

PLAN FOR THE



ROAD AHEAD

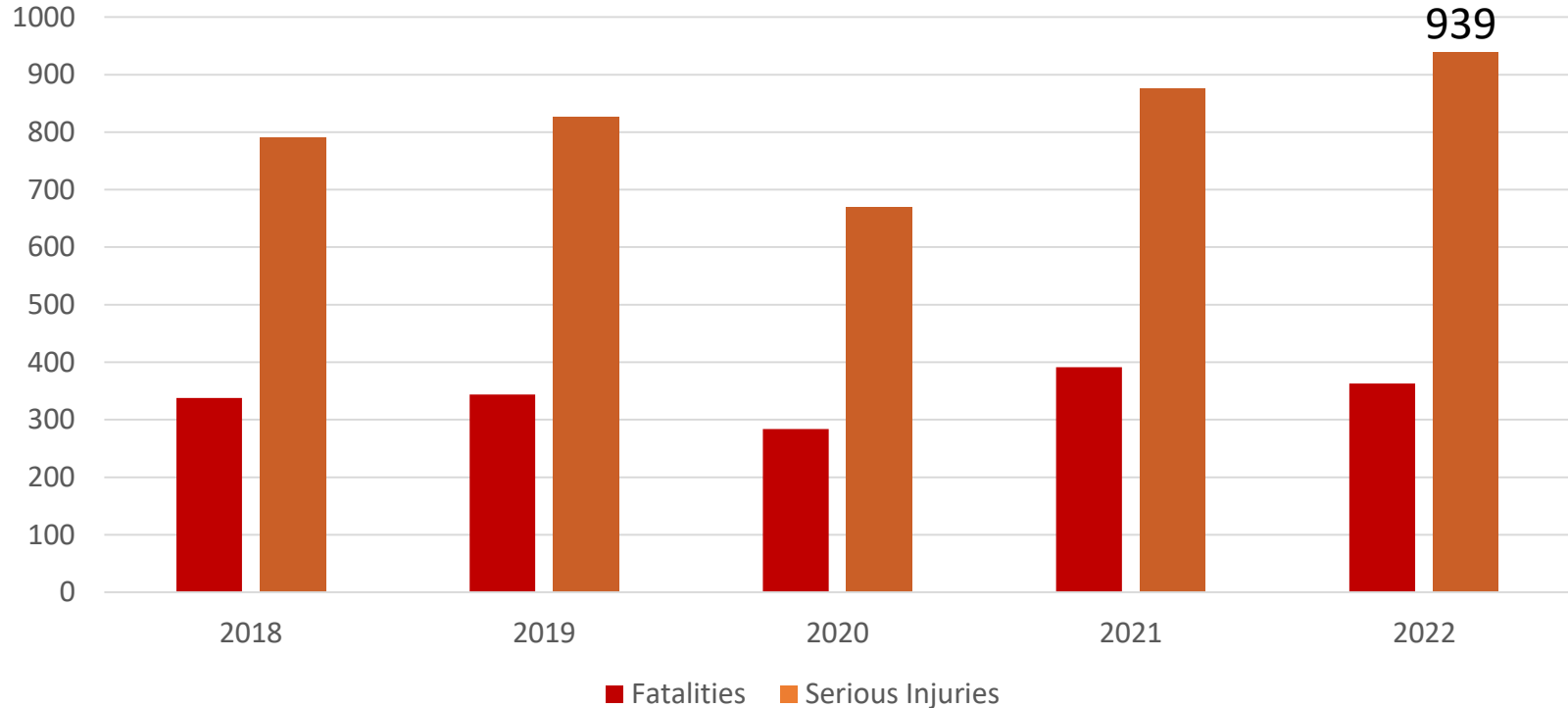
Insights and Strategies to Address Older Drivers on North Carolina Roads

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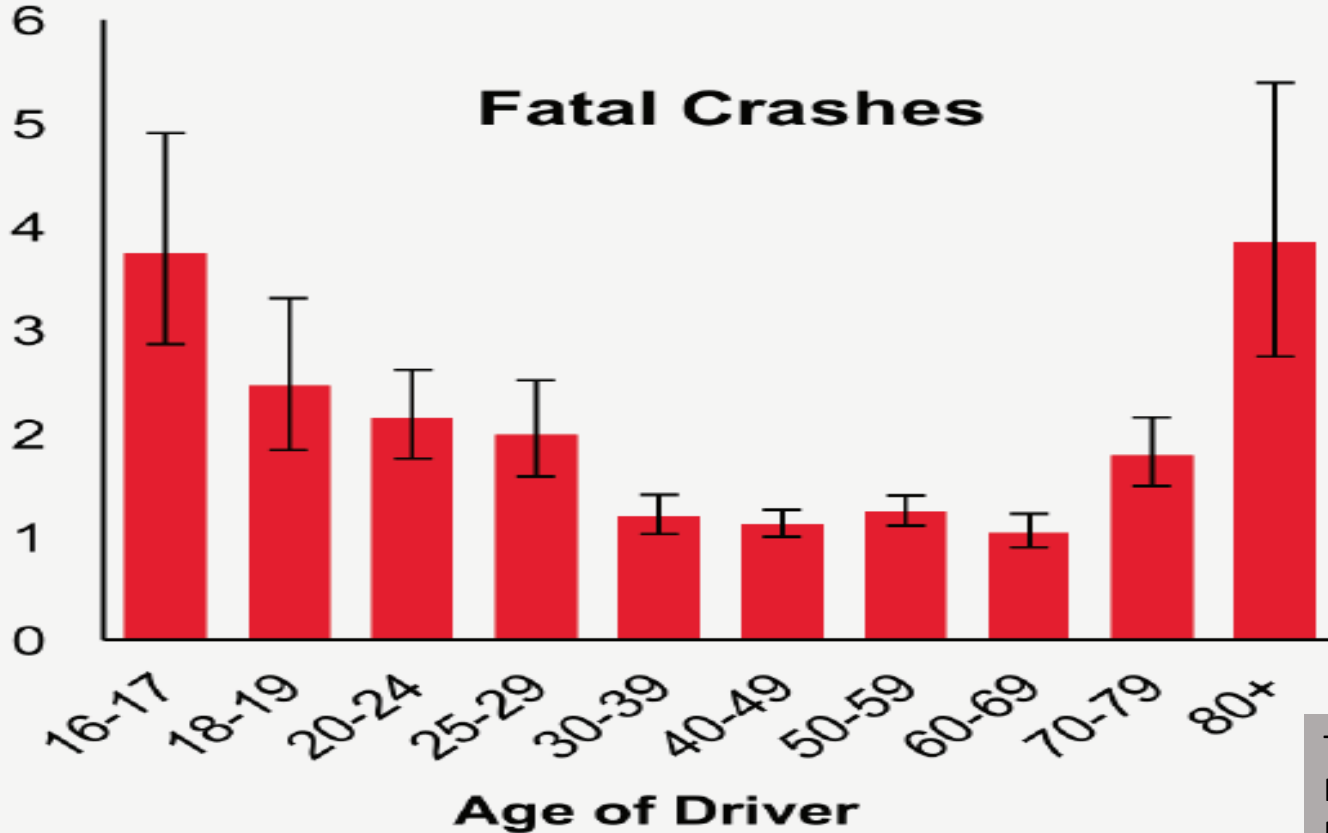
NC Older Driver Crashes



Data from reports of ECHS

80+ Drivers – Fatal Crash Rates

Rate per 100M Miles Driven



Tefft, B.C. (2017, Research Brief.) AAA Foundation for Traffic Safety.

Frailty and Fragility

Older adults “sustain injuries more easily and are more frail which reduces their odds at recovering from injuries”.

“At crash speeds of 31 mph, the risk of sustaining a serious injury increases dramatically.

- 50-year-old female has about a 10% risk of serious injury in a frontal crash,
- 80-year-old female has about a 40% risk.”



Why is Driving an Issue?

“When they turn 85, why don’t we take their license away?”

NC LE officer



- ➔ Many older adults live in suburban & rural areas.¹
- ➔ Driving will remain the primary choice and personal mode of transportation.²⁻³
- ➔ Decision to stop driving has adverse consequences.⁴⁻⁵
- ➔ Older adults want to age in their communities.⁵
- ➔ Want and need to continue driving to maintain health & quality of life.⁶

Babies come into the world as
homogenous persons...

Older adults are
heterogenous!



What we do know!

- ➔ Older drivers are generally safe drivers.¹
- ➔ As one ages, drivers tend to self restrict.²
- ➔ We all age *differently*.
- ➔ **Clear evidence:** with aging: increased processing speed.³⁻⁵
- ➔ We will outlive our ability to drive!⁶
 - ➔ **Men – 6 years**
 - ➔ **Women - 10 years**

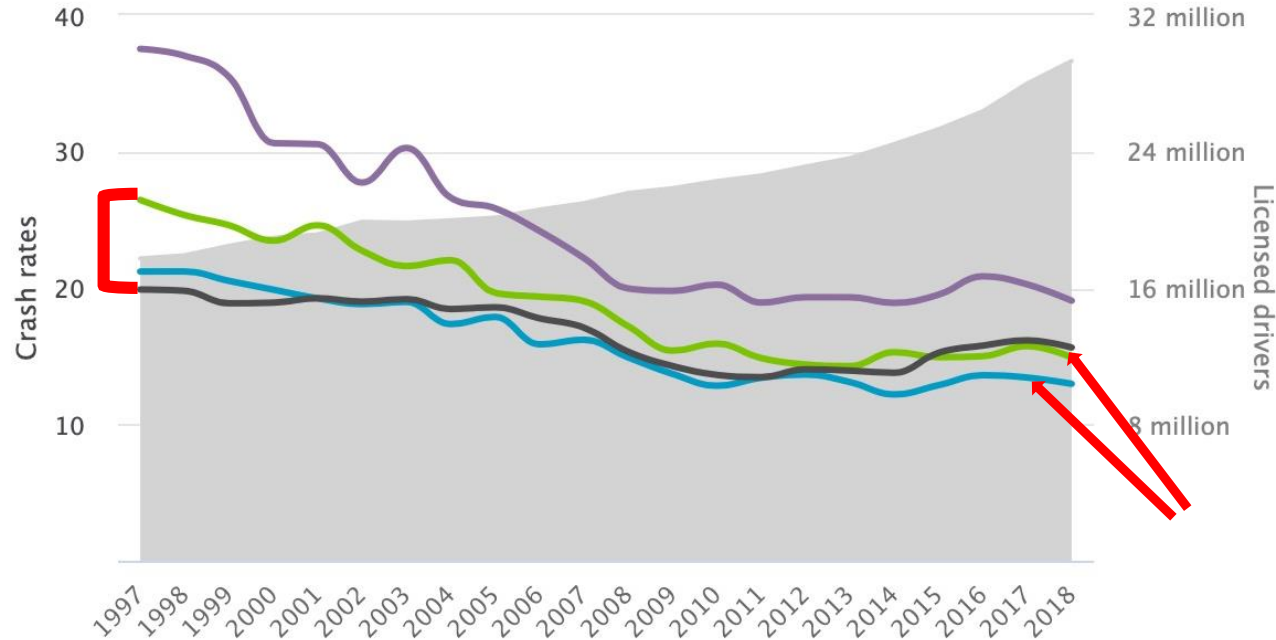


Crash rates drop 1997-2018

Largest declines in the 70-79 age group.

➔ 43% decline

➔ 21% for middle age



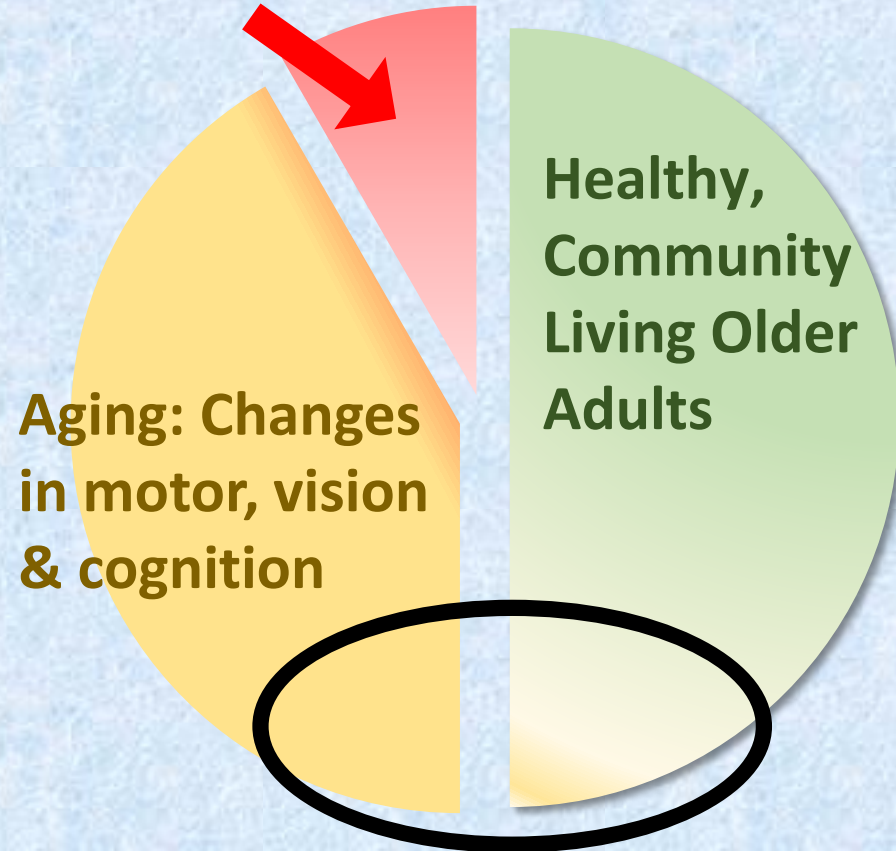
Cox, A.E. & Cicchino, J.B. (2020). Continued trends in older driver crash involvement rates in the United States: Data through 2017-2018.

- Licensed drivers 70 and over
- Fatal crash rate for drivers 35-54
- Fatal crash rate for drivers 70-74
- Fatal crash rate for drivers 75-79
- Fatal crash rate for drivers 80+

As one ages:

- **Processing speed decreases**
- **Increased number of Medical conditions**

Medically-at-risk



The *Medically-at-Risk* Driver



Challenge:

How do we identify or test the medically-at-risk driver without over-restricting our healthy older adults?

Making sure the driving privilege is based on **Function** – **not Age** – through an **evaluation of Driving Fitness**¹

”I have been driving
for 60 years – and I
never crashed or
got a ticket!”



The *Medically-at-Risk* Driver

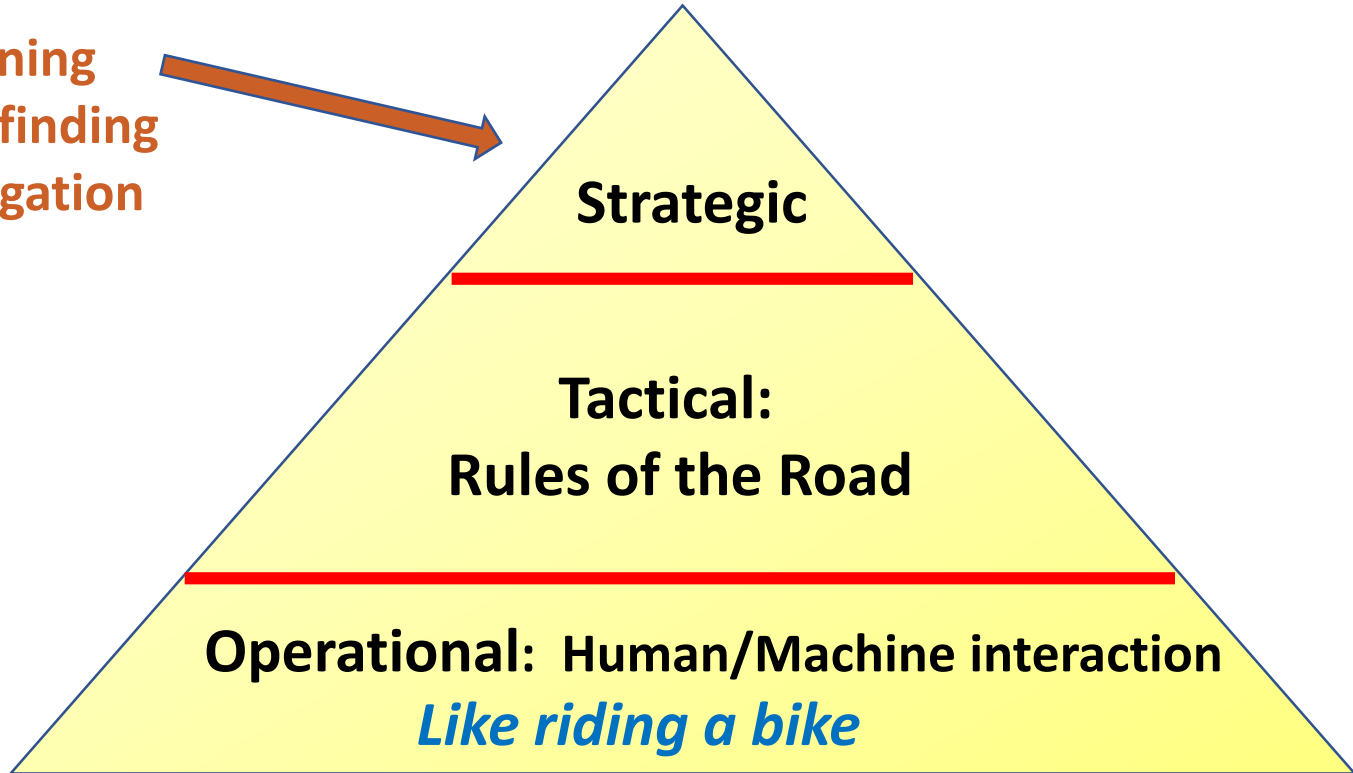
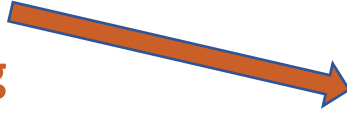
Key Points:

- ➡ No one test can be used to determine fitness to drive¹⁻⁷
- ➡ Cognition is key factor^{1,2,4,8}
- ➡ Fitness to drive evaluations – best done by driving rehabilitation specialists who are occupational therapists.



Michon's Hierarchy of Driving Behaviors

Planning
Wayfinding
Navigation



Strategic

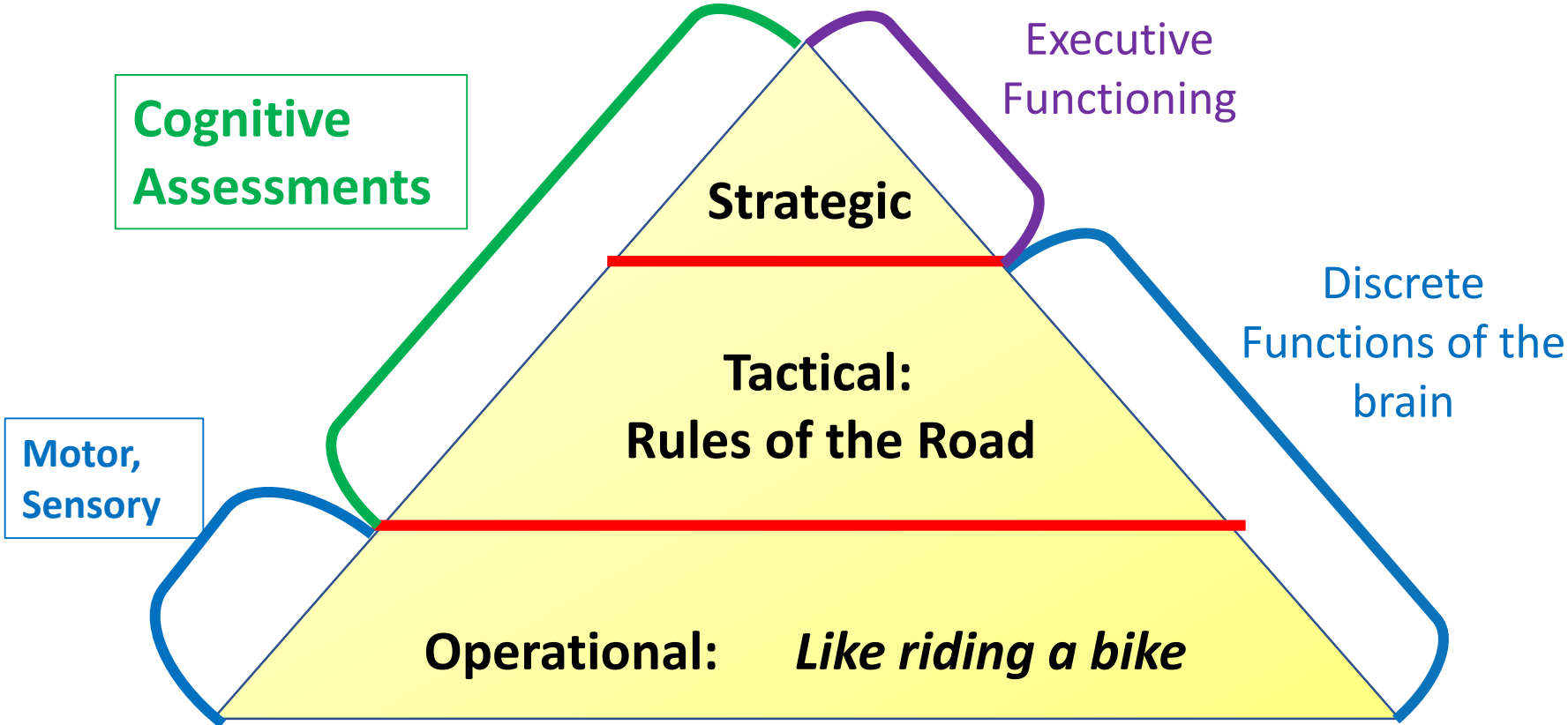
**Tactical:
Rules of the Road**

Operational: Human/Machine interaction
Like riding a bike

Understanding Driving Behaviors*



Michon's Hierarchy of Driving Behaviors





What have we **done**
to improve driving safety for older adults?



St

Tactical: R

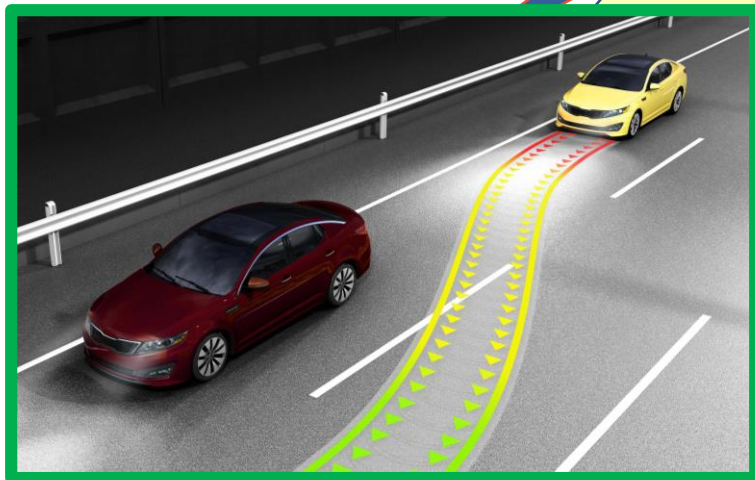
Motor,
Sensory

Operational: Human/Machine interaction



Tactical:
 roadway Design &
 Technology

Operational

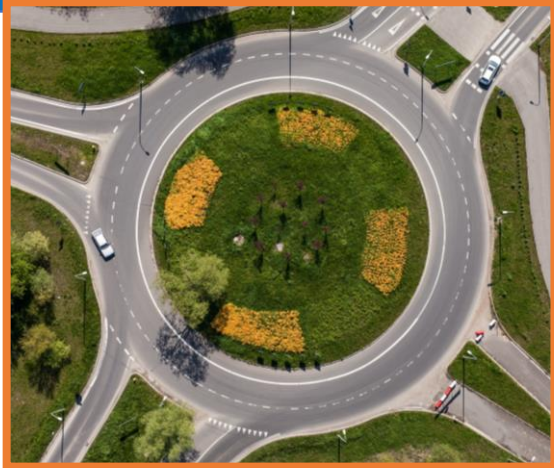


Notable Research

- Older adult pedestrians – potential to improve roadway safety with green space.¹
- Pedestrians/bicyclist- building median islands & traffic lights for exclusive peds & bikes phase²
- Certain types of bike lanes are safer.³



Notable Research continued



Roundabouts: (Retting et al., 2001)

➡ Study of 24 conversions:

- ➡ Reduction of 76% for all injury crashes
- ➡ Number of fatal & incapacitating injuries – reduced by 90%
- ➡ Add advanced warning signs and directional signs

Instant Roundabout in VA

- ▶ Off the shelf markings, tubular markers, plastic curb sections instead of concrete
- ▶ Installed in 6 days, \$90,000., (95% less cost)
- ▶ Crashes dropped immediately by 30%;
- ▶ 3.5 years = without a single vehicle crash; in 2 years reduced injury crashes by 89%



Automatic emergency braking

- ↓ **50%** Front-to-rear crashes
- ↓ **56%** Front-to-rear crashes with injuries

Blind spot detection

- ↓ **14%** Lane-change crashes
- ↓ **23%** Lane-change crashes with injuries

Automatic emergency braking with pedestrian detection

- ↓ **27%**
- ↓ **30%**

Only works if the person uses it!!

Rear auto

- ↓ **78%** Backing crashes (when combined with rearview camera and parking sensors)
- ↓ **10%** Claim rates for damage to the insured vehicle

Lane departure warning

- ↓ **11%** Single-vehicle, sideswipe and head-on crashes
- ↓ **21%** Injury crashes of the same types

Rear cross-traffic alert

- ↓ **22%** Backing crashes

Michon's Hierarchy of Driving Behaviors



Planning / Wayfinding / Navigation

Strategic



Highway Design

by a bike

Older Driver Study Using GPS

Everyone drove better using GPS, even if they were not familiar with using it before.

*Thomas, F. D., Dickerson, A. E., Blomberg, R. D., Graham, L. A., Wright, T. J., Finstad, K. A., & Romoser, M. E. (2018, June). *Older drivers and navigation devices* (Report No. DOT HS 812 587). Washington, DC: NHTSA



What more can we do?



Guideline No. 13 Target areas

Uniform Guidelines *for* State Highway Safety Programs



DOT HS 812 007D
April 2014

Highway Safety Program Guideline No. 13

OLDER DRIVER SAFETY

Each State, in cooperation with its political subdivisions, tribal governments and other stakeholders, should develop and implement a comprehensive highway safety program, reflective of State demographics, to achieve a significant reduction in traffic crashes, fatalities, and injuries on public roads. The highway safety program should include a comprehensive older driver safety program that aims to reduce older driver crashes, fatalities, and injuries. To maximize benefits, each State older driver safety program should address driver licensing and medical review of at-risk drivers, medical and law enforcement education, roadway design, and collaboration with social services and transportation services providers. This guideline recommends the key components of a State older driver safety program, and criteria that the program components should meet.

*Demonstration Project Promoting Highway
Safety Program Guideline #13
2017-2021
State of North Carolina*

- I. Program Management
- II. Roadway Design for Older Driver Safety
- III. Driver Licensing (Medical Review Unit)
- IV. Medical Providers
- V. Law Enforcement
- VI. Social and Aging Service Providers
- VII. Communication Program
- VIII. Program Evaluation and Data

Why Occupational Therapy?

- ➔ Assists individuals with medical conditions with everyday activities.
 - ➔ Driving is an important everyday activity.
 - ➔ Evaluate / plan interventions for individuals with cognition, physical, visual/perceptual impairments.
- ➔ Individuals who specialize in this area:
Driving rehabilitation specialists.



PLAN FOR THE

ROAD AHEAD

Expanded Services - with driving schools



500 + evaluations



Complete Toolkit!

Program Description

Video 1. Introduction to the Education

Video 2. IADLs and Clinical Assessments

Video 3. Planning the Driving Route

Video 4. Driving Route Directions

Video 5. Implementation Outcomes

Table 1. Occupational Therapist Essential Knowledge and Skills

Table 2. Connections Chart: Between Performance Skills and Driving Performance

Table 3. Example of a Driving Route Cue and Sheet for Notes

Table 4. Example of a Comprehensive Driving Evaluation Format



Need to Change Perception of Driving

- ➔ View **Transportation Planning** as a **Transition**
- ➔ Dedicated to Older Adults for Transportation Planning



Resources: Interactive & no sales pitch

- ➔ Self assessments – Research Based!
- ➔ Interactive Questionnaire designed to measure emotional/attitudinal readiness to cope with present and future changes in mobility.
- ➔ Interactive Transportation Planner
- ➔ Interactive Cost Calculator for vehicle costs monthly.

Where do I want/need to go?	How often do I go there?	How far is it from my home?	Do I know other people that go there?	Is there another way I could get there?	Comments / notes
Grocery store	Times per month ▾	Select miles ▾	Select option ▾	Other options ▾	Comments / notes
Pharmacy	Times per month ▾	Select miles ▾	Select option ▾	Other options ▾	Comments / notes
Place of worship	Times per month ▾	Select miles ▾	Select option ▾	Other options ▾	Comments / notes

Daily distance:

33

Average number of miles per day (0 - 100 miles)

Vehicle mileage:

22

About how many miles per gallon your vehicle uses (8 - 70 mpg)

Price of gas:

3.5

Cost of fuel (\$1.00 - \$7.00 per gallon)

Making the Call

Why is this Education Unique and Valuable?

- ➔ It emphasizes the “story” – what people remember from education.
- ➔ Engages the viewer – they want to know what happens – watch it.
- ➔ It is authentic -





Service Film

<https://news.ecu.edu/2023/05/16/service-film/>

Questions? Dickersona@ecu.edu

