Auto Insurance in the Era of Autonomous Vehicles

24th Annual Insurance Issues Conference
Automobile Insurance in the Era of Autonomous Vehicles

KPMG U.S. recently published two documents on *Automobile insurance in the era of autonomous vehicles*

Video: Driverless vehicles
Agenda

Alignment for Mass Change

What Now?

8 elements for transformation

Timing

4 phases to a new normal

Future State

Potential impact on insurance

Implications for Insurers

A new insurance landscape

Call to action

What Now?

Future State

Implications for Insurers

Call to action
Alignment for Mass Change
Eight Key Elements for Transformation

Interactions between elements are dynamic

Advances in one area may act as catalyst for progress in others
Foundational technologies already exist and will continue to strengthen and integrate

Pervasive Sensors

Alignment for Mass Change
Integrity of Technology
Traditional market participants and new entrants are developing autonomous vehicles or technology behind them.
Alignment for Mass Change
Infrastructure Availability

Existing Infrastructure
- Technology initially embedded in vehicles
- Vehicles can use existing roads

Smart Infrastructure
- Roads, signs, signals communicate with cars
- Result in integrated driving environment

Source: (1) “Platooning With IVC-Enabled Autonomous Vehicles: Strategies to Mitigate Communication Delay, Improving Safety and Traffic Flow.” IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS. VOL. 13, NO. 1, MARCH 2012. Pedro Fernandes, Member, IEEE, and Urbano Nunes, Senior Member, IEEE

Autonomous vehicles could increase highway capacity by up to 500% (1)
As of earlier this year, 21 states\(^1\) have passed or introduced bills related to self-driving vehicles. California, Michigan and Nevada are likely to set standards adopted by others.
National Highway Traffic Safety Administration released a report that states:

“…new possibilities for improving highway safety, increasing environmental benefits, expanding mobility, and creating new economic opportunities…on the threshold of a period of dramatic change in…the vehicles we drive”

Meanwhile in Ontario…

Government pledged roughly $3 million in funding to Ontario Centres of Excellence Connected Vehicle/Automated Vehicle Program
Legal implications of autonomous vehicles are developing and evolving

Initial Lawsuits
Lawsuits and rulings will provide tort clarity

Adapting to Change
Insurers have opportunity to define policy

The Key Players
Manufacturers and insurers need legal strategy

Alignment for Mass Change
Legal Responsibility
Each driver has unique value proposition, and autonomous vehicles offer broad appeal. Focusing on improving consumer’s quality of life will likely result in traction.
Households with 2+ Vehicles

- New York City
- Washington D.C.
- Boston
- Philadelphia
- Chicago
- Dallas
- Houston
- Los Angeles
- San Antonio
- U.S.A. Average

Car Sharing
• Standard option for urban drivers

Ride Hailing
• Further convenience and savings

Autonomous Vehicles
• Declined vehicle ownership

Alignment for Mass Change
Mobility Services

© 2015 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative (“KPMG International”), a Swiss entity. All rights reserved. KPMG CONFIDENTIAL.
Alignment for Mass Change

Data Management

• A tsunami of data will roll in

Data Security

• Autonomous driving will face serious security threats

Information Privacy

• Individual privacy may become harder to achieve

Data Analytics

• The ability to gather, aggregate and harness the data will be critical
Agenda

- Alignment for Mass Change
- Timing
- What Now?
- Future State
- Implications for Insurers
- 8 elements for transformation
- 4 phases to a new normal
- Potential impact on insurance
- A new insurance landscape
- Call to action

© 2015 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative (“KPMG International”), a Swiss entity. All rights reserved. KPMG CONFIDENTIAL.
**Timing**

**Four Phases of Transformation**

<table>
<thead>
<tr>
<th>Training Wheels</th>
<th>Now - 2017</th>
</tr>
</thead>
</table>
| • Introduction to autonomous vehicles
| • High-tech companies express interest |

<table>
<thead>
<tr>
<th>First Gear</th>
<th>2017 - 2020</th>
</tr>
</thead>
</table>
| • Partial driver substitution technology
| • More consumers experience technology
| • Potential mandate for V2V communications

<table>
<thead>
<tr>
<th>Acceleration</th>
<th>2020 - 2025</th>
</tr>
</thead>
</table>
| • Fully autonomous all-speed vehicles
| • V2V capabilities likely embedded in new vehicles
| • Increase in scale drives down costs

<table>
<thead>
<tr>
<th>Full Speed</th>
<th>2025 - 2040</th>
</tr>
</thead>
</table>
| • Broad-based transformation begins
| • New vehicles have autonomous capabilities
| • A “new normal” realized by 2040

No crystal ball to predict future.

We envision four potential incremental changes to transformation over next 25 years, with foundation laid for a “new normal” within a decade.
Timing
Insurance Industry View on Timeline

10% Developed a strategic plan
23% Little or no understanding of autonomous vehicles
68% No budget allocated for preparation for autonomous vehicles
74% Not ready for autonomous vehicles
84% Significant impact on business after 2025

Source: KPMG LLP (U.S.)'s 2015 Automobile Insurance in the Era of Autonomous Vehicles Survey Results.
Agenda

8 elements for transformation

4 phases to a new normal

Potential impact on insurance

A new insurance landscape

Call to action

What Now?

Future State

Implications for Insurers

Alignment for Mass Change

Timing

© 2015 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative (“KPMG International”), a Swiss entity. All rights reserved. KPMG CONFIDENTIAL.
Implications for Insurers
Potential Impact to Different Coverages

Auto insurance
Claim frequency will fall, ultimately leading to lower premiums

Life and annuities
Mortality tables will be impacted – road traffic accidents leading cause of death for ages 15 to 34

Health insurance
Need to modify processes for auto accident related health claims

Workers’ compensation
6% of claims costs arise from auto accidents

Implications for Insurers

Actuarial Analysis

- Insurance Market Size
- Insurance Product Mix
- Size of Car
- Stock
- Autonomous Vehicle Technology
- Autonomous Vehicle Adoption Rates
- Severity Trends
- Accident Frequency

Actuarial Analysis
Implications for Insurers

Accident Frequency and Severity

**Accident Frequency per Vehicle**

- **Average incidents per vehicle**

**Severity per Accident**

- **Average severity**

Source: KPMG LLP (U.S.) actuarial analysis estimates based on data from the U.S.
Implications for Insurers

Expected Loss

Combining frequency and severity assumptions indicates a drop of roughly 50% in expected insured loss per vehicle.

Note: (1) Based on total auto insurance market. Source: KPMG LLP (U.S.) actuarial analysis estimates based on data from the U.S.
Safer vehicles could result in auto insurance industry losses decreasing by 40% by 2040, with commercial and product liability accounting for larger portion of loss pie

Implications for Insurers

Industry Loss Costs

Source: KPMG LLP (U.S.) actuarial analysis estimates based on data from the U.S.
Agenda

8 elements for transformation
4 phases to a new normal
Potential impact on insurance
A new insurance landscape
Call to action
Future State
A New Insurance Landscape

Will result in emergence of niche writers

42%

Will result in new providers of insurance

39%

Will have no material impact on insurance industry

32%

Will increase industry consolidation

29%

Will shift mix of personal and commercial auto business

26%

Other

10%

Multiple responses allowed

Over the next 10 years, many survey respondents expect emergence of niche writers and new providers of insurance

Roughly one-third of executives believe this new technology will have no material impact on the industry

Source: KPMG LLP (U.S.)'s 2015 Automobile Insurance in the Era of Autonomous Vehicles Survey Results
Agenda

8 elements for transformation
4 phases to a new normal
Potential impact on insurance
A new insurance landscape
Call to action
What Now?

**Call to Action**

- Understand your company's exposure to the change
- Evaluate your business strategy
- Identify and monitor leading indicators
- Align with other insurers and form partnerships
- Educate and train your people
- Understand cost structures
- Prepare your operations

© 2015 KPMG LLP, a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative (“KPMG International”), a Swiss entity. All rights reserved. KPMG CONFIDENTIAL.
Related Reports from KPMG

Self-driving cars: The next revolution

Me, my car, my life

Self-driving cars: Are we ready?
Joe Schneider
Managing Director
(312) 665-1006
jeschneider@kpmg.com

Houston Cheng
Consulting Actuary
(416) 777-8364
hhcheng@kpmg.ca
