

## Objectives

Q1: How does **automation** affect drivers' anticipatory glances (i.e., glances to relevant cues)?

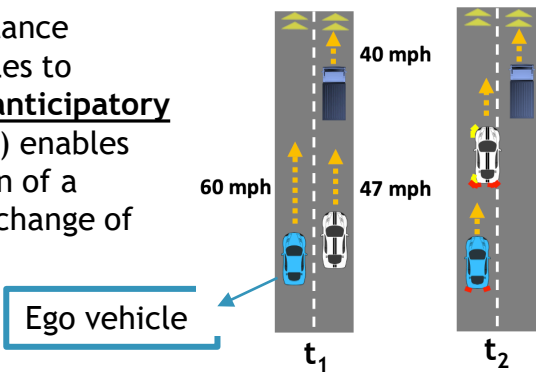
Q2: Are there moderating effects of **driving experience** and **distraction**?

*Comparison of two studies that found the following:*

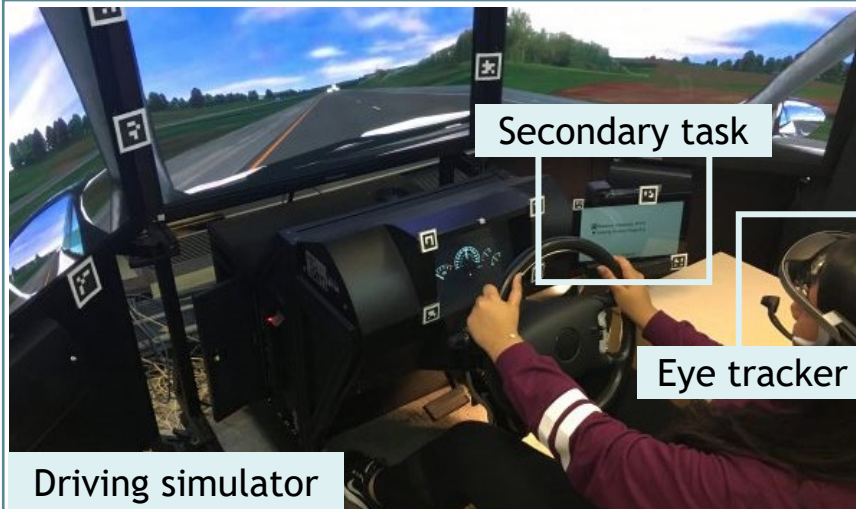
- **Distractions** impede attention to cues and in turn anticipation, both when driving without<sup>[1]</sup> and with<sup>[2]</sup> Adaptive Cruise Control (ACC) & Lane Keeping Assistance (LKA)
- **Driving experience** facilitates attention to cues and in turn anticipation when driving without ACC and LKA<sup>[1]</sup>

## Anticipation in Driving

Decreasing distance between vehicles to driver's right (**anticipatory cue**, at time  $t_1$ ) enables the anticipation of a potential lane change of white car ( $t_2$ )



## Methods



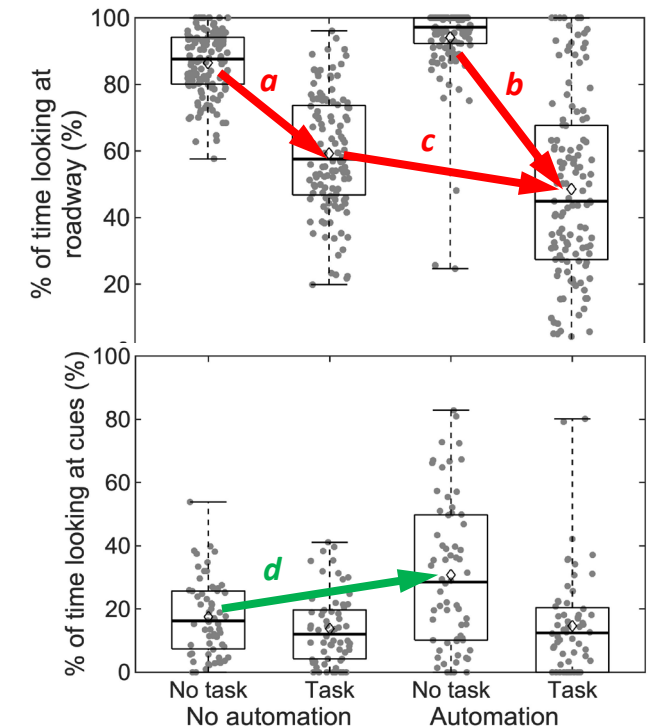
Driving simulator

**Driving task:** Four experimental drives, each with a distinct anticipatory driving scenario

**Between subject-design (N=64)**

- **Automation:** None (n=32)<sup>[1]</sup> vs. ACC & LKA (n=32)<sup>[2]</sup>
- **Secondary task** (i.e. distraction): None (n=32) vs. secondary task (self-paced, visual-manual, n=32)
- **Driving experience:**
  - **Novice:** G2 license in ON or equivalent < 3 years; <10,000 km driven in the past year (n=32)
  - **Experienced:** full license in Ontario or equivalent > 8 years; >20,000 km driven in the past year (n=32)

## Findings & Conclusions



- Without secondary task, automation led to more attention to anticipatory cues (**effect d**); benefit disappears when drivers are distracted.
- Secondary task reduced attention to roadway (**effects a & b**); effect more pronounced with automation (**b**) than without (**a**).
  - Automation reduced attention to roadway, only when drivers were distracted (**c**).