DARKNESS AND DEATH IN THE U.S.: WALKING DISTANCES ACROSS THE NATION BY TIME OF DAY AND TIME OF YEAR

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ABSTRACT

Hurdle regression predict daily walk-miles traveled (WMT) and nighttime WMT across the US to show how the decision to walk and distances walked on each survey day vary significantly with demographic attributes, time of year, latitude, state of residence, and other factors. However, once individuals decide to walk at night, those distances do not vary much. Longer daylight hours and more nighttime walking do not appear to be reasons for some states' much higher pedestrian fatality rates. Differences in built environments, law enforcement, and aggressive driving may be key factors for much higher pedestrian death rates in southern settings.

KEYWORDS: Walk trips, Walk Distances, Nighttime walking, Pedestrian crashes

QUESTIONS

Why are so many US pedestrians dying at night? And what makes southern US states less safe than northern US states?

Pedestrians make up 17% of US roadway deaths, and this number is rising (NHTSA, 2021). US pedestrian death rates are 2 to 3 times higher per capita and 5 to 10 times higher per walked-mile than those in Western European nations (Buehler and Pucher, 2021). While 10.5% of US person-trips are made by walking, walking distances are just 0.85% of Americans' person-miles traveled (PMT) (FHWA, 2017).

Roughly 75% of US pedestrian deaths occur after sunset and before sunrise (during "nighttime"), with the death count almost doubling between 2009 and 2018 (GHSA, 2020; Tefft et al., 2021). Darkness and nighttime conditions come with much higher frequency and severity of pedestrian injuries (Rahman et al. 2022; Zhao et.al., 2020). Arizona, California, Florida, Georgia and Texas (all relatively southern US states, with long coastlines) accounted for 47% of all US pedestrian deaths while representing just 33% of the nation's population (GHSA 2020). The top 15 states with the highest pedestrian fatality rates are in the nation's southern latitudes (NHTSA 2019, 2022), with New Mexico topping the list, with almost 4 pedestrian deaths per year per 100,000 population. When dividing fatalities by vehicle-miles traveled (VMT), eight of the top ten US states are relatively southern, with Nevada and Arizona taking the lead (NHTSA, 2022).

This study examines the various demographic, location/position, time of day and year attributes that characterize Americans' walk-miles traveled (WMT), in order to offer daytime vs nighttime WMT values for crash rate comparisons. The 2016/17 National Household Travel Survey (NHTS) data are used in hurdle regression models to predict each respondent's WMT and "nighttime" WMT on his/her survey day.

METHODS

The 2016/17 NHTS dataset contains almost 924,000 person-trips made by nearly 130,000 U.S. households with 264,000 persons from mid-April 2016 through April 2017. Walk trip distances are capped here at 3 miles to avoid very long hikes and runs that are not normally near roadways (or were mis-reported to the NHTS survey team). Each walk-trip's starting position timing is key, since 75% of US pedestrian deaths occur in darkness (GHSA, 2020). Python's 'Suntime' library was used to find sunset and sunrise to determine whether walk-trip start times were before sunrise or after sunset. Table 1 summarizes statistics for all variables used, after applying NHTS population weights.

Table 1. Summary Statistics of 2016/17 NHTS Person Records (n = 254,295 respondents)

	Mean	Median	Std Dev	Min	Max
WMT = Respondent Walk-Miles (on sample day)	0.191 mi/d	0 mi/d	0.681 mi/d	0 mi/d	31.28 mi/d
WMT at "Night" (before sunrise + after sunset)	0.016 mi/d	0 mi/d	0.184 mi/d	0 mi/d	7.718 mi/d
Age (in years)/10	4.843 yr	5.2 yr	2.179 yr	0.5 yr	9.2 yr
Male	0.473	0	0.499	0	1
White	0.815	1	0.388	0	1
African American	0.074	0	0.261	0	1
Asian	0.046	0	0.210	0	1
Other Race	0.065	0	0.247	0	1
Worker (includes Full-time and Part-time workers)	0.597	1	0.490	0	1
No High School or College Degree	0.161	0	0.368	0	1
High School Graduate	0.180	0	0.384	0	1
Some college (e.g., Assoc degree)	0.263	0	0.440	0	1
Bachelor's degree	0.211	0	0.408	0	1
Graduate degree	0.186	0	0.389	0	1
Household Income/ $10,000 (over prior 12 months)	8.247 $	6.3 $	5.558 $	1 $	20 $
Daylight on Survey Day (hours) based on origin of first trip	12.01 hr	12 hr	1.781 hr	2 hr	22 hr
Sunday	0.112	0	0.316	0	1
Monday	0.154	0	0.361	0	1
Tuesday	0.155	0	0.362	0	1
Wednesday	0.154	0	0.361	0	1
Thursday	0.159	0	0.365	0	1
Friday	0.157	0	0.364	0	1
Saturday	0.109	0	0.311	0	1
Summer (June - August)	0.258	0	0.438	0	1
Winter (December - February)	0.269	0	0.444	0	1
Spring (March - May)	0.205	0	0.403	0	1
Fall (September - November)	0.268	0	0.443	0	1
Southern States (< 40° Latitude)	0.636	1	0.481	0	1
Northern States (> 40° Latitude)	0.364	0	0.481	0	1
Hawaii (Trip Origin < 25° Latitude)	0.003	0	0.050	0	1
25° - 30° Latitude (Trip Origin)	0.092	0	0.290	0	1
30° - 35° Latitude (Trip Origin)	0.321	0	0.467	0	1
35° - 40° Latitude (Trip Origin)	0.220	0	0.414	0	1
40° - 45° Latitude (Trip Origin)	0.340	0	0.474	0	1
45° - 50° Latitude (Trip Origin)	0.022	0	0.148	0	1
Alaska (Trip Origin > 50° Latitude)	0.002	0	0.042	0	1
West Coast Trip Origin (-125> Longitude)	0.152	0	0.359	0	1
Between Coasts Trip Origin (-125º to -85º Longitude)	0.459	0	0.498	0	1
East Coast Trip Origin (-85< Longitude)	0.389	0	0.487	0	1
Alabama Resident	0.003	0	0.050	0	1
Alaska Resident	0.002	0	0.042	0	1

Arizona Resident	0.022	0	0.147	0	1
Arkansas Resident	0.002	0	0.039	0	1
California Resident	0.203	0	0.402	0	1
Colorado Resident	0.004	0	0.060	0	1
Connecticut Resident	0.002	0	0.042	0	1
Delaware Resident	0.002	0	0.044	0	1
Washington, D.C. Resident	0.002	0	0.044	0	1
Florida Resident	0.010	0	0.102	0	1
Georgia Resident	0.067	0	0.250	0	1
Hawaii Resident	0.002	0	0.047	0	1
Idaho Resident	0.003	0	0.054	0	1
Illinois Resident	0.008	0	0.087	0	1
Indiana Resident	0.004	0	0.061	0	1
Iowa Resident	0.021	0	0.143	0	1
Kansas Resident	0.002	0	0.046	0	1
Kentucky Resident	0.002	0	0.049	0	1
Louisiana Resident	0.002	0	0.042	0	1
Maine Resident	0.002	0	0.050	0	1
Maryland Resident	0.011	0	0.106	0	1
Massachusetts Resident	0.004	0	0.061	0	1
Michigan Resident	0.006	0	0.077	0	1
Minnesota Resident	0.005	0	0.069	0	1
Mississippi Resident	0.002	0	0.040	0	1
Missouri Resident	0.004	0	0.060	0	1
Montana Resident	0.002	0	0.050	0	1
Nebraska Resident	0.002	0	0.047	0	1
Nevada Resident	0.002	0	0.039	0	1
New Hampshire Resident	0.002	0	0.046	0	1
New Jersey Resident	0.004	0	0.067	0	1
New Mexico Resident	0.002	0	0.042	0	1
New York Resident	0.130	0	0.336	0	1
North Carolina Resident	0.067	0	0.249	0	1
North Dakota Resident	0.002	0	0.047	0	1
Ohio Resident	0.008	0	0.088	0	1
Oklahoma Resident	0.010	0	0.098	0	1
Oregon Resident	0.003	0	0.055	0	1
Pennsylvania Resident	0.008	0	0.089	0	1
Rhode Island Resident	0.002	0	0.041	0	1
South Carolina Resident	0.053	0	0.223	0	1
South Dakota Resident	0.002	0	0.049	0	1
Tennessee Resident	0.004	0	0.059	0	1
Texas Resident	0.195	0	0.396	0	1
Utah Resident	0.003	0	0.055	0	1
Vermont Resident	0.003	0	0.053	0	1
Virginia Resident	0.005	0	0.073	0	1
Washington Resident	0.005	0	0.070	0	1
West Virginia Resident	0.002	0	0.042	0	1
Wisconsin Resident	0.089	0	0.284	0	1
Wyoming Resident	0.002	0	0.045	0	1

Figures 1 and 2 highlight different WMT choices by month of year and latitude. Unexpectedly, those living in northern US locations (above 40° latitude) walk *almost twice as much* as those in southern (continental) settings, even though those in the northern locations experience up to 12% less daylight during the non-summer months (and up to 7% more daylight during summer months) when comparing daylight hours between 35° N and 45° N latitudes (United States Naval Observatory, 2019).

Figure 1. Average WMT per Person per Day by Trip Origin

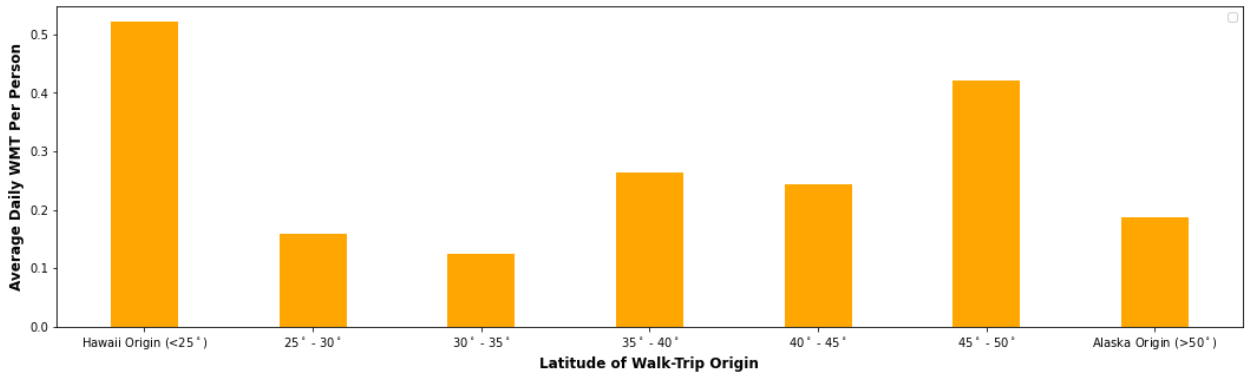
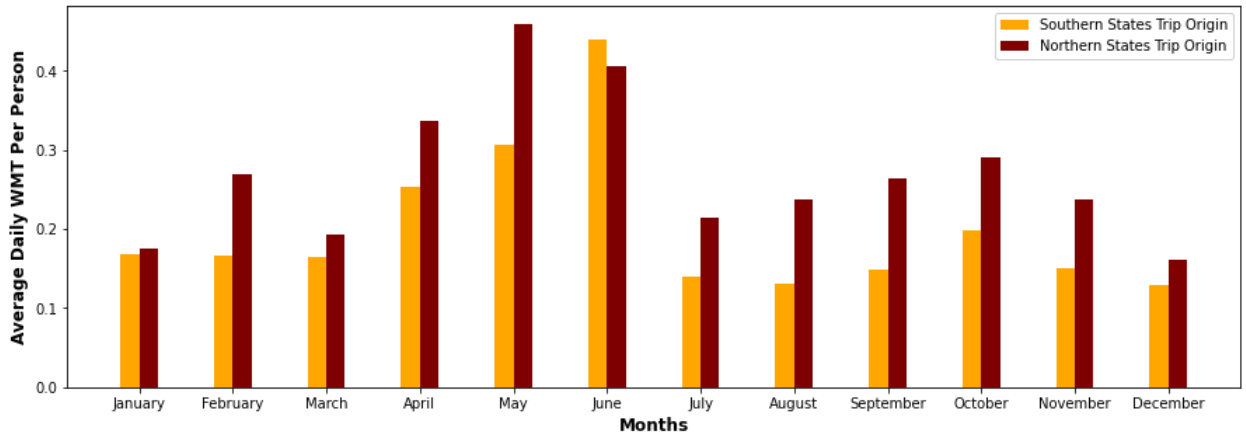


Figure 2 compares average WMT per person by month for walk trips in northern vs southern US settings. Average WMT ranges from about 0.15 to 0.45 per person-day, across months and locations, and is highest in April, May and June.

Figure 2. Average WMT per Person per Day by Month, for Northern vs Southern Trip Origins (divided by 40° latitude)



StataCorp (2015) software was used to estimate respondents' WMT values (daily versus "nighttime" only). Only 15% of respondents made a walk-trip on the survey day, and only 1.4% made a walk trip at night. So a hurdle specification is used here to split the dependent variable into two parts: the logistic probability of a respondent not walking at all on the survey day and an exponential density function for all positive WMT possibilities (Cragg, 1971).

FINDINGS

Table 2 provides parameter estimates for the WMT/person/day model, along with measures of each explanatory variable's practical significance (found by increasing each covariate by 1 standard deviation (SD), in every person-day record, and taking the ratio of average WMT predictions after vs before the increase). Workers, those without college degrees, Caucasians, older persons, and those in higher-income households are less likely to walk on the survey day. Increasing the Bachelor's and Graduate degree indicator variables by 1 SD increases daily WMT predictions by +0.075 and +0.107 miles (per respondent), respectively. Location is *very* important, with 1 SD increases in indicators for 30º to 35º, 35º to 40º, and 40º to 45º latitude bands lowering average WMT by -0.162, -0.155 and -0.158 miles per day per person, respectively – everything else constant. Season is the *most important* variable, with Fall months (September, October and November) giving rise to another 0.2+ more walked miles (per day) than other months.

Table 2. Hurdle Model for WMT Per Person Per Day Using 2016/17 NHTS Data

Logistic Selection Model for Pr(WMT > 0)				
	Coef.	***T-stat***	***P-value***	***Pract. Sign.***
Constant	-0.8339	-30.100	0.000	
Age/10	-0.0297	-6.700	0.000	*
Worker	-0.1290	-7.520	0.000	*
Household Income/10,000	-0.0060	-4.370	0.000	-0.012
White	Base Race			
African American	0.0982	3.770	0.000	0.009
Asian	0.1413	4.730	0.000	0.011
Other Race	0.0554	2.160	0.030	0.005
No High School or College Degree	Base Degree			
High School Graduate	-0.1506	-5.590	0.000	*
Some Degree	-0.0631	-2.500	0.012	*
Bachelor's Degree	0.2213	8.810	0.000	*
Graduate Degree	0.3702	13.900	0.000	*
Exponential Regression Model (for positive WMT values)				
	Coef.	***T-stat***	***P-value***	***Pract. Sign.***
Constant	-1.7612	-4.550	0.000	
Age/10	-0.0354	-4.340	0.000	-0.018
Male	0.1258	4.450	0.000	0.016
Worker	-0.1628	-4.940	0.000	-0.039
Length of Daylight	0.0342	2.120	0.034	0.015
No High School or College Degree	Base Degree			
High School Graduate	0.2849	5.090	0.000	0.005
Some Degree	0.2117	4.060	0.000	0.013
Bachelor's Degree	0.3352	6.780	0.000	0.075
Graduate Degree	0.4074	8.370	0.000	**0.107**
Monday	0.1191	2.130	0.033	0.011
Wednesday	0.1256	2.260	0.024	0.011
Thursday	0.1385	2.410	0.016	0.013
Sunday, Tuesday, Friday & Saturday	Base Days of the Week			
Summer	0.9636	2.290	0.022	**-0.215**
Winter	1.3408	2.860	0.004	**-0.229**
Spring	0.7705	1.650	0.098	**-0.195**
Fall	Base Season			
Hawaii Trip Origin [<25º Latitude]	0.8700	1.980	0.048	-0.014
25º - 30º Latitude Trip Origin	0.9245	2.440	0.015	-0.083
30º - 35º Latitude Trip Origin	1.1566	3.170	0.002	**-0.162**
35º - 40º Latitude Trip Origin	1.0692	2.920	0.004	**-0.155**
40º - 45º Latitude Trip Origin	0.9332	2.560	0.010	**-0.158**

45º - 50º Latitude Trip Origin	1.0955	2.950	0.003	-0.077
Alaska Trip Origin [>50º Latitude]	Base Latitude Trip Origin			
Summer * (25º - 30º Latitude Trip Origin)	-1.0243	-2.330	0.020	*
Summer * (30º - 35º Latitude Trip Origin)	-1.0674	-2.580	0.010	*
Summer * (35º - 40º Latitude Trip Origin)	-1.1209	-2.710	0.007	*
Summer * (40º - 45º Latitude Trip Origin)	-0.9851	-2.400	0.016	*
Summer * (45º - 50º Latitude Trip Origin)	-1.1801	-2.730	0.006	*
Winter * (Hawaii Trip Origin [<25º Latitude])	-0.9936	-1.830	0.067	*
Winter * (25º - 30º Latitude Trip Origin)	-0.9033	-1.830	0.068	*
Winter * (30º - 35º Latitude Trip Origin)	-1.3937	-2.960	0.003	*
Winter * (35º - 40º Latitude Trip Origin)	-1.4415	-3.040	0.002	*
Winter * (40º - 45º Latitude Trip Origin)	-1.3154	-2.790	0.005	*
Winter * (45º - 50º Latitude Trip Origin)	-1.5457	-3.180	0.001	*
Spring * (30º - 35º Latitude Trip Origin)	-1.0398	-2.230	0.026	*
Spring * (35º - 40º Latitude Trip Origin)	-0.9432	-2.020	0.043	*
Spring * (40º - 45º Latitude Trip Origin)	-0.8282	-1.770	0.076	*
Spring * (45º - 50º Latitude Trip Origin)	-0.9124	-1.870	0.062	*
Alabama Resident	-0.6567	-2.520	0.012	-0.008
Arizona Resident	-0.2225	-2.500	0.013	-0.008
Florida Resident	-0.1668	-1.870	0.061	-0.004
Georgia Resident	-0.1393	-2.690	0.007	-0.008
Idaho Resident	-0.3495	-2.510	0.012	-0.005
Louisiana Resident	-0.3762	-1.860	0.063	-0.004
Mississippi Resident	-0.6616	-2.870	0.004	-0.006
New Mexico Resident	-0.5757	-1.820	0.069	-0.006
North Carolina Resident	-0.1151	-2.200	0.028	-0.007
South Carolina Resident	-0.3285	-5.330	0.000	-0.017
Texas Resident	-0.2021	-4.660	0.000	-0.019
Virginia Resident	-0.3050	-2.540	0.011	-0.005
West Virginia Resident	-0.3564	-1.820	0.069	-0.004
Residents of Remaining 37 States + Washington DC = Base States of Residence				
Final log-likelihood				-1.43E+08
Pseudo R-square				0.0189
Number of observations				254,295

* Asterisked variables carry the practical significance values shown in the exponential regression model. N/A's are shown with interaction terms, since each variable's overall impact is shown in that variable's earlier row.

Table 3 provides parameter estimates for the "Nighttime" WMT model, along with measures of practical significance. There is a higher chance of making a "nighttime" walk trip on the survey day if the person has a college degree, is male, African American, and/or of lower household income. However, those "nighttime" walk *distances* do not vary in any meaningful way with location or demographics.

Table 3. Hurdle Model for WMT Per Person Per Day at "Night" using 2016/17 NHTS Data

Logistic Selection Model for Pr(Nighttime WMT > 0)

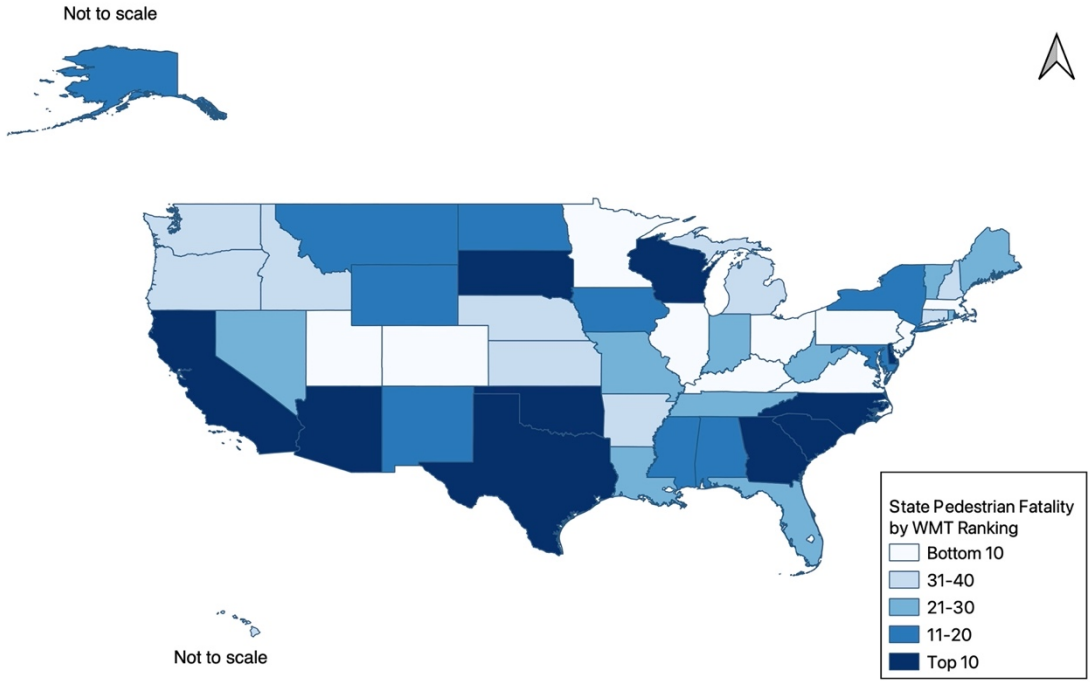
	Coef.	*T-stat*	*P-value*	*Practical Signific.*
Constant	0.134	4.060	0.000	
Male	0.076	2.490	0.013	*
Worker	0.112	3.280	0.001	0.002
Household Income/10,000	-0.011	-3.720	0.000	-0.002
All Other Races	Base Race			
African American	0.091	1.760	0.079	0.001
No College Degree	Base Degree			
Bachelor's Degree	0.177	3.770	0.000	0.003
Graduate Degree	0.269	5.970	0.000	0.005
Exponential Regression Model				
	Coef.	*T-stat*	*P-value*	*Pract. Sign.*
Constant	-0.987	-6.210	0.000	
Age/10	0.094	4.150	0.000	0.004
Male	0.156	1.950	0.051	0.003
All Other Races	Base Race			
Asian	0.306	2.370	0.018	0.000
East Coast Trip Origin (-85º<= Longitude)	-0.216	-1.740	0.081	-0.002
Non-East Coast Trip Origin (-85º> Longitude)	Base Longitude Trip Origin			
Connecticut Resident	0.785	2.590	0.010	0.001
Washington D.C Resident	0.463	2.050	0.041	0.000
Illinois Resident	0.357	1.520	0.128	0.001
Louisiana Resident	1.573	21.370	0.000	0.001
Massachusetts Resident	0.450	2.400	0.017	0.000
New Mexico Resident	1.337	5.690	0.000	0.001
Ohio Resident	0.541	1.960	0.050	0.001
Pennsylvania Resident	0.434	1.410	0.157	0.001
South Dakota Resident	0.827	2.640	0.008	0.001
Tennessee Resident	0.884	6.040	0.000	0.001
Wisconsin Resident	0.246	2.030	0.042	0.001
Residents of Remaining 40 States = Base States of Residence				
Final log-likelihood				-2.21E+07
Pseudo R-square				0.0172
Number of observations				254,295

* Asterisked variables have their practical significance values shown in the exponential regression model for the same variable.

Results show how day of week, race, education, age, income and worker status significantly impact walk-mode and -distance choices, but not “nighttime” walk distance. Season and latitudes (locations) have the greatest impacts, due to weather and sunlight, vacation timing and school engagements. Intriguingly, Americans in southern US locations (which enjoy more sunshine/better lighting and warm weather) do not walk as much, and face higher pedestrian crash risk per mile walked. Dividing pedestrian fatalities

(FHWA, 2017; NHTSA, 2022) by WMT extrapolations for each state's resident population (and visitors, which are key in Washington DC's and Delaware's cases), places 8 southern states among the nation's 10 most deadly, as shown in Figure 3, with South Carolina and Texas topping the list . As noted earlier, both South Carolina and Florida lead in terms of crash rates per VMT, with roughly 280 pedestrian deaths per 100 billion VMT (NHTSA, 2022). South Carolina also leads in most traffic fatalities (not just pedestrians) per VMT as well. Lack of enforcement, poor design, weaker licensing laws, and driver culture may be an issue for South Carolina and many other states.

Figure 3. Rankings of Pedestrian Deaths per Walk-Mile Travelled (WMT) across US States



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Trip Origin State	WMT/ person	Total State WMT in Millions	Ped Fatality	Ped Fatality per Million WMT	Ped Fatality per 100,000 Pop	Annual VMT please do per capita	Ped Fatality per 100 Billion VMT	All Traffic Fatality by 100 M VMT	% with Blood Alcohol Conc 0.01+
Alabama	0.38	1.67	119	71.2	2.42	7.07E+10	168.27	1.30	23
Alaska	0.23	0.16	14	88.4	0.82	5.53E+09	253.26	1.14	27
Arizona	0.17	1.06	213	201.1	2.88	6.51E+10	327.39	1.39	21
Arkansas	0.63	1.94	47	24.3	2.05	3.64E+10	129.11	1.38	22
California	0.15	5.45	940	172.4	2.56	3.43E+11	273.78	1.09	21
Colorado	1.17	5.55	92	16.6	1.27	5.34E+10	172.30	1.09	22
Connecticut	0.87	2.48	49	19.8	1.51	3.15E+10	155.51	0.79	32
Delaware	0.29	0.28	33	116.9	3.28	1.05E+10	314.99	1.29	17
Washington D,C	1.15	1.94	11	5.7	1.27	3.72E+09	295.49	0.61	22
Florida	0.85	15.31	654	42.7	3.32	2.19E+11	298.86	1.41	18
Georgia	0.08	0.76	253	332.2	2.22	1.25E+11	202.75	1.12	19
Hawaii	0.47	0.67	14	21.1	2.54	1.08E+10	130.09	0.98	29
Idaho	0.35	0.70	15	21.4	0.67	1.73E+10	86.65	1.24	24
Illinois	1.16	13.85	147	10.6	1.37	1.08E+11	136.17	0.94	24
Indiana	0.60	3.43	101	29.5	1.08	8.18E+10	123.51	0.98	19
Iowa	0.08	0.26	23	88.6	0.66	3.35E+10	68.68	1.00	25
Kansas	0.57	1.56	33	21.2	0.55	3.23E+10	102.29	1.29	17
Kentucky	1.28	5.47	83	15.2	1.63	4.93E+10	168.49	1.48	15
Louisiana	1.05	4.12	115	27.9	2.53	4.93E+10	233.48	1.42	24
Maine	0.49	0.80	20	25.1	1.19	1.47E+10	135.61	1.06	28
Maryland	0.32	1.74	117	67.1	2.05	6.01E+10	194.76	0.89	23
Massachusetts	1.91	12.10	72	5.9	1.12	6.27E+10	114.89	0.52	28
Michigan	0.93	8.62	156	18.1	1.41	1.02E+11	153.29	0.97	20
Minnesota	0.49	2.79	38	13.6	0.83	6.00E+10	63.36	0.60	19
Mississippi	0.37	1.03	71	68.8	2.18	4.09E+10	173.61	1.56	22
Missouri	0.71	3.60	96	26.7	1.78	7.59E+10	126.41	1.11	23
Montana	0.24	0.27	14	52.7	1.5	1.27E+10	110.62	1.43	30
Nebraska	0.45	0.82	20	24.4	1.03	2.10E+10	95.26	1.17	19
Nevada	1.02	2.43	91	37.5	2.01	2.76E+10	329.91	1.06	24
New Hampshire	0.39	0.53	11	20.9	0.73	1.37E+10	80.39	0.73	30
New Jersey	1.80	15.24	183	12.0	1.96	7.75E+10	236.12	0.71	21
New Mexico	0.45	0.85	75	88.7	3.95	2.97E+10	252.74	1.53	23
New York	0.18	3.45	246	71.3	1.41	1.24E+11	198.78	0.75	24
North Carolina	0.08	0.74	198	267.1	2.1	1.19E+11	166.06	1.19	21
North Dakota	0.12	0.09	5	58.1	0.65	9.74E+09	51.33	1.02	33
Ohio	0.88	10.00	142	14.2	1.06	1.20E+11	118.72	1.01	25
Oklahoma	0.22	0.82	79	96.3	2.15	4.94E+10	159.86	1.43	19
Oregon	0.76	3.13	70	22.4	1.94	3.68E+10	190.45	1.38	30
Pennsylvania	0.99	11.46	147	12.8	1.15	1.02E+11	144.60	1.03	21
Rhode Island	0.64	0.58	21	36.5	0.76	8.00E+09	262.35	0.75	41
South Carolina	0.04	0.17	155	920.3	3.16	5.56E+10	278.96	1.74	23
South Dakota	0.12	0.09	10	106.8	0.79	9.65E+09	103.62	1.03	23
Tennessee	0.70	4.30	121	28.1	2.17	8.23E+10	146.96	1.37	20
Texas	0.06	1.51	608	403.8	2.24	2.73E+11	222.98	1.26	30
Utah	0.98	3.19	42	13.2	1.19	3.15E+10	133.40	0.75	14

Vermont	0.26	0.19	8	42.5	0.48	7.43E+09	107.67	0.64	21
Virginia	0.82	6.72	111	16.5	1.44	8.53E+10	130.10	0.97	24
Washington	0.88	5.58	104	18.6	1.34	6.14E+10	169.26	0.86	27
West Virginia	0.30	0.56	26	46.4	1.73	1.91E+10	136.18	1.36	18
Wisconsin	0.04	0.21	56	270.2	1.01	6.53E+10	85.71	0.85	26
Wyoming	0.14	0.08	6	75.6	1.9	9.80E+09	61.21	1.44	20