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BankBlack USA Minority Owned Bank Dashboard

The COWRIE Initiative in partnership with Poverty Solutions

**University of Michigan
School of Information, SI 485
Information Analysis Capstone**

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Client Information

BankBlackUSA

BankBlackUSA is a 501c3 non-profit organization that works to connect economic power and access to improve social and racial justice in America. MDIs (Minority Depository Institutions) and CDFIs (Community Development Financial Institutions) play a great role in bridging the gaps between levels of access in communities, yet they are under-supported and are a very small part of the large American banking system (1). BlackBankUSA's goal is to provide citizens with information on the activities, successes, and opportunities that come from banking with black financial institutions. BankBlackUSA is comprised of three main teams. These are the Local Engagement team, Media team, and Research and Innovation team (1). The founders are Justin Moore, Robert Herring III, Christopher Williams, Christopher LeFlore, Jonathan Logan, Latoya Benjamin, and Stephone Coward.

The organization works with a variety of individuals, groups, financial institutions, community organizations, and other stakeholders to promote economic empowerment in black communities. On the BankBlack website, the Research and Innovation team has compiled information and data on MDIs and CDFIs for users to learn about these institutions. This information includes consumer information including accounts, rates, fees, and services, the financial institutions' health, local impact, and growth over time (1). BankBlack's local engagement team works directly within communities to develop workshops, presentations, and events to teach about the Bank Black Movement at the local level. Through their website, social media, and direct community outreach, BankBlackUSA is a resource for people to make an informed decision about their choice to move their money by teaching individuals about the financial health and community impact of black-owned banks (1). Additionally, BankBlack USA has completed a Banking Desert Project with the University of Kansas (4).

As a part of their efforts to facilitate individuals looking to bank with MDIs, BankBlackUSA has created a series of three dashboards that describe different data points of MDIs. The dashboards include data about the historical assets of Black Institutions from the FDIC. Additionally, the dashboards include geo-location information about the banks. The dashboard that we will be working towards will include new information including data from the Small Business Association about bank lending, banks CRA ratings, and more expansive information regarding the different zip codes and counties that MDI and CDFIs are in.

Poverty Solutions at the University of Michigan

President Mark Schlissel launched Poverty Solutions at the University of Michigan in 2016 to help inform the community and government about ways to prevent and alleviate poverty. H. Luke Shaefer, associate professor at the U-M School of Social Work and Gerald R. Ford School of Public Policy, was appointed the inaugural director of Poverty Solutions (2).

Poverty Solutions seeks to work in tandem with the vast knowledge available via the University to make a major impact on the lives of millions of low-income Americans. They are doing this through action-based research, an agenda aimed at boosting economic opportunity, expanding educational attainment, and improving health. A great example of an initiative they've taken is the creation of the Summer Youth Employment Program that aims to pair local youth in Washtenaw County to employers in the area for on the job training. The objective of the program is to expose under-represented youth with limited resources to learning opportunities and career exposure (2).

They are taking an interdisciplinary approach that has engaged agencies and nonprofits across the region with scholars from U-M's schools of business, law, information, public health, social work, public policy, medicine, urban planning, engineering, literature, science and the arts, and the Institute for Social Research, and various partnerships to build creative solutions and invest in capacity in the community, enhancing success, and creating resiliency.

Project Context

Our work is centered around building upon the previous work of BankBlack and Poverty Solutions, which has created a starting set of data visualizations. As described above, Bank Black currently has a dashboard on their site that informs Policy Makers and Researchers about the latest statistics relative to MDIs and CDFIs at a national level. There is a lot of information embedded into these dashboards (including census data). The current map provides a macro level view of the status of black banks across the US. However, it is not presented in a manner that would be easily digestible for the target audience BankBlack is now seeking to attract — young Americans interested, but not informed, about transitioning to banking black.

We will take the perspective of stakeholders, apart from our client, when understanding the scope of the project and how it will benefit those that interact with the site. There are a variety of stakeholders associated with our project. Primarily, end users that will utilize the information on our dashboard to inform their decisions about banking black. People in academia also use the information presented on BankBlackUSA as part of their research. Lastly, banks themselves are indirect stakeholders that can leverage the exposure the dashboard will provide to increase their customer base.

Our work will contribute varying value to each of the aforementioned groups. For end users, it will facilitate the searching process and provide them with a tangible outcome of possible banking institutions they can contact and sign up for their services. For academics, our dashboard will present the information in a clear and concise manner that will show the disparities in the financial institution system. For banks, we will contribute to their mission statement of serving customers by providing them an indirect opportunity to gain more customers.

The tumultuous events of this year have underscored the need and importance of this project. It is indisputable that Black people have been systematically mistreated from the genesis of the United States to the present. Especially this year, the media and larger corporate America have brought these problems further into their discourse. While this is a step, we must understand that many aspects of systematic

mistreatment happen at the community level, and the health of local financial institutions are a reflection of the greater community's access to resources. While larger visibility of these tragedies has only strengthened the fight for equality, Black-owned financial institutions have continued to shrink. Our greater goal is that our project serves as one of the many bridges that will help Black-owned financial institutions expand their reach and uplift as many persons and communities as possible.

Project Objectives

Problem Statement

MDIs and CDFIs are not growing like other banks. As a response to this, BankBlack has identified that users need readily available information and resources to switch to banking black.

Due to the lack of awareness, lack of knowledge, and negative biases, these banks are often underutilized and can be hard to find information about. The inequities that still exist for Black, brown and lower-income white communities with regards to financial services are systemic structural factors that lead to financial exclusion and intergenerational poverty.

Main Objectives

The main objective is to provide people with easily digestible and accessible information about MDIs and CDFIs and, further, why using them can benefit individuals and communities. In order to address this, we will carry out a four-part plan that will consist of:

1) Understanding user motivations for transitioning to banking black.

2) Developing a **new** dataset for BankBlack that consists of financial information regarding the health of the banks, for the ultimate purpose of creating an algorithm to assign a quantitative score that represents the value and health of each bank to prospective new accounts. Further explanation of what this dataset will be composed of is described in the 'Data' section below.

3) Establishing the intended user flow we want to occur as stakeholders engage with the site.

4) Building out the final set of visualizations, including a dashboard and other visual elements we deem necessary, on a live page set up by BankBlack's web developer that will be integrated into their site upon completion.

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Scope

In scope:
- A key preliminary task will be to conduct user-research with BankBlack users to determine their main motivations for using the website and what factors persuade them to bank black. Additionally, we will create a new dataset for Bank Black, consisting of financial information, that will aid us in the creation of a bank scoring algorithm. Lastly, we will build out the final set of visualizations with Tableau or ArcGIS (or other visualization tool we deem necessary) that will be integrated into BankBlack's site—so that users have a new, useful tool to use.

Reach goals:
- BankBlack's current map is not a major feature on their site. It is hidden within the top navigation. With the new dashboard, we would like to be able to change how users access and interact with the map on the website.

Out of scope:
- One of the main project outcomes is to persuade users to bank black. It is not within the project scope to determine the success rate of users that interact with the new visualization and then convert to banking black. Additionally, BankBlack currently has a mobile application. It is not within the project scope to integrate the map into the mobile application.

Anticipating Impact and Benefits

The primary goal of the project is to bridge the information gaps and tell a story to the user that educates and convinces them that their money can be equally or better served by switching to a black owned financial institution. By giving the users of BankBlackUSA the means to find discernable information about the location and success of these banks, the long term benefit would include increasing the volume of customers that MDIs and CDFIs have. A better search filter will emphasize the community support efforts of MDIs and CDFIs by showing users what resources they provide to individual communities, and as a result persuade potential customers. The main impact here will be evident in the way that MDIs and CDFIs are now more accurately represented in the financial industry and in the way they support the communities they serve.

Project Resources and Needs

Research Goal and Justification of Methods

Our research goal is to understand our customers motivations and needs when picking a bank. This series of research questions is our main method to determine what information is missing from the current dashboard and to establish a means to gather the pending data.

To work towards solving the problem statement, we have established a series of research questions that we have presented to our client. This set of questions will allow us to understand what our client believes motivates their users to bank black. Through bi-weekly meetings with our clients at BankBlack and Poverty Solutions and our Slack channel, we have asked and received answers to the questions below. They include:

- What are the key benefits of an MDI when compared to larger institutions?
- What makes one MDI better than the other?
- What are the demographics of most MDI/CDFI users?
- Ultimately, what are the key drivers that would convince people to switch to an MDI/CDFI?
- What are the key drivers that MDI/CDFI users' consider when picking a bank? (ex: car loans, mortgages)
- How can we quantify community reinvestment and commitment?

As part of our research, we also have a series of questions to ask current BankBlackUSA users (the connection is being facilitated by our client). This set of questions will allow us to gauge our target audience's needs. These questions include:

- What are 2/3 things banks are doing that highlights their commitment to communities (that would sway you to bank black)?
- What do you look for when selecting a black bank?
- What questions are you coming to the page with/what information satisfies your needs?
- Is the information on the current site answering your questions?
- How easy is it to gain the information you're looking for?

This set of questions will allow us to learn about what individuals value most when deciding where to bank, in general. These questions will facilitate the creation of the scoring algorithm. They include:
- What are the factors and underlying weights of banking health scores currently in existence?
- What types of financial analyses are good indicators of bank financial health?
- What publicly available banking data are good indicators of a bank's commitment to reinvesting into the communities in which they operate?

Project Resources and Needs

There are two main project resources: our client and the data. On the client side, our main resource is Stephone Coward, who is the founder of the organization and the main project owner. He is our main client resource because he is providing us much of the research information as well as connecting us with any necessary individuals and data points to move forward with the project. We are also in contact with Chris Leflore, a graduate student at Michigan who has been working with Stephone and the team at BankBlack during the initial attempts at mapping black banks—he is our main point for data access.

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Justin Nash is the head developer of the Bank Black website and will grant us the ability to implement our dashboards and visualizations on the Bank Black site.

Within Poverty Solutions we have access to Christian Hunter, who designed and created the initial map and is our source for the data used in the map. Trevor Bechtel is his supervisor and an additional point of contact for us. Dominique and Ian will be in charge of communicating any external needs of the project with our client(s). We do not anticipate any costs required in parsing the data or visualizing it.

Data Description

Bank Descriptions

The first one is in a Google Sheet and it contains demographics and user data about banks. The sheet has 39 columns and 163 rows. The sheet was first created in April 2017 and has been updated every few months, with the most recent update occurring on October 11th. Each row represents a different bank location and features a variety of information about the bank. The following table is a summary of the important information included in the dataset.

Column	Values
address	
website link	URL
number of branches	1-31
description of bank	paragraph
ATM Score	100-10,000
mobile/online usability	None, Coming Soon, Poor, OK, Good, Very Good, Excellent
mobile score	30-101
percent of lending to black communities	NA, 19-100
percent of branches serving black communities	NA, 50-100
percent of lending to small communities	NA, 1-69
impact	NA, No, Yes
savings	NA, Yes
savings rate	Unknown, 0.05%-1.00%

credit card	VISA, Amex, MasterCard
second chance banking	Visa Privilege Credit Card, Second Chance U2 E-Checking, Unity Secured VISA, Second Chance Checking, Credit Rebuilder Loan Program, Credit Counseling, Individual Development Account
health grade	A+-F-
health grade score	1-101
credit union	Yes/No

All of this data will be used to help inform individuals on the state of each banking institution. The data is already cleaned and organized. Most of the information comes from each bank's website and is entered into the sheet from someone in BankBlack's organization. This ensures high initial quality. The sheet was shared with us on October 8th and each of us have editor permissions. In addition, it is shared with 27 other people, mostly with editor permissions. This includes people from both BankBlackUSA and Poverty Solutions. We have evaluated the data that our client has provided and determined that we will not require a high-performance computing cluster.

Bank Assets

The second dataset is an Excel spreadsheet that describes each bank's performance based on assets owned over time. This dataset is extremely detailed and does not have missing data. It was emailed to us on October 8th. This data has 23 columns and 20 rows. The following table is a summary of the important information included in the dataset.

Columns	Values
Bank	Bank Name
Lat	Latitude Value
Long	Longitude Value
Asset change, 2009-2019	Dollar amount, difference in assets over time period
2001 Assets	$0.00 - $449,992.00
2002 Assets	$0.00 - $500,369.00
2003 Assets	$0.00 - $532,617.00
2004 Assets	$0.00 - $616,415.00

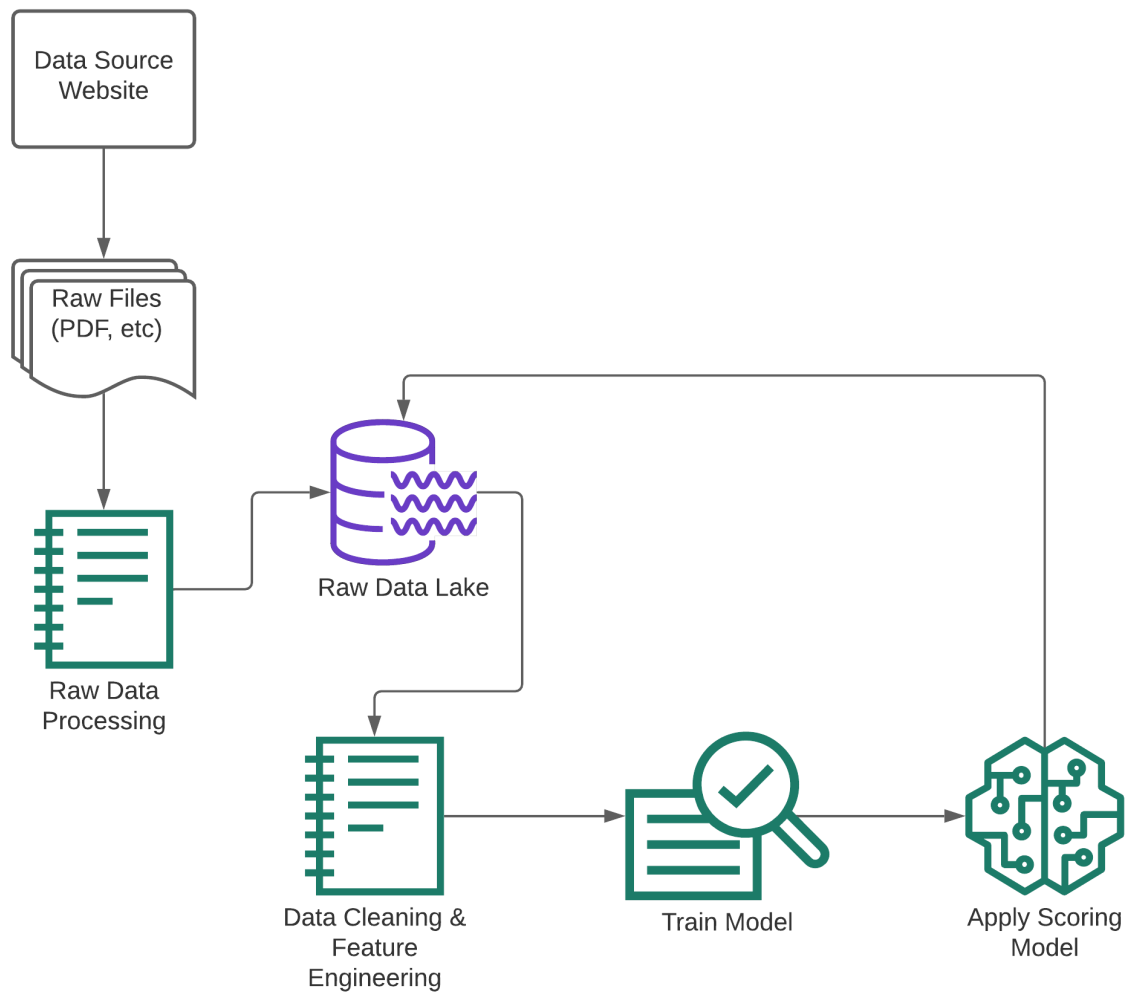|	
2005 Assets	$0.00 - $648,971.00
2006 Assets	$0.00 - $765,672.00
2007 Assets	$0.00 - $803,387.00
2008 Assets	$0.00 - $790,750.00
2009 Assets	$0.00 - $811,369.00
2010 Assets	$0.00 - $743,604.00
2011 Assets	$0.00 - $670,357.00
2012 Assets	$0.00 - $640,482.00
2013 Assets	$0.00 - $638,901.00
2014 Assets	$0.00 - $645,337.00
2015 Assets	$0.00 - $751,807.00
2016 Assets	$0.00 - $697,441.00
2017 Assets	$0.00 - $657,349.00
2018 Assets	$0.00 - $656,198.00
2019 Assets	$19,584.00- $653,951.00

Financial Data

The majority of our data mining and analysis will be with the purpose of building the scoring algorithm. This algorithm's purpose is to quantify the performance of a bank's assets into one grade, removing the need for the end user to understand disparate and complex financial terms. These scores will consist of an index of Federal Financial Institutions Examinations Council (FFIEC) Home Mortgage disclosure act data, Bank Community Reinvestment Act (CRA) ratings, Small Business Association bank lending reports, Federal Depository Insurance Corporation (FDIC) Bank performance reports, FDIC summary of deposits, and banking health grade components. We will be pulling this data from government websites such as the FDIC.

The majority of the data is in PDF format. To access it we will be pulling and parsing with pdfminer and PyPDF2, which are described within the tools section below. We intend to use Python and SQL for analysis on financial and demographics data about banks as well for performing simpler analytics queries on the data.

These sources will likely be important to the creation of this scoring algorithm, but we reserve the right to further explore new data sources or remove currently listed sources if they are not valuable to tabulating a score.

The preliminary data flow diagram below outlines the workflow that these sources will follow.

The specific datasets available from the FDIC website can be seen below.

(13)

Tools / Usage / Skills

The tools required are specific to the two types of data that we will be working with (BankBlack's already shared data and the Financial data we will be mining).

The two datasets shared with us are fairly small in size and already cleaned. Our work will consist of leveraging tools such as ArcGis or Tableau (or any other data visualization tool we deem necessary) to create an informative and digestible dashboard.

ArcGIS

ArcGIS is a geographic information system (GIS) for gathering, managing, and analyzing data. This framework integrates many types of data. It analyzes spatial location and organizes layers of information into visualizations using maps and 3D scenes (5). We do predict that we will need assistance with ArcGIS since it is a technology our client is primarily using, and one that no one on our team has experience with. We have already addressed this concern with our client and have been put in contact with Christian Hunter -- a member of the BankBlack team that will field any ArcGIS questions we have. Additionally, to meet the identified need of learning ArcGIS, we will use resources that include Youtube and DataCamp as well as StackOverFlow and additional online resources (5). The timeline for acquiring this skill will be

from mid-October until Thanksgiving. The learning for the data visualization tools we predict (but are not limited) to use, including ArcGIS, will be led by Dominique and Kallen and will be completed by January 1st.

Tableau

Tableau is a visual analytics platform that enables users to transform the way they use their data through an intuitive drag and drop interface that makes it easy to merge points of data (6). We have all had experience and are comfortable with Tableau. In specific, we will use Tableau's visualization software to create interactive visualizations such as maps and graphs that will be integrated into the Bank Black site. The benefit of Tableau is the large knowledge base and ease of use in building simple visualizations quickly. Tableau will be useful in building prototypes in an agile manner — allowing us to iterate up until completion of the final dashboard. The learning for the data visualization tools we predict (but are not limited) to use, including Tableau, will be led by Dominique and Kallen and will be completed by January 1st.

Python and SQL

Parsing through PDFs and other text formats will be processed with Python libraries created for this purpose. These libraries are pdfminer and PyPDF2. These are open source projects that allow us to turn raw pdf files into iterable data. The learning necessary for the PDF scraping will be led by Kristofer and will be completed by January 1.

Python will be used for data analysis on financial and demographics data about banks. Along with Python, we might also use SQL for performing simpler analytics queries on the data. Python is an interpreted, high-level and general-purpose programming language (7). SQL is a domain-specific language used in programming and designed for managing data held in a relational database management system, or for stream processing in a relational data stream management system (8). The learning necessary for accessing the financial data will be led by Ian and will be completed by January 1st.

Backup Plan

We all have experience and are comfortable with Python and SQL. Python and SQL are needed for the data processing and manipulation phase of our project. We will be rearranging some of the data depending on our proposition of what the final visualization will be. Python for Everybody on Coursera, StackOverflow, and FreeCodeCamp are an integral part of our backup plan, should we face unexpected technical challenges.

If we face difficulties with ArcGIS / Tableau and they do not lead to our desired outcome, our backup plan is to leverage our Python knowledge and use visualization options like seaborn and plotly. Seaborn and plotly are python libraries used to build visualizations with code.

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Research

Competitive Analysis

We looked at similar organizations to identify how others are dealing with similar challenges to BankBlackUSA:

Company / Direct or Indirect	Summary of Company	Similarities to BankBlack USA	Differences to BankBlack USA
[Blackout Coalition](#) (Exhibit 1) / **Direct**	Blackout Coalition is a website dedicated to inspiring and teaching people to bank and buy black. It mainly informs users about: ● black owned banks ● black colleges ● black owned hotels and resorts ● black owned establishments in Ohio This information is displayed through a variety of maps on the website (10).	Blackout Coalition's first tab on the website is titled "[#BankBlack](#)" and contains a map that looks similar to BankBlackUSA's map of minority-owned banks and credit unions in the US. On Blackout Coalition's map, the information displayed is the name of the bank or credit union, its location, and a link to the bank's/credit union's website (11).	Blackout Coalition provides information not only about banks but also about hotels, phone carriers as well as entertainment, whereas BankBlackUSA solely focuses on financial institutions. Additionally, Blackout Coalition's bank map, consisting only of the bank name, location, and website link, provides users with a lot less information about the bank than BlackBankUSA (10).
[Afro Tech](#) / **Direct**	Afro Tech informs the reader about Black centered efforts within: ● Enterprise ● VC ● Startups ● Business ● Education	Covers business and financial news centered around the greater US Black community.	Article centric website, does not have any large data descriptions or visualizations.
Large Financial Institutions (ex: JPMorgan Chase, Bank of America, Citigroup, Wells Fargo, Goldman Sachs, Morgan Stanley, U.S. Bancorp, PNC Financial Services) / **Indirect**	A financial institution (FI) is a company engaged in the business of dealing with financial and monetary transactions such as deposits, loans, investments, and currency exchange (9). They are indirect competitors because the target groups for the	These large institutions and BankBlack aim to provide users with financial resources.	These financial institutions are the largest providers of financial services in the United States. The main difference is that BankBlack is not a financial provider. BankBlack is an organization aimed to draw people away from these institutions and towards MDIs.

	institutions and our client are the same.		
Large Credit Unions (ex: Navy Federal Credit Union, State Employees Credit Union, PenFed, BECU, SchoolsFrist Federal Credit Union, The Golden 1 Credit Union) / **Indirect**	Credit unions are not-for-profit organizations that accept deposits, make loans and provide a wide array of other financial services. But as member-owned and cooperative institutions, credit unions provide a safe place to save and borrow at reasonable rates (12). They are indirect competitors because the target groups for the institutions and our client are the same.	Credit unions and BankBlack aim to provide users with financial resources.	The main difference is that BankBlack is not a financial provider, unlike credit unions. BankBlack is an organization aimed to draw people away from these institutions and towards MDIs.

Exhibit 1

Source: https://blackoutcoalition.org/black-u-s-banks/
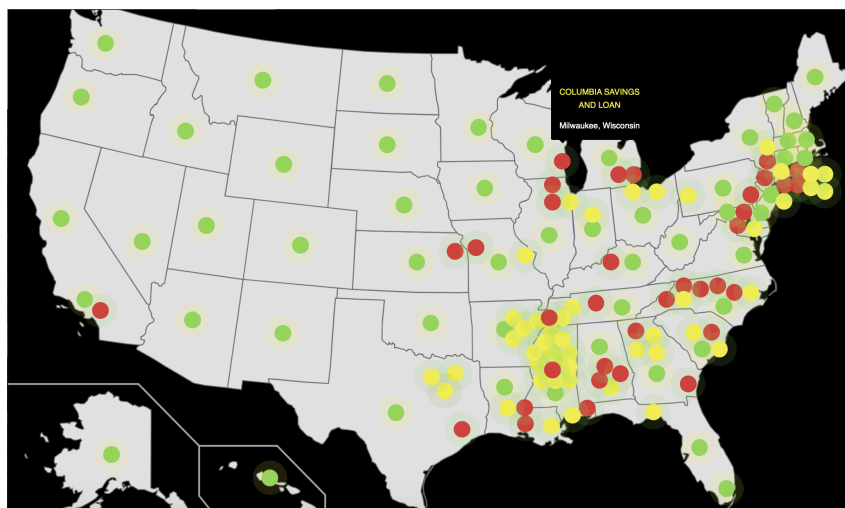
Current map on Blackout Coalition's website that contains information about black owned banks and credit unions.

Analogous Research

We looked at companies outside of the financial industry to see how they tackled similar challenges to BankBlackUSA's of displaying disparate information clearly and informatively:

Company	Challenge	Takeaway(s)
Like To Know It We chose this company because they are in a completely different industry from our client's. Their main objective is to 1) consolidate resources and 2) deliver them to users in a convincing and easy-to-digest manner.	- This company aims to consolidate different links to clothing and accessory stores. - The first challenge is aggregation and presentation of the links in a way that is nice to look at. - The second challenge lies in figuring out how to present the information to the consumer in a way that they will want to carry out the purchases (conversion rates).	- Both this company and BankBlack must find ways to group together a lot of information in one location to influence people. Looking at LikeToKnowIt's UI: how they guide the user through the use of different categorical labels The current BankBlack dashboard currently lacks guidance and clarity regarding what information users have available to them via the site.
Ungentry We chose this company because Ungentry uses map visualizations to display disparate information in a clear way.	- Describe trends of gentrification in key major US cities - Compares many disparate socio-economic statistics using filters - Separates geographic areas by census region	- Ungentry is an example others have solved the issue of not overloading the users while also providing the option to filter upon many fields - The Dashboard focuses by city, a key feature that we are looking to integrate

Research Takeaways

The research above has reinforced the direction of our project. The existence of Blackout Coalition's "#BankBlack" map demonstrates that there is a need for visualizations within the scope of Black owned banks and credit unions. Blackout Coalition's map is simple and easy to digest — a key goal of our project, but we also feel that there is a medium in between that can better inform users.

Researching larger financial institutions, including banks and credit unions, is important for understanding what competitors are doing to appeal to consumers within the same market sector. These institutions have far more financial resources than the majority of MDIs. With these greater financial resources, larger financial institutions are able to provide customers with more monetary perks, including cash back on purchases, discounted ticket prices, and frequent flyer rewards. Additionally, they have far greater advertising budgets that are used to reach and appeal to more customers. While the increased budget and perk opportunities are great levers that these large financial institutions can pull, we recognize that they lack the reinvestment in communities that MDIs offer. While strong brand recognition and perks

are appealing features of a strong bank, these benefits align less with our immediate project goal. The key goal of our project will be to inform users about how MDIs play a larger role in reinvesting in local communities compared to these larger businesses.

Our analogous research reinforced the idea of creating a clear and simple flow of information for users. Like to Know It provides users with different products and services in one site while Ungentry allows users to observe many fields of data in a way that is visually digestible and appealing.

Project Planning

Our project plan is divided into 3 main phases: user and shareholder evaluation, algorithm development, and algorithm integration into visualizations. The project plan is divided into 3 main phases reflecting the main objectives. The timeline starts in December and runs through April, when the final deliverable is due for the course. To offer a better overview of the timeline, we created a Gantt Chart and Project Backlog identifying all necessary tasks, their dependencies, and team responsibilities.

Administrative Roles

Role	Person Assigned	Description
Client Communicator	Ian	- Provides client with general updates on project - Leads client meetings
Scheduler	Kallen	- Schedules meetings with clients - find available times - send zoom links
Lead Editor	Dominique	- Reads through and edits reports before submission
Note taker	Kristofer	- Takes notes/meeting minutes during all client/project related meetings - Shares notes with rest of group

Gantt Chart

The entire Gantt Chart timetable is available in the above link. A condensed version is available below.

Key		
   	Milestone	
   	Critical Task	
   	Looping Process	

Item #	Task Title	Start	Due
1	**User & Stakeholder Evaluation**	12/1	1/1
1.1	Conduct user research with participants provided by Stephone (BankBlack)	12/1	1/1
1.1.1	Schedule interviews with participants provided by Stephone (BankBlack)	12/7	12/11
1.1.2	Conduct the scheduled interviews (record and take notes)	12/14	12/18
1.1.2.1	Utilize questions outlined in 'Research Goal' report section	12/14	12/18
1.1.3	Analyze interview notes to develop insights	12/18	1/1
2	**Algorithm Creation**	12/1	3/15
2.1	Extract, Load, Transform (ELT)	12/1	2/14
2.1.1	Identify all of the sites / data sources that we're going to pull from	12/1	1/18
2.1.1.1	Store the sources (create a document in group drive with the links to all the sites we will be referencing)	12/1	1/18
2.1.1.2	Pull Data	1/19	1/31
2.1.1.3	Store Data (based upon ultimate size either contained within CSV format or a SQL database if size requires)	1/19	1/31
2.1.1.4	Clean Data	2/1	2/14
2.2	Evaluate relevance of data	2/1	3/15
2.2.1	Consolidate what key determinants/pieces of information are most convincing/helpful to users when looking at the dashboard	2/7	2/17
2.2.2	Collaborate with Ross Impact Studio (subject matter experts within banking) to establish metrics representative of financial health	2/10	2/17
2.2.2.1	Iteratively test financial algorithm against metrics	2/1	3/15
2.2.2.2	Iteratively tune/edit/train the financial algorithm model	2/1	3/15
2.2.3	Collaborate the National Community Reinvestment Coalition (NCRC) (subject matter experts in community reinvestment) to establish metrics representative of bank's commitment to their local communities	2/10	2/23
2.2.3.1	Iteratively test reinvestment algorithm against metrics	2/1	3/15
2.2.3.2	Iteratively tune/edit/train the reinvestment algorithm model	2/1	3/15
3	**Integrate algorithm to visualization**	3/15	4/20
3.1	Translate key filter points from algorithm into a prototype for the new dashboard/visualization	3/15	3/29
3.1.1	Explore ArcGis and Tableau (or other viz tool we deem necessary) to determine what tool will best help us integrate filters	3/15	3/29
3.2	Convert prototype exploration into dashboard using chosen tool	3/29	4/20

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Backlog

As a group, we agreed that the greatest learning opportunity will lie in exploring and contributing to all components of the project. However we also recognize that each member has different strengths and a leadership hierarchy is required for task accountability and work distribution. Therefore we have two main leadership roles that will ensure efficiency and technical success. Thus for each task, if a member is not listed as either role then they are still involved in the task completion as a contributing member, but are not a lead.

Role	Person Assigned	Description
Product Owner (PO)	See Project Backlog below	Key responsibilities include: - Establishing all project milestones and assigning them to different team members - Tracking completion of these milestones and providing support to team members if needed
Technical Lead (TL)	See Project Backlog below	- Subordinate to Product Owner - Person with most existing technical knowledge on subject - In charge of providing other members of the group with resources to learn

Key	
	Milestone
	Critical Task
	Looping Process

Item #	Description	Product Owner	Technical Lead	Resources/Skills	Priority
1	**User & Stakeholder Evaluation**	D		Stephone (BankBlack)	**High**
1.1	Conduct user research with participants provided by Stephone (BankBlack)	D	D		**Medium**
1.1.1	Schedule interviews with participants provided by Stephone (BankBlack)	D	D	Slack	**Medium**
1.1.2	Conduct the scheduled interviews (record and take notes)	D	D	Zoom	**Medium**
1.1.2.1	Utilize questions outlined in 'Research Goal' report section	D	D		**Low**
1.1.3	Analyze interview notes to develop insights	D	D		**High**
2	**Algorithm Creation**	KC, KS, I			**High**
2.1	Extract, Load, Transform (ELT)	KS	I		**Medium**
2.1.1	Identify all of the sites / data sources that we're going to pull from	KS	I		**Medium**
2.1.1.1	Store the sources (create a document in group drive with the links to all the sites we will be referencing)	KS	I	Google Doc	**Medium**
2.1.1.2	Pull Data	KS	I	Data Extraction, E of ELT	**Medium**
2.1.1.3	Store Data (based upon ultimate size either contained within CSV format or a SQL database if size requires)	KS	I	CSV or SQL, L of ELT	**Medium**
2.1.1.4	Clean Data	KS	I	Python, T of ELT	**Medium**
2.2	Evaluate relevance of data	KS	KS		**Medium**
2.2.1	Consolidate what key determinants/pieces of information are most convincing/helpful to users when looking at the dashboard	KS	KS		**Medium**
2.2.2	Collaborate with Ross Impact Studio (subject matter experts within banking) to establish metrics representative of financial health	KS	KS		**Low**
2.2.2.1	Iteratively test financial algorithm against metrics	I	I	Python/Statistics/ML	**High**
2.2.2.2	Iteratively tune/edit/train the financial algorithm model	I	I	Python/Statistics/ML	**High**
2.2.3	Collaborate the National Community Reinvestment Coalition (NCRC) (subject matter experts in community reinvestment) to establish metrics representative of bank's commitment to their local communities	I	KS		**Low**

2.2.3.1	Iteratively test reinvestment algorithm against metrics	I	I		**High**
2.2.3.2	Iteratively tune/edit/train the reinvestment algorithm model	I	I		**High**
3	**Integrate algorithm to visualization**	KS			**High**
3.1	Translate key filter points from algorithm into a prototype for the new dashboard/visualization	D	KC		**Medium**
3.1.1	Explore ArcGis and Tableau (or other viz tool we deem necessary) to determine what tool will best help us integrate filters	D	KC	Research of platforms	**Low**
3.2	Convert prototype exploration into real dashboard using chosen tool	D	KC	Tool we decide to use	**Medium**

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