

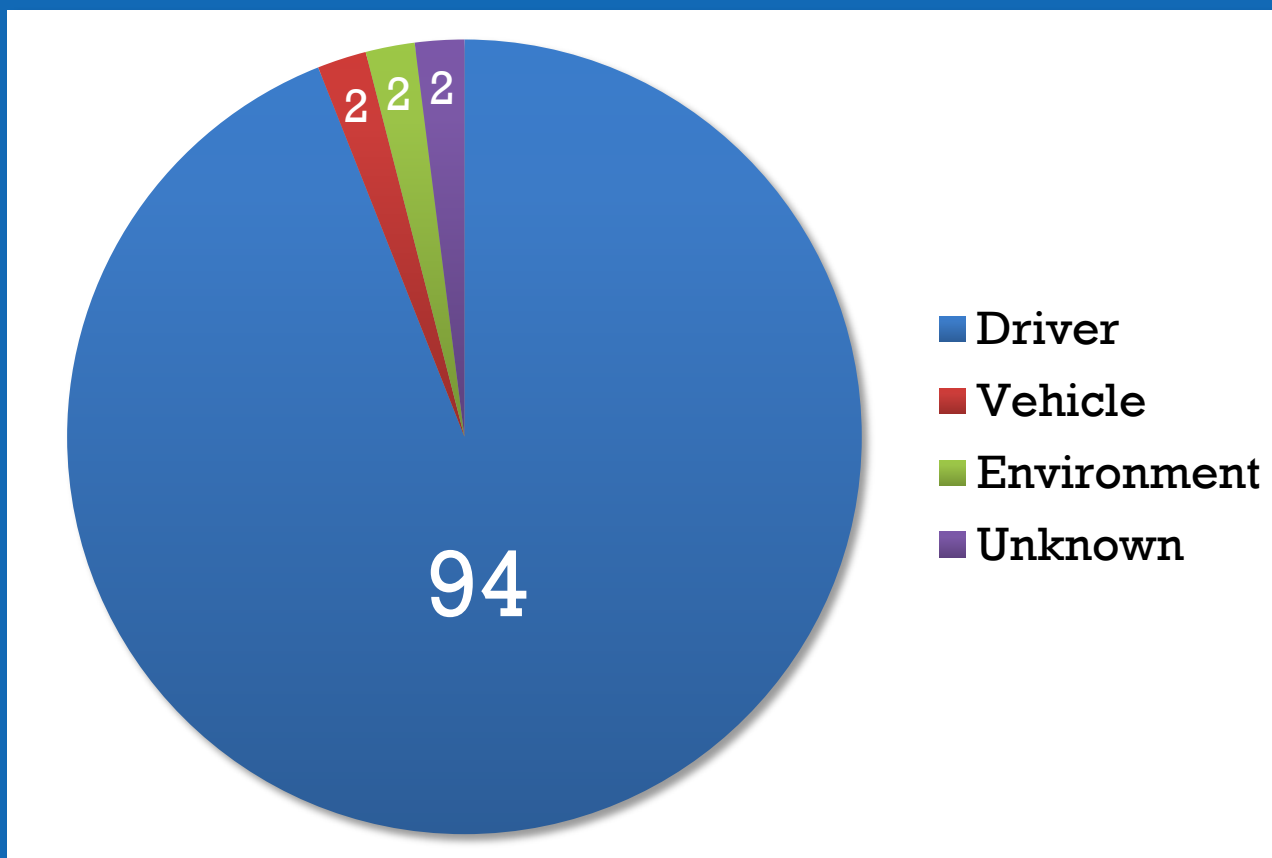
Automated and Connected Vehicles: Potential Effects on Driver Responses

Chris Monk, PhD
Chief, Human Factors Research





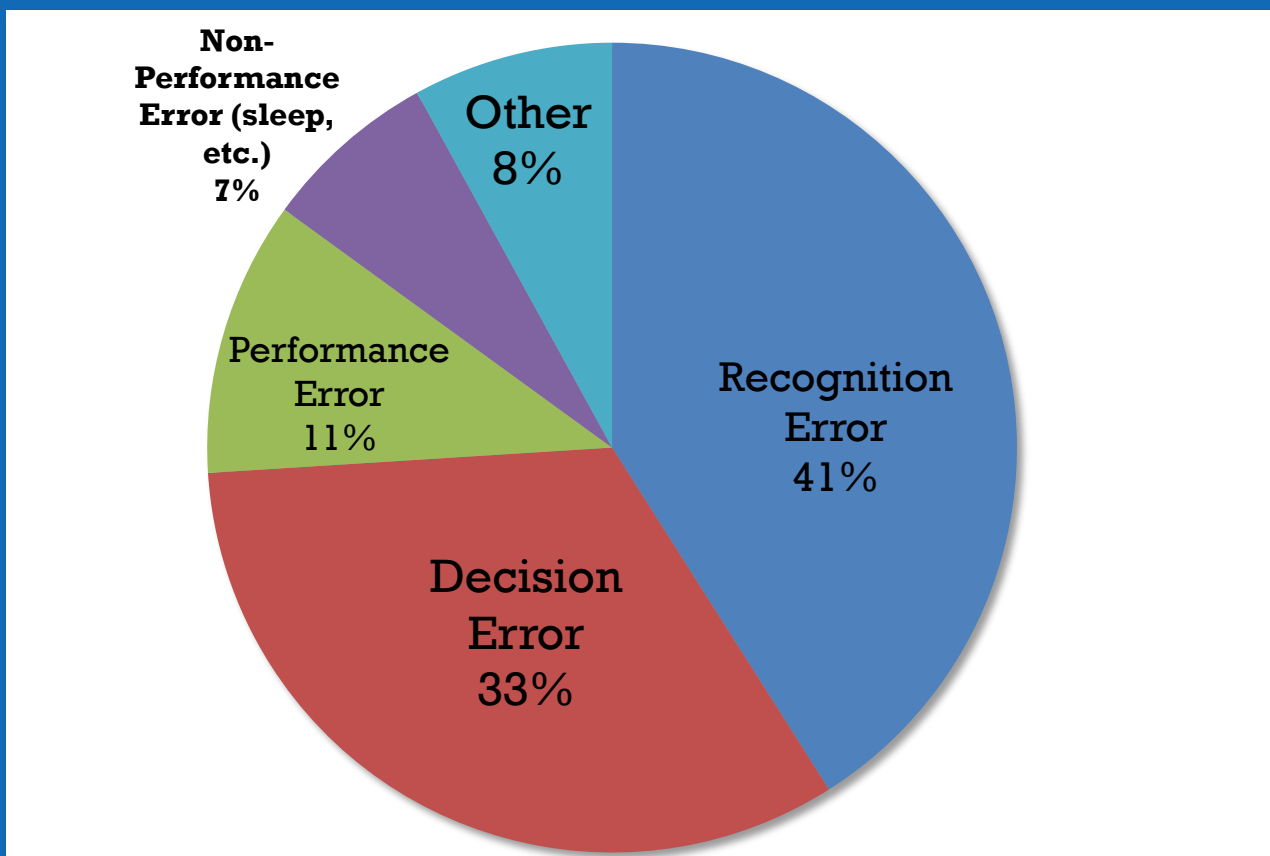
What is responsible for crashes?



Singh, S. (2015, February). Critical reasons for crashes investigated in the National Motor Vehicle Crash Causation Survey. (Traffic Safety Facts Crash•Stats. Report No. DOT HS 812 115). Washington, DC: National Highway Traffic Safety Administration.



What kind of driver errors?



Singh, S. (2015, February). Critical reasons for crashes investigated in the National Motor Vehicle Crash Causation Survey. (Traffic Safety Facts Crash•Stats. Report No. DOT HS 812 115). Washington, DC: National Highway Traffic Safety Administration.



How can Vehicle-to-Vehicle (V2V) Systems and Automated Vehicles help?





How can Vehicle-to-Vehicle (V2V) Systems and Automated Vehicles help?



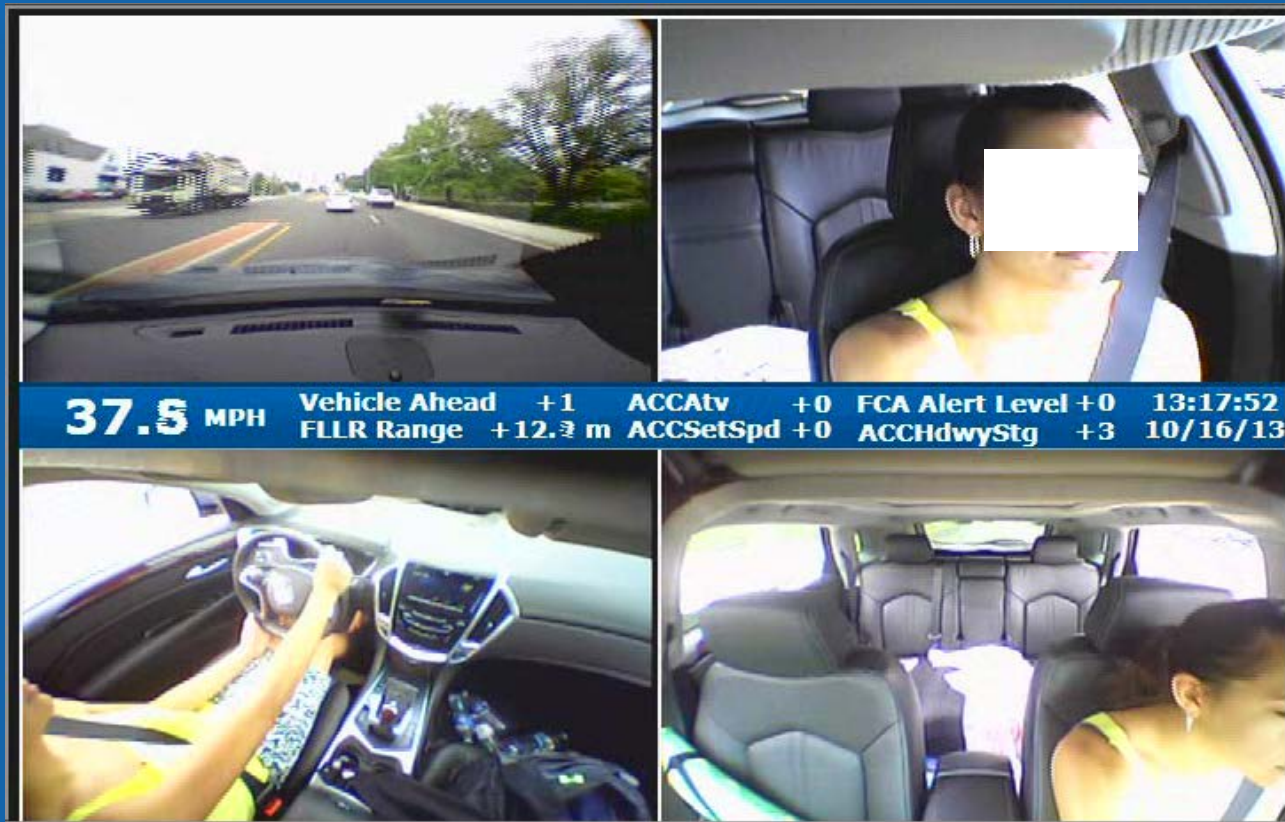


So how will drivers react to such technology?



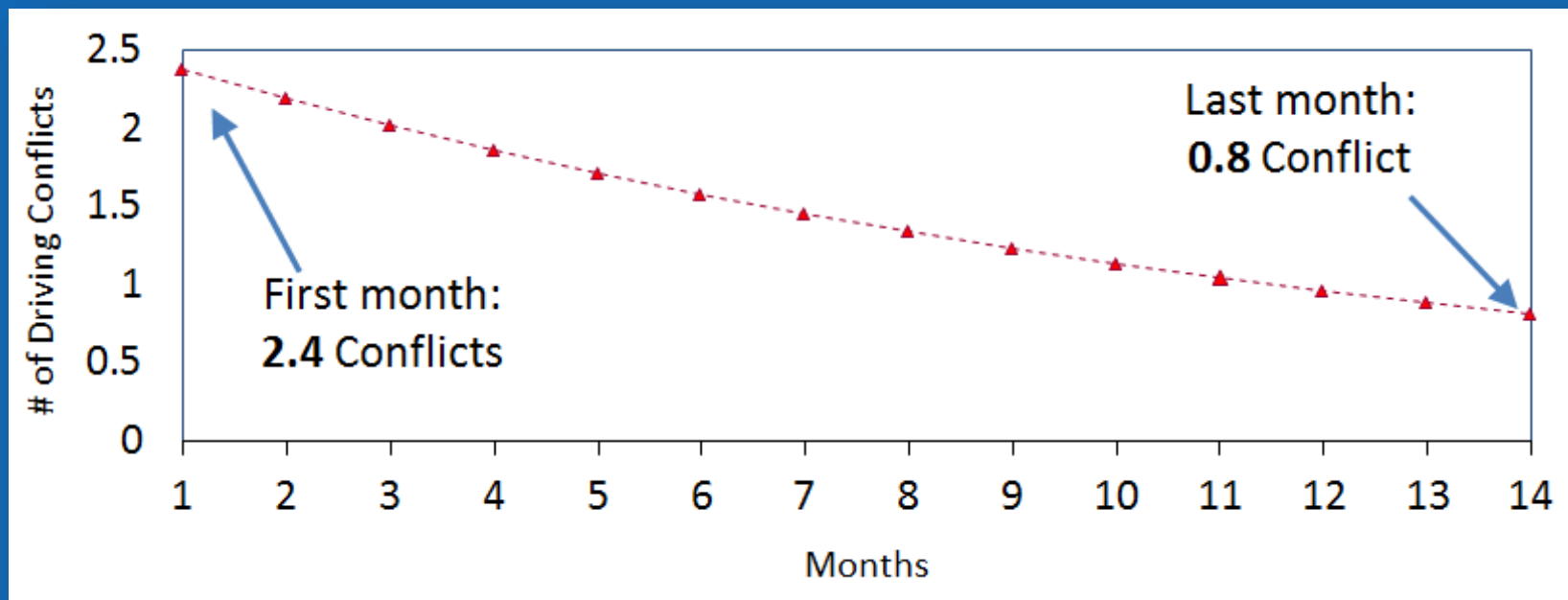


Does the safety impact of driving with a V2V Warning system change over time?





Forward Collision Warning: Naturalistic Driving Data



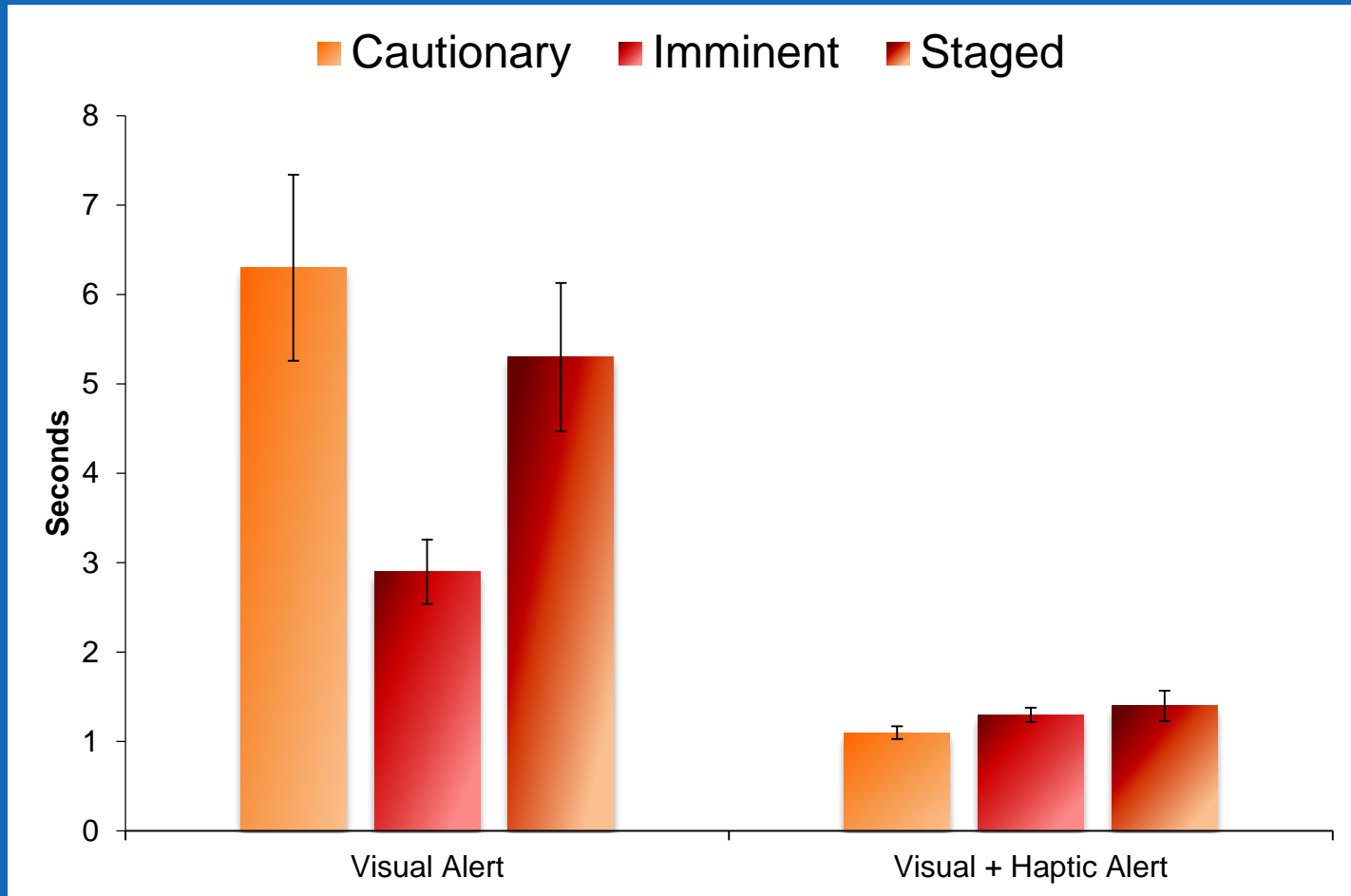


Automated Vehicles: How do drivers react when told they need to take control?



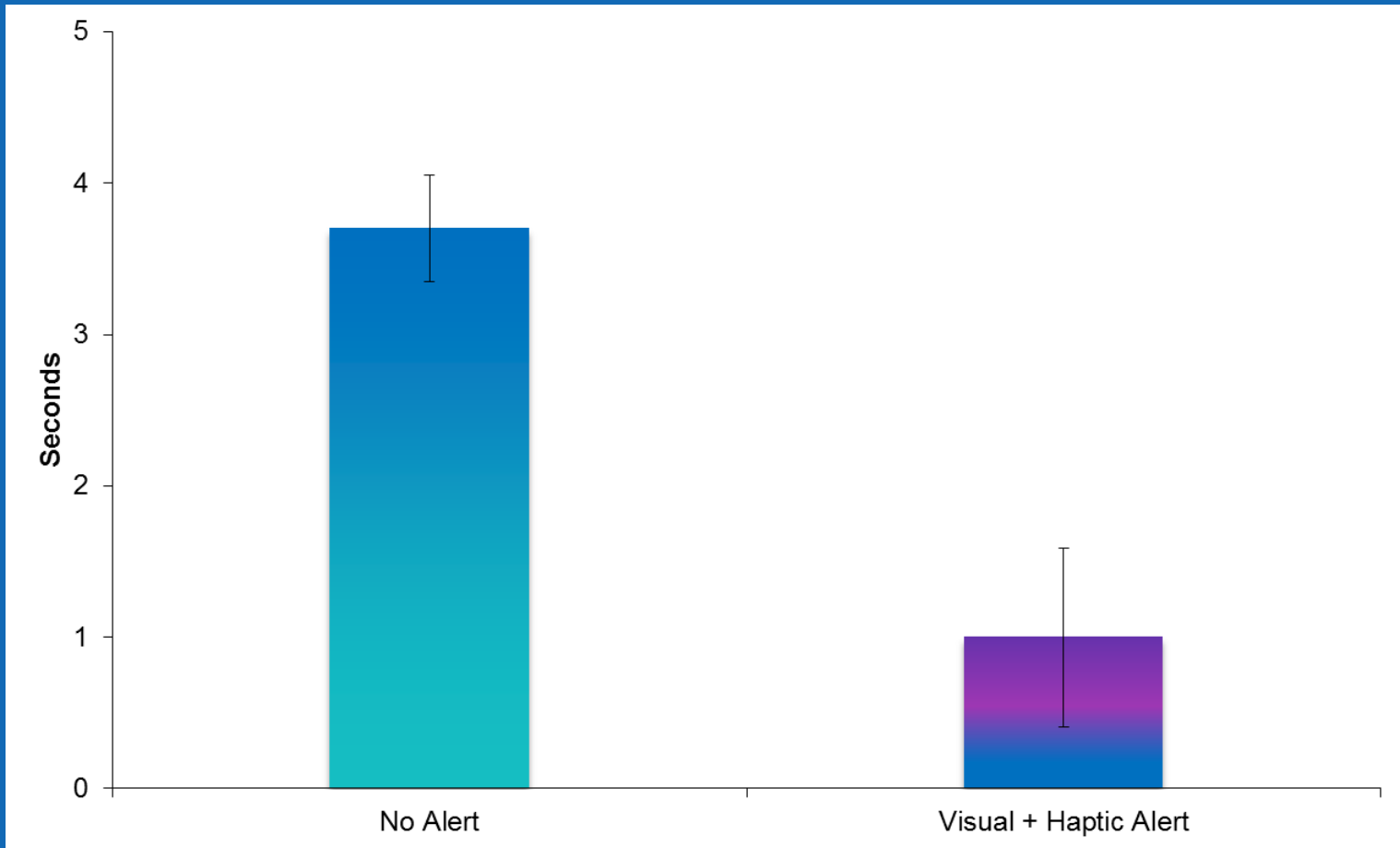


Time to Regain Control





Time to React to Unexpected Lane Drift





Time to Regain Control

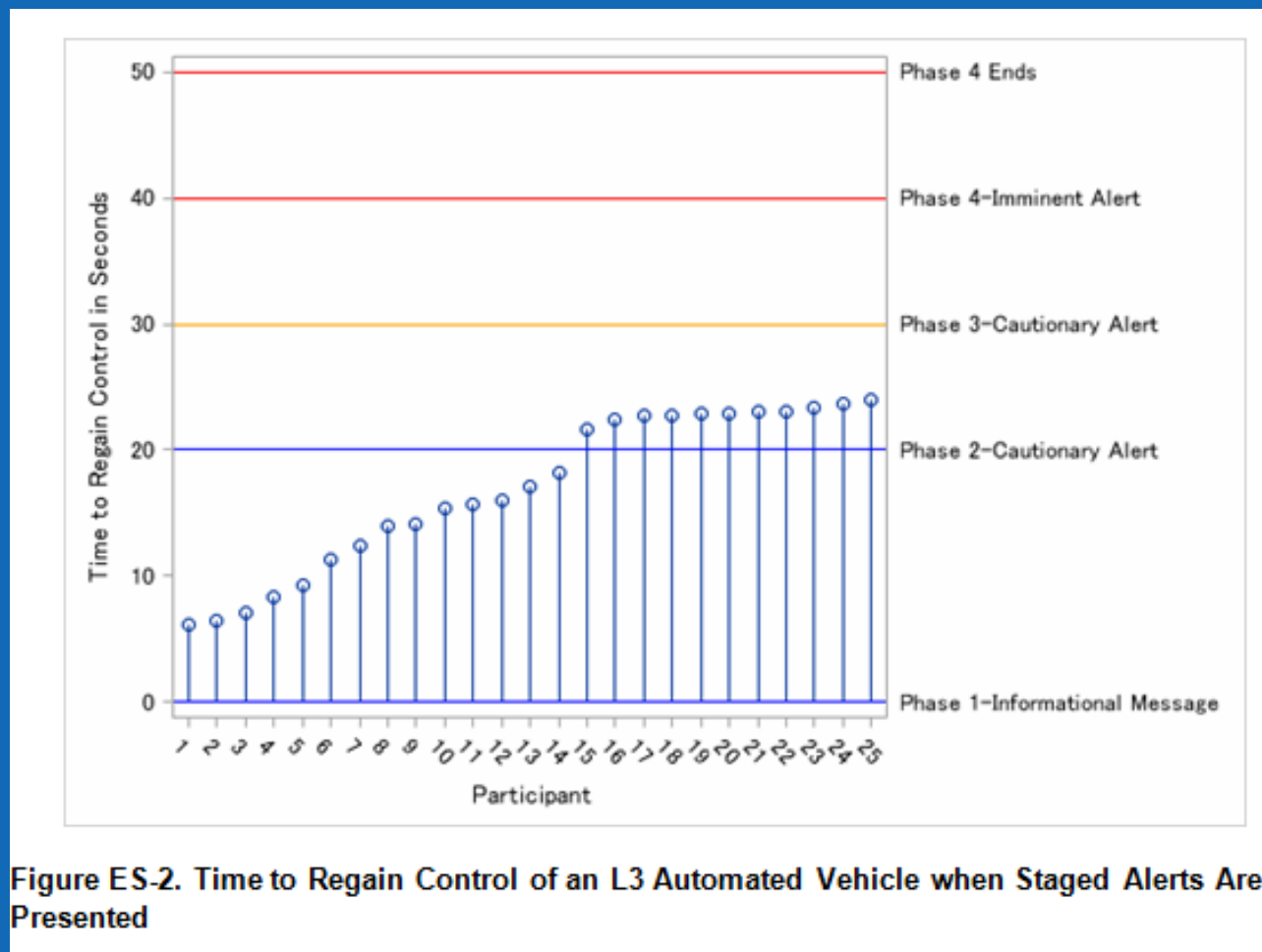


Figure ES-2. Time to Regain Control of an L3 Automated Vehicle when Staged Alerts Are Presented

Blanco, M., Atwood, J., Vasquez, H. M., Trimble, T. E., Fitchett, V. L., Radlbeck, J., ... & Morgan, J. F. (2015, August). Human factors evaluation of level 2 and level 3 automated driving concepts. (Report No. DOT HS 812 182). Washington, DC: National Highway Traffic Safety Administration.



Naturalistic Study with Current Automated Systems



Audi A6



Infiniti Q50



Mercedes-Benz E350



Tesla Model S



Volvo XC90



How are driver behavior and performance impacted?



NHTSA



THANK YOU

chris.monk@dot.gov