

STRIDE

Southeastern Transportation Research,
Innovation, Development and Education Center

T + H

Transportation + Health

Transportation & Health Partnerships for Targeted Populations

**THE
CITADEL**



CIVL 642 Public Health, Physical Activity, and Design of the Built Environment



Transportation + Health

1. **Active Transportation** - What does this represent?
2. **Safety** - What are risks for green modes and what methods for improvement?
3. **Connectivity** - How big is problem, how to address network issues?
4. **Access and Equity** - Why is this important aspect of mobility?
5. **Health Performance Metrics** – What are factors, how to obtain and analyze data?
6. **USDOT Transportation & Health Tool** – Indicator data, sources and useful comparisons



Active Transportation

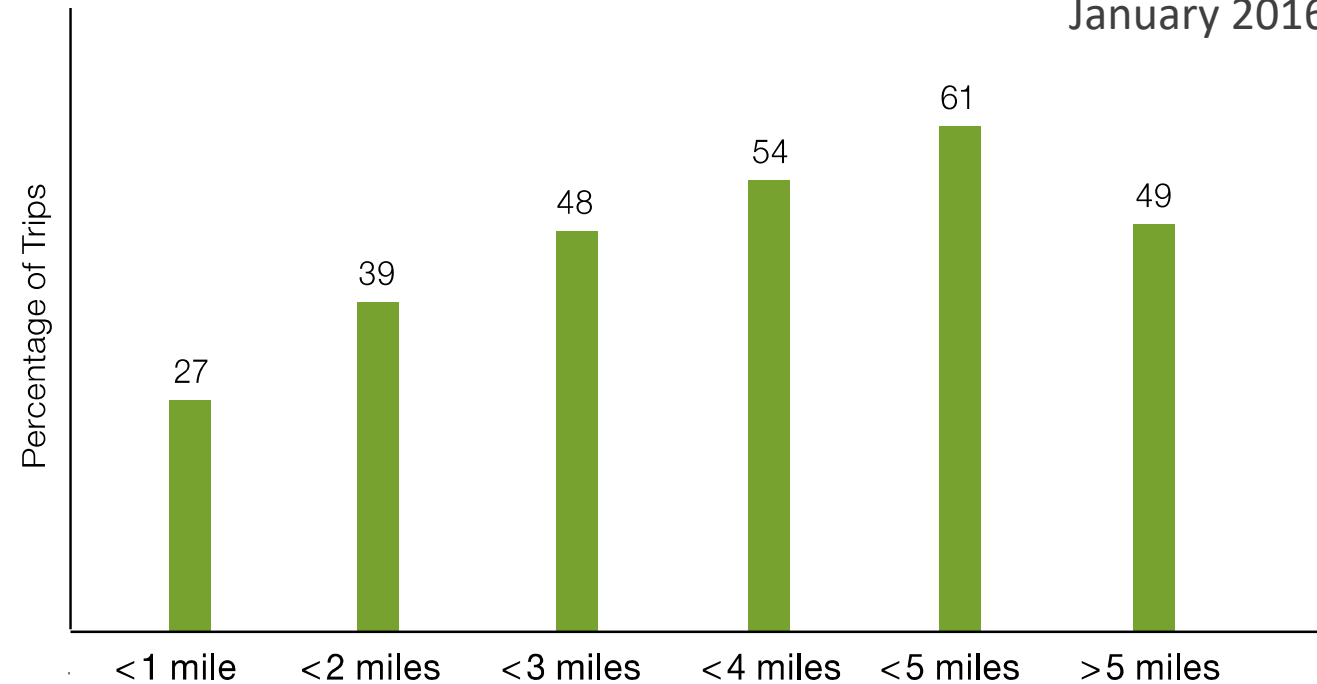
Green Modes: Walking, bicycling, bike-share, scooters, transit

Elements: Supportive Infrastructure, Mixed Land Use, Short trips

Benefits: Physical Activity, Reduced Congestion, Sustainability, Parking, Reliability

FIGURE 2 **Most Daily Trips in U.S. Are Within Easy Walking or Biking Distance**³

Active Living Research
| RESEARCH REVIEW |
January 2016



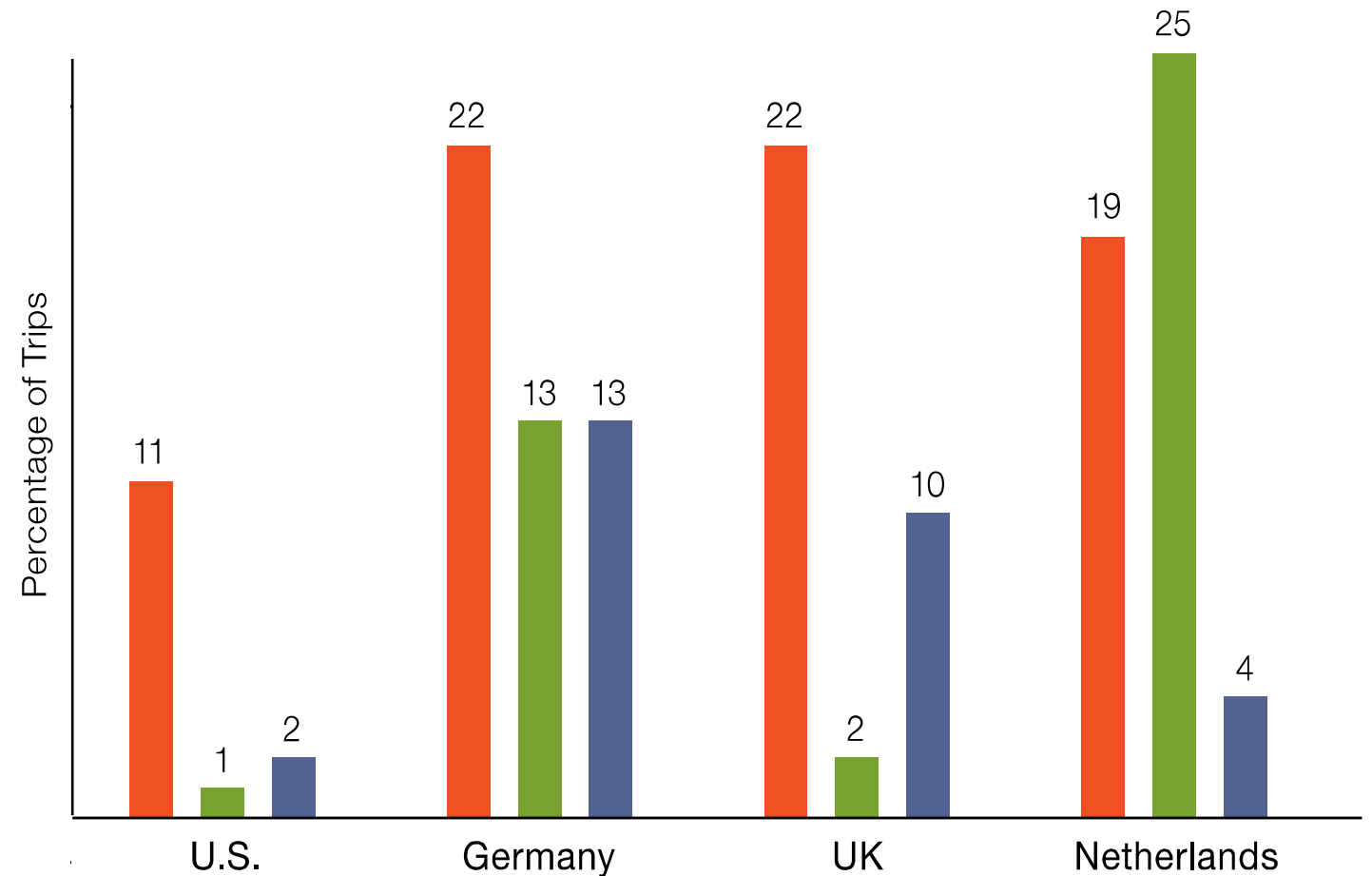


Active Transportation

FIGURE 1 **Rates of Active Travel in America Are Lower Than in Western European Countries**^{4,5}

Active Living Research
| RESEARCH REVIEW |
January 2016

Walking Bicycling Public transportation



People living in sprawling suburban US counties:

1. Walk less in their leisure time
2. Have higher body mass indexes
3. Are more likely to be obese
4. Are more likely to have high blood pressure.

Ewing, R. *Am. J. of Health Promotion* 2003

**What the Research Tells Us:
The Best Ways to Promote Active Living**

**Barbara McCann
Sept, 2004**



Walkable neighborhoods make a difference

Residents in a highly walkable neighborhood engaged in about **70 more minutes per week** of moderate and vigorous physical activity than residents in a low-walkability neighborhood.

Saelens, B. *AJPH* 2003

**What the Research Tells Us:
The Best Ways to Promote Active Living**

**Barbara McCann
Sept, 2004**



THE ROLE OF

Transportation

IN PROMOTING PHYSICAL ACTIVITY

SIDEWALKS

People who live in neighborhoods with sidewalks on most streets are

47%

more likely to be active at least 30 minutes a day.

TRAFFIC CALMING

Medians, speed bumps and other traffic-calming efforts can reduce the number of automobile crashes with pedestrian injuries by up to

15%

PUBLIC TRANSPORTATION

Public transit users take

30%

more steps per day than people who rely on cars.

BIKE FACILITIES

In Portland, Ore., bicycle commuters ride

49% of their miles

on roads with bike facilities, even though these are only 8% of road miles.

Active Living Research

www.activelivingresearch.org

Active Transportation



Active Transportation



1 mile of walking each way = **2/3** of the daily recommended 60 minutes of physical activity



1.) Active Living Research

https://activelivingresearch.org/sites/activelivingresearch.org/files/ALR_Review_ActiveTransport_January2016.pdf

2.) Green Vehicle Guide, EPA

<https://www.epa.gov/greenvehicles/what-if-we-kept-our-cars-parked-trips-less-one-mile>



3.) Safe Routes to School

<https://www.saferoutespartnership.org/>

4.) Influences for Change

- National Association of City Transportation Officials (NACTO)
<https://nacto.org/publication/urban-bikeway-design-guide/>
- Active Living Research (Robert Wood Johnson Foundation)
<https://www.activelivingresearch.org/>
- Centers for Disease Control and Prevention (CDC)
<https://www.cdc.gov/healthyplaces/factsheets.htm>
- Complete Streets
https://smartgrowthamerica.org/resources?resource_type=report&authors=&category_name=complete-streets&s=
- Transportation Research Board





Safety for Active Transportation Modes

1. **Vulnerable Roadway Users** – Bicyclist, pedestrians, Motorcyclists, Mopeds, Scooters, non-motorized users, etc.
2. **Pedestrians** – 6,227 **pedestrians** were killed in **2018** (Governors Highway Safety Assoc.) **Pedestrian fatalities** in U.S. have increased 41% since 2008 and now account for 16% of all **traffic fatalities**.
3. **Bicyclists** – 783 **bicyclists** were killed in **2017**.
4. **Youth & Elderly** – Traffic Safety Risks are greater
5. **Perception** – Public perceives there is a safety problem.
6. **SC State Law** – Bikes not allowed on sidewalks.
7. **Public Transit Safety** – 10.7b trips in U.S. in 2014

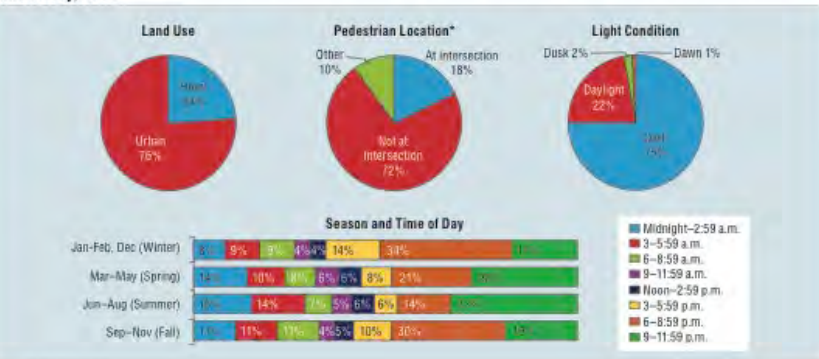
https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/National%20Public%20Transportation%20Safety%20Plan_1.pdf

Table 1
Total Fatalities and Pedestrian Fatalities in Traffic
Crashes, 2007–2016

Year	Total Fatalities	Pedestrian Fatalities	Percentage of Total Fatalities
2007	41,259	4,699	11%
2008	37,423	4,414	12%
2009	33,883	4,109	12%
2010	32,999	4,302	13%
2011	32,479	4,457	14%
2012	33,782	4,818	14%
2013	32,893	4,779	15%
2014	32,744	4,910	15%
2015	35,485	5,495	15%
2016	37,461	5,987	16%

Source: Fatality Analysis Reporting System (FARS) 2007–2015 Final File, 2016 Annual Report File (ARF).

Figure 1
Percentage of Pedestrian Fatalities in Relation to Land Use, Pedestrian Location, and Light Condition, and Season and Time of Day, 2016



Safety for Active Transportation Modes

NHTSA Tips for Safe Walking

1. **Be predictable.** Follow rules of road, obey signs & signals.
2. Walk on **sidewalks** whenever available.
3. If no sidewalk, walk **facing traffic**.
4. **Keep alert** at all times; don't be distracted by electronic devices that take your eyes (and ears) off the road.
5. Whenever possible, cross streets at **crosswalks** or intersections, where drivers expect pedestrians.
6. If a crosswalk or intersection is not available, locate a well-lit area where you have the best view of traffic. Wait for a gap in traffic that allows enough time to cross safely; continue watching for traffic as you cross.
7. **Never assume** a driver sees you.
8. Be **visible** at all times. Wear bright clothing during the day, and wear reflective materials or use a flashlight at night.
9. Watch for cars entering or exiting **driveways**.
10. **Avoid** alcohol and drugs when walking that impair abilities & judgment.

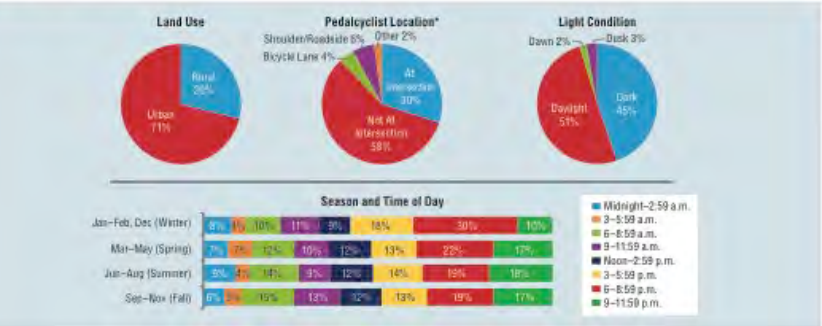


Table 1
Total Fatalities and Pedalcyclist Fatalities in Traffic Crashes, 2007–2016

Year	Total Fatalities	Pedalcyclist Fatalities	Percentage of Total Fatalities
2007	41,259	701	1.7%
2008	37,423	718	1.9%
2009	33,883	628	1.9%
2010	32,999	623	1.9%
2011	32,479	682	2.1%
2012	33,782	734	2.2%
2013	32,893	749	2.3%
2014	32,744	729	2.2%
2015	35,485	829	2.3%
2016	37,461	840	2.2%

Source: Fatality Analysis Reporting System (FARS) 2007–2015 Final File, 2016 Annual Report File (ARF).

Figure 1
Percentage of Pedalcyclist Fatalities in Relation to Land Use, Pedalcyclist Location, Light Condition, and Season and Time of Day, 2016

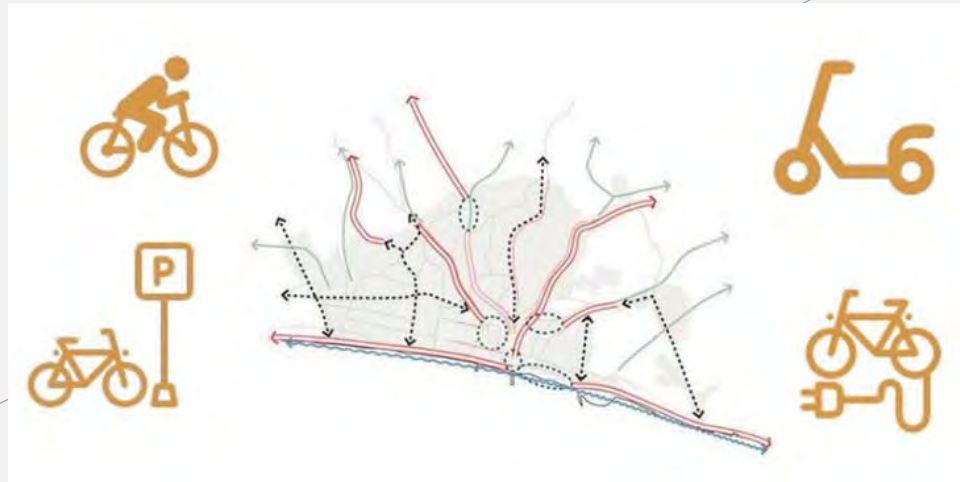


Safety for Active Transportation Modes

NHTSA Tips for Safe Cycling

- Ride a bike that fits**
- Ride a bike that works**
- Wear Protective Equipment** - visible to others, bike helmet, bright clothing (during the day), reflective gear, and a white front light/red rear light & reflectors on your bike (at night)
- Ride one per seat**, with both hands on the handlebars, unless signaling a turn.
- Carry all items in a backpack** or strapped to back of bike.
- Tuck & tie shoe laces and pant legs.**
- Plan your route** - if driving as a vehicle on road, choose routes with less traffic & slower speeds. Safest routes may be away from traffic altogether, in bike lane or on bike path.

Connectivity for Active Transportation Modes



Pedestrian and Bicycle Networks & Connectivity

1. Promoting Connectivity, USDOT, 2015

<https://www.transportation.gov/mission/health/promoting-connectivity>

2. Bicycle Network Analysis, People for Bikes, 2019

<https://peopleforbikes.org/placesforbikes/bicycle-network-analysis/>

3. Multimodal Network Connectivity, FHWA, 2018

http://www.ampo.org/wp-content/uploads/2018/11/fhwahep18032_FHWA-Measuring-Multimodal-Network-Connectivity-Guidebook.pdf

4. Walk Score, 2019

<https://www.walkscore.com/>

<https://www.walkscore.com/cities-and-neighborhoods/>



Connectivity for Active Transportation Modes



Access & Equity for Active Transportation Modes

Access for low-income & disadvantaged communities

1. Issues include:

- Biking & walking Infrastructure
- Public transportation
- Access to affordable housing
- Access to employment
- Access to health care
- Access to grocery stores & healthy food

2. Transportation Equity Caucus

<https://equitycaucus.org/home>

3. Safe Routes to School

<https://www.saferoutespartnership.org/resources/research/role-equity-active-transpo>

4. American Heart Association

https://www.heart.org/-/media/files/about-us/policy-research/policy-positions/physical-activity/active-transportation-ucm_495249.pdf?la=en&hash=52D5E764580475905850FD5FAA787708DA257F83



Health Performance Metrics for Active Transportation Modes



Measuring Performance

1. Transportation Public Health Link, TPH Link

<https://www.tphlink.com/public-health-performance-metrics.html>

2. Built Environment Assessment Tool, CDC

<https://www.cdc.gov/nccdphp/dnpao/state-local-programs/built-environment-assessment/index.htm>

3. Pedestrian & Bicycle Performance Measures, FHWA, 2016

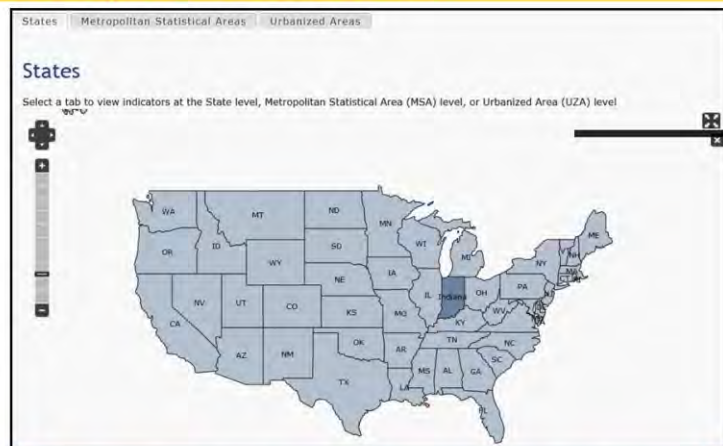
http://www.mvphip.org/content/sites/bassett/Mark_Fenton/Guidebook_for_Developing_Pedestrian_Bicycle_Performance_Measures.pdf

4. Infrastructure Performance, Fehr & Peers, 2015

https://www.fehrandpeers.com/wp-content/uploads/2016/12/ATPMeasuresReport12_16.pdf

USDOT Indicator Data for Active Transportation Modes

Transportation Health Tool



<https://stage8.dot.gov/mission/health/transportation-and-health-tool/>

Transportation and Health Tool (THT)

1. THT tool developed by USDOT and CDC to provide easy access to data that practitioners can use to examine the **health impacts of transportation systems**.
2. **Quickly view** how states or metropolitan areas compare in addressing key transportation and health issues.
3. **Objective** is to better understand links between transportation & health, and identify strategies to improve public health through transportation planning and policy.
4. <https://www.transportation.gov/transportation-health-tool>

Metropolitan area	Raw value (standardized score) ^a				
	Commute mode share: public transportation	Land use mix	Pedestrian road traffic fatalities per 100,000 residents	Pedestrian road traffic fatality exposure rate ^b	Daily vehicle miles traveled per capita ^c
Atlanta, GA	3.2% (85)	0.55 (81)	1.5 (34)	114.2 (17)	28.7 (21)
Boston, MA	11.9% (100)	0.60 (96)	1.0 (66)	18.2 (86)	22.4 (46)
Columbia, MO	0.6% (26)	0.62 (98)	0.8 (73)	17.6 (87)	21.2 (52)
Denver, CO	4.5% (94)	0.45 (20)	1.2 (53)	54.9 (49)	20.8 (54)
Jackson, MS	0.4% (21)	0.48 (35)	1.4 (39)	128.3 (14)	42.9 (3)
Los Angeles, CA	6.1% (98)	0.51 (56)	1.7 (26)	63.9 (38)	22.3 (46)
Minneapolis, MN	4.7% (95)	0.48 (38)	0.7 (82)	30.9 (69)	24.4 (36)
Nashville, TN	1.1% (45)	0.44 (18)	1.2 (52)	96.6 (22)	35.8 (8)
New Orleans, LA	2.6% (78)	0.42 (8)	2.0 (17)	79.8 (29)	16.4 (78)
New York, NY	30.7% (100)	0.45 (22)	1.7 (27)	27.4 (74)	15.6 (82)
Omaha, NE	0.9% (38)	0.41 (8)	0.5 (89)	26.5 (75)	18.6 (66)
Phoenix, AZ	2.1% (70)	0.41 (8)	1.7 (26)	108.8 (19)	21.4 (51)
Seattle, WA	8.3% (100)	0.44 (16)	0.9 (70)	25.2 (77)	23.1 (42)
Sheboygan, WI	0.5% (26)	0.55 (80)	1.0 (61)	36.9 (62)	13.0 (92)
Washington, DC	14.1% (100)	0.47 (29)	1.4 (41)	43.6 (55)	21.3 (51)

^a Standardized scores are percentile-based and presented on a 1–100 point scale where 50 is the median and higher scores always represent better performance from a health perspective.

^b The pedestrian road traffic fatality rate per 100,000 residents divided by walking commute mode share.

^c The vehicle miles traveled per capita indicator is available for urbanized areas (UZAs) only. The other four indicators shown in this table are presented for metropolitan statistical areas (MSAs).

Key: Highest performing quartile (score ≥75)

Lowest performing quartile (score ≤25)

Transportation & Health Partnerships

for Targeted Populations



Thank You.

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