Connected Car & Mobility Consumer Survey
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Throughout the year SBD carries out multiple global consumer studies for clients focused on understanding consumer viewpoints related to Connected Car service offerings and associated features. This report is aimed at providing effective data and analysis to clients to help quantify preferences and propensity to purchase or use connected car features and services, including new mobility schemes across three core markets.

This report is aimed at understanding the viewpoint of 3,000 Connected Car owners across the German, US and Chinese markets, with a focus on five main areas:

- Connected car feature sets

- Data sharing

- Fair pricing of features

- Daily mobility problems

- Usage of mobility platforms.

CONNECTED CAR & MOBILITY CONSUMER SURVEY
USA, Germany and China

The majority are happy with some form of data sharing

72%
Are happy to share vehicle data if it is anonymized or with limited personal data

But

22%
Do not want to share any vehicle data

65%
State this is because of privacy concerns

What could incentivize people to be more open to data sharing?

Money	Free in-car services	Vehicle servicing	Warranty	Discounts	Nothing
13%	17%	21%	14%	18%	55%

Interest in Features vs Willingness to Pay: US

Analysis
Interest in features is based on those respondents who said that they were either very interested or interested, and is broadly similar across the three countries. Overall, the US expresses an average level of interest and willingness to pay compared to Germany and China. Willingness to pay is consistently lower than interest, only coming close in a few cases.

- Features of the highest interest are consistently Traffic Information, eCall, then SVT across all three countries.
- Features of least interest in the US are Augmented reality, Emotional understanding and Gesture control.
- The feature with the highest willingness to pay is Car location, followed by Traffic information, eCall and SVT.
- Features with lowest willingness to pay are Share location with a friend (9%), Augmented reality (11%) and Gesture control (14%).
- Willingness to pay is lower than interest

US Interest vs Willingness to Pay

Willingness to pay defined as answering "Yes, I would pay an individual price for this feature" or "Yes, I would expect it to be part of a package" to Q1.2
Interest defined as answering "Very interested" or "Interested" to Q1.1

Traffic information: Unexpectedly high willingness to pay as part of a package

Analysis
Traffic information enjoys success as the overall most popular connected car feature for interest and the second most popular for willingness to pay.
Interest for US respondents peaks with "Very Interested", reducing in responses with the reduction in interest expressed by the respondent:
- 49% are "Very Interested" with only 24% cumulatively being neither or uninterested
- At 24%, US respondents are equally numbered in believing Traffic should be a standard feature

German respondents mostly mirror the results of other regions, with a slight role-reversal for "Very Interested" and "Interested"
- 37% of German participants answered as "Very Interested" – the lowest of the regions
- 42% answered as "Interested" which is over 10% higher than other regions

Traffic is the third most popular feature for survey participants in the China region, with results that bear similarity to US respondents
- At 19%, the highest number elect to pay an individual cost for Traffic compared to the other regions

Traffic information Interest
Sample size: USA 202, Germany 200, China 201

Traffic information Willingness to pay
Sample size: USA 202, Germany 200, China 201

Q29.1. Likelihood or Renting Out own Car (USA by City)

Question
If you could rent out your car to other people easily via a smartphone app, which would also handle insurance, booking and any payments to you in advance, when you are not using it, how likely would you be to do this:

Key point Most do not want to rent out their vehicles.

Los Angeles · Boston · Dallas · Chicago

- I have done this already
- I would consider
- I might consider
- Never

Sample size: LA 126, Boston, 125, Dallas 128, Chicago 124

Request the price

Survey scope and screening

Scope

- 3 countries (De, USA, China)
- 1,000 respondents per country
- 100% Connected Car owners only
- Vehicle models defined on general 50:50 split between premium and volume models. 6 models to be chosen per market (this provides a wide view of the market and large enough sample size to cut the data where applicable)
- 50% of respondents must identify as living in a city
- 4 cities per country
- Please note we will class 'non-city' as population areas with less than 1 million inhabitants for the Chinese market

De	USA	China
1. Hamburg 2. Munich 3. Berlin 4. Rhein-Ruhr Area (Düsseldorf, Cologne, Duisburg, Essen, Dortmund)	1. Los Angeles 2. Boston 3. Dallas 4. Chicago	1. Shanghai 2. Beijing 3. Chengdu 4. Shenzhen

Vehicle qualification example

One of the key components for the accuracy of this study is qualification of Connected Car respondents. To be sure on the validity of results SBD uses the "Connected Services Tracker" data to make sure respondents with the appropriate Connected Car features are interviewed. Example below focused on the Toyota Camry solution in the US market.

Toyota Camry

Customers who have the option to have connected car services are available below. Any variants where the SP is not available will not be allowed to continue

	Toyota Camry Connected Services	Connected System Availability		
		2019	2018	2017
Toyota Camry	Safety Connect	All Toyota Camry models have some form of connectivity as standard from 2018-2019		Optional on XLE and Hybrid XLE
	Service Connect			N/A
	Remote Connect			N/A
	Destination Assist Connect			N/A
	Wi-Fi Connect			N/A
	Entune 3.0 App Suite			N/A
	Scout GPS Link	N/A		Optional on most variants, Standard on XLE, Hybrid XLE and XSE
	Entune App Suite	N/A		Optional on most variants

Proteus Instruction

For 2019 vehicles:	For 2018 vehicles:	For 2017 vehicles:
OK to continue	OK to continue	Disqualified

Thank you for taking part in the survey it should take about 10 minutes, and will help shape the future of car technology in your country.

Screener Section

S1 Do you own a car that you bought or leased from new within the past 3 years?

Yes	1	
No	2	Close*

*I'm sorry but you do not qualify for the interview. Thank you. Goodbye.

S2 Please select the make and model you own from this list? (drop down list)

Make_____Model_____		
I do not own one of these models	99	Close*

*I'm sorry but you do not qualify for the interview. Thank you. Goodbye.

S3 This study is only for people who have cars fitted with some form of connected services; so this could be internet radio services, or a button to press for emergency services etc..

DO you have these services?

Yes	1	
No	2	Close*
Not sure		Close*

*I'm sorry but you do not qualify for the interview. Thank you. Goodbye.

Feature interest and willingness to pay

Q1 When you purchase a vehicle there are many options and features available, we would like to understand your interest and whether you would be willing to pay for the following features:

Feature group	SBD definition	Consumer description
Safety & security	eCall	After a serious crash the car will automatically connect to the emergency services to provide help
Safety & security	bCall	If your car has broken down this service can link you directly to the roadside assistance provider – the car can provide detailed information about the fault and car's location which can make the recovery process quicker
Safety & security	SVT	If your vehicle is stolen this service can track the location and provide it to the police to help the vehicle be recovered
Safety & security	Deliver to car	Allow delivery companies, such as Amazon (CHANGE FOR SPECIFIC REGIONS), to unlock your vehicle boot/trunk remotely to deliver a package. The car will automatically lock after the delivery.
Safety & security	Unlock for a friend and allow them to drive the car	Allow a friend to unlock and drive the vehicle remotely, for example this could be carried out with a smartphone app.
Connected navigation	Traffic information	Up to the minute, high-quality traffic information

Connected navigation	Connected POI search	Search for locations such as restaurants where information such as reviews, price and images can be shown. This works similarly to using Google on your smartphone (CHANGE FOR SPECIFIC REGIONS).
Connected navigation	Share location with a friend	Share your current vehicle location and destination with a friend or family member, so they can track your progress and know your time of arrival.
Connected navigation	Connected parking info	Search for parking locations with information such as price, availability and opening times shown
Connected navigation	Fuel price information	Search for fuel stations with pricing shown for available fuel types
Companion app	Car location	Use a smartphone app to find the location of your vehicle – useful if your vehicle is in a large car park
Companion app	Door unlock	Unlock or lock your vehicle with a smartphone app
Companion app	View vehicle information	Use a smartphone app to view vehicle information such as fuel or charge level and whether there are any vehicle faults, such as low battery.
Companion app	POI send to car	Send a location, such as an address or restaurant location, from a smartphone app to the navigation system in the car
Companion app	Remote climate control	Use a smartphone app to remotely heat or cool the vehicle before you get in
HMI	Gesture control	Gesture recognition in the vehicle allows you to use simple hand gestures in the air to perform actions, such as answer or decline a call or turn up the volume
HMI	Haptic feedback	When you use the touchscreen in the car it will provide vibrations to your finger to confirm your input. This works in a similar way to a button press on a smartphone.
HMI	Head up display	A method of projecting key information such as speed or navigation directions onto the windscreen / windshield in front of the driver.
HMI	Augmented reality	When about to carry out a turn, a video feed of the view ahead is shown on the main screen with arrows or signs carefully superimposed over it to help the driver.
HMI	Biometric ID	The ability to use fingerprint or voice to identify the driver – to unlock the vehicle, change settings or confirm payment for services, such as fuel etc. without the need for a key.
Voice recognition	Talk to a built-in OEM-branded VPA	The ability to hold a conversation with the car's voice recognition system, launching it with the manufacturer's wake up word e.g. Hey BMW, Hey Mercedes, Hey Toyota etc. (CHANGE FOR SPECIFIC REGIONS).
Voice recognition	Talk to my choice of 3rd party VPAs using their wake-up words	Using 3rd party voice recognition systems in the car, such as Alexa, Google or Siri (CHANGE FOR SPECIFIC REGIONS).
Voice recognition	Avatar	Having an avatar/character to interact with for voice recognition to carry out tasks such as "find me a pizza restaurant nearby".
Voice recognition	Emotional understanding	The ability for the vehicle to understand the current emotional state of driver and/or passengers e.g calming, music begins to play when anger is detected.
Voice recognition	Vehicle settings	The ability to use the vehicle's voice recognition system to open a window or the sunroof (by voice)

Q1.1 How interested are you in this feature?

Very interested	1	
Interested	2	
Neither interested or uninterested	3	
Uninterested	4	
Very uninterested	5	
I do not know what this feature is	6	Do not ask Q1.2

Q1.2 Would you pay for this feature?

Yes, I would pay an individual price for this feature	1	
Yes, I would expect it to be part of a package	2	
I am unsure	3	
Never, I believe it should be standard i.e. no cost to pay	4	
Never, as I have no interest in this feature	5	

Q1.3 Please rank the following voice recognition products in order of preference from first to last. (randomise list)

(CHANGE FOR SPECIFIC REGIONS).

Amazon Alexa	Rank or "I do not know this product"
Google Assistant	Rank or "I do not know this product"
Apple Siri	Rank or "I do not know this product"
Samsung Bixby	Rank or "I do not know this product"
Soundhound Houndify	Rank or "I do not know this product"
Microsoft Cortana	Rank or "I do not know this product"
IBM Watson	Rank or "I do not know this product"

Data sharing & privacy

Q2 There have been many stories in the news regarding data privacy and we would like to understand your views. How do you feel about data sharing with any company so that they can improve your experience with their product or services? (e.g. washing machines, refrigerators, cell phone providers etc.)

I don't want to share any of my data	1	Go to Q3
I am OK to share anonymized data (cannot be linked to my identity)	2	Go to Q4
I am OK to share some limited personal data (e.g. age, gender etc.)	3	
I am OK to share all my personal data	4	
I do not understand	5	

Q3 Why do you not want to share any data? Please select all that apply.

I don't trust companies to keep my data safe	1	
I want something in return	2	
I have had problems in the past	3	
I am worried how the data will be shared	4	
I don't want to be profiled for the use of marketing or ads	5	
I don't want to become a victim of identity theft	6	
Other, (verbatim)	7	

Q4 Recent technology developments mean data from vehicles can also be shared. What is your view on your personal car sharing (sending) data to the manufacturer (e.g. distance driven, fuel used)?

I don't want to share any of my data	1	Go to Q5
I am OK to share anonymised data (cannot be linked to my identity)	2	Go to Q6
I am OK to share some personal data e.g. my car location which <u>does not</u> link back to me personally	3	Go to Q6
I am OK to share all my personal data e.g. my car location which <u>does</u> link back to me personally	4	Go to Q7
I do not understand	5	Go to Q7

Q5 Why do you not want to share any data? Please select all that apply.

I don't trust companies to keep my data safe	1	
I want something in return	2	
I have had problems in the past	3	
I am worried how the data will be shared	4	
I don't want to be profiled for the use of marketing or ads	5	
I don't want to become a victim of identity theft	6	
Other, verbatim	7	

Q6 Which of the following would encourage you to allow more data sharing? Please select all that apply.

A fair monetary incentive	1	
Free in-car services / free subscription to the service e.g. free map update, free traffic information, free music subscription.	2	
Discounted vehicle servicing	3	
Increased extended warranty	4	
Access to exclusive discounts from major retailers	5	
Nothing	6	

Q7 What do you think about automakers sharing personal driving data (driving behaviour, location, etc.) with 3rd parties to provide you with services better suited to you (e.g. offers at McDonald's, Starbucks, better quotes from insurance companies, etc.)?

Totally unacceptable	1	
Slightly unacceptable	2	
No opinion	3	
Slightly acceptable	4	
Totally acceptable	5	

Q8 Who do you trust more with your personal data? Consumer electronics companies (Google, Apple, Amazon, etc. (CHANGE FOR SPECIFIC REGIONS) or automakers (BMW, Ford, VW, Toyota, (CHANGE FOR SPECIFIC REGIONS etc.)?

Consumer electronics companies	1	
Automakers	2	
I trust/distrust them equally	3	

Q9 Should automakers be required to gain your consent each time they develop a new way to use your personal data?

I don't mind	1	
Yes, it is essential	2	

<u>Fair pricing</u>

Q10 If you are budgeting for a new vehicle do you mainly consider the outright vehicle purchase price OR monthly payments?

Purchase price	1	Go to Q10.1
Monthly payments	2	Go to Q10.2
Both	3	
I will not consider a new vehicle next time	4	

Q10.1 If you selected outright purchase price, what is your top budget?

$/€/ ¥_____

Q10.2 If you selected monthly payments, what is your top budget?

$/€/ ¥_____

Q11 If you are purchasing a new car and you have the option to upgrade to a better-quality infotainment system with a larger screen, better speakers and more connected services, what additional price would you believe is fair *(monthly or outright price based on Q10)*?

Verbatim price	1	
I would never pay for this option	2	Go to Q13

Q12 Would you purchase at this price?

Yes, definitely	1	
Possibly, but I would need to think about it	2	
Unlikely	3	

Q13 For a vehicle with Connected Car services, such as continuously up to date maps, LIVE traffic information and a smartphone app which connects to the car remotely, what would you believe is a fair annual subscription price for the services?

Verbatim price	1	

Q14 Would you subscribe at this price?

Yes, definitely	1	
Possibly, but I would need to think about it	2	
Unlikely	3	

Q15 Would you exchange anonymised vehicle data, such as vehicle location to help with traffic reports, for free access to the subscription services mentioned above?

Yes, definitely	1	
Possibly, but I would need to think about it / need more information about what data was being exchanged	2	
Not at all	3	

Q15.1 Would you exchange anonymised vehicle data to help solve societal and transportation problems, for example to help create smart cities (an urban area that uses data to make transportation in the city more efficient, less polluting and safer)?

Yes, definitely	1	
Possibly, but I would need to think about it / need more information about what data was being exchanged	2	
Not at all	3	

Daily mobility problems

Q16 How many cars are in your household?

Value	

Q17 Do you enjoy driving?

Yes, I love it	1	
Yes, mostly	2	
I have no strong view	3	
No, it is only a necessity	4	
No, I hate it and will always try to find alternative options or get someone else to drive	5	

Q18 Do you think you will own/lease a car in 5 years' time?

I will	1	
I am very likely to	2	
I am not sure	3	
It is unlikely	4	
I will not	5	Go to Q20

Q19 And what about in 10 years' time?

I will	1	
I am very likely to	2	
I am not sure	3	
It is unlikely	4	
I will not	5	

Q20 How often do you use each of the following transport options?

	20.1: Own vehicle	20.2: Public transport	20.3: 'traditional' Taxis	20.3 Uber (or equivalent) (CHANGE FOR SPECIFIC REGIONS	20.5: Car sharing/rental (CHANGE FOR SPECIFIC REGIONS
I do not know what this is	N/A	N/A	N/A	1	1
Daily	2	2	2	2	2
Weekly	3	3	3	3	3
Monthly	4	4	4	4	4
Never	5	5	5	5	5
Why? Verbatim (for answers of "never" only)					

Q21 When you are deciding what transport method to use how important are the following considerations? Please choose which item most closely matches your view.

SBD definition	Consumer description	Consumer options
Location convenience	When choosing a transportation option what is your view related to the distance you need to travel to reach your transport method?	1.The service must come to my exact location or already be available where I am 2.I am OK to walk a reasonable distance to access ride hailing/taxi/public transportation etc. CHANGE FOR SPECIFIC REGIONS 3.Onward travel is OK, such as using a bus or train
Safety	How do you feel about personal safety when using services such as Uber?	1.I have no safety concerns 2.I have some minor safety concerns 3.I have some major safety concerns
Time convenience	How long would you be willing to wait for a means of transport to become available?	1.I do not want to wait, it must be immediately available 2.I am OK to wait for a reasonable amount of time e.g. up to 20 minutes 3.I am OK to plan far in advance and can wait a few hours if needed
Cost	How important is the cost of a trip?	1.It must be the cheapest option available even if that means it might be slower, less comfortable or less convenient than other options available 2.Price is a consideration but other factors, such as comfort and convenience, are also important 3.Price is not my highest priority, but it is still a consideration 4.Price is of no concern at all
Environmental impact	How important is the environmental impact of your trip? E.g. emissions per person are considerably lower on public transport than in a private car for the same journey	1.It is the most important consideration 2.I consider this but other points, such as price, are more important 3.It is not a consideration at all

Q22 Please rank the questions you just answered from most important to least important

Location convenience
Safety
Time convenience
Price
Environmental impact

Mobility platforms - Focus on carsharing and ride hailing

Q23 Have you heard of Waze Carpool? (CHANGE FOR SPECIFIC REGIONS)

No, I have not heard of them	1	Go to Q26
Yes, I have heard of them but do not know much/anything about them	2	Go to Q26
Yes, I have heard of them and know at least a little about them	3	Go to Q26
Yes, I have used them	4	Go to Q24

Q24 Will you use them again?

Yes	1	
No	2	

Q25 Why not?

Verbatim	1	

Q25.1 How often do you use them/have you used them?

I have only ever used them once or twice	1	
I have used them a few times in the last year	2	
Monthly	3	
Weekly	4	
Daily	4	

Q26 Have you heard of Uber? (CHANGE FOR SPECIFIC REGIONS)

No, I have not heard of them	1	Go to Q29
Yes, I have heard of them but do not know much about them	2	Go to Q29
Yes, I have heard of them and know about them	3	Go to Q29
Yes, I have used them	4	Go to Q27

Q27 Will you use them again?

Yes	1	
No	2	

Q28 Why not?

Verbatim	1	

Q28.1 How often do you use them/have you used them?

I have only used them once or twice	1	
I have used them a few times in the last year	2	
Monthly	3	
Weekly	4	
Daily	5	

Q29.1 If you could rent out your car to other people easily via a smartphone app, which would also handle insurance, booking and any payments to you in advance, when you are not using it, how likely would you be to do this:

	29.11: With friends and family	29.12: With neighbors and work colleagues	29.13: With people you have not met
Never	1	1	1
I might consider	2	2	2
I would consider	3	3	3
I have done this already	4	4	4

Q29.2 (must have a 2 or 3 for Q29.11, Q29.12 or Q29.13) What do you think is a fair daily price for someone else to use your car? Please assume this will be from 8 in the morning to 6 in the evening and the vehicle will be fully fuelled on return and the same condition as it was provided to the user.

Verbatim	1	

Q30 (must have answered 1 for Q29.11, Q29.12 or Q29.13) Why would you not consider this?

Verbatim	1	

Q31 (only for respondents who answer Q30) Is there anything that would convince you share your personal car?

No	1	
Verbatim	2	

Final questions

F1 Please select your gender

Male	1	
Female	2	

F2 What is your age group?

18-20	1	
21-25	2	
26-35	3	
36-45	4	
46-55	5	
56-65	6	
66-75	7	
76+	8	

F3 What is your marital status?

Married/partnered with children	1	
Married/partnered without children	2	
Single with children	3	
Single with no children	4	

F4 What is your annual household income before taxes?

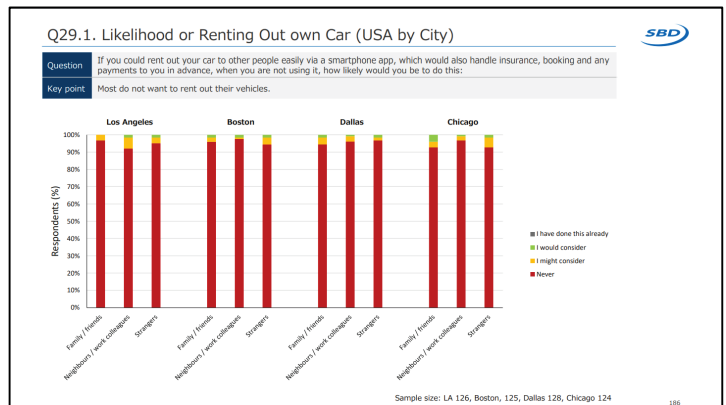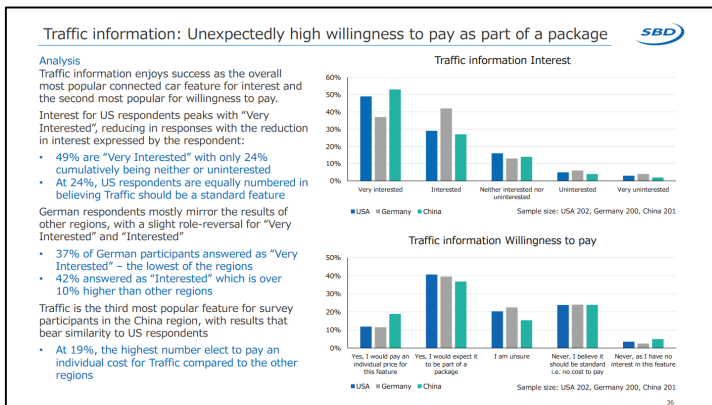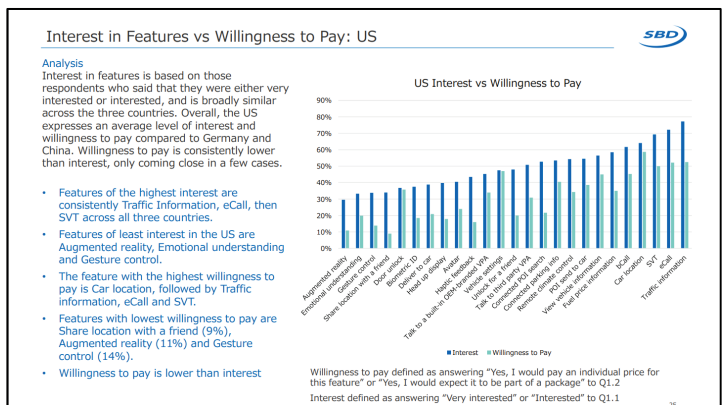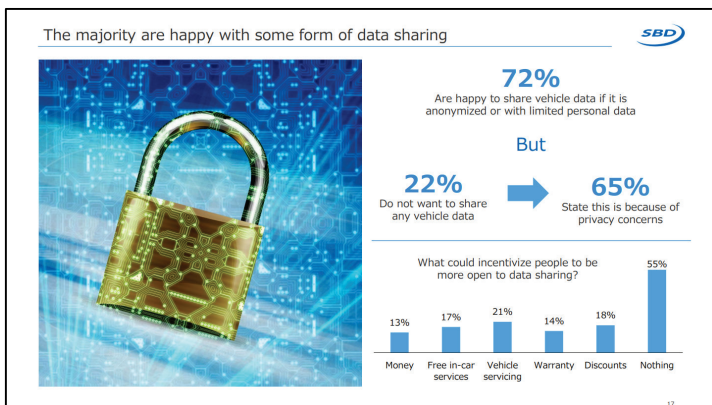|		
Less than $25,000	1	
$25,001-50,000	2	
$50,001-75,000	3	
$75,001-100,000	4	
$100,001-125,000	5	
$125,001-150,000	6	
$150,001-175,000	7	
$175,001-200,000	8	
$200,000+	9	
Refused	10	

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State this is because of privacy concerns

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Traffic information Interest

Sample size: USA 202, Germany 200, China 201

Traffic information Willingness to pay

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Question If you could rent out your car to other people easily via a smartphone app, which would also handle insurance, booking and any payments to you in advance, when you are not using it, how likely would you be to do this:

Key point Most do not want to rent out their vehicles.

Los Angeles   Boston   Dallas   Chicago

- I have done this already
- I would consider
- I might consider
- Never

Sample size: LA 126, Boston, 125, Dallas 128, Chicago 124

Request the price