



cutting through complexity

Automobile insurance in the era of autonomous vehicles

Survey results | June 2015

kpmg.com/insurance

A message from the insurance task force

KPMG LLP (KPMG) remains at the forefront of the autonomous vehicle conversation. Our automotive team has issued a series of leading research reports focused on the emerging technology, the potential for consumer adoption, and the promise of an ultra-connected age. Our analysis has made increasingly clear that the automobile landscape is poised for radical change. Convergence of consumer and automotive technologies along with the rise of mobility services will transform the way we drive and commute—sooner than most expect. Now is the time to expand the dialogue to insurance.

The conversion to autonomous vehicles will change the amount, type, and purchase of automobile insurance. Building on the insights from KPMG's automotive research team, our autonomous vehicle insurance task force asked: What do insurance companies think, and how prepared are they for the potential transformation precipitated by autonomous vehicles?

The following report summarizes the feedback from our survey of insurance senior executives, whose companies, in aggregate, accounted for almost \$85 billion in private and commercial auto premium. These will be the insurance leaders at the front line of change.

The survey found skepticism about the potential transformation. Few carriers have taken action—not due to doubts about the possible ramifications, but rather because most believe the change will happen far into the future, if at all. When the transformation starts to take hold, most survey respondents agreed that there will need to be major changes across all the core functions, from underwriting to claims. The executives surveyed also anticipated a shift in the insurance landscape, with traditional manufacturers and high-tech companies playing significantly bigger roles in the future. The core of this document provides an in-depth look at our full survey results.

KPMG's insurance task force will issue this year a seminal white paper—*Automobile insurance in the era of autonomous vehicles*—that will synthesize insights gained through a combination of interviews with industry leaders, market research, and development of proprietary actuarial models.

The potential effects on the industry could be stark:

- **The core ingredients are aligning to enable mass change starting in a decade.** These components include technology enablement, consumer adoption, and regulatory permission.
- **A continual decline in the frequency of accidents will drive a drop in industry loss costs and subsequently premium,** with a precipitous fall starting as the car stock begins to convert. The mix of insurance will also likely change, as commercial and product liability lines expand. Within 25 years, our models suggest a scenario where the personal automobile insurance sector could shrink to less than 40 percent of its current size.
- **The elimination of excess underwriting capacity could bring severe market issues,** with changing business models and new competitors only adding to the turbulence and speed of change.

No one has a crystal ball that can predict the future, but we are convinced that a period of unprecedented change has begun. As carriers start to navigate the shifts ahead, we believe that insurance executives will need to first contemplate and then ultimately address a series of key considerations. To kick-start those conversations, at the end of the survey we provide a series of questions critical to future success, and also suggest some actions to begin to prepare.

We hope that you will find this summary full of insight and provocative thoughts. Now is the time for robust discussion about the potential implications of autonomous vehicles on your organization. We look forward to having the conversation with you soon.

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Our belief is
that the disruption
to insurance carriers
will be profound – with a
select set of winners and
a broader swath of
potential losers.



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KPMG's point of view

The conversion to autonomous vehicles may bring about the most significant change to the automobile insurance industry since its inception. As the way we drive and commute transforms, the amount, types, and purchase of automobile insurance will be impacted. The disruption to insurers may be profound, and the change could happen faster than most expect.

We thought it important to provide KPMG's point of view up front, as we see the results of this survey of insurance executives about the pending change through this lens. Later this year, our insurance task force will issue a seminal white paper called *Automobile insurance in the era of autonomous vehicles*. That paper synthesizes several months of market research and analysis, incorporates insights gained from industry leaders, and shows the results of our proprietary actuarial models.

Over the next several pages, we will summarize some of the key points from the white paper so that you can better understand our research and conclusions. In particular, we will cover the alignment of the eight core ingredients for change, our view of the four likely phases of the transformation, and the potential implications for the automobile insurance industry. This is only a taste of the report. We would encourage you to review the actual white paper once it is released to get a full serving of the analysis and discussion.

Point of view 1:

Alignment for mass change:

Eight key elements for transformation

The advent of the autonomous vehicle era is upon us. Shifts of this scale won't happen through singular change, but will instead require foundational movements across the entire driving environment. We have identified eight core elements that will likely be needed to drive the transformation. Each element has been individually advancing—you are seeing evidence daily of the progress—and brings its own industry implications. The current aligning of these eight elements, however, can enable a new normal across the automobile sector.



Integrity of technology – Foundational technologies required for driver autonomy already exist, and will only continue to strengthen and integrate. Convergence of technologies will ultimately be needed for mass adoption.



Infrastructure availability – With the initial technology embedded into the vehicles themselves, the new cars can use existing roads—no up-front investment in infrastructure is needed to get started. Over time, road infrastructure is expected to get increasingly “smart” and will communicate with vehicles to realize a more holistic array of information.



Capability accessibility – Traditional manufacturers (OEMs) have committed pipelines of new vehicles, with each release making accessible more sophisticated autonomous capabilities. Watch for high-tech companies—like Google, Tesla, and Apple—to leapfrog to fully self-driving.



Regulatory permission – Sixteen states (District of Columbia included in this number) have passed or introduced bills related to self-driving vehicles, with California, Michigan, and Nevada likely to set the standards to be adopted by the others. In 2013, the National Highway Traffic Safety Administration (NHTSA) released a preliminary findings report that—in our opinion—stopped just short of a full endorsement. The Administration is also gathering formal feedback on a potential mandate to require vehicle-to-vehicle (V2V) communications in new cars.



Legal responsibility – As the vehicle itself makes more driving decisions, determining who is responsible when an accident occurs will need to be clarified. These legal issues will resolve in parallel with advances in autonomous technology—likely without hindering market advances. Insurance companies have an opportunity to develop policy covers to provide protection to both individuals and corporations in this new environment.



Mobility services – Car sharing is now a standard option for urban drivers. This new model of vehicle usage has thrived due to convenience and cost advantages for the user. Those two core benefits have been further magnified through the emergence of mobility on demand—with Uber as a good example. Downward pressure on the overall size of car stock—due to efficiency of usage—is another potential ramification.

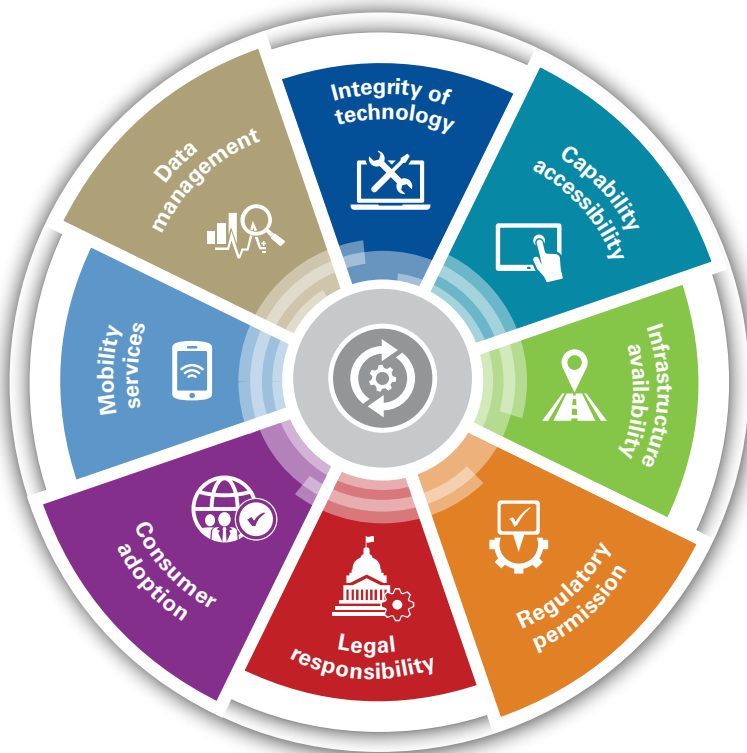
Eight key elements for transformation



Data management – Autonomous driving requires and generates significant data, which will likely grow exponentially as the web of information becomes denser between vehicles, infrastructure, and other sources. Driving records along with dashboard activity (captured in a “black box” equivalent) only add to the volume and mix. In this environment, data management—integrity, storage, analytics, and security—becomes critical.



Consumer adoption – Our research showed that once consumers understood the potential benefits of autonomous vehicles, they were hooked. Each driver has a unique value proposition, and autonomous vehicles offer broad appeal: the ability to multi-task, faster commutes, safer travel, and more independence to name a few. Consumer education and awareness will be important—and a key area of manufacturer focus—to promote adoption.



KPMG's point of view

Point of view 2:

A new normal within a decade: Four potential phases of incremental change

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



Phase 1 – Training wheels

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.



Phase 3 – Acceleration

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.



Phase 2 – First gear

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. Likely mandate from NHTSA for V2V communications.



Phase 4 – Full speed

In 2025, a broad-based transformation begins. All new cars 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.

The interaction between the eight core elements will likely be an important dynamic, as advances in one area will likely act as a catalyst for rapid progress in the others.

Ultimately, the alignment across all areas will be needed to realize wide-scale change.

Four potential phases of incremental change

	Today	PHASE 1 2017	PHASE 2 2020	PHASE 3 2025	PHASE 4 2040
		"Training wheels"	"First gear"	"Acceleration"	"Full speed"
Technology		Preliminary passive	Partial driver substitution	Fully autonomous	Converged network – sensor + V2V communications
Capability accessibility		Selective safety options	Full product suite/ dropping price	Affordable technology	Full car stock conversion
Consumer adoption		Buzz-curiosity/ education	Broad consumer knowledge/initial adoption	Embedded mainstream adoption	Broad market acceptance
Regulatory permission		Leader state adoption	Full state adoption	Rule harmonization V2V mandate	New vehicle/ potential retrofit
Legal responsibility		Conceptual design	Core strategies/ Initial lawsuits	Diversity of opinion/ Cases and appeals	Tort law clarified
Infrastructure		Existing roads	Experimental vehicle-to-infrastructure (V2I)	Broader V2I	Integrated driving
Mobility		Car sharing and ride-hailing	Rise of mobility on demand	Autonomous vehicle options	Autonomous fleets on demand
Data management		Vehicle "black box" data	Data security protocols	Driving system data Security responses	Privacy rules focus

KPMG's point of view

Point of view 3: Survival of the fittest: A new insurance landscape

While there will be a wide variety of effects on insurance from the rise of driverless vehicles, KPMG believes that the increased safety features of these vehicles will have the most profound impact on auto insurers over the long term and will be the underlying force behind industry trends such as reduced auto insurance market size, consolidation in the personal lines space, and dramatic operational changes within carriers.

Safety first!

It all starts with safety.

With more than 90 percent of accidents each year caused by driver error, well-tested, road-ready safety technology—the beginning of which we have seen in traffic jam assist, lane departure warnings and other collision avoidance technology—will partially remove the erroneous human element of driving from the streets.¹ Furthermore, especially as “Level 4” fully autonomous vehicles become increasingly commercially viable over the medium term, human involvement in the driving experience will literally take more and more of a back seat.

KPMG believes that, over the long term, with the car stock being replaced by more and more autonomous vehicles, the risk profile of vehicles on the road will substantially decrease, leading to much lower total losses for carriers. And the implications of radically safer cars will—in our view—change the insurance landscape.

Accident frequency could drop by 80 percent

Working closely with our automotive team and leveraging their extensive research, the insurance task force developed actuarial models to translate the technology and market changes into shifts across the core factors that drive insurance company performance.

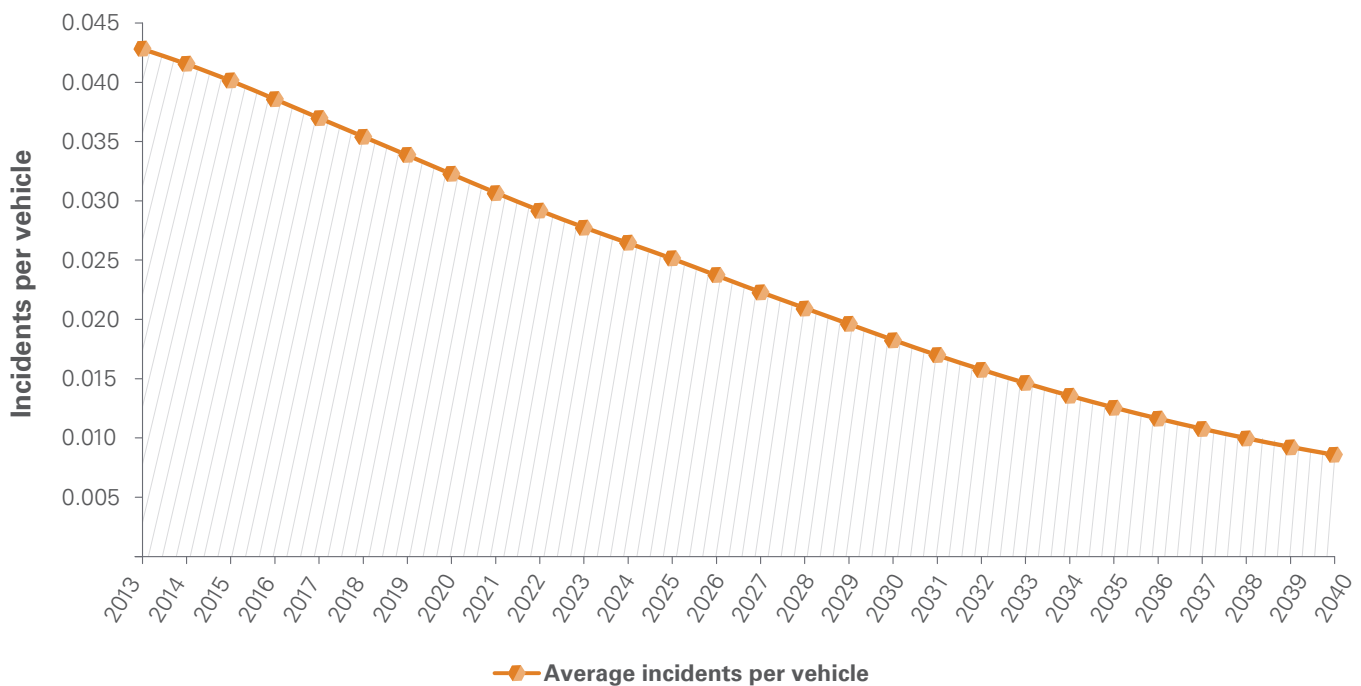
KPMG's baseline scenario is presented below with accident frequency projected to 2040, taking into consideration a variety of factors, including the increased proliferation of safety technology such as accident avoidance and parking assist commonly found in driverless vehicles until Level 4 fully autonomous vehicles are widely available in 2025. In the final 'full speed' phase of the conversion—from 2025 until 2040—the car stock will likely be replaced by or retrofitted with autonomous technology. Our team estimated an 80 percent potential reduction in accident frequency per vehicle by 2040, resulting in roughly 0.009 incidents per vehicle. This change would result in a new normal—sooner than most in the industry anticipate.

¹Source: 2008 NHTSA National Motor Vehicle Crash Causation Survey, Report to Congress

Insurance companies will start to experience the effects of the autonomous technology soon, if not already. According to David Zuby, executive vice president and chief research officer of the Insurance Institute for Highway Safety, a nonprofit supported by the insurance industry and focused on increased safety on the nation's roadways, "Our research is showing that automating some parts of the driving task are leading to reductions in claim frequency. In particular, vehicles equipped with front crash prevention technology have a 7–15% lower claim frequency under property damage liability coverage than comparable vehicles without it. Further automation, if successful, could lead to even further reduction of insurance claims." As portfolios of new products—with each release offering more depth and breadth of autonomous technology—come to market, the downward drop in frequency will likely only continue.

Of course, accidents will never completely go away. Our models recognize this fact. Weather, road conditions, wayward animals, and technology failures will cause problems. Perhaps most importantly, we also expect that drivers will have the option to flip off the technology at times and drive manually instead. Interestingly, the level of self-driving may well become a core dimension of driving risk. Still, as better and faster driving decisions are made by the vehicle rather than by a human, the frequency of accidents is expected to decline.

Accident frequency per vehicle by year (baseline scenario)

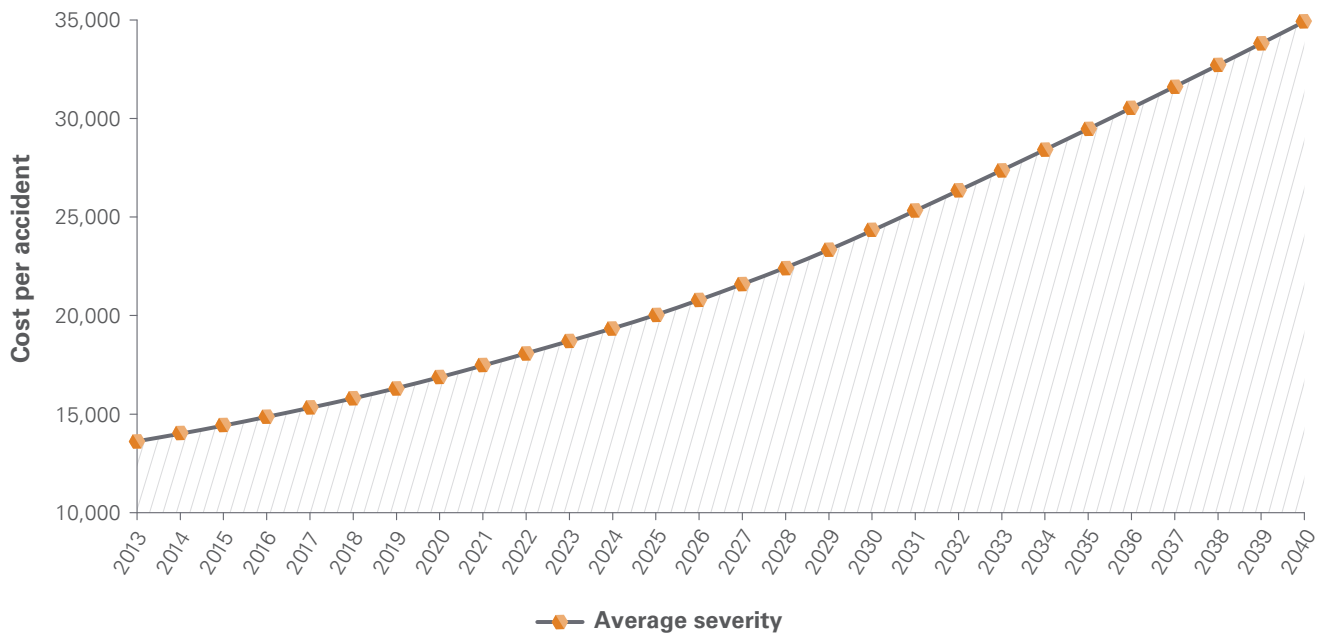


KPMG's point of view

More expensive components could increase severity—maybe

The potentially drastic reduction in incidents per vehicle will be somewhat offset by the increased severity incurred in each accident, given the greater likelihood of higher priced vehicles with more costly technology underpinning the autonomous capability. KPMG estimated the current accident expense could increase from almost \$14k to roughly \$35k by 2040. This is a conservative view. There is some debate about how expensive the future cars may actually be. An alternative view is that cars—or at least a large subset—become more like “transportation pods,” which are inexpensive, basic vehicles used to move people in urban settings. Such a scenario could flatten or reduce severity.

Severity per accident



While the increased exposure and severity assumptions both imply increased losses, KPMG's baseline scenario model suggests the decline in frequency could be even more pronounced with the average number of miles driven per accident increasing from roughly 280,000 miles per occurrence to an incident every 1.6 million miles by 2040.

Industry loss costs could drop by 40 percent

When combining the accident frequency and severity assumptions, there is the potential for a 40 percent plus drop in total loss in 2040 when compared to that of 2013. We again took a middle-ground approach. For example, government mandates around the technology—including a broader and faster web of V2V technology—could further accelerate the downward frequency trend.

Expected loss (baseline scenario)



The mix of insurance lines will likely change

The size of the automobile insurance pie will likely shrink, and the allocation of the slices across types of insurance could also change. Our analysis suggests that commercial lines could take a larger share, as the marketplace moves towards car sharing and mobility on demand. As the vehicle makes more decisions, the potential liability of the software developer and manufacturer will increase too. Both of these factors would further reduce the share of the personal automobile insurance sector.

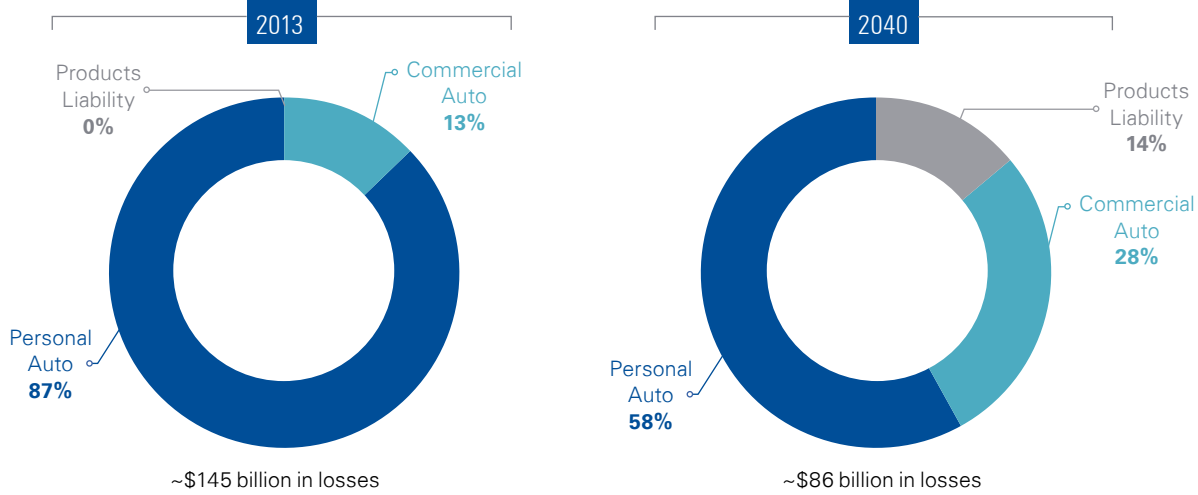
The trend towards car sharing and mobility on demand is clear, with this more efficient use of vehicles now a common part of urban living. As households decide to use fleets on demand—

imagine a Zipcar pulling into your driveway after you summon it on your smartphone—they could decide not to buy a second car, which could result in a smaller personal auto car stock. As a result, KPMG believes personal auto losses could decline, while commercial auto insurance, which covers these fleets, would account for a larger percentage of the overall losses.

Furthermore, according to our analyses, losses covered by products liability policies will most likely increase due to the fact that the sophisticated technology that underpins driverless vehicles will also need to be insured.

KPMG's point of view

Loss splits between products liability, personal auto, and commercial auto

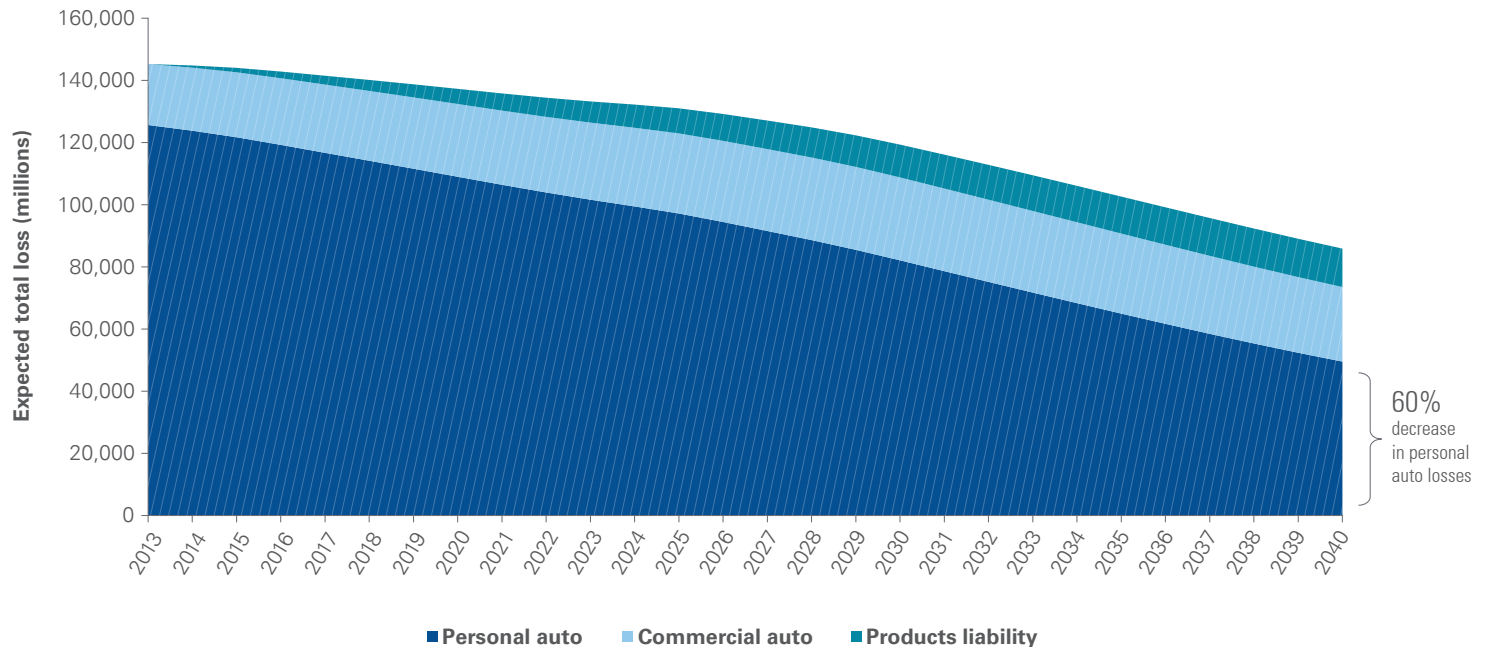


Source: KPMG LLP actuarial analysis

The personal lines sector could fall to 40 percent of current size

When we pull together all of the analyses, the indications are clear. The personal lines automobiles sector will likely bear the brunt of the transformation, as it will hold a smaller share of a smaller market. Currently, the personal auto sector accounts for almost \$125 billion in loss costs. By 2040, we believe this sector could cover less than \$50 billion in loss costs.

Expected loss allocated to products liability, personal auto, and commercial auto



Source: KPMG LLP actuarial analysis

Lower losses lead to lower premium

Premium follows loss costs. Whether personal or commercial, auto insurance is a mature and competitive industry and given these market potential dynamics, it would be naïve to think that premium will stay the same while losses drop, thereby dramatically increasing underwriting profit for carriers. To the contrary, KPMG believes that carriers could drop price in order to stay competitive. Plus, consumers will no doubt demand lower premiums to reflect fewer accidents.

As the size of the market shrinks, we anticipate the potential for frenzied competition as firms attempt to maintain premium volume to cover operational expenses or market share. Carriers could potentially lose sight of pricing business for profit. This irrational pricing behavior by either well-capitalized or troubled companies could result in a dangerous downward underwriting spiral for the broader industry. Things could get ugly.

Key survey findings

Both new technology entrants and traditional manufacturing companies are racing to develop self-driving capabilities and bring them to market. The era of the autonomous vehicle has started. Paralleling the advent of this technology will be a significant change to the auto insurance industry. This transition brings several questions to the forefront: How will auto insurance products be affected? What shape will the adoption of autonomous vehicles take? How are insurance companies preparing for the reshaping of their industry?

We posed these questions and many more to insurance executives across the automobile insurance industry. The survey offered several important insights that are summarized below and further detailed in this report.



Timing – Nothing significant any time soon

The majority of personal and commercial auto insurers believe we will not witness a significant change to the market for at least another decade. As a result of this belief of distant effects, most insurers do not plan to address this issue as it relates directly to their business within the near term (next 12–18 months).

[Questions 8, 27]



Topical knowledge – Mixed levels of insight

Only 29 percent of respondents felt very knowledgeable about autonomous vehicles, while another 23 percent professed to have little or no knowledge about the topic.

[Question 1]



Preparation – No need to start now

Many insurers have held preliminary discussions about the eventual effect autonomous vehicles will have on their business, but insurers have taken few, if any, actions in preparation for the precipitation of driverless vehicles. Seventy-four percent of companies surveyed were not prepared for the change.

[Questions 1, 21, 22, 23, 24, 25, 26]



New products and competitors – New opportunities and entrants

Insurers believe that there will be opportunities to develop different products to cover autonomous vehicles, which will also open the door for new competitors to enter the industry. Executives believe auto manufacturers, data, and technology companies are the most likely to enter the market.

Survey respondents anticipate Google to play an important role in insurance. Almost all respondents (87 percent) expect Google to control driving data, with over half (55 percent) anticipating that the company will distribute insurance. Almost a quarter (23 percent) predict the high-tech company to become an insurance company.

[Questions 7, 10, 14, 17, 19, 20]



Early adopters – Young drivers pave the way

Insurers expect the movement to self-driving vehicles will be driven by technology firms, with younger drivers (aged 15–44) leading the adoption. Insurers do not expect that one gender will be quicker to adopt than the other.

[Questions 2, 3, 4, 16]



Shifts in the insurance landscape – Major changes could follow

When/if the conversion to autonomous vehicles occurs, insurers expect that claim frequency will significantly decrease, which would result in a substantial decrease in policy premiums. They also expect that replacement costs will increase due to more expensive components. However, insurers predict that underwriting profitability will remain relatively stable. Insurers seem unsure about how, or if, the mix of insurance will change.

[Questions 5, 6, 11, 15]



Legal and regulatory issues – Big hurdles yet to jump

Insurers expect legal and regulatory issues to play a significant role in the adoption and implementation process. They believe that regulators will impede the initial adoption process and then, assuming the widespread adoption of autonomous vehicles, they anticipate that the legal system will have the largest impact in determining the fault of an accident.

[Questions 12, 18]



Business operations – Everything could change

Insurers expect several operational components of their business will require adjustment as autonomous vehicles enter the market. They believe that underwriting, product management, and claims will all require significant revisions. Organizations agree that they will need to focus the majority of their efforts on understanding the expected impact to underwriting.

[Questions 9, 13]

This transition brings several questions to the forefront:

How will auto insurance products be affected?

What shape will the adoption of autonomous vehicles take?

How are insurance companies preparing for the reshaping of their industry?

Survey details

Section 1 – Market adoption and firm adaptation

Questions 1–7

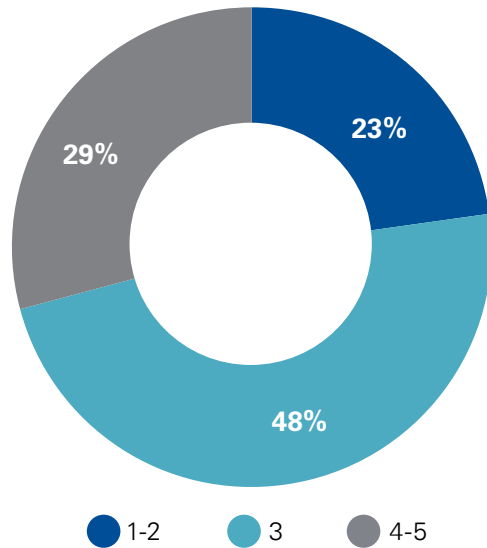
Q1 How knowledgeable are you about driverless vehicles? Please rate on a 1–5 scale, where 1=“Not at all knowledgeable” and 5=“Extremely knowledgeable.”

29%

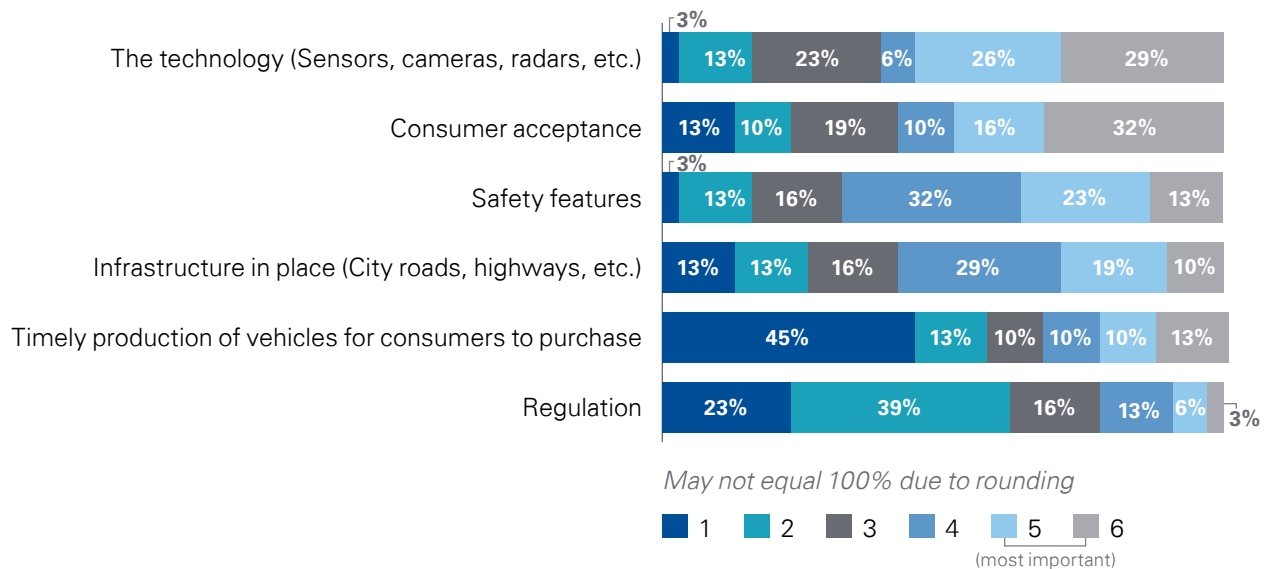
Only 29 percent of company leaders feel very knowledgeable about driverless vehicles.

23%

With another 23 percent professing little or no understanding of the topic.



Q2 How important are each of the following factors for the ultimate adoption of driverless vehicles? Please rank each on a 1–6 scale, with 1 as the least important factor for the adoption of driverless vehicles and with 6 being the most important factor for the adoption of driverless vehicles.

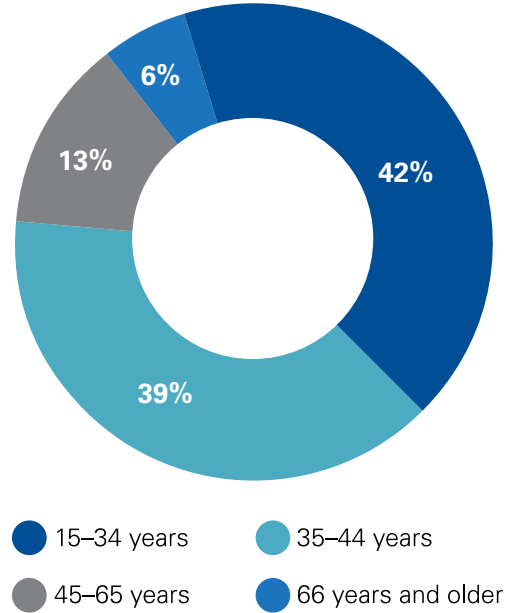


Consumer acceptance and the technology will be the most important factors for the ultimate adoption of driverless vehicles, while safety features and infrastructure are secondary drivers of adoption. Companies believe timely production of vehicles and regulation are the least important factors.

Survey details

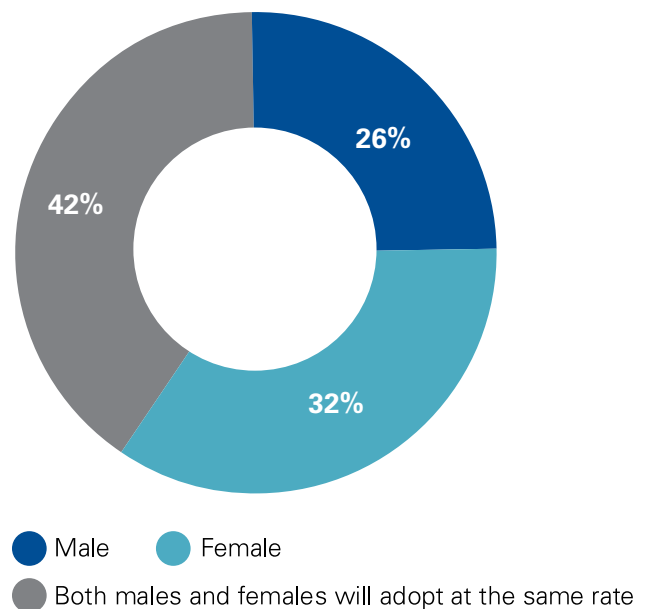
Q3 Which of the following age groups will be early adopters of driverless vehicles?

Firms believe younger drivers will be more accepting of new technology. They expect drivers from ages 15 to 44 to comprise 81 percent of early adopters.

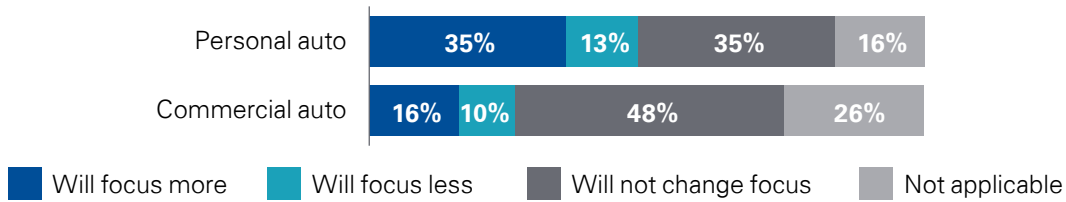


Q4 Which gender do you believe will be the quickest adopters of driverless vehicles?

There is no definitive assertion that one gender will be quicker to adopt than the other.



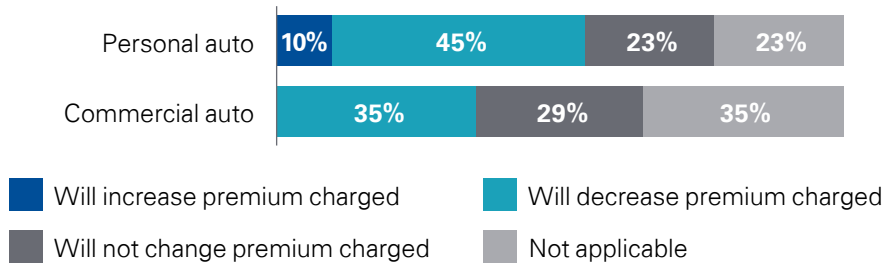
Q5 As your company prepares for the change precipitated by driverless vehicles, what type of focus will your company most likely place on the lines of business below? (Select one per line of business)



May not equal 100% due to rounding

As the industry prepares for the change precipitated by autonomous vehicles, 35 percent of survey respondents expect to increase their focus on personal auto lines, while 48 percent of companies expect their focus on commercial auto lines to remain the same.

Q6 In terms of premium charged for vehicle insurance coverage, how will your company most likely adapt to the potential change precipitated by driverless vehicles? (Select one per line of business)

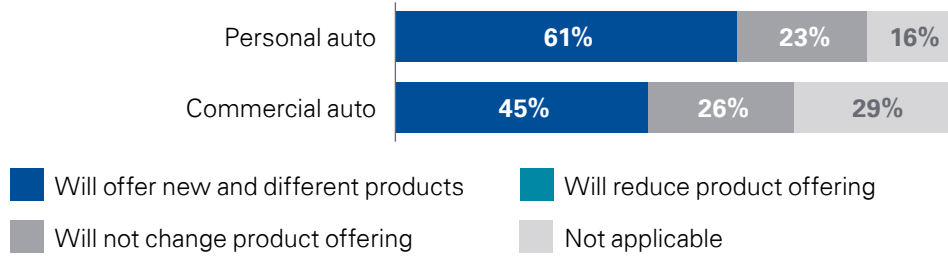


May not equal 100% due to rounding

As driverless vehicles enter the marketplace, 45 percent of survey respondents expect to decrease premiums charged on personal lines auto coverage. Companies are relatively split on how driverless vehicles will affect the premium price of commercial auto coverage.

Survey details

Q7 In terms of your product offering, how will your company most likely adapt to the potential change precipitated by driverless vehicles? (Select one per line of business)

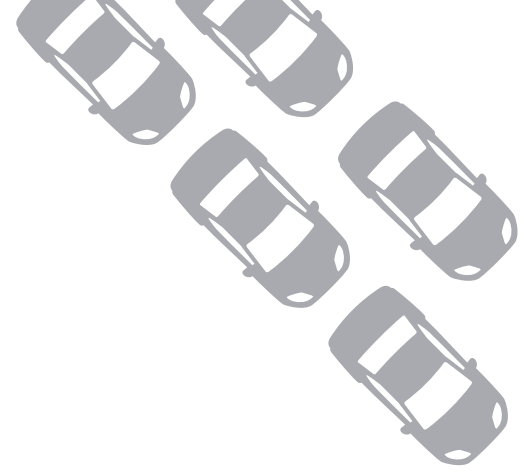


To adapt to potential changes precipitated by autonomous vehicles, 61 percent of insurers surveyed expect to offer new and different personal auto products, while 45 percent of insurers expect to offer new and different commercial auto products.





As the way we drive and commute transforms, the amount, types, and purchase of automobile insurance will be impacted. The disruption to insurers may be profound, and the change could happen faster than most expect.



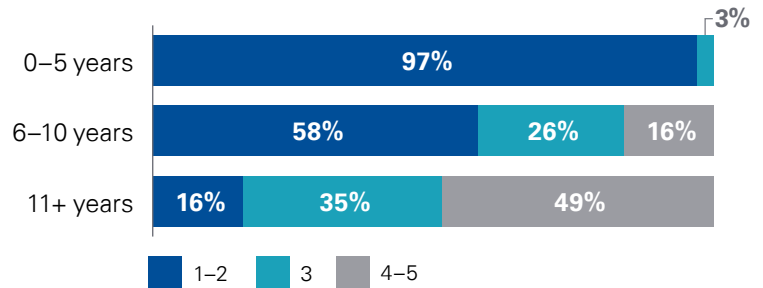
Survey details

Section 2 – Industry impact

Questions 8–15

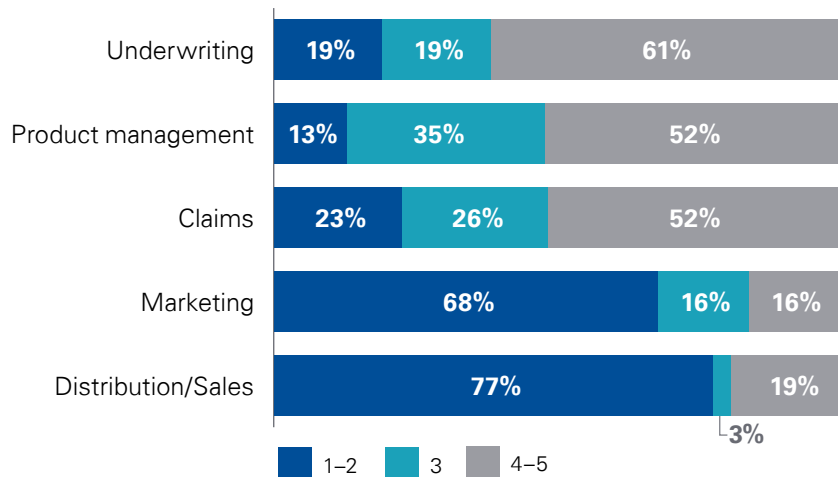
Q8 Over the time horizons shown below, what type of impact will driverless vehicles most likely have on your business? Rate each time horizon using a 1–5 rating scale where 1=“No impact at all,” 3=“Somewhat significant impact,” and 5=“Extremely significant impact.”

According to the insurance executives surveyed, most respondents believe the effects of self-driving cars will not have a significant impact on their business over the next decade.



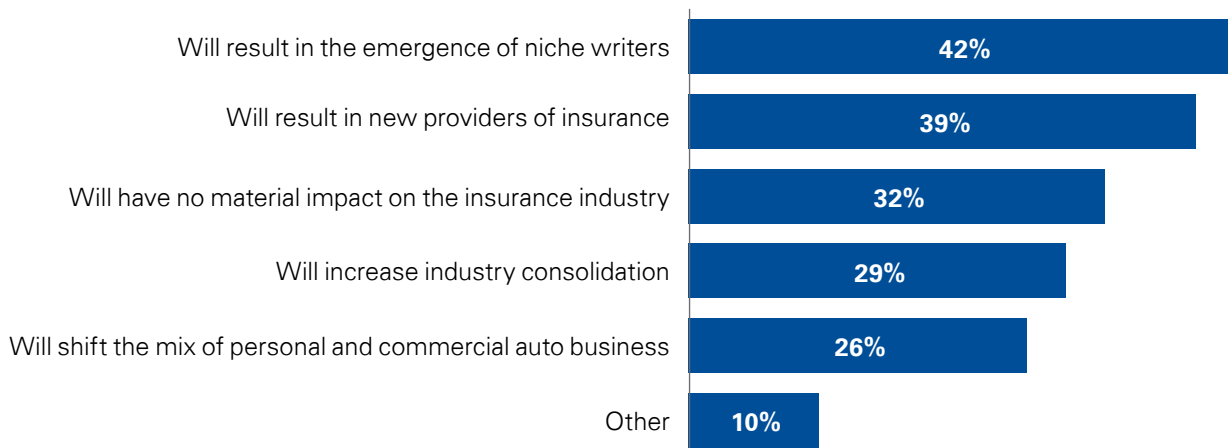
Q9 How will the following areas of your business be impacted by driverless vehicles? (Please rank from 1–5, with 1 being the area least impacted and 5 being the area most impacted)

Survey respondents believe underwriting, product management, and claims will be significantly impacted by driverless vehicles. Alternatively, they don't expect that the emergence of driverless vehicles will have a strong impact on their distribution/sales or marketing.



May not equal 100% due to rounding

Q10 How do you think driverless vehicles will impact the insurance industry over the next 10 years? (Select all that apply)



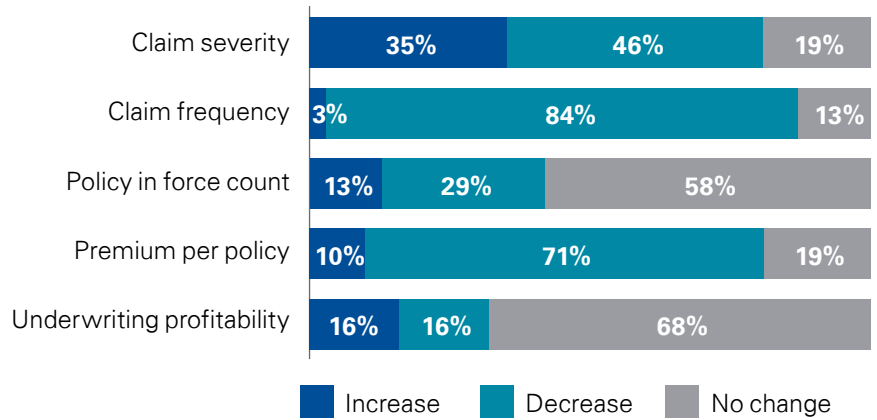
Multiple responses allowed

Over the next 10 years, survey respondents expect the emergence of niche writers and new providers of insurance will be the largest direct result of driverless vehicles, while 32 percent of firm leaders expect that driverless vehicles will have no material impact on the insurance industry.

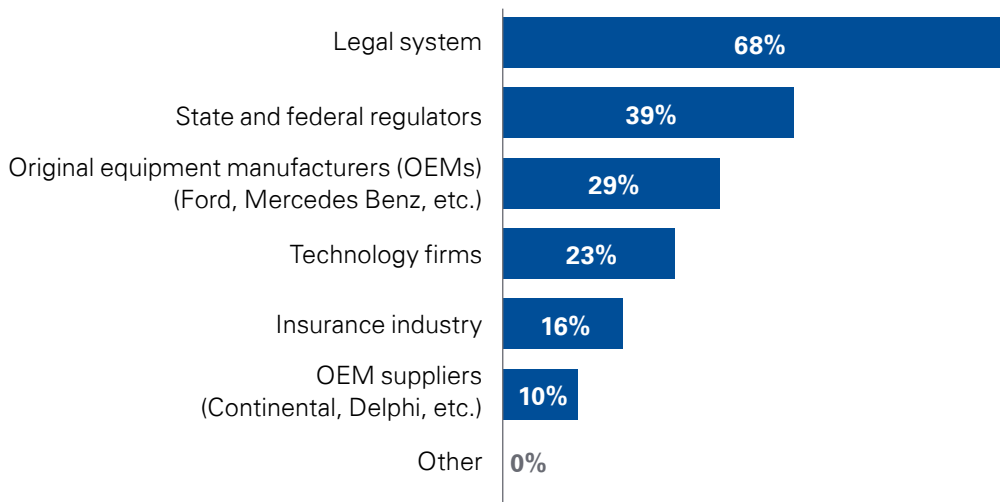
Survey details

Q11 How do you believe driverless vehicles will most likely impact your business model from the following perspectives? (Select one for each category)

Industry perception is that driverless vehicles will likely decrease claim frequency and premium per policy, while resulting in little change to policy in force count and underwriting profitability. The majority of executives believe that claim severity will change, though there is no clear consensus on whether claims will be more or less severe.



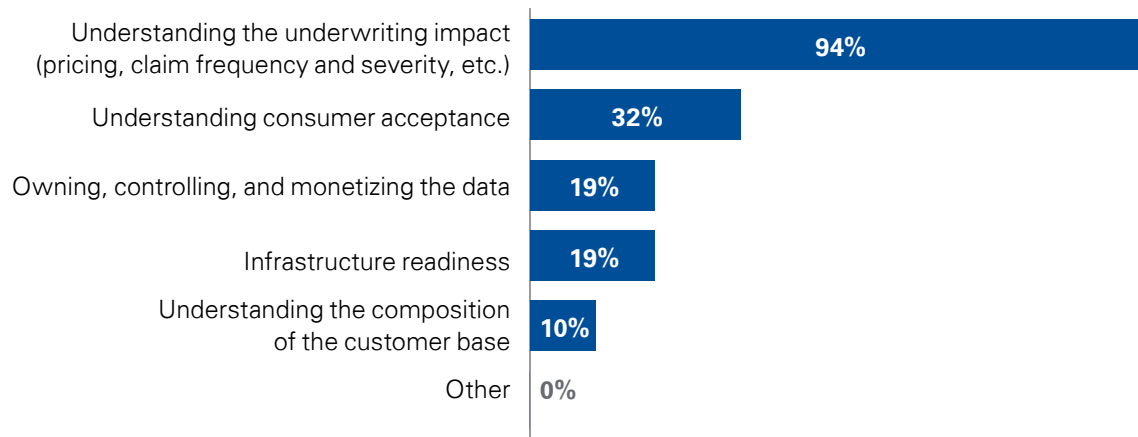
Q12 Assuming widespread adoption of driverless vehicles, which of the following will have the most impact in terms of determining fault in the event of an accident? (Select up to two)



Multiple responses allowed

Assuming widespread adoption of driverless vehicles, respondents anticipate that the legal system will have the largest direct impact when determining the fault of an accident.

Q13 Assuming driverless vehicles will have a material impact on insurance companies, which do you believe is the most critical area for your organization to focus on in this new driverless vehicle landscape? (Select up to two)



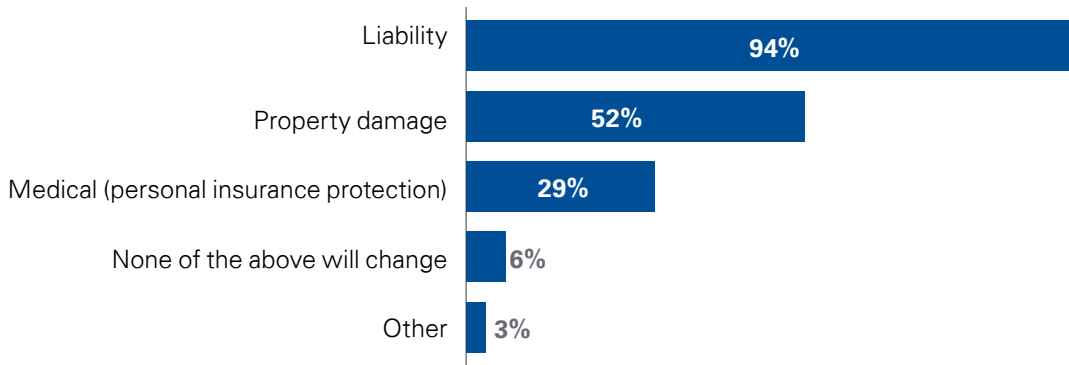
Multiple responses allowed

Respondents believe underwriting would be most affected by the change.



Survey details

Q14 What components of your personal and commercial auto insurance coverage(s) will most likely change in a driverless vehicle landscape? (Select all that apply)

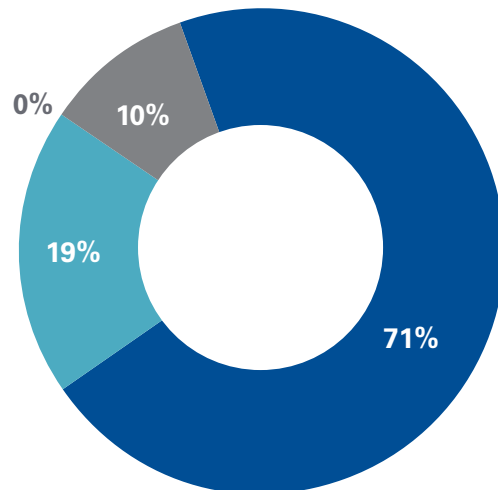


Multiple responses allowed

Survey respondents expect the introduction of autonomous vehicles to change several components of their personal and commercial coverage(s). Almost every participant (94 percent) expects liability to change, while over half (52 percent) expect property damage coverage to change. Another 29 percent predict that medical coverage will be affected.

Q15 How do you think the cost of vehicle parts replacement will change due to driverless vehicles? (Select one)

Industry consensus is that vehicle replacement parts will become more expensive as driverless vehicles enter the marketplace.



- They will be more expensive
- They will cost about the same
- They will be less expensive
- Not sure



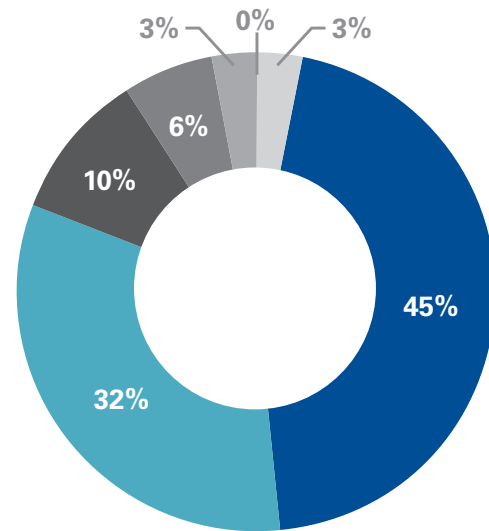
Survey details

Section 3 – Industry transformation

Questions 16–20

Q16 Which of the following entities will be the biggest force behind the change in the driverless vehicle landscape? (Select one)

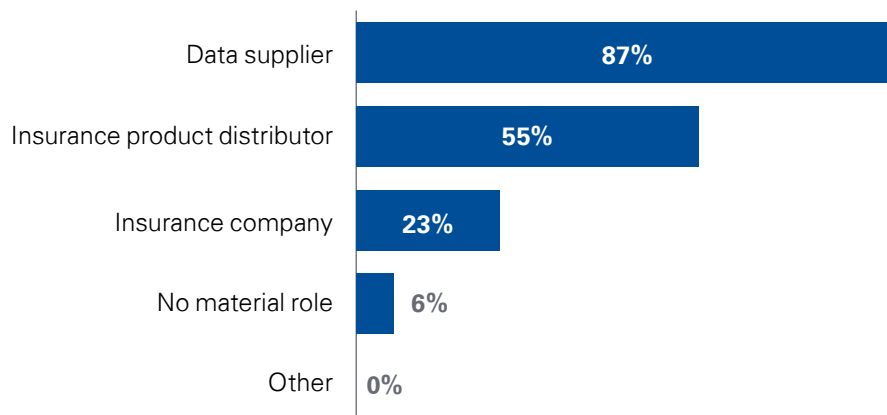
Respondents expect established technology firms will be the largest force behind the change in driverless vehicle landscape, although they expect the original equipment manufacturers to play a significant role, too.



- Established technology firms (Google, Intel, etc.)
- Original equipment manufacturers (OEMs) (Ford, Mercedes Benz, etc.)
- Start-up companies
- Capital providers (Venture capital, private equity, and other investment firms such as Andreessen Horowitz, Kleiner Perkins, etc.)
- Universities and research institutions (MIT, Stanford, etc.)
- OEM suppliers (Continental, Delphi, etc.)
- Other

May not equal 100% due to rounding

Q17 Which of the following roles do you think Google will play as it relates to driverless vehicles and auto insurance? (Select all that apply)



Multiple responses allowed

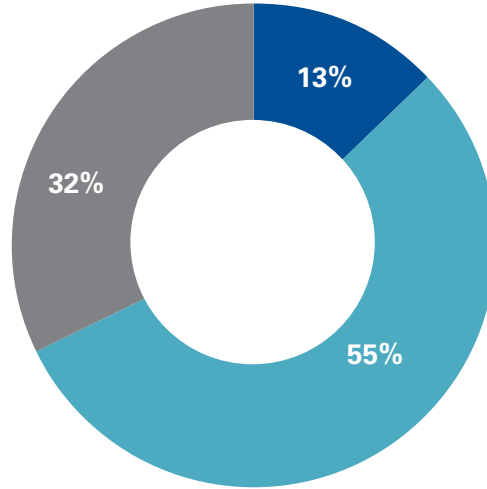
Survey respondents anticipate Google will play an important role in insurance. Almost all respondents (87 percent) expect Google to control driving data, with over half (55 percent) anticipating that the company will distribute insurance. Almost a quarter (23 percent) predict the high-tech company to become an insurance carrier.



Survey details

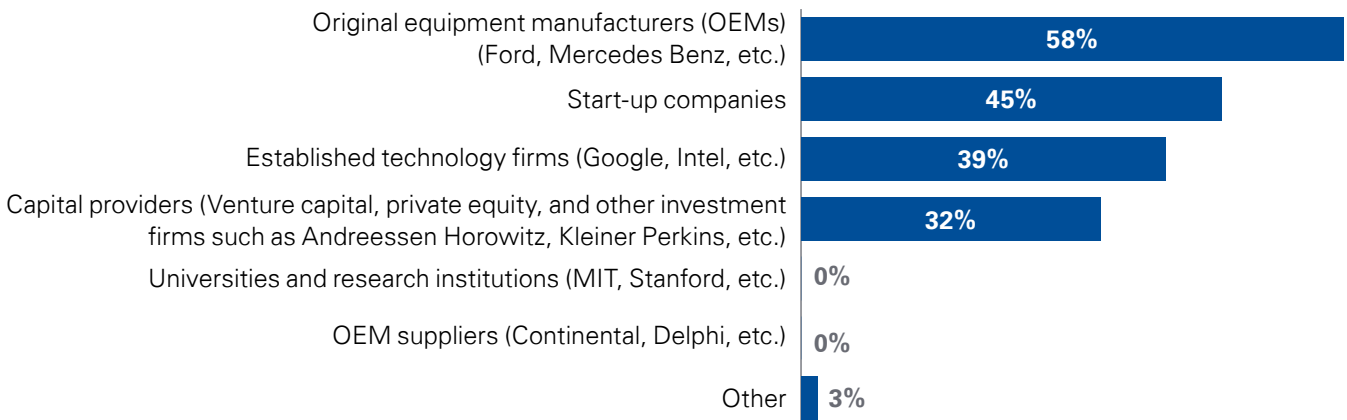
Q18 What type of role do you believe the regulators will play in the adoption of driverless vehicles? (Select one)

More than half (55 percent) of respondents expect regulators to impede the adoption of driverless vehicles, while 32 percent believe regulators will have no effect at all.



- Positive – Will accelerate the adoption of driverless vehicles
- Negative – Will impede the adoption of driverless vehicles
- None – Will neither accelerate nor impede the adoption of driverless vehicles

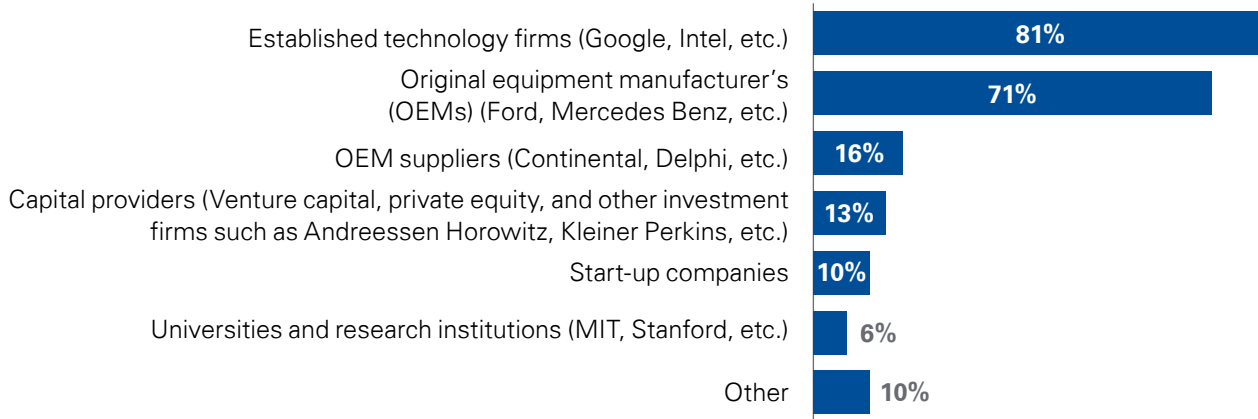
Q19 Other than insurance companies, which of the following entities do you think will be a major provider of vehicle insurance in the future? (Select all that apply)



Multiple responses allowed

Survey participants believe OEMs, start-up companies, established technology firms, and capital providers may become major providers of vehicle insurance in the future.

Q20 Which entities do you believe will “own” the data related to driverless vehicles? (Select all that apply)



Multiple responses allowed

Respondents believe established technology firms and OEMs will be the primary “owners” of data related to driverless vehicles.



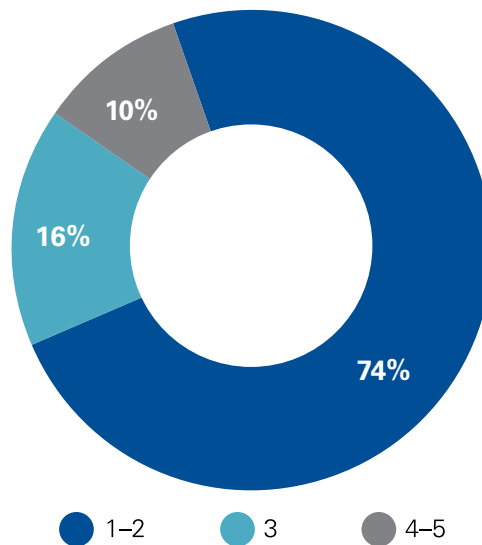
Survey details

Section 4 – Firm preparation

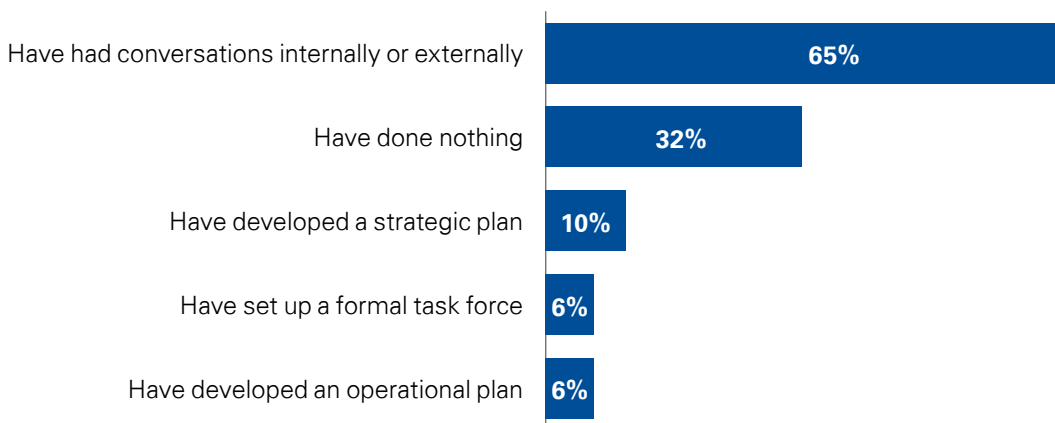
Questions 21–27

Q21 How prepared do you believe your organization is for driverless vehicles? Please rate on a 1–5 scale where 1=“Not at all prepared” and 5=“Extremely prepared.”

Of the participants polled, 74 percent feel they are unprepared for driverless vehicles.



Q22 What, if anything, has your company done to prepare for driverless vehicles?
(Select all that apply)

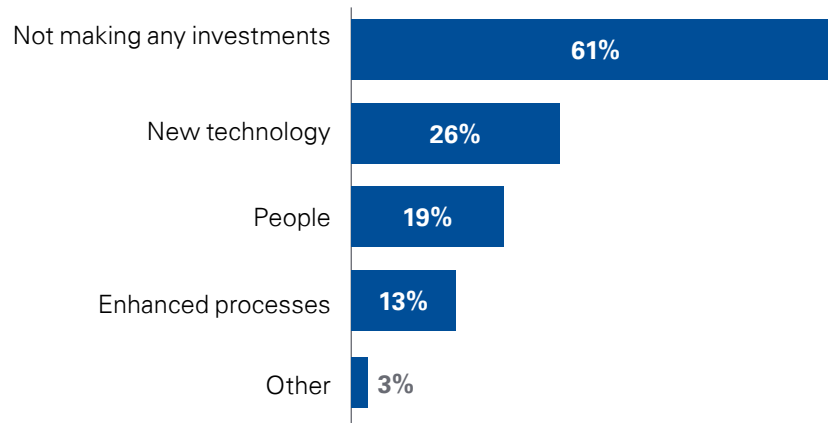


Multiple responses allowed

Survey respondents indicated that the majority of firm preparations consist of internal or external conversation, while 32 percent of firms admit they have done nothing. Only 22 percent of firms have developed a formal plan or task force.

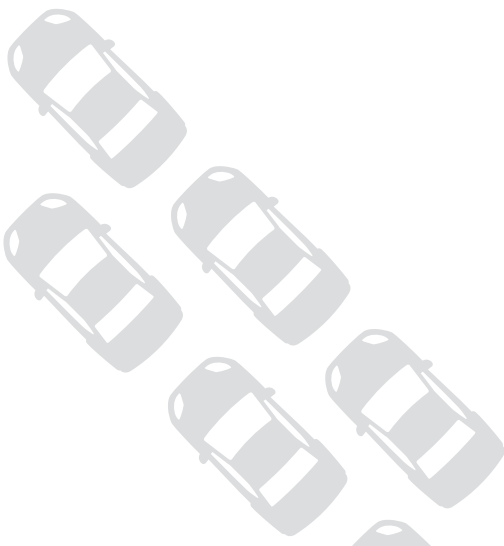
Survey details

Q23 Where are you making strategic investments in your business as they relate to driverless vehicles? (Select all that apply)



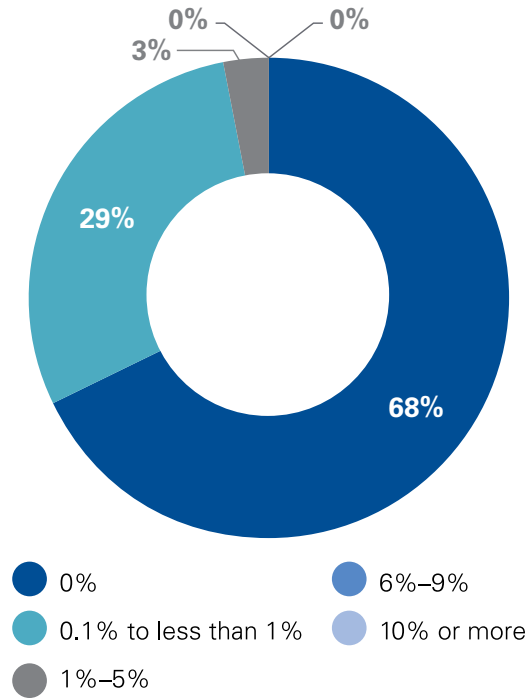
Multiple responses allowed

Of the companies polled, 61 percent are making no strategic investments in their business as it relates to driverless vehicles. One quarter of firms polled are investing in new technology and a fifth of the firms are investing in their people. The level of investment is, however, unclear and a point for the next survey.



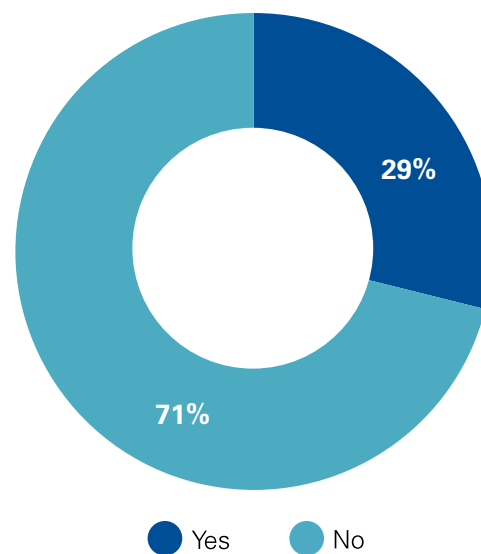
Q24 What percentage of your operations budget have you allocated to getting prepared for driverless vehicles? (Select one)

Only 3 percent of participating firms have allocated more than 1 percent of their operations budget toward preparing for driverless vehicles and 68 percent of respondents have allocated nothing.



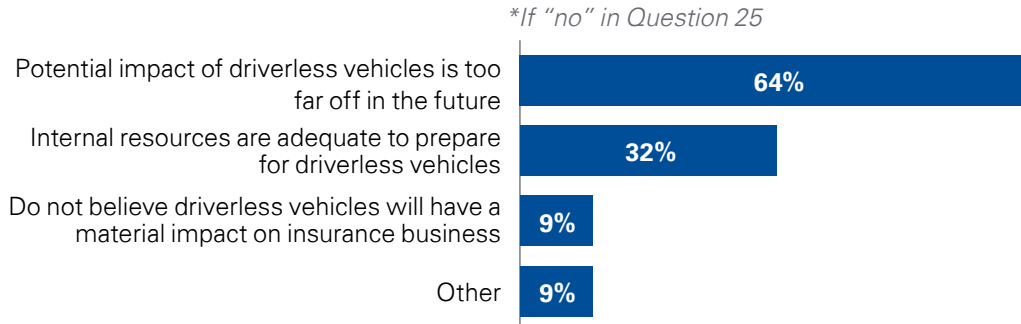
Q25 Are you currently using outside resources to assist in preparing for driverless vehicles? (Select one)

Almost three-fourths of the firms polled are currently not using outside resources to assist in preparing for driverless vehicles.



Survey details

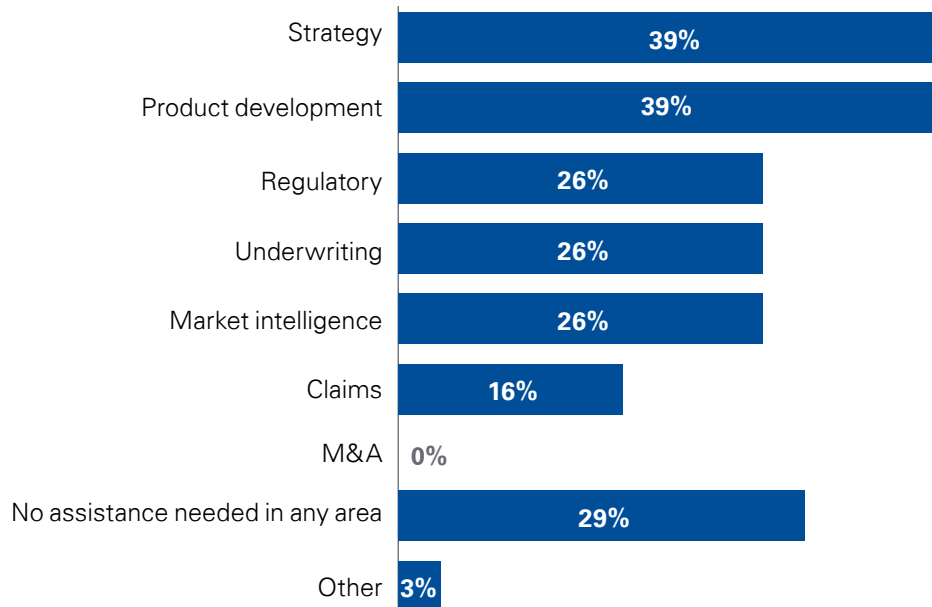
Q25a Why are you not using outside assistance to prepare for changes that driverless vehicles will bring to the industry and marketplace? (Select all that apply)



Multiple responses allowed

The majority of survey participants (64 percent) believe the potential impact of driverless vehicles is too far off in the future to use outside assistance to prepare for changes, while about one third (32 percent) of participants believe their internal resources are adequate to prepare for driverless vehicles without outside assistance.

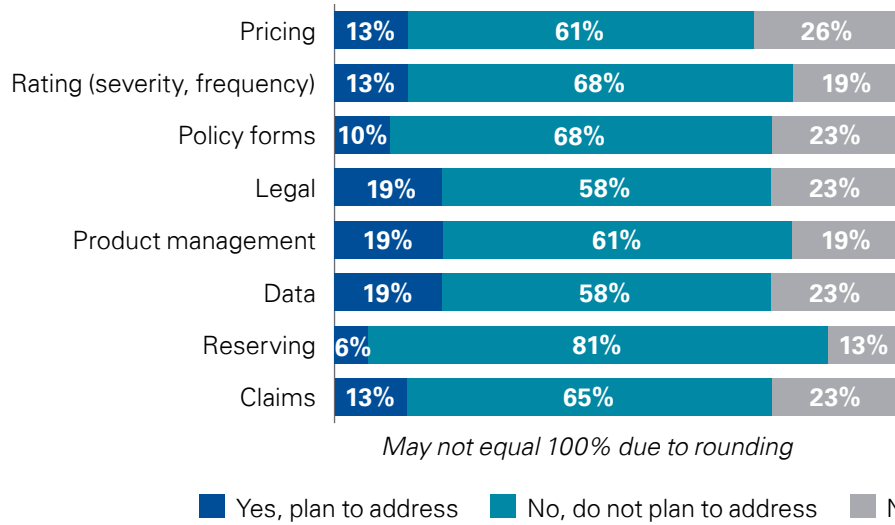
Q26 In what areas do you need the most assistance in preparing for driverless vehicles? (Select up to three)



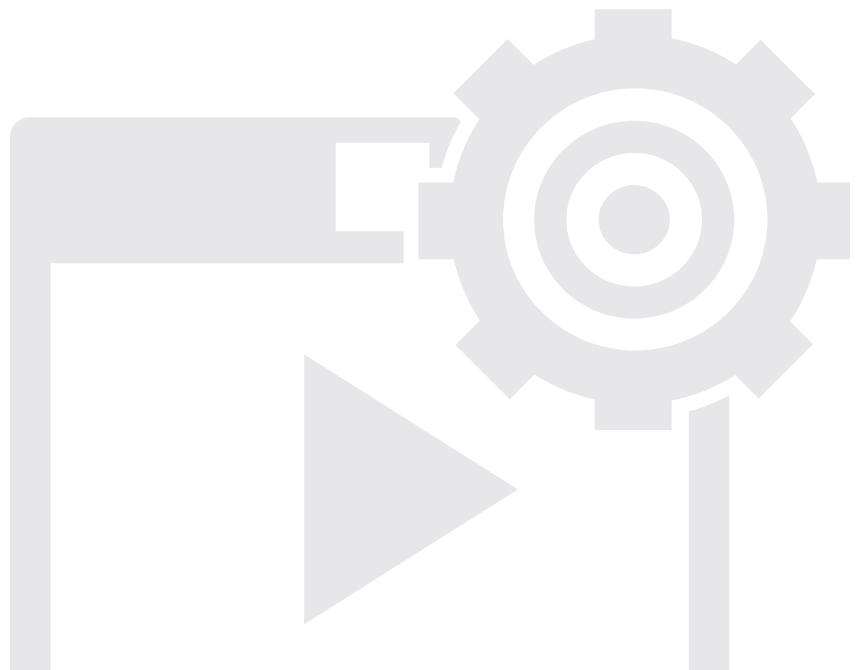
Multiple responses allowed

Strategy and product development are the two areas respondents feel they need the most assistance in preparing for driverless vehicles. However, regulatory, underwriting, and market intelligence are also key areas of need.

Q27 Currently or over the next 12–18 months, do you plan on addressing the following areas as they relate to the impact of driverless vehicles on your business? (Select one per category)



Industry-wide, firms are unsure or do not plan to address the impact of driverless vehicles on their business in the next 12–18 months.



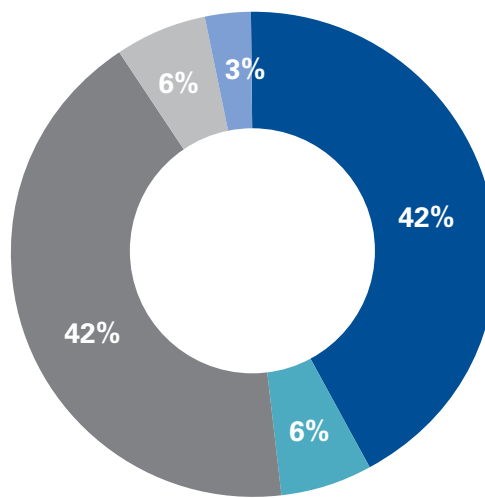
Survey details

Section 5 – Survey participants

Questions 28–33

Q28 What is your title?

The survey respondents were senior executives within the company.

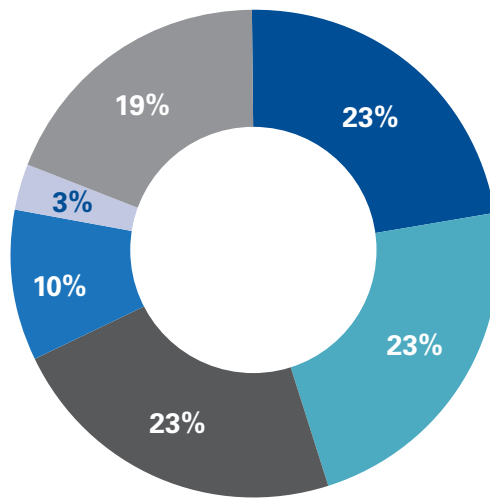


May not equal 100% due to rounding

- C-suite (chairman, CEO, president, CFO, COO, etc.)
- Executive vice president or managing director level
- SVP, VP, or AVP level
- Director
- Other

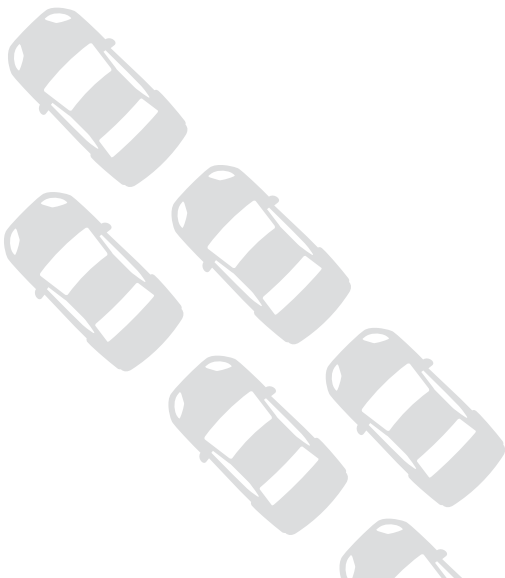
Q29 What area of the business is your primary focus?

The respondents had a variety of functional responsibilities.



May not equal 100% due to rounding

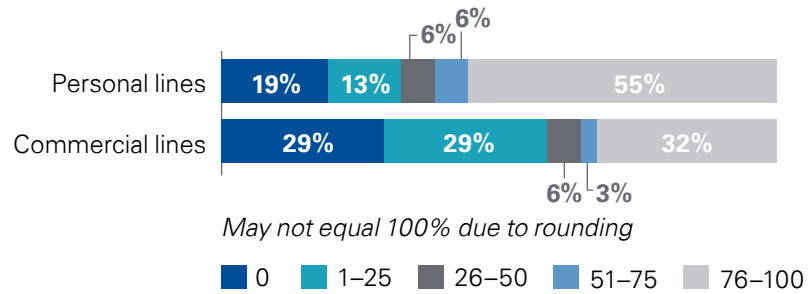
- Underwriting
- Finance/Accounting
- Strategy
- Technology
- Claims
- Other



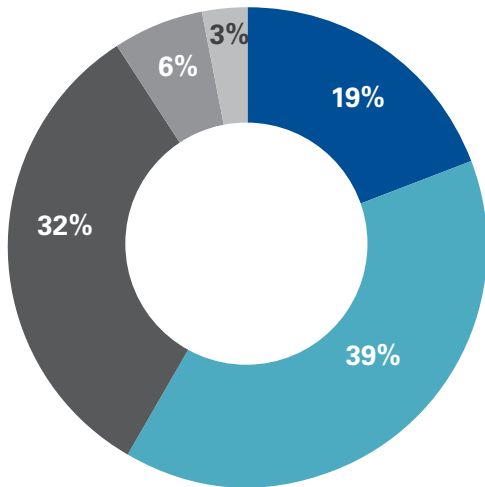
Survey details

Q30 For property and casualty (P&C) insurance specifically, what percentage of your time do you spend on the following areas?

There was a solid mix of commercial and personal line perspectives.



Q31 Is your company a:



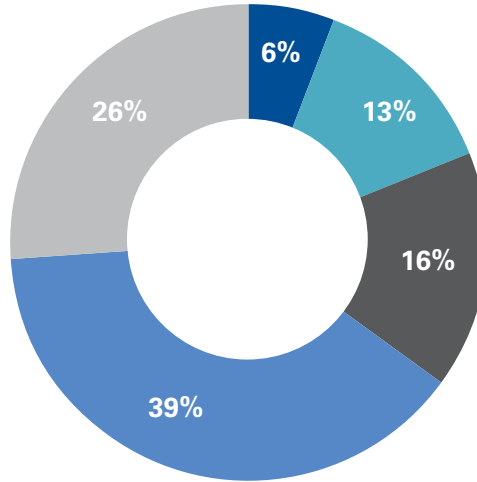
There was a solid mix of ownership structures.

- Stock company (privately held)
- Stock company (publicly held)
- Mutual
- Reciprocal exchange
- Other



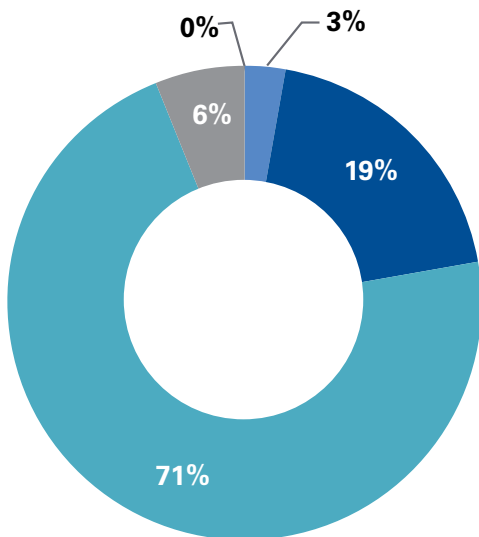
Q32 What was your company's P&C premium in its most recent fiscal year?
(Select one)

The survey respondents provided a good cross-section of the automotive insurance industry.



- Less than \$250 million
- \$250 million to \$499.9 million
- \$500 million to \$999.9 million
- \$1 billion to \$4.9 billion
- \$5 billion or more

Q33 Of your company's P&C book of business, approximately what percentage is commercial auto?



- 0%
- Less than 25%
- 25%–49%
- 50%–74%
- 75% or more

May not equal 100% due to rounding

Key considerations

We are convinced that a period of unprecedented change has begun. As insurance companies start to navigate through the shifts ahead, we believe that industry executives will need to first contemplate and then ultimately address a series of key considerations related to the conversion to autonomous vehicles and the implications on their organizations.

The findings from this survey are full of insight and provocative thought. Now is the time for robust discussion. To get the conversation started, we have identified an initial set of questions for an insurance company to consider.

Timing and competitive landscape



Timing

- What if the conversion to autonomous vehicles happens faster than you expect?
- What type of scenario analyses have you conducted? Did the “what if” cases capture an array of timing possibilities, ranging from distant change to fast-track implications? What scenario does your organization believe to be most likely? Why?
- Who will be the early adopters? How prevalent are these individuals in your customer base?
- How does car sharing, ride sharing, and mobility on demand affect your book of business? What happens if the size of the car stock starts to drop?
- How is your organization monitoring the changes in the marketplace? How will you know to shift course? What are your leading indicators?
- How much lead time will you need to get ready? How does the amount of preparation time vary across the tactical and strategic actions?



Competitive landscape

- Who are the potential insurance winners in this future marketplace? Why are they well advantaged? What can we do to gain similar strength?
- What firms could be new entrants? What is their competitive advantage?
- If industry premium gets smaller, the pie gets smaller—which firms will thrive? Why? How could your organization respond to potential market consolidation?
- Will pricing remain rational as the market starts to shrink? With margins already tight across the sector, how can further price erosion be handled?

Functional responses



Product development

- What will be the new areas of risk in an autonomous environment?
- With more decisions made by the vehicle, how will product liability be handled?
- How will fleet and commercial coverage grow?
- What new product models will evolve (insurance coverage part of cost of car)?
- What type of niche opportunities can be pursued?



Underwriting

- If driver variability becomes more standard, what are the appropriate factors of risk?
- What happens to standard and high-risk programs?
- How will the organization absorb real-time data that captures every movement of the car and decision by the driver?
- Who owns the vehicle data? What happens if the vehicle manufacturer or some high-tech firm like Google controls and/or keeps the “black box” driving data?
- What about data privacy and security?



Rating

- What will be the effects of the new capabilities—accident avoidance, lane change warnings, self-parking—on loss frequency? Has your company already started to see a change?
- What could the effects be of the next generation of products like stop-and-go piloting and V2V communications? How best to conduct the analysis?
- When will customers start to demand a discount for these features? How much is appropriate?

- What happens if there is a permanent downward decline in loss frequency? How will rates change in response?
- How will severity change?
- Will new rate plans be needed? When? How best to file with state regulators? Should conversations be started?
- Does a not-at-fault construct make sense?



Distribution

- What type of insurance distribution is appropriate when vehicles are autonomous?
- With the level of premiums likely to decline following the drop in loss costs due to lower frequency of accidents, how much can be spent to acquire business?
- How do channels need to be educated?



Claims

- Who holds liability in the case of an accident—driver, manufacturer, driving software manufacturer? How will this liability shift as the vehicle makes more decisions?
- What is the appropriate legal strategy?
- Does there need to be an industry-wide approach for traction and consistency? Does lobbying need to begin? What do you want to accomplish? Can you shape tort law and shape precedence?

Strategic options and change management



Cost structure and expense management

- What is the right level of investment to make? How does this change over time? What triggers additional investment?
- How much to invest to update core systems—underwriting, rating, claims—in an environment of flux? What is critical versus optional?
- Do your current and future IT plans contemplate the effects of autonomous technology?

- If premium volume falls, how will costs be reduced? How much? What is the current cost structure? Where to cut first? What are the variable and fixed components?
- How quickly can costs be cut?



Strategic change

- What is your business strategy and operating model in the future marketplace?
- What will be your competitive advantage?
- How will you make money?
- What is the right mix of business?
- Is there an ability to leverage and monetize your data?
- Do you expand into new products and areas? What will that take? Is there brand permission to do this? What is the available market?
- Are there alliances and partnerships to consider? Who and why? How quickly will the market move to lock in these agreements?
- What are the expectations of key stakeholders—policyholders, shareholders, debt holders, etc.?



Change management

- What messages do you want to send to your organization? How do the messages vary by key stakeholder—internal and external?
- Does the company structure need to change? What about its culture?
- How much do you and your organization know about autonomous vehicles—the technology, manufacturer commitments, consumer adoption, and regulatory requirements?
- Who needs to know? What do they need to know—what is relevant and important? How does this vary by constituent?
- How will your organization educate its employees? Should there be a formal education curriculum and training? Who drives this effort?

Next steps – call to action

In this marketplace of uncertainty, we recommend auto insurers take a combination of strategic and tactical efforts.



Understand your company's exposure to the change

- Conduct “what if” scenario analyses
- Model the potential effects on your core business metrics—policies in force, premiums, loss frequency, severity
- Determine your company's point of view of the potential change—scope, timing, etc.



Evaluate your business strategy

- Identify the opportunities and threats in the future marketplace, and assess your company's strengths and weaknesses through this lens
- Review each of the core components of your corporate strategy: target market, product mix, cost structure, points of differentiation
- Refine your corporate strategy across a broader time horizon—near (1–2 years), intermediate (3–5), and longer term (5+ years)
- Determine how your company culture will need to change



Identify and monitor leading indicators

- Determine your set of key market indicators
- Align your “what if” scenarios against these indicators to determine which case is most likely to happen
- Set up a process to monitor and report changes



Prepare your operations

- Mobilize a task force
- Develop high-level action plans for each “what if” scenario; build a more detailed action plan for the most likely scenario
- Cover required actions for each of the core functions: distribution, underwriting, rating, claims, product development, and customer service
- Address the people, process, and technology dimensions
- Craft a business case for change



Understand cost structures

- Determine cost breakouts: variable, step-variable, fixed
- Align cost plans against scenarios
- Determine cost reduction plans/options



Educate and train your people

- Assign responsibility to monitor and package information about changes around autonomous vehicles
- Establish or leverage an existing communication network within the company to distribute the insights
- Begin to craft message to your people
- Consider when appropriate the skills required and frame the associated training



Align with other insurers and form partnerships

- Determine which companies will be most relevant in an autonomous vehicle ecosystem
- Identify potential alliance and partnerships, and make initial overtures
- Work with other insurers to determine an “industry” point of view on key areas like liability and regulation
- Start to lobby and influence

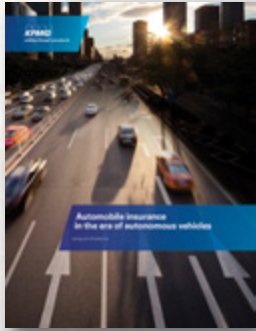
A woman with dark hair, wearing a purple scarf and a dark top, is shown in profile, focused on drawing a line graph on a whiteboard. She is holding a white marker. The background is a blurred office setting with other people. The whiteboard has some faint, mirrored text visible, including "MAY 2017".

KPMG can help

KPMG remains at the forefront of the conversation about autonomous vehicles—we bring our breadth of leading research around the marketplace transformation as well as the depth of knowledge to discuss the potential effects on the insurance industry. Our team of professionals can help you evaluate your strategic options and also support your tactical efforts.

We look forward to the opportunity to having a conversation with you soon.

Our Insurance and Automotive practices have issued a series of leading research. In case you missed these papers, you can download them now.

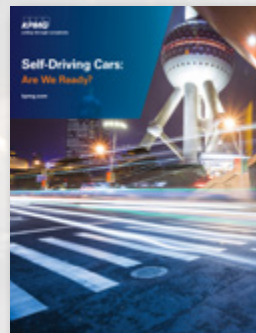


KPMG's Insurance practice

KPMG's white paper on this topic, ***Automobile insurance in the era of autonomous vehicles***, will be issued later in 2015.


KPMG's Automotive practice

In case you missed them, you can download from KPMG's website our previous papers related to the future of the automotive industry.









Our analysis has made increasingly clear that the automobile landscape is poised for radical change. Convergence of consumer and automotive technologies along with the rise of mobility services will transform the way we drive and commute—sooner than most expect.

Now is the time to expand the dialogue to insurance.



kpmg.com



The views and opinions from the survey findings are those of the survey respondents and do not necessarily represent the views and opinions of KPMG LLP.

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