ASPEN TECH
POLICY HUB

PROJECT

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Fair Algorithmic Housing Loans

Supercharging fair lending audits for algorithmically-granted mortgages

EXECUTIVE SUMMARY

Mortgage lenders increasingly use machine learning (ML) algorithms to make loan approval and pricing decisions. This has some positive effects: ML loan models can be up to 40 percent less discriminatory than face-to-face lending. Moreover, unlike human loan officers, algorithms can be tested for fairness before they're released into the wild. But such decisions also present challenges: when ML models discriminate, they do so disproportionately against underbanked borrowers. In addition, it is often unclear how existing fair lending laws should be applied to algorithms, which are updated too frequently for traditional fair lending audits to handle. To address these challenges, this project recommends that the state lending regulators define a fairness metric for mortgage algorithms and pilot automated fair lending tests.

THE PROBLEM

Onsite fair lending audits are traditionally used to detect and mitigate algorithmic discrimination. However, key limitations in these audits exist. For instance, ML models can be updated daily—far more frequently than fair lending audits are designed to handle. In addition, because ML models lack a human decision-maker to interrogate the reasoning behind their loan decisions, it can be unclear how key concepts of fairness are being applied to ML algorithms. As a result, traditional fair lending audits are at risk of losing their ability to effectively detect and diagnose discriminatory lending practices.

When machine learning models discriminate, they do so disproportionately against underbanked borrowers.

THE SOLUTION

To address algorithmic discrimination and clarify fair lending rules, this project recommends that the state lending regulators define a rigorous statistical fairness metric. This project offers several choices of metric and advocates running a fair lending model contest in partnership with local universities to pilot the metric.

To keep up with frequent updates to lending algorithms, this project also recommends that state lending regulators develop a lightweight automated fair lending test that automatically evaluates each new version of a lending model using the chosen fairness metric. The plan outlines how this automated test can help judge the fair lending contest and ultimately prevent algorithmic lending discrimination before it occurs.

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ABOUT THE HUB

The Aspen Tech Policy Hub is a Bay Area policy incubator, training a new generation of tech policy entrepreneurs. We take tech experts, teach them the policy process, and support them in creating outside-the-box solutions to society's problems.

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