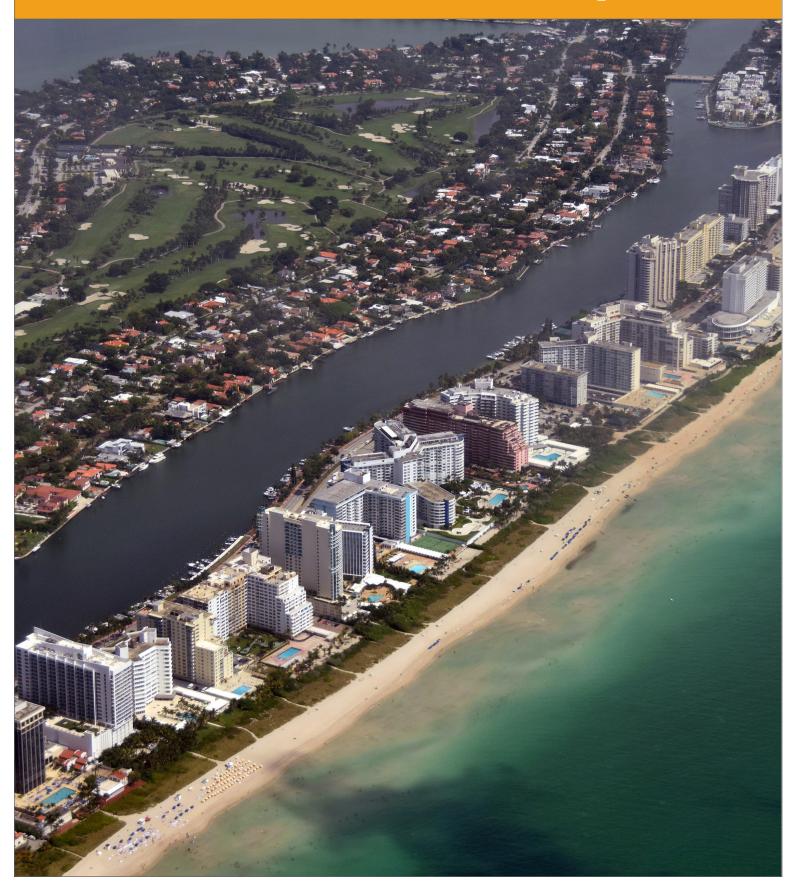
Population in the U.S. Floodplains

Center

NYU Furman

DATA BRIEF | DECEMBER 2017



Population in the U.S. Floodplains

As sea levels rise due to climate change, planners and policymakers in flood-prone areas must plan ahead to protect vulnerable residents from the effects of flooding. To plan effectively, they need vital information about the people and housing located in the floodplains. To meet this need, the NYU Furman Center, with funding from the Kresge Foundation, designed Floodzone-Data.us, a tool that describes the housing stock and population in floodplains at the national, state, county, and census tract level. These data can help policymakers assess needs and formulate plans and policies for floodplain management.

The NYU Furman Center's accompanying data brief series summarizes and highlights the data available at FloodzoneData.us. this second brief discusses the population in the nation's floodplains. The first brief, which was released in the spring of 2017, described the housing in the nation's floodplains; and the third brief will summarize the housing and population in areas affected by recent hurricanes.

Introduction

In the first brief in this series, *Housing in the U.S. Floodplains*, we provided background information about how we define floodplains and how users can access data about the housing and population in the floodplain¹ using our data tool, FloodzoneData.us. We also described the housing that lies in the nation's floodplains, finding that, for example, most of the housing units in the nation's floodplain are single-family homes and 22 percent of all housing units in the 100-year and combined floodplains were built prior to 1960. In this second brief, we focus on the more than 30 million people living in the combined floodplain (100-year or 500year floodplain) in 2011-2015.² We also take a closer look at how the population living in the floodplain varies by state. This information shows who is likely

2 Unless otherwise noted, the data in this report are based on the American Community Survey 2011-2015 five-year estimates. These data are period estimates and should be interpreted as a measure of the conditions during the full date range. to bear the eventual cost of flooding, which can help policymakers plan the most effective and geographyspecific disaster prevention and readiness programs.

Population in the Floodplain

An average of 15 million people nationwide lived in the 100-year floodplain in 2011-2015, representing nearly five percent of the nation's population. More than 30 million people—nearly 10 percent of the nation's population—lived in the combined 100- and 500-year flood-plain during this time period (Table 1). Two-thirds of the population living in the nation's combined flood-plain lived in either California, Florida, Arizona, Texas, or New York in 2011-2015.

In the vast majority of states, less than 10 percent of the state's population lived in the combined floodplain in 2011-2015. In several states, however, large shares of the population lived in the floodplain. Contrary to popular conception that floodplains are mostly a problem for coastal areas, Arizona had the largest share of the population living in the combined floodplain (64%), followed by Florida (26%), North Dakota (20%), and Louisiana (17%). See Appendix A for a state breakout of the population in the 100-year and combined floodplain.

¹FloodzoneData.us combines U.S. Census Bureau data and data from the National Subsidized Housing Database with the National Flood Hazard Layer (NFHL), which contains the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRMs). FEMA is the entity that defines the boundaries of the 100 and 500 year floodplain. The NFHL covers 71 percent of the counties in the U.S., and approximately 92 percent of the population. Some areas with flood risk are not covered by the NFHL. For more information about the NFHL see FEMA. (April 2017). The National Flood Hazard Layer. https://www.fema.gov/medialibrary-data/1492200395397-ddb37681a7ad12e4ae9365b3aa5f84ed/The_ National_Flood_Hazard_Layer.pdf.



Children and Seniors

Children and seniors may face a particular set of challenges when flooding occurs, so it is important to look at the age of those who live in the floodplain. Figure 1 shows the share of households with children and share of households with seniors, respectively, in the nation and in the 100-year and combined floodplains. In the 100-year floodplain, 30 percent of households included children and 29 percent of households included seniors.³ Of the households in the combined floodplain, 33 percent include children and 28 percent include seniors.

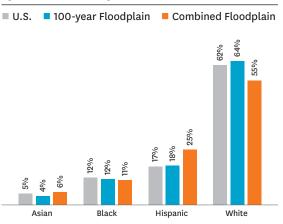
For the vast majority of states, the share of households with children and/or seniors in the floodplain approximated the shares for the state as a whole. There were, however, a few exceptions. In California, households in the combined floodplain were more likely to have children than households statewide (41% versus 36% respectively). In Delaware, 30 percent of households had at least one senior in 2011-2015, compared to 39 percent in the combined floodplain. See Appendix B for state breakout of households with children and seniors in the 100-year and combined floodplains.

Race and Ethnicity

As Figure 2 shows, the racial and ethnic composition of the total U.S. population and the population living in the 100-year floodplain were approximately the same. However, compared to the U.S. population, a higher share of the population living in the combined floodplain identified as Hispanic (25% in floodplain vs 17% nationally), and a lower share of the population in the combined floodplain was white (55% in floodplain vs 62% nationally).

oodplains. Sources: American Community Survey. J

Figure 2: Share of the Population by Race and Ethnicity, 2011-2015



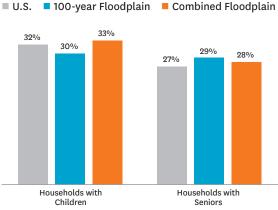
Sources: American Community Survey, U.S. Federal Emergency Management Agency, NYU Furman Center

Table 1: Population Living in the Floodplain, 2011-2015

	0		2
		Total	Share of U.S. Population
100-year floodplain		15,000,304	5%
Combined floodplain		30,239,796	10%
U.S.		316,515,021	100%

Sources: American Community Survey, U.S. Federal Emergency Management Agency, NYU Furman Center

Figure 1: Share of Households with Children and Seniors, 2011-2015



Sources: American Community Survey, U.S. Federal Emergency Management Agency, NYU Furman Center

3 The data do not identify households with both seniors and children, but undoubtedly there are households with both; and the share of households with both may be larger than the share with only children or the share with only seniors.

There is some variation between the overall population and the population living in the floodplain, however, at the state level. For example, in Arkansas, 27 percent of residents in the combined floodplain were black in 2011-2015, nearly double the statewide share of 15 percent; in Maryland, 17 percent of residents in the combined floodplain were black compared to 29 percent of residents statewide. In California, 46 percent of residents in the combined floodplain were Hispanic in 2011-2015 compared to 38 percent statewide; in New Mexico, 51 percent of the population in the combined floodplain was Hispanic compared to 47 percent statewide. In Washington State, eight percent of residents statewide were Asian compared to three percent of residents in the combined floodplain. See Appendix C for state breakout of race and ethnicity in the 100-year and combined floodplains.

Poverty in the Floodplain

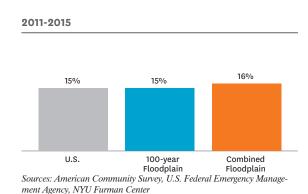
The financial resources of floodplain residents have important public policy implications, both for the ability of a community to make resilience improvements and for its ability to cope with the costs of disasters.

Population below the Poverty Line

About 15 percent of the nation's population lived in poverty in 2011-2015. The poverty rate in the 100-year floodplain was the same—15 percent—and the poverty rate in the combined floodplain was slightly higher at 16 percent (see Figure 3).

The national data, however, masks some state variation. There were several states, including Alabama, Arkansas, Colorado, Idaho, and Washington D.C., where the poverty rate in the combined floodplain in 2011-2015 was at least three percentage points higher than the statewide poverty rate. There were also two states— Michigan and Rhode Island—where the poverty rate in the combined

Figure 3: Share of Population below the Poverty Line,



floodplain was about 3 percentage points lower than the state poverty rate. See Appendix D for state breakout of poverty rates in the 100-year and combined floodplain.

Neighborhood Poverty in the Floodplain

Poverty rates reported at the national and state levels can mask deeper pockets of poverty in the floodplain. In some cases, waterfront areas may be desirable and expensive, and attract higher-income residents; whereas other floodplain areas may be less desirable, and thus more affordable for households with lower incomes. In order to examine poverty in the floodplain at the neighborhood level, we use census tract data provided by FloodzoneData.us.⁴

We first group census tracts into several categories based on the census tract's poverty rate in 2011-2015. Low-poverty census tracts are defined as those where the share of the population in poverty was less than 10 percent; moderate-poverty tracts are defined as those where the share of the population in poverty was between 10 percent and 30 percent, and highpoverty tracts are defined as those where the share of the population in poverty was greater than 30 percent.

Next, we classify census tracts as being either in the floodplain, or outside of the floodplain. "Non-floodplain" tracts have no population in the floodplain and

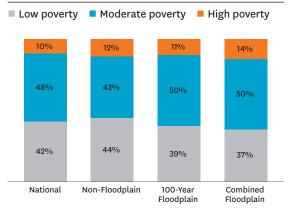
⁴ Census tracts are a small, statistical geography delineated by the U.S. Census Bureau and often are used by researchers as a neighborhood proxy. For more information, see: https://www.census.gov/geo/reference/gtc/ gtc_t.html.

"floodplain" tracts have at least some population living in the combined floodplain.

Nationwide in 2011-2015, among non-floodplain tracts, 44.3 percent of the population lived in a low-poverty tract, 43.5 percent of the population lived in a moderate-poverty tract, and 12.2 percent of the population lived in a high-poverty tract. Among tracts in the 100year floodplain, a larger share of the population lived in moderate-poverty tracts (50.4%), but a smaller share lived in both low- and high-poverty tracts. In the combined floodplain, more of the population lived in highpoverty tracts (13.7%) than in the other geographies.

Conclusion

Using data from FloodzoneData.us, we find that households in the combined floodplain are somewhat more likely to have children, but no more or less likely to have seniors. The population in the nation's 100-year floodplain is more likely to be white, while the population in the combined floodplain is more likely to be Asian and Hispanic, and less likely to be white. Finally, while the nationwide poverty rate and the poverty rate in the 100-year and combined floodplain are about the same, we find that a higher share of the population lives in a moderate- or high-poverty census tract in the 100-year and combined floodplains than in nonfloodplain census tracts. Figure 4: Share of Population Living in Low-, Moderate-, and High-Poverty Census Tracts



Sources: American Community Survey, U.S. Federal Emergency Management Agency, NYU Furman Center Note: Estimates based on census tracts covered by the National Flood Hazard Layer (NFHL). NFHL coverage varies by state.

While at the national level, the population in the floodplain largely mirrors the population more generally, disaggregating the data at the state level begins to reveal important variation, and localities may see more variation as they explore neighborhoods within their jurisdiction.

The 30 million people who live in the nation's floodplains bear the immediate brunt of flooding, which is happening more frequently as serious storms become more commonplace.⁵ In order for communities and governments to adequately prepare for this risk and address needs when flooding does occur, it is critically important to have data on the characteristics of who lives in the floodplains.

5 United States Environmental Protection Agency. See https://www.epa.gov/ climate-indicators/climate-change-indicators-coastal-flooding; ftp://texmex. mit.edu/pub/emanuel/PAPERS/Emanuel_BAMS_2017.pdf

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Appendix A: Population in the 100-Year and Combined Floodplain by State, 2011-2015

State	Total population	Population in 100-year floodplain*	Share of total	Population in Combined floodplain*	Share of total
Alabama		-	5%	•	
Alaska	4,830,620	249,644		308,864	6%
	733,375	18,899	3%	23,019	3%
Arizona	6,641,928	210,636	3%	4,242,451	64%
Arkansas	2,958,208	181,604	6%	293,071	10%
California	38,421,464	1,055,397	3%	5,894,486	15%
Colorado	5,278,906	105,484	2%	174,989	3%
Connecticut	3,593,222	196,940	5%	254,361	7%
Delaware	926,454	43,201	5%	54,352	6%
D.C.	647,484	6,419	1%	12,618	2%
Florida	19,645,772	3,551,305	18%	5,168,452	26%
Georgia	10,006,693	538,580	5%	696,821	7%
Hawaii	1,406,299	88,744	6%	104,837	7%
Idaho	1,616,547	37,052	2%	100,102	6%
Illinois	12,873,761	287,427	2%	416,081	3%
Indiana	6,568,645	273,544	4%	376,280	6%
Iowa	3,093,526	97,400	3%	118,579	4%
Kansas	2,892,987	103,774	4%	224,028	8%
Kentucky	4,397,353	201,853	5%	241,112	5%
Louisiana	4,625,253	587,248	13%	803,362	17%
Maine	1,329,100	32,352	2%	35,238	3%
Maryland	5,930,538	103,342	2%	130,000	2%
Massachusetts	6,705,586	393,397	6%	558,922	8%
Michigan	9,900,571	299,831	3%	403,688	4%
Minnesota	5,419,171	136,763	3%	180,143	3%
Mississippi	2,988,081	325,755	11%	401,193	13%
Missouri	6,045,448	163,695	3%	211,330	3%
Montana	1,014,699	32,420	3%	56,916	6%
Nebraska	1,869,365	87,758	5%	160,804	9%
Nevada	2,798,636	67,986	2%	303,071	11%
New Hampshire	1,324,201	72,415	5%	90,211	7%
New Jersey	8,904,413	451,898	5%	627,342	7%
New Mexico	2,084,117	96,886	5%	122,791	6%
New York	19,677,282	620,075	3%	989,197	5%
North Carolina	9,843,566	431,190	4%	536,714	5%
North Dakota	723,998	50,686	7%	145,410	20%
Ohio	11,573,853	365,703	3%	477,540	4%
Oklahoma	3,850,073	208,345	5%	312,568	8%
Oregon	3,938,904	132,476	3%	241,550	6%

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State	Total population	Population in 100-year floodplain*	Share of total	Population in Combined floodplain*	Share of total
Pennsylvania	12,781,730	357,386	3%	509,502	4%
Rhode Island	1,051,970	65,708	6%	96,860	9%
South Carolina	4,777,239	-	0%	15,691	0%
South Dakota	843,413	41,280	5%	56,876	7%
Tennessee	6,501,445	208,377	3%	274,960	4%
Texas	26,537,376	1,559,458	6%	2,538,087	10%
Utah	2,903,646	29,342	1%	93,134	3%
Vermont	625,723	25,022	4%	29,565	5%
Virginia	8,256,095	354,303	4%	508,129	6%
Washington	6,987,276	73,187	1%	98,269	1%
West Virginia	1,850,205	127,755	7%	200,816	11%
Wisconsin	5,742,634	238,508	4%	298,603	5%
Wyoming	576,170	11,854	2%	26,811	5%

*Estimates based on the 100-year and combined floodplains as defined by the National Flood Hazard Layer (NFHL). NFHL coverage varies by state.

Sources: American Community Survey, U.S. Federal Emergency Management Agency, NYU Furman Center

Appendix B: Households with Children and Seniors in the 100-Year and Combined Floodplain by State, 2011-2015

	H	ouseholds wit	h Children		Households wi	th Seniors
State	Share of all households		households in the combined	Share of al household	l the 100-year	Share of households in the combined floodplain*
Alabama	31%	30%	31%	28%	o 29%	29%
Alaska	36%	36%	36%	18%	b 18%	18%
Arizona	32%	28%	34%	29%	o 33%	26%
Arkansas	32%	32%	33%	28%	o 28%	27%
California	36%	36%	41%	26%	o 28%	26%
Colorado	32%	30%	31%	22%	o 22%	21%
Connecticut	32%	29%	29%	28%	30 %	30%
Delaware	31%	24%	24%	30%	40%	39%
D.C.	22%	22%	16%	20%	b 17%	22%
Florida	28%	25%	27%	34%	o 35%	34%
Georgia	35%	34%	34%	23%	o 25%	25%
Hawaii	33%	23%	25%	33%	o 31%	31%
Idaho	34%	30%	29%	26%	o 27%	24%
Illinois	32%	32%	33%	26%	o 28%	28%
Indiana	32%	31%	32%	25%	o 26%	25%
Iowa	30%	29%	29%	27%	o 27%	27%

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Households with Children

Households with Seniors

24%

27%

24%

30%

31%

29%

28%

25%

26%

28%

28%

26% 27%

28%

26%

30%

29%

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20%

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26%

31% 30%

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24%

30%

26%

27%

32%

27%

24%

Share of Share of Share of Share of households in households in households in households in Share of all the 100-year the combined Share of all the 100-year the combined State households floodplain* floodplain* households floodplain* floodplain* Kansas 33% 34% 33% 2.5% 2.5% Kentucky 32% 32% 32% 26% 27% Louisiana 33% 35% 35% 25% 24% 27% Maine 27% 27% 30% 30% 29% 29% 26% Maryland 33% 31% 27% 29% 30% Massachusetts 30% 30% Michigan 30% 29% 29% 27% 29% Minnesota 31% 33% 33% 25% 25% 34% 33% 27% 26% Mississippi 34% Missouri 32% 27% 29% 31% 31% Montana 27% 29% 29% 28% 29% Nebraska 32% 29% 30% 25% 26% Nevada 32% 28% 31% 26% 33% 27% New Hampshire 29% 28% 28% 29% 29% 28% 27% New Jersey 34% 30% 32% 32% 32% 28% 29% New Mexico New York 31% 29% 29% 28% 30% North Carolina 32% 30% 30% 26% 29% North Dakota 29% 32% 27% 24% 22% Ohio 30% 30% 27% 28% 30% Oklahoma 33% 34% 33% 26% 28% Oregon 29% 27% 28% 28% 32% Pennsylvania 29% 28% 28% 29% 30% Rhode Island 29% 29% 29% 28% 30% South Carolina 31% 28% 31% 26% South Dakota 29% 29% 25% 30% Tennessee 31% 31% 31% 27% 27% Texas 38% 38% 38% 23% 23% Utah 42% 41% 39% 21% 24% Vermont 27% 26% 26% 28% 30% 25% 32% Virginia 33% 32% 26% Washington 31% 32% 32% 25% 27% West Virginia 27% 27% 27% 31% 32% Wisconsin 30% 30% 26% 30% 28% 30% 31% 29% 24% 24% Wyoming

*Estimates based on the 100-year and combined floodplains as defined by the National Flood Hazard Layer (NFHL).

NFHL coverage varies by state.

Sources: American Community Survey, U.S. Federal Emergency Management Agency, NYU Furman Center

Appendix C: Population by Race and Ethnicity in the 100-Year and Combined Floodplain by State, 2011-2015

		Asian, Non-H	ispanic		Black, Non-Hispani		
State	Share of population		Share of population in the combined floodplain*		Share of population	Share of population in the 100-year floodplain*	Share of population in the combined floodplain*
Alabama	1%	1%	1%		26%	31%	33%
Alaska	6%	4%	5%	_	3%	2%	2%
Arizona	3%	2%	4%	_	4%	3%	5%
Arkansas	1%	1%	1%	_	15%	18%	27%
California	14%	12%	15%	_	6%	4%	6%
Colorado	3%	4%	3%	_	4%	2%	3%
Connecticut	4%	4%	4%	_	10%	9%	9%
Delaware	4%	2%	2%	_	21%	13%	15%
D.C.	4%	2%	3%	_	48%	76%	59%
Florida	3%	2%	3%	_	15%	11%	15%
Georgia	4%	3%	3%	_	31%	28%	29%
Hawaii	37%	37%	36%	-	2%	2%	1%
Idaho	1%	1%	2%	-	1%	1%	1%
Illinois	5%	4%	4%	-	14%	8%	12%
Indiana	2%	2%	2%	-	9%	7%	8%
Iowa	2%	2%	2%	-	3%	2%	3%
Kansas	3%	2%	2%	-	6%	4%	5%
Kentucky	1%	1%	1%	-	8%	6%	5%
Louisiana	2%	2%	1%	-	32%	26%	31%
Maine	1%	1%	1%	-	1%	1%	1%
Maryland	6%	4%	4%	-	29%	17%	17%
Massachusetts	6%	5%	5%	-	6%	4%	4%
Michigan	3%	2%	3%	_	14%	6%	8%
Minnesota	4%	3%	3%	-	5%	2%	2%
Mississippi	1%	1%	1%	_	37%	37%	38%
Missouri	2%	1%	1%	-	11%	7%	9%
Montana	1%	0%	1%	_	0%	0%	0%
Nebraska	2%	2%	1%	-	5%	3%	2%
Nevada	8%	4%	9%	-	8%	4%	7%
New Hampshire	2%	2%	2%	-	1%	1%	1%
New Jersey	9%	11%	10%	-	13%	8%	10%
New Mexico	1%	1%	1%	-	2%	2%	2%
New York	8%	6%	7%	-	14%	11%	13%
North Carolina	2%	2%	2%	-	21%	20%	20%
North Dakota	1%	1%	2%	-	2%	1%	2%
	2%	1%		-	12%	7%	

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Asian,	Non-	Hich	anic
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State	Share of population	Share of population in the 100-year floodplain*	Share of population in the combined floodplain*
Oklahoma	2%	1%	2%
Oregon	4%	3%	3%
Pennsylvania	3%	2%	2%
Rhode Island	3%	2%	2%
South Carolina	1%	—	2%
South Dakota	1%	1%	1%
Tennessee	2%	2%	2%
Texas	4%	5%	6%
Utah	2%	1%	2%
Vermont	1%	1%	1%
Virginia	6%	4%	4%
Washington	8%	3%	3%
West Virginia	1%	0%	1%
Wisconsin	2%	2%	2%
Wyoming	1%	1%	1%

	Black, Non-Hispanic			
Share of population	Share of population in the 100-year floodplain*			
7%	6%	7%		
2%	1%	1%		
11%	8%	9%		
5%	2%	2%		
27%	_	27%		
2%	2%	2%		
17%	16%	18%		
12%	13%	15%		
1%	1%	2%		
1%	1%	1%		
19%	23%	25%		
3%	1%	1%		
3%	3%	4%		
6%	2%	2%		
1%	2%	1%		

Hispanic, Any Race

		mapanic, An	ynacc
State	Share of population		Share of population in the combined floodplain*
Alabama	4%	4%	4%
Alaska	7%	5%	5%
Arizona	30%	29%	32%
Arkansas	7%	7%	6%
California	38%	40%	46%
Colorado	21%	18%	22%
Connecticut	15%	13%	13%
Delaware	9%	7%	7%
D.C.	10%	4%	5%
Florida	24%	25%	25%
Georgia	9%	8%	9%
Hawaii	10%	8%	9%
Idaho	12%	11%	12%
Illinois	16%	14%	14%
Indiana	6%	5%	6%
Iowa	5%	4%	4%
Kansas	11%	9%	14%
Kentucky	3%	3%	3%

White, Non-H	ispanic
Share of	Share of
population in	population in

Share of population	population in the 100-year floodplain*	
66%	62%	60%
62%	63%	60%
57%	61%	56%
74%	71%	64%
39%	41%	30%
69%	74%	69%
69%	72%	71%
64%	76%	74%
36%	16%	31%
56%	60%	55%
55%	59%	57%
23%	27%	27%
83%	84%	82%
62%	72%	68%
81%	84%	81%
87%	91%	90%
77%	81%	75%
86%	89%	89%

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stateppulation i sharedppulation i sharedp			Hispanic, Any Race			White, Non-Hispanic		
Maine 1% 1% 9% 6% 6% 53% 71% 71% Maryland 9% 6% 6% 6% 53% 71% 71% Massachusetts 11% 8% 9% 74% 81% 80% Michigan 5% 4% 4% 82% 89% 83% Minnesota 5% 4% 4% 82% 89% 88% Mississippi 3% 3% 4% 80% 86% 83% Netrasa 10% 10% 13% 80% 86% 83% Netrasa 28% 19% 25% 52% 67% 54% New Hampshire 3% 2% 2% 93% 38% 38% New Mexico 47% 16% 19% 39% 38% 39% 39% 38% 88% 86% 86% 86% 86% 86% 86% 86% 86% 86% 86% 86%	State		population in the 100-year	population in the combined		population in the 100-year	Share of population in the combined floodplain*	
Maryland 9% 6% 6% 53% 71% 71% Massachusetts 11% 8% 9% 74% 81% 80% Michigan 5% 4% 4% 82% 89% 88% Minnesota 5% 4% 4% 82% 89% 88% Mississippi 3% 3% 3% 80% 86% 83% Missouri 4% 3% 3% 80% 89% 89% Netrata 10% 10% 3% 3% 80% 80% 80% 80% Nevada 28% 19% 25% 57% 56% 62% New Hampshire 3% 2% 2% 91% 94% 39% New York 18% 16% 19% 57% 65% 58% North Carolina 9% 7% 7% 86% 88% Ohdona 10% 3% 3% 80% 86% 86	Louisiana	5%	4%	3%	59%	67%	62%	
Massachusetts 11% 8% 9% Michigan 5% 4% 4% 5% 4% 4% 3% 3% 4% Mississippi 3% 3% 4% Missuri 4% 3% 3% 4% 3% 3% 80% 88% Missuri 4% 3% 3% 80% 88% Montana 3% 3% 3% 80% 88% 83% Newtaska 10% 10% 13% 81% 83% 82% New Hampshire 3% 2% 2% 67% 54% New Hampshire 3% 2% 2% 67% 65% New York 18% 16% 19% 57% 65% 58% North Dakota 3% 3% 3% 80% 86% 86% Ohio 3% 3% 3% 67% 69% 68% South Dakota	Maine	1%	1%	1%	94%	95%	95%	
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Minesota 5% 4% 4% 82% 89% 88% Mississippi 3% 3% 4% 57% 57% 56% Missouri 4% 3% 3% 80% 86% 83% Montana 3% 3% 3% 80% 86% 83% Mortana 3% 3% 3% 80% 86% 83% Nebraska 10% 10% 13% 81% 83% 82% New datse 28% 19% 25% 52% 67% 54% New Harsey 19% 15% 17% 57% 65% 52% New Mexico 47% 51% 51% 39% 36% 36%	Massachusetts	11%	8%	9%	74%	81%	80%	
Mississippi 3% 3% 4% 57% 57% 56% Missouri 4% 3% 3% 3% 80% 86% 83% Montana 3% 3% 3% 80% 86% 83% Nebraska 10% 10% 13% 81% 83% 82% Nevada 28% 19% 25% 52% 67% 54% New Hampshire 3% 2% 2% 91% 94% 93% New Mexico 47% 51% 51% 39% 38% 39% New York 18% 16% 19% 57% 65% 58% North Dakota 3% 3% 3% 80% 86% 68% Obio 3% 3% 3% 80% 86% 68% Obio 3% 3% 3% 80% 86% 88% Obio 10% 11% 77% 81% 80%	Michigan	5%	4%	4%	76%	86%	83%	
Missouri 4% 3% 3% 80% 86% 83% Montana 3% 3% 3% 3% 87% 90% 90% Nebraska 10% 10% 13% 81% 83% 82% Nevada 28% 19% 25% 52% 67% 54% New Hampshire 3% 2% 2% 91% 94% 93% New Mexico 47% 51% 51% 57% 65% 62% New York 18% 16% 19% 3% 3% 3% 3% 86% 86% 66% North Carolina 9% 7% 7% 65% 58% 66% 86%	Minnesota	5%	4%	4%	82%	89%	88%	
Montana 3% 3% 3% 87% 90% 90% Nebraska 10% 10% 13% 81% 83% 82% Nevada 28% 19% 25% 52% 67% 54% New Hampshire 3% 2% 2% 91% 94% 93% New Jersey 19% 15% 17% 57% 65% 62% New Mexico 47% 51% 51% 39% 38% 39% North Carolina 9% 7% 7% 64% 68% 68% North Dakota 3% 3% 3% 80% 86% 86% Obio 3% 3% 3% 80% 86% 86% Okahoma 10% 8% 9% 67% 64% 80% Oregon 12% 10% 11% 77% 81% 80% South Carolina 5% - 5% 64% - 64%	Mississippi	3%	3%	4%	57%	57%	56%	
Nebraska 10% 10% 13% 81% 83% 82% Nevada 28% 19% 25% 52% 67% 54% New Hampshire 3% 2% 2% 91% 94% 93% New Jersey 19% 15% 17% 57% 65% 62% New Mexico 47% 51% 51% 39% 38% 39% North Carolina 9% 7% 7% 64% 68% 68% North Dakota 3% 3% 3% 80% 86% 86% 68% Oblio 3% 3% 3% 80% 86% 86% 86% Oregon 12% 10% 11% 77% 81% 80% South Carolina 5% - 5% 64% - 64% South Carolina 5% 5% 6% 75% 75% 72% South Carolina 5% 5% 6% 75% </td <td>Missouri</td> <td>4%</td> <td>3%</td> <td>3%</td> <td>80%</td> <td>86%</td> <td>83%</td>	Missouri	4%	3%	3%	80%	86%	83%	
Nevada 28% 19% 25% 67% 54% New Hampshire 3% 2% 2% 91% 94% 93% New Jersey 19% 15% 17% 57% 65% 62% New Mexico 47% 51% 51% 39% 38% 39% New York 18% 16% 19% 57% 65% 58% North Carolina 9% 7% 7% 64% 68% 68% North Dakota 3% 3% 3% 80% 86% 86% Oblio 3% 3% 3% 80% 86% 86% Okahoma 10% 8% 9% 67% 69% 68% Oregon 12% 10% 11% 77% 81% 80% South Carolina 5% - 5% 6% 75% 75% 72% South Dakota 3% 4% 4% 83% 86% 85%	Montana	3%	3%	3%	87%	90%	90%	
New Hampshire 3% 2% 2% New Jersey 19% 15% 17% 57% 65% 62% New Mexico 47% 51% 51% 39% 38% 39% New York 18% 16% 19% 57% 65% 58% North Carolina 9% 7% 7% 64% 68% 68% North Dakota 3% 3% 3% 3% 87% 90% 88% Obio 3% 3% 3% 80% 86% 86% Oklahoma 10% 8% 9% 67% 69% 68% Oregon 12% 10% 11% 77% 81% 80% South Carolina 5% - 5% 64% - 64% South Dakota 3% 38% 37% 44% 42% 40% Vitah 13% 12% 16% 80% 82% 76% Vitah	Nebraska	10%	10%	13%	81%	83%	82%	
New Jersey 19% 15% 17% 57% 65% 62% New Mexico 47% 51% 51% 39% 38% 39% New York 18% 16% 19% 57% 65% 58% North Carolina 9% 7% 7% 64% 68% 68% North Dakota 3% 3% 3% 87% 90% 88% Ohio 3% 3% 3% 80% 86% 86% Ohio 3% 3% 3% 80% 86% 86% Ohio 3% 3% 90% 67% 69% 68% Ohio 10% 8% 9% 67% 69% 68% Oregon 12% 10% 11% 77% 81% 80% South Carolina 5% - 5% 64% - 64% South Dakota 3% 38% 37% 80% 82% 76%	Nevada	28%	19%	25%	52%	67%	54%	
New Mexico 47% 51% 51% 39% 38% 39% New York 18% 16% 19% 57% 65% 58% North Carolina 9% 7% 7% 64% 68% 68% North Dakota 3% 3% 3% 87% 90% 88% Ohio 3% 3% 3% 87% 90% 88% Ohio 3% 3% 3% 80% 86% 86% Oklahoma 10% 8% 9% 67% 69% 68% Oregon 12% 10% 11% 77% 81% 80% South Carolina 5% - 5% 64% 87% South Carolina 5% - 5% 64% - 64% South Carolina 5% 5% 6% 75% 75% 72% Iennessee 5% 5% 6% 75% 75% 72% I	New Hampshire	3%	2%	2%	91%	94%	93%	
New York 18% 16% 19% North Carolina 9% 7% 7% North Dakota 3% 3% 3% North Dakota 3% 3% 3% Ohio 3% 3% 3% Ohio 3% 3% 3% Oklahoma 10% 8% 9% Oregon 12% 10% 11% Pennsylvania 6% 4% 5% Rhode Island 14% 7% 7% South Carolina 5% - 5% South Dakota 3% 4% 4% South Dakota 3% 4% 4% South Dakota 3% 38% 37% Vermont 2% 2% 2% Virginia 9% 7% 63% 62% Yirginia 1% 1% 1% 1% Yirginia 1% 1% 1% 9% Yirginia 6%	New Jersey	19%	15%	17%	57%	65%	62%	
North Carolina 9% 7% 7% North Dakota 3% 3% 3% 87% 90% 88% Dhio 3% 3% 3% 80% 86% 86% Dhio 3% 3% 3% 80% 86% 86% Dhio 3% 3% 3% 80% 86% 86% Dhio 10% 8% 9% 67% 69% 68% Oklahoma 10% 8% 9% 67% 69% 68% Oregon 12% 10% 11% 77% 81% 80% Pennsylvania 6% 4% 5% 78% 84% 82% South Carolina 5% - 5% 6% 75% 75% 72% South Dakota 3% 4% 4% 83% 86% 85% Vermont 2% 2% 2% 94% 94% 94% Virginia 9%	New Mexico	47%	51%	51%	39%	38%	39%	
North Dakota 3% 3% 3% 3% 3% 3% 3% 87% 90% 88% Ohio 3% 3% 3% 3% 80% 86%	New York	18%	16%	19%	57%	65%	58%	
Ohio 3% 3% 3% 80% 86% 86% Oklahoma 10% 8% 9% 67% 69% 68% Oregon 12% 10% 11% 77% 81% 80% Pennsylvania 6% 4% 5% 78% 84% 82% Rhode Island 14% 7% 7% 86% 87% South Carolina 5% - 5% 64% - 64% South Dakota 3% 4% 4% 83% 86% 85% Tennessee 5% 5% 6% 75% 75% 72% Vitah 13% 12% 16% 80% 82% 76% Washington 12% 15% 14% 71% 75% 76% West Virginia 1% 1% 1% 93% 93% 92% Wisconsin 6% 4% 5% 82% 90% 89%	North Carolina	9%	7%	7%	64%	68%	68%	
Doklahoma 10% 8% 9% 67% 69% 68% Dregon 12% 10% 11% 77% 81% 80% Pennsylvania 6% 4% 5% 78% 84% 82% Rhode Island 14% 7% 7% 64% 66% 87% South Carolina 5% - 5% 64% - 64% South Dakota 3% 4% 4% 83% 86% 85% Fennessee 5% 5% 6% 75% 75% 72% Utah 13% 12% 16% 80% 82% 66% 61% Washington 12% 15% 14% 71% 75% 76% West Virginia 1% 1% 1% 93% 93% 92% Wisconsin 6% 4% 5% 82% 90% 89%	North Dakota	3%	3%	3%	87%	90%	88%	
Dregon 12% 10% 11% 77% 81% 80% Pennsylvania 6% 4% 5% 78% 84% 82% Rhode Island 14% 7% 7% 74% 86% 87% South Carolina 5% 5% 64% 64% South Dakota 3% 4% 4% 83% 86% 85% Fennessee 5% 5% 6% 75% 75% 72% Itah 13% 12% 16% 80% 82% 76% Vermont 2% 2% 2% 94% 94% 94% Washington 12% 15% 14% 71% 75% 76% West Virginia 1% 1% 1% 1% 93% 93% 92% Wisconsin 6% 4% 5% 82% 90% 89%	Ohio	3%	3%	3%	80%	86%	86%	
Pennsylvania 6% 4% 5% 78% 84% 82% Rhode Island 14% 7% 7% 74% 86% 87% South Carolina 5% 5% 64% 64% South Dakota 3% 4% 4% 83% 86% 85% Fennessee 5% 5% 6% 75% 75% 72% Texas 38% 38% 37% 44% 42% 40% Vermont 2% 2% 2% 94% 94% 94% Virginia 9% 7% 7% 63% 62% 61% West Virginia 1% 1% 1% 93% 93% 92% Wisconsin 6% 4% 5% 82% 90% 89%	Oklahoma	10%	8%	9%	67%	69%	68%	
Rhode Island 14% 7% 7% 74% 86% 87% South Carolina 5% 5% 64% 64% South Dakota 3% 4% 4% 83% 86% 85% South Dakota 3% 4% 4% 83% 86% 85% Fennessee 5% 5% 6% 75% 75% 72% Texas 38% 38% 37% 44% 42% 40% Utah 13% 12% 16% 80% 82% 76% Virginia 9% 7% 7% 63% 62% 61% Washington 12% 15% 14% 71% 75% 76% Wisconsin 6% 4% 5% 82% 90% 89%	Oregon	12%	10%	11%	77%	81%	80%	
South Carolina 5% - 5% South Dakota 3% 4% 4% 83% 86% 85% South Dakota 3% 4% 4% 83% 86% 85% Tennessee 5% 5% 6% 75% 75% 72% Texas 38% 38% 37% 44% 42% 40% Utah 13% 12% 16% 80% 82% 76% Vermont 2% 2% 2% 94% 94% 94% Virginia 9% 7% 7% 63% 62% 61% West Virginia 1% 1% 1% 93% 93% 92% Wisconsin 6% 4% 5% 82% 90% 89%	Pennsylvania	6%	4%	5%	78%	84%	82%	
South Dakota 3% 4% 4% 83% 86% 85% Fennessee 5% 5% 6% 75% 75% 72% Texas 38% 38% 37% 44% 42% 40% Utah 13% 12% 16% 80% 82% 76% Vermont 2% 2% 2% 94% 94% 94% Virginia 9% 7% 7% 63% 62% 61% Washington 12% 15% 14% 93% 93% 92% West Virginia 1% 1% 1% 93% 93% 92%	Rhode Island	14%	7%	7%	74%	86%	87%	
Tennessee 5% 5% 6% 75% 75% 72% Texas 38% 38% 37% 44% 42% 40% Utah 13% 12% 16% 80% 82% 76% Vermont 2% 2% 2% 94% 94% 94% Virginia 9% 7% 7% 63% 62% 61% Washington 12% 15% 14% 71% 75% 76% West Virginia 1% 1% 5% 82% 90% 89%	South Carolina	5%	_	5%	64%	_	64%	
Texas 38% 38% 37% 44% 42% 40% Utah 13% 12% 16% 80% 82% 76% Vermont 2% 2% 2% 94% 94% 94% Virginia 9% 7% 7% 63% 62% 61% Washington 12% 15% 14% 71% 75% 76% West Virginia 1% 1% 1% 82% 90% 89%	South Dakota	3%	4%	4%	83%	86%	85%	
Utah 13% 12% 16% 80% 82% 76% Vermont 2% 2% 2% 94% <td>Tennessee</td> <td>5%</td> <td>5%</td> <td>6%</td> <td>75%</td> <td>75%</td> <td>72%</td>	Tennessee	5%	5%	6%	75%	75%	72%	
Vermont 2% 2% 94% </td <td>Texas</td> <td>38%</td> <td>38%</td> <td>37%</td> <td>44%</td> <td>42%</td> <td>40%</td>	Texas	38%	38%	37%	44%	42%	40%	
Virginia 9% 7% 7% 63% 62% 61% Washington 12% 15% 14% 71% 75% 76% West Virginia 1% 1% 1% 93% 93% 92% Wisconsin 6% 4% 5% 82% 90% 89%	Utah	13%	12%	16%	80%	82%	76%	
Washington 12% 15% 14% 71% 75% 76% West Virginia 1% 1% 1% 93% 93% 92% Wisconsin 6% 4% 5% 82% 90% 89%	Vermont	2%	2%	2%	94%	94%	94%	
West Virginia 1% 1% 93% 93% 92% Wisconsin 6% 4% 5% 82% 90% 89%	Virginia	9%	7%	7%	63%	62%	61%	
Wisconsin 6% 4% 5% 82% 90% 89%	Washington	12%	15%	14%	71%	75%	76%	
	West Virginia	1%	1%	1%	93%	93%	92%	
Wyoming 10% 9% 9% 84% 83% 84%	Wisconsin	6%	4%	5%	82%	90%	89%	
	Wyoming	10%	9%	9%	84%	83%	84%	

*Estimates based on the 100-year and combined floodplains as defined by the National Flood Hazard Layer (NFHL).

NFHL coverage varies by state.

Sources: American Community Survey, U.S. Federal Emergency Management Agency, NYU Furman Center

Appendix D: Poverty Rate in the 100-Year and Combined Floodplain by State, 2011-2015

State	Statewide poverty rate	Poverty rate in the 100-year floodplain*	Poverty rate in the combined floodplain*
Alabama	19%	. 21%	22%
Alaska	10%	9%	10%
Arizona	18%	17%	17%
Arkansas	19%	20%	22%
California	16%	18%	18%
Colorado	13%	14%	16%
Connecticut	11%	9%	9%
Delaware	12%	10%	11%
D.C.	18%	30%	21%
Florida	17%	15%	15%
Georgia	18%	18%	18%
Hawaii	11%	12%	12%
Idaho	15%	16%	18%
Illinois	14%	12%	12%
Indiana	15%	14%	15%
Iowa	12%	11%	12%
Kansas	14%	12%	16%
Kentucky	19%	21%	21%
Louisiana	20%	18%	20%
Maine	14%	13%	14%
Maryland	10%	11%	11%
Massachusetts	12%	9%	9%
Michigan	12%	13%	14%
Minnesota	11%	7%	9%
Mississippi	23%	24%	23%
Missouri	16%	15%	15%
Montana	15%	13%	13%
Nebraska	13%	13%	13%
Nevada	15%	16%	15%
New Hampshire	9%	8%	8%
New Jersey	11%	10%	11%
New Mexico	21%	21%	21%
New York	16%	14%	16%
North Carolina	10%	17%	18%
North Dakota	17%	8%	13%
Ohio	12%	15%	15%
Oklahoma	17%	15%	15%
Oregon	17%	18%	10%
Continued on page 13.	10%	± / 70	± / %

Continued on page 13.

State	Statewide poverty rate	Poverty rate in the 100-year floodplain*	Poverty rate in the combined floodplain*
Pennsylvania	13%	13%	13%
Rhode Island	14%	10%	11%
South Carolina	18%	-	16%
South Dakota	14%	13%	13%
Tennessee	18%	17%	17%
Texas	17%	18%	18%
Utah	12%	11%	15%
Vermont	12%	12%	12%
Virginia	12%	13%	13%
Washington	13%	14%	15%
West Virginia	18%	19%	19%
Wisconsin	13%	10%	11%
Wyoming	11%	11%	12%

*Estimates based on the 100-year and combined floodplains as defined by the National Flood Hazard Layer (NFHL).

NFHL coverage varies by state.

Sources: American Community Survey, U.S. Federal Emergency Management Agency, NYU Furman Center

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The NYU Furman Center advances research and debate on housing, neighborhoods, and urban policy.