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Autonomous Vehicles & The Future of Insurance
The Griffith Insurance Education Foundation, an affiliate of The Institutes, is a 501(c)(3) non-profit, non-partisan, and non-advocative educational organization dedicated to the teaching and study of insurance and risk management.

In keeping with the non-partisan, non-advocative mission of The Griffith Foundation, I will keep my comments and contributions to today's program unbiased and purely educational.
Earliest Form of Autonomous Transportation
Early Autonomous Vehicle

First Privately Owned Vehicle Pedestrian Fatality—
The White Ghost, 1902

Puck Magazine, April 16, 1902
(The caption reads, “AS THE LAW STANDS: Owner (To Chauffeur). — Don’t stop! It only costs about ten dollars apiece to run them down. I must break the record even if it costs a hundred!”)
1904—Lloyd’s Offers First Automobile Coverage.
1925—Connecticut Financial Responsibility Law
1927—Massachusetts Mandatory Auto Insurance

States with Autonomous Vehicle Laws

14 states plus D.C. have some law: Alabama, Arkansas, California, Florida, Georgia, Louisiana, Michigan, Nevada, New York, North Dakota, Pennsylvania, Tennessee, Utah and Virginia, plus Washington D.C.
The Governors of Arizona and Massachusetts issued executive orders on self-driving cars.


See also: _http://cyberlaw.stanford.edu/wiki/index.php/Automated_Driving:_Legislative_and_Regulatory_Action#State_Bills_
Causes of Crashes

94% are due to human error or judgment!

2% Vehicle Problem: tire/wheel related, brake related, steering/transmission/engine related.

2% Driving Environment.

2% Unknown
Source: NHTSA Crash Stats (Feb. 2015)

In over 35% of traffic fatalities, the brakes are not applied. Source: Calif. DMV, Stanford Center for Internet and Society
Who is Responsible—Manufacturer or Driver (“Operator”)?

- Faulty cars with Faultless Drivers
- Standard Auto Policy
  - Liability Coverage—“legally responsible”
  - Uninsured/Underinsured—“legally entitled to recover from owner or operator”
- When, if ever, will a faultless driver be “legally responsible” for an accident or be “legally entitled” to recover from a faultless “operator” of a self-driving car?
“Robot depicted as uninsured motorist only. Farmers Insurance does not insure any form of robot or non-human.”
Who is Responsible?
Current “Products Liability” Answer

• If Caused Only by Defect in Manufacture, Design, Warning, Instructions—The OEM and Others in the Chain.

• Move OEMs from 2% responsibility to 80%-100% responsibility?
  --Defect in Manufacturer—Does not Meet OEM’s Design Specs.

  --Defect in Design—RAD (Reasonable Alternative Design). Calif. And a Few Other States—Violates the Expectations of a “Reasonable Consumer.”

  --Warnings and Instructions—Over Promotion, Ineffective Manuals

  --Duty to Update

  --Foreseeable Use/Misuse—Tesla Backseat Drivers!
Who Was In Control?

• If the Operator, Then Business As Usual.
• If Technology, then OEM.
• If Both (Vehicle Misbehaves, But Some Ability of Driver to Intervene)--Both.
• NHTSA—Technology can be “Driver” for Motor Vehicle Safety Standards. Affect Assignment of Liability?
How To Decide Who Had Control?

• Testimony? Is There a Better Way?

  • Trip Data Recorder (Black Box). Calif. and Nev. Require Preservation of Last 30 sec. Who Has Access to This?

• Regulatory Impact?—California Proposed Regulation:

  • See CA Proposed Reg., sec. 228.28—Manufacturer “shall be responsible for the safe operation” when in autonomous mode. Driver “shall be responsible for the safe operation” when the autonomous vehicle “requires the driver to take control”). If adopted, will this affect liability?

https://www.dmv.ca.gov/portal/dmv/detail/pubs/newsrel/2017/2017_18
What Information Do You Need?

- Was Operator or Technology In Control?
- Hands on Wheel?
- Was Vehicle in Transition?
- If No Consumer Expectation Test, What is the RAD?
How Was Operator Alerted?

• Human Factors

• Was There a Better Way to Alert? Lights, Vibration, Sound, All Three?
Human Factors—Simulators
Some Low Hanging Fruit?

Some “New” Costs?

- Claims currently un/undercompensated will now flow up to the OEM, *e.g.*
  - **Parent** drives car into tree, injuring parent and child. No **insured** claim—Family exclusion in auto policies.

- **Car** drives parent and child into tree. Products claim against OEM.

- **Trucker** drives truck into tree. Workers compensation is the only remedy.

- **Truck** drives trucker into tree. Tort claim against OEM.

- Serious injury, but only $15,000 in insurance or assets. Claim’s value is $15,000. If a products liability claim, the OEM’s insurance and assets are available to pay the claim.
Some New “Costs”--“Fender benders” can destroy expensive sensors, raising repair costs. Very expensive technology may be destroyed in more serious collisions. Who will be authorized to make repairs? Bob’s Pretty Good Repair Shop?
Exactly What Is Behind That Pretty Bumper?
After Market Additions

• After Market Conversion by Third Parties.
• After Market Additions by Third Parties.
• Some States Protect OEMs. E.g.: Statutes in D.C., Fla., Mich., Nev. protecting OEMs (But No Statute in Calif.).
But Why Are These Public Policy Issues?

• State Mandated Vehicle Insurance

• Washington--$10,000 in 1963. Today would be $79,359, but is $25,000. CA adopted $15,000 in 1967—Worth about $2,000 today.

• Uninsured motor vehicles. Over 4 million in CA (14.7%). Approx. 30,000,000 in U.S.
How Does This Affect Public Policy Surrounding Automobile Insurance? (Continued)

• The Best Accident is the One That Does Not Happen (Frequency).

• Next Best Accident is the One with Less Injury—How Hard do you Land? Kinetic Energy=\( \frac{1}{2} \text{Mass} \times \text{Velocity}^2 \) (Severity).

• Next Best Accident is One in Which Injured Parties are As Fully Compensated as Possible (Compensation).
Mandatory Auto Insurance?

- All States (except New Hampshire) mandate a minimum level of auto insurance. These were adopted when death’s per VMT were at their height. 53/Bill. VMT in 1958, 11-12/Bill VMT today (but now rising!)
- Sound public policy if frequency, severity, and driver responsibility significantly diminish?
- Will focus shift to OEMs and fleet owners – much like the transportation networks companies like Uber and Lyft?
• Does adequate data for pricing exist? Will AVs reduce accidents by 93%? (Casualty Actuarial Society study - “49% of accidents contain at least one limiting factor that could disable the technology or reduce its effectiveness.”)
http://www.casact.org/pubs/forum/14fforum/CAS%20AVTF_Restated_NMVCCS.pdf

• Will prior data be a credible predictor of future costs?
  • One download changes the safety profile of the entire fleet.
  • Moore’s Law?
Cyber Risk

“Autonomous lawnmowers were a bad idea. I see that now.”
Vehicle Threat Vectors
How Fast Will This Happen?—Penetration

Although mandatory in all new vehicles as of 2012, it is predicted that ESC will be standard or optional on 95% of registered vehicles in 2029 and 100% by 2040.
Other Incentives?

- Cash to retire older cars? Air quality control districts do this now.
- Tax Credits/Deductions (Compare electric cars)
- Carpool lane?
- Higher speed limit for safer cars?
  - 55 for trucks
  - 65 for manually driven cars
  - 75 for cars in self-driving mode?
  - Leverage—How many cars will one on-call AV replace?
• The Future—V2V, V2I and V2X. Who is responsible when government designed infrastructure fails (think a traffic light showing green in all directions)?
• “The King can do no wrong”—sovereign immunity and the various forms governmental entities have waived it.
As infrastructure matures, resolving disputes and compensating injuries based on a fault/defect based system may make less and less sense.

- **Strict Liability of Operator (Up to a Limit)?**

- **European Model?—Driver Primarily Responsible, with Subrogation Claim Against OEM?**

- **Health Costs of Injuries—As Health Care Becomes More Universal (?!), Leave Medical Costs with Health Insurers?**

- **A New Approach?—Perhaps the Vaccine Compensation Model?**
Insurance regulators’ first obligation - insure the solvency of insurers so they can honor the promise of the policy. This is especially so when public policy demands financial responsibility for automobiles. Regulators accomplish this through:

--Conservative accounting principles for insurers
--Financial surveillance
--Guarantee Funds
The Vanishing OEMs – Who Guarantees Their Obligation?

Guarantee Funds? – probably not because OEMs may:

--Self-insure—no guarantee fund coverage.
--Retain some risk and reinsurance – no guarantee fund coverage for reinsurance
--Insure with a nonadmitted ("surplus lines") insurer – no guarantee fund coverage.
--Insure through a risk retention group – no guarantee fund coverage.
--Insure through a captive (in Bermuda? Vermont?) – no guarantee fund coverage.

Public Policy Issue? – If a large part, or most, responsibility for injuries shifts to OEMs, should there be some sort of guarantee fund to protect the public from insolvencies?
Who Is Going to Provide Coverage?

Personal Auto Policies for Operators, But With Diminishing Premiums
Endorsement on Homeowners or Renters?
Stand alone policies?
OEMs—CA, Nev., N.Y. require $5,000,000 bond, insurance or net worth. Too Much; Too Little? Florida recently repealed a similar provision. Georgia requires insurance similar to commercial limousines.
Self-Insure, Risk Retention, Captives Reinsurance.
Questions?

Some Resources:

  http://digitalcommons.law.scu.edu/cgi/viewcontent.cgi?article=2732&context=lawreview

• D. Glancy, K. Graham, R. Peterson, “A Look at the Legal Environment for Driverless Vehicles”

• R. Peterson, Comments on the CA DMV’s proposed deployment regulations—February 23, 2016
  http://orfe.princeton.edu/~alaink/S.smartDrivingCars/Papers/RPeterson_CA_DMV%20RegsComments032316.pdf

• Australia National Transportation Commission Guidelines for Trials of Automated Vehicles (2017)

• American Association of Motor Vehicle Administrators (AAMVA) autonomous vehicle information library
  http://www.aamva.org/Autonomous-Vehicle-Information-Library/