

## The 2023 FinTech Capstone Project

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*This project will touch on financial regulation, social justice, and the “big data” banks and regulators have at their disposal. You will gain insights to key issues executives consider important, a view into the internal processes at play during large mergers, and result in a deliverable you can show to prospective employers.*

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BMO Harris recently acquired [hopefully!] Bank of the West from BNP Paribas and there is a lot to do between Legal Day 1 and Conversion Day 1. BMO compliance staff has already reviewed past mortgage lending data for any “showstopper” problems that would indicate illegal redlining. Given our relative unfamiliarity with the new geographies we now serve, there is more we could learn from the data sets available to us. BMO needs to understand the historical mortgage lending activities in areas served by Bank of the West including:

- Denial rates by product and purpose;
- Whether pricing disparities exist in each market;
- If competitor banks in any markets of concern have special mortgage programs targeted to underserved customers;
- Whether any markets of concern have other extenuating circumstances, such as low rates of homeownership, underdevelopment, poverty, or Census-indicated population loss;
- **How home appraised values impact the likelihood of loan approval in different neighborhoods in each market;**
- And finally, whether BMO should allocate additional resources to improve its mortgage lending in any particular market, including an identification of where our products fall short and what incentives would be most effective.

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*The exact specification of the project will be determined closer to the start of the semester based on the state of play at the time and the skills of the capstone team.*

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## Background

Our sponsor this semester is Matt Darragh ([linkedin](#)), Class of 2005. He is a Director at BMO Harris who manages several teams tasked with ensuring that the bank's products and services comply with US consumer financial fairness regulations, including a statistics-heavy team focused solely on fair lending requirements. The fair lending team's work entails many things, including assessment of how BMO's (and potential merger targets) lending processes are performing along racial, gender, and other [protected characteristics](#).

His team does this by analyzing data and producing outputs to help executives understand if and where bank processes should be updated, convey areas in which the bank is succeeding in its goals (which is useful in discussions with regulators and other stakeholders), and highlight areas in need of improvement. An effective compliance management program, including sophisticated fair lending analytics, is a must-have for any bank attempting to acquire or merge with another institution.

This area is increasing in importance, and as Consumer Financial Protection Bureau (CFPB) policy evolves, BMO and other banks need to do so as well. For example, the CFPB is [introducing new rules](#) regarding anti-discrimination, and this will require banks to augment their existing analysis to ensure compliance.

## Reading list

**I think skimming these before the semester is a great idea**; the links here will both whet your appetite and help you understand the key issues Matt, his team, and BMO is concerned about.

- Legal stuff: Essential rules and regs
  - [Community Reinvestment Act](#)
  - [The Equal Credit Opportunity Act / Regulation B](#)
  - [The Fair Housing Act](#)
  - [FFIEC Fair Lending Exam Manual](#)
  - [Justice Department Announces New Initiative to Combat Redlining](#)
- Economics on discrimination (and specifically in lending); material and PR consequences
  - [CFPB and DOJ Order Hudson City Savings Bank to Pay \\$27 Million to Increase Mortgage Credit Access in Communities Illegally Redlined](#)
  - [Fair housing center opposes BMO Harris merger, citing poor record of lending to Black Hoosiers](#)
  - [The Lasting Legacy of Redlining](#)
  - [How Segregation, Redlining Shapes I-81 Debate](#)
  - [How Air Pollution Across America Reflects Racist Policy From the 1930s](#)
  - [BMO Introduces 'Welcome Home Grant' Down Payment Program for Homebuyers in Chicago](#)

- Statistical background (Examples of how discrimination can be tested for and shown - both visually and formal testing, and counterpoints/issues in these tests like omitted variables)
  - [A New Method For Tracking The Origins Of Housing Segregation](#)
  - [HUD Section VII - Proving Discrimination - Disparate Impact](#)
  - [FHFA Fair Lending Data Examples](#)
  - [Anatomy Of A Fair-Lending Exam: The Uses And Limitations Of Statistics](#)
  - [Fair Lending: Data Limitations and the Fragmented U.S. Financial Regulatory Structure Challenge Federal Oversight and Enforcement Efforts](#)
- Data viz examples
  - [Not Even Past: Social Vulnerability and the Legacy of Redlining](#)
  - [How 1930s Discrimination Shaped Inequality in Today's Cities](#)
- Data background
  - [HMDA: Getting It Right](#) (data dictionary)

## Data quickstart guide

The key public datasets we will use stem from the Home Mortgage Disclosure Act. The HMDA data (you can pronounce that “hum-da”) is available on the CFPB website:

- **Main page:** <https://www.consumerfinance.gov/data-research/hmda/>
  - **Read the about section**
  - **Skim the report on Mortgage trends**
- Browse the data to get a feel for what's in there: <https://ffiec.cfpb.gov/data-browser/>
  - Check out the filtering option and the map-based version, you'll start to see how the data can be sliced and examined
  - [Here is one mini-report I was curious about.](#)
  - 2021 summary: <https://www.consumerfinance.gov/data-research/hmda/summary-of-2021-data-on-mortgage-lending/>
- Understanding the data better
  - **Start here: A beginner's guide to the data**  
[https://files.consumerfinance.gov/f/documents/cfpb\\_beginners-guide-accessing-using-hmda-data\\_guide\\_2022-06.pdf](https://files.consumerfinance.gov/f/documents/cfpb_beginners-guide-accessing-using-hmda-data_guide_2022-06.pdf)
  - More documentation: <https://ffiec.cfpb.gov/documentation/2022/>
- More datasets: <https://ffiec.cfpb.gov/data-publication/2021>