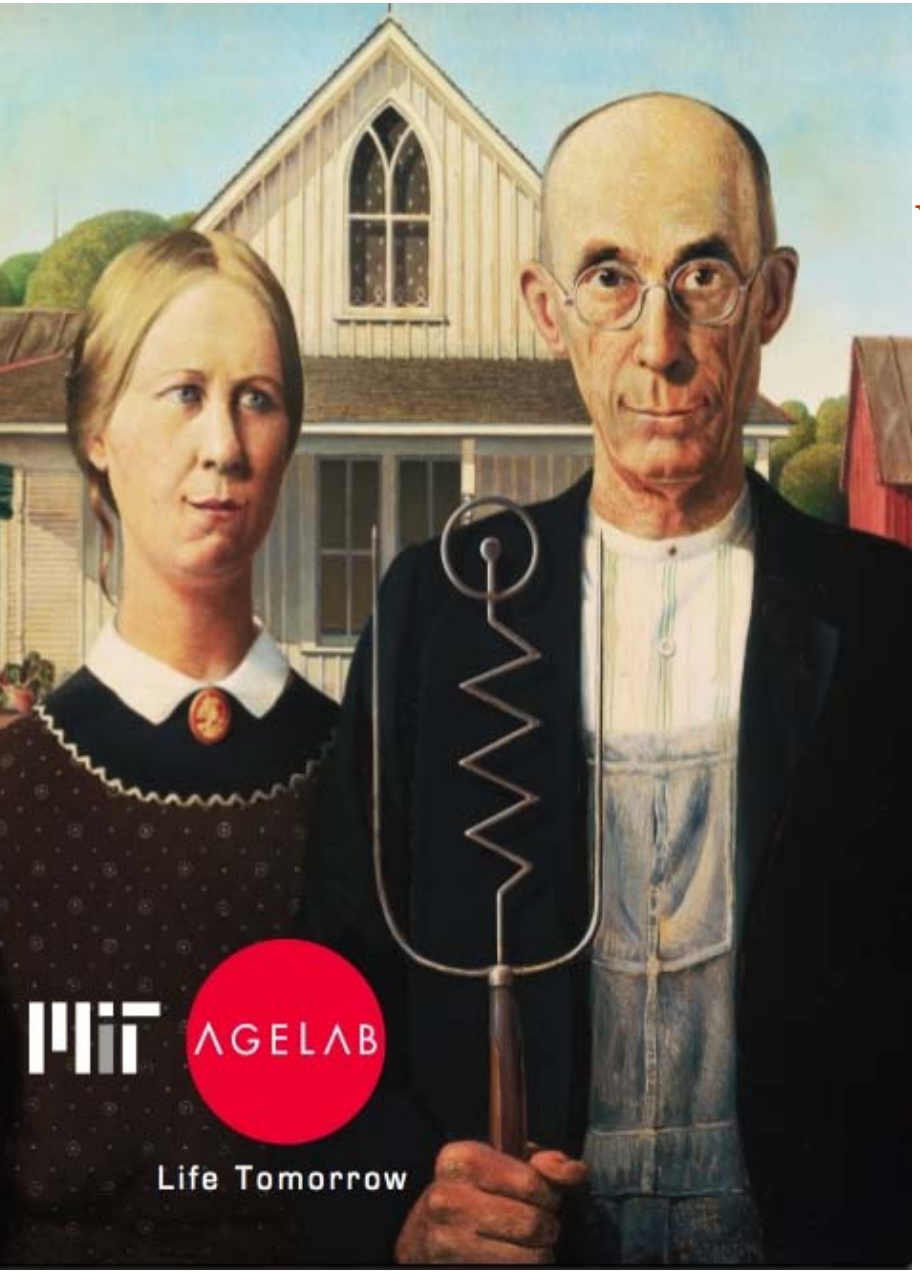

New Considerations for Vehicle Design & the Older Driver: Learning, Load & Longevity

Joseph F. Coughlin, PhD
Director

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Safety, Mobility & Aging Drivers
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Driver Free: The Self-Driving Car

- Autonomous automobile has been a vision since the 1939 Worlds Fair.
- Automated highway
- Glass cockpit.

Early Adopters of Innovation?

Learning & In-Vehicle Systems: Older Drivers as Lifestyle Leaders

- Conflict between vision of early adopter & the first buyer who averages 55+.
- Car will be changing rapidly for all drivers:

  - no mental model for new systems, challenge for drivers from 25+

  - new systems will require relearning how to drive, e.g., ABS, active safety.

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Load: Driver Workload Across the Lifespan

- Technology adoption more likely to increase older driver confidence.
- Older adults more likely to self-regulate use of in-vehicle and ‘nomadic’ technologies, e.g., cell phone.
- Natural age-related changes limit ‘channels’ to driver, e.g., diminished hearing.
- Health & medications may challenge cognitive capacity.

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Load: Age Difference in Trust, Control & Distraction

- Novelty & promise of technology engenders higher levels of trust in younger drivers.
- Older drivers learn to trust system based upon real-time use.
- Younger users fail to validate system, older users distracted by desire to verify or make sense out of system behavior.

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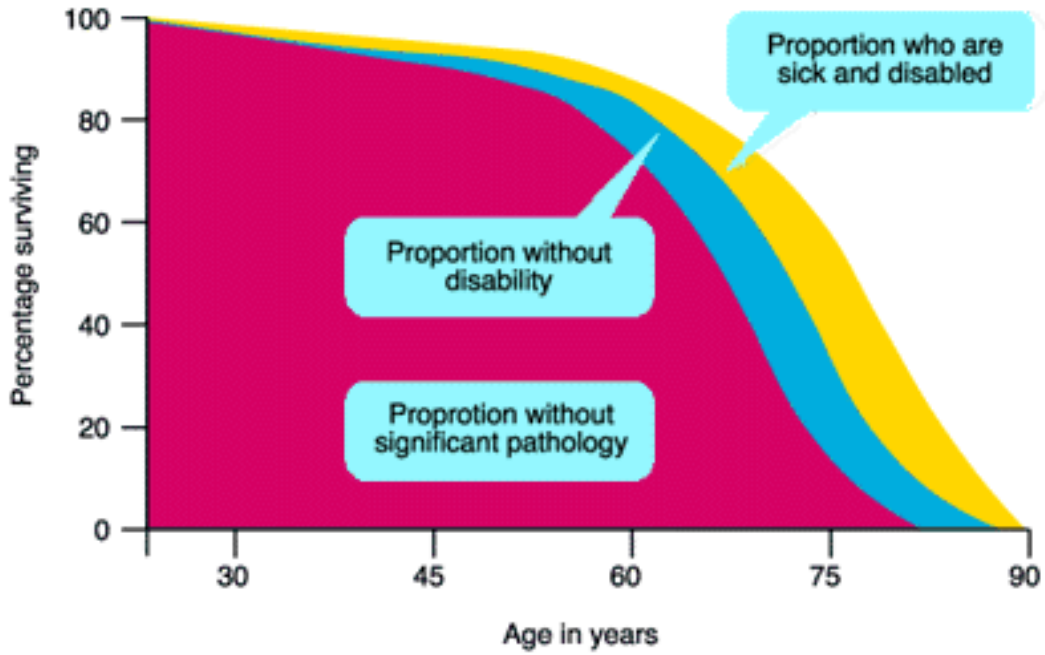
Longevity: Envisioning the Car as Platform for Well-Being

- ***Birthdays do not kill, health conditions do***.
- Longer period of relative wellness into "old" age.
- 110 M with chronic illness, 60 M with 2+ chronic conditions and related medications to impact driving performance.



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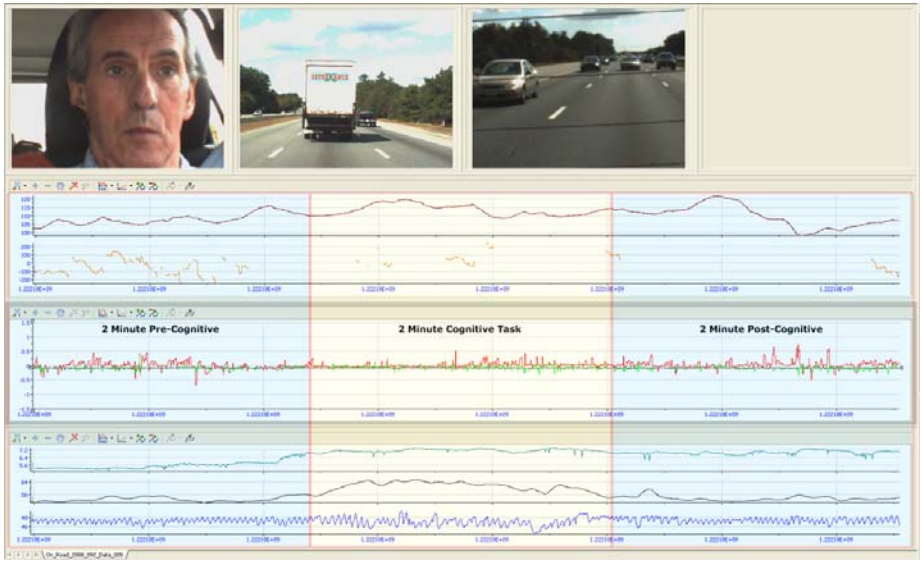
MIT AwareCar



- Vehicle as partner in self-regulating driving.
- In-vehicle systems to manage, monitor & motivate safe driving and healthy behaviors.
- Application for passenger cars and commercial vehicles to detect well-being, display performance and refresh the driver.

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WARNING
DEATH or SERIOUS INJURY can occur
Children 12 and under can be killed by the air bag
The BACK SEAT is the SAFEST place for children
NEVER put a rear-facing child seat in the front
Sit as far back as possible from the air bag
ALWAYS use SEAT BELTS and CHILD RESTRAINTS

Observations & Recommendations Product, Process & Policy

- *Conduct research to better understand technology learning & acceptance across lifespan.*
- *Develop quantifiable guidelines to mitigate impact & interactions* of design, workload, age, health on performance behind the wheel.

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Process

- *Stimulate development of lifelong driver education* – develop technology education across lifespan
- *Reinvent new car buyer delivery process* to reflect new technology learning, use & adoption.

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Public Policy

- *Recognize evolving 'class' from reasonable man to reasonable older woman legal & public standard.*
- *Develop public standards around human-automation learning, trust & acceptance across the lifespan.*

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http://utc.mit.edu

Joseph F. Coughlin
Director
MIT AgeLab
New England University
Transportation Center
coughlin@mit.edu