

# power / industry trends report

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### The New Repair Network **Collision Repair Will** Never Be the Same

By Jack Rozint Vice President, Sales & Service, Repair | Auto Physical Damage

# mitchell

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# A Message from the CEO

# The Latest Technology Trends and Industry Insights

Welcome to the first mPower by Mitchell Auto Physical Damage Industry Trends Report of 2018. As someone who is passionate about technology, I was interested to learn that the insurance industry is a leading investor in artificial intelligence. In this issue, I explore how AI is helping insurers gain operational efficiencies, where it's occurring and what's driving it, and my views on it as a way to help us run our businesses better and deliver better outcomes to the people we serve.

As vehicles become increasingly sophisticated, they're evolving from modes of transportation to complex computer networks on wheels. In his article, "The New Repair Network," Jack Rozint, Vice President, Sales & Service, Repair, APD Solutions, takes a look at how this complexity is driving the need for a dynamic and more flexible approach to repair networks. In his analysis, Jack reinforces the need for proper repair plans to deliver proper and safe repairs.

This latest report is also packed full of other useful information and insights, including an article exploring 2017 Q4 motor vehicle markets reports for used and new vehicles, collision repair and total loss data, rental data for repairable vehicles, along with an in-depth look at the Canadian collision summary report.

You can find these articles and many more on the **mPower by** <u>Mitchell website</u>, our latest resource for technology trends and industry insights. I encourage you to check back often.





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Alex Sun | President and CEO | Mitchell



# Insurers Lead in Al Investment. Where Are They Investing and Why?

By Alex Sun CEO and President, Mitchell

In a **recent study** of 13 different verticals, the insurance industry invested more on artificial intelligence (AI) than any other industry—on average, \$124 million per company surveyed.<sup>1</sup> Of the 54 insurance companies that participated, about half were in North America, and about half were in the property and casualty industry.<sup>2</sup> While the greatest areas of investment were security and customer service, investments were made across multiple business functions, including everything from human resources to sales.

<sup>1</sup> TCS Global Trend Study Phase 2, Getting Smarter by the Sector: How 13 Global Industries Use Artificial Intelligence, Tata Consultancy Services, Page 15, Accessed 2/18/2018

<sup>2</sup> TCS Global Trend Study Phase 2, Getting Smarter by the Sector: How 13 Global Industries Use Artificial Intelligence, Tata Consultancy Services, Page 54, Accessed 2/18/2018

Where insurers are investing is interesting, but I'm also fascinated by why the insurance industry is investing and the types of business challenges they are looking to solve. Near term, the industry is investing to improve operations and to make better, more informed decisions around claims, but long term, artificial intelligence has the potential to transform every aspect of the property and casualty and collision repair industries. Eventually, it may not only help us make better decisions, but also deliver insights that we've never seen before.

# AI Today—Making Better Decisions around Claims

Many of today's artificial intelligence applications are focused on achieving operational efficiencies, both in customer-facing interactions and behind the scenes. It is used for everything from automating repetitive tasks to identifying fraud. One of the most widely adopted applications for AI in insurance is chatbots. According to Gartner, <u>chatbots will power 85</u> <u>percent of customer interactions by 2020</u>, and the average person will have more conversations with a chatbot than with their spouse.

A big challenge with this type of AI is its low EI, or emotional intelligence. While chatbots can ask and answer questions, they are not great at reading emotions or understanding tone. A growing field of AI study called sentiment analysis is changing that. Sentiment analysis, sometimes called emotion AI, analyzes written or spoken words to understand the feelings behind them. Solutions like <u>Watson Tone</u> <u>Analyzer</u> are using it to help chatbots understand emotions and interpret tone and are a big step toward making these interactions more human and personal so that they better serve the customer.

As chatbots grow more sophisticated, they are moving beyond customer service and into other operational functions where they can better serve insurers as well as their customers. Natural language search—similar to search on Google or Bing—is beginning to provide the enterprise with straightforward access to their data without complicated query methods.

"According to

of customer

interactions

by 2020."

Gartner, chatbots

will power 85%

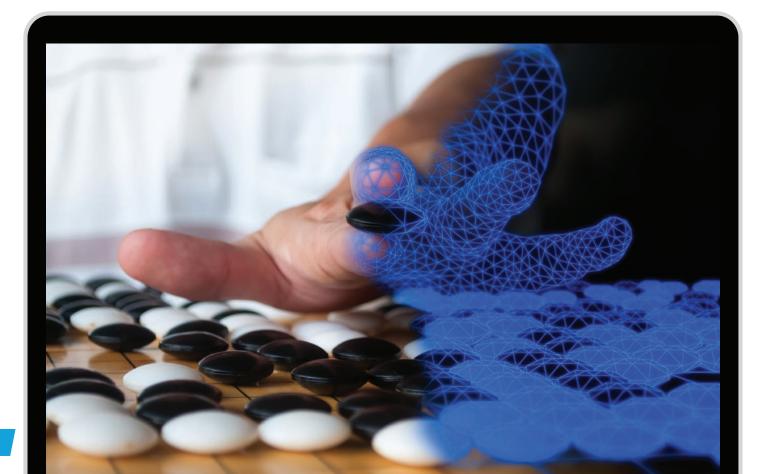
In doing so, information that was once only available to a trained user who could pull a report will soon be available to anyone with a question. What does this mean to insurers? As natural language search gains traction, information is becoming more accessible and that information can be used to inform decision making around claims—and both insurers and their customers benefit from that.

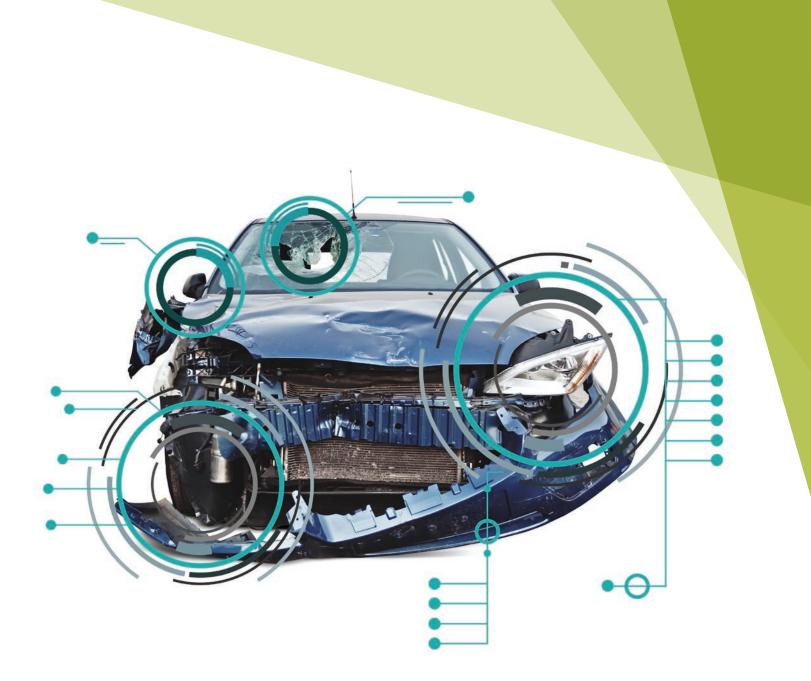
### AI Tomorrow—Delivering Unprecedented Insights

Beyond natural language, there is a growing multitude of ways AI can deliver information and recommendations so people can make well-informed business decisions. We're doing this at Mitchell with **WorkCenter™ Assisted Review**, a solution that uses AI to validate repair vs. replace decisions for damaged vehicles. To train the AI, we uploaded millions of photos of damaged vehicles across all makes and models of cars and trucks. Alphabet's DeepMind used a similar process to train their AI entity **AlphaGo** to play the ancient game of Go using thousands of professional and amateur games. Although the rules are simple, Go is infinitely more complex than chess—the number of board configurations is 10 to the power of 170. Mastering it was considered one of the foremost machine learning challenges. Unhindered by preconceived human notions of the best ways to play the game, AlphaGo upended hundreds of years of conventional wisdom by making a number of innovative moves to beat one of the best Go players of the last decade, Lee Sodol, at his own game.

A later version of the AI, <u>AlphaGo Zero</u>, bypassed the training step and learned to play entirely on its own using a technique called reinforcement learning. In just three short days, it taught itself how to beat the original program.

AlphaGo provides insight into where AI is headed. You can see the opportunity to dramatically reshape how work gets done. Like AlphaGo, AI may even be able make innovative "moves" that depart from conventional thinking and result in faster, more accurate, and more economical claims and collisions resolutions.





### Al in Property and Casualty— Restoring People's Lives

In the Tata study, participants were asked to rank what they thought the biggest risk was to successful AI implementations—an interesting question when posed to an industry built on evaluating risk. The number one answer: developing a system that makes good, reliable, safe decisions.<sup>3</sup> To me, this is also the area of greatest potential reward.

Our greater purpose as an industry is to restore people's lives after an unforeseen, and often

challenging, event. In our role at Mitchell, that means providing solutions and services that support the **proper and safe repair** of vehicles, and **help people get back to their pre-injury state** after they've been injured in a vehicle or workplace accident.

We're already beginning to reap the operational benefits of AI, but for me, one of the most exciting things about artificial intelligence, and many other forward-looking technologies, is how the power of data will bolster human decision making to simplify the inherent complexities and uncertainties of restoring people's lives.

# Cover Story

#### FEATURED ARTICLE

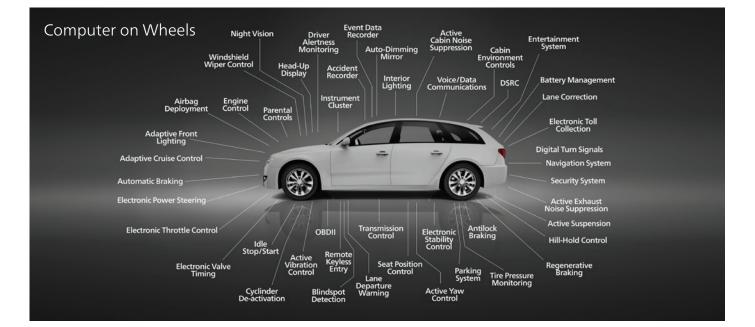
### **The New Repair Network** Collision Repair Will Never Be the Same

**By Jack Rozint** Vice President, Sales & Service, Repair | Auto Physical Damage



The repair network of today is not your grandfather's or your father's repair network; in fact it may not even be your older brother's repair network. Vehicles are becoming more sophisticated with every new model that rolls off the production line. They're no longer merely a mode of transportation—they're complex computer networks on wheels. Bob Lutz, from General Motors acknowledges this trend: "there's not a single product we use today that isn't becoming sophisticated from an electronic perspective or a technology perspective." "There's not a single product we use today that isn't becoming sophisticated from an electronic perspective or a technology perspective."

Did you know that the average new car comes with more than 100 million lines of code? That's ten times more than a Boeing 787 Dreamliner and twice as many as the Large Hadron Collider.<sup>1</sup>



It should come as no surprise to anyone these days that with this advanced sophistication comes unprecedented complexity in repairs.

### Material Composition Complexity

Vehicle complexity is not just related to electronics. Driven by CAFE standards combined with consumer preference for IIHS and NHTSA safety ratings, material composition complexity has exploded as well, based on the use of advanced materials. Comprising 13 different materials, including high-strength aluminum and highstrength steels,<sup>2</sup> the Cadillac CT6 is just one example of a manufacturer's embracing mixed materials to improve performance and efficiency.

Repair shops require multiple welders, specialized repair bays, rivet guns and the latest adhesive systems to repair modern vehicles. All of these advanced joining or bonding methods require specialized training to go along with them. Also, today's vehicles require diagnostics tools that



have the latest OEM-level capabilities. Advanced Driver Assistance Systems (ADAS) recalibrations increasingly involve OEM vehicle-specific target or mirror systems based on many common collision repair procedures, including some of which you might not even be aware.<sup>3</sup>

"In 1965 a technician needed to understand 5,000 pages of service manuals to fix any automobile on the road. Today, that same technician must be able to decipher over 500,000 pages of technical text."

The first 92 years of automotive innovation, from 1908 through 2000 brought us flashing turn signals, cruise control, airbags, crumple zones and anti-lock brakes. Vehicle technology has advanced exponentially since then. We've gone from back up cameras to experimental autonomous cars in less than a decade.

According to the U.S. Secretary of Labor, "In 1965 a technician needed to understand 5,000 pages of service manuals to fix any automobile on the road. Today, that same technician must be able to decipher over 500,000 pages of technical text." Isn't it time for repair networks to evolve alongside the most sophisticated machines on the planet?

### The Right Information at the Right Time

From part details to VINs and labor times to service information, the types of data required for proper and safe repair vary as much as the amount of data does. Partial or incomplete data from OEMs and third parties create inefficiencies and delays in vehicle repair processing. To address these challenges, Mitchell's solutions offer the right information at the right time through direct access to the latest electronic OEM data and real-time access to APIs as well as data from our key partners.

### What Do Proper and Safe Repairs Require?

To answer this question, first we must examine the significance of OEM procedures and their role in the estimating and repair planning process. While there has been a significant amount of discussion on the importance of OEM procedures as they relate to parts and repairs, there has not yet been adequate discussion of the estimating and repair planning process. What should be examined is the importance of OEM information in the estimating and repair planning process because **proper repair plans drive proper and safe repairs.** 

This is not just about fixing the damaged sheet metal, fascias, and lamp assemblies correctly. It's not enough to have skilled, knowledgeable technicians using visual damage assessment skills to find gaps and hidden damage. The bar is being raised for the entire collision repair industry to focus first on accurate identification of all the necessary steps to repair both the structural components of a vehicle and to restore its electronic systems and software to original condition. In your grandfather's day, damage was a predictor of specific necessary repairs. Today, OEM repair information is required to plan the repair. It's worth repeating that from parts to operations to post-repair calibrations, proper repair plans drive safe and proper repairs.

### Mitchell's Role in the "New" Repair Network

Since 2000, we have created Repair Standards (aka Repair Procedures) in <u>Mitchell TechAdvisor</u> for all core collision related categories for cars, trucks and vans. Our procedures include 25 core categories

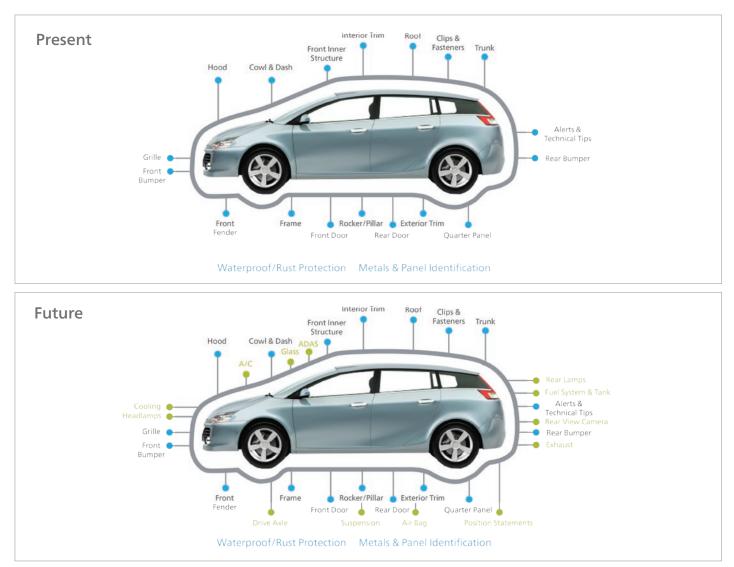


For model years 2016 and 2017, there are approximately 30 vehicles introduced to the market that met the selection criteria.

and 15 special categories for 900 models from 45 different OEMs. Based on the changing market we are augmenting our content to include even more information for collision repairers, including adding 72 new categories.

In addition, the "meticulous disassembly" or teardown process of the future is here today with Mitchell Diagnostics, the first comprehensive diagnostic workflow solution that is designed specifically for collision repair and auto claims.

### **Repair Procedures Present vs. Future**



For example, there's no comparison between Mitchell Diagnostics, which is a connected diagnostic system and a stand-alone scan tool. Our system's approach interacts with other data streams during tear-down. It integrates scan reports into the repairers existing workflow. Carriers prefer the documentation provided by Mitchell Diagnostics over the flat file output of a scan tool because our documentation proves the necessary diagnostic procedures were completed correctly. Shops prefer Mitchell Diagnostics because it's part of their overall repair and claims management infrastructure, delivering OEM level capabilities in a cost effective solution that works for making proper and safe repairs to nearly all makes & models.

#### A Dynamic Approach to Repair Networks

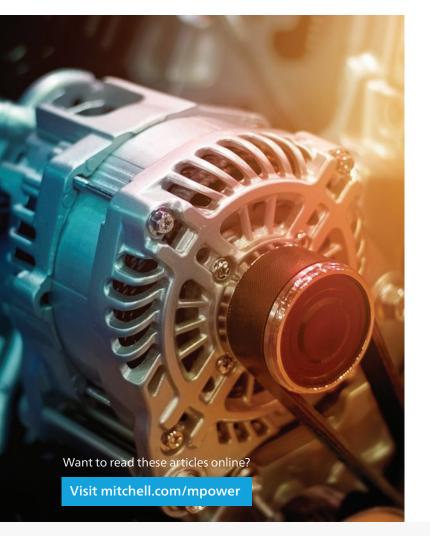
Just as generic repair methods and techniques are no longer adequate, neither is a static repair network. Continuous monitoring and adjustment of a dynamic network is required. Facilities must continually adjust their capabilities with new equipment, and new vehicles require new training and certifications for technicians.

While all networks strive to deliver proper and safe repairs, one size does not fit all. Repairers are likely to participate in both OEM certified and carrier DRP programs.

### ABOUT THE AUTHOR

Since the KPIs and metrics for each program may differ, it is critical to have in place a system that allows for the management of proper and safe repairs, especially against varying criteria.

We learned from recent litigation that the adherence to OEM repair procedures is more important than ever for making proper and safe repairs. While repair networks need to be both flexible and thoroughly up to date as vehicles become ever more complex, at Mitchell our commitment to support the industry in the delivery of **proper and safe repairs** remains constant.





Jack Rozint Vice President, Sales & Service, Repair | APD Solutions

Jack Rozint joined Mitchell International, Inc. in 2016 and currently serves as the Company's Vice President, Sales & Service, Repair, APD Solutions, guiding the Company's sales and service activities with its customers in the Collision, Glass and Automotive OEM industry segments in North America.

Jack has been active in the Collision and Claims industry for many years and is currently Chairman of the Emerging Technologies Committee for the Collision Industry Conference (CIC). He was a founding Board member of the Collision Industry Electronic Commerce Association (CIECA), and is a regular speaker at industry events. Jack holds a BA in Psychology from the University of Connecticut and an MBA from Pepperdine University.

<sup>1</sup> https://informationisbeautiful.net/visualizations/million-lines-of-code/

<sup>2</sup>http://www.motortrend.com/news/2016-cadillac-ct6-chassis-uses-mix-of-aluminum-steel-other-materials/ <sup>3</sup>http://www.repairerdrivennews.com/2017/12/20/honda-many-common-body-shop-situations-require-adas-recalibration/

# Average Length of Rental for Repairable Vehicles

# U.S. Length of Rental—Q4 2017

By Dan Friedman | Assistant Vice President | Collision Industry Relations and Sales, Enterprise Rent-A-Car | Mitchell Auto Physical Damage Solutions



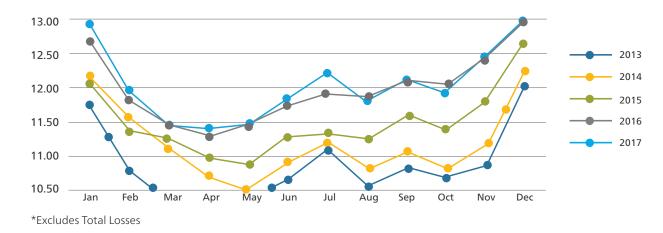
The average LOR ranged from a high of 13.6 days in the Mountain region to a low of 11.2 in the Pacific.

Average Length of Rental (LOR) for Q4 2017 landed at 12.4 days in the United States, a decrease of .1 days compared to Q4 2016. This produced a final LOR for Calendar 2017 of 12.04 days, up slightly from 11.98 in 2016.

Once again, there was very little consistency between regions and states, suggesting that the quarterly result for the U.S. is not reflective of a genuine national trend. The Northwest region produced the largest increase at .3 days while the Southwest declined .6 days for the third consecutive quarter. The average LOR ranged from a high of 13.6 days in the Mountain region to a low of 11.2 in the Pacific. At the state level, Puerto Rico and North Dakota were outliers at 17.8 and 9 days, respectively. At least 20 states deviated significantly in terms of year-over-year change, further demonstrating a lack of consistency. Puerto Rico (5.1), Nebraska (1.6) and South Dakota (1.1) produced the largest increases with the Island still being impacted by the devastation of Hurricane Maria. The most significant decreases in LOR included Texas (-.9), Montana (-.8), North Dakota (-.8) and Rhode Island (-.8). Texas remained 1.1 days above the U.S. average (13.5) despite the second consecutive significant quarterly drop.

As pointed out in previous updates, there remains a significant delta between average and best in class. Collision centers that invest in extensive training, consistently execute a robust scheduling strategy, and properly utilize the ARMS® Auto application, routinely outperform market-average LOR metrics.

#### **US Industry Avg Length of Rental**



#### Canadian Length of Rental—Q4 2017

Canadian Length of Rental (LOR) finished at 11.8 days for Q4 2017. This result was .7 days higher than Q3 and .5 days higher than Q4 2016.

While Canada's LOR continues to be lower than the US, the historical gap between the two countries is narrowing. The LOR gap in Q4 2016 was 1.2 days between the two countries, while in Q4 2017 that gap had shrunk to .6 days. The fact that the US saw a decline of .1 days between Q4 2017 vs Q4 2016 LOR results was the main driver of this trend.

Following a similar pattern that we see in the US, there was a large variance in individual provincial results. For the second consecutive quarter, New Brunswick was the only province to see a LOR decrease relative to Q4 2016, dropping .7 days. Six provinces witnessed increases over last year, ranging from .3 days to 1.1 days. Ontario, Nova Scotia and Prince Edward Island each added at least a day to their fourth quarter results.

Overall, Canada's Q4 LOR ranged from a low of 9.7 days in New Brunswick, to a high of 12.4 days in both Ontario and Alberta. Provinces that outperformed the national average included Quebec, Newfoundland, New Brunswick, Nova Scotia and Prince Edward Island.

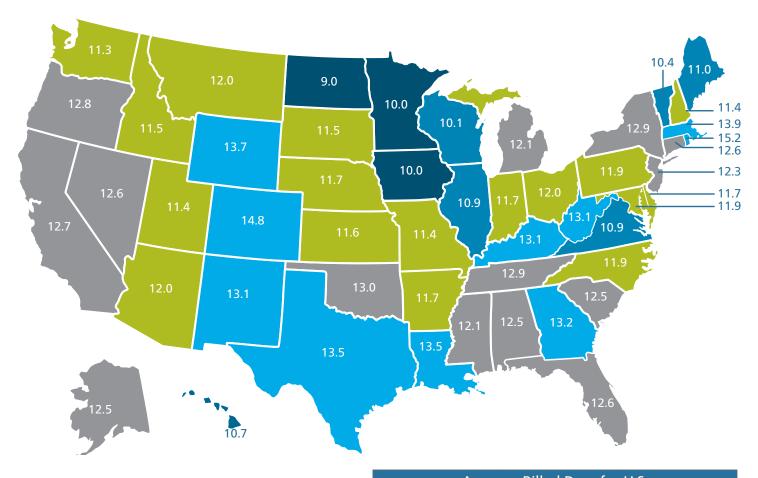
Canadian LOR continues its upward trajectory, driven in large part by the increasing complexity of repair.

As with our southern neighbor, the difference between "average" and "best in class" LOR is significant. Collision centers that invest in extensive training, properly utilize the ARMS® Auto application, and consistently execute a robust scheduling strategy routinely outperform market-average LOR metrics.

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**U.S. Average Length of Rental (LOR) by State** Q4 2017



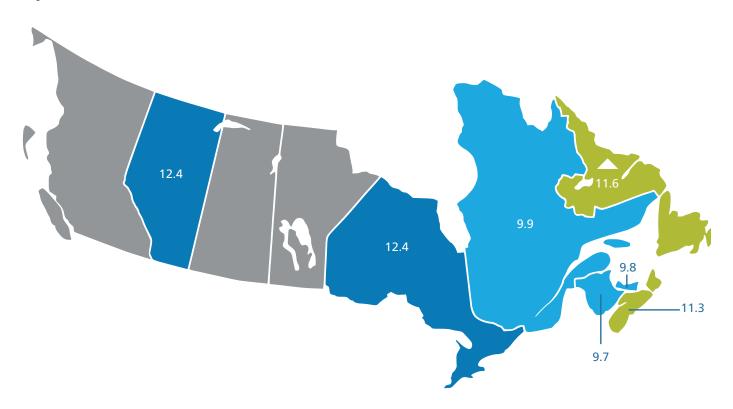
Average Billed Days for U.S.					
Q4 2016	Q4 2017	Change			
12.5	12.4	-0.1			

At least 20 states deviated significantly in terms of year-overyear change, further demonstrating a lack of consistency.

Average Billed Days for U.S. by Region							
Region	Q4 2016 Q4 2017 LOR LOR		Change				
California	12.8	12.7	-0.1				
Mid-Atlantic	11.9	11.8	-0.1				
Midwest	11.3	11.4	0.1				
Mountain	13.5	13.6	0.1				
Northeast	12.9	13.0	0.1				
Northwest	11.5	11.8	0.3				
Pacific	11.1	11.2	0.1				
Southeast	12.6	12.7	0.1				
Southwest	13.8	13.2	-0.6				



**Canadian Average Length of Rental by Province** Q4 2017



#### Year-Over-Year Change

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

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 <u>armsautosuite.com</u> or by contacting Dan Friedman at <u>Daniel.Friedman@ehi.com</u>.

Avera	Average Billed Days for Canada					
Q4 2016	Q4 2017	Change				
11.3	11.8	0.5				

Average Billed Days for Canada								
Province	Q4 2016 Q4 2017 LOR LOR		Change					
Alberta	12.1	12.4	0.3					
Ontario	11.4	12.4	1.0					
Quebec	9.5	9.9	0.4					
Newfoundland and Labrador	10.7	11.6	0.9					
New Brunswick	10.4	9.7	-0.7					
Nova Scotia	10.2	11.3	1.1					
Prince Edward Island	8.7	9.8	1.1					

# Motor Vehicle Markets

# New Vehicle Sales

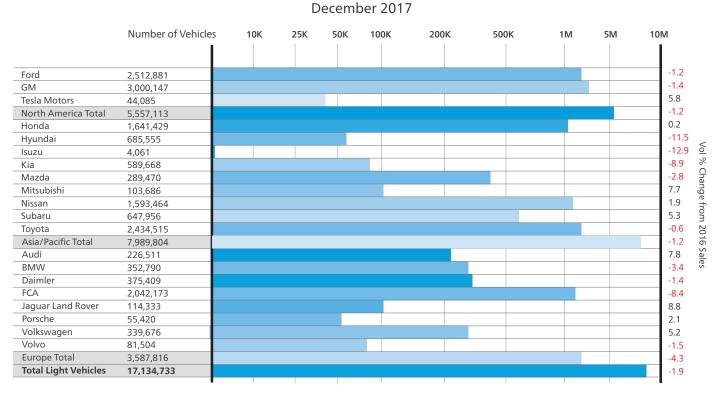
### WardsAuto 10 Best-Selling U.S. Cars and Trucks

As of December 2017

	Cars	Trucks/Vans/SUVs		
Model	YTD Sales	Model	YTD Sales	
Camry	387,081	F-Series	834,445	
Civic	377,286	Silverado	585,864	
Accord	322,655	Ram Pickup	483,520	
Corolla	308,695	Rav4	407,594	
Altima	254,996	Rogue	403,465	
Sentra	218,451	Cr-V	377,895	
Fusion	209,623	Escape	308,296	
Elantra	198,210	Equinox	290,458	
Malibu	185,857	Explorer	271,131	
Cruze	184,751	Grand Cherokee	240,696	

Source: WardsAuto InfoBank

### WardsAuto U.S. Light Vehicle Sales by Company



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**

Source: ADESA Analytical Services. May data revised.

### December 2017 Kontos Kommentary

#### 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.

### Wholesale Used Vehicle Price Trends

	Latest Mon	th Versus			
	Jan-18	Dec-17	Jan-17	Prior Month	Prior Year
Total All Vehicles	\$10,980	\$10,804	\$10,945	1.6%	0.3%
Total Cars	\$8,751	\$8,502	\$8,867	2.9%	-1.3%
Compact Car	\$6,698	\$6,452	\$6,639	3.8%	0.9%
Midsize Car	\$7,880	\$7,651	\$8,044	3.0%	-2.0%
Fullsize Car	\$7,853	\$7,551	\$8,300	4.0%	-5.4%
Luxury Car	\$13,170	\$12,959	\$13,472	1.6%	-2.2%
Sporty Car	\$13,987	\$13,846	\$13,041	1.0%	7.3%
Total Trucks	\$13,074	\$12,966	\$12,990	0.8%	0.6%
Mini Van	\$9,048	\$8,891	\$9,289	1.8%	-2.6%
Fullsize Van	\$12,980	\$12,619	\$12,430	2.9%	4.4%
Compact SUV/CUV	\$10,680	\$10,508	\$10,762	1.6%	-0.8%
Midsize SUV/CUV	\$11,578	\$11,148	\$11,854	3.9%	-2.3%
Fullsize SUV/CUV	\$14,648	\$14,856	\$13,715	-1.4%	6.8%
Luxury SUV/CUV	\$18,446	\$18,711	\$18,697	-1.4%	-1.3%
Compact Pickup	\$9,306	\$9,209	\$8,954	1.1%	3.9%
Fullsize Pickup	\$16,190	\$16,189	\$16,039	0.0%	0.9%

#### Summary

With the impacts of Hurricanes Harvey and Irma having lasted primarily from late-August through mid-November, wholesale prices in December returned to patterns seen prior to those events. Namely, prices for cars continue to soften while prices for trucks were up.

#### Details

According to ADESA Analytical Services' monthly analysis of Wholesale Used Vehicle Prices by Vehicle Model Class1, wholesale used vehicle prices in December averaged \$10,804—up 0.1% compared to November and up 1.5% relative to December 2016. However, car prices were down both month-overmonth and year-over-year, while the opposite was true for truck prices.

When holding constant for sale type, model-year age, mileage, and model class segment, midsize car prices were down on a year-over-year basis, while midsize SUV/ Crossover prices were up, as seen in the following table:

Fleet/Lease Sales of Three-MY-Old Units w/36k–45k Miles							
	Averag	e Prices	Y/Y	Y/Y			
Model Class	Jan-18	Jan-17	\$	%			
Midsize Car	\$11,513	\$11,556	\$43	-0.4%			
Midsize SUV/CUV	\$20,236	\$20,458	\$222	-1.1%			

Although Midsize SUV/CUV prices were up in December in this analysis, the increase was modest compared to September through November. This may be indicative of a cessation in truck demand growth in Texas after Hurricane Harvey.

Average wholesale prices for used vehicles remarketed by manufacturers were down 3.3% month-over-month but up 8.3% year-over-year. Prices for fleet/lease consignors were down 1.9% sequentially but up 0.4% annually. Average prices for dealer consignors were down 0.1% versus November and up 3.6% relative to December 2016.

Based on NADA data, December retail used vehicle sales by franchised and independent dealers were down a combined 3.4% year-overyear, after being down in October and November as well. December CPO sales were up 9.0% from the prior month and down 4.8% year-over-year, according to figures from Autodata.

'The 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," "bode", "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 2017, was \$3,151. Continued development suggests a final Q4 2017 average appraisal value of \$3,184, which represents an increase of \$67 compared to the same quarter last year.



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

 \* Values provided from Guidebook benchmark averages, furn through Ultramate.

#### **Comprehensive Losses**

In Q4 2017, the average initial gross appraisal value for comprehensive coverage estimates processed through our servers was \$3,228, compared to \$3,322 in Q4 2016. Factoring for development produces an increase in the adjusted value to \$3,271.

Average Appraisal Values, ACVs

and Age Comprehensive Losses\*



\* Values provided from Guidebook benchmark averages, furnished through Mitchell Estimating.



Mitchell Cloud Estimating is the industry's first truly cloud based platform, utilizing the latest technology to deliver innovative solutions to market faster than ever, to solve the needs of the estimators of today and tomorrow. Using Mitchell's proprietary technology, this app simplifies the estimating process, letting you focus on proper and safe repairs and achieve effective business outcomes.

Visit Mitchell's website at www.mitchell.com/cloud-estimating

#### Third-Party Property Damage

In Q4 2017, our initial average gross third-party property damage appraisal was \$2,940 compared to \$2,893 in Q4 2016, reflecting a \$47 initial increase between these respective periods. Factoring for development yields an anticipated Q4 2017 adjusted appraisal value of \$ 2,965, a \$72 increase in average severity over Q4 2016.



### Average Appraisal Values, ACVs and Age Auto Physical Damage<sup>\*</sup>

#### **Collision Losses**

Mitchell's Q4 2017 data reflects an initial average gross collision appraisal value of \$3,479. However, continued development suggests a final Q4 2017 average gross collision appraisal value of \$3,520, which represents an increase of \$116 over the same quarter last year.

Average Appraisal Values, and Age

**Collision Coverage**\*



#### \* Values provided from Guidebook benchmark averages, furnished through Mitchell Estimating.



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

### 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 2017, 40.05% 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 62.25%, reflecting a 1.22 point increase from that same period in 2016. The average combined supplement variance for this quarter was \$917.59, \$1.67 lower than in Q4 2016.

Date	Q2/15	Q4/15	Q2/16	Q4/16	Q2/17	Q4/17	Pt. Change	% Change
% Est. Supplement	34.20	36.58	39.07	41.29	39.79	40.05	-1.24	-3%
% Supplement	49.09	52.53	57.02	61.03	58.59	62.25	1.22	2%
Avg. Combined Supp. Variance \$	873.79	904.88	878.15	919.26	912.20	917.59	-1.67	0%
% Supplement \$	29.86	29.66	29.06	29.50	29.63	29.73	0.23	1%

### Average Supplement Frequency and Severity

### 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 2017 to the same period last year, there was only minimal shifting (less than 1%) between categories.

Date	Q2/15	Q4/15	Q2/16	Q4/16	Q2/17	Q4/17	Pt. Change	% Change
% Average Part \$	43.23	45.91	43.09	46.07	43.18	46.32	0.25	1%
% Average Labor \$	45.71	42.84	45.96	42.72	45.80	42.31	-0.41	-1%
% Paint Material \$	10.55	10.29	10.19	9.99	10.14	10.03	0.04	0%

### % Average Appraisal Dollars by Type

# 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 \$1,450 in average spend per estimate.



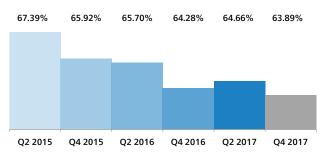
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### Original Equipment Manufacturer (OEM) Parts Use in Dollars

In Q4 2017, OEM parts represented 63.89% of all parts dollars specified by Mitchell-equipped estimators. This represents a 0.39% relative decrease from Q4 2016.

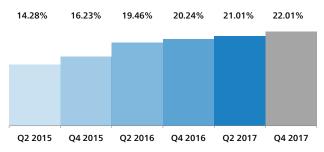
#### Parts-New



### Aftermarket Parts Use in Dollars

In Q4 2017, 22.01% of all parts dollars recorded on Mitchell appraisals were attributed to Aftermarket sources, up 1.77 points from Q4 2016.

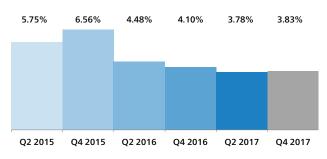
### Parts-Aftermarket



### Remanufactured Parts Use in Dollars

Currently listed as "Non-New" parts in our estimating platform and reporting products, Remanufactured parts currently represent 3.83% of the average gross parts dollars used in Mitchell appraisals during Q4 2017. This reflects a decrease over this same period in 2016.

#### **Parts-Remanufactured**





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

### 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<sup>™</sup>

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 breakdown 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

### **Recycled Parts Use in Dollars**

Recycled parts constituted 10.27% of the average parts dollars used per appraisal during Q4 2017, reflecting a 1.1% relative decrease from Q4 2016.

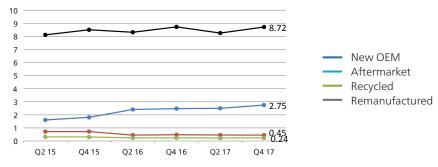
#### Parts-Recycled



### 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 2017 to the same quarter in 2016, aftermarket parts usage increased to an average 2.75 parts per estimate, while new OEM parts usage was flat.

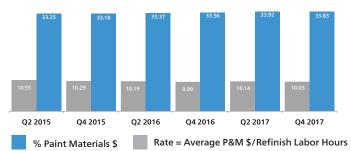
#### Number of Parts by Part Type



### Paint and Materials

During Q4 2017, Paint and Materials made up 10.03% of our average appraisal value, representing a slight increase from Q4 2016. 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 \$33.83 per refinish hour in this period, compared to \$33.56 in Q4 2016.

Paint And Materials, By Quarter



### Adjustments

In Q4 2017, the percentage of adjustments made to estimates was down compared to the same period last year. The frequency of betterment taken decreased by 7%, while the average dollar amount of the betterment taken also decreased by 7% to \$126.14. Appearance allowance frequency decreased by 12%, while the dollar amount of that appearance allowance increased to \$228.17.

Date	Q2/15	Q4/15	Q2/16	Q4/16	Q2/17	Q4/17	Pt/\$ Change	% Change
% Adjustments Est	2.82	3.02	2.97	2.88	2.71	2.64	-0.24	-8%
% Betterment Est	2.23	2.45	2.19	2.2	2	2.05	-0.15	-7%
% Appear Allow Est	0.44	0.43	0.55	0.52	0.51	0.46	-0.06	-12%
% Prior Damage Est	2.98	2.52	2.48	2.26	2.28	1.95	-0.31	-14%
Avg. Betterment \$	124.15	124.06	135.76	135.99	135.07	126.14	-9.85	-7%
Avg. Appear Allow \$	210.92	211.45	220.09	214.52	219.84	228.17	13.65	6%

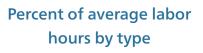
### Adjustment \$ and %s

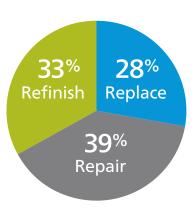
### Labor Analysis

For 2017, average body labor rates rose across all survey states compared to 2016.

### Average Body Labor Rates and Change by State

	2016	2017 YTD	\$ Change	% Change
Arizona	51.09	51.45	\$ 0.36	1%
California	55.49	56.86	\$ 1.37	2%
Florida	42.94	43.58	\$ 0.64	1%
Hawaii	50.24	51.34	\$ 1.10	2%
Illinois	51.98	52.19	\$ 0.21	0%
Michigan	46.27	46.69	\$ 0.42	1%
New Jersey	47.84	48.09	\$ 0.25	1%
New York	49.07	49.38	\$ 0.31	1%
Ohio	46.00	47.90	\$ 1.90	4%
Rhode Island	45.96	46.81	\$ 0.85	2%
Texas	45.74	46.17	\$ 0.43	1%





# 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.

### Average Vehicle Age in Years

Vehicles	Q2/15	Q4/15	Q2/16	Q4/16	Q2/17	Q4/17				
		Average Vehicle Age in Years								
Convertible	12.35	12.74	12.79	13.47	12.92	13.81				
Coupe	11.94	12.3	11.98	12.46	12.01	12.62				
Hatchback	8.25	8.1	7.72	8.29	7.95	8.59				
Sedan	10.26	10.47	10	10.54	10.17	10.69				
Wagon	10.02	10.66	10.36	11.05	10.86	11.62				
Other Passenger	13.04	12.2	10.87	4.49	4.59	3.62				
Pickup	12.63	13.24	12.89	13.6	13.47	14.15				
Van	11.29	11.76	11.42	11.87	11.66	12.14				
SUV	10.2	10.47	10.1	10.74	10.38	11				

### Average Vehicle Total Loss Actual Cash Value

Vehicles	Q2/15	Q4/15	Q2/16	Q4/16	Q2/17	Q4/17			
	Average Actual Cash Value								
Convertible	10,163.23	10,245.21	10,023.98	9,955.32	9,471.13	9,243.54			
Coupe	7,958.80	8,074.13	8,089.15	7,827.83	7,951.59	7,638.76			
Hatchback	8,477.33	8,604.16	8,501.80	7,895.81	7,678.89	7,369.54			
Sedan	7,803.98	7,723.94	7,800.33	7,315.87	7,229.53	6,901.13			
Wagon	6,926.95	6,762.68	6,735.01	6,413.34	6,417.49	6,070.88			
Other Passenger	14,698.45	18,002.34	18,937.53	18,840.05	18,843.38	17,938.03			
Pickup	11,101.02	11,375.06	11,688.84	11,491.02	11,378.87	11,301.74			
Van	6,248.82	6,409.64	6,600.89	6,656.11	6,436.20	6,591.16			
SUV	9,809.46	10,050.35	10,131.81	9,773.62	9,578.39	9,337.27			

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.

### **Canadian Appraisal Severity**

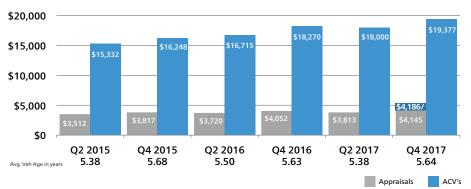
### Average Appraisal Values Severity Overall

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 2017, was \$4,184, a \$43 increase from Q4 2016. Factoring for development yields an anticipated increase to \$4,229.



### **Collision Losses**

The average initial gross collision appraisal value uploaded through Mitchell Canadian systems in Q4 2017 was \$4,145, a \$93 increase from the same period last year. Factoring for development yields an anticipated increase to \$4,186, which represents a \$134 increase from Q4 2016.



### 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 and a slight decrease in labor when comparing Q4 2017 to the same period last year.

Date	Q2/15	Q4/15	Q2/16	Q4/16	Q2/17	Q4/17	Pt/\$ Change	% Change
% Average Part \$	43.65	45.68	45.28	47.05	46	48.17	1.12	2%
% Average Labor \$	44.33	42.78	42.99	41.61	42.59	40.87	-0.74	-2%
% Paint Material \$	8.68	8.18	8.82	7.89	8.4	7.91	0.02	0%



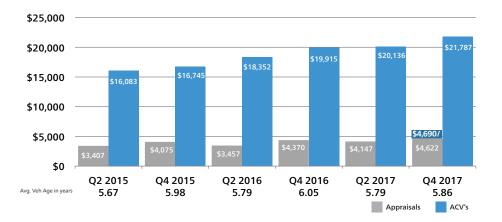
### CANADA SEGMENT

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



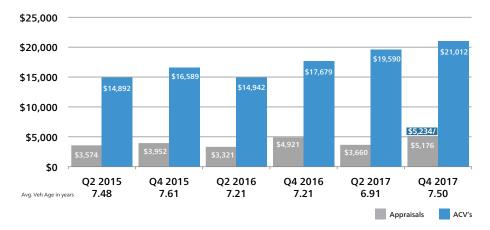
### Comprehensive Losses

In Q4 2017, the average initial gross Canadian appraisal value for comprehensive coverage estimates processed through our servers was \$4,622, which represents an increase of \$252 compared to Q4 2016. Factoring for development, the anticipated final average appraisal value will be \$4,690.



### Third-Party Property Damage

In Q4 2017, our Canadian industry initial average gross third-party property damage appraisal was \$5,176, which represents an increase of \$255 from Q4 2016. Factoring for development, we anticipate a final value of \$5,234.



### **Canadian Supplements**

In Q4 2017, 48.72% of all original estimates prepared by Mitchell-equipped Canadian estimators were supplemented one or more times. The average combined supplement variance for this quarter was \$1,042.82, \$7.27 higher than in Q4 2016.

Date	Q2/15	Q4/15	Q2/16	Q4/16	Q2/17	Q4/17	Pt/\$ Change	% Change
% Est Supplements	51.40	52.65	50.14	51.45	50.55	48.72	-2.73	-5%
% Supplements	78.79	82.10	78.27	91.32	73.71	89.45	-1.87	-2%
Avg Combined Supp Variance	842.58	831.93	826.24	1,035.55	886.75	1,042.82	7.27	1%
% Supplement \$	24.06	21.44	22.95	25.01	23.15	24.92	-0.09	0%



### Canadian Adjustments

In Q4 2017, the average frequency of betterment taken on estimates decreased, while the dollar amount of that betterment increased to \$477.81, the highest of all charted values. Appearance allowances were also down, although the dollar amount of those allowances increased by 23% when compared to Q4 2016.

Date	Q2/15	Q4/15	Q2/16	Q4/16	Q2/17	Q4/17	Pt/\$ Change	% Change
% Adjustments Est	1.8	1.97	1.96	2.14	1.51	1.41	-0.73	-34%
% Betterment Est	1.5	1.71	1.63	1.82	1.28	1.22	-0.6	-33%
% Appear Allow Est	0.3	0.25	0.32	0.34	0.23	0.2	-0.14	-41%
% Prior Damage Est	0.23	0.19	0.24	0.22	0.22	0.23	0.01	5%
Avg. Betterment \$	273.76	371.18	271.31	399.78	445.85	477.81	78.03	20%
Avg. Appear Allow \$	236.69	277.13	343.74	288.84	282.29	355.89	67.05	23%

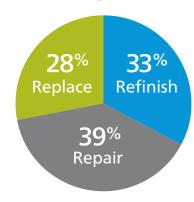
### Canadian Labor Analysis

This data reflects the percentage of labor dollars utilized in the creation of Mitchell appraisals by Canadian estimators. With the exception of Alberta, labor rates increased across the other provinces and territories.

### Average Body Labor Rates and Change by Province

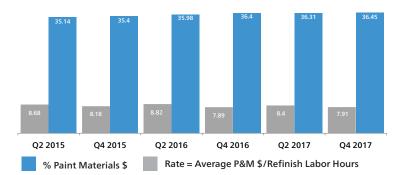
Provence	2016	YTD 2017	\$ Change	% Change
Alberta	76.17	75.19	\$ (0.98)	-1%
Newfoundland & Labrador	63.23	64.75	\$ 1.52	2%
Northwest Territories	93.48	93.67	\$ 0.19	0%
Nova Scotia	59.51	60.04	\$ 0.53	1%
Ontario	57.59	58.04	\$ 0.45	1%
Quebec	52.70	54.20	\$ 1.50	3%
Yukon Territory	95.58	95.45	\$ (0.13)	0%

#### **Labor Operations**



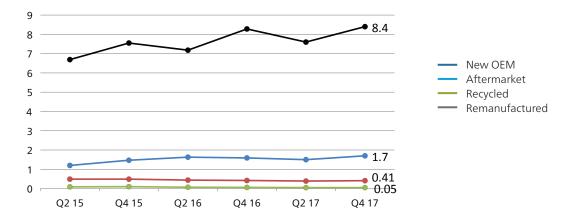
### Canadian Paint and Materials

For Q4 2017, Paint and Materials made up 7.91% of our average appraisal value. Represented differently, the average paint and materials hourly rate rose slightly to \$36.45 per hour compared to Q4 2016.





### Canadian Number of Parts by Part Type



### **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 2017, OEM parts use was steady compared to Q4 2016.

### Parts-New



### Aftermarket Parts Use in Dollars

Aftermarket parts use in Q4 2017 increased slightly compared to the same period last year, coming in at 14.59%.

### **Parts-Aftermarket**



### Remanufactured Parts Use in Dollars

Remanufactured parts use in Canada dropped to 0.93% for Q4 2017, which represents the lowest percentage of part dollars in the charted quarters.

#### **Parts-Non-New**



### Recycled Parts Use in Dollars

In Q4 2017, recycled parts use in Canada increased as a percentage of part dollars when compared to Q4 2016. Parts-Recycled



# About Mitchell





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.



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 more. Stay informed of 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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