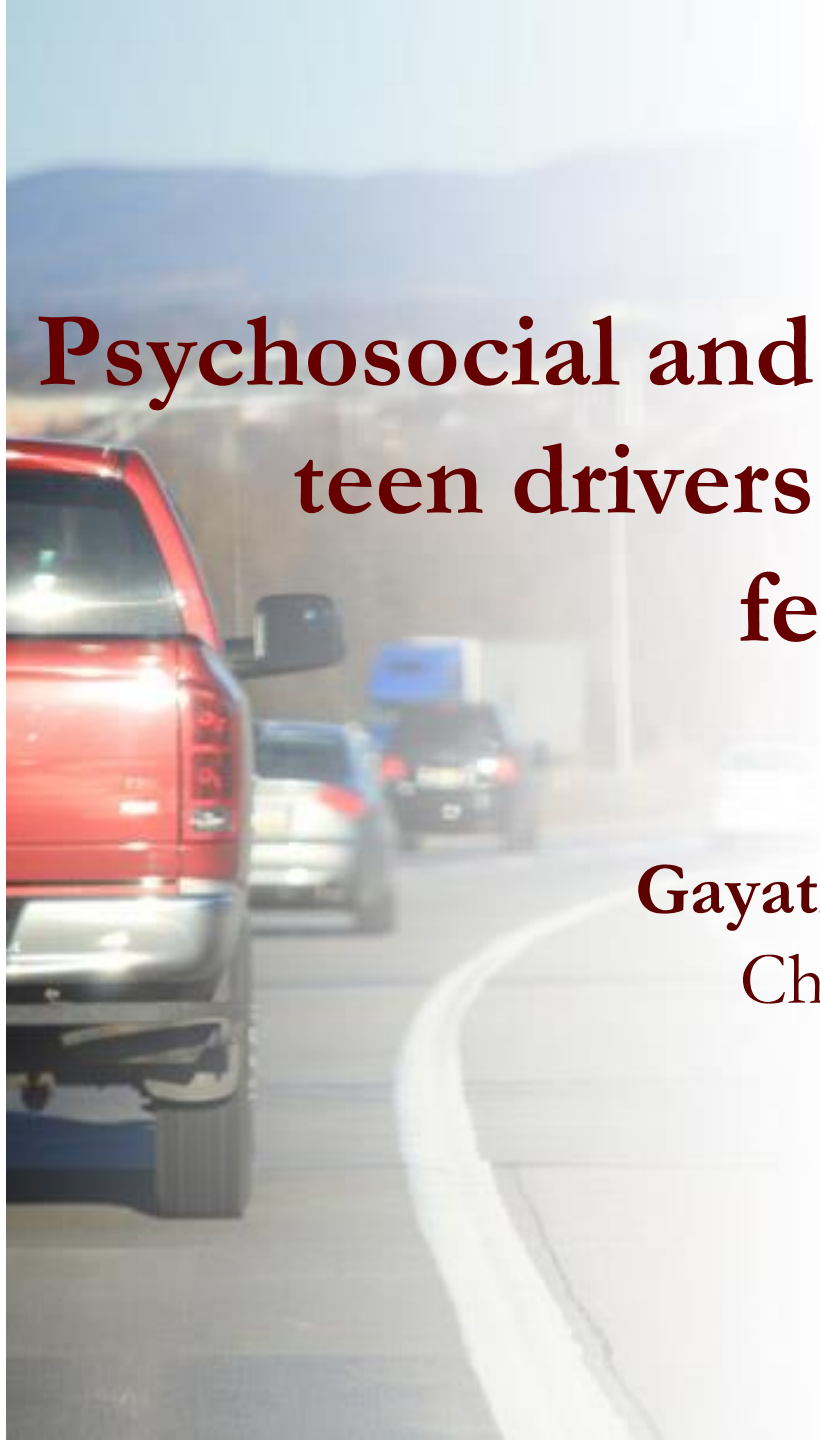

# DRIVER COACH STUDY:
# Psychosocial and personality characteristics of teen drivers whose parents used post-hoc feedback vs those who did not?

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# Driver Coach Study(DCS): Motivation

- In 2014, motor vehicle crashes caused ~ 55.2% of all deaths among teens aged 15-24, resulting in a total of 6,531 teen deaths.
- Previous NDS focused on teen drivers,

(1) Crash/near crash (CNC) rate of teen drivers is significantly higher than for adults (at least four times greater);

(2) Rates of elevated g-force events (i.e., kinematic risky driving), distraction, and speeding were significantly higher in teen drivers than in adults

(3) Elevated g-force event rates in previous month are predictive of CNC occurrence

# DCS: Motivation (contd)

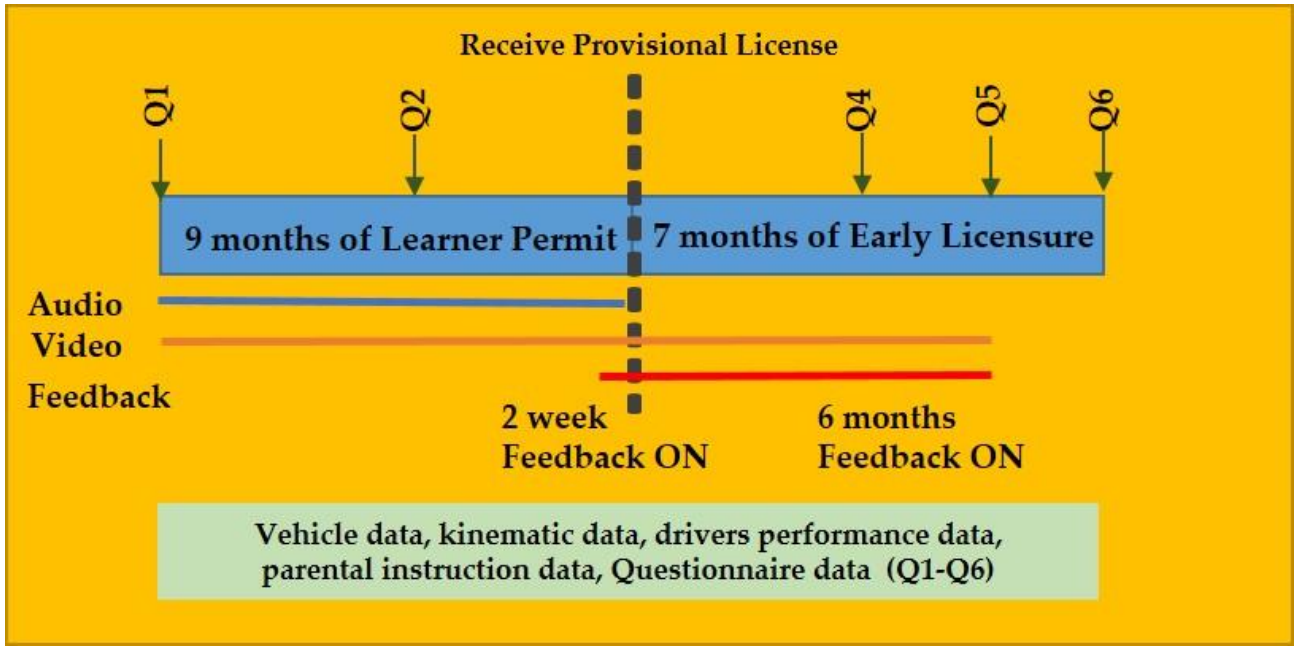
- Results from other studies
  - Parents are the key!!
  - With parental oversight, novice drivers reduce the frequency of elevated g-force events (hard braking/hard cornering) over time.


- Results from other monitoring/feedback studies
  - Non-video based In-vehicle data recorders (IVDR) with feedback –least promising results in improving teen driving safety.
  - Event triggered video based IVDR showed promise.

# Purpose

Determine if real-time and post-hoc feedback delivered to both teens and parents can reduce crash rates for novice drivers during the most dangerous first 6 months of driving.

# Overview




Q1- Beginning of study
Q2- Six months into participation
Q3- Upon receipt of licensure
Q4-Three months post-licensure
Q5- Six months post-licensure
Q6- End of study

- 92 newly licensed teen drivers/parents dyads.
- Age: 15.5 and 16.1 at the recruitment.
- Teens received their learner's permit no more than two weeks prior to initial paperwork and instrumentation
- Data collected: June 2013- August 2015

# Driver Coach MiniDAS



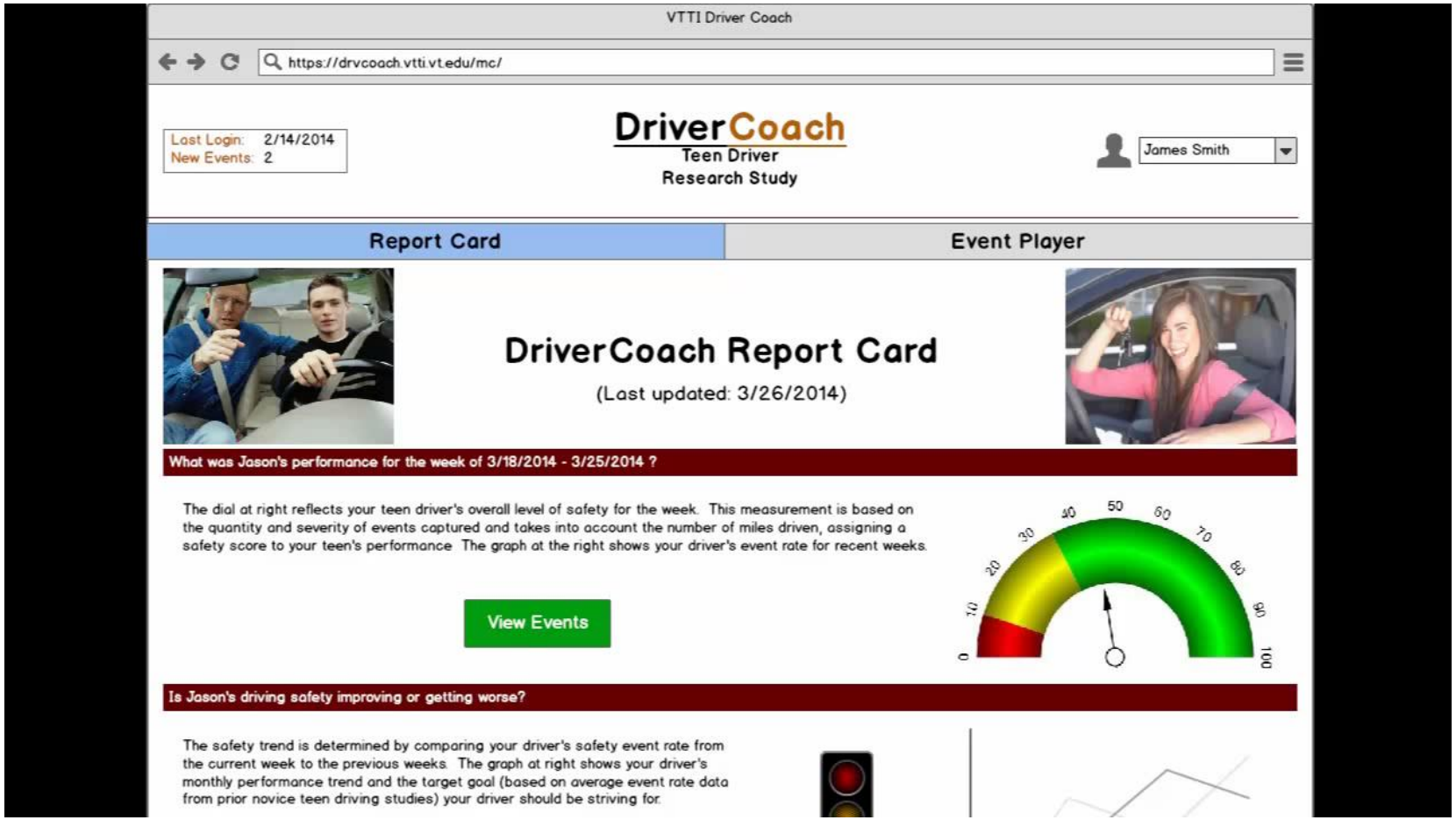
*MiniDAS as compared to a standard AA battery.*

# Real-time Driver Feedback

- When a participant exceeded a trigger threshold, the MiniDAS provided an audible three-tone alert

| Trigger Type | Threshold Values | Alert Speech Component |
|---|---|---|
| **Longitudinal Deceleration** | ≤ −0.55 g longitudinal deceleration for duration of ≥500 ms. Minimum speed threshold of 5 m/s (11 mph). | *"Hard Brake"* |
| **Longitudinal Acceleration** | ≥0.35 g longitudinal acceleration for duration of ≥1,000 ms. No minimum speed threshold. | *"Fast Start"* |
| **Lateral Acceleration** | ±0.5 g lateral acceleration with a minimum speed of ±5 m/s (11 mph). | *"Hard Turn"* |
| **Lane Departure Warning** | Crossing a lane line without turn signal activated. Minimum speed of 20.1 m/s (45 mph). | *"Lane Crossing"* |
| **Swerve** | Exceeds a 19 deg/s/s | *"Swerve"* |
| **Speed** | ≥ 75 mph for a duration of greater than 15,000 ms. | *"Speeding"* |
| **Critical Incident Button** | Boolean input | *None* |

# Driver Coach Feedback Website

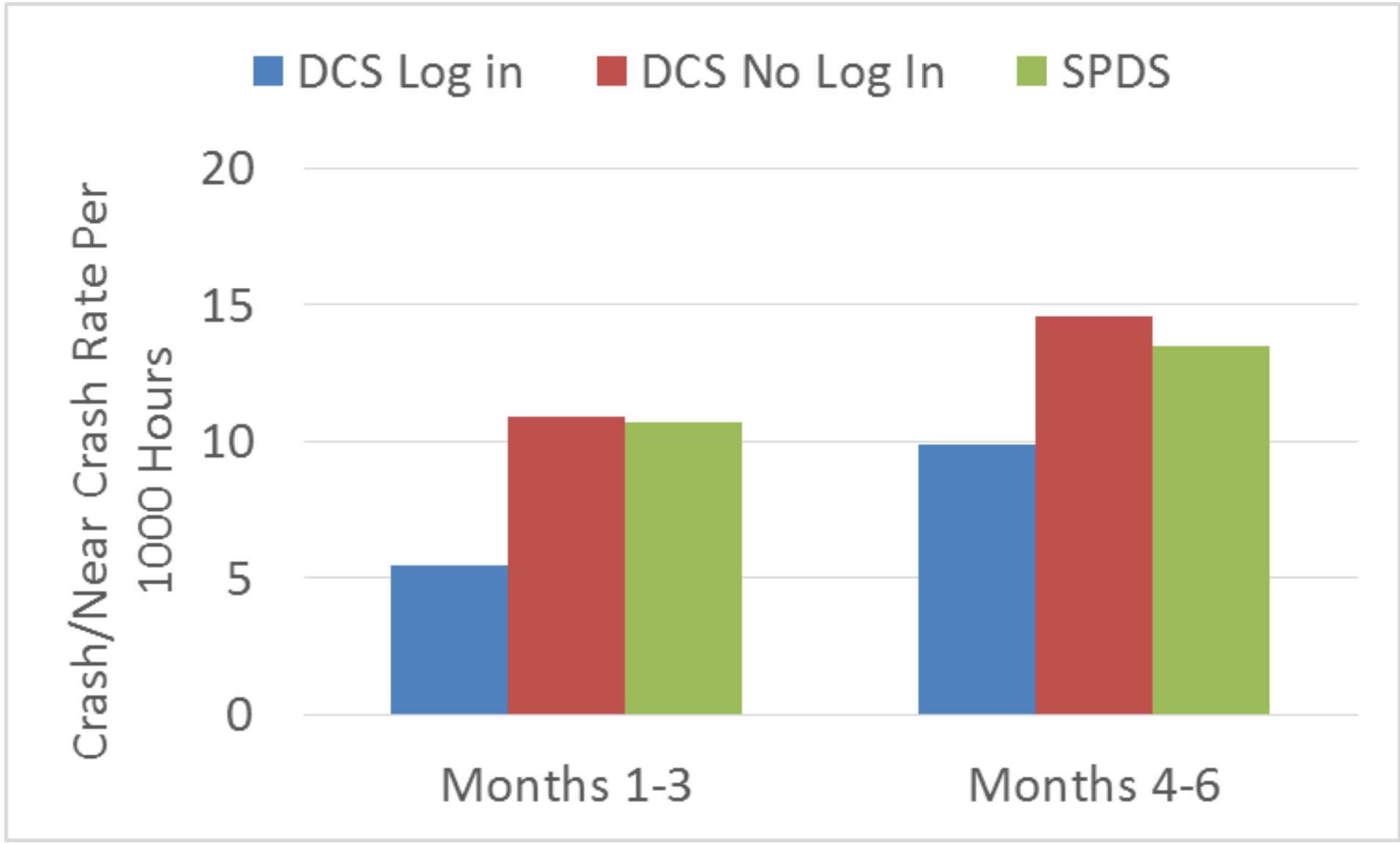


# Number of teen drivers by gender and by parental log in status

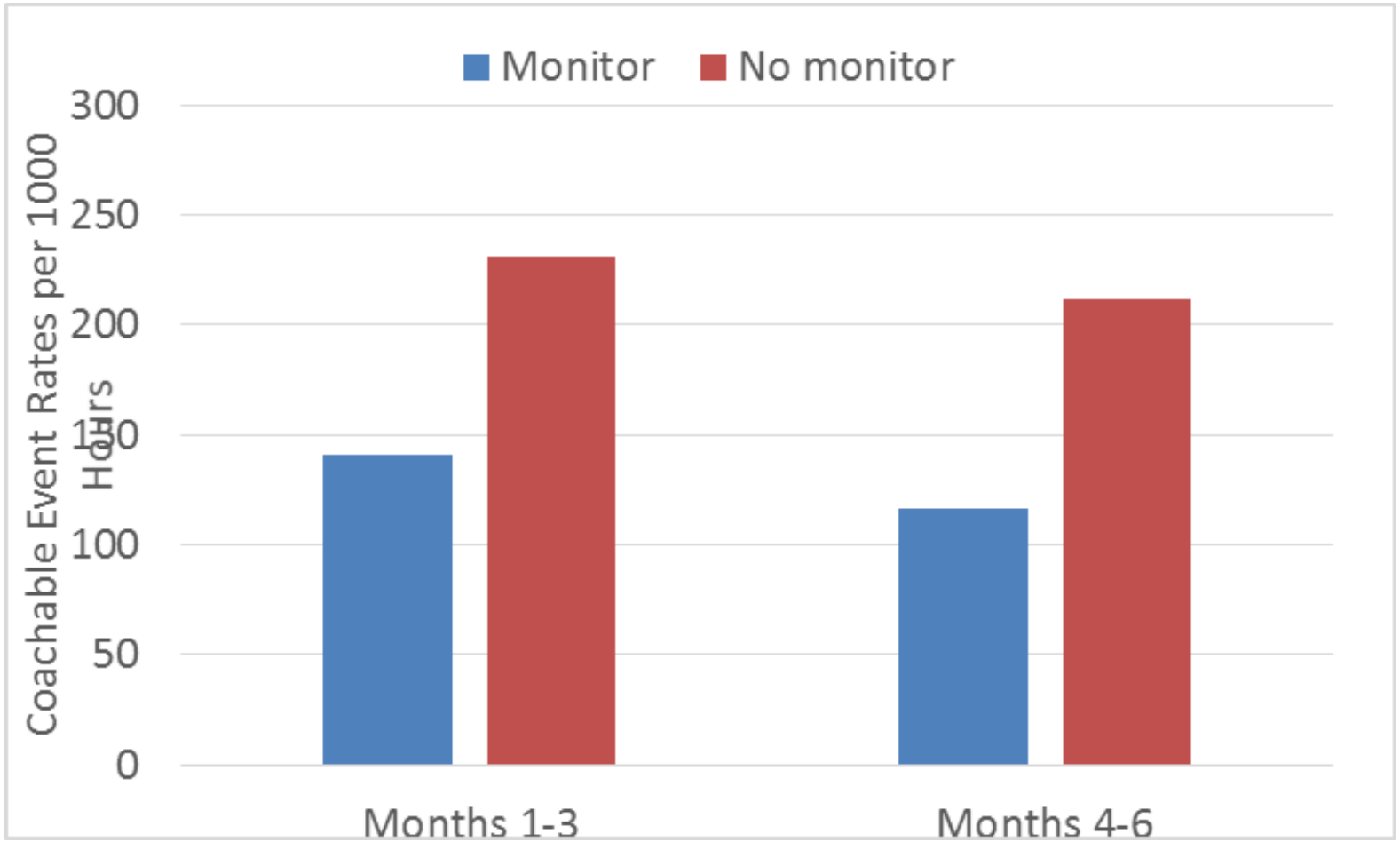
| Log In Status | Female | Male | Grand Total |
|---|---|---|---|
| No Parent Log In | 21 | 17 | 38 |
| Parent Log In | 25 | 29 | 54 |
| Grand Total | 46 | 46 | 92 |

58% parents logged in at least once

# Objective 1: Does Real-Time and Post Hoc Feedback Reduce Rates of CNC Involvement?



# Does feedback improve coachable event rates?



# Research Question

- What are **Psychosocial and personality characteristics of teen drivers whose parents used post-hoc feedback vs those who did not?**

# Psychosocial and personality variables of all teen drivers

Selected 5 appropriate driving related questionnaires out of 27 types of questionnaires administered at predetermined time points during the study.

| | |
|---|---|
| **Teen perceived risk** | How much risk of injury or crash when novice teens drive unsupervised in several situations? (DUI, night etc.) |
| **Parent Restriction** | How likely your parents restricted driving privilege if you did following : no seat belt use, pulled over by police etc? |
| **Friends' Risky Behavior** | |
| **Thrill Seeking** | |
| **Parent Imposed Driving Limits as perceived by Teens** | Number of teen passengers, signing parent-teen driving contract etc. |

# Psychosocial and personality variables of all teen drivers

| Psychosocial and personality variables | # of items | Range | Mean (SD) | Cronbach's Alpha |
|---|---|---|---|---|
| Teen perceived risk | 14 | 1-5 | 3.2 (0.54) | 0.849 |
| Parent Restriction | 13 | 1-7 | 5.3 (1.11) | 0.925 |
| Friends' Risky Behavior | 7 | 1-7 | 2.08 (0.73) | 0.723 |
| Thrill Seeking | 8 | 1-7 | 2.4 (1.27) | 0.856 |
| Parent Imposed Driving Limits as perceived by Teens | 2 | 1-10 | 4.01 (2.68) | 0.897 |

# Teens whose parents logged in vs who did not log in with statistical difference

| Psychosocial and personality variables | Descriptive stats Mean (SD) | |
|---|---|---|
| | Log in | Did not log in |
| **Friends' Risky Behavior*** | 2.146 (.763) | 1.757 (0.856) |
| **Thrill Seeking**** | 2.625 (1.334) | 1.804 (1.175) |

(*significance at $p < 0.05$; ** significance at $p < 0.005$)

# Conclusion

- Teens with parents who actively monitored their driving have teens who scored themselves higher on risky friends and sensation seeking behaviors than those whose parents who did not monitor their teen's driving.
- There is no difference in teens perceived risk or parent restriction or parent imposed driving limits as perceived by teens.

# Acknowledgments


- VTTI team: Feng Guo, Peter Baynes, Youjia Fang, Whitney Atkins, Stephanie Baker, Rebekah Duke
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# THANK YOU

# QUESTIONS??