

Increasing underwriting
profitability in automobile
insurance with new
data elements



CGI

For over 25 years CGI has been supporting the automobile insurance industry with required information for underwriting decisions. In an effort to help our insurance clients optimize their results and differentiate themselves from competitors, CGI continues to invest in three strategic areas: Technology, People, and Data. These efforts have resulted in two main brand-new offerings for our clients:

Data products

The launch in 2017 of the Advanced Analytics team for insurance has allowed CGI to focus on data product development, business intelligence and forecasting areas, specifically for this industry. Several new data products have been developed by this team and validated by insurers that have been shown to bring increased profitability in the automobile insurance underwriting process.

Professional services

The establishment of CGI's Actuarial Services team in 2021 has been another strategic investment for our clients. This team is comprised of credentialed actuaries, senior data scientists, engineers, and led by an experienced actuary with over 25 years of Canadian property and casualty practice. The range of actuarial consulting expertise covers automobile, property and liability.

The CGI Actuarial Analytics team has recently developed several data elements for both fraud and loss mitigation purposes that help increase insurer automobile insurance underwriting profitability.

New CGI data elements for increasing automobile underwriting profitability



Actuarial services

Risk management /
Rating optimization /
Increase profitability



Fraud scores

Exported VIN Predictor:
Identifies VINS likely to
be exported & filing a
claim upon obtaining auto
insurance

Opportunist Fraud Score:
Identifies driver likely to
engage in opportunistic
fraud activities upon signing



Loss Ratio Score

Booster of loss
prediction

1. Loss Ratio Score:

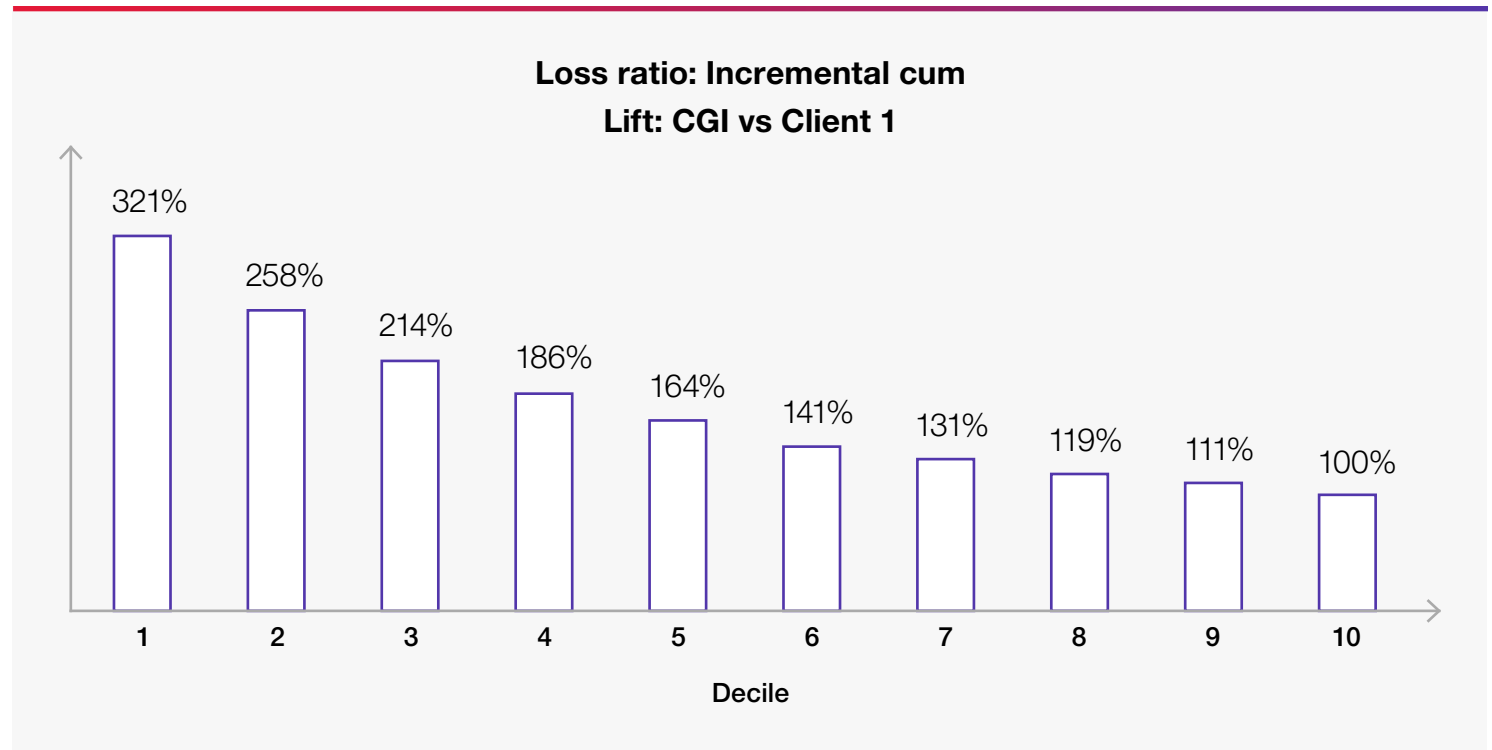
Predicts probability of claim amount filing over policy term

Overview

The vehicle Loss Ratio Score assigns each driver a probability of having high loss ratio over a 12-month period; loss ratio is defined as pure loss over premium.

Each driver will have a score (probability). The higher the score the lower the chance to have a high loss ratio.

The vehicle Loss Ratio Score can also be further customized to reflect client's specific predictive needs.



Graph above shows, by decile, the cumulative incremental lift between the CGI data element and the existing client's Loss Ratio Score.

For the 1st decile, highest risk applicants, the CGI data element was able to identify those with higher risk, more than 3 times, better than the existing client's Loss Ratio Score.

1. Loss Ratio Score:

Client validation: Confirmed CGI results

Use case	Predictor	Offsets	Validation tests Modeling holdout		Conclusion
			AIC	GINI	Beta coeff
1. Risk Sharing Pool (RSP):					
a. All losses:	CGI LOSS SCORE	LC 2.1	↑	↑	Significant
b. Collection loss	CGI LOSS SCORE	LC 2.1	↓	↑	Significant
2. Internal loss score					
a. All losses:	CGI LOSS SCORE	LC 3.0	↑	↑	Significant
b. Collection loss	CGI LOSS SCORE	IC 3.0	↓	↑	Significant
3. Underwriting action					
a. All losses:	CGI LOSS SCORE	On-level Premium* UWS	↑	↑	Significant
b. Collection loss	CGI LOSS SCORE	On-level Premium* UWS	↑	↑	Significant

Benefits

- Innovation: New data element to enhance underwriting profitability.
- Quantification: Automobile insurance underwriting loss mitigation tool. An insurer using CGI's Loss Ratio Score can save approximately \$3.00 per application on average.
- Complement to client score: It can also be used to complement existing client's scores, as dual-scoring matrices, or as a new data element in in-house built scores.

Use cases

Automobile insurance underwriting loss mitigation tool.

Proof of concept

Retroactive analysis (free of charge): using historical data to test model performance

60-day pilot testing (free of charge): small scale preliminary test in production to evaluate model performance

Availability: Ready

2. Exported VIN Predictor:

Predicts likelihood that VIN gets exported out of Canada with a claim in next 12 months

Overview

Grey market exporting is the practice of purchasing a good in one region from an authorized dealer, and then reselling it as an unauthorized reseller in another region, for a profit.

Due to Canada's geographic and economic situation, it is one of the world's largest sources for grey market vehicles.

Nearly every major automotive OEM is affected by the issue of grey market exporting. The scale of the issue for each brand is different based on the demand for those vehicles in the importing countries.

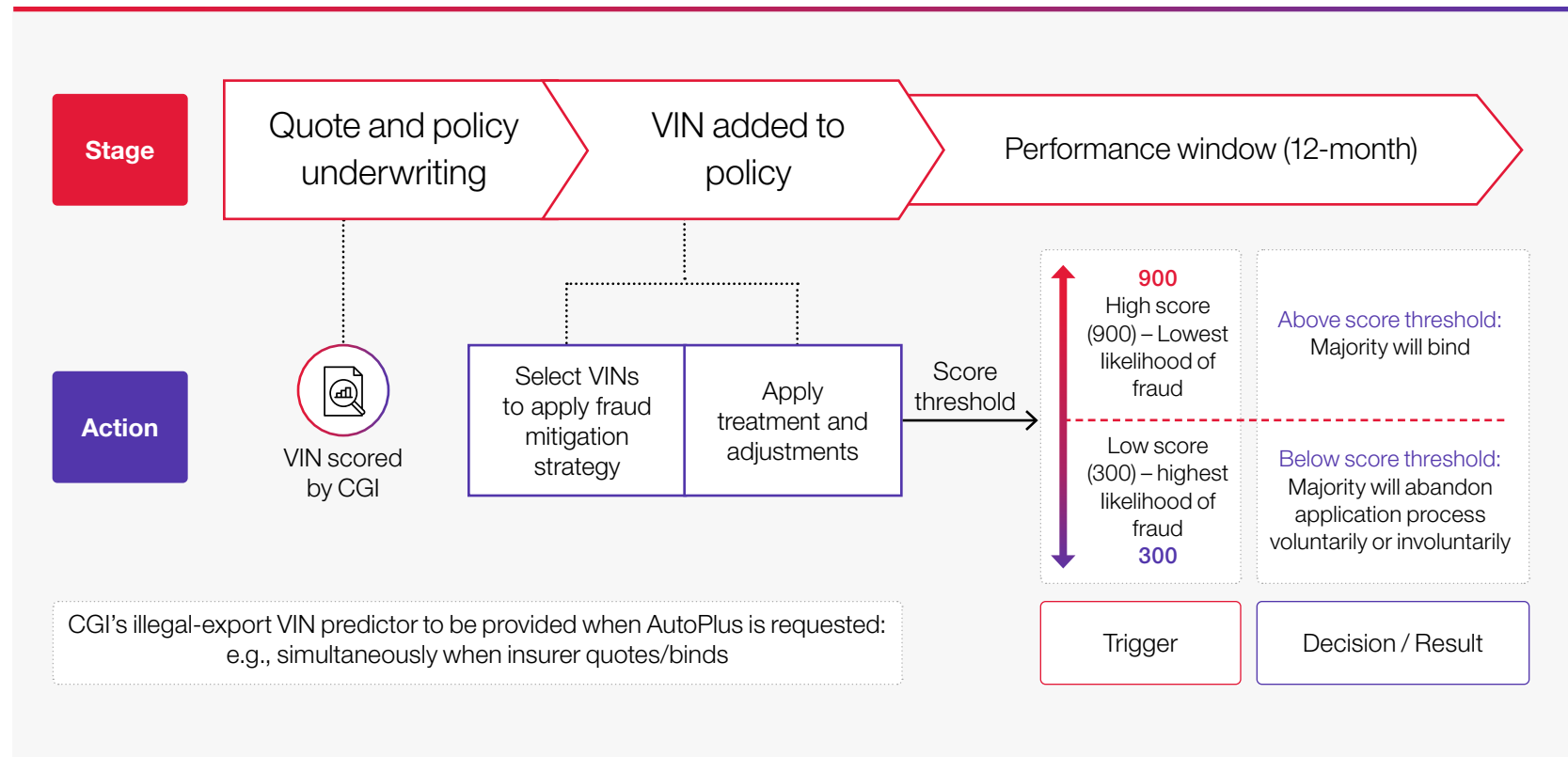
In 2020, there were 17K vehicles (\$1B in assets) that were grey market exported from Canada.

Exported VIN Predictor enables insurers mitigate fraud risk for new business and renewal underwriting.



2. Exported VIN Predictor:

Exported VIN predictor uses standardized measure of fraud risk; insurers can benchmark overtime and through quarterly portfolio scoring exercises. Insurers can identify and implement dynamic logic that identifies drivers with high fraudulent likelihood, and the Exported VIN Predictor enables combination of driver and VIN factors.



With the Exported VIN Predictor, insurers can apply different treatments to customers such as:

- Increased deductibles/premiums
- Increased level of documentation
- Specialized queues, management take-over
- Limiting loss payment with endorsements, physical inspection of vehicle, physical inspection of documents, usage of telematic device for location of garaging and driving

2. Exported VIN Predictor:

Benefits

- Innovative, dynamic, machine-learning tool to combat underwriting fraud
- Client savings between \$50K-\$1M / year depending on insurer's size
- Catches/prevents constantly changing fraud schemes more effectively than other technologies

Use cases

- New business: run score on new business applications through API
- Renewal and/or one-time clean-up: run score on renewal business accounts through API or batch processing

Proof of concept

- Retroactive analysis (free of charge): using historical data to test model performance
- 60-day pilot testing (free of charge): small scale preliminary test in production to evaluate model performance

Availability: Ready



3. Opportunistic Fraud Score:

Identifies applicants likely to engage in opportunistic fraud activities upon signing

Overview

Built specifically for the underwriting stage, the CGI Opportunistic Fraud Score is a newly developed fraud mitigation tool introduced in 2021. It is built based on the power of an advanced machine learning algorithm that identifies suspected fraud types of various kinds. It must be rebuilt at least on an annual basis to account for newly developed fraud schemes and to incorporate custom client requirements.



3. Opportunistic Fraud Score:

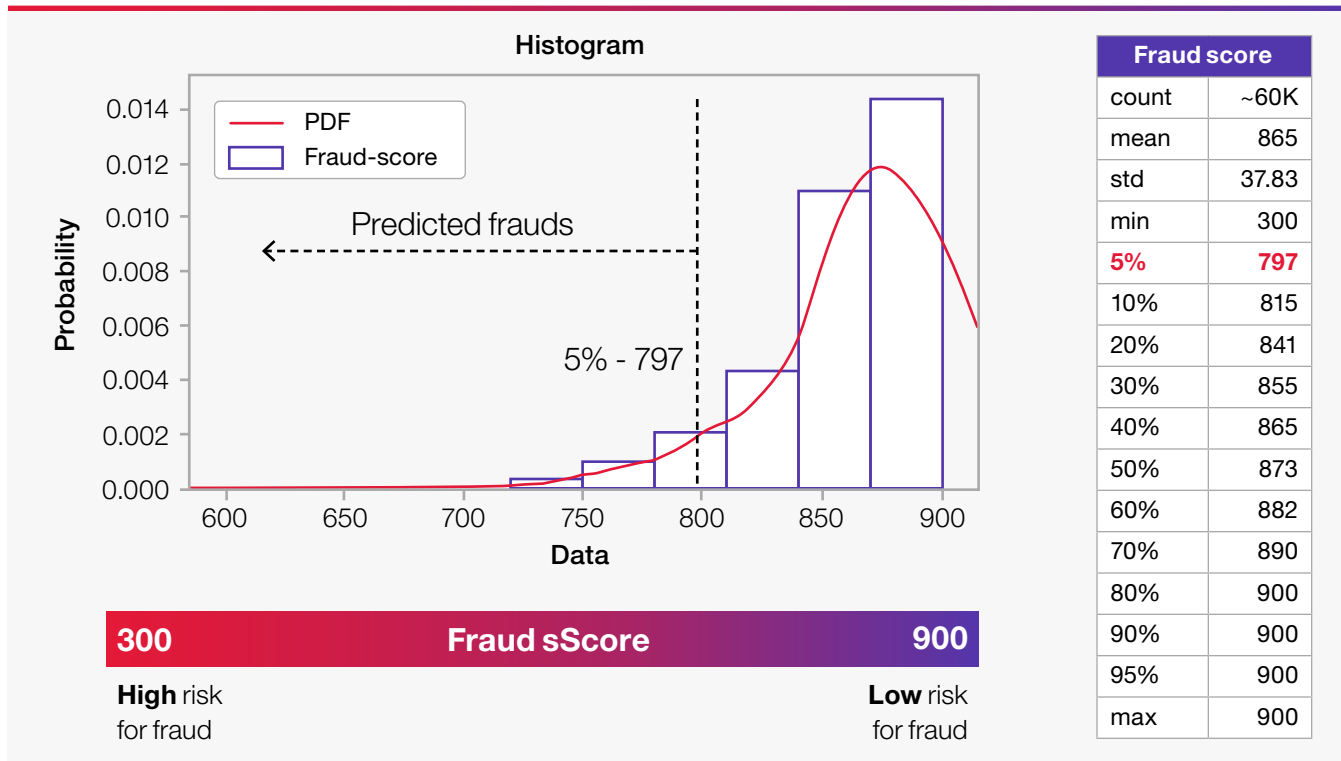
The score assigns a probability of a driver being highly suspected of fraud in the next 12 months. Ranging from 300 to 900, the score can be used as part of a fraud trigger strategy to identify drivers suspected to commit various fraud types. For each driver, a higher score indicates a lower propensity of being high risk to fraud in the next 12 months.

Based on the score severity actions including manager take over, tighter process controls and additional documentation requirements can be implemented to introduce preventative process controls to reduce fraud.

Suspected fraud scorecard (Example)

Suspected fraud type	Frequency	Severity	Fraud risk
High loss amount & claim frequency	0.55%	High	132.44
Claim during dual insurance	0.15%	Medium-High	18.19
Declined claims	1.05%	Medium	3.99

This tool is available for online, via an API, and batch processes via SFTP, and so it can be used for both new business and renewal underwriting.



3. Opportunistic Fraud Score:

Benefits

- Machine-learning tool to combat underwriting fraud
- Customizable to client needs completing existing fraud mitigation tools
- Savings between \$20K to \$1M, depending on insurer's portfolio size
- State of the art Machine Learning scoring

Use cases

- Automobile underwriting fraud mitigation tool

Proof of concept

- Retroactive analysis (free of charge): using historical data to test model performance
- 60-day pilot testing (free of charge): small scale preliminary test in production to evaluate model performance

Availability: Ready



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Founded in 1976, CGI is among the largest IT and business consulting services firms in the world.

We are insights-driven and outcomes-based to help accelerate returns on your investments. Across hundreds of locations worldwide, we provide comprehensive, scalable and sustainable IT and business consulting services that are informed globally and delivered locally.

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