

Variability in Crash and Near-Crash Risk among Novice Teenage Drivers

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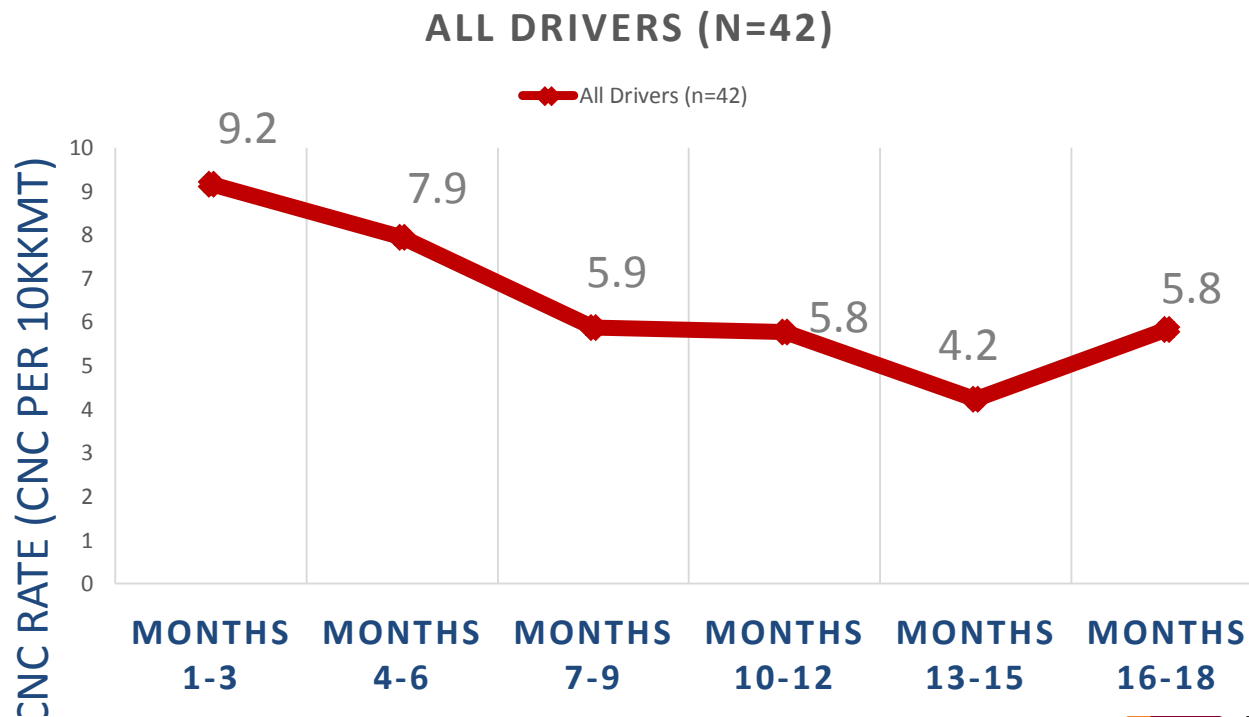
Authors: Bruce G. Simons-Morton, Sheila E.
Klauer, Marie Claude Ouimet, Thomas A.
Dingus, and Suzanne E. Lee



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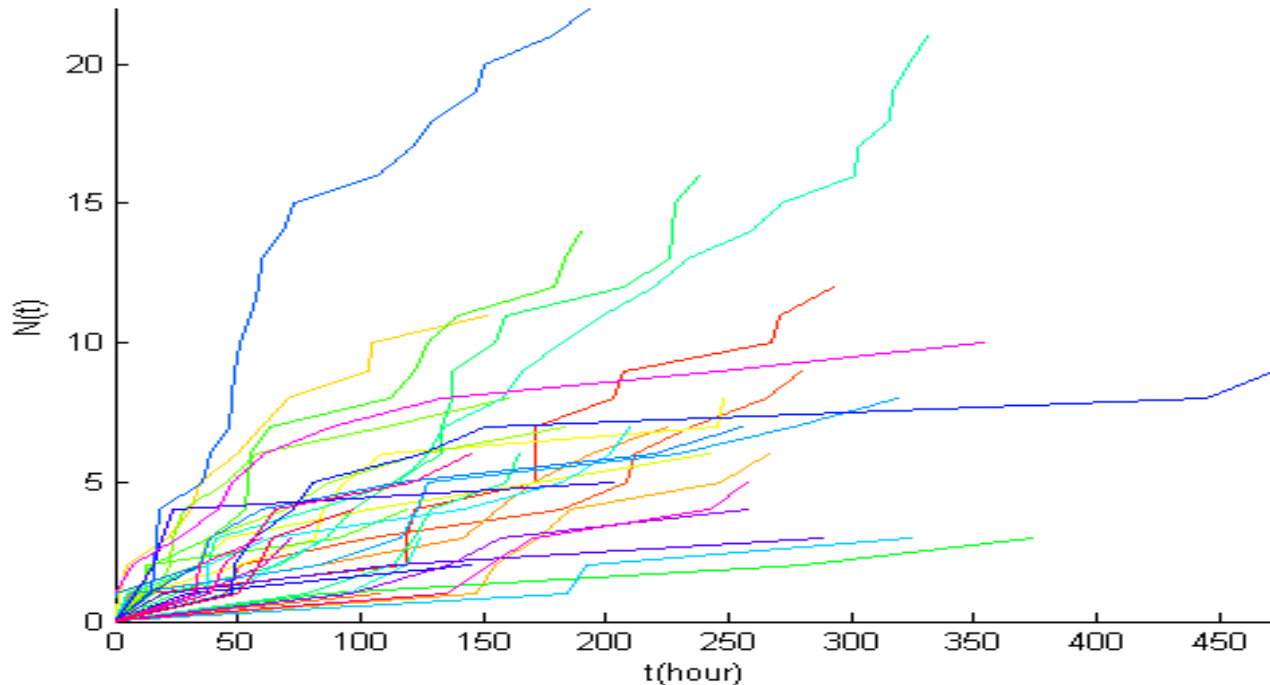
Teen Driving Risk

- The initial period after licensure is most dangerous
- Typically followed by a quick decrease: Reflect improvement in safety
- Change happens around six months after licensure (Mayhew et al. 2003, Simons-Morton et al. 2011, Lee et al. 2011).



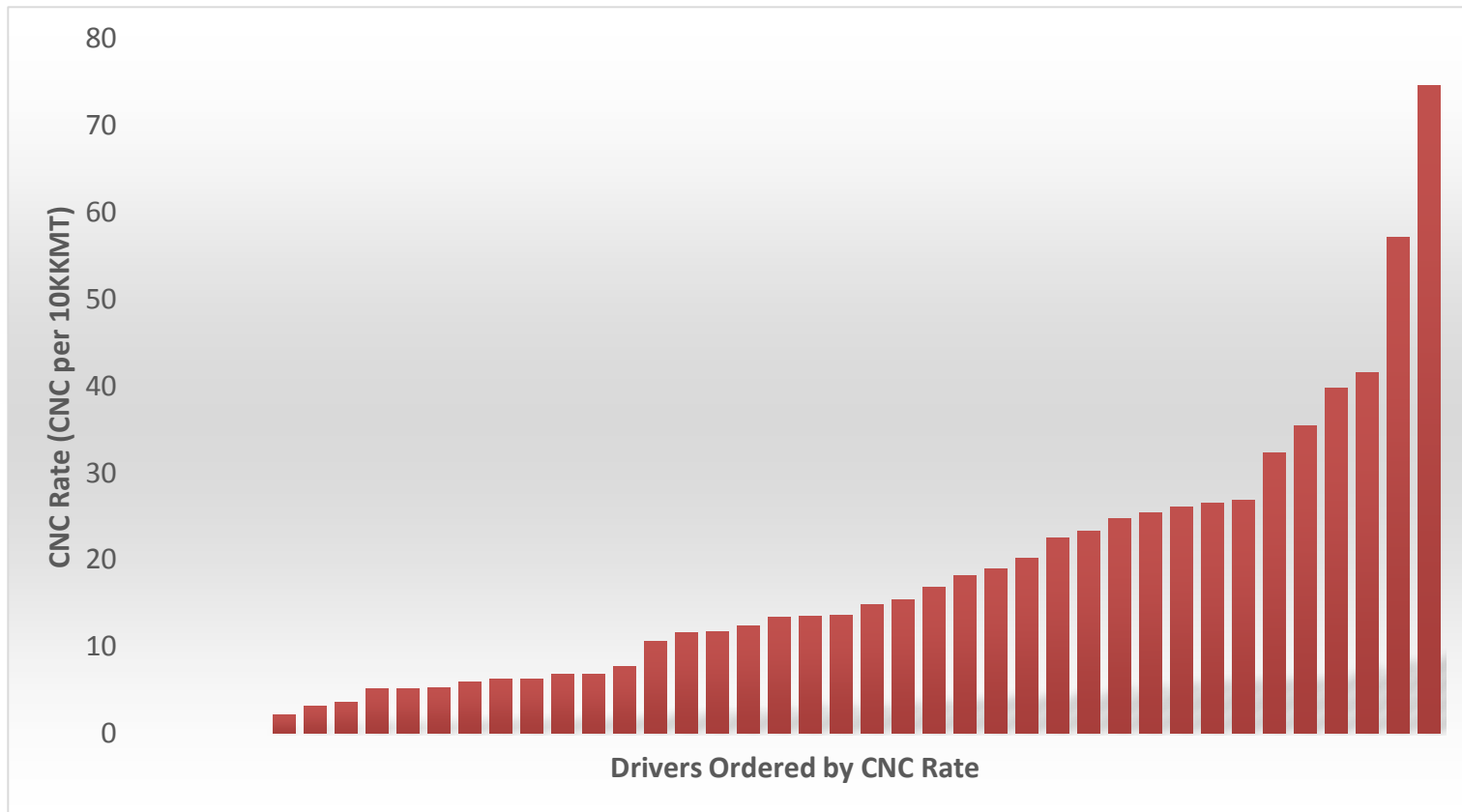
Individual Risk Variation

- Crash and Near-Crash (CNC) rate varies substantially among drivers
- Will the risk decrease pattern be the same for all drivers?



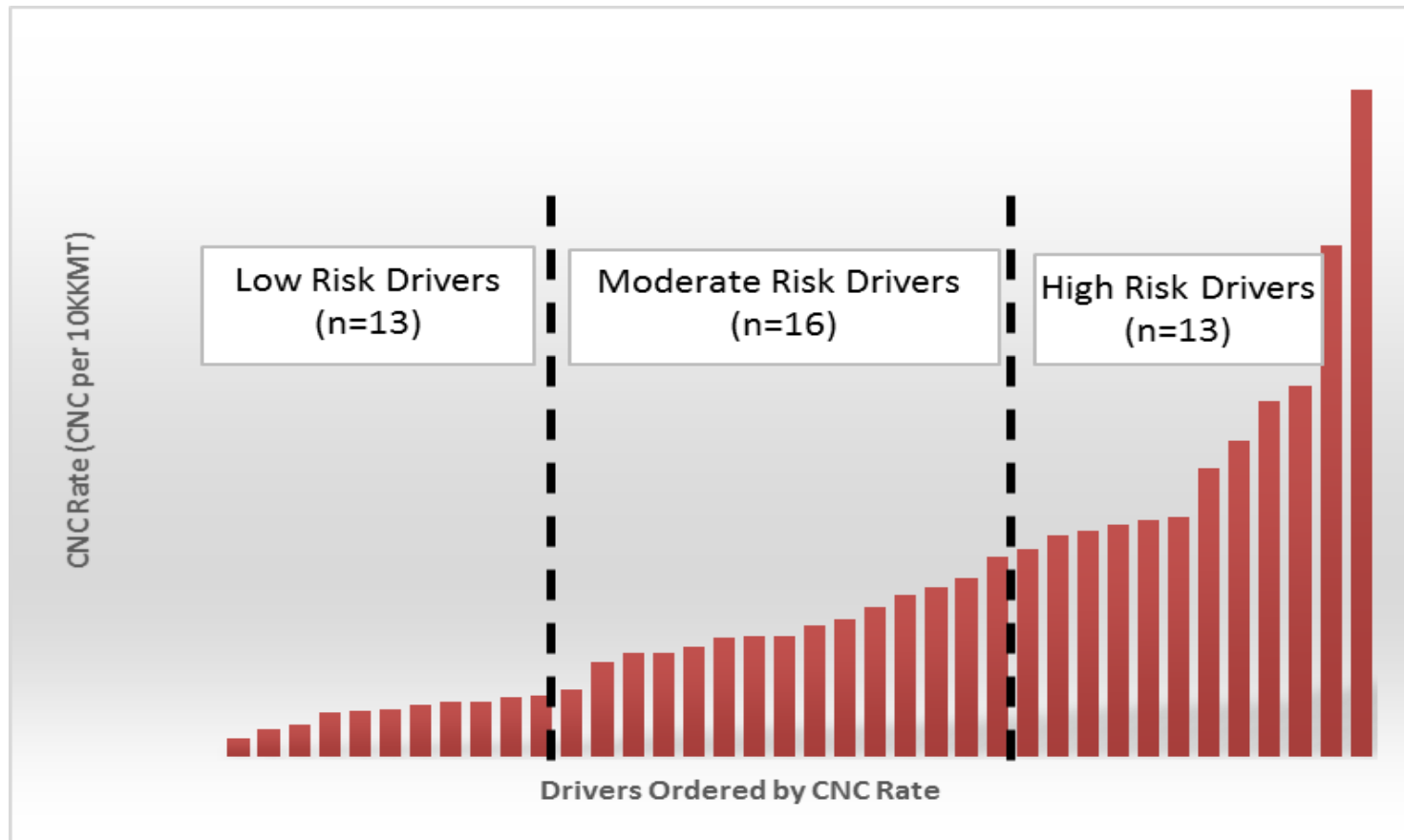
Group Driver by Over CNC Rate

- Substantial variation in in overall CNC rate

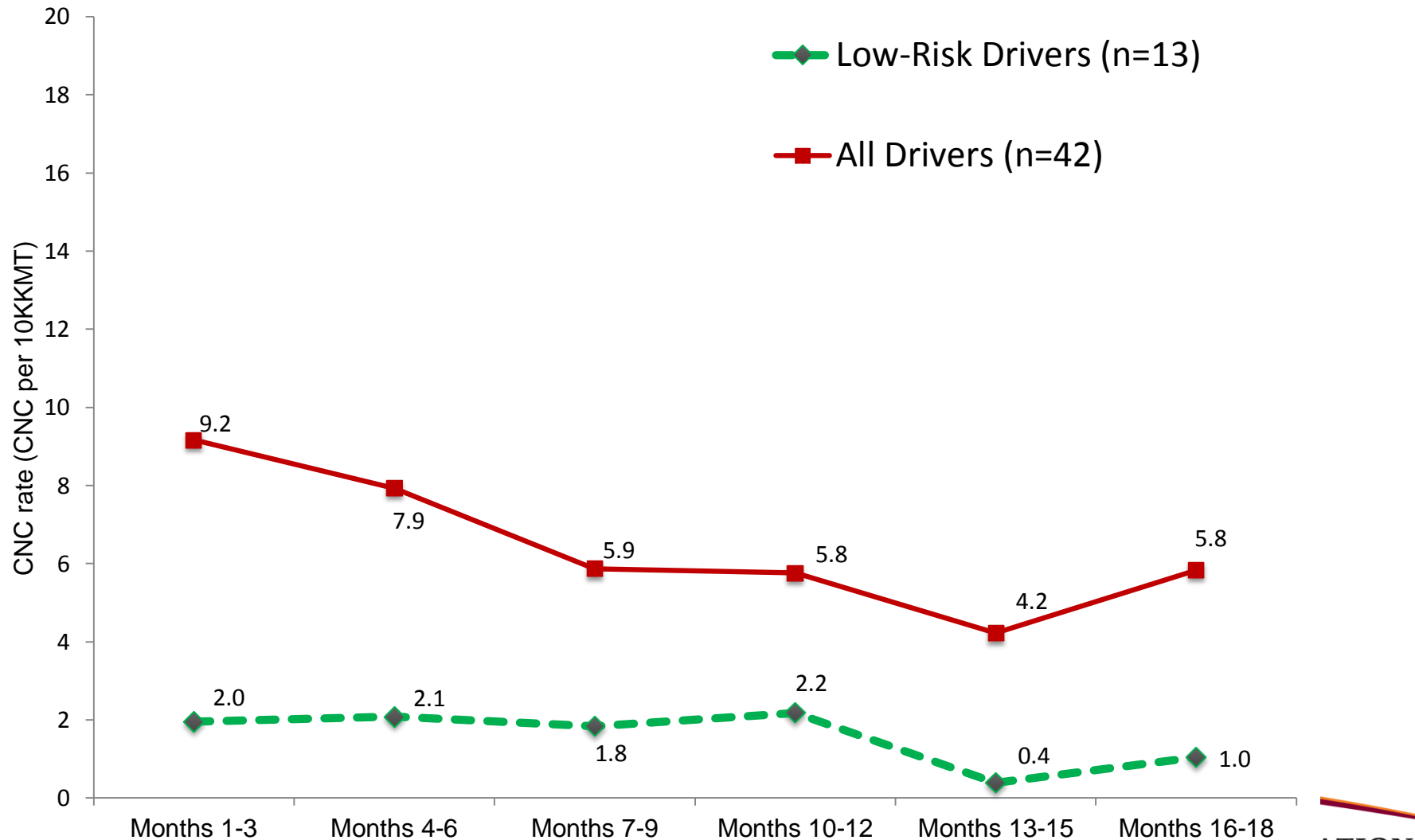


Group Driver by Over CNC Rate

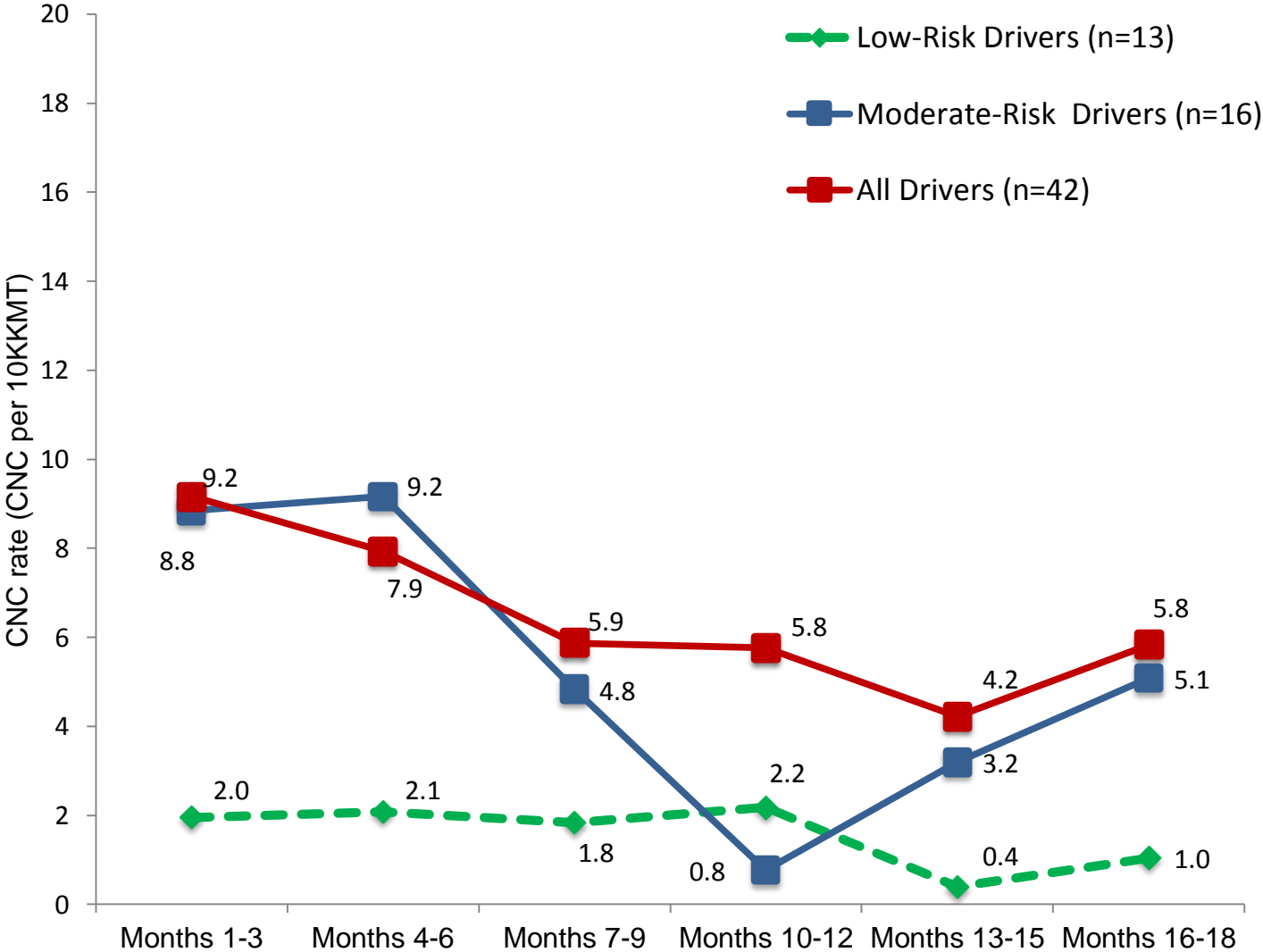
- K-Mean Cluster Method: Three risk groups were identified.



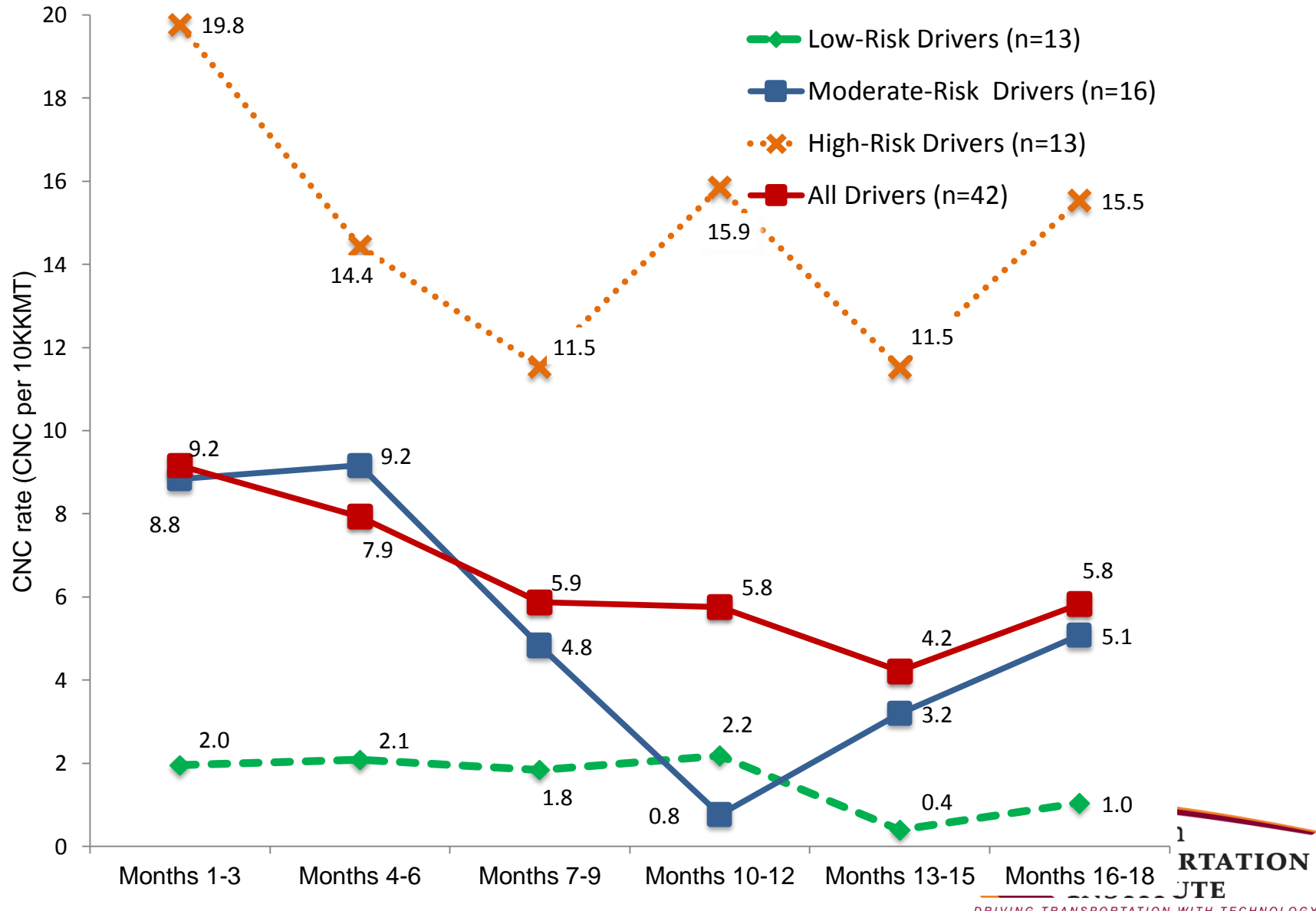
Low-Risk Drivers: Stable Risk Over Time



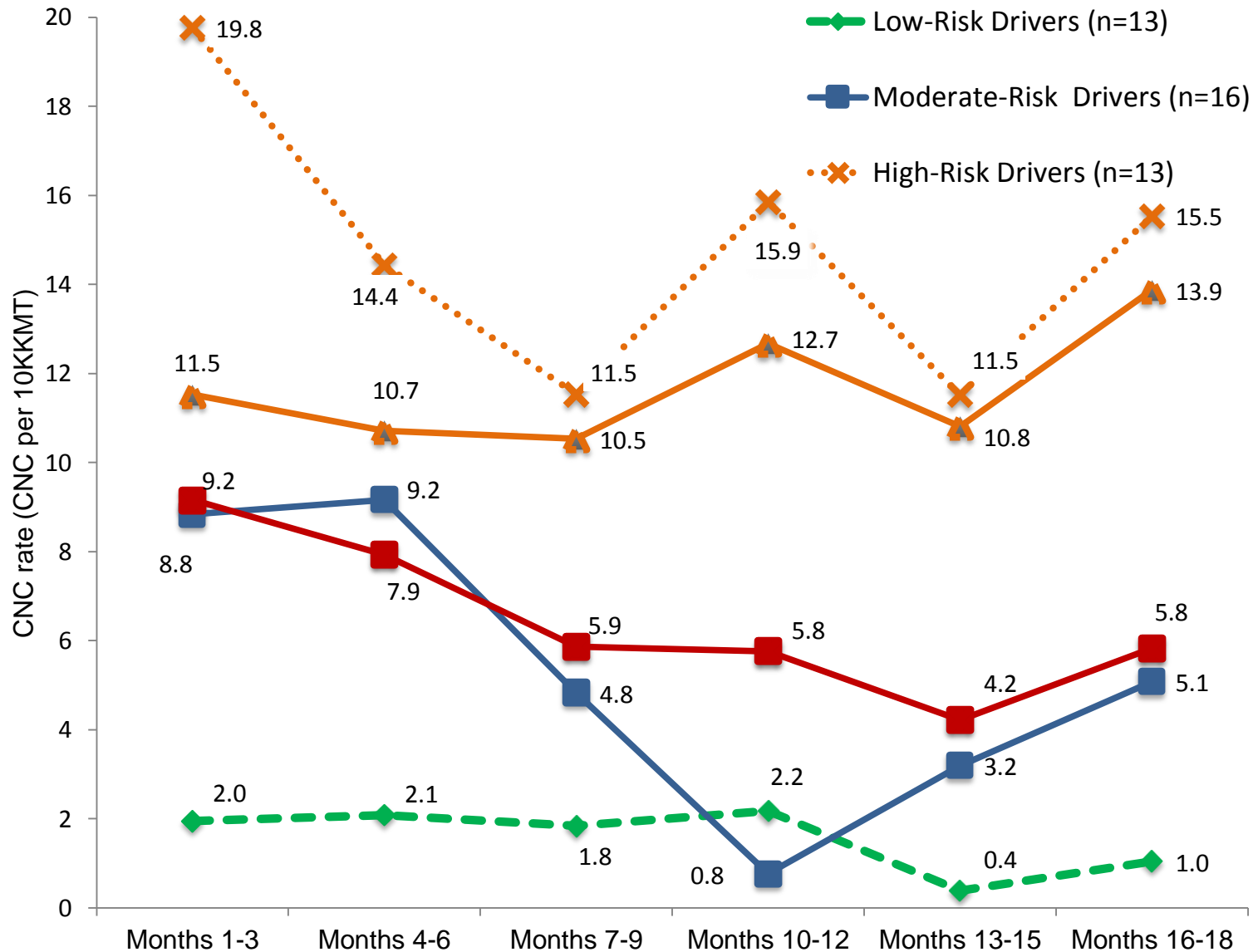
Moderate Risk Drivers: Significant Decrease after 6 months



High Risk Drivers: High Fluctuation



Remove 2 Outliers: No Decrease Over Time for High Risk Drivers



Summary and Discuss

- Statistical inference using Poisson longitudinal model: Only moderate risk group showed significant decrease in risk.
- The decrease in risk is driven by a subgroup of moderate risk drivers
- How to improve safety of high risk drivers is the key to improve teen driver safety.
- Early predictive high risk group is critical
- Longer observation period will provide more insight

Next Step

- Calendar time is not an accurate measure of driving experience:
 - driving time
- 3 month cluster is subjective and could be too coarse:
 - recurrent event modeling
- 3 risk groups predefined
 - Each driver as own group

Thanks!

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