

Situation

The Federal Home Loan Mortgage Corporation (“Freddie Mac”) provides secondary market functions for US mortgages and ranks as a Fortune 50 enterprise, holding nearly \$2 trillion USD in mortgage assets.

Freddie acquires \$30 billion USD each month from thousands of sources across the US, so efficiency is vital. Even more important is assuring safety and trust within the system, as it is foundational for market function. With this in mind, Freddie sought efficient, accurate and reliable origination fraud solutions.

Challenge

- Freddie buys loans. They can’t control application quality from brokers, banks, FIs.
- Freddie buys over 100,000 loans/month. Fraud control must be fast and efficient.
- Inclusion goals are critical. Fraud controls can’t suppress inclusion objectives.

Solution

1. Verde used a big data approach. Pulling data from many sources allowed for better checking of internal consistency.
2. Big data was also used to validate categories across all loan applications. (ex. How does the income of people doing the same job compare within the same market?)
3. Bank, agent, broker and FI data was incorporated to help detect inside fraud.
4. Metadata was used to detect fraudulent patterns in the way applications are completed.
5. Geospatial data was used to more accurately detect valuation fraud and organized crime patterns.
6. Static, reviewable and state-space models were used in conjunction with machine learning models to improve accuracy, boost reliability and aid in the detection of rapidly emerging fraud patterns.
7. Fairness testing models were used to assure that fraud screens did not adversely reduce approvals or opportunity for borrowers in inclusion segments.

Results

- Fraud was reduced to 6 bp -- about 1 in every 2000 approved loans.
- Manual fraud review was reduced to 1 in every 200 applications.
- Processing was instant, adding nearly zero time or overhead to origination.
- Inclusion objectives were attained by eliminating manual, subjective declines.