The Changing Travel Behavior of the Elderly

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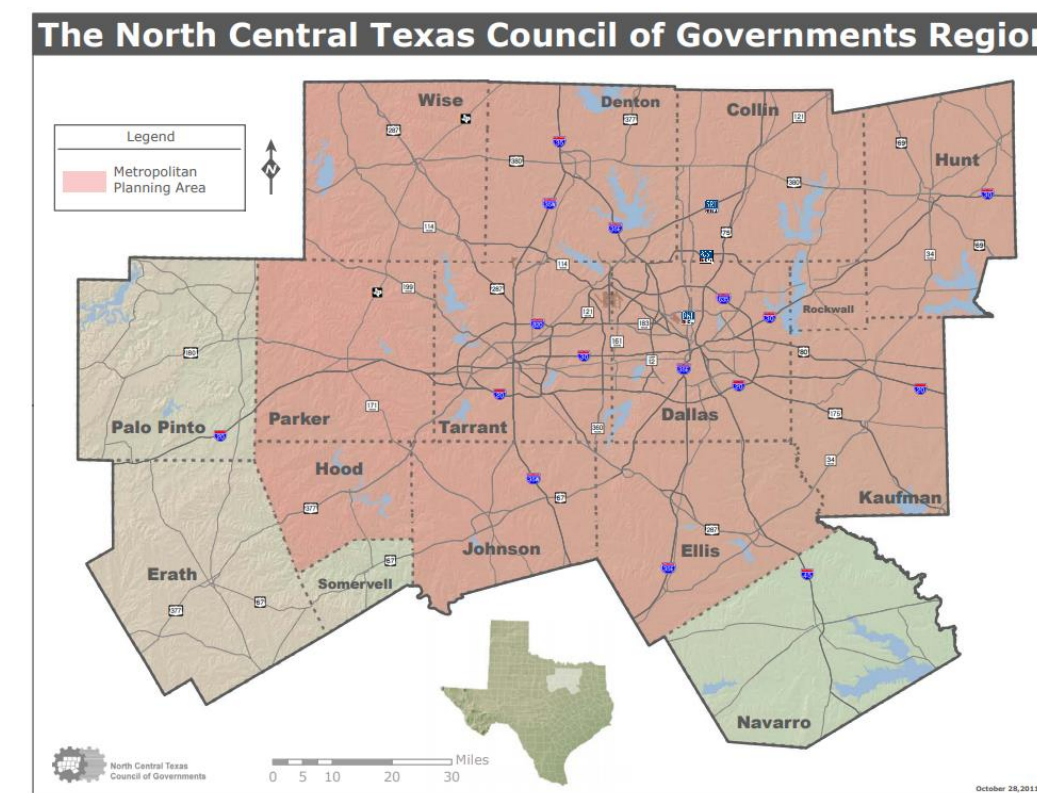## Introduction/Background

Courtesy https://101clipart.com/clip-art-old-people/

- In 2016, USA had 46 million people aged 65+ (15% of total), expected to increase to 21% of total share by 2030
- Seniors are more active, likelier to work than previous generations (Goulias et. al, 2007; Rosenbloom, 2001)
- What socio-demographic factors impact activity-travel of the elderly in action space, mode choice, and time use? Differences in ages 55-64, 65-74, 75-84, and 85 or older?
- We use the 2017 NHTS to study this, looking specifically at weekday travel by individuals aged 55 or older

Sample Characteristics

- 7,522 seniors (age 55+) in Dallas-Fort Worth metro sub-sample of 2017 NHTS, location data from NCTCOG
- Older elderly less likely to be part-time and full-time workers than younger elderly, most individuals regardless of age are drivers
- Oldest group more white than younger peers, slightly less educated than younger groups
- Higher proportion of the older elderly live alone, perhaps contributing to social isolation and decreased mobility
- Overall, a gradual change in socio-economic characteristics until the age of 74, with more dramatic shifts happening at 75+ and 85+ years

The North Central Texas Council of Governments Region
Courtesy North Central Texas Council of Governments, 2011: https://www.nctcog.org/nctcg/media/Transportation/DocsMaps/Data/Maps/RegionalMap_Web.pdf

Action Space

Log-linear multivariate multiple regression of action space by aggregated activity type

Explanatory Variables	Work/School Action Space Estimate	Work/School Action Space t-stat	Shopping/Eating Action Space Estimate	Shopping/Eating Action Space t-stat	Social/Recreational/Health Action Space Estimate	Social/Recreational/Health Action Space t-stat
Constant	0.2086	5.66	1.1362	31.31	0.8218	20.08
Age is 65-74	--	--	0.1071	4.29	--	--
Age is 65+	-0.0548	-2.16	--	--	--	--
Age is 85+	--	--	--	--	-0.1448	-2.10
Individual has a medical condition	--	--	-0.2666	-6.89	-0.1560	-4.09
Individual is a full-time worker	1.3633	37.03	--	--	-0.2014	-7.37
Individual is a part-time worker	0.7777	19.60	--	--	--	--
Household is in an urban area	--	--	-0.3003	-8.60	-0.1394	-3.94
Household income below $35K	--	--	--	--	-0.1202	-3.97
Online Purchases for delivery, last 30 days	-0.0090	-3.06	0.0169	5.44	--	--

- Action space is farthest road-network distance from home to participate in an activity
- Gender differences not significant, medical condition and urban residence tend to decrease act. space, and age only predictive in select activity type/age situations
- Online shopping positively impacts shopping/eating out action space – variety seeking?

Mode Use

- Multivariate ordered probit model of mode share of active transportation (biking and walking), private vehicle (car, SUV, van, truck), and public transport (bus, rail)
- Those aged 65-74 choose to drive with higher propensity than those aged 85 or older; those aged 85+ may have diminished driving capability, also walk/bike less frequently
- Minorities more inclined to use public transport than other groups
- Individuals who travel by one mode for activity are more likely to travel by the same mode for different activity types

References

- Bhat, C.R. A Multiple Discrete-Continuous Extreme Value Model: Formulation and Application to Discretionary Time-Use Decisions. Transportation Research B, 39(8), 2005, 679-707.
- Goulias, K. G., L. Blain, N. Kilgren, T. Michalowski, and E. Murakami. Catching the Next Big Wave: Do Observed Behavioral Dynamics of Baby Boomers Force Rethinking of Regional Travel Demand Models? Transportation Research Record, 2014 (1), 67–75.
- Rosenbloom, S. Sustainability and Automobility Among the Elderly: An International Assessment. Transportation, 28(4), 2001, 375–408.

Time Use

- Time use modeled using MDCEV (see Bhat, 2005), full results omitted for brevity
- Age differences – newly retired spend more time shopping/eating out (age 65-74), those aged 75-84 truly relinquish working (some aged 65-74 may work part-time)
- Activity participation differences likely more attributable to physical condition and lifecycle – medical condition and medical device, working status, household size

Average Daily Time Use of Selected Activities
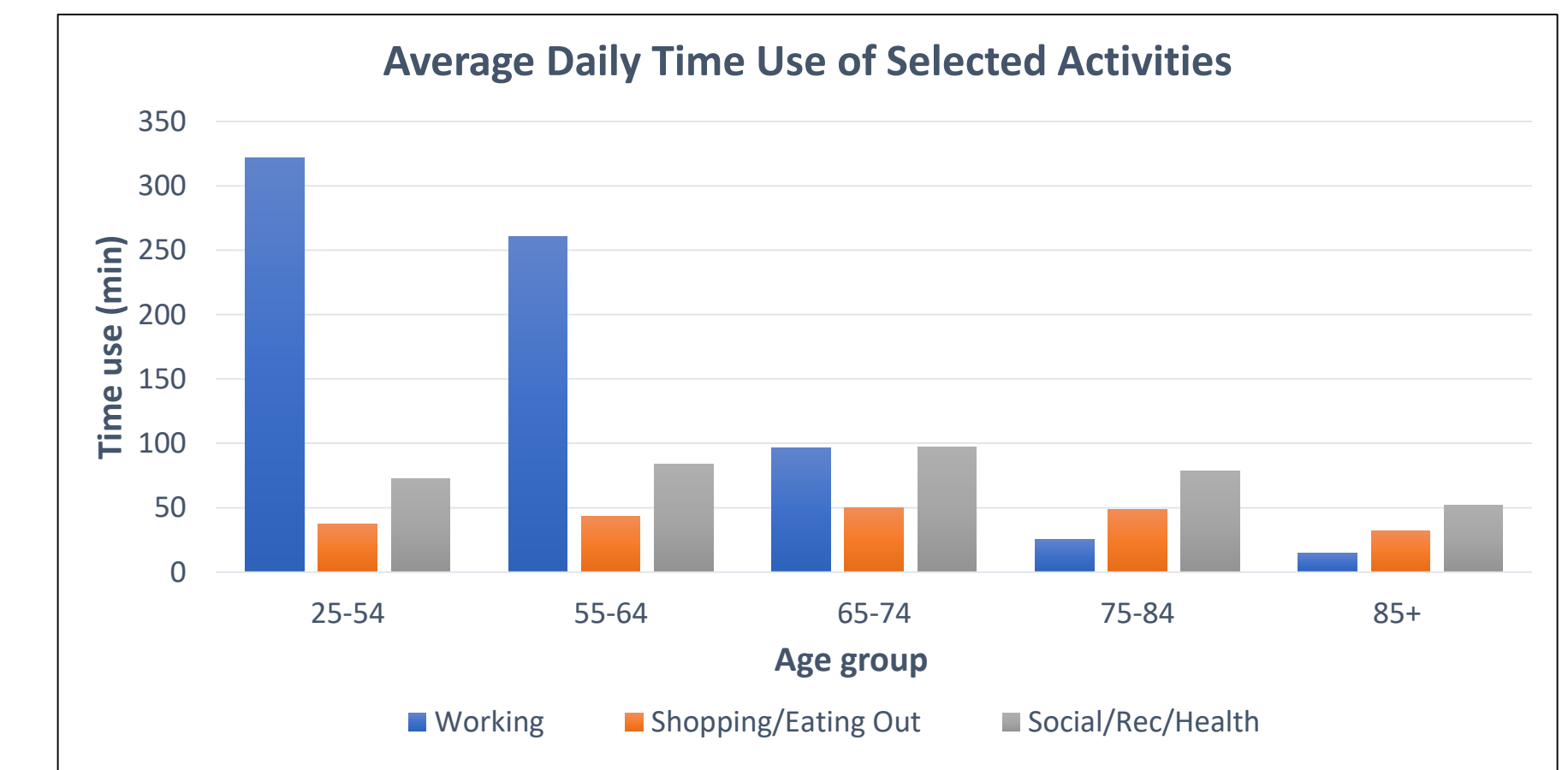
Conclusions

- There is heterogeneity among age groups even when controlling for various other effects – the degree of heterogeneity varies among choice dimensions
- Medical condition and medical device significant predictors of activity-travel choices, often to a greater degree than age – physical and cognitive abilities more important indicators of differences
- Policy interventions should be aimed at *all* people with disabilities, regardless of age and future work should measure size effects of explanatory factors on travel