AI Regulation in Finance

While firm regulations have not yet been finalized, financial regulators worldwide have provided guidelines and consultations on the responsible use of Artificial Intelligence/Machine Learning (AI/ML). What have they been saying? What common underlying concerns and regulatory themes are emerging? What can the industry expect in the coming years, and how can it start responding now?

Timeline of key regulator activity

Nov 2018	Nov 2019	Jun 2020	Aug 2020	Sep 2020	Mar 2021	Apr 2021	Jun 2021	Jul 2021	Nov/ Dec 2021	Feb 2022
Monetary Authority of Singapore – Fairness, Ethics, Accountability & Transparency	**Hong Kong Monetary Authority** – High Level Principles on AI	**Banque De France** – Governance of AI in Finance	**National Association of Insurance Commissioners** - AI guiding principles	**Office of the Supdt. of FIs** – Tech. Risk Consultation including AI	**CFPB, OCC, Fed Reserve, FDIC, NCUS** - Use of AI/ML	**European Commission** – Draft AI law (Credit = high risk AI)	**European Insurance & Occupational Pensions Authority** - AI governance	**Bundesbank and BaFin** – ML in Risk Models	**EBA** – ML in IRB models survey **ECB** - Response to Draft EU AI law	**Bank of England/ FCA** – AI Public Private Forum report

Common regulatory themes

Explainability, Interpretability

Justifiability, Conceptual Soundness

Fairness, Unjust Bias

Customer Transparency and Recourse

Robustness, Reliability, Stability

Accountability

TruEra tracks and helps you prepare for emerging regulatory themes

truera | DATASHEET

SINGAPORE FINTECH FESTIVAL
8-12 NOV 2021
Codifying responsible AI
Winner

Explainability and Interpretability Activities with Regulators, Banks, and Government Agencies

FDIC · cfpb · Office of the Comptroller of the Currency

- Response to multi-agency consultation and supervision on AI in banking
- Multiple engagements on Explainability
- Represented at AI Public Private Expert Forum (BoE)
- Joint working paper on Truera's explainability technique (BoE)

BANK OF ENGLAND

- Co-leader of Veritas Industry consortium on AI governance (MAS)

MAS
Monetary Authority of Singapore

In-depth Insights on AI for Financial Services

truera | WHITEPAPER

Capture the AI Opportunity in Banking - Re-Imagining Model Risk Management

truera | WHITEPAPER

Responsible AI with External Data and AI Quality Management

YouTube

Fairness in credit scoring/profiling with external data

truera · Demyst
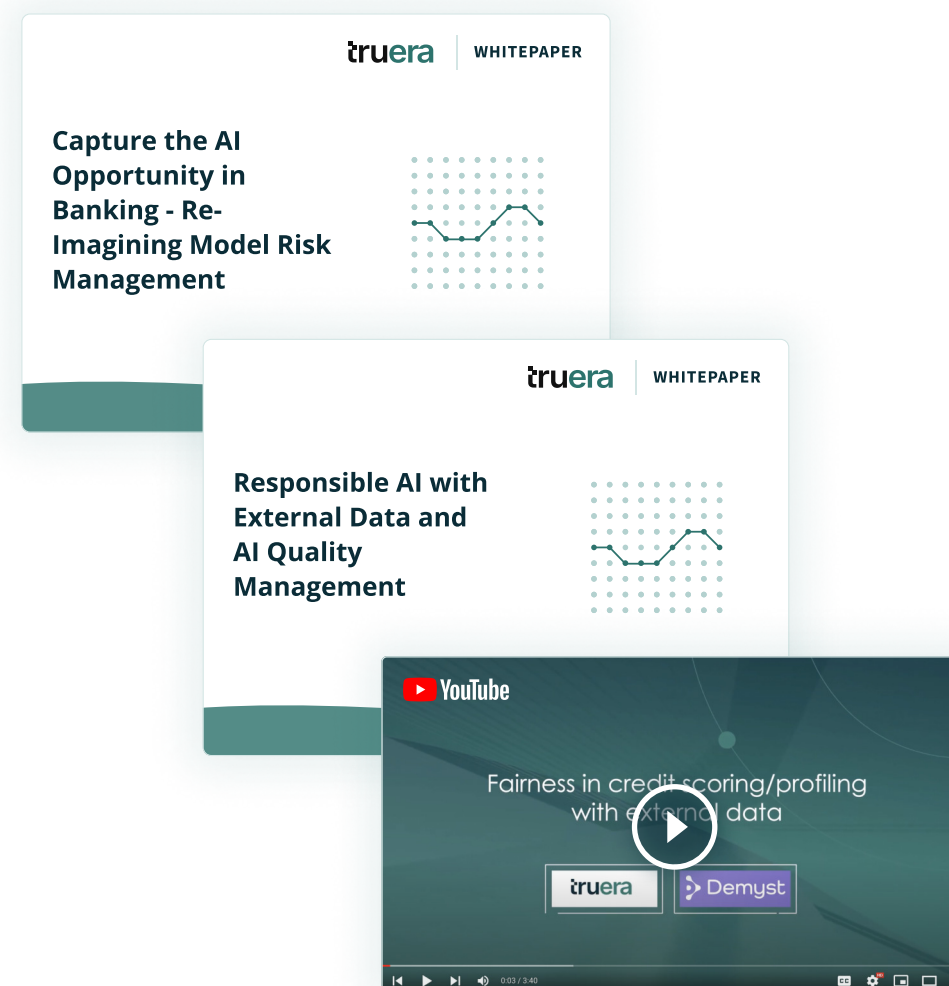
Client co-development

- Global Systemically Important Bank - Standard Chartered Bank - uses TruEra for Fairness and Transparency assessments
- Banking clients across UK, EU, and the US
- Insurance clients across Europe and the Americas
- Co-development in areas such as: Fair lending assessment (US); customer-facing transparency; off-the-shelf fairness reporting for auditability; and implementing model development best practices via TruEra.

Industry associations and publications

FINANCIAL TIMES · The Banker *Global Financial Intelligence Since 1926* · AMERICAN BANKER · InsuranceERM *The online resource for enterprise risk management* · insuranceday *Business intelligence* · IIF INSTITUTE OF INTERNATIONAL FINANCE
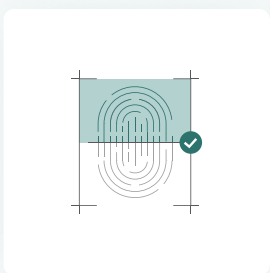
TruEra's product support for regulatory themes

Explainability and Interpretability

- More accurate, reliable explanations
- Faster explanations
- Agnostic of the platform used to build the model (including third party models)
- Consistency/standardisation within and across data science teams
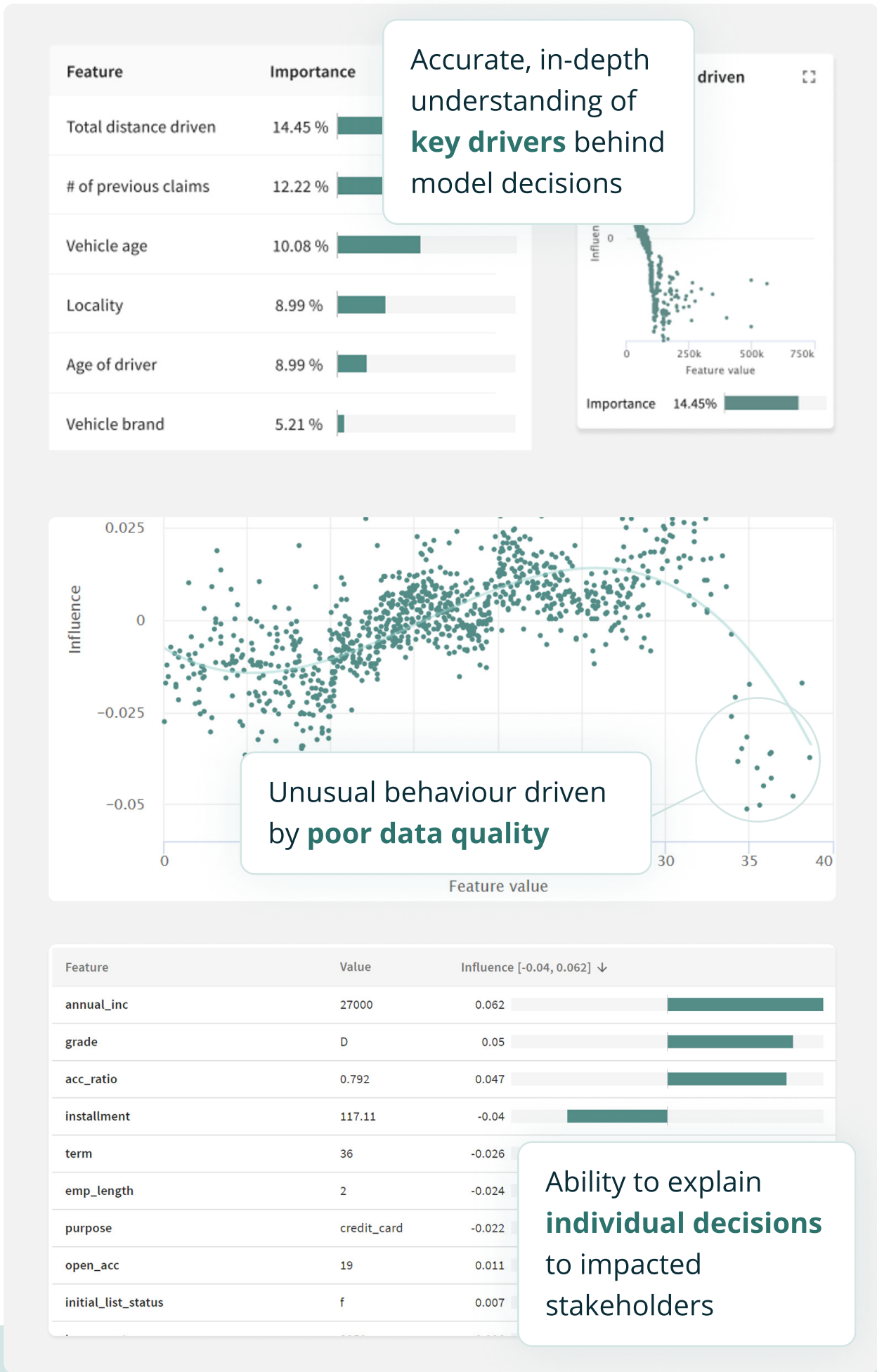- Different views tailored to different stakeholders

Justifiability and Conceptual Soundness

- Subject matter experts can use TruEra to analyze the relationship between model behaviour and input features
- Automated flagging of unusual feature influences that may require human investigation

Customer-Facing Transparency, Redress

- Customer or transaction-specific explanations
- Can be adapted for 'layman-friendly' explanations of decisions to end-customers
- Counterfactual explanations

Feature	Importance	
Total distance driven	14.45 %	
# of previous claims	12.22 %	
Vehicle age	10.08 %	
Locality	8.99 %	
Age of driver	8.99 %	
Vehicle brand	5.21 %	

Accurate, in-depth understanding of **key drivers** behind model decisions

Importance 14.45%

Unusual behaviour driven by **poor data quality**

Feature	Value	Influence [-0.04, 0.062] ↓	
annual_inc	27000	0.062	
grade	D	0.05	
acc_ratio	0.792	0.047	
installment	117.11	-0.04	
term	36	-0.026	
emp_length	2	-0.024	
purpose	credit_card	-0.022	
open_acc	19	0.011	
initial_list_status	f	0.007	

Ability to explain **individual decisions** to impacted stakeholders

# TruEra's product support for regulatory themes (continued)

Fairness, Unjust Bias

- Ability to define different ways in which bias or group fairness is measured
- Ability to pinpoint root causes of bias
- Ability to assess accuracy-fairness trade-offs (after interventions) in a holistic manner

Robustness, Reliability, Stability

- Ability to identify instances of overfitting
- Ability to identify differences in model output between different data sets (training, test, OOT), and also over time in live models
- Ability to pinpoint root cause of stability/overfitting
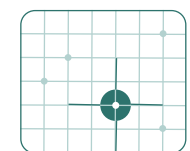
Accountability

- Ability to compare different models and demonstrate that the best option was picked
- Ability to justify decisions with root cause analysis

Bias driven by **unrepresentative training data**

Model drift driven by **change in specific feature values**

Comparison between **incumbent linear regression model vs. complex ML model**