



REPORT SUMMARY

This section provides an overview of the predictive analytics used for the estimation of claim severity, exposure, and fraud risk for the most recent crash or event sequence.



Repair / Loss Exposure

The market value range for the vehicle is USD \$30,718.81 - USD \$37,678.81. The vehicle is predicted to be a **TOTAL LOSS**.



Occupant Injury Risk

A severe frontal crash was detected by the Event Data Recorder with a recency of 1 ignition cycle ago. If the detected event is related to the claim in question, the mean acceleration in the impact was 4.36 g.

1st Party - Statistical Likelihood of Minor Injury Symptoms: 25% (Possible). Risk of Serious Injury: 20% (Possible)

3rd Party - Statistical Likelihood of Minor Injury Symptoms: 100% (Almost Certain)

The following reconstruction data analysis relates to the severe frontal crash that was detected by the Event Data Recorder (having a recency of 1 ignition cycles ago):



Pre-Crash Data

Within the 5.0 seconds of recorded pre-impact data for the most recent crash, the recorded speed range on this vehicle was **11 mph to 20 mph**. The vehicle speed was **11 mph** at the moment of impact.

Driver/Vehicle Maneuver:
Going left



Flags / Loss Indicators

Low-Medium Risk (1 Alert): Pre-Damaged Vehicle (Front, Rear, Right Front, Rear, Rear)



Diagnostic Scan Results

✔ **Event Data Recorder: Scan Completed Successfully**

✘ **Emissions Test Failed.**



Safety Issues / Ratings

✘ **10 Potential Recalls Found.** No Safety Ratings Alerts Found. **Structural/Frame Damage.** Even minor damage, if not repaired properly, can seriously degrade a car's ability to protect you in an accident.



Recommended Action

Confirm the relevance of the crash event data to the reported collision claim by verifying that the event data recency (based on ignition cycles or mileage) is consistent with the Date of Loss (based on approximate vehicle usage). Check that the pre-crash data is consistent with the reported circumstances.



CRASH DATA RECORDS

This section lists crash data records stored on the vehicle's event data recorder. The date of crash data collection was 2019-06-20.

Recency / Sequence	Crash Severity	Type / Damage Area	Sudden Speed Change (Delta-V)	Force of Impact (Mean g-Force)	Direction of Force	Ignition Cycles since (Odometer at) Event
Most Recent	Severe, High-speed Collision	Right Front. Roll Motion.	-25.00 mph (Decreasing)	4.36 g	25 degrees (1 o'Clock)	1 (15,544 miles)
1st Prior	Negligible Severity	Front. Roll Motion.	-1.25 mph (Decreasing)	0.22 g	0 degrees (12 o'Clock)	180 (13,700 miles)
2nd Prior	Negligible Severity	Rear. Roll Motion.	1.25 mph (Increasing)	0.22 g	180 degrees (6 o'Clock)	276 (12,600 miles)
3rd Prior	Negligible Severity	Right Front. Roll Motion.	-1.25 mph (Decreasing)	0.22 g	27 degrees (1 o'Clock)	877 (6,538 miles)
4th Prior	Negligible Severity	Rear. Roll Motion.	0.62 mph (Increasing)	0.11 g	180 degrees (6 o'Clock)	902 (6,275 miles)
5th Prior	Negligible Severity	Rear. Roll Motion.	0.62 mph (Increasing)	0.11 g	180 degrees (6 o'Clock)	1488 (1,512 miles)

How To Interpret This Information

A severe frontal crash was detected by the Event Data Recorder. At the time of data retrieval, the vehicle's ignition had been turned on 1 time since the crash event recording.

The mean (average) acceleration in the most recent crash event was 4.36 g. The maximum Delta-V (Change in Velocity) value as measured by the airbag module's accelerometer reached 25.00 mph within 190 milliseconds, with an instantaneous peak force level of 16.99 g. The vehicle experienced a sudden decrease in speed due to the most recent collision, by a force acting on the vehicle from a direction of approximately 1 o'clock (where the front of the vehicle is 12 o'clock).

Crash events are sorted and displayed in order of recency. It is possible for an airbag module to contain multiple records for a single event. In that case, event recency will be further marked by "1st Impact", "2nd Impact"...etc., with "1st Impact" being the initial record in sequence.

Event Data Applicability

Confirm the relevance of the crash event data to the reported collision claim by verifying that the recency (based on ignition cycles or mileage) is consistent with the Date of Loss (based on approximate vehicle usage). Check also that the pre-crash data is consistent with the vehicle's reported pre-impact speed and maneuver.

Example calculation of daily vehicle usage: if the vehicle was reported to be used an average of 2 times per day between the collision and date of data retrieval (2019-06-20), the recorded collision event could be estimated to have occurred approximately 0 days prior, on or about 2019-06-20. The number of ignition cycles indicates the number of times the ignition has been turned on (to key on, engine off position). Vehicles with automatic start-stop systems (engine idle off) do not increase the ignition cycle count. A similar calculation can be performed using daily mileage.

A lack of relevant crash event data for the collision under investigation indicates any of the following:

1. The vehicle was switched off or parked at the time of the impact
2. The impact severity failed to meet the minimum required threshold for the EDR to record



PRE-CRASH DATA / Most Recent

This section lists pre-crash data records stored on the vehicle's event data recorder.

Time Before Impact (sec)	Distance to Impact (feet)	Vehicle Speed (mph)	Engine Speed (RPM)	Accelerator Pedal (%)	Brake Status	Deceleration (g)	Steering Angle (deg)
-5.0	N/A	20	1600	0.0	Off	N/A	2 (Straight)
-4.5	106.6	19	1536	0.0	Off	-0.1 (Light)	2 (Straight)
-4.0	92.7	19	1536	0.0	Off	-0.1 (Light)	0 (Straight)
-3.5	79.3	18	1472	0.0	Off	-0.1 (Light)	0 (Straight)
-3.0	66.3	18	1472	0.0	Off	-0.1 (Light)	0 (Straight)
-2.5	53.5	18	1280	0.0	On	0.0 (Light)	0 (Straight)
-2.0	41.0	17	1152	0.0	On	-0.1 (Light)	4 (Straight)
-1.5	29.2	16	1088	0.0	On	-0.1 (Light)	28 (Left)
-1.0	18.2	14	1024	0.0	On	-0.1 (Light)	104 (Left)
-0.5	8.4	12	1024	0.0	On	-0.2 (Light)	162 (Left)
0.0	0.0	11	960	0.0	On	-0.2 (Light)	198 (Left)



PRE-CRASH DATA / 1st Prior

This section lists pre-crash data records stored on the vehicle's event data recorder.

Time Before Impact (sec)	Distance to Impact (feet)	Vehicle Speed (mph)	Engine Speed (RPM)	Accelerator Pedal (%)	Brake Status	Deceleration (g)	Steering Angle (deg)
-5.0	N/A	48	1344	36.0	Off	N/A	0 (Straight)
-4.5	290.5	48	1344	31.0	Off	0.0 (Light)	0 (Straight)
-4.0	255.6	48	1344	28.0	Off	N/A	0 (Straight)
-3.5	220.5	48	1344	27.0	Off	0.0 (Light)	0 (Straight)
-3.0	185.5	48	1344	27.0	Off	0.0 (Light)	0 (Straight)
-2.5	150.4	48	1344	25.0	Off	0.0 (Light)	0 (Straight)
-2.0	115.3	48	1344	0.0	Off	0.0 (Light)	0 (Straight)
-1.5	80.4	48	1344	0.0	On	-0.1 (Light)	0 (Straight)
-1.0	47.8	42	1152	0.0	On	-0.5 (Moderate)	-2 (Straight)
-0.5	20.7	32	896	0.0	On	-0.8 (Emergency)	-16 (Right)
0.0	0.0	24	1216	0.0	On	-0.7 (Hard)	-12 (Right)



PRE-CRASH DATA / 2nd Prior

This section lists pre-crash data records stored on the vehicle's event data recorder.

Time Before Impact (sec)	Distance to Impact (feet)	Vehicle Speed (mph)	Engine Speed (RPM)	Accelerator Pedal (%)	Brake Status	Deceleration (g)	Steering Angle (deg)
-5.0	N/A	17	2496	36.0	Off	N/A	0 (Straight)
-4.5	109.4	19	1984	36.0	Off	N/A	0 (Straight)
-4.0	95.0	21	2112	38.0	Off	N/A	-2 (Straight)
-3.5	79.3	22	2176	38.0	Off	N/A	-2 (Straight)
-3.0	62.4	24	2304	38.0	Off	N/A	0 (Straight)
-2.5	45.1	24	2112	0.0	On	0.0 (Light)	0 (Straight)
-2.0	29.4	19	1664	0.0	On	-0.4 (Moderate)	0 (Straight)
-1.5	17.3	14	1216	0.0	On	-0.5 (Moderate)	0 (Straight)
-1.0	9.1	9	896	0.0	On	-0.5 (Moderate)	0 (Straight)
-0.5	3.6	6	896	0.0	On	-0.2 (Light)	4 (Straight)
0.0	0.0	4	896	0.0	Off	-0.2 (Light)	2 (Straight)



PRE-CRASH DATA / 3rd Prior

This section lists pre-crash data records stored on the vehicle's event data recorder.

Time Before Impact (sec)	Distance to Impact (feet)	Vehicle Speed (mph)	Engine Speed (RPM)	Accelerator Pedal (%)	Brake Status	Deceleration (g)	Steering Angle (deg)
-5.0	N/A	36	1600	13.0	Off	N/A	0 (Straight)
-4.5	195.5	36	1600	0.0	Off	-0.1 (Light)	0 (Straight)
-4.0	169.5	36	1472	0.0	On	0.0 (Light)	0 (Straight)
-3.5	143.8	35	1216	0.0	On	-0.1 (Light)	0 (Straight)
-3.0	118.7	34	1408	0.0	On	-0.1 (Light)	0 (Straight)
-2.5	94.6	32	1344	43.0	Off	-0.1 (Light)	0 (Straight)
-2.0	70.9	32	1600	0.0	Off	0.0 (Light)	0 (Straight)
-1.5	48.1	30	1472	0.0	On	-0.2 (Light)	-2 (Straight)
-1.0	27.8	26	1216	0.0	On	-0.4 (Moderate)	-6 (Straight)
-0.5	11.6	19	1088	0.0	On	-0.6 (Hard)	-18 (Right)
0.0	0.0	13	960	0.0	On	-0.5 (Moderate)	-26 (Right)



PRE-CRASH DATA / 4th Prior

This section lists pre-crash data records stored on the vehicle's event data recorder.

Time Before Impact (sec)	Distance to Impact (feet)	Vehicle Speed (mph)	Engine Speed (RPM)	Accelerator Pedal (%)	Brake Status	Deceleration (g)	Steering Angle (deg)
-5.0	N/A	43	1664	0.0	Off	N/A	-2 (Straight)
-4.5	256.3	43	1792	12.0	Off	0.0 (Light)	-4 (Straight)
-4.0	224.9	43	1984	16.0	Off	0.0 (Light)	-2 (Straight)
-3.5	193.4	43	1984	19.0	Off	0.0 (Light)	0 (Straight)
-3.0	162.0	43	1600	0.0	Off	0.0 (Light)	0 (Straight)
-2.5	130.6	43	1472	0.0	Off	0.0 (Light)	0 (Straight)
-2.0	99.3	42	1408	0.0	On	-0.1 (Light)	0 (Straight)
-1.5	69.0	41	1344	0.0	On	-0.2 (Light)	0 (Straight)
-1.0	41.2	36	1216	0.0	On	-0.5 (Moderate)	-4 (Straight)
-0.5	18.0	28	1152	0.0	On	-0.7 (Hard)	10 (Straight)
0.0	0.0	21	832	0.0	On	-0.6 (Hard)	8 (Straight)



PRE-CRASH DATA / 5th Prior

This section lists pre-crash data records stored on the vehicle's event data recorder.

Time Before Impact (sec)	Distance to Impact (feet)	Vehicle Speed (mph)	Engine Speed (RPM)	Accelerator Pedal (%)	Brake Status	Deceleration (g)	Steering Angle (deg)
-5.0	N/A	46	1856	33.0	Off	N/A	0 (Straight)
-4.5	231.5	46	1984	32.0	Off	0.0 (Light)	0 (Straight)
-4.0	197.8	46	1984	0.0	Off	0.0 (Light)	0 (Straight)
-3.5	164.5	45	1728	0.0	On	-0.1 (Light)	-2 (Straight)
-3.0	132.4	43	1600	0.0	On	-0.2 (Light)	-2 (Straight)
-2.5	102.1	40	1344	0.0	On	-0.3 (Light)	-2 (Straight)
-2.0	74.3	36	1216	0.0	On	-0.3 (Moderate)	-2 (Straight)
-1.5	49.7	31	1024	0.0	On	-0.5 (Moderate)	-2 (Straight)
-1.0	28.9	26	1088	0.0	On	-0.5 (Moderate)	-2 (Straight)
-0.5	12.5	19	960	0.0	On	-0.6 (Moderate)	0 (Straight)
0.0	0.0	15	960	0.0	On	-0.4 (Moderate)	0 (Straight)

How To Interpret This Information

Each pre-crash data set contains recorded vehicle operating status 5.0 seconds prior to impact. Accelerator Pedal, Brake Switch Status, and Steering Angle can be used to reconstruct the driver's maneuver leading up to the impact.

Deceleration (in g) is calculated using speed differences between data points. Note that deceleration depends heavily on road conditions. For example, in winter driving conditions, it may only be possible to reach a peak deceleration of 0.2g.



SEAT BELT & AIRBAG STATUS (Most Recent Crash)

This section lists the restraint system status at the time of the event recording, including airbag deployment status and the seatbelt buckle insertion status for supported seating positions.

Seating Position	Driver	Front Passenger
Occupant Classification	Occupied	Unoccupied
Safety Belt Status	Buckled	Unbuckled
Frontal Airbag	Deployed	Not Deployed
Side Seat Airbag	Not Deployed	Not Deployed
Side Curtain Airbag	Deployed	Deployed
Knee Airbag	Not Deployed	Unavailable



FLAGS / LOSS INDICATORS

This section lists flags for further investigation based on known anti-fraud indicators and/or inconsistencies with reported circumstances.

Indicator	Description	Risk Alert
Drive Down	Frontal collision where the driver accelerates up to impact, with no pre-impact brake application.	No
No Avoidance Maneuver	No driver input for either brake or steering maneuver within the 2 seconds prior to impact.	No
Possible Distracted Driver	In a frontal collision, driver did not either brake or steer 2 seconds prior to impact.	No
No Pre-Impact Speed Reduction	Brake is only applied lightly with no meaningful reduction in speed.	No
Steered-To Sideswipe	Driver steers either left or right, causing an impact on the steered-to side.	No
Swoop & Squat	Driver steers to make a lane change and quickly applies brakes.	No
Panic Stop	Rear-end collision where driver brakes just prior to impact.	No
Possible Non-Recent Event	Accident recording may not be recent. Event data recorded 50 or more engine starts prior to data retrieval. Possible issues include: unrelated damage, past posting (no insurance at time of collision)	No
Possible Intentional Damage	Event data recorded on successive engine starts (sequential ignition cycles), or multiple events recorded on the same ignition cycle, where pre-crash data does not overlap.	N/A

Pre-Damaged Vehicle	Evidence of prior accident damage, where data of multiple events was recorded at different engine starts. Possible issues include: Unrelated Damage to Incident, staged Hit & Run, Phantom Accident, or Paper Accident.	Yes
Unbuckled Driver	Driver not wearing seat belt at the time of crash data recording.	No
Unbuckled Passenger	Front passenger not wearing seat belt at the time of crash data recording.	No
Emissions Test Failure	Vehicle failed emissions inspection due to insufficient sensor data or diagnostic trouble codes (DTCs).	No
Low Velocity Impact	An impact in which the mean acceleration is below 3.0 g	No
Odometer Rollback	Flags tampering through a discrepancy with mileage (odometer reading) for successive crash events. Example: for EDRs that store mileage at the crash event, if the most recent crash event has a lower mileage, this is evidence of odometer tampering.	No

Reported Circumstances

The flags in this section are generated through cross-referencing provided information (if any).

Indicator	Description	Diagnostic and Predictive Data	Reported Info
Reported Number of Occupants	Compares the reported number of occupants to the available seat sensor data.	1	N/A
Reported Maximum Pre-Impact Speed	Compares the reported travel speed with the pre-crash data and flags a variance of 10 km/h.	20	N/A
Reported Impact Speed	Compares the reported impact speed with the pre-crash data and flags a variance of 10 km/h.	11	N/A
Reported Pre-Impact Maneuver Variance	Compares the reported pre-impact motion with pre-crash data and impact angle for consistency.	Going left	N/A
Reported Appraisal Variance	Compares a provided appraisal estimate with the AI estimate and flags an appraisal variance of +15%.	29267	N/A
Reported Airbag Deployment Variance	Determines whether airbags were manually removed to exaggerate damage by comparing recorded airbag deployment status.	Deployed	N/A
VIN Mismatch	Compares the VIN diagnostically retrieved from the vehicle to the the VIN sticker or provided VIN. Requires claim reference number.	1V2MR2CA8JC*****	N/A
Image Integrity	Utilizes algorithms to identify digitally edited or altered parts in provided photographs.	N/A	N/A
Pre-Accident Vehicle Sale Attempt	VIN identified in online classifieds within the last 6 months.	N/A	N/A

1ST PARTY / INJURY SEVERITY & DURATION



This section predicts occupant injury risk ranging from minor to moderate/serious injury for frontal/side/rear collisions. The injury risk is the statistical incidence, likelihood, and probability of injury as tracked in real-world crash studies using event data recorders. The model uses a regression model of crash severity versus reported injuries as published in scientific studies.

Assumed delta-V: 25.00 mph

Occupant Detail	Statistical Likelihood of Minor Injury Symptoms	Statistical Likelihood of Moderate Injury	Risk of Serious Injury
Occupants in Frontal Impact	25% (Possible)	13% (Unlikely)	20% (Possible)

How To Interpret This Information

On a balance of probabilities, if the likelihood of injury occurrence is below 50%, it is suggested that an injury is more likely not to have occurred. With a high risk of whiplash or other injury, the claim can be expedited. Early treatment is often effective in providing the best probable outcome for patient recovery.

The injury prediction is based on the actual incidence rate or proportion of injury in tracked studies using data from real-world outcomes. The most important factor in predicting the risk of injury or death in a vehicle crash is the crash severity, which is expressed as the velocity change, or Delta-V, experienced by the vehicle during the crash. The Crash Investigation Sampling System (CISS) is the largest database in the world with over 100,000 cases linking injury outcomes with Delta-Vs, which are obtained from field reconstructions. The effects of occupant age, gender, and belt use on injury and fatality risk have been found substantial.

Low Velocity Impact Studies

Delta-V (Change in Velocity) has traditionally been used to correlate crash severity with the risk of occupant injury (Augenstein et al., 2003; Bahouth et al., 2004; Sunnevång et al., 2009; Kononen et al., 2011). Injury tolerance and risk for various injury types based on real-world crashes with recorded crash data have been established (Gabauer and Gabler, 2006; Gabauer and Gabler, 2008; Kullgren and Krafft, 2008; Ydenius, 2010).

Large-scale retrospective studies have also examined the relationship between minor severity crashes and the risk of occupant whiplash complaints, including studies in the U.S. (Tencer et al., 2001), Germany (Eis et al., 2005; Hell et al., 2002) and Sweden (Krafft et al., 2005). In the minor severity studies it was found that occupant's reporting symptoms for greater than one month corresponded to an average delta-V of 12.4 +/-2.9 mph and a mean acceleration of 5.3 +/-0.6 g. Occupants that sustain soft tissue symptoms for less than one month, on average, corresponded to a delta-V of 6.4 +/-1.3 mph and a mean acceleration of 3.9 +/-0.5 g. The mean acceleration was found to be the best predictor for duration of symptoms.

The following studies describe the impact severity when no injury or only short-term consequences occur: Hell and Langwieder (1998) found that most occupants sustained short-term symptoms in impacts where the change of velocity was 10-15 km/h (6.2-9.3 mph). McConnell et al (1995) performed low-speed rear impacts with seven male volunteers, with velocity changes of up to 10.9 km/h (6.77 mph). None of the volunteers reported whiplash symptoms after a few days. Ono and Kaneoka (1997) and Siegmund et al (1997) found similar results from volunteer tests. In another study with volunteers (Eichberger et al 1996), where the sled impact velocities were 8-11 km/h (4.9-6.8 mph) and the mean deceleration 2.5 g, the volunteers suffered whiplash symptoms for approximately 24 hours.

Typical G-forces (Tolerance)

A hard acceleration or deceleration in a vehicle produces a sustained g-force in the range of 0.6 to 0.8 g. In everyday life, humans experience g-forces stronger than 1 g. The steep ascent of an Airbus A-300 would produce 1.8 g. A sneeze results in about 3 g of acceleration and typical cough produces a momentary force of 3.5 g. A luge athlete may experience forces of 5.2 g. Roller coasters are usually designed not to exceed 3 g but are known to reach 6.3 g. A slap on the back may produce a force of 4 g. Humans typically black out at 6 g, where fighter pilots wear special "g-suits" to withstand forces up to 9 g. A car crash with forces of 10 g can break human bones. A belted occupant in a car crash at 30 g could sustain broken ribs when held by the seat belt. Humans can tolerate localized g-forces in the 100s of g's for a split second, such as a slap to the face. Sustained forces above about 10 g can be deadly or lead to permanent injury.

For context, consider the following g-forces:

- 0.75 g - Automobile braking
- 0.88 g - Flopping into a chair
- 1.48 g - Driving up a curb
- 1.80 g - Steep Climb in Airbus A300
- 3.00 g - Sneeze
- 3.50 g - Cough
- 4.00 g - Slap on the back
- 4.50 g - Titan Roller Coaster (Six Flags Theme Park)
- 5.00 g - NASCAR vehicle on turn
- 10.0 g - Car crash that can break human bones
- 30.0 g - Ribs can be broken by seat belt
- 50.0 g - Death or serious injury

For safety, police demonstrate the beneficial use of a seatbelt. The videos below show the occupant kinematics experienced in a casual 5.0-7.0 mph collision: [Video 1](#), [Video 2](#).

RELATIVE INJURY RISK / 3RD PARTY EXPOSURE



This section provides a lead indicator for relative 3rd party injury risk based on accident reconstruction principles including conservation of momentum and relative vehicle mass (ΔV_2 (Change in velocity) = $\Delta V_1 * M_1 / M_2$). The calculation does not require the vehicles reach a common post-impact velocity. Calculated injury risk applies only to the occupants in another passenger vehicle or light truck as shown and not to any struck pedestrian or cyclist (bicycle or motorcycle).

Assumed 3rd Party Vehicle	3rd Party Vehicle Delta-V / Severity	Statistical Likelihood of Minor Injury Symptoms	Statistical Likelihood of Moderate Injury	Risk of Serious Injury
Compact Car (3993 lb)	25.48 mph	100% (Almost Certain)	100% (Almost Certain)	20% (Possible)
Midsize Car (4972 lb)	20.46 mph	100% (Almost Certain)	100% (Almost Certain)	8% (Unlikely)
Van/SUV/Light Truck (5984 lb)	17.00 mph	100% (Almost Certain)	100% (Almost Certain)	4% (Improbable)
Full Size Truck/SUV (7986 lb)	12.74 mph	65% (Very Likely)	23% (Possible)	2% (Improbable)



POTENTIAL RECALLS / SAFETY / DIAGNOSTIC SCAN DATA

This section lists any potential outstanding recalls, known safety ratings & issues, retrieved DTCs (Diagnostic Trouble Codes), and respective Freeze Frame impact data, if any.

Potential Safety Recalls

Vehicle safety recall information is received from Transport Canada and includes all known recalls associated with this particular vehicle model. Any listed recalls are potential recalls which can be verified as outstanding or not by providing the VIN to a local dealer's service department.

Recal Date: 2017-11-29

Recall Number: 2017586

Affected System: Fuel Supply

Description: On certain vehicles, the thickness of fuel tank walls may not be adequate due to an issue during the manufacturing process. This could result in fuel leaking from the tank, which in the presence of an ignition source, could result in a fire causing property damage and/or personal injury.

Correction: Dealers will replace the fuel tank.

Recal Date: 2018-05-02

Recall Number: 2018227

Affected System: Fuel Supply

Description: On certain vehicles, the thickness of fuel tank walls may not be adequate due to an issue in the manufacturing process. This could result in fuel leaking from the tank, which in the presence of an ignition source, could result in a fire causing property damage and/or personal injury.

Correction: Dealers will replace the fuel tank.

Note: This is an expansion of recall 2017-586.

Recal Date: 2018-06-01

Recall Number: 2018292

Affected System: Brakes

Description: On certain vehicles, a problem with the brake system may cause gas bubbles to form in the brake fluid. This could cause a soft brake pedal feel and a reduction in brake performance, increasing the risk of a crash causing injury and/or damage to property.

Correction: Dealers will bleed the front or rear brakes as necessary.

Note: In the interim, owners are advised to stop driving their vehicle until the defect has been repaired. Affected owners should call Volkswagen's Roadside Assistance number at 1-800-411-6688.

Recal Date: 2018-06-06

Recall Number: 2018296

Affected System: Airbag

Description: On certain vehicles, the passenger frontal airbag may not unfold properly or could tear during deployment, which would increase the risk of injury to the seat occupant.

Correction: Dealers will replace the passenger frontal airbag.

Recal Date: 2018-06-15

Recall Number: 2018330

Affected System: Seats And Restraints

Description: On certain vehicles, if a child restraint with a larger than recommended base is installed in the centre position of the second row bench seat, it may damage both the centre and adjacent outboard seat belt buckles. In the event of a crash, a damaged seat belt buckle can release unexpectedly, increasing the risk of injury.

Correction: Dealers will inspect the centre and left (outboard) second row seat belt buckles, and replace as necessary. Additionally Volkswagen will provide an owner's manual supplement addressing child safety and child restraints.

Recal Date: 2018-08-15

Recall Number: 2018429

Affected System: Brakes

Description: On certain vehicles, the brake caliper bracket bolts may not be properly tightened and could loosen, allowing the caliper to move. This could cause increased stopping distances, result in wheel damage and/or cause a loss of vehicle control, increasing the risk of a crash causing injury and/or property damage.

Correction: Dealers will inspect the vehicles and, if a loose bolt is found, the bolt will be replaced and tightened to the correct specification.

Note: On Atlas models, only the front brake caliper bracket bolts are affected, and on Passat models, only the rear brake caliper bracket bolts are affected.

Recal Date: 2018-08-16

Recall Number: 2018431

Affected System: Airbag

Description: On certain vehicles, a drain tube for the air conditioner may be twisted and could drain water inside the passenger compartment onto the airbag control module. This could cause the airbag control module to malfunction, potentially causing a sudden airbag deployment without a crash, increasing the risk of injury to occupants and potentially leading to a crash.

Correction: Dealers will inspect the HVAC drain tube and, if found twisted, the hose and airbag control module will be replaced.

Recal Date: 2018-11-21

Recall Number: 2018644

Affected System: Lights And Instruments

Description: Certain vehicles do not conform to Canada Motor Vehicle Safety Standard (CMVSS) 114 - Theft Protection and Rollaway Prevention. Due to incorrect programming, the vehicle may fail to provide an audible warning when a driver opens their door after turning off the ignition, and the key is left in the ignition switch. This could increase the risk of vehicle theft.

Correction: Dealers will reprogram the instrument cluster.

Recal Date: 2018-12-19

Recall Number: 2018717

Affected System: Suspension

Description: On certain vehicles, the rear suspension coil springs may not have been properly manufactured and could break over time. This could result in damage to a rear tire, resulting in rapid air loss and/or tire failure, which could affect vehicle control. Additionally, a broken coil spring could create a road hazard for other motorists. Both of these conditions may increase the risk of a crash causing injury and/or property damage.

Correction: Dealers will replace both of the rear axle coil springs. If a broken coil spring is found, the rear tires should be inspected for damage and replaced as required.

Recal Date: 2019-05-23

Recall Number: 2019242

Affected System: Lights And Instruments

Description: Issue: Certain vehicles were built with headlights that may allow horizontal adjustment. This is not allowed under Canadian regulations. Safety Risk: Headlights that are not properly adjusted could cause reduced visibility or glare for oncoming drivers, and could increase the risk of a crash. Corrective Actions: The company will notify owners by mail and instruct them to take their vehicle to a dealer to inspect the headlights. A blocking cap will be installed on the horizontal adjusters as necessary.

IIHS Crashworthiness / Safety Ratings

Insurance Institute for Highway Safety (IIHS) in the US publishes vehicle safety ratings based on actual crash tests. In each category, the possible ratings are: Good, Acceptable, Marginal, and Poor. Further vehicle research on safety ratings and features, reviews, tips and more can be found here: www.iihs.org/iihs/ratings.

Frontal Small Overlap



Good

Side



Good

Frontal Moderate Overlap



Good

Rollover



Good

Diagnostic Trouble Codes (DTCs)

Diagnostic Trouble Codes (DTCs) are set by a control module when it detects faults in its system through self-diagnostics. The following section lists DTCs retrieved from various control modules of the vehicle.



Engine Control Module (ECM)



No Issues Found



Transmission Control Module (TCM)



No Issues Found



Enhanced DTCs (Beta)



No Issues Found

Freeze Frame Data

Freeze Frame Data refers to a snapshot taken by a control module when it detects a fault in its system. The snapshot consists of measured values from various sensors and can be useful in determining the root cause of the fault. Note that not all vehicles support the items listed below and thus some values may be inaccurate.

No freeze frame data for DTCs (Diagnostic Trouble Codes) were retrieved from the ECM (Engine Control Module) or TCM (Transmission Control Module).



MARKET VALUE

This section provides an estimated market value for 2018 Volkswagen Atlas V6 SEL. Estimate based on 74 similar vehicles sold between 2019-05-20 and 2019-11-09 within the range of USD \$30,718.81 - USD \$37,678.81.

Assumed Mileage	Market Value	Time Period	Value Certainty
20,138 miles	USD \$34,198.81	6 Months	99%



EXPOSURE / AUTO PHYSICAL DAMAGES

This section provides predictive loss and repair estimate/cost information. AI inputs: Trusted Repair Estimates, Max Delta-V, Impact Angle, Vehicle Model/Specs (weight, stiffness), Airbag Deployment status, DTCs, Damage Area/Level/Photographs (if any).

Repair Estimate (AI Prediction)	Salvage Value (80% of Market Value)	Prediction: Total Loss / Repairable	Value Certainty
USD \$29,267.36	USD \$27,359.05	Likely Total Loss	94%

How To Interpret This Information

The vehicle is predicted to be a Total Loss. The algorithmic repair estimate exceeds the estimated salvage (as damaged) value of the vehicle. The algorithmic repair estimate for this prediction considered "total repair estimates" from similar vehicles, with similar recorded impact configuration and severity, also requiring airbag replacement. Photographs of the damaged vehicle were not used to generate the prediction.

The repair estimate does not replace a physical damage appraisal. Collision Sciences is working with strategic partners to develop an advanced repair cost prediction algorithm using a combination of photo-based estimating, diagnostically detected impact configuration and severity, and diagnostic issues requiring repair. The repair estimate may currently be used to predict a total loss or repairable condition, identify potentially exaggerated repair estimates and provides a contextual frame of reference for claim severity.



VEHICLE SPECIFICATIONS

This section lists basic vehicle details encoded by the VIN.

VIN	1V2MR2CA8JC*****	Year	2018
Make	Volkswagen	Model	Atlas
Trim	SEL	Engine	3.6-L V-6 DOHC 24V
Made In	United States	Style	AWD V-6

Steering Type	Rack & Pinion	Anti-Lock Brakes	4-Wheel ABS
Fuel Type	Regular Unleaded	Fuel Capacity	18.6 gallons
Overall Length	198.30 inches	Overall Width	78.30 inches
Overall Height	70.00 inches	Standard Seating	7
Curb Weight	N/A	Gross Weight	N/A
Highway Mileage	25 miles/gallon	City Mileage	18 miles/gallon
Invoice Price	\$39,453	MSRP	\$42,690

Event Data Disclaimer

It is important to note is that if a vehicle was spinning or rolling surrounding the collision, then the report's speed measurements would not accurately reflect the actual speed of the vehicle during/after it lost control; the speed measurement is typically based on the wheel speed sensor. Signs of this type of anomaly would be rapid changes in speed between the brief timing intervals. The reported speed may be an average of the four wheels; thus could also be skewed by spinning wheels. In combination with scene evidence, an expert could assess vehicle speed by analyzing the data via accident reconstruction and engineering analysis.

Users of the Collision Sciences service and reviewers of the reports and exported data shall ensure that data and information supplied is applicable to the vehicle, vehicle's system(s) and the vehicle ECU. Collision Sciences Inc. and all its directors, officers, employees and members shall not be liable for damages arising out of or related to incorrect, incomplete or misinterpreted software and/or data. Collision Sciences Inc. expressly excludes all liability for incidental, consequential, special or punitive damages arising from or related to the online services, evidence logistics, EDR data, EDR software or use thereof.

Injury Risk / Biomechanical Assessment Disclaimer

The estimated injury risks are calculated based on the recorded crash pulse, relative energy changes, known vehicle characteristics in standardized and real-world crashes, published databases, and recognized studies. The provided information can be used as a guide in settlement decisions but cannot be used to definitively prove the existence or non-presence of an injury. In cases with a very low risk of whiplash or other injury, claims can be identified for further investigation. Conversely, for cases with a high risk of whiplash or other injury, the claim can be expedited, since early treatment is often effective in reducing the long term prognosis.

Delta-V (Change in Velocity) has traditionally been used to correlate crash severity with risk of occupant injury (Augenstein et al., 2003; Bahouth et al., 2004; Sunnevång et al., 2009; Kononen et al., 2011). Injury tolerance and risk for various injury types based on real-world crashes with recorded crash data have been established (Gabauer and Gabler, 2006; Gabauer and Gabler, 2008; Kullgren and Krafft, 2008; Ydenius, 2010). Large-scale retrospective studies have also examined the relationship between minor severity crashes and the risk of occupant whiplash complaints, including studies in the U.S. (Tencer et al., 2001), Germany (Eis et al., 2005; Hell et al., 2002) and Sweden (Krafft et al., 2005). Injury risk studies consider the following risk factors: Crash configuration (front, side, rear, rollover), Delta-V = Change in velocity, Vehicle mass (size, weight), Vehicle stiffness, Vehicle geometry and engagement, Restraint system and its adjustment, Occupant seated position, Occupant profile (age, gender, previous injury), Number of WAD symptoms, and Psychological Distress. Structural damage and known whiplash thresholds overlap, indicating structural damage and repair cost are a poor predictor of minor injury threshold. Damage can also vary widely by vehicle model and impact configuration.