RESEARCH REPORT

Measuring Community Needs, Capital Flows, and Capital Gaps

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The Urban Institute, in collaboration with the John D. and Catherine T. MacArthur Foundation and Mission Investors Exchange, is developing an evidence-based toolkit to advance the concept and inform the practice of place-based impact investing. This project focuses on understanding the roles of foundations and collaborative models in nurturing the development of place-based impact investing efforts. Read more about this effort in the project fact sheet.

Finally, a hearty thanks to all those who participated in an earlier convening that informed this report and to our reviewers for comments that helped strengthen the document: Melanie Audette, John Balbach, Mike Eggleston, Robin Hacke, Nhadine Leung, Mary Miller, Ellen Seidman, and Ben Seigel.

Introduction

Capital comes in many forms and from many sources, but it is a common need uniting a wide range of actors (including businesses, nonprofits, city governments, and consumers such as homebuyers or students) who are seeking to grow and develop. Debt—although justifiably generating concern when it is too expensive, deceptive, or great in magnitude—is nevertheless vital to growth. So too with equity investments for many businesses and projects.

Access to capital is often a sign of economic strength. There have been concerns for decades that some places, groups of people, or types of businesses have had unequal access to capital. For example, access to mortgage loans was a significant challenge for people of color exacerbated by the federal Home Owners' Loan Corporation's designation of neighborhoods across the US with African American residents as areas risky for mortgage lending, as was the Federal Housing Administration's refusal to insure nonwhite mortgages (Aaronson, Hartley, and Mazumder 2017; Rothstein 2017). The formation of the Small Business Administration (SBA), the Federal Housing Administration, and various US Department of Agriculture (USDA) lending programs, to name but a few government programs, were all based on concerns that one or more sectors of society lacked access to capital. But limited access to capital is not just a historical phenomenon—it is contemporary. One current effort to improve capital access in low-income areas is the Opportunity Zones incentive, which provides tax reductions to encourage the investment of capital gains in businesses and real estate in targeted census tracts (Theodos, Meixell, and Hedman 2018).

The reasons for limited access to debt and equity capital are many. They include discrimination, to be sure (Bone et al. 2017; Hanson et al. 2016; Turner and Skidmore 1999), but they also concern the presence of financial institutions, regulation, credit profiles, and geography (Calhoun, Feltner, and Smith 2018; Li and Goodman 2014). Rural areas can lack sufficient deal flow to sustain a local lending presence, which in turn can lead to limited economic growth. This problem has been exacerbated as financial institutions have failed and subsequently merged or closed bank branches both before and following the Great Recession. Start-up small businesses can lack the track record needed to convince a lender that repayment is likely.[1] Other small businesses may be pursuing investments for specialized equipment, which has limited value as collateral to lend against. Some loans, such as small home-mortgage loans and some small-business loans are too small to make given fixed costs. And in some communities, even if a nonprofit, business, or consumer can afford to cover the monthly cost of buying and repairing a property, the property may not appraise at a level sufficient to cover both acquisition and rehab costs, making it difficult or impossible to use the property as collateral for the loan. In the

case of venture capital, regional concentrations of wealth appear to limit the geographic scope of where venture capital investment is available. Just five metropolitan areas account for over 70 percent of venture capital investment in start-ups in the US (San Francisco, New York, San Jose, Boston, and Los Angeles).[2]

This report is intended as a practical tool for those seeking to understand how capital does and does not flow to communities, businesses, and households. This understanding can inform efforts by community developers to identify projects in need of financing, raise capital, and design and market new financial products and services. We scanned literature and practice to make plain the ways these trends are measured. We intend it to be helpful for those engaged in place-based impact investing (Ashley and Ovalle 2018) as well as more broadly for actors needing insights into capital access. The report is organized into three sections:

- **Needs assessments.** Before looking at capital flows and gaps, those interested in place-based investment can benefit from studying local needs for the things capital finances, particularly in areas where below-market capital may be required. For example, does the community face a shortage of affordable housing, insufficient access to grocery stores providing fresh foods, or dilapidated school facilities? We define a community-needs assessment as a process of determining unmet local need for a particular good or service. In this section, we detail five types of needs assessments. A needs assessment may precede a look at capital access for initiatives seeking to bolster local economies, though these components could also be done separately. In any event, understanding community needs—including listening to community members to understand the challenges they face—is key to a meaningful assessment of capital needs.

- **Capital flows.** A capital flow is the provision of financing to a household, business, or community. How much money is flowing to developers to build or rehab commercial real estate or multifamily housing, to businesses to buy equipment, or consumers to buy homes? In this section, we describe four steps to measure and analyze capital flows.

- **Capital gaps.** We define capital gaps as occurring when investors fail to make financing available for investable projects. Capital gaps can occur for neighborhoods, groups of people, types of businesses, or type of products or purposes. In this section, we document 11 ways that capital gaps can be measured.

To help ground this "how-to" guide in the real world, we provide examples in each of the three sections drawing from original data about the Twin Cities of Minneapolis and St. Paul, Minnesota.

Five Approaches to Assessing Community Need

In certain instances, communities require specific goods and services whose development may depend on the provision of subsidies or below-market financing. Examples include grocery stores in food deserts, charter schools, health clinics, and affordable housing. To ascertain how much a specific area needs these services, communities, developers, and investors often carry out a needs assessment. Needs assessments generally do not try to quantify the financing required for such service to be provided; instead, they estimate community needs in terms of units of the good or service being studied. Nevertheless, they can provide important support for the development of capital needs studies. Broadly speaking, a needs assessment can take five different methodological forms (with some studies using more than one method). We consider each in turn; appendix A provides a summary of relevant literature using these methods.

BOX 1:

Methods of Needs Assessment

1. Subtract existing supply from demand
2. Survey or interview community members to understand need
3. Examine use of suboptimal alternatives
4. Compare to an average level of service
5. Analyze services spatially to identify areas of relative geographic need

Subtract Supply from Demand

Need can be demonstrated, perhaps most intuitively, by subtracting the existing supply of a particular service from projected demand. This approach is an effective way to analyze the need for a good with fixed availability over a set period. Such an approach is useful in determining the need for additional affordable housing units; seats in quality schools; or slots in a health care, child care, or other community program. In these examples, the supply is static over time and is a number that equates to

the availability of a service. In some cases, analysts have estimated demand as the full population in the area that could conceivably access a service. For example, in the case of early childhood care and education, all children age 5 and under in an area can be counted (IFF 2015). Note that this conceptualization of demand is broader than that used by many economists, who would define demand by people's ability and willingness to pay.

In other cases, a target subpopulation is specified to service those in particular need. For instance, in Minneapolis and St. Paul, the Metropolitan Council (2006) calculated future demand for affordable housing by forecasting growth in the number of households in sewer-serviced parts of the region making below 60 percent of area median income. Another example would determine demand by population that meets at-risk requirements for specific programs. For example, demand for a preschool for at-risk children could be measured by the number of 3- and 4-year-olds in households at or below 185 percent of the federal poverty level (IFF 2011).

Demand or supply may need to be projected rather than directly determined. The most conventional methods for a needs assessment of retail businesses is analysis of the square footage of demand an area can support. City governments often undertake such studies when developing neighborhood economic development plans (Mefford et al. 2014; DC Office of the Deputy Mayor for Planning and Economic Development et al. 2009). Trade captures are estimated looking at current retail in a given area, and spending potential is then determined considering additional factors such as population growth, current quality of offerings, area household income, and additional sales from outside the area itself. Dividing the spending potential into various industries, a sales-per-square-foot of retail type is estimated; after taking out existing sales and square footage, this yields the total additional amount of square footage of a retail type that can be supported.

Strengths:

- This technique can precisely estimate the number of necessary units needed to be supplied, thus facilitating a capital gaps study to determine financing needs.
- Through projection of future demand, this technique can allow for advanced planning to meet needs.

Weaknesses:

- To perform this approach, one needs to have clear idea of existing supply of the service and the pool of potential users of it.

- Depending on the service needed and period studied, estimates can be inexact (e.g., if more or fewer children move into or out of an area than expected), and the supply of the service can change more or less quickly.

Survey or Interview Community Members to Understand Need

Certain types of services do not lend themselves as easily to simple accounting of supply and demand because of either data constraints or lack of a clearly defined target for supply. In these circumstances, a survey of a population can help establish levels of need. Surveys can be expensive to design and administer and can fail to generate high response rates. But if a population is relatively well defined and known (for example, where a program surveys its clients) a survey may be relatively inexpensive and effective. And some information cannot be obtained from secondary sources, necessitating a survey.[3] Beyond surveys, community meetings and interviews with selected members of the community allow for in-depth discussion of local needs as well as possible opportunities to address them.

Strengths:

- Surveys can provide a general approximation when it is otherwise difficult to establish a baseline level of demand for services.
- Surveys can provide insights into topics or groups of people that existing data do not describe.
- In-depth community conversations can provide a level of nuanced understanding of the nature of community needs that is otherwise difficult to obtain.

Weaknesses:

- Survey administration can be costly and difficult.
- Careful survey design is needed to obtain valid results that can be generalized to a population or community.
- When conducting community meetings or interviews, researchers need to be aware of the possibility that the people they speak with are not representative of the whole community.

Examine Use of Less Desirable Alternatives

A third way to inform demand for a service is to look at the number of people using inferior alternatives to that service, suggesting they have been shut out of the market. Such alternatives will only be used for some types of services, but where they are, they can serve as a proxy for demand for a more optimal option.

This approach is deployed prominently in quantifying the use of payday loans with high interest rates in place of conventional small-dollar lending; it is also deployed in quantifying the use of check cashing services rather than accessing full-service checking accounts. An example of this technique is the New York City Department of Consumer Affairs' 2008 assessment of conventional financial services, which it undertook by determining what share of residents in two target neighborhoods currently make use of alternative financial services. The authors approximate how much conventional financial services were needed by examining the extent to which these alternative services were used.

Another sector where similar studies have been conducted are assessments of the use of high-cost, low-quality convenience stores in place of full grocers (Hilmers, Hilmers, and Dave 2012). Affordable housing needs can also be understood by looking at the number of households with inadequate housing conditions, such as overcrowded housing units or families living in single-room occupancy units.

Strengths:

- Use of suboptimal services is an observed behavior that may provide solid information about demand for services.

Weaknesses:

- Information about the use of suboptimal services may need to be directly observed or determined through surveys—detailed usage information is not frequently publicly available.
- This approach relies on assumptions about the reasons for use of alternative services (such as that the use of the alternative service reflects a lack of access rather than a preference), and these assumptions may not be fully valid.
- Defining the relevant alternative may be difficult. For example, is renting truly an alternative to owning a home for everyone, and is the categorization consistent across income levels and places?

Compare to an Average Level of Service

Level of need for a service can also be considered by examining the extent to which a population is served in comparison to the average level for a larger geographic area. Given spatial inequality across neighborhoods in many cities, such differences can be pronounced.

For instance, in determining need for grocery stores, the CDC Division of Nutrition, Physical Activity, and Obesity (2011) considered the number of retailers of healthy foods divided by the number of all food retailers in a census tract. The national average for this rate is 10 percent. The authors considered any tract below this service level of healthy food retailers as demonstrating a need for more grocers. In their analysis of primary care providers in Philadelphia, Brown et al. (2015) compiled all primary care providers and computed population-to-provider ratios by census tract. They considered any census tract falling in the lowest quintile of this ratio to be an area of greatest need.

Strengths:

- This technique is useful for demonstrating disparities across a geography.
- This approach presents a clear level of desired supply in cases where demand or need is not otherwise easy to calculate and where need can be assumed to be constant across people and geographies.

Weaknesses:

- Controlling for inherent or unobserved differences in areas is difficult. Not every neighborhood will need or require the exact average of a particular service.
- Inexact measures of distance from a service, particularly for those who reside at the boundaries of chosen geographies or have greater or lesser transit access, can confound calculations.

Spatial Analysis of Services to Identify Areas of Relative Geographic Need

A related but distinct form of needs assessment entails mapping services to determine a spatial distribution in comparison to other key factors to denote areas of highest need. This method allows multiple factors to be considered spatially, determining need based on overlap or measuring distances to current services.

Rausch and Mattessich (2016) adopted this approach in their analysis of grocery stores. By overlaying federally designated food deserts with census tracts that have low vehicle access, they deemed any area where the two coincided to be in need of grocery stores. The USDA Economic Research Service (2009), by contrast, took an approach of mapping distances to grocery stores from the center of one kilometer squares they construct. By overlaying decennial census data with this geography, they spatially analyzed specific demographic and socioeconomic factors in comparison to grocery store access.

Strengths:

- Spatial analysis provides clear visualization and allows for analysis of trends across an area.
- This approach allows for easy overlay of multiple sources of information.
- This approach is useful for considering distance from various services.

Weaknesses:

- Analyses of distances from services should consider multiple modes of transportation and geographic, cultural, or jurisdictional barriers. For example, a nearby school may be inaccessible if it is in another school district.
- This technique identifies areas where greater supply may be required, but it does not clearly quantify the additional supply needed.

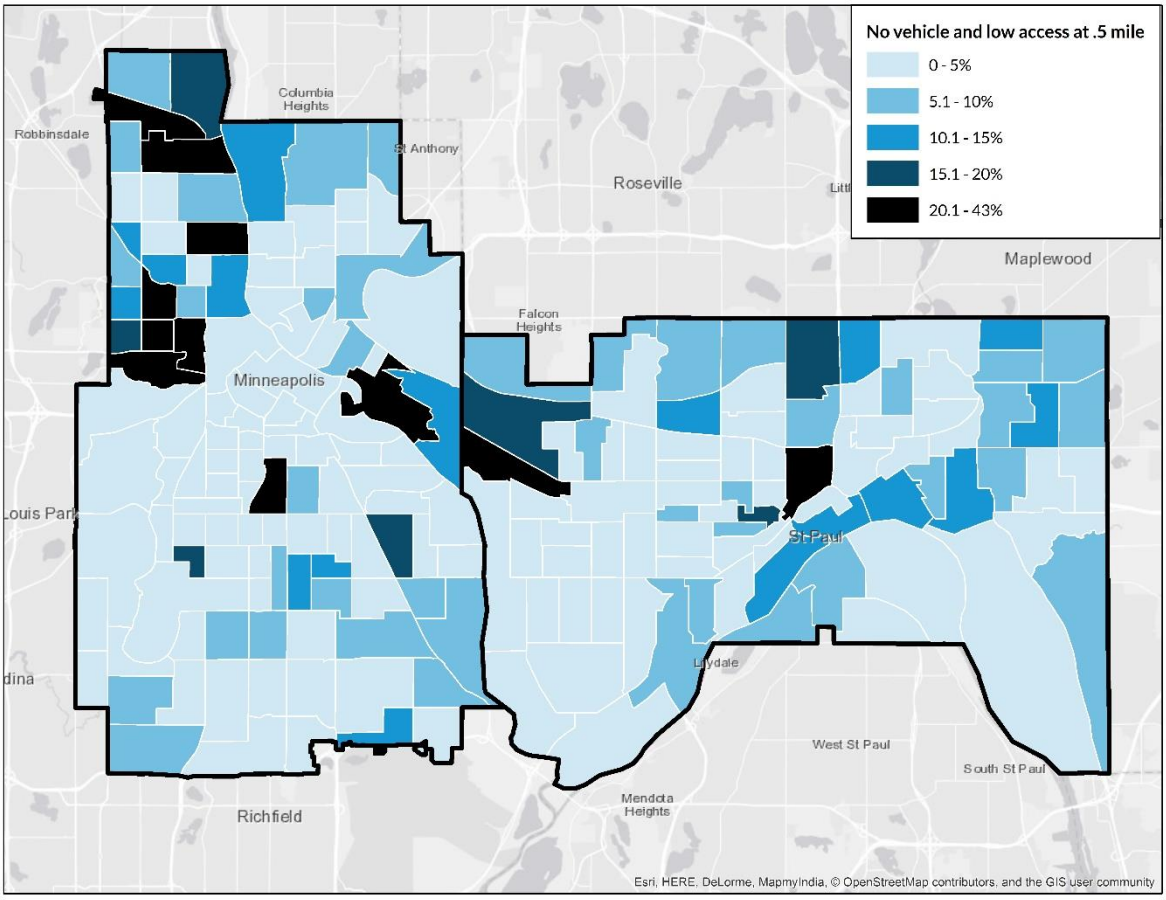
Two Examples of Needs Assessment

To illustrate how needs assessment can be done in practice, we created two examples of needs assessments for Minneapolis and Saint Paul, Minnesota. Figure 1 provides a method for estimating the need for grocery stores based on data of grocery store locations and census tract population without access to a vehicle. The figure relies on 2010 data compiled by the USDA Economic Research Service (USDA ERS) on geocoded point locations of large grocery stores and supermarkets and 2010 block-level ACS data on households without access to a vehicle. As the figure demonstrates, the vast majority of people (95 percent or more) in most tracts in Saint Paul and Minneapolis live within a half mile of a grocery store or have access to a vehicle. However, the map does highlight certain areas of both cities where food access is more limited and where the need for a new supermarket or grocery store may be

the most pressing—notably the northwest side of Minneapolis and in Saint Paul, the neighborhoods north of downtown and on the city's west side.

FIGURE 1

Share of Population with No Vehicle and Low Access to Grocery Stores within a Half Mile, 2010



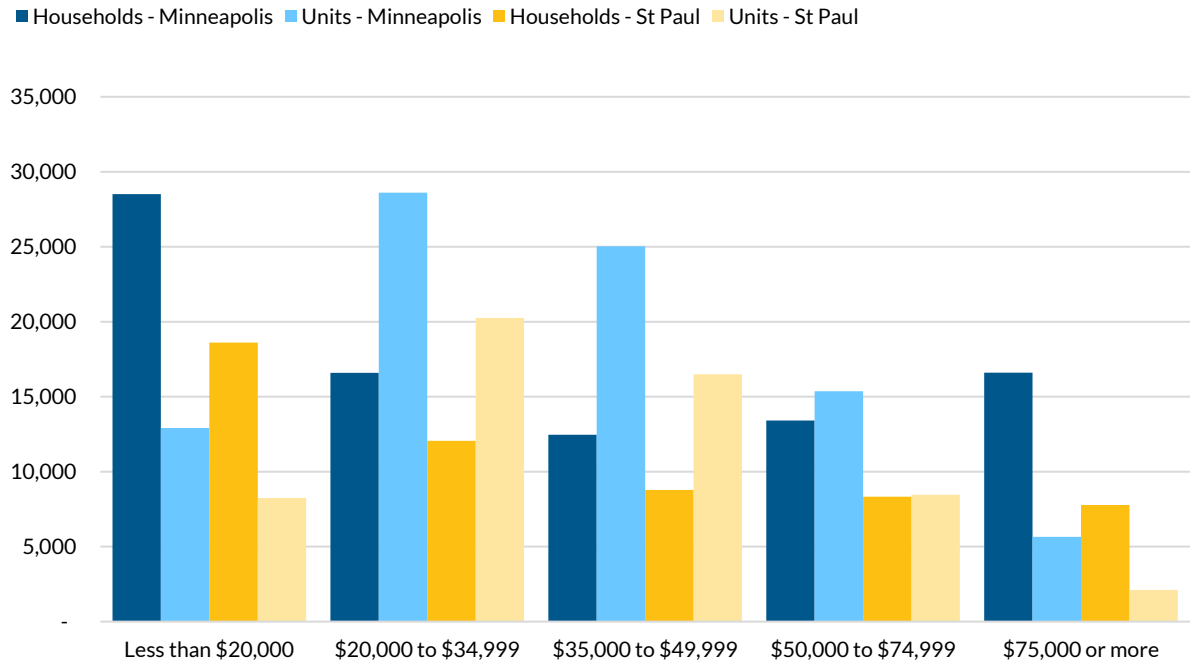
Sources: US Department of Agriculture Economic Research Service, American Community Survey, 2010.

A second example uses a method for assessing the affordable housing gap in a community that compares the number of rental households within an income range to the number of rental units that are affordable to households of that income (a way of comparing supply and demand). Rent is defined as affordable if the household spends 30 percent or less of its income on rent. Housing needs are then calculated as the difference between the number of units available to rent at a certain income level and the number of rental households in a community. Figure 2 demonstrates this in both Minneapolis and Saint Paul. For renter households with incomes less than $20,000 in both cities, the analysis indicates a significant deficiency in the supply of rental housing affordable to those households. Note also that for

the highest-income group of renters, there are fewer units than households, indicating that many of these households are renting down-market.[4]

FIGURE 2

Affordable Rental Housing Unit Gap by Rental Household Income in Minneapolis and Saint Paul, 2012–16



Source: American Community Survey, 2012-16.

Four Steps in Analyzing Capital Flows

As discussed in the following section, measuring capital flows can be useful in exploring capital gaps, but they can also be important to study in their own right. Understanding flows can help explain why communities look the way they do, how a local investment landscape is trending, which actors are engaged in communities, and how strong or weak local capacity is relative to other communities or neighborhoods. From a review of studies that determined capital flows for various asset classes in different locales, we identify four overarching steps to help guide an assessment of capital flows. (Appendix B details the capital flows literature we reviewed.)

The number of thorough studies of local capital flows is growing. In an analysis of Baltimore City small business access to capital, Miller, Seigel, and McComas (2017) analyzed more than three dozen distinct sources of capital flows spanning federal, state, local, and private sources. Next Street and Mass Economics's 2016 Boston Small Business Plan combined capital source data for bank branches, credit unions, community development financial institutions (CDFIs), the SBA, Community Reinvestment Act (CRA) reporting, private equity, venture capital, angel investor groups, and crowdfunding platforms. In their paper on real estate investment in Detroit, Theodos and colleagues (2017) attempted to capture (at least in theory) every loan, sale, and permit for commercial, industrial, and multifamily properties within the City of Detroit, making use of over two dozen federal, state, local governmental, CDFI, and proprietary data sources. Some studies survey capital users, capital providers, or a combination of the two to discern flows within a specified area. The New York City Department of Consumer Affairs Office of Financial Empowerment (2008), for instance, surveyed 640 randomly selected residents about consumer borrowing and conducted four focus groups for deeper dives in two selected neighborhoods (Jamaica, Queens and Melrose, the Bronx).

BOX 2:

Steps in Analyzing Capital Flows

1. Obtain detailed data from government agency reports, government or trade association records of financial transactions (such as mortgage deed data or Realtor home sale data), private data vendors, philanthropies or other impact investors, or your own data collection
2. Aggregate these data to the study geography
3. Consider presenting data in an easily interpretable scale, such as a per capita rate
4. Analyze data for easier consumption and greater insight, for example by studying change in capital flows over time, comparing different types of capital flows, and studying spatial concentrations of capital flows

Obtain and Prepare Data for Analysis

A variety of data sources are available to track capital flows in different asset classes. In some circumstances, these data will be publicly available, such as Home Mortgage Disclosure Act Loan Application Register or Federal Financial Institutions Examination Council's CRA small business lending

data. Private sources, such as TransUnion or Black Knight, may be necessary for certain analyses. Depending on the area being studied, local data from county, city, or state sources may also prove necessary. In most cases, a combination of government, proprietary, industry, and local on-the-ground data are necessary for a true grasp of a specific investment landscape. Appendix D provides a list of potential data sources by asset class.

Aggregate Data to the Study's Geographic Level of Interest

Data may be collected or shared at the address-level for individual investments or may already have been aggregated to larger geographies such as census tracts, cities, or counties. If the data are accessed at a smaller geographic level than the desired geography, they can be aggregated using geospatial techniques. This is typically straightforward, though it can be confusing or difficult where geographic identifiers are not consistent or clear, making it difficult to place investments—for example when a new development results in different streets or addresses not captured by geolocating software.

Address-level data are often aggregated to the census tract or city level to characterize the amount of investment within a specific geography. Alternatively, Sawyer and Temkin (2004) aggregated point data on mainstream banks and alternative providers into clusters of five or more locations in the same area, to represent concentrations of a certain type of lending. Geographic information system software can also be used to make heat maps or hot spot maps (e.g., kernel density maps) to show areas with a high intensity of activity.

Apportioning—or estimating the percentage of activity in a larger geography that has occurred in a smaller one—is usually difficult to do accurately, but it may be informed by business or household locations if proxies are needed.

Analysis of smaller geographies and smaller numbers of observations should be dealt with cautiously because normal random fluctuations in activity can be misidentified as meaningful trends under these conditions. One potential solution is to combine data across several years.

Create Scalar Variables

Comparing raw dollar flows across communities is rarely useful, because the size of a community (the number of residents or businesses, for example) influences the size of capital flows. To turn capital flows data into a rate that can allow for cross-comparison, a scale variable is often used as a denominator to normalize the data. Toussaint-Comeau and Newberger (2014), for instance, calculated the number of SBA 7(a) loans and CRA reported loans per 1,000 businesses. Business lending analyses might also use the number of employees or the number of employees at small businesses as scalars. Sawyer and Temkin (2004) analyzed the number of banks and the number of alternative financial services providers per 10,000 residents. Real estate lending activity could be measured as a ratio of assessed property value. Home mortgage activity could be scaled by the number of owner-occupied housing units.

Create Analytic Cross-Cuts

After preparing data, several options are available to appropriately segment them for analysis.

Spatial analysis. Mapping data spatially can provide important insights into how flows are concentrated within specific areas. For example, Ratcliffe and colleagues (2014) displayed mortgage debt and non-mortgage debt by census tract across the country. Theodos and colleagues (2018) displayed a granular look at Baltimore's census tracts and how capital investment concentrates in specific areas of the city. In this form, financial flows data can be layered with other spatial attributes for analysis, such as concentrations of high poverty, demographics, or other socioeconomic renderings.

Deal size. Sorting flows into buckets of specified sizes can be useful because the size of loans can provide information on the entities receiving them. The Institute for Housing Studies at DePaul University (2015) adopted this approach in its analysis of rental housing in Cook County, coding each individual multifamily loan as small (less than $1 million), medium ($1 million to $3 million), or large (over $3 million). Cowan (2017) focused solely on loans under $100,000 in his small business lending study of Chicago, Los Angeles, and San Diego, with the rationale that such loans are more likely to support truly local businesses.

Source of lending. Another important lens for analysis is the type of organization originating the capital flows. Tracking the market share of different sources across geographies and time—whether they be mainstream bank lenders, CDFIs, private alternative lenders, or impact investors, for example—helps clarify the motivations and limitations of different types of investors and reveals community demand for financial products and inequities in supply. Theodos and colleagues (2017) carried out an

analysis of Detroit across mission, mainstream, and private lending streams, finding that mission-oriented lenders, government subsidies, and mainstream financing leveraged by these sources accounted for 42 percent of all financing provided to commercial real estate in the city from 2013 to 2015. Considering mission financing as a share of all financing better contextualizes its role and effects in the resurgence of investment within Detroit.

Many consumer lending studies focus on the separation between mainstream and alternative or "fringe" lenders. The New York City Department of Consumer Affairs' Office of Financial Empowerment (2008) conducted a survey of residents in two low-income neighborhoods to determine sources of lending being used by consumers. In a Chicago region analysis sponsored by the MacArthur Foundation, Hacke et al. (2016) segmented the landscape of impact investing capital sources into a series of actors: government, banks, large corporations, institutional asset owners, foundations, accredited investors, and retail investors.

Another option for better understanding a type of capital flow is to consider the origin of the flow. In their study of Baltimore small businesses, Miller, Seigel, and McComas (2017) tracked investments and lending as deriving from within Baltimore City, elsewhere in Maryland, or outside of Maryland.

Trends over time. Looking at how capital flows are changing over time can reveal significant fluctuations that are driven by both national and more local economic conditions. For example, Theodos and colleagues (2017) documented a growing resurgence in commercial real estate lending in Detroit from 2011 to 2015. This approach can also be combined with spatial analysis, comparing a trend in the study area to a trend in a comparison area. For instance, Shakro (2013) used spatial permit density data between 1990 to 2009 in Austin, Texas, to demonstrate the influx of renovation reinvestment in East Austin and northwest of downtown. Trends can also be studied by source of lending. In a study of SBA lending in Michigan, Toussaint-Comeau and Newberger (2014) demonstrate the gradual influx of smaller bank and nonbank lenders into the SBA 7(a) sphere between 2000, 2006, and 2012.

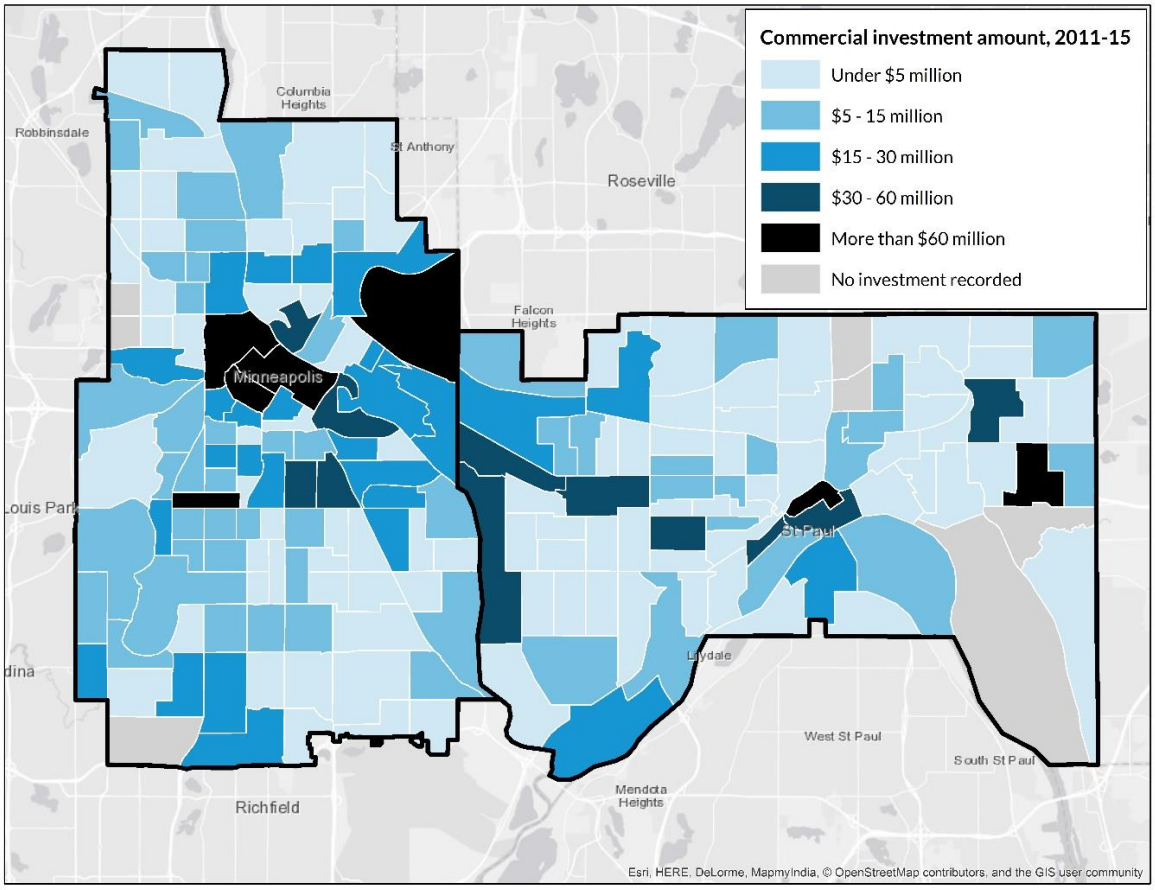
Two Examples of Capital Flows Analysis

To make practical the steps described above, we again generate two examples looking at the cities of Minneapolis and Saint Paul. Figure 3 provides the results of a spatial analysis of capital flows, showing lending to commercial businesses in Minneapolis and Saint Paul from 2011 to 2015 by census tract. In both cities, commercial capital flows are concentrated downtown. In Minneapolis, commercial capital flows were also high to the Mid-City Industrial neighborhood in northeast as well as the Lyn-Lake

commercial district in south Minneapolis. Saint Paul had lower capital flows than Minneapolis, but there was higher investment in the western portion of the city bordering Minneapolis as well as some concentrated investments on the east side. As expected, commercial capital flows in residential communities were smaller.

FIGURE 3

Tract-Level Commercial Real Estate Investment in Minneapolis and Saint Paul, 2011–15



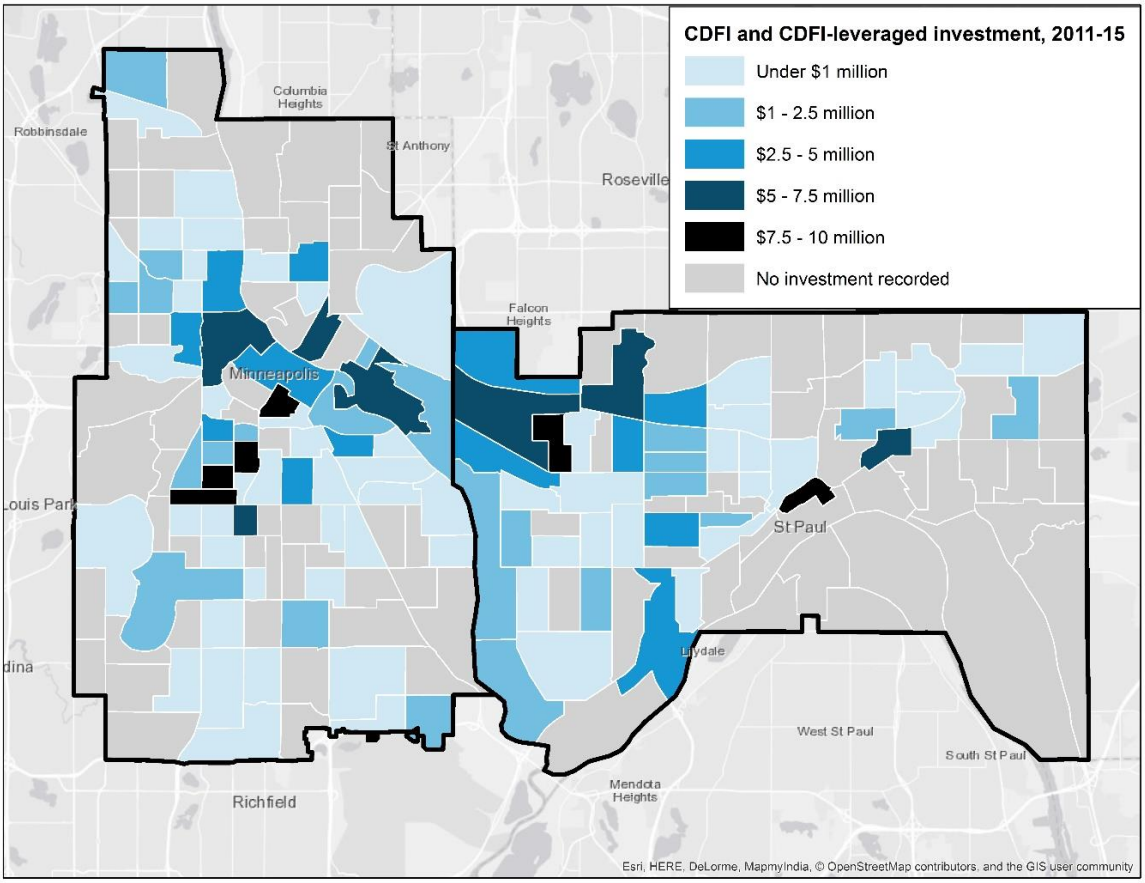
Source: CoreLogic, 2011–15.

One can also compare across maps to understand trends in different types or sources of capital, as shown in figure 4. CDFIs are private, mission-driven financial institutions that provide credit and other financial services to underserved communities. Although in many cases CDFI lending can cover the full capital needs of a project, CDFI investment can also be leveraged to attract private investment sources. As figure 4 shows, the volume of CDFI and CDFI leveraged investment in the Twin Cities from 2011 to 2015 is far lower than commercial real estate capital flows. There is some alignment in terms of where commercial real estate and CDFI capital is flowing, but also some points of departure, for example, with

CDFIs making a greater share of their investments in the neighborhoods south of downtown Minneapolis.

FIGURE 4

CDFI and CDFI-Leveraged Investment in Minneapolis and Saint Paul, 2011–15



Sources: CoreLogic; US Department of Treasury's CDFI Fund Transaction Level Report database; Opportunity Finance Network.

Eleven Ways to Calculate Capital Gaps

There is a growing body of literature that seeks to identify where and why capital limitations exist for certain purposes, for certain places, and for certain groups of people or institutions. Hacke, Wood and Urquilla (2015), for example, discuss the "capital absorption capacity of places"—how players in a given community are able to work together to attract capital. They describe how capital gaps can be created when the local community investment ecosystem is poorly organized.

The literature is also beginning to yield approaches to provide evidence of the existence of—and in some cases, estimate the magnitude of—capital gaps. These approaches differ in their data sources and analytic methodologies. Depending on the type of capital, geography of study, research budget, audience, and scope of analysis, certain methods may be better or worse fits for studying a specific capital gap.

This section summarizes 11 methodologies we identified through a literature scan and provides example studies for each as well as a description of the methods' strengths and limitations. The literature we reviewed draws from a wide range of capital sources, study populations, geographies, and research disciplines. Appendix C provides a detailed summary of the relevant gap estimation research articles by method. One limitation common to many of these methods is that they do not predict future capital gaps; rather, they help understand current or recent capital gaps.

BOX 3

Eleven Capital Gap Estimation Methods

- Ask borrowers
- Ask capital providers
- Ask both borrowers and providers
- Estimate demand and supply, and calculate the difference
- Calculate lending denial and frustration rates
- Compare one moment in time to another
- Compare one place to another, with scaling variables
- Analyze differences in capital use between groups
- Look at use of less desirable financial services
- Reconstruct the underwriting box
- Implement a pilot project

Ask Borrowers

A method for identifying capital gaps from the demand side is to talk with borrowers through interviews, focus groups, or surveys. Depending on the questions asked, this approach can provide quantitative data—such as the amount of capital borrowers are seeking, the types of capital they are seeking, and their denial or success rates. It can also provide qualitative insights, such as how borrowers of different groups choose whether to apply for loans, which capital products are most appealing, and how barriers might be reduced.

An example of this approach is the Federal Reserve Banks's Small Business Credit Survey, an annual national survey that includes information about why small businesses did or did not apply for loans, barriers to capital, credit application sources (small banks, large banks, online banks), satisfaction with the sources, and application denial and success rates (Federal Reserve Banks 2017).

Strengths:

- This method can provide detailed information on borrowers' backgrounds and sentiments not usually collected in national datasets.

Weaknesses:

- This method can be cost intensive to identify, recruit, and collect data from capital seekers.
- This approach does not incorporate supply-side perspectives.
- Borrower interviews may not be sufficient to estimate gap size, especially at smaller geographies, depending on how many are conducted and the level of detail known and provided.
- Borrowers may not fully understand why they are having difficulty accessing credit and may believe a capital gap exists when rather their own creditworthiness is a fundamental issue.

Ask Capital Providers

For the supply-side perspective, researchers can ask capital providers about capital gaps. Providers can give insight about capital supply barriers, market characteristics, new products, gaps in the market, and what capital providers look for in borrowers. Providers may even be able to discuss loans that they would like to make but that current organizational policies or regulations prevent them from making, as

well as loans that they would be willing to make if another capital provider were able to take on part of the deal (e.g., participation) or risk (e.g. a subordinate loan). These kinds of conversations can lead to a detailed, granular understanding of the nature of certain capital gaps. Researchers may complement this collection approach with additional contextual information by including interviews with regulators or relevant public officials.

A study in Oregon identified capital gaps from the supply perspective (Zellers 2012). The researchers collected quantitative and qualitative information from capital providers and experts in Oregon's capital ecosystem, identifying needs and gaps within specific business sectors (e.g. life sciences, small manufacturing, clean tech) and identifying specific types of capital needs (e.g. growth capital, seed stage, microlending).

A wrinkle on this approach would be to ask social-sector capital providers about their use of subsidy to make deals work and perceived needs for additional subsidy dollars. The need for subsidy could be construed as a proxy for a capital gap.

Strengths:

- This approach provides evidence about the supply-side of capital gaps.
- This approach can be lower in cost than demand-side studies because there are fewer capital providers than borrowers.

Weaknesses:

- This approach does not provide information about borrower perspectives.
- Provider interviews may not be sufficient to estimate gap size, depending on how many are conducted and the level of detail known and provided.
- Capital providers will not always have perfect information about their borrowers, so capital gaps may exist that they are not aware of.

Ask Both Borrowers and Providers

A more robust perceptual approach to identify gaps is to interview or survey both capital providers and borrowers. Researchers who use this approach to identify gaps often focus on a specific capital type (e.g. small businesses, home mortgages) and usually limit the geography of analysis (e.g. state, city,

neighborhood). An example of such approach is Hacke and colleagues' (2016) research on the demand and supply of impact investment capital in the Chicago region. For the demand-side perspective, the research team conducted a survey of potential borrowers' capital needs (e.g., type of capital sought, flexibility, risk, duration and interest rate) and barriers to access. From the supply side, the researchers conducted interviews with impact investors, including impact-oriented foundations and accredited investors, for insight on their motivating factors for investment (e.g., what returns or outcomes are expected, locations of impact, and market conditions). A similar approach was taken in the Next Street and Mass Economics's (2016) City of Boston Small Business Plan.

Strengths:

- Including perspectives from both borrowers and capital providers can develop a more nuanced picture of the capital gap.

Weaknesses:

- Including both borrowers and providers may increase research costs.
- This method does not necessarily empirically estimate gap size, depending on depth and specificity of data collection.

Estimate Demand and Supply, and Calculate the Difference

Another approach to identifying capital gaps is to project the demand for capital and subtract the supply of capital available to generate an estimate of the unmet demand. This research approach relies on representative data on both the supply of capital in a given market and on capital usage. To identify the gap, analysts develop a model to estimate the expected demand given market conditions and subtract from that the amount of capital being offered in that same market.

Servon, Visser, and Fairlie (2011) used this approach to estimate the capital gap for small businesses in New York City. Drawing from a variety of small-business data sources, the research team developed a multiple linear regression model to predict the demand for business loans in New York City. They estimated the supply of capital available to small businesses in New York City by taking data on observed CRA-reported lending activity and scaling that figure upward based on national data on CRA market share. The research team then subtracted the total demand for business loans within the

small-credit market from realized supply of capital to estimate the unmet demand in the New York City credit market.

Strengths:

- This approach accounts for both capital supply and demand in a given market.
- This approach provides an empirical estimate for capital gap size.

Weaknesses:

- Obtaining the data needed to accurately estimate demand and supply across capital type can be difficult.

Calculate Lending Denial and Frustration Rates

A fifth approach to identifying capital gaps is to look at denial or frustration rates. Although borrowers can be denied funding, there is also loan "frustration," which refers to borrowers with incomplete or withdrawn applications or borrowers approved for a loan but on terms they do not accept. It is sometimes assumed that the amount of loan volume leading to a denied or frustrated borrower is equal to a capital gap, which could be filled by increasing the availability of alternative credit, by providing additional credit enhancements to mainstream lenders, or by providing counseling and technical assistance to borrowers.

Surveys of small businesses have provided data on the share of businesses reporting they have been denied credit and used those figures to estimate gap size (Temkin and Theodos 2008). And several researchers have identified capital gaps within the home mortgage market using Home Mortgage Disclosure Act data. Li and Goodman (2014) refined this approach to construct denial rates that account for shifts in the composition of the applicant pool over time.

Strengths:

- Denial and frustration can convey information about capital gaps, and data like those from the Home Mortgage Disclosure Act are free, publicly available, nationally representative, longitudinal, and available at a small geography.

Weaknesses:

- Many capital types do not collect the detailed data needed to perform such analysis.

- Although some denied or frustrated borrowers could potentially be served successfully by mission lenders, not all of them are creditworthy.
- The data do not cover borrowers who were so discouraged they did not even apply for a loan.

Compare One Moment in Time to Another

Capital gaps can be identified by looking at changes in capital demand and flow across time. In particular, researchers may choose to look at how an economic shock or other disrupting event can affect capital utilization. Analysts typically select a moment in time that the researcher deems to represent a reasonable or typical level of capital access and then compare that period to an abnormal one. An example is Robb's (2013) examination of the impact of the economic crisis on access to capital by small businesses over the 2004 through 2010 period, controlling for business and owner characteristics. A second example is Goodman, Zhu, and George's (2014) estimate of mortgage access, which found up to 1.2 million fewer home loans annually than under an environment with "normal" credit availability. Note that broad economic trends, and not just local market conditions, will affect the provision of capital in a place over time. Researchers attempting to isolate purely local drivers of capital gaps would also need to incorporate a look at trends over time in comparison communities.

Strengths:

- This approach can provide quantitative evidence to identify the size of capital gaps and how shocks impact capital access.
- This method provides some empirical evidence of gap size.

Weaknesses:

- Distinguishing how much of a drop-off in investment activity is caused by investors tightening their standards, rather than a reduction in demand, is not always easy.
- This approach tends to be backward rather than forward looking.

Compare One Place to Another, with Scaling Variables

Analysts can identify capital gaps by analyzing capital activity across place. The approach involves selecting a geography type (e.g., state, county, city, neighborhood, zip code), introducing a scaling

variable to account for differences in population or market that affect demand, and then analyzing differences in capital flows or utilization rates. Researchers could compare one place to another without including a scaling variable, but not considering differences in population or economy limits the robustness of the comparison. An example of a comparison study that includes a scaling variable is the Urban Institute's web feature estimating capital gaps for a variety of community development financing flows.[5] For example, the researchers analyzed small-business lending by calculating a lending rate (number or dollars of loans per number of small business employees) and then comparing lending rates across counties.

Strengths:

- This approach can provide evidence of disparities in capital access across geographies. Findings could inform qualitative work on why barriers exist in certain areas.

Weaknesses:

- Controlling for variations in underwriting characteristics of borrowers in different areas may be difficult.
- Choice of scaling factors can significantly affect results.

Analyze Differences in Capital Use between Groups

Analysts commonly identify capital gaps between different groups of people, looking at gender, race or ethnicity, age of borrower, and other considerations. Although these gaps can be investigated through qualitative or quantitative means, quantitative studies again often introduce scaling or control variables (e.g., geographic area or borrower characteristics) to isolate the effect of the demographic characteristic the research team is seeking to analyze. Care needs to be taken, however, when the explanatory variable of interest is correlated with the control variables.

For these reasons, this approach requires careful use of statistical methods. Fairlie and Robb (2010) investigated disparities in capital access between white- and nonwhite-owned small businesses. The authors use national survey data on small businesses to conduct a series of regression analyses to investigate differences in equity investment and loan amounts between groups of owners, controlling for a variety of demographic, education, geographic, business, and sales factors.

Strengths:

- This method can provide evidence of disparities in capital access across populations. Findings can inform qualitative work on why barriers exist between certain populations.

Weaknesses:

- This approach may have difficulty controlling for all the relevant factors, such as variations in underwriting characteristics of borrowers in different areas.
- This approach may not fully account for structural factors (e.g., discrimination) associated with disparities in capital access.

Look at Use of Less Desirable Financial Services

Analysts may look at the use of less desirable financing to understand capital gaps as well as community needs; the concept is similar. Less desirable financing may be a proxy for identifying an indicator of the unmet need for mainstream financing. In this approach, researchers may look at differences in utilization rates for less desirable services by population, geography, or time. Common examples of less desirable financing include payday lending, online business loans, and subprime home-mortgage lending. For example, Fishbein and Woodall (2006) looked at rates of subprime mortgage lending disparities by gender, race, and income and found that women, particularly women of color, are more likely to receive subprime and higher-cost mortgages.

Strengths:

- This method provides an empirical estimation of capital gap size.

Weaknesses:

- Secondary data sources for some less desirable forms of financing may be difficult to find.
- This method does not provide direct evidence on why more desirable financing does not serve a region or population.

Reconstruct the Underwriting Box

Another approach to identifying a capital gap is to reconstruct the underwriting box. Often this method is used in real estate finance to identify a financing gap in a development. A developer will estimate the

total cost to build the project and then estimate the operating income and expenses of the project to derive the amount of net operating income the project will have available to pay investors. Given this information, plus information about the desired rate of return, term, required debt service coverage ratio, and required loan-to-value ratio of prospective investors, the developer can estimate the total amount of investment the project can raise. The difference between the total cost of the project and the amount of investment that can be raised is the financing gap, which is typically filled with grants or by using other forms of below-market financing.

To the extent that detailed knowledge about the capital gaps on a small group of projects can be applied to similar projects, an estimate can be made of the community-wide capital gap for a particular investment type. For example, if a developer calculates that they have a $20,000 gap to acquire and rehabilitate a home in a revitalizing neighborhood, and that there are 50 other such homes in the neighborhood, an aggregate capital gap of $1 million could be estimated to exist for this type of project. And similar approaches can be used to determine gaps for low-income homeowners to afford homes, for community facilities such as schools or health care centers to operate, and even for businesses (for example to determine crowd-funding needs to launch a start-up business). Depending on the borrower type, other underwriting factors must also be considered in such an analysis, such as borrower credit scores.

Strengths:

- This method can provide dollar estimates of capital gaps and financing needs.

Weaknesses:

- This approach requires detailed knowledge of the borrowers or deals that are to be financed and can be time consuming.
- Capital gaps estimates for entire communities would need to rely on the construction and analysis of multiple deals or assume that "typical" deals extrapolate for a marketplace. Particularly for business financing, making generalizable assumptions to enable such community-wide estimates can be difficult.

Implement a Pilot Project

A final approach to measuring capital gaps is much more experimental. A capital provider can consider revising its own underwriting box and introduce a new pilot loan product with more expansive or

flexible terms that could allow more capital seekers to qualify. For example, a CFDI could release a small-business loan product with lower collateral requirements. Comparing the previous demand for a similar loan product with stricter criteria with demand under the new pilot program can provide an estimate of a capital gap. The findings from one pilot program could be extrapolated, using scaling variables, to estimate the gap size in another region. However, because it can be difficult to project demand ahead of time, a capital provider should exercise caution to ensure the pilot program itself is adequately capitalized, lest it damage its reputation by having to turn away prospective borrowers at the door. Such efforts have been especially well (and rigorously) tested in the offering of microfinance internationally (Banerjee et al. 2014). However, domestic CDFIs also frequently engage in a process of refining their financial products over time to meet market needs, understanding capital gaps through a "learning by doing" approach. LiftFund, for example, has experimented with modifying its small-business lending standards over time to build a growing and successful loan portfolio (Carsey 2018).

Strengths:

- This approach provides direct experimental evidence of a capital gap.

Weaknesses:

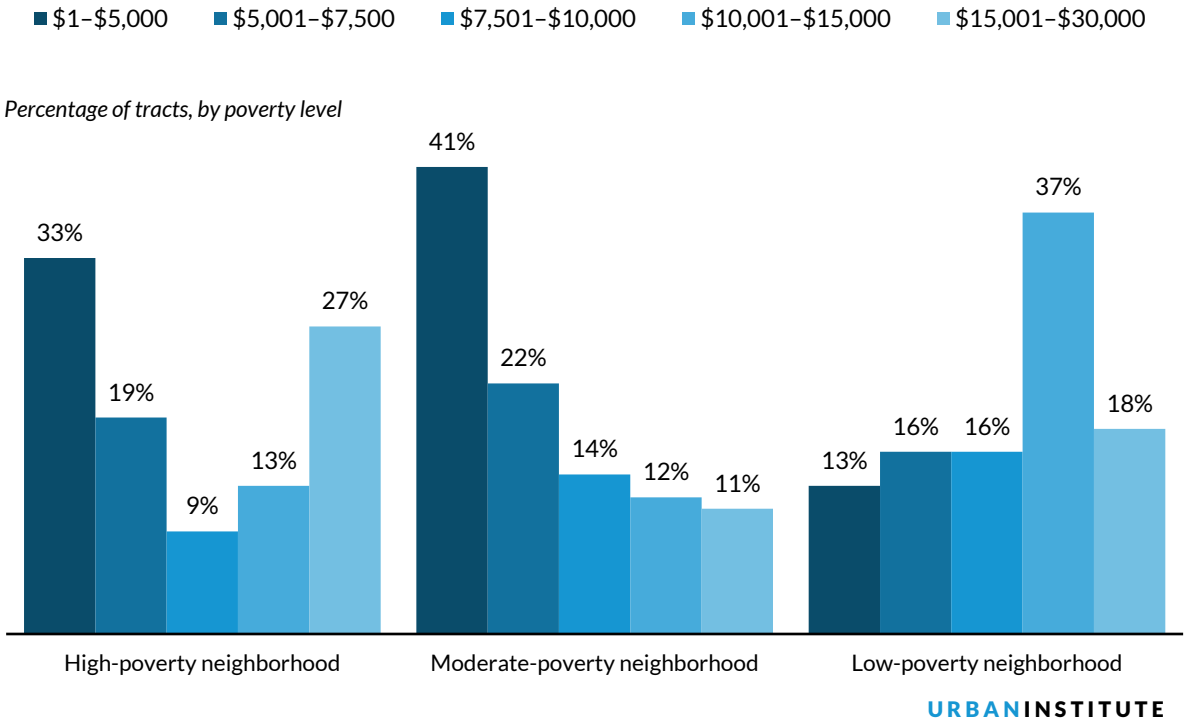
- In the event that low demand is observed, the capital provider may need to assess whether problems with operations or marketing are at fault before concluding that a capital gap does not actually exist.
- It can take time for experimentation to run its course and for results to emerge.

Three Examples of Capital Gaps Analysis

We produce examples of capital gaps again using the cities of Minneapolis and Saint Paul. Capital gaps can be measured by comparing disparate rates of lending between groups of people or neighborhoods to highlight differential access. Figure 5 details small business CRA lending per employee to census tracts by level of neighborhood poverty. Among the financially better off, low-poverty neighborhoods, 71 percent of tracts receive more than $7,500 in lending per small business employee. Just 37 and 49 percent of moderate and high poverty tracts see these lending levels.

FIGURE 5

Average Annual Small Business Community Reinvestment Act Lending per Employee by Neighborhood Poverty Level in Minneapolis and St. Paul, 2011-15

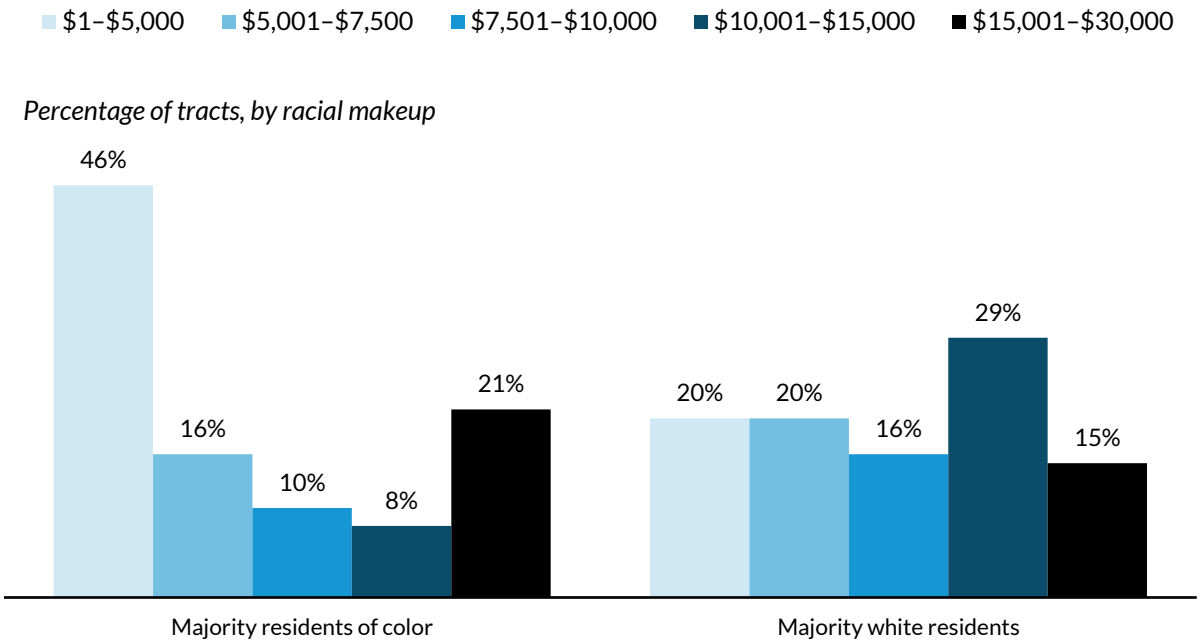


Sources: Community Reinvestment Act Federal Financial Institutions Examination Council reporting, Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics Workplace Area Characteristics, and American Community Survey, 2011–15

Similarly, figure 6 details small business (CRA) lending per employee by census tract separately for neighborhoods that have a majority of residents of color and those that are majority non-Hispanic white. A disproportionate amount of majority-residents-of-color tracts (46 percent) are in the lowest per small business employee lending category. Conversely, 44 percent of majority-non-Hispanic-white tracts receive over $10,000 per small business employee in CRA lending.

FIGURE 6

Average Annual Small Business Community Reinvestment Act Lending per Employee by Neighborhood Racial Makeup, 2011–15



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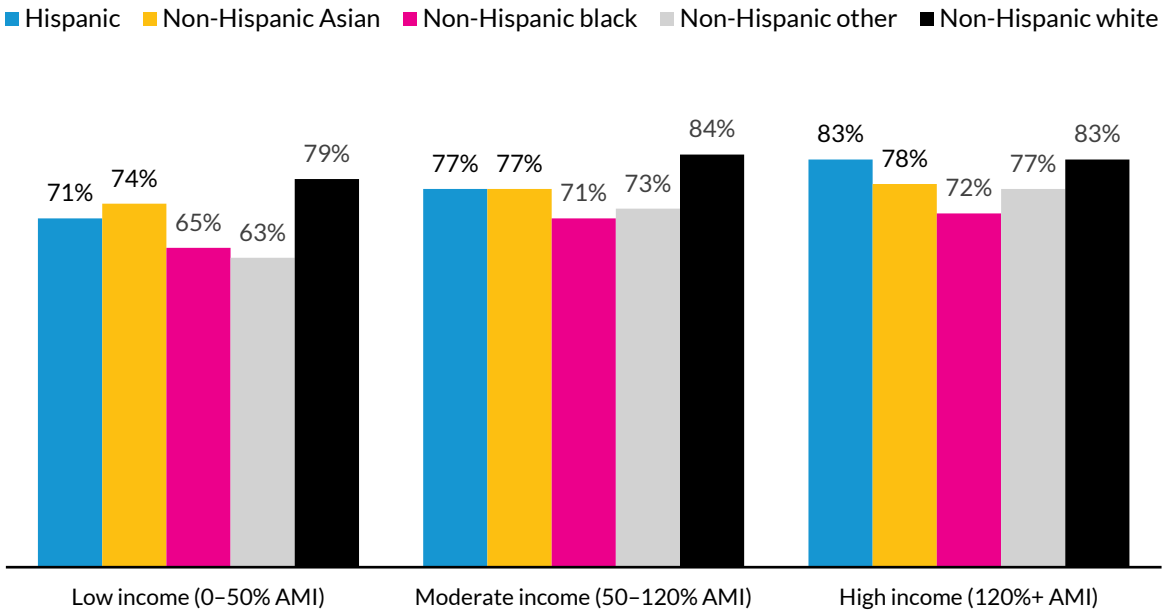
Sources: Community Reinvestment Act Federal Financial Institutions Examination Council reporting, Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics Workplace Area Characteristics, and American Community Survey, 2011–15

Our final example measures gaps in accessing home mortgages by race and ethnicity by comparing mortgage loan origination rates. Figure 7 provides data on the share of single-family home purchase loans originated (i.e., not denied by the financial institution or withdrawn by the applicant) by race and ethnicity and household income in Minneapolis and Saint Paul from 2011 to 2015. As the figures show, a racial/ethnic gap exists in loan origination rates across incomes, with non-Hispanic white applicants having consistently higher origination rates in Minneapolis and Saint Paul across incomes. To further evaluate these numbers, researchers can conduct statistical difference tests to evaluate whether the observed origination rates across racial and ethnic groups or income ranges significantly differ from one another. (The differences here are statistically significant.) Of course, many factors could be driving these trends, to include not just individual lender and borrower characteristics and decisions but also structural elements such as neighborhood access. A more robust statistical analysis would include control variables account for these additional factors.

FIGURE 7

Single Family Home Purchase Mortgage Loan Origination Rates in Minneapolis and Saint Paul by Race and Income, 2011–15



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Sources: Community Reinvestment Act Federal Financial Institutions Examination Council reporting, Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics Workplace Area Characteristics, and American Community Survey, 2011–15.

Conclusion

This report is intended to serve as a guide for practitioners looking to understand their local capital environment, whether it be understanding the needs capital finances (affordable housing, retail, grocery stores, etc.); the flows of capital to households, businesses, or communities; or the gaps in the provision of capital between neighborhoods, populations, and businesses. Understanding local need, capital flows, and capital gaps is critical to informing effective place-based impact initiatives as well as broader efforts to empower and support communities.

We hope this document provides practitioners with the tools and approaches to conduct their own analyses and, from that work, use the data to inform effective place-based action in the communities they serve. Some of the literature cited in this document is highly complex or rigorous. We encourage analysts supporting place-based efforts to explore only what is essential to addressing the questions practitioners require. It will be important to understand in advance the scope of the questions

practitioners are seeking to answer, the time frame, and the capacity of staff to conduct the analysis. Even with limited time and staff capacity, a community could undertake several approaches to analyzing capital flows and gaps. One does not need to fully reproduce an academic study to be able to produce actionable findings to inform a local decision. That said, we strongly encourage readers to examine the papers cited in the appendices, which provide valuable ideas for how analysts could carry out insightful research.

Here we offer some general tips on starting the process:

1. To begin, consider what type of need is most important to understand (e.g., affordable housing, food access, or home mortgages). Conversations with community members can be extremely valuable in the early stages of research.

2. Determine the geography of analysis (e.g. census tract, neighborhood, city, county, state).

3. Decide on the time frame for analysis (single year, multiple years in series, or multiple years collapsed).

Note that these first three dimensions—issue area, geography, time frame—in addition to other data constraints, will strongly influence the rest of the research approach.

4. Reach out to partners who can help to think through the research approaches, find relevant data sources, and analyze and interpret them.

5. After thinking through these questions, refer back to the relevant section in this report (i.e., Five Approaches to Assessing Community Need, Four Steps in Analyzing Capital Flows, or Eleven Ways to Calculate Capital Gaps) to see what methodological approach fits with the research questions. Each approach has its respective cost and strengths and weaknesses and, depending on the capital type or population in question, some approaches are better suited to answer specific data questions than others. Once a methodology is chosen, we recommend reviewing the relevant studies and reports included in the appendices.

6. Estimate research costs and build a work plan. Engage in fundraising efforts for the research if needed.

7. Plan for future data collection to be able to track the issues studied over time.

More data are available than may be commonly perceived. Several federal data sources (e.g., American Community Survey, American Housing Survey, Home Mortgage Disclosure Act data, Local

Employment Dynamics) are free to the public and often available by census tract or other small geographies. Additionally, larger municipalities and state governments often maintain open data portals for local data. If a data source is not listed online, it may be worth contacting your local government; municipalities often maintain datasets that are not posted publicly but nonetheless may be made available upon request. Proprietary data sources are not always expensive and can provide solid evidence about capital flows.

Our geographic lens of Minneapolis and Saint Paul is intended to serve as an example approach, but that frame (i.e., city level) is not the only geographic level available. The scope can be widened or shrunk depending on data and resource constraints. For example, one could take a larger lens and look at a metropolitan area, potentially highlighting how capital differs between the core city and suburban municipalities. The appendices include many examples of needs assessments, capital flows analyses, and capital gaps assessments at various geographic levels.

Once an analysis is conducted, it will be worth considering reproducing these finding in the future as new data become available. Having a systematic process for evaluating new data on capital flows and gaps could document how patterns have changed over time, which can help inform neighborhood strategies and other community development needs.

Appendix A. Community Needs Literature Matrix

TABLE A.1

Community Needs Literature Summary

Area of Need	Type of need analysis	Report	Data sources	Geography	Measures	Method
Consumer	Survey of population to demonstrate need	NYC Department of Consumer Affairs. 2008. "Neighborhood Financial Services Study: An Analysis of Supply and Demand in Two New York City Neighborhoods." New York: NYC Department of Consumer Affairs.	Survey of 640 randomly selected residents and four focus groups	New York City (Jamaica, Queens; Melrose, Bronx)	Number of bank and credit union branches per 10,000 residents by zip code; Questions around use of financial services including the percentage of respondents with a checking/savings account, the percentage of respondents who use check cashers at least once every few months, the percentage of respondents who overdraw their checking account every few months, the percentage of respondents who do not have direct deposit, the percentage of respondents who must pay rent in cash, and the amount of respondents' savings	Through survey of residents, determined consumer demand for financial services; that is, the percentage of the population who are never banked, are formerly banked, are crossover banking users, are exclusively mainstream banking users, have informal/no savings, are formal savers, have fringe/no credit, are crossover credit users, and have exclusively mainstream credit.
Affordable Housing	Subtract existing	Metropolitan Council. 2006. "Determining	Census Bureau Local Employment Dynamics data;	Minneapolis, MN, and Saint Paul, MN	Number of new households in sewer-serviced areas,	Forecasted growth in the number of households in sewer-

Area of Need	Type of need analysis	Report	Data sources	Geography	Measures	Method
	supply from demand	Affordable Housing Need in the Twin Cities." Saint Paul, MN: Metropolitan Council.	Minnesota Department of Revenue data on market values; Census bureau rent levels; Metropolitan Council data on manufactured housing units		number of low-income new households in sewer-serviced areas; and number of market units that will become affordable.	serviced parts of region and the percentage of this growth from households below 60 percent of area median income. Then forecasted the number of market-rate units that will depreciate to become affordable. Subtract these from the number of new low-income households to produce the affordable housing need.
Housing	Subtract existing supply from demand	Aurand, Andrew, Dan Emmanuel, Diane Yentel, and Ellen Errico. 2017. "The Gap: A Shortage of Affordable Homes." Washington, DC: The National Low Income Housing Coalition.	ACS Public Use Microdata Series	50 largest metropolitan statistical areas	Number of rental units affordable and available at 30 percent or less of income for households at or below 30 percent of area median income (or below 100 percent of the federal poverty level); number of extremely low income households; number of affordable and available units per 100 households at various income levels; percentage of households at each income level with severe housing cost burden.	Estimated need for affordable housing by subtracting the number of units renting at or below 30 percent of 30 percent or below area median income from the total number of extremely low income households in area.
Housing	Subtract existing	Mullin & Lonergan Associates Incorporated,	ACS Public Use Microdata Series	Pittsburgh, PA	Number of units affordable and available at or below	Subtracted number of affordable and available units at each income

Area of Need	Type of need analysis	Report	Data sources	Geography	Measures	Method
	supply from demand	Brean Associates, and Fourth Economy. 2016. "Housing Needs Assessment." Pittsburgh: City of Pittsburgh Affordable Housing Task Force.			30, 50, 80, and 100 percent of median household income; number of households making at or below 30, 50, 80, and 100 percent of median household income.	threshold from the number of households at or below each income threshold to estimate the need at each threshold. Affordable and available units are defined as those listed as vacant and for rent; vacant and for sale; or currently occupied by a household making below the area median income being considered and paying 30 percent or less of income in rent (homeowner affordability was determined using median home value as a proxy for purchase price).
Affordable Housing	Subtract existing supply from demand	Institute for Housing Studies at DePaul University. 2017. "2017 State of Rental Housing in Cook County." Chicago, IL.	American Community Survey	Cook County	Rental demand, supply, and access to affordable rental housing	Subtracted number of units affordable to households at or below 150 percent of the federal poverty level from the number of households either at or below 150 percent of the federal poverty level or currently living in a unit affordable to this population.
Primary Care Providers	Comparison to Average	Brown, Elizabeth J., David T. Grande, Corentin M. Barbu,	SK&A, private insurer and Medicaid provider	Census tracts in Philadelphia	Number of full-time equivalent providers offering primary care	Compiled various datasets to measure the supply of primary

Area of Need	Type of need analysis	Report	Data sources	Geography	Measures	Method
	Level of Service	Daniel E. Polsky, and Jane W. Seymour. 2015. "Location Matters: Differences in Primary Care Supply by Neighborhood in Philadelphia." Philadelphia: Leonard Davis Institute of Health Economics.	directories, lists of community health centers		by census tract; population-to-provider ratio (within five-minute drive)	care providers across Philadelphia, mapped all primary care providers and calculated population-to-provider ratios by census tract. Singled out groups of census tracts in the lowest quintile of population-to-provider ratios as areas that exhibit the greatest need.
Quality Schools	Subtract existing supply from demand	IFF. 2015. "The Opportunity Gap -- Defined: A supply-and-demand analysis of student access to high-performing schools in Minneapolis." Chicago: IFF.	National Center for Education Statistics and MDE; Minneapolis Public Schools Where Students Live 2013 Fall dataset; ACS; 2014 ESRI Single Year Age data; Minneapolis Planning Commission	Minneapolis, MN	Number of seats in high-performing schools (defined by MDE metrics based on proficiency, growth, achievement gap, and graduation rates); and the number of children	Number of children attending a "high-performing school" was taken from attendance areas based on average distance of commute. The capacity of each school was estimated by grade using categories of K–5, 6–8, and 9–12. The level of need for seats in high-performing schools was determined by the difference between these two measures. Each neighborhood cluster was then ranked 1 to 35 by the highest level of need at each grade category. Each community is ranked based on the percentage of demand served across each category.

Area of Need	Type of need analysis	Report	Data sources	Geography	Measures	Method
Early Childhood	Subtract existing supply from demand	IFF. 2015. "Building a Better System: The Need for Early Childhood Education in Macomb, Oakland, and Out Wayne Counties." Chicago: IFF.	ESRI Demographics estimates; Michigan Department of Human Services Statewide Text File of Child Care Services; Michigan Department of Education; City of Detroit Master Plan Neighborhoods; US Department of Health and Human Services Directory of Head Start Centers; ACS	Macomb, Oakland, and Out Wayne Counties, MI	Number of children age 5 and under; and the number of licensed/registered service providers	The number of licensed/registered child care providers was subtracted from the number of children age 5 and under. The number of child care providers was divided by the number of children to show level of access to early childhood care/education. Providers were further segmented by program type (child care for any income; child care for subsidy-eligible; child care for Head Start/Early Head Start–eligible; child development program; child care for Great Start Readiness Program–eligible; Michigan state school readiness program). Communities were ranked 1 to 54 in order of highest level of demonstrated need.
Early Childhood	Subtract existing supply from demand & Comparison to Average	IFF. 2011. "Early Care and Education: The Top 10 Counties, Municipalities, and Chicago Community Areas	Illinois Early Childhood Asset Map (counties and municipalities); American Community Survey (community areas)	102 Illinois counties, 64 municipalities with a population greater than 30,000, and 77 Chicago community areas	Number of children age 5 and under in families below and above 200 percent of the federal poverty level (broken out into in two-parent families with both in the labor	Number of slots in each program subtracted by the number of children determined to be in need of these slots. Demand for each program is determined by individualized

Area of Need	Type of need analysis	Report	Data sources	Geography	Measures	Method
	Level of Service	in Need of Care." Chicago, IL: IFF.			force, one-parent families with parent in the labor force, and one-parent families with parent not in the labor force); total capacity of child care providers for ages 0–1, 2, 3–4, and 5 through kindergarten; number of children age 2 and under in Early Head Start; the number of children ages 3–4 in Head Start; number of children ages 3–4 at or below 185 percent of the federal poverty level (a proxy for at-risk preschool for all demand); the number of children ages 3–4; and the number of children enrolled in preschool for all	specifications. For instance, at-risk preschool for all need is calculated by children aged 3-4 in households at or below 185 percent of the federal poverty level. Additionally, a slot need is calculated for each program, measuring the number of children unserved by that program in each community. Service level and slot gap rankings are combined to create a weighted rank for each community with each program. Weighting is applied to each program to create overall composite category community ranks.
Grocery Stores	Comparison to Average Level of Service	CDC Division of Nutrition, Physical Activity, and Obesity. 2011. "Census Tract Level State Maps of the Modified Retail Food Environment Index (mRFEI)."	Proprietary data (not listed from which source -- "private market research companies")	Census tracts across US	Number of supermarkets and larger grocery stores (at least 10 employees); number of fruit and vegetable markets; number of warehouse clubs; number of fast-food restaurants, small grocery stores, and convenience stores	The number of healthy food retailers was divided by the number of all food retailers in each census tract. This number was multiplied by 100 to make it a percentage. Healthy retailers were defined as supermarkets, large grocery stores, supercenters, and produce stores. Less

Area of Need	Type of need analysis	Report	Data sources	Geography	Measures	Method
						healthy retailers included fast-food restaurants, small grocery stores, and convenience stores. Nationally, the rate is 10. Those areas scoring under 10 are considered to demonstrate a need for healthy retailers.
Grocery Stores	Spatial analysis of services to identify areas of relative geographic need	Rausch, Ela J., and Paul W. Mattessich. 2016. "Healthy Food Access: A View of the Landscape in Minnesota and Lessons Learned from Healthy Food Financing Initiatives." Minneapolis, MN: Federal Reserve Bank of Minneapolis.	US Census Bureau, US Department of Agricultural Economic Research Service, County Health Rankings and Roadmaps, Minnesota Compass	Counties in Minnesota	Change in supercenters per capita; change in convenience stores per capita; share of population with low retail access; federally designated food desert area; number of residents facing distance barrier to food access; number of residents who are food insecure; number of residents with a distance barrier and who are food insecure	GIS mapping of federally designated food desert areas with census tracts having low vehicle access. Areas of overlap are defined as those with the greatest need for grocery stores.
Grocery Stores	Comparison to Average Level of Service	The Reinvestment Fund. 2015. "2014 Analysis of Limited Supermarket Access: Summary Brief." Philadelphia: The Reinvestment Fund.	US Decennial Census; American Community Survey; Bureau of Labor Statistics Consumer Expenditure Survey; Nielsen Trade Dimensions	Nationwide, by census block group	Population weighted Limited Supermarket Access (LSA) score; number of block groups within LSA area; estimated grocery retail leakage amount and rate; estimated total grocery retail demand; estimated number of	Calculated the population density of every census block group, calculated the distance between center of every census block group to nearest grocery store. Defined as a "comparatively acceptable" block group distance the average of

Area of Need	Type of need analysis	Report	Data sources	Geography	Measures	Method
					grocery retail square feet leaked; number of limited service stores in LSA area; population	all non-LMI block groups. "Limited Supermarket Access" score was created as the percentage of distance reduction necessary to achieve the comparatively acceptable rate for all block groups with a longer than average distance. With spatial clustering, found larger areas of block groups with scores of 45 or higher clustered near each other. Calculated grocery leakage estimates by taking household income ranges and income spent on "food at home" and subtracting it from all food sales (both full-service and substandard) to stores in the area. Converted dollars to square feet with national weighted average of sales for square foot.
Grocery Stores	Spatial analysis of services to identify areas of relative geographic need	USDA Economic Research Service. 2009. "Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and	Food Security Supplement of the Current Population Survey; 2000 Decennial Census; National supermarket	National	Population within one-mile of grocery store and do not have access to a vehicle; population living in low-income areas that are more than 1 mile from grocery store;	To develop a measure of access by household income and individual household characteristics the US was divided into one-kilometer square grids to which 2000

Area of Need	Type of need analysis	Report	Data sources	Geography	Measures	Method
		Their Consequences." Report to Congress. Washington, DC: US Department of Agriculture.	directory developed by researchers; Supplemental Nutrition Assistance Program data; proprietary household-level data on food items purchased by a representative sample across the US		time and travel mode to reach grocery stores by neighborhood income; food purchases by store type (e.g., convenience store, supermarket); price paid by consumers on similar food items across income levels.	Decennial census data were associated. Took the distance from the centroid of each square to the nearest grocery store. Based on this, each square was categorized as high/medium/low access in walking and driving access. Looked specifically at four vulnerable subpopulations: squares with high proportion of low-income people (equal or below 200 percent of the federal poverty level), with low household vehicle access, with a high percentage of people of color, and with a high percentage of people over age 65.
Retail	Project future square footage of demand that could be supported	Mefford, Chris, Mark Goodman, Erin Gengo, Alexandra Hudson, and Bryan Lobel. 2014. "Community Cornerstones: Othello Retail Analysis." Seattle, WA: City of Seattle.	Washington State Department of Revenue taxable retail sales and gross business income data; Hoovers Business Data; US Census American Community Survey	Seattle, WA, Othello neighborhood	Total taxable retail sales; per capita retail spending; trade capture rate; estimated population growth	To assess what level of retail could be supported in a neighborhood, the level of trade capture for each type of retail (percentage of area residents spending in area) was estimated through per capita retail spending of residents and the total taxable retail sales of a

Area of Need	Type of need analysis	Report	Data sources	Geography	Measures	Method
						retail type. An estimate was developed of total sales required to sustain additional retail square footage amounts. Population estimates were taken for the time new retail would be delivered theoretically. From the total additional sales required, the population growth multiplied by the per capita retail spending was subtracted. An additional amount was then taken out for estimated new sales from outside the neighborhood. And finally the total additional sales required were calculated per area resident. This was then turned into additional trade capture necessary.
Retail	Project future square footage of demand that could be supported	DC Office of the Deputy Mayor for Planning and Economic Development, Economic Research Associates, Jair Lynch Development Partners,	Census Bureau; DC Office of the Deputy Mayor for Planning & Economic Development; CoStar; ESRI Business Analyst	Washington, DC, H Street Corridor neighborhood	Trade area expenditures; estimated population growth; capture rates; estimated captured spending; average sales per square foot	Spending potential was estimated by multiplying current retail type spending by an estimated additional market capture (determined by looking at population growth, quality of existing offerings, local

Area of Need	Type of need analysis	Report	Data sources	Geography	Measures	Method
		streetsense, and Washington DC Economic Partnership. 2009. "H Street NE: SWOT Analysis, Retail Demand Analysis, Strategy and Preliminary Planning Diagrams." Washington, DC: Office of the Deputy Mayor for Planning and Economic Development.				competition, area household income, etc.). Spending potential by retail type was then divided by an industry measure of sales per square foot for that retail type. The result was total additional amount of retail square footage each retail type can support in the area.

Appendix B. Capital Flows Literature Matrix

TABLE B.1

Capital Flows Literature Summary

Capital flow type	Report	Data sources	Geography	Measures	Method
Small business	Toussaint-Comeau, Maude, and Robin Newberger. 2014. "An Analysis of SBA Loans in Lower-Income and Black Neighborhoods in Detroit and Michigan." Chicago: Federal Reserve Bank of Chicago.	SBA	Detroit and Michigan	Number and volume of SBA 7(a) loans	Case study of Detroit and Michigan SBA lending compared with CRA lending. Used multivariate analysis to control for other factors. Looked at "vulnerable locations" (i.e., City of Detroit and low-income or majority African-American neighborhoods). Tracked loans per 1,000 businesses and trends in types of lenders of SBA loans by location of businesses served.
Small business	Hull, John, Michele Henney, Nathan Lillegard, Pen Goodale. 2014. "Oregon Capital Scan: A Line is Drawn." Eugene, OR: University of Oregon.	Variety of public and private data sources: CB Insights, Kickstarter, SBA, USDA, IRS, ONAMI, OregonBEST, FDIC, US government SBIR/STTR sources. Where published quantitative data was not readily available, the research team performed	Oregon (counties and regions)	SBA 7(a) and 504 Loan number and volume by county; number and value of Venture Capital Deals by type; number and volume of angel, seed, and convertible debt transactions; number and volume of kickstarter	Built off a 2012 report to develop a trend line, "This update of the report is meant to be a second data point in the ongoing tracking of capital availability in the State, thus with a second point, a line

Capital flow type	Report	Data sources	Geography	Measures	Method
		qualitative interviews and attempted to assemble information that would provide a picture of the scale of capital available			can be drawn identifying a trend."
Small business	Woodstock Institute. 2017. "Patterns of Disparity: Small Business Lending in the Chicago and Los Angeles-San Diego Regions" Chicago, IL.	CRA small business lending data	Chicago, LA, San Diego	Number and volume of CRA-reported loans under $100,000 and CRA-reported loans to small firms.	Documented downturn in small business lending activity in two regions between 2008 and 2014. Compared the share of lending that low-income tracts captured compared with their share of business lending by both number and dollar volume of loans.
Small business	Immergluck, Dan. 1999. "Intrametropolitan Patterns of Small-Business Lending: What Do the New Community Reinvestment Act Data Reveal?" *Urban Affairs Review* 34 (6): 787–804.	Community Reinvestment Act Federal Financial Institutions Examination Council reporting	Chicago MSA	Number and volume of CRA-reported loans	Tracked capital flows to small businesses by level of income of census tract (low, moderate, middle, or upper). Conducted multivariate analysis of volume of small-business loans to census tracts by number of firms, firm size, proportion of different industry

Capital flow type	Report	Data sources	Geography	Measures	Method
					types, income, and race.
Small business	Next Street and Mass Economics. 2016. "City of Boston: Small Business Plan" Boston: City of Boston.	Capital providers sources: Bank branches: FDIC. Credit Unions: National Credit Union Administration. Private Equity: HedgeFundJobsList. Venture Capital and Angel Investor Groups: Xconomy, Crunchbase, and project research. CDFIs: CDFI awards database. Crowdfunding Platforms: The Crowdfunding Centre. Microlenders/Alternative Lenders, Online Lending Platforms, Quasi-Public Agencies, Accelerators.	Boston	Estimated capital flow to small businesses; Number of loans per 1,000 small businesses by neighborhood; Number of Loans per 1,000 small businesses	Tracked amount of flows to small businesses cumulatively within city and mapped these flows by neighborhood to compare investment densities.
Small business	National Community Reinvestment Coalition. 2007. Access to Capital and Credit for Small Businesses in Appalachia. Washington, DC: Appalachian Regional Commission.	CRA small business lending data, FDIC (branch and deposit), CRA exams of banks and thrifts, Dun and Bradstreet (business demographics and credit scores), and Appalachian Regional Commission and trade associations of CDFIs	Parts of the 13 states comprising Appalachia at the county and tract level	Percent of businesses that receive small business loans, percent of small business loans to businesses with revenues less than $1 million, small business loan to deposit ratio; small business lending per branch, and small business lending by minority level of county	Compared between geographies (Appalachia and US as a whole)

Capital flow type	Report	Data sources	Geography	Measures	Method
Small business	Bond, Philip, Paul Huck, Sherrie Rhine and Robert Townsend. 1999. "Small Business Finance in Two Chicago Minority Neighborhoods." Chicago: Federal Reserve Bank of Chicago.	Little Village and Chatham survey of business owners	Little Village and Chatham neighborhoods of Chicago	Percentage of business start-up costs (personal, informal, formal, other) by owner's race; percentage of businesses using trade and ongoing credit	After universe of business owners in two communities was developed, a stratified random sample was taken among "common businesses," "uncommon businesses," and "other businesses" to obtain a representative sample. Medical and legal businesses were excluded. From the survey, information on differences in flows by race and sources of credit was ascertained.
Small business	Miller, Mary, Ben Seigel, and Mac McComas. 2017. "Financing Baltimore's Growth: Measuring Small Companies' Access to Capital." Baltimore: 21st Century Cities Initiative.	SBA, CDFI, Opportunity Finance Network (OFN), Export-Import Bank, SBIR, Pitchbook, Maryland.gov Open Data, Federal Financial Institutions Examination Council, State and Local agency data, Individual Fintech Firm data	Investments in Baltimore City-based small businesses (under 500 employees)	SBA 7a and 504 programs, CDFI Loans and Investments, Export-Import Bank, Small Business Innovation Research and Small Business Technology Transfer Program, Maryland Department of Commerce Funds, TEDCO Funds, Maryland Department of Housing and Community Development BusinessWorks, Baltimore	Tracked number and dollar amount of flows to small businesses within city as a whole. Took cross-cuts of data by individual lenders/program, deal size, and location of lender.

Capital flow type	Report	Data sources	Geography	Measures	Method
				Development Corporation Loan Programs, FDIC Insured-Bank Small Business Loans, Venture Capital Investments, Mergers/Acquisitions and Initial Public Offerings, Financial Tech/Online Lending	
Multiple	Theodos et. al., "Baltimore Investment Flows - AECF" (unpublished presentation to the Annie E. Casey Foundation)	CoreLogic, HMDA, CRA, CDFI Fund, OFN	Baltimore	Number and dollar amounts of loans, sales, and building permits of commercial and residential real estate; income; jobs; city spending on capital improvements and community development; contextual data on demographics, health, and social conditions	Tracked number and dollar amount of flows by neighborhood and census tract over time; compared investment flows in a target area to citywide flows of similar types of capital
Multiple	Hacke, Robin, David Wood, Alan Okagaki, Katie Grace, Michael Vitali, and Malini Ram Moraghan. 2016. "Bridging the Gap: Impact Investment Supply and Demand in the Chicago Region" Chicago: MacArthur Foundation and the Chicago Community Trust and Affiliates.	Interviews and surveys conducted in 2015 with impact capital providers and users	Chicago	Capital sources broken down by: government, banks, large corporations, institutional asset owners, foundations, accredited investors, retail investors	Used a survey of capital providers and users to track the amount of flows currently being provided and potential for future flows.

Capital flow type	Report	Data sources	Geography	Measures	Method
Multiple	Theodos, Brett, Eric Hangen, Jay Dev, and Sierra Latham. 2017."Mission Finance in the Motor City." Washington, DC: Urban Institute.	City of Detroit's Office of the Assessor, Motor City Mapping, CoreLogic, and Real Capital Analytics, and CDFI and other loans data providers	Detroit	Commercial, industrial, multifamily, and institutional lending volume for mainstream, private, and mission lenders; subsidy investment by program; commercial, industrial, multifamily, and institutional lending volume for mission lenders, by type; volume of mainstay, private, mission and subsidy investment by neighborhood	Tracked lending volume by mainstream, private, and mission lenders both at city and neighborhood level; showed trends over time
Commercial real estate	Theodos, Brett, Eric Hangen, Jay Dev, and Sierra Latham. 2017. "Coming Back from the Brink: Capital Flows and Neighborhood Patterns in Commercial, Industrial and Multifamily Investment in Detroit." Washington, DC: Urban Institute.	CoreLogic, CDFI Fund, OFN, local building permits data	Detroit	Number and dollar amounts of loans, sales, and building permits of commercial real estate; contextual data on population and jobs	Tracked number and dollar amount of flows by neighborhood and census tract over time
Real estate	Shakro, Melissa. 2013. "Tracking Neighborhood Development and Behavioral Trends	Local building permits data	Austin	Permit density per square mile	Used GIS to map building permit trends by neighborhood

Capital flow type	Report	Data sources	Geography	Measures	Method
	with Building Permits in Austin, Texas." *Journal of Maps* 9 (2): 189–97.				
Rental real estate	Institute for Housing Studies at DePaul University. 2014. "The State of Rental Housing in Cook County: Understanding Neighborhood Multifamily Lending Trends in the Wake of the Housing Crisis." Chicago: DePaul University.	County deeds data via Property Insight, Assessor's data, HMDA, and CRA small business lending data	Cook County	Income level of census tract compared to MSA median family income; multifamily loan volume	Tracked dollar amount of multifamily lending by census tract, cross-cut into low-income, moderate-income, middle-income, and upper-income neighborhood categorizations.
Home-ownership	Institute for Housing Studies at DePaul University. 2015. "2014 Chicago Area Housing Market Conditions Report." Chicago: DePaul University.	US Census; HMDA; USPS vacancy data; County crime data; County deeds data	Chicago	Mortgage lending activity, foreclosure activity, price trends, trends in who is purchasing housing, housing vacancy trends	Disaggregated sales, lending and foreclosure data at various levels of geography and for various property types (single family, condo, 2–4 units, 5+ units); constructed a house price index
Home-ownership and consumer	Ratcliffe, Caroline, Brett Theodos, Signe-Mary McKernan, Emma Kalish, John Chalekian, Peifang Guo, and Christopher Trepel.	2013 credit data from TransUnion; 2008-2012 ACS	People with credit files across the US (Random sample of 7 million individual records to create measures at the census tract	Total debt; mortgage debt; non-mortgage debt	Tracked total dollar amounts of debt and debt (mortgage and nonmortgage) relative to income by census tract. Mapped for spatial analysis.

Capital flow type	Report	Data sources	Geography	Measures	Method
	2014. "Debt in America." Washington DC: Urban Institute.		level. Outliers were removed by trimming each component of total debt at 0.1 percent from the top of the distribution.)		
Consumer	Sawyer, Noah, and Kenneth Temkin. 2004. "Analysis of Alternative Financial Service Providers." Washington, DC: Urban Institute.	INFO-USA, FDIC, state licensing information and the FDIC database; Illinois Department of Financial Institutions; Illinois Office of Banks and Real Estate; Texas Office of the Consumer Credit Commissioner; Missouri Division of Finance; California Department of Justice; Florida Department of Financial Services; Florida Department of Agriculture; Tennessee Department of Financial Institutions; District of Columbia Department of Banking and Financial Institutions; District of Columbia Department of Consumer and Regulatory Affairs	Location of check-cashing outlets, payday lenders, and pawnshops in Cook County, IL; Fulton County, GA; Harris County, TX; Jackson County, MO; LA County, CA; Miami-Dade County, FL; Shelby County, TN; and Washington, DC.	Census tracts with at least one alternative provider, census tracts with at least one retail bank, racial/ethnic demographics of census tracts, poverty rate by census tract	Examined how census tract racial/ethnic demographics and poverty rate differ from each county's average. Compared characteristics of all geographic clusters of five or more alternative providers or banks. Analyzed mix of banks and alternative providers and the effect of the local regulatory environment (classified as weak, strong, or intermediate).

Capital flow type	Report	Data sources	Geography	Measures	Method
Consumer	Smith, Marvin, John Wackes, and Tony E. Smith. 2009. "Alternative Financial Service Providers and the Spatial Void Hypothesis: The Case of New Jersey and Delaware. Philadelphia: Federal Reserve Bank of Philadelphia.	New Jersey and Delaware Departments of Banking state licensing data; FDIC; 2000 census	Atlantic, Mercer, Monmouth, and Passaic Counties PA and New Castle County DE	Location patters of banks and alternative financial service providers (check cashers/pawnbrokers)	Observed spatial clusters of banks versus alternative financial service providers. Identified nearest neighbor hierarchical clusters and clusters that involve at least five individual points (with any county studied needing at least one cluster of each type). Compared census block median income of alternative financial service providers versus bank clusters.
Consumer	Ratcliffe, Caroline, Brett Theodos, Signe-Mary McKernan, Emma Kalish, John Chalekian, Peifang Guo, and Christopher Trepel. 2014. "Debt in America." Washington DC: Urban Institute.	2013 credit bureau data from TransUnion; 2008-2012 ACS	People with credit files across the US (Random sample of 7 million individual records to create measures at the census tract level. Outliers were removed by trimming each component of total debt at 0.1 percent from the top of the distribution.)	Debt past due; debt in collections	Tracked percentage of adults with debt past due and both the percentage of adults with and average of debt in collections by census tract. Mapped this data for spatial analysis.

Appendix C. Capital Gaps Literature Matrix

TABLE C.1

Capital Gaps Literature Summary

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
Ask borrowers	Capital Link. 2015. "Capital Plans and Needs of Health Centers: A National Perspective." New York: Capital Link.	Federally Qualified Health Centers	National	Online assessment of capital needs sent to 1,200 Federally Qualified Health Centers, of which 316 responded. Included questions around needs for various types of debt.	Online assessment surveyed capital raised and barriers to access for Federally Qualified Health Centers.	Surveyed health providers on estimated planned facility projects, their associated costs, capital currently raised, and capital still needs to be raised.
Ask borrowers	Mills, Claire K., Ellyn Terry, and Ann M. Wiersch. 2016. "2015 Small Business Credit Survey: Report on Nonemployer Firms." Federal Reserve System.	Small business	26 states	The 2015 Small Business Credit Survey collected 1,576 responses from nonemployer firms. These responses shed light on the experiences of small business entities, including firm performance and financing outcomes.	NA	Asked questions about why small businesses did not apply for loans, barriers to capital, credit application sources (small banks, large banks, online banks), satisfaction with the sources, application denial/success rates, shortfalls. Also looked at characteristics of small businesses (credit

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
						score of applicant, size of firm, nonemployer).
Ask borrowers	Federal Reserve Banks of Atlanta, Boston, Chicago, Cleveland, Dallas, Kansas City, Minneapolis, New York, Philadelphia, Richmond, St. Louis, and San Francisco. 2017. "2016 Small Business Credit Survey: Report on Employer Firms." Washington, DC: Federal Reserve System.	Small business	National	The 2016 Small Business Credit Survey collected data on 10,303 employer firms across all 50 states and DC.	NA	Contained data from small businesses on credit scores, source of credit, credit approval rates, credit application rates, financing received, reasons firms did or did not apply for financing, reliance on personal financing, reported financing challenges, and other topics. Survey findings indicated capital gaps for smaller revenue firms.

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
Ask capital providers	Glasmeier, Amy, Karl Seidman, Christa R. Lee-Chuvala, and Drew Pierson. 2013. "Bridging the Gap: Expanding Capital Access for Commercial Energy Efficiency in Central Appalachia." Cambridge, MA: MIT.	Commercial real estate (energy efficiency)	Central Appalachia	NA	Interviews with energy companies, lenders, and policy makers conducted in the summer of 2013	"This report discusses strategies to expand capital access for commercial energy efficiency projects in Central Appalachia. It draws on information and interviews with energy companies, lenders, and policy makers conducted in the summer of 2013, and investigates the nature of capital market gaps in the region's rural commercial building sector. Specifically, the report examines how the Mountain Association for Community Economic Development (MACED), a CDFI based in Eastern Kentucky, can encourage energy efficiency uptake in rural commercial buildings through positioning, lending products, and partnerships that

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
						address market barriers and help bring investments in rural energy efficiency to scale."
Ask capital providers	Williams, Stockton. 2015. "Preserving Multifamily Workforce and Affordable Housing: New Approaches for Investing in a Vital National Asset." Washington, DC: Urban Land Institute.	Multifamily	National	NA	Interviews with lenders and multifamily development experts.	Identified trends in the loss of multifamily housing stock for low/moderate income renters. The report drew upon interviews with lenders and multifamily development experts to identify the regulatory conditions, different capital products, and government programs in the multifamily affordable housing space. It also provided case studies of a select group of financing vehicles.

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
Ask capital providers	Hull, John, Michele Henney, Nathan Lillegard, Pen Goodale. 2014. "Oregon Capital Scan: A Line is Drawn." Eugene, OR: University of Oregon.	General business capital access	Oregon	NA	Variety of public and private data sources: CB Insights, Kickstarter, Small Business Administration, USDA, IRS, ONAMI, OregonBEST, FDIC, US government SBIR/STTR sources. Where published quantitative data was not readily available, the research team performed qualitative interviews and attempted to assemble presentation information that would provide a picture of the scale of capital available	Built off "Oregon Capital Scan: A Developing Ecosystem" report to develop a trend line of sources and supply of capital in Oregon. Drawing from set of qualitative interviews, the research team identified capital gaps within certain industries in Oregon and, within industries, how capital flows differ across the state.

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
Ask capital providers	Zellers, Niels. 2012. "Oregon Capital Scan: A Developing Ecosystem." Pittsburgh, PA: Confluence Capital, LLC.	General business capital access	Oregon	No quantification of demand side data, but through interviews with capital providers and experts the research identifies need and gaps within specific sectors in Oregon (e.g. life sciences, small manufacturing, and clean tech). Also identifies larger capital needs (e.g. growth capital, seed stage, microlending).	Information was collected from 93 participants, largely through in-person interviews. Participants included both capital providers and experts in Oregon's capital ecosystem. Examples of data provided include: total fund assets; assets currently available to invest; estimated investment in 2012; and average transaction size.	Used quantitative and qualitative information collected from in-person interviews with 93 participants to highlight capital gaps in specific sectors in Oregon (e.g. life sciences, small manufacturing, and clean tech), at different stages in business's life (e.g. seed capital, growth capital), and for different capital types (e.g. non-bank loan capital and micro-lending). To illustrate the gaps identified, Zellers included stories of actual Oregon businesses in the different sectors identified.

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
Ask both borrowers and providers	Hacke, Robin, David Wood, Alan Okagaki, Katie Grace, Michael Vitali, and Malini Ram Moraghan. 2016. "Bridging the Gap: Impact Investment Supply and Demand in the Chicago Region" Chicago: MacArthur Foundation and the Chicago Community Trust and Affiliates.	Capital for entities or investment vehicles that help deploy (e.g. CDFIs, social impact bonds); Real estate capital; Small businesses, social ventures, and nonprofit services providers	Chicago region	The research team conducted interviews and a survey of various potential capital users in the Chicago region	Interviews with impact investors, including impact-oriented foundations and accredited investors	The interviews and survey asked capital seekers about the need for capital and barriers to access. The research also asked about specifics of the capital sought, including flexibility, risk, duration and interest rate. The supply side interviews identified motivating factors for impact investors (what returns/outcomes are expected, locations of impact, market conditions, and other factors). Based on survey and interviews, authors projected an unmet impact capital need of $100 to $400 million.
Ask both borrowers and providers	Ascher, Carol, Clyde Cole, Jodie Harris, and Juan Echazarreta. 2004."The Finance Gap: Charter Schools and their Facilities." New York: New York University Steinhardt	Charter and other public schools	14 study states and DC	Conducted interviews with representatives of charter and other public schools and education officials. The research team also analyzed state-level data on school	Interviews with members of the financial community involved in financing school facilities through	The report relied on a review literature on capital financing for school facilities and interviews with school representatives, stakeholders, and the financial community involved in financing

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
	School of Culture, Education, and Human Development, and LISC.			funding, spending and enrollment.	nontraditional means.	schools. The researchers developed a typology of the mechanisms through which public schools, particularly charter schools, are funding and financing their facilities. Drawing on these data, the researchers developed 10 criteria the finance community are using to determine whether a charter school is "finance-able" and suggested how these criteria are creating a financing gap between schools that are considered finance worthy and those that are not.
Ask both borrowers and providers	Next Street and Mass Economics. 2016. "City of Boston: Small Business Plan" Boston: City of Boston.	Small business	Boston	US Census Bureau Survey of Business Owners in 2012 to show differences in firms per population, number of employees, and revenue per firm between nonwhite-owned and white-	Interviews with 100 business service organizations (e.g., trade associations, Main Street Organizations, incubators, workforce centers, and others), capital	Relied on survey data to identify gaps between types of small businesses. Used qualitative analysis to give insight into why gaps exist from both small businesses and

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
				owned businesses, and between women-owned and male-owned businesses. Conducted interviews and roundtable discussions with 60 small-business owners in Boston; data collection from lenders	providers, and other experts, including 40 interviews with City of Boston and state officials.	capital providers. Did not quantify gaps.

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
Estimate demand and supply, and calculate the difference	Servon, Lisa J., M. Anne Visser, and Robert W. Fairlie. 2011. "Estimating the Capital Gaps for Small Businesses In New York City." *Journal of Public Budgeting, Accounting & Financial Management* 23 (4): 451–477.	Small business	New York City	The 1992 Characteristics of Business Owners Survey, the 2002 Survey of Business Owners, and the 2003 Survey of Small Business Finances to estimate the excess demand for business loans which may exist in the small-business credit market.	1998 and 2003 Survey of Small Business Finances, 1997-2005 CRA Aggregate Reports, and the United States Census 2004 County Business Patterns data.	The authors developed a multiple linear regression model to predict the demand for business loans nationally and in New York City. For supply, they estimated the supply of capital available to small businesses in New York City by type of credit supplier. As the authors noted: "We used aggregate CRA data from 1997-2005, which allowed us to determine the actual location of the origination of the loan as well as the exact amount of money loaned. Having estimated the realized supply of capital in New York City, we then subtracted the total demand for business loans within the SMME credit market to estimate the unmet demand in the NYC credit market."

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
Calculate lending denial and frustration rates & Differences in capital use between groups	Temkin, Kenneth and Brett Theodos. 2008. "Competitive and Special Competitive Opportunity Gap Analysis of the 7(a) and 504 Programs." Washington, DC: Urban Institute.	Small business	National	2003 Survey of Small Business Finances	SBA administrative loan-level data on the 7(a) and 504 programs (2001-2004)	This study assessed the extent to which the 7(a) and 504 programs provide capital to those facing a gap in the private market. The authors compared characteristics of small businesses that receive 7(a) and 504 loans to those that receive conventional loans; they also conducted a market penetration analysis with the target market consisting of firms with demand for a loan, that met the credit elsewhere requirement, and that were creditworthy.
Calculate lending denial and frustration rates & Differences in capital use between groups	Li, Wei, and Laurie Goodman. 2014. "A Better Measure of Mortgage Application Denial Rates." Washington, DC: Urban Institute.	Home-ownership	National	HMDA and CoreLogic data (2006 to 2013)	HMDA and CoreLogic data (2006 - 2013)	"This paper discusses how to construct a better measure of the mortgage application denial rate that accounts for shifts in the composition of the applicant pool over time. That analysis gives us very rich results. In particular, our measure of the

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
						denial rate is higher than the observed denial rate. And, most of the racial and ethnic gaps in denial rates disappear among low-credit-profile applicants."
Calculate lending denial and frustration rates & Differences in capital use between groups	Woodstock Institute. 2013. "Fact Sheet: Unequal Opportunity Disparate Mortgage Origination Patterns for Women in the Chicago Area."	Home-ownership	Six counties in Chicago region	2010 HMDA data	2010 HMDA data	Looked at origination rates for a variety of home mortgage loan types (Conventional, FHA, or VA loans; purchase or refinance; one- to four-family units;) by gender and race/ethnicity of applicant. The analysis also controled for loan-to-income ratio of applicant and whether the loan was jointly applied for. Estimated probability of loan origination for home purchase and refinance loans by gender and race.

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
Compare one moment in time to another	Fiorilla, Paul, and Jack Taylor. 2009. "Life After Debt: Coming to Grips with the Funding Gap." Newark, NJ: Prudential Real Estate Investors.	Commercial real estate	National	Comparing to NCREIF Property Index values, the research team developed a matrix to calculate refinancing shortfalls based on how a particular property might qualify for refinancing given different property value and loan-to-value scenarios.	From article: "Here we will consider loans originated by commercial banks and CMBS originators in the four years – 2005 to 2008 – in which values were peaking and lending was its most aggressive. We focused on CMBS and bank originations because those sectors were the largest and most aggressive providers of commercial real estate debt."	Authors estimated funding gap under two scenarios: "In the 'optimistic scenario,' property values were assumed to drop 35% from peak to trough, while average LTVs were assumed to decline from 75% to 65% at refinancing. In the "pessimistic scenario," property values were assumed to drop 45% from peak to trough, while average LTVs were assumed to decline from 75% to 60% at refinancing." The research team then estimated the funding gap: "We have estimated that the funding gap for the $2.3 trillion of loans originated by banks and CMBS lenders during this period may range from $610 billion to $825 billion. If we exclude the approximately $850 billion of construction

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
						and land loans made during this period, the funding gap would range from $390 billion to $520 billion."
Compare one moment in time to another	Goodman, Laurie, Jun Zhu, and Taz George. 2014. 'Where Have All the Loans Gone? The Impact of Credit Availability on Mortgage Volume." Washington, DC: Urban Institute.	Home-ownership	National	2001 and 2013 HMDA data and CoreLogic servicing data	2001 and 2013 HMDA data	To calculate missing loans, authors combined HMDA data and CoreLogic servicing data, allowing them to identify the FICO scores on all loan files. They then calculated what mortgage originations would have been if borrowers of all credit levels had the same access to the mortgage market in 2013 as they did in 2001.

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
Compare one moment in time to another & Differences in capital use between groups	Robb, Alicia M. 2013. "Access to Capital among Young Firms, Minority-Owned Firms, Women-Owned Firms and High-tech Firms." Washington, DC: Small Business Administration Office of Advocacy.	Small business (nonwhite- and female-owned)	National	Kauffman Firm Survey 2004 through 2010	Kauffman Firm Survey 2004 through 2010	Drawing on Kauffman Firm Survey, the research investigated the "effects of the changing financial environment generally and the economic crisis specifically, on access to capital by small businesses over the 2004 through 2010 period, controlling for business and owner characteristics." The research identified disparities in capital access by race and gender as well as differences in lending patterns between high-tech and non-high-tech firms, and credit market conditions during the financial crisis.

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
Compare one place to another, with scaling variables	Cowan, Spencer. 2017. "Patterns of Disparity: Small Business Lending in the Chicago and Los Angeles-San Diego Regions" Chicago: Woodstock Institute.	Small business	National summary, Chicago region, Los Angeles–San Diego region	To estimate the level of demand for business loans, Cowan estimated of the number of active business addresses for each census tract. Cowan also used census data on median family income of tract relative to the area median family income and the nonwhite percentage of the census tract population.	CRA data on loans under $100,000 from 2012 to 2014. The researchers noted that these loans "constitute over 92 percent of all CRA-reported small business loans," and that those are the loans that are "most important to startups and small businesses," and that those are also the "bulk of loans that the rapidly growing financial technology lenders are providing."	To identify a gap in small-business lending, Cowan looked at differences in the amount of CRA-reported bank loans by census tract income compared with the number of active business for census tracts nationally, in the Chicago region and in the LA–San Diego region. Cowan then drew upon the same loan data to look at differences in lending and business concentration by the share of tract population that are nonwhite. The author found that in low-income census tracts and in predominantly nonwhite census tracts, the share of CRA-reported bank loans originated to businesses in those tracts was below the share of active businesses in those

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
						tracts in the three regions. Drawing from these findings, Cowan provided an estimate of the number of additional loans and the total capital amount businesses would have received if the businesses had received loans in proportion to their share of businesses in each of the three geographies.
Compare one place to another, with scaling variables	Immergluck, Dan. 1999. "Intrametropolitan Patterns of Small-Business Lending: What Do the New Community Reinvestment Act Data Reveal?" *Urban Affairs Review* 34 (6): 787–804.	Small business	Six-county Chicago MSA	Dun and Bradstreet data on the number of small businesses in 1996. Census data at the tract level on median family income, proportion of residents who are black, and proportion of residents who are Hispanic.	1996 Community Reinvestment Act Federal Financial Institutions Examination Council reporting on loans under $1 million	From article: "Using new data collected by regulators, the author measures small-business lending flows to different types of neighborhoods in the Chicago metropolitan area. Although data limitations preclude a definitive finding of differential access to credit, lower-income and minority neighborhoods areas receive fewer loans after accounting for firm density, firm size,

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
						and industrial mix, findings that support the notion of geographic and/or race-based discrimination in marketing or approving loans."
Compare one place to another, with scaling variables	Pradhan, Archana, and Josh Silver. 2014. "Small Business Lending Deserts and Oases." Washington, DC: National Community Reinvestment Coalition Analysis.	Small business	National	Dun and Bradstreet data on the number of small businesses in 2012.	2012 CRA private sector lending data. SBA 7(a) loan data on a county level. CDFI Fund Transaction Level Report data for 2012.	Involved calculating a lending rate (e.g., number or dollars of loans per number of small businesses or small business employees) and then comparing lending rates across counties. The "deserts" were assumed to have a capital gap equal to the amount of lending that would have happened if their lending rate were the same as the "oases." From text: "NCRC chose four performance measures in order to derive a composite index sorting counties from greatest to least access to small business loans. Two measures, percent

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
						of all small businesses receiving loans and percent of the smallest businesses with revenues under $1 million receiving loans, were used to reflect access to private-sector lending. Two measures, number of SBA 7(a) loans per 10,000 small businesses and number of CDFI microloans per 10,000 microbusinesses, were used to reflect access to public-sector lending."
Analyze differences in capital use between groups	Fairlie, Robert W. and Alicia M. Robb. 2010."Disparities in Capital Access between Minority and Non-Minority-Owned Businesses: The Troubling Reality of Capital Limitations Faced by MBEs." U.S. Department of Commerce, Minority Business	Small business	National	2003 Survey of Small Business Finances, which provides information on businesses and their owners, including race, ethnicity, and gender.	Kauffman Firm Survey, a panel of 5,000 firms from their start in 2004 through 2007. Data include information about sales, employment, owner characteristics, and financing.	The research team conducted a series of regression analysis to investigate differences in equity investment and loan amounts between white- and nonwhite-owned businesses. Controlled for a variety of demographic, education, geographic, business considerations (number of owners, whether the

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
	Development Agency.					business was purchased or inherited, firm age, legal form, and industry), sales, etc. Looked at differences in capital use, denial rates, "did not apply" rates, interest rates, start-up capital, investments and loan amounts between minority- and nonminority-owned businesses.
Look at use of less desirable financial services & Differences in capital use between groups	Fishbein, Allen and Patrick Woodall. 2006. "Women are Prime Targets for Subprime Lending: Women are Disproportionately Represented in High-Cost Mortgage Market." Washington, DC: Consumer Federation of America.	Home-ownership	National	2005 HMDA	2005 HMDA. Authors examined HMDA Loan Application Register data from 22 major lenders and their 312 total affiliates.	The report analyzed differences subprime mortgage lending rates by gender, race, and income. Controlling for income, the research found that women, particularly women of color, are more likely to receive subprime and higher-cost mortgages. Looked at the effects of disproportionate subprime mortgage lending on wealth building for women and people of color.

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
Reconstruct the underwriting box	King, Rebekah, and Ethan Handelman. 2016. "The Cost of Affordable Housing." Washington, DC: Urban Institute and National Housing Conference.	Multifamily	Denver (includes national data)	Property income: "NHC used total rental income based on rents appropriate to the income of the tenants served. For market rents, we used median market rents for the Denver metro area from the fourth quarter of 2015. Operating Costs: are pulled from an analysis of Denver properties."	Debt sizing: "Our model reduces rental income by an economic vacancy factor, modeled at 7 percent, which is typical for long-term underwriting and in line with the underwriting of Denver properties we reviewed." Sources and uses: "considered typical funding sources in addition to mortgage debt, including equity from Low Income Housing Tax Credits (LIHTC) for larger affordable properties, deferred developer fees for affordable properties and developer equity for market-rate properties."	The difference between the sum of these sources and the total development cost or uses is the gap that has to be filled for properties to move forward. Property income and operating costs determine how much net operating income is available to pay the property's mortgage debt, and therefore the maximum size of the mortgage debt. Mortgage debt plus a mix of other financing sources fund the end uses of creating the property. If the property cannot support enough mortgage debt to cover its building costs, other sources must be found or the property cannot be built.

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
Implement a pilot project	Banerjee, Abhijit, Esther Duflo, Rachel Glennerster, and Cythia Kinnan. 2014. "The Miracle of Microfinance? Evidence from a Randomized Evaluation." Cambridge, MA: Massachusetts Institute of Technology.	Microcredit	Hyderabad, India	To measure the impact the introduction of a new microfinance product, 104 neighborhoods in Hyderabad, India were identified as ideal candidates for product expansion. As the authors note, "these areas were selected based on having no preexisting microfinance presence, and having residents who were desirable potential borrowers: poor, but not "the poorest of the poor."" Among the 104 neighborhoods identified, 52 neighborhoods were selected to be treatment areas and 52 control. To gain baseline information on the neighborhoods prior to the launch of the	Data collected on microcredit products offered in treatment neighborhoods by Spandana, a large microfinance organization in India. The organization offered loan products to groups of six to ten women in treatment areas who meet an eligibility criteria set by the organization that evaluates ability to repay the loan.	Authors conducted a randomized control trial of a group-lending microcredit program that introduced a microfinance product in select neighborhoods in Hyderabad, India. In the study, 52 "treatment" neighborhoods had a new microfinance product introduced and 52 "control" neighborhoods did not. To evaluate the capital gap, the research team evaluated differences in microcredit take-up, small-business investments and profits, consumption rates, "durable goods" expenditures, and "temptation goods" expenditures. The team also investigated changes in health, education, or women's empowerment between the areas of study.

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
				microfinance product, a baseline neighborhood survey was conducted in 2005 to collect information from 2,800 households on household composition, education, employment, asset ownership, expenditure, borrowing, saving, and any businesses currently operated by the household or stopped within the last year. To create a proper sampling frame for the endline, the research team conducted a "comprehensive census of each area in early 2007, and included a question on borrowing... Two years later, in 2009-2010, a second endline survey, following up on the		

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
				same households, was undertaken. It included the same set of questions as in 2007-2008 to insure comparability."		
Differences in capital use between groups	Squires, Gregory D. and Sally O'Connor. 2001. "Access to Capital: Milwaukee's Continuing Small Business Lending Gaps." Chicago: Woodstock Institute.	Small Business	Milwaukee, Ozaukee, Washington, and Waukesha Counties, WI	NA	Community Reinvestment Act Federal Financial Institutions Examination Council reporting; Dun and Bradstreet; Board of Governors of the Federal Reserve; data provided by 14 lenders in region	Compared the number and amount of small-business loans (as an aggregate, per 100 businesses, and per 1000 people) at the census tract level between groupings by income level (below 50 percent metropolitan statistical area average income, 50 to 79 percent, 80 to 195 percent, and 120 percent and above) and racial demography (less

Gap estimation shorthand	Report	Capital type or population	Geography	Data sources for demand for capital and population characteristics	Data sources for capital supply and access	Method
						than 10 percent black, 10 to 70 percent black, and over 70 percent black; and less than 5 percent Hispanic, 5 to 25 percent Hispanic, and over 25 percent Hispanic).

Appendix D. Data Sources for Capital Flows

TABLE D.1

Potential Data Sources for Capital Flows

Asset class	Data source	Topics covered
All	Federal Deposit Insurance Corporation	Financial information on all Federal Deposit Insurance Corporation–insured institutions
Business	Local Employment Dynamics	Number of employees both by place of work and place of residence, breakdowns by employer size and salary range
Business	HedgeFundJobsList	Location, assets under management, and number of employees for alternative investment hedge fund and private equity firms
Business	Crunchbase	Venture capital data searchable with a pro subscription
Business	US Treasury CDFI Awards Database	Organizations that have received funds from Bank Enterprise Award, Capital Magnet Fund, CDFI Bond Guarantee Program, CDFI Program, FEC Pilot Program, Native Initiatives, and New Markets Tax Credit Program (includes amount of funding)
Business	The Crowdfunding Centre	Number of live projects, backers, the amounts of money raised, the activity of each crowdfunding platform
Business	Dun and Bradsteet	Business demographics and credit scores
Business	CB Insights	Data on investments, acquisitions, partnerships, and patents.
Business	Small Business Innovation Research, Small Business Technology Transfer	Organizations receiving award from the National Institutes of Health and award amount, includes breakdown by women-owned and socially/economically disadvantaged firms.
Business	SBA	All 7(a) and 504 Loans: borrower, borrower location, loan amount, length of term, third party lender information
Business	Pitchbook	Data on companies, investors, and deals.
Business	Export-Import Bank Guaranteed Loans	A+C12:C29ll export-import bank authorizations; guarantees, insured, loans, and working capital
Business lending	CRA	Number and dollar amount of loans under $1 million in size to businesses; number and dollar amount of loans to businesses with revenues under $1 million
CDFIs	Opportunity Finance Network	Institution size, financing composition by sector, source of capital, and financing activity
Commercial	CoreLogic	Commercial real estate mortgage sales and loans: price, loan size, loan date, lender name, other loan details, property information
Commercial	Real Capital Analytics	Large ($1 million or more) commercial real estate mortgage loans: loan size, loan date, lender name, other loan details
Commercial	CBRE Group	Sectors such as hotel, office, medical office or health care, real estate capitalization rates

Asset class	Data source	Topics covered
Commercial	Co-Star	Property inventories and sales comparables; commercial tenant information; lease comparables; risk analytics by property type and market
Commercial, Office, Multifamily	Real Capital Analytics	Sales, financing deals, and property level information
Commercial/Multifamily	Mortgage Bankers Association	Origination volume, multifamily lending, origination index, debt outstanding, loan maturity volumes
Consumer	TransUnion	Consumer credit data, demographics, and location.
Consumer, Business	infoUSA	Business: number of employees, sales volume, square footage, business expenses, fleet size Consumer: homeownership, housing type, number of apartments per address, length of residence, year home built, estimated home value, wealth, number of credit cards, mortgage data
Consumer/Real Estate	National Credit Union Administration	Credit union data: total assets, total loans, total shares, total investments, total assets, vehicle loans, credit card loans, real estate loans, total amount of delinquent loans
Multifamily residential	REIS, Inc.	Data on apartment property performance (rental rates, vacancy rates), operating expenses, and physical characteristics (unit mix, year built or renovated, size)
Residential	Home Mortgage Disclosure Act	Mortgage loans: volume, number of applications, number of originations, denials, “frustrated” borrowers, borrower income
Residential (single and multifamily)	CoreLogic	Residential mortgage loans and sales: price, loan size, loan date, lender name, other loan details, property information
Residential and business	United States Postal Service Vacancy Data	Vacant buildings of residential and commercial use.
Residential and commercial real estate	Property Insight	Property title and deed information (includes sales price and loan amount information)

Notes

1. [1] For example, the Federal Reserve Small Business credit survey finds that financing shortfalls are more common for businesses requesting loans under $100,000, as well as for start-ups. See https://www.fedsmallbusiness.org/medialibrary/fedsmallbusiness/files/2018/sbcs-employer-firms-report.pdf.
2. [2] According to analysis of Pitchbook data by Richard Florida, Karen King, and Taylor Blake of Martin Prosperity Institute. Florida, Richard, "Venture Capital Remains Highly Concentrated in Just a Few Cities, October 3, 2017, https://www.citylab.com/life/2017/10/venture-capital-concentration/539775/.
3. [3] For an example of a child care needs assessment survey, see https://pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/350/350-056/350-056_pdf.pdf.
4. [4] An analysis looking at supply and demand by household size and units by number of bedrooms would provide a more nuanced look at potential supply shortages.
5. [5] Theodos, Brett, Eric Hangen, Irvin Mull, Noah Strayer, Jay Dev, Maia Woluchem, Daniel Sundén, Daniel Wood, Elizabeth Forney, and Emily Peiffer. 2018. "Community Development Financial Flows: How US Counties Compare." Washington, DC: Urban Institute.

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