The National Advanced Driving Simulator

Has more face validity – real people driving on real roads.

Allows use of driver’s own vehicle.

Produces large datasets for extensive analysis.

Can identify large trends in driving safety behavior.

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simulator vs. on-road evaluation

on-road testing:

Provides limited repeatability – no two events are exactly the same.

Produces results that are prone to confounding from variables that can’t be controlled.

Data collections spanning several months or years for naturalistic studies.

Requires a great deal of money and time to mine data from naturalistic studies.

Presents risk of crashes and injury to participants.

Yields data prone to noise from sensors that don’t perform well in varying conditions.

Requires a lot of data to get enough events to analyze; a recent study showed that it takes 36,600 km of naturalistic driving to log a single crash, 4000 km to log a near crash, 400 km for a critical event.

Is not suitable for responding to un-anticipated national emergencies that require a quick response.
**The National Advanced Driving Simulator**

**simulator vs. on-road evaluation**

**simulation:**

- Uses repeatable test protocols.
- Provides control over experimental conditions such as weather, time of day, road conditions, traffic, participant’s state.
- Costs less and takes less time than naturalistic studies.
- Allows drivers to be safely put into realistically risky driving situations.
- Provides the ideal platform for looking at crash avoidance technologies or drugs and their effects on driving.
- Makes multisite driving safety research possible across network of driving simulation research laboratories.
- Can be quickly modified to assess new technologies.
- Allows evaluations to be tailored to meet specific needs.
- Provides ease of comparison across drivers, facilities, time, date, illness, injury, or weather.
- Allows for focused evaluation of safety critical situations that are difficult to capture in naturalistic studies.
- Provides actionable results in a shorter period.
- Provides a safer environment to study risky behavior.

- Causes simulator sickness in some drivers.
- Has difficulty performing vehicle maneuvers like parking and backing up.
- May be perceived by some drivers as a game; this is particularly true for desktop simulators.