	15.1%	2.3	**105.3**
9	Texas	35,938	4,212	11.7%	1.9	**104.3**
10	Georgia	15,791	1,545	9.8%	1.7	**102.9**
11	North Carolina	15,308	1,638	10.7%	1.9	**102.7**
12	Tennessee	12,064	806	6.7%	1.4	**93.2**
13	Delaware	1,151	171	14.9%	2.0	**82.2**
14	Arkansas	6,399	389	6.1%	1.4	**76.7**
15	Maryland	6,219	1,057	17.0%	1.9	**76.4**
16	California	39,224	6,957	17.7%	2.0	**71.0**
17	Missouri	11,008	802	7.3%	1.4	**68.7**
18	Oklahoma	7,338	480	6.5%	1.4	**67.2**
19	Michigan	11,582	1,468	12.7%	1.5	**64.3**
20	Kentucky	8,850	535	6.0%	1.3	**56.5**
21	New Jersey	7,118	1,514	21.3%	1.8	**53.2**
22	Virginia	9,161	873	9.5%	1.2	**51.2**
23	Hawaii	1,321	281	21.3%	2.2	**48.5**
24	West Virginia	3,980	237	6.0%	1.3	**45.8**
25	Indiana	8,618	610	7.1%	1.0	**43.0**
26	Colorado	6,182	607	9.8%	1.3	**42.8**
27	Illinois	12,880	1,659	12.9%	1.3	**42.2**
28	Utah	2,985	278	9.3%	1.1	**40.0**
29	Connecticut	2,986	373	12.5%	1.1	**37.1**
30	Ohio	12,748	973	7.6%	0.9	**36.8**

Rank	State Name	Total Traffic Fatalities (2000-2009)	Total Ped Fatalities (2000-2009)	Ped Fatalities as % of All Fatalities (2000-2009)	Avg Ped Fatalities per 100,000 (2000-2009)	**State PDI**
31	Rhode Island	817	117	14.3%	1.1	**35.7**
32	Oregon	4,556	487	10.7%	1.4	**35.2**
33	Pennsylvania	15,089	1,611	10.7%	1.3	**32.1**
34	Washington	5,971	683	11.4%	1.1	**31.8**
35	Kansas	4,472	222	5.0%	0.8	**29.5**
36	South Dakota	1,699	102	6.0%	1.3	**29.3**
37	Wyoming	1,651	55	3.3%	1.1	**26.8**
38	Minnesota	5,511	415	7.5%	0.8	**26.6**
39	New York	14,156	3,222	22.8%	1.7	**26.6**
40	Wisconsin	7,466	510	6.8%	0.9	**26.5**
41	Idaho	2,604	119	4.6%	0.8	**25.7**
42	Massachusetts	4,309	724	16.8%	1.1	**24.9**
43	Montana	2,469	120	4.9%	1.3	**24.3**
44	New Hampshire	1,363	100	7.3%	0.8	**23.9**
45	District of Columbia	608	149	24.5%	2.6	**22.6**
46	Maine	1,832	119	6.5%	0.9	**22.4**
47	North Dakota	1,082	51	4.7%	0.8	**20.2**
48	Iowa	4,246	219	5.2%	0.7	**19.0**
49	Nebraska	2,608	106	4.1%	0.6	**18.8**
50	Alaska	838	97	11.6%	1.5	**18.3**
51	Vermont	786	43	5.5%	0.7	**11.2**
	US Total	411,574	47,741	11.6%	1.6	**56.8**