A WORKING PAPER

The Impact of Financial Products and Services on Quality of Life

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Leveraging Capital for Change[SM]

CONTENTS

PREFACE

Mission-oriented financial institutions (MOFIs) are catalysts for economic activity and growth in some of the most distressed and underserved markets around the country. Many of these markets are predominantly composed of low- and moderate-income (LMI) people and are in both urban and rural areas. The institutions often provide important financial products and services, such as loans and depository products, and act as local anchor institutions in these markets. In LMI communities, they may be the only financial services providers other than check cashers and payday lenders.

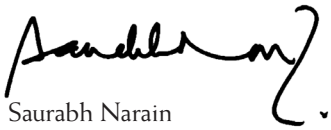
National Community Investment Fund (NCIF, www.ncif.org) is a nonprofit private equity fund and a Community Development Financial Institution (CDFI). It has a mission of increasing the flow of financial products and services into underserved markets nationally and has done so since 1996 by investing in MOFIs and supporting the sector overall. To date, NCIF has invested in over 55 banks, credit unions, and other financial institutions that have generated over $7 billion in loans in underserved markets. Currently, NCIF is the largest investor by numbers in the sector and is keenly focused on the health and impact of the banks working in these markets. NCIF has pioneered its Social Performance Metrics (www.bankimpact.org) to analyze the impact of these banks via measuring outputs and nonbanking variables such as jobs created or retained, racial and gender diversity, etc. — see the Telling the Story report* for more information — and to increase the asset class of MOFIs.

The working paper explores NCIF's theory of change and attempts to quantify whether the availability of financial products and services has a correlation with changes in quality of life and economic activity in these markets. We realized this is a very ambitious undertaking, yet we pursued it to explore the data and move the needle forward to support the MOFI industry. We are pleased to find that, while additional research is needed, there is valuable information that can be used by various stakeholders to support financial institutions through additional investment and public policy changes — especially those working in underserved markets — such as the certified CDFI banks, minority banks, and MOFIs in general.

We hope to use this work to not only enhance our own Social Performance Metrics and support the sector, but also to seek additional capital for the industry. In the short or medium term, we hope to influence finance theory to support such institutions. Generally, financial theory optimizes expected return to risk and we posit that — by focusing on financial considerations alone — the returns used in these optimization equations are not only incomplete but also relate only to short-term movements of prices, and do not incorporate the long-term effects of externalities. Accordingly, we believe we need to add Social Return (and, in the near future, Environmental Return) to the Financial Return to arrive at Total Return — which should then be optimized to Risk. Adoption of social returns into finance decision making will significantly reward long-term positive externalities and disincentivize negative externalities and encourage capital flows to sectors creating the most social return.

NCIF has collected 14 years of data on a national scale — including nearly 300 variables and 147 million data points — resulting in a massive database in support of the industry. We hope this paper acts as only the beginning of research, and that it spurs additional research and analysis by others even as we continue to refine our own research, interpret our findings, and support the sector. We believe further research is fundamental to increasing the flow of capital into underserved markets and, hence, requires significant funding from investors, government, and philanthropic foundations.

Sincerely,



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*Telling the Story is available online: bit.ly/NCIFR15

Mission-Oriented Financial Institutions (MOFIs)

Mission-oriented financial institutions are those that have demonstrated a commitment to supporting community and economic development within their communities. These banks generally work in LMI or underserved communities. While credit unions and others may also be MOFIs, to date NCIF has concentrated on bank analysis. NCIF classifies three primary types of banks as MOFIs:

- Community Development Financial Institutions (CDFIs) have received certification as CDFIs from the CDFI Fund. Certification recognizes these institutions' work in qualified tracts, based on poverty rates, unemployment rates, and the tract's median income in comparison to the surrounding community. As of December 31, 2014, there were 109 certified CDFI banks.
- Minority Depository Institutions (MDIs) are designated as such by the FDIC if the bank has at least 51% of stock held by minority individuals, if the majority of board members are minorities, and/or if the institution serves a community that is predominantly minority. MDIs often promote the economic viability of minority and underserved communities. As of December 31, 2014, there were 175 certified MDI banks.
- Quadrant 1 banks are designated by NCIF as those that have superior social performance. Quadrant 1 banks locate at least 50% of their branches and provide at least 40% of HMDA lending in LMI areas. In addition to HMDA lending, banks can receive a Quadrant 1 designation through analysis of total lending. As of December 31, 2014, there were at least 765 Quadrant 1 banks.

Separate from this research effort, NCIF has long analyzed the social and financial performance of MOFIs — providing insights to bankers, investors, and regulators as well as researchers and public policy practitioners interested in the industry.

For example, NCIF works with mission-oriented banks to gather in-depth information on their activities and performance to create individual analysis for the banks as well as industry analysis. In our most recent report, *Telling the Story: The Impact of the Reporting Banks and the Mission-Oriented Banking Industry,* NCIF provides data on 24 banks. The report highlights the banks' Social Performance Metrics and overall impact in their communities. Findings include:

- 73% of all lending supports the banks' community and economic development goals, per the Mission Intensity metric. These loans included loans to LMI individuals, loans in LMI areas, loans to nonprofit and faith-based organizations, loans to minority- and women-owned businesses, and more.
- In 2013, the banks' lending contributed to the creation of 10,609 jobs in their communities.
- The banks offer innovative products and services to their clients to meet particular needs, such as small dollar loans and check cashing services that are tailored to economically vulnerable communities.
- 44% of deposit accounts have balances less than $1,000, suggesting lower-income and higher-touch clients.

Navigating the Report

For broad take-away information and an overview of findings from the research, readers should reference Section 1, "Top Five Findings." Here, the research team has compiled its top findings on bank and credit union activity and changes in quality of life.

Section 2, "Executive Summary," provides a comprehensive overview to the working paper, including an introduction of the findings and next steps for the research.

Section 3, "Foundations to the Research," walks the reader through the team's research questions and early stage considerations — helping set the stage for more extensive analyses. Learn here about data sources used and innovative methods employed, such as a methodology to attribute financial institution data from the company level to individual branches — and, ultimately, to the surrounding communities — to create a more granular picture of the institution's activity in a community. Section 3 also explains how the team identified key pieces of data, such as the explanatory value of Home Mortgage Disclosure Act variables.

Section 4, "Making the Case," provides an in-depth review of methodologies employed and how they led to the team's key findings as initially laid out in Section 1. In this section, readers can get a sense of how the presence and activity of banks and credit unions affect a community in terms of quality of life. Additionally, the research team examines how geographies are differentially impacted by examining Census tracts with CDFI banks operating within them, and those that are distressed with higher levels of unemployment and poverty.

In "Enhancing the Social Performance Metrics," Section 5, the team explores how the findings can add to the existing set of NCIF Social Performance Metrics to better quantify the impact of institutions in their communities. The research opens new avenues for the metrics through the availability of additional data as well as through applications of the findings.

Section 6, "Laying the Groundwork for a Social Return Index," discusses the research team's efforts to create a Social Return Index to create a more comprehensive measure of total returns by incorporating both social and financial returns. The section details initial steps taken to explore components of an index. This analysis is the first step in identifying components for the index; the methodology presented is a promising way of combining social returns and financial returns for evaluation.

In Section 7, "Conclusions," the team details the important conclusions from the working paper and underscores how users can apply the information contained within the working paper to their own work.

The research team discusses future research opportunities in Section 8, "Areas for Future Research." While this working paper discusses key findings, the research efforts illuminate additional areas for future investigation. For example, this working paper focuses on Census tract-level information, but additional data points on economic activity are available at the county level. Incorporating the additional data into future efforts could allow for more insight on the role banks and credit unions play in their communities.

A Data Dictionary is presented in Appendix 1, providing a catalog of the data points assembled, representing the basis of both this work and future work at NCIF. Interested parties are encouraged to reach out to NCIF to learn more about the data collected.

Appendix 2, "Technical Appendix," provides more background on the data sources used, methodologies employed, and outputs generated. Those most interested in the technical approaches used within this report are encouraged to review this section for more detail.

Appendix 3, "Glossary," is available for definitions.

Finally, Appendix 4, "Bibliography," contains a list of sources reviewed in the creation of this working paper. Those interested in learning more about a particular topic covered within the working paper — including the role of financial institutions in communities, quality of life characteristics, impact tracking and indexing examples, or methodology considerations — may consult the Bibliography to find additional resources.

SECTION 1:

Top Five Findings

FINDING 1

There is a positive correlation between bank and credit union presence and activity and quality of life, as defined in this working paper.

FINDING 2

The relationship between quality of life and the presence and activity of banks and credit unions has been relatively consistent between 2000 and 2013.

FINDING 3

Banks and credit unions are less likely to be operating within lower-income areas, suggesting that these areas have less access to the quality of life benefits associated with the presence and activity of financial institutions.

FINDING 4

Tracts where CDFI banks operate are different than other tracts in terms of demographics, financial institution activity, and HMDA activity.

FINDING 5

The presence and activity of banks and credit unions is associated with improvements in unemployment and poverty rates.

SECTION 2:

Executive Summary

NCIF has a mission of increasing the availability of responsibly-priced financial products and services in underserved and low- and moderate-income (LMI) markets to catalyze the economic development of those communities across the country. To meet this mission, NCIF works with mission-oriented financial institutions (MOFIs) — primarily banks — across three business lines:

- Investments to the institutions through equity investments or deposits
- Lending to impactful projects working with bank partners
- Research to support mission-oriented banks and attract additional capital to the industry

To date, NCIF has invested in more than 55 institutions operating in LMI and underserved communities — creating social impacts while also generating competitive financial returns. To understand the social returns of its investments, NCIF has created a series of Social Performance Metrics that serve as proxies for the impact of an institution. NCIF's existing bank portfolio demonstrates exceptional social performance, with a median Development Lending Intensity (DLI) of 65% and a Development Deposit Intensity (DDI) of 86% — both of which surpass the performance of the majority of banks in the country. Additionally, investee banks have a median Mission Intensity score of 84%, demonstrating an exceptional commitment to lending that supports their community and economic development missions.

NCIF's theory of change is that banks and other financial institutions are important contributors to development in their communities by helping deliver capital and aiding financial stability. NCIF supports them to enable this development. Importantly, because of the structure of banks, investments in them have compounding impacts — potentially turning equity investments into 8-10 times that amount of lending in their communities. In particular, NCIF works with mission-oriented banks, which focus on LMI areas or underserved populations to support lending and development in these distressed areas.

With this theory of change in mind, NCIF undertook this project with three primary goals:

1. To make the case that the increased availability of financial products and services may relate positively with an increase in quality of life.
2. To enhance the NCIF suite of Social Performance Metrics based on the findings generated — adding ways to track and compare the performance of financial institutions.
3. To create a Social Return Index as a comprehensive way to quantify the social returns of financial institutions — adding to the understanding of finance theory.[1] The Index aims to provide information to encourage additional investment into impactful institutions.

The research goals were ambitious and NCIF is encouraged by the directionality of the findings that demonstrate a positive association with the presence of financial institutions and quality of life. NCIF anticipates that the full working paper and its findings will spark important discussions and move MOFIs and impact investors forward to more fully consider social returns — as well as financial returns — in their decision making. The research team also expects this research will support the use of delivery channels for financial products and services that use technology solutions to better serve communities.

Each of the goals is considered in more depth, accompanied by an introduction to the findings.

[1] Prevailing financial theory — particularly Modern Portfolio Theory — attempts to maximize a portfolio's expected return for a given amount of portfolio risk (or, equivalently, minimize risk for a given level of expected return) by carefully choosing the proportions of various assets. See the work of Henry Markowitz for foundational text on Modern Portfolio Theory. Others have also considered ways of incorporating social and environmental returns into financial decision making. See, as an example, Jed Emerson's concept of blended returns, recent trends in socially responsible investment, and investment with Environmental, Social, and Governance (ESG) considerations.

1. Making the Case for Financial Institutions and the Increased Availability of Financial Products and Services

As an impact investor, NCIF looks beyond financial performance — making investments that meet double or triple bottom line needs — to create social and environmental returns as well as financial returns. In particular, NCIF supports banks and credit unions because of their ability to multiply the impacts of an investment. Given that banks and credit unions are able to raise additional funding via deposits, every dollar of equity invested in them can be turned into $8 to $10 in lending.

As noted above, NCIF's portfolio demonstrates strong social performance as seen through the NCIF Social Performance Metrics and impact stories collected from the banks. This working paper seeks to move beyond these measures, however, to build on the existing body of knowledge, make the case for increasing the availability of financial products and services, and emphasize the important role banks and credit unions play in communities. Given that banks and credit unions are the primary providers of such services, the research team focused on their association or correlation with quality of life.

The research efforts uncovered insight confirming positive relations supporting NCIF's theory of change. **Finding 1** shows there is positive correlation between the presence of banks and credit unions and the activity and quality of life in the surrounding areas (as the team has defined quality of life). Additionally, **Finding 2** notes that the relationship was relatively consistent between 2000 and 2013 — before, during, and after the Great Recession. Banks and credit unions are important elements associated with quality of life within the community and, as such, their ongoing activities should be supported — particularly in LMI areas that could benefit from improvements in quality of life. This is especially important, as **Finding 3** highlights that banks and credit unions are less likely to be operating in lower-income areas and, therefore, these communities may have less access to the benefits associated with an improved quality of life.

Finding 4 focuses on a particular subset of geographies — comparing Census tracts with and without a Community Development Financial Institution (CDFI) bank operating. Here, the research team finds the two sets of geographies have statistically significant differences, including that tracts where CDFI banks are operating have lower household income, higher unemployment rates, and lower total Home Mortgage Disclosure Act (HMDA[2]) single-family lending.

Finding 5 compares two other geographies: Census tracts that were "distressed" (and remain so) and Census tracts that were distressed and have improved. Tracts that improve[3] are associated with greater bank and credit union activity overall. Looking at data over time, the research team also observed that tracts with banks and credit union presence were more likely to "jump" from distressed to not distressed over the study period.

Taken together, these findings represent substantial additions to the understanding of how banks and credit unions interact with their communities. Furthermore, it makes the case for the importance of these institutions, particularly in LMI areas — potentially extending the positive relationship to a quality of life.

2. Enhance the Social Performance Metrics to More Broadly Capture Institutions' Impacts

NCIF's Social Performance Metrics are a set of data points designed to quantify the social performance of banks. As noted below, NCIF uses the metrics to guide internal investment, help others identify investments and track their portfolio's social performance, and support mission-oriented banks through better information on their own impacts.

This report builds on the past successes of the Social Performance Metrics in two ways:

- The findings add nuance to the understanding of how banks and credit unions interact with their communities. For example, the research team used a data-driven method to approximate bank and credit union service areas. This allowed for an expanded understanding of the geography examined to gauge the impact of an institution — moving beyond the address of the branch to include a more realistic service footprint.
- The findings lay the foundation for the creation of new metrics that integrate the findings of this report.

[2] The Federal Financial Institutions Examination Council (FFIEC) collects and makes available data reported due to the Home Mortgage Disclosure Act (HMDA). Data points cover a range of information on mortgage lending, including type of loan, purpose of loan, borrower characteristics, loan characteristics, and actions taken regarding the loan.

[3] "Distressed" tracts refer to those with unemployment and poverty rates above the national median. Tracts that "improve" are those that move from above median rates to below. Learn more on the "jumping tract" methodology in Section 4.

3. Lay the Groundwork for a Social Return Index

Generally, Modern Portfolio Theory focuses on optimizing returns to risk. Returns are generally focused on short-term financial returns — forgoing considerations of positive social or environmental externalities and not discounting the financial return for the negative externalities associated with irresponsible behavior. This has potentially skewed the results of the theory's optimization equations.

The Social Return Index is an effort to create a quantifiable measure of social return by capturing some of the complex characteristics of financial institutions' interactions with their communities. The Social Return Index will be a composite of different characteristics of financial institutions and their surrounding Census tracts — capturing social performance over time. Then, ideally, finance theory will start incorporating this measure of social return into the Total Return calculations and then into the optimization calculations. Generally, the index may be calculated as:

$$\textit{Total Return} = f(\textit{Financial Return} + \textit{Social Return} + \textit{Environmental Return} + \varepsilon)$$

The report explores methodologies to examine the characteristics of institutions that can be incorporated as determinants of social return. While additional work is needed to create a Social Return Index, the team is encouraged by the progress. Ultimately, the Social Return Index aims to provide a mechanism to enhance the flow of capital to banks and credit unions that provide important products and services, particularly in LMI communities. Section 6 provides more information on the importance of a Social Return Index and how it could be created.

A Strong Data Foundation

For this working paper, NCIF created a database incorporating variables on demographics, economic activity, quality of life, HMDA activity, and financial institutions' presence and activity in their communities. The database includes nearly 300 variables collected over 14 years — totaling 147 million data points. Much of the data covers a national scale from 2000 through 2013, making it a robust data set from which to test hypotheses and draw conclusions on the role of financial institutions in their communities.

The database was used to develop the findings within this report, but will also be useful in future explorations. NCIF has long used data to better understand MOFIs and the communities in which they are working by a) providing analysis to banks to help them understand and communicate their own social performance; b) providing information to investors to help them identify potential investments and track the performance of existing investment portfolios; and c) providing information to regulators and public policy practitioners, encouraging them to support these institutions through regulator action and the reduction of regulatory burden.

Going forward, NCIF will continue to utilize this database to provide information to these audiences and create analysis on the role of financial institutions in their communities.

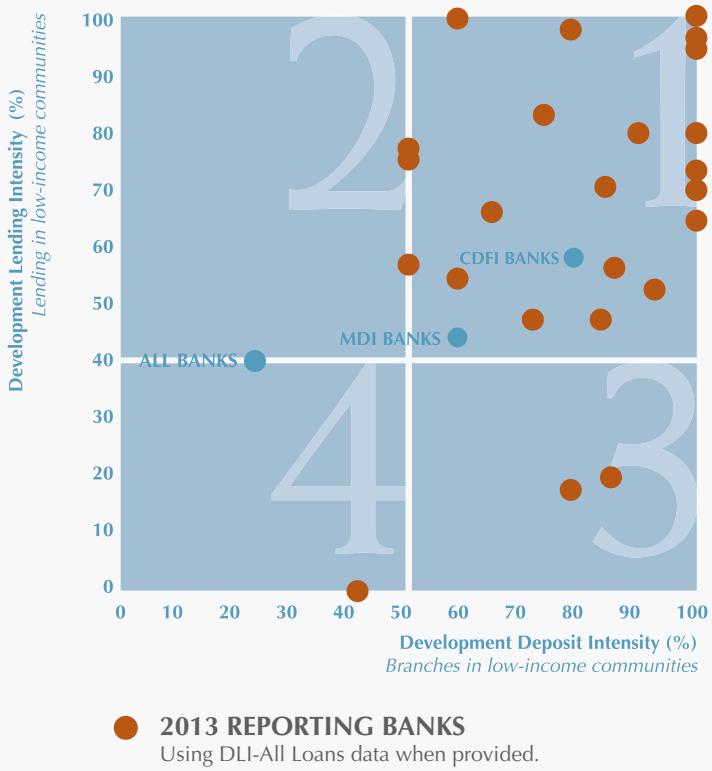
NCIF Social Performance Metrics — an Introduction

NCIF has developed clear, compelling, and broadly accepted Social Performance Metrics (SPM) for mission-oriented banks, with the following objectives:

- To inform investors about the social impact of potential and existing investments;
- To help bank management evaluate a bank's progress toward achieving its mission objectives;
- To demonstrate the importance of the industry to regulators and legislators;
- To show consumers the effect mission-oriented banks have in their community.

NCIF created the metrics in 1996 and has developed them over time to meet the needs of its bank partners and investor partners. Today, there are four core metrics supported by dozens of additional data points collected from partner banks. The core metrics are:

- **Development Lending Intensity (DLI)**
  The percentage of an institution's lending that is in qualified distressed Census tracts, as identified by the Treasury's CDFI Fund. This metric can be created based on publicly-available Home Mortgage Disclosure Act (HMDA) data for all banks, as well as on all lending through information reported to NCIF by partner banks. In 2013, NCIF Network reporting banks had a DLI of 63.6%, signifying that nearly two-thirds of their lending was in qualified areas.
- **Development Deposit Intensity (DDI)**
  The percentage of the institution's branches in the same communities. In 2013, NCIF Network reporting banks had a DDI of 85.7%, showing strong commitment to locating in and serving LMI areas.
- **Quadrant Score**
  Combining DLI and DDI, an institution's quadrant score highlights overall concentration in LMI areas. While approximately 10% of all banks receive the highest rank of Quadrant 1, 87.5% of NCIF Network reporting banks are Quadrant 1 banks.
- **Mission Intensity**
  Working with partner banks, NCIF creates the Mission Intensity score as a measure of the percentage of a bank's lending that supports their mission. The mission-oriented banks with which NCIF works demonstrate median Mission Intensity scores of 81.4%, signifying a high commitment to their community and economic development missions.



For more information, please visit **www.ncif.org**.

Using Data to Improve Communities

The findings presented in this working paper and ongoing research will be beneficial to a range of audiences, including bank and credit union representatives as well as supporting stakeholders such as investors, regulators, and researchers. The following calls to action provide guidance on how each group can use this report to support banks and credit unions — particularly those operating in LMI areas.

Bank and Credit Union Representatives

Differentiate and benchmark — Knowledge on quality of life improvements can be used by mission-oriented banks and credit unions to make the case for their important work in LMI communities as they seek support from investors and the public sector. In addition, banks and credit unions should continue to benchmark their social and environmental performance, promoting high standards.

Produce social returns in addition to robust financial performance — Banks and credit unions are encouraged to further their efforts in working in underserved communities, as this working paper's findings demonstrate positive improvements in overall quality of life are associated with the presence of financial institutions.

Investors

Enhance financial and philanthropic investment into MOFIs — The findings make the case to investors that financial institutions are important components of their communities, and are associated with positive quality of life. To support communities, investors interested in social impacts should pursue investments in banks and credit unions — particularly those working in economically distressed communities.

Increase the flow of capital, considering social returns — The research also proposes the foundations for a Social Return Index, which is intended to capture and succinctly convey the social impacts of banks and credit unions in addition to their financial performance. NCIF encourages investors to begin to more comprehensively consider the impacts — both social and financial — of their investments.

Regulators

Support MOFIs — The presence of banks and credit unions is associated with higher quality of life; however, banks and credit unions are less likely to be located in lower-income areas. To help overcome this limitation, regulators are encouraged to support the operations of banks and credit unions working in economically-distressed areas — allowing them to better deliver financial products and services. Regulators can aid these banks and credit unions by supporting legislation to direct additional capital to these communities, such as the Community Reinvestment Act, and by offering reductions to regulatory burden.

Researchers and Public Policy Practitioners

Support MOFIs via additional public-sector assistance — Given that MOFI activity has a positive correlation with an increase in quality of life, especially in underserved markets, additional public sector assistance should be considered.

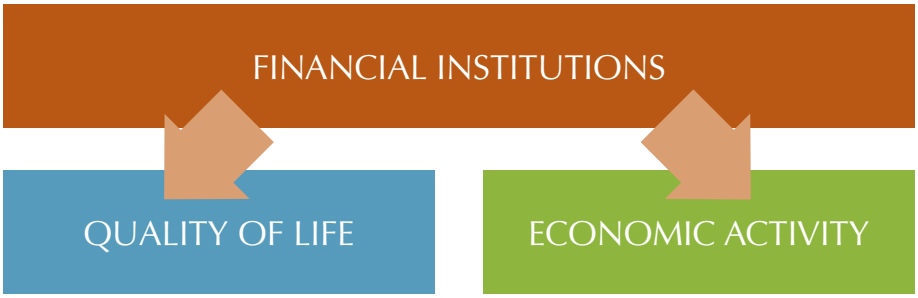
Additional research — The findings open the door to future research opportunities, particularly as outlined in Section 8. NCIF hopes this working paper helps spark a broader interest in research to make the case for banks and credit unions — particularly those working in LMI areas — and help develop the Social Return Index.

SECTION 3:

Foundations to the Research

Refining Research Questions and Collecting Data

The research team began the project with a general hypothesis that the presence and activities of financial institutions lead to an improvement in the quality of life and economic activity in a community (see Appendix 2.3). The relationship can be visualized as in the image below, in which the presence and activity of financial institutions affect a community's quality of life and economic activity.



To explore the relationship between financial institutions and a community's quality of life and economic activity, the research team began by identifying variables and collecting data that could potentially describe each component. Due to the paucity of data at the desired geographic scale, analysis of economic activity is reserved for future research.

Because of their importance in communities, banks and credit unions were considered the primary financial institutions of interest (see Appendix 2.4). In some areas, it is likely that other types of institutions — fringe lenders, the gray economy, the informal sector, etc. — are also providing financial products and services. These alternative services, however, may be predatory and may not provide the same sustainable pathways to wealth creation as banks and credit unions. Additionally, publicly-available data sources on alternative financial services or online lenders are not present at the national scale of this working paper and, as a result, they have not been included.

In considering quality of life, the research team first assembled a set of variables for considerations as part of a quality of life index. The intention is to combine several variables into a construction of quality of life. Ideally, it would include variables that could be replicated across different geographies and time periods for comparison and tracking of change over time. To aid in this process, the team conducted a literature review and consulted with the Advisory Board members to identify key concepts and data points for inclusion. The team collected a wide range of variables related to quality of life, such as educational attainment, income, poverty rates, housing type and quality, and mortality rates.[4] Initial analysis of the variables brought to light challenges in the availability of data across the different geographies and time periods.

[4] Of note, an individual's quality of life is influenced by a wide range of external factors as well as individual preferences and desires. Therefore, despite efforts to best represent quality of life, a quality of life index is, ultimately, an approximation.

During the literature review, the team also considered several existing quality of life indices that had tackled the similar challenge as this research — to identify a set of data points to describe quality of life. One key piece considered was Galster et al.'s article "Identifying Robust, Parsimonious Neighborhood Indictors" (2005). In this article, Galster et al. attempt to develop a quality of life index within several cities, relying on publicly-available data.

Galster et al. find that many of the elements they identify as important to quality of life have a strong correlation with data points related to home mortgages as contained in the Home Mortgage Disclosure Act (HMDA) data sets. Because of the similarity of the data points considered by the research team and the successful creation of an index by Galster et al., the team ultimately selected a primary variable from Galster et al.'s work as a proxy for quality of life rather than recreating a quality of life index. Galster et al. note an important relationship between HMDA single-family median loan origination amount and quality of life. As such, this piece of HMDA data — henceforth referred to as **HMDA median loan amount —** serves as a proxy for quality of life for this paper.[5]

Analysis at Census Tract Level from 2000-2013

The research team was interested in the granular, community-level relationship between banks and credit unions and their surrounding areas. As such, analysis within this working paper is conducted at the Census tract level to track granular change within a community and more directly link changes in communities with financial institution branches operating nearby.

In early stages of the project, the team also considered and collected a substantial amount of information at the county level. At that geographic level, information is available regarding economic activity, such as the number of firms operating in that county, total hires, total separations, and total payroll. As economic activity and quality of life often go hand in hand, incorporating more data covering economic activity may provide additional insight on the relationships between financial institutions and their communities. Learn more about how county-level data and other data sets may be explored in future research applications in Section 8.

Since 2000, the financial services industry has gone through (at least) three distinct periods — the times before, during, and after the Great Recession. The communities in which banks and credit unions are operating also underwent substantial changes as a result of the Recession. As such, the team selected a time period from 2000 to 2013 for the study — allowing for observations in each of the three periods as well as of longer-term changes within communities. Data availability, however, prevents some aspects of the research from spanning the full time period. For example, demographic data collected by the U.S. Census Bureau is not consistently available between 2001 and 2008 for all Census tracts. Because of this, some findings and insights focus on 2009 to 2013. While these portions cover less time, they are robust through the inclusion of these additional variables.

Data Creation: Granular Financial Institution Information

As noted above, the research team selected Census tracts as the primary unit of analysis in order to capture the relationship between financial institutions and their surrounding communities.

Bank and credit union data, however, is limited in that the majority of their data is available only at the institution level. With the exception of deposits data for individual bank branches, all data points for banks and credit unions are tied to the address of their headquarters, making it difficult to determine how an individual branch is impacting its immediate areas. For example, information on all of PNC Bank's locations is aggregated and reported under the headquarters address in Delaware.

To accommodate this potential limitation, the team created a methodology to allocate an institution's data first to each branch and then from the branch to surrounding Census tracts to approximate the amount of activity each branch is committing to its own immediate areas (refer to the Decay Methodology text box on page 15). This was important to the analysis to understand granular effects in communities and to tie financial institution data to the same unit of analysis — Census tracts — as the rest of the data.

The research team used this methodology, known as the **decay methodology,** to create variables representing bank and credit union presence and activity in their communities, including a count of branches interacting with the Census tract, assets allocated to a tract, and deposits of institutions operating within the tract.

The innovative methodology represents a unique approach to the data in attempting to understand the role individual branches can have on their communities. This takes a deeper look at the relationship between banks and their communities by calculating service area rather than simply looking at the address of the branch and the Census tract (or other geographic unit) in which the branch is located.

[5] There are some potential limitations related to reliance on HMDA loan value. During the study years, many neighborhoods underwent fluctuations of home values and, in many, sales slowed — both affecting loan values. The Great Recession may have also affected loan values through more stringent underwriting requirements. Additionally, focusing on single-family loan amount may not fully capture the appropriate data in areas with more renters. Despite the potential limitations on using a property-value-based variable, the research team feels it is the best available variable for the time period under consideration.

Decay Methodology – An Introduction

To transition bank and credit union data into a format that better reflects the institutions' on-the-ground impacts, the research team created a methodology to translate data from available sources down to the Census tract level. The methodology approximates the service area of banks and credit unions — allowing the research team to better understand with which communities the institutions might be interacting. The methodology is known as the **decay methodology,** which refers to the premise that an institution's ability to attract customers — and, therefore, to effect change — will decrease (decay) as the distance from the branch increases.

The methodology was developed in conjunction with Bancography, an industry leader in understanding the service area of financial institutions. In addition, the research team consulted other industry leaders and literature to refine the methodology.

Step 1

The first step of the methodology is to disaggregate branch activity from the institution level back to each individual branch. For banks, this is accomplished using the branch and institution deposits — both of which are publicly available. The team calculated the branch's deposits as a proportion of the total institution deposits and used that proportion to attribute other variables to the branch level. While this measurement will not mirror the bank's internal accounting on branch-level activity, the research team believes it to be a strong approximation. To improve the accuracy of the proportions, all branches with deposits of more than $250 million were capped at that level, with the assumption that deposits above that level would likely be large institutional or municipal investors and would skew the overall values.

For credit unions — as deposits are not publicly available at the branch level — the proportions to disaggregate branch information were based on population. The team considered the population of Census tracts in which an individual credit union is located as a proportion of all of the Census tracts in which the credit union is located. From there, other variables were proportioned to the credit union level. In developing this methodology, the research team also consulted with Filene researchers and several industry practitioners for recommendations. Of note for credit unions, there are a substantial number of credit unions with only one branch – meaning that, for many, the total service area population is the same as the population the branch serves.

Step 2

The second step of the methodology divides branch-level data to surrounding Census tracts — based on an approximated service area. Using industry standards from Bancography as well as additional research, the team estimated the distance a customer would travel to reach a financial institution. These distances are the approximate service areas and measure how widely that bank might be able to "cast its net" or affect its community. Different service area sizes were used based on the density of the community. For example, the team estimated that customers in urban areas would travel up to 1 mile to reach a branch, given that urban areas are denser — with more proximate opportunities to bank. Based on the "decay effect," which lessens with distance from the branch, more activity was apportioned to the inner buffer than the outer buffer. The majority of clientele will come to the bank or credit union from a more immediate area, while a smaller proportion of clientele will come to the bank or credit union from farther out.

Table 1: ***Service Area Size Approximations Based on Census Tract Type***

	Population Density per Square Mile	Inner Buffer	Outer Buffer
Rural	< 1000	5 miles	9 miles
Suburban	≥ 1000 <3000	2.5 miles	3 miles
Urban	≥ 3000 <5000	1.5 miles	2 miles
Urban Core	≥5000	0.5 miles	1 mile

Decay Methodology – An Introduction *(continued)*

Using mapping software (ArcGIS), the team mapped each branch. Around each bank and credit union branch, the inner and outer buffers were drawn and the area of the overlap between the buffer and each underlying Census tract was calculated with the mapping software. For each branch, the financial data points were decayed out to the surrounding Census tracts — based on the calculated amounts of overlap and the amount of activity attributed to each buffer.

Ultimately, the data files prepared represent the total activity of all banks and credit unions operating within a given tract. Primary variables created through this process are:

- **Branch count:** the number of physical institutions interacting with a tract. This approximates the service area of each branch and helps identify the geographies with which that tract might be interacting.
- **Tract deposits:** the sum of bank and credit union deposits of all branches operating within a tract. A Census tract's value for tract deposits is the total of all branches whose buffers intersect that Census tract. This provides a measure of the scope of institutions working within a tract.
- **Asset allocation:** the sum of bank and credit union assets proportioned to each geography. Using the decay methodology, data on assets were proportioned out to each Census tract.
- **Loan allocation:** the sum of bank and credit loans proportioned to each geography. Similarly, using the decay methodology, data on lending were proportioned out to each Census tract.

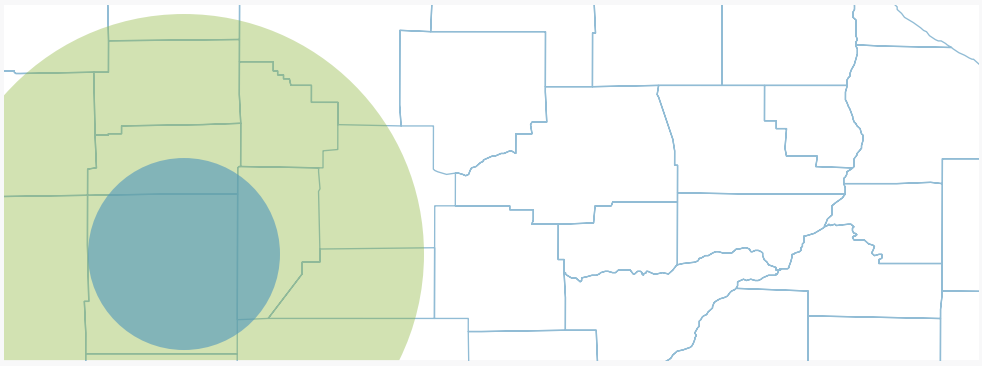


Figure 1: ***Decay Methodology Example***
The map shows an example of the buffering process, demonstrating an inner and outer buffer extended from a single branch and the Census tracts overlapped by the buffers. Each of the individual Census tracts would receive an allocation of the institution's activity.

SECTION 4:

Making the Case for Financial Institutions and of Increasing the Availability of Financial Products and Services Among Communities

Finding 1:
There is a positive relationship between bank and credit union presence and activity and quality of life.

HMDA single-family origination median loan amount serves as a quality of life proxy based on Galster et al.'s successful correlations with other key quality of life indicators. As a shorthand, this working paper refers to single-family median loan amount as HMDA median loan amount.

The findings below demonstrate how banks and credit unions are associated with higher quality of life, making the case for the expansion of access to financial products and services with a particular focus on extending these important products and services into LMI and underserved communities so they can reap the benefits associated with banks and credit unions (see Appendix 2.6).

Methodology: The research team was interested in how bank and credit union presence and activity is associated with the HMDA median loan amount as a proxy of quality of life in a tract.[6] As a first step to analyze the relationship, the team correlated HMDA median loan amounts with three pieces of bank activity data — the number of branches interacting with the tract (Branch Count), total deposits of banks and credit unions within the tract (Tract Deposits), and assets allocated to tracts (Asset Allocation). The relationship was tested across the 2000-2013 study period to check for changes over time.

For both banks and credit unions, exogenous factors may also be at play, affecting the interpretation of our findings. The effects of these variables are to be expected given the broad subject matter of our research efforts.

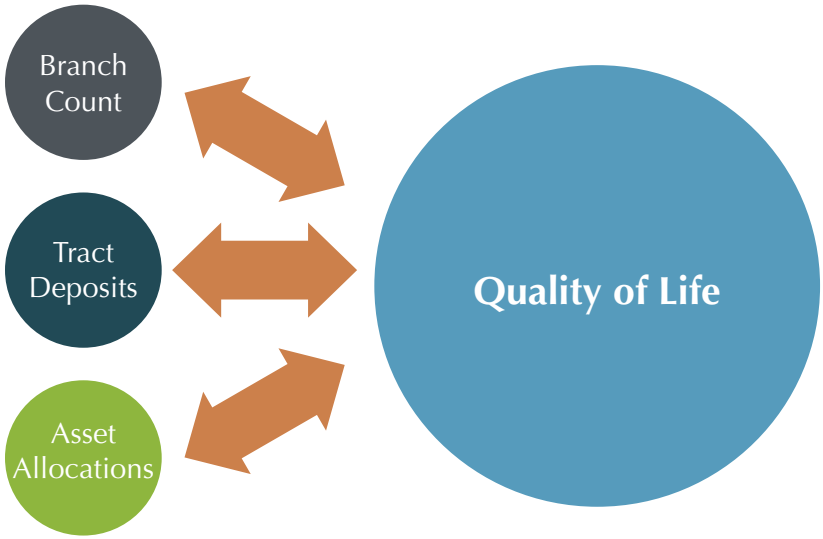


Figure 2: ***Financial Institutions' Interaction with Quality of Life***
The research team hypothesized that each of the bank and credit union variables may have an effect on the quality of life.

[6] For more information on techniques used within this report, see the following sources, among others: For a general discussion of linear regression, see Draper and Smith (1998), Greene (2012), or Kmenta (1997). Draper, N., and H. Smith. 1998. Applied Regression Analysis.3rd ed. New York: Wiley; Greene, W. H. 2012. Econometric Analysis. 7th ed. Upper Saddle River, NJ: Prentice Hall; Kmenta, J. 1997. Elements of Econometrics. 2nd ed. Ann Arbor: University of Michigan Press. Galton (1888). The product-moment correlation coefficient is often called the Pearson product-moment correlation coefficient because Pearson (1896) and Pearson and Filon (1898) were partially responsible for popularizing its use. See Stigler (1986) for information on the history of correlation. Galton, F. 1888. Co-relations and their measurement, chiefly from anthropometric data. Proceedings of the Royal Society of London 45: 135–145; Pearson, K. 1896. Mathematical contributions to the theory of evolution — III. Regression, heredity, and panmixia. Philosophical Transactions of the Royal Society of London, Series A 187: 253–318; Pearson, K., and L. N. G. Filon. 1898. Mathematical contributions to the theory of evolution. IV. On the probable errors of frequency constants and on the influence of random selection on variation and correlation. Philosophical Transactions of the Royal Society of London, Series A 191: 229–311; and Stigler, S. M. 1986. The History of Statistics: The Measurement of Uncertainty before 1900. Cambridge, MA: Belknap Press.

Results: In each of the years, there is a moderate correlation between banking and credit union variables and the quality of life proxy.

Bank Relationships

The results below in Table 2 and Figure 3 show that assets allocated to the tract and branch count have similar correlations with quality of life — ranging from 0.20 to 0.26 over the time period studied. This signifies that, while the correlations are low, the branch presence and the amount of assets allocated to a tract have a positive relationship with the quality of life proxy. Secondly, when considering the amount of deposits of all of the branches located within a tract, through the Tract Deposit variable, there is also a positive correlation — ranging from 0.36 to 0.39 — with the quality of life proxy. This signifies a moderate correlation with the overall deposit amount of branches operating within a tract and the quality of life proxy.

Figure 3: ***Bank Variable Correlations with Quality of Life Proxy***

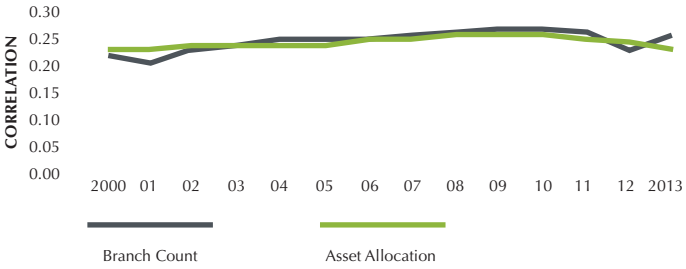


Figure 4: ***Tract Deposits Correlation with Quality of Life Proxy***

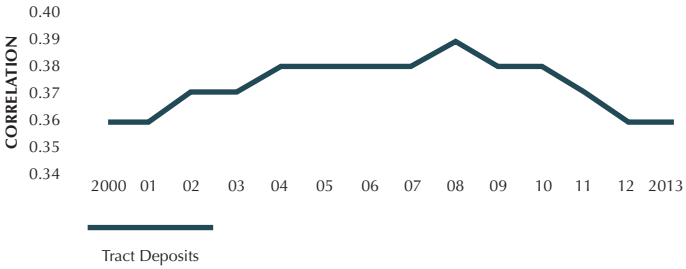


Table 2: ***Correlation of Bank Variables and Quality of Life Proxy***

	Branch Count	Asset Allocation
2000	0.22	0.21
2001	0.22	0.20
2002	0.23	0.22
2003	0.23	0.23
2004	0.23	0.24
2005	0.23	0.24
2006	0.24	0.24
2007	0.24	0.25
2008	0.25	0.26
2009	0.25	0.26
2010	0.25	0.26
2011	0.24	0.25
2012	0.24	0.22
2013	0.22	0.25

Table 3: ***Correlation of Tract Deposits and Quality of Life Proxy***

	Tract Deposits
2000	0.36
2001	0.36
2002	0.37
2003	0.37
2004	0.38
2005	0.38
2006	0.38
2007	0.38
2008	0.39
2009	0.38
2010	0.38
2011	0.37
2012	0.36
2013	0.36

Credit Union Relationships

For credit unions, the correlation among the variables is lower. There are many potential explanations for this. First, the analysis of both banks and credit unions is branch based and, as credit unions have fewer branches, it is possible that their association with branches and the tracts in which they are operating is lower based on our methodology. Additionally, the decay methodology applied to each set was slightly different. Finally, some credit unions are focused on a specific group of individuals and are not open to the public.[7] The branch count and assets allocated to the tract have low correlation with quality of life. For branch location, this tapers to no correlation in the later years of the study.

Additionally, for credit union deposits, there is a low but positive correlation with the quality of life proxy. The correlation here is higher than the other variables.

Figure 5: ***Bank Variable Correlations with Quality of Life Proxy***

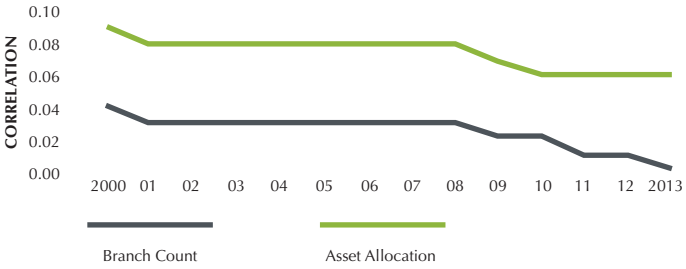


Figure 6: ***Tract Deposits Correlation with Quality of Life Proxy***

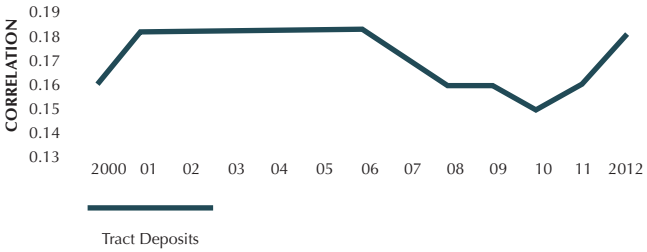


Table 4: ***Correlation of Credit Union Variables and Quality of Life Proxy***

	Branch Count	Asset Allocation
2000	0.04	0.09
2001	0.03	0.08
2002	0.03	0.08
2003	0.03	0.08
2004	0.03	0.08
2005	0.03	0.08
2006	0.03	0.08
2007	0.03	0.08
2008	0.03	0.08
2009	0.02	0.07
2010	0.02	0.06
2011	0.01	0.06
2012	0.01	0.06
2013	0.00	0.06

Table 5: ***Correlation of Credit Union Variables and Quality of Life Proxy***

	Tract Deposits
2000	0.19
2001	0.16
2002	0.18
2003	0.18
2004	0.18
2005	0.18
2006	0.18
2007	0.18
2008	0.17
2009	0.16
2010	0.16
2011	0.15
2012	0.16
2013	0.18

[7] Credit unions with Select Employee Group (SEG); Trade, Industry, or Profession (TIP) Charter; etc.

Finding 2:

The relationship between quality of life and the presence and activity of banks and credit unions was relatively consistent between 2000 and 2013.

Methodology: The research team explored whether the relationship between financial institutions and the quality of life in the institutions' surrounding communities changed over time. To better understand this, the correlation was tested year to year as described above.

Results: Drawing on the results from Finding 1 — displayed above in Tables 2–5 and Figures 3–6 — the relationships between each of the bank and credit union variables and the quality of life proxy did not change substantially between the years considered.

Over time, the association is stronger for banks than for credit unions — though the relationship is consistently positive for both. The strength of the correlations suggests that the bank and credit union activity is moderately associated with the quality of life proxy.

While Finding 2 is similar to Finding 1, it is significant on its own in that it shows financial institutions have been consistently, positively associated with the quality of life proxy. The relationship remains stable across the three different studied time periods for the financing sector: before, during, and after the Great Recession. Particularly in the observations on banks, this stable, positive association is encouraging for the ongoing role of institutions within their communities.

Finding 3:

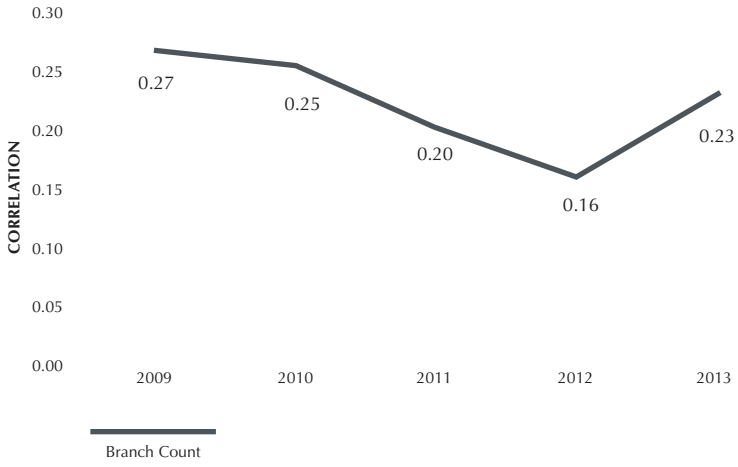
Banks and credit unions are less likely to be operating within lower-income areas, suggesting that these areas have less access to the quality of life benefits associated with the increased presence and activity of financial institutions.

Methodology: Based the research team's collective observations and NCIF's past research, the team hypothesized that there will be more banks and credit unions in areas where incomes are higher. To test this, branch location information was correlated with median household income in tracts. Here, the team focused on the 2009-2013 time period in order to include data on household income.

Results: As seen in Figure 7, there is a moderate correlation between household income and branch count, meaning more branches are more associated with areas of higher income. Importantly, this also suggests there are fewer branches in areas with lower household incomes. The correlation varies during the time period, with a decline between 2009 and 2012, followed by an uptick in 2013.

The relationship between branch presence and household income is important in that, as noted in Findings 1 and 2, there are positive associations between bank and credit union presence and quality of life. The causation of the relationship was not tested or known; potentially, banks and credit unions choose to locate in areas of higher household income. That banks and credit unions are less likely to be present in lower-income areas may mean that individuals in these areas are less exposed to the quality of life gains associated with branch presence.

Figure 7: ***Correlation of Branch Count and Median Household Income per Census Tract***



Finding 4:
Tracts where CDFI banks operate are different than other tracts in terms of financial institution activity and HMDA activity

Methodology 1: Because of NCIF's position as an advocate for CDFI banks, the team was interested in exploring if Census tracts where a CDFI bank is located are different than other tracts in terms of HMDA activity and financial institution activity. As noted in the side bar on page 2, CDFI banks, minority banks, and other MOFIs are a small but significant component of the overall financial institution sector. NCIF has worked extensively with these institutions — particularly CDFI banks — to identify their individual impact in their communities. This analysis builds on that work to understand if they are having differential effects on the quality of life in their communities.

To create the following analysis, the team identified **CDFI Bank Tracts** through an extension of the decay methodology (see Appendix 2.7). The team mapped all CDFI bank branches and, using the decay methodology, approximated their service area. All tracts in which CDFI banks interact were labeled "CDFI bank tracts" and compared[8] to other tracts for this analysis. These tract comparisons served as the basis for the initial, exploratory analysis for this working paper. Future research efforts will further explore these findings.

In considering the following information on CDFI bank tracts, it is important to note that the statements made are not inherently about CDFI bank behavior, but, rather, the cumulative tract activity — to which CDFI banks contribute. There are external factors that may also contribute to the behaviors observed within the tracts. CDFI bank tracts are a small subset — approximately10% of all tracts — which may affect observations. Additionally, because CDFI bank tracts were described through the decay methodology, they may include the activity of nearby, more affluent tracts.

Results 1: CDFI bank tracts operate at a higher base level of poverty and unemployment than other tracts. This is expected because of the nature of CDFI banks: to gain certification, a certain percentage of their activity must take place in distressed areas. This is important, however, as it provides a base understanding of how these Census tracts compare to other tracts. The differences in Figures 8 and 9 below are statistically significant.

Figure 8: ***Mean Poverty Rate Comparison by Tract Type***

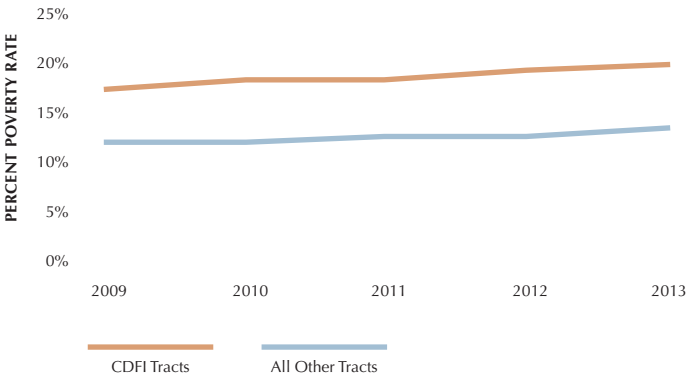
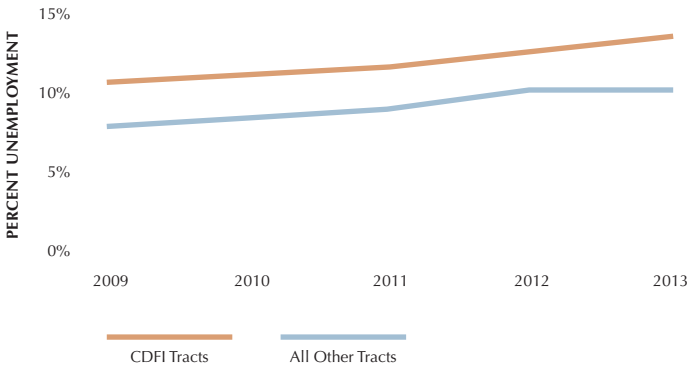


Figure 9: ***Mean Unemployment Rate Comparison by Tract Type***



[8] See Mann, H. B., and D. R. Whitney. 1947. On a test whether one of two random variables is stochastically larger than the other. Annals of Mathematical Statistics 18: 50-60 and Wilcoxon, F. 1945. "Individual comparisons by ranking methods." Biometrics 1: 80-83.

CDFI bank tracts have statistically significant differences from other tracts in terms of bank and credit union activity — as seen below in Tables 6 and 7. Overall, CDFI tracts, compared to other tracts:

- Have lower assets allocated to the tracts. In early years, the difference between the two sets of tracts is not consistently significant, but — from 2006 onward — other tracts have more assets allocated to them.
- Have more bank and credit union branches operating within them. This suggests that CDFI bank tracts have more bank and credit union presence.

Several potential conclusions may be inferred from these findings, including that CDFI bank tracts have more branches but not more assets allocated to them, which may suggest that the branches within CDFI tracts are from smaller banks as well as the fact that these are relatively underserved markets.

Additionally, when considering the amount of bank branch deposits of the branches operating within CDFI bank tracts,[9] CDFI bank tracts have higher total deposits. This signifies that there are more total branch deposits — with several potential implications. First, this may be because CDFI bank tracts make up a small portion of total tracts and additional factors are drawing down the median for the other tracts. Additionally, the median tract deposit could be skewed by larger institutions operating within a tract. Deposits of branches operating in CDFI bank tracts are higher, particularly in the earlier years of the study.

Table 6: ***Correlation of Bank Variables and Quality of Life Proxy***

	Median Assets Allocated to Tracts		Median Branches in Tracts	
	CDFI Bank Tracts	Other Tracts	CDFI Bank Tracts	Other Tracts
2001	95,123†	94,663	44	23
2002	49,520	47,557	35	20
2003	50,984†	49,813	35	20
2004	55,078†	52,950	39	21
2005	51,362†	51,286	41	22
2006	46,511	51,893	41	23
2007	50,744	59,161	47	26
2008	64,933	70,800	42	25
2009	44,072	56,826	42	26
2010	49,702	53,117	36	28
2011	39,208	45,034	33	26
2012	36,478	44,945	28	26
2013	49,798	64,739	33	27

Table 7: ***Median Tract Bank Deposits Comparison Between CDFI Bank Tracts and Other Tracts***

	CDFI Bank Tracts	Other Tracts
2001	2,438,212	861,391
2002	1,860,716	727,047
2003	1,940,488	779,029
2004	2,086,881	827,188
2005	2,161,539	894,378
2006	2,226,815	964,598
2007	2,626,335	1,086,506
2008	2,505,474	1,028,485
2009	2,905,743	1,099,101
2010	1,876,848	1,294,982
2011	1,617,048	1,194,570
2012	1,508,829	1,207,375
2013	1,894,346	1,335,558

[9] Recall that the Tract Deposits and Assets Allocated variables are not comparable to each other and should be used to infer the relationship between assets and deposits of institutions within tracts.

† See page 43 for explanation.

Credit union activity in CDFI bank tracts — compared to other tracts — shows that CDFI tracts have lower median assets allocated to them but more branches. This may suggest that credit unions operating in CDFI bank tracts are smaller, though more numerous. Additionally, as noted above, credit unions may also be different from banks due to differences in the decay methodology used and different relationships with communities served for some types of credit union charters.

Looking at the total credit union deposit activity of the branches within the two sets of tracts, CDFI bank tracts have more total deposits — though the difference is not significant in later years.

Table 8: ***Correlation of Credit Union Variables and Quality of Life Proxy***

	Median Assets Allocated to Tracts		Median Branches in Tracts	
	CDFI Bank Tracts	Other Tracts	CDFI Bank Tracts	Other Tracts
2001	1,181,592	1,486,669	7	3
2002	1,173,984	1,651,351	7	3
2003	1,351,815	2,383,103	8	3
2004	1,624,125	3,282,933	9	4
2005	2,065,866	3,867,805	9	4
2006	2,029,041	4,354,618	11	6
2007	2,317,440	5,237,226	12	6
2008	1,860,007	5,808,332	12	6
2009	2,231,735	6,403,544	12	6
2010	3,532,125	5,903,008	10	7
2011	3,558,525	6,176,990	9	6
2012	4,188,063	7,283,229	10	7
2013	3,735,619	7,246,295	9	6

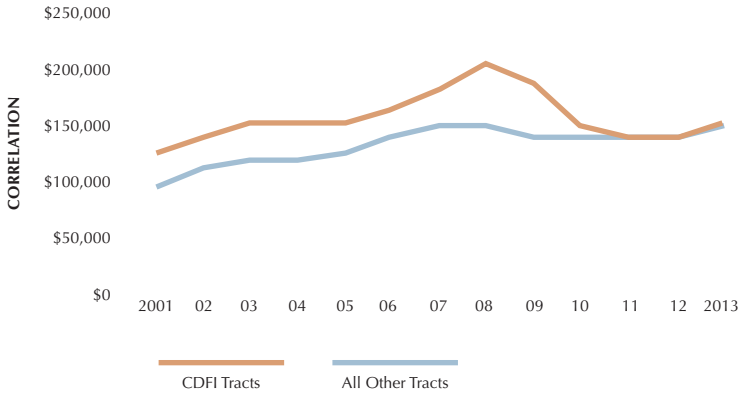
Table 9: ***Median Tract Credit Union Deposits Comparison Between CDFI Bank Tracts and Other Tracts***

	CDFI Bank Tracts	Other Tracts
2001	108,313	71,810
2002	114,196	80,864
2003	152,811	110,555
2004	177,635	134,439
2005	184,138	144,947
2006	182,908	144,763
2007	217,759	164,183
2008	178,888†	176,258
2009	198,054†	190,435
2010	226,247	208,619
2011	209,678†	208,549
2012	247,757†	240,625
2013	236,350	247,736

Methodology 2: Using the same sets of CDFI bank tracts and other tracts, the research team compared HMDA activity between the two sets.

Results 2: CDFI bank tracts have statistically significant differences from other tracts. First, in comparing the quality of life proxy, CDFI bank tracts have a higher quality of life compared to other tracts between 2001 and 2009. After 2010, however — while CDFI bank tracts show only a slightly higher median loan amount — the difference between the two sets of tracts is not statistically significant. See Figure 10 at right for more detail.

Figure 10: ***HMDA Activity Comparison Between CDFI Bank Tracts and Other Tracts***



There are several potential interpretations of this trend. First, the downturn in single-family origination amounts in CDFI bank tracts begins in 2008 — roughly aligning with the start of the Great Recession. The lower-income tracts where CDFI banks tend to be located were harder hit during the Recession than other areas, potentially accounting for the decline in median HMDA loan amounts in CDFI bank tracts.

Recall that, in CDFI bank tracts, the base income is lower. This may suggest that, while the individuals who do receive loans have higher incomes than their tract's median income, they are not necessarily on par with borrowers in non-CDFI bank tracts that have higher income overall.

In considering additional HMDA data points, CDFI bank tracts again have statistically significant differences from other tracts. The relationship is drawn out in Table 10, where all differences are significant unless marked with an asterisk. Trends include:

- CDFI bank tracts have lower total HMDA single-family originations loans within them compared to other tracts throughout the time period.
- The median income of borrowers receiving those loans, however, is higher in CDFI bank tracts from 2000-2009. In 2010, the relationship switches, and borrowers in other tracts have higher incomes.
- There are consistently more single-family originations in other tracts.

Table 10: ***HMDA Activity Comparison Between CDFI Bank Tracts and Other Tracts***

	Sum of Originated Loan Amounts ($000)		Median Income of Borrower ($)		Number of Originated Loans	
	CDFI Bank Tracts	Other Tracts	CDFI Bank Tracts	Other Tracts	CDFI Bank Tracts	Other Tracts
2001	4,163	5,633	56,000	51,000	34	49
2002	4,714	6,360	59,957	55,000	35	53
2003	5,657	7,655	61,000	56,000	40	59
2004	7,592	9,213	66,000	59,996	49	67
2005	8,977	10,935	71,000	64,000	59	74
2006	9,749	10,516	75,000	68,000	59	68
2007	7,051	7,970	75,000	68,000	38	49
2008	4,055	5,447	75,500	65,000	19	33
2009	3,240	4,632	68,969	59,500	17	29
2010	2,805	4,230	59,000	60,852	18	27
2011	2,456	3,907	60,000	62,000	16	26
2012	2,845	4,443	61,500‡	62,500	18	29
2013	3,349	5,357	64,000	65,000	19	33

In-Depth Look at Median Income of Borrowers

Considering the higher poverty rates of CDFI bank tracts, the higher income of borrowers in these tracts is somewhat surprising.

In both sets of tracts, there is a difference between the median income of borrowers and the median tract household income overall. However, as seen in Table 11, the difference is significantly greater for CDFI bank tracts. For example, in 2013, the difference between median income and median tract household income in CDFI bank tracts was 84.3% compared to 60.3%. In both sets of tracts, the trend of borrowers having higher income than others in the Census tract increases in magnitude across the time period — moving from 38.9% to 84.3% for CDFI bank tracts, and from 17.2% to 60.3% in all other tracts. This substantial increase suggests that lenders may have become more selective of their borrowers following the Recession.

One potential interpretation of these trends is that, in CDFI bank tracts, lenders are more selective of their borrowers — targeting higher-income individuals within the tract and making higher-value loans. Overall, lending is lower in CDFI bank tracts, potentially because of the socioeconomic characteristics of each set of tracts.

Recall that, in CDFI bank tracts, the base income is lower. This may suggest that, while the individuals who do receive loans have higher incomes than their tract's median income, they are not necessarily on par with borrowers in non-CDFI bank tracts that have higher income overall.

Table 11: ***Median Difference Between Borrower and Household Income by Tract Type***

	CDFI Bank Tracts	Other Tracts
2009	38.90%	17.20%
2010	35.70%	17.30%
2011	47.60%	28.80%
2012	62.70%	41.50%
2013	84.30%	60.30%

Finding 5:

The presence and activity of banks and credit unions is associated with improvements in unemployment and poverty rates.

Methodology 1: Whereas other findings focus on HMDA median loan amount as a proxy for quality of life, within this sub-section, the research team focused on two other indicators of quality of life: unemployment rate and poverty rate. Focusing on these two indicators allows for drill-down into several key demographic characteristics of quality of life and allows for the tracking of change for these variables.

Additionally, poverty rates are closely tied to income levels. In Finding 3, it was noted that there is a relationship between household income and the presence of banks. By focusing additionally on poverty rates, this analysis ties back to the HMDA quality of life proxy as well.

To test whether there were different levels of bank and credit union activity in tracts based on poverty and unemployment rates, tracts were marked and analyzed based on these two socioeconomic characteristics. Tracts were separated into groups of above or below the median poverty rate and above or below the median unemployment rate. A point-in-time comparison of the financial institution variables was conducted to evaluate if there is a differential relationship between the presence and activity of banks and credit unions and these groups of Census tracts.

For this analysis, the team used the 2009 to 2013 time period to utilize demographic data. Bank and credit union data has been combined in the below analyses.

Results 1: Between tracts that are above or below the median levels for poverty rates and unemployment rates, the two sets of tracts have statistically significant levels of bank and credit union activity.

When looking at tracts based on poverty rate and unemployment rates in the tables below, the following insights can be drawn:

- Tracts with higher poverty rates have fewer assets allocated to them — both for banks and credit unions. The same holds true for tracts with higher unemployment rates.
- Areas of higher poverty rate and unemployment rate both have fewer branches operating within them.
- Overall, areas of higher distress — as defined by unemployment and poverty rates — have lower presence and activity of financial institutions.

Additionally, tracts with higher poverty rate have lower total deposits within them — both for banks and credit unions. The same holds true for tracts with higher unemployment rates.

Table 12: *Comparison of Financial Institution Activity in Tracts Above and Below the Median National Poverty Rate*

	Median Asset Allocation		Branches	
	< Median National Poverty Rate	≥ Median National Poverty Rate	< Median National Poverty Rate	≥ Median National Poverty Rate
2009	8,002,111	5,244,486	48	41
2010	7,516,230	4,501,686	41	36
2011	7,606,931	4,710,763	39	33
2012	8,980,543	5,528,946	30	24
2013	8,970,712	5,457,249	41	35

Table 13: *Comparison of Financial Institution Activity in Tracts Above and Below the Median National Unemployment Rate*

	Median Asset Allocation		Branches	
	< Median Unemployment Rate	≥ Median National Unemployment Rate	< Median Unemployment Rate	≥ Median National Unemployment Rate
2009	7,779,201	5,036,196	47	42
2010	7,829,317	5,222,355	42	37
2011	7,472,912	4,799,399	39	33
2012	8,857,779	5,637,496	30	24
2013	8,833,787	5,555,743	41	35

Table 14: *Comparison of Tract Deposits in Tracts Above and Below the Median National Poverty Rate*

	Median Tract Deposits	
	< Median National Poverty Rate	≥ Median National Poverty Rate
2009	2,170,950	1,183,197
2010	2,111,616	1,568,849
2011	1,541,038	1,387,256
2012	1,366,032	988,971
2013	2,091,233	1,571,029

Table 15: *Comparison of Tract Deposits in Tracts Above and Below the Median National Unemployment Rate*

	Median Tract Deposits	
	< Median Unemployment Rate	≥ Median National Unemployment Rate
2009	2,112,840	1,723,646
2010	1,916,283	1,589,112
2011	1,804,349	1,438,192
2012	1,330,014	1,030,458
2013	2,060,651	1,631,233

Methodology 2: To test whether bank and credit union presence and activity are associated with improvements in tracts, the team created a methodology to identify tracts that improved in their poverty and unemployment tracts. The improved and unimproved subsets of Census tracts were compared to each other over time. This methodology is referred to as the jumping tracts methodology (for more information, see "The Jumping Tracts Methodology" below).

Starting in the base year of 2009, tracts with greater than median unemployment rates and poverty rates were marked as "distressed." Year over year between 2009 and 2013, tracts that "jumped" or improved from the distressed group to the non-distressed group were identified. The team hypothesized that bank and credit union activity could potentially be associated to their jump. If financial institutions' presence was affecting quality of life, the research team anticipated that bank activity would precede a transition (or "jump") from distressed to not distressed.

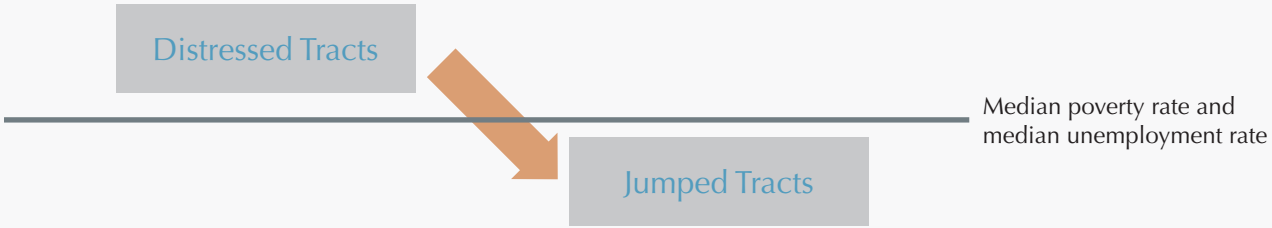
After tracts were identified using the jumping tracts methodology, the research team used median testing to compare the level of financial institution presence and activity — as well as HMDA activity — between tracts that remained distressed and tracts that jump year-to-year. The goal was to determine if either the activity of the financial institutions or the HMDA activity would be significantly different in the two sets of tracts — and if a lead-in effect could be identified.

The Jumping Tracts Methodology — An Introduction

The jumping tracts methodology was established to identify a set of Census tracts that improved in terms of quality of life characteristics from year to year and to then see if there were significant differences in tracts that did or did not change.

In the base year of 2009, "distressed tracts" were identified as those with poverty and unemployment rates above the national median level. 23,449 tracts were identified as distressed and served as the basis for further analysis within the jumping tracts methodology. Tracts identified as distressed were monitored from 2009 to 2013 for improvements in their poverty and unemployment rates. Tracts that met the "distressed" criteria in 2009 were the overall population of tracts compared in the jumping tracts methodology. Those that moved from above the median rate to below the median were classified as "jumping" in that they "jumped" the median. See below for an illustration of the methodology.

Figure 11: ***Jumping Tract Methodology Illustration***



Each year, some tracts made the jump (as seen in Table 16). Overall, 47% of the 23,449 tracts had jumped by 2013. Note that once a tract jumps it is no longer tracked to see if it returns to the distressed group. Future research could explore the long-term behavior of jumped tracts — tracking them to see how often they return to distressed status.

Table 16: ***Monitoring Jumping Tracts by Year***

	CDFI Bank Tracts	Other Tracts
Time Period of Analysis	Tracts that Jumped in Year	Cumulative Jumped Tracts
2009 to 2010	7,139	7,139
2010 to 2011	1,984	9,122
2011 to 2012	1,284	10,406
2012 to 2013	894	11,300

Several of the findings are based on comparisons between tracts that jump out of the distressed tract and those that remained distressed to identify differences in the quality of life proxy and bank and credit union presence and activity.

Results 2: Analysis found that there is more financial institution presence and activity in tracts that jump. Below, each of the differences is significant, at $p \leq .10$ unless indicated by an asterisk.

Note that, in several years, tracts that jump have statistically significant and greater financial institution activity in terms of the assets allocated to them. The difference in branch presence between jumping tracts and tracts that remain distressed was not significant.

These findings are important in demonstrating that the presence and activity of financial institutions may be positively associated with several key demographic characteristics of Census tracts — poverty and unemployment rates, in particular.

The research team also explored whether there is increased financial institution activity in the years leading up to the jump from distressed to non-distressed. Note that, in all years, tracts that jump have statistically significant and greater HMDA activity, including:

- Greater total originations;
- Greater income of borrowers receiving single-family origination loans;
- Greater median loan amount;
- Greater number of loans.

Table 17: ***Comparison of Financial Institution Activity in Distressed and Jumping Tracts***

		Distressed Tracts	Jumped Tracts
2010	Tract Count	23,440	7,139
	Assets ($000)	4,484,206	5,644,404
	Branch Count	37†	38
2011	Tract Count	23,440	9,122
	Assets ($000)	4,084,299	5,391,245
	Branch Count	34†	35
2012	Tract Count	23,440	10,406
	Assets ($000)	4,678,003	6,281,584
	Branch Count	25†	25
2013	Tract Count	23,440	11,300
	Assets ($000)	4,979,186	6,237,719
	Branch Count	36†	35

Table 18: ***Comparison of HMDA Activity in Distressed and Jumping Tracts***

		Distressed Tracts	Jumped Tracts
2010	Tract Count	23,440	7,139
	Sum Total SF Originations ($000)	2,394	4,307
	Median Income SF Borrower	51,000	61,000
	Median Loan Amount	107,000	141,000
	# SF Loans	20	28
2011	Tract Count	23,440	9,122
	Sum Total SF Originations ($000)	2,238	4,098
	Median Income SF Borrower	52,000	62,000
	Median Loan Amount	104,000	137,000
	# SF Loans	19	27
2012	Tract Count	23,440	10,406
	Sum Total SF Originations ($000)	1,305	2,588
	Median Income SF Borrower	55,000	47,000
	Median Loan Amount	94,000	114,500
	# SF Loans	12	20
2013	Tract Count	23,440	11,300
	Sum Total SF Originations ($000)	3,224	5,248
	Median Income SF Borrower	58,000	65,000
	Median Loan Amount	117,000	148,000
	# SF Loans	25	32

Additionally, the presence and activity of banks and credit unions were associated with future jumps. The research team looked at the differences in jumped tracts and distressed tracts after 1, 2, 3, and 4 years of interventions and took the median change after each year for each time set. For example, the effect of financial institution activity after one year is compared to four different sets of one-year interventions — comparing 2009 to 2010, 2010 to 2011, 2011 to 2012, and 2012 to 2013. This describes the effects of financial institutions' presence and activity after one year. See Table 19 for a full description of the years of comparison.

In looking at data preceding a tract's jump, HMDA median loan amount data and financial institution data were considered in advance of the year of the jump. This analyzes how the presence and activity of financial institutions in the first year of consideration influence a tract's ability to jump in later years.

Table 19: ***Description of Time Series Analysis for Jumping Tracts***

Time	Description	Comparison Years Included in Median
T1	Compares the base year to observations one year later	2009-2010, 2010-2011, 2011-2012, 2012-2013
T2	Compares the base year to observations two years later	2009-2011, 2010-2012, 2011-2013
T3	Compares the base year to observations three years later	2009-2012, 2010-2013
T4	Compares the base year to observations four year later	2009-2013

The results of the time series analysis are presented below in Figure 12. Here, bank and credit union data are combined across each of the financial institution variables: branch count, tract deposits, and assets allocated.

Figure 12: ***Time Series Comparison of Percent Difference Between Jumped and Distressed Tracts***

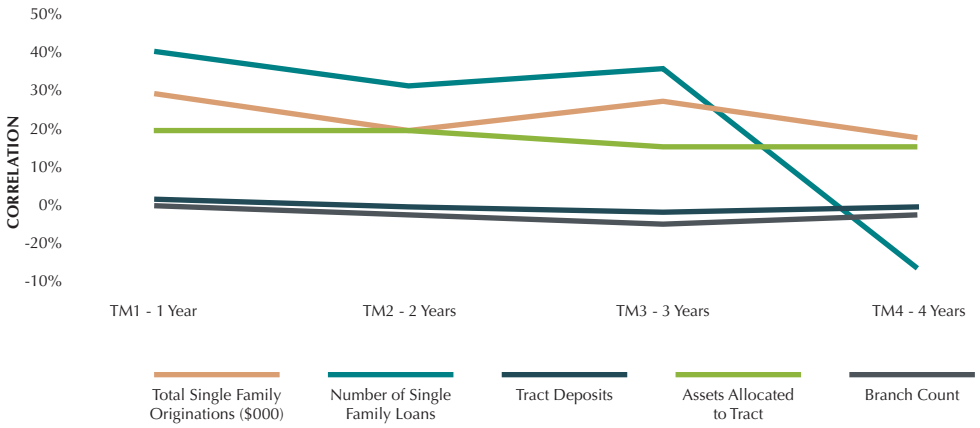


Figure 12 demonstrates that:

- After one year of intervention (TM1), there is a substantially higher amount of total single-family originations, number of single-family loans, and assets allocated in jumped tracts than in tracts that remain distressed. There is little difference between deposits of the branches within the tract and the number of branches in the tract. This suggests that these three variables may be associated with a tract's likelihood to jump.
- After two and three years, the total single-family originations, number of single-family loans, and assets allocated continue to be substantially higher in jumped tracts than in tracts that remain the same — though the difference is slightly lower.
- After four years (comparing 2009 and 2013), the role of total single-family originations shifts, such that there are more originations present in tracts that remain distressed than in jumped tracts. This may suggest that the effect of this variable lessens over time.

SECTION 5:

Enhancing the Social Performance Metrics

For nearly 20 years, NCIF has collected and analyzed data on banks and credit unions to better understand their social performance (see Appendix 2.8). NCIF's analysis is provided to a range of audiences, with the ultimate goal of moving additional capital to LMI communities and supporting underserved populations.

Currently, NCIF creates four core Social Performance Metrics and collects dozens of additional data points to create a comprehensive picture of the performance of banks, including social, environmental, and financial performance. Different audiences use the information in range of ways:

- Investors use the data to identify institutions in which to invest and to track the social performance of an existing portfolio. Using data, investors can better understand the social returns their financial investments are making.
- Banks use the data externally to make the case for the performance of their banks in front of investors and to differentiate themselves with depositors and other potential clients. Banks also use the data to understand their own performance, creating internal benchmarks to identify challenge areas and improve performance.
- Regulators use the data to better understand the role mission-oriented banks have in their communities. NCIF focuses on MOFIs when sharing data in publications and analysis, recognizing these institutions' important role in their communities.
- Researchers and public policy practitioners use the data to track the social performance of financial institutions — particularly mission-oriented banks — in their research and while advocating for policy changes.

The findings from the research efforts can be applied in new ways to enhance the existing Social Performance Metrics. Proposed enhancements will be useful both internally to NCIF — helping to better guide investments and advocate for banks making a positive change in the communities — and externally for the audiences described above. The following provides an overview of enhancements to the Social Performance Metrics.

Enhancements Through New Data

1. Expanding the Social Performance Metrics to credit unions. Historically, NCIF has focused its social performance analysis on banks. In creating the datasets used for this project, the research team collected financial information on credit unions from 2000-2013. Some of this data can be applied to create the four core Social Performance Metrics for credit unions over the time span. Additionally, because credit unions were included in the overall analysis, all future applications of the expanded Social Performance Metrics will include credit unions.
2. Capturing the footprint of financial institutions to better quantify their impact. NCIF created a methodology for understanding banks' and credit unions' interactions with their communities that can be used as a basis for expanding the Social Performance Metrics. The decay methodology (see page 16 for more information) proportions bank and credit union data — from the institution level to the branch level and, finally, to the Census tract level — to approximate the service area of the institution as well as the amount of activity it is contributing in each Census tract.

This methodology will allow NCIF to create a closer approximation to the service area of financial institutions and, therefore, to more accurately track and quantify their impact. Previously, the Social Performance Metrics focused on the Census tract in which an institution was located or in which loans were placed. The expanded understanding of financial institutions' geographic footprint will greatly expand potential ways to track impacts. For example, in current analyses of banks, NCIF looks at the demographics of the Census tracts in which bank branches are located. Using the decay methodology, NCIF will be able to expand the area of analysis to the approximated footprint to gain a more accurate Census of the socioeconomic characteristics of areas where financial institutions are operating.

Improvements Through New Findings

As detailed in the previous section, the report generated five major findings — several of which can be applied to enhance the Social Performance Metrics and spur new research.

1. Incorporating the quality of life proxy. The research finds that the HMDA median loan amount can be a proxy of quality of life. This proxy may have several implications to NCIF's social performance work. For example, NCIF currently creates its Development Deposit Intensity (DDI) metric by looking at what portion of a bank's branches are located in LMI areas. An additional layer of analysis could be to examine which proportion of a bank's branches are in areas with lower median HMDA median loan amounts. It is important that financial institutions reach into these areas as well to extend the positive gains to quality of life associated with their presence.
2. Incorporating the jumping tracts methodology. The findings show that the presence of financial institutions is associated with the improvement of Census tracts (where tracts "jump" from distressed to not distressed) and, importantly, the presence of financial institutions can precede the improvement. While other factors also likely contribute to the improvement of tracts, a historical analysis of a bank or credit union's role in its community can be created through examining the jumping tendencies of tracts in which the bank or credit union is operating.
3. Longitudinal analysis. Several of the findings draw out the long-term role financial institutions have in their communities. For example, the jumping tract analysis shows that the presence of banks and credit unions is associated with future improvement in key socioeconomic variables. The quality of life analysis shows that banks and credit unions are associated with positive quality of life over a period of time. With these findings in mind, future Social Performance Metrics can be built out to track long-term change over time — building on the current single-year analysis.
4. Adapting to the changing world of banking. While branch location remains important, technology platforms such as online banking, payment transfers, and loan systems are becoming an increasingly larger part of how individuals and organizations access banking services. Overall, the findings from this report demonstrate that access to banks and credit unions is associated with higher quality of life. As NCIF begins to think of ways to track the impact of new technology-driven approaches to banking, these groundwork findings may help inform new metrics.
5. Laying the groundwork for a Social Performance Index. An important addition to the Social Performance Metrics will be the creation of a Social Performance Index, described in detail in Section 6. NCIF believes that adding the index will have broad implications on how banks and credit unions are viewed — particularly by including social performance considerations in addition to financial performance.

SECTION 6:

Laying the Groundwork for a Social Return Index

An important component of this research effort was to lay the groundwork for a Social Return Index. NCIF believes this sort of analysis will help further incorporate additional considerations into financial decision making. Then, banks and credit unions that generate social and environmental returns will rise to the top of their industry — achieving greater recognition and investment.

Modern Portfolio Theory focuses solely on the financial risks and returns — without considering the social or environmental returns of investments. Through the Social Return Index, NCIF proposes to create a formula that captures the complex characteristics of financial institutions' interactions with their communities in order to better incorporate social return into financial decision making.

Overall, the Social Return Index would be part of larger considerations of Total Returns, when paired with Financial Returns as envisioned in the simplified equation below:

$$\textit{Total Return} = f(\textit{Financial Return} + \textit{Social Return} + \textit{Environmental Return} + \varepsilon)$$

To define social returns, characteristics of financial institutions that contribute to their social returns must first be identified. For example, banks that have more small business lending or those that have had "outstanding" CRA exam scores may be associated with greater social returns.

The research team identified seven potential characteristics of banks and credit unions that may be associated with higher social returns and then they collected data for additional analysis. The following describes these potential characteristics and how data was manipulated to help lay the groundwork for an index. Initial analysis was also conducted, but is subject to further research.

The research team is encouraged by the segments identified and the data created but also recognizes that there are multiple other characteristics of banks and credit units that can be identified and analyzed for potential inclusion in a Social Return Index. The team shares the following sample areas for additional exploration and invites additional conversation with stakeholders to identify other important features:

1. The institution's Social Performance Metrics. NCIF's metrics aggregate information on banks as a measure of their concentration in LMI areas and could be a strong indicator of social return;
2. Products and services offered;
3. Additional balance sheet and income statement characteristics;
4. Asset quality characteristics such as loan loss reserves or noncurrent loans;
5. Earnings characteristics such as net interest margin or efficiency ratio;
6. Additional nuances of the data. For the initial consideration, the team separated data into simple binaries, whereas future analysis could create more nuanced categories for ranking or dividing the data. For example, here the team considered total lending and small business lending, but only above- or below-median amounts of lending. Social returns may be more influenced by other types of lending and/or different volumes of lending.

Table 20: ***Description of Potential Social Return Index Components***

Financial Institution Characteristic	Hypothesis	Segmentation Applied
Size of institution	Smaller financial institutions will be more likely to be associated with positive quality of life because of their ability to be responsive to needs in the surrounding communities.	Institutions were segmented as either large (above $1B in assets) or small (less than $1B in assets). Counts of large institutions interacting with each Census tract were made as an indicator of where larger institutions are present.
Headquarters	The headquarters of a financial institution will be more likely to be associated with positive quality of life because of its closer proximity to the community. Many smaller banks have fewer offices and a headquarters may be an important service hub for the institution. Finally, headquarters locations can be important centers of employment — adding wages and indirect outcomes to the community.	Branches were segmented into those that are headquarters or not. Counts of headquarters for each Census tract were created.
Loan-to-deposit ratio	Institutions with healthy loan-to-deposit (LTD) ratios are more likely to be associated with positive quality of life as they are actively lending in their community while maintaining appropriate levels of deposits. Here, an LTD is defined as healthy if it falls between 70% and 90%.	Institutions were segmented as those that have an LTD between 70% and 90% and those that do not. Counts of institutions with healthy LTDs were created for each Census tract to see where these institutions are operating.
Ownership structure	Institutions that have elected to be taxed as Subchapter S corporations are more likely to be associated with positive quality of life as they have fewer, likely local, owners who are more tied to communities.	Institutions were segmented as those that are S corporations and those that are not. All credit unions were segmented as S-corporations. Counts of the S-corporations in each Census tract were created to see where these institutions are operating.
Total lending	Institutions that have higher total loans outstanding are more likely to be associated with positive quality of life, as they contribute capital to their communities.	Institutions were segmented as those that have above-median total loans outstanding and those that are below the median amounts. Counts of institutions above the median were created for each Census tract to see where these larger lenders are operating.
Small business lending	Institutions that have more small business lending are more likely to be associated with positive quality of life as they contribute capital to their communities. In particular, small business lending can be an important catalyst for employment in communities.	Institutions were segmented as those that have above-median small business loans outstanding amount and those that are below the median amounts. Counts of institutions above the median were created for each Census tract to see where these larger small business lenders are operating.
Total HMDA lending	Institutions that have more total HMDA lending are more likely to be associated with positive quality of life, as they contribute capital to their communities and help individuals secure homes — an important source of wealth.	Institutions were segmented as those that have above-median total HMDA lending amounts and those that are below the median amounts. Counts of institutions above the median were created for each Census tract to see where these larger HMDA lenders are operating.

Once characteristics of interest are identified, they may then be combined into a model — combining components of financial, social, and environmental return into a single index. A hypothetical version is presented below, based on the seven characteristics discussed in Table 20:

$$\textit{Total Return} = f(\textit{Financial Return} + \textit{Social Return} + \textit{Environmental Return} + \varepsilon)$$

With the following detail on the social return component:

$$\begin{aligned}\textit{Social Return} = f(&\textit{Constant} + \beta_1\ (\textit{Size of Institution}) + \beta_2\ (\textit{Headquarters}) + \beta_3 \\ &(\textit{LTD Ratio}) + \beta_4\ (\textit{Ownership Structure}) + \beta_5\ (\textit{Total Lending}) + \beta_6 \\ &(\textit{Small Business Lending}) + \beta_7\ (\textit{Total HMDA Lending}) + \varepsilon)\end{aligned}$$

To explore how the seven financial institution characteristics could be combined into a single model, the team performed a logistic regression (see Appendix 2.9) across several sets of data, including:

- Dependent variable: a binary variable describing whether a tract jumped in the year following the observation. This tests if the independent variables are correlated with this measure of tract improvement.
- Independent variables:
  - The above characteristics, excluding total HMDA lending
  - Decayed loans and leases, bank and credit union lending information disaggregated out to Census tracts, based on the decay methodology

Based on 2009-2010 analysis, two significant variables arose. First, small business lending as a positive relationship with the tract's likelihood to jump in the following year. Second, Subchapter S corporation ownership structure as a negative relationship.

The initial analysis is investigative — to explore ways to incorporate variables into a single model to serve as the basis for the Social Return Index. As such, this analysis should not be seen as conclusive. The current model has low explanatory value from a statistical standpoint and, as such, additional iterations are necessary to improve it and come to a more accurate Social Return Index model. The research team is encouraged by the identification of a procedure for creating the model and looks to explore the inputs to the model in the future in several ways:

- Additional variables. As described above, additional variables or adding nuance to the additional variables could strengthen the model.
- Additional years of analysis. Looking at longer time series or a combination of time series could be another way of improving the model.

Adoption of a Social Return Index would substantially enhance the consideration of social and environmental returns in financial decision making. NCIF believes this would work in favor of financial institutions working in LMI communities that have strong social performance per the NCIF metrics and anecdotal observations. This would help attract additional capital to important institutions (see Appendix 2.10).

SECTION 7:

Conclusions

NCIF undertook this research effort with an overriding goal of understanding the relationship between financial institutions and quality of life in the communities in which they operate. It is hoped that, by considering both social and financial returns, additional investments would be channeled to these institutions.

In addition to this overarching goal, the undertaking included three sub-goals. Here, NCIF revisits those goals, the findings of the research effort, and action steps for readers to best utilize the findings of this working paper.

1. **Make the case for the increased availability of financial institutions, particularly as they are positively associated with quality of life.**

   There is a positive association between banks and credit unions and quality of life in communities (based on the defined proxy). Overall, financial institutions' relationship — as observed through correlations — to quality of life in their communities remained relatively constant between 2000 and 2013. Over the time period studied, banks and credit unions were less likely to be located in lower-income areas. Importantly, increased presence and activity of financial institutions can precede an improvement in quality of life.

   This research adds to the existing body of research by exploring the relationship between financial institutions and their communities and identifying positive relationships between the two. Overall, these findings make the case for an increased presence of banking services provided through banks and credit unions so economically-distressed communities can potentially access similar associated increases.

   The research team encourages a wide range of audiences to use this knowledge to support the expansion of banking services — particularly in LMI communities. **Banks and credit unions** can expand their own offerings with the knowledge that their choice to locate in and provide financial products to a community is associated with higher quality of life. **Investors** should consider avenues for supporting financial institutions — armed with the knowledge that not only will such investment be multiplied through the structure of the financial institution but that their investment is also associated with positive social returns. It is particularly important to invest in institutions working in LMI and underserved areas. **Regulators and public policy practitioners** can advocate for the reduction of regulatory burden for financial institutions operating in distressed communities — making it easier for banks and credit unions to operate within them.

2. **Enhance the Social Performance Metrics to better capture institutions' impacts.**

   Through the expansion of available data and the application of findings, the research team has identified multiple ways to enhance the Social Performance Metrics. The data collected for this working paper provides a robust base from which to draw data for expanded analysis, to apply longitudinal analysis, and to add nuance to the metrics. For example, the decay methodology will add specificity to a financial institution's service area, allowing NCIF and others to more accurately calculate impacts.

   The existing and the enhanced Social Performance Metrics are exceptional resources for those interested in better understanding the social performance of a financial institution. **Banks and credit unions** can use the metrics to better understand their performance and to better tell their story to stakeholders. **Investors** can use the metrics to identify individual institutions, track the performance of an existing portfolio, and perform longitudinal analysis on a set of financial institutions. **Regulators and public policy practitioners** can identify particularly impactful institutions and increase their understanding of the industry's social performance overall. NCIF encourages all audiences to more fully utilize metrics data in their consideration of banks and credit unions.

3. **Create a Social Return Index as a comprehensive way to understand the social returns of financial institutions. The index aims to provide information to encourage the additional investment into impactful institutions.**

   Within this working paper, the research team has identified a method for constructing a Social Return Index and has completed its initial rounds of testing of components for the index. A first round of seven components of financial institutions was tested to determine their association with changes in quality of life. This initial analysis and the methodology employed will serve as the groundwork for ongoing research to create an index.

   Creating a Social Return Index is crucial to expanding the understanding of total financial returns and attracting additional capital to institutions generating important social impacts in their community. NCIF encourages all stakeholders to more fully incorporate social returns into investment decision making. As the findings demonstrate, the presence and activity of financial institutions are associated with positive quality of life within communities. Additional investment — driven by a Total Returns consideration including a Social Return Index — will allow institutions operating in LMI areas to expand their services to these areas.

   Banks and credit unions can use a Social Return Index to better understand their own impact in a community and strategically leverage their social performance with investments. **Investors** can use the Index to bring social considerations into their financial decision making. Investors working with clients can use the index to identify and justify the social impact of a portfolio. **Regulators and public policy practitioners** can support the work of financial institutions based on their social returns — in addition to financial returns.

NCIF is encouraged by the findings in this report as they provide support for its theory of change — that financial institutions in LMI and underserved areas can be drivers of positive change in those communities. Institutions working in these areas should be supported, through increased investment and eased regulations, such that they can continue to provide important financial products and services to individuals who need them the most.

SECTION 8:

Areas for Further Research

The data that was collected and created for this research effort — as well as the findings they generated — have opened the door on many areas of future research. NCIF anticipates that future research will build on the findings of this working paper to continue to increase the body of knowledge around banks and credit unions and their relationships with the surrounding communities. NCIF encourages those interested in participating in future research endeavors to contact the research team.

Several potential areas of future research are highlighted below:

1. **Explore the economic activity data.** In early stages of the research, the team was interested in understanding the role of financial institutions on quality of life and economic activity within a community. The team hypothesized that economic activity is an important part of the vitality of communities as well as the lived experience of their residences and, as such, sought to understand how banks and credit unions contribute to this. Additionally, information on business activity could help improve the understanding of the relationships between financial institution activity, small businesses, job creation, and, ultimately, improvement in quality of life.

   In the data collection phase of the project, the team collected multiple variables to help define the economic activity in a community, such as the number of firms operating in an area as well as their payroll, hires, and separations; the number of small businesses; income breakdowns; the number of commuters, etc. For a full list, see the Data Dictionary in Appendix 1.

   Much of the economic activity data is available only at the county level, rather than the Census tract level — making it difficult to incorporate into this analysis. Future research could access this data by a) performing the analysis at a county level rather than a Census tract level; b) weighting county level data to the Census tract level, or vice versa; c) developing a new methodology to explore economic activity; and/or d) building on the concepts of quality of life as considered in this working paper.

2. **Focus on smaller geographies.** One challenge the research team faced was identifying sources of data available nationwide. However, at smaller geographies — such as cities, counties, or even states — additional data is available that could add to the understandings of quality of life and economic activity in that particular geography. For example, during the literature review and in discussions with the Advisory Board, the team identified crime level as an important component to quality of life. The team hypothesized that, if an area has higher crime level, it would have lower quality of life. Crime data is available from some municipalities or other jurisdictions but nationwide sources are limited. By identifying a smaller area on which to concentrate, the methodologies introduced in this report may be applied using more data — particularly variables that contribute to quality of life and economic activity to create a more detailed picture.

3. **Comparative analysis.** This analysis would compare two geographies to draw out additional characteristics that influence changes in quality of life and economic activity and how financial institutions relate to that change. For example, two Census tracts that are similar in socioeconomic characteristics at the beginning of a time period would be paired and then tracked over time to see if they experience differential changes in quality of life or economic activity. Based on the findings, it is expected that areas with greater bank or credit union presence would see greater positive shifts over time. Looking at paired geographies could also help identify the presence of any external factors influencing quality of life improvements.

4. **Explore credit score data.** A major way individuals interact with financial institutions is through credit, such as credit cards, credit checks, and more. These interactions are important because an individual's access to credit influences how they can participate in the economy — which likely influences their quality of life. Institutions that collect information on credit, such as credit card companies or credit reporting agencies, have access to a wide range of data points on individuals. Information may also be tied to location identifiers, helping define the communities in which these individuals live and work. Working with this data in an anonymized or aggregated format could add interesting details to the understanding of the interaction between individuals and financial institutions.
5. **Incorporate additional financial institutions.** This research focused on banks and credit unions, but the research team recognizes that individuals interact with other financial institutions, such a payday lenders, check cashers, or other informal sources as well as credit companies and loan funds. Nationwide sources of information on additional financial institutions were not available for the desired time period. However, future research could focus on the activity of some or all of the financial institutions — layering their activity into the methodologies established in this report.
6. **Additional application of the jumping tracts methodology.** The jumping tracts methodology provided an interesting way to understand community change over time. However, greater complexities to the analysis could help further draw out the relationship between banks and credit unions and change in socioeconomic characteristics. For example, tracts that improve but then backslide can be identified and analyzed to see if there have been corresponding changes in financial institution activity.
7. **Explore subgroups of financial institutions.** This report focused on all banks and credit unions, but multiple subsets of each group exist and could be isolated for additional analysis and comparison to the larger set. Potential subgroups of banks include those with CDFI or Minority Depository Institution (MDI) certification or those recognized as community banks based on size.[10] Potential subgroups for credit unions include those with CDFI certifications and those designated as Community Development Credit Unions (CDCUs) or Low Income Credit Unions (LICUs).[11]
8. **Continue to build a Social Return Index.** As seen in the "Laying the Groundwork" section, the research team considered characteristics of financial institutions that could have a role in defining a financial institution's interaction with its community. There are numerous other characteristics of banks and credit unions that can be tested against the quality of life measures defined in this report. For example, while the team tested whether total lending and small business lending are associated with quality of life, other lending breakdowns such as commercial real estate or consumer lending could also be tested to see if banks and credit unions with more lending in these areas are more highly associated with changes in quality of life. Additionally, more nuance in the segments could be established — building on the first iteration presented here, which divided financial institutions into simple binaries for each characteristic.

   Additional exploration of regression models to combine all of the components will also be an important future research area as NCIF continues to move toward a Social Return Index.

[10] CDFI certification is provided by the Community Development Financial Institutions (CDFI) Fund. MDI certification is provided by the Federal Deposit Insurance Corporation (FDIC).

[11] CDCUs have a mission of serving low- and moderate-income communities. CDCUs are members of the National Federation of Community Development Credit Unions. LICUs have a majority of their membership qualified as low-income members based on National Credit Union Association (NCUA) regulations.

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Steve Reider, Founder and President of Bancography. Steve provided data to the project as well as substantial guidance in thinking through methodological questions. In particular, NCIF relied on Steve's assistance in crafting the decay methodology — a variation of which is used by Bancography. Steve is a personal champion of data-driven impact analysis and the team greatly appreciates the number of hours he has invested in this work.

Members of the Advisory Board. NCIF convened an Advisory Board made up of industry experts and practitioners to provide input on the project. NCIF's Advisory Board provided input to ensure that a) analysis undertaken was methodologically strong and appropriately addressed the goals of the project, and b) findings generated are meaningful and useful for practitioners. Members of the Advisory Board provided thought- and action-provoking feedback during the program, greatly improving the research team's outcomes. NCIF is proud to include the following individuals on the Advisory Board:

- Alden McDonald, President and CEO, Liberty Bank and Trust
- B. Doyle Mitchell, Jr., President and CEO, Industrial Bank
- Cathie Mahon, President/CEO, National Federation of Community Development Credit Unions
- Cliff Rosenthal, former Assistant Director of Financial Empowerment, CFPB
- Ellen Seidman, Senior Fellow, Urban Institute, and former Director, Office of Thrift Supervision
- Greg Bischak, Program Manager, Financial Strategy and Research, CDFI Fund
- Hewson Baltzell, Chief Operating Officer, Just Capital, former Head of Product Development, ESG Research, MSCI, Inc.
- Jody Rasch, Senior Vice President, Moody's Corporation
- Mark Ricca, President and CEO, First American International Bank
- Mary Houghton, former President, ShoreBank Corporation
- Michael Berry, Director of Policy Studies, Federal Reserve Bank of Chicago
- Paige Chapel, President and CEO, Aeris
- Preston Pinkett III, President and CEO, City National Bank of New Jersey
- Robert Weissbourd, Founder and President, RW Ventures
- Steve Lydenberg, Partner, Strategic Vision, Domini Social Investments, LLC
- Steve Reider, Founder and President, Bancography
- Tony Berkley, Vice President, Strategy and Impact, Corporate Social Responsibility, Prudential Financial, Inc. (formerly of W.K. Kellogg Foundation)

APPENDIX 1:

Data Dictionary

Data served as the foundation for this research effort and was gathered to allow the research team to test hypotheses, create the findings, and allow for the future expansion of the Social Performance Metrics and investigation into a Social Return Index. During the research effort, the team created a large database incorporating variables on a wide range of topics. The database was leveraged to create the findings within this report and will be useful in future applications. NCIF anticipates that the data will be beneficial to support multiple initiatives, including:

1. **Analysis on the social and financial performance of banks and credit unions.** NCIF has long used data to quantify the performance of financial institutions — particularly their social performance using NCIF's Social Performance Metrics. Analysis has been used by investors to identify potential investments and track existing portfolios; by bankers to understand their own performance and share their story with stakeholders; and by regulators, researchers, and public policy practitioners to better understand the performance of these institutions. Data collected for this project will enhance NCIF's current analysis offerings.
2. **Future research initiatives.** As described in Section 8, there are multiple areas for future research that have risen from the creation of this working paper. Data will be leveraged to explore these research questions.
3. **Future collaboration.** The research team recognizes that the data collected here can be applied to provide data to quantify aspects of banking, community development finance, and community change broadly. NCIF invites interested parties to reach out for access to additional data as well as for manipulating the enormous datasets that were created.

Figure 13: ***Financial Institutions' Interaction with Quality of Life***

An overarching hypothesis of the research is that financial institutions have an effect on quality of life and on economic activity through their presence and activity in a community, as represented in Figure 13. With this in mind, the research team collected several types of data to provide information on financial institutions (including both banks and credit unions), quality of life and economic activity.

The table that follows summarizes the data collected for this project, grouped by the source of the data. It provides information for the variables' potential applications and definition. Of note, some data presented is unique to NCIF and this research effort — particularly data points created through the decay methodology, jumping tracts methodology, and index testing described earlier in this paper. These variables are marked with an asterisk (*).

Table 21: ***Data Dictionary***

A	U.S. Census Bureau: American Community Survey 1-year, 3-year, and 5-year estimates; 2010 Census; 2000 Census. Publicly available at Census tract (2000, 2009-2013) and county (2000, 2005-2013) levels.			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
1	Total housing units	QOL1	T5Y_est_totunits_XX	Total housing units indicates an area's housing stock — providing an understanding of the housing options available to residents and is part of the overall health of the housing market.
2	Percent occupied housing units	QOL2	T5Y_pct_occupiedunits_XX	Percent occupied housing units indicates housing utilized by residents and is part of the overall health of the housing market.
3	Percent vacant housing units	QOL3	T5Y_pct_vacunits_XX	Percent vacant housing units indicates housing utilized by residents and is part of the overall health of the housing market.
4	Vacancy rate of owner-occupied buildings	QOL4	T5Y_pct_vacrateho_XX	Vacancy rate of owner-occupied buildings indicates housing utilized by residents and is part of the overall health of the housing market.
5	Vacancy rate of renter-occupied buildings	QOL5	T5Y_pct_vacraterental_XX	Vacancy rate of renter-occupied buildings indicates housing utilized by residents and is part of the overall health of the housing market.
6	Percent of housing structures built before 1939	QOL6	T5Y_pct_strtpre1939_XX	Percent of housing structures built before 1939 provides background on the housing stock of a Census tract.
7	Percent owner-occupied housing units	QOL7	T5Y_pct_oo_XX	Percent owner-occupied housing units serves as an indicator of the housing stock, variety of resident uses, and is part of the overall health of the housing market.
8	Percent renter-occupied housing units	QOL8	T5Y_pct_ro_XX	Percent renter-occupied housing units serves as an indicator of the housing stock, variety of resident uses, and the overall health of the housing market.
9	Total number of occupied housing units	QOL9	T5Y_est_occupied_XX	Total number of occupied housing units serves as an indicator of housing utilized by residents and is part of the overall health of the housing market.
10	Percent housing units moved into before 1969	QOL10	T5Y_pct_movedpre1969_XX	Percent housing units moved into before 1969 serves to provide background on the age of the housing stock in the community. It also an indicator of long-term residents of a community.
11	Percent of housing units with no plumbing	QOL11	T5Y_pct_noplumbing_XX	Percent of housing units with no plumbing serves as an indicator of the quality of housing in an area.
12	Percent of housing units with no phone	QOL12	T5Y_pct_nophone_XX	Percent of housing units with no phone serves as an indicator of the quality of housing in an area.
13	Median value of housing units	QOL13	T5Y_est_medvalue_XX	Median value of housing units serves to provide background on the quality of housing incorporated into the community.
14	Number of units with mortgage	QOL14	T5Y_est_wmortgage_XX	Number of units with mortgage is an indicator of housing ownership in an area.

Table 21: ***Data Dictionary***

A	U.S. Census Bureau: American Community Survey 1-year, 3-year, and 5-year estimates; 2010 Census; 2000 Census. Publicly available at Census tract (2000, 2009-2013) and county (2000, 2005-2013) levels.			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
15	Percent of housing units with mortgage	QOL15	T5Y_pct_wmortgage_XX	Percent of housing units with mortgage is an indicator of home values.
16	Estimated median housing cost	QOL16	T5Y_est_medhousingcosts_XX	Estimated median housing cost serves to provide background on the quality of housing incorporated into the community.
17	Percent of units with housing costs over 35% of income for units with mortgage	QOL17	T5Y_pct_medhousingcostso35_XX	Percent of units with housing costs over 35% of income for units with mortgage is an indicator of the affordability of housing in an area.
18	Estimated median gross rent	QOL18	T5Y_est_grossrent_XX	Estimated median gross rent serves as an indicator of affordability of housing incorporated in an area.
19	Percent of units with housing costs over 35% of income for renters	QOL19	T5Y_pct_grossrento35_XX	Percent of units with housing costs over 35% of income for renters is an indicator of affordability of housing incorporated in an area.
20	Total population over 16	QOL20	T5Y_est_Pop16up_XX	Total population over 16 indicates the number of adults living in the community.
21	Median income of individuals with earnings	QOL34	T5Y_est_EarnersMedIncome_XX	Median income of individuals is an indicator of income levels in an area.
22	Individuals and families below poverty line	QOL39	T5Y_pct_IncbelowPvLv_XX	Individuals and families below poverty line indicates how well-off the community members are; poverty is determined by family size and composition.
23	Total population for educational attainment	QOL50	T5Y_PopforEdAttain_XX	Total population for educational attainment is the number of individuals in an area for whom educational attainment can be determined.
24	Count of individuals with less than a high school education	QOL51	T5Y_est_lessthanHS_XX	Count of individuals with less than a high school education speaks to the level of opportunity available to residences in the tract and is also related to incomes.
25	Percent of individuals with less than a high school education	QOL52	T5Y_pct_lessthanHS_XX	Percent of individuals with less than a high school education provides a measure of educational attainment.
26	Count of individuals with some high school education	QOL53	T5Y_est_someHS_XX	Count of individuals with some high school education provides a measure of educational attainment.
27	Percent of individuals with some high school education	QOL54	T5Y_pct_someHS_XX	Percent of individuals with some high school education provides a measure of educational attainment.

Table 21: ***Data Dictionary***

A	U.S. Census Bureau: American Community Survey 1-year, 3-year, and 5-year estimates; 2010 Census; 2000 Census. Publicly available at Census tract (2000, 2009-2013) and county (2000, 2005-2013) levels.			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
28	Count of individuals with a high school education	QOL55	T5Y_est_Hsgrad_XX	Count of individuals with a high school education provides a measure of educational attainment.
29	Percent of individuals with a high school education	QOL56	T5Y_pct_Hsgrad_XX	Percent of individuals with a high school education provides a measure of educational attainment.
30	Count of individuals with some college education	QOL57	T5Y_est_somecollege_XX	Count of individuals with some college education provides a measure of educational attainment.
31	Percent of individuals with some college education	QOL58	T5Y_pct_somecollege_XX	Percent of individuals with some college education provides a measure of educational attainment.
32	Count of individuals with an associate's degree	QOL59	T5Y_est_assocdegree_XX	Count of individuals with an associate's degree provides a measure of educational attainment.
33	Percent of individuals with an associate's degree	QOL60	T5Y_pct_assocdegree_XX	Percent of individuals with an associate's degree provides a measure of educational attainment.
34	Count of individuals with a bachelor's degree	QOL61	T5Y_est_bachdegree_XX	Count of individuals with a bachelor's degree provides a measure of educational attainment.
35	Percent of individuals with a bachelor's degree	QOL62	T5Y_pct_bachdegree_XX	Percent of individuals with a bachelor's degree provides a measure of educational attainment.
36	Count of individuals with a graduate or professional degree	QOL63	T5Y_est_graddegree_XX	Count of individuals with a graduate or professional degree provides a measure of educational attainment.
37	Percent of individuals with a graduate or professional degree	QOL64	T5Y_pct_graddegree_XX	Percent of individuals with a graduate or professional degree provides a measure of educational attainment.
38	Percent of individuals with a high school education or higher	QOL65	T5Y_pst_Hsorabove_XX	Percent of individuals with a high school education or higher provides a measure of educational attainment.
39	Estimate of individuals with disabilities	QOL66	T5Y_est_Wdisability_XX	Estimate of individuals with disabilities provides a characteristic of the community and its particular needs and challenges to quality of life.
40	Percent of individuals with disabilities	QOL67	T5Y_pct_Wdisability_XX	Percent of individuals with disabilities provides a characteristic of the community and its particular needs and challenges to quality of life.
41	Total households	QOL68	T5Y_est_totHH_XX	Total households indicates how many households are located in an area and may be used together with other variables to assess their quality of life.
42	Total family households	QOL69	T5Y_est_totfamHH_XX	Total family households indicates how many households classified as families are located in an area and may be used together with other variables to assess their quality of life.

Table 21: ***Data Dictionary***

A	U.S. Census Bureau: American Community Survey 1-year, 3-year, and 5-year estimates; 2010 Census; 2000 Census. Publicly available at Census tract (2000, 2009-2013) and county (2000, 2005-2013) levels.			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
43	Percent of households classified as family households	QOL70	T5Y_pct_totfamHH_XX	Percent of households classified as family households indicates how many households are located in an area and may be used together with other variables to assess their quality of life.
44	Count of family households with children	QOL71	T5Y_est_totfamHHwchild_XX	Count of family households with children provides a characteristic of the demographic composition of an area.
45	Percent family households with children	QOL72	T5Y_pct_totfamHHwchild_XX	Percent family households with children provides a characteristic of the demographic composition of an area.
46	Percent of married-couple families	QOL73	T5Y_est_totfamHHmarried_XX	Percent of married-couple families provides a characteristic of the demographic composition of an area.
47	Percent of households classified as married-couple families	QOL74	T5Y_pct_totfamHHmarried_XX	Percent of households classified as married-couple families provides a characteristic of the demographic composition of an area.
48	Count of married-couple families with children	QOL75	T5Y_est_totfamHHmarriedwchild_XX	Count of married-couple families with children provides a characteristic of the demographic composition of an area.
49	Percent of married-couple families with children	QOL76	T5Y_pct_totfamHHmarriedwchild_XX	Percent of married-couple families with children provides a characteristic of the demographic composition of an area.
50	Count of female-headed households	QOL77	T5Y_est_totfamHHFemH_XX	Count of female-headed households provides a characteristic of the demographic composition of an area.
51	Percent of households that are female-headed households	QOL78	T5Y_pct_totfamHHFemH_XX	Percent of households that are female-headed households provides a characteristic of the demographic composition of an area.
52	Count of female-headed households with children	QOL79	T5Y_est_totfamHHFemHwchild_XX	Count of female-headed households with children provides a characteristic of the demographic composition of an area.
53	Percent of female-headed households with children	QOL80	T5Y_pct_totfamHHFemHwchild_XX	Percent of female-headed households with children provides a characteristic of the demographic composition of an area.
54*	Distressed tracts, for jumping analysis	QOL279	Distress_tract_XX	Distressed tracts, used for the jumping analysis, serves as a baseline variable to allow time series analysis on those Census tracts that initially have greater than median unemployment and poverty rates.
55*	Jumping tracts, for jumping analysis	QOL280	Jump_tract_XX	Jumping tracts, used for the jumping analysis, are those Census tracts that improve each year from a distressed group of Census tracts — identified by greater than median unemployment and poverty rates — to the non-distressed group.

Table 21: ***Data Dictionary***

A	U.S. Census Bureau: American Community Survey 1-year, 3-year, and 5-year estimates; 2010 Census; 2000 Census. Publicly available at Census tract (2000, 2009-2013) and county (2000, 2005-2013) levels.			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
56	Percent of population in labor force	QOL21	T5Y_pct_inLF_XX	Percent of population in labor force provides a characteristic of the work patterns of individuals and the economic activity in an area.
57	Percent of labor force, unemployed	QOL22	T5Y_pct_inLFUnemp_XX	Percent of labor force, unemployed provides a characteristic of the work patterns of individuals and the economic activity in an area.
58	Percent unemployed	QOL23	T5Y_pct_Unemp_XX	Percent unemployed provides a characteristic of the work patterns of individuals and the economic activity in an area.
59	Number of workers commuting to work	QOL24	T5Y_est_Commuting_XX	Number of workers commuting to work provides a characteristic of the work patterns of individuals and the economic activity in an area.
60	Mean commuting time	QOL25	T5Y_est_CommutingMeanTime_XX	Mean commuting time provides a characteristic of the work patterns of individuals and the economic activity in an area.
61	Total households	QOL26	T5Y_est_TotHHforIncome_XX	Total households is a baseline variable that provides a characteristic of the demographic composition of an area and can be used to normalize indicators of community-level quality of life.
62	Median income for households	QOL27	T5Y_est_HHmedianInc_XX	Median income provides a characteristic of economic activity in an area.
63	Estimate of households with earnings	QOL28	T5Y_est_WEarnings_XX	Estimate of households with earnings provides a characteristic of economic activity in an area.
64	Percent of households with earnings	QOL29	T5Y_pct_WEarnings_XX	Percent of households with earnings provides a characteristic of economic activity in an area.
65	Mean earnings for households with earnings	QOL30	T5Y_est_WEarningsMeanEarnings_XX	Mean earnings for households with earnings provides a characteristic of economic activity in an area.
66	Total families	QOL31	T5Y_est_FamsForIncome_XX	Total families is a baseline variable on which to normalize indicators of community-level quality of life.
67	Median family income	QOL32	T5Y_est_FamMedianIncome_XX	Median family income provides a characteristic of economic activity in an area.
68	Per-capita income	QOL33	T5Y_est_PerCapitaIncome_XX	Per-capita income provides a characteristic of economic activity in an area.

Table 21: ***Data Dictionary***

B	U.S. Census Bureau: American Community Survey 1-year, 3-year, and 5-year estimates; 2010 Census; 2000 Census. Publicly available at Census tract (2011-2013) and county (2011-20131) levels			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
69	Number of people with health insurance	QOL35	T5Y_est_WHealthInsurance_XX	Number of people with health insurance provides a characteristic of the demographic composition of an area.
70	Percent of people with health insurance	QOL36	T5Y_pct_WHealthInsurance_XX	Percent of people with health insurance provides a characteristic of the demographic composition of an area.
71	Number of people without health insurance	QOL37	T5Y_est_WOHealthInsurance_XX	Number of people without health insurance provides a characteristic of the demographic composition of an area.
72	Percent of people without health insurance	QOL38	T5Y_pct_WOHealthInsurance_XX	Percent of people without health insurance provides a characteristic of the demographic composition of an area.

Table 21: ***Data Dictionary***

C	U.S. Census Bureau: Statistics of U.S. Businesses. Publicly available at county level (2000-2011).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
73	Number of firms	Econ81	num_firms_total_XX	Number of firms is a measure of the number of businesses operating within a county and is a measure of economic activity in an area.
74	Number of establishments	Econ82	num_establish_total_XX	Number of establishments is a measure of the number of businesses operating within a county and is a measure of economic activity in an area.
75	Total employment	Econ83	employment_total_XX	Total employment is an indicator of the economic activity of firms in a county.
76	Annual payroll	Econ84	annual_payroll_total_XX	Annual payroll is an indicator of the economic activity of firms in a county.
77	Number of firms with enterprise employment of fewer than 500 employees	Econ85	num_firms_less_500_XX	Number of firms with enterprise employment of fewer than 500 employees is the number of medium and small businesses located in an area and is an indicator of the economic activity of firms in a county.
78	Number of firms with enterprise employment of more than 500 employees	Econ86	num_establish_less_500_XX	Number of firms with enterprise employment of more than 500 employees is an indicator of the economic activity of firms in a county.
79	Total employment firms and establishments with enterprise employment of fewer than 500 employees	Econ87	employment_less_500_XX	Total employment firms and establishments with enterprise employment of fewer than 500 employees is an indicator of the economic activity of firms in a county.
80	Total payroll at firms and establishments with enterprise employment of greater than 500 employees	Econ88	annual_payroll_less_500_XX	Total payroll at firms and establishments with enterprise employment of greater than 500 is an indicator of the economic activity of firms in a county.
81	Number of firms with more than 500 employees	Econ89	num_firms_plus_500_XX	Number of firms with more than 500 employees is the number of large businesses located in an area and is an indicator of the economic activity of firms in a county.
82	Number of establishments with more than 500 employees	Econ90	num_establish_plus_500_XX	Number of establishments with more than 500 employees is an indicator of the economic activity of firms in a county.
83	Total employment at firms with more than 500 employees	Econ91	employment_plus_500_XX	Total employment at firms with more than 500 employees is an indicator of the economic activity of firms in a county.
84	Total payroll at firms with more than 500 employees	Econ92	annual_payroll_plus_500_XX	Total payroll at firms with more than 500 employees is an indicator of the economic activity of firms in a county.

Table 21: ***Data Dictionary***

D	U.S. Census Bureau: County Business Patterns (See Data Dictionary note 2 on page 70). Publicly available at county (2000-2013) level.			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
85	Total employees	Econ93	allnaics_emp_XX	Total employees is an indicator of economic activity across business types (NAICS codes) in a county.
86	Total hires	Econ94	allnaics_hira_XX	Total hire numbers is an indicator of economic activity across business types (NAICS codes) in a county.
87	Total separations	Econ95	allnaics_sep_XX	Total separations is an indicator of economic activity across business types (NAICS codes) in a county.
88	Average monthly earnings	Econ96	allnaics_earns_XX	Average monthly earnings is an indicator of economic activity across business types (NAICS codes) in a county.
89	Total quarterly payroll	Econ97	allnaics_payroll_XX	Total quarterly payroll is an indicator of economic activity across business types (NAICS codes) in a county.
E	U.S. Census Bureau: Nonemployer Statistics (See Data Dictionary note 3 on page 70). Publicly available at county (2000-2012) level.			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
90	Total nonemployer establishments	Econ98	NumEstabs_Total_nonemp_XX	Total nonemployer establishments that have no paid employees and are subject to federal income tax. Most nonemployers are self-employed individuals operating unincorporated businesses (known as sole proprietorships), which may or may not be the owner's principal source of income. This variable provides an indicator of economic activity in a county.
91	Total receipts for all nonemployer establishments	Econ99	TotalReceipts_total_nonemp_XX	Total receipts for all nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
92	Nonemployer agriculture establishments	Econ100	NumEstabs_Agriculture11_nonemp_XX	Nonemployer agriculture establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
93	Receipts for all agriculture nonemployer establishments	Econ101	TotalReceipts_Agriculture11_nonemp_XX	Receipts for all agriculture nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
94	Nonemployer mining establishments	Econ102	NumEstabs_Mining21_nonemp_XX	Nonemployer mining establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
95	Receipts for all mining nonemployer establishments	Econ103	TotalReceipts_Mining21_nonemp_XX	Receipts for all mining nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.

Table 21: ***Data Dictionary***

E	U.S. Census Bureau: Nonemployer Statistics (See Data Dictionary note 3 on page 70). Publicly available at county (2000-2012) level.			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
96	Nonemployer utilities establishments	Econ104	NumEstabs_Utilities22_nonemp_XX	Nonemployer utilities establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
97	Receipts for all utilities nonemployer establishments	Econ105	TotalReceipts_Utilities22_nonemp_XX	Receipts for all utilities nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
98	Nonemployer construction establishments	Econ106	NumEstabs_Construction23_nonemp_XX	Nonemployer construction establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
99	Receipts for all construction nonemployer establishments	Econ107	TotalReceipts_Construction23_nonemp_XX	Receipts for all construction nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
100	Nonemployer manufacturing establishments	Econ108	NumEstabs_Manu3133_nonemp_XX	Nonemployer manufacturing establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
101	Receipts for all manufacturing nonemployer establishments	Econ109	TotalReceipts_Manu3133_nonemp_XX	Receipts for all manufacturing nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
102	Nonemployer wholesale trade establishments	Econ110	NumEstabs_Wholesale42_nonemp_XX	Nonemployer wholesale trade establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
103	Receipts for all wholesale trade nonemployer establishments	Econ111	TotalReceipts_Wholesale42_nonemp_XX	Receipts for all wholesale trade nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
104	Nonemployer retail trade establishments	Econ112	NumEstabs_Retail4445_nonemp_XX	Nonemployer retail trade establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
105	Receipts for all retail trade nonemployer establishments	Econ113	TotalReceipts_Retail4445_nonemp_XX	Receipts for all retail trade nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
106	Nonemployer transportation and warehousing establishments	Econ114	NumEstabs_Transport4849_nonemp_XX	Nonemployer transportation and warehousing establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
107	Receipts for all transportation and warehousing nonemployer establishments	Econ115	TotalReceipts_Transport4849_nonemp_XX	Receipts for all transportation and warehousing nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.

Table 21: ***Data Dictionary***

E	U.S. Census Bureau: Nonemployer Statistics (See Data Dictionary note 3 on page 70). Publicly available at county (2000-2012) level.			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
108	Nonemployer information establishments	Econ116	NumEstabs_Info51_nonemp_XX	Nonemployer information establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
109	Receipts for all information nonemployer establishments	Econ117	TotalReceipts_Info51_nonemp_XX	Receipts for all information nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
110	Nonemployer finance and insurance establishments	Econ118	NumEstabs_FinanceInsure52_nonemp_XX	Nonemployer finance and insurance establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
111	Receipts for all finance and insurance nonemployer establishments	Econ119	TotalReceipts_FinanceInsure52_nonemp_XX	Receipts for all finance and insurance nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
112	Nonemployer real estate rental and leasing establishments	Econ120	NumEstabs_RealEstate53_nonemp_XX	Nonemployer real estate rental and leasing establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
113	Receipts for all real estate rental and leasing nonemployer establishments	Econ121	TotalReceipts_RealEstate53_nonemp_XX	Receipts for all real estate rental and leasing nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
114	Nonemployer professional, science, and technical services establishments	Econ122	NumEstabs_Profess54_nonemp_XX	Nonemployer professional, science, and technical services establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
115	Receipts for all professional, scientific, and technical services nonemployer establishments	Econ123	TotalReceipts_Profess54_nonemp_XX	Receipts for all professional, scientific, and technical services nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
116	Nonemployer admin and support and waste management establishments	Econ124	NumEstabs_Admin56_nonemp_XX	Nonemployer admin and support and waste management establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
117	Receipts for all admin and support and waste management nonemployer establishments	Econ125	TotalReceipts_Admin56_nonemp_XX	Receipts for all admin and support and waste management nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
118	Nonemployer educational services establishments	Econ126	NumEstabs_Education61_nonemp_XX	Nonemployer educational services establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.

Table 21: ***Data Dictionary***

E	U.S. Census Bureau: Nonemployer Statistics (See Data Dictionary note 3 on page 70). Publicly available at county (2000-2012) level.			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
119	Receipts for all educational services nonemployer establishments	Econ127	TotalReceipts_Education61_nonemp_XX	Receipts for all educational services nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
120	Nonemployer health care and social assistance establishments	Econ128	NumEstabs_HealthCare62_nonemp_XX	Nonemployer health care and social assistance establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
121	Receipts for all health care and social assistance nonemployer establishments	Econ129	TotalReceipts_Healthcare62_nonemp_XX	Receipts for all health care and social assistance nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
122	Nonemployer arts, entertainment, and recreation establishments	Econ130	NumEstabs_Arts71_nonemp_XX	Nonemployer arts, entertainment, and recreation establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
123	Receipts for all arts, entertainment, and recreation nonemployer establishments	Econ131	TotalReceipts_Arts71_nonemp_XX	Receipts for all arts, entertainment, and recreation nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
124	Nonemployer accommodations and food services establishments	Econ132	NumEstabs_Accomodations72_nonemp_XX	Nonemployer accommodations and food services establishments provides a count of these small businesses. This variable provides an indicator of economic activity in a county.
125	Receipts for all accommodations and food services nonemployer establishments	Econ133	TotalReceipts_Accomodations72_nonemp_XX	Receipts for all accommodations and food services nonemployer establishments provides some information on these small businesses. This variable provides an indicator of economic activity in a county.
126	Nonemployer other establishments	Econ134	NumEstabs_Other81_nonemp_XX	Nonemployer other establishments provides a count of otherwise not categorized nonemployer small businesses. This variable provides an indicator of economic activity in a county.
127	Receipts for all other nonemployer establishments	Econ135	TotalReceipts_Other81_nonemp_XX	Receipts for all other nonemployer establishments provides some information on these other small businesses. This variable provides an indicator of economic activity in a county.

Table 21: ***Data Dictionary***

F	Federal Financial Institutions Examination Council (FFIEC) Home Mortgage Disclosure Act (HMDA) data set (See Data Dictionary note 4 on page 70). Publicly available at financial institution level (2000-2013) and privately aggregated to Census tract level (2000-2013)			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
128	Amount of single-family loans, for home purchases	Fin136	sfbase_ori_sumla_XX	Amount of single-family loans, for home purchases provides a characteristic of bank and credit union activity in an area.
129	Median income single-family loans, for home purchase	Fin137	sfbase_ori_medinc_XX	Median income single-family loans, for home purchase indicates the median income of those that apply for single-family loans reported to HMDA — linking level of income to resulting loan amounts on their home purchase applications. This provides a characteristic of borrowers in an area.
130	Number of single-family loans, for home purchase	Fin138	sf_ori_countloans_XX	Number of single-family loans, for home purchase provides a characteristic of bank and credit union activity in an area.
131	Median loan amount of single-family loans, for loan purchase	Fin139	sfbase_ori_medianla_XX	Median loan amount of single-family loans, for loan purchase provides a characteristic of bank and credit union activity in an area.
132	Amount of single-family loans, for refinancing	Fin140	sfbase_ref_sumla_XX	Amount of single-family loans, for refinancing provides a characteristic of bank and credit union activity in an area.
133	Median income single-family loans, for refinancing	Fin141	sfbase_ref_medinc_XX	Median income single-family loans, for refinancing indicates the median income of those that apply to refinance as reported to HMDA — linking level of income to resulting loan amounts on their refinancing applications.
134	Number of single-family loans, for refinancing	Fin142	sf_ref_countloans_XX	Number of single-family loans, for refinancing provides a characteristic of bank and credit union activity in an area.
135	Amount of multi-family loans, for home purchase	Fin144	mfbase_ori_sumla_XX	Amount of multi-family loans, for home purchase provides a characteristic of bank and credit union activity in an area.
136	Median income multi-family loans, for home purchase	Fin145	mfbase_ori_medinc_XX	Median income multi-family loans, for home purchase provides a characteristic of bank and credit union activity in an area.
137	Number of multi-family loans, for home purchase	Fin146	mf_ori_countloans_XX	Number of multi-family loans, for home purchase provides a characteristic of bank and credit union activity in an area.
138	Median loan amount of multi-family loans, for loan purchase	Fin147	mfbase_ori_medianla_XX	Median loan amount of multi-family loans, for loan purchase provides a characteristic of bank and credit union activity in an area.
139	Amount of multi-family loans, for refinancing	Fin148	mfbase_ref_sumla_XX	Amount of multi-family loans, for refinancing provides a characteristic of bank and credit union activity in an area.
140	Median income multi-family loans, for refinancing	Fin149	mfbase_ref_medinc_XX	Median income multi-family loans, for refinancing indicates the median income of those that apply to refinance as reported to HMDA — linking level of income to resulting loan amounts on their refinancing applications.

Table 21: ***Data Dictionary***

F	Federal Financial Institutions Examination Council (FFIEC) Home Mortgage Disclosure Act (HMDA) data set (See Data Dictionary note 4 on page 70). Publicly available at financial institution level (2000-2013) and privately aggregated to Census tract level (2000-2013)			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
141	Number of multi-family loans, for refinancing	Fin150	mf_ref_countloans_XX	Number of multi-family loans, for refinancing indicates provides a characteristic of bank and credit union activity in an area.
142	Median loan amount of multi-family loans, for loan purchase	Fin151	mfbase_ref_medianla_XX	Median loan amount of multi-family loans, for loan purchase provides a characteristic of bank and credit union activity in an area.
143	Median loan amount of all loans for refinancing	Fin152	ref_medianla_XX	Median loan amount of all loans for refinancing provides a characteristic of bank and credit union activity in an area.
144	Median loan amount of all loans for home purchase	Fin153	ori_medianla_XX	Median loan amount of all loans for home purchase provides a characteristic of bank and credit union activity in an area.
145	Number of loans for refinancing	Fin154	ref_countloans_XX	Number of loans for refinancing provides a characteristic of bank and credit union activity in an area.
146	Number of loans for home purchase	Fin155	ori_countloans_XX	Number of loans for home purchase provides a characteristic of bank and credit union activity in an area.
147	CRA Rating	Fin164	CRA rating	CRA Rating is a rank score of a financial institution's performance in helping meet the credit needs of its community — evaluated in the context of information about the institution (capacity, constraints, and business strategies), its community (demographic and economic data, lending, investment, and service opportunities), and its competitors and peers. This provides a characteristic of bank and credit union activity in an area.
*148	Total HMDA lending segment	Index287	HMDA_above_med	Total HMDA lending segment is NCIF derived and represents the financial institutions classified as above or below median HMDA lending amount and was constructed for consideration in a social return index.
*149	Total HMDA lending segment, aggregated to Census tract	Index294	HMDA_above_med_tract	Total HMDA lending segment, aggregated to Census tract is NCIF derived and represents the financial institutions classified as above or below median HMDA lending amount; then, the ones lending above the median are summed for each Census tract. This variable was constructed for consideration in a social return index.

Table 21: ***Data Dictionary***

G	Federal Deposit Insurance Corporation (FDIC) Summary of Deposits, used for NCIF decay methodology. Publicly available at financial institution level (2000-2013) and privately aggregated to Census tract level (2000-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
150	Bank FIPS	Fin156	FIPS	FIPS is a baseline Census tract identifier for bank data.
*151	Count of branches interacting with that Census tract	Fin157	CountBr	Count of branches that interact with a tract are the branches that include the individual Census tract in their surrounding services areas. This serves as an indicator of bank activity.
*152	Total branch deposits present within a tract, without the $250 million cap	Fin158	SumDepSumBr	Total branch deposits present within a tract are the estimated deposits of branches distributed over the branches' surrounding services areas. Here, no cap was applied to individual branch deposits. This serves as an indicator of bank activity.
*153	Total branch deposits present within a tract, considering the $250 million cap	Fin159	SumDepSumBrFinal	Total branch deposits present within a tract are the estimated deposits of branches distributed over the branches' surrounding services areas. Here, individual branch deposits were capped at $250 million to prevent skewing by large depositors. This serves as an indicator of bank activity.
*154	Total deposits of institutions present within a tract	Fin160	SumDepDom	The branch deposits that interact with a tract are the amounts that reflect customer deposits in the branches' surrounding services areas. This serves as an indicator of bank activity.
*155	Total assets present within a tract	Fin161	SumAssetAllocationFinal	The branch assets that interact with a tract are the amounts that reflect assets over the branches' surrounding services areas. This serves as an indicator of bank activity.
*156	Total loans present within a tract	Fin162	SumNet_loans_leasesBr	The branch loans that interact with a tract are the amounts that reflect total loans over the branches' surrounding services areas. This serves as an indicator of bank activity.

Table 21: ***Data Dictionary***

H	Federal Deposit Insurance Corporation (FDIC) Summary of Deposits (SDI), used for NCIF decay methodology. Publicly available at financial institution level (2000-2013) and privately aggregated to Census tract level (2000-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
157	Local bank status	Fin167	Local bank status	The local bank status variable is a filtration of banking institutions that have assets less than $1B. This serves as an indicator of bank activity.
158	FDIC certificate number	Fin170	cert	A unique number assigned by the FDIC used to identify institutions and for the issuance of insurance. It is a variable to track unique banking institutions.
159	OTS docket number	Fin171	OTS docket	This identifying code is a baseline variable in order to track each banking institution. This unique identifier is assigned by the Office of Thrift Supervision (OTS) for each federally chartered savings association and thrift holding company it regulates.
160	Federal Reserve ID number	Fin172	Federal Reserve ID Number	The Federal Reserve ID or RSSD ID is a unique identifier assigned to institutions by the Federal Reserve. It is a variable in order to track each bank institution.
161	Institution name	Fin174	Institution name	The institution name is intended to help track the activities of unique banking institutions.
162	Headquarter city	Fin175	City	Headquarter city provides a geographic identifier for each banking institution.
163	Headquarter state	Fin176	State	Headquarter state provides a geographic identifier for each banking institution.
164	Headquarter zip code	Fin177	Zip	Headquarter zip code provide a geographic identifier for each banking institution.
165	Number of domestic U.S. offices	Fin178	Number of Domestic U.S. Offices	Number of domestic U.S. offices is an indicator of the size and scope of each banking institution.
166	Number of foreign offices	Fin179	Number of Foreign Offices	Number of foreign offices is an indicator of the size and scope of each banking institution.
167	County of headquarters	Fin180	County of Banking Institution	County of headquarters provides a geographic identifier for each banking institution.
168	Established date	Fin181	Established Date	Established date reflects the age of the bank and how long it has been a part of its community.
169	Regulator	Fin182	Regulator	The Regulator variable is intended to be a baseline variable to track banking institutions.

Table 21: ***Data Dictionary***

H	Federal Deposit Insurance Corporation (FDIC) Summary of Deposits (SDI), used for NCIF decay methodology. Publicly available at financial institution level (2000-2013) and privately aggregated to Census tract level (2000-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
170	Net loans and leases	Fin183	Net_loans_leases	Net loans and leases is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
171	Total loans and leases	Fin184	Total_loans_leases	Total loans and leases is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
172	Gross loans and leases	Fin185	Gross_Loans_Leases	Gross loans and leases is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
173	All real estate loans (see Data Dictionary note 5 on page 70)	Fin186	All_RE_Loans	All real estate loans is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
174	Domestic real estate loans	Fin187	RE_domestic_loans	Domestic real estate loans is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
175	Construction and land development loans	Fin188	Construction_development_loans	Construction and land development loans is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
176	Commercial real estate loans	Fin189	Commercial_RE_loans	Commercial real estate loans is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
177	Commercial real estate loans, owner-occupied	Fin190	Comm_RE_OO_Loans	Commercial real estate loans, owner-occupied is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
178	Commercial real estate, not owner occupied secured	Fin191	Comm_RE_NR_Loans	Commercial real estate, not owner occupied secured is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
179	Multi-family real estate loans	Fin192	Mfresidential_RE_Loans	Multi-family real estate loans is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
180	Single-family real estate loans	Fin193	1-4family_RE_loans	Single-family real estate loans is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
181	Loans secured by farmland	Fin194	Farmland_loans	Loans secured by farmland is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
182	Loans secured by real estate held in foreign offices	Fin195	Foreignoffices_loans	Loans secured by real estate held in foreign offices is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
183	Farm loans	Fin196	Farm_loans	Farm loans is intended to provide a measure of lending activity and is a characteristic of bank activity overall.

Table 21: ***Data Dictionary***

H	Federal Deposit Insurance Corporation (FDIC) Summary of Deposits (SDI), used for NCIF decay methodology. Publicly available at financial institution level (2000-2013) and privately aggregated to Census tract level (2000-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
184	Commercial and Industrial loans	Fin197	CNI_loans	Commercial and Industrial loans is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
185	Loans to individuals	Fin198	Individual_loans	Loans to individuals is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
186	Credit card loans	Fin199	Creditcard_loans	Credit card loans is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
187	Related plan loans	Fin200	Relatedplans_credit	Related plan loans is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
188	Consumer auto loans	Fin201	ConsumerAuto_Loans	Consumer auto loans is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
189	Other individual loans	Fin202	IndividualOther_loans	Other individual loans is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
190	Other loans and leases	Fin203	Other_Loans_leases	Other loans and leases is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
191	Obligations of states	Fin204	ObligationsofStates	Obligations of states is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
192	Non-real-estate secured loans	Fin205	NotREsecured_loans	Non-real-estate secured loans is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
193	Restructured loans and leases	Fin206	Restructured_Loans_ leases	Restructured loans and leases is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
194	Restructured loans and leases, excluding 1-4 family	Fin207	Non1-4family_ restructured_loans_leases	Restructured loans and leases, excluding 1-4 family is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
195	Residential 1-4 family construction loans	Fin208	Residential1-4family_construction_loans	Residential 1-4 family construction loans is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
196	Other construction loans	Fin209	Otherconstruction_loans	Other construction loans is intended to provide a measure of lending activity and is a characteristic of bank activity overall.
197*	Net loans and leases, apportioned to branches	Fin210	Net_loans_leasesBr	Net loans and leases, apportioned to branches is intended to provide a measure of banking products and services being offered locally at the branch. This variable was created by NCIF as a characteristic of bank activity.

Table 21: ***Data Dictionary***

H	Federal Deposit Insurance Corporation (FDIC) Summary of Deposits (SDI), used for NCIF decay methodology. Publicly available at financial institution level (2000-2013) and privately aggregated to Census tract level (2000-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
198*	Total loans and leases, apportioned to branches	Fin211	Total_loans_leasesBr	Total loans and leases, apportioned to branches is intended to provide a measure of banking products and services being offered locally at the branch. This variable was created by NCIF as a characteristic of bank activity.
199	Total Liabilities	Fin212	liab	Total Liabilities is intended to provide a measure of bank activity.
200	Total deposits	Fin213	dep	Total deposits is intended to provide a measure of bank activity.
201	Total equity capital	Fin214	eqtot	Total equity capital is intended to provide a measure of bank activity.
202	Bank equity capital	Fin215	eq	Bank equity capital is intended to provide a measure of bank activity.
203	Noncurrent loans and leases	Fin216	nclnls	Noncurrent loans and leases is intended to provide a measure of a bank's financial performance.
204	Tier one (core) capital	Fin217	RBCT1J	Tier one (core) capital is intended to provide a measure of a bank's financial performance.
205	Net income	Fin218	netinc	Net income is intended to provide a measure of a bank's financial performance.
206	Return on assets	Fin219	ROA	Return on assets is intended to provide a measure of a bank's financial performance.
207	Return on equity	Fin220	ROE	Return on equity is intended to provide a measure of a bank's financial performance.
208	Loan-to-deposit ratio	Fin221	Loans to Deposits	Loan-to-deposit ratio is intended to provide a measure of a bank's financial performance.
209	Institution size segment	Index281	asset_0comm_1non_binary	Institution size segment is an NCIF derivation and separates large banks from community banks through a $1B threshold. This separation is intended to identify community development banks and was created for consideration in the social return index.
*210	Main office segment	Index282	BKMO_1Main_0Branch_binary	Main office segment is an NCIF derivation and is intended to identify which bank branches are headquarter branches. This variable was created for consideration in the social return index.

Table 21: ***Data Dictionary***

H	Federal Deposit Insurance Corporation (FDIC) Summary of Deposits (SDI), used for NCIF decay methodology. Publicly available at financial institution level (2000-2013) and privately aggregated to Census tract level (2000-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
*211	Loan-to-deposit ratio segment	Index283	lnlsdepr_binary	Loan-to-deposit ratio segment is an NCIF derivation and is intended to separate banks with a loan-to-deposit ratio between 70% and 90%, from those banks outside of this range. This variable was created for consideration in the social return index.
*212	Ownership structure segment	Index284	subchaps_0C_1S_binary	Ownership structure segment is an NCIF derivation and is intended to separate S-corps from C-corps. This variable was created for consideration in the social return index.
*213	Total lending segment	Index285	Lend_above_med	Total lending segment is an NCIF derivation and it classifies financial institutions as above or below median total lending amount. This variable was created for consideration in the social return index.
*214	Small business lending segment	Index286	SmBizAll1M_0below_1above_binary	Small business lending segment is an NCIF derivation and is classified as above or below median small business lending amount in order to facilitate analysis on how they may interact with their communities differently. This variable considers only small business loans of $1 million or less. This variable was created for consideration in the social return index.
*215	Institution size segment, aggregated to Census tract	Index288	Sum of asset_0comm_1non_binary	Institution size segment, aggregated to Census tract is an NCIF derivation which separates large banks from community banks based on a $1B threshold. Once community banks are identified, the number of institutions is totaled within a tract. This variable was created for consideration in the social return index.
*216	Main office segment, aggregated to Census tract	Index289	Sum of BKMO_1Main_0Branch_binary	Main office segment, aggregated to Census tract is an NCIF derivation intended to identify which bank branches are headquarter branches. Once headquarters are identified, the number of headquarters within a tract were totaled. This variable was created for consideration in the social return index.
*217	Loan-to-deposit ratio segment, aggregated to Census tract	Index290	Sum of lnlsdepr_binary	Loan-to-deposit ratio segment, aggregated to Census tract is an NCIF derivation intended to separate banks with a loan-to-deposit ratio between 70% and 90%, from those banks outside of this range. Once institutions within the 70-90% window were identified, the number of those institutions was summed within each Census tract. This variable was created for consideration in the social return index.

Table 21: ***Data Dictionary***

H	Federal Deposit Insurance Corporation (FDIC) Summary of Deposits (SDI), used for NCIF decay methodology. Publicly available at financial institution level (2000-2013) and privately aggregated to Census tract level (2000-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
*218	Ownership structure segment, aggregated to Census tract	Index291	Sum of subchaps_0C_1S_binary	Ownership structure segment, aggregated to Census tract is an NCIF derivation intended to separate S-corps from C-corps. Once S-corps are identified, the total of these institutions is summed within each Census tract. This variable was created for consideration in the social return index.
*220	Total lending segment, aggregated to Census tract	Index292	Lend_above_med_tract	Total lending segment, aggregated to Census tract is an NCIF derivation and it classifies financial institutions as above or below median total lending amount. Once institutions are designated as having above- or below-median amounts of lending, those above the median were totaled for each Census tract. This variable was created for consideration in the social return index.
*221	Small business lending segment, aggregated to Census tract	Index293	Sum of SmBizAll1M_0below_1above_ binary	Small business lending segment, aggregated to Census tract is an NCIF derivation and is classified as above- or below-median small business lending amount. This indicator considers small business loans of $1 million or less. Once institutions are designated as having above- or below-median amounts of small business lending, those above the median were totaled for each Census tract. This variable was created for consideration in the social return index.
I	FDIC: Minority Depository Institutions Program. Publicly available at financial institution level (2001-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
222	MDI status	Fin166	MDI status	Minority Depository Institutions (MDI) are designated by the FDIC as having a) 51% of more of their ownership as minorities, b) having a majority of board members as minorities, and/or c) serving a predominantly minority community.

Table 21: ***Data Dictionary***

J	Bancography, used for NCIF decay methodology. Available at the financial institution level (2000-2013) and privately aggregated to Census tract level (2000-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
223	Census tracts within service area (see Data Dictionary note 6 on page 70)	Fin222	FIPS	Census tracts within a service area are identified as those with which a proximate credit union branch makes its services accessible (NCIF services areas are radii that are defined according to population density).
224*	Count of branches interacting with that Census tract	Fin223	CountBr	Count of branches interacting with that Census tract is the sum of credit union institution branches that are servicing a Census tract. This is a numeric value describing the number of branches that have a service area in that tract.
225	Credit union charter number	Fin253	CU Number	Credit union charter number is a baseline variable to track unique credit union institutions.
226	Credit union name	Fin254	CU Name	Credit union name is a baseline variable to track unique credit union institutions.
227	Address	Fin255	Address	Address is the credit union's address, and is a geographic identifier of each credit union institution.
228	City	Fin256	City	City is the city in which a credit union is located, and is a geographic identifier of each credit union institution.
229	State	Fin257	State	State is the state in which a credit union is headquartered, and is a geographic identifier of each credit union institution.
230	Credit union type	Fin258	CU Type	Credit union type provides an identification code that sorts credit union main offices, branches, and restricted branches. This provides an indicator of credit union activity.
231	Zip code	Fin259	Zip Code	Zip code is the zip code assigned to a credit union location, and is a geographic identifier of each credit union institution.
232	Type of membership	Fin260	Type of Membership	Type of membership is NCUA's type of membership code (charter type — i.e., multiple or single common bond, or community).

Table 21: ***Data Dictionary***

K	National Credit Union Administration (NCUA), used for NCIF decay methodology. Publicly available at the financial institution level (2000-2013) and privately aggregated to Census tract level (2000-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
*233	Total branch deposits present within a tract, capped	Fin225	SumDepSumBrFinal	The sum of the deposits held by the branches that have each Census tract in their service areas. Here, individual branch deposits have been capped at $250 million to prevent skewing by large depositors. This variable provides a characteristic of credit union activity.
*234	Total assets present within a Census tract	Fin226	SumAssetAllocationFinal	The sum of the assets held by the branches that have each Census tract in their service areas. This variable provides a characteristic of credit union activity.
*235	First mortgage real estate lending provided by the branches present within a tract	Fin227	SumFirstMortBr	The sum of first mortgage real estate lending done by the branches that have each Census tract in their service areas. This variable provides a characteristic of credit union activity.
*236	Total lending amount provided by the branches present within a tract	Fin228	SumLoanSumBr	The sum of total lending done by the branches that have each Census tract in their service areas. This variable provides a characteristic of credit union activity.
*237	New vehicle lending provided by the branches present within a tract	Fin229	SumNewVehicleBr	This is a sum of new vehicle lending done by the branches that have each Census tract in their service areas. This variable provides a characteristic of credit union activity.
*238	Other real estate lending provided by the branches present within a tract	Fin230	SumOtherREBr	This is a sum of other real estate lending done by the branches that have each Census tract in their service areas. This variable provides a characteristic of credit union activity.
*239	Unsecured credit card lending provided by the branches present within a tract	Fin231	SumUnSecuredCCBr	This is a sum of unsecured credit card lending done by the branches that have each Census tract in their service areas. This variable provides a characteristic of credit union activity.
*240	Used vehicle lending provided by the branches present within a tract	Fin232	SumUsedVehicleBr	This is a sum of used vehicle lending done by the branches that have each Census tract in their service areas. This variable provides a characteristic of credit union activity.
*241	Total deposits decayed to Census tract, uncapped	Fin233	SumDepSumBrDecay	This is a sum of total deposits held at the branch level and "decayed" or distributed to the particular Census tract within its greater service area; the deposits are allocated proportionately to the amount of geographic area the branch's service area covers. This variable provides a characteristic of credit union activity.
*242	Total deposits decayed to Census tract, capped	Fin234	SumDepSumBrFinalDecay	This is a sum of total deposits (capped at $250M per institution) held at the branch level and "decayed" or distributed to the particular Census tract within its greater service area; the deposits are allocated proportionately to the amount of geographic area the branch's service area covers. This variable provides a characteristic of credit union activity.

Table 21: ***Data Dictionary***

K	National Credit Union Administration (NCUA), used for NCIF decay methodology. Publicly available at the financial institution level (2000-2013) and privately aggregated to Census tract level (2000-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
*243	First mortgage real estate lending provided decayed to Census tract	Fin235	SumFirstMortBrDecay	This is a sum of first mortgage real estate lending at the branch level and "decayed" or distributed to the particular Census tract within its greater service area; the lending is allocated proportionately to the amount of geographic area the branch's service area covers. This variable provides a characteristic of credit union activity.
*244	New vehicle lending of credit union institutions present within a tract	Fin236	SumAmtNewVehicleLns	This is a sum of new vehicle lending done by each credit union institution that has branches that are servicing each Census tract. This variable provides a characteristic of credit union activity.
*245	Unsecured credit card lending of credit union institutions present within a tract	Fin237	SumAmtUnsecuredCreditCardLns	This is a sum of unsecured credit card lending done by each credit union institution that has branches that are servicing each Census tract. This variable provides a characteristic of credit union activity.
*246	Used vehicle lending of credit union institutions present within a tract	Fin238	SumAmtUsedVehicleLns	This is a sum of used vehicle lending done by each credit union institution that has branches that are servicing each Census tract. This variable provides a characteristic of credit union activity.
*247	Shares and deposits for each credit union institution present within a tract	Fin239	SumTotalAmountofSharesandDeposits	This is a sum of shares and deposits held by each credit union institution that has branches that are servicing each Census tract. This variable provides a characteristic of credit union activity.
*248	Delinquent loans and leases of each credit union institution present within a tract	Fin240	SumTotalAmtofDelinquentLoans&Leases	This is a sum of delinquent loans and leases of each credit union institution that has branches that are servicing each Census tract. This variable provides a characteristic of credit union activity.
*249	Assets of each credit union institution present within a tract	Fin241	SumTotalAssets	These are the assets held by each credit union institution that has branches that are servicing each Census tract. This variable provides a characteristic of credit union activity.
*250	Deposits of each credit union institution present within a tract	Fin242	SumInstDepsFinal	This is a sum of deposits held by each credit union institution that has branches that are servicing each Census tract. This variable provides a characteristic of credit union activity.
*251	Liabilities, shares, and equity of each credit union institution present within a tract	Fin243	SumTotalLiabilitiesSharesandEquity	This is a sum of liabilities, shares, and equity of each credit union institution that has branches that are servicing each Census tract. This variable provides a characteristic of credit union activity.

Table 21: ***Data Dictionary***

K	National Credit Union Administration (NCUA), used for NCIF decay methodology. Publicly available at the financial institution level (2000-2013) and privately aggregated to Census tract level (2000-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
*252	Lending each credit union institution present within a tract	Fin244	SumTotalLoans	This is the sum of total lending done by each credit union institution that has branches that are servicing each Census tract. This variable provides a characteristic of credit union activity.
*253	Lending decayed to Census tract	Fin245	SumLoanSumBrDecay	This is a sum of total lending at the branch level and "decayed" or distributed to the particular Census tract within its greater service area; the lending is allocated proportionately to the amount of geographic area the branch's service area covers. This variable provides a characteristic of credit union activity.
*254	New vehicle lending decayed to Census tract	Fin246	SumNewVehicleBrDecay	This is a sum of new vehicle lending at the branch level and "decayed" or distributed to the particular Census tract within its greater service area; the lending is allocated proportionately to the amount of geographic area the branch's service area covers. This variable provides a characteristic of credit union activity.
*255	Other real estate lending decayed to Census tract	Fin247	SumOtherREBrDecay	This is a sum of other real estate lending at the branch level and "decayed" or distributed to the particular Census tract within its greater service area; the lending is allocated proportionately to the amount of geographic area the branch's service area covers. This variable provides a characteristic of credit union activity.
*256	Unsecured credit card lending decayed to Census tract	Fin248	SumUnSecuredCCBrDecay	This is a sum of unsecured credit card lending at the branch level and "decayed" or distributed to the particular Census tract within its greater service area; the lending is allocated proportionately to the amount of geographic area the branch's service area covers. This variable provides a characteristic of credit union activity.
*257	Used vehicle lending decayed to Census tract	Fin249	SumUsedVehicleBrDecay	This is a sum of used vehicle lending at the branch level and "decayed" or distributed to the particular Census tract within its greater service area; the lending is allocated proportionately to the amount of geographic area the branch's service area covers. This variable provides a characteristic of credit union activity.
*258	Total net worth of each credit union institution present within a tract	Fin250	SumTotalNetWorth	This is the total net worth amount of each credit union institution that has branches that are servicing each Census tract. This variable provides a characteristic of credit union activity.
*259	First mortgage real estate lending provided by each credit union institution present within a tract	Fin251	SumTotAmtof1stMortRELns	This is the sum of first mortgage real estate lending done by each credit union institution that has branches that are servicing each Census tract. This variable provides a characteristic of credit union activity.

Table 21: ***Data Dictionary***

K	National Credit Union Administration (NCUA), used for NCIF decay methodology. Publicly available at the financial institution level (2000-2013) and privately aggregated to Census tract level (2000-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
*260	Other real estate lending provided by each credit union institution present within a tract	Fin252	SumTotAmtofOtherRealEstateLns	This is the sum of other real estate lending done by each credit union institution that has branches that are servicing each Census tract. This variable provides a characteristic of credit union activity.
261	URL	Fin261	URL	URL is the website address of a credit union — used for descriptive information on the credit unions.
262	Charter issue date	Fin262	Charter Issue Date	Charter issue date is the date on which a credit union's charter was issued — an indicator of age.
263	Total liabilities, shares, and equity	Fin263	Total Liabilities, Shares and Equity	Total liabilities, shares, and equity is a credit union institution variable not distributed to a credit union's greater footprint or service areas. This variable provides a characteristic of credit union activity.
264	Total net worth	Fin264	Total Net Worth	Total net worth is a credit union institution variable not distributed to a credit union's greater footprint or service areas. This variable provides a characteristic of credit union activity.
265	Total amount of shares and deposits	Fin265	Total Amount of Shares and Deposits	Total amount of shares and deposits is a credit union institution variable not distributed to a credit union's greater footprint or service areas. This variable provides a characteristic of credit union activity.
266	Total amount of delinquent loans & leases	Fin266	Total Amt of Delinquent Loans & Leases	Total amount of delinquent loans & leases is a credit union institution variable not distributed to a credit union's greater footprint or service areas. This variable provides a characteristic of credit union activity.
267	Total amount loans & leases asset	Fin267	Total Amt Loans & Leases Asset	Total amount loans & leases asset is a credit union institution variable not distributed to a credit union's greater footprint or service areas. This variable provides a characteristic of credit union activity.
268	Total assets	Fin268	Total Assets	Total assets is a credit union institution variable not distributed to a credit union's greater footprint or service areas. This variable provides a characteristic of credit union activity.
269	Amount used vehicle loans	Fin269	Amt Used Vehicle Lns	Amount used vehicle loans is a credit union institution variable not distributed to a credit union's greater footprint or service areas. This variable provides a characteristic of credit union activity.
270	Amount new vehicle loans	Fin270	Amt New Vehicle Lns	Amount new vehicle loans is a credit union institution variable not distributed to a credit union's greater footprint or service areas. This variable provides a characteristic of credit union activity.

Table 21: ***Data Dictionary***

K	National Credit Union Administration (NCUA), used for NCIF decay methodology. Publicly available at the financial institution level (2000-2013) and privately aggregated to Census tract level (2000-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
271	Total amount of other real estate loans and lines of credit	Fin271	Tot Amt of Other Real Estate Lns/Lines of Credit	Total amount of other real estate loans and lines of credit is a credit union institution variable not distributed to a credit union's greater footprint or service areas. This variable provides a characteristic of credit union activity.
272	Amount unsecured credit card loans	Fin272	Amt Unsecured Credit Card Lns	Amount unsecured credit card loans is a credit union institution variable not distributed to a credit union's greater footprint or service areas. This variable provides a characteristic of credit union activity.
273	Total amount of first mortgage real estate loans and lines of credit	Fin273	Tot Amt of 1st Mort RE Lns/Lines of Credit	Total amount of first mortgage real estate loans and lines of credit is a credit union institution variable not distributed to a credit union's greater footprint or service areas. This variable provides a characteristic of credit union activity.
274	Total liabilities	Fin274	Total Liabilities	Total liabilities is a credit union institution variable not distributed to a credit union's greater footprint or service areas. This variable provides a characteristic of credit union activity.
275	Loans to deposits	Fin275	Loans to Deposits	Loans to deposits is a credit union institution variable not distributed to a credit union's greater footprint or service areas. This variable provides a characteristic of credit union activity.
*276	Local credit union	Fin276	Local Bank	Local credit union is an NCIF derivation of NCUA data that separates credit union institutions by asset amount above and below $1B.
L	SNL.com Available at the banking institution level (2000-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
277	Return on average assets	Fin277	ROA	Return on average assets is calculated from net income divided by average total assets. This ratio provides a measure of performance for financial institutions.
278	Return on average equity	Fin278	ROE	Return on average equity is calculated from net income divided by average total equity. This ratio provides a measure of performance for financial institutions.

Table 21: ***Data Dictionary***

M	Community Development Financial Institutions (CDFI) Fund, used for NCIF decay methodology. Publicly available at the financial institution level (2001-2013) and privately aggregated to Census tract level (2000-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
279	CDFI status	Fin165	CDFI (0/1; no/yes)	CDFI status provides a marker of which banking institutions are certified Community Development Financial Institutions. This allows for analysis on this particular group apart from other institutions to explore if they are servicing their communities in different ways than the greater banking industry.
N	Centers for Disease Control and Prevention. Publicly available at the county level (2001-2013).			
	Variable Name	**NCIF ID**	**NCIF Technical Name**	**Intended Use**
280	County number of deaths	QOL295	cdc_deaths_XX	County number of deaths provides a measure of quality of life as it relates to health.
281	County number of population	QOL296	cdc_pop_XX	County number of population provides a measure of quality of life as it relates to health.
282	County number of deaths per 100,000	QOL297	cdc_cruderate_XX	County number of deaths per 100,000 provides a measure of quality of life as it relates to health.
283	County percent of total deaths	QOL298	cdc_totalrate_XX	County percent of total deaths provides a measure of quality of life as it relates to health.

Data Dictionary Notes

1. Not all counties are available for each year, based on the sampling method employed by the U.S. Census Bureau in that year.
2. County Business Patterns data not available for Massachusetts and some additional states between 2000 and 2003. Quarter 4 information collected for each year.
3. Nonemployer statistics industry breakdown based on NAICS codes.
4. All HMDA categories considered include only approved loans.
5. Loan categories for banks can be analyzed at the Census tract level through the decay process. Data has not yet been processed but will be available in the future.
6. "Service area" and the related "servicing" will always refer to the NCIF methodology by which communities' population density will determine the reach of the bank physically located in their communities.

APPENDIX 2:

Technical Appendix

All methodologies and findings presented within this report were produced in collaboration with Michael Swack, Professor, Carsey School of Public Policy, University of New Hampshire and Jack Northrup, President and CEO, New England Market Research, and Carsey Fellow, Carsey School of Public Policy, University of New Hampshire.

Supplementary, technical information on the methodologies applied and findings follows.

Appendix 2.1

Additional information on the NCIF Social Performance Metrics is available at the NCIF website at ncif.org/inform/social-performance-metrics. Social Performance Metrics for all U.S. banks are accessible using the BankImpact database — an online tool to search for individual banks and to create and compare peer groups (accessible at www.bankimpact.org).

Appendix 2.2

In addition to collecting a wide range of variables to describe quality of life and economic activity, the research team also consulted a wide range of literature to inform our understanding of quality of life. Ultimately, the team determined that HMDA single-family origination median loan amount was a strong proxy for quality of life — pulling from the following article:

Galster, George, Chris Hayes, and Jennifer Johnson. 2005. "Identifying Robust, Parsimonious Neighborhood Indicators." Journal of Planning Education and Research, 24:265-280. http://clas.wayne.edu/Multimedia/DUSP/files/G.Galster/id,robust,parsimonious%20neighborhood%20indicators.pdf

Appendix 2.3

In original iterations of the research, the team considered exploring the role of financial institutions concerning quality of life and economic activity. The team hypothesized that — because of their provisions of loans and other financial services to businesses — the presence and activity of financial institutions would also contribute to the overall well-being of a community through additional economic activity. To this end, variables related to economic activity were collected, including number of firms; their hires, separations, and payroll information; nonemployer small businesses counts; and more as included in the Data Dictionary in Appendix 1. Unfortunately, the majority of economic activity data is available at a county level rather than a Census tract level and did not lend itself to inclusion in this analysis.

Appendix 2.4

In original iterations of the research, the team focused on examining the role of "responsibly priced" financial products and services on communities. This distinction is important to distinguish banks and credit unions from alternative financing sources, such as payday lenders or check cashers — which may have burdensome rates and fees. In exploring the data, however, the team determined the focus on "responsibly priced" would have to be reframed as 1) what is "responsible" can be subjective and varies by location, and 2) pricing data on products and services is not readily available for all banks and credit unions. As such, the team analyzed regulated banks and credit unions with the assumption that their regulated status would serve as a proxy for being a responsible institution.

Appendix 2.5

The decay methodology used to disaggregate bank and credit union activity to Census tracts was informed by several sources. First, the team consulted with Steve Reider, Founder and President of Bancography. Bancography has developed a similar methodology of estimating service area for its market research functionalities. Additionally, the distance of the buffers was informed by research on the distance consumers are likely to travel to reach various amenities, including:

Mattson, Jeremy. 2010. Transportation, Distance and Health Care Utilization for Older Adults in Rural and Small Urban Areas. Fargo: Small Urban and Rural Transit Center, Upper Great Transportation Institute, North Dakota State University. Accessed August 2014 http://www.ugpti.org/pubs/pdf/DP236.pdf

Cox, Wendell. 2014. "The Long Term: Metro America Goes from 82% to 86% Suburban Since 1990." Newgeography. Accessed August 2014. http://www.newgeography.com/content/004361-the-long-term-metro-america-goes-from-82-86-suburban-since-1990

Donahue, Ryan. 2011. "Pedestrians and Park Planning: How Far Will People Walk?" City Parks Blog. Accessed August 2014. http://cityparksblog.org/2011/05/13/pedestrians-and-park-planning-how-far-will-people-walk/

Forbes, Gerald, Teresa Gardner, Hugh McGee, and Raghavan Srinivasan. 2012. Methods and Practices for Setting Speed Limits: An Informational Report. Washington, DC: Federal Highway Administration. Accessed August 2014. http://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa12004/

APPENDIX 2: TECHNICAL APPENDIX

The research team created cutoffs for banks' or credit unions' branches that have more than $250 million in deposits. To improve the accuracy of the proportions, all branches with deposits of more than $250 million were capped — with the assumption that deposits of that level or higher would likely be large institutional or municipal deposits skewing the overall values. In approximating the service area, the team assumed that the inner buffer would have a greater density of clients. Individual customers would be most likely to visit the branch from that inner geography. As such, more of a bank's or credit union's assets and deposits were attributed to the inner buffer at different proportions: data was proportioned such that 60% of activity was attributed to the inner buffer and 40% to the outer buffer.

The asset allocation variable was created by proportioning an institution's total assets to the branch using a proportion of capped branch deposits/total institution deposits. The area of the buffer, which is within an individual Census tract, was calculated. Using the fraction of the buffer area, a single branch's assets were divided among Census tracts in its services area. To obtain the final value for a Census tract, all branch buffer fractions were summed into a total asset amount for a Census tract.

The tract deposit variable was created by determining which branch buffers overlap a given Census tract and summing each of those branch's deposits.

The decay methodology was completed using branch locations processed in ArcGIS and additional calculations completed using Microsoft SQL Server.

One final note for the decay methodology: the team recognizes that there are likely some clients that are not captured in the approximated service areas. This may be because the clients have moved but still travel greater distances to use a branch; there are clients who access banking services through technology platforms such as mobile or online banking; there are clients who bank closer to where they work rather than where they live; or a range of other reasons. The team assumes, however, that — since there is a national scope and all regulated banks and credit unions were included — the difference between where clients live and which banks or credit unions they access would equalize across the country.

Appendix 2.6

Findings within the report were created primarily using Exploratory Data Analysis (EDA) techniques. EDA is an approach to analyzing data sets to summarize their main characteristics — often with visual methods. A statistical model may or may not be used, but EDA is primarily for analyzing what the data can tell the user beyond the formal modeling or hypothesis testing task. EDA was promoted by John Tukey to encourage statisticians to explore the data and possibly formulate hypotheses that could lead to new data collection and experiments. During analysis, the team used a variety of techniques, including model- and summary statistic-based analysis, time series based — that is, the data of interest may be plotted out and studied over the study period.

In addition to the findings presented within this report, additional insights from exploratory analysis are provided for the data sets collected, as follows.

1. Home Mortgage Disclosure Act (HMDA) Data Set

The research team collected and analyzed a wide range of HMDA data points for inclusion in this working paper. Collected data included approved loans within the following buckets: a) single-family origination, b) single-family refinance, c) multi-family origination, and d) multi-family refinance. For each of the buckets, the following variables were created: total lending amount, median loan amount, total number of loans, and median borrower income.

Data was collected for 2000 to 2013. Because of the change in Census tract geographies in 2010, data from 2000-2009 was manipulated and weighted to match the updated Census tract boundaries — allowing for comparison of Census tracts across the time period. For information on the crosswalk process for converting Census tract data, see:

Logan, John R., Zengwang Xu, and Brian Stults. 2012. "Interpolating U.S. Decennial Census Tract Data from as Early as 1970 to 2010: A Longitudinal Tract Database." Professional Geographer.

Tatian, P. A. 2003. Neighborhood Change Database (NCDB) 1970-2000 Tract Data: Data Users Guide. Washington, DC.

The team analyzed correlations between each of the HMDA variables. Correlations were relatively consistent in each year; in the 2000 data example below, there is a very strong correlation between income and loan amount (r=0.85). There is also a strong correlation between the total lending amount in a Census tract (sum loan amount) and the number of loans (loan count) (r=0.84). There is a moderate correlation between the median income of borrowers and the total lending amount in a Census tract (r=0.51).

Table 22: ***Correlation Within HMDA Variables in Year 2000***
Census Tract Values (n=72,145)

	Median Loan Amount		
Median Income of Borrower	0.85	Median Income of Borrower	
Sum Loan Amount	0.55	0.51	Sum Loan Amount
Loan Count	0.21	0.11	0.84

Within this working paper, Galster et al.'s work on creating a quality of life index is leveraged, using the single-family median origination amount from the HMDA data set as a proxy for quality of life.

2. Banks Data Set

Drawing from publicly-available sources such as the Federal Deposit Insurance Corporation (FDIC) and Federal Financial Institutions Examination Council (FFIEC) the team collected data on regulated U.S. banks from 2000 to 2013. Publicly-available data on banks — other than deposit information — is available only at the institution level and is tied to the headquarters address. To integrate the data into the analysis, the research team applied the decay methodology, as outlined in Section 3 and Appendix 2.5 above. The decay methodology's outcome is bank data disaggregated to the Census tract level, which defines the total amount of banking presence and activity of banks operating within that Census tract. Individual variables created within each Census tract include:

- Branch count: the count of physical institutions interacting with a tract. Approximates the service area of each branch and identifies the geographies with which that branch might be interacting. Branch count is the total number of branches interacting with each tract.
- Tract deposits: the sum of bank and credit union deposits of branches operating within a tract. This provides a measure of the scope of institutions working within a tract.
- Asset allocation: the sum of bank and credit union assets proportioned to each geography. Similarly, using the decay methodology, data on assets were proportioned out to each Census tract.
- Loan allocation: the sum of bank and credit loans proportioned to each geography. Similarly, using the decay methodology, data on lending were proportioned out to each Census tract.

The data file was manipulated and weighted to match the 2010 updated Census tract boundaries — allowing us to compare Census tracts across the time period as described in the HMDA data set description above.

The team analyzed the bank data set to gain a better understanding of this unique data. Variables were correlated to test for relationships. 2000 information is presented below in Table 23. There is a strong correlation between the number of branches and total deposits (r=0.83).

Table 23: ***Correlation Within Decayed Bank Variables in Year 2000***
Census Tract Observations (n = 72,524)

	Branch Count		
Branch Count	0.83	Tract Deposits	
Asset Allocation	0.49	0.36	Asset Allocation
Tract Deposits	0.39	0.22	0.19

APPENDIX 2: TECHNICAL APPENDIX

Change in each of the variables over time was examined. Table 24 and Table 25 present the median values of all Census tracts from 2000 to 2013 for each of the banking activity variables. The following charts also illustrate the trends.

The number of branches interacting with each tract increased steadily from 2000-2010. Since then, there has been a slight decline. Median assets allocated to each tract — as well as median deposits — generally increased over the time period. For median assets allocated, however, there was a sharp decline between 2008 and 2009 — potentially tied to challenges faced by banks during the Great Recession.

Table 24: ***Median Bank Variables Over 2000-2013***

	Median Branches	Median Asset Allocation ($000)
2000	18	40,275
2001	24	94,675
2002	20	47,633
2003	21	49,876
2004	22	53,056
2005	23	51,288
2006	24	51,645
2007	27	58,680
2008	26	70,516
2009	27	56,101
2010	29	52,931
2011	27	44,604
2012	26	44,416
2013	28	63,329

Table 25: ***Median Tract Deposits Over 2000-2013***

	Median Tract Deposits ($000)
2000	628,322
2001	928,845
2002	772,936
2003	829,386
2004	883,614
2005	960,677
2006	1,045,960
2007	1,196,389
2008	1,136,101
2009	1,231,225
2010	1,406,109
2011	1,267,704
2012	1,226,959
2013	1,438,319

3. Credit Union Data Set

Drawing from publicly-available data from the National Credit Union Administration (NCUA) and supported by private data provided by Bancography — a consulting company focusing on supporting financial institutions in their branch, product, and brand position strategies — the team collected data on U.S. credit unions operating from 2000-2013.

As described above for the banks data set, credit union data was decayed and then manipulated to match 2010 tracts' geographies. Unlike banks, credit union deposit information is not available at the branch level to serve as the link to appropriating institution level data to each branch. Instead, NCIF worked in consultation with researchers at Filene's and the National Federation of Community Development Credit Unions to develop an alternative methodology based on population. The team then vetted the methodology with several credit unions as a practitioner validity check, then moved forward with the methodology.

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To transfer the data from the institution level to the branch level, the team calculated the population of all Census tracts in which an individual credit union and its branches are operating. The population in each tract where a credit union branch is located was also calculated. The proportion of an individual credit union branch's population to the total area served by that credit union (all branches) was used to appropriate other variables out to individual tracts.

Once the data was prepared, the team performed exploratory analysis to better understand the data. As seen in Table 26, all credit union variables were correlated against each other to see what relationships exist. Below is a correlation table of the credit union variables, using 2000 as an example. The results are similar across the years of study. There is a strong correlation (r=0.92) between the number of branches, loans, and tract deposits. There is also a moderate correlation between total loans and assets.

Table 26: ***Correlation Within Credit Union Variables in Year 2000***
Census Tract Values (n = 59,969)

	Branch Count		
Tract Deposits	0.34	Tract Deposits	
Asset Allocation	0.14	0.43	Asset Allocation
Sum Loans	0.33	0.92	0.50

Change in each of the variables over time was examined. Table 27 presents the median values of all Census tracts from 2000 to 2013 for each of the credit union activity variables.

The number of branches interacting with tracts has increased consistently since 2000 — in part because of the availability of data. Additionally, deposits and assets allocated to each tract have increased consistently. Compared to banks, credit unions are operating at a lower volume than banks across all variables. This matches conventional understanding that the credit union industry is smaller than the banking industry, though it is an important component of financial products and services delivery —particularly meeting the needs of communities.

Table 27: ***Median Bank Variables Over 2000-2013***

	Median Branches	Median Tract Deposits ($000)	Median Asset Allocation ($000)
2000	3	66,277	1,288,572
2001	3	73,381	1,474,186
2002	3	83,507	1,623,516
2003	3	114,082	2,327,893
2004	4	138,428	3,204,498
2005	5	149,357	3,769,889
2006	6	147.594	4,228,097
2007	7	167,525	5,055,585
2008	7	177,658	5,647,015
2009	7	192,752	6,068,647
2010	7	218,034	6,330,425
2011	6	208,695	5,950,866
2012	7	241,196	7,003,875
2013	7	246,768	6,960,282

Finally, as part of the exploratory analysis, bank and credit union variables of the same name were correlated against each other. Of the three variables, branch count is most correlated, ranging from 0.450-0.604 — suggesting that banks and credit unions are often locating within the same areas. Assets allocated to the tracts show a lower correlation. While the correlations for assets allocated and tract deposits are lower, the variables generally move in the same direction for both bank and credit union variables.

Figure 14: ***Median Credit Union Assets and Deposits***

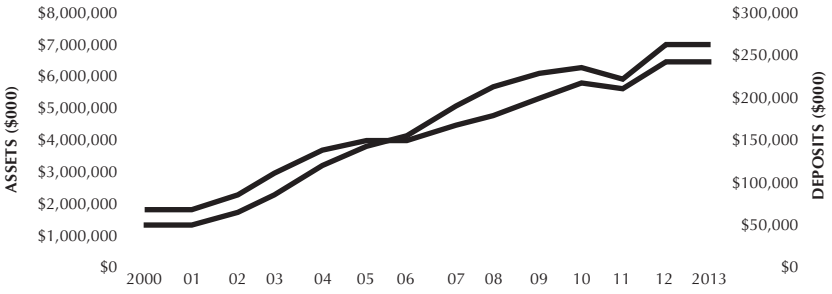

Figure 15: ***Median Credit Union Branches***

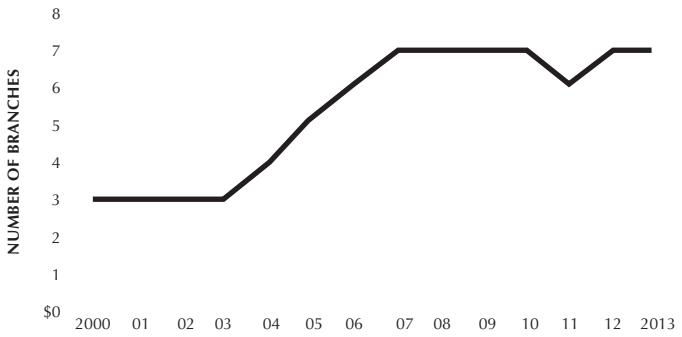

Table 28: ***CDFI Banks and CDFI Bank Tracts per Year***

	Number of CDFI Banks	Number of CDFI Bank Tracts
2001	39	3,428
2002	49	4,015
2003	49	4,003
2004	50	4,112
2005	50	4,252
2006	55	4,952
2007	59	5,393
2008	65	6,545
2009	62	6,596
2010	91	7,183
2011	88	6,988
2012	89	6,952
2013	87	6,659

Appendix 2.7

The team conducted exploratory analysis on the difference between tracts where there is a CDFI bank operating within it versus all other tracts. For more information on the procedure, see the following:

Mann, H. B., and D. R. Whitney. 1947. On a test whether one of two random variables is stochastically larger than the other. Annals of Mathematical Statistics 18: 50-60.

Wilcoxon, F. 1945. Individual comparisons by ranking methods. Biometrics 1: 80-83.

To create the analysis, Census tracts were divided into those that have CDFI banks operating within them, versus those that do not. Banks were described as operating within a tract if their approximated service area — created by the decay methodology — overlapped a tract. Information on which banks were certified as CDFI banks was available between 2001 and 2013 and, as such, 2000 was not included in the analysis for this section.

The number of CDFI banks has increased over the time period of study and, as such, the number of CDFI bank tracts considered in each year also grew. See Table 28 above for an overview of CDFI banks and CDFI bank tracts per year. Since 2013, the CDFI bank industry has continued to grow. As of second quarter 2015, there were 110 certified CDFI banks. NCIF is encouraged by the ongoing advances in CDFI banks — particularly in light of the findings of this working paper. A future area of research will to update analysis, including the new banks, once additional data becomes available.

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To take a deeper look at how CDFI banks interact with their communities, the findings on HMDA data for CDFI bank tracts compared to other tracts were normalized across several different characteristics. More information on the population normalization is included below.

Table 29 below shows HMDA data for the years 2009-2013 as well as the differences in CDFI bank tracts compared to all other tracts when normalized for population. This time period was selected because of the availability of population data. Population of individuals aged 16 and older — both raw and log of population data — were used. Results are significant unless marked with an asterisk.

When normalized from population, the trends found without normalization remain the same, in that CDFI bank tracts have:

1. Lower single-family loan originations (per person);
2. Lower number of originated loans per person;
3. Higher median loan amount per person.

There is a difference between the median income of the borrower and tract household income. However, the difference is significantly greater for CDFI banks. For example, in 2013, the difference between median income and median tract household income in CDFI bank tracts was 84.3% compared to 60.3%. In both sets of tracts, the trend of borrowers having higher income than others in the Census tract increases in magnitude across the time period — moving from 38.9% to 84.3% for CDFI bank tracts and 17.2% to 60.3% in all other tracts. This substantial increase suggests that lenders may have become more selective of their borrowers following the Recession.

Table 29: ***HMDA Data Normalized by Population 16 and Over***

	Sum of Originated Loan Amount/Population 16+		% Difference Between Median Income and Tract HH Income		# Originated Loans/Log of Population 16+		Median Loan Amount/Log of Population 16+	
	CDFI Bank Tracts	All Other Tracts	CDFI Bank Tracts	All Other Tracts	CDFI Bank Tracts	All Other Tracts	CDFI Bank Tracts	All Other Tracts
2009	1.26	1.40	38.9%	17.2%	2.1	3.7	23.2	16.5
2010	0.97	1.28	35.7%	17.3%	2.2	3.3	17.9	17.0
2011	0.84	1.20	47.6%	28.8%	2.0	3.1	17.2	16.3
2012	0.96	1.38	62.7%	41.5%	2.3	3.6	17.6	17.1
2013	1.14	1.65	84.3%	60.3%	2.3	3.6	18.5	18.2

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Appendix 2.8

NCIF pioneered impact measurement specifically for the mission-oriented banking industry in order to strengthen banks and attract investors. NCIF developed clear, compelling, broadly accepted Social Performance Metrics (SPM) used by investors; bank staff and boards; regulators, researchers, and public policy practitioners; and community members to identify and track the social performance of banks.

There are four key metrics (defined in the Glossary) as well as dozens of additional data points that are collected in partnership with banks. Data points include clients serviced, detail on products and services offered, jobs created and retained, environmentally responsible practices, diversity measures among staff and board, and narrative response to provide context on the bank and its performance.

For more on NCIF's Social Performance Metrics, visit http://ncif.org/inform/social-performance-metrics.

Appendix 2.9

In exploring the logistic regression model described in Section 6, testing different components of a social return index, the following output was generated:

Figure 16: ***Logistic Regression Outputs for Index Test***

log likelihood = -119.81263

Number of obs = 313
LR chi^2 (7) = 10.89
Prob > chi^2 = 0.1436
Pseudo R^2 = 0.0435

nsum	Coef.	Std. Err.	x	P > |z|	[95% Conf. Interval]	
total	7.34 e-06	0.0000102	0.72	0.472	-0.0000127	0.0000273
sumnet_loans_leasesdecay	7.64 e-07	1.08 e-06	0.70	0.481	-1.36 e-06	2.89 e-06
b_smallbiz	0.1463416	0.0877649	1.67	0.095	-0.0256745	0.3183576
a_asset	0.2102996	0.1593435	1.32	0.187	-0.102008	0.5226072
a_subs	-0.4599851	0.2274796	-2.02	0.043	-0.9058368	-0.0141334
a_lnsdep	-0.2058934	0.1562543	-1.32	0.188	-0.5121462	0.1003593
a_mb	0.0763456	0.2235682	0.34	0.733	-0.3618401	0.5145313
_cons	-2.1600290	0.3110608	-6.94	0.000	-2.769697	-1.550361

The model does not have strong predictive value, with a pseudo r^2 of 0.0435. There are two significant variables: small business lending (a positive coefficient) and Subchapter S corporation ownership (a negative coefficient) that arose from the 2009 to 2010 one-year comparison. These findings are represented in the cell at the intersection of 2009 and T1, as it is the comparison of 2009 data with the tract's jumping status in 2010.

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Similar analysis was performed for additional years in the time series analysis. For example, in row 2009, comparison to one year out is represented in T1, two years out (2009 to 2011) in T2, three years out (2009 to 2012) in T3, and four years out (2009 to 2013) in T4. Comparisons for other years follow by row. Table 30 shows the significant variables for these years with the sign of the coefficient in parentheses.

Table 30: ***Time-Series Analysis of Regressions of Financial Institution Characteristics***

	T0	T1	T2	T3	T4
2009		(+) Small business lending (-) Subchapter S corporation	(+) Total HMDA lending (+) Main branch presence	(+) Total HMDA lending	(+) Total HMDA lending (-) Subchapter S corporation
2010	(+) Asset size (-) Main branch presence	(+) Total HMDA lending (-) Small business lending (+) Asset size	(+) Total HMDA lending (-) Small business lending (+) Asset size	(+) Total HMDA lending (-) Small business	
2011	(+) Asset size	(+) Total HMDA lending (+) Asset Size	(+) Total HMDA lending (+) Decayed loans		
2012	(+) Asset size (+) Decayed lease	(+) Total HMDA lending (+) Decayed lease (+) Subchapter S corporation			
2013	(+) Asset Size				

The initial analysis was meant to be investigative — to explore ways to incorporate variables into a single model to serve as the basis for the Social Return Index — and, as such, should not be seen as suggesting causation or as conclusive. The current model has low explanatory value from a statistical standpoint and, as such, requires additional iterations to improve it and come to a more accurate Social Return Index model. The research team is encouraged by the identification of a procedure for creating the model and looks to explore the inputs to the model in the future in several ways, including additional variables to strengthen the explanatory power of the model.

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Appendix 2.10

Additional analysis not presented in the body of the working paper follows.

Factor analysis, in the sense of exploratory factor analysis, is a statistical technique for data reduction. It reduces the number of variables in an analysis by describing linear combinations of the variables that contain most of the information and that, hopefully, admit meaningful interpretations. Factor analysis originated with the work of Spearman (1904), and has since witnessed an explosive growth — especially in the social sciences and, interestingly, in chemometrics. Relevant sources include:

Fuller, W. A. 1987. Measurement Error Models. New York: Wiley.

Gorsuch, R. L. 1983. Factor Analysis. 2nd ed. Hillsdale, NJ: Lawrence Erlbaum.

Hamilton, L. C. 2009. Statistics with Stata (Updated for Version 10). Belmont, CA: Brooks/Cole.

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Kolenikov, S. 2009. "Confirmatory factor analysis using confa." Stata Journal 9: 329–373.

Mardia, K. V., J. T. Kent, and J. M. Bibby. 1979. Multivariate Analysis. London: Academic Press.

Mulaik, S. A. 2010. Foundations of Factor Analysis. 2nd ed. Boca Raton, FL: Chapman & Hall/CRC. van Belle, G., L. D. Fisher, P. J. Heagerty, and T. S. Lumley. 2004. Biostatistics: A Methodology for the Health Sciences. 2nd ed. New York: Wiley.

For this working paper, a factor analysis was done as a way of exploring ways to create a Social Performance Index. This methodology was tested as a way to reduce the complex number of variables into a simpler subset, which could be applied in index creation. For the factor analysis, the seven characteristics of financial institutions introduced in Section 6 were examined as count variables. To review, these variables are:

- Count of institutions with asset size above $1B;
- Count of headquarters location;
- Count of institutions with loan-to-deposit ratio between 70% and 90%;
- Count of institutions with Subchapter S corporation ownership;
- Count of institutions with total loans outstanding above the national median amount;
- Count of institutions with total small business loans outstanding above the national median (considering small business loans less than $1 million)
- Count of institutions with total HMDA lending above the national median.

The factor analysis was tested on 2000 data. One factor was retained with an Eigen value of 2.259; all other values were less than 2. The factor had a strong correlation on main branch location, asset size, and Subchapter S corporation ownership. The latent qualities of the financial institutions in a tract described by Factor 1 could be described by saying financial institutions possessing Factor 1 in greater amounts are tracts where there are more big banks, more Subchapter S corporations, and more headquarter locations. Total lending volume, both the HMDA and decayed leases variables had lower correlations.

Table 31: ***Factor Analysis Overview***

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor 1	Factor 2	Factor 3	Uniqueness
total	-0.1148	0.0455	0.3040	0.8923
sumnet_loan~y	0.1129	0.1210	0.3340	0.8611
b_smallbiz	0.3350	0.6309	0.1193	0.4756
a_asset	0.7511	0.4604	-0.0765	0.2180
a_subs	0.8074	0.0749	0.0485	0.3401
a_lnsdep	0.3644	0.6197	-0.0273	0.4824
a_mb	0.8789	0.2088	0.0217	0.1835

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The scores represent the linear combination of the coefficients on varimax rotated factors, so the higher the score the more that tract has financial institutions that possess the elements of Factor 1.

Varimax rotation is the most common rotation. This first involves scaling the loadings by dividing them by the corresponding communality as shown below:

$$\tilde{l}^{*}_{ij} = \hat{l}^{*}_{ij}/\hat{h}_i$$

Here, the loading of the i^{th} variable on the j^{th} factor after rotation, where $\hat{h}_i$ is the communality for variable i. What we want to do is find the rotation that maximizes this quantity. The varimax procedure, as defined below, selects the rotation to find this maximum quantity:

$$V = \frac{1}{p}\sum_{j=1}^{m}\left\{\sum_{i=1}^{p}(\tilde{l}^{*}_{ij})^4 - \frac{1}{p}\left(\sum_{i=1}^{p}(\tilde{l}^{*}_{ij})^2\right)^2\right\}$$

These are the sample variances of the standardized loadings for each factor, summed over the m factors. Our objective is to find a factor rotation that maximizes this variance.

The research team retained Factor 1 scores created in 2000 and tested their presence in jumping tracts from 2010 to 2013. Using a logistic regression model — with the jumped variable as a dependent variable and the Factor 1 score as an independent variable — the output is below.

Table 32: ***Regression Model Testing of Factor Analysis and Likelihood of Jumping***

log likelihood = -4911.4028

Number of obs	=	7293
LR chi² (1)	=	6.41
Prob > chi²	=	0.0113
Pseudo R²	=	0.0007

nsum	Coef.	Std. Err.	x	P > |z|	[95% Conf. Interval]	
f1	0.0660711	0.0261093	2.53	0.011	0.0148978	0.1172444
_cons	-0.3967292	0.0238925	-16.60	0.000	-0.4435577	-0.3499008

The regression model suggests there is a positive relationship between the presence of the Factor and a tract's jumping characteristic. Note that the pseudo r^2 is still extremely low — indicating that the Factor score, while indicative of the direction of the relationship, does not add much to the analysis.

GLOSSARY

CDFI Bank Tract: A Census tract that is located in a CDFI bank's approximated service areas as approximated by the research team using the decay methodology.

Decay Methodology: The decay methodology disaggregates bank and credit union data that is aggregated at the institution level — first to the branch level and ultimately to the Census tract level. This allows for a granular understanding of the institution's activities within a given tract. The decay methodology approximates the service area of an institution with two concentric rings, which represent the estimated distance customers will travel to access banking services. Decay refers to the concept that the effect or pull of an institution will lessen the farther away from the branch. For more information on the decay methodology procedures, see the text box on page 15.

Development Lending Intensity (DLI): The percentage of a bank's lending, in dollars, located in qualified Census tracts based on the CDFI Fund's Investment Area designation. DLI can be created along a range of categories based on publicly-available Home Mortgage Disclosure Act (HMDA) data or privately-reported data through NCIF's partnerships with banks. DLI is a measure of an institution's concentration of lending in qualified Census tracts.

Development Deposit Intensity (DDI): The percentage of a bank's branches located in qualified Census tracts based on the CDFI Fund's Investment Area designation. DDI is a measure of the concentration of an institution's branches in qualified Census tracts.

Distressed Tracts: As part of the jumping tracts methodology, the research team classified tracts as distressed if they exhibit above-median poverty rates and above-median unemployment rates.

Jumping Tracts Methodology: The jumping tracts methodology was created by the research team to explore change in socioeconomic characteristics of Census tracts. Tracts with above-median poverty and unemployment rates in 2009 were identified and their progress was tracked from 2009-2013. Tracts that improved out of the distressed category were labeled "jumping." This analysis created two sets of Census tracts for comparison in each year — letting the team see if differing amounts of financial institution activity was present and if the tracts had different quality of life indicators.

Jumping Tracts: As part of the jumping tracts methodology, the research team classified tracts as jumping tracts (or jumped tracts) if they improved from being designated as distressed tracts to non-distressed tracts. Jumping refers to their movement from above-median rates for poverty and unemployment to below-median rates.

Quadrant Score: A quadrant analysis combines an institution's DLI and DDI scores into an overall representation of its concentration in a qualified Census tract. Quadrant 1 banks are those that surpass thresholds for superior social performance for both DLI and DDI.

Social Performance Metrics: NCIF has established a suite of Social Performance Metrics, including DLI, DDI, and Quadrant Score (defined above), as well as Mission Intensity. Mission Intensity captures the comprehensive amount of lending that supports a bank's social mission — regardless of the loans' location. It is the percentage of a bank's total annual lending that supports the bank's mission by 1) being located in a qualified Census tract or 2) supporting a specific mission-relevant category. Banks designate a range of categories as being mission relevant, including loans to low-income borrowers or other targeted populations, loans to nonprofits or faith-based organizations, loans to minority- or women-owned businesses, environmentally-focused lending, and more. In addition to these four core metrics, NCIF collects information from partner banks, including: jobs created and retained, affordable housing units financed, diversity in staff and governance, product and services offered, environmentally-responsible practices, and more. For more on NCIF's Social Performance Metrics, visit http://ncif.org/inform/social-performance-metrics.

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The team consulted numerous sources during the research effort. Literature was consulted in refining the research questions, exploring the role of financial institutions in communities, considering quality of life characteristics, understanding other impact tracking and indexing examples, and creating and implementing various methodologies employed.

For those interested in learning more about particular aspects of the work, sources consulted during this research effort are listed below, grouped by content:

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National Community Investment Fund (NCIF) is a 501(c)(4) nonprofit investment fund that invests in mission-oriented banks and other financial institutions in order to increase access to services and catalyze economic development in low-income and underserved communities. As an impact investor, NCIF supports the mission-oriented banking industry by investing capital. Additionally, NCIF creates innovative business opportunities and facilitates the flow of funds from mainstream, philanthropic, socially responsible, and public sources. NCIF supplies research and impact metrics for banks and their investors and encourages collaboration through the NCIF Network. We aspire to transform the financial industry so responsible services are accessible to all and investments are valued based on social and environmental impact as well as financial performance.

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