Development of a Naturalistic Study of Driving Across the Lifespan

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Senior and Adolescent Naturalistic Driving Study (SANDS)

- Background
- Goal & Aims
- Methodology
- Current & Next Steps
Driving is a balance between:

- Maintaining mobility essential for independent living
- Reducing high-risk factors or behaviors

Motor Vehicle Collisions (MVC) are one of the leading causes of death for individuals across the lifespan
Worst Areas for Isolation of Older Non-Drivers
Percentage of Non-Drivers 65 and over who stay home on a given day
By Census Division (NHTS 2001, STPP Analysis)

- Ranked #1: 69%
- Ranked #2: 68%
- Ranked #3: 59%
- Ranked #4: 57%
- Ranked #5: 53%
- Ranked #6: 48%
- Ranked #7: 47%
- Ranked #8: 46%
- Ranked #9: 44%

Legend:
- #1 East South Central
- #2 West South Central
- #3 West North Central
- #4 South Atlantic
- #5 East North Central
- #6 Pacific
- #7 New England
- #8 Middle Atlantic
- #9 Mountain
Background...

National Household Travel Survey VMT by Age and NHTSA FARS;
Goal and Aims

• Examine unbiased real-world **driving mobility, driving safety, and driving behavior** in at-risk drivers
  
  1. To *validate* commonly utilized self-reported measures of driving mobility, behaviors, and safety with objective measures.
  
  2. To examine the association between self-reported and objectively *observed engagement in various secondary tasks* and diminished driving safety.
  
  3. To identify the cognitive, sensory, physical, and driving experiential *factors that are predictive of unsafe driving* and the potential *moderating effects* of specific driving behaviors on driving safety.
Methodology

• The study seeks to recruit 24 participants
• Each participant will:
  • Complete a comprehensive baseline assessment
  • Allow the installation of a naturalistic data device into his/her vehicle
  • Return to complete a post assessment and removal of device
Methodology...

• Comprehensive baseline assessment
• Installation of naturalistic data devices
• Post-test assessment
Methodology...

- Baseline assessment
- Demographics
- Cognitive Function
- Sensory Function
- Physical/Health Function

- Performance-based & validated
Methodology...

- Comprehensive baseline assessment
- Installation of naturalistic data devices
- Post-test assessment
Methodology...

• Naturalistic data is collected through a Naturalistic Data Acquisition Device (N-DAD).

• Data is recorded for a 2-week period.

• This data provides specific variables that assess driving mobility, safety and behavior.
Accelerometer and GPS:
• Constantly provides the geospatial location of the device
• Records high g-force events
• Speed of vehicle

Dual Cameras:
• Collect 2 front and 2 rear pictures every second
• Front camera captures the outside of the car
• Rear camera captures the inside of the car
SANDS Data Input GUI

- Input PT #: [Input PT number]
- Road Condition: [Wet]
- Weather: [Sunny]
- Events: [Other]
- Elevation: [High Traffic]
- Map: [Update]

File:
- [file]

$echo$in
{patchname: list sins);
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name, subname (4), subname (8)}
Methodology...

- Comprehensive baseline assessment
- Installation of naturalistic data devices
- Post-test assessment
• Post-test focuses on:
  • Self-report measures of driving mobility, driving behaviors, and driving safety
  • Experiences with N-DAD
The SANDS Team

•Investigators
  • Lesley Ross, PhD (co-PI)
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  • Virginia Sisiopiku, PhD
  • Sherrilene Classen, PhD

•Funding
  • Southeastern Transportation, Research, Innovation, Development & Education Center (STRIDE)

•Trainees
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  • Schmidt, Erica
  • Stannard, Sarah
  • Terdalkar, Sunil
  • Wittig, Shannon
  • TRIP Lab and SHAARP Lab
    • Volunteer Undergrad Students
Current and Next Steps...

- UAB Faculty Development Program
- Center for Research of Applied Gerontology
- University of Florida
- Alabama Department of Transportation
Current and Next Steps...

- Increased sample size of SANDS
- Increased SANDS team
- Refined development of N-DAD
- *SANDS 2?*
Questions?

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