



Advancing Financial Inclusion

# Financial inclusion metrics for the real world

How a spatial understanding of financial inclusion can contribute to meaningful measurement and impact

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## Author

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## About insight2impact

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Insight2impact | i2i is a resource centre that aims to catalyse the provision and use of data by private and public-sector actors to improve financial inclusion through evidence-based, data-driven policies and client-centric product design.

i2i is funded by the Bill & Melinda Gates Foundation in partnership with The MasterCard Foundation.

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# Introduction

A recent i2ifacility blog post *Good Intentions*<sup>1</sup> highlighted the importance of the relationship between what you measure and the outcomes you achieve. For financial inclusion, this is particularly true in terms of understanding the complex relationships between the real world and the access to and usage of cash-in/cash-out services. Spatial data is key to understanding which parts of the population have access to services, understanding real-world drivers of the distribution of services as well as understanding the real-world characteristics that influence and drive usage of specific products and services.

Policymakers play a key role in driving financial inclusion, not only through the setting and measuring of broad, national financial inclusion targets, but also in the setting of policies and standards to encourage (i) the distribution of services in a way that increases access and (ii) the design of appropriate and inclusive products and services in a way that increases usage. Before examining how spatial data can be used to inform metrics and measurement frameworks, we need to explore how spatial data can enhance our understanding of access and usage.

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<sup>1</sup> <http://www.i2ifacility.org/insights/blog/good-intentions?entity=blog>



# Understanding access

If we accept that proximity is, at least, a limiting factor to the usage of cash-in/cash-out services, then understanding the distribution of financial services is a key component of understanding consumer access. We will assume that (given equality in other factors) the further away services are from people, the less likely they are to use them.

While there are many metrics and measures that can be used to assess the relationship between financial services and the populations they serve, all of them involve the usage of spatial or location data. Simply put, if you want to understand the relationship between service points and people, you need to know where both the service points and the people are.

## Understanding usage

Currently, most countries rely on demand-side surveys to assess the level of usage of financial services in the market. While these surveys produce national and very broad subnational estimates of usage, they hide the intense inequality of the distribution of this usage by different segments of the population.

Without a detailed understanding of how usage is distributed, we have little chance of fully understanding what is driving it. If we don't understand the drivers of usage, we have much less of a chance of having a meaningful impact when we set policies and targets designed to increase it.

For example, an analysis of the spatial data and self-reported performance of mobile money agents in Tanzania reveals an interesting correlation between the number of transactions of an agent and their proximity to a major road. While this should not be surprising, a further apparent correlation would suggest that outside of urban centres there is a positive relationship between the number of transactions an agent conducts and their proximity to the junction of two major roads. This spatial analysis can be used to develop interesting hypotheses to be tested, such as:

*Agents close to junctions of major roads have better access to better transport links to urban areas, which allows them to manage their liquidity and to offer better levels of their services, which increases their number of transactions.*

Or

*Agents close to junctions conduct more transactions, as these junctions act as points of congregation for many other services, which reinforce one another and so attract more customers from a larger catchment area than a single agent.*

While the spatial data alone cannot explain this relationship, without the spatial data it would not be possible to recognise the patterns that lead to interesting questions, increase our understanding of the market and, so, lead us to appropriate targets and measures.

# What should we measure, and what targets should we set?

This question is a complex one that can only reasonably be answered with another question: “What do you want to achieve?” When starting on the journey of measuring financial inclusion, many policymakers look to international bodies and best practices for guidance on targets and metrics. While these measures can be incredibly useful (especially where there is little or no information or data to use to measure financial inclusion as the market matures, more data becomes available and the understanding of the market increases), the information produced should be used to create a feedback loop that guides strategic decisions; and these, in turn, should moderate, influence and change the targets and metrics set for financial inclusion.

It is not possible to develop a one-size-fits-all set of goals and targets, and the examples below should be considered illustrations of the options currently being used or explored in different markets. It is also important to note that in the journey towards financial inclusion we are likely to see an increase in disruptive services and business models. This will necessitate that policymakers be responsive and flexible in their frameworks and targets to ensure that they stay both relevant and appropriate.

The following are examples of types of targets and measures that make use of spatial data and that provide a framework to explore which combination and variations would provide the most appropriate guidance to your own market.



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# Setting and measuring targets for access

## Proximity measures

One of the most obvious ways of using spatial data to measure access to services is to measure proximity. This usually entails developing a metric like:

*% of population within 5 km of a financial access point*

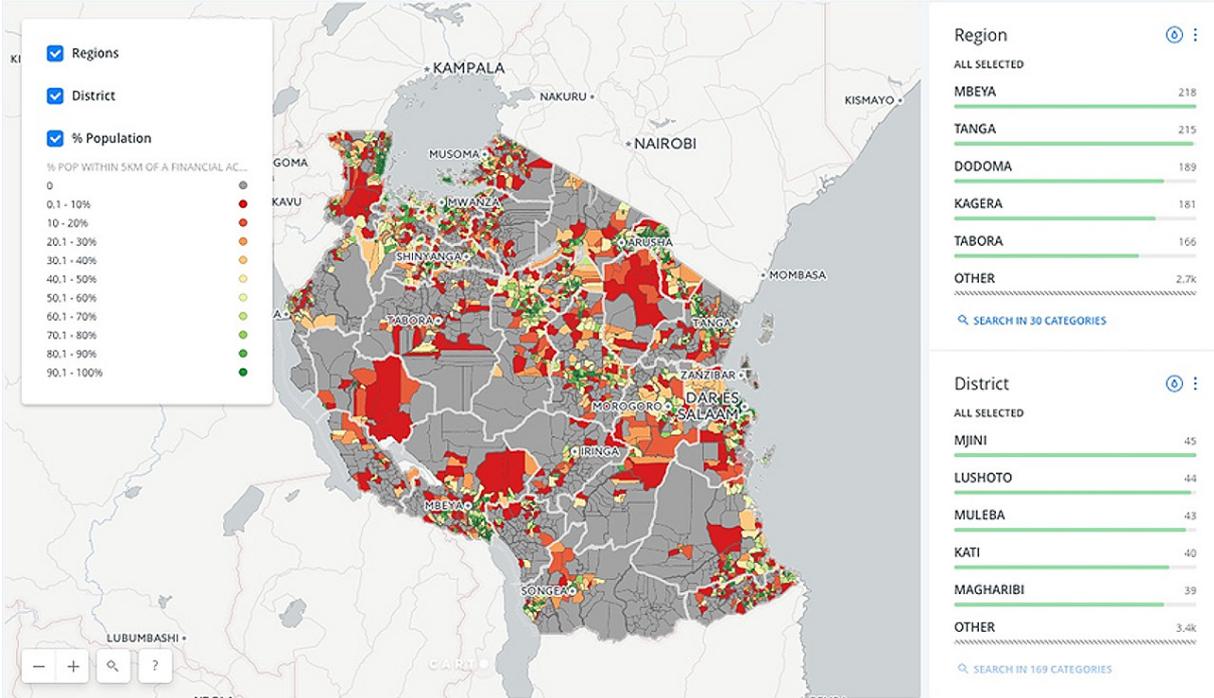
This is a simple, but effective, gauge that can be used to measure how easy it is for the population to physically access different services. It is a flexible and informative measure, as it can be broken down to create a measure at even the smallest administrative unit. It can be disaggregated to

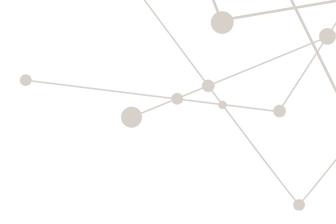
distinguish urban or rural populations, it can be broken down by channel and by product, and it can be used to track the expansion of services over time.

This kind of analysis relies on the availability of accurate and up-to-date location data for every financial access point. It also relies on the availability of high-quality, highly disaggregated spatial data, such as that produced by WorldPop.org.

The map of Tanzania, below, shows the percentage of the population within five kilometres of a financial access point, which is styled based on access at the ward level (lowest administrative level).

**Figure 1: Tanzania population within 5 km of a financial access point**





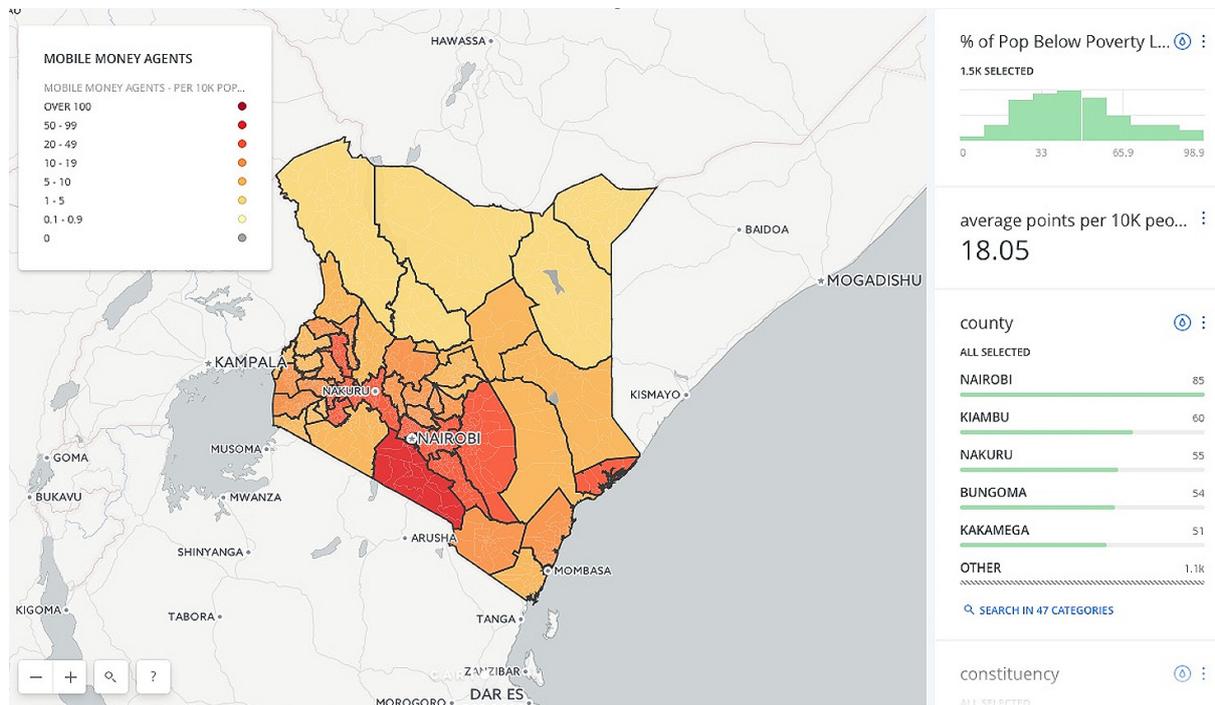
### Financial access points per person

The Alliance for Financial Inclusion's (AFI) Financial Inclusion Data Working Group (FIDWG) has developed a Core Set of Financial Inclusion Indicators<sup>2</sup>, which includes access indicator 1.1. "Number of points per 10,000 adults at a national level segmented by type and administrative unit".

As you can see below, this indicator can serve as a powerful tool to explore the relationship between population and services.

This inherently spatial indicator can be calculated without the need for capturing the exact coordinates of the service locations by simply counting the number of bank branches, ATMs or other services within a given administrative unit. However, this approach brings its own challenges, as administrative boundaries can and do often change to accommodate political and administrative requirements. This can make it difficult, if not impossible, to track and measure progress over time in a meaningful way.

**Figure 2: Number of mobile money agents per 10,000 population. Regional, county and ward summary provided based on zoom level**



2 <https://www.afi-global.org/sites/default/files/publications/fidwg-core-set-measuring-fi.pdf>



These problems are easily overcome if accurate, up-to-date GPS coordinates are available, as the points can simply be reallocated to new administrative areas when the boundaries are changed.

### **Measuring and guiding distribution of services**

Understanding, measuring and guiding the distribution of financial service points are key to improving financial inclusion.

An example of the importance of measuring distribution can be seen if we look at the spatial relationship between bank branches and bank agents in Kenya. Using the 2016 FinAccess Maps data available from the FSD Kenya website<sup>3</sup>, we can calculate that 45% of bank agents are within one kilometre (approximately a 10-minute walk) of a bank branch and that 66% of bank agents are within five kilometres (approximately an hour's walk) of a bank branch.

If we accept that a 10-minute walk is unlikely to have a significant impact on a customer's ability or willingness to open or use a bank account, we are left with a picture where nearly half of all bank agents cannot be considered to be extending services to populations who would not otherwise have had access. This is not to say that these agents are not contributing to financial inclusion. Bank agents take pressure off busy banking halls and may reduce cultural barriers to usage by bringing banking services into a less formal space. The important thing is that this information can help us understand the relationship between the service and the real world.

This information could be used to set targets for the distribution of services to explicitly challenge

the natural incentive, for more conservative providers, to focus solely on serving high-density urban populations. Influence may be exerted directly through the setting of policies and targets (i.e. a target that stipulates that 10% of all new agents have to be accessible, within a 20-minute walk to an underserved population) or indirectly by aggregating and publishing high-quality data that allows financial service providers to identify underserved markets with high commercial potential, thus incentivising them to expand their market reach.

### **Setting and measuring targets for usage**

Usage is most commonly estimated by means of demand-side surveys. While they produce valuable insights, they are also expensive, time-consuming to manage, infrequent and often unsustainable; and the estimates of usage they produce are usually only representative at a very broad geographic level.

As financial service providers (FSPs) start taking more advantage of data for decision-making within their own organisations, the potential to use aggregated transactional data to measure usage is becoming an ever more real possibility. The advantages of using aggregated transactional data to measure usage are clear. It is highly cost-effective for the regulator, there is no requirement for additional data to be collected outside of what the FSPs already have access to, and it is inherently sustainable – as the FSPs will need to maintain and manage this data for their internal use. With the right systems in place to aggregate the data, information is available in almost real time, allowing a much deeper understanding of the market than can currently be gained by annual surveys.

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2 <http://fsdkenya.org/dataset/finaccess-geospatial-2015/>



It also allows for far more detailed analysis than the current surveys. While it may seem that the availability of this kind of data is a long way off, the idea that the market is moving in this direction is far from being without precedent. The Central Bank of Nigeria (CBN) (who plan to mandate that FSPs report the exact locations of their service points) are working with the Nigeria Interbank Settlement System (NIBSS) (who have access to real-time transactional data for a large percentage of the market) to design just such a system.

These changes in the information systems of markets will fundamentally change how we think about measuring financial inclusion, and the power of the aggregated transactional data to drive effective change is increased exponentially when you can link the transactions to the locations in which they are taking place. Instead of having broad, sweeping targets (such as India's initiative to bring bank accounts to all in 2014, the challenges of which can be outlined in the Good Intentions blogpost in this series), location-linked transactional data would allow for the development of micro-targets, such as:

- The percentage of the populations of regional capital cities that are within five kilometres of a bank branch that offers interest-bearing savings accounts
- The percentage of the rural population that live more than an hour's walk from a major road, that have access to a basic cash-in/cash-out service or percentage of agents that have a functional float available five days out of seven.

While these micro-targets would only be suitable in markets with a highly interventionist regulator, they demonstrate how a combination of spatial

and aggregated transactional data provides an extraordinarily powerful set of tools with which to understand and guide the market towards increased access and usage.

### **The future and digital economies**

As markets move to more integrated digital economies that are less dependent on cash, understanding the spatial relationships between consumers and cash-in/cash-out services will become less important. In a cashless economy, the important spatial relationships will be between consumers and the products and services they need to purchase, and even these relationships will become progressively less important with the rise and evolution of e-commerce.

As we move towards a more complex, consolidated digital economy, the focus will move away from measuring the flow of value through proxies (such as the locations and performance of cash-in/cash-out points) and towards the live tracking of value flows between individuals, service providers, retail outlets, tax and other government and non-government institutions.

Spatial data allows the contextualisation of whatever market information is available to policymakers. By deepening the market's understanding of the barriers to, and drivers of, access and usage, spatial data has the power to facilitate real change in the market by providing policymakers with the tools they need to understand, measure and direct change.



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