Investigating Night Shift Nurse Preferences for a Drowsy Driving Mitigation Device

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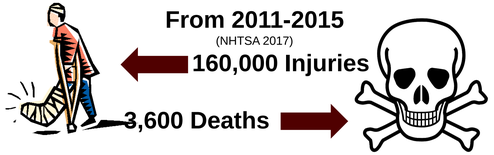
1. BACKGROUND

The Problem of Drowsy Driving

- Drowsy driving is a serious problem that results in severe outcomes.



- 60% of US drivers have driven drowsy and 37% have fallen asleep at the wheel (National Sleep Foundation, 2018)

Nurses and Drowsy Driving

- 79% of night shift nurses have driven drowsy after their shift (Scott et al., 2007).
- Night shift nurses have a higher chance of being involved in a drowsiness related crash than other nurses (Gold et al., 1992).

Drowsy Driving Mitigation Technology

- May and Baldwin (2009) outline variety of technologies to combat drowsy driving including: detection, crash alerts, fatigue countermeasures
- Strengths and weaknesses associated with
- Available technologies are not used by nurses
- Nurses are often resistant to new technology (Mutlu & Forlizzi, 2008)

Critical Need: Understand night shift nurses preferences and requirements for a drowsy driving mitigation technology

2. DATA COLLECTION

Interviews with Night Shift Nurses

- 30 night shift nurses were recruited from a large teaching hospital in South Texas
- Age: M = 36.1; STD = 11.27; Range = 22-64
- 1-20+ years of experience
- 9 different areas including ICU, CCU, IMU, Surgery
- Interviews were transcribed and validated.

3. INTERVIEW ANALYSIS

Code Development
- Review protocol and create codes based off themes and topics

→ **Initial Coding**
- Categorize segments of text into codes
- Create new codes as necessary

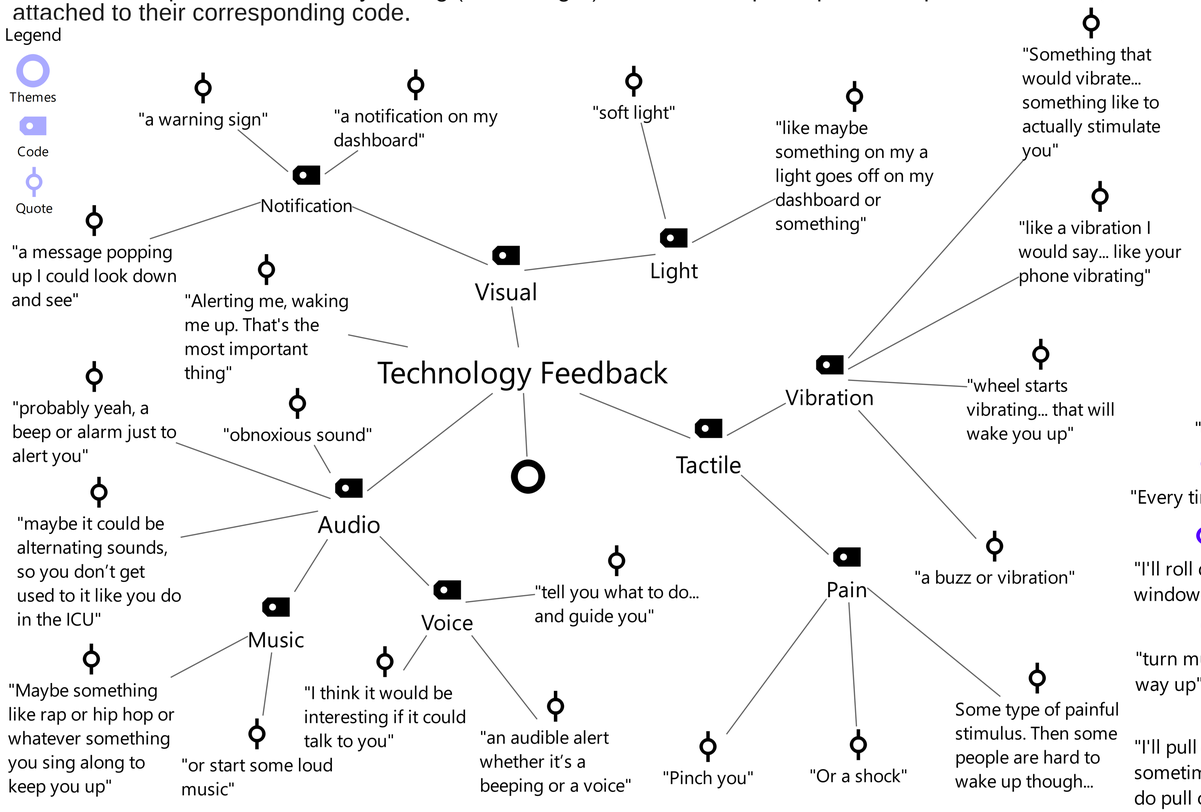
→ **Focused Coding**
- Review initial codes
- Create more specific subcodes

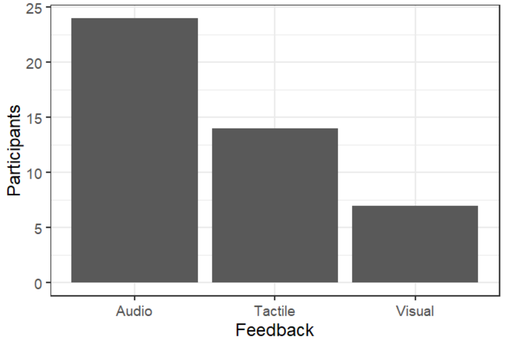
↔ **Code Discussion**
- Discuss code creation and coding process
- Discuss thematic elements

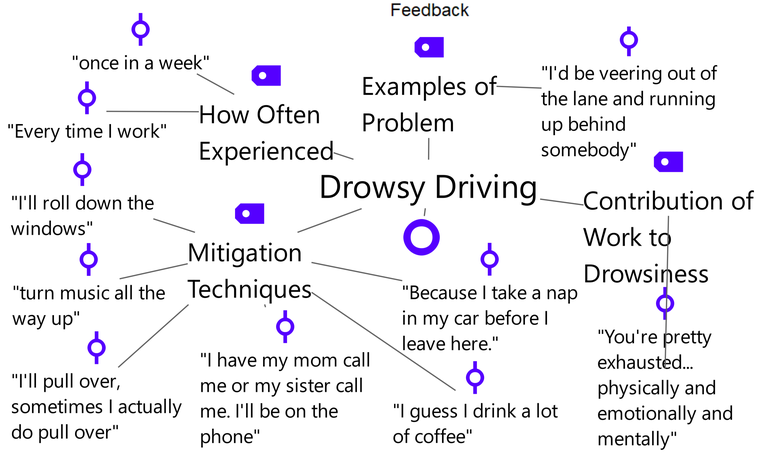
→ **Report Results**
- Create visualizations based off of relations between codes, quotes and themes

4. RESULTS

The visualization represents two major themes: Nurses' preferences for drowsy driving mitigation devices (top) and nurses' experience of drowsy driving (bottom right). Quotes from participants are presented below, attached to their corresponding code.







5. IMPLICATIONS & WORK IN PROGRESS

- Auditory – most preferred, varying levels of feedback and information deliverance
- Visual – Least preferred, could be distracting, provides symbolic information
- Tactile – Available but difficulty in training Combination of feedback can be used, little work in transportation, more work in other domains

Ongoing Study

- 300 nurse participants
- Collecting driving data after shift to identify drowsy driving episodes and incidents
- Test the efficacy of an educational program and in-vehicle drowsy driving detection technology

For more information about this work, please contact Dr. Anthony McDonald at mcdonald@tamu.edu or (979) 458-4299