

# The Protector — Executive Brief

## Fraud Model | FourTwenty Analytics

### Purpose

The Protector Model quantifies the balance between trust and risk in financial transactions. Using anonymized Kaggle data, it identifies behavioral anomalies that suggest potential fraud, turning statistical signal into decision clarity. **Key Insight**

Fraud detection is a trade-off: high protection slows user experience, while low protection invites loss. This model visualizes that tension through precision, recall, and threshold simulations—showing stakeholders how to tune protection dynamically. **Highlights**

- Fraud accounts for only 0.17% of transactions, yet clusters around high-velocity or high-amount events.
- Baseline logistic regression captures ~87% of fraud (recall) at ~6% precision.
- Raising the detection threshold improves precision at the cost of recall—an adjustable balance visualized in Power BI.
- Outputs include model artifacts (joblib), scored data (Parquet/CSV), KPI signals (JSON), and an interactive dashboard for exploration.

### Artifacts

- fraud.py — data pipeline and model training
- consumer\_protection.pbix — Power BI dashboard
- signals/baseline\_metrics.json — live KPI metrics
- model.html — UI for KPI visualization
- assets/executive\_brief.pdf — this document

### Outcome

The project demonstrates a complete, reproducible workflow: from raw data to visual insight. It shows that data science isn't just about accuracy—it's about explaining where trust falters and how to act before it breaks.