Repair Rights at a Crossroads: The Consumer Perspective

Modern vehicles are more computerized than ever—but fixing them is getting harder. This report explores the high-stakes battle over the right to repair cars, and what it means for drivers, mechanics, and the future of mobility

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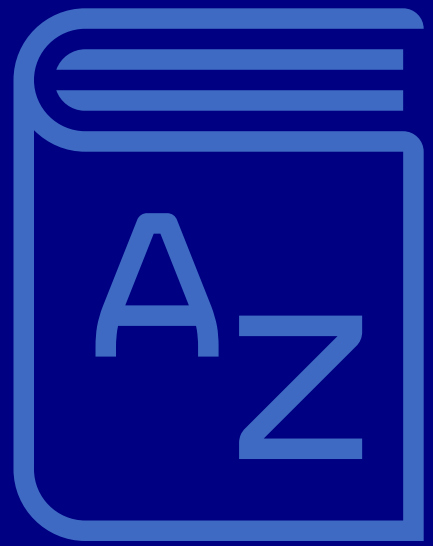
Roland Berger

Contents

Glossary

AFM	Aftermarket
Commanding	Sending instructions to the vehicle to do something (e.g., actuate brakes)
DIFM	Do-it-for-me (e.g., independent repair shop, dealership)
DIY	Do-it-yourself
IAM	Independent aftermarket
MY	Model year
OE	Original equipment
OEM	Original equipment manufacturer
OTA	Over-the-air
R2R	Right-to-repair



Without legislation, repair restrictions seen today have the potential to grow, resulting in additional costs of $34 bn per year for consumers by 2035

Executive summary

Commissioned by MEMA, Roland Berger conducted a comprehensive study to assess the current and future impact of repair restrictions in the U.S. light vehicle aftermarket. The findings reveal significant risks for consumers, independent repair shops, and the broader aftermarket ecosystem

During the study Roland Berger:

- Interviewed stakeholders across the aftermarket value chain: repair shops, parts and tool manufacturers, OEMs, and industry associations
- Leveraged secondary research using public data and internal expertise
- Conducted a phone survey of repair shops across the U.S. with N.A. Williams

Background:

- The U.S. automotive aftermarket supports nearly 290 million light vehicles, spanning all makes and ages, with over 350,000 businesses and 4 million employees
- Independent repair shops are essential, as OEM dealerships lack the capacity to meet the full demand for vehicle maintenance and repair

Key findings:

- **Consumer Choice at Risk:** Traditionally, consumers have largely been able to choose how and where to repair their vehicles. Without legislation, this flexibility can disappear
- **Massive Impact by 2035:** Over 155 million vehicle owners may face nearly $34 billion in added repair and maintenance costs, or an average increase of $185–$225 per vehicle per year, driven by reduced access to affordable parts and services. These costs will continue to grow yearly as more vehicles enter the aftermarket sweet spot
- **Shrinking Service Options:** Independent repair shops are already experiencing limitations in diagnosing and fixing newer vehicles. Without clear legislation, these challenges will only grow
- **Parts Access Varies by Complexity:** Restrictions can hit hardest in categories with integrated electronics and safety-critical functions, where access to tools and data is most limited

Source: BLS, S&P Mobility, Roland Berger

Thank you…

…for helping with the study

A. Restricted Repairs, Rising Costs: The Consumer Consequences of Inaction

Traditionally, consumers have been able to repair their vehicles with a variety of choices - Choosing where to repair and what type of part to repair with

Key repair choices

1 Where to repair

Do-it-for-me (DIFM) - OEM dealer

Using an OEM dealership to perform repairs and maintenance, typically affiliated with a vehicle's make

Do-it-for-me (DIFM) - Independent repair shop

Using an independent repair shop to perform repairs and maintenance

Do-it-yourself (DIY)

Consumers willing to do repairs and maintenance themselves

Repair options

2 What part to use[1)]

OEM part

Original parts sourced by the automaker from tier 1 suppliers

- **OEM genuine parts**
- **OEM second line parts**

Independent aftermarket part

Independently developed parts

- **IAM branded parts**
- **IAM private label parts**

1) Parts can be new, used, refurbished or remanufactured

Source: Roland Berger

Repair choices are at risk today, without legislation this risk can grow to impact owners of over 155 m vehicles by 2035

Consumer consequences overview

1. What will consumers experience?	2. Why can this happen?	3. Who will be impacted?
DIY consumers can see **increased costs and decreased ability to repair** own vehicles **DIFM** consumers can see **increased costs and longer wait times**	**Emerging trends** such as cybersecurity and subscription-based access to vehicle data **are limiting repair options and driving up costs** as they directly **affect the ability of AFM players,** such as repair shops, to service consumers	Owners of **new vehicles today** and everyone who **purchases a vehicle in the future** will be at risk if right-to-repair protections are lost. **By 2035, this could affect nearly 155 million vehicles,** driving up costs and limiting repair options across the board

When choosing between OE dealers and independent shops, consumers weigh what they value most, whether it's price, trust, or turnaround time

DIFM consumer repair and maintenance journey

Repair choices	Where to repair		What part type	
	Identify shop	**Diagnose & identify parts**	**Specify & order parts**	**Complete repair**
Description of journey step	• Consumer goes to the closest or preferred repair shop	• Repair shop diagnoses issue and recommends parts to use	• Customers choose the type of part to use - repair shops order accordingly	• Repair shops complete the repair and reset the vehicle (e.g., telltales)
Differences between DIFM options				
OE Dealer	Typically service vehicles from affiliated OEM	Have access to OE defined tools and service information	Dealer orders OE genuine or aftermarket parts	OE dealers ensure OEM authorized repair and service, for warranty and beyond
Independent repair shop	Service vehicles from a variety of OEMs	Typically have OE or IAM tools and access OE service information, with delays and restrictions	Repair shops order OE or IAM parts	Independent shops enable greater choice of providers, with different price points

Value propositions

Source: Interviews with market participants, desk research, Roland Berger

Without legislative support, consumers can lose repair choices, which will lead to increased costs and longer waiting times

Potential drivers of impact and implications for consumers

Repair choices → Where to repair → What part type

	Identify shop	Diagnose & identify parts	Specify & order parts	Complete repair
Description of journey step	• Consumer goes to the closest or preferred repair shop	• Repair shop diagnoses issue and recommends parts to use	• Customers choose the type of part to use repair shops order accordingly	• Repair shops complete the repair and reset the vehicle (e.g., telltales)
Potential drivers of impact	• **Fewer shops to choose from** if repair shops specialize by OEM or go out of business • **Forced to go to OE dealers** without other options	• Tools available to independent shops **allow fewer and fewer issues to be diagnosed** • **New subscriptions and tools are required** for each OEM driving up cost	• **Fewer or no independent aftermarket parts available** • Forced to choose **OE parts**	• Tools **unable to:** – **Test repairs** – **Reset counters or warnings** in vehicles – **Activate parts**, forcing shops to turn cars to dealers
Implications for consumers	• **Increased costs** from switching to dealers or OEM dedicated shops • **Longer wait times** due to decreased available capacity	• **Increased costs** passed on from shops for tools and subscriptions • Having to **move vehicles from independent shops to finish repairs with dealers**	• **Increased costs** due to more expensive OE parts	• **Poor user experience from persistent warnings** for repair needed even after repairs at independent shops

Source: Interviews with market participants, desk research, Roland Berger

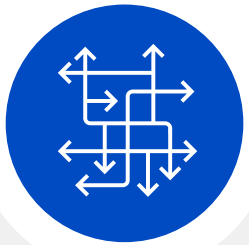
Even basic maintenance, like oil changes, can become more difficult, shrinking opportunities for DIY vehicle owners to service their own cars

Example maintenance task – Oil changes

Situation today

Oil changes are straightforward and accessible

- The process is **primarily mechanical**: drain old oil, replace the filter, and add new oil
- A digital oil change counter is **reset using either dashboard controls or a basic diagnostic tool**
- Consumers have the **freedom to choose between DIY and DIFM** options, as parts and tools are widely available



What can change without R2R

Access to essential digital functions can become restricted

- While the mechanical steps remain the same, **resetting the oil change counter can require a specialized OEM tool**
- These tools **can be unavailable to the public or prohibitively expensive** for DIY users
- Independent **repair shops can also face barriers**, limiting consumer choice

Implication on consumers

DIY becomes impractical and consumer autonomy is reduced

- Drivers **can be forced to operate vehicles with persistent "Change Oil" warnings**
- **DIY oil changes become infeasible**, pushing consumers toward **dealer-only service options, often at higher cost** and with less convenience
- Loss of repair freedom can erode consumer trust and **increase long-term ownership costs**

Source: Interviews with market participants, desk research, Roland Berger

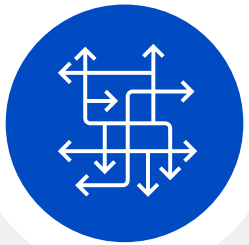
Independent shops can be constrained in repairs involving complex electronics, limiting consumer choice and forcing more drivers into the OEM channel

Example maintenance task – Brake bleed

Situation today

Bleeding brakes is a service that has generally been accessible

- Repairs that involve brakes (e.g., changing brake pads, calipers, cylinders) require a brake bleed
- Traditionally this was **done manually, but newer vehicles have pumps that bleed brakes**
- Independent **repair shops today can actuate the ABS to bleed brakes with the use of capable scan tools**



What can change without R2R

Reading signals or sending commands can be restricted by cybersecurity

- **Commanding the actuator** to bleed brakes **can be prevented by cybersecurity**
- **ABS module can lock up** if the wrong tool is used or the process fails
- This introduces a **limitation on repair shops** on how much of a brake repair they can complete

Implication on consumers

Repair shop capabilities are potentially reduced

- Consumers can **be forced to use OE dealers** for brake work, **losing a more affordable and potentially more convenient alternative**
- Independent **repair shops will need to turn customers to dealerships mid-repair** if they're unable to complete the repair or **purchase specialized OE tools and subscriptions** – both **increasing costs** for the consumer

Source: Interviews with market participants, desk research, Roland Berger

Non-exhaustive

Industry players are leveraging emerging trends in ways that can restrict consumer repair options, driving up costs and reducing access to service

Automotive trends impacting repair options

01 More data and vehicle communication are shifting behind the cyber security wall to protect vehicles and their owners

02 Repair information, diagnostics, and firewall access are increasingly subscription-based, with terms that vary widely across OEMs

03 Independent aftermarket tools are increasingly restricted to data reading only, with command functions blocked due to cybersecurity concerns

04 ADAS components are embedded throughout various vehicle systems, requiring recalibration after many common repairs

05 OTA capabilities are increasingly used by OEMs to update software and fix certain vehicle issues

06 Some premium OEMs now require replacement parts to be activated through their systems, adding complexity for independent repairers

> *"We must ensure vehicles and connectivity are secure and safe, non-OE replacement parts can be risky"*
>
> ***Large OEM***

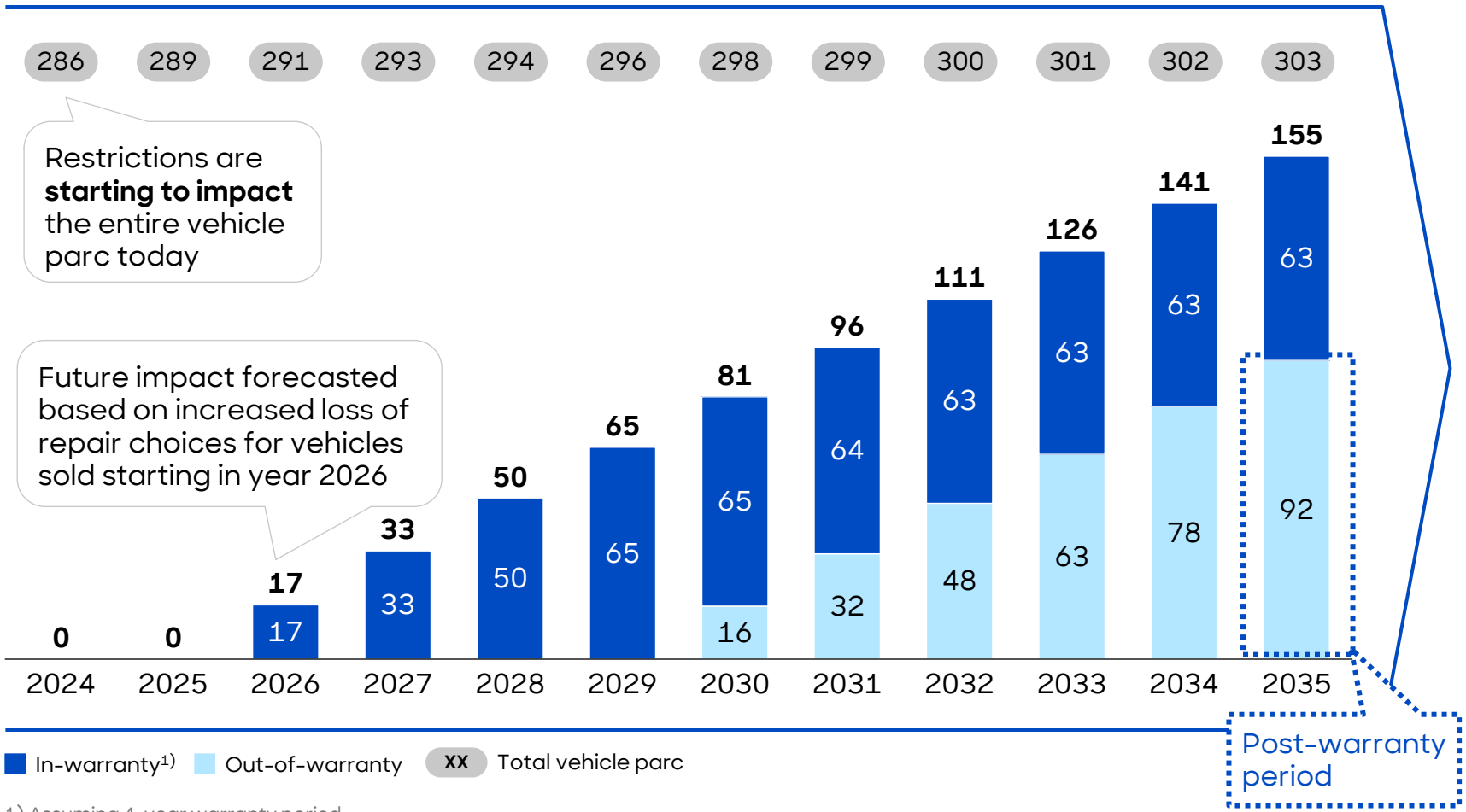
> *"OEMs are requiring subscriptions, special computers, and OE tools to service newer vehicles, which can cost up to $50-100k per OEM "*
>
> ***Independent repair shop***

> *"ADAS has driven up costs – many non-ADAS repairs end up requiring recalibration of ADAS systems"*
>
> ***Independent repair shop***

Source: Interviews with market participants, desk research, Roland Berger

New vehicle owners are already seeing limits on repair options – Without clear legislative action, 155 million drivers can be impacted by 2035

Aftermarket penetration of vehicles sold starting next year, 2024-2035 [m units]



1) Assuming 4-year warranty period

Comments

- Impacted vehicles in the parc will grow as **more vehicles enter the post-warranty period**
- Vehicles sold next year **may see impacts sooner on wear-and-tear maintenance** done inside warranty period

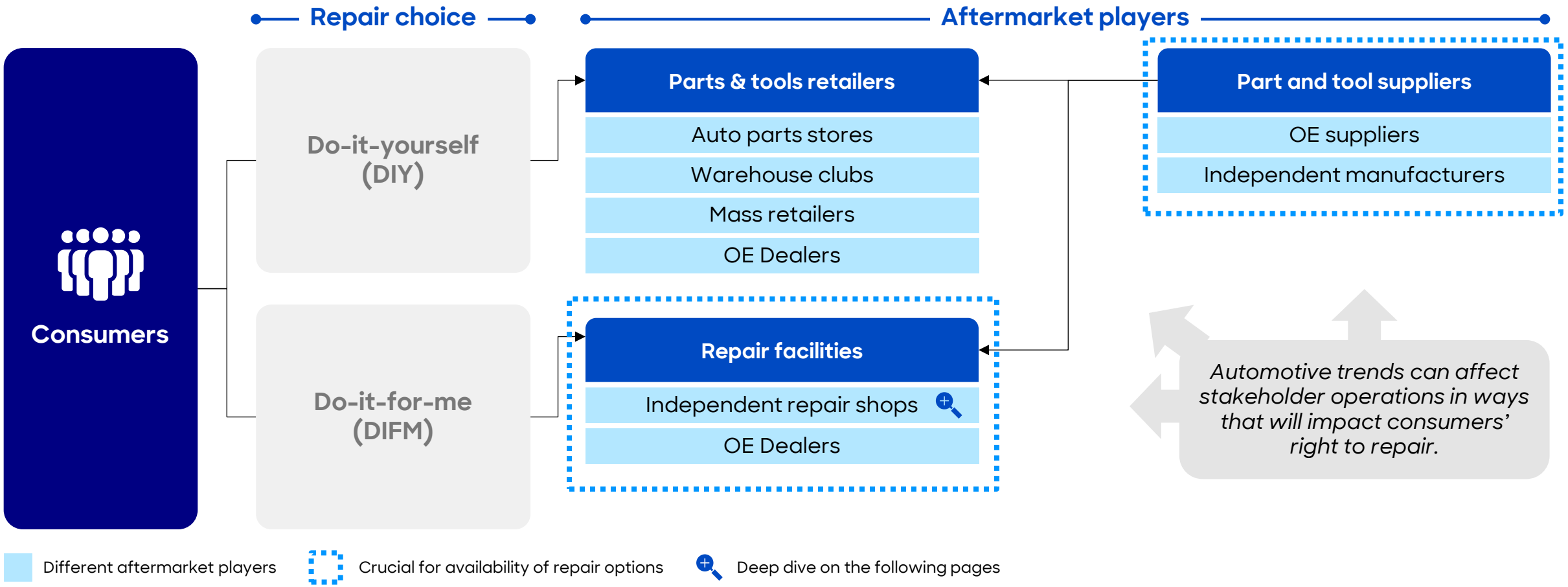
> *"Without legislation, there's no protection against repair restrictions. There isn't enough capacity available if consumers can't go to the independent aftermarket."*
>
> ***Independent tool supplier***

Source: S&P Global Mobility, Roland Berger

B. The Chain Reaction: How Constraints in the Aftermarket Can Drive Up Costs and Limit Consumer Choice

Consumers' repair options depend on aftermarket players having access to vehicle data to develop tools, make parts, and perform repairs

Overview of aftermarket players



Source: Roland Berger

Impact to consumers' repair options is due to the effects on aftermarket players

Constraints on aftermarket players overview

1. How are different AFM players impacted?	2. Which other OEM strategies affect the aftersales experience?	3. How are consumers impacted, as a result?
Effects on repair shops (e.g., paying for new tools and subscriptions) **and suppliers** of parts and tools (e.g., restricted development capabilities) **can raise costs and reduce repair and manufacturing capabilities**	Restrictions with **strategies such as OTA and telematics, can impact consumer experience** with independent repair shops, distorting aftermarket competition	Switching to dealers and OE parts can drive **higher repair costs and longer wait times**

Repair shops and suppliers are already feeling the squeeze – Costs are rising and limitations are spreading across the entire repair value chain

Drivers of consumer impact by aftermarket player type

Impact type	Repair shops	Part suppliers	Tool suppliers
Costs Drivers of increased cost	• Additional expenses from new tools and subscriptions • Longer repair times if repair complexity increases (e.g., more electronics, ADAS recalibrations)	• Increased hurdles in developing compatible parts (e.g., functioning with cybersecurity firewall)	• Increased hurdles in developing compatible tools (e.g., communicating past firewall) • Tools requiring additional subscriptions from OEMs to function properly
Availability Drivers of decreased availability of service, parts, and tools	• Having to engage OEMs for certain repair steps (e.g., activating replacement part) • Unable to complete software repairs that require OTA by the OEM • Being unable to acquire OE diagnostic tools	• Independent part suppliers unable to match or track changes to original or interfacing parts (e.g., OE part number changes) • OE suppliers being potentially restricted from participating in independent aftermarket	• Tools can have their capabilities being restricted or reduced by OEMs to prevent certain vehicle interactions (e.g., sending vehicle commands)

Impacts seen by repair shops over the last 5 years

- **29%** reported a drop in ability to service vehicles
- **40%** reported a decline in part availability
- **25%** reported not having access to OE tools

Today Future

Source: N.A. Williams phone survey, interviews with market participants, desk research, Roland Berger

Non-exhaustive

Data strategies adopted by OEMs and dealers for electronic components can also impact how aftermarket players engage and interact with consumers

OEM strategies affecting the aftersales experience

OEM data applications

Over-the-air (OTA): OEMs are using OTA updates to apply software patches and fix vehicle issues remotely

Telematics data: OEMs are leveraging telematics to enable additional customer engagement and monetization

Implications to aftermarket players

These **updates can break compatibility with IAM parts**, making previously installed parts or repairs non-functional. As a result, **consumers may have to pay again for services already performed**, or be redirected to OE dealers, further limiting aftermarket options

If OEMs restrict access to telematics data, **independent repair shops can't offer the same level of service or engagement** (e.g., proactive maintenance scheduling), putting them at a competitive disadvantage

Source: Interviews with market participants, desk research, Roland Berger

Repair shops are already facing growing restrictions that limit their ability to serve customers – This isn't only a future issue, it's already happening today

Example repair shop impacts and voices of repair shops

Parts · Proc. · Tools

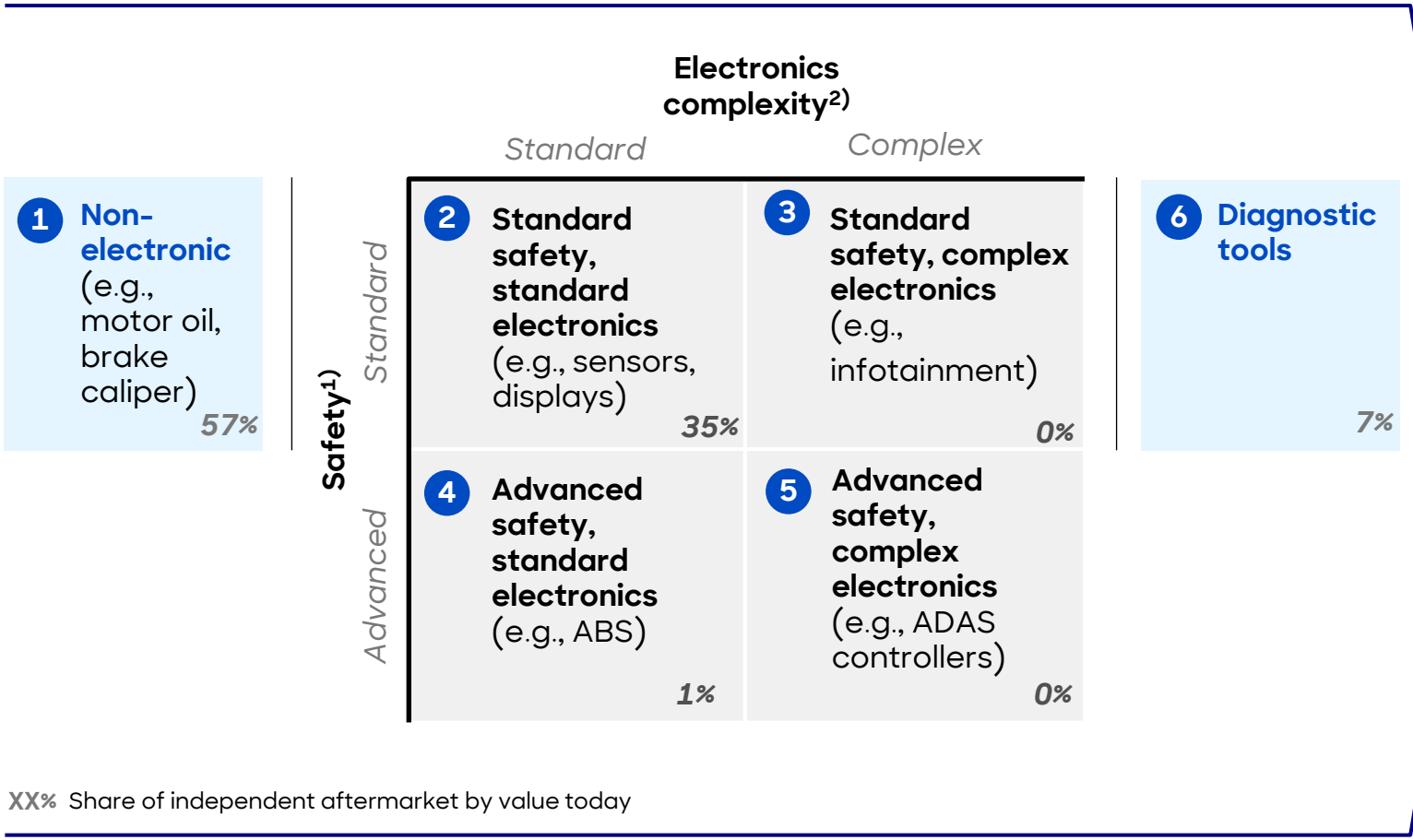
	Voices of repair shops	Impacts	Implication for consumers
01	*"Technology is changing leaps and bounds, it's hard for mom and pop shops to keep up training"*	**Complex electronics and repair procedures require ongoing training**	Increased labor costs from longer repairs or moving to OE dealers
02	*"Availability was an issue for aging, low volume cars but ECUs become obsolete and OEMs try to keep out bad actors"*	**Reduced availability of independent aftermarket replacement parts**	Increased part costs from switching to OEM parts
03	*"Can't reprogram vehicles without a subscription and we don't do enough to pay for a subscription"*	**Too expensive to acquire all tools needed to service all makes**	Turned away - reduced availability of shops that can service certain makes
04	*"We're forced to buy different subscriptions for different makes and models"*	**Multiple subscriptions are needed to service all types of repair**	Increased repair costs
05	*"During repair, systems may lock up, then we can't work on the car. We have to send it to a dealer"*	**Available tools may be restricted to reading data, not commanding**	Increased costs from being redirected to OE dealers to continue repairs
06	*"Reprogramming files are missing in some cases and are left unresolved for months."*	**Delayed availability of capable tools**	Turned away due to inability to repair or delays in repair completion

Source: N.A. Williams phone survey, interviews with market participants, desk research, Roland Berger

C. From Nuts and Bolts to Chips and Codes: Smarter Parts, Hidden Risks for the Right-to-Repair

Aftermarket parts fall into six archetypes based on safety relevance and electronics complexity – Each with distinct impacts

Product archetypes classification



Product archetypes

1. **Non-electronic**
   Wear and tear components, interior components, limited electronic control
2. **Standard safety, standard electronics**
   Basic electronics with limited or minimal software integration
3. **Standard safety, complex electronics**
   Highly complex electronic controllers and systems that are not safety critical
4. **Advanced safety, standard electronics**
   Safety critical, mature technology electronics with stable designs
5. **Advanced safety, complex electronics**
   Highly complex electronic controllers and systems that are safety critical
6. **Diagnostic tools**
   Tools for diagnostic, repair and validation purposes

1) Low safety includes ASIL ratings B and below, high safety includes ASIL ratings C and above; 2) High technology driven by complexity such as encryption level, latent features, OTA capability, etc…

Source: Roland Berger

Technological shifts in parts and service underpin the impact to repair choices and can cost consumers $185-225/vehicle

Changes to products overview

1. How are parts expected to change?	2. How much more will consumers pay?	3. How will the IAM market change?
Non-electronics are **integrating electronics**, while electronic parts are **increasingly shifting behind cyber security gateways**	Per year, consumers on aggregate **can end up paying an extra $34 bn or $185-225/vehicle by 2035** from shifting to OE dealers and parts	Market share for **IAM parts can drop from 55% to 30%**, as the market shifts to OE parts due to limited repair choices

Today, right-to-repair restrictions mainly affect repair and maintenance of complex electronics

Repair restrictions across product archetypes today

1 **Non-electronic**	• Non-electronics tend to have good demand for both DIY and DIFM repair options • Repair and maintenance requires limited to none electronic interface (e.g., changing oil and resetting the counter) • Minor right-to-repair restrictions today
2 **Standard safety, standard electronics**	• Consumers typically choose DIFM options, as electronic tools are required to diagnose and repair issues • Independent repair shops are capable and independent aftermarket parts are typically available on the market
3 **Standard safety, complex electronics**	• Consumers typically choose DIFM options, as electronic tools are required to diagnose and repair issues • Limited availability of independent aftermarket parts today, repair shop capabilities primarily around diagnosing and replacing parts
4 **Advanced safety, standard electronics**	• Consumers typically choose DIFM at OE dealers, as complex electronic tools required may not be available at independent shops • Limited availability of aftermarket parts today, with increasing restrictions on diagnostic and replacement capabilities as parts are positioned behind the vehicles' firewall
5 **Advanced safety, complex electronics**	• Consumers typically choose DIFM at OE dealers, as complex electronic tools required may not be available at independent shops • Limited to no availability of independent aftermarket parts today, with limited repair shop capabilities today in repair and maintenance (e.g., limited ADAS calibration capabilities)
6 **Diagnostic tools**	• Currently, most repair needs can be diagnosed and repaired using available independent aftermarket tools - OEM scan tools can be purchased as well, but repair shops can experience delays in availability • Some tools require additional subscriptions from OEMs to function properly (e.g., to bypass security gateway)

Source: Interviews with market participants, desk research, Roland Berger

Without legislation, four out of six product archetypes will be affected by technological changes and may experience rise of repair costs

Repair restrictions across product archetypes in the future

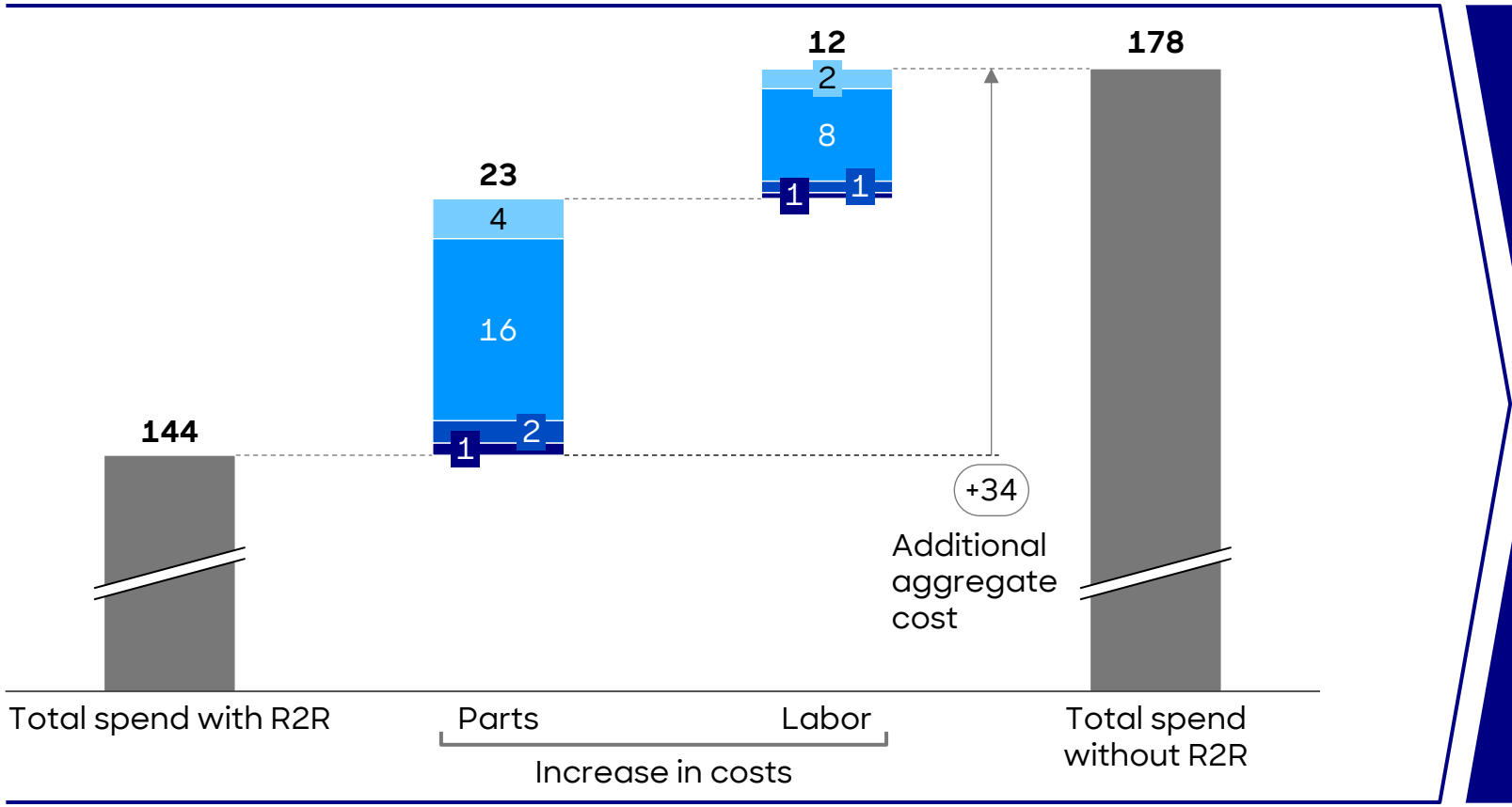
	Expected changes to product categories	Impact of changes on repair options	Rise in avg. cost w/o legislation [USD/car/year]
1 Non-electronic	• Non-electronic parts are **increasingly integrating electronic components**, such as sensors on mechanical systems, adding complexity to both repair and maintenance	⊖	15 - 25
2 Standard safety, standard electronics	• Parts will **become harder to repair or maintain** as software becomes more complex and communication is set behind the security gateway	⊖	140 - 160
3 Standard safety, complex electronics	• Neutral impact as products in these categories **represent a small share of the overall aftermarket demand** – Limited availability of parts may remain the same or worsen – Limited availability of tools capable of diagnosing and performing repairs	○	N/A – Limited IAM market
4 Advanced safety, standard electronics	• Neutral impact as products a **small share of the overall aftermarket demand, cost rise primarily from electrification of non-electronics** – Limited availability of parts may remain the same or worsen – Limited availability of tools capable of diagnosing and performing repairs	⊖	30 - 40
5 Advanced safety, complex electronics	• Neutral impact as products in these categories represent **a small share of the overall aftermarket demand** – Limited availability of parts may remain the same or worsen – Limited availability of tools capable of diagnosing and performing repairs	○	N/A – Limited IAM market
6 Diagnostic tools	• **Decreased capabilities of independent tools**, due to OEM restrictions or cybersecurity (e.g., firewall bypass needed for vehicle communication) • Increased **delays in compatible tool availability** • Increased **costs due to licenses and subscriptions**	⊖	N/A – Not a direct cost to consumers but included in shop supply fees

⊕ Positive ○ Neutral ⊖ Negative

Source: Interviews with market participants, desk research, Roland Berger

Consumers can face additional $ 34 bn annually in maintenance and repair costs by 2035, without legislative protection for the right-to-repair

Maintenance and repair cost increase breakdown, 2035[1] [USD bn]



Comments

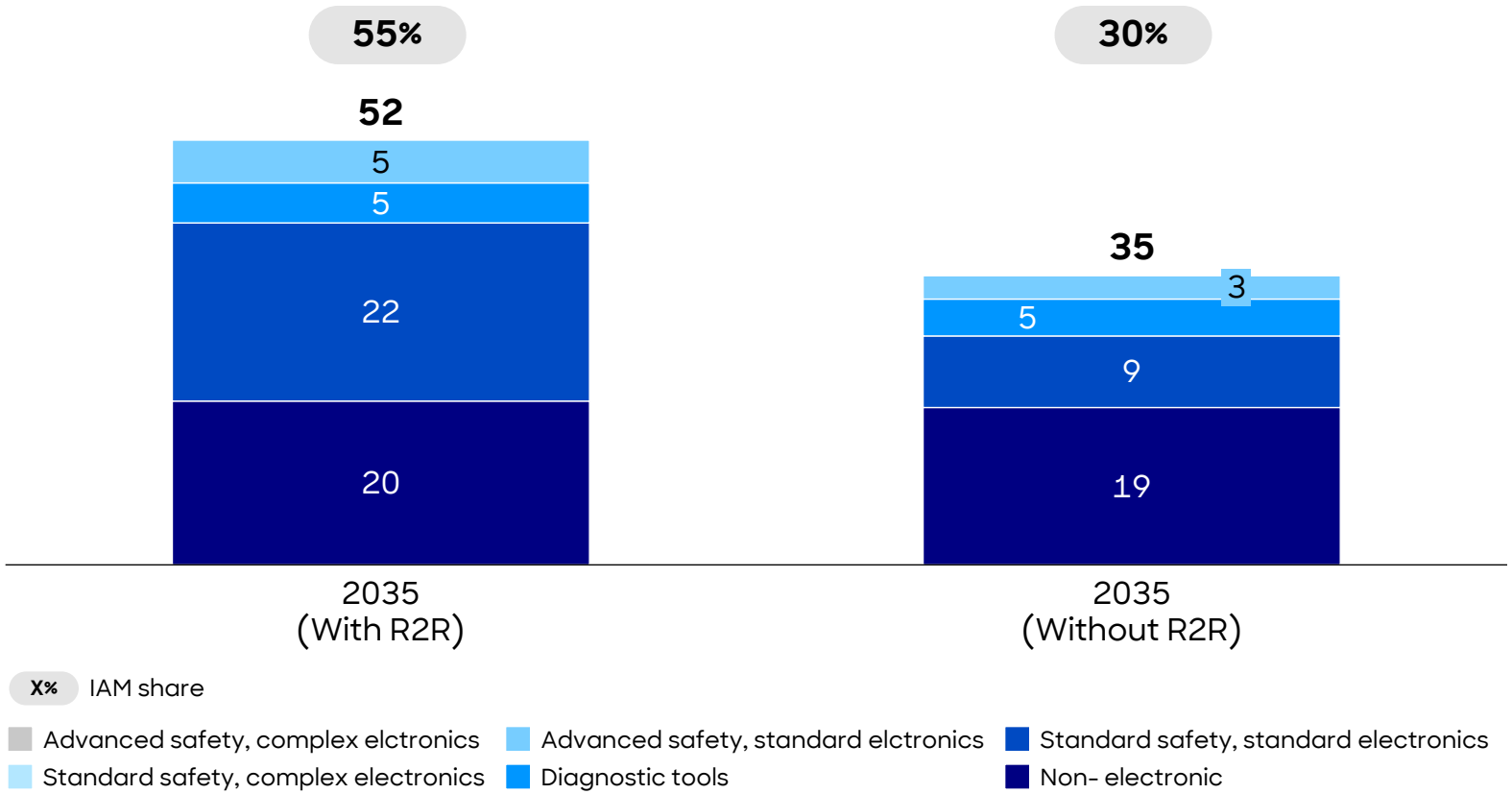
- OEM parts and labor cost approximately 40% more than those of IAM repair shops
- Without competition from independent shops, dealers can raise prices by an additional 40%, driven by reduced consumer choice, limited price pressure, and tighter control over parts and service
- OEMs currently lack the capacity to meet full DIFM demand, making IAM repair shops essential to maintaining availability
- Strain on independent repair shops can ripple across the entire vehicle parc (over 300 m vehicles in 2035) leading to reduced service capacity, longer wait times, and rising repair costs for all drivers

Advanced safety, complex electronics | Advanced safety, standard electronics | Non-electronics
Standard safety, complex electronics | Standard safety, standard electronics | Diagnostic tools

1) Market sizes and shares are based on forecast of car parc of vehicles sold starting in 2026 and includes inflation. Numbers may not add up due to rounding. Note: The "Right to Repair" scenario assumes legislation passes, maintaining today's level of access to tools, diagnostics, and parts for independent repairers, though some delays and limitations may still apply
Source: S&P Global Mobility, interviews with market participants, desk research, Roland Berger

The market share for independent aftermarket parts can shift from 55% to 30% by 2035, without the R2R

IAM parts market size and IAM parts share forecast[1] [USD bn, % of impacted vehicles parts market]



Comments

- The **IAM is projected to lose significant ground**, dropping from 55% to 30% market share, **primarily due to a shift toward OEM parts and service**
- The **biggest value loss** will come from **non-electronic and standard electronic parts,** which dominate the market today, but are becoming increasingly complex and harder for the IAM to service

1) Market sizes and shares are based on forecast of car parc of vehicles sold starting in 2026

Source: Lang, Autocare, IMR, interviews with market participants, desk research, Roland Berger

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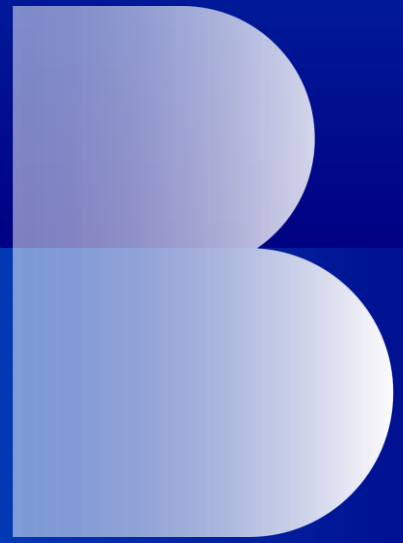

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