

Harmonizing Autonomous Vehicle Safety Performance: A Standardized Oversight Framework for Local Governance

Thursday, January 29, 2026, 1:00-2:00 PM PT

Location: Engineering 6 BLDG, Room 580B

Zoom: <https://ucla.zoom.us/j/96746114179>

Abstract

Effective public oversight of Autonomous Vehicle (AV) safety is currently limited by a critical measurement gap. Despite high-level safety claims, the underlying reporting infrastructure across agencies (CPUC, DMV, NHTSA) remains fragmented and inconsistent, preventing decision-grade benchmarking across operational contexts.

This research introduces a comprehensive safety measurement methodology that bridges this gap by integrating regulatory policy analysis with System-Theoretic Process Analysis (STPA). We establish a traceable metric catalog that captures both regulatory blind spots and complex interaction-driven hazards. These metrics are then operationalized through the harmonization of public datasets, enabling the generation of exposure-normalized conditional probability tables (CPTs) and trend diagnostics.

The result is a dual-layer framework offering both a prioritized requirements list for future reporting and an empirical evidence layer for immediate use. This methodology moves beyond simple aggregate crash counts, providing stakeholders with the granular, context-aware benchmarking tools necessary to distinguish true safety performance from reporting artifacts and drive evidence-based policy.

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Siddhant Singh is a Researcher at the B. John Garrick Institute for the Risk Sciences (GIRS) at UCLA. He is currently working with the Center of Excellence on New Mobility and Automated Vehicles (COE) and the San Francisco County Transportation Authority (SFCTA) to develop a safety-centric framework for the integration of autonomous vehicles in local jurisdictions. He is a Mechanical Engineering graduate from UCLA. His work focuses on policy analysis and risk-based regulatory frameworks for new mobility systems.