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MTI Research Snaps presents

Intelligent Speed Assistance: Can Technology Help California Stop Speeding?

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What is ISA?

- Intelligent Speed Assistance (ISA) is an advanced driver assistance system designed to help drivers adhere to speed limits.
- Involves in-vehicle technologies that use GPS data interacting with accurate, digitally mapped speed limit data for the entire network or vehicle-based speed limit sign recognition.

Types of ISA

ISA Type	System type	Driver Control	Intervention	Notes
Speed Limit Information	Baseline functionality	Full	Continuous Display	Required under EU safety regulations
Advisory	Open system	Full	Visual/audible warning	No vehicle control intervention
Voluntary	Half-open system	Driver can choose to relinquish control	Optional – accelerator resistance	Driver chooses system engagement
Automated	Mandatory compliance	Driver's control is relinquished	Vehicle actively limits speed	Driver maintains override capabilities

Table 1 : Types of ISA

Motivation and question

Why ISA, and why now?

- Speeding contributes to fatal and severe crashes in the U.S.
- ISA is widely adopted or mandated internationally, but U.S. adoption remains limited.

This study asks:

- Is ISA technically reliable enough today?
- Will U.S. drivers accept it?
- What form of ISA is realistically scalable/applicable in California?

Methods Overview

Three-pronged approach:

- NHTSA Consumer Complaints
  - 2.0 million records analyzed
  - About 100,000 ISA-relevant ($\sim$ 5%)
- NHTSA Recall Data
  - ~ 300,000 recall records
  - ~ 6,000 ISA-relevant
- California Driver Survey
  - 286 licensed drivers
  - ISA awareness, behavior, and privacy, policy attitudes

Technical Findings
(Complaint & Recall)

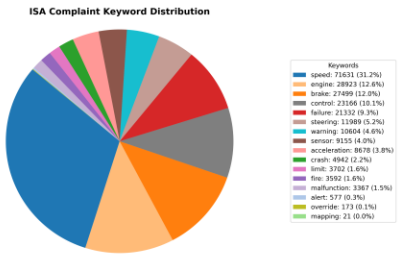

Figure 1 : ISA Complaint Keyword Distribution

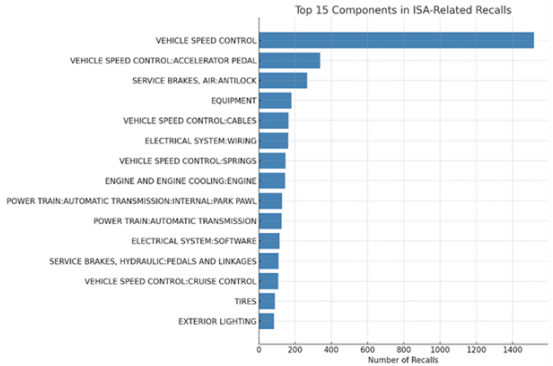

Figure 2: Top 15 components in ISA-related Recalls

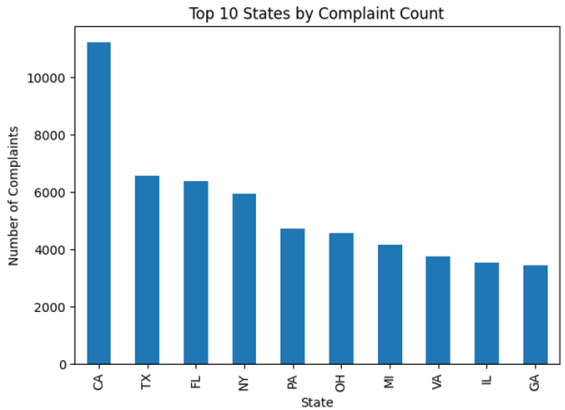

Figure 3 : Distribution of Complaints by State

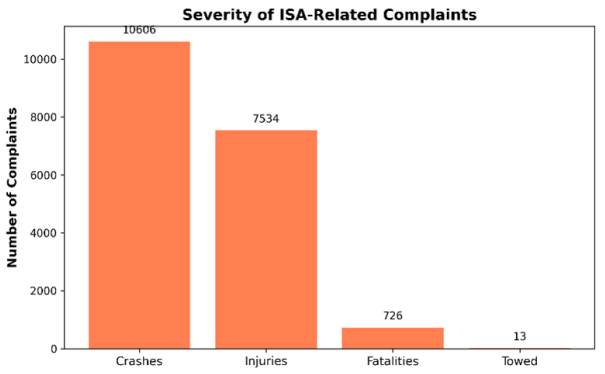

Figure 4 : Severity of ISA-related Complaints

Survey Design

- 286 survey response
- Distributed via:
  - Amazon Mechanical Turk (MTurk)
  - University Outreach

Survey Section	Purpose
Section 1	Demographics for comparative analysis
Section 2	ISA awareness and familiarity
Section 3	Perception and attitude towards ISA (safety, trust, control)
Section 4	User experience with ISA-equipped vehicles
Section 5	Driving behaviors and ISA's anticipated influence
Section 6	System preference and ISA feedback design
Section 7	Policy support and regulatory perspectives
Section 8	Privacy and data concerns; open ended feedback

Table 2 : Survey theme breakdown

Driver Acceptance and Behavioral Impact

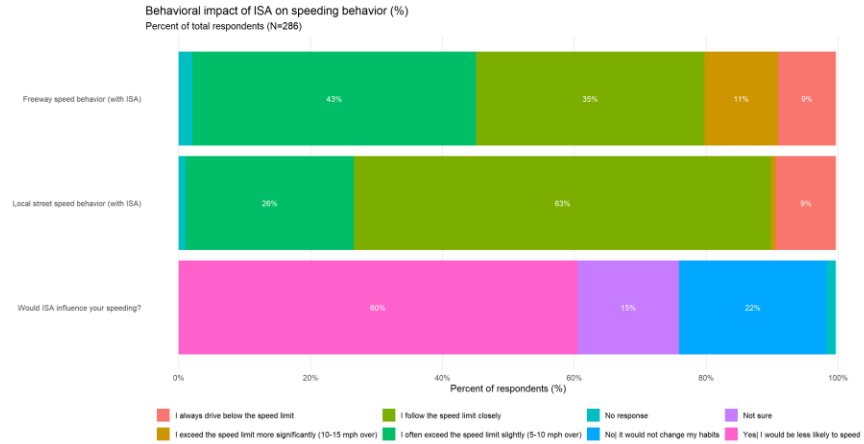

Figure 5 : Behavioral impact of ISA on speeding behavior

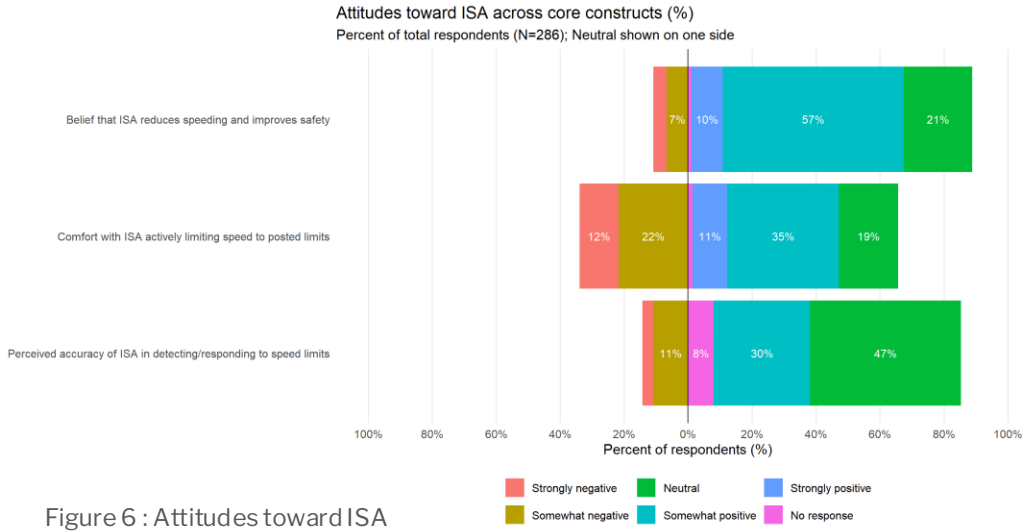

Figure 6 : Attitudes toward ISA

- Strong majority believe ISA improves safety and reduces speeding
- Acceptance declines when ISA actively limits driver control
- Most drivers report ISA would reduce their own speeding behavior

Privacy and Trust as adoption barriers

- Nearly 80% express some concern about data collection
- Nearly half say privacy concerns would affect willingness to use ISA
- Open-ended responses emphasize:
  - Surveillance
  - Insurance misuse
  - Government overreach

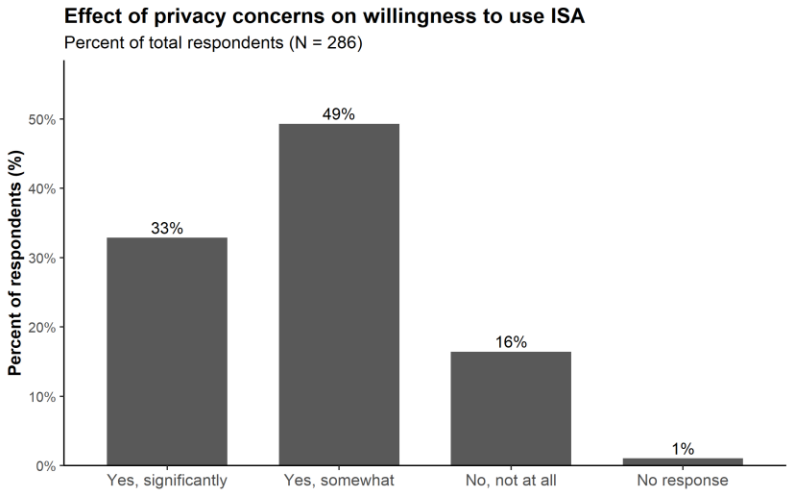

Figure 7: Effect of privacy concerns on willingness to use ISA

Cross Analysis

- Prior ISA experience increases acceptance of intervention-based system designs
- Belief in ISA's safety benefit aligns with stable or improved driving confidence
- Confidence concerns are concentrated among those skeptical of ISA effectiveness

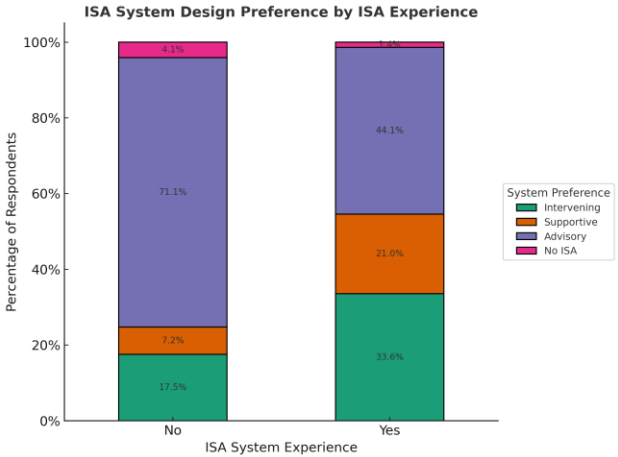

Figure 8: ISA sytem deisgn preference by ISA experience

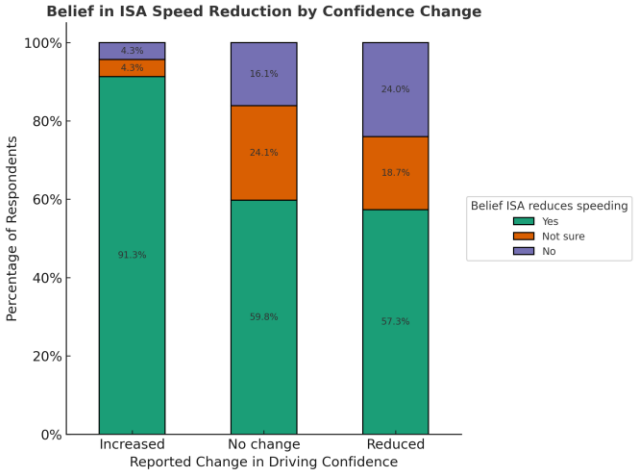

Figure 9: Belief in ISA speeding reduction by confidence change

Pre-submitted Questions

- Alert-first, speed reduction second – can drivers cancel it?
  - Survey strongly favors advisory + override capable systems
  - Mandatory, non-overridable ISA shows lowest acceptance
- Will drivers welcome added restrictions?
  - Not universally
  - Acceptance increases when:
    - Data transparency
    - Override is available
    - System accuracy is trusted
- Speed Limits are ignored today – why would ISA help?
  - Gives drivers a choice – changes the choice architecture
    - ISA changes the driving default. It reduces unintentional speeding while preserving override
  - Reduces unintentional speeding
  - Supports compliance when enforcement is inconsistent

Policy Framework

Viable ISA stack

- (a) Speed-Limit source
  - Hybrid approach
    - Map-based baseline
    - Sign recognition as verification
  - Reduce false positive
- (b) HMI/override
  - Graduate alerts : optional speed moderation
- (c) Validation/QA
  - Regional calibration
  - Continuous map updates
  - Clear failure state behavior

What would convince Californians?

- Advisory or supportive ISA initially
- Explicit override rules
- Clear accountability model
  - Map errors
  - Temporary limits
  - Work zones

Pathway

- Incentives > mandates
- Pilot programs in high-risk corridors
- Integration with existing ADAS

Conclusion

- ISA has clear safety potential in the U.S.
- Technical reliability and trust are decisive
- Advisory and supportive systems are most viable short-term
- Adoption will succeed only if autonomy and privacy are respected

ISA should be framed as supportive safety system not a form of control

Thank you for joining us for

Intelligent Speed Assistance: Can Technology Help California Stop Speeding?

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