Collision Sciences *CLAIMS REPORT*

EXPOSURE, RISK & DECISION SUPPORT

Vehicle: 2015 Mercedes-Benz CLS-Class

VIN: WDDLJ7GB7FA******

Report ID: #4

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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 CAD $77,212.86 - 95,384.26. The vehicle is predicted to be **repairable**.
Occupant Injury Risk	1st Party: Risk of Short-term Whiplash (75%). Risk of Long-term Whiplash (26%) 3rd Party (if any; for average car size): Risk of Short-term Whiplash (35%)
Pre-Crash Vehicle Speed	Within the 5.0 seconds of recorded pre-impact data for the most recent crash, the recorded speed range on this vehicle was **4 km/h** to **84 km/h**. The vehicle speed was **17 km/h** at the moment of impact.
Flags / Loss Indicators	Low-Medium Risk (1 Alert): Panic Stop
Recommended Action / Notes	Expedite Settlement / Treatment. Compare pre-crash data to 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 2019-02-07.

Recency / Sequence	Crash Severity	Type / Damage Area	Sudden Speed Change	Force of Impact (g-Force)	Direction of Force	Engine Starts Since Event
Most Recent	Moderate Severity	Rear-end Collision	22.00 km/h (Increasing)	8.49 g	165 degrees (5 o'Clock)	18

How To Interpret This Information

The crash severity (acceleration / g-force) measured by the airbag module accelerometer reached a maximum value of 22.00 km/h within 100 milliseconds, which is considered "moderately severe" in terms of severity. Damage occurred on the left side of the vehicle. The vehicle's ignition was turned on 18 times between the incident and crash data download; this number can be used as an indication of event recency. For example, if the vehicle were used an average of 2 times per day, the recorded collision event would have occurred approximately 9 days prior to the the date of retrieval on 2019-02-07.

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.

PRE-CRASH DATA / Most Recent

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

Time Before Impact (sec)	Vehicle Speed (km/h)	Engine Speed (RPM)	Accelerator Pedal (%)	Brake Switch Status	Deceleration (g)
-5.0	84	N/A	0.0	On	N/A
-4.5	28	N/A	0.0	On	-3.2 (Emergency)
-4.0	4	N/A	0.0	Off	-1.4 (Emergency)
-3.5	41	N/A	0.0	On	N/A
-3.0	68	N/A	0.0	On	N/A
-2.5	76	N/A	0.0	Off	N/A
-2.0	63	N/A	0.0	On	-0.7 (Hard)
-1.5	52	N/A	0.0	On	-0.6 (Hard)
-1.0	38	N/A	0.0	On	-0.8 (Emergency)
-0.5	29	N/A	0.0	On	-0.5 (Moderate)
0.0	17	N/A	0.0	On	-0.7 (Hard)

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	⊖ Unavailable	⊗ Unoccupied
Safety Belt Status	❌ **Unbuckled**	⊗ Unbuckled
Frontal Airbag	✅ Not Deployed	✅ Not Deployed
Side Seat Airbag	✅ Not Deployed	✅ Not Deployed

Side Curtain Airbag	✓ Not Deployed	✓ Not Deployed	
Knee Airbag	⊖ Unavailable	⊖ 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.	N/A
Swoop & Squat	Driver steers to make a lane change and quickly applies brakes.	N/A
Panic Stop	Rear-end collision where driver brakes just prior to impact.	**Yes**
Past Posting	Accident recording may not be recent. Event data recorded 10 or more engine starts prior to data retrieval.	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 event data was recorded 25 or more engine starts prior to the count at crash data retrieval. Possible issues include: Unrelated Damage to Incident, staged Hit & Run, Phantom Accident, or Paper Accident.	N/A
Unbuckled Occupant	Driver or front passenger not wearing seat belt at the time of crash data recording.	N/A
Emissions Test Failure	Vehicle failed emissions inspection due to insufficient sensor data or diagnostic trouble codes (DTCs).	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.	84	N/A
Reported Impact Speed	Compares the reported impact speed with the pre-crash data and flags a variance of 10 km/h.	17	N/A
Reported Pre-Impact Maneuver Variance	Compares the reported pre-impact motion with pre-crash data and impact angle for consistency.	N/A	N/A
Reported Appraisal Variance	Compares a provided appraisal estimate with the AI estimate and flags an appraisal variance of +15%.	38181	N/A
Reported Airbag Deployment Variance	Determines whether airbags were manually removed to exaggerate damage by comparing recorded airbag deployment status.	Not 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.	WDDLJ7GB7FA******	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 for WAD (Whiplash Associated Disorder) and MAIS2+ (Maximum Abbreviated Injury Scale - moderate/serious) injury for frontal/side/rear collisions using a regression model of crash severity versus reported injuries from real-world crash studies using event data recorders.

Occupant Detail	Risk of Initial WAD Symptoms	Risk of Long-term WAD Symptoms	Risk of Serious Injury
Rear-ended Occupants	75% (Very Likely)	26% (Possible)	2% (Improbable)

How To Interpret This Information

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.

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 (Delta V2 (Change in velocity) = Delta V1 * M1 / M2). The calculation does not require the vehicles reach a common post-impact velocity.

Assumed 3rd Party Vehicle	3rd Party Vehicle Delta-V / Severity	Risk of Initial WAD Symptoms	Risk of Long-term WAD Symptoms	Risk of Serious Injury	3rd Party Vehicle Speed
Compact Car (1815 kg)	23.56 km/h	35% (Possible)	18% (Unlikely)	2% (Improbable)	N/A
Midsize Car (2260 kg)	18.92 km/h	28% (Possible)	13% (Unlikely)	1% (Improbable)	N/A
Van/SUV/Light Truck (2720 kg)	15.72 km/h	25% (Possible)	10% (Unlikely)	1% (Improbable)	N/A
Full Size Truck/SUV (3630 kg)	11.78 km/h	21% (Possible)	5% (Improbable)	0% (Improbable)	N/A

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.

No outstanding recalls were found associated with this VIN.

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.

The overall IIHS Crashworthiness / Safety Rating for this vehicle is "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

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 2015 Mercedes-Benz CLS-Class (CLS63 AMG 4MATIC S-Model). Estimate based on 16 similar vehicles sold between 2018-08-19 and 2018-12-16 within the range of CAD $77,212.86 - CAD $95,384.26.

Assumed Milage	Market Value	Time Period	Estimate Certainty
47,962 km	CAD $86,298.56	6 Months	90%

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	Estimate Certainty
CAD $38,181.51	CAD $69,038.85	Likely Repairable	86%

How To Interpret This Information

The vehicle is predicted to be repairable. The algorithmic repair estimate is less than 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. 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	WDDLJ7GB7FA******	Year	2015
Make	Mercedes-Benz	Model	CLS-Class
Trim	CLS63 AMG 4MATIC	Engine	5.5-L V-8 DOHC 32V
Made In	Germany	Style	N/A
Steering Type	Rack & Pinion	Anti-Brake System	4-Wheel ABS
Fuel Type	Premium Unleaded (Required)	Fuel Capacity	80 L
Overall Length	4996 mm	Overall Width	1882 mm
Overall Height	1407 mm	Standard Seating	4

Curb Weight	1944 kg	Gross Weight	N/A
Highway Mileage	9 km/L	City Mileage	7 km/L
Invoice Price	CAD $128,820	MSRP	CAD $138,515

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.