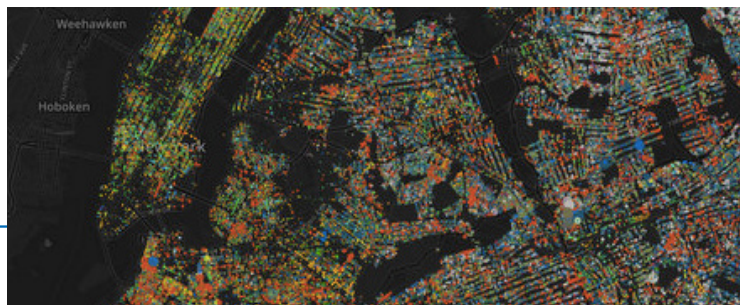


CITIZEN-SOURCED DATA IN YOUR CITY



Citizen-Sourced Data in Your City

A citizen-sourced data initiative is a citizen engagement strategy that can be a cost-effective means of gathering large amounts of specific information over a wide area. Cities can use the data to inform public policy design and service delivery. Often done in partnership with community organizations, citizen-sourced data initiatives work best when they follow a simple procedure to answer straightforward research questions.

There are many approaches to citizen-sourced data initiatives. Cities of Service has created this toolkit to provide cities with step-by-step instructions on how to leverage community partners, technology, and the power of everyday citizens to generate high-quality data that can inform policy and help solve public problems. This approach follows the Cities of Service model of citizen engagement. It starts with city leaders who identify a challenge that affects the city at large. It brings in members of the community to deliberate this challenge and help determine a solution. It mobilizes everyday citizens to produce real results, building trust between the city and the community and sustaining engagement for the long term.

Cities of Service is an independent nonprofit organization that helps mayors and city leaders tap the knowledge, creativity, and service of citizens to solve public problems and create vibrant cities. We work with cities to build city-led, citizen-powered initiatives that target specific needs, achieve long-term and measurable outcomes, improve the quality of life for residents, and build stronger cities. Visit us at citiesofservice.org or follow us on Twitter @citiesofservice.

To begin a citizen-sourced data initiative, city leadership must identify the data gaps that are standing in the way of good policy design and service delivery. Working closely with community partners, a team of city officials from various departments can plan and implement volunteer canvassing efforts to fill those data gaps. After learning the proper technique for data-gathering during a brief training, the volunteers are ready to canvass designated areas of the city. While the data-gathering tool will vary depending on the initiative, smartphone technology offers a high degree of accessibility to a great number of volunteers and provides aggregated data back to city hall for policy application.

There are many examples of cities using citizen-sourced data to better serve the public. In 2012 the city of Flint needed to know the condition of 51,607 residential properties to begin its master planning process. They enlisted 27 neighborhood groups to assess nearly 40 percent of them in the Your Neighborhood Inventory initiative. After a one-hour training, volunteers were able to assess the condition of residential parcels on a five-point scale and record their findings on paper.ⁱ The Genesee County Land Bank and the City of Flint used that data to secure \$20.1 million through the Hardest Hit Fund, a program of the U.S. Treasury Department that helps communities with high foreclosure rates. The program has continued with an expansion to cover commercial properties as well.ⁱⁱ

Every 10 years, New York City TreesCount! trains and organizes volunteers to inventory all the street trees in the city. Using a methodology and mobile app developed by TreeKIT, volunteers map the location, structure, size, species, condition, and stewardship practices for each tree. The data allow the city to estimate the environmental services provided by street trees, such as air quality improvement, energy savings, carbon sequestration, and stormwater mitigation. During the 2015–2016 TreesCount!, volunteers recorded 666,134 trees growing along New York City's streets. The data collected through TreesCount! help the city target greening initiatives, budget for and prioritize planting requests, and work with communities to enhance the tree canopy in their neighborhoods.ⁱⁱⁱ

IDENTIFY THE DATA GAPS.

Most cities need more or better data to inform policy design and service delivery. In New York City, for example, the city could not accurately budget for tree-planting projects until it knew the location and condition of existing street trees. The first step in a citizen-sourced data initiative is the identification of these data gaps. City leadership decides where better information is needed and initiates the process to gather the necessary data to inform policy and service delivery.

ASSEMBLE THE TEAM.

A citizen-sourced data initiative needs support from several departments within city hall. In addition to the department that focuses on the chosen policy or public problem, the city should assemble a team of officials with the following responsibilities:

1. An official with long-standing relationships with the target community
2. An official who organizes citywide volunteer engagement, such as a chief service officer
3. A communications official who can spread the message of the initiative widely to the community
4. City council representatives or their staff who can share specific knowledge about how the problem affects target communities

CHOOSE THE RIGHT TECH TOOL.

Small-scale initiatives may work fine with paper records. For larger initiatives, the city should consider smartphone technology, such as a mobile app or a text-messaging tool, which will be accessible to the greatest number of volunteers. For some initiatives, a mobile app may already be available for volunteers to use on their smartphones. For others, the city may prefer to have a tool developed. The tech tool should have simple functionality, multilingual capability, and the capacity to support many users at once. It should be compatible with common smartphone operating systems to ensure wide accessibility. The nonprofit [Community Connect Labs](#) develops simple messaging systems that gather data by asking volunteers a series of automated questions by text message or through a mobile messaging app. Community Connect Labs synthesizes information on the tool's back-end to share with the city.

Community Connect Labs' mission is to enable nonprofits, government agencies, foundations and mission-driven companies to generate fast, affordable, and reliable data from low-income communities through the innovative use of SMS technology. Visit us at communityconnectlabs.com.

RECRUIT COMMUNITY PARTNERS.

Citizen-sourced data initiatives often follow a train-the-trainers approach, which allows the city to cover a wider area by training individuals from partner organizations as instructors who can then train groups of volunteers. Cities should partner with community groups such as nonprofits, faith-based organizations,

and neighborhood associations that are trusted in the community, have a broad volunteer base, and have experience managing and training volunteers. These community groups then work with the city to help design the data-gathering procedure, recruit and train volunteers, and manage the canvassing events. While it is not necessary, cities may wish to incentivize participation in the process with small stipends to compensate community partners for their time. If funding for stipends is not available, the city should seek to work with partners that have a vested interest in the community where they are gathering data. Access to new, accurate information about the community would be an incentive to participate.

PREPARE WITH COMMUNITY PARTNERS.

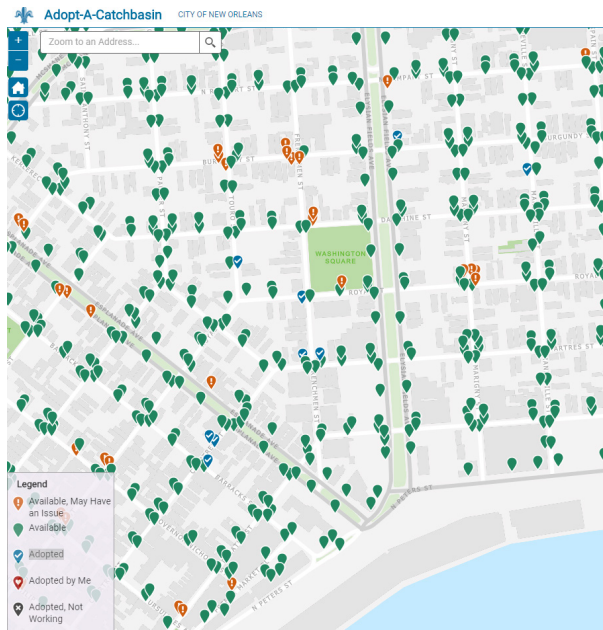
Community partners should be involved at the very beginning of the process to provide input on the need and the approach. Community partners may offer additional support in the lead-up to the canvassing event, such as scoping the canvassing area, translating the text in the tech tool and training materials, planning for canvassing-day logistics, and taking photos of good examples in the field for use in training materials.

As the city prepares to launch the initiative, the city team should host at least two meetings with the community organizations in advance of the train-the-trainers meeting:

1. A meeting to discuss the public problem and the citizen-sourced data approach
2. A meeting to assign canvassing areas to community partners and to help plan for the volunteer canvassing events

CREATE TRAINING MATERIALS.

The city team should develop training materials for two audiences: the community partners who will serve as the trainers and the volunteers who will be canvassing. If necessary, the training materials should provide instructions for using the smartphone technology, example photos of the units that you wish to record, such as blighted lots, and a detailed explanation of the data-gathering procedure. Check with your community partners about the appropriate level of detail and language-accessibility needs for the volunteer training materials. You may also wish to include maps of the canvassing areas in the training materials. [Google Maps](#) is an easy way to generate a visual representation of the canvassing area. [NationBuilder](#) is a service that creates canvassing walk sheets with accompanying maps. [QGIS](#) is a free and open source mapping application that can also produce useful maps to guide canvassing.



The live Adopt-a-Catch Basin map displays all of the catch basins in New Orleans, and allows citizens to adopt them for routine maintenance. *Credit: City of New Orleans*

TRAIN THE TRAINERS.

The city team plans and hosts a train-the-trainers event to prepare the community partners to train their own volunteers for the canvassing day. This event should cover the data-gathering procedure and the use of the smartphone technology. A portion of this training should be conducted in the field so that community partners can get real-world practice using the smartphone technology. At this event, the city can distribute volunteer training materials, maps of canvassing areas, and other items that the volunteers will use during canvassing. The train-the-trainers event should be scheduled far enough in advance of the canvassing days to give the community partners time to plan and recruit volunteers.

INFORM COMMUNITIES.

It is very important that the city reach out to target communities to explain the citizen-sourced data initiative in advance of the canvassing day so that community members are prepared for the presence of the volunteers. Develop a clear and consistent message about the initiative, translate into the appropriate languages, and share this information through the schools, city council offices, local shops, and local branches of the public library. This information can also be shared widely using social media channels. Include volunteer sign-up instructions.

RECRUIT VOLUNTEERS.

The city team and the community organizations must recruit enough volunteers to complete the canvassing effort. Depending on the size of the initiative, it may be necessary to recruit a large number of volunteers for a single weekend or a smaller number of volunteers who are available over multiple days. Consider volunteers with the following traits:

1. Ability to canvass, which may include walking long distances, for several hours
2. Cultural competency and a familiarity with the target communities
3. Familiarity with or interest in the public problem
4. Proficiency in the language spoken in the community
5. Technological proficiency and a high level of comfort using smartphone technology

TRAIN VOLUNTEERS AND CANVASS.

The city and the community partners work together to plan and manage canvassing days. Begin the canvassing day by assembling the volunteers in the community and training them on the use of the smartphone technology and the data-gathering procedure. Organize volunteers into pairs or small teams according to the traits of the volunteers. Each volunteer group will canvass a designated area and use the smartphone technology to mark the data points they observe. The community organizations should assemble their volunteers at the end of a canvassing day to learn about their experience in the field and gather feedback on the procedure. This information is provided back to the city, and the process is refined as necessary.

The city team sets parameters for the canvassing days, such as the area that must be covered, the suggested number of volunteers, and the time that volunteers have to submit the data. Depending on the number of community partners and the number of volunteers, the canvassing effort may span multiple days.

FOLLOW-UP AND RECOGNITION.

When the canvassing effort has been finalized, the city team will receive aggregated data through the chosen tech tool. Share this information and the city's plan for using this information with the community, the volunteers, and the community partners. Recognize the contribution that the volunteers and community partners made to the development of the citizen-sourced data initiative by keeping them up-to-date on the following:

1. The final design of the initiative and how the feedback helped inform its framing
2. Opportunities for further engagement
3. Progress and “stories from the field”
4. Lessons learned and ways in which the initiative is evolving
5. Successful impact and outcomes
6. Plans to sustain or build on this initiative

SHARE WIDELY.

The city team should share its experience developing and implementing a citizen-sourced data initiative with stakeholders in the community and in other cities. Stories of success and a variety of tested applications will encourage other cities to use this engagement strategy to gather much-needed data to inform solutions to public problems

Citizen-Sourced Data In Action: Community-Based Address Mapping In San José

In California, the City of San José piloted an approach to citizen-sourced data with a community-based address-mapping initiative that uses community members to identify and record households that could be missed by the 2020 census. The city organized community partners and trained their representatives in the mapping process. The community partners then mobilized their own volunteers and trained them to canvass neighborhoods and identify low-visibility dwellings in the field, recording these units using a smartphone text-messaging tool that was created by [Community Connect Labs](#).

BACKGROUND

The census determines not only congressional representation for each state, but also the disbursement of more than \$675 billion in federal funding every year for local programs addressing transportation, health, education, and small-business development.^{iv} Most people are counted by the census when they receive and return a census form. In order to receive census forms, households must be in the Census Bureau's Master Address File, which is the inventory of all known residences. People living in low-visibility dwellings, such as converted garages, in-law apartments, or occupied RVs parked in a driveway, may be missing from the Master Address

File, and therefore would not receive census forms. As a result, the census routinely fails to count a large number of people, especially those in lower income communities, immigrants, and people with limited English proficiency. Communities can lose an estimated \$3,000 in federal funding over a decade for every person missed by the census.^v

The goal of San José's community-based address-mapping initiative is to improve the city's housing list so that it can serve as the basis for an accurate and up-to-date master address file for the census. The initiative uses volunteers to count how many low-visibility dwellings are present in San José and record where they are located with an accessible and easy-to-use text-messaging tool. With this information, the city ensures that people living in low-visibility dwellings get a chance to be counted by adding them to the Census Bureau's Master Address File. The information is collected confidentially, and it is only used by officials assigned to work on the census. It is not shared with city regulators or immigration officials, and it cannot be used punitively toward the residents. The community-based address-mapping initiative was piloted as a small-scale event in December with a plan to refine the procedure before expanding the initiative citywide.

IDENTIFY THE DATA GAPS.

In 2010, the census missed an estimated 6.8 percent of the population, or nearly 68,000 people, in San José.^{vi} This undercount may have caused the city to miss out on as much as \$20 million in federal funding every year since 2010.^{vii} Mayor Sam Liccardo has been a champion for closing this data gap. While there are many reasons why people go uncounted, in a city with a lot of unconventional housing arrangements, improving the housing record is one way that he knew the city could establish a more accurate census count in 2020.

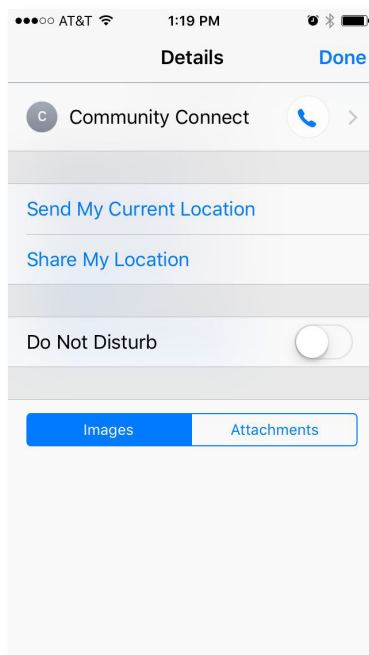
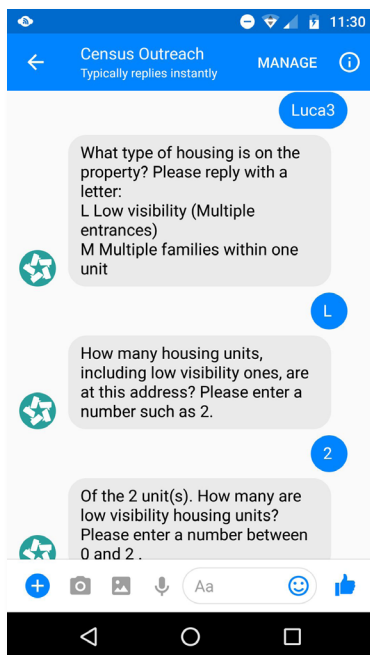
ASSEMBLE THE TEAM.

In San José, the Office of the City Manager is responsible for overseeing the 2020 census process. However, in order to reach the households that are at risk of going uncounted, the city recognized the need to assemble a multidisciplinary team to lead census preparation efforts. The team consisted of the director of strategic partnerships for his experience managing programs with multiple internal and external partners; the chief service officer for his experience organizing citywide volunteer opportunities; and the director of the office of immigrant affairs for her strong relationships with community-based organizations and experience with vulnerable communities. The team also worked very closely with the vice president of research at Community Connect Labs, the nonprofit that developed the text-messaging system, and a communications consultant who assisted with providing the message about census efforts to the community.

The chief service officer collaborates with citizen volunteers and public and private partners to create a cohesive road map aligning service and engagement efforts citywide.

CHOOSE THE RIGHT TECH TOOL.

Community Connect Labs developed a text-messaging tool that can quickly record the location of low-visibility dwellings in a single list that would be shared only with city officials assigned to work on the census. When a volunteer sees a low-visibility dwelling, they send a text message to a designated phone number. The number texts the volunteer back with a series of questions to describe the dwelling: Does it have its own entrance? Is it a garage, an apartment, a trailer, or something else? Where is it in relation to the primary dwelling? The user then texts the location of the dwelling using their smartphone's location services. To enter data on another low-visibility dwelling, the user simply texts the designated phone number again to restart the process. The sequence of questions was made available in English, Spanish, and Vietnamese. Community Connect Labs designed the text-messaging tool to work through Android and iPhone systems via SMS and with Facebook Messenger, which works faster than SMS but requires the use of cellular data. The multiple use options were designed to make the system accessible to as many volunteers as possible.



Volunteers record the low-visibility dwellings by responding to a series of questions by text on their smartphone. Credit: Community Connect Labs

RECRUIT COMMUNITY PARTNERS.

The city team partnered with six community-based organizations to achieve broad reach across the city and depth at the neighborhood level. The director of the Office of Immigrant Affairs recruited community partners that serve communities where there is a large number of low-income individuals and a high density of unusual housing. They sought partners who had existing volunteer pools, experience managing and training volunteers, and a reputation for being trusted by the communities they serve.

The community partners were required to attend two planning meetings, participate in the train-the-trainers event, and recruit, train, and organize volunteers for canvassing events. Each community partner was assigned a canvassing area that they were required to cover with at least 10 volunteers and submit their results within a week. They were also asked to help refine training materials for the volunteers, and they provided feedback on trainings and canvassing events. Some of the community partners provided additional assistance by translating the questions on the text-messaging tool and the training materials to Vietnamese and Spanish. To compensate the community partners for their time, the city offered stipends of \$2,500 to each organization. With the funding came an expectation for high-quality data and constructive feedback.

WORK CLOSELY WITH COMMUNITY PARTNERS.

The city team met with the community partners twice before the train-the-trainers event. In the first meeting, the city team described its strategy to ensure an accurate census count, and the community partners made a commitment to participate in the initiative. In the second meeting, they established the roles and responsibilities of each partner, described the train-the-trainers approach, and verified the neighborhoods for the pilot.

In preparation for the initiative, the city team consulted city council representatives and their staffs to select 31 census block groups known to have high-density housing or high concentrations of unconventional or low-visibility housing. They cross-referenced this information with maps of hard-to-count communities developed by the [Center for Urban Research](#) at the City University of New York Graduate Center as well as a formula to determine the likelihood of low-visibility dwellings based on field research and prior census response rates. These census block groups were divided among the community partners based on the expected number of volunteers and familiarity with the communities.



Community partners practiced the text messaging tool in the field during the train-the-trainers meeting. Credit: Cities of Service

CREATE TRAINING MATERIALS.

Community Connect Labs prepared training materials for the community partners and for the volunteers. The training materials for the community partners included background on the census, instructions for using the text-messaging tool, and detailed descriptions of different types of low-visibility housing. These materials were prepared as a brief handbook and a presentation deck, which served as the basis for the train-the-trainers day. The volunteer training materials were an abbreviated version of the community partner materials, and they were distributed to volunteers at the beginning of the canvassing day. These materials were also translated into Spanish and Vietnamese. The city team prepared maps and address lists of each census block group using [NationBuilder](#). The address lists were meant to guide the direction of volunteer canvassing rather than to be a reference for low-visibility dwellings.

TRAIN THE TRAINERS.

The city team and representatives from the six community partners gathered at city hall for the train-the-trainers event. The chief service officer reviewed the importance of an accurate census count and the group discussed the types of low-visibility dwellings in San José and indicators to look out for. The vice president of research at Community Connect Labs walked the representatives through the text-messaging tool on different mobile platforms. After this brief classroom component, the training moved out into the neighborhood. The participants walked down the street as a group, looking for potential low-visibility dwellings. When a low-visibility dwelling was spotted, they practiced recording it and sending the location using the text-messaging tool. Because this was a pilot, San José conducted the training in the

middle of the day on a weekday when fewer residents were home. During the train-the-trainers event the community partners could ask questions and prepare to train their own volunteers. The city also used this opportunity to distribute helpful materials for the volunteers to use on the canvassing day.

INFORM COMMUNITIES.

Some residents may fear responding to the census if they believe that doing so could put them in danger of legal action or deportation. Since the community-based address-mapping initiative will be the first time information about the 2020 census is shared with the community, the city team is planning extensive outreach to educate the community about the value of participating in the census and the privacy measures in place to allow them to do so safely. The city is developing marketing materials that can be distributed through neighborhood associations, schools, places of worship, and council offices. These materials will also inform the community about the community-based address-mapping initiative and notify them about the presence of the volunteers in their neighborhoods.

The Census Bureau is bound by Title 13, which places strict privacy protections on the data it collects. Any information collected or received by the city that is subject to Title 13 provisions can only be used for official census purposes.^{viii}

It cannot be used for code enforcement, planning decisions, police department enforcement, tax collection, or any use that would adversely affect people.

For the pilot, the city team worked with council offices to inform key leaders about the initiative and to raise awareness through email, newsletters, and [Nextdoor.com](https://www.nextdoor.com). Although the canvassing volunteers would not be knocking on residents' doors during the pilot, the city team wanted to make sure the volunteers could explain the community-based address-mapping initiative with a clear and consistent message if they were approached by a community member. The communications consultant developed a tri-fold brochure that gave a succinct explanation of the initiative in English, Spanish, and Vietnamese. Every volunteer carried copies of this brochure during their canvassing days.



Volunteers use the location services on their smartphones to record the location of the dwelling.

RECRUIT VOLUNTEERS.

All the community partners worked with volunteers in some capacity prior to this initiative. While some had robust volunteer programs and others used volunteers only sporadically, each was able to recruit the required 10 volunteers from their rosters. Some recruited more.

Some volunteers brought special skills to the initiative that proved advantageous. Volunteers who were familiar with the neighborhood and proficient in the dominant language of the neighborhood were a great asset. So were volunteers who were comfortable using the smartphone technology and could help others with the technology on different mobile platforms. In one case, a volunteer who worked as a contractor for the local energy utility brought special expertise for identifying lived-in residences that might otherwise be missed.

The canvassing effort was slowed by volunteers who felt uncomfortable in a neighborhood due to unfamiliarity or a lack of language skills. Some volunteers who were unable to walk for long distances preferred to drive, and this led to less accurate location reporting of the low-visibility dwellings.

TRAIN VOLUNTEERS AND CANVASS.

On the first canvassing day, the volunteers gathered at designated sites in the communities where they would be canvassing. Representatives from the community partners delivered an abbreviated version of the training they had received from the city team, providing a brief overview of the census and detailed instructions on the canvassing procedure and use of the text-messaging tool.

Volunteers were separated into pairs or small teams according to their language skills, knowledge of the neighborhood, technological proficiency, and comfort

with different smartphone platforms. In many cases, volunteers were given a brief field training that allowed them to practice identifying low-visibility dwellings and recording their findings through the text-messaging tool with guidance from their trainer. As the volunteer teams walked or drove through the neighborhoods, they discussed any low-visibility dwellings they spotted and took turns recording the dwelling with the text-messaging tool.

Teams of volunteers were generally able to cover a census block group in two to three hours. The time depended on a number of factors, such as the size of the census block groups (which are determined by population, not by area), the number of low-visibility dwellings in that census block group, and the size of the volunteer team. Each submission by SMS took about one minute to complete, while the Facebook messenger option could be completed more quickly. Most of the community partners and their volunteers canvassed on multiple days in order to finish the entire area within one week.

After all the 31 census block groups were covered, the volunteers had submitted about 820 potential low-visibility dwellings through the text-messaging tool. Many of the volunteers took advantage of the language options — 390 submissions were in Spanish or Vietnamese. Every smartphone that was used in the canvassing effort submitted an average of nine to 10 low-visibility dwellings. According to the U.S. Census Bureau, many of the submissions, particularly the converted garages and other unattached dwellings, were new to the Master Address File. Given that every additional person counted in the census could yield an additional \$3,000 in federal resources per decade, the outcome from the pilot is potentially significant.

FOLLOW-UP AND RECOGNITION.

As a pilot project, it was essential to follow up with participants of the community-based address-mapping initiative about what went well and what needs to be refined. The volunteers gathered after a round of canvassing to complete a brief survey and share their feedback on the process with the community partners.

Two weeks after the canvassing was complete, the community partners assembled at city hall again to share their experiences and their volunteers' feedback with the city team. They offered suggestions on the text-messaging tool itself, the trainings, the timeline, and the preparation. Many of their suggestions can be easily incorporated before the citywide rollout of the community-based address-mapping initiative.

SHARE WIDELY.

The city team wanted to share the outcome of the community-based address-mapping initiative with city leadership, as well as with other cities that face similar housing. They drafted an informational memo to the mayor and City Council to explain the community-based address-mapping initiative and its importance as San José prepares for the 2020 Census. They also followed-up directly with the council members whose districts were canvassed. The city team has planned a meeting with Santa Clara County to share the results of the pilot and to coordinate ongoing census efforts. The director of the Office of Immigrant Affairs has been sharing the community-based address-mapping experience with other cities, including a webinar presentation for cities and counties in the United States that are members of Welcoming America.

There is no question about the importance of this work. An accurate census is essential to ensure that cities receive the appropriate allocation of federal resources and fair representation in Congress. All residents deserve to be counted, but there are many who could be easily missed. While examining the city at the necessary level of detail is labor intensive, the citizen-sourced data approach can lessen the load. The City of San José found that technology combined with the power of its community volunteers made the task possible. By leveraging essential partnerships and mobilizing passionate citizens, the city and the community together are making sure that everyone has a chance to be counted.

For More Information

If you want to learn more about starting a citizen-sourced data initiative, contact Rosalind Becker at rosalind@citiesofservice.org.

If your city is interested in developing a text-messaging system to fill critical data gaps, contact Jacob Model of Community Connect Labs at jacob@communityconnectlabs.com.

- ⁱ Calix Martinez, “Flint’s Your Neighborhood Inventory,” IMAGINews, Autumn 2015.
- ⁱⁱ Scott Atkinson, “Flint Mapping Makes City Planning a Team Effort,” Next City, August 2017.
- ⁱⁱⁱ The City of New York, “TreesCount! 2015–2016 Street Tree Census,” NYC Parks Newsletter.
- ^{iv} Andrew Reamer, “Counting For Dollars 2020: The Role of the Decennial Census in the Geographic Distribution of Federal Funds. Initial Analysis: 16 Large Census-guided Financial Assistance Programs,” George Washington Institute of Public Policy, August 2017.
- ^v Presidential Members of the U.S. Census Monitoring Board, “Final Report to Congress,” U.S. Census Monitoring Board, September 2001.
- ^{vi} United States Census Bureau, [2010 Census Coverage Measurement Person Results for San Jose City, CA](#), 2010 Census Coverage Measurement.
- ^{vii} Harder + Company, Increasing Census Participation Through Community Based Efforts, March 2011.
- ^{viii} [Title 13 – Census](#), United States Code, 2009 Edition.

Cover (clockwise from top left):

Data collection is often assisted by technology.

Community member from Lansing, MI sharing plans for the Point West Art and Trail Project.
Credit: Cities of Service

Members of Church Without Walls in Flint, MI conducting a housing condition assessment in 2012.
Credit: Community Foundation of Greater Flint

Map of the street trees of New York City by species using volunteer-gathered data.
Credit: Jill Hubley

Volunteers in New York City conducting the annual TreeCount! census.
Credit: TreeKIT