URBAN INSTITUTE · ELEVATE · THE · DEBATE

National Longitudinal Land-Use Survey User Guide

Version as of September 30, 2019

Contents

ABOUT THE URBAN INSTITUTE

The nonprofit Urban Institute is a leading research organization dedicated to developing evidence-based insights that improve people's lives and strengthen communities. For 50 years, Urban has been the trusted source for rigorous analysis of complex social and economic issues; strategic advice to policymakers, philanthropists, and practitioners; and new, promising ideas that expand opportunities for all. Our work inspires effective decisions that advance fairness and enhance the well-being of people and places.

Introduction

The Urban Institute, with support from Fannie Mae, is providing a public data source on land-use practices. These data can be used to describe land-use practices, assess whether they have changed over time, and analyze their relationship to housing supply and affordability, racial and economic segregation, urban sprawl, and neighborhood disinvestment.

What Is the NLLUS?

The National Longitudinal Land-Use Survey (NLLUS) is designed to collect information from local governments about land-use planning practices. Topics include:

- residential zoning density
- impact fees
- adequate public facilities ordinances
- accessory dwelling units
- growth management techniques
- affordable housing policies and programs

Tips for Using the NLLUS

Which levels of government hold land-use planning authority varies from state to state and within states. For example, some states' counties regulate land in unincorporated areas, while in other states, that job falls to townships, boroughs, or, in some cases, cities. For this reason, we surveyed only land-use-empowered jurisdictions at three census summary levels: county (050), subcounty (060), and place (160). Census counties only include the counties we are familiar with, but subcounties include townships, towns, parishes, and boroughs, while places include cities, villages, and towns. This can make analysis of this survey challenging, and analysts must take care in using the data.

The following are some issues to keep in mind:

- Although this survey only includes jurisdictions with land-use planning authority, we recommend keeping comparisons and analyses restricted within jurisdictions of a similar type (i.e., places, subcounties, or counties) to minimize faulty conclusions, though cross-type comparisons may be made where jurisdictions have documented similar planning powers. For example, county subdivisions in Connecticut play a similar role to cities or places in other states.
- Our survey focused on the most populous 25 to 50 core-based statistical areas (CBSAs) in each year, so it does not reflect land-use practices in other smaller CBSAs within the US.
- The 2019 data can be used with similar data collected in 1994 and 2003 to trace the evolution of practices over the past quarter century. Some elements of the survey data collected in 1994 and 2003 align with the 2019 survey, and those have been made available in a longitudinal file. However, we recommend using only the graded longitudinal variables when tracing trends over

time and only comparing ungraded variables with extreme caution. The comparable variables were constructed through careful review of the original survey instruments, but some potential comparisons between instruments might have been omitted or may be made with different comparability standards.

- Extrapolating results from responding jurisdictions to represent practices throughout a state, CBSA, or metropolitan statistical area (MSA) should be done with care. It is essential to consider the number of people or the amount of land that is affected by a specific land-use practice and weight that land-use practice accordingly.

Recommended Citation

Data: Lydia Lo, Megan Gallagher, Rolf Pendall, Ananya Hariharan, and Christopher Davis, National Longitudinal Land-Use Survey: Version 1.0, Urban Institute: Washington, DC, accessed [date], https://datacatalog.urban.org/.

NLLUS Datasets

The NLLUS comprises four datasets:

- Longitudinal Land-Use Survey
- 2019 Land-Use Survey
- 2003 Land-Use Survey
- 1994 Land-Use Survey

The 1994 and 2003 datasets were developed by Rolf Pendall more than a decade ago. We are publishing them for the first time. The Urban Institute fielded the 2019 survey, so this guide provides extensive information about its design and administration. In addition, our team has identified the ways the 1994 and 2003 surveys are similar to and different from the 2019 survey to develop a longitudinal dataset that includes data from 1994, 2003, and 2019.

Longitudinal Land-Use Survey

The NLLUS Longitudinal Land-Use Dataset includes information from the 2019, 2003, and 1994 Land-Use Datasets. The dataset includes data on land-use-planning empowered jurisdictions in the areas surrounding 52 large US cities that qualified among the most populous 25–50 core-based statistical areas, metropolitan statistical areas, or combined metropolitan statistical areas (CMSAs) in 1990, 2000, or 2014.

The dataset contains 3,144 jurisdictions' responses to the survey over the three iterations. The dataset includes both a comparable set of roughly 50 variables that have been standardized across all years, as well as all the original variables from all three survey datasets. Both wide and long versions of the dataset are provided. Comparable variables have a letter grade according to the degree of wording and context similarity between the original instruments: A is most comparable, and C is least comparable.

TABLE 1

Number of Responding Jurisdictions by Survey Year

Survey participation	Number of jurisdictions
1994 only	222
2003 only	509
2019 only	471
1994 and 2003 only	293
1994 and 2019 only	214
2003 and 2019 only	579
1994, 2003, and 2019	439
Total	2,727

2019 Land-Use Survey

The NLLUS 2019 Land-Use Dataset includes information collected by the Urban Institute in collaboration with Rolf Pendall in 2019. The dataset includes data on land-use-planning empowered jurisdictions with populations over 10,000 within the most populous 50 CBSAs (as of 2014) and a sample of land-use-planning empowered jurisdictions with populations of fewer than 10,000 residents for select CBSAs where jurisdictions with populations over 10,000 represented less than 60 percent of the CBSA's land area. It also includes jurisdictions who responded to the survey in 1994 or 2003. The survey was emailed to 2,946 eligible jurisdictions in January and February of 2019, and representatives from 1,704 jurisdictions responded.

2003 Land-Use Survey

The NLLUS 2003 Land-Use Dataset includes information collected by Rolf Pendall, Jake Wegman, and Jonathan Martin. The 2003 survey modified some of the questions from the 1994 instrument and expanded the sample to include the most populous 50 MSAs and CMSAs as of 2000. It also expanded to include jurisdictions with fewer than 10,000 residents in metropolitan areas where jurisdictions with more than 10,000 people covered less than 60 percent of the MSA's total land area. The survey was mailed to 2,365 jurisdictions, and 1,820 responded.

1994 Land-Use Survey

The NLLUS 1994 Land-Use Dataset includes information collected by Rolf Pendall as part of his dissertation at the Institute for Urban and Regional Development at the University of California, Berkeley, in 1994. The dataset includes data on land-use-planning empowered jurisdictions in the 25 most populous MSAs or CMSAs as of 1990. The survey was mailed to planning directors in 1,530 jurisdictions with populations over 10,000 that have land-use planning power, and 1,168 jurisdictions responded.

Dataset Conventions

Variable Types

The datasets contain two to three kinds of variables:

- Survey variables store data obtained from respondents directly through the survey instrument.
- Administrative variables store data obtained from sources other than the NLLUS, such as geographic identifiers, census data, or Urban-generated identifiers.
- [Only in the longitudinal file] Comparable survey variables store data obtained from respondents directly through the survey instrument for which the answer categories have been standardized across iterations.

Missing Values

Some of the respondents couldn't answer or chose not to answer some of the survey questions. We coded missing values to distinguish between reasons for missing values. We did not impute values for missing values, but we clarified the nature of the missing information. The survey had skip patterns, or gateway questions that were used to determine whether respondents qualified to see or fill in certain questions. We used responses to those gateway questions to code responses to subsequent questions that were not relevant or viewed as not applicable (".n"). If a respondent was asked a question but chose to skip it (either because they did not know the answer or they refused to provide an answer), we coded the responses to those questions as skipped (".s"). If it was not known whether a respondent was eligible to answer a question because a gateway question was also skipped, we coded the response as skipped (".s").

Open-Ended Responses

For a set of variables in the 2019 dataset, we matched open-ended responses to the appropriate response categories when "other" open-ended responses clearly fell within the definition of one of the response categories. These variables have a "tc" suffix attached to their names, and they are added into the dataset, not replacing the original response variables.

Personal Information for Respondents

Individual people responded to the survey as representatives of their jurisdiction. In the datasets, we have not included their personal information. Dropped fields include name, IP address, and email address of respondent. However, the respondents' titles and departments remain to provide an indicator of expertise and seniority.

Weights

These datasets do not include weights, although users of the NLLUS may need to develop weights to produce unbiased estimates with the data. Bias may be introduced into the estimate for two reasons. First,

the sample was designed to survey all jurisdictions over 10,000 in the most populous 50 CBSAs. This is a census of these jurisdictions. We also sampled jurisdictions with populations of fewer than 10,000 people in select CBSAs. The second reason bias might exist stems from differential response rates based on characteristics of interest, which researchers may wish to correct for in order to extrapolate responses for similar nonresponding jurisdictions. Response analysis has been performed for the 2019 survey and is detailed in the 2019 NLLUS Administration section below.

Census Data

Data from the 1990 and 2000 Decennial Censuses, as well as data from the 2013–2017 American Community Survey, has been appended onto the longitudinal dataset. There are two issues of note in using these variables. First, the variables have not been standardized over time as jurisdictions have annexed or lost land. Second, these variables should be used with extreme caution, as the variable values do not equal the populations who fall under the land-use authority of the encompassing jurisdiction. Namely, counties only regulate land in unincorporated areas, but because the county census variables include populations within minor civil divisions (e.g., boroughs or townships), which in turn include populations within places (e.g., cities, towns, or villages), these census variables should not be used for analysis across jurisdiction summary levels unless the populations from the planning-empowered jurisdictions within them have been subtracted out.

Longitudinal Dataset Structure

This section explains the structure and format of the NLLUS longitudinal dataset.

Dataset Structure

In the wide version of the dataset, each row within the panel dataset belongs to a single jurisdiction, and each jurisdiction has only one row of data. The long version, in contrast, has three rows of data per jurisdiction—one for each year the survey ran (1994, 2003, and 2019). Those years in which the jurisdiction responded contain data on their response, while the rows for the jurisdiction's other years (if they did not respond or if the variable is not comparable across time) will have missing values.

Because of the variation in CBSA, MSA, and CMSA designations and definitions across years, we created a new metro-area identifier (metro_nllus and metro_nllus_id) that categorizes jurisdictions based on their nearest or most-often-designated core urban area. We have 52 such urban areas. The panel dataset is divided into three sections of variables: comparable survey variables, original survey variables, and census variables.

Original Variables

Original variables keep their same formatting, as in the individual survey year datasets. In the long formatted longitudinal dataset, these variables are missing in the responding jurisdiction for years that the original variables do not represent. For example, the jurisdiction-year rows will contain only missing values for 2003 and 1994 if the original variable comes from the 2019 dataset. Thus, the dataset is both wide by

survey variable and long by year to facilitate reproducibility and better understanding of comparable variables.

Census Variables

Census variables included in this dataset are all unmanipulated from their original format. This means that dollar amounts have not been adjusted for inflation, incorporated populations have not been subtracted from encompassing jurisdictions that only govern unincorporated areas, and all values are people counts, not percentages. Census variables within the long-formatted dataset include: number of housing units, multifamily units, vacancies, owner-occupied units, and renter-occupied units; aggregate housing value; median contract rent; median gross rent; median home value; total population and population by race; median household income; population below poverty line; poverty rate; land area (2000 and 2017 only).

Comparable Variables

Variables for comparison were chosen through analysis of the three different survey instruments' question wordings and response categories.

Similar, comparable, and identical questions were included in the comparable variable set with a comparability grade that indicates the degree of fidelity in question wording and response categories between survey years. An A-grade variable is one for which the question wording and the categories for response are the exact same between years (perfect comparability). A B-grade variable indicates a variable for which either the question wording or categories of response have some variation between years, but they are comparable because the interpretation of the question is the same or the categories can be manipulated to be comparable (e.g., recoding both "fewer than 4" and "4–7" to the same number and equating them to "less than 8"). A C-grade variable indicates variables that are topically the same but don't have wording or response categories that match in any coherent way, thus yielding only qualitatively comparable data.

These comparability grades were coded into the variables' labels along with any notation of discrepancies between the comparability of different years. For example, if a variable is perfectly comparable between 2003 and 2019 but the wording or categories were only qualitatively comparable from the 1994 instrument, the label would contain "A (03 19) C(94)" at the start. If a comparable variable has only two years, the question was either not asked in other years or it was not comparable to other years.

The table on the following page lists all panel variables with their comparability grade, associated question number in the instruments, and the original variables from which they were generated.

TABLE 2

Comparable Variables by Grade, Survey Instrument, and Question Number

Variable Name	Description	Grade	2019 Q#	2003 Q#	1994 Q#
respotitle_	Job title/level of respondent	C	0	0	-
compplan_	Juris has comprehensive (master, general) plan	A	4	1	1
cp_updateyr_	Year juris last updated Land Use chapter of comprehensive plan	B	4	1	-
zonord_	Juris has a zoning ordinance	A	5	2	2
zo_updateyr_	Year juris last updated zoning ordinance	B	5	2	-
maxden_	Max number of dwelling units allowed per net acre in highest residential zone	B	7	3	3
maxdens2_	Max number of dwelling units allowed per net acre in highest resident	A	7	3	-
hypdensit_	Is flexible 40 units 2 story apts allowed on 5 acres?	A	8	6	-
mobilehome_	Jurisdiction allows mobile homes	C	9	5	-
grwthlimit_	Does juris have a greenbelt, urban growth boundary, limit line, or service area?	A	14	9	11
morator_	Jurisdiction has moratorium on issuing new permits/subdivision maps	B	17	11	13
moratextent_	Extent moratorium applies - none, full juris, partial	A	17	11	13
growthmgmnt_	Juris has measure restricting pace of pop or bldg growth	B	15	10	12
poprstrpct_	Population growth limited to ___% per year	A	15	10	12
bldgprmlimit_	Building permits limited to ___# per year	A	15	10	12
gc_ahexmpt_	Does juris offer growth control/moratorium exemptions for affordable housing	B	16, 18	12	14
impactfees_	Juris charges impact fees	A	19	14	-
ifmode_	Does juris charge impact fees? No, Case by Case, Flat Rate, Both	A	19	14	-
if_sqft_	Jurisdiction charges impact fees per sq ft	C	19	14	-
if_sqft2_	How much juris charges in impact fees per square foot	B	19	14	-
if_unittype_	Jurisdiction charges impact fees per unit (mf/sf)	C	19	14	-
if_sfrate_	How much juris charges in impact fees for a single family unit	C	19	14	-
if_mfrate_	How much juris charges in impact fees for a multifamily unit	C	19	14	-
if_school_	Impact fees apply to schools	A	19	14	-
if_storm_	Impact fees apply to stormwater	A	19	14	-
if_transit_	Impact fees apply to transportation	A	19	14	-
if_pubsafe_	Impact fees apply to public safety facilities	A	19	14	-
if_water_	Impact fees apply to water supply and/or wastewater handling and/or storage facilities	A	19	14	-
if_park_	Impact fees apply to parks, recreation, and/or open space facilities	A	19	14	-
apfoyn_	Jurisdiction has adequate public facilities ordinance	B	20	15	16
apfo_school_	APFO applies to schools	B	20	15	16

Variable Name	Description	Grade	2019 Q#	2003 Q#	1994 Q#
apfo_storm_	APFO applies to stormwater	B	20	15	16
apfo_transit_	APFO applies to transit facilities	B	20	15	16
apfo_pubsaf_	APFO applies to public safety facilities	B	20	15	16
apfo_water_	APFO applies to water/wastewater supply, delivery, storage facilities	B	20	15	16
apfo_park_	APFO applies to parks and recreational facilities	B	20	15	16
apfo_other_	APFO applies to other unlisted facilities	B	20	15	16
ahreqinc_	Does juris require/incentivize private-sector builders to develop AH?	C	22, 30	16	17
ahlinkfee_	Juris requires non-residential builders to pay an affordable housing fee ('linkage fee')	C	30	16	-
izreq_	Juris requires developers of market-rate housing to include affordable housing	B	22	16	17
izpct_	What pct of units must be reserved as affordable housing	B	23	16	17
densbonus_	Juris provides density bonuses incentives for AH construction by private builders	B	30	16	17
ahwaiver_	Juris provides impact fee waivers to incentivize AH construction by private sector builders	B	30	16	-
ahfast_	Juris uses fast-track/streamlined permitting to incentivize AH construction by private builders	B	30	16	17
ahinlieu_	Developers may satisfy AH requirement by paying a fee	B	26	16	17
ahtf_	Juris has dedicated affordable housing trust fund	C	32	19	-

2019 NLLUS Administration

This section explains the survey design, sample design, and data collection approaches used for the NLLUS.

Sample Design

Before designing the sample, we consulted a set of expert stakeholders in city planning, housing construction, and land development to ensure our sample design would be representative of the kinds of jurisdictions with planning responsibilities in the US. This survey's universe includes all jurisdictions with planning power and populations over 10,000 in the 50 largest CBSAs within the US as of 2014. It also includes any jurisdictions surveyed in 2003 and 1994.

We also collected data from jurisdictions with planning power whose populations were under 10,000 in CBSAs where the total land area of all jurisdictions with populations over 10,000 was less than 60 percent of the total CBSA area (i.e., we sampled smaller jurisdictions where the CBSA was composed of many such jurisdictions). We sampled small population jurisdictions in the Columbus, OH; Milwaukee, WI; and Minneapolis, MN CBSAs, yielding 147 small-population jurisdictions for the 2019 cohort. Several other small-population jurisdictions were included in the survey universe as legacies of the 2003 and 1994 survey. We identified 3,106 jurisdictions for the 2019 survey.[1]

Sample Contact Information

With the full list of sampled jurisdictions in hand, the team's research and data science members collaboratively designed an algorithm to search jurisdiction websites to identify the chief or primary contact to complete the survey for each jurisdiction.

Our research team did not know the names or contact information for the individuals most knowledgeable about land-use planning in each jurisdiction, so we used a technique called web scraping to search out the name and email address for best possible contact for each jurisdiction. Researchers worked with data science experts to design an algorithm that drills down from the jurisdiction website, to the department, and the name of the most senior planning official. The team developed and revised the algorithm to improve its capabilities during a pilot study prior to full survey administration.

The algorithm first identified the appropriate website for each jurisdiction by searching Bing with the relevant characteristics (e.g., jurisdiction type, full name, and an identifier for a government office). Then the algorithm used natural language processing paired with a prioritized set of respondent job titles to identify the best possible respondent's name, email, phone number, and office address. Job titles used include (in order of priority): Director or head, senior staff, junior staff, consultant, other. The search prioritized finding the best match within the Planning, Zoning, or Community Development departments, but beyond that, departments or offices accepted included (in order of priority): building, public works or engineering, city or

[1] There are 499 total noncounty small-population jurisdictions in the 2019 survey dataset. Of those, 147 are from the 2019 cohort and the other 346 are legacy jurisdictions from the 2003 survey. After the survey was completed, quality controls for the web-scraping and recipient-to-jurisdiction matching revealed that some of our sample jurisdictions were misidentified as being eligible for sampling.

county manager, clerk's office, appointed positions (e.g., to planning, zoning, or building commission or board), or elected offices.

Most (3,037) of the 3,106 jurisdictions had a web presence. The web-scraping algorithm collected titles and contact information for each viable contact candidate in a jurisdiction with email addresses not always accurately paired with each person's name. Consequently, it was necessary for a researcher to review the results, manually choose the appropriate contact, and verify the email address using the source link the web-scraper provided. Working with the web-scraper output, the researcher was able to verify an average 1.2 contacts per minute, with difficult jurisdictions (e.g., those where emails bounced back or with poor web documentation, roughly 7% of the universe) taking an average of 3.5 minutes per contact.

Instrument Design

Rolf Pendall conducted a survey of land-use planning in 1994 and again in 2003. The 2003 survey included some modifications from the 1994 survey, but many of the same topics were covered. In preparation for fielding the 2019 survey, we reviewed the 2003 survey for relevance and ease of use and requested input from advisors (including Fannie Mae) on new items and updates. The 2019 survey used many of the same items from 2003.

We programmed the final survey into Qualtrics and conducted several rounds of testing on the Qualtrics instrument to improve transitions, layout, and visual appeal. Survey testers were research and urban planning experts that examined the content and mechanics of the instrument and provided feedback to our team.

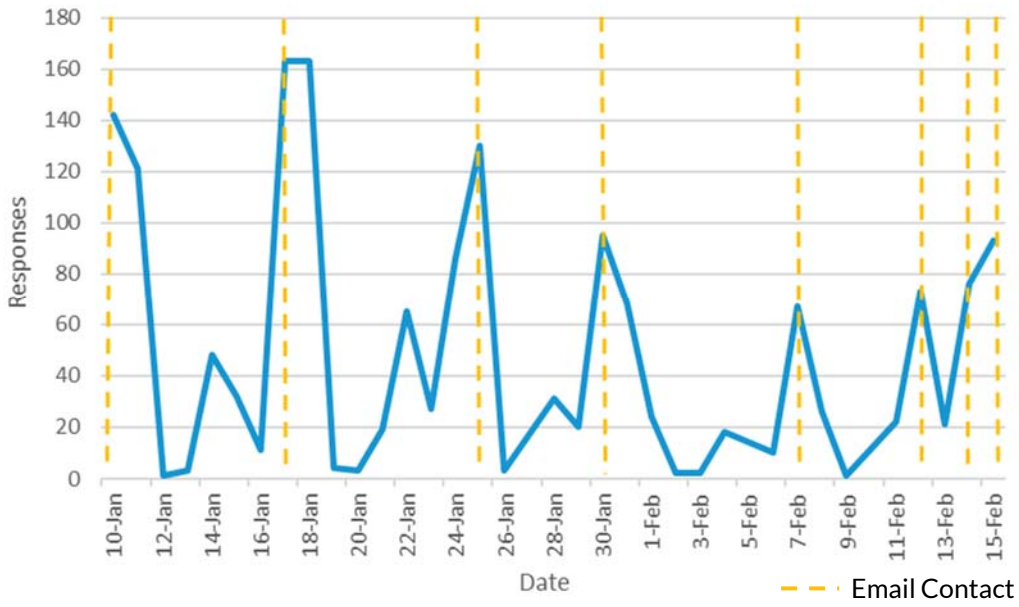
We used Qualtrics survey software for communication with sample members, data collection, and tracking. Qualtrics software can send personalized email communications (e.g., survey introductions and reminders) to sample members and provides detailed tracking on response status for each recipient. Using the individualized links in those emails, respondents could access their survey to see whether they completed it or not and pick up where they left off. For data collection, Qualtrics offers custom layout, formatting, and features like pop-up definitions for terms and sophisticated skip and display logic. This survey utilized all these features to create a customized look, personal feel, and to-the-minute analysis for both respondents and researchers. The online Qualtrics version of the survey can be viewed here: https://urban.co1.qualtrics.com/jfe/form/SV_6eUbAqcVPWmcmP3

On January 8, 2019, we sent each of the 2964 jurisdictions (the 3037 jurisdictions in the survey minus the 73 who had already completed the survey during the pilot phase) an introductory email without any links through Outlook to notify them of the upcoming survey and request the sender's email address be added to their list of safe contacts. Then, we sent the survey invitation email with links out two days later, on January 10, 2019 at 3pm using Qualtrics' email distribution feature. Each jurisdiction received an introductory email with a survey link unique to their jurisdiction that they could forward to another individual or click again to return to the survey on a later date. Jurisdictions received weekly reminder emails to complete the survey with days and times varying (Thursday, Wednesday, Tuesday; morning, noon, late afternoon) to maximize potential for recipients to respond. Responses tended to only come in on days where a reminder email had been sent (see figure 1). The survey closed on February 15, 2019 at midnight.

Figure 1 presents respondent activity and figure 2 presents response types over the survey administration period.

FIGURE 1

Survey Response Timeline

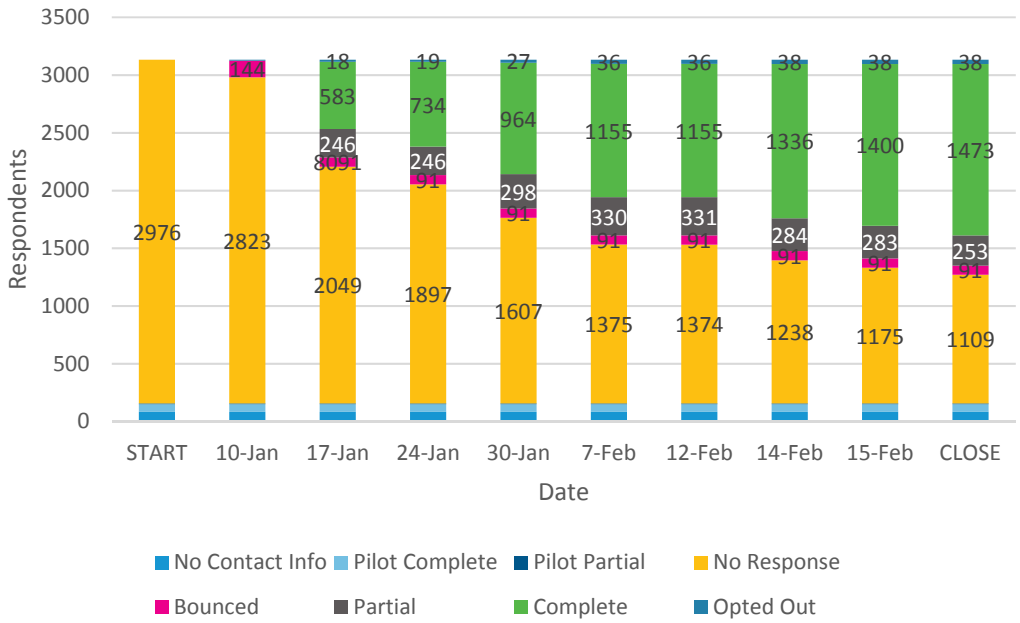


From the sample of 2964 who were included in the full survey (3106 minus the 69 without web presences and the 73 who participated in the pilot), 144 contacts' emails bounced back and prompted a fresh search for improved email addresses. Of those updated emails, 53 did not bounce back again and became the primary contact address for that jurisdiction in future communications. The 91 nonrecoverable bounce-back emails brought the total jurisdictions who received the survey down to 2873. Over the course of the survey, 38 jurisdictions opted out.

Of the 2,835 that did not opt out of the survey, 1726 (61 percent) participated in the survey and of those, 1473 (51 percent of the total, 85 percent of participants) completed it. While 1473 respondents got to the end of the survey and submitted it, another 253 participated in the survey and have some valuable data for analysis. Of those 253, we included those with responses to at least 5% of the survey items, resulting in a total of 158 useable partial responses and 95 non-counted partial responses. These adjustments in addition to those 66 full and 7 useable partial responses from the pilot survey result in an analysis file with 1704 responses (see table 4).

FIGURE 2

Survey Response Types by Contact Date



Duration: The median time taken on the survey was 19 minutes, with the minimum (those who did more than click the link and immediately close the window) being 5 minutes and the maximum (those who left the survey open for several days or returned to it after several weeks) being 669 hrs.

Response rate: American Association for Public Opinion Research (AAPOR) provides options for calculating response rates. Using their most conservative standard, which only includes completed surveys, the response rate is (1550/3133), or 49.5%. The alternative, which includes partial completes, is (1721/3133), or 54%.

If we exclude the 164 ineligible jurisdictions from the denominator, the completed-only response rate is 52% (1550/2969) and the partials-included response rate is 58% (1721/2969).

TABLE 3

Eliminating Ineligible Jurisdictions

		Sample
Initial list of eligible jurisdictions		3106
Reasons for elimination		
No web presence	69	3037
No valid email address	90	2957
Revised list of eligible jurisdictions		**2957**

TABLE 4

Results of Survey Administration to Eligible Jurisdictions

	Pilot n=150	Full survey n=2873	Full analysis sample
Non-Participants			
Did not open email	--*	1109	1109
Opted Out	--*	38	38
Participants			
Opened email and completed 0-5% of survey	--*	95	95
Opened email and completed 5-99% of survey	7	158	165
Full submissions	66	1473	1539
Usable Responses (>5%) Subtotal	73	1631	1704
Total			**2946**

*We offered all nonrespondents, incomplete respondents, and participants who opted out during the pilot a chance to complete the survey during the full survey period.

Nonresponse analysis: Below we describe ways in which the characteristics of respondents and nonrespondents vary. There are signs of nonresponse bias that we will look at more closely during the analysis stage.

- **Survey cohort:** Nonrespondents were less likely to be from the overlapping '03 and '19 survey cohorts and more likely to be from the 2003-only cohort.
- **Jurisdiction type:** Nonrespondents were more likely to be from boroughs and villages and likely to be from cities.
- **Land area:** There were no significant differences between respondents and nonrespondents in terms of jurisdiction land area.
- **Population:** There were no significant differences between respondents and nonrespondents in terms of population size.
- **Region**: Nonrespondents were more likely to be from Northeast jurisdictions and less likely be from Western jurisdictions.
- **State:** Nonrespondents were less likely to be from four states (Connecticut, Minnesota, Rhode Island, and Texas), and more likely to be from six states (Alabama, Louisiana, Massachusetts, Michigan, New Jersey, and New York).

TABLE 5

T-tests for Differences between Respondents and Nonrespondents

	Respondents n=1,704	Nonrespondents n=1,242	Statistical significance
2014 population	89748	73716	--
Land Area (sq. miles)	111.4	93.2	--
Sample (pop <10,000)	4%	5%	--
Pilot participation	6%	4%	**
Cohort			
2019 only	39%	43%	--
2003 only	16%	20%	**
'03 and '19	45%	37%	***
Region			
North	27%	32%	**
South	22%	19%	--
Midwest	34%	35%	--
West	17%	14%	*
Jurisdiction Type			
County	11%	10%	--
Borough	2%	6%	***
City	51%	43%	***
Town or Township	28%	31%	--
Village	8%	11%	**

* p<0.05 ** p<0.01 ***p<0.005

Appendix A: CBSA List

2019:

1. Atlanta-Sandy Springs-Roswell, GA
2. Austin-Round Rock, TX
3. Baltimore-Columbia-Towson, MD
4. Birmingham-Hoover, AL
5. Boston-Cambridge-Newton, MA-NH
6. Buffalo-Cheektowaga-Niagara Falls, NY
7. Charlotte-Concord-Gastonia, NC-SC
8. Chicago-Naperville-Elgin, IL-IN-WI
9. Cincinnati, OH-KY-IN
10. Cleveland-Elyria, OH
11. Columbus, OH
12. Dallas-Fort Worth-Arlington, TX
13. Denver-Aurora-Lakewood, CO
14. Detroit-Warren-Dearborn, MI
15. Hartford-West Hartford-East Hartford, CT
16. Houston-The Woodlands-Sugar Land, TX
17. Indianapolis-Carmel-Anderson, IN
18. Jacksonville, FL
19. Kansas City, MO-KS
20. Las Vegas-Henderson-Paradise, NV
21. Los Angeles-Long Beach-Anaheim, CA
22. Louisville/Jefferson County, KY-IN
23. Memphis, TN-MS-AR
24. Miami-Fort Lauderdale-West Palm Beach, FL
25. Milwaukee-Waukesha-West Allis, WI
26. Minneapolis-St. Paul-Bloomington, MN
27. Nashville-Davidson--Murfreesboro—Franklin, TN
28. New Orleans-Metairie, LA
29. New York-Newark-Jersey City, NY-NJ-PA
30. Oklahoma City, OK
31. Orlando-Kissimmee-Sanford, FL
32. Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
33. Phoenix-Mesa-Scottsdale, AZ
34. Pittsburgh, PA
35. Portland-Vancouver-Hillsboro, OR-WA
36. Providence-Warwick, RI-MA
37. Raleigh, NC
38. Richmond, VA
39. Riverside-San Bernardino-Ontario, CA
40. Sacramento--Roseville--Arden-Arcade, CA
41. Salt Lake City, UT
42. San Antonio-New Braunfels, TX
43. San Diego-Carlsbad, CA
44. San Francisco-Oakland-Hayward, CA
45. San Jose-Sunnyvale-Santa Clara, CA
46. Seattle-Tacoma-Bellevue, WA
47. St. Louis, MO-IL
48. Tampa-St. Petersburg-Clearwater, FL
49. Virginia Beach-Norfolk-Newport News, VA
50. Washington-Arlington-Alexandria, DC-VA-MD-WV

2003:

1. Atlanta, GA
2. Austin-San Marcos, TX
3. Boston-Worcester-Lawrence-Lowell-Brockton, MA-NH
4. Buffalo -Niagara Falls, NY
5. Charlotte-Gastonia-Rock Hill, NC-SC
6. Chicago-Gary-Kenosha, IL-IN-WI
7. Cincinnati-Hamilton, OH-KY-IN
8. Cleveland-Akron, OH
9. Columbus, OH
10. Dallas-Fort Worth, TX
11. Denver-Boulder-Greeley, CO
12. Detroit-Ann Arbor-Flint, MI
13. Grand Rapids-Muskegon-Holland, MI
14. Greensboro-Winston-Salem-High Point, NC
15. Hartford, CT
16. Houston-Galveston-Brazoria, TX
17. Indianapolis, IN
18. Jacksonville, FL
19. Kansas City, MO-KS
20. Las Vegas, NV
21. Los Angeles-Riverside-Orange County, CA
22. Louisville, KY
23. Memphis, TN-MS-AR
24. Miami-Fort Lauderdale, FL
25. Milwaukee-Racine, WI
26. Minneapolis-St. Paul, MN
27. Nashville, TN
28. New Haven-Bridgeport-Stamford-Waterbury-Danbury, CT
29. New Orleans, LA
30. New York-Northern New Jersey-Long Island, NY-NJ-PA
31. Norfolk-Virginia Beach-Newport News, VA-NC
32. Orlando, FL
33. Oklahoma City, OK
34. Philadelphia-Atlantic City-Wilmington, PA-NJ-DE-MD
35. Phoenix-Mesa, AZ
36. Pittsburgh, PA
37. Portland-Salem, OR-WA
38. Raleigh-Durham-Chapel Hill, NC
39. Richmond-Petersburg, VA
40. Rochester, NY
41. Sacramento-Yolo, CA
42. Salt Lake City-Ogden, UT
43. San Antonio, TX
44. San Diego, CA
45. San Francisco-Oakland-San Jose, CA
46. Seattle-Tacoma-Bellevue, WA
47. St. Louis, MO-IL
48. Tampa-St. Petersburg-Clearwater, FL
49. Washington-Baltimore, DC-MD-VA-WV
50. West Palm Beach-Boca Raton, FL