

Are Older Adults Prone to More Severe Crashes Farther Away From Home? An Exploratory Assessment using Florida Data

BACKGROUND AND PURPOSE

- By 2020, the population of older adults (65 and above) is estimated to be approximately 55.7 million.
- In the same period, the proportion of licensed older drivers is expected to be about 73% of the older adult population.
- Older adults are known to be susceptible to injury and death owing to their fragility, frailty and crash environment.
- It is also known that older drivers self-regulate their driving habits in a variety of ways including limiting the driving to local/familiar environments.
- Florida experiences seasonal in and out migration of a large volumes of elderly people, commonly referred to as "snowbirds". The impact of this migration patterns on crashes needs to be understood.
- The intent of this study is to examine how the location of crash (distance from home) impacts crash severity, and
- Also to investigate whether seasonal variations in elderly population is reflected in crashes in Florida.

METHOD

- Crash data from Florida for the years 2011 – 2014 were obtained.
- Crashes involving older drivers (Age >= 65) were extracted.
- Based on the geocoded location of the crash and the residential zip-code of the older driver, the distance between the crash location and the residential location was computed.
- The extracted data was classified as in-state and out-of-state based on the residential zip code.
- Several other data elements describing the crash and driver characteristics were also assembled from the crash reports.
- Total data points screened for analyses was (N=108,636), In-state (n=101,563) and out-of-state (n= 7,073).

RESULTS

Demographics	In-State Freq (%)	Out-of-State Freq (%)
Gender		
Male	59780 (58.9)	5123 (72.4)
Female	41783 (41.1)	1950 (27.6)
Age		
65-70	44155 (43.5)	3316 (46.9)
70-75	23822 (23.5)	1846 (26.1)
75-80	16393 (16.1)	1027 (14.5)
80-85	10744 (10.6)	615 (8.7)
85-90	5027 (4.9)	216 (3.1)
> 90	1422 (1.4)	53 (0.7)

RESULTS

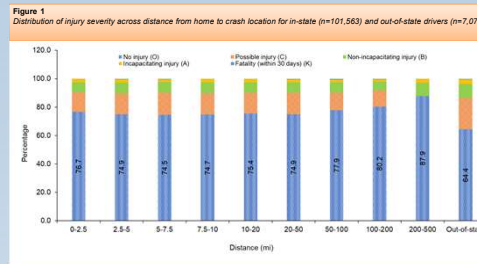


Figure 2
In-state spatial distributions of crash locations. Occurring within 0-5 miles away from home locations.

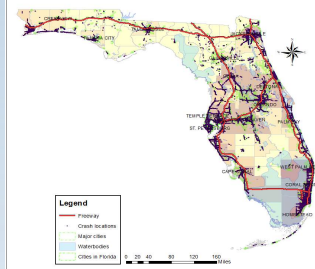


Figure 3
In-state spatial distributions of crash locations. Occurring within 5-50 miles away from home locations.

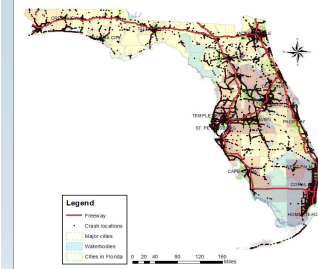


Figure 4
Out-of-state spatial distribution of crash locations.

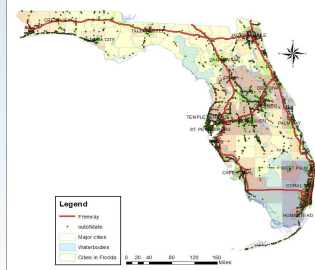
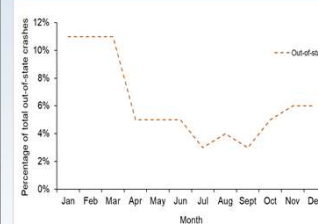


Figure 5
Monthly distribution of proportions of out-of-state crashes



RESULTS

Table 2
In-state (n=101,563) injury severity distribution across two seasons (May to November, and November to April).
Legend: Freq(%): Frequency (Percentage)

Season	Injury Severity						Total
	No injury (O) Freq(%)	Possible injury (C) Freq(%)	Non-incapacitating injury (B) Freq(%)	Incapacitating injury (A) Freq(%)	Fatality (within 30 days) (K) Freq(%)	Nontraffic fatal Freq(%)	
May-Oct	36763 (75.5%)	7064 (14.5%)	3591 (7.4%)	1085 (2.2%)	137 (0.3%)	25 (0.1%)	48665
Nov-Apr	39961 (75.5%)	7682 (14.5%)	3878 (7.3%)	1191 (2.3%)	171 (0.3%)	15 (0.0%)	52898
Total	76724 (75.5%)	14746 (14.5%)	7469 (7.4%)	2276 (2.2%)	308 (0.3%)	40 (0.0%)	101563

Table 3
Out-of-state (n=7073) injury severity distribution across two seasons (May to November, and November to April).
Legend: Freq(%): Frequency (Percentage)

Season	Injury Severity						Total
	No injury (O) Freq(%)	Possible injury (C) Freq(%)	Non-incapacitating injury (B) Freq(%)	Incapacitating injury (A) Freq(%)	Fatality (within 30 days) (K) Freq(%)	Nontraffic fatal Freq(%)	
May-Oct	1820 (80.7%)	272 (12.1%)	123 (5.5%)	38 (1.7%)	2 (0.1%)	0 (0.0%)	2255
Nov-Apr	3801 (78.9%)	633 (13.1%)	275 (5.7%)	91 (1.9%)	17 (0.4%)	1 (0.0%)	4818
Total	5621 (79.5%)	905 (12.8%)	398 (5.6%)	129 (1.8%)	19 (0.3%)	1 (0.0%)	7073

DISCUSSION

- Age distribution was approximately same for both in-state and out-of-state drivers.
 - There were more males than females represented in both in-state and out-of-state databases.
 - Positive growth in number of out-of-state crashes between November and March was identified. We surmise this may be attributable to influx of elderly people who move from colder regions to warmer climates, referred to as the "snowbird" phenomena.
 - In-state results show that, majority of crashes occurred within 0 - 2.5 miles from home locations of drivers.
 - In-state crashes recorded slight growth across the year, however out-of-state crashes almost doubles in the same period.
 - Empirical results from ordered response model suggest injury severity increases with distance.
- In conclusion, This study provides additional empirical insights into enhancing the safety of older drivers, and elucidates the impact of "snowbird" phenomena on crashes.