



Business Intelligence in the Financial Industry:

How to identify & assess lending risk using analytics

The Client Need

- A financial institution that needed a better means to understand the risks associated with their existing Commercial Loan relationships.
- Specifically, the desire to understand their exposure to “single name” borrowers, as well as risk with certain property types and industries that might alter over time due to the impact of certain events, by geography.
- The client had no means other than a simple Excel spreadsheet by which they could understand risks, and run various analytical scenarios.

The Solution

- The customer presently analyzes the loan relationships 2x per year, and runs limited scenarios to understand risk.
- Design of a series of visual dashboards that present the existing loan relationships in a myriad of ways, allowing end users to analyze and stratify types of loans, and run various scenarios based on geography,
- The end solution will be refreshed weekly, to enable a more dynamic understanding of how loan risk evolves over time, and can be democratized to a larger audience readily.

Data Enrichment

- The data set was enhanced in three primary ways:
 - All loans had a North American Industry Classification System (NAICS) codes associated with them. We converted their codes to the 20 higher level sectors, which allows for analysis using summarized industry descriptions, as opposed to the very granular codes tracked by the customer.
 - For instance, the customer might have loans with a code of “711212 Racetracks” or “722511 Full-Service Restaurants”...these can be analyzed under the Sector summary of “Arts, Entertainment, and Recreation” in order to group these more effectively for analysis.

Data Enrichment

- The data set was enhanced in three primary ways:
 - We converted (geocoded) each loan's street address to latitude/longitude. This allows for precise placement of properties on a map.
 - We further overlaid Census demographics under the data points to enrich analysis with additional information, such as Household Demographics, Occupations, Housing metrics).

Live Demo

Potential Next Steps

- The analysis can be **enhanced** to include:
 - Existing Interest rates
 - Non Accrual Status (i.e. non payment in last 90 days)
 - Historical charge off activity
 - Rent roll data
 - Pipeline activity can be integrated
- Additionally, it's relatively simple to add other asset classes to the data:
 - Personal loans
 - Auto loans
 - CDs
 - Mortgages

Potential Next Steps

- The analysis can be **expanded** to address Loan Committee concerns:
 - Current Expected Credit Losses (CECL) – Integrating historical evidence of losses, to contemplate losses by loan type / industry to make reserves for current and future loans.
 - Home Mortgage Disclosure Act (HMDA) – The data collected on consumer mortgage and equity loans and used in Fair Lending analysis.
 - Community Reinvestment Act (CRA) – Firms need to understand whether or not they are deploying funds in their service area as well as understanding where gaps exist and what their Reasonably Expected Market Area (REMA) may look like. This is where regulators look for redlining (Fair Lending) and this dovetails with HMDA data.

Questions