"To be or not to be" is no longer the question. Insurers confront the "when" and "how" of uneven transition as mobility preferences and capabilities evolve.

Ladies and gentlemen, start your engines.

Breakthroughs in self-driving cars are likely only the beginning. Vehicular travel from point A to point B is changing in ways that could create an entirely new ecosystem of personal mobility. Advanced technology to improve safety and enable increasingly autonomous vehicles (AVs) is threatening to disrupt several industries, not least of which is insurance.

With sensor-loaded cars poised to reduce accidents by 90 percent,1 and ride-sharing/ride-hailing trends pointing toward decreased vehicle ownership,2 auto insurers could be challenged to compensate for the apparent inevitability of falling premium rates and perhaps a substantial volume of business. As a result, insurers should consider developing transformational strategies to remain relevant and create value for consumers, yet still be profitable in this emerging environment.

This transition will likely be multifaceted, as a complex mobility ecosystem develops. Deloitte’s The Future of Mobility posited four future states of mobility—personally owned driver-driven vehicles, shared driver-driven vehicles, personally owned autonomous vehicles, and shared autonomous vehicles (figure 1)—that are expected to evolve unevenly and are likely to coexist simultaneously for some time to come.3

The unevenness of the transition could be fueled by several factors, including the success of new technologies (including, but not limited to, fully autonomous vehicles), as well as regulatory uncertainty and consumer attitudes about relinquishing the driver’s seat. Our research indicates that the pace of these trends may vary among age groups and geographies, but compelling economic and societal benefits suggest that the future will increasingly be defined by shared self-driving vehicles.

The stakes in this challenge could be enormous for auto insurers, which generate the highest share of premiums in the overall property-casualty market. In 2015, auto insurance yielded $200 billion in premiums globally, about a third of all premiums written by the property and casualty industry.2 On the loss side, collisions are expected to fall precipitously with the increase of safety technology being embedded in vehicles. Meanwhile, the
incremental rise in autonomous driving and ride sharing promises to reduce accidents and car ownership, respectively, which may also potentially impact the price, terms, conditions, and premium volume for personal and commercial auto coverage.

How impactful might these trends be? In “Quantifying an uncertain future: Insurance in the new mobility ecosystem,” Deloitte developed an actuarial model of potential future premium revenue streams in line with the expected evolution of driving and mobility preferences. The model projected annual auto insurance premiums out to 2030 and 2040 (figures 2, 3, and 4), assuming the four future states (figure 1) of mobility materialize. The modelers also pointed out lingering uncertainty over the pace of transformation by region and demographics. These critical distinctions should be accounted for while formulating specific adaptation strategies and timelines, depending on a carrier’s target market.

Deloitte’s recent Global Automotive Consumer Insight Platform Study, highlighted in “The race to autonomous driving: Winning American consumer trust,” surveyed

![Figure 2. Premiums – steady state vs. projections](image)

![Figure 3. Projected premium breakdown – 2030](image)

![Figure 4. Projected premium breakdown – 2040](image)

**Steady state:** Current mobility environment persists—there are no further advances in driver-assist technologies, autonomous vehicles do not become part of the national fleet, and ridesharing does not continue to expand

**Sharing economy:** The driver-driven sharing economy could boost premiums as the commercial auto policies for those drivers would tend to be more expensive

**Reduction in human error:** Addition of autonomous vehicles could reduce premiums of the steady state due to safety benefits

**Product liability:** Shift from driver liability to product liability could boost premiums

**Other factors:** Reduced fraud and additional safety benefits from driver-driven and autonomous vehicles could reduce premiums

Source: Quantifying an uncertain future: insurance in the new mobility ecosystem, Deloitte Consulting LLP
22,000 consumers in 17 countries, including the United States, to better understand consumer preferences related to the evolving driving economy. These insights could potentially help insurers get ahead of the curve.

**Action without insight could be doomed**

One key point from the survey is that global consumers seem divided among regions and age groups regarding the level of desirability for advanced vehicle automation technology and ride sharing/ride hailing.\(^7\)

**Autonomous driving:** While many motorists—particularly in more developed countries—remain uncomfortable sharing the road with self-driving vehicles and most still say they don’t want to own them, they did indicate they would be willing to try them once there was an established safety record.\(^8\) Consumers surveyed in more emerging economies, such as India and China, as well as younger demographics in the United States, Germany, Japan, and India appear more enthusiastic about near-term increased autonomy of vehicles (figure 5).\(^9\)

Vehicle manufacturers are increasingly embedding more sensors and safety-focused technology in vehicles to incrementally encourage consumer confidence and advance acceptance of the widely predicted cross-over to a fully autonomous driving society. Deloitte’s global investigation

**Insights from Deloitte’s auto consumer survey** suggest developing countries such as China and India are more open to new driving paradigms. This is likely due to:

- Significant congestion and pollution levels, particularly in urban areas.
- Both India and China are somewhat newer to cars and driving than Europe and the United States, and therefore are less likely to have entrenched attitudes about driving than regions with strong, legacy car cultures.
- With 356 million 10-24-year-olds, India has the world’s largest youth population, according to UNFPA’s 2014 report, “The Power of 1.8 Billion,” which could bode well for change since younger generations are generally more open to new concepts and thought processes in driving.

![Figure 5. Percent of consumers that want full self-driving automation (Strongly agree or agree)](source)

![Figure 6. Consumer level of agreement with different levels of vehicle automation](source)
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auto consumer survey illustrates that the desire for limited self-driving or full self-driving components is lower in developed regions (figure 6), although stakeholders believe that as they incrementally phase in more proactive safety features, the level of acceptance and demand for such technologies would rise.

It is important to note that while consumer sentiment is more enthusiastic in developing regions, there may still be obstacles to adoption in those geographies. Indeed, challenges such as regulatory issues related to data sharing and underdeveloped infrastructure may hinder the rate of autonomous vehicle rollout, despite consumer readiness.

Looking at the bigger picture, regardless of geography, technologies that most consumers really want embedded in their vehicles seem to be focused on safety, as opposed to ‘service enablers’ that they would prefer to get on their smartphones (figure 7).

This finding could be significant because many auto insurers experimenting with usage-based coverage supported by real-time, telematic data had thought value-added services delivered to policyholders via their connected vehicles might help differentiate carrier offerings in an increasingly price-driven, commoditized market. In reality, it appears that emphasizing safety-focused capabilities is more on target to meet customers’ needs.

Figure 7. Technologies consumers want embedded in their vehicles

<table>
<thead>
<tr>
<th>Description</th>
<th>Category</th>
<th>US</th>
<th>DE</th>
<th>JP</th>
<th>KR</th>
<th>CN</th>
<th>IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognizes objects on road and avoids collision</td>
<td>Safety</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Informs driver of dangerous driving situations</td>
<td>Safety</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Blocks driver from dangerous driving situations</td>
<td>Safety</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Takes steps in medical emergency or accident</td>
<td>Safety</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Diagnoses and sends maintenance notifications</td>
<td>Connectivity</td>
<td>5</td>
<td>14</td>
<td>12</td>
<td>5</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Enables remote shutdown of stolen vehicle</td>
<td>Cyber security</td>
<td>6</td>
<td>13</td>
<td>8</td>
<td>14</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Helps enhance fuel efficiency</td>
<td>Fuel efficiency</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>11</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>Enables V2V and road communication</td>
<td>Connectivity</td>
<td>8</td>
<td>10</td>
<td>5</td>
<td>9</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Prevents hacking into vehicle systems</td>
<td>Cyber security</td>
<td>9</td>
<td>15</td>
<td>19</td>
<td>17</td>
<td>22</td>
<td>13</td>
</tr>
<tr>
<td>Prevents theft by restricting unauthorized access</td>
<td>Cyber security</td>
<td>10</td>
<td>7</td>
<td>16</td>
<td>20</td>
<td>18</td>
<td>10</td>
</tr>
<tr>
<td>Enables settings to enhance vehicle performance</td>
<td>Performance</td>
<td>23</td>
<td>21</td>
<td>20</td>
<td>15</td>
<td>23</td>
<td>18</td>
</tr>
<tr>
<td>Assists in locating and reserving a parking space</td>
<td>Service enabler</td>
<td>24</td>
<td>19</td>
<td>25</td>
<td>25</td>
<td>17</td>
<td>21</td>
</tr>
<tr>
<td>Enables the use of self-healing paint</td>
<td>Miscellaneous</td>
<td>25</td>
<td>24</td>
<td>23</td>
<td>27</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td>Provides passengers with custom entertainment</td>
<td>Convenience</td>
<td>26</td>
<td>32</td>
<td>30</td>
<td>28</td>
<td>30</td>
<td>28</td>
</tr>
<tr>
<td>Provides notifications on places of interest</td>
<td>Service enabler</td>
<td>27</td>
<td>26</td>
<td>31</td>
<td>31</td>
<td>26</td>
<td>23</td>
</tr>
<tr>
<td>Automatically pays parking and toll fees</td>
<td>Service enabler</td>
<td>28</td>
<td>27</td>
<td>22</td>
<td>26</td>
<td>21</td>
<td>30</td>
</tr>
<tr>
<td>Empowers customer to personalize vehicles</td>
<td>Miscellaneous</td>
<td>29</td>
<td>30</td>
<td>28</td>
<td>22</td>
<td>28</td>
<td>27</td>
</tr>
<tr>
<td>Enables control of automated home systems</td>
<td>Service enabler</td>
<td>30</td>
<td>29</td>
<td>29</td>
<td>24</td>
<td>24</td>
<td>29</td>
</tr>
<tr>
<td>Enables low-speed urban “auto pilot” mode</td>
<td>Self-drive</td>
<td>31</td>
<td>22</td>
<td>21</td>
<td>23</td>
<td>19</td>
<td>25</td>
</tr>
<tr>
<td>Helps manage daily activities</td>
<td>Convenience</td>
<td>32</td>
<td>31</td>
<td>27</td>
<td>32</td>
<td>32</td>
<td>31</td>
</tr>
</tbody>
</table>

Ride sharing/Ride hailing: The rise of pay-per-use ride-sharing services is expected to lead to a decrease in individual car ownership down the road, at least in urban areas. While there has yet to be much of an impact on vehicle ownership, the die is likely cast. Most notably, the majority of consumers surveyed in developing countries (figure 8), and particularly younger demographics, appear most enthusiastic about changing usage models that don’t necessarily include ownership.13

In fact, those who have used ride-sharing/ride-hailing services often questioned the need to own their own vehicle in the future, particularly the younger segments (figure 9).14

If AVs and ride hailing continue to become entrenched with younger consumers and in up-and-coming regions such as India and China, it could mean a structural decline in the need for personal auto liability insurance over time.

So, as the driving economy evolves, insurers worldwide would need to fully assimilate consumer acceptance of the future states of mobility and the tech that drives them, in various regions and among different age groups to adapt their responses accordingly.
Insurers should jump on the bandwagon

"Better three hours too soon than a minute too late" — Shakespeare

The transitional time frames wherein AVs could share the road with human-driven vehicles, and the longer term, when self-driving cars may dominate, will likely force a fundamental shift in insurers’ product mix, as they would for underwriting, pricing, and business models.

Recognize that rate of change by geography and age may vary: According to consumer sentiment, insurers operating in developing regions will likely have a shorter transition period than those in more mature geographies, and therefore should consider pioneering new strategies to remain viable and profit from the emerging driving paradigm. However, while benefiting from lessons learned in these regions, those operating in more ‘resistant’ geographies, such as Germany and the United States, should remain flexible and start transforming their own products and processes to align with changing consumer driving habits. Insurers should also closely track the progress of regulation and infrastructure development required to support consumer demand for AVs, as societal acceptance alone will not decide the rate of rollout.

Develop more technical underwriting capabilities: At its core, the underwriting tools and skill sets that are ‘tried and true’ with traditional auto insurance risk modeling and pricing will likely need to evolve. Risk models that use driver attributes to determine rates, such as motor vehicle records, traffic violations, or credit reports, would have to be modified with elements that are more relevant in a sensor-driven ecosystem, such as technology viability, sensor shelf life, and the impact of local road conditions and infrastructure. And while risks such as theft and vandalism will likely remain as coverage options for a vehicle’s owner, liability for accidents could increasingly shift from the driver to the vehicle or technology manufacturer, including the software programmer. This would complicate the transition already underway for those deploying telematics and usage-based programs that leverage real-time driving data for pricing and claims settlement. With the emergence of sensors and AVs, underwriters should consider additional tools and training to acquire the technical capabilities to understand and incorporate the latest vehicle specifications.

Prepare for incremental changes to cost structures: While it will be some time before AVs could dominate the roadways, insurers are in the midst of a more immediate, transitional period thanks to the new technologies being embedded in today’s vehicles. For example, 14 percent of 2016 car models in the United States were equipped with technology to mitigate accidents. While it may seem intuitive that new safety features should decrease accident frequency and ultimately drive down premium rates, insurers should consider accounting for the fact that for the time being safety sensors are (1) expensive in today’s vehicles, and (2) pose unique risks of their own. They are often embedded in vulnerable places such as side view mirrors or front/rear bumper areas, which are more likely to incur damage. The cost to repair damage in sensor-equipped cars is five times higher than for traditional vehicles, and is therefore already driving up loss costs during this transition. And it may be quite a while before all this new technology lowers accident frequency enough to positively affect loss costs. Indeed, estimates by some insurers are that 25-to-50 percent of vehicles would have to be equipped with forward-collision prevention systems before crash rates decline sufficiently to offset the higher repair costs associated with damaged sensors and computer systems.

Prepare to navigate with insufficient or incomplete data, and exploit emerging sources: Counterintuitively, it might make sense in the short term for insurers to increase prices or deductibles to cover vehicles with safety technologies designed to lower the odds of an accident, because such technology is actually raising loss costs at the moment. But in reality, consumers and even regulators might balk at higher premiums for theoretically safer vehicles. In the interim, insurers may have to accept the potential for higher claims severity for such vehicles, and reconcile the difference by focusing on reduced frequency, as well as the benefits from the influx of data received from the sensors to improve predictive models and pricing.
**Establish advanced analytics capabilities:**
Leveraging advanced analytics, insurers can capitalize on the huge influx of real-world, sensor-generated data, rather than depend on traditional proxy sources. This could be a potential game-changer for underwriting, pricing, claims, and business-line shifts. For instance, Liberty Mutual is offering discounts to clients that drive Volvos with active or passive advanced safety features. Savings incentives may not only encourage consumer adoption of safety features, they more importantly can provide invaluable experiential data to insurers for more accurate evaluation of the impact of such technology on accident frequency and severity. An insurer’s capabilities to leverage telematic data to develop more accurate models will likely become a competitive differentiator at first, and table stakes for survival as this transition proceeds.

**Plan for product and business-line shifts:**
Longer term, while some in the insurance industry anxiously foresee the contraction of several traditionally leading lines of business, AVs and pay-per-use will also likely generate a host of new loss scenarios to insure. For example, AVs will likely require connectivity for over-the-air software updates and to transmit performance data, which could create vulnerability to network-based attacks. According to Deloitte’s, “TMT Predictions, 2017,” the abundance of unsecured IoT devices has made large-scale attacks that exploit their vulnerabilities simpler to execute. Insurers can capitalize on the emerging need for cyber liability products to protect consumers, vehicle manufacturers, AV technology producers, and writers of the software that run self-driving systems.

New products could also be developed to cover risks related to infrastructure enhancements to accommodate AVs, as well as real-time per-trip micro insurance based on elements such as location, time of day, or who/what is driving a car at any given moment, and for what purpose (commercial versus personal, given the ongoing expansion of mixed-use vehicles). Additionally, manufacturers will likely seek coverage against satellite or sensor failure or damage, as well as heightened recall risk.

**Retrain claims adjusters to interpret intricacies of shared driving:**
Pay-per-use driving would make liability more complex and challenging to assign. Like underwriters, claims adjusters will likely need to be retrained to fully understand the algorithms, sensors, and emerging loss scenarios, as well as how to assign responsibility among driver, manufacturer, and tech provider. Meanwhile, as ride-sharing/ride-hailing services become more pervasive, first in urban areas and among younger travelers, and later likely universally, insurers should develop products that provide coverage for multiple drivers who may not be in the same household or family, and might not always be driving the same vehicle.

**Recognize the threat of non-traditional competitors:**
Another challenge to auto insurers in this evolving ecosystem is potential poaching from non-traditional competitors. As insurers contemplate how to navigate the new coverage paradigm, some self-driving vehicle developers or analytics organizations could step in to fill the insurance gap themselves. Morgan Stanley predicts that about 20 percent of the car insurance market may be appropriated by such “disruptors,” as tech companies leverage driver data collected by navigation apps such as Waze or Google Maps to provide personalized insurance products and services to consumers. Indeed, Tesla has been selling car insurance with its products being distributed in Asia as part of its vision to one day routinely include insurance in the final sticker price—in part to drive home the point that its autopilot system is designed to make Tesla cars much safer than traditional cars.
Getting onboard
When one door closes, another one opens

Insurers will likely need to quickly find their footing through the transitioning mobility ecosystem. They cannot afford to be laggards when it comes to modernization, given the fundamental shift taking place in their insurable exposures. Disruptive forces confronting the auto insurance market seem to demand quick and nimble responses to maintain relevance amid a changing risk landscape and the potential for heightened competition from both traditional and non-traditional sources. It is likely that only those insurers with a flexible and diverse product mix and business model may thrive going forward, as technological and societal trends take hold at an uneven pace in the automobile industry.

As technology and capabilities to enable the new driving paradigm advance and as consumers increase confidence in becoming literal backseat drivers, insurers should plan to navigate through both known and less predictable developments to retain and grow market share (figure 10) in the short and long term. This may require refinement of operating models, underwriting and pricing, and products and services, as well as the talent to compete in a rapidly changing market. Global customer sentiment indicates these challenges could unfold unevenly by region and demographics over the transition period.

The bottom line for auto insurers is that the cost of doing business the same way they’ve traditionally done it, in terms of lost revenue and market share, will likely be far higher than the price of change. For an historically conservative industry such as insurance, this observation has possibly never been more appropriate. As society increasingly embraces the future of mobility, and as expectations for ease, convenience, and cost-effective products and services grow, insurers should position themselves to take the driver’s seat, or all evidence suggests they could lose this race.
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Endnotes

4 Deloitte University Press graphic
8 Ibid.
9 Ibid.
10 Ibid.
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13 Ibid.
16 Ibid.
17 Ibid.
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