

Consumer concerns about vehicle privacy and ways to improve transparency

Discussion with Department of Commerce's IoT Board of Advisors

Andrea Amico
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About Andrea Amico



Andrea Amico
Founder and CEO
Privacy4Cars
Columbia MBA
MSc Engineering



- ❖ Recognized expert & speaker on vehicle privacy & security
- ❖ Created first platform to manage and execute deletion of Personal Information from vehicles (AutoCleared™) – free to consumers
 - ❖ More than 1,500,000 vehicles cleared of PI to date
- ❖ Created first privacy transparency tool which includes the first privacy label for any IoT (Vehicle Privacy Report™) – free to consumers
 - ❖ More than 300,000 pageviews through word-of-mouth
 - ❖ More than 10,000,000 impressions per month on dealer websites
- ❖ 10 patents in AI/ML/CV/privacy-tech for automotive
- ❖ Compliance & Education Co-Chair at International Automotive Remarketers Alliance
- ❖ Discovered and ethically disclosed multiple privacy and security vehicle vulnerabilities to tens of automakers and other companies in the automotive ecosystem

Vehicle Privacy Is Increasingly Seen As Particularly Problematic



It's Official: Cars Are the Worst Product Category We Have Ever Reviewed for Privacy



By Jen Caltrider, Misha Rykov and Zoë MacDonald | Sept. 6, 2023

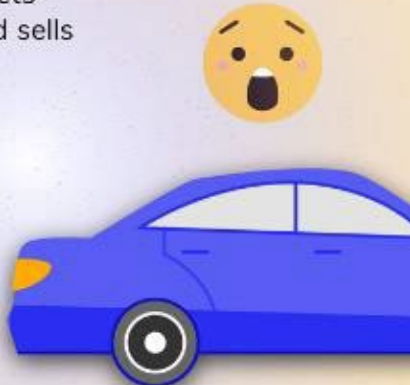
Ah, the wind in your hair, the open road ahead, and not a care in the world... except all the trackers, cameras, microphones, and sensors capturing your every move. *Ugh*. Modern cars are a **privacy nightmare**.

What has four wheels, collects your **sexual activity data** and sells your **personal information**?

Probably your car.

25 car brands tested
25 car brands failed

*Privacy Not Included
mozilla



August 8, 2023 - CPPA interview on KCRA - Privacy Practices of Connected Vehicles

Automaker Policies Related to Government Demands for Customer Location Data

	Who requires a warrant?	Who tells their customers about demands for their data?
GM	YES	NO
Toyota	NO	NO
Ford	YES	NO
Hyundai	NO	NO
Stellantis	YES	NO
Honda	YES	NO
Nissan	NO	NO
Subaru	NO	NO
Volkswagen	NO	NO
Tesla	YES	YES
BMW	NO	NO
Mazda	NO	NO
Mercedes-Benz	NO	NO
Kia	NO	NO
Volvo	did not respond	did not respond

RON WYDEN
UNITED STATES SENATOR - OREGON

39% Of Consumers Say Data Privacy is Highly Important in Cars



39% Say Data Privacy is Highly Important during the vehicle shopping and ownership experience

- More than vehicle's Style & Design, Brand, or Tech & Infotainment features
- Last year: 0% (category did not exist)



SBD Automotive



We set out to explore if some of today's hottest automotive tech trends resonate with consumers

Survey Details

1000

Respondents

41

Questions

25

Tech trends

USA

Coverage

Online

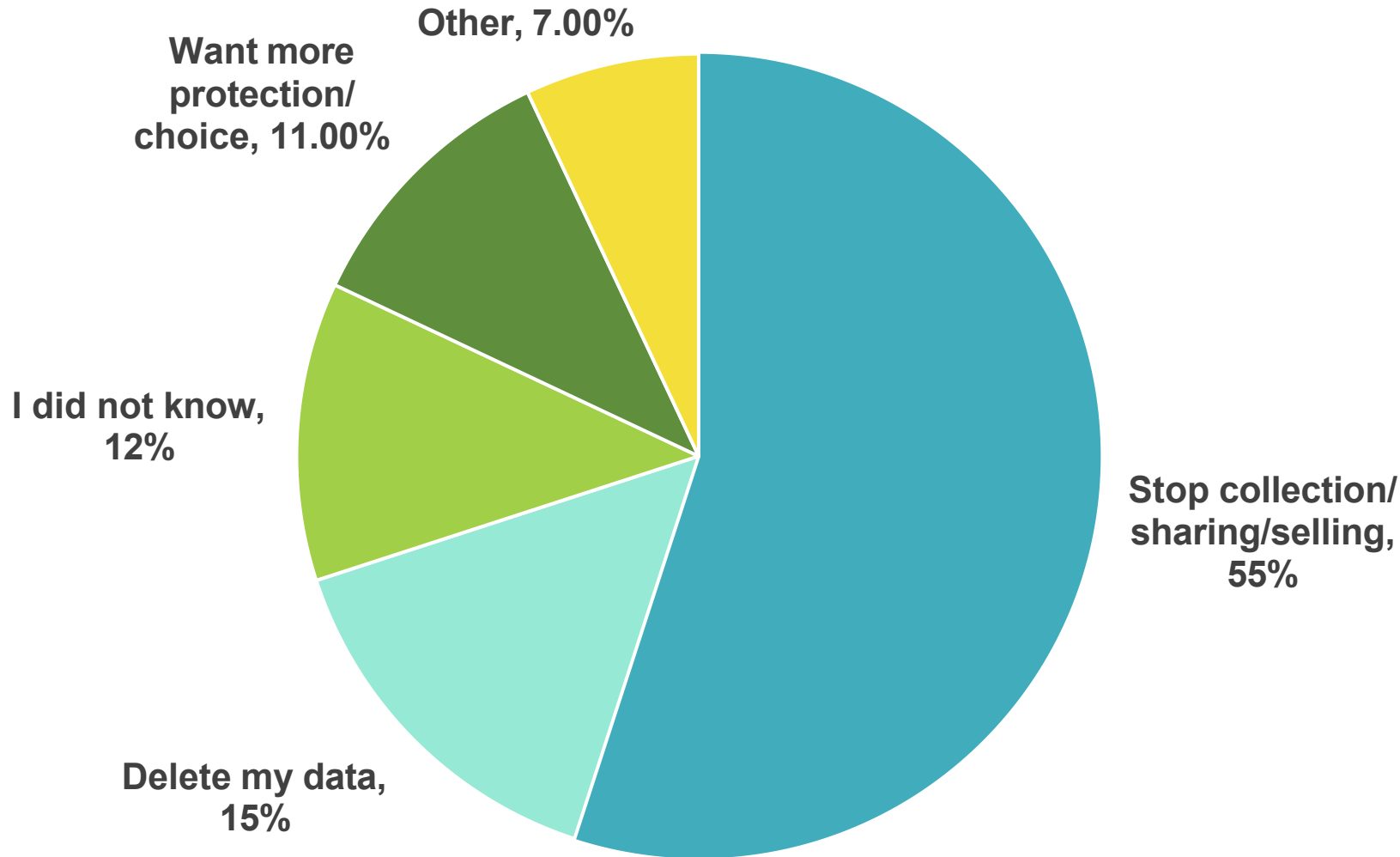
Approach

Nov/
Dec '23

Field research



Consumers Complain About Opt-out, Deletion, And Transparency



3 Options going forward

1. Keep assuming that consumers can read PPs and ToS and understand them
2. Encourage dealers to make verbal disclosures to potential customers
3. Require written disclosures to be made before the vehicle is sold

Source: 384 comments left by visitors of Privacy4Cars' Vehicle Privacy Report, as of April 2024

OEM Written Disclosures Are Too Long and Too Complex



Manufacturers' approach (Toyota example)

UNIQUE DOCUMENTS	WORDS	READ TIME**
10	66,441	331 min
Main Privacy Policy Last updated: 01/01/2023	8,813 Reading Level: 16th Grade***	44 min
Main TOS Last updated: 01/01/2023	7,484 Reading Level: 16th Grade***	37 min
Vehicle Owners Privacy Policy Same as Main TOS	Same Reading Level: Same	Same
Vehicle Owners TOS Last updated: N/A	N/A Reading Level: N/A	N/A
Connected Services/Telematics Privacy Policy Last updated: 08/09/2023	6,875 Reading Level: 13th Grade***	34 min
Connected Services/Telematics TOS Last updated: 07/03/2023	8,103 Reading Level: 14th Grade***	41 min
Sirius XM: Main Privacy Policy Last updated: 6/30/2023	10,996 Reading Level: 12th Grade***	55 min
Sirius XM: Main TOS Last updated: 1/19/2018	3,843 Reading Level: 11th Grade***	19 min
Android Auto: Main Privacy Policy Last updated: 10/4/2023	9,362 Reading Level: 8th Grade***	47 min
Android Auto: Main TOS Last updated: 1/5/2022	3,492 Reading Level: 11th Grade***	17 min
Apple Carplay: Main Privacy Policy Last updated: 12/22/2022	4,069 Reading Level: 13th Grade***	20 min
Apple Carplay: Main TOS Last updated: 11/20/2009	3,404 Reading Level: 15th Grade***	17 min

* Estimate based on public disclosures made in the Privacy Policy (PP) and Terms Of Service (TOS) of the vehicle's OEM (Original Equipment Manufacturer). For full disclosure and information go to the links provided.

** Average time to read entire document(s) at 200 words per minute.

privacy4cars.com

Privacy4Cars' approach: <https://vehicleprivacyreport>

powered by

VEHICLE
2019 TOYOTA CAMRY

VIN
4T1B11HK1KU814974

COUNTRY OF RESIDENCE
 United States

This car is like a "smartphone on wheels" ⓘ

>300,000 pageviews through WOM

VEHICLE PRIVACY LABEL™

Toyota Data Practices ⓘ CLICK CARDS TO LEARN MORE

Collect	Identifiers YES	Biometrics YES	Location YES	Synched Phones SILENT	User Profiles YES
	Share/Sell to	Affiliates YES	Service Providers YES	Insurance YES	Government YES

Mobile Apps **Remotely control + monitor this car**
Toyota & prior users may have access

TAKE STEPS HERE TO SECURE YOUR VEHICLE ⓘ

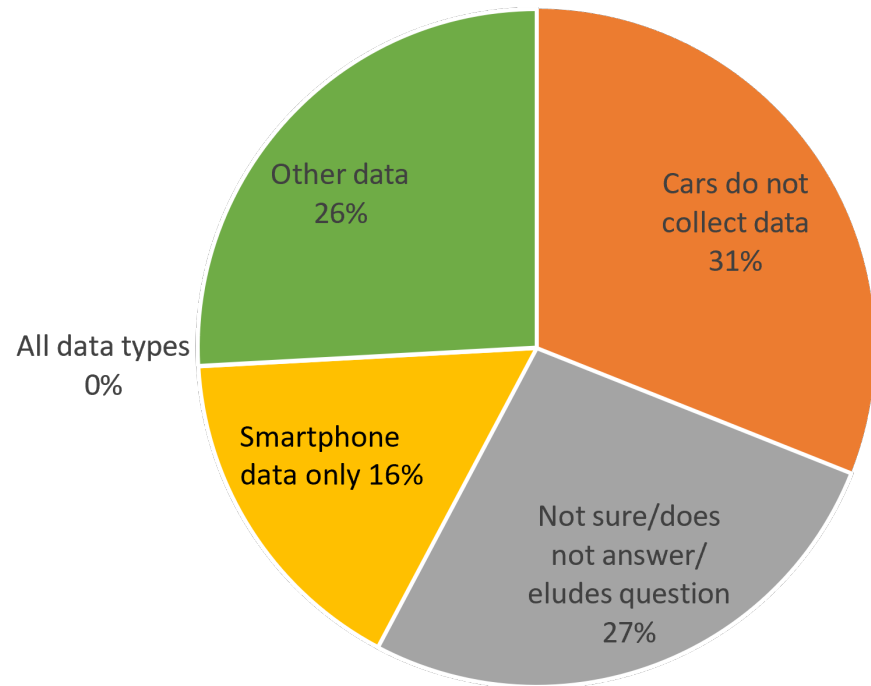
OPT-OUT FOR FREE

In-Car Apps & Services ⓘ CLICK CARDS TO LEARN MORE

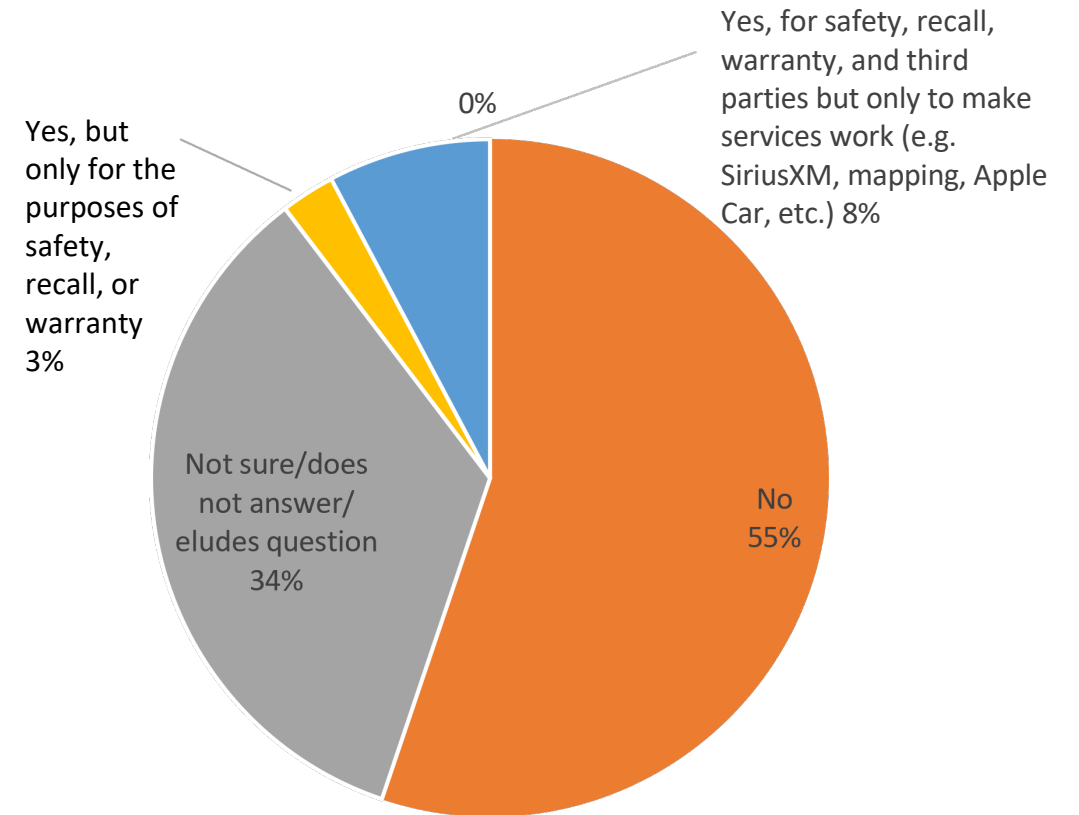
Sirius XM ONE-WAY	Android Auto YES	Apple Carplay YES	Amazon Alexa NO	Many other companies SOON
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Oral Disclosures at Dealerships Are Inaccurate

"I read that cars collect a lot of data. What kind of information the first car I drove (brand of the dealership) would collect about me?"



"Is it true that [name the manufacturer of the dealership brand] can sell or give my information to companies and the government? "



Dealership Representations On PI Protection Do Not Match Consumer Experience

WHAT DEALERS REPRESENT

73% of Dealers Tell Consumers Their PI stored in Vehicles Will be Deleted, 8% Will Delete if Asked



WHAT CONSUMERS EXPERIENCE

86% of Consumers Find PI in Test Drives



44% of Consumers Find A Home Address



85% of Consumers Believes Dealers Should Delete PI



Source: Privacy4Cars' 1Q2024 mystery shops performed at 166 dealerships belonging to the top 100 auto dealership groups in the country

Written Disclosures Are Customary... and Effective



A Monroney sticker is required for new cars and is a result of the Automobile Information Disclosure Act of 1958.

At the end of 2023, Privacy4Cars started publishing **privacy badges** on dealership **websites'** vehicle inventory pages to disclose the privacy practices of manufacturers and, for used vehicles only, if the dealerships had deleted the personal information of prior owners
10,000,000+ impressions on dealer websites in April 2024



Pre-Owned 2020
Mercedes-Benz GLC 300
 Stock: M9716A
 VIN: W1NOG8DB5LF858225

Details
 Price **\$27,125**

Exterior: Silver
 Interior: Silk Beige/Black

KEY FEATURES:

SHOW ME THE CARFAX
 Auto Cleared
 Vehicle Privacy Report

Years later, the Federal Trade Commission (FTC) stepped in to protect used car buyers. In 1985, it passed the Used Motor Vehicle Trade Regulation Rule, known today as the **Used Car Rule**, requiring dealers to display a **Buyers Guide**

BUYERS GUIDE

IMPORTANT: Spoken promises are difficult to enforce. Ask the dealer to put all promises in writing.

YEAR	MAKE	MODEL	VIN/NUMBER	DEALER STOCK # (if applicable)
<input type="checkbox"/> AS IS - NO WARRANTY YOU WILL PAY ALL COSTS FOR ANY REPAIRS. The dealer assumes no responsibility for any repairs, regardless of any oral statements about the vehicle.				
<input type="checkbox"/> WARRANTY FULL <input type="checkbox"/> LIMITED WARRANTY. The dealer will pay <u>100</u> % of the labor and <u>100</u> % of the parts for the covered systems that fail during the warranty period. Ask the dealer for a copy of the warranty document for a full explanation of warranty coverage, exclusions, and the dealer's repair obligations. UNDER STATE LAW, "IMPLIED WARRANTIES" MAY GIVE YOU EVEN MORE RIGHTS.				

SYSTEMS COVERED

- ENGINE:** All internally lubricated parts, Fuel Pump and Water Pump, Block, Heads, and Manifolds, Harmonic Balancer, Fuel Injectors, Carburetor, Turbo Charger, and Engine Mounts.
- TRANSMISSION:** All internally lubricated parts, Converter, and Modular Case and Its Internal Parts, Metal Cooler Lines, and Cooler.
- DRIVE AXLE:** All internally lubricated parts, Shafts and Bearings, C.V./U.J. Joints, and Propeller Shaft, Gear Case Housing, Flex Disc, Center Bearings, and Yokes.
- BRAKES:** Master/Wheel Cylinders, Axial Brakes, Calipers, and Proportioning Valve.
- STEERING:** Internally Lubricated parts of the Steering Gear, and Power Steering Pump, Housing, Steering Column Shaft and Coupling.
- ELECTRICAL:** Alternator, Regulator, Ignition Module and Coil, Starter, Distributor, Electrical Control Module, Electric Windows and Seat Motors.
- SUSPENSION:** Control Arms and Shocks, Ball Joints, King Pins, Spondas and Knuckles, Wheel Bearings, and MacPherson Struts.
- ENGINE COOLING:** Radiator, Engine Cooling Fan and Fan Motor.
- NOTE:** Fluids, Seals, Gaskets covered only when required with the replacement of a covered component(s)/part(s).

THE DEALERSHIP WARRANTS THIS VEHICLE TO BE MECHANICALLY OPERATIONAL AND SOUND

- 30 DAYS OR 1,500 MILES - Vehicle with purchase price from \$3,000.00 to \$4,999.99.
- 60 DAYS OR 3,000 MILES - Vehicle with purchase price from \$5,000.00 or more.
- AS IS - NO WARRANTY - Vehicle with purchase price up to \$2,999.99 or any vehicle that is 7 years or older which age should be calculated from the first day in January of the designated model year of the vehicle.

DURATION: The systems or parts covered above are guaranteed by a FULL LIMITED WARRANTY for days or miles, whichever occurs first. ALL REPAIRS MUST BE DONE IN DEALER'S SHOP. NO OUTSIDE INVOICE WILL BE HONORED BY THE DEALER.

SERVICE CONTRACT: A service contract is available at an extra charge on this vehicle. Ask for details as to coverage, deductible, price, and exclusions. If you buy a service contract within 90 days of the time of sale, state law, "Implied Warranties" may give you additional rights.

PRE-PURCHASE INSPECTION: ASK THE DEALER IF YOU MAY HAVE THIS VEHICLE INSPECTED BY YOUR MECHANIC EITHER ON OR OFF THE LOT.

Request More Info

STATE OF ILLINOIS 103rd LEGISLATURE

EFFECTIVE JANUARY 1, 2024

[SB 800](#) states: *“The General Assembly finds: (i) due to advancements in technology, personal information associated with consumers is increasingly collected and stored on motor vehicles that function as collateral in secured loans; (ii) the loss or breach of such personal information can cause consumers financial and personal harm and loss, including, but not limited to, harm and loss associated with identity theft and loss of privacy; (iii) when motor vehicles are repossessed, it is critical that consumers be protected from such harm and loss; and (iv) that collateral recovery practices affect public health, safety, and welfare.” and “that if a “licensed repossession agency” has cause to believe that a vehicle that serves as collateral collects or stores Personal Information (“PI”), then, as soon as practicable upon repossession of the vehicle and prior to the release of the vehicle from the possession of the licensed repossession agency, the licensed repossession agency shall clear, erase, delete, or otherwise eliminate the PI collected or stored in or by the vehicle.”*

STATE OF NEW JERSEY 220th LEGISLATURE

EFFECTIVE JANUARY 8, 2024

[NJ A4723](#) requires: *“Whenever a motor vehicle dealer takes possession of a motor vehicle from a consumer for the purpose of resale or lease, the motor vehicle dealer shall offer to delete the consumer’s personal information from the motor vehicle’s computer system in the motor vehicle, including, but not limited to, navigation history, paired phones, and garage door codes, by performing data clearing protocols in accordance with the Guidelines for Media Sanitization developed by the National Institute of Standards and Technology using techniques specified by the vehicle manufacturer to overwrite data or by using a menu option to reset the device to original factory settings.”*

- ❖ Vehicle privacy is an area of concern for both consumers and regulators
- ❖ The current approach to disclosure (legal docs on OEM websites) is prone to transparency problems and consistent misunderstanding/miscommunication for both consumers and auto dealerships
- ❖ Auto has well established precedents on using window stickers to transparently, systematically, and objectively disclose important information to perspective buyers of both new and used vehicles
- ❖ Not taking actions will likely yield a growing patchwork of local laws as states take in their own hands the need to “fix” vehicle privacy issues

Thank You



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Manufacturer Declarations in Privacy Policies (examples)



Your Responsibilities

Your responsibilities include: (1) informing passengers and drivers of your vehicle that data is collected and used by us, and (2) notifying us of a sale or transfer of your vehicle. If you do not notify us of a sale or transfer, we may continue to send data about the vehicle to the subscriber's Account Information currently on file, and we are not responsible for any privacy related damages you suffer.



YOUR OBLIGATIONS

It is your sole responsibility to tell your vehicle occupants and users about the Services and the CV Services, how they work, what data may be collected (e.g., collection of geolocation data), how that data may be shared, and what the limitations of the Services and CV services are (e.g., they may not work in remote areas). If you choose to activate features such as curfew, boundary or speed alerts, you have the obligation to explain that remote monitoring of the vehicle will be conducted using parameters that you set. You agree to make all vehicle occupants and users aware of this Privacy Statement and the privacy choices you have made.

If you sell, lease or otherwise transfer your vehicle directly to another person, it is your responsibility to notify such subsequent owner of the CV Services, the Services (including the Vehicle Data Collection and any other collection of data), this Privacy Statement, and the Terms and Conditions. In addition, prior to such transfer, you should delete all information (such as contacts and saved map addresses stored in the vehicle) from the vehicle and contact Customer Care to cancel your account. Any information you do not delete may be accessible to future users of the vehicle. Please refer to your Owner's Manual for [instructions on how to delete information](https://www.privacy4cars.com) from your vehicle's system.



Please note that the **information stored in your Audi vehicle may be accessible to others** who use your Audi vehicle or mobile device, and thus may be deleted, altered, or transferred. Please see your vehicle's owner's manual for information about how to **remove the information stored in your Audi vehicle.**



If you sell or otherwise transfer your vehicle, it is your responsibility to delete all information (such as contacts, address look-ups, saved map addresses, or preferences) from the vehicle and contact us to transfer or cancel your account. If you do not delete this information, it may remain in the vehicle and may be accessible to future users of the vehicle. For instructions on how to delete information from your vehicle, please refer to your vehicle owner's manual.



BENTLEY

Please note that the information stored in your BMI vehicle (e.g., phone contacts if you pair your smartphone, points of interest saved through navigation system) may be accessible to others who use your BMI vehicle or mobile device, and thus may be deleted, altered, or transferred.

Information stored in your vehicle may also be accessible to a new owner in a private sale of the vehicle. Please consult your Owner's Manual for instructions on how to perform a factory reset to remove information stored in your vehicle.



Sale or Transfer of Vehicle. If you sell or otherwise transfer your Vehicle, it is your responsibility to: (i) contact us to cancel or transfer your Bluelink® subscription; and (ii) delete all stored information (such as contacts and saved locations) from your Vehicle. If you do not delete this information, it may remain in the Vehicle and may be accessible to future users of the Vehicle. For instructions on how to delete information from your Vehicle, please refer to your Vehicle owner's manual.

Vehicle Privacy is Newsworthy... And News Are Impactful



March 11: NYT Article

Automakers Are Sharing Consumers' Driving Behavior With Insurance Companies

LexisNexis, which generates consumer risk profiles for the insurers, knew about every trip G.M. drivers had taken in their cars, including when they sped, braked too hard or accelerated rapidly.

Share full article 1.1K



By **Kashmir Hill**

Kashmir Hill has been writing about technology and privacy for more than a decade.

Published March 11, 2024 Updated March 13, 2024

March 14: Class action



Florida Man Sues G.M. and LexisNexis Over Sale of His Cadillac Data

Romeo Chicco's auto insurance rate doubled because of information about his speeding, braking and acceleration, according to his complaint.

Share full article



March 22: Policy change



General Motors Quits Sharing Driving Behavior With Data Brokers

G.M. had provided information about braking, acceleration and speed to LexisNexis Risk Solution and Verisk, firms that generated driver risk profiles for insurers.

Share full article



Vehicle Privacy Report™ Sample Press Coverage

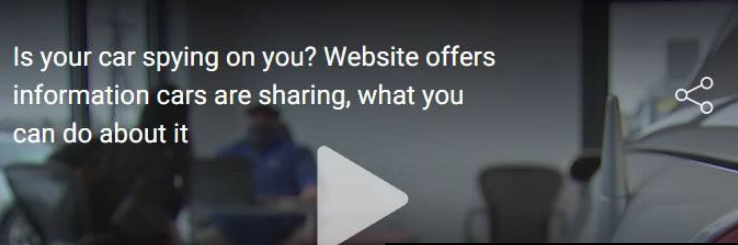


FOX 26 HOUSTON Watch Live

Rip Current Statement
from MON 9:55 AM CDT until MON 10:00 PM CDT, Galveston Island

Your car is spying on you, but a new website helps you learn what's being shared

By Tom Zizka | Published May 23, 2023 | Updated May 24, 2023
| Cars and Trucks | FOX 26 Houston |



New website reveals your car's data secrets

May 8, 2023
BOSTON GLOBE TODAY



Is your car tracking you? Here's how to find out and put a stop to it

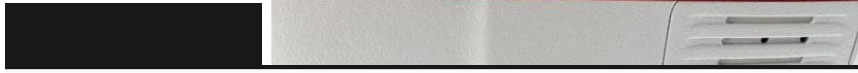
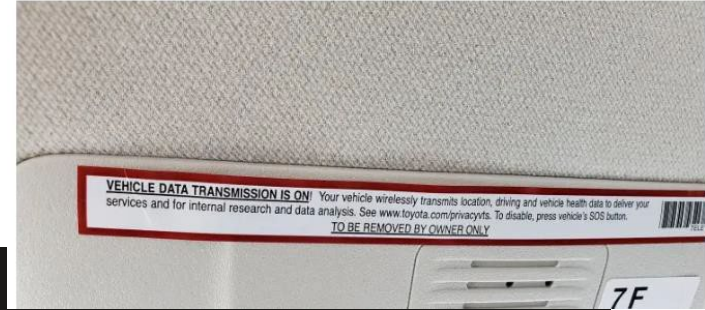
May 7, 2023
KIM KOMANDO

NEW YORK POST LOG IN

Here's what you may find when you plug in your VIN:

- Details like your name, address, email address, and driver's license number.
- Location data that shows where you are and where you went.
- Biometrics are collected by your car's microphone and camera.
- Voice recordings are collected by your car's voice assistant.
- Data is synced from your connected devices, like call records, text messages, or contacts.

The tool also lists who your information is shared with — think insurance companies, the government, and data brokers.



FORBES > BUSINESS > MANUFACTURING

Groundbreaking New Tool Unveils Secrets Behind The Automotive Industry's Data Collection

Joe Toscano Contributor @
Entrepreneur; author; privacy advocate ft'd Netflix
The Social Dilemma

Follow

VICE Video TV News Tech Rec Room Life Horoscopes

MOTHERBOARD
TECH BY VICE

New Tool Shows if Your Car Might Be Tracking You, Selling Your Data

The free tool from Privacy4Cars provides some insight on whether your vehicle is collecting and sharing location and other types of data.

privacy4cars.com

By Joseph Cox