

# Autonomous Vehicles – Insurance Implications

A glowing orange sphere, possibly representing a sun or a light source, is surrounded by numerous sharp, translucent glass fragments that appear to be shattering or exploding outwards. The background is a dark, starry space with many small white specks, suggesting a cosmic or high-tech environment.

*- In Commercial Vehicle Safety  
Research Summit, November 2016*

*Dr. Anand S. Rao  
Innovation Lead – PwC Analytics*



*Ridesharing, Automated Driver Assistance Systems, Autonomous Vehicles and Electric Vehicles are disrupting the auto industry ecosystem*





# *Car sharing & Ride sharing*

*Younger, urban dwellers are increasingly shifting towards sharing as opposed to owning assets – including cars*

**30%**

*Annual growth of car and ride sharing globally*

**\$5.2 Billion**

*Revenue from car sharing globally by 2020*

**1 Million**

*Number of Uber drivers worldwide in June 2015*

**300**

*Number of cities with Uber as of June 2015*

# *Automated Driver Assistance Systems (ADAS)*

*Variety of sensors, automotive technologies, artificial intelligence and machine learning techniques are driving growth of ADAS*

**\$230 bn/yr**

*Cost to society from  
distracted driving*

**31%**

*% of Premium car customers  
who will definitely or  
probably purchase  
emergency stop assist for  
\$800*

**23%**

*Compound Annual Growth  
Rate of ADAS Globally from  
2014-2020*

**\$60 Billion**

*Size of ADAS market by  
2020 globally*

# *Autonomous Vehicles & Self-driving Cars*

*Falling costs of radar technology and advances in machine learning are already resulting in autonomous, self-driving vehicles*

**2M vs 140M**

*Number of autonomous vs autopilot miles driven by Google vs Tesla Car as of October 2016*

**\$9,200**

*Cost to operate driverless Uber cars annually instead of current \$43,500 per year*

**\$400 bn**

*Accident related savings with self-driving cars in US alone*

**2017-2020**

*Fully autonomous cars will be released (Audi – 2017; Tesla – 2018, Toyota – 2020)*



# Autonomous Vehicles



*CitiMobil2 – Cities demonstrating automated road passenger transport (European Union)*

*Autonomous buses, trucks, pods and convoys are also being built and piloted across the world*

*Milton Keynes – Autonomous Pods unveiled in Sep 2015*



## *Mercedes-Benz Future Truck 2025 – Autonomous Driving*

# Autonomous Vehicles

*Autonomous buses,  
trucks, pods and  
convoys are also  
being built and  
piloted across the  
world*





## Otto hauls Budweiser in First Commercial Use of Self-Driving Truck

CHRIS O'BRIEN || OCTOBER 25, 2016



## What did your department have to do to prepare for the autonomous drive?

This set us on a course of three months of conversations with multiple agencies. The process took hundreds of hours of preparation, sometimes testing 16 hours a day with members of our team and the Colorado State Patrol, as well as our [RoadX program](#), which is a national leader in connected and autonomous vehicle technology.

Our protocol was that the truck had to make this trip eight times with a driver [in the cab] without the driver taking over before we would allow the computer to drive the whole route [with the driver in the sleeper compartment].

Our involvement was multifaceted. We made sure the roadway was swept of debris, and we got our tow trucks involved to make sure there weren't any abandoned vehicles on the side of the road that would hamper the test. We worked with our road construction contract partners to make sure there weren't any unexpected road projects going on that would cause weird traffic conditions. The highway patrol had a lot of questions about how they would pull over a truck with no driver in the seat and how we communicate effectively with the autonomous vehicle.

*By Shailen Bhatt, Executive Director, Colorado Department of Transportation*

## *George Hotz – Builds a self-driving car in his Garage*

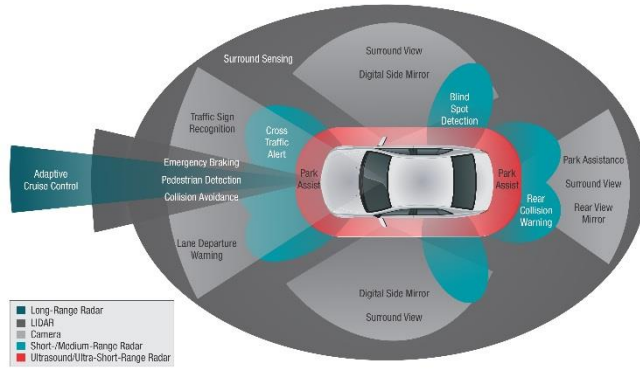
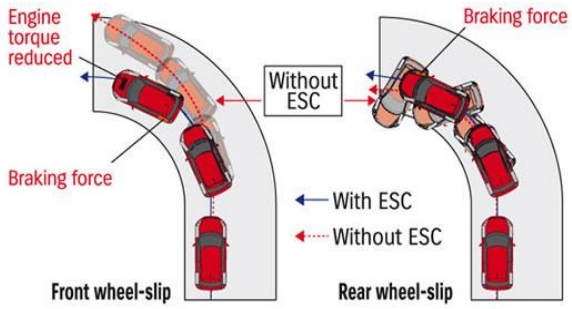
Autonomous  
Driving for  
less than  
\$1000

*George Hotz – first to  
hack iPhone – builds  
a self-driving unit in  
his garage.*

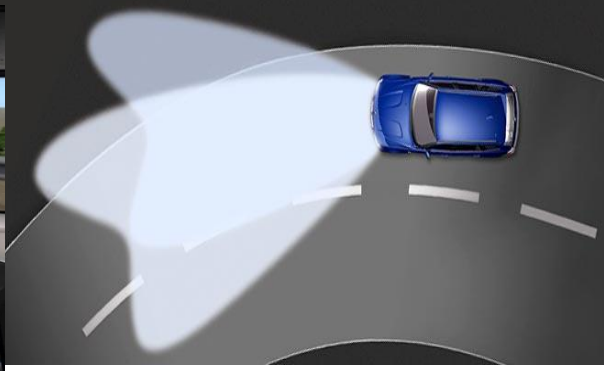
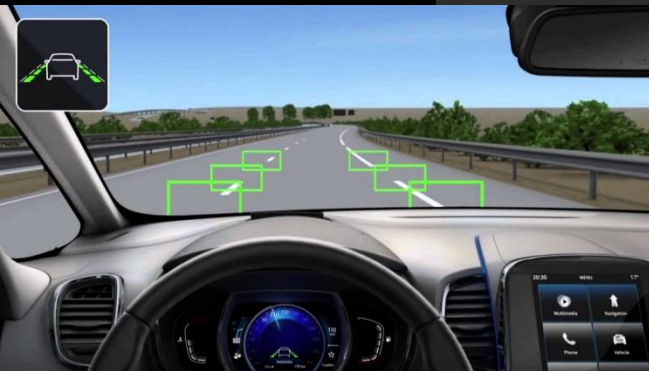
*Andreessen Horowitz  
invests \$3 million to  
build a \$1K self-  
driving unit*







*Increased safety, reduced severity and frequency of accidents, reduced losses, robo-taxis (Personal Mobility As A Service) will fundamentally alter the auto insurance industry*





# Autonomous Vehicles & Safety

*Road traffic  
accidents caused by  
human error is still  
substantial globally*

*93% of road traffic accidents are  
caused by human error*

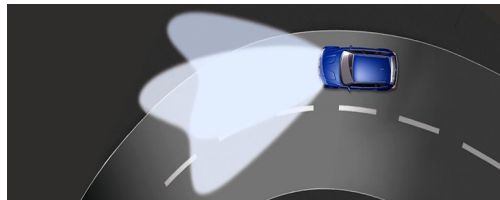
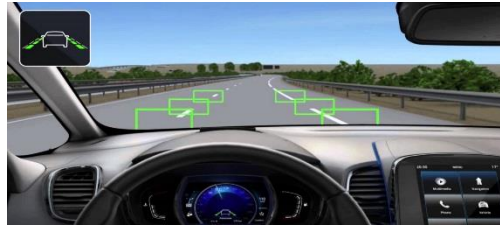
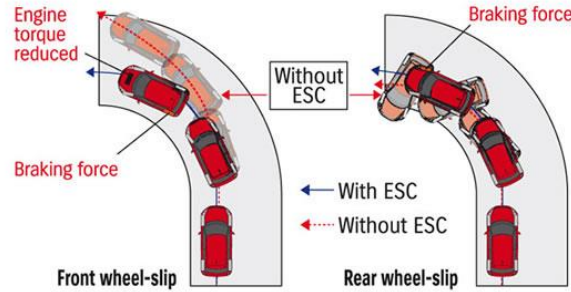
*1.3 million fatalities occur  
globally*

*50 million injuries occur  
globally*

*38,300 deaths & 4.4 million  
injuries in US from road traffic  
accidents in 2015*

# Autonomous Vehicles & Safety

*More than 10,000 lives can be saved with just four automated driver assistance technologies (ESC, LDW, FCW, and Adaptive headlights)*



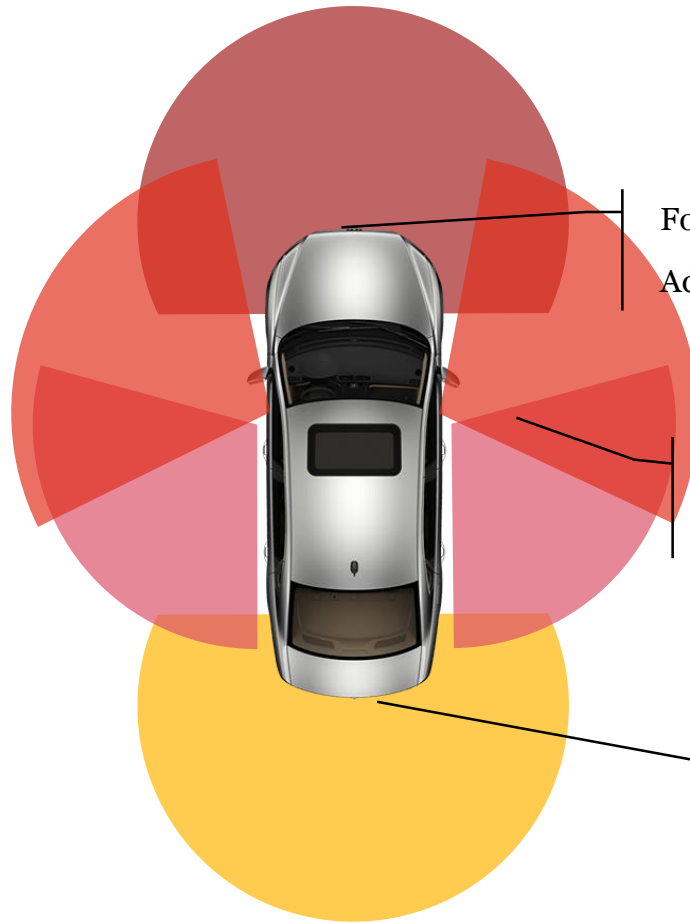
*Electronic Stability Control saved 4,100 lives in 2010-2014 (NHTSA)*

*Lane Departure Warning could save 7,529 lives per year in US (IIHS.ORG)*

*Adaptive headlights could save 2,484 lives per year in US (IIHS.ORG)*

# Autonomous Vehicles & Safety

*Automated driver assistance technologies will impact both severity and frequency of accidents*



## *Average Change due to Technology*

|                      | <b>Frequency</b> | <b>Severity</b> |
|----------------------|------------------|-----------------|
| Forward Collision    | -3.2%            | -1.1%           |
| Adaptive Headlights  | -2.3%            | -5.5%           |
| Lane Departure       | -0.4%            | 0.0%            |
| Blind Spot Detection | -6.1%            | -20.0%          |
| Park Assist          | -1.8%            | -1.1%           |

Source: PwC Analysis based on Highway Loss Data Institute reports on predicted availability of safety features and initial results of collision avoidance features, 2011 - 2012

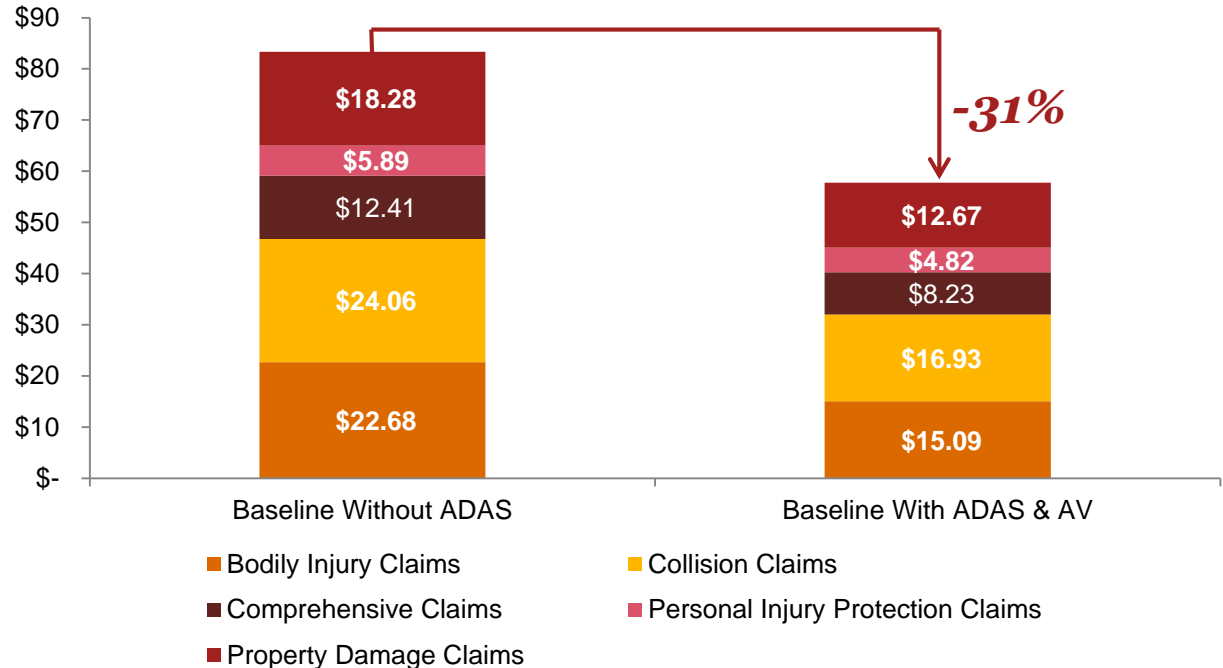


# Impact on Insurance – ADAS & AV

*Car Sharing & AV will reduce car parc and combined with ADAS could result in a reduction in projected losses by 31% by 2025*

**Reduction in losses from ADAS & AV is ~31 % by 2025**

## Total Projected Losses, 2025\*



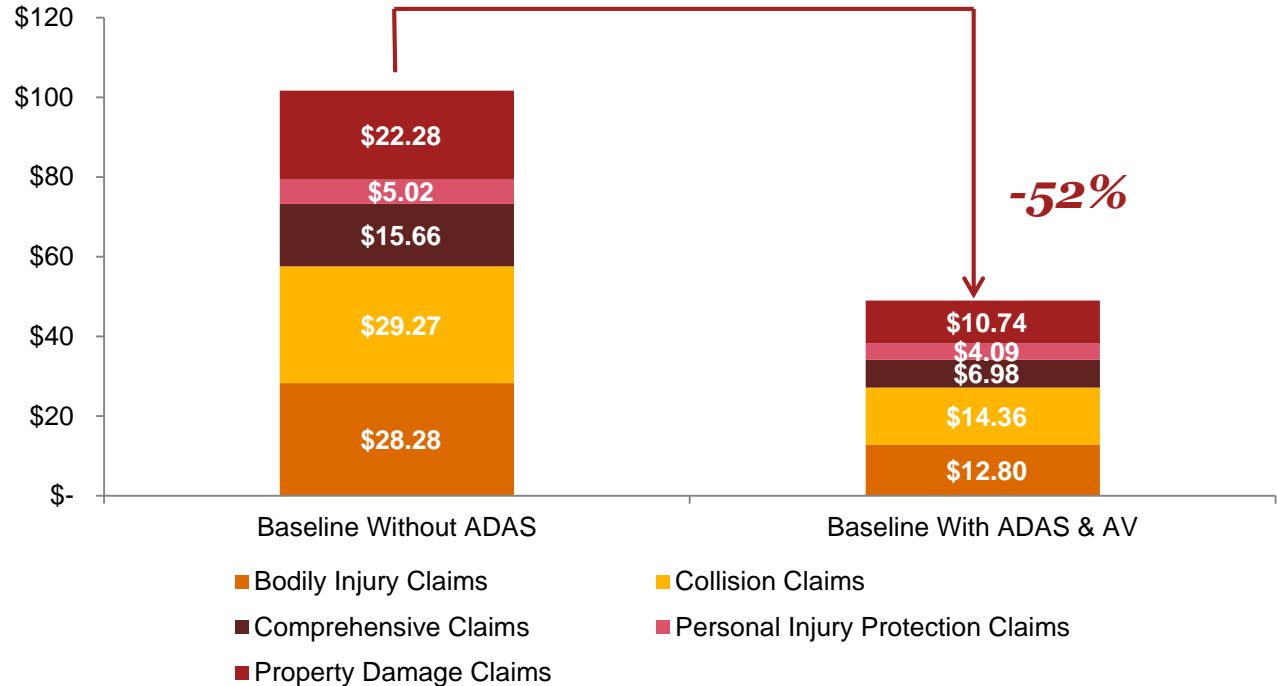
**Source:** PwC Analysis based on Highway Loss Data Institute reports on predicted availability of safety features and initial results of collision avoidance features, 2011 - 2012

# Impact on Insurance – ADAS & AV

*As penetration of Aves increase over time the reduction in losses could be as much as 52% by 2035*

## Reduction in losses from ADAS & AV is ~52 % by 2035

### Total Projected Losses, 2035\*



Source: PwC Analysis based on Highway Loss Data Institute reports on predicted availability of safety features and initial results of collision avoidance features, 2011 - 2012

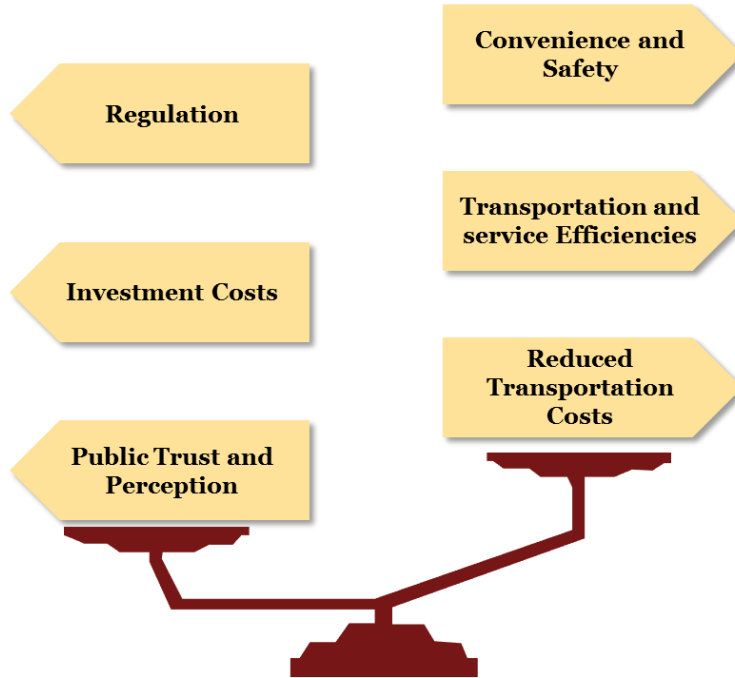
# Case for Action

*The impact on insurance will be small at first, but would accelerate once AV adoption reaches a tipping point substantially reducing consumer auto insurance market*

*Only 7 states & DC have passed legislation to address autonomous vehicles; Others are considering or have failed to pass measures<sup>1</sup>*

*Autonomous technology is projected to add \$10,000<sup>2</sup> to the cost of the car; this is expected to decline to \$3,000 by 2035*

*46% of consumers feel that autonomous cars will not be safe and 28% believe that they will never own one<sup>3</sup>*



*Autonomous cars will remove variability and improve driving conditions*

*Commute times will drop due to decreasing congestion; public transit and car sharing will cover larger areas, increasing availability and reducing wait times*

*Autonomous adoption can reduce transportation costs of car ownership through alternative transportation solutions*

<sup>1</sup>[http://cyberlaw.stanford.edu/wiki/index.php/Automated\\_Driving:\\_Legislative\\_and\\_Regulatory\\_Action](http://cyberlaw.stanford.edu/wiki/index.php/Automated_Driving:_Legislative_and_Regulatory_Action)

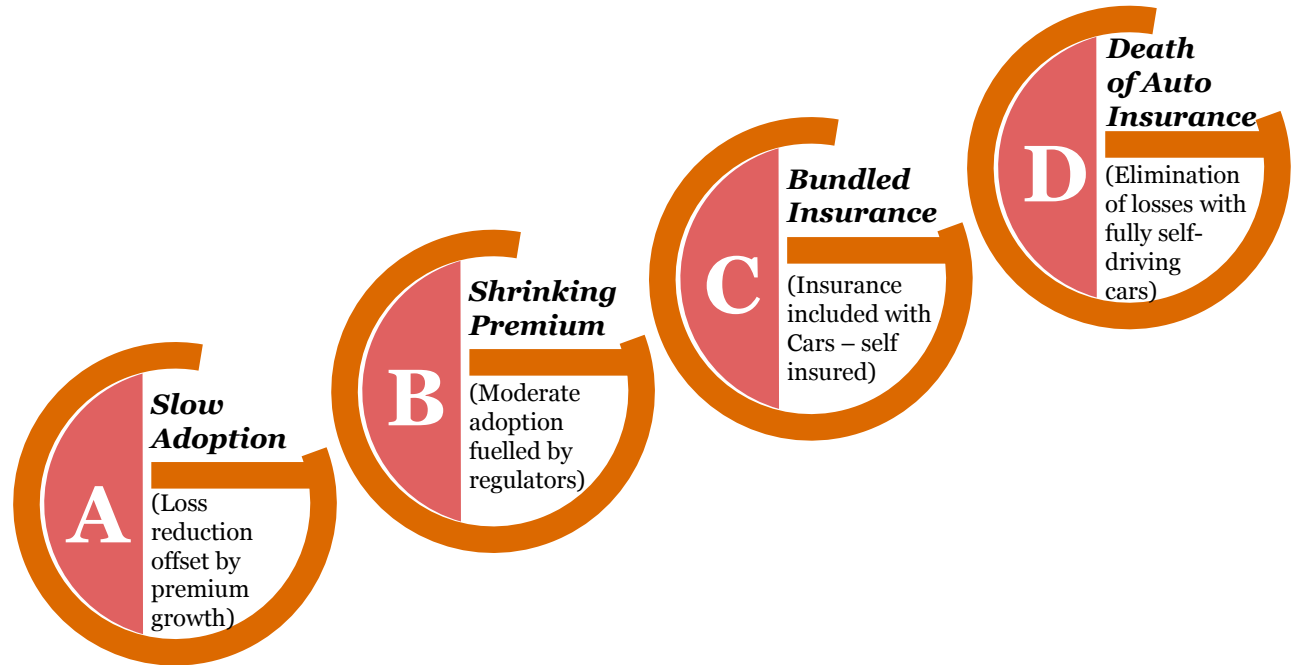
<sup>2</sup><http://www.nerdwallet.com/blog/insurance/2015/06/09/survey-consumer-fears-self-driving-cars/>

<sup>3</sup><http://orfe.princeton.edu/~alaink/SmartDrivingCars/PDFs/Nov2013MORGAN-STANLEY-BLUE-PAPER-AUTONOMOUS-CARS%EF%BC%9A-SELF-DRIVING-THE-NEW-AUTO-INDUSTRY-PARADIGM.pdf>



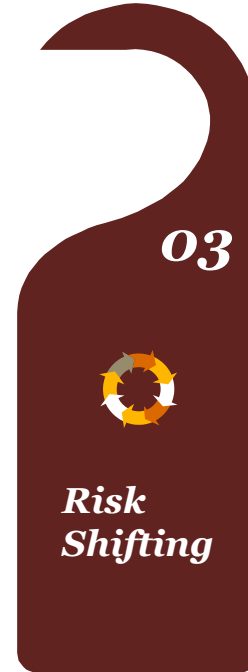
# Case for Action

*Four possible scenarios over the next two decades ranging from small impact to potentially a massive consolidation*



# Case for Action

*Insurers need to be prepared to innovate with their offering and be able to target new business customers and eventually seek alternative growth areas*



# Case for Action

*Business models of auto insurers will fundamentally change as ADAS/AV technologies take over and liability shifts from the driver to the product manufacturer*

- **Liability:** 'Driver' to 'Product'
- **Ownership:** Owing to sharing/renting
- **Distribution:** Consumers to Manufacturers
- **Death Spiral:** Lower claims, lower premiums and eventually ....

# Case for Action

*Insurers who want to survive and thrive in the long-term should start acting now to innovate and better understand the changing ecosystem*

## Short-term (3-7 yrs)

- Embrace alternative forms of insurance
- Partner with auto manufacturers to collect data on ADAS and AV technologies

## Medium-term (8-15 yrs)

- Shift primary focus towards auto-manufacturers and PMaaS providers for marketing, distribution and product development
- Develop innovative products – bundled insurance, ‘self-drive’ mode insurance

## Long-term (15+ yrs)

- Consolidate personal and commercial auto
- Explore alternative revenue streams including - commercial auto logistics, becoming a PMaaS provider etc.



A group of business professionals in a futuristic meeting room. They are seated around a table with a large screen displaying data. The room has a modern, high-tech aesthetic with curved walls and large windows. The lighting is soft and ambient.

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# Thank You

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\* Data sources via similarweb