(CES) Consumer Electronics Show

Company Participants

- Alexander R. Baugh, Chief Executive Officer-North America General Insurance
- Gaurav D. Garg, Chief Executive Officer-Global Personal Insurance
- Kate Sampson, Vice President-Risk Solutions
- Robert W. Peterson, Professor of Law & Director-Center for Insurance Law and Regulation

Other Participants

- Salen Churi, Assistant Clinical Professor of Law & Bluhm-Helfand Director-Innovation Clinic

MANAGEMENT DISCUSSION SECTION

Alexander R. Baugh {BIO 15706866 <GO>}

Good afternoon and welcome to the 2018 CES Research Summit. My name is Lex Baugh. I'm the CEO of North American General Insurance for AIG, and I'd like to introduce my colleague, Gaurav Garg, who is the CEO for our Personal Insurance business. We're delighted to be back at the CES Research Summit. This is the third year in a row for us, and we're fortunate enough to have been selected as the only insurance company invited to speak.

In 2016, we began our partnership with CES and in particular, we worked closely with the Chief Economist for the CES at that point in time. And our initial efforts were along the lines of just trying to understand how the Internet of Things, how the consumer Internet of Things, how the industrial Internet of Things would impact risk. Last year, we came back for a second time. We released the study on smart safe data sharing with Kleiner Perkins.

The concept there was to introduce the ID of digital trust and to understand better how we were coming to trust the digital age and what the impediments would be for business and for the adoption. This year, I'm excited to say that we focus on the future of mobility and risk as autonomous features become driverless cars and trucks. And I don't know how many of you saw it this morning, but in my hotel room they slipped the newspaper under the door. I can't say that I had read the Las Vegas Review-Journal before in the Las Vegas Sun, but big article in there about BYTON, and BYTON is a fully autonomous electric vehicle, which is expected to be launched in China by 2019. So we'll talk a little bit more about what we learned in the survey, but the expectations there are well in advance of, I think, what most people are anticipating in the different tests that we've done around the world.

Gaurav and I are here to outline why we did this year's study, and then take a seat on a panel of experts, which will explore the subject a little bit more deeply. As we step back and think about it, the world of travel is changing profoundly. It's changing quickly. Today we think nothing of sharing rides. Cars park themselves. I was on the phone this morning with a partner at McKenzie and he was like a young child. He was so excited about going around and looking at cars that actually park themselves. And I guess it was probably about three years ago that I first got into a Mercedes prototype, and I was pretty excited at that point in time when a car actually parked itself. These things are not something for the future. They're here with us today.

How many people have seen the Lexus ad, where there's a jogger who jumps out from an obscured area behind a bush? The car doesn't only have automatic braking in order to stop before hitting the jogger, the car actually steers to avoid the object jumping out of the bushes. That's something that we probably couldn't have anticipated only two years ago.

As our mobility behavior changes, we think about risk and exposure differently as well. The shift is upending our conventional wisdom about liability and the way that we predict the cost of risk. Within the insurance industry, we tend to look backwards in order to project the future in order to anticipate what's going to happen in the future. And in a period of time when we were introducing airbags, that was very feasible. Airbags were first conceived in 1971. It wasn't until 1998 that they were actually mandated in new cars released in the U.S., and so that gave us a span of 27 years to learn, to understand how do drivers react to having airbags. Do they take more risk? Do they drive differently? What happens with airbags? Do we get more serious injuries and less deaths? Those things turned out to be the case, but not something that we necessarily understood very well in 1971.

These technologies that I talked about earlier that we're seeing, where cars are automatically braking, cars are automatically avoiding an oncoming pedestrian, those are things which were really only in development three, four, five years ago. And today, they're already becoming ubiquitous in the transit market.

The biggest change in risk management between three years ago and today is that today we have the power to know more about more things and with more certainty than ever before. For insurers, that's very valuable. This is an industry that used to price car insurance on the basis of the color of the car. We're able to correlate the color of the car with the likelihood of an accident, very different from the capability that we have today with the data feeds that are available to us from these new technologies.

Some of you might be sitting there and wondering, why is an insurance company doing this at a Consumer Electronics Show? And I know Gaurav has some thoughts that he'd like to share with you on that.

Gaurav D. Garg {BIO 17753314 <GO>}

Thank you, Lex. Delighted to be here today.

Autonomous vehicles, I think, fits very well with the Consumer Electronics Show. What is an insurance company doing here? So it is about the risk. As the risks transfer from self-driven cars to driverless cars, there's a huge shift in the risk profile. And why is it important? Is that technology can lead to safer roads? We do know that there are around 40,000 human lives lost in car accidents in the U.S. alone. And guess what? 90% of this is supposed to be through human error. So if we have technology that can prevent this, it would not only save lives, but make for safer roads, safer societies.

So these individuals and families that travel in these cars, through this survey, we thought we should give them a voice. They should have a seat on the table, because ultimately, they would be the end consumers. So this survey that we did, we asked road users in three countries, in the U.S., in UK and Singapore, on three aspects. The first aspect, what is the risk on the road today? The second aspect, what do they think the risk will be with semiautonomous vehicles, which are already there on the roads? And the third aspect, how would they think the risk will be with driverless cars?

Now, we will discuss the findings today in the panel, but one finding was very interesting, with many of you may agree with. The drivers in the U.S. rated themselves to be superior than the average driver. Well, that's what the survey said. So we'll discuss more about it today.

But two ends of the spectrum emerged in this survey. One end of the spectrum is that people are concerned about things like cybersecurity, privacy of data. You see in videos about – of hacking of cars, of the music system going off, of cars being – the windshield wipers going on, so there are on YouTube videos about that. So they are concerned about that aspect.

The other end of the spectrum is that with this technology, they also feel that the cars will become safer. And if the cars become safer, there is an expectation that the insurance premiums on cars will go down. There may be other areas I will talk about that the insurance premium will balance off on liability versus personal car insurance.

So we are really excited today to be here to discuss this. I would go back to Lex and ask him as to, how is he risk shifting, Lex?

Alexander R. Baugh {BIO 15706866 <GO>}

We'll talk a little about that in the Q&A, but what is clear is that, risk will change. It's not simply going to disappear. It's going to, to some extent, shift. It's going to blur conventional lines that we think about between man and machine.

Gaurav represents the personal side of the insurance business and I represent the corporate, commercial, industrial side, both from the same insurer. And what we're trying to work out and working through various partnerships and collaboration with our customers is exactly how that risk is going to migrate.

So is it between the auto manufacturers, the software providers, the parts manufacturers, or perhaps the road construction people that are building the infrastructure that's going to – or the municipalities that are responsible for the infrastructure, that's going to speak to the cars? Is it the communication providers? Will they have some responsibility here? Or is it some new enabling technology, which we're really not even aware of yet?

Answers to these questions we debated for quite some time and we've certainly only scratched the surface of these questions in our survey. But it's important to start somewhere. And speaking of starting somewhere, I want to return the podium to Gaurav and ask him to introduce our esteemed panelists.

Gaurav D. Garg {BIO 17753314 <GO>}

Thank you again, Lex. We are honored to share the stage with three experts in the field, who will join us now for the discussion on some of these questions. Santa Clara University School of Law Professor Emeritus Bob Peterson. Bob and Professor Glancy were true partners in this endeavor and an integral part in developing our findings today. Welcome, Bob.

Kate Sampson. Kate Sampson is the Vice President of Risk Solutions at Lyft. She is a well-respected insurance leader in the sharing economy after decades of experience at Marsh. She advices several startups on innovation. And finally our moderator, Professor Sal Churi, who runs the Innovation Clinic at the University of Chicago Law School. Tomorrow Sal releases IoT, Risk Manager Checklist Part 2, focused on Europe and the GDPR, a project that we at AIG were delighted to partner with you all.

With that, I'd like to turn things over to you, Professor Sal Churi.

Q&A

Q - Salen Churi {BIO 20591117 <GO>}

Well, thanks, Gaurav. Very happy to be here with all of you and thanks to AIG in putting this panel together. Just quickly a little bit about the Internet of Things Risk Manager Checklist. It's meant to be a practical approach to get risk managers asking the right questions as they implement IoT processes into their businesses, into their products and services. So this is actually the second collaboration between University of Chicago, myself, and AIG, where we've addressed IoT and the sorts of risks that we see on the horizon.

Last year we did it for the United States, and this year we expanded it for Europe. With the looming sort of question of GDPR, and it sort of being implemented on the horizon, we thought it was important to address those questions for risk managers, who do business and whose businesses touch Europe. So with that shameless plus aside, I will open it up to our esteemed panel here to talk about autonomy. We'll start with you, Professor Peterson. We'd love to hear a little bit more about your work at Santa Clara and with AIG. I understand you're a Professor of Insurance and Liability there. Can you tell us a little bit more about how long you've been thinking about driverless cars?

A - Robert W. Peterson {BIO 21267685 <GO>}

Yeah. Well, despite appearances, I was not around in 2011, when the first silent movie was made about a robot driven car, but I had for many, many years taught insurance law, torts law, products liability. So when it looked like autonomous vehicles were going to become a reality, this was a very happy wedding for me. So I started really researching and writing in the area in 2012. But my colleague, Dorothy Glancy, also on the faculty, had been working with smart cars for well over 20 years starting with a grant she got from the Department of Transportation. So we've been working in the area for quite a long time.

So when the opportunity came along to collaborate with AIG on this paper, both Professor Glancy and I jumped at it. We also did a fairly lengthy whitepaper for the Transportation Research Board, which, actually if I may plug this, won an award and she is back in Washington D.C. at the moment accepting that reward on behalf of all of us. In that same year, 2012, California Legislature adopted a statute enabling the Department of Motor Vehicles to begin creating regulations for self-driving vehicles. This has been a long and somewhat labored birth, because they still don't have their final regulations out. But we do expect they may be out by the middle of 2018, if things go as we hope that they are going to go.

So this has been a really exciting area to fall into in the waning years of my academic experience, so I feel very, very lucky to be working in this area.

Q - Salen Churi {BIO 20591117 <GO>}

We all know you're just reaching your prime now.

A - Robert W. Peterson {BIO 21267685 <GO>}

Yeah.

Q - Salen Churi {BIO 20591117 <GO>}

So this one's for Kate from Lyft. We know Lyft is really focused on changing mobility in the future. We can tell that especially from last week. You had a really exciting announcement of a partnership with Aptiv. So how do you think about autonomy and the features that are available today and how that kind of leads into sort of full autonomy in the future?

A - Kate Sampson {BIO 20505903 <GO>}

Sure. So we're super excited to be at CES wearing my Lyft hat, demonstrating the first point-to-point ride-hailing experience. So you can head out to the Gold Lot and actually experience it. And what's super exciting about it, it's really the first real-life example of how autonomous technology can be used in a scalable way. I'm providing this experience to all the CES folks, but really thinking about the future on what this technology is going to do to emissions, our cities' congestion, all of that.

So when I started to think about full autonomy, I started off with we all might not own a fully autonomous car. We might not own one now. We might not ever own one. But we've all experienced autonomous technology, whether it be cruise control, the parking assist

that we talk about, it's all been there. So when I actually think about full autonomy, Level 5, an autonomous technology that has no means for human interaction when the car is moving.

I think, from a Lyft perspective, we tend to think a lot about the impact on the environment, the impact on our commutes, what our cities are going to look like, are we going to live further away from the city, because that commute in is very efficient and you can work and it's quick. Or are we going to live in the cities, because the cities are going to be so livable. We're going to have green spaces where there weren't, parking garages. So at Lyft we think about that.

Personally, I live in the Bay Area. I'm a big skier. I just drove back from Lake Tahoe yesterday, four and a half hours through Sacramento traffic, and I really am dying for this technology to make that ride better. I want that car, that's my living room. But then professionally, when I think about full autonomy, I do – and this is professionally from a risk professional. I think it's going to be much safer. But I also think there is going to be a significant shifting of liability. When I think about all the players that are in this space that will all have influence on that experience in the future, we still have a ways to go, as Lex and Gaurav were saying before, on where that liability is going to land. So I'm thinking about that.

Q - Salen Churi {BIO 20591117 <GO>}

Yeah, tough life making it back from Tahoe. So, Lex, you've been talking about risks shifting for years. Can you tell us a little bit more about what you mean when you say that? Unpack it a bit for us.

A - Alexander R. Baugh {BIO 15706866 <GO>}

I think I spent too much time thinking about risk shifting and not enough skiing in Tahoe. But we have spent some time studying and we truly believe that risk is shifting and shifting in really three categories, three different dimensions. The first area where risk is shifting is just in the mitigation of risk, the management of risk. Most of the technologies that you see being developed – and certainly the auto industry is no exception to this – are focusing on those things that human beings don't do particularly well.

And so an example of that would be automated braking that where the car actually stops itself is it's getting closer to the object in front of it, directly in front of it. For whatever reason, human beings sometimes fall sleep, sometimes they're distracted, and they tend to accelerate right into the back of an object, which they should be seeing. That's a good example of where industry is stepping in using an autonomous feature to improve the safety to take the human out of the process in order to make that process safer.

The second dimension of change in terms of risk is moving from one party to another. And the third dimension is that risk will aggregate differently, so that today risk in the largely human environment is a compilation of the actions of many, many independent actors in the process. And so you might have thousands, you might have actually millions of individuals making decisions, which are leading to relative risk as they execute on that

decision. I think that the machine will do a far better job of making the decision, but when it gets it wrong, it won't get it wrong once. It will get it wrong thousands of times or millions of time, and so the aggregation of that risk is very different than what we've had to deal with as an economy up until now.

Perhaps if I give a couple of examples of industries where this is the case, and I'll come back to auto. The first one I would give you as an example is the production of ammonium nitrate. Ammonium nitrate is – it's a product of petroleum input that runs through a chemical process in order to ultimately produce ammonium nitrate as an end product. It's used as an explosive, highly volatile, something that we as insurers would spend a lot of time worrying about, thinking about trying to engineer.

Well, if we go to the plant today and we go and knock on the door and try and find out where the engineers are at the plant, they're not there anymore. The three shifts of eight-hour engineers who were controlling temperature, pressure, output, were managing the maintenance at that facility, they're not there anymore. There's an industrial control system that's not only controlling the process at that plant, but it's actually controlling the process at many plants across the country. And that's actually not – that industrial control system is not developed by the petrochemical company. It's a control system developed by Raytheon. And so the question of when something goes wrong who is responsible is very different. The chances for something to go wrong are far lower. When they do go wrong, they might happen not only at one plant but might happen at multiple plants.

Another example closer to the customer or to the consumer side of the house is medical malpractice. So, one of the things that hospitals get sued for today is when people show up and they get a false negative. So they show up complaining of chest pains. They're sent home. They're said that if they've got angina, they don't have a particular risk of heart attack. They're sent home. They have a heart attack and they have a bad outcome from that heart attack. That's a classic medical malpractice type of exposure for hospitals today.

In the environment where we have an embedded chip that's able to monitor the release of an enzyme which happens before you have a heart attack, usually six or seven days before you have a heart attack, that person is never going to show up in the hospital in the first place. There's going to be a new liability for the development of that medical equipment and for the monitoring of that medical equipment, and maybe the doctor monitoring that patient may have a new liability that they didn't have before. But the liability at the hospital will disappear. If something goes wrong, it's less likely to go wrong. If it goes wrong, it may go wrong in multiple instances.

And finally, the example of the automobile, where you have these autonomous features and where the car is fully autonomous, kind of hard to imagine that the car will not be safer and that people won't be safer driving cars. I think Elon Musk's concept of us thinking of it as bizarre in 5 or 10 years' time that we would allow somebody to hurdle down the highway at 80 miles per hour uncontrolled in a hunk of 2 tons of steel, it's probably a pretty good vision in terms of how we're going to think back about driving before the age of autonomy.

But as we move towards autonomous driving, the risk won't disappear. The risk will be perhaps with the manufacturers I alluded to earlier, perhaps with other parties or contributors to the process. The risk will be far less frequent, but the ramifications of the system going wrong have far greater severity implications than they would have historically.

Our future of mobility study really pretty much agreed with that. They said where there was no autonomy, it's clear, the driver is primarily responsible. But in cases where you get driverless cars, other entities will take on responsibility. Who will be most liable in the accident involving a driverless vehicle? Auto manufacturers, software programmers were perceived to be the most liable, followed by the vehicle occupant, vehicle owner. Notice the distinction between occupant and owner in an autonomous world. The Internet service provider, parts manufacturing, the pedestrian – I'm not sure how that came up – and finally, road construction companies. Maybe you take responsibility for not looking both ways and you walk out into the road, I'm not sure.

Q - Salen Churi {BIO 20591117 <GO>}

Assumed risk. So this one is for you, Gaurav. From a consumer perspective, what is one really big issue that we, sort of the industry at large kind of building autonomous technology, have to address before we get to broader adoption?

A - Gaurav D. Garg {BIO 17753314 <GO>}

So, I mean, there are multiple things that we have to address before we get further down this road. And there are a lot of complex issues relating to technology, relating to infrastructure that Lex talked about. But I think one of the biggest issues that I see, and coming out of our study, is the perceived trust gap with the consumer. So if you look at our study, you will see that less than 50% of the respondents actually feel safe with a driverless car on the road. While 4 out of 10 think that this is safer, but would they be comfortable with a driverless car on the road. So that creates a big hurdle to surmount for any innovation or any progress to be made in this area.

So there are things – people are confused about it. There are media reports, but at the same time, can a car anticipate the millions and millions of scenarios? Will it be able to identify, as Lex said, a pedestrian crossing? Would it be able to identify a stationary object instead of a pedestrian? Would it be able to identify a bike instead of a car? Would it be able to identify a pet or a cat running across the street? Would it be able to actually see what a four-way stop means? Is it a four-way stop, dead end, three-way? There is a lot of permutation, combinations that need to be worked into.

So let's assume the technology is able to do everything. But there still has to be this trust gap that needs to be overcome with the consumers to be able to trust the technology and adopt. So in my view this would be one of the biggest hurdles as we go down the road. And one thing that, as Lex was speaking, is interesting is that once the autonomous vehicles come in, there won't be a DMV. Will there be? There'll be no licensing...

Q - Salen Churi {BIO 20591117 <GO>}

Sounds like a wishful thinking.

A - Gaurav D. Garg {BIO 17753314 <GO>}

...right? Anyone can just sit in a car and go.

Q - Salen Churi {BIO 20591117 <GO>}

So we'll go back to Kate to talk about autonomous in the ridesharing context. So over the past five years consumers have really taken to and embraced ridesharing. How do you think consumers are going to respond to autonomous rides?

A - Kate Sampson {BIO 20505903 <GO>}

Yeah. So, with no surprise, I'll probably be more bullish and optimistic about adoption. If I go back five years ago when we launched Lyft, I distinctly remember having a conversation with AIG to say – I was an insurance broker at the time, I worked at Marsh, and I called AIG and said, oh, I'm working with this company and this is what they're going to do. They're going to be the first peer-to-peer ridesharing and everyone will have an app and you can share a ride with a stranger. And I don't think it was AIG who said, but a number of insurers said, so hitchhiking, you're going to just do hitchhiking. And we've spent our whole lives being told not to get in the car with a stranger. And then, we launched Lyft and we're like, hey, here's a pink moustache and fist bump and jump in the car with us here.

What we knew in 2011/2012 is that we were going to – Lyft was only going to be successful if we changed consumer behavior. We had to wipe out don't get in the car with a stranger, and get you to get in the car with a stranger. And then a year later, what we – so it worked, I think, we all agree. I used to say raise your hand if you've been Lyft or in Uber, and now every hand goes up in the room. But about a year later we launched Lyft Line. We said now not only are you going to get in the car with a stranger, but you're going to get in the car with another stranger, who is also going the same way as you. And everyone said, now that's just crazy. And then within months, 50% of the rides in San Francisco were Lyft Line rides, sharing a ride.

So I tend to think that the adoption of this technology is going to be much quicker by consumers than we think. I think there is some hesitation. But when I think about getting in the car with a stranger or getting in the car with technology that is being advanced over all this time by some of the greatest thinkers in the world, I'm pretty bullish on it. And I like to compare it to – I had the opportunity to be in a couple of these cars.

And when you first get in – I equate it to when I had a BlackBerry, and I held on to my BlackBerry forever. I've been around for a while in the insurance business. I had a Blackberry for a long, long time. And then finally I got an iPhone, and I just thought, oh, I'm going to miss the keypad, I'm going to not like this, and within an hour I thought why did I not get into this iPhone game before. So I think that we will get in these cars, experience it, and stay with it for a long time. And I think it's just going to be so much safer that I envision a time down the road, where if someone takes out their car key is you'll kind of

look at them and say, you still drive, like aren't you using an autonomous car, because so many of the accidents are going to be caused by human drivers, not by the robot cars.

Q - Salen Churi {BIO 20591117 <GO>}
Yeah. We're going to have Mothers Against Human Drivers soon.

A - Robert W. Peterson {BIO 21267685 <GO>}
Yeah.

Q - Salen Churi {BIO 20591117 <GO>}
So we'll shift back to Professor Peterson. You looked at a number of different jurisdictions in your report and you found some interesting differences between them. Can you kind of just double click on the differences between the U.S., the UK, and Singapore, and kind of draw out some of the things that jumped out to you?

A - Robert W. Peterson {BIO 21267685 <GO>}
Sure. A little bit. I mean, just as a slight aside, going back to ammonium nitrate. If you really want to find out about the power of ammonium nitrate, Google the Texas City disaster from about 1944, when they are loading a fertilizer ship with ammonium nitrate and it blew up, and they found one of the anchors about 1.5 mile inland. So that gives you just a feel for ammonium nitrate.

Q - Salen Churi {BIO 20591117 <GO>}
Maybe don't Google it, you don't want to be on a list.

A - Robert W. Peterson {BIO 21267685 <GO>}
Yeah, that's right. We're probably all – every one of you is now. Yeah, there are a lot of differences between the United States and other countries. But there are a lot of things where they tend to agree too. And one of them is that, they virtually all agree that they think that these cars are going to be safer, that their driving is going to be less stressful, and their personal safety is going to increase. But when it comes to some of the problems, they also all agree that they think that cost is going to be one of the major barriers to the deployment of these vehicles. I think that comes from the fact that, I think 40% or so of the people in the United States and the UK expect that they are going to own one of these cars; kind of surprising – well, maybe not surprising, only 24% of the people in Singapore think that they are going to own one of these cars.

But if the cars are deployed on a fleet basis rather than an individual ownership basis, I think that particular concern about cost is going to fade a little bit into the background. About the same percentage of people expressed comfort with sharing the road with these vehicles – this is a point that Gaurav was making – maybe 42%, 43%. On the other hand, a similar number expressed discomfort. So you have to ask yourself, do we have a glass here that's half full or a glass that's half empty, because that other 40% that feels uncomfortable is going to have to be persuaded and is going to have to be brought

around through education and marketing and other things. Otherwise, there is going to be, I think, a political challenge to rapid deployment of these.

Cars are also a culture. They're a major part of the United States culture, but not surprisingly, they are less of an element of the culture in Singapore, for example, and that's probably because only 53% of the people in Singapore actually own a vehicle. You compare that with 79% in the UK and 85% in the United States. And from personal experience, a lot of those people in the United States actually own more than one vehicle. I think 91% of the people in Singapore have actually used ridesharing, 91%. So they're going to be more comfortable with this.

If you look at the UK, it's only about 26% that have used ridesharing. And if you look at the United States, it's really only about 22%. Another impediment that people cited in the survey was they love to drive their cars. They enjoy driving their cars. They don't want to give up their cars. They'll say that you're going to have to pry the steering wheel out of my dead hands, which the EMTs might actually. But I can understand again why in Singapore they are less concerned about that, because so many fewer people own cars in Singapore, so it's not as ingrained a part of their culture. But I have lived in England for a while and I cannot see the joy, frankly, of driving my own car around London. But, if you go for a nice weekend drive in the Cotswolds, there is really nothing half so pleasurable as a nice drive to the Cotswolds, I understand that

Q - Salen Churi {BIO 20591117 <GO>}

So this one is for you, Gaurav. What role do you think insurance plays in this overall journey towards autonomy?

A - Gaurav D. Garg {BIO 17753314 <GO>}

Well, insurance companies are, obviously, not in the value chain of building the autonomous vehicle with so many people involved, but, as we discussed, autonomous vehicles expose different kinds of risks. So these risks are risks that an insurance company would be instrumental in helping manage, to the ecosystem, to individuals and businesses. And as the survey points out, things like cybersecurity, I mean, there is more than 70% people who really worry about cybersecurity, hacking into the cars, which could be very detrimental. Imagine a fleet of vehicles which are autonomous on the roads are hacked into. It could result in catastrophic damages and loss of life as well. So to ensure that this whole ecosystem has the right protection, to work with the regulators as they frame regulation on liability and what would happen, because it's also incumbent on the regulators to make roads safer for people, and how do we help shape that process.

So insurance companies have to stay with the times, stay ahead of the times, and that's one of the reasons why AIG has invested heavily into this and we come to the CES and we are talking about this and we published this paper, is that we are seeing the trends and we want to be ahead with the kind of right insurance products with the various stakeholders in the value chain to help this process come forward and create the trust and confidence in the whole society, in the people who are investing in for this process to go on. So I think it's a critical role that insurance would play for this to go forward.

Q - Salen Churi {BIO 20591117 <GO>}

So opening up to the whole panel. If you could all just kind of share maybe the thing that jumped out to you most about this report. What really sticks out? Maybe start with you, Lex.

A - Alexander R. Baugh {BIO 15706866 <GO>}

Sure. For me – and I don't think it was a big surprise. I think it was very evident in looking at the research that partnerships are critical to the way forward. So when I think about that from an AIG perspective or from an insurance company's perspective, and I was talking about the inability to be able to go back and look at history in order to project the future, that leaves really only the option of looking at scenario planning. And in order to build strong scenarios and to do good scenario planning, you have to understand the dimension of the autonomous driving challenge from more than just the perspective of the insurance company. You need to understand what's happening from the standpoint of the communications industry, what's happening from the standpoint of experience as these new prototypes are being built and where they ultimately take us.

And if you look at the paper, you can see that that's happening at multiple levels. You're seeing that there is a citing of the combination between Avis working with Waymo. You've got Volvo working with Uber. You've got nuTonomy working with Lyft. You've got Fiat, BMW, Intel, Mobileye, Delphi, all working together. This is happening across the landscapes and we're talking specifically about the space of autonomous vehicles, but parallel activity is happening in many aspects of our economy. And this is going to be requirement for us as we think about the development of the regulatory environments, as we think about the development of the law. And listening to the plaintiffs' bar, they're looking at this challenge and the one thing that's going to be very obvious and has been obvious in every technological revolution that we've gone through to-date is that the law lags the actual science and lags technology, and so we're not going to know exactly how the law is going to respond in every case. We're going to have to work with partnerships to get the best view we can to develop that scenario.

In the world of innovation, hubris is absolutely deaf. Everybody wants to win. We all represent businesses or ventures ourselves, and we want that venture to win. But humility and the willingness to partner is going to be critical to success in this space, and I think that comes out loud and clear in the work.

Q - Salen Churi {BIO 20591117 <GO>}

Maybe move to you, Gaurav.

A - Gaurav D. Garg {BIO 17753314 <GO>}

Well, I mean, if you look at this paper and the research, I would tend to think that one of the biggest takeaways is that consumers have a voice, and at this moment they are kind of mixed and concerned on some parts, as well as looking forward to the safety of the vehicles. So the consumers are the people who ultimately will be voting to deciding who will be deciding and voting on regulatory changes, who will be sitting in juries who decide on liabilities as to where does the liability fall in case of an happening. And in my view, as

we take this forward, we have to continuously shape this whole consumer sentiment, and that I think is very important for success of this autonomous vehicles going forward.

A - Kate Sampson {BIO 20505903 <GO>}

So for me, two things. I think the first is, the paper really highlights the number of players, the number of concerns that are out there. And when we first launched ridesharing, we certainly were disruptive to insurance companies, to transportation boards, to taxis, consumers had a voice there. But when I look at autonomous technology and the number of partnerships, the number of people, the cities who are building infrastructure to attract us to come and test in their cities, I really think the regulators – and this is a really complex regulatory environment, and I'm really hopeful that the regulations and the legal frameworks can be established to keep up with how quickly the technology is developing.

And that's the second takeaway, is I think this is coming faster than people think. In the report, all three of the locations noted that they agree that a majority of cars on the road may be autonomous by 2051, so 35 years. And at Lyft, we're focused on getting a majority of rides autonomous by 2021. So there's a huge gap in what the report and what consumers are thinking for what some of the companies are working toward. So I think the future is here and is going to come quicker than people think.

A - Alexander R. Baugh {BIO 15706866 <GO>}

I think that regulatory point is a very interesting one, in that the regulation that controls most of motor vehicle operation globally was developed in the early 1970s, and it doesn't say anything about autonomous driving, you'd be surprised to hear. It really has as its tenet, as fundamental in all of the enabling legislation the fact that there's a human driver who is responsible for the operation of that car, and unraveling that and rebuilding that legislation is going to be no small feat. And I suspect that what we'll see, listening to the plaintiffs' bar a little bit that – what we'll see in the first instance is that, that law won't change immediately and won't even change quickly. And that you'll still be in a situation where the first action that you'll have will be against the operator of the vehicle, even if that operator is not actually in control of the car. And that will lead to subrogation activity against some of these other parties that we're talking about, and the law will evolve and we'll come to a different landing. I don't know exactly the path that that's going to follow, but I think that we'll see something along those lines.

A - Kate Sampson {BIO 20505903 <GO>}

Yeah. And I would also say, it's not the first time that this challenge has been put forth for insurance companies, for regulators. We have aircraft that we've got an operator of the aircraft. We've got a Rolls-Royce engine or a certain engine, we've got autopilot technology in there. So we've seen situations where liability has had to be determined, so it's not the first time, but it's on a much broader scale.

A - Robert W. Peterson {BIO 21267685 <GO>}

Yeah. Look, speaking of airplanes and the rate of adoption, let me just go back to when airplanes were first invented, because in 1901, Wilbur Wright said to his brother Orville, it will be 50 years before people fly. Now, Wilbur died young, unfortunately, from typhoid

fever and didn't live long enough to see another innovation, which was vaccinations. But Orville actually lived long enough to see not only the destruction of Europe from the air, but the breaking of the sound barrier in 1947, because he passed away in 1948. So when it comes to these kinds of predictions, you can either cite Yogi Berra or Niels Bohr, whichever one you want to credit, with saying predictions are difficult especially about the future.

But I think this train is now on a roll, self-driving cars for the last 100 years have always been 20 years away. Well, now, look in your rear viewer mirror, because things are closer than they appear. When was Uber founded? 2009 I think, and then Lyft a few years later, and now they're absolutely global. So a new technology in this age can sweep away the status quo almost overnight. So I agree with, I think, everybody here that the public perception is probably not correct that these cars are going to be on the road and in substantial numbers particularly in urban areas, where the value proposition is pretty obvious very, very quickly.

There are going to be a lot of regulatory challenges and the ones that we see right now between – little bit of a tension between the states and the federal government that who is going to take the lead with respect to light of this regulation, is really just a microcosm of what's actually going on globally, because virtually every country and every economy is working as fast as they can to deploy these and to come up with whatever regulatory structure they are going to have for that particular deployment. And the report does, I think, a very good job – or the whitepaper, of showing exactly how this is a global enterprise with all the different pieces that we've been talking about.

You go and take a look at pages 15 through 20 in the whitepaper and they have some wonderful charts that show how any particular vehicle that's being developed today may have elements coming from all around the world going into it. So those are going to cause any number of challenges and there is going to be a lot of sifting out and settling down that's going to be doing – going over the next years. But I say they're here and I think you can go out to the Gold Lot right now and reserve an autonomous ride in a Lyft, if I'm correct. So maybe when we're done here, Sal and all of us, let's go out to the Gold Lot and get on that train.

Q - Salen Churi {BIO 20591117 <GO>}

It does seem like there is a sense in which the people that are most optimistic about this or at least think it's coming the most quickly are the people who've experienced the taste of it, right? Kate, you mentioned the experience such as sort of sitting in one or the folks in Singapore who have more experience with ridesharing.

Another theme I think we've seen kind of woven through all this is the trust gap, right? And I think Lyft and ridesharing has gone a long way towards solving that problem, right? You mentioned the first thing that your mom told you when you were a kind is don't get in a stranger's car, and now we all do that with regularity, because you guys built a digital trust platform and it's really something, I think, that has helped people kind of acclimate to this. So it does feel like one of those things where when you say it, it sounds really a pie in the sky, you're going to get in this car, it's going to whisk you away to somewhere. It's not

a stranger, it's a robot. But the people who've experienced sort of the first steps we've taken in that direction tend to be a little bit more optimistic about it.

It's been said recently in Silicon Valley that we're overstating the short-term effects of this and understating the long-term effects of autonomy. And we talked a little bit here today about sort of where we are today and where we're going in 2050 or 2030 or whatever the appropriate day is for that kind of deep penetration of autonomy. Can you guys talk a little bit about where you think we may go in between? What does the adoption look like? What does that process look like?

A - Kate Sampson {BIO 20505903 <GO>}

I'll start. So if I think about it, where we are today, the car is the second most expensive, largest expense in your house. So I'm constantly wondering, there is no question that we are close to, if we haven't already, hit peak car. So meaning, we have peak horse when we stopped buying horses, and the population of horses went down in America. Now it's we're at peak car. And we know that 16-year olds aren't getting their license. We know in the urban environment we're seeing much more adoption of rideshare versus owing a car. And I always use the analogy of, if you're – some of us have – we all use our cellphones, and many of us still have a landline in the house. And we really don't use it. It just accepts cold calls and political calls. But we like having it.

But if that cost you $9,000 a year to keep, you'd get rid of it in a second and you'd use an alternative. And I think that's what we're looking at when we talk about the transition to the various forms of ridesharing that will occur with autonomous technology or semi-autonomous technology until we get to that Level 5 state. So I think we're seeing more and more use cases for ridesharing in this middle ground. We're seeing non-emergency medical cases, where we're partnering at Lyft with folks who want to help their patients get to their dialysis appointment or come for their check-ups. So we're starting to see the use cases just explode in preparation for this really being the future.

So I think we're going to still see adoption of ridesharing and the elimination of car ownership. Maybe you go from three cars to two cars or two cars to one car through this transitional period, but it'll start to be more and more obvious to consumers that this is the future as those things start to emerge.

Q - Salen Churi {BIO 20591117 <GO>}

Rip-off of that, I think that applies equally to sort of the regulatory picture, right? So as things sort of start to get adopted, you may see more and more willingness to engage with them. So this kind of parallels the sort of personal feelings that people might have and their optimism or pessimism about autonomy. But to just take one example, there is a company called Zipline. I don't know if you guys have come across them. It's a drone medical delivery company. So they have autonomous drones that are today delivering 20% of Rwanda's blood to the hospitals and currently can't operate in the U.S. under FAA regulations. But once they get to that penetration and they show the tremendous transformative power of being able to make those deliveries and the lives that they're changing, it becomes easier for regulators here to get comfortable with that. And so, I

would sort of echo your comments that you sort of start to build out a framework where you can see adoption coming across jurisdictional lines and even international lines.

A - Robert W. Peterson {BIO 21267685 <GO>}

Yeah. Well, I think we are as humans neophobes, and that's part of how we stay alive is we are a little bit fearful of new things until we establish that they are at least harmless to us. And then if they're useful, we will adopt them. But I could say just from personal experience, I rode in a Google car a number of years ago, we went out on US 101 and I-280, and I was nervous when I first got in the car. But probably within five minutes I was relaxed and I was chatting with the person who was in charge of driving the car and it was – really it took no more time than that for me to sit back and say, I like this. And at 75, the other people around me when I'm driving would like it if I were in one of those cars, too.

Yeah. But when you think about the rate of adoption, one of the figures that's always stuck in my mind is that, if you deploy these cars on a fleet basis and within a particular operational design domain you have only 5% of fully autonomous vehicles, but each of those replaces six cars, those are cars that either aren't going to be bought or they're going to be retired or they're going to sit in their driveway, you really have 30% penetration. 5% times replacing six cars, so it can happen very, very fast without deploying cars one-for-one or even close to one-for-one. So if I can commit the Yogi Berra error of guessing about the future, that is my best guess, it's going to happen very fast.

Q - Salen Churi {BIO 20591117 <GO>}

Well, I think we'll conclude there. Thank you so much to our esteemed panel here for sharing their thoughts and to AIG and to the authors of our reports. And for all those who would like to dig in and take a look at the report and learn more, you can find more on www.aig.com/innovativetech. Thanks so much.