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THE CONNECTED CAR AS A DIGITAL PLATFORM: The consumer market for in-car apps, ads, and internet services

John Greenough | February 13, 2015

BUSINESS INSIDER

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Key Points

- **Connected-car makers, telecommunications companies, and app developers will see significant revenue from selling connected-car features, such as in-car entertainment.** The cost of connected-car services and products often comes at a surcharge to users, either included in the up-front price of the car or paid over time. The various connected-car services and products could generate an estimated $152 billion in revenue for carmakers in 2020, according to Strategy&.
- **Entertainment is the feature consumers show the most interest in, followed by connected safety features.** Sixty-nine percent of respondents in a recent survey indicated that they would like streaming music for their cars, such as services provided by Pandora and Spotify, and 52% of consumers would like their car to alert them about traffic signals, congestion, accidents, and more.
- **For all the excitement among automakers and other connected-car partners, only one-third of Americans are**

interested in connected-car features for now. Owners of luxury cars tend to be most interested in the connected car. However, in a positive sign for connected-car makers, those who use these connected services are very satisfied with them.

- **Consumer awareness is very low:** In a recent survey, about 80% of US consumers said they had either never heard of connected cars or were unsure what the term referred to. In the poll, 44% of drivers said they had never heard of connected cars. An additional 42% had heard of the term but didn't know what it meant.
- **The primary barriers to the connected-car services market are the high price and major concerns around whether these vehicles will be vulnerable to hackers' attacks.** Prices will begin to come down over time and carmakers will need to partner with technology companies and security experts to overcome technical hurdles and make sure connected cars are safe from hacking.
- **Self-driving cars will be the next major automotive technology, but that is a long way off.** According to one industry estimate, 180,000 completely self-driving cars will ship in 2020.

Click here to read our broader market forecast and report on the connected-car vehicle market, "THE CONNECTED-CAR REPORT: Forecasts, competing technologies, and leading manufacturers."

Click here to download the infographic for this report »

Click here for the charts and data associated with this report »

Revenue opportunities

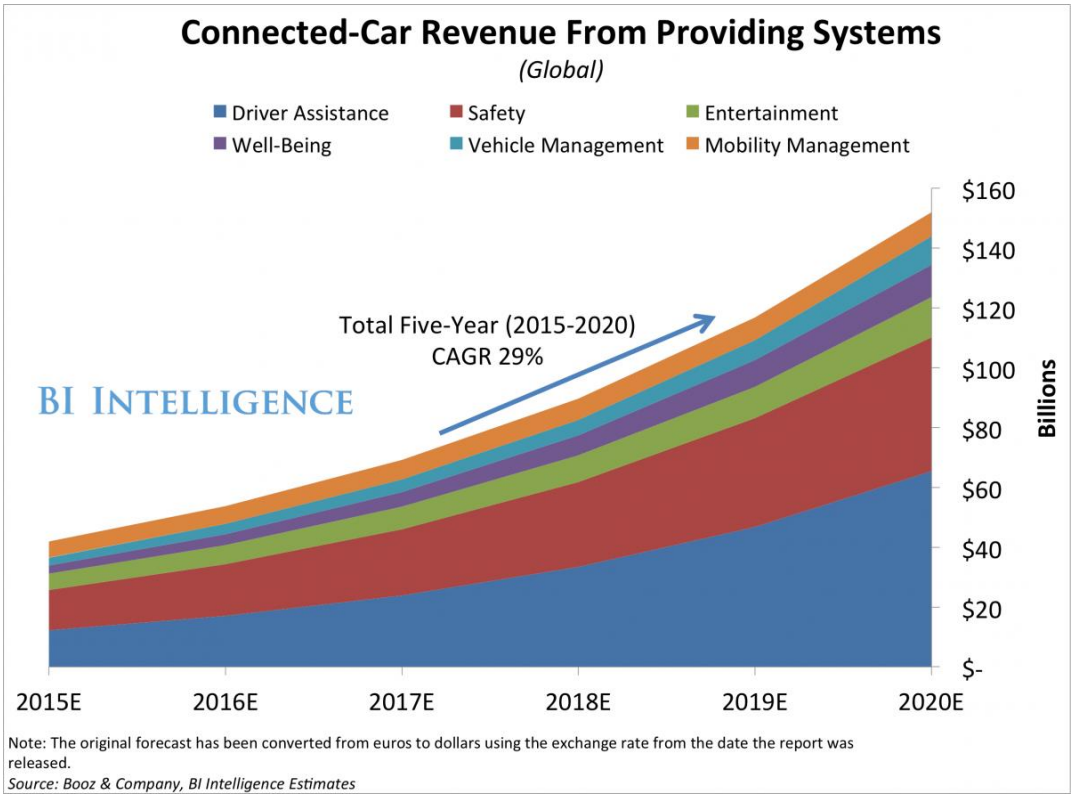
Carmakers typically offer a selection of features in their connected cars, including safety products; traffic-management tools; entertainment consoles and apps; and vehicle management. Some of these features are available only in cars with embedded connections, and some can be found in cars running both embedded and tethered technology.

While we believe that the biggest benefit connected cars offer automakers is internal to the companies' operations — the money they will save by pushing software updates to cars remotely and the improvements they will be able to make by accruing data on car performance on the road — there is still a massive market for carmakers to sell connected-car features to consumers.

Car manufacturers' revenues from providing various connected-car hardware and software to consumers will total $152 billion globally in 2020, according to Strategy& (formerly Booz & Company).

This market forecast looks specifically at car manufacturers' revenues generated by selling connected services and products, which is only a fraction of the revenue earned from connected-car sales overall. It also serves as an indicator of the features that will be most popular with consumers.

These systems can typically be purchased a la carte or as part of a connected-car package.



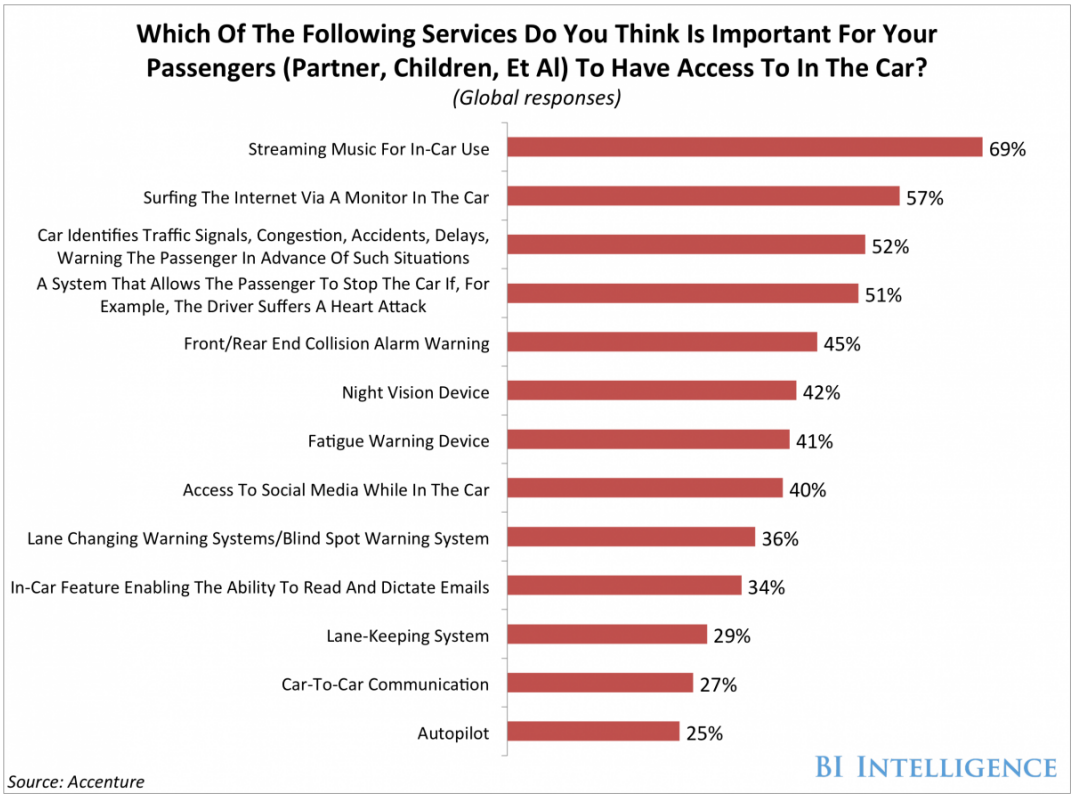
Note: The original forecast has been converted from euros to dollars using the exchange rate from the date the report was released.
Source: Booz & Company, BI Intelligence Estimates

- **Driver-assistance features will bring in the most revenue in 2020, at $65 billion.** This is primarily a self-driving feature, allowing cars to park themselves without driver control and speed up or slow down in traffic jams to maximize efficiency. In these scenarios, a driver is still behind the wheel to monitor the car's performance and adjust accordingly.
    - Tesla recently showcased how its new Model D car could self-drive but required a driver behind the seat. (Fully autonomous, or self-driving, cars are discussed later in this report.)
- **Connected safety features bring in the most revenue of all of today's connected-car systems, at $13 billion. But safety will lose its spot as the top revenue stream to driver assistance in 2017. Connected safety features will bring in $44 billion in 2020.** These connections include alerting customers of road conditions, such as severe weather or an approaching hazard, as well as systems that prevent collisions.

    - One way cars help optimize a driver's well-being is through biometric monitoring. For example, a connected car could include cameras that monitor a driver's eyes and bring the car to a safe stop if the driver starts falling asleep. Strategy& speculates that the systems will become so sophisticated that they can monitor a user's heart rate to prevent crashes in the event of a heart attack.
- **Mobility management (including navigation and maps) will account for $8 billion in 2020.** Strategy& defines this as giving proper driving instructions to people so they can reach their destination in the most fuel-efficient and fastest way.
- **Entertainment is one of the most popular features available for the connected car, but it is not a major revenue driver. It will account for only $13 billion in revenue in 2020.** Entertainment features include integrations with apps such as Pandora, Yelp, and Facebook.
- **Other connected-car service categories will account for significantly lower revenues throughout the forecast period.**
    - **Well-being, as defined by Strategy&, involves optimizing the passenger's comfort and safety. This segment will generate about $10 billion in 2020.**
    - **Vehicle management will account for roughly $10 billion in 2020.** This includes remote unlocking from a smartphone, remote ignition, and more. These are all popular areas for the connected car and are already one of the more readily available connected car features in high-end vehicles.

How do these services line up with what consumers actually want from their connected car?

- **The most demand is for entertainment features,** according to a recent survey from Accenture. Sixty-nine percent of respondents indicated that they would like the ability to stream music in their cars through services such as those provided by Pandora and Spotify. Fifty-seven percent of drivers indicated that they would like their passengers to be able to surf the internet via a monitor in the car. And 40% said they wanted access to social media within the car.
- **Many consumers also want safety features.** Fifty-two percent of consumers would like their car to identify traffic signals, congestion, accidents, and more. Interestingly, only 36% would like lane-changing/blind-spot warning systems.
- **Well-being systems are also in demand by about half of drivers.** Fifty-one percent of respondents would like a system that tracks biometrics so that the car will stop if the user has a heart attack.
- **Driver-assistance features ranked relatively low.** Only 25% of consumers would like an autopilot system, which is the type of system used to self-park cars. And 29% would like a lane-keeping system that helps keep drivers in their lane when they start to drift. Although demand is low, carmakers are increasingly advertising these features, and demand could pick up as people become more educated and aware of such services. These systems are very expensive for the car buyer, which is why Strategy& expects revenue to increase so steeply.



Besides revenues from actually selling different types of connected features and services, carmakers that specifically use embedded technology to connect cars are seeing an additional way to earn revenues off of these vehicles.

To serve ads, marketers are increasingly approaching car companies about gaining access to connected-car platforms and the data they accrue from in-car behaviors. In return for giving these third parties access to the connected car, the car owner might receive free basic connected-car services. We think this is likeliest to happen for lower-cost connected cars.

For now, luxury-car companies will be less likely to forge these partnerships, at least with marketers, because they will be able to command high up-front prices for connected cars. BMW has already said the data it generates will remain private but that advertisers seeking partnerships have approached the company.

Data about how long a driver has been on the road and which locations are nearby can be extremely valuable to marketers. For example, if a car has been running for three hours, the marketer can assume the child in the car is probably

hungry. That is an opportunity to push a message letting the driver know there is a McDonald's just off the highway. This is the kind of information marketers are seeking, according to Ian Robertson, BMW's board member for sales and marketing.

There is more reception to advertising in cars than might be expected, especially if consumers can get services for free as a result. (More on this later in the report.) As for the privacy concerns that will arise with this type of data collection, carmakers have already agreed with trade groups to disclose to drivers the data they collect. Additionally, the carmakers have said the data is made anonymous so that no entity will know specific information about a given driver.

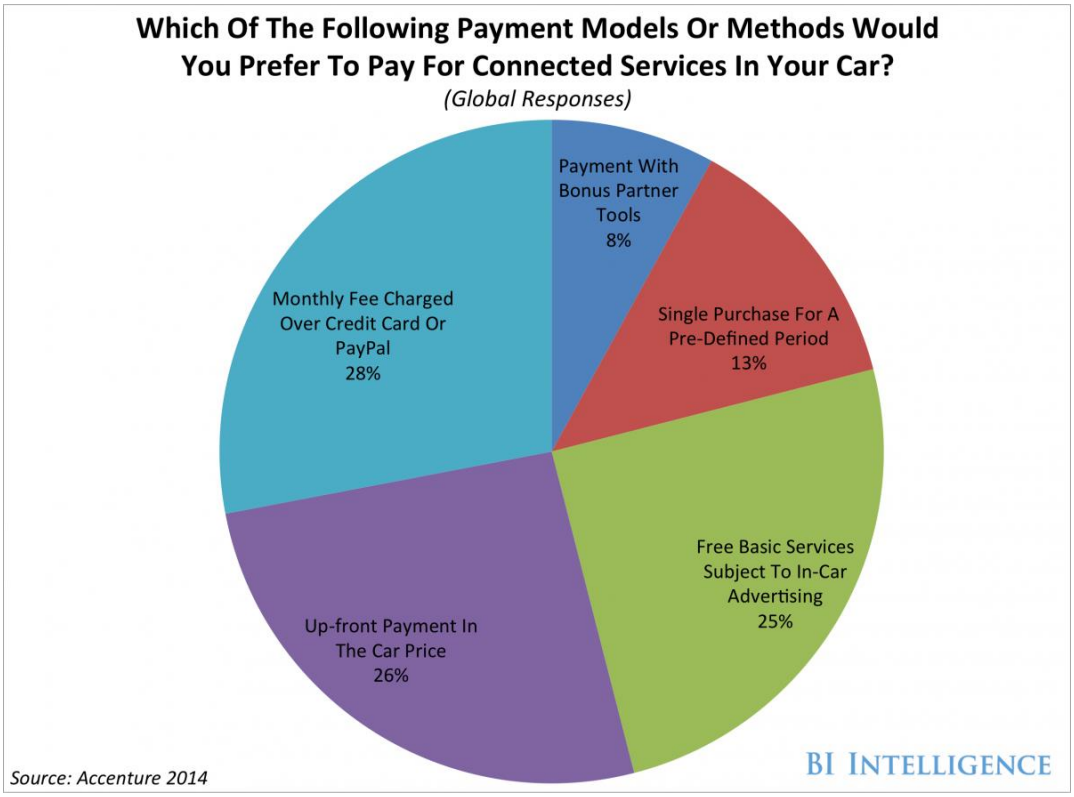
Pricing models

Wireless companies stand to benefit considerably from the increasing number of connected cars on the road with embedded connections, because these companies provide the data networks used by connected-car services. Today, consumers can pay for data for embedded connected-car services using a few different models, including monthly payments, cost built into the price of the car, and a single add-on purchase that covers a defined time period.

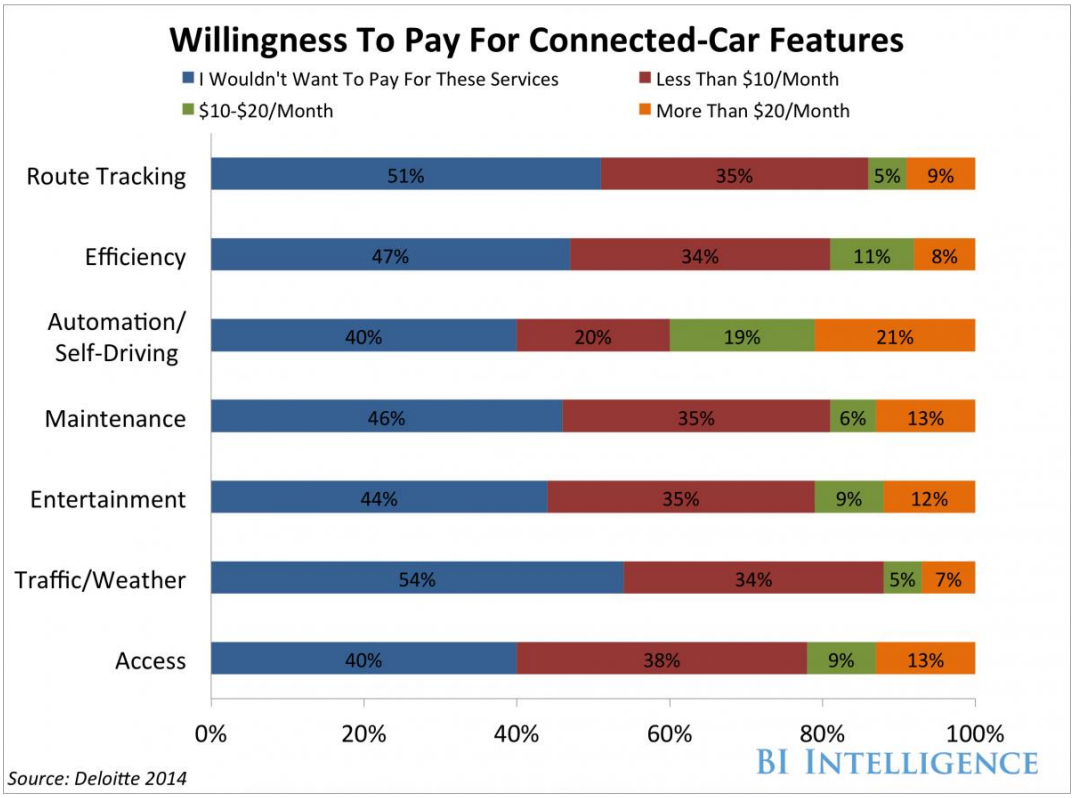
It is extremely important that as connected cars become more common, carmakers and wireless companies pay attention to how consumers would *prefer* to pay for these features, because cost structure may determine whether consumers splurge for upgrades.

- Twenty-eight percent of consumers would like to pay a monthly fee to get access to connected services, according to Accenture.
- Twenty-six percent would like the payment paid up front in the car price.

- Interestingly, 25% of global consumers would be willing to receive in-car advertising if it meant they got free basic services in exchange. This means marketers are likely to have a big opportunity to tap into the connected-car market.
- Only 13% would like to buy the data in a single purchase for a defined period.



- More than 40% of consumers said they would not be willing to pay for any specific connected services, including entertainment, maintenance, and route tracking, according to a Deloitte survey.
- Of those who are willing to pay for services, most do not want to pay more than $10 a month for any given feature.
- Self-driving features was the service that the greatest number of consumers said they would pay more than $20 per month for.



Based on this survey, it is likely that wireless companies and carmakers will have much more success rolling various services into a single price, whether paid on a one-off basis or over a long-term contract. And they will still need to offer competitive rates that do not add a steep monthly or yearly cost for consumers.

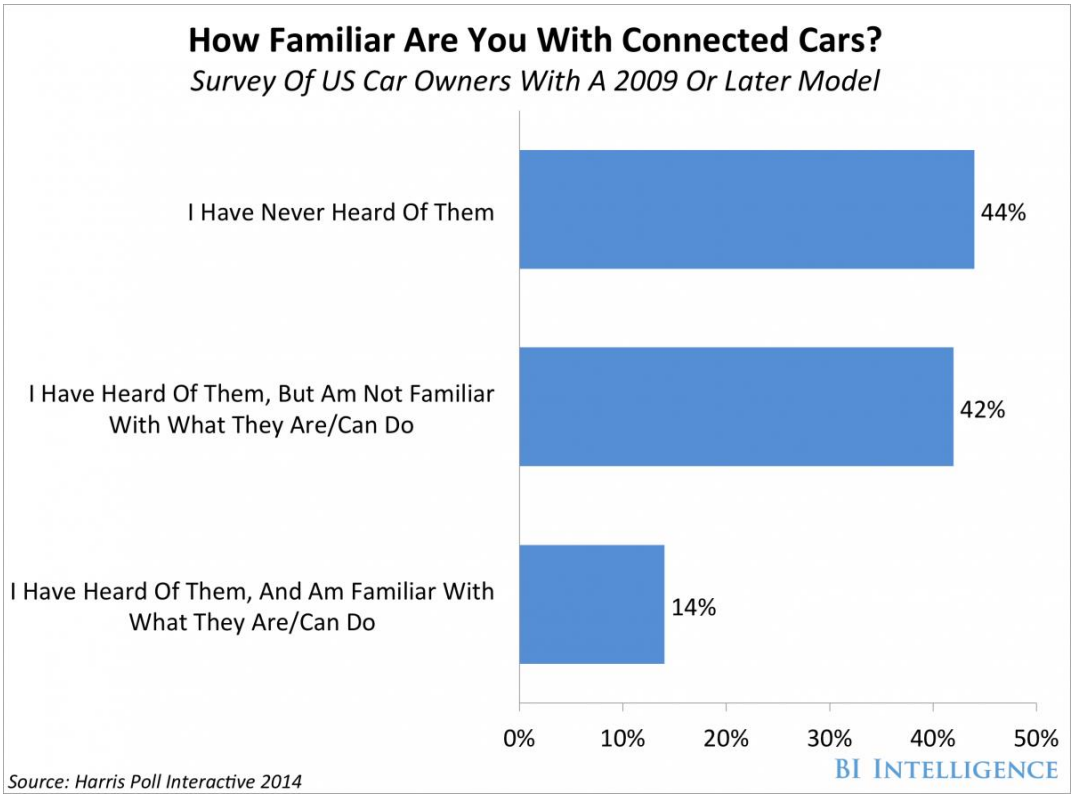
We expect carmakers and wireless providers to develop similar pricing models for connected cars as they do for wireless tablets.

For example, the Chevy Malibu offers a free three-month-trial subscription to the car's connected services. After this period, non-OnStar subscribers pay AT&T $10 a month for 200 MB of data, $20 per month for 1 GB, $30 for 3 GB, and $50 for 5 GB. There is also a one-day use option. OnStar subscribers get a discount on each of these plans.

Similarly, for the iPad Air 2, T-Mobile offers a one-day data plan of 50 MBs for $5, 3GB for 30 days for $30, or a one-year contract in which a consumer pays $20 monthly for 1GB of data per month.

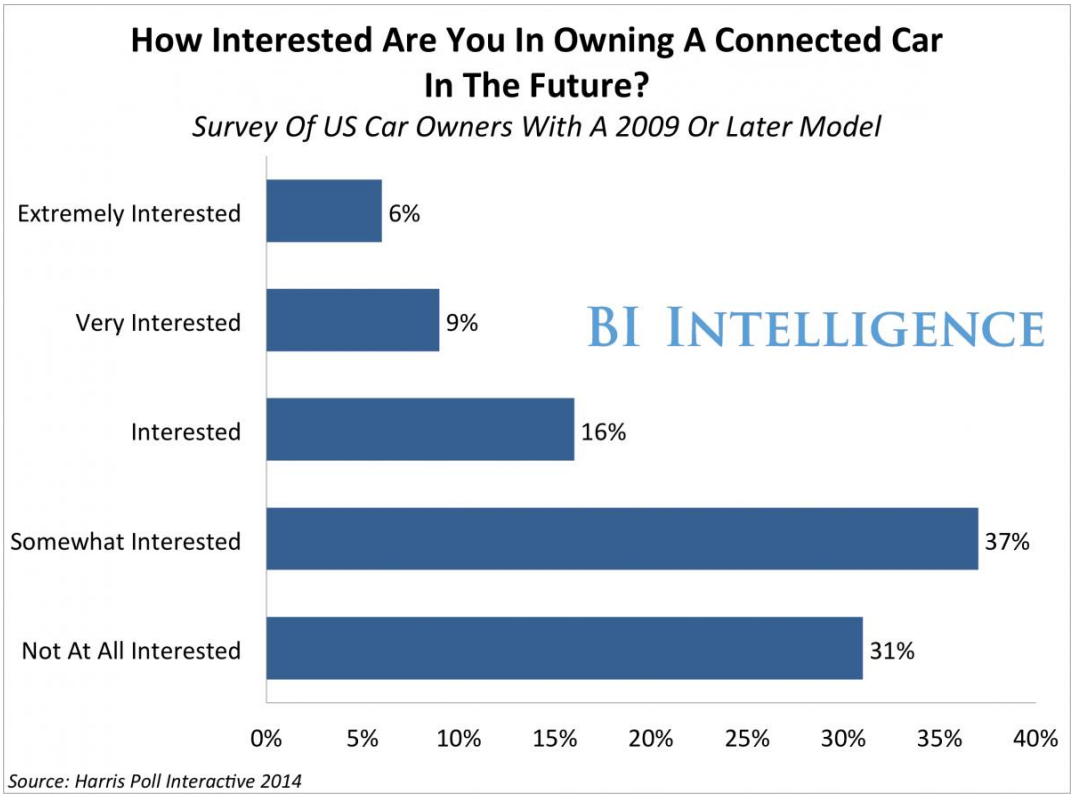
Consumer attitudes in the US market

For all the excitement around connected cars from automakers, wireless networks, and marketers, few US drivers — which we estimate will be one of the largest segments of the connected-car market — actually know what connected cars are, according to July 2014 survey from Harris Poll.



- **Consumer awareness is very low:** About 80% of consumers have either never heard of connected cars or are unsure what the term refers to. In the poll, 44% of drivers said they had never heard of connected cars. An additional 42% had heard of the term but didn't know what it meant.
- **That leaves only 14% of respondents who know what a connected car is and what it is capable of doing.**

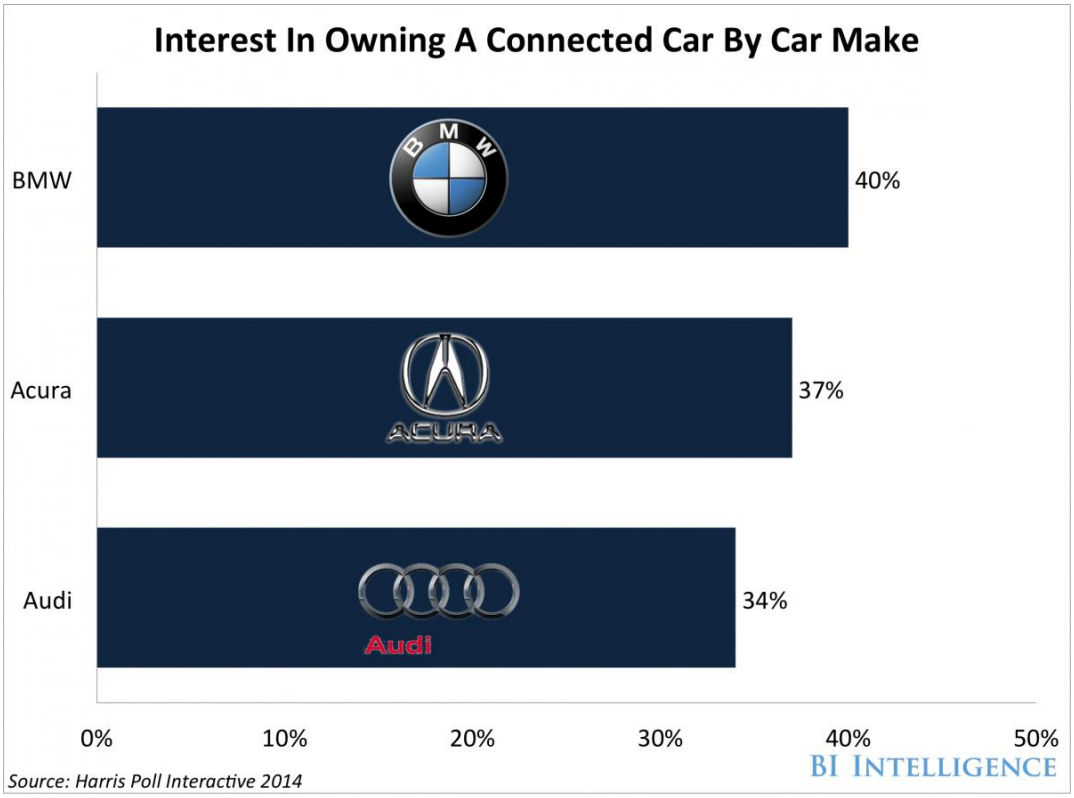
The same survey showed that more than two-thirds of US drivers said they were just somewhat interested or not at all interested in owning a connected car.



- **Thirty-one percent of respondents have no interest in owning a connected car,** while another 37% indicated they were somewhat interested.
- **Only 15% indicated that they were either extremely or very interested in owning a connected car.** Another 16% indicated a general interest. The reported interest rate lines up with today's conversion rate from free-trial users to paying connected-car users.

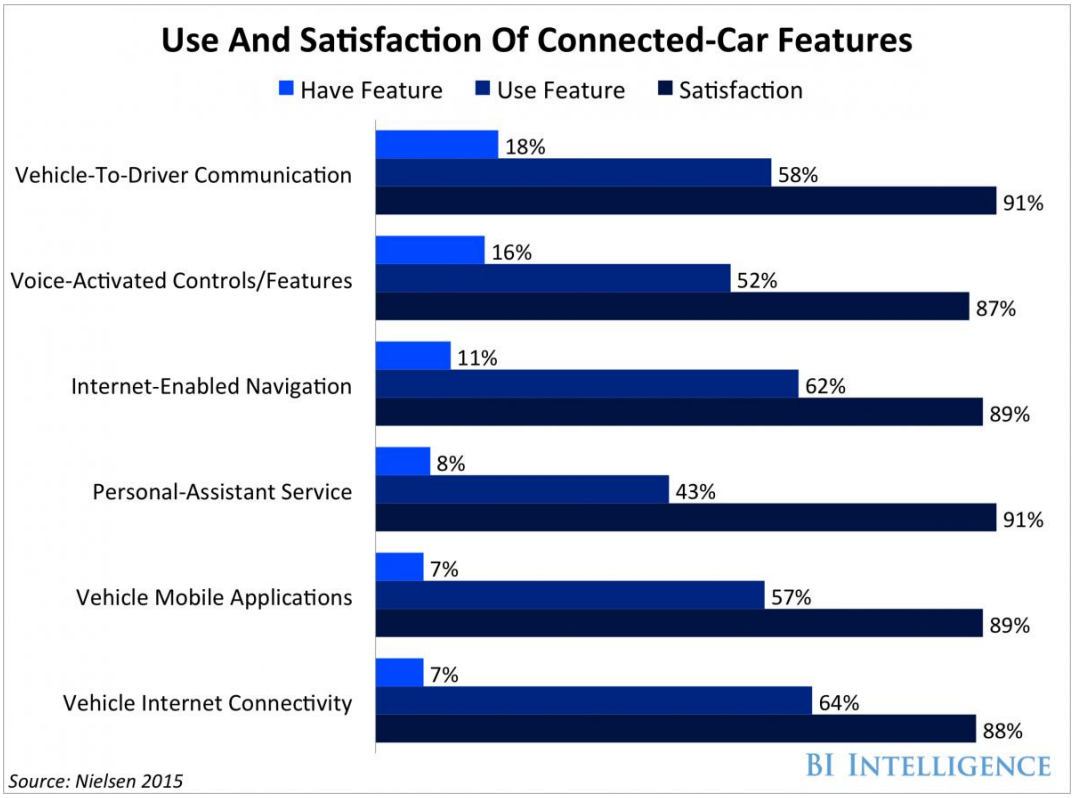
Although interest in connected cars is low, Harris reported that owners of luxury-car brands were the most interested in buying a connected car.

- **Forty percent of BMW owners showed interest in buying a connected car, followed by Acura (37%) and Audi (34%).** This aligns with the trend we have seen in which luxury carmakers have become the connected-car pioneers.



Though interest and education are low, there is a lot of promise among current connected-car users. About half of those who have a connected car actually use the car's connected features, and those who do use many of these features shows high levels of satisfaction with them, according to a Nielsen survey.

This bodes well for the initial-free-trial model for access to connected-car services. A consumer with little interest in connected features in the dealer's lot could use these services for a month or two free and then decide they are worth the added cost. For carmakers selling connected-car services for an up-front cost, it will be more important to show consumers why they would want these added features.



Over time, we expect carmakers to market a car's connectivity capabilities and build awareness about the services that connectivity can provide, therefore driving interest up. For example, car companies such as Volvo are launching marketing campaigns for their newly connected cars highlighting integration with entertainment features such as Yelp, Pandora, and Wikipedia. Further, as more Americans have connected-car features installed and continue to report satisfaction, adoption is likely to rise based on word of mouth.

Barriers that could keep connected cars from taking off

- **High prices:** For consumers, the primary barrier is the high price point. For example, BMW (whose current customers indicated the most interest in buying a connected car) has an embedded 3G Connected Drive system that comes complimentary in some BMW models, such as the BMW i3. If it doesn't come standard, however, it can be costly to have these systems installed, depending on the model and negotiated dealer price. A full system has been reported to be an average of £1,890 in the UK, or about $3,000.
- **Carmakers may have trouble implementing these systems:** Carmakers have experienced growing pains as they attempt to adapt the automobile industry for the digital world. Executives with whom we have spoken say marrying the technology that is already found in cars with the technology that powers connected-car features is a challenge. For example, while old technology tracked the number of miles per gallon a car was getting on the road, connecting this software to a smartphone app so that the information updates in real time can be difficult. In addition, carmakers are primarily legacy hardware manufacturers, not digital-first companies with longstanding tech expertise. To combat this issue, carmakers are partnering with major tech companies. For instance, Ford announced that Blackberry will power its next Sync connected-car platform.
- **Concerns over security:** Cars that have the ability to drive themselves or monitor where they are going could pose a huge risk from a harmful hacker who wishes to know a person's specific location or who would like to gain control over the car remotely.

In addition to tech companies, carmakers will need to partner with outside security firms to provide the services consumers want and ensure the connected car is secure.

Autonomous vehicles

While cars are undoubtedly getting smarter, drivers still need to get behind the steering wheel to operate them. But eventually we may have self-driving (or autonomous) cars that we enter and select our destination, with the car able to bring us there without requiring the driver to manually control the vehicle.

Google, Ford, and Uber have been investing in self-driving vehicle research and development. However, we are still a long way off from consumer adoption.

By 2020, 180,000 fully autonomous vehicles will be shipped globally, according to estimates from Frost and Sullivan. These cars will not necessarily be in use by consumers, because that would heavily depend on the pace of legislation around self-driving cars.

THE BOTTOM LINE

- **Connected-car makers, telecommunications companies, and app developers will see significant revenue from selling connected-car features, such as in-car entertainment.** The cost of connected-car services and products often comes at a surcharge to users, either included in the up-front price of the car or paid over time. The various connected-car services and products could generate an estimated $152 billion in revenue for carmakers in 2020, according to Strategy&.
- **Entertainment is the feature consumers show the most interest in, followed by connected safety features.**
- **For all the excitement among automakers and other connected-car partners, only one-third of Americans are interested in connected-car features for now.**
- **Consumer awareness is very low:** About 80% of US consumers have either never heard of connected cars or are unsure what the term refers to.
- **The primary barriers to the connected-car services market are the high price and major concerns around whether these vehicles will be vulnerable to hackers' attacks.**
- **Self-driving cars will be the next major automotive technology, but that is a long way off.**

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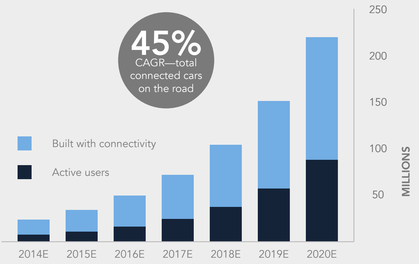
The Connected Car Market

220 MILLION

There will be 220 million connected cars on the road by 2020

But we estimate consumers will only use connected services in 88 million of those cars.



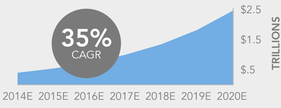
Revenue

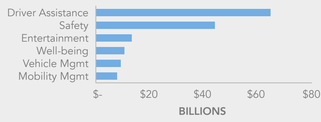
Sales of connected cars will equal $2.3T in 2020

The current average selling price of a connected car is much higher than the national average. That will drop as carmakers connect their economy lineups.

Connected car hardware and software will bring in $152B in 2020

Driver assistance systems, such as self parking features, will become more common and generate a lot of revenue for carmakers.

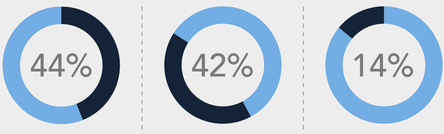




Consumer Perceptions

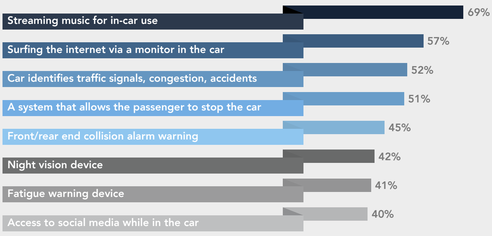
Most consumers are unaware of connected car features and services

44% of consumers have never heard of a connected car. Another 42% have heard of them but are not familiar with what they do.



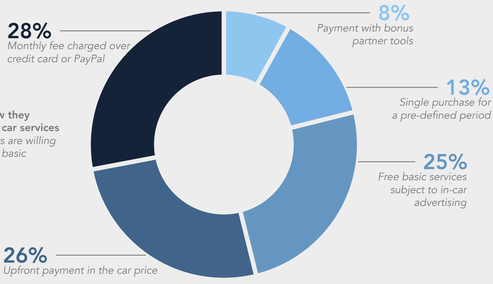
But they desire entertainment and safety features

Streaming music, like listening to Pandora or Spotify, is the most desired feature



Consumers are split on how they want to pay for connected car services

A large portion of consumers are willing to receive in car ads for free basic connected car services



Autonomous Cars

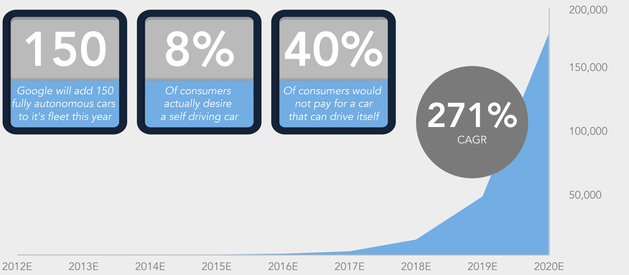
The next evolutionary phase after cars are connected

Shipments of autonomus cars are expected to top 180,000 by 2020

150
Google will add 150 fully autonomous cars to it's fleet this year

8%
Of consumers actually desire a self driving car

40%
Of consumers would not pay for a car that can drive itself



Players *(Select companies)*

Nearly all car makers and communication companies are entering the connected car market

Digital companies are aiding them by providing connected car software and apps

Car Makers

ACURA · Audi · BMW · Ford · Honda · Mercedes-Benz · TESLA · Toyota

Communications

Aeris COMMUNICATIONS · at&t · Jasper · SIERRA WIRELESS · verizon

Software

BlackBerry · Google · PANDORA · Spotify · yelp

Sources: BI Intelligence, Strategy&, Harris Poll Interactive 2014, Accenture, Deloitte, Frost & Sullivan

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