



# The "Chaotic Middle": Automobile Insurance in the Era of Autonomous Vehicles

**Federal Advisory Committee on Insurance**

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# Introductions - Here with You Today



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**Note: This presentation was not designed and is not intended to advocate for any public policies that might be connected to the topics discussed**



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# Summary

Change is coming, and it is coming fast

## Changing Auto Insurance Marketplace



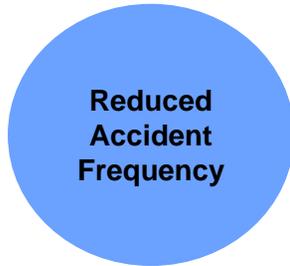
**Aligning Forces**

Underlying market forces are already aligning to enable mass change



**New Entrants and the 'Chaotic Middle'**

Given their control of driving data and the customer relationship, automotive original equipment manufacturers ("OEMs") are particularly well positioned to disrupt the traditional insurance market, especially over the next 10-15 years



**Reduced Accident Frequency**

KPMG estimates an 80 percent reduction in accident frequency by 2040



**Consumer Impact**

Fewer traffic fatalities and lower insurance premium have the potential to benefit consumers, while data, privacy and other risks will need to be evaluated and managed



**Shrinking Premium Pie and Different Coverage Mix**

Lower losses lead to lower premium – KPMG predicts industry losses to decrease by roughly \$60 billion within 25 years. A shift from personal to commercial and product liability coverages is also anticipated



**Planning for the Future**

Insurers need to understand their exposure in the auto insurance space and prepare their strategy and operations accordingly

Source: KPMG LLP actuarial analysis



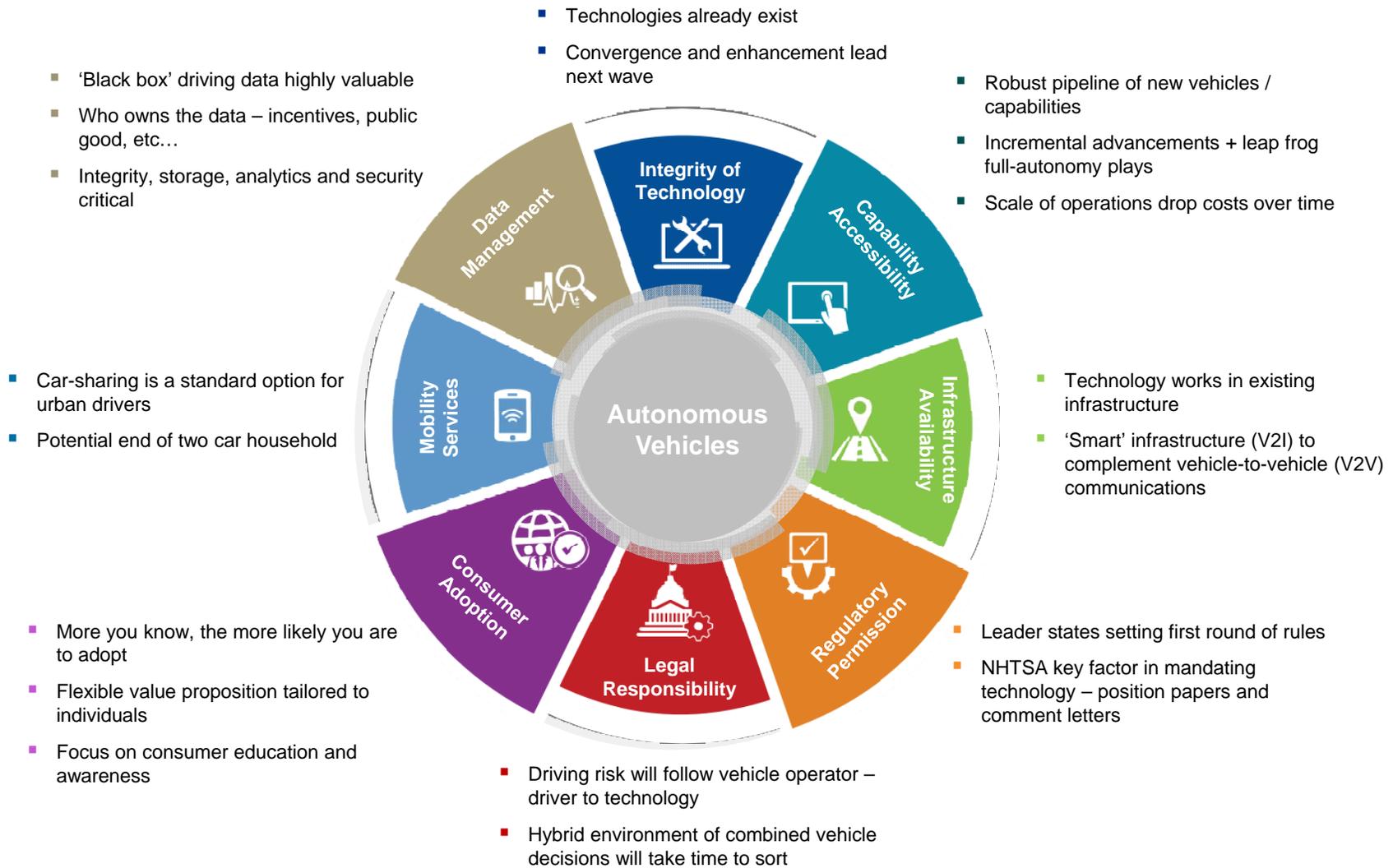
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# Presentation Overview

<b>1</b> <b>Alignment for Mass Change</b>	<b>Core elements enabling transformation</b>
<b>2</b> <b>Timing</b>	<b>Four phases leading to a 'new normal' in a decade</b>
<b>3</b> <b>Implications for Insurers and Consumers</b>	<b>Potential impact on insurers' books of business and the consumer marketplace for insurance</b>
<b>4</b> <b>The Chaotic Middle</b>	<b>Potential new entrants and changes in the insurance landscape</b>
<b>5</b> <b>What Now?</b>	<b>Preparing for the future</b>

# Eight Key Elements for Transformation

**A variety of forces will be responsible for the foundational transformation across the driving ecosystem**



# Four Phases of Transformation

**No one has a crystal ball to predict the future pace of change. As we synthesized our initial analyses, we envision there to be four potential incremental changes to the transformation over the next 25 years, with the foundation laid for a “new normal” within a decade**

## “Training Wheels”

Now - 2017

- Introduction to autonomous vehicles as manufacturers roll out some of the underlying technology
- High-tech companies express interest in fast-tracking production of fully autonomous vehicles

## “First Gear”

2017 - 2020

- In 2017, partial driver substitution technology is introduced. A broader set of consumers experience this technology, witnessing firsthand its safety and soundness
- This helps shift market perceptions. Potential mandate from NHTSA for V2V communications

## “Acceleration”

2020 - 2025

- Five years from now, fully autonomous all-speed vehicles become more common
- V2V capabilities are likely to be embedded in all new vehicles and the increase in scale drives down costs, making the technology accessible to a larger segment of consumers

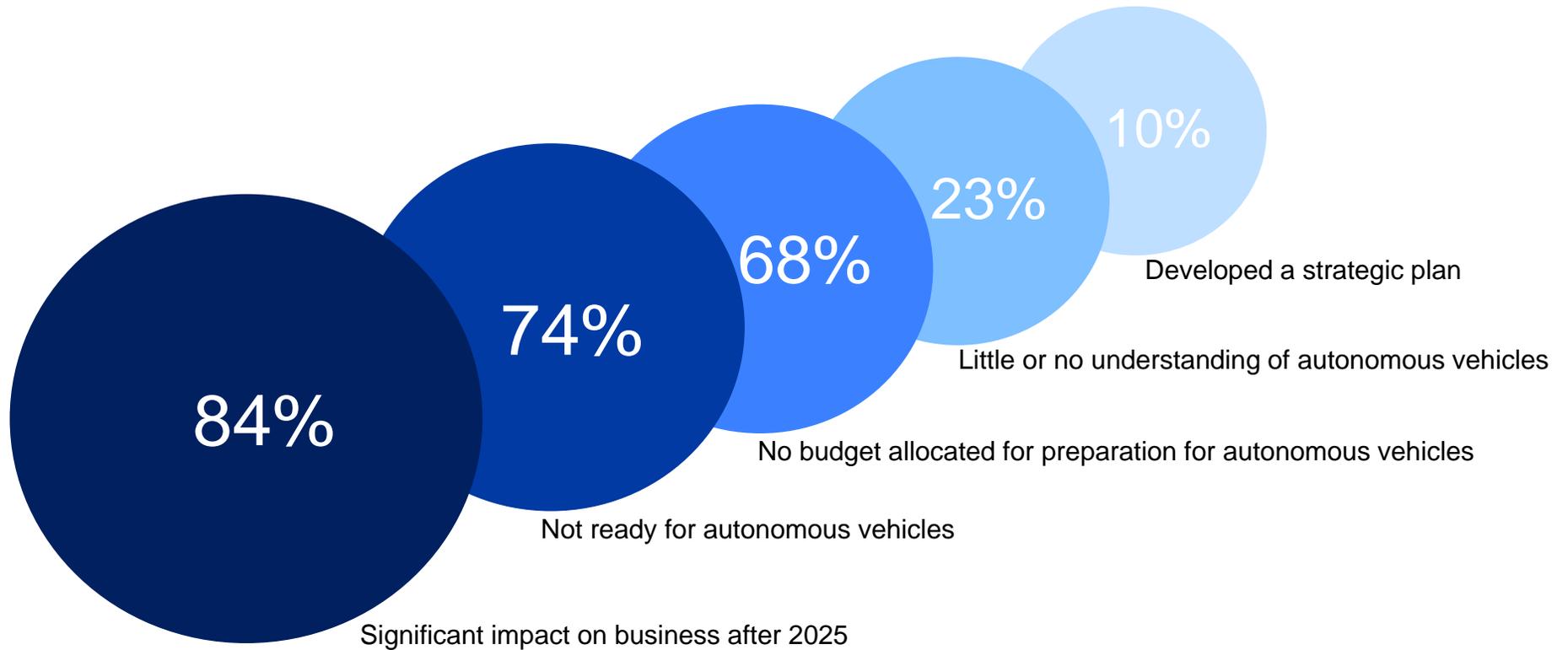
## “Full Speed”

2025 - 2040

- In 2025, a broad-based transformation begins. All new vehicles have autonomous capabilities and existing vehicles are potentially retrofitted
- Over the next 15 years, integrated driving emerges, a web of information is flowing between vehicles and infrastructure tightens. A “new normal” is realized by 2040

# Insurance Industry View on Timeline

Currently, there is significant skepticism among insurance leaders about the potential for autonomous vehicles to transform the industry - few insurers have taken action, most likely because many believe the change will happen far into the future, if at all

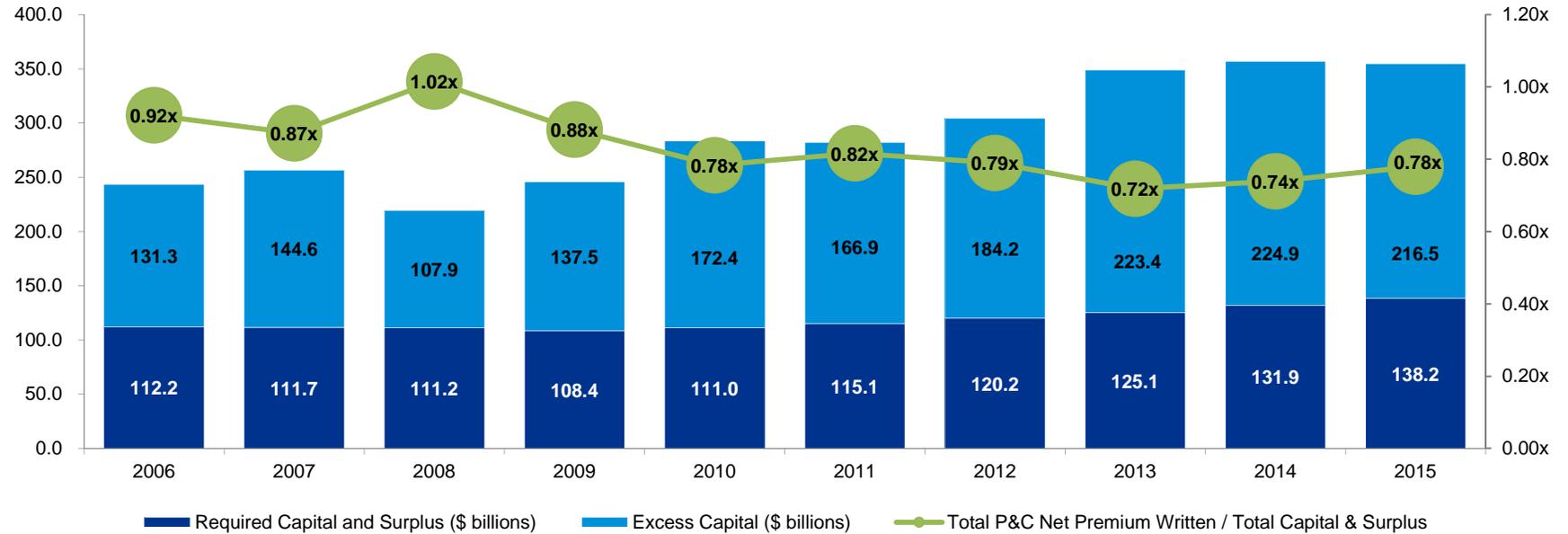


Source: KPMG LLP's 2015 Automobile Insurance in the Era of Autonomous Vehicles Survey Results

# Insurer Excess Capital

The good news is that personal auto insurers have lots of capital, giving them significant financial flexibility. The bad news is that this large capital cushion may also give many a false sense of security

**Capital Position of Top 15 Personal Auto Insurers' Overall P&C Businesses<sup>(1)</sup>**



Note: (1) 2015 statutory P&C insurance data aggregated for the top 15 writers of private passenger auto direct premium written, based on SNL groups / unaffiliated companies. Required capital was calculated by dividing total P&C NPW by two given an assumed NPW / capital & surplus ratio of 2:1. Excess capital is then calculated by subtracting required capital and surplus from total capital & surplus of the top 15 personal auto insurers on an aggregate basis. Source: SNL Financial

# Insurer Impact

**Autonomous vehicle technology will result in a dramatically safer driver experience, thereby significantly impacting the insurance marketplace by reducing traffic fatalities and other losses**

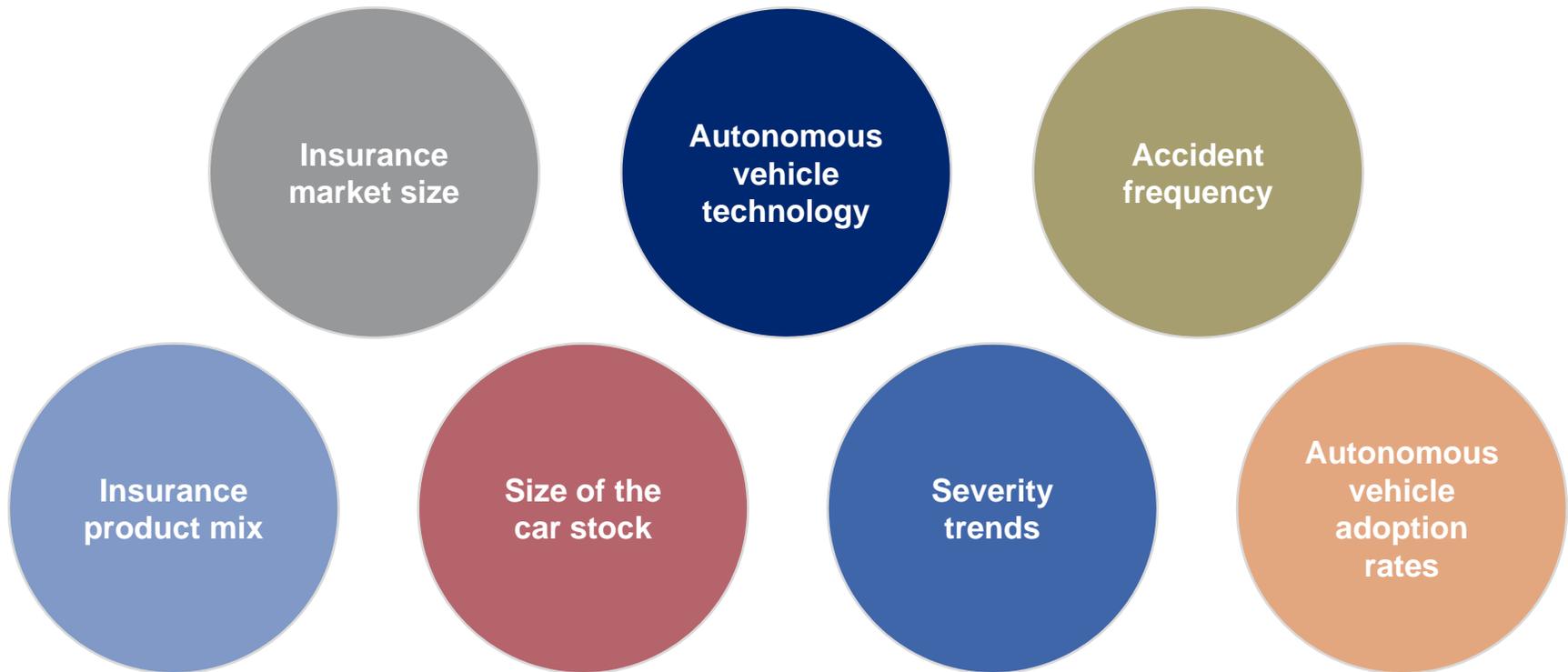


Source: KPMG LLP actuarial analysis and US Centers for Disease Control and Prevention (2010)

# Actuarial Analysis

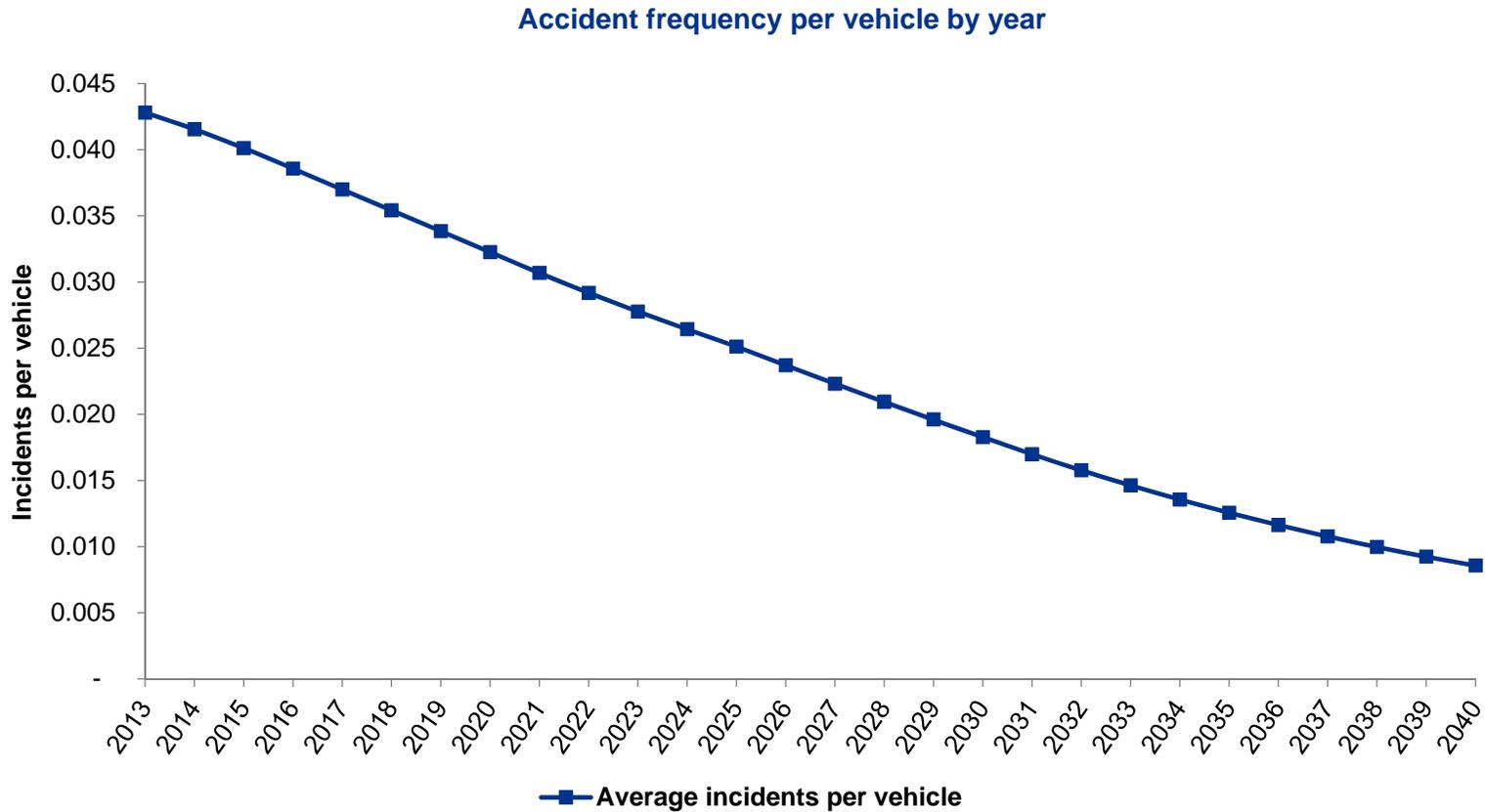
**Working closely with our automotive team and leveraging their extensive research, KPMG's Actuarial Team developed models to translate the technology and market changes in order to demonstrate the potential impact on auto insurer performance**

## Actuarial Analysis



# Accident Frequency

Given the new safety technology in autonomous vehicles, the KPMG Actuarial Team predicts a potential 80% reduction in accident frequency by 2040, which is the largest driver of loss reduction



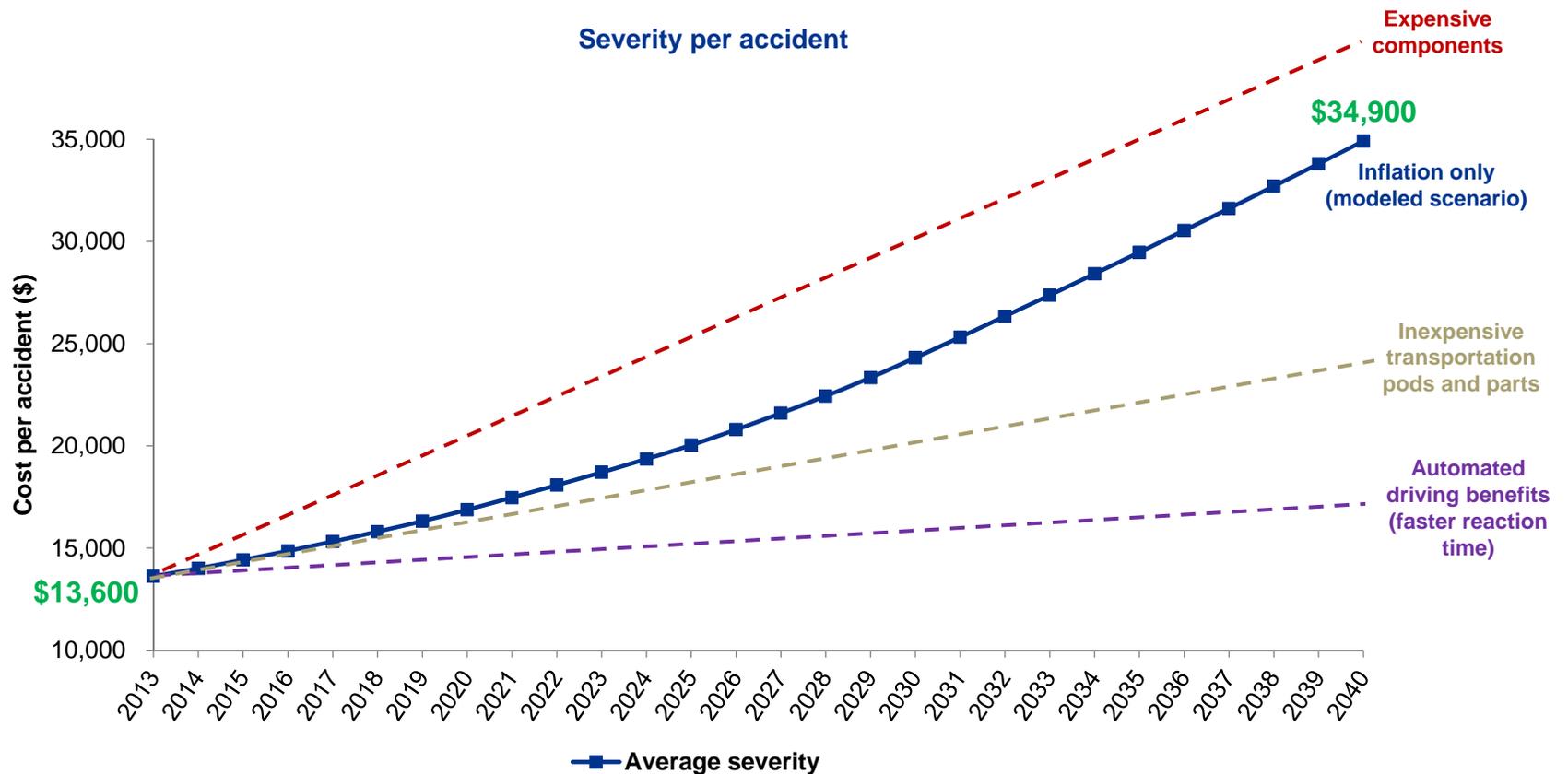
Source: KPMG LLP actuarial analysis



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# Loss Severity

The KPMG Actuarial Team modeled severity broadly in line with inflationary trends. There are, however, a variety of different potential scenarios that could have a significant impact on severity over time

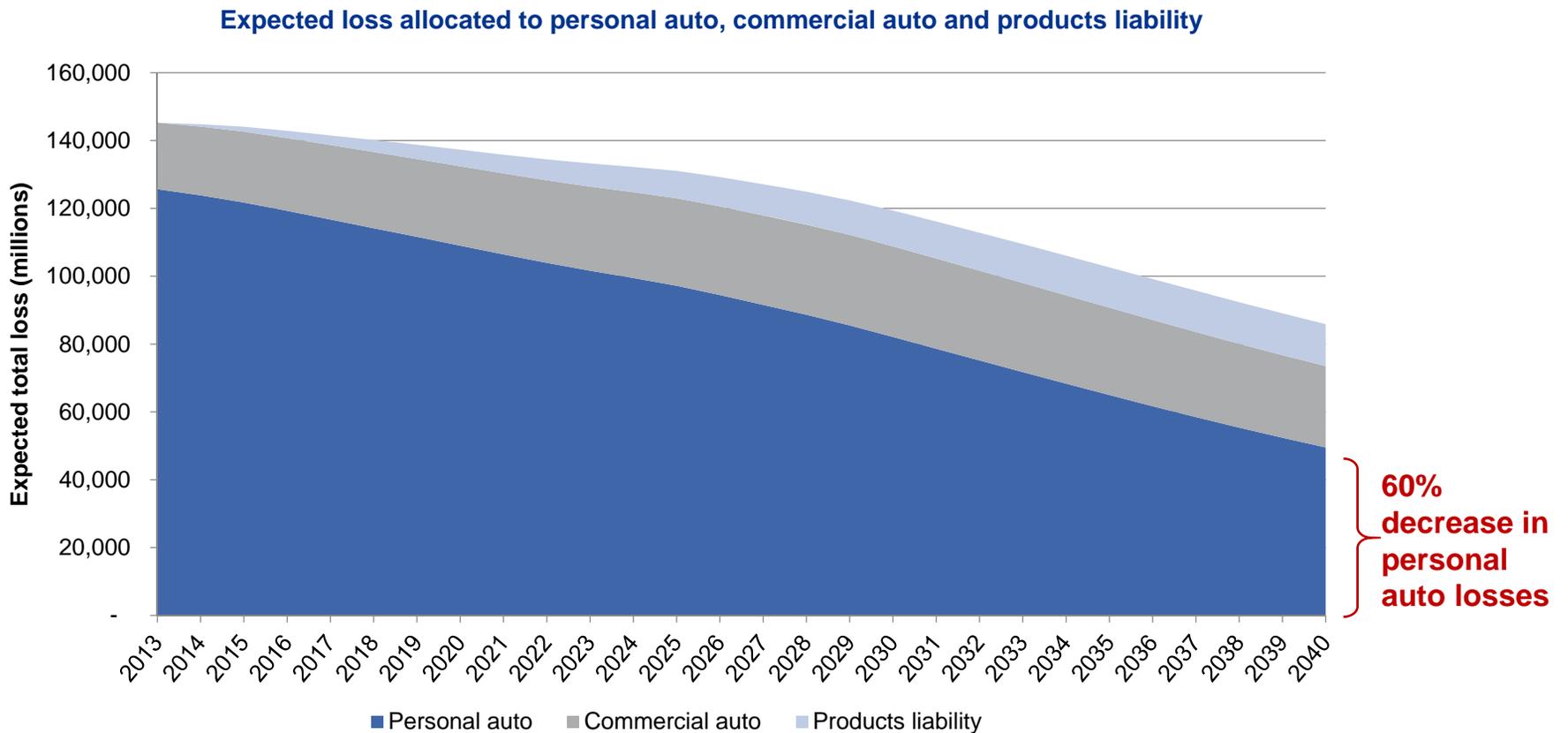


Source: KPMG LLP actuarial analysis



# Industry Loss Costs

**Safer vehicles could result in total auto insurance industry losses decreasing by 40% by 2040 with commercial and product liability accounting for a larger portion of the loss pie**



Source: KPMG LLP actuarial analysis



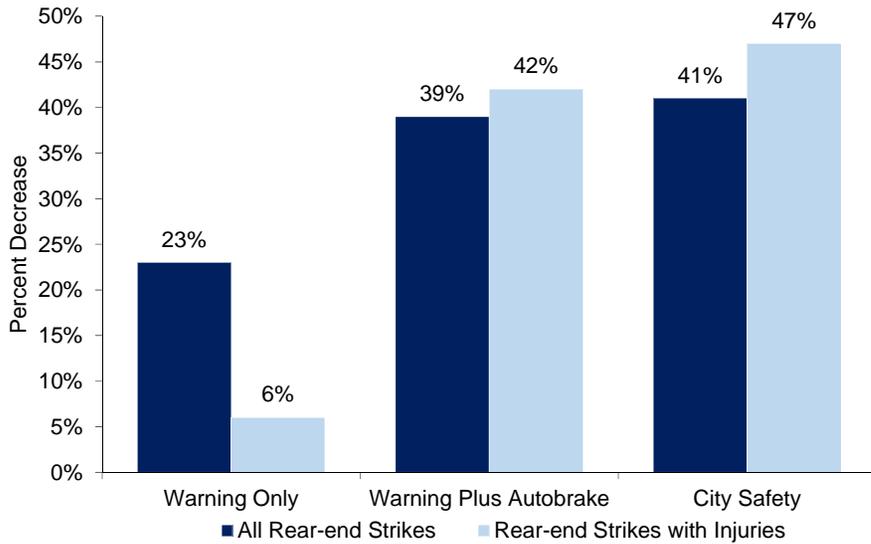
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# Automated Vehicle Technology is Making Driving Safer... Today

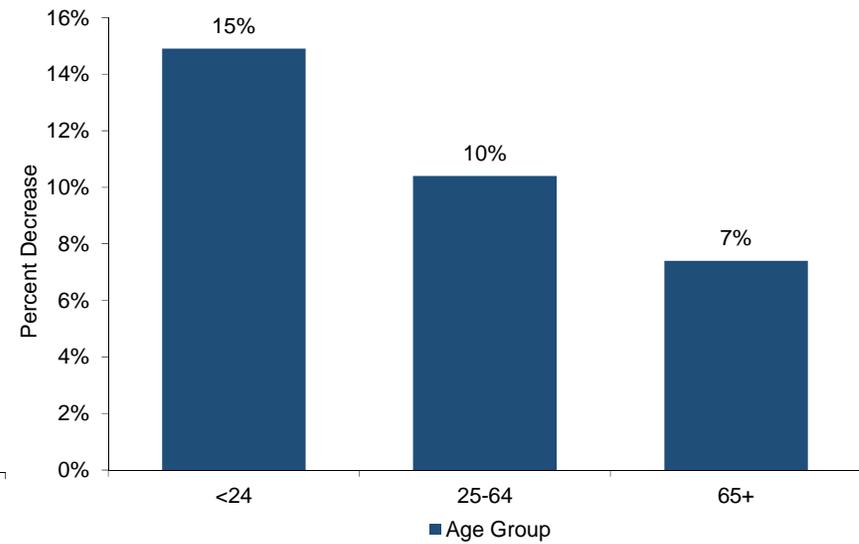
Crash avoidance features which underpin autonomous vehicle safety technology are already improving the safety profile of vehicles...

## Impact on Driving Safety of Vehicles With Crash Prevention Technology vs. Vehicles Without It

### Vehicles With Front Crash Prevention Technology<sup>(1,2)</sup>



### Prop. Damage Liability Claim Frequency by Driver Age<sup>(3)</sup>

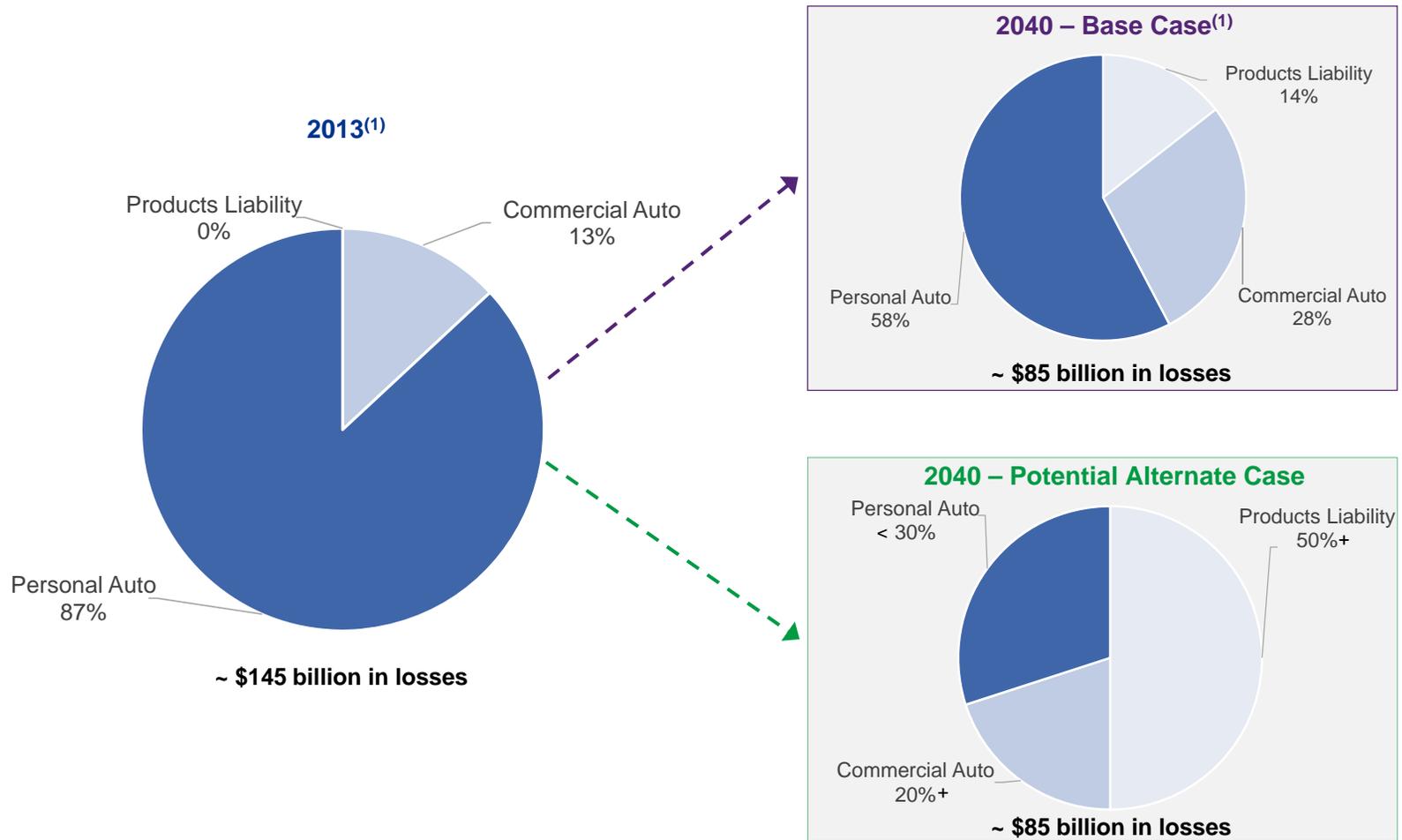


...furthermore, according to recent findings<sup>(1)</sup>, more than 700,000 police-reported rear-end crashes in 2013 could have been avoided if the vehicles involved were equipped with autobrake technology

Note: (1) Study analyzes police-reported rear-end crashes in 27 states during 2010-2014 involving Acura, Honda, Mercedes-Benz, Subaru and Volvo vehicles with forward collision warning ("warning") and autonomous emergency braking ("autobrake") vs. the same models without the optional technology; (2) 'City Safety' represents Volvo's low-speed autobrake system. The test was conducted by comparing two Volvo models with City Safety vs. other vehicles without front crash prevention technology; and (3) Study examines Honda's camera-based and radar-based forward collision and lane departure warning systems for vehicles equipped with these features vs. vehicles without them, bucketed by driver age group. Source: IIHS's research papers 'Effectiveness of Forward Collision Warning Systems with and without Autonomous Emergency Braking in Reducing Police-Reported Crash Rates' and 'Effectiveness of Volvo's City Safety Low-Speed Autonomous Emergency Braking System in Reducing Police-Reported Crash Rates' and IIHS's 'Status Report, Vol. 51, No. 1, January 2016'

# Potential Business Mix Composition

**While personal and commercial auto insurance represents the whole loss pie in 2013, products liability insurance will play a greater role in the future as the vehicles themselves make more driving decisions**



Note: (1) Based on KPMG LLP actuarial analysis

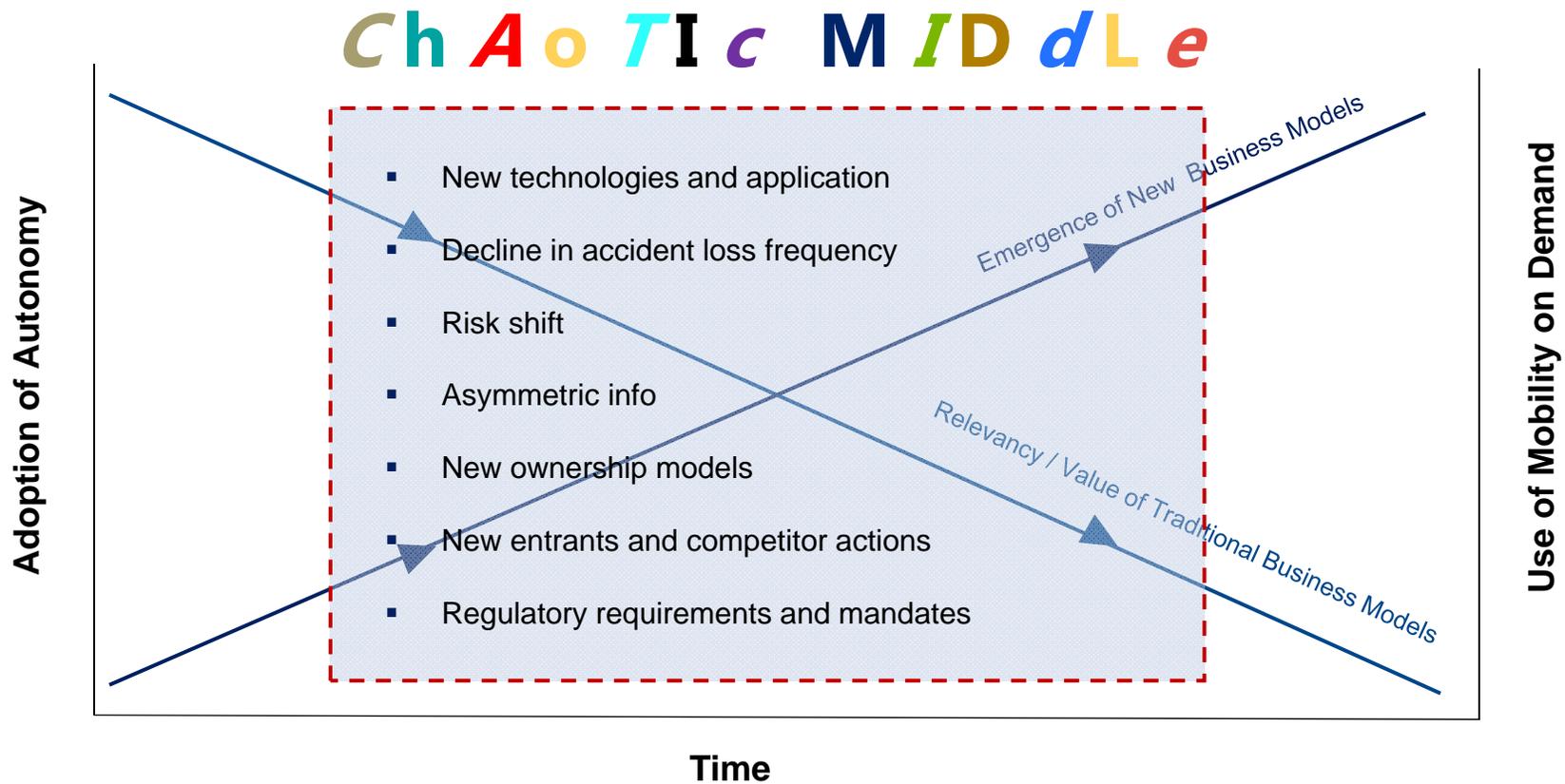
# The Consumer, the Autonomous Vehicle and Insurance

**From safety to saving money on insurance dollars spent, autonomous vehicles have the potential to positively impact consumers in a variety of different ways, although associated risks of this new technology also must be considered**

	Considerations	Potential Benefits
General	<ul style="list-style-type: none"> <li>▪ Cost of vehicle</li> <li>▪ Cyber threats</li> <li>▪ Privacy issues</li> <li>▪ Ownership of data</li> <li>▪ Access to mobility (urban areas most likely to benefit)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Safer vehicles = less auto related deaths and injuries</li> <li>▪ Autonomous mobility-on-demand and cost effective, tailored means of transportation</li> <li>▪ Greater access to mobility for urban youth, the disabled, the elderly and other segments of the population</li> </ul>
Insurance Related	<ul style="list-style-type: none"> <li>▪ Lower premiums most likely to benefit those utilizing autonomous vehicles more</li> <li>▪ Pricing transparency if included in sticker price</li> <li>▪ Insurance industry disruptions – job impact</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lower losses lead to lower premiums</li> <li>▪ The “new” two car family – now one car family supplemented by mobility-on-demand – lower overall insurance (and vehicle) spend</li> </ul>

# The 'Chaotic Middle' Begins

The transformation to a future marketplace defined by full autonomy and pervasive mobility on demand will be highly disruptive. We anticipate a 'chaotic middle' over the next 10-15 years, during which business models and the competitive landscape are transformed. Future success will require the ability to anticipate and adjust to rapid change

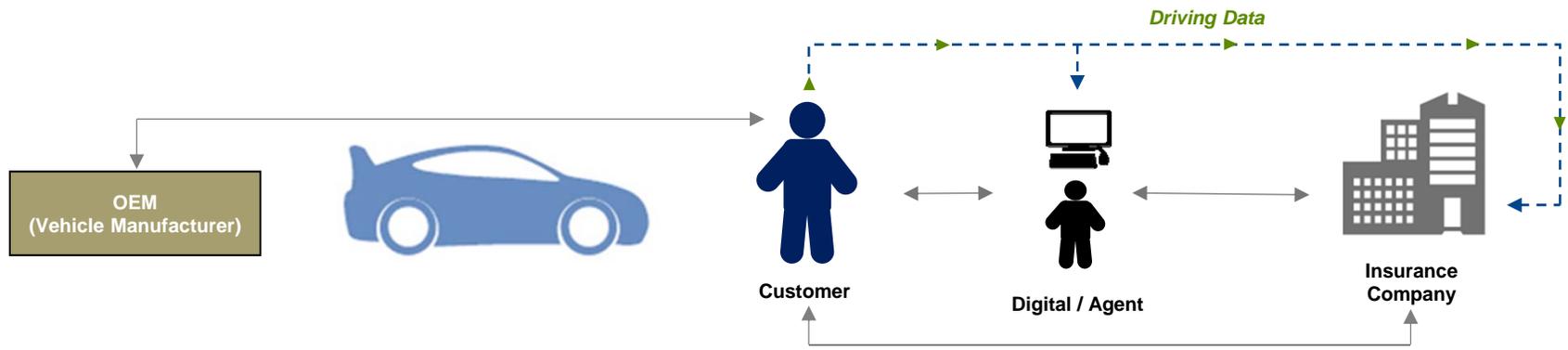


# The OEM Advantage - Data and the Customer Relationship

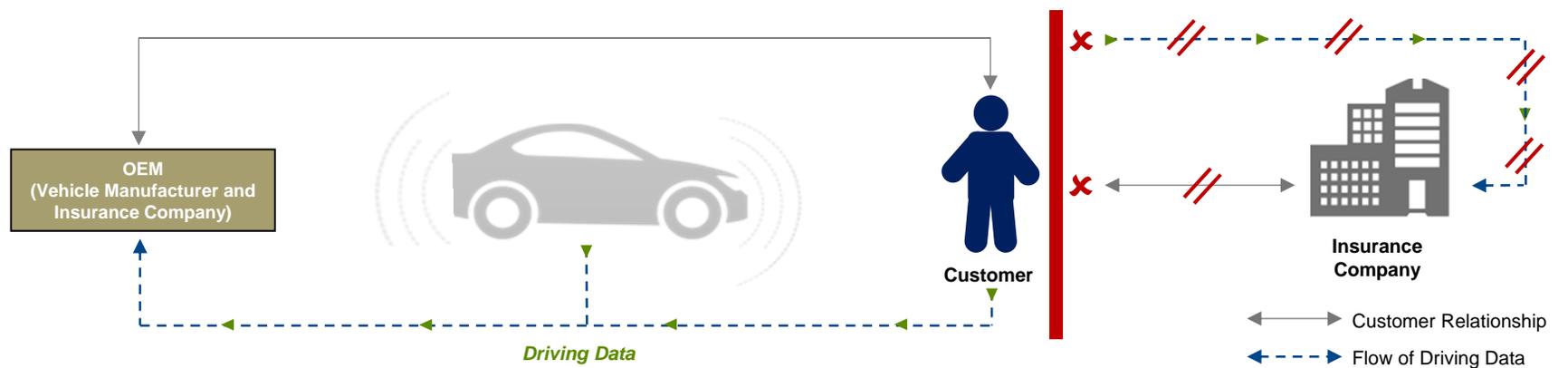
Ultimately, the original equipment manufacturers (“OEMs”) have the ability to not only control the data, but also the customer relationship, thereby dramatically altering the traditional auto insurance model

## Illustrative Process of Buying Automotive Insurance

### Today



### The Future



# Potential Business Models

The (re)entrance of OEMs into insurance could take a variety of forms

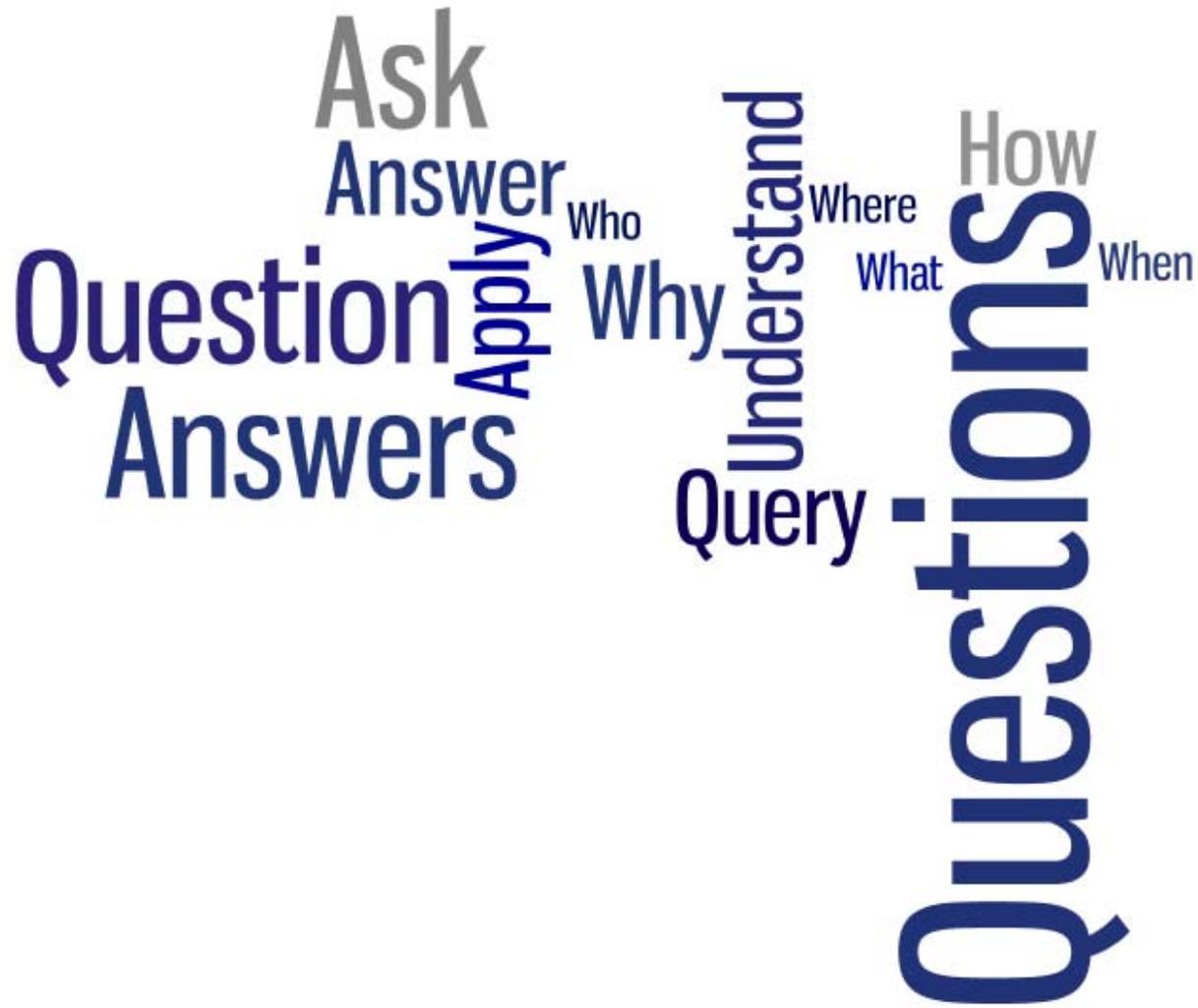
Illustrative Future State Business Models					
	Entity	Scenario A	Scenario B	Scenario C	Scenario D
OEMs		<ul style="list-style-type: none"> <li>Provide driving and vehicle data to insurers</li> </ul>	<ul style="list-style-type: none"> <li>Become distributor of insurance for a selected set of carriers</li> </ul>	<ul style="list-style-type: none"> <li>Act as an insurance company with many functions outsourced</li> </ul>	<ul style="list-style-type: none"> <li>Become a fully integrated insurance company</li> </ul>
	<b>Strategic Angle</b>	<ul style="list-style-type: none"> <li>Telemetry data</li> </ul>	<ul style="list-style-type: none"> <li>Brand, customer connectivity</li> </ul>	<ul style="list-style-type: none"> <li>Product advantage</li> </ul>	<ul style="list-style-type: none"> <li>Product advantage</li> </ul>
	<b>Revenue Model</b>	<ul style="list-style-type: none"> <li>Fees</li> </ul>	<ul style="list-style-type: none"> <li>Commissions</li> </ul>	<ul style="list-style-type: none"> <li>Underwriting profit and investment income (annuity)</li> <li>Vehicle and parts sales</li> </ul>	<ul style="list-style-type: none"> <li>Underwriting profit and investment income (annuity)</li> <li>Vehicle and parts sales</li> </ul>
Insurer		<ul style="list-style-type: none"> <li>License data from OEMs to underwrite policies</li> </ul>	<ul style="list-style-type: none"> <li>Form alliances with OEMs</li> </ul>	<ul style="list-style-type: none"> <li>Serve as third-party administrators - for example, current insurers could process the claims of the OEMs</li> </ul>	<ul style="list-style-type: none"> <li>Transform business model to compete with new entrants</li> <li>Expand into new products and services</li> </ul>

WHAT NOW?

# Preparing for the Future - Auto Insurance Considerations

- 1 > Acknowledge that the Autonomous Vehicle Transformation is Real
- 2 > Understand Exposure
- 3 > Evaluate Business Strategy / Consider Diversification Options
- 4 > Identify and Monitor Leading Indicators
- 5 > Prepare Operations
- 6 > Understand Cost Structures
- 7 > Align with Other Insurers and Form Partnerships

# Questions





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