6. CASE STUDIES USING ACS DATA

Case Study #1: New Orleans Smoke Alarm Outreach Program

Skill Level: Intermediate

Subject: Age, Income, Poverty, Year Structure Built, Year Householder Moved Into Unit
 Type of Analysis: Analyses of trends/patterns within a community
 Tools Used: data.census.gov, statistical software, and mapping software
 Author: Oliver Wise, Director of the Office of Performance and Accountability, City of New Orleans

As a component of its fire prevention effort, the New Orleans Fire Department (NOFD) offers free smoke alarm installation to all city residents. Initially the program was fairly passive—requiring individuals to contact the fire department to request a smoke alarm, but local leaders wondered if the program was as effective as it could be.

To answer that question, and to help guide the city's efforts in reducing fire fatalities, the Office of Performance and Accountability teamed up with the NOFD to pilot a more targeted approach to smoke alarm installation. The team developed a model to identify neighborhoods most at risk for fire fatalities. That model then helped NOFD prioritize a door-to-door effort to install free smoke alarms in homes across New Orleans.

This analysis combined data from multiple sources, but would not have been possible without the American Community Survey (ACS).

The first step was to estimate the likelihood that homes in a neighborhood were missing smoke alarms. From the American Housing Survey (AHS), the research team identified three key factors associated with lack of a smoke alarm: the age of the structure, the length of time the householder has lived in the structure, and the household's ratio of income to the poverty level. However, AHS data are only available for relatively large areas. (Parishes, the equivalent of counties in other states, are the smallest reported geographies in Louisiana.) NOFD needed a smaller spatial scale for targeted outreach. The ACS filled that local data requirement because ACS data are available at a small neighborhood scale. For this project, we used block group data from the 2009-2013 ACS 5-year estimates to identify neighborhoods most at risk for lack of smoke alarms.

To produce the block-group-level analysis of smoke alarm risk, we downloaded three ACS tables from data.census.gov: B25034 (Year Structure Built), C17002 (Ratio of Income to Poverty Level in the Past 12 Months), and B25038 (Tenure by Year Householder Moved Into Unit).

- First, we went to the data.census.gov site: <https://data.census.gov>.
- To access the estimates from data.census.gov, we chose the "Advanced Search" option (see Figure 6.1).

Figure 6.1. Selecting Advanced Search in Data.census.gov
Census Burran
Explore Census Data
The Census Bureau is the leading source of quality data about the nation's people and economy.
Q Find Tables, Maps, and more
Advanced Search ③ Help 📮 Feedback
Source: U.S. Census Bureau, data.census.gov, <https: data.census.gov="">.</https:>

• On the Advanced Search page, we began with the Geography filter. We selected "Geography" in the navigation pane on the left side of the screen to display a list of available geographies. • We started by selecting "Block Group," then "Louisiana," "Orleans Parish, Louisiana," and "All Block Groups within Orleans Parish, Louisiana" (see Figure 6.2).

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rch / Advanced Search					
dvanced	Search				
e ID (e.g., DP05)					
row search with	filters				
A FILTER					
336111 - Automobile I	Vanufacturing				
BROWSE FILTERS	GEOGRAPHY	WITHIN (STATE)	Q	WITHIN (COUNTY) Q	WITHIN (TRACT) Q
Topics	Show Summary Levels	manana	-		Within Other Geographies 🗸
Geography	State *	lowa		Madison Parish, Louisiana	All Block Groups within Orleans
Years	County	Kansas		Natchitoches Parish Louisiana	Parish, Louisiana
Surveys	Tract	Kentucky		Orleans Parish Louisiana	Census Tract 1, Orleans Parish, Louisiana
	Block Group	Louisiana		Quachita Parish, Louisiana	Census Tract 100, Orleans Parish,
Codes	Block	Manlend		Plaquemines Parish, Louisiana	Louisiana
Codes		NALVIALLI			Census Tract 101, Orleans Parish,
Codes	Zip Code Tabulation Area (Five-	Margaabuaatta		Pointe Coupee Parish, Louisiana	Laudataas
Codes	Zip Code Tabulation Area (Five- Digit)	Massachusetts		Pointe Coupee Parish, Louisiana	Louisiana
Codes	Zip Code Tabulation Area (Five- Digit) Elementary School District	Massachusetts Michigan		Pointe Coupee Parish, Louisiana Rapides Parish, Louisiana Red River Parish, Louisiana	Louisiana Census Tract 102, Orleans Parish, Louisiana
Codes	Zip Code Tabulation Area (Five- Digit) Elementary School District Secondary School District	Massachusetts Michigan Minnesota		Pointe Coupee Parish, Louisiana Rapides Parish, Louisiana Red River Parish, Louisiana Richland Parish, Louisiana	Louisiana Census Tract 102, Orleans Parish, Louisiana Census Tract 103, Orleans Parish,

Because we knew which tables we wanted to extract for the analysis, we typed the table ID "B25034" into the first search bar under the Advanced Search heading and clicked "Search" in the lower right corner (see Figure 6.3).



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• Then we clicked on the table, "Year Structure Built" (see Figure 6.4).

Jnited States* ENSUS Bureau	Q Search		
TABLES MAPS PAGES			,
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out 757 results Filter			
ables			
VEAR STRUCTURE BUILT			
Survey/Program: American Community Su	irvey		
Years: 2018,2017,2016,2015,2014,2013	Table: B25034		
	Block Group 2, Census Tract 131, O	rleans Parish, Louisiana	Block G o
	Estimate	Margin of Error	Estimate
✓ Total:	264	+/-46	
Built 2014 or later	0	+/-12	
Built 2010 to 2013	0	+/-12	
Built 2000 to 2009	12	+/-14	
Built 1990 to 1999	0	+/-12	
Built 1980 to 1989	0	+/-12	
Rull+ 1070 to 1070			
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			IEW ALL TABLES (
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aps			

Source: U.S. Census Bureau, data.census.gov, <https://data.census.gov>.

• Next, we selected "Customize Table" (see Figure 6.5).

Census	Q Search				
ALL TABLES MAPS PAGES 1 Results Filter Download	YEAR STRUCTURE BUILT Survey/Program: American Comr TableID: B25034	nunity Survey Product Univers	: 2018: ACS 5-Year Estimates Detailed Tables e: Housing units	CUSTOMIZE	TABLE
YEAR STRUCTURE BUILT		Block Group 2, Census Tract 131, 0	rleans Parish, Louisiana	Block Group 3, Census Tract 13	31, Orleans Par
Survey/Program: American Community Survey		Estimate	Margin of Error	Estimate	
Years: 2018,2017,2016,2015,2014,2013 Table: B25034	✓ Total:	264	+/-46	148	
	Built 2014 or later	0	+/-12	0	
	Built 2010 to 2013	0	+/-12	0	
	Built 2000 to 2009	12	+/-14	6	
	Built 1990 to 1999	0	+/-12	7	
	Built 1980 to 1989	0	+/-12	0	
	Built 1970 to 1979	0	+/-12	0	
	Built 1960 to 1969	8	+/-13	5	
	Built 1950 to 1959	27	+/-17	2	
	Built 1940 to 1949	26	+/-23	27	
	D 11 4444 1	101	+/-50	101	

• We then selected the desired survey year by clicking on the current "Product" selection. The header should read "2013: ACS 5-Year Estimates Detailed Tables" (see Figure 6.6). (For the purposes of this case study, we used 2009–2013 ACS 5-year estimates because they were the most recent data available at the time.)

Figure 6.	6. Se l	lecting	g the	e Su	rvey	/ Yea	ar in	Dat	a.census.gov	/				
Census Bureau				Q	Searc	:h								
// Search / Tables EAR STRUCTU urvey/Program: Am	/ B25034 RE BUILT erican Comm	unity Survey	Universe	: Housin	g units	TableID: E	325034	Product:	2010: ACS 5 Voor Entin	notes Detailed Tables				
Data Notes	Selections) 1 Geography	Years	Topic	I Survey	<u>123</u> Code	<i>چی</i> Hide	Filter	2017: ACS 5-Year Estin 2017: ACS 5-Year Estin 2016: ACS 5-Year Estin	nates Detailed Tables nates Detailed Tables nates Detailed Tables	₽ P P P P P P P P P P P P P P P P P P P	မှာ ရှိ Download Pri	nt Share	More
			Blo	ck Grouj	p 1, Censu	us Tract 1	, Orleans	Parish, I	2015: ACS 5-Year Estin	nates Detailed Tables	ensus Tract	1, Orleans Parish,	Louisiana	
			Es	stimate				Mar	2014: ACS 5-Year Estin 2013: ACS 5-Year Estin	nates Detailed Tables		Mar	gin of Error	
✓ Total:					1	545			+/-108		603			+/-111
Built 2010 or	later					0			+/-12		0			+/-12
Built 2000 to	2009					12			+/-17		0			+/-12
Built 1990 to	1999					0			+/-12		0			+/-12
Built 1980 to	1989					0			+/-12		0			+/-12
Built 1970 to	1979					11			+/-16		28			+/-42
Built 1960 to	1969					0			+/-12		23			+/-30
Built 1950 to	1959					24			+/-28		15			+/-23
Built 1940 to	1949					52			+/-56		134			+/-84
Built 1030 or	earlier				13	446			+/-121		403			+/-114

• To format the data for downloading, we used the "Transpose Table" option to transpose the rows/columns. Next, we clicked "Download" and used the Download Tables window to check the box for the 2013 ACS 5-year data. We selected "CSV" as the file type and clicked on "Download" in the lower right corner (see Figure 6.7).

Da	ita.census	s.gov		mg the Su	rvey fear		Type in	
		Q, Search						
earch / Tables / B25034 R STRUCTURE BUILT //Program: American Communit Dia Notes Selections 1 6	y Survey Universe: Hous	sing units TableID: B2503	34 Product: 2013: ACS 5-	Year Estimates Detailed Tab	of Frror Restore Law) 🔅 🗃 nt Share More Data	成 Man
Download Tables Select Table Vintages						\bigcirc		
	All	2018 2017	2016 2015	2014 2013				
B25034 5-Year)			
File Type CSV PDF		v	Vhat You're Getting 1 .csv files (metadate 1 .csv files (data) 1 .txt files (table title)	a)			Uncompressed	Estimated Size: 110
Margin of Error	+/-91	+/-12	+/-30	+/-12	+/-17	+/-12	+/-10	+/-51
Block Group 1, Census								
Estimate	426	0	0	26	0	23	47	53
Margin of Error	+/-74	+/-12	+/-12	+/-31	+/-12	+/-36	+/-39	+/-51
Block Group 2, Census								
	371	0	6	0	22	0	33	75
Estimate			+/-10	+/-12	+/-28	+/-12	+/-30	+/-53
Estimate Margin of Error	+/-72	+/-12	.,					

• After the files were prepared, we clicked the "Download Now" button (see Figure 6.8).



Clicking on the downloaded zip file opened a folder containing three files. We selected the file with the prefix "ACSDT5Y2013.B25034_data_with_overlays" to open the data table in a spreadsheet. We repeated this process in data.census.gov for the two other tables (C17002 and B25038).

The research team then used a statistical program to aggregate the data from each table into relevant risk categories. We used data from Table C17002 to calculate the percentage of households in each block group with income below 200 percent of the federal poverty level, data from Table B25034 to identify the percentage of housing structures built before 1949, and data from Table B25038 to identify the percentage of householders who moved into their home before 2000. We then used these three indicators to assign a risk score to each block group.

It is important to note that some block groups are sparsely populated, and some have no population at all. For example, Lake Pontchartrain is probably not a relevant block group for smoke alarm outreach. To account for this, we removed large, sparsely populated (or completely unpopulated) block groups from the analysis.

The second step of the analysis was to estimate fire fatality risk. Since young children and older adults are most at risk of death in a fire, we used 2010 Census data to identify block groups with high proportions of people under the age of 5 or age 65 or older. In addition, we added fire frequency data from NOFD records for March 2009 to March 2015. Using these three pieces of information, we compiled a fire fatality risk map.

Overlaying the smoke alarm risk map—based on ACS data—with the fire fatality risk map, we were able to highlight neighborhoods where fire mortality risk was high and where homes were unlikely to have smoke alarms. NOFD used that map to begin a door-to-door campaign in high-risk neighborhoods to install smoke alarms. We estimated that the program was twice as effective as random assignment would have been for contacting households in need of smoke alarms.

Shortly after the program began, a fire occurred in one of the homes in which a smoke alarm had been installed based on the targeted installation outreach. Eleven people survived that fire because they had an early warning from the alarm.

Because the model is based on ACS data available nationwide, the analysis could be replicated—and fire safety improved—for other communities around the nation. The code for this analysis can be found online.⁴⁸ You can also view the Census Bureau's *Stats in Action* video to learn more about this project.⁴⁹

⁴⁸ See <https://github.com/cno-opa/smoke-alarm-outreach>.

⁴⁹ U.S. Census Bureau, Stats in Action: New Orleans, LA: Smoke Alarm Outreach Program, 2016, <www.census.gov/library/video/2016 /sia-nola-saop.html>.

Case Study #2: Atlanta Region 20-County Data Dashboard

Skill Level: Introductory/intermediate

Subject: County-level demographic and socioeconomic data

Type of Analysis: Analysis and visualization of ACS data across the 20-county metro Atlanta region

Tools Used: Data.census.gov, Excel, and data visualization tools

Authors: Taylor Tyger, Senior Planner, Atlanta Regional Commission Jim Skinner, Senior Principal Planner, Atlanta Regional Commission Mike Carnathan, Division Manager, Atlanta Regional Commission

The Atlanta Regional Commission's (ARC) Research and Analytics Division uses various databases, analysis tools, and visualization programs to improve data outreach in metro Atlanta. One of those tools is the Atlanta Region 20-County Data Dashboard.⁵⁰ This data dashboard was created to provide an interactive platform for users seeking demographic and socioeconomic information at the county level. The dashboard consolidates data from various data sources into eight categorical "bins": population, employment, housing, education, health, crime, income, and forecasts. The designated "bins" were identified based on common data requests ARC receives.

We used the U.S. Census Bureau's County Population Estimates and American Community Survey (ACS) 5-year estimates to "feed" parts of the dashboard (see Table 6.1). Some of the counties for which populations are included in the dashboard are fairly small. As a result, ACS 5-year estimates must be used instead of ACS 1-year estimates. Other data sources used in the dashboard include U.S. Bureau of Labor Statistics, U.S. Department of Housing and Urban Development, Georgia Department of Public Health, Georgia Department of Education, Federal Bureau of Investigation, and Atlanta Regional Commission forecasts.

Table 6.1. List of Variables Downloaded Through Data.census.gov and Census.gov					
Variable	Data set				
Population	County Population Estimates				
Race and ethnicity	County Population Estimates				
Age	County Population Estimates				
Housing tenure	ACS 5-Year Estimates				
Vacancy rate	ACS 5-Year Estimates				
Household composition	ACS 5-Year Estimates				
School enrollment	ACS 5-Year Estimates				
Educational attainment	ACS 5-Year Estimates				
Median household income	ACS 5-Year Estimates				
Population below poverty level	ACS 5-Year Estimates				

While we recognize that there is a level of uncertainty associated with ACS estimates, the margins of error are not included in the dashboard. We considered two factors in the decision not to show margins of error. First, we wanted to present the information in a concise format for data users. Second, we wanted to present information in a consistent way across measures, and several measures in the dashboard from other sources do not have margins of sampling error.

To download the data, we used the data.census.gov Advanced Search option, as follows:

- Go to the data.census.gov Web site at <https://data.census.gov>.
- Click on "Advanced Search" under the search bar. This will bring you to the Advanced Search page.
- Begin with the Geography filter. Select "Geography" in the navigation pane on the left side of the screen to display a list of available geographies.

⁵⁰ Atlanta Regional Commission, 20-County Data Dashboard, http://33n.atlantaregional.com/20-county-data-dashboard>.

• Select "County," then select "Georgia" from the "State" filter, and then select each of the ARC's 20 counties (see Figure 6.9).

Figure 6.9 Selecting	g a Geography in Data	.census.gov	
	Q Search		
// Search / Advanced Search Advanced S Table ID (e.g., DP05)	Search		
Narrow search with fil FIND A FILTER e.g. 336111 - Automobile Ma	ters nufacturing	٩	
BROWSE FILTERS Topics Geography Years Surveys Codes	GEOGRAPHY Show Summary Levels Nation Region Division State County Tract Block Group Block Zip Code Tabulation Area (Five-Digit) Elementary School District Secondary School District	COUNTY Q Commonwealth of the Northern Mariana Islands Connecticut Delaware District of Columbia Florida Georgia Guam Hawaii Idaho Illinois Indiana Iowa Kansas	GEORGIA Q Show geographic components Upson County, Georgia Walker County, Georgia Watren County, Georgia Warren County, Georgia Wayne County, Georgia Wayne County, Georgia Webster County, Georgia Webeler County, Georgia White County, Georgia White County, Georgia White County, Georgia
elected Filters: Barrow County,	Georgia 😸 Bartow County, Georgia 😵	Carroll County, Georgia S MORE (17)	CLEAR FILTERS SEARCH

• Next, choose the "Surveys" filter and select "ACS 5-Year Estimates Detailed Tables" (see Figure 6.10).

Figure 6.10. Selecti	ng a Survey in Data.census.gov	
	Q, Search	
// Search / Advanced Search	Search	
Narrow search with f	iters	
e.g. 336111 - Automobile M	inufacturing Q	
BROWSE FILTERS Topics Geography Years Surveys Codes	SURVEYS ACS 5-Year Estimates Data Profiles Detailed Tables ACS 5-Year Estimates Subject Tables ACS Supplemental Estimates Detailed Tables ANN Business Patterns County Business Patterns ANN Business Patterns ANN Business Patterns ANN Business Patterns ANN Nonemployer Statistics ANN Nonemployer Statistics Owners Survey of Business Owners Company Summary	
Selected Filters: Barrow Count	Georgia 🛛 Bartow County, Georgia 🔇 Carroll County, Georgia 🔇 MORE (18)	SEARCH MORE
Source: U.S. Census Bu	eau, data.census.gov, <https: data.census.gov="">.</https:>	

- Then, choose the "Topics" filter, select "Housing," select "Vacancy," and mark the check box for "Vacancy."
- All 22 filters should appear in the "Selected Filters" at the bottom of the page.

• Next, click on "Search" in the lower right corner of the page (see Figure 6.11).

Figure 6.11. Acces	sing Vacancy Data in	Da	ta.census.gov					
	Q Search							
// Search / Advanced Search Advanced Search Table ID (e.g., DP05) Narrow search with 1	Search		-					
FIND A FILTER								
e.g. 336111 - Automobile M	lanufacturing	C						
BROWSE FILTERS	TOPICS	Ι	HOUSING	1	VACANCY			
Topics	Business and Economy		Housing	V	Vacancy			
Geography	Education		Absorption Rate		Vacancy Character	istics		
Years	Employment		Financial Characteristics		Vacancy Rates			
Surveys	Families and Living Arrangements		Health and Safety Characteristics					
00000	Government		Homeownership Rate					
	Health		Housing Units					
	Housing	>	New and Existing Units					
	Income and Poverty		Occupancy Characteristics					1
	Populations and People		Owner/Renter (Householder)					
	Race and Ethnicity		Characteristics					
		-	Vacancy					
Selected Filters: Barrow Count	y, Georgia 🛞 Bartow County, Georgia 🛞	Ca	rroll County, Georgia 🛞 MORE (19)			CLEAR FILTERS	SEARCH	MORE
Source: U.S. Census B	ureau, data.census.gov, <htt< th=""><th>:ps:/</th><th>/data.census.gov>.</th><th></th><th></th><th></th><th></th><th></th></htt<>	:ps:/	/data.census.gov>.					

• On the results page, click on "Occupancy Status" (see Figure 6.12).

ABCILC	O Street			
Bureau	C Search			
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out 19 results Filter				
ables				
OCCUPANCY STATUS				
Survey/Program: American Comm	nunity Survey			
Years: 2018,2017,2016,2015,2014	,2013,2012,2011,2010 Table: B25002	2		
	Barrow Count	ty, Georgia	Bartow Count	y, Georg
	Estimate	Margin of Error	Estimate	M
✓ Total:	27,914	+/-58	40,694	
Occupied	25,319	+/-383	37,351	
Vacant	2,595	+/-375	3,343	
VACANCY STATUS Survey/Program: American Comm Years: 2018,2017,2016,2015,2014	nunity Survey ,2013,2012,2011,2010 Table: B25004	4		Þ
VACANCY STATUS Survey/Program: American Comm Years: 2018,2017,2016,2015,2014 VACANT - CURRENT RESIDE	nunity Survey ,2013,2012,2011,2010 Table: B25004 NCE ELSEWHERE	4		Þ
VACANCY STATUS Survey/Program: American Comm Years: 2018,2017,2016,2015,2014 VACANT - CURRENT RESIDE Survey/Program: American Comm Years: 2018,2017,2016,2015,2014	nunity Survey ,2013,2012,2011,2010 Table: B25004 NCE ELSEWHERE nunity Survey ,2013,2012,2011,2010 Table: B25003	4		Þ
VACANCY STATUS Survey/Program: American Comm Years: 2018,2017,2016,2015,2014 VACANT - CURRENT RESIDE Survey/Program: American Comm Years: 2018,2017,2016,2015,2014	nunity Survey 2013,2012,2011,2010 Table: B25004 NCE ELSEWHERE nunity Survey 2013,2012,2011,2010 Table: B25005	4	VIEW ALL TAB	• 8LES (9)

• On the table results page, select "Customize Table" in the upper-right corner (see Figure 6.13).

Figure 6.13. Customizing	a Table in Data	.census.gov			
	Q, Search				
ALL TABLES MAPS PAGES 9 Results Filter Download	OCCUPANCY STATUS Survey/Program: American Co TableID: B25002	mmunity Survey Pro Un	oduct: 2018: ACS 5-Year Estimates iverse: Housing units	Detailed Tables 🗸 🄇	CUSTOMIZE TABLE
OCCUPANCY STATUS		Barrow Count	Bartow County, Georgia		
Survey/Program: American Community Survey		Estimate	Margin of Error	Estimate	Margin of Error
Years: 2018,2017,2016,2015,2014,2013,2012,2011,2010	✓ Total:	27,914	+/-58	40,694	+/-100
Table: B25002	Occupied	25,319	+/-383	37,351	+/-532
VACANCY STATUS	Vacant	2,595	+/-375	3,343	+/-533
Survey/Program: American Community Survey Years: 2018;2017;2016;2015;2014;2013;2012;2011;2010 Table: 82:5004					

• Select the desired survey year by clicking on the current "Product" selection. For the purposes of this case study, we are using 2013–2017 ACS 5-year estimates because they were the most recent data available at the time. The header should read "2017: ACS 5-Year Estimates Detailed Tables." Then select "Download" from the menu at the top of the screen (see Figure 6.14).

Figure 6.14. S	Selecting the S	urvey Year in	Data.census.gov			
	Q s	earch				
// Search / Tables / B25002 OCCUPANCY STATUS survey/Program: American Comr	munity Survey Universe: Housing un	its TableID: B25002 Product	2018: ACS 5-Vasr Estimates Detailed Tables			
Data Notes Selections	20 Geographies Years 1 Topic	1 Survey Code Hide	2017: ACS 5-Year Estimates Detailed Tables 2016: ACS 5-Year Estimates Detailed Tables	Restore Layout	Print Share More Data	Map
	Barrow Cour	ity, Georgia	2015: ACS 5-Year Estimates Detailed Tables 2014: ACS 5-Year Estimates Detailed Tables 2013: ACS 5-Year Estimates Detailed Tables	Carroll Cou		
	Estimate	Margin of Error		Estimate	Margin of Error	
✓ Total:	27,464	+/-63	2012: ACS 5-Year Estimates Detailed Tables	45,097	+/-206	
Occupied	24,588	+/-404	2011: ACS 5-Year Estimates Detailed Tables	41,123	+/-706	
Vacant	2,876	+/-404	2010: ACS 5-Year Estimates Detailed Tables	3,974	+/-690	
Source: U.S. Cer	nsus Bureau, data.c	ensus.gov, <https< td=""><td>://data.census.gov>.</td><td></td><td></td><td></td></https<>	://data.census.gov>.			

• In the "Download Tables" window, check the box under "2017," choose "CSV" as the file type, and select "Download" (see Figure 6.15).

Figure 6.15. Downlo	oading Table	: Selecting	the S	Surve	y Year	and	File	Туре	in I	Data.cer	nsus.gov
Census Bures	Q Search										
// Search / Tables / B25002 CCUPANCY STATUS urvey/Program: American Community Survey Uni	verse: Housing units TableID: B	25002 Product: 2017: ACS 5	5-Year Estimat	tes Detailed Ta	ables 🗸						
Data Notes Selections 20 Geographies	Years 1 Topic 1 Survey 0	23 ode Hide Filter Sor	t Trans	pose Table	+∕⊂ Margin of Error	Restor	e Layout	Ţ Download	Print S	hare More Data	ピ Map
Download Tables Select Table Vintages											
	All 2018 2017	2016 2015	2014	2013	2012	2011	2010				
B25002 5-Year [
File Type		What You're Getting • 1.csv files (metadi • 1.csv files (data) • 1.txt files (table tit	ata) le)							Uncompressed E	istimated Size: 1.8 kB
Source: U.S. Census Bui	reau, data.censu	s.gov, <https: <="" td=""><td>/data.c</td><td>ensus.</td><td>gov>.</td><td></td><td></td><td></td><td></td><td></td><td></td></https:>	/data.c	ensus.	gov>.						

• Select "Download Now" after the file is prepared (see Figure 6.16).

Figu	re 6.16. Downloading Files in Data.census.gov	
ha	We're preparing your files. Cancelling this window will end the download.	×
		100%
		Download Now
Sour	ce: U.S. Census Bureau, data.census.gov, <https: data.census.gov="">.</https:>	

• Clicking on the downloaded zip file opens a folder containing three files. Select the file with prefix "ACSDT5Y2017.B25002_data_with_overlays" to open the data table in a spreadsheet (see Figure 6.17).

1	GEO_ID	NAME	B25002_001E	B25002_001M	B25002_002E	B25002_002M	B25002_003E	B25002_003M
2	id	Geographic Area Name	Estimate!!Total	Margin of Error!!Total	Estimate!!Total !!Occupied	Margin of Error!!Total!!Oc cupied	Estimate!!Total !!Vacant	Margin of Error!!Total!!Va cant
3	0500000US13013	Barrow County, Georgia	27464	63	24588	404	2876	404
4	0500000US13015	Bartow County, Georgia	40380	114	37120	507	3260	507
5	0500000US13045	Carroll County, Georgia	45097	206	41123	706	3974	690
6	0500000US13057	Cherokee County, Georgia	87941	132	83150	674	4791	650
7	0500000US13063	Clayton County, Georgia	105058	162	91604	778	13454	779
8	0500000US13067	Cobb County, Georgia	295227	224	274361	1401	20866	1366
9	0500000US13077	Coweta County, Georgia	52929	115	50531	436	2398	429
10	0500000US13089	DeKalb County, Georgia	307776	298	273614	1559	34162	1499
11	0500000US13097	Douglas County, Georgia	52184	127	48426	562	3758	538
12	0500000US13113	Fayette County, Georgia	41747	97	39604	368	2143	366
13	0500000US13117	Forsyth County, Georgia	74692	90	70468	452	4224	449
14	0500000US13121	Fulton County, Georgia	456265	535	391850	1896	64415	1984
15	0500000US13135	Gwinnett County, Georgia	302157	215	283256	1465	18901	1408
16	0500000US13139	Hall County, Georgia	70877	120	63095	676	7782	651
17	0500000US13151	Henry County, Georgia	78971	152	72697	935	6274	902
18	0500000US13217	Newton County, Georgia	38713	124	35823	562	2890	537
19	0500000US13223	Paulding County, Georgia	54395	75	51397	569	2998	561
20	0500000US13247	Rockdale County, Georgia	33421	100	29937	442	3484	439
21	0500000US13255	Spalding County, Georgia	27178	106	23475	411	3703	398
22	0500000US13297	Walton County, Georgia	33041	71	30488	438	2553	429

Source: U.S. Census Bureau, data.census.gov, <https://data.census.gov>.

- We repeat this process for all ACS topics in the dashboard.
- After variables are downloaded from data.census.gov as tables, we process the data in a spreadsheet. In the default format, each variable table is downloaded with each of the 20 counties' identifiers in rows and then the data variables (including values and margins of error) in columns. In processing, two rows are added: a "10-county" and "20-county" summary geography. We use the 10- and 20-county definitions as references for comparing individual counties to the broader region.
- When needed, additional columns are added in order to aggregate or refine the data as downloaded. For example, we combined individual columns of age data to create an age range for the population aged 20 to 34. We also calculated percentages by downloading the "universe" of data for selected variables.
- Columns that are not needed are deleted, and the labels are edited for clarity.

An initial analysis can be done in a spreadsheet, by sorting results from highest to lowest and comparing countylevel values to the 10- and 20-county reference points. However, most of the analysis and trend identification occurs in the visualization software, rather than in a spreadsheet. Figure 6.18 shows how the data are visualized in the final product.



The data dashboard is updated throughout the year as updated data become available. The dashboard can be found on the Atlanta Regional Commission Web site.⁵¹

The dashboard has been viewed more than 3,000 times and is used as a resource by internal agency coworkers, external partners, nonprofits, elected officials, and the general public. For example, within ARC, the Aging Services division uses the 20-County Data Dashboard to quickly access and summarize demographic information for clients. It has even served as a model for Aging Services to develop their own data dashboards. Local media partners have used the 20-County Data Dashboard to quickly pull data that informs their stories. In addition, Tableau showcased the 20-County Data Dashboard as a best practice example for using data visualization to improve data outreach in their Webinar "Data Driven Government."

⁵¹ Atlanta Regional Commission, Atlanta Region 20-County Data Dashboard, http://atlanta-regional.org/atlanta-region-20-county-data-dashboard/.

Case Study #3: USDA 515 Rental Housing Maturation

Skill Level: Introductory/Intermediate
Subject: County-level rental housing data
Type of Analysis: Analysis and visualization of counties' affordable rental housing
Tools Used: Data.census.gov, spreadsheet, and mapping software
Author: Keith Wiley, Research Associate, Housing Assistance Council

The 2010–2014 American Community Survey (ACS) 5-year data show that there are 5 million occupied rental housing units in rural areas.⁵² Since its inception in 1963, the U.S. Department of Agriculture (USDA) Section 515 Rural Rental Housing loan program has financed the construction of more than 533,000 affordable rental units, and it represents an important part of this housing stock. The program has received attention recently because a growing number of these loans will begin reaching maturity and will be paid off; an estimated 6,684 loans are expected to reach maturity over the next 20 years.⁵³ After a loan is paid off, owners are under no obligation to maintain their properties as affordable housing and some fear many owners may no longer choose to do so.⁵⁴

Given that the distribution of Section 515 units is not uniform across rural areas, the risk to affordable housing stocks associated with maturing loans will be greater for some areas than others. The following approach uses the 2010-2014 ACS 5-year data to identify those counties where the USDA Section 515 properties represent a relatively large portion of the overall rental housing stock. These are the areas where policymakers may want to concentrate efforts to ameliorate the potential loss of this important affordable housing option.

The U.S. Census Bureau's data.census.gov Web site provides easy access to 2010–2014 ACS 5-year occupied-rental housing unit estimates. With these data, one can assess the role of the Section 515 program.

Steps:

- Go to the data.census.gov Web site at <https://data.census.gov>.
- Click on "Advanced Search" under the search bar. This brings you to the Advanced Search page (see Figure 6.19).

Figure 6.19. Selecting Advanced Search in Dat	a.census.gov
Explore Ce The Census Bureau is the leading source of qu	ensus Data ality data about the nation's people and economy.
Q Find Tables, Maps, and more) ⑦ Help □ Feedback
	Tables Check out our new table display which allows you to dynamically add geographies, topics, or any applicable filters. You can reorder, pin, and hide columns all with simple
Source: U.S. Census Bureau, data.census.gov, <https: data.c<="" td=""><td>census.gov>.</td></https:>	census.gov>.

⁵² In this case study, rural refers to all counties that are not part of an Office of Management and Budget defined metropolitan statistical area using the 2013 classification.

⁵³ Housing Assistance Council, Rural Policy Note: Maturing USDA Rural Rental Housing Loans: An Update, 2016, <www.ruralhome.org/storage /documents/policy-notes/rpn_maturing-mortgages-usda-2016.pdf>.

⁵⁴ The New England Housing Network's June 30, 2015, letter to the U.S. Senate Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies exemplifies the concern raised by local housing advocates about the potential loss of Section 515 housing units. The letter, as accessed on August 28, 2016, can be found at http://housingactionnh.org/wp-content/uploads/2015/07/RD515LETTER2015.pdf>.

- Select "Surveys" in the navigation pane on the left side of the screen to display a list of available surveys.
- Select "ACS 5-Year Estimates Detailed Tables" (see Figure 6.20).

Figure 6.20. Sele	ecting a Survey in Data.	census.gov	
	Q Search		
// Search / Advanced Search Advanced S Table ID (e.g., DP05)	Search		
Narrow search with	filters		
e.g. 336111 - Automobile N	lanufacturing		٩
BROWSE FILTERS	SURVEYS		
Topics Geography	ACS 1-Year Estimates Subject		
Years	ACS 5-Year Estimates Comparison Profiles		
Codes	ACS 5-Year Estimates Data Profiles		
	ACS 5-Year Estimates Detailed Tables		
	ACS 5-Year Estimates Selected Population Data Profiles		
	ACS 5-Year Estimates Subject Tables		
Selected Filters: ACS 5-Year Es	stimates Detailed Tables ⊗	CLEAR FILTERS	SEARCH
Source: U.S. Census	Bureau, data.census.gov, <https< th=""><th>://data.census.gov>.</th><th></th></https<>	://data.census.gov>.	

- Select "Geography" in the navigation pane on the left side of the screen to display a list of available geographies.
- Select "County" and then select "All counties in United States" from the "Within (State)" filter.
- Next, since we already know the desired table ID, type "B25003" into the top search bar on the Advanced Search page and click "Search" in the lower right corner (see Figure 6.21).

Figure 6.21. Selec	ting a Geography a	nd Table ID in Data.census.gov	
	Q, Search		
// Search / Advanced Search	Search		
B25003		×	
Narrow search with fi FIND A FILTER e.g. 336111 - Automobile Ma	Iters anufacturing		م
BROWSE FILTERS	GEOGRAPHY	WITHIN (STATE)	
Topics	Show Summary Levels	Within Other Geographies 🗸 🔺	
Geography	Nation	All counties in United States	
Years	Region	Alabama	
Surveys	Division	Alaska	
Codes	State	Arizona	
	County	Arkansas	
	Tract	California	
	Block Group	Colorado	
	Block	Connecticut	
	Zip Code Tabulation Area (Five- Digit)	Delaware	
		District of Columbia	
Selected Filters: ACS 5-Year Est	timates Detailed Tables 🛞 All counties in U	Jnited States 🔞	CLEAR FILTERS SEARCH MORE
Source: U.S. Census E	3ureau, data.census.gov, <h< td=""><td>ittps://data.census.gov>.</td><td></td></h<>	ittps://data.census.gov>.	

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• On the search results page, select the "Tenure" table (see Figure 6.22).

nited States ⁻	Q Search			
. TABLES MAPS PAGES	5			
out 20 results Filter				
TENURE Survey/Program: American Community fears: 2018,2017,2016,2015,2014,2013	y Survey 3,2012,2011,2010 Table: B25003			
TENURE Survey/Program: American Community rears: 2018,2017,2016,2015,2014,2013	y Survey 3,2012,2011,2010 Table: B25003 Washington County, M	lississippi	Perry County,	Missi
TENURE Survey/Program: American Community rears: 2018,2017,2016,2015,2014,2013	y Survey 3,2012,2011,2010 Table: B25003 Washington County, M Estimate	lississippi Margin of Error	Perry County, Estimate	Missi
TENURE Survey/Program: American Community rears: 2018,2017,2016,2015,2014,2013	y Survey 3,2012,2011,2010 Table: B25003 Washington County, M Estimate 18,299	lississippi Margin of Error +/-333	Perry County, Estimate 4,563	Missi
TENURE Survey/Program: American Community Years: 2018,2017,2016,2015,2014,2013	y Survey 3,2012,2011,2010 Table: B25003 Washington Courty, M Estimate 18,299 9,888	iississippi Margin of Error +/-333 +/-445	Perry County, Estimate 4,563 3,804	Missi

• With the "Tenure" table selected, click "Customize Table" in the upper-right corner (see Figure 6.23).

Figure 6.23. Customizing a Table in Data.census.gov									
Census Interest	Q Search								
ALL TABLES MAPS PAGES	TENURE								
10 Results Filter Download	TableID: B25003	Un	munity Survey Product: 2018: ACS 5-Year Estimates Detailed Tables Universe: Occupied housing units						
TENURE		Washington Cour	nty, Mississippi	Perry County, Mississippi					
Survey/Program: American Community Survey		Estimate	Margin of Error	Estimate	Margin of Error				
2018/2017/2016/2015/2014/2013/2012/2011/2010	✓ Total:	18,299	+/-333	4,563	+/-209				
Table: B23003	Owner occupied	9,888	+/-445	3,804	+/-216				
TENURE (WHITE ALONE HOUSEHOLDER)	Renter occupied	8,411	+/-475	759	+/-159				
Survey/Program: American Community Survey Years: 2018;2017;2016;2015;2014;2013;2012;2011;2010 Table: B25003A									
Source: U.S. Census Bureau, d	lata.census.gov, <ht< td=""><td>tps://data.census.go</td><td>v>.</td><td></td><td></td></ht<>	tps://data.census.go	v>.						

- Select the desired survey year by clicking on the current "Product" selection. For the purposes of this case study, we are using 2014 ACS 5-year estimates.
- The header should read "2014: ACS 5-Year Estimates Detailed Tables" (see Figure 6.24).

	Q Sea	irch			
/ Search / Tables / B25003 ENURE Invey/Program: American Community Data Notes Selections 1 G	r Survey Universe: Occupied hou:	sing units TableID: B25003 Product: 123 ØØ V Jr vey Code Hide Filter Sort	2018: ACS 5-Year Estimates Detailed Tables 2017: ACS 5-Year Estimates Detailed Tables 2016: ACS 5-Year Estimates Detailed Tables	ut Download Print S	🖒 🧰 👓
	Los Angeles County, California		2015: ACS 5-Year Estimates Detailed Tables	Marin County	y, California
	Estimate	Margin of Error	2014: ACS 5-Year Estimates Detailed Tables	Estimate	Margin of Error
✓ Total:	3,242,391	+/-5,245	2012: ACS 5-Year Estimates Detailed Tables	103,034	+/-765
Owner occupied	1,503,915	+/-8,684	2011: ACS 5-Year Estimates Detailed Tables	64,490	+/-1,122
Renter occupied	1,738,476	+/-5,351	2010: ACS 5-Year Estimates Detailed Tables	38,544	+/-1,112

• Then, select "Download" from the menu at the top of the screen. In the "Download Tables" window, check that the box under "2014" is selected. Choose the "CSV" file type and click "Download" in the lower-right corner (see Figure 6.25).

Figure 6.25. Dow	nloadii	ng Tab	le: S	selectir	ng Si	urvey Y	ear	and F	ile Typ	e in	Data	.cen	sus.go	v
		Q Search												
// Search / Tables / B25003 ENURE urvey/Program: American Community Surv	ey Universe: O	ccupied housing u	inits Ta	blelD: B25003 I	Product: 20	014: ACS 5-Year Est	imates De	tailed Tables	~					
Data Notes Selections 1 Geogra	aphy Years To	opic 1 Survey	<u>123</u> Code	₩ Hide Filter	J ^r Sort	≝⁸ Transpose Table	e Margi	⁺∕– n of Error	⊂ Restore Layout	Do	wnload Pri	nt Share	More Data	More
Download Tables														
Select Table Vintages	All	2018	2017	2016	2015	2014	2013	2012	2011	2010				
B25003 5-Year														
File Type What You're Getting Image: Stress of the stress of t														
Source: U.S. Census I	Bureau, d	lata.censı	ls.go	v, <https:< td=""><td>//data</td><td>a.census.g</td><td>ov>.</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></https:<>	//data	a.census.g	ov>.							

• Then, select "Download Now" after the file is prepared (see Figure 6.26).

Figure 6.2	26. Dow	nloading	g Files ir	Data.cens	us.gov			
]								
		V Cance	're prep elling this wini	aring your	files. ownload.	Downloa	× 100%	
Source: U.S	S. Census E	Bureau, dat	ta.census.go	ov, <https: dat<="" th=""><td>a.census.gov></td><td>`.</td><td></td><td></td></https:>	a.census.gov>	` .		

• Clicking on the downloaded zip file opens a folder containing four files. Select the file with prefix "ACSDT5Y2014.B25003_data_with_overlays" to open the "Tenure" table in a spreadsheet. The initial row can be deleted since the variables are already labeled. The data provide the user with estimates of the number of rental units in all counties.

The next step is to join the 2010–2014 ACS 5-year data with Section 515 property data using a spreadsheet, and calculate the percentage of occupied rental units that are in the Section 515 program for each county.⁵⁵ Counties where Section 515 occupied units make up 10 percent or more of the entire occupied rental housing stock are considered most at risk as these loans mature. The potential loss of 10 percent or more of all rental housing units would be problematic for most counties. These at-risk counties are home to approximately 13 percent of USDA Section 515 properties containing 48,378 occupied units (see Figure 6.27).



Source: U.S. Census Bureau, 2010–2014 American Community Survey, 5-Year Estimates, and the author's analysis of publicly available USDA Multi-Family Housing 515 property data (2014).

⁵⁵ The USDA property data are publicly available at <www.sc.egov.usda.gov/data/MFH.html>. This analysis involved aggregating these property data to the county level. The county-level USDA data were then linked to the ACS data using state/county FIPS codes.

The final step is to use the data to create a map of at-risk counties across the nation (see Figure 6.28). Certain states, such as Alabama, Maine, Mississippi, and South Dakota, contain many of these counties.

Policymakers may want to monitor what occurs with these maturing loans over the next 10 to 15 years, particularly in those counties where USDA Section 515 units represent at least one in every 10 rental units. If there is a considerable amount of attrition in these affordable housing units, it would most likely be in areas with higher concentrations of Section 515 housing units. Knowing where the loss would have the greatest impact can also help policymakers decide how best to use limited resources to address any problems. This issue is difficult to address, however, because it will unfold over many years.



Source: U.S. Census Bureau, 2010–2014 American Community Survey, 5-Year Estimates, and the author's analysis of publicly available USDA Multi-Family Housing 515 property data (2014).