



Industry Trends Report

► Growth in Special
Materials and Its
Impact on Estimating

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Vice President, Consulting and Professional
Services, Mitchell Auto Physical Damage

APD Edition

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Industry Trends Report

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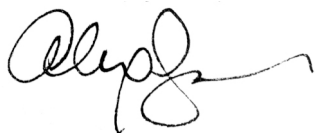
A Message from the CEO

What's Hot in the P&C Industry?

Welcome to the Q1 edition of the 2017 Mitchell Auto Physical Damage Industry Trends Report. As you may remember from our last issue, we shared insights about top trends covered at our annual conference. In this issue, we take a close look at five hot topics in business today, explore the technology and social trends that are fueling them, and share what they may mean for the P&C industry and collision repairers.

In our feature article, Growth in Special Materials and Its Impact on Estimating, author Hans Littooy provides an overview of the growth of specialty materials and explains that while they are new for U.S. and Asian brands, higher-end European brands have been using them for decades. Hans elaborates on the impact to estimating and repairs and advises how shops and carriers can address the issue of specialty materials.

Throughout the year, we'll continue to follow the topics and trends that impact your organization, both here on these pages and on the [Mitchell blog](#), and explore what they may mean for the industry. I look forward to sharing more insights with you in future issues and hearing how these topics and trends are impacting your business.

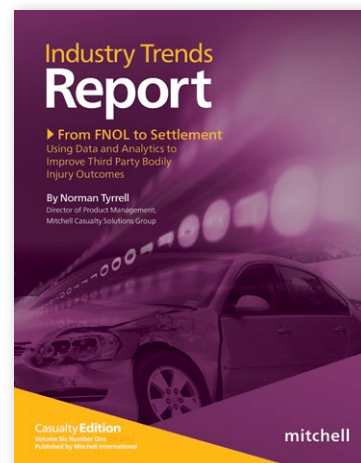


Alex Sun
President and CEO
Mitchell



Alex Sun
President and CEO, Mitchell

View the [Casualty Edition](#)





FIVE P&C INDUSTRY HOT TOPICS AND THE TRENDS FUELING THEM

In this quarter's Industry Trends Report, Mitchell takes a close look at five of the hottest topics in the Property & Casualty industry today and the technology and social trends that are fueling them.

Throughout the year, we'll continue to follow these topics and trends, both here on these pages and on the **Mitchell blog**, and explore what they may mean for both the Property & Casualty industry and for collision repairers.

TECHNOLOGY TRANSFORMATION

Does virtual reality have practical applications for the P&C and collision repair industries? While it may be too soon to say what the overall impact will be, we are seeing interesting applications that go beyond entertainment. Virtual reality is being used to train doctors, create architectural models, and test the safety of new car models in a virtual setting before manufacturing them.

It's easier to see the potential benefits of augmented reality. It could, for instance, be used to guide complex repairs in high-risk environments, possibly minimizing injuries. In addition, as automotive repairs become more complex, technology like this could be used to ensure repairs are done correctly so that vehicles are safe to return to the road.

Meanwhile, the Internet of Things is experiencing explosive growth. Markets and Markets predicts a

compound annual growth rate of **33 percent through 2021**—an increase in market value of more than \$500 billion. Connected home devices can enhance safety, security and energy efficiency, but do they present a cybersecurity risk? And will people need insurance for that? Wearables can help prevent on-the-job injuries and facilitate a return to health, but there is still much to be worked out in terms of privacy and data ownership. And connected cars are delivering real-time information about the status of a vehicle as well as driving new insurance models like usage-based insurance.

We'd be remiss if we didn't mention autonomous vehicles. We're closely following both advancement and adoption of the technology across the world. In fact, a **trial is getting underway** here in our hometown of San Diego, and we can't help but wonder what Glenn Mitchell would think!



OPERATIONAL EXCELLENCE

COGNITIVE COMPUTING TECHNOLOGY LIKE WATSON IS BEING USED TO MAKE SENSE OF BIG DATA—AND HAVING A BIG IMPACT ACROSS VERTICALS, INCLUDING THE INSURANCE INDUSTRY.

It's been four short years since IBM's Watson famously beat Ken Jennings at Jeopardy, and in that time, it's been commercialized and put to practical use fighting cancer, **building legal cases** and preventing cybercrime. Cognitive computing technology like Watson is being used to make sense of big data—and having a big impact across verticals, including the insurance industry.

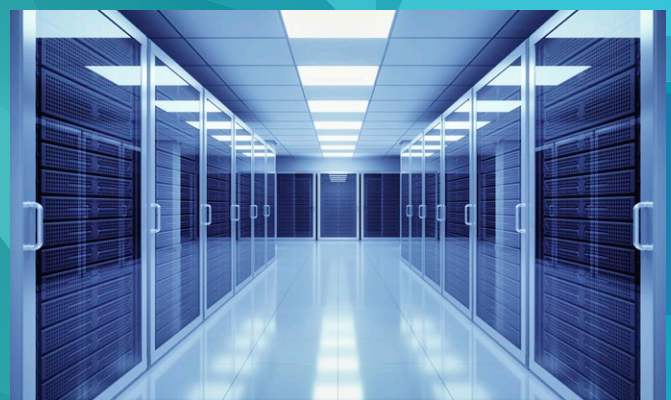
Closer to home, advanced analytics and visualized data, when applied at key points throughout the claims lifecycle, are helping insurers make more informed decisions around claims. This could potentially save time, reduce costs and lead to better outcomes, both for their businesses and for their customers.

Behind the scenes, insurers are moving both legacy systems and back-office operations to **cloud infrastructure**. DevOps is another IT-centric trend. More of a cultural movement than

a methodology, **DevOps** encourages communications and collaboration between development and operations and uses automation to deliver quality software quickly.

Trends that are not new but remain as relevant as ever—insurers continue to seek ways to use technology to streamline workflows, automate simple, repetitive tasks, reduce administrative costs and navigate an incredibly dynamic regulatory environment.

And last, but by no means least, blockchain, the distributed ledger technology behind the digital currency Bitcoin, is finally coming into its own. Deloitte named it a **key trend for 2017**, saying, "Blockchain may improve data storage and protection, and enable more efficient policy execution via smart contracts." IBM, for its part, is building an **entire ecosystem** around it.



THE EVOLUTION OF WORK

Henry Ford wasn't the first person to institute the five-day workweek, but he certainly popularized the model when he implemented it in his factories in 1916. A hundred years or so later, manufacturers are starting to turn from assembly lines to automation. The impact of automation is yet to be seen: a **McKinsey study** suggests that while 45 percent of the 2,000 work activities they looked at could be automated with currently available technologies, less than five percent of occupations can be entirely automated. In addition, they caution that those changes could take years.

Automation isn't the only trend at play. Fueled by technology, the gig economy, the share economy and on-demand workforce, in all their various permutations, continue to grow. **Intuit predicts** that more than 40 percent of the workforce will be comprised of contingent workers by 2020.

Adding to the complexity, the insurance workforce is in flux.

70,000 insurance professionals are expected to retire this year. One way to combat that loss of institutional knowledge and experience is to embed access to relevant information right there within the claims workflows. And while this may help incoming millennial talent get up to speed, insurers will need to implement new programs to attract and retain them—especially since **65 percent** of them do not have a positive take on the industry.

Another thing to think about: members of the enterprise, who as consumers have on-demand access to just about everything in their personal lives, will demand the same of their business applications.



70,000

insurance professionals are expected to retire in 2017*

*EY 2017 Property-Casualty Insurance Outlook

CUSTOMER EXPERIENCE

MOBILE
APP
USE

20%

DECLINE
BY 2020*

*Gartner's Top 10 Strategic Predictions for 2017 and Beyond

In their **2017 U.S. Property & Casualty Insurance Outlook**, EY provides a strategic roadmap for driving profitable growth. Number one among their four priorities is a focus on customer-driven innovation.

Today, the average consumer owns **3.64 connected devices**. We all recognize that this ubiquity of digital devices has changed the way consumers choose to interact. Now, the nature of digital interactions themselves is changing. The use of voice-first browsing devices like Google Home and Amazon Echo is on the rise: **Gartner predicts** that by 2020, 30 percent of web browsing will be done without a screen at all.

Further, **Gartner predicts** that by 2020 there will be a 20 percent decline in mobile app use. Instead, more consumers are turning to chatbots that don't require an app interface. Chatbots use artificial intelligence and natural language processing to automate simple tasks and interactions, often between company and customer. In many cases, the experience is so authentic, that the customer might not realize a chatbot is on the other end.

Will human interactions become a thing of the past? Or perhaps we'll see a premium placed on them? One thing is certain—listening to customers is more important than ever, as is nurturing a culture of innovation that enables a rapid and effective response to customers' ever-evolving wants and needs, both in the way they communicate and for products and services.

CORPORATE CULTURE AS BUSINESS STRATEGY

What the unprecedented pace of technology transformation suggests is that companies of all types, including those in the P&C insurance ecosystem, must innovate to respond to changing consumer wants and needs. Companies with a culture of innovation may have a competitive advantage in this regard.

According to a **PWC report**, engaged employees put in 57 percent more effort on the job and are 87 percent less likely to resign than disengaged employees, so an engaged workforce can have an important impact on a company's overall success. But how do companies create an engaged workforce? As **MG Kristian**, Senior Vice President of Human Resources at Mitchell advises, "It takes a conscious commitment from leadership across the company and deliberate action to drive culture into all aspects of the business."

Engaging millennials is becoming more important than ever. They are expected to make up **46 percent of the U.S. workforce** by 2020, and according to a **Deloitte study**, tying corporate social responsibility to their own values and volunteerism is an important component of the engagement equation.

From an IT standpoint, CIOs and CTOs are also under pressure to create a culture of innovation that drives employee engagement. It's a delicate balance that Mitchell CTO Erez Nir sums up nicely: "We are challenged to be technology visionaries, to foster innovation and create an engaged and effective workforce, and we must do all this while also keeping pace with advances in technologies and evolving modern infrastructure that supports company strategy and objectives."



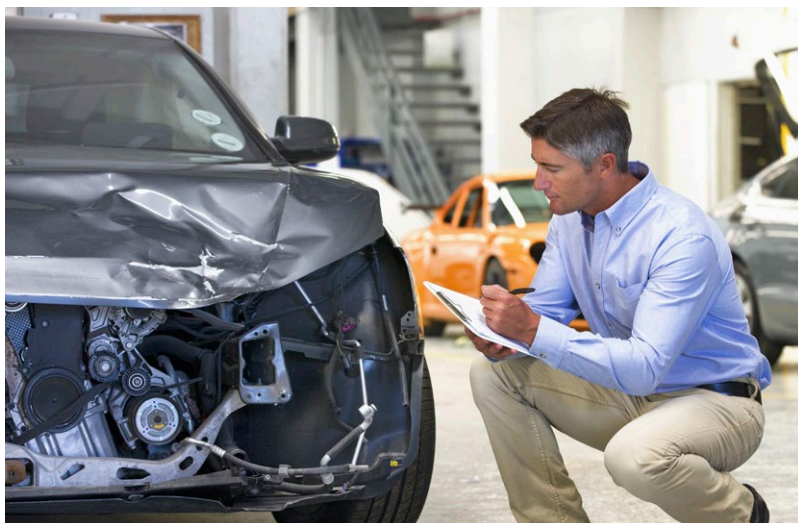
CIOs and CTOs are challenged to be technology visionaries, to foster innovation and create an engaged and effective workforce.

Erez Nir, Executive Vice President and Chief Technology Officer, Mitchell

Growth in Special Materials and Its Impact on Estimating

By Hans Littooy

Vice President, Consulting and Professional Services, Mitchell Auto Physical Damage



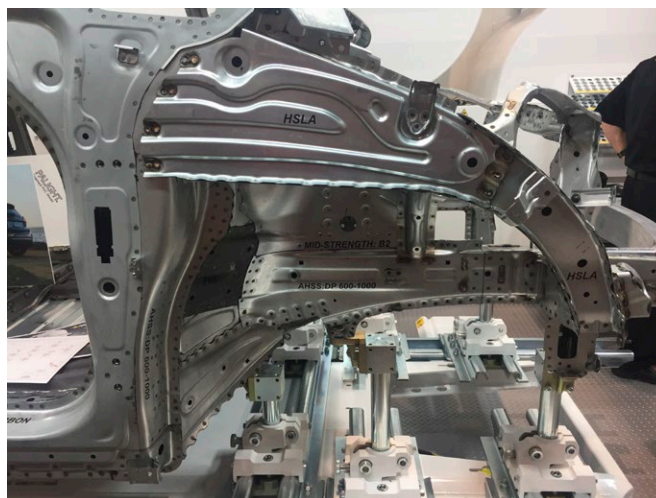
How will appraisers and body technicians address repairing vehicles which require different repair processes than how the OE built the car?

While taking in the OE companies at the NACE and SEMA shows this past year, I was truly amazed to see their increasing use of special materials and construction techniques. I saw General Motors had the Cadillac CT6 cut-away at NACE, while at SEMA, they displayed a Chevy Bolt body shell, highlighting all of the materials, rivet styles, glues, and more. Audi was well represented, displaying a 2017 Q7 shell, calling out where you can repair and where it's too far gone to repair. And MOPAR displayed the correct repair procedure for damaged A-B-C pillars for one of their vehicles.

So, after observing these innovative displays, I started to think what the claims impact all of these new special materials are going to have on claims severity. And an equally interesting question is how

will appraisers and body technicians address repairing these vehicles, which often require different repair processes than how the OE built the car?

Figure 1: 2017 Chevrolet Bolt Front Structure



Credit: Photo by author.

First, Let’s See Why Special Materials Are Used in Vehicle Construction

Due to ever-increasing CAFE and vehicle safety standards, the OEs are in an epic battle to create lighter yet safer cars. For the equivalent weight, aluminum crash energy absorption is twice that of steel, permitting the design of larger crush zones without weight penalties. And by using lighter and stronger materials on vehicles—which permits more efficient engines and safer structures—it’s projected that drivers can save 5 billion gallons of fuel by 2030.¹

Table 1: Mass Reduction Benefits of alternative materials to conventional steel¹

Lightweight Material	Mass Reduction
Magnesium	30–70%
Carbon fiber composites	50–70%
Aluminum and Al matrix composites	30–60%
Titanium	40–55%
Glass fiber composites	25–35%
Advanced high-strength steel	15–25%
High-strength steel	10–28%

If you look at the history of special materials used in vehicles, the use of aluminum is not all that new. At the end of WWII, a combination of steel shortages and the observation of corrosion resistance led Land Rover to utilize aluminum (actually Birmabright, an aluminum/magnesium alloy) as the primary metal for its body panels and has continued using aluminum for body panels ever since. Other high-end Euro models since the mid-90s have used aluminum, starting with the 1993 Audi A8. What’s changed though is within the past five years, the major US and

Japanese auto manufacturers have started to use high-strength steel, aluminum, and other materials to improve fuel efficiency and vehicle safety.

Analyzing the Claims Data for Vehicles with Special Materials

Based on Mitchell’s editorial database and claims data, we have seen the following growth in vehicles with special materials (HSLA, HSS, AHSS, Aluminum, PHS and more):

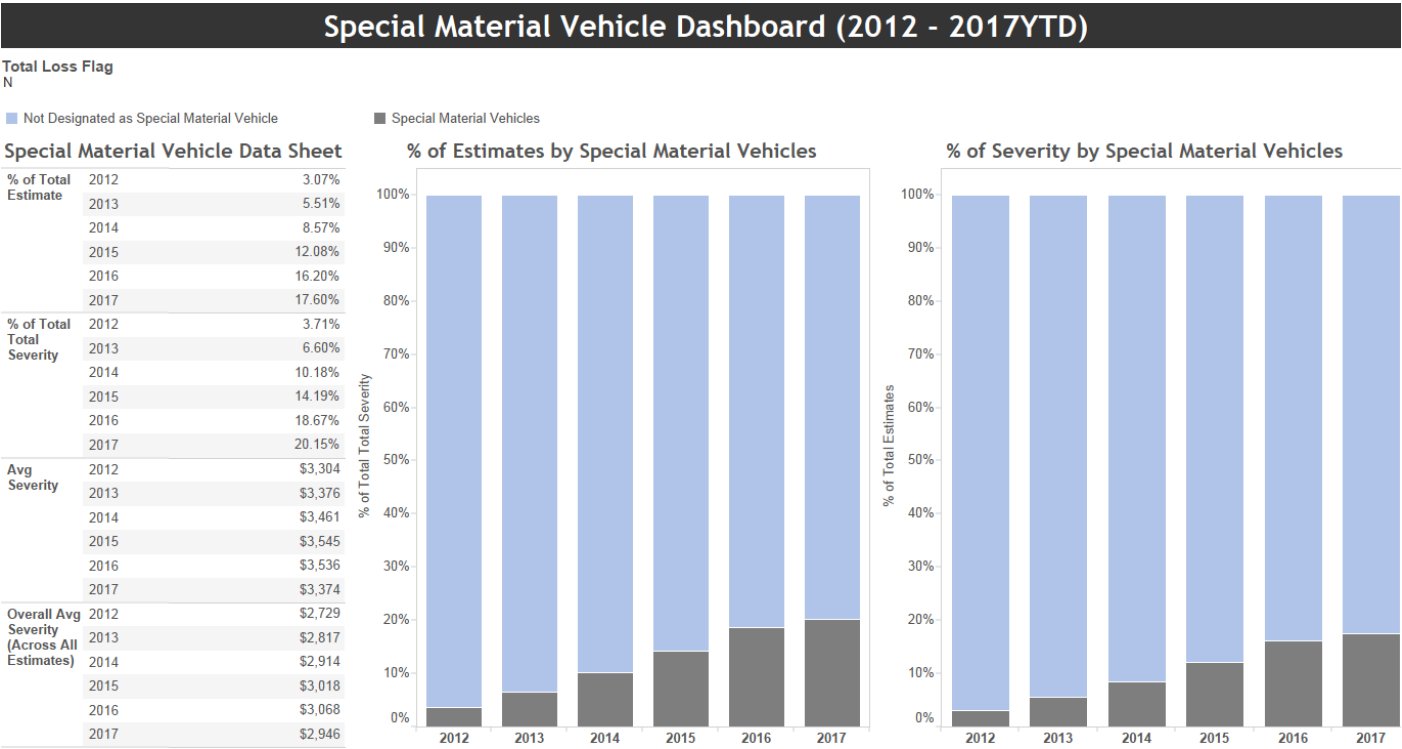
As Table 2 shows on the next page, within the past 5 years, estimates written for vehicles with special materials have grown from just over 3% to over 19%. Also note the average severity difference between vehicles with specialty materials vs conventional vehicles. While the difference has decreased from \$576 premium per vehicle with specialty materials in 2012 to \$458 in 2017, this still represents a repair severity premium of 15.7% for vehicles with special materials.

Special Materials Mean Special Procedures When It Comes to Estimating and Reparability

One of the direct results of using special materials is the complex manufacturing process required, including electronic laser beam welding, rivets, and structural adhesives used to join dissimilar metals. Because of the difficulty of replicating OE manufacturing processes, many OEs recommend a different repair procedure than how the OE originally manufactured the vehicle.

Examples include the latest BMW 3 Series, the Lincoln MKC, and the new Cadillac CT6. While the OE laser welded the quarter panels to the body structure, BMW strictly recommends using structural adhesives when replacing a damaged quarter panel. For the CT6, while the factory used a combination of

Table 2: Estimates with Special Materials on Vehicles and Claims Severity Impact



structural adhesives and laser beam welding to marry the dissimilar metals together, for the repair, the factory recommends rivets and structural adhesives.

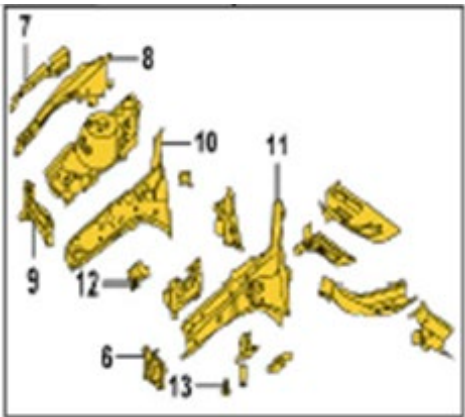
As a result of the expanded used of specialty materials, more and more repair facilities are investing in obtaining the necessary equipment, training, and skills required to obtain certification for the repairs. And with the specialization and training, labor costs have increased.

Helping the Technicians by Calling Out Special Materials

Over the years, Mitchell’s Editorial Staff has been continually updating our database with specially designed graphics to reflect any components designated by the OE as special materials. This can include anything from HSLA to Aluminum to Carbon and are uniquely colored in the Mitchell graphics. In addition, within the detail notes, reference is made

if OE specific repair procedures are required. When it comes to software solutions for technicians, Mitchell offers the RepairCenter™ TechAdvisor repair data solution that includes available links directly from the estimating page.

Figure 2: Mitchell Color Coded Special Materials Graphics



Lastly, recognizing the fact that different skills sets may be required for repairs that involve specialty materials, Mitchell will be enhancing our estimating platforms to give the appraiser the ability to charge different labor rates for those materials.

Figure 3: Labor Rate Profile within Mitchell Estimating. Available Summer of 2017.

Labor Rates	
Body:	40.00
Refinish:	40.00
Glass:	40.00
Mechanical:	70.00
Frame:	55.00
Bdy-S:	0.00
Aluminum Repair:	75.00
Carbon Fiber:	0.00
User Defined 1:	75.00
User Defined 2:	0.00

Conclusion

It's a guarantee we can expect to see the continued expansion of special materials in vehicles, with projections of 90% growth in the use of High-Strength Steel by 2025 . For appraisers, they need to be aware of these materials to ensure proper repair techniques are followed and also reflect the appropriate labor rates for those repairs. For carriers, because of the increase in severity potential for vehicles using special materials, they need to ensure policies are properly priced and claims department's budgets reflect the increased exposure to vehicles with special materials.

¹ Reference: VEHICLE TECHNOLOGIES OFFICE: LIGHTWEIGHT MATERIALS FOR CARS AND TRUCKS, Energy.gov. <https://energy.gov/eere/vehicles/vehicle-technologies-office-lightweight-materials-cars-and-trucks>

² Ref: Mitchell Claims Database. Analysis report created by David Chen, Business Analyst, Mitchell International.

³ Ducker Worldwide. (2015). Metallic Material Trends in the North American Light Vehicle. Accessed online Aug. 3, 2016

About the author...



Hans Littooy

Vice President, Consulting and Professional Services, Mitchell Auto Physical Damage

We are pleased to welcome Hans Littooy as a new contributor to the Industry Trends Report.

Hans Littooy is Mitchell's Vice President, APD Consulting and Professional Services. He joined Mitchell's Product Management team in August 2003, where he led the release of Mitchell's highly successful WorkCenter™ Review Suite and was awarded two patents for innovations in estimating compliance. In 2009, Hans transitioned into his current role, leading a team of consultants who assist our carriers with achieving measurable improvements in their claims workflow and efficiency.

Hans began his career designing rocket engines for NASA's expendable launch vehicle programs in the late 1980s and later served in product management for Cummins Engine Company and Caterpillar's Gas Turbine division. Hans is originally from the Pacific Northwest, earning his BS in Mechanical Engineering from Washington State University and later a Master's in Business from the University of Michigan.

Hans is hands-on in the collision industry, where he enjoys restoring classic 1960s muscle cars — and performs all the body and paint work himself!

U.S. Length of Rental Trend Continues for Q4 2016

By Dan Friedman

Assistant Vice President, Collision Industry Relations and Sales, Enterprise Rent-A-Car



Length of Rental was propelled once again by an increase in claims frequency and an escalation in repair complexity, however, there was a significant delta between average and best in class.

The recent Length of Rental (LOR) trend continued in the Fourth Quarter of 2016 as the average increased to 12.5 days from 11.9 in the Fourth Quarter of 2015. While most of the U.S. hovered near the .6 days average, there were three regional outliers—the Northeast, which was essentially flat, the Southwest, which increased nearly one full day, and the Mountain region which jumped 1.5 days to 13.5. Despite this large increase, the Southwest continued to produce the longest LOR duration at 13.8 days.

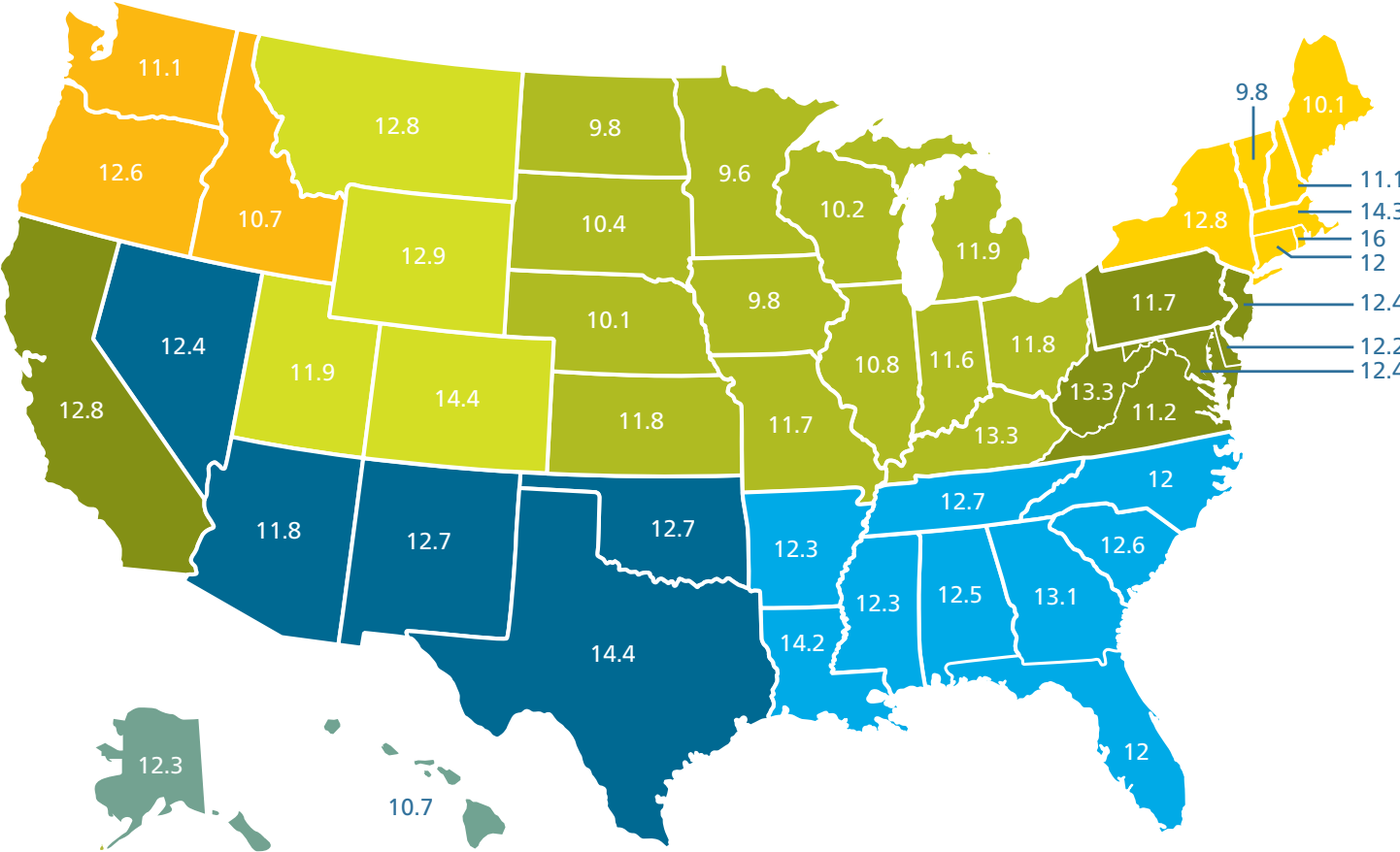
Nine individual states produced results that deviated substantially from the U.S. average. Alaska and Massachusetts were the only states to decline, .2 and .3 days respectively. Arkansas, Delaware, Wyoming, Utah and Montana increased between one and 1.3 days, although their impact on the regional and U.S. number was minimized by their relatively small volume.

The most impactful states were Texas, which jumped 1.1 days, and Colorado which skyrocketed 1.8. These spikes resulted in 14.4 day averages for both, the highest of any state.

Length of Rental was propelled once again by an increase in claims frequency and an escalation in repair complexity, however, there was a significant delta between average and best in class. This indicates that, despite these challenges, shops can drive results by focusing on the elements they are able to control.

The three most impactful pieces, based on data and feedback from best in class operations, are formal training (I-Car Gold shops outperform the market by approximately 1.3 days), utilization of ARMS® Automotive (particularly the reporting tools) and a robust scheduling strategy.

U.S. Average Length of Rental (LOR) by State
Q4 2016



Nine individual states produced results that deviated substantially from the U.S. average. Alaska and Massachusetts were the only states to decline, .2 and .3 days respectively.

Average Billed Days for U.S.	
12.5	

Region	LOR
California	12.8
Mid-Atlantic	11.9
Midwest	11.3
Mountain	13.5
Northeast	12.9
Northwest	11.5
Pacific	11.1
Southeast	12.6
Southwest	13.8

Average Length of Rental for Repairable Vehicles

Canada

Canadian Length of Rental (LOR) continued its 2016 upward climb, showing a .4 day increase in Q4 2016 over Q4 2015 for the quarter ending December 31.

Despite the longer results, Canadian LOR continued to trend below that of the U.S., finishing 1.2 days lower (11.3 days in Canada vs. 12.5 days in the US).

Provincial differences were significant, with Atlantic Canada once again leading the way. Each of the four Atlantic Canada provinces beat the average, led by Prince Edward Island's finish of 2.6 days below the national average. Newfoundland, Nova Scotia and New Brunswick also bettered the Canadian result by more than .5 days each.

Meanwhile, Ontario, the country's most populous province, saw a .8 day increase to 11.4 days.

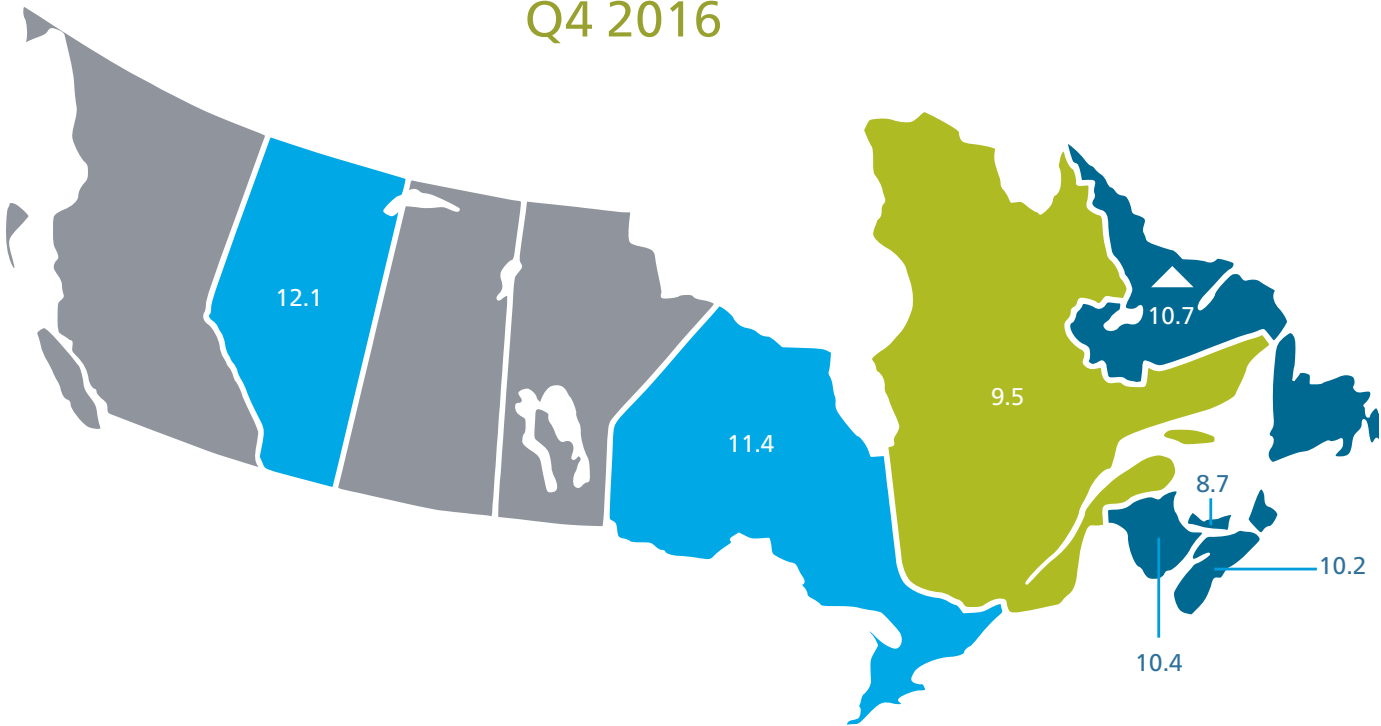
Alberta witnessed an end to its recent trend of producing LOR improvement (or decreases), and increased from 12 days in Q4 2015 to 12.1 days in Q4 2016.

Length of Rental was propelled once again by an increase in claims frequency and an escalation in repair complexity, however, there was a significant delta between average and best in class. This indicates that, despite these challenges, shops can drive results by focusing on the elements they are able to control. The three most impactful pieces, based on data and feedback from best in class operations, are formal training (I-Car Gold shops outperform the market by approximately 1.3 days in the US), utilization of ARMS® Automotive (particularly the reporting tools) and a robust scheduling strategy.



Canadian Average Length of Rental by Province

Q4 2016



Year-Over-Year Change

Source: Enterprise Rent-A-Car. Includes ARMS® Insurance Company Direct Billed Rentals; Excludes Total Loss Vehicles.

Average Billed Days for Canada		
Q4 2015	Q4 2016	Change
10.9	11.3	Up

The quarterly LOR summary is produced by Dan Friedman, Assistant Vice President Collision Industry Relations and Sales at Enterprise Rent-A-Car. Dan has 21 years of experience with Enterprise working within the collision repair industry. Through its ARMS® Automotive Suite of Products, Enterprise provides collision repair facilities with free cycle time reporting with market comparisons, free text/email capability to update their customers on vehicle repair status, and online reservations. More information is available at armsautosuite.com or by contacting Dan Friedman at Daniel.Friedman@ehi.com.

Average Billed Days for Canada			
Province	Q4 2015 LOR	Q4 2016 LOR	Change
Alberta	12	12.1	Up
Ontario	10.6	11.4	Up
Quebec	9.3	9.5	Up
Newfoundland and Labrador	11.7	10.7	Down
New Brunswick	9.9	10.4	Up
Nova Scotia	10.5	10.2	Down
Prince Edward Island	8.2	8.7	Up

Auto Physical Damage Insurance Underwriting Profit Declined from 2005–2015

Published by: CollisionWeek



The average underwriting profit during the 2005–2015 period was 4.0 percent of premiums earned.

Latest statistics from the National Association of Insurance Commissioners indicates that the percentage of premiums going to pay losses has increased.

Data contained in the National Association of Insurance Commissioners (NAIC) report on profitability by insurance line in 2015, released this month, illustrates the increasing percentage of underwriting dollars going to pay claims on auto physical damage (APD) insurance. This has resulted in declining underwriting profitability from the period 2005 through 2015.

As the chart on page 19 shows, incurred losses were 56.7 percent of direct premiums written in 2005 on private passenger APD insurance. In 2015, incurred losses have grown to 65.0 of premiums, an increase

of 14.6 percent. The average for the 2005–2015 period is 61.0 percent of direct premiums written.

For commercial APD insurance, incurred losses have grown from 50.8 percent of direct premiums written in 2005 to 57.9 in 2015, an increase of 17.7 percent. The incurred loss percentage was down from 61.9 percent in 2014, an increase of 21.9 percent during the period. The average over the 11 year period was 57.8 percent of premiums.

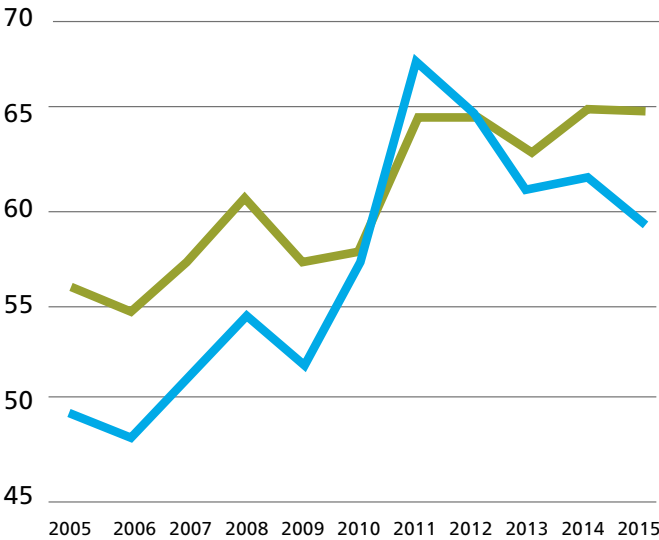
Looking at underwriting profit, which takes into account costs beyond incurred losses, in 2005, private passenger APD underwriting profit was 9.3 percent of direct premiums earned. In 2015, it was 0.5 percent, up from a loss of 0.3 percent of premiums in 2014. The average underwriting profit during the 2005–2015 period was 4.0 percent of premiums earned.

On the commercial APD side, underwriting profit was 12.0 percent of premium in 2005. In 2015 it turned to a loss of 0.9 percent, an improvement from the loss of 3.2 percent in 2014. The average during the 11 year period was 0.9 percent of premiums earned.

The profit performance of APD insurance looks much better when the gains on the insurer’s investments are taken into account, though it too has declined substantially during the 10 year period.

For private passenger APD insurance, the profit on the insurance transaction after investment gains are taken into account stood at 6.8 percent of premiums earned in 2005. In 2015, it stood at 0.8 percent of premiums, a decline of 88.2 percent. The average profit during the period was 3.3 percent.

Auto Physical Damage Insurance
Losses Incurred
Percent of Direct Premiums Earned



Auto Physical Damage Insurance
Profit on Insurance Transaction
Percent of Direct Premiums Earned



Auto Physical Damage Insurance
Underwriting Profit
Percent of Direct Premiums Earned



Training: An Ongoing Commitment

Published by: Autosphere.ca



Retention and productivity must trump the cheapskate urge to economize on paid hours if the organization is going to prosper in the long run.

Integrating learning as part of organizational evolution.

In my last column, we agreed that simply talking about training, rather than adopting a training imperative, puts us on the wrong path. How do we ensure that training is a reality? By making it an ongoing part of our organizational culture, rather than a response to a sudden need or an annual ritual.

It's an easy first step in our industry, where automotive technology makes it necessary to constantly stay in the vehicle design loop, to recognize that learning is part of everything your organization does. Take the aluminum-bodied Ford F-150 as a dramatic example.

A continuous process

Learning is an ongoing process, not an event. The introduction of every new type of vehicle can be used as a learning tool for all staff. Vehicle introductions tend to concentrate in the fall, but that's just the busiest time of a continuous stream. Consider how new materials being used in the latest vehicles and new equipment to address them impacts your business. Consider too how that impact will increase over time as the use of aluminum; carbon fibre, advanced plastics and new high-strength steels increase.

It's your role as a leader to support the expectation of learning and provide both resources and opportunities for making it possible. A company

shows that it values learning by including employee training and development in the budget and viewing it as an investment in the future. Items included in the annual budget reflect the priorities of the operation. Say ‘yes’ when approached for training and propose it regularly. Make it an expectation rather than an exception.

Additionally, don’t just train your technicians. Counter people and, yes, administration needs to be up to date. While they may not need to rivet aluminum, they need to understand what’s involved. They need to care and show they do. They also have to understand the process to assist with explaining an estimate, dealing with insurers and especially with owners.

By supporting the expectation of learning, the line item will already be in your annual plan. That may require some significant budget planning, but once done, the shadow of the expenditure—everyone feels it—won’t hang over the important training needs of the team.

Providing time

The toughest part is providing time for training. Traditionally, employees have been expected to use their own weekends or evenings. That just isn’t fair. Satisfied employees are those whose training needs are recognized alongside their need for balanced lives. Retention and productivity must trump the cheapskate urge to economize on paid hours if the organization is going to prosper in the long run.

The winner is the company that has the most informed, skilled employees. Employees know, they talk to customers and they discuss their working lives in the community.

Those employees also need to be loyal, enthused and proud that their operation values training them to make sure the vehicles they encounter get the best possible attention. You cannot generate pride by simply putting slogans on the wall but you can create a culture of learning that enforces employee competence and satisfaction.

Rémy Rousseau is the founder of Collision Management and Rousseau Automotive Communication. You can reach him at remyrousseau@rogers.com.

Survey: Just 25 Percent of Shops 'Always' Check OEM Procedures During Repairs

Published by: Collision Repair Magazine



There are a lot of shops and techs repairing to what they think is right and not to OEM standards just because of not getting easy free access to OEM specs and standards.

We've heard repeatedly that the best course of action is to always check the OEM repair procedures. But how many shops are actually doing it? According to the results of our latest survey, the majority of shops check while performing structural repairs, but only about a quarter of respondents check them for every repair. The numbers are even lower when it comes to writing estimates.

The 2017 OEM Repair Procedures Survey asked respondents to indicate how often they checked the procedures both in preparing estimates and during the repair process itself. Our next survey focuses on measuring systems and technology.

The results from that survey will be available on collisionrepairmag.com on February 1, 2017.

The majority of Collision Repair magazine's readers are shop owners and managers, so it's no surprise that the majority of our respondents (60 percent) fall into that category. However, this particular survey also had a larger than usual percentage of responses from collision repair executives employed with banners, networks or chains (20 percent). It seems reasonable to assume that this is a topic of great interest at the top levels of the collision business.

The remainder of the survey responses came from technicians (7 percent) and others (13 percent). The "others" were roughly evenly split between insurers and suppliers to the collision repair industry.

The meat of the survey starts by asking how often OEM repair procedures are consulted while preparing

an estimate. The most common response was “Most of the time,” drawing about 42 percent of the responses. It was followed by “Sometimes” at 33 percent. About 17 percent of our respondents indicated that they “Always” checked OEM repair procedures while performing an estimate. Just 8 percent of respondents indicated they “Never” check the procedures while writing estimates.

Those numbers are just for writing estimates. The numbers climb significantly when discussing the repair process itself. Of our survey respondents, 25 percent “Always” check the OEM procedures while performing repairs. A further 58 percent check the procedures any time they have to perform a structural repair, followed by 17 percent who check for “Some structural repairs.”

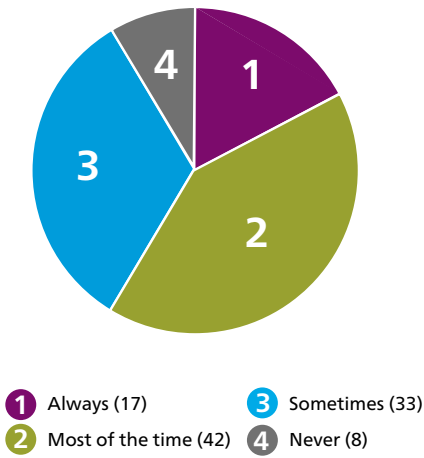
Finally, we turn to how the information is accessed. Alldata was clearly the most popular choice, with 35 percent of our respondents indicating it was the source they accessed most often. Mitchell’s TechAdvisor followed with 26 percent. OEM subscriptions followed closely with 22 percent and I-CAR’s Repairability Technical Support (RTS) portal garnered 17 percent of the total responses.

We’ll close with a comment left by one of the survey participants. As always, these comments are anonymous and appear with only minimal editing from us.

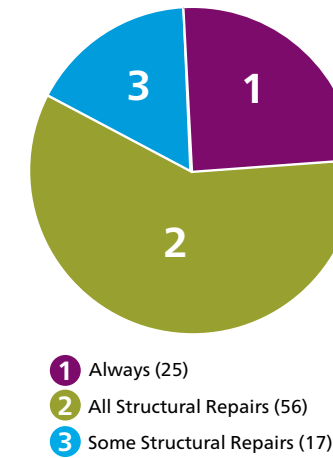
“Repairing the vehicle is all about making it safe and to OEM specs. Why make it a cost and difficult to access proper OEM procedures and specs? If the cost of obtaining OEM info was covered, more people would look up and know the proper procedures and specs. There are a lot of shops and techs repairing to what they think is right and not to OEM standards just because of not getting easy free access to OEM specs and standards. Remember, it’s about providing the customer with a safe vehicle.”

Make sure to check out our next survey on measuring technology at this link, and watch for the results next week!

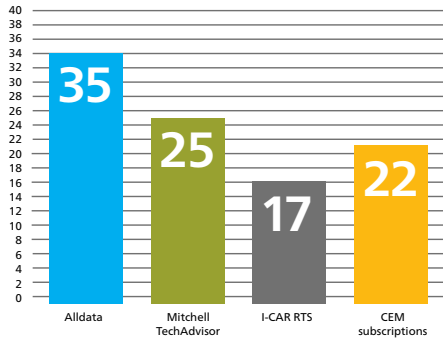
How Often Do You Check OEM Procedures During Estimates?



How Often Do You Check OEM Procedures During the Repair Itself?



Where Do You Access OEM Procedures?
All figures given in percentages



The Benefits of Plastic Repair for the Collision Repair Industry

Published by: Autobody News



A faster cycle time means that vehicles spend less time in the shop, which expands a business's capacity to do other work.

Faster cycle times, fewer total losses and shorter length of rentals. These are just some of the many benefits of plastic repair that Kurt Lammon, president of Polyvance, talked about during a recent Guild 21 webinar.

He said there are advantages for all members of the collision repair ecosystem including consumers, body shops, insurers, OEMs, technicians, as well as the planet.

Polyvance, formerly Urethane Supply Company, was established in 1981 to provide plastic repair and refinishing products for the collision repair industry. During the 1980s, the business pioneered a repair method for polyurethane bumpers. Lammon and his

brother Keith took over the company from its founder, Jim Sparks, in 1995. Some of the products they have created since then for bumper repair and refinishing include the FiberFlex universal welding rod, Bumper & Cladding Coat Adhesion Primer, and the Nitro Fuzer nitrogen welding system, introduced in 2006.

Although most think people think of bumpers when it comes to plastic repairs, Lammon said there are many other non-structural plastic parts that can be fixed, such as washer

and overflow bottles, headlight tabs and fenders. "As the OEMs try to get the cars to be lighter, we're going to see more plastic panels I believe," said Lammon.

He cited a case study he found on LinkedIn about a body shop in Australia that began doing plastic repair after receiving the necessary training, equipment and materials. Over a one-year period, the company repaired more than 1,500 vehicles using plastic repair methods; 71 percent of which were bumpers and 19 percent were headlights. The company found that the replacement part costs went down by 45 percent. There were also reductions in vehicle repair costs, paint materials and cycle time. “There is some real impact that happens in the shops when they take plastic repair to heart,” said Lammon.

Benefits for the Collision Repair Ecosystem:

Consumers

When a body shop utilizes plastic repair on a vehicle, it not only allows for a faster cycle time, the customer is able to keep the original bumper, which helps protects the brand. Lammon said plastic repair lowers repair costs, which can lead to more affordable insurance premiums and lower costs in general if a consumer is paying to repair a vehicle out-of-pocket. All of these help with customer satisfaction. In addition, plastic repair reduces incidents of total loss. “When consumers experience a total loss, they are often dissatisfied and would like to keep that car on the road,” said Lammon. “If we can repair some plastic and keep it under the total-loss threshold, it would be a benefit to the consumer.”

Body Shops

In terms of cycle time, it’s not only beneficial for the consumer but obviously for the body shop as well. Lammon said a faster cycle time means that vehicles spend less time in the shop, which expands a business’s capacity to do other work. Because plastic

repair can decrease the number of total losses, shops can minimize paying the costs of storage, estimations, and labor that is not reimbursed. It also helps reduce severity and time, as well as looks favorable on a body shop’s DRP scorecard.

Lammon pointed out that body shops make their money on labor, rather than parts. Typically, a shop can make 20 to 25 percent on parts, whereas in terms of labor, they can make 50 or even 60 percent on their time. “It’s definitely better to repair parts to make a higher profit margin,” he said. Keeping the original part on the vehicle is beneficial for fit issues as well as the labor hours involved.

“A big thing now is being able to maintain control,” said Lammon. He used the example of bumpers, which cannot always be repaired, especially over blind spot monitors. If the technician knows that the blind spot monitor is on the rear quarter behind the bumper, he or she is going to avoid doing any repairs over that area, whereas he said if they bought a recycled bumper, they would have no idea where the repairs were. “That gives the body shop control and I think that’s a really big factor nowadays,” said Lammon.

Insurers

Two of the main benefits for insurers include reduction of severity due to the ability to blend the paint in the panel, and faster cycle time, which benefits all parties because it’s a shorter length of rental for the insurer. “I would think because the consumer is having a better experience with a shorter cycle time, that would also benefit the CSI score,” said Lammon. He said if consumers have a negative experience with a repair, they may switch insurance companies. “The happier the consumer, the more likely they are going to stay with that insurer after the repair is done,” said Lammon.

Another benefit he pointed out is reduced diminished value. Some bumpers now have VIN codes and he said that keeping that intact is also something of value.

OEMs

Lammon said that a faster cycle time as a result of plastic repair benefits everybody. When consumers have had a good experience, the more likely they are going to be satisfied with the OEM as well. "More often than not, in a total loss situation, consumers will switch brands of vehicles so that's a stream of future cashflows that the OEMs are going to lose on repairs and maintenance," he said.

Polyvance has been approached by Tesla about using plastic repair on its vehicles. Lammon said that the automotive manufacturer is informing its approved body shops to repair some of the plastic parts on the vehicles because parts availability is such a problem. "Even a temporary repair gets the cars back on the road faster and improves customer satisfaction," he said.

Technicians

When it comes to technicians, Lammon said he has found plastic repair has helped with job satisfaction and pride in workmanship. "Right now, the body shops are in such a dire need for new talent coming in," he said. Since the parts repaired are non-structural, he said it provides a good first step to becoming a skilled repairer and can put them on a path to increase their skills. In addition, it gives them an opportunity for increased pay, which leads to a better standard of living. "It also allows the shop owner to evaluate the performance of the technician in a low-risk environment and if a person exceeds or excels, the shop owner can progress that person along to being a structural technician."

Planet

One of the main benefits for the planet is reducing landfill waste. By keeping the original part on the vehicle, it reduces recycling volume. Although polyurethane bumpers are not very common, Lammon said those types of plastics cannot be recycled. Instead, they have to be discarded. He estimated that approximately 70 percent of damaged polypropylene bumpers are not being repaired. Due to the ability to blend the paint to the panel, it reduces VOC emissions, which is good for the planet. Finally, he said it also helps create skilled labor jobs and employ a younger workforce.

This information was based on a presentation by Kurt Lammon during a recent Guild 21 webinar.



Kurt Lammon, president of Polyvance, said there are many benefits of plastic repair.

For more information about plastic repair, visit www.polyvance.com or contact Polyvance at 800-633-3047.

New Report Ranks States According to Highest Auto Insurance Premiums

Published by: Body Shop Business

New Jersey's combined average premium in 2014 was \$1,379, Louisiana's was \$1,364, and Michigan's was \$1,351. The national average was \$982.27.



A new report from the National Association of Insurance Commissioners indicates that New Jersey has the highest auto insurance premiums in the country, followed by Louisiana and Michigan.

The report measures the 2014 combined average premium, which includes liability, collision and comprehensive coverage costs. New Jersey's combined average premium in 2014 was \$1,379,

Louisiana's was \$1,364, and Michigan's was \$1,351. The national average was \$982.27.

The states with the lowest auto insurance premiums were Idaho (\$673), Iowa (\$683), and Maine (\$689).

The national combined average premium increased by 8.17 percent between 2010 and 2014.

Wholesale Used Vehicle Prices Declined in December

While down month-on-month, prices remain above year ago levels.

Published by: CollisionWeek



Average new vehicle incentives were again above \$3,000 and were nearly \$1,000 higher than year-ago levels based on Edmunds data.

According to ADESA Analytical Services' monthly analysis of wholesale used vehicle prices, prices did a bit of an about-face in December, as truck price softening, perhaps influenced by higher gasoline prices, drove down overall results. New vehicle incentive activity also remained high, which, along with higher fleet sales, helped the year close out with a new record in sales but put downward pressure on wholesale values. Fortunately, certified pre-owned (CPO) used vehicle sales also hit a new record, helping absorb growing used vehicle supply and limiting the negative impact to wholesale prices.

Lower used vehicle prices increase pressure on the number of total losses impacting the collision repair industry, while rising prices allow for more collision

repair work to be performed prior to a vehicle being declared a total loss.

According to ADESA Analytical Services' monthly analysis of Wholesale Used Vehicle Prices by Vehicle Model Class, wholesale used vehicle prices in December averaged \$10,642—down 0.3 percent compared to November but up 3.9 percent relative to December 2015.

Truck prices, which fell 0.6 percent month-over-month, led the overall monthly decline, consistent with rises in gasoline prices during the month that some dealers may have seen as a longer term trend. Particularly hard-hit were prices for full-size and luxury SUV/CUV models, as well as full-size

vans. Passenger car segments, on the other hand, registered price gains during the month, with only luxury and sporty cars (which tend to be less fuel efficient) showing declines.

Average wholesale prices for used vehicles remarketed by manufacturers were down 4.2 percent month-over-month and down 0.4 percent year-over-year. Prices for fleet/lease consignors were down 1.5 percent sequentially but up 1.0 percent annually. Average prices for dealer consignors were flat versus November but up 1.1 percent relative to December 2015.

December Certified, Pre-Owned (CPO) sales were at record levels and were up 14.7 percent month-over-month and 2.4 percent year-over-year,

according to figures from Autodata. For the year, CPO sales were up 3.5 percent, setting a new record at 2.64 million units.

Average new vehicle incentives were again above \$3,000 and were nearly \$1,000 higher than year-ago levels based on Edmunds data.

Fleet sales were up by 122,364 units and totaled almost 2.8 million in 2016, according to Bobit Business Media data. This helped total new vehicle sales top the 2015 record of 17.5 million, as 2016 sales were up by 56,211, according to Automotive News Data Center.

Wholesale Used Vehicle Price Trends

Average Prices (\$/Unit)				Latest Month Versus	
	Dec-16	Nov-16	Dec-15	Prior Month	Prior Year
Total All Vehicles	\$10,642	\$10,672	\$10,244	-0.3%	3.9%
Total Cars	\$8,576	\$8,472	\$8,629	1.2%	-0.6%
Compact Car	\$6,413	\$6,314	\$6,535	1.6%	-1.9%
Midsize Car	\$7,773	\$7,446	\$7,679	4.4%	1.2%
Fullsize Car	\$7,971	\$7,656	\$7,484	4.1%	6.5%
Luxury Car	\$13,049	\$13,182	\$13,213	-1.0%	-1.2%
Sporty Car	\$12,748	\$13,064	\$13,339	-2.4%	-4.4%
Total Trucks	\$12,645	\$12,726	\$11,942	-0.6%	5.9%
Mini Van	\$8,897	\$8,623	\$8,448	3.2%	5.3%
Fullsize Van	\$11,317	\$12,320	\$11,513	-8.1%	-1.7%
Compact SUV/CUV	\$10,481	\$10,439	\$10,264	0.4%	2.1%
Midsize SUV/CUV	\$11,336	\$11,473	\$10,284	-1.2%	10.2%
Fullsize SUV/CUV	\$14,379	\$14,607	\$12,603	-1.6%	14.1%
Luxury SUV/CUV	\$18,141	\$18,554	\$17,925	-2.2%	1.2%
Compact Pickup	\$8,757	\$8,755	\$8,229	0.0%	6.4%
Fullsize Pickup	\$15,624	\$15,548	\$14,825	0.5%	5.4%

New Vehicle Sales

WardsAuto 10 Best-Selling U.S. Cars and Trucks

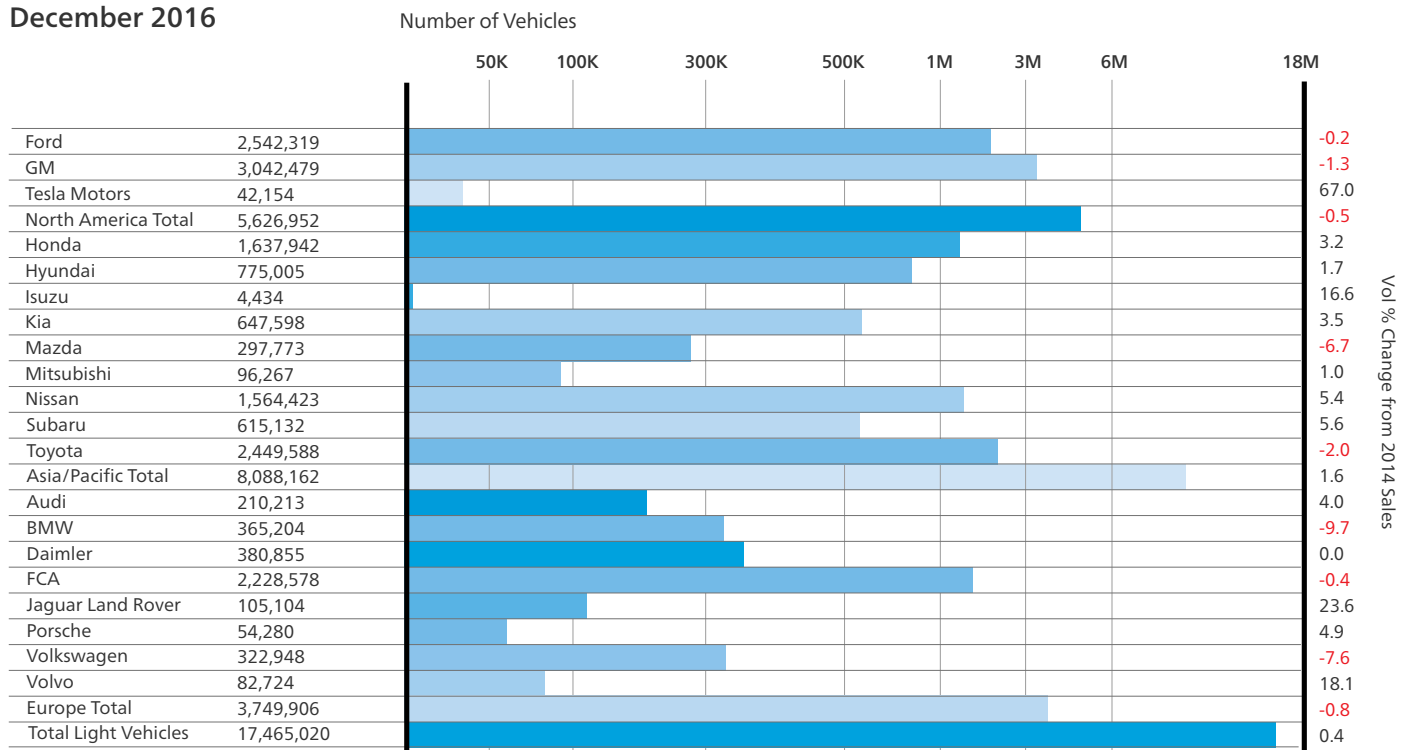
As of December 2016

Cars		Trucks/Vans/SUVs	
Camry	388,616	F-Series	763,907
Civic	366,927	Silverado	574,876
Corolla	360,483	Ram Pickup	473,681
Accord	345,225	CR-V	357,335
Altima	307,380	RAV4	352,139
Fusion	265,840	Rogue	329,904
Malibu	227,881	Escape	307,069
Sentra	214,709	Explorer	248,507
Elantra	208,319	Equinox	242,195
Sonata	199,416	Sierra	221,680

Source: WardsAuto InfoBank

WardsAuto U.S. Light Vehicle Sales by Company

December 2016



Light vehicles are cars and light trucks (GVW Classes 1-3, under 14,001 lbs.). DSR is daily sales rate. Tesla Motors monthly sales estimated.

Source: WardsAuto InfoBank

Current Used Vehicle Market Conditions

December 2016 Kontos Commentary

By Tom Kontos

Executive Vice President,
ADESA Analytical Services

The following commentary is produced monthly by Tom Kontos, Executive Vice-President, ADESA Analytical Services. ADESA is a leading provider of wholesale used vehicle auctions and ancillary remarketing services.

As part of the KAR Auction Services family, ADESA works in collaboration with its sister company, Insurance Auto Auctions, a leading salvage auto auction company, to provide insights, trends and highlights of the entire automotive auction industry.

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Source: ADESA Analytical Services. November revised.

Summary

Wholesale prices did a bit of an about-face in December, as truck price softening, perhaps influenced by higher gasoline prices, drove down overall results. New vehicle incentive activity also remained high, which, along with higher fleet sales, helped the year close out with a new record in sales but put downward pressure on wholesale values. Fortunately, certified pre-owned (CPO) used vehicle sales also hit a new record, helping absorb growing used vehicle supply and limiting the negative impact to wholesale prices.

Details

According to ADESA Analytical Services' monthly analysis of Wholesale Used Vehicle Prices by Vehicle Model Class1, wholesale used vehicle prices in December averaged \$10,642—down 0.3% compared to November but up 3.9% relative to December 2015. Truck prices, which fell 0.6% month-over-month, led the overall monthly decline, consistent with rises in gasoline prices during the month that some dealers may have seen as a longer term trend. Particularly hard-hit were prices for full-size and luxury SUV/CUV models, as well as full-size vans. Passenger car segments, on the other hand, registered price gains

during the month, with only luxury and sporty cars (which tend to be less fuel efficient) showing declines.

Average wholesale prices for used vehicles remarketed by manufacturers were down 4.2% month-over-month and down 0.4% year-over-year. Prices for fleet/lease consignors were down 1.5% sequentially but up 1.0% annually. Average prices for dealer consignors were flat versus November but up 1.1% relative to December 2015.

December CPO sales were at record levels and were up 14.7% month-over-month and 2.4% year-over-year, according to figures from Autodata. For the year, CPO sales were up 3.5%, setting a new record at 2.64 million units.

Average new vehicle incentives were again above \$3,000 and were nearly \$1,000 higher than year-ago levels based on Edmunds data.

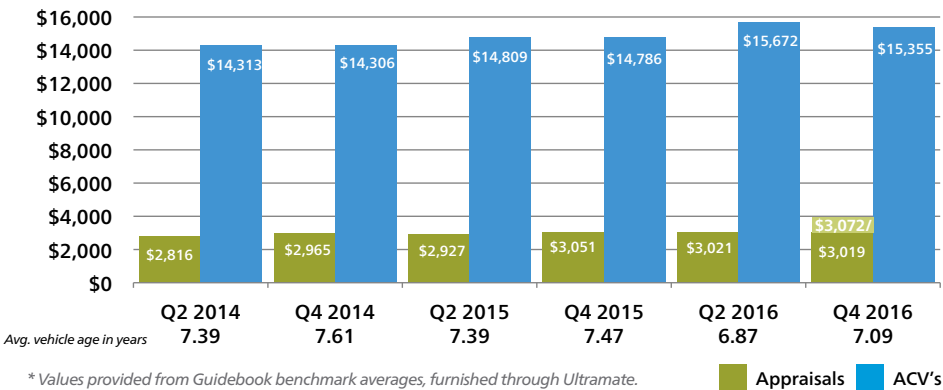
Fleet sales were up by 122,364 units and totaled almost 2.8 million in 2016, according to Bobit Business Media data. This helped total new vehicle sales top the 2015 record of 17.5 million, as 2016 sales were up by 56,211, according to Automotive News Data Center.

1The analysis is based on over seven million annual sales transactions from over 150 of the largest U.S. wholesale auto auctions, including those of ADESA as well as other auction companies. ADESA Analytical Services segregates these transactions to study trends by vehicle model class, sale type, model year, etc. The views and analysis provided herein relate to the vehicle remarketing industry as a whole and may not relate directly to KAR Auction Services, Inc. The views and analysis are not the views of KAR Auction Services, its management or its subsidiaries; and their accuracy is not warranted. The statements contained in this report and statements that the company may make orally in connection with this report that are not historical facts are forward-looking statements. Words such as "should," "may," "will," "anticipates," "expects," "intends," "plans," "believes," "seeks," "estimates," "bids," "promises," "likely to" and similar expressions identify forward-looking statements. Forward-looking statements are subject to risks and uncertainties that could cause actual results to differ materially from the results projected, expressed or implied by the forward-looking statements. Factors that could cause or contribute to such differences include those matters disclosed in the company's Securities and Exchange Commission filings. The company does not undertake any obligation to update any forward-looking statements.

Appraisal Values

The initial average appraisal value, calculated by combining data from all first and third-party repairable vehicle appraisals uploaded through Mitchell systems in Q4 2016, was \$3,019, \$32 less than this same period last year. However, continued development suggests a final Q4 2016 average appraisal value of \$3,072, which represents an increase over the same quarter last year.

Average Appraisal Values, ACVs and Age | All APD Line Coverages*



MITCHELL SOLUTION:

Mitchell Estimating™

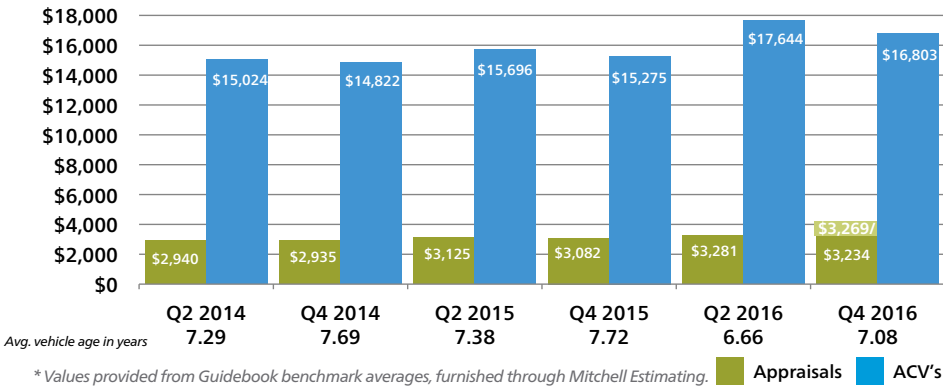
Mitchell **Estimating** is an advanced estimating system, combining database accuracy, automated calculations, and repair procedure pages to produce estimates that are comprehensive, verifiable, and accepted throughout the collision industry. Mitchell Estimating is an integral part of Mitchell's appraisal workflow solutions.

Visit Mitchell's website at www.mitchell.com

Comprehensive Losses

In Q4 2016, the average initial gross appraisal value for comprehensive coverage estimates processed through our servers was \$3,234, compared to \$3,082 in Q4 2015. Factoring for development produces an increase in the adjusted value to \$3,269.

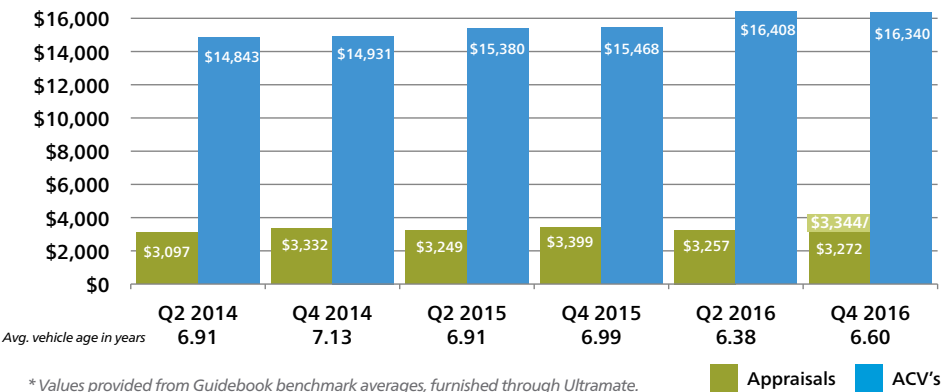
Average Appraisal Values, ACVs and Age Comprehensive Losses*



Collision Losses

Mitchell's Q4 2016 data reflects an initial average gross collision appraisal value of \$3,272, \$127 less than this same period last year. Continued development suggests a final Q4 2016 average gross collision appraisal value of \$3,344, which represents a decrease over the same quarter last year.

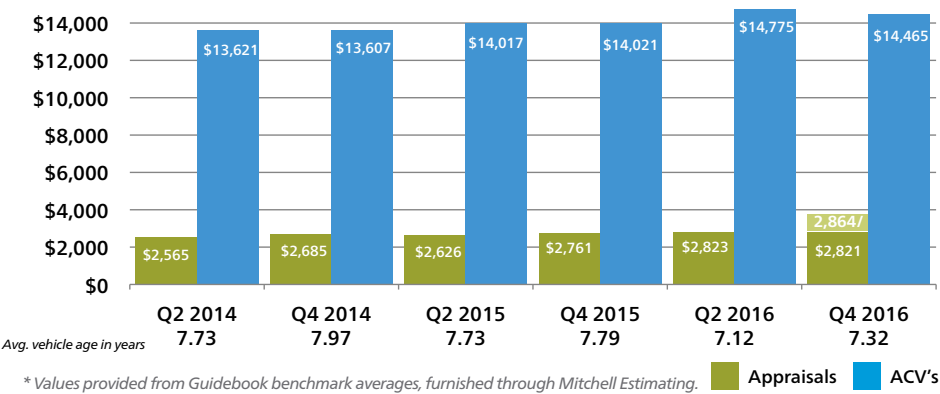
Average Appraisal Values, ACVs and Age Collision Coverage*



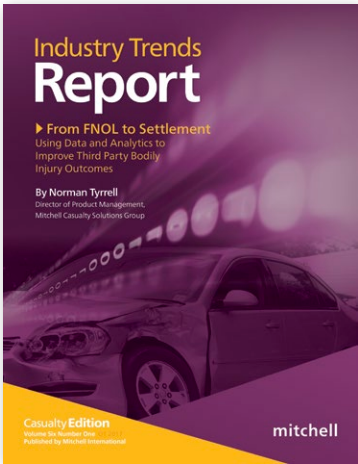
Third-Party Property Damage

In Q4 2016, our initial average gross third-party property damage appraisal was \$2,821 compared to \$2,761 in Q4 2015, reflecting a \$60 initial increase between these respective periods. Factoring for development yields an anticipated Q4 2016 adjusted appraisal value of \$2,864, a \$103 increase in average severity over Q4 2015.

Average Appraisal Values, ACVs and Age Auto Physical Damage*



View the [Casualty Edition](#)



Supplements

EDITOR’S NOTE

As it generally takes at least three months following the original date of appraisal to accumulate most supplements against an original estimate of repair, we report (and recommend viewing supplement information) three months’ after-the-fact, to obtain the most accurate view of this data.

In Q4 2016, 34.5% of all original estimates prepared by Mitchell-equipped estimators were supplemented one or more times. In this same period, the pure supplement frequency (supplements to estimates) was 62.64%, reflecting an 10.11 point increase from that same period in 2015. The average combined supplement variance for this quarter was \$826.18, \$78.70 lower than in Q4 2015.

Average Supplement Frequency and Severity

Date	Q2/14	Q4/14	Q2/15	Q4/15	Q2/16	Q4/16	Pt. Change	% Change
% Est. Supplement	33	35.23	34.2	36.58	39.07	34.5	-2.08	-6%
% Supplement	46.85	49.22	49.09	52.53	57.02	62.64	10.11	19%
Avg. Combined Supp. Variance \$	764.04	814.27	873.79	904.88	878.15	826.18	-78.7	-9%
% Supplement \$	27.13	27.46	29.86	29.66	29.06	27.37	-2.29	-8%

Average Appraisal Make-Up

This chart compares the average appraisal make-up as a percentage of dollars, constructed by Mitchell-equipped estimators. These data points reflect a ‘trade off’; in comparing Q4 2016 to the same period last year, there was only minimal shifting (less than 1%) between categories.

% Average Appraisal Dollars by Type

Date	Q2/14	Q4/14	Q2/15	Q4/15	Q2/16	Q4/16	Pt. Change	% Change
% Average Part \$	41.23	45.25	43.23	45.91	43.09	45.73	-0.18	0%
% Average Labor \$	47.71	43.42	45.71	42.84	45.96	43.03	0.19	0%
% Paint Material \$	10.64	10.38	10.55	10.29	10.19	10.18	-0.11	-1%

Parts Analysis

Parts Type Definitions

Original Equipment Manufacturer (OEM)

Parts produced directly by the vehicle manufacturer or their authorized supplier, and delivered through the manufacturer's designated and approved supply channels. This category covers all automotive parts, including sheet metal and mechanical parts.

Aftermarket

Parts produced and/or supplied by firms other than the Original Equipment Manufacturer's designated supply channel. This may also include those parts originally manufactured by endorsed OEM suppliers, which have later followed alternative distribution and sales processes. While this part category is often only associated with crash replacement parts, the automotive aftermarket also includes a large variety of mechanical and custom parts.

Non-New/Remanufactured

Parts removed from an existing vehicle that are cleaned, inspected, repaired and/or rebuilt, usually back to the original equipment manufacturer's specifications, and re-marketed through either the OEM or alternative supply chains. While commonly associated with mechanical hard parts such as alternators, starters and engines, remanufactured parts may also include select crash parts such as urethane and TPO bumpers, radiators and wheels.

Recycled

Parts removed from a salvaged vehicle and re-marketed through private or consolidated auto parts recyclers. This category commonly includes all types of parts and assemblies, especially body, interior and mechanical parts.

EDITOR'S NOTE

While there isn't a perfect correlation between the types of parts specified by estimators and those actually used during the course of repairs, we feel that the following observations are directionally accurate for both the insurance and auto body repair industries. This section illustrates the percentage of dollars allocated to each unique part-type.

As a general observation, recent data show that parts make up 46% of the average value per repairable vehicle appraisal, which represents nearly \$1,400 in average spend per estimate.



MITCHELL SOLUTION:
Mitchell QRP™

Mitchell's Quality Recycled Parts (QRP) program is the most comprehensive source for finding recycled parts, providing online access to a parts database compiled from a growing network of more than 800 of the highest quality recyclers in North America and Canada. QRP is fully integrated with UltraMate / UltraMate Premier Suite for total ease-of-use.

For more information on QRP, visit Mitchell's website at www.mitchell.com



MITCHELL SOLUTION:
Mitchell MAPP™

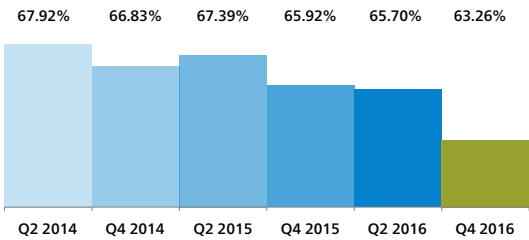
Mitchell Alternate Parts Program (MAPP) offers automated access to nearly 100 Remanufactured and Aftermarket part types from over 700 suppliers ensuring shops get the parts they need from their preferred vendors. MAPP is fully integrated with UltraMate / UltraMate Premier Suite for total ease-of-use.

For more information on MAPP, visit Mitchell's website at www.mitchell.com

Original Equipment Manufacturer (OEM) Parts Use in Dollars

In Q4 2016, OEM parts represented 63.26% of all parts dollars specified by Mitchell-equipped estimators. This represents a 2.66% relative decrease from Q4 2015.

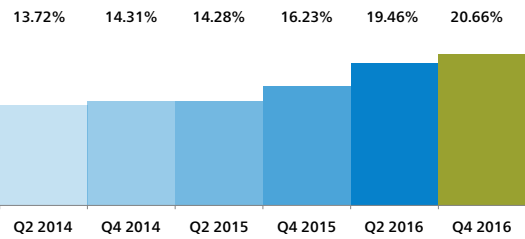
Parts-New



Aftermarket Parts Use in Dollars

In Q4 2016, 20.66% of all parts dollars recorded on Mitchell appraisals were attributed to Aftermarket sources, up 4.4 points from Q4 2015.

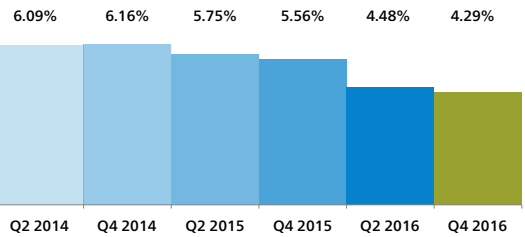
Parts-Aftermarket



Remanufactured Parts Use in Dollars

Currently listed as "Non-New" parts in our estimating platform and reporting products, Remanufactured parts currently represent 4.29% of the average gross parts dollars used in Mitchell appraisals during Q4 2016. This reflects a 1.27% relative decrease over this same period in 2016.

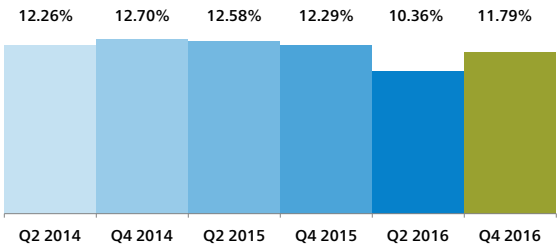
Parts-Remanufactured



Recycled Parts Use in Dollars

Recycled parts constituted 11.79% of the average parts dollars used per appraisal during Q4 2016, reflecting a 0.5% decrease from Q4 2015.

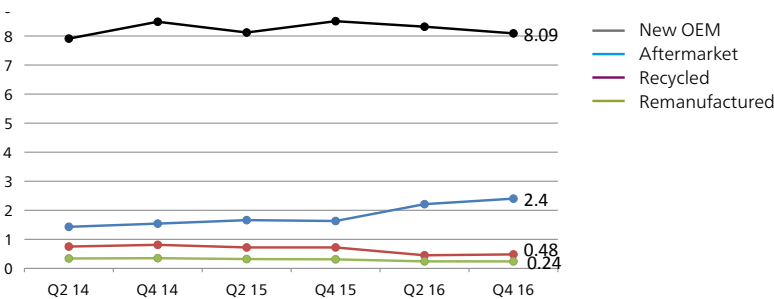
Parts-Recycled



The Number of Parts by Part Type

In order to capture another aspect of parts use, we calculate the number of parts used by part type on a repairable estimate. In comparing Q4 2016 to the same quarter in 2015, aftermarket parts usage experienced a substantive increase to an average 2.39 parts per estimate. At the same time, new OEM, Remanufactured, and Recycled parts usage experienced decreases.

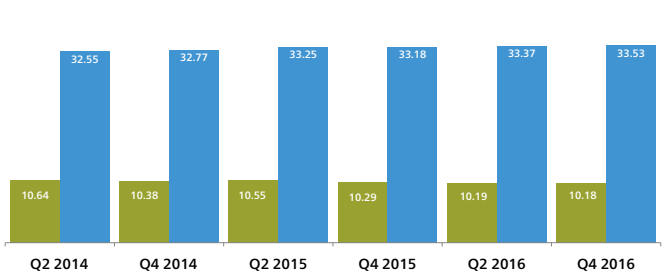
Number of Parts by Part Type



Paint and Materials

During Q4 2016, Paint and Materials made up 10.18% of our average appraisal value, representing a 0.11% relative decrease from Q4 2015. Represented differently, the average paint and materials rate—achieved by dividing the average paint and materials allowance per estimate by the average estimate refinish hours—yielded a rate of \$33.53 per refinish hour in this period, compared to \$33.18 in Q4 2015.

Paint And Materials, By Quarter



EDITOR'S NOTE

It is commonly understood within the collision repair and insurance industries that a very large number of recycled “parts” are actually “parts-assemblies” (such as doors, which in fact include numerous attached parts and pieces). Thus, attempting to make discrete comparisons between the average number of recycled and any other parts types used per estimate may be difficult and inaccurate.



MITCHELL SOLUTION:
Mitchell RMC™

Mitchell’s Refinishing Materials Calculator (RMC) provides accurate calculations for refinishing materials costs by incorporating a database of more than 8,500 paint codes from eight paint manufacturers. It provides job-specific materials costing according to color and type of paint, plus access to the only automated, accurate, field-tested, and industry-accepted break-down of actual costs of primers, colors, clear coats, additives and other materials needed to restore vehicles to pre-accident condition. For more information on RMC, visit Mitchell’s website at www.mitchell.com

Adjustments

In Q4 2016, the percentage of adjustments made to estimates was down compared to the same period last year. The frequency of betterment taken decreased by 12%, while the average dollar amount of the betterment taken increased by 8% to \$134.08. Appearance allowance frequency increased by 14%, while the dollar amount of that appearance allowance decreased to \$210.62.

Adjustment \$ and %s

Date	Q2/14	Q4/14	Q2/15	Q4/15	Q2/16	Q4/16	Pt/\$ Change	% Change
% Adjustments Est	2.75	2.89	2.82	3.02	2.97	2.82	-0.2	-7%
% Betterment Est	2.15	2.37	2.23	2.45	2.19	2.16	-0.29	-12%
% Appear Allow Est	0.43	0.41	0.44	0.43	0.55	0.49	0.06	14%
% Prior Damage Est	3.01	2.79	2.98	2.52	2.48	2.21	-0.31	-12%
Avg. Betterment \$	120.87	121.56	124.15	124.06	135.76	134.08	10.02	8%
Avg. Appear Allow \$	212.19	208.13	210.92	211.45	220.09	210.62	-0.83	0%

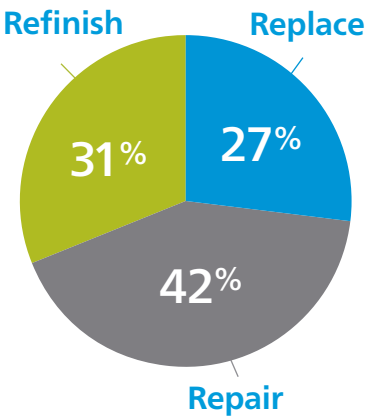
Labor Analysis

For 2016, average body labor rates rose in more than half of survey states compared to 2015.

Average Body Labor Rates and Change by State

	2015	2016 YTD	\$ Change	% Change
Arizona	49.86	51.08	\$ 1.22	2%
California	55.67	55.47	\$ (0.20)	0%
Florida	42.83	42.93	\$ 0.10	0%
Hawaii	48.82	50.24	\$ 1.42	3%
Illinois	51.38	51.98	\$ 0.60	1%
Michigan	45.54	46.26	\$ 0.72	2%
New Jersey	48.07	47.83	\$ (0.24)	0%
New York	48.6	49.07	\$ 0.47	1%
Ohio	45.8	45.99	\$ 0.19	0%
Rhode Island	45.62	45.95	\$ 0.33	1%
Texas	45.72	45.73	\$ 0.01	0%

Percent of average labor hours by type



Total Loss

The chart below illustrates the total loss data for both vehicle age and actual cash value of total loss vehicles processed through Mitchell servers. Low fuel prices, along with favorable financing, are contributing to stronger demand and pricing for used trucks and SUVs.

Average Vehicle Age in Years

Vehicles	Q2/14	Q4/14	Q2/15	Q4/15	Q2/16	Q4/16
	Average Vehicle Age in Years					
Convertible	12.14	12.83	12.35	12.74	12.79	13.47
Coupe	11.81	12.11	11.94	12.3	11.98	12.48
Hatchback	8.49	8.59	8.25	8.1	7.72	8.3
Sedan	10.3	10.53	10.26	10.47	10	10.55
Wagon	9.69	10.17	10.02	10.66	10.36	11.05
Other Passenger	12.63	12.67	13.04	12.2	10.87	4.44
Pickup	12.18	12.69	12.63	13.24	12.89	13.63
Van	11.04	11.49	11.29	11.76	11.42	11.89
SUV	10.09	10.42	10.2	10.47	10.1	10.76

Average Vehicle Total Loss Actual Cash Value

Vehicles	Q2/14	Q4/14	Q2/15	Q4/15	Q2/16	Q4/16
	Average Actual Cash Value					
Convertible	10,045.93	9,575.86	10,163.23	10,245.21	10,023.98	9,956.42
Coupe	7,493.71	7,686.78	7,958.80	8,074.13	8,089.15	7,807.43
Hatchback	8,569.69	8,216.17	8,477.33	8,604.16	8,501.80	7,882.24
Sedan	7,560.96	7,577.53	7,803.98	7,723.94	7,800.33	7,304.79
Wagon	7,057.93	6,870.76	6,926.95	6,762.68	6,735.01	6,412.16
Other Passenger	14,606.06	17,769.01	14,698.45	18,002.34	18,937.53	18,752.23
Pickup	10,381.83	10,508.74	11,101.02	11,375.06	11,688.84	11,455.46
Van	6,034.97	6,044.28	6,248.82	6,409.64	6,600.89	6,615.45
SUV	9,290.57	9,453.64	9,809.46	10,050.35	10,131.81	9,755.17



MITCHELL SOLUTION:

Mitchell WorkCenter™
Total Loss

Mitchell WorkCenter™ Total Loss gives your claims organization a statistically-driven, fully-automated, web-based total loss valuation system that generates fair, market-driven values for loss vehicles. It combines J.D. Power and Associates’ data analysis and pricing techniques with Mitchell’s recognized leadership in physical damage claims processing solutions. Mitchell WorkCenter™ Total Loss helps you reduce settlement time and improve customer satisfaction. www.mitchell.com.

EDITOR'S NOTE

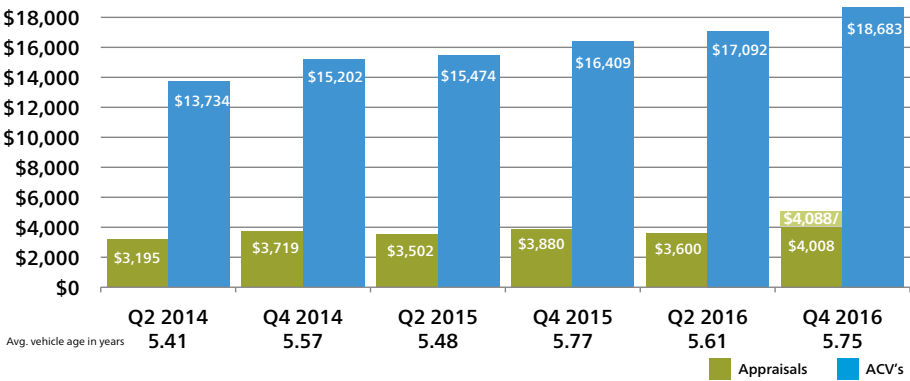
At the request of our customers and friends in Canada, we are pleased to provide the following Canada-specific statistics, observations, and trends.

All dollar-figures appearing in this section are in CDN\$. As a point of clarification, this data is the product of upload activities from body shops, independent appraisers, and insurance personnel, more accurately depicting insurance-paid loss activity, rather than consumer direct or retail market pricing.

Canadian Appraisal Severity

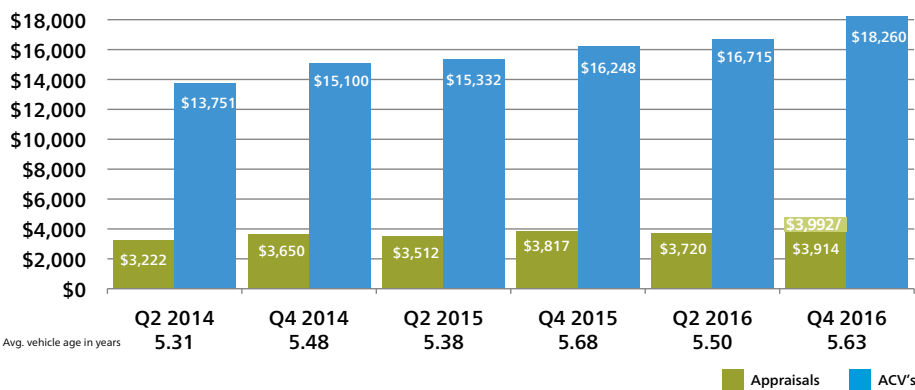
Average Appraisal Values Severity Overall

The average gross initial appraisal value, calculated by combining data from all first and third party repairable vehicle appraisals uploaded through Mitchell Canadian systems in Q4 2016, was \$4,008—a \$128 increase from Q4 2015. Factoring for development yields an anticipated increase to \$4,088.



Collision Losses

The average initial gross collision appraisal value uploaded through Mitchell Canadian systems in Q4 2016 was \$3,914, a \$97 increase from Q4 2015. Factoring for development yields an anticipated increase to \$3,992, which represents a \$175 increase from Q4 2015.



Canadian Average Appraisal Make-Up

This chart compares the average appraisal make up as a percentage of dollars. These data points reflect an increase in parts, with slight decreases in labour and paint.

Date	Q2/14	Q4/14	Q2/15	Q4/15	Q2/16	Q4/16	Pt/\$ Change	% Change
% Average Part \$	42.63	44.65	43.65	45.68	45.28	46.7	1.02	2%
% Average Labour \$	45.37	44.16	44.33	42.78	42.99	41.99	-0.79	-2%
% Paint Material \$	9.08	8.28	8.68	8.18	8.82	8.07	-0.11	-1%



Fig. 29—Comprehensive Losses

In Q4 2016, the average initial gross Canadian appraisal value for comprehensive coverage estimates processed through our servers was \$4,286, which represents an increase of \$211 compared to Q4 2015. Factoring for development, the anticipated final average appraisal value will be \$4,415.

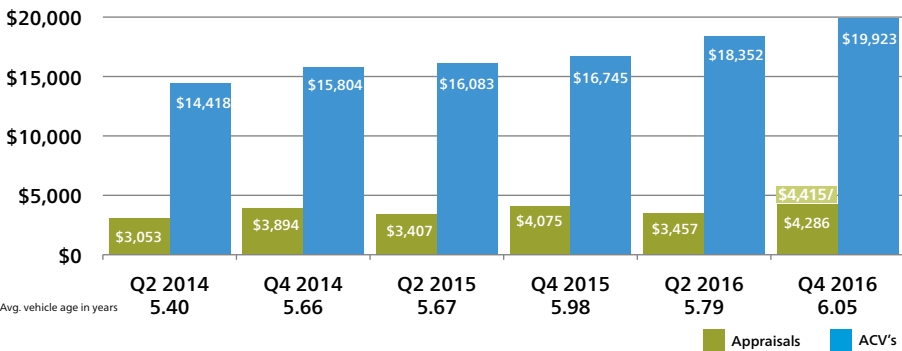
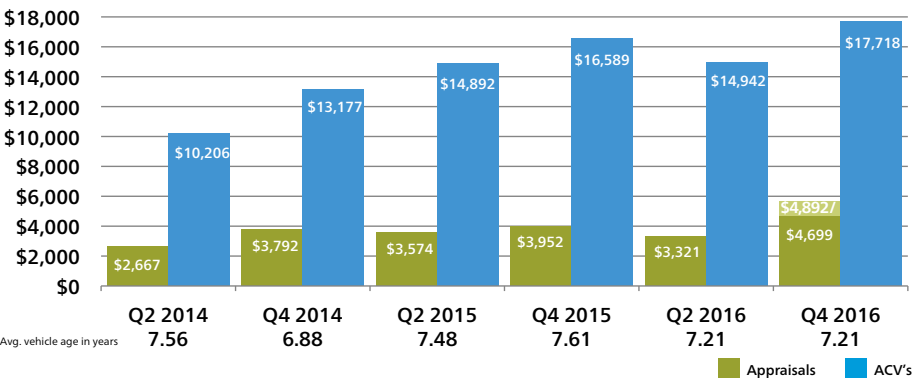


Fig. 30—Third-Party Property Damage

In Q4 2016, our Canadian industry initial average gross third-party property damage appraisal was \$4,699, which represents an increase of \$747 from Q4 2015 on vehicles that were newer. Factoring for development, we anticipate a final value of \$4,892.



Canadian Supplements

In Q4 2016, 40.11% of all original estimates prepared by Mitchell-equipped Canadian estimators were supplemented one or more times. In this same period, the pure supplement frequency (supplements to estimates) was 93.11%, which represents the highest of all charted values. The average combined supplement variance for this quarter was \$968.10, \$136.17 higher than in Q4 2015.

Date	Q2/14	Q4/14	Q2/15	Q4/15	Q2/16	Q4/16	Pt/\$ Change	% Change
% Est Supplements	49.20	49.51	51.40	52.65	50.14	40.11	-12.54	-24%
% Supplements	79.24	67.86	78.79	82.10	78.27	93.11	11.01	13%
Avg Combined Supp Variance	710.28	841.31	842.58	831.93	826.24	968.1	136.17	16%
% Supplement \$	22.23	22.62	24.06	21.44	22.95	24.15	2.71	13%

About Mitchell in Canada...

For more than 20 years, Mitchell’s dedicated Canadian operations have focused specifically and entirely on the unique needs of collision repairers and insurers operating in the Canadian marketplace. Our Canadian team is known for making itself readily available, for being flexible in its approach to improving claims and repair processes, and for its ‘second to none’ commitment to customer support. Headquartered in Toronto, with offices across Canada, Mitchell Canada delivers state-of-the-art, multi-lingual collision estimating and claims workflow solutions (including hardware, networks, training, and more), world-class service, and localized support.



Canadian Adjustments

In Q4 2016, the average frequency of betterment taken on estimates increased by 2%, while the dollar amount of that betterment increased by 10%. Appearance allowances were also up, although the dollar amount of those allowances increased by just 1% when compared to Q4 2015.

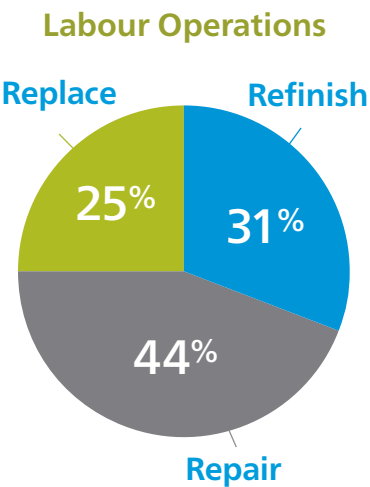
Date	Q2/14	Q4/14	Q2/15	Q4/15	Q2/16	Q4/16	Pt/\$ Change	% Change
% Adjustments Est	1.93	1.77	1.8	1.97	1.96	2.05	0.08	4%
% Betterment Est	1.68	1.58	1.5	1.71	1.63	1.75	0.04	2%
% Appear Allow Est	0.25	0.2	0.3	0.25	0.32	0.32	0.07	28%
% Prior Damage Est	0.06	0.11	0.23	0.19	0.24	0.2	0.01	5%
Avg. Betterment \$	234.92	247.54	273.76	371.18	271.31	409.96	38.78	10%
Avg. Appear Allow \$	276.2	208.21	236.69	277.13	343.74	279.15	2.02	1%

Canadian Labour Analysis

This data reflects the percentage of labor dollars utilized in the creation of Mitchell appraisals by Canadian estimators. Labor rates increased across all provinces and territories.

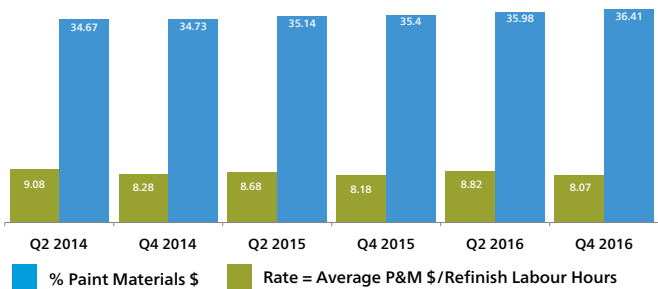
Average Body Labour Rates and Change by Province

	2015	YTD 2016	\$ Change	% Change
Alberta	75.11	76.16	\$1.05	1%
Newfoundland & Labrador	62.62	63.23	\$0.61	1%
Northwest Territories	90.47	93.48	\$3.01	3%
Nova Scotia	59.32	59.50	\$0.18	0%
Ontario	56.89	57.58	\$0.69	1%
Quebec	51.69	52.68	\$0.99	2%
Yukon Territory	95.24	95.58	\$0.34	0%



Canadian Paint and Materials

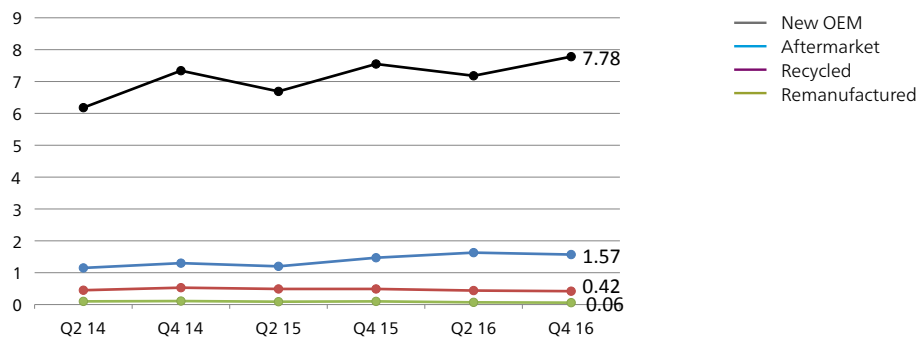
For Q4 2016, Paint and Materials made up 8.07% of our average appraisal value. Represented differently, the average paint and materials hourly rate rose to \$36.41 per hour.





Canadian Number of Parts by Part Type

We continue to see a fluctuation of OEM parts used in the average repairable estimate and see an increase in the last few quarters in aftermarket parts.



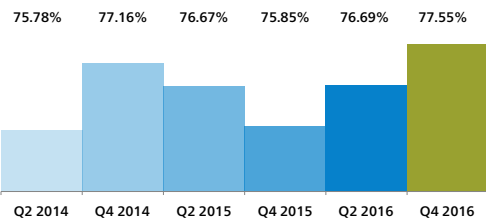
Canadian Parts Utilization

All data reflects the percentage of part-type dollars utilized in the construction of Mitchell appraisals by Canadian estimators.

Original Equipment Manufacturer (OEM) Parts Use in Dollars

In Q4 2016, OEM parts use increased compared to Q4 2015.

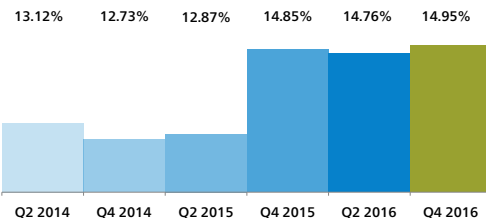
Parts-New



Aftermarket Parts Use in Dollars

Aftermarket parts use in Q4 2016 increased by 0.1% compared to the same period last year, coming in at 14.95%.

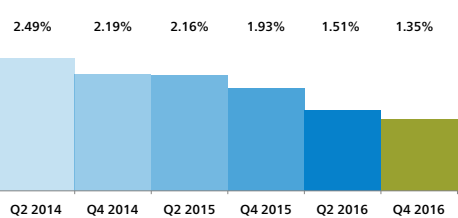
Parts-Aftermarket



Remanufactured Parts Use in Dollars

Remanufactured parts use in Canada dropped to 1.35% for Q4 2016, which represents the lowest percentage of part dollars in the charted quarters.

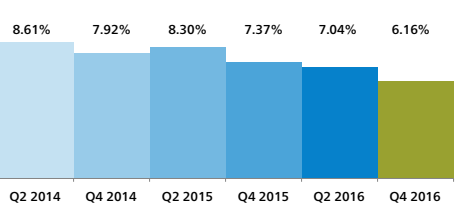
Parts-Non-New



Recycled Parts Use in Dollars

In Q4 2016, recycled parts use in Canada decreased as a percentage of part dollars and is now the lowest percentage of parts dollars in the charted quarters.

Parts-Recycled





**Mitchell San Diego
Headquarters**

**6220 Greenwich Dr.
San Diego, CA 92122**



Mitchell empowers clients to achieve measurably better outcomes. Providing unparalleled breadth of technology, connectivity and information solutions to the Property & Casualty claims and Collision Repair industries, Mitchell is uniquely able to simplify and accelerate the claims management and collision repair processes.

As a leading provider of Property & Casualty claims technology

solutions, Mitchell processes over 50 million transactions annually for over 300 insurance companies/claims payers and over 30,000 collision repair facilities throughout North America. Founded in 1946, Mitchell is headquartered in San Diego, California, and has approximately 2,000 employees. The company is privately owned primarily by KKR, a leading global investment firm.

For more information on Mitchell, visit www.mitchell.com.

Mitchell in the News

The San Diego Union-Tribune

'The Mitchell Way' guides San Diego company for 70 years

Mitchell is recognized as a top workplace by the San Diego Union-Tribune and Alex Sun shares insights about the company culture.

[Read More at The San Diego Union Tribune](#)

ABLADVISOR

Mitchell Announces \$50 Million First Lien Term Loan

Mitchell announces the closing of a \$50 million senior secured first lien term loan to continue investing in technologies that drive better outcomes in the markets we serve.

[Read More at ABL Advisor](#)

ABRN
AUTO BODY REPAIR NETWORK

Mitchell's Annual Property & Casualty Conference Attracts Industry Leaders

The gathering of experts in auto physical damage, auto casualty and workers' compensation insurance claims served as a platform for Mitchell to share insights and listen to their customers on topics ranging from consumer preferences to technology trends affecting the industry.

[Read More at ABRN](#)

fender
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LIVE

Streamlining Parts Procurement

Jack Rozint discusses Mitchell's new parts procurement initiative, Mitchell Parts.

[Watch the Video at FenderBender Live](#)

CollisionRepairmag.com
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Friday Fun: DeLoreans return, crashes in the smartphone era and a look at odd driving laws from Europe

Collision Repair magazine mentioned a blog post by Alex Sun in their Friday industry roundup where Alex talks about how peer-to-peer transactions are transforming the insurance industry.

[Read More at Collision Repair Magazine](#)

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Industry Trends Report

The Industry Trends Report is a quarterly snapshot of the auto physical damage collision and casualty industries. Just inside—the economy, industry highlights, plus illuminating statistics and measures, and more. Stay informed on ongoing and emerging trends impacting the industry, and you, with the Industry Trends Report!

Questions or comments about the Industry Trends Report may be directed to:

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Kontos Kommentary is produced monthly by Tom Kontos, Executive Vice-President, ADESA Analytical Services. ADESA is a leading provider of wholesale used vehicle auctions and ancillary remarketing services. As part of the KAR Auction Services family, ADESA works in collaboration with its sister company, Insurance Auto Auctions, a leading salvage auto auction company, to provide insights, trends and highlights of the entire automotive auction industry.

For more information about Enterprise Rent-A-Car Average Length of Rental and to access your market and shop numbers please contact daniel.friedman@ehi.com.