

APPENDIX H – ENHANCED ANALYSIS OF VULNERABLE POPULATIONS AND PROTECTED CLASSES

Assessing Puerto Rico’s Vulnerable Populations and Protected Classes

The Fair Housing Act (42 U.S.C. § 3601 *et seq.*) protects people from discrimination when renting or buying a home, getting a mortgage, seeking housing assistance, or engaging in other housing-related activities. Specifically, the Fair Housing Act prohibits housing discrimination based on race, color, national origin, religion, sex, familial status, or disability. Additional protections apply to federally assisted energy projects for housing, including certain CDBG-DR funded activities, including consideration of racially and ethnically concentrated areas and concentrated areas of poverty. Understanding where different racial and ethnic populations and others with pre-existing social vulnerabilities reside across disaster-impacted areas can be useful for emergency response, recovery, mitigation planning, and program development.

86 FR 32681 requires grantees to “describe how the funds will be used to address the needs of vulnerable populations, protected classes, and underserved communities, how the funded activities primarily benefit low- and moderate-income persons, and how the planned improvements will be designed and implemented to address the impacts of climate change.” The information in this section, in addition to the information throughout the Action Plan, provides this description.

Puerto Rico’s Added Focus on Protected Classes

Puerto Rico’s socio-economic composition summarized in Table 6 of the CDBG-DR Electrical Power Systems Enhancements and Improvements Action Plan, highlights specific population differences between Puerto Rico and the U.S. as a whole. Several socio-economic characteristics are markedly different across Puerto Rico compared to the U.S., putting residents at an immediate disadvantage of their capacity to prepare for, respond to, or recover from emergencies, such as natural disasters. This “social vulnerability” is a well-known and thoroughly documented phenomena that is explained by a specific set of socio-demographic indicators culled from disaster case study literature and combined using statistical analysis to highlight pockets of vulnerability at various geographic scales.

The social vulnerability index implemented in Puerto Rico’s CDBG-DR risk assessment includes at least ten (10) indicators of protected classes, including: race, sex, familial status, and certain measure of disability. Indeed, each of the seven (7) “components” of Puerto Rico’s 2018 social vulnerability index (Table 7 of the Action Plan) includes protected class categories, including:

- Component 1: Poverty and Class, includes educational attainment and limited English Proficiency (LEP) – each of which contribute to a lack of ability to deal with the consequences of a disaster;
- Component 2: Renters and Access, includes Female Headed Households;

- Component 3: Age (Old), includes both children (under 18) and elderly (over 65) populations as well as social security beneficiaries who often have disabilities;
- Component 4: Gender and Employment, includes the percentage of females participating in the labor force;
- Component 5: Lack of Insurance, Race (Black), and Service Sector Employment, includes the percentage of Black populations;
- Component 6: Ethnicity (Hispanic) and Special Needs, includes Asian and Hispanic populations; and
- Component 7: Substandard Housing and Race (Native American), includes Native American populations.

However, several protected classes, identified in the Fair Housing Act¹ are not included in the social vulnerability index. Recognizing the importance of identifying these populations and building programs that do not disadvantage them requires additional analysis beyond that provided by the social vulnerability index. To the extent possible, extra analytic steps were taken to ensure that these protected classes are identified and monitored throughout the CDBG-DR process.

Identifying Puerto Rico’s Populations by Disability

Identifying and accounting for persons with functional diversity is an essential facet of vulnerability assessment, including disaster mitigation activities. To this end, U.S. Census disability and “difficulty” data for Puerto Rico was assessed to identify where the populations with functional diversity reside. The Census has evolved its understanding (and measurement) of disabilities. Beginning in the American Community Survey (ACS) 2008, the Census moved from the strict use of the term disability to a more broadly inclusive term of “difficulty”. Figure 31 in the CDBG-DR Electrical Power Systems Enhancements and Improvements Action Plan includes the Census’ definitions of several disabilities/difficulties, such as hearing difficulty; vision difficulty; cognitive difficulty; ambulatory difficulty; self-care difficulty, and independent living difficulty.

While persons with functional diversity reside throughout Puerto Rico, certain municipalities have larger concentrations of people with disabilities and difficulties. In fact, nine (9) municipalities have more than 20% of their respective populations categorized as disabled or with difficulties in at least one (1) of the six (6) categories accounted for by the U.S. Census. Those municipalities are: Bayamón, Cataño, Culebra, Guánica, Loíza, Mayagüez, Orocovi, Sabana Grande, and Yauco. The full data set for all municipalities is included below in Table 1.

Municipality	Total Population (2019)	Hearing difficulty	Vision difficulty	Cognitive difficulty	Ambulatory difficulty	Self-care difficulty	Independent living difficulty
Adjuntas	17,837	668 (3.75%)	784 (4.4%)	2074 (11.63%)	2932 (16.44%)	1361 (7.63%)	2374 (13.31%)

¹ Housing Discrimination under the Fair Housing Act, https://www.hud.gov/program_offices/fair_housing_equal_opp/fair_housing_act_overview.

Municipality	Total Population (2019)	Hearing difficulty	Vision difficulty	Cognitive difficulty	Ambulatory difficulty	Self-care difficulty	Independent living difficulty
Aguada	37,940	3214 (8.47%)	5542 (14.61%)	4551 (12%)	6958 (18.34%)	1257 (3.31%)	6939 (18.29%)
Aguadilla	51,556	4288 (8.32%)	5301 (10.28%)	4357 (8.45%)	9423 (18.28%)	2525 (4.9%)	8371 (16.24%)
Aguas Buenas	25,638	1970 (7.68%)	3433 (13.39%)	3095 (12.07%)	4411 (17.2%)	1746 (6.81%)	3568 (13.92%)
Aibonito	22,955	946 (4.12%)	2497 (10.88%)	2112 (9.2%)	2884 (12.56%)	844 (3.68%)	2256 (9.83%)
Añasco	26,847	1866 (6.95%)	3950 (14.71%)	2514 (9.36%)	5216 (19.43%)	994 (3.7%)	4669 (17.39%)
Arecibo	84,721	3238 (3.82%)	4961 (5.86%)	8297 (9.79%)	11722 (13.84%)	4650 (5.49%)	11839 (13.97%)
Arroyo	17,791	488 (2.74%)	466 (2.62%)	1118 (6.28%)	2490 (14%)	486 (2.73%)	1258 (7.07%)
Barceloneta	24,069	776 (3.22%)	657 (2.73%)	1297 (5.39%)	1537 (6.39%)	763 (3.17%)	1550 (6.44%)
Barranquitas	28,256	835 (2.96%)	1122 (3.97%)	2630 (9.31%)	3052 (10.8%)	859 (3.04%)	2104 (7.45%)
Bayamón	173,096	14547 (8.4%)	14074 (8.13%)	40099 (23.17%)	40747 (23.54%)	22198 (12.82%)	33775 (19.51%)
Cabo Rojo	48,363	1011 (2.09%)	983 (2.03%)	3290 (6.8%)	3250 (6.72%)	1470 (3.04%)	5046 (10.43%)
Caguas	128,334	7479 (5.83%)	10203 (7.95%)	16594 (12.93%)	18703 (14.57%)	6254 (4.87%)	14917 (11.62%)
Camuy	31,453	875 (2.78%)	1074 (3.41%)	2614 (8.31%)	3663 (11.65%)	1890 (6.01%)	4110 (13.07%)
Canóvanas	45,414	2032 (4.47%)	2190 (4.82%)	3806 (8.38%)	5695 (12.54%)	2221 (4.89%)	5176 (11.4%)
Carolina	153,138	7184 (4.69%)	7887 (5.15%)	16133 (10.53%)	20628 (13.47%)	8616 (5.63%)	16687 (10.9%)
Cataño	24,217	3583 (14.8%)	2049 (8.46%)	5601 (23.13%)	6471 (26.72%)	2466 (10.18%)	5752 (23.75%)
Cayey	43,743	2981 (6.81%)	6787 (15.52%)	6659 (15.22%)	8414 (19.24%)	2391 (5.47%)	6885 (15.74%)
Ceiba	11,505	199 (1.73%)	314 (2.73%)	469 (4.08%)	712 (6.19%)	494 (4.29%)	927 (8.06%)
Ciales	16,498	1035 (6.27%)	2299 (13.94%)	1932 (11.71%)	2491 (15.1%)	844 (5.12%)	2145 (13%)
Cidra	39,493	2720 (6.89%)	4002 (10.13%)	6404 (16.22%)	6889 (17.44%)	3290 (8.33%)	5808 (14.71%)
Coamo	38,857	1567 (4.03%)	6030 (15.52%)	3096 (7.97%)	2837 (7.3%)	1083 (2.79%)	3477 (8.95%)
Comerio	19,213	1428 (7.43%)	1555 (8.09%)	2808 (14.62%)	3111 (16.19%)	1602 (8.34%)	3150 (16.4%)
Corozal	33,262	1310 (3.94%)	2057 (6.18%)	2836 (8.53%)	3424 (10.29%)	1699 (5.11%)	3644 (10.96%)
Culebra	1,311	127 (9.69%)	32 (2.44%)	131 (9.99%)	350 (26.7%)	151 (11.52%)	354 (27%)
Dorado	36,697	747 (2.04%)	1161 (3.16%)	2136 (5.82%)	2395 (6.53%)	1075 (2.93%)	2780 (7.58%)
Fajardo	30,976	1907 (6.16%)	3101 (10.01%)	4105 (13.25%)	5214 (16.83%)	2456 (7.93%)	5263 (16.99%)
Florida	11,684	350 (3%)	402 (3.44%)	601 (5.14%)	1082 (9.26%)	477 (4.08%)	1213 (10.38%)
Guánica	16,280	1496 (9.19%)	6520 (40.05%)	2594 (15.93%)	5968 (36.66%)	2374 (14.58%)	4020 (24.69%)
Guayama	38,730	845 (2.18%)	1265 (3.27%)	3164 (8.17%)	6138 (15.85%)	1127 (2.91%)	2403 (6.2%)

Municipality	Total Population (2019)	Hearing difficulty	Vision difficulty	Cognitive difficulty	Ambulatory difficulty	Self-care difficulty	Independent living difficulty
Guayanilla	18,447	561 (3.04%)	621 (3.37%)	1154 (6.26%)	1771 (9.6%)	757 (4.1%)	1635 (8.86%)
Guaynabo	86,512	5729 (6.62%)	5367 (6.2%)	11744 (13.57%)	13605 (15.73%)	6649 (7.69%)	11980 (13.85%)
Gurabo	46,721	1623 (3.47%)	2897 (6.2%)	3593 (7.69%)	3651 (7.81%)	1384 (2.96%)	3511 (7.51%)
Hatillo	39,888	351 (0.88%)	491 (1.23%)	1539 (3.86%)	1646 (4.13%)	1030 (2.58%)	2463 (6.17%)
Hormigueros	15,898	1182 (7.43%)	1432 (9.01%)	1901 (11.96%)	2805 (17.64%)	975 (6.13%)	2614 (16.44%)
Humacao	52,157	685 (1.31%)	1046 (2.01%)	2733 (5.24%)	2728 (5.23%)	1776 (3.41%)	3923 (7.52%)
Isabela	41,431	2350 (5.67%)	2905 (7.01%)	5104 (12.32%)	5954 (14.37%)	1886 (4.55%)	6031 (14.56%)
Jayuya	14,258	295 (2.07%)	633 (4.44%)	1166 (8.18%)	1245 (8.73%)	533 (3.74%)	1154 (8.09%)
Juana Díaz	45,976	1766 (3.84%)	3240 (7.05%)	4770 (10.37%)	5951 (12.94%)	1603 (3.49%)	5634 (12.25%)
Juncos	38,718	982 (2.54%)	1090 (2.82%)	2376 (6.14%)	3225 (8.33%)	1507 (3.89%)	3412 (8.81%)
Lajas	22,789	621 (2.72%)	1059 (4.65%)	2204 (9.67%)	2610 (11.45%)	912 (4%)	3476 (15.25%)
Lares	25,481	728 (2.86%)	899 (3.53%)	2960 (11.62%)	3063 (12.02%)	1738 (6.82%)	3466 (13.6%)
Las Marías	8,286	92 (1.11%)	104 (1.26%)	494 (5.96%)	366 (4.42%)	250 (3.02%)	534 (6.44%)
Las Piedras	37,466	391 (1.04%)	363 (0.97%)	1161 (3.1%)	1262 (3.37%)	831 (2.22%)	2125 (5.67%)
Loíza	25,746	1541 (5.99%)	1550 (6.02%)	3437 (13.35%)	4603 (17.88%)	1929 (7.49%)	5244 (20.37%)
Luquillo	18,106	962 (5.31%)	1686 (9.31%)	1985 (10.96%)	3362 (18.57%)	1421 (7.85%)	2907 (16.06%)
Manatí	38,680	1540 (3.98%)	1731 (4.48%)	3722 (9.62%)	4183 (10.81%)	2770 (7.16%)	5163 (13.35%)
Maricao	6,075	112 (1.84%)	139 (2.29%)	386 (6.35%)	398 (6.55%)	198 (3.26%)	549 (9.04%)
Maunabo	10,770	231 (2.14%)	231 (2.14%)	811 (7.53%)	676 (6.28%)	445 (4.13%)	1316 (12.22%)
Mayagüez	74,713	6171 (8.26%)	7721 (10.33%)	12558 (16.81%)	15040 (20.13%)	4816 (6.45%)	12405 (16.6%)
Moca	35,981	1528 (4.25%)	2096 (5.83%)	1830 (5.09%)	3260 (9.06%)	1158 (3.22%)	3058 (8.5%)
Morovis	30,939	1062 (3.43%)	2976 (9.62%)	2382 (7.7%)	2972 (9.61%)	1002 (3.24%)	2203 (7.12%)
Naguabo	26,043	331 (1.27%)	322 (1.24%)	788 (3.03%)	1085 (4.17%)	672 (2.58%)	1540 (5.91%)
Naranjito	28,061	1544 (5.5%)	1956 (6.97%)	2559 (9.12%)	3385 (12.06%)	1985 (7.07%)	3063 (10.92%)
Orocovis	20,886	1849 (8.85%)	3013 (14.43%)	4420 (21.16%)	3974 (19.03%)	1774 (8.49%)	4721 (22.6%)
Patillas	16,913	402 (2.38%)	294 (1.74%)	776 (4.59%)	875 (5.17%)	633 (3.74%)	1448 (8.56%)
Peñuelas	20,362	616 (3.03%)	711 (3.49%)	1486 (7.3%)	2232 (10.96%)	1289 (6.33%)	2451 (12.04%)
Ponce	137,042	5204 (3.8%)	6158 (4.49%)	13817 (10.08%)	22549 (16.45%)	10742 (7.84%)	18510 (13.51%)
Quebradillas	23,626	476 (2.01%)	552 (2.34%)	1325 (5.61%)	1627 (6.89%)	672 (2.84%)	1957 (8.28%)

Municipality	Total Population (2019)	Hearing difficulty	Vision difficulty	Cognitive difficulty	Ambulatory difficulty	Self-care difficulty	Independent living difficulty
Rincón	14,022	880 (6.28%)	1627 (11.6%)	1240 (8.84%)	1973 (14.07%)	477 (3.4%)	2013 (14.36%)
Río Grande	49,093	2246 (4.57%)	3381 (6.89%)	5365 (10.93%)	6306 (12.85%)	2754 (5.61%)	6277 (12.79%)
Sabana Grande	22,443	1278 (5.69%)	4538 (20.22%)	2729 (12.16%)	4726 (21.06%)	2459 (10.96%)	4348 (19.37%)
Salinas	27,995	1395 (4.98%)	3724 (13.3%)	2390 (8.54%)	1846 (6.59%)	784 (2.8%)	2610 (9.32%)
San Germán	31,345	626 (2%)	474 (1.51%)	1684 (5.37%)	1729 (5.52%)	1121 (3.58%)	2169 (6.92%)
San Juan	331,817	20527 (6.19%)	27739 (8.36%)	43520 (13.12%)	60490 (18.23%)	29691 (8.95%)	60016 (18.09%)
San Lorenzo	37,153	1332 (3.59%)	1102 (2.97%)	3134 (8.44%)	3024 (8.14%)	1582 (4.26%)	2943 (7.92%)
San Sebastián	36,991	2169 (5.86%)	2689 (7.27%)	3806 (10.29%)	5216 (14.1%)	1998 (5.4%)	4966 (13.42%)
Santa Isabel	21,757	807 (3.71%)	2955 (13.58%)	1158 (5.32%)	1344 (6.18%)	438 (2.01%)	1515 (6.96%)
Toa Alta	72,714	1861 (2.56%)	2669 (3.67%)	3724 (5.12%)	4352 (5.99%)	2005 (2.76%)	4169 (5.73%)
Toa Baja	77,505	4617 (5.96%)	5235 (6.75%)	10407 (13.43%)	12321 (15.9%)	6178 (7.97%)	10421 (13.45%)
Trujillo Alto	66,041	2657 (4.02%)	2852 (4.32%)	5175 (7.84%)	6271 (9.5%)	1998 (3.03%)	5024 (7.61%)
Utuado	28,655	1241 (4.33%)	1268 (4.43%)	3120 (10.89%)	3575 (12.48%)	1982 (6.92%)	3501 (12.22%)
Vega Alta	36,526	1436 (3.93%)	2175 (5.95%)	2577 (7.06%)	3585 (9.81%)	1725 (4.72%)	4104 (11.24%)
Vega Baja	51,992	2706 (5.2%)	5100 (9.81%)	4877 (9.38%)	6337 (12.19%)	3028 (5.82%)	7233 (13.91%)
Vieques	8,642	44 (0.51%)	44 (0.51%)	112 (1.3%)	366 (4.24%)	171 (1.98%)	410 (4.74%)
Villalba	22,271	970 (4.36%)	1700 (7.63%)	2745 (12.33%)	3672 (16.49%)	935 (4.2%)	3111 (13.97%)
Yabucoa	33,455	601 (1.8%)	860 (2.57%)	2422 (7.24%)	1766 (5.28%)	829 (2.48%)	3687 (11.02%)
Yauco	35,264	1838 (5.21%)	7423 (21.05%)	4001 (11.35%)	7587 (21.51%)	3390 (9.61%)	6790 (19.25%)
Grand Total	3,293,526	161868 (4.91%)	233536 (7.09%)	356484 (10.82%)	455396 (13.83%)	196545 (5.97%)	426260 (12.94%)

Table 1: Total Population (and Percentage of Population) by Difficulty/Disability and Municipality

Identifying Puerto Rico’s Populations by Sex, Age, and Familial Status

The Fair Housing Act prohibits discrimination based on sex, age, or familial status. Although each of these characteristics is included in the SoVI® analysis for Puerto Rico, they will be considered individually here based on a variety of theoretical and conceptual links to inequity. Each of these indicators of social vulnerability has proven ties to adverse outcomes in relation to hazards. Gender, specifically being female, is an important driver of social vulnerability to disasters. Power imbalances tend to reduce women's status in society, their access to resources, opportunities and power, and subsequently lead to higher female vulnerability to adverse hazard and disaster

outcomes.² Age, another key characteristic influencing social vulnerability, is normally recognized at the two extremes of the age continuum—children and older adults are more vulnerable than others.³ Both age cohorts (young and old) need special care, are often more susceptible to harm, and may have mobility constraints, all of which influence the ability to get out of harm's way.⁴ For this assessment, Fair Housing provisions requires a focus on aging populations. Similarly, families with large numbers of dependents or single-parent households may be more vulnerable because of the need to rely on paid caregivers. Like sex and age indicators, identifying areas based on familial status, is of particular interest to address Fair Housing Act requirements. Each of these three indicators of socially vulnerable areas are mapped and discussed below.

Puerto Rico's Population by Gender

Like Hispanic populations across Puerto Rico, gender is a ubiquitous vulnerability characteristic with female populations evenly dispersed across the Island (Figure 1). However, 30 census tracts (3.3%) have greater than 60% female populations. These tracts would tend to have a more difficult time preparing for, responding to, and rebounding from disaster situations.

² C. Trieb, *Vulnerability to Natural Hazards: A Gender Perspective in Disasters*, https://www.researchgate.net/publication/310052407_Vulnerability_to_Natural_Hazards_A_Gender_Perspective_in_Disasters.

³ Handbook of Disasters Research, <https://link.springer.com/book/10.1007/978-3-319-63254-4>.

⁴ W. Anderson, *Bringing children into focus on the social science disaster research agenda*, <http://ijmed.org/articles/376/download/>; S. Smith, M. Tremethick, P. Johnson, and J. Gorski, *Disaster planning and response: considering the needs of the frail elderly*, <https://www.inderscience.com/info/inarticle.php?artid=25170>.

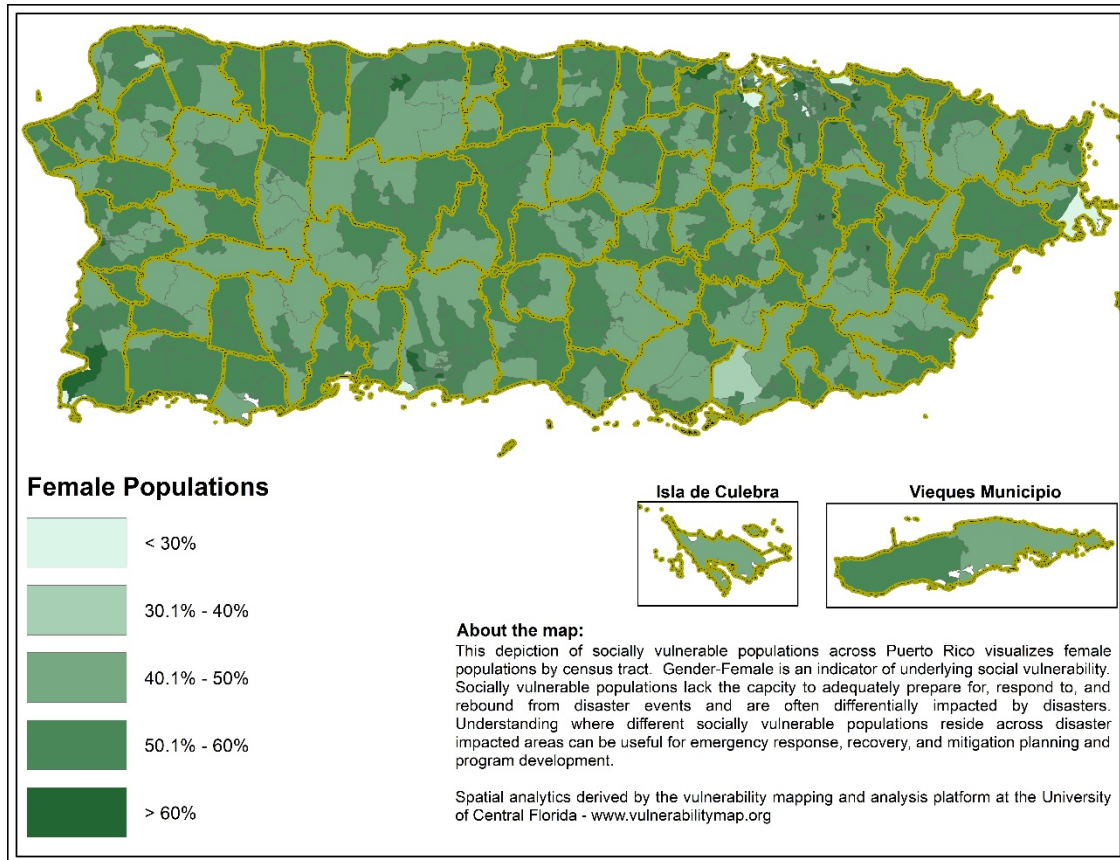


Figure 1: Female Populations by Census Tract (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table DP05)

Puerto Rico's Population by Age

Puerto Rico's 21.3% population over age 65 is higher than the U.S. average (See Table 6 of the CDBG-DR Electrical Power Systems Enhancements and Improvements Action Plan). However, the spatial pattern of aging populations does not clearly indicate any specific concentrations (Figure 2). Fifty-nine (59) census tracts (6.5%) have greater than 30% of their population over age 65 and only four (4) census tracts have greater than 40% populations over age 65.

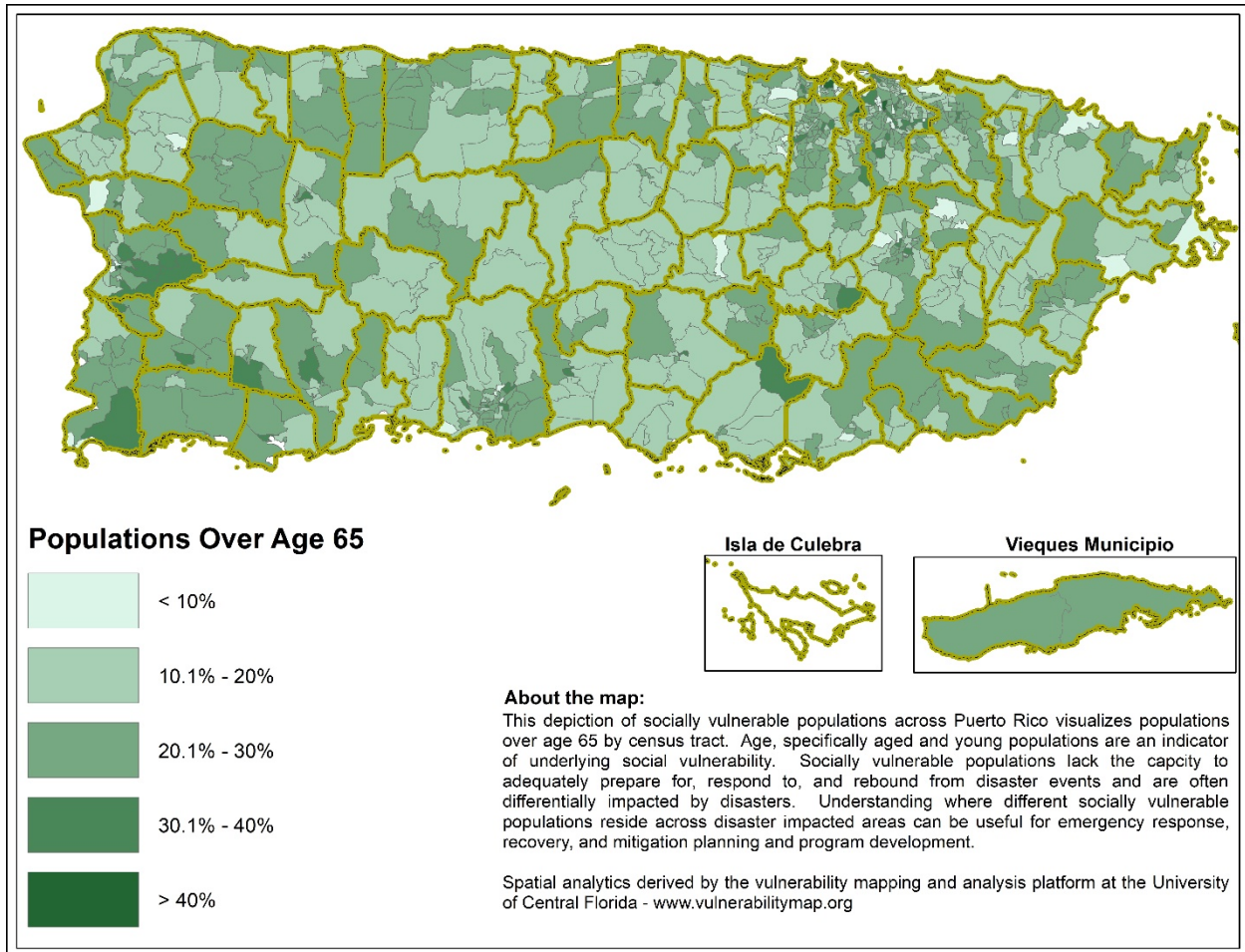


Figure 2: Populations Over 65 by Census Tract (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table DP05)

Puerto Rico's Population by Familial Status

As the other individual social characteristics assessed here, familial status does not show a distinct pattern of concentrations across Puerto Rico (Figure 3). Only fifty-three (53) census tracts (5.9%) had 40% or more households with children. However, an additional two hundred eighty-eight (288) census tracts (31.9%) had 30% or more households with children.

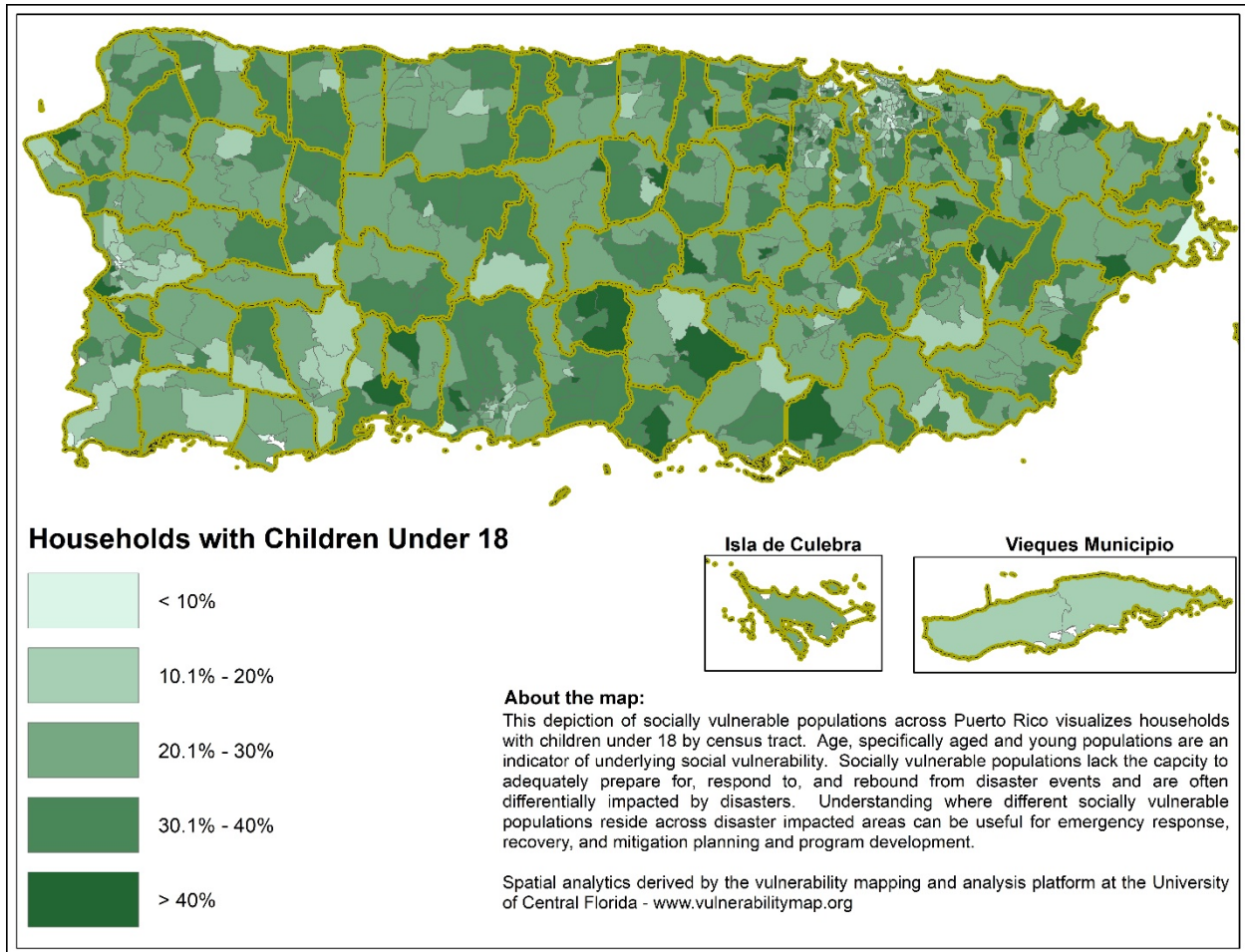


Figure 3: Households with Children under 18 (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table S1101)

The fact that familial status and other univariate representations of social vulnerability are not showing patterns or concentrations highlights the real utility in using a composite measure of social vulnerability that captures the dynamic and multi-faceted nature of a community's capacity to prepare for, respond to, and rebound from disasters.

Identifying Puerto Rico's Populations by Race

The U.S. Census provides quality data on racial composition at several levels of geographic specificity from State to census block group. Most useful for the Puerto Rican case are county (municipality) and census tract levels of geography. These enumeration units are either politically defined (in the case of municipalities) or statistically defined (in the case of census tracts) based on population thresholds determined by the Census.⁵ Identifying the racial composition of census tracts enables a more holistic understanding of where these different population groups reside across the Commonwealth. However,

⁵ Glossary of the U.S. Census, <https://www.census.gov/programs-surveys/geography/about/glossary.html#:~:text=Census%20Tracts%20are%20small%2C%20relatively,Bureau's%20Participa nt%20Statistical%20Areas%20Program.>

it must be noted that data on race (White, Black, Other) may be misleading in the Puerto Rican context due to historical trends in identifying as “white” even though much of the population across the Island has roots in Africa.⁶ Maps of Other (Non-White/Black) populations (Figure 4), Black populations (Figure 5), and White populations (Figure 6) show specific regionalization patterns. Those identifying as “Other” Race (Non-White/Black) make up a higher percentage of population in Southwestern municipalities such as Cabo Rojo, Hormigüeros, Lajas, and Mayagüez, and Northeastern municipalities such as Canóvanas, Juncos, and Río Grande. Those identifying as Black make up a higher percentage of the population in southeastern municipalities such as Las Piedras, Maunabo, Patillas, and Yabucoa. White populations, by-and-large, make up the highest percentage of population in nearly every other municipality across Puerto Rico.

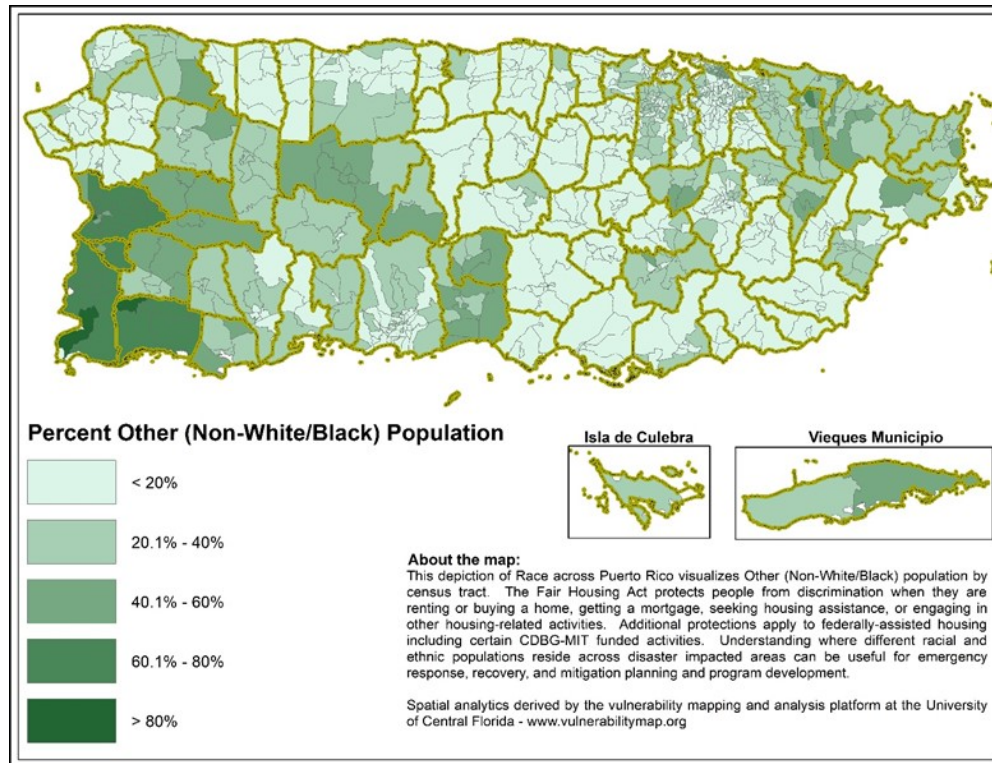


Figure 4: Non-White Populations by Census Tract (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table DP05)

⁶ N. Alford, *Why Some Black Puerto Ricans Choose “White” on the Census*, The New York Times (February 9, 2020), <https://www.nytimes.com/2020/02/09/us/puerto-rico-census-black-race.html>.

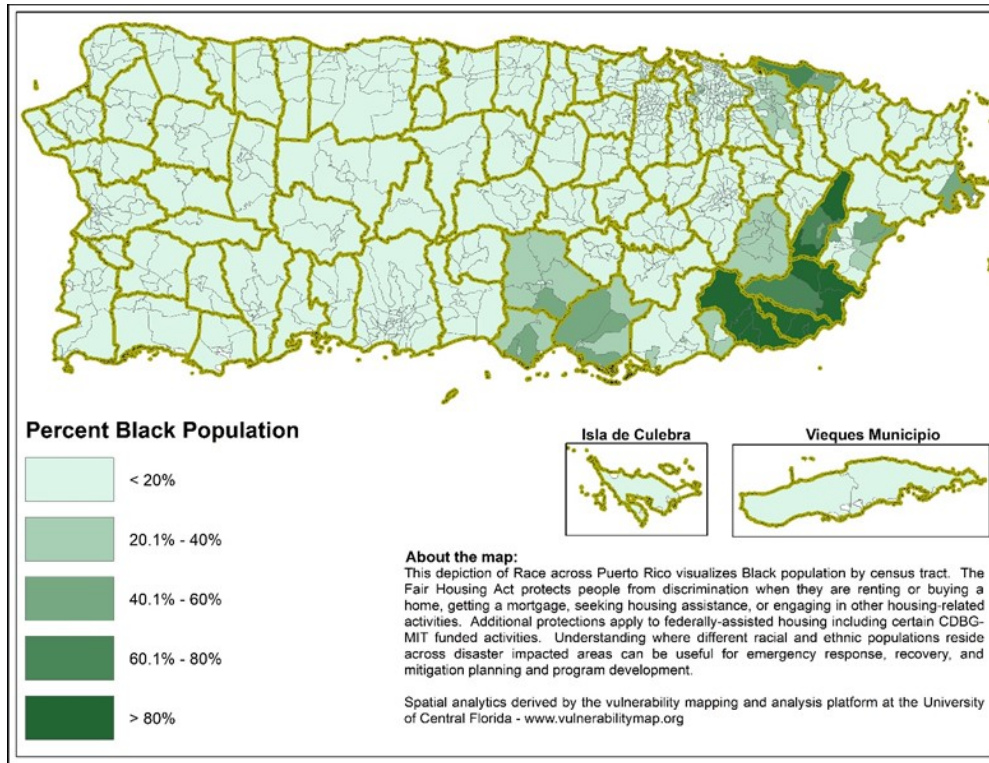


Figure 5: Black Populations by Census Tract (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table DP05)

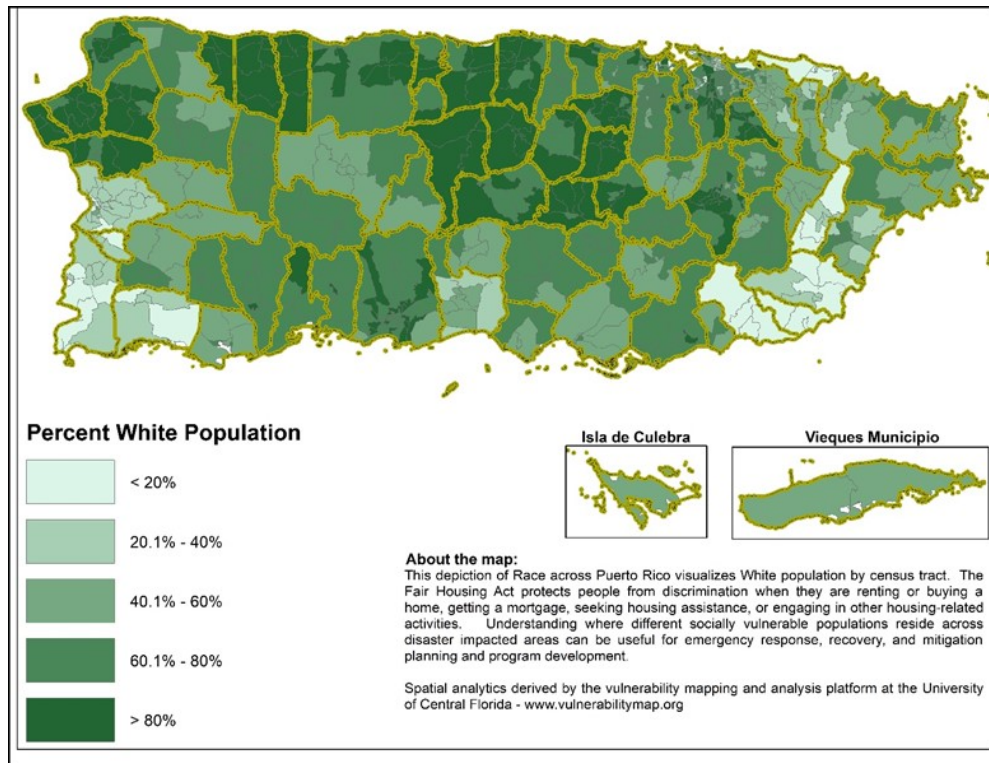


Figure 6: White Populations by Census Tract (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table DP05)

Identifying Puerto Rico's Population by Ethnicity

The Office of Management and Budget (OMB) defines "Ethnicity" as either "Hispanic or Latino" or "Not Hispanic or Latino." OMB defines "Hispanic or Latino" as a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race.⁷ It should be noted that people who identify themselves as Hispanic, Latino, or Spanish may be any race. Puerto Rico's population predominantly identifies itself as Hispanic/Latino with no census tract containing less than 75% Hispanic/Latino population (Figure 7).

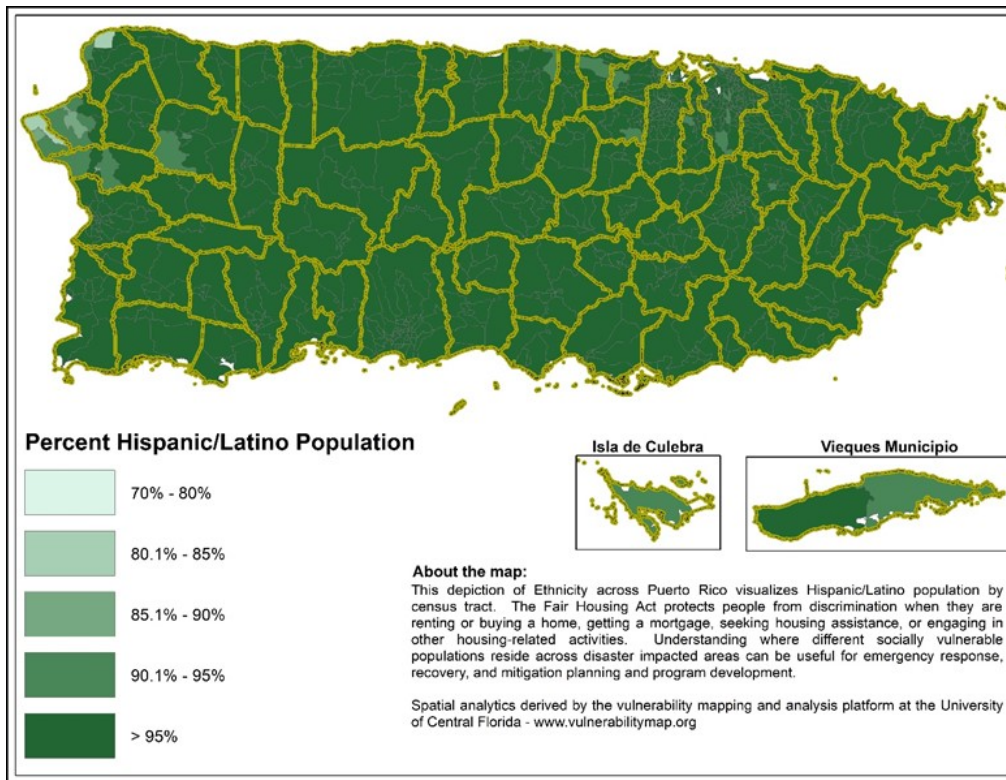


Figure 7: Hispanic/Latino Populations by Census Tract (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table B003002)

Puerto Rico's 98.7% Hispanic/Latino population (Table 6 of the CDBG-DR Electrical Power Systems Enhancements and Improvements Action Plan) automatically qualifies most of Puerto Rico as a protected class according to the Fair Housing Act. However, additional social vulnerabilities such as Afro Caribbean ancestry, poverty, or the intersection of race/ethnicity and poverty may put certain communities, groups, or population segments at greater threat from the impacts of hazards. Accordingly, a more nuanced analysis of Afro Caribbean ancestry, disability, poverty, and the intersection of

⁷ R. Marks and N. Jones, *Collecting and Tabulating Ethnicity and Race Response in the 2020 Census*, <https://www2.census.gov/about/training-workshops/2020/2020-02-19-pop-presentation.pdf>.

race/ethnicity and poverty may provide useful information beyond that provided by social vulnerability measures (Table 7 of the CDBG-DR Electrical Power Systems Enhancements and Improvements Action Plan).

Afro Caribbean Ancestry

The Migration Policy Institute identified 13 different Caribbean countries in a Caribbean Migration Study aimed at understanding Black Caribbean immigration to the United States.⁸ These countries include: Jamaica, Haiti, Trinidad & Tobago, Dominican Republic, Barbados, Cuba, Grenada, Bahamas, St. Lucia, Antigua-Barbuda, St. Vincent, Dominica, and St. Kitts-Nevis. In Puerto Rico, the largest populations of Black Caribbean's have ancestral links to the Dominican Republic.

Populations of Dominican ancestry account for approximately 1.76% of Puerto Rico's total population with a majority (52.14%) residing in the Municipality of San Juan (Table 4). Two other municipalities, Bayamón and Carolina are home to greater than 5% of all Puerto Rico's Dominicans. A majority (56.54%) of census tracts across Puerto Rico have less than 30% Dominican populations and only 14 census tracts have greater than 30% Dominican populations.

Municipality	Total Population	Total Hispanic Afro Caribbean	Total Dominicans	Total Cubans
Adjuntas	17,891	49	48	1
Aguada	37,954	223	142	81
Aguadilla	52,803	459	404	55
Aguas Buenas	25,748	189	169	20
Aibonito	22,988	137	80	57
Añasco	26,934	88	88	-
Arecibo	85,390	561	306	255
Arroyo	17,805	5	5	-
Barceloneta	24,079	22	1	21
Barranquitas	28,393	63	41	22
Bayamón	178,192	4,957	3,863	1,094
Cabo Rojo	48,487	183	108	75
Caguas	128,937	1,698	1,222	476
Camuy	31,598	126	125	1
Canóvanas	45,588	1,526	1,498	28
Carolina	153,779	8,033	7,102	931
Cataño	24,271	670	519	151

⁸ K. Thomas, *A Demographic Profile of Black Caribbean Immigrants in the United States*, Migration Policy Institute, <https://www.migrationpolicy.org/pubs/CBI-CaribbeanMigration.pdf>.

Municipality	Total Population	Total Hispanic Afro Caribbean	Total Dominicans	Total Cubans
Cayey	43,785	134	122	12
Ceiba	11,515	97	89	8
Ciales	16,513	71	32	39
Cidra	39,607	143	41	102
Coamo	38,906	193	55	138
Comerio	19,224	109	109	-
Corozal	33,500	65	65	-
Culebra	1,311	24	15	9
Dorado	36,803	213	140	73
Fajardo	31,111	516	474	42
Florida	11,697	9	-	9
Guánica	16,293	12	4	8
Guayama	40,889	69	24	45
Guayanilla	18,514	25	24	1
Guaynabo	86,937	3,474	1,872	1,602
Gurabo	46,910	199	189	10
Hatillo	39,950	86	59	27
Hormigueros	15,943	87	53	34
Humacao	52,507	412	337	75
Isabela	41,707	181	158	23
Jayuya	14,539	-	-	-
Juana Díaz	46,152	133	112	21
Juncos	38,780	110	95	15
Lajas	22,835	139	-	139
Lares	25,696	109	95	14
Las Marías	8,370	18	18	-
Las Piedras	37,499	154	93	61
Loíza	25,778	290	277	13
Luquillo	18,224	225	175	50
Manatí	38,836	62	31	31
Maricao	6,075	173	173	-
Maunabo	10,776	84	84	-
Mayagüez	75,232	738	551	187
Moca	36,161	158	87	71
Morovis	30,962	102	84	18
Naguabo	26,075	79	59	20
Naranjito	28,112	43	10	33

Municipality	Total Population	Total Hispanic Afro Caribbean	Total Dominicans	Total Cubans
Orocovis	20,982	131	127	4
Patillas	16,929	74	30	44
Peñuelas	20,383	28	28	-
Ponce	139,671	1,079	750	329
Quebradillas	23,629	263	129	134
Rincón	14,056	75	54	21
Río Grande	49,613	519	387	132
Sabana Grande	22,560	37	37	-
Salinas	28,109	79	54	25
San Germán	31,442	181	105	76
San Juan	335,468	34,554	29,836	4,718
San Lorenzo	37,209	118	21	97
San Sebastián	37,120	288	242	46
Santa Isabel	21,757	14	14	-
Toa Alta	72,864	488	362	126
Toa Baja	77,810	1,406	1,340	66
Trujillo Alto	66,338	1,446	1,222	224
Utuado	28,676	33	8	25
Vega Alta	37,106	170	170	-
Vega Baja	52,192	306	196	110
Vieques	8,642	9	9	-
Villalba	22,403	16	16	-
Yabucoa	33,499	118	112	6
Yauco	35,428	135	107	28
Grand Total	3,318,447	69,292	56,883	12,409

Table 2: Hispanic Afro Caribbean Ancestry by Municipality (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table B03001)

At the census tract level of geography (a subset of county or municipality) the average percent Dominican population is 2.29 and the maximum percent is 54.95 (Table 5). A majority (56.54%) of census tracts across Puerto Rico have less than 30% Dominican populations and only 14 census tracts have greater than 30% Dominican populations. Most Dominicans (44,473) live within relatively few census tracts (19.58%) mainly in San Juan, Canóvanas, Carolina, Bayamón, and Guaynabo, among others (Table 6).

Residents from the Dominican Republic	Tracts	Percent of Total	Total Dominicans
Total	945		
Presence of Dominicans	577	61.06%	57,841
Average Percent Dominicans	2.29%		
Max Percent Dominicans	54.95%		
Standard Deviation Percent Dominicans	5.92%		
Presence of Below Average number of Dominicans	760	80.42%	13,368
Presence of Above Average number of Dominicans	185	19.58%	44,473
Tracts with 3-5% Dominicans	49	9.51%	5,500
Tracts with 5-10% Dominicans	51	17.60%	10,179
Tracts with 10-20% Dominicans	22	13.16%	7,613
Tracts with 20-30% Dominicans	16	16.27%	9,413
Tracts with 30-40% Dominicans	10	9.93%	5,746
Tracts with 40-50% Dominicans	3	3.37%	1,950
Tracts with > 50%	1	2.33%	1,349

Table 3: Dominican Population Breakdown by Census Tract (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table B03001)

Municipality	Dominican Population Estimates for tracts with Above Average (>2.29%) Percent Dominican Populations
Aguadilla	190
Aguas Buenas	110
Bayamón	2,856
Caguas	302
Canóvanas	1,149
Carolina	5,818
Cataño	417
Fajardo	319
Guaynabo	1,276
Humacao	164
Loíza	138
Luquillo	109
Maricao	156
Mayagüez	40
Orocovis	90
Ponce	154
Río Grande	241
San Juan	29,231
Toa Baja	775
Trujillo Alto	938

Municipality	Total Population	Total Non-Hispanic Afro Caribbean	Haitian	Jamaican	Bahamian	Barbadian	British West Indian	Trinidadian and Tobagonian	U.S. Virgin Islander	West Indian	Other West Indian
Juncos	37,082	-	-	-	-	-	-	-	-	-	-
Lajas	20,490	11	-	-	-	-	-	-	-	11	-
Lares	23,958	-	-	-	-	-	-	-	-	-	-
Las Marías	7,768	-	-	-	-	-	-	-	-	-	-
Las Piedras	36,000	68	-	-	-	-	-	-	-	-	68
Loíza	23,569	29	8	-	-	-	12	-	9	-	-
Luquillo	16,410	29	-	-	-	-	-	-	29	-	-
Manatí	35,950	-	-	-	-	-	-	-	-	-	-
Maricao	5,661	-	-	-	-	-	-	-	-	-	-
Maunabo	10,164	-	-	-	-	-	-	-	-	-	-
Mayagüez	66,197	37	28	-	-	-	-	-	-	9	-
Moca	33,945	-	-	-	-	-	-	-	-	-	-
Morovis	29,284	-	-	-	-	-	-	-	-	-	-
Naguabo	25,333	-	-	-	-	-	-	-	-	-	-
Naranjito	25,500	-	-	-	-	-	-	-	-	-	-
Orocovis	19,290	-	-	-	-	-	-	-	-	-	-
Patillas	16,207	14	-	14	-	-	-	-	-	-	-
Peñuelas	18,614	-	-	-	-	-	-	-	-	-	-
Ponce	122,459	41	41	-	-	-	-	-	-	-	-
Quebradillas	22,519	62	62	-	-	-	-	-	-	-	-
Rincón	13,009	11	-	-	-	-	-	11	-	-	-
Río Grande	45,169	-	-	-	-	-	-	-	-	-	-
Sabana Grande	19,166	-	-	-	-	-	-	-	-	-	-
Salinas	26,589	36	-	-	-	-	-	-	-	36	-
San Germán	28,955	-	-	-	-	-	-	-	-	-	-
San Juan	290,052	364	89	-	-	-	143	21	49	62	-
San Lorenzo	34,804	-	-	-	-	-	-	-	-	-	-
San Sebastián	34,449	-	-	-	-	-	-	-	-	-	-
Santa Isabel	20,124	-	-	-	-	-	-	-	-	-	-
Toa Alta	67,100	-	-	-	-	-	-	-	-	-	-
Toa Baja	70,264	9	-	-	-	-	-	-	-	9	-
Trujillo Alto	60,284	-	-	-	-	-	-	-	-	-	-
Utuado	26,175	-	-	-	-	-	-	-	-	-	-
Vega Alta	34,754	20	-	-	-	-	20	-	-	-	-
Vega Baja	47,330	10	-	-	-	-	-	-	-	10	-
Vieques	8,254	-	-	-	-	-	-	-	-	-	-
Villalba	20,618	-	-	-	-	-	-	-	-	-	-
Yabucoa	31,212	-	-	-	-	-	-	-	-	-	-
Yauco	30,677	80	-	-	-	-	-	-	-	80	-
Grand Total	2,994,405	1,296	361	19	-	43	281	32	87	405	68

Table 5: Non-Hispanic/Latino Hispanic Afro Caribbean Ancestry by Municipality (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table B04004)

Identifying Puerto Rico's Population by Poverty

Poverty is high across Puerto Rico with 43.5% of people living in poverty, according to the U.S. Census (Table 7 of the CDBG-DR Electrical Power Systems Enhancements and Improvements Action Plan). High percentages of poverty populations can be found in most municipalities across Puerto Rico and 38% of tract have more than 50% of their populations living below the poverty threshold (which varies by family size).⁹ Poverty's ubiquity across Puerto Rico provides an indication that society at large has increased social vulnerability to adverse disaster outcomes. Unfortunately, using poverty as an indicator of where recovery and mitigation program implementation would provide the most benefit is not possible because so much of the Island suffers from its deleterious effects.

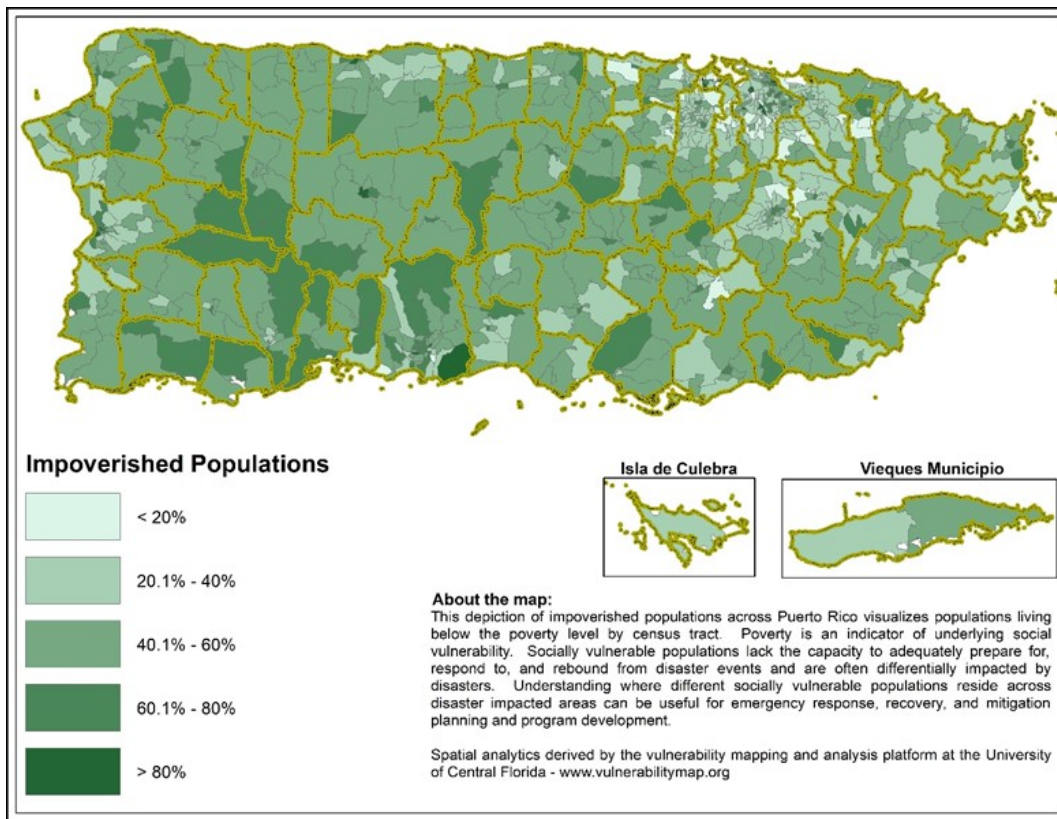


Figure 8: Impoverished populations by census tract (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table S1701)

However, identifying poverty in association with race and ethnicity may provide a noteworthy perspective on most distressed communities. The following sections will process through an assessment of HUD's data on ethnic and racial concentrations and

⁹ Puerto Rico Poverty Statistics, <https://www.livestories.com/statistics/puerto-rico/poverty>.

poverty. This assessment builds from these initial summary indicators showing possible areas of racial and ethnic poverty concentrations toward a true census derived representation of current Puerto Rican Racially and Ethnically Concentrated Areas of Poverty (PR-R/ECAPs).

Racially and Ethnically Concentrated Areas of Poverty (R/ECAPs)

Identifying and assessing protected classes, including those living in Ethnically or Racially Concentrated Areas of Poverty (R/ECAPs) across Puerto Rico, will provide valuable insight. About both the location of areas where such populations reside (census tracts) and, more importantly, the actual concentration of such populations across these arbitrary enumeration unit boundaries.

HUD's Geospatial Representation of R/ECAPs¹⁰

To assist communities in identifying R/ECAPs, HUD has developed a census tract-based definition of R/ECAPs showing a binary (yes or no) indication of poverty and race/ethnicity. HUD's definition involves a racial/ethnic concentration threshold and a poverty test threshold. The racial/ethnic concentration threshold is straightforward: R/ECAPs must have a non-white population of 50% or more. Regarding the poverty threshold, Wilson (1980) defines neighborhoods of extreme poverty as census tracts with 40% or more of individuals living at or below the poverty line. Because overall poverty levels are substantially lower in many parts of the country, HUD supplements this with an alternate criterion. Thus, a neighborhood can be a R/ECAP if it has a poverty rate that exceeds 40% or is three or more times the average tract poverty rate for the metropolitan/micropolitan area, whichever threshold is lower. Census tracts with this extreme poverty that satisfy the racial/ethnic concentration threshold are deemed R/ECAPs (Figure 9).

¹⁰ Racially or Ethnically Concentrated Areas of Poverty (R/ECAPs), HUD GIS Helpdesk (May 15, 2020), https://hudgis-hud.opendata.arcgis.com/datasets/56de4edea8264fe5a344da9811ef5d6e_0.

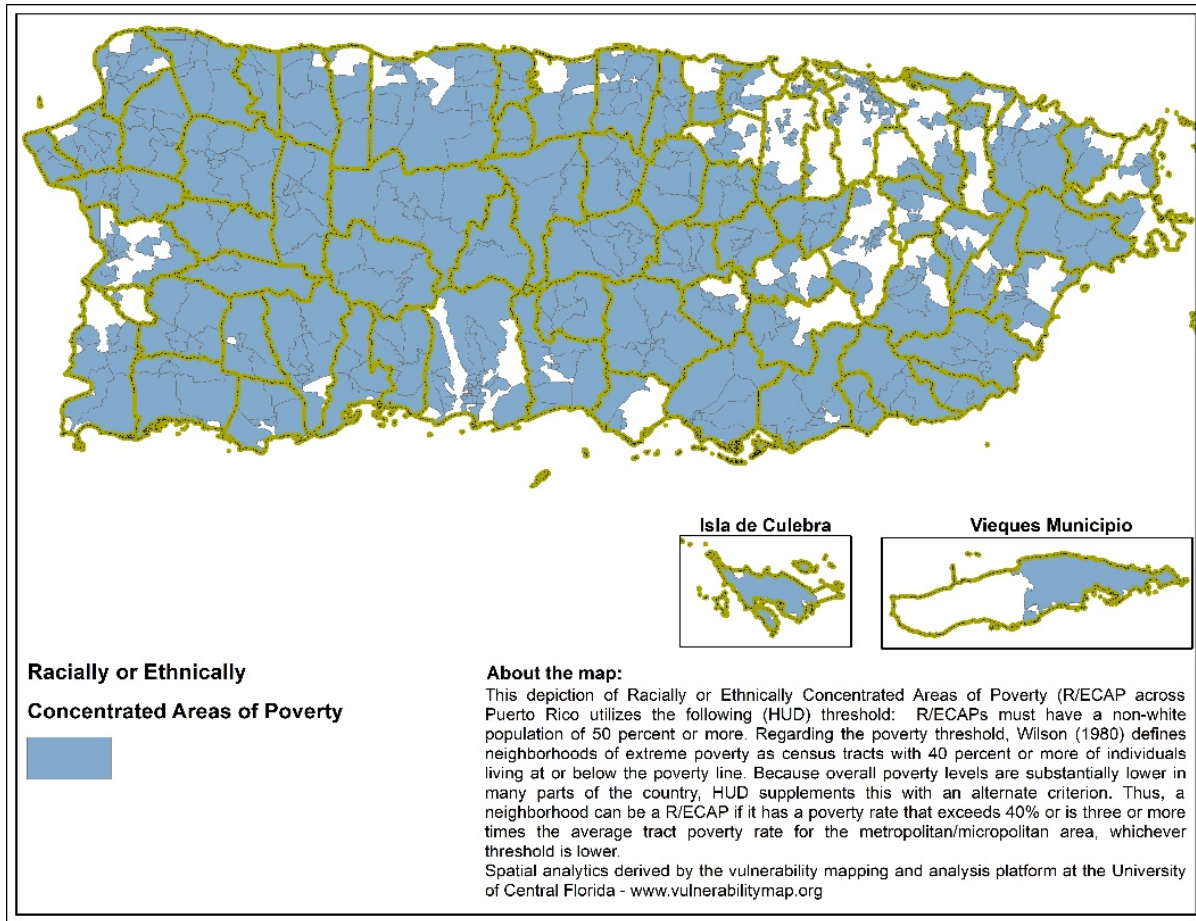


Figure 9: HUD R/ECAP indication for Puerto Rico by census tract (Source: https://hudgis-hud.opendata.arcgis.com/datasets/56de4edea8264fe5a344da9811ef5d6e_0)

HUD's definition of R/ECAPs provides a simple and systematic way to determine areas with an increased probability that two conditions (non-white and poverty) are met at the aggregate level. Although, a map of HUD's R/ECAPs data for Puerto Rico (Figure 9) shows what appears to be a heavy majority of the commonwealth meeting or exceeding the threshold, only 64.3% of census tracts are classified as "current R/ECAP". This information can be useful for understanding this problem from the univariate perspective only. **Importantly, HUD's R/ECAP data only shows those tracts that have both higher non-white populations and higher poverty populations.** However, R/ECAP use of conditional logic (**AND**) to identify census tracts based on two different variables introduces an ecological fallacy where it is **inferred that the populations in these places (tracts) are both non-white and impoverished because the tract (as a whole) exhibits these characteristics.** In lieu of more nuanced data combining these race/ethnicity and poverty data to create a new variable, such assumptions about the presence of concentrations of poverty can only be useful for creating a general understanding of the quasi-intersectionality of race/ethnicity and poverty. Fortunately, the U.S. Census does provide a combined variable at the

census tract level summarizing the number of people by different races **and** by poverty. Using this information enables a more precise understanding of where these PR-R/ECAP populations reside across Puerto Rico.

Identifying Puerto Rico's Populations by Combined Race/Ethnicity and Poverty

Recognizing the need to identify and assess areas across Puerto Rico in terms of racial/ethnic concentrations of poverty, this assessment leveraged HUD's R/ECAP concepts and methods into a more precise measure of combined racial/ethnic poverty indicator for Puerto Rico. Specifically, HUD's R/ECAP analysis formed the basis for a reconceptualized analysis of racially and ethnically concentrated poverty utilizing 2019 Census data accounting for different racial and ethnic characteristics **AND** poverty. This multi-step process required first, an assessment of these census data at the tract level. Here, one can see that higher percentages of populations who are both impoverished and Non-White Race (Figure 10) are present in the southwestern municipalities of Cabo Rojo, Hormigueros, Lajas, and Mayagüez and in the southeastern municipalities of Humacao, Las Piedras, Maunabo, Patillas, and Yabucoa. However, this depiction (percentages) showing the intersectionality of poverty and race can be misleading because it only shows where higher rates of poverty/race occur and does not necessarily depict higher numbers of impoverished people by race.

A larger percentage of population does not necessarily mean a larger number of people overall. Assessing percentages of white impoverished populations (Figure 11) shows higher values across most of central Puerto Rico. Central municipalities including Barranquitas, Ciales, Comerío, and Orocovis, as-well-as higher values in the northwest coastal municipalities of Arecibo, Camuy, Hatillo, and Quebradillas and the southwest central and coastal municipalities of Adjuntas, Guayanilla, Lares, Peñuelas, Ponce, and Yauco. Again, many of these municipalities have significantly lower populations resulting in overall lower number of impoverished whites than some of the more heavily populated municipalities across Puerto Rico. Finally, mapping census tracts based on impoverished Hispanic populations (Figure 12) results in a pattern like the percentage Hispanic populations seen earlier (Figure 7) with most of the Island trending toward higher percentages of impoverished Hispanic populations.

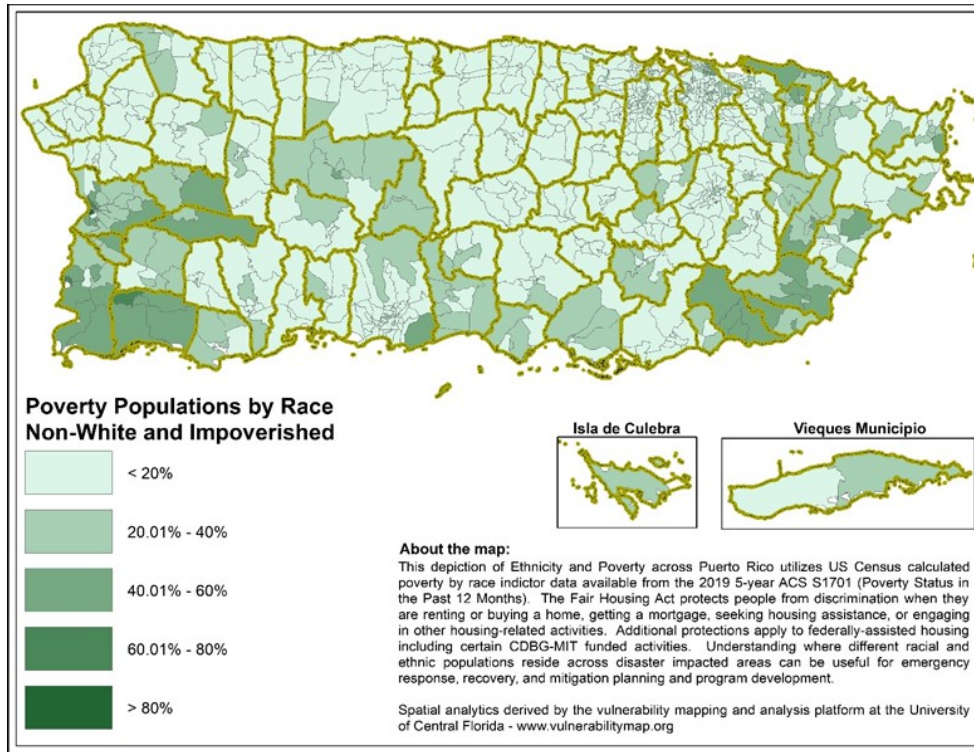


Figure 10: Impoverished Non-white populations by census tract (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table S1701)

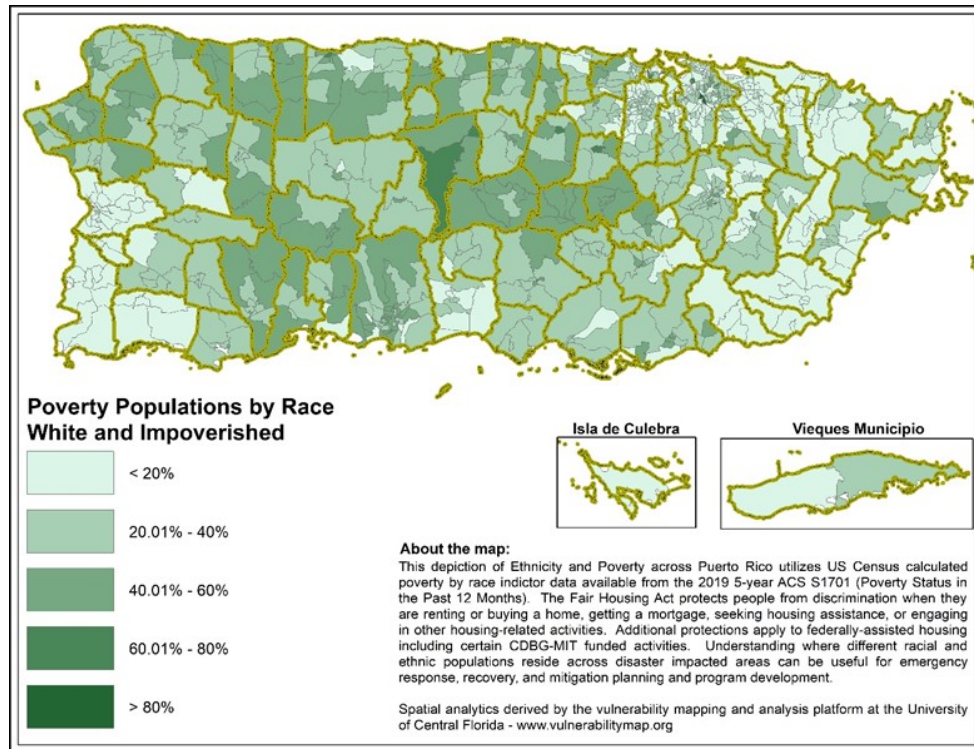


Figure 11: Impoverished White populations by census tract. Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table S1701.

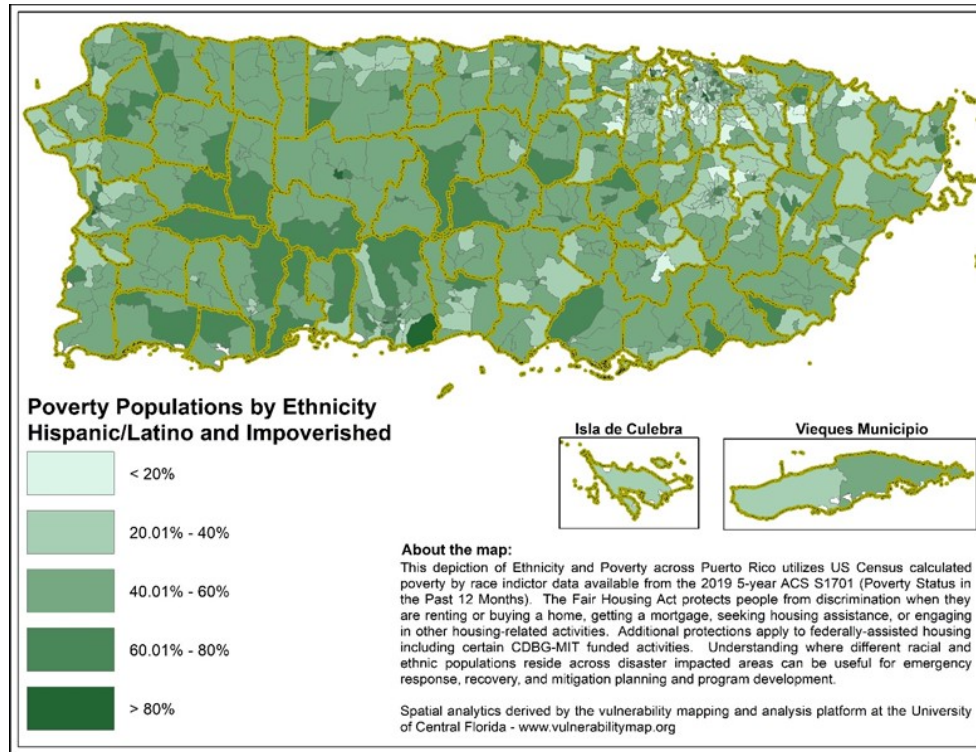


Figure 12: Impoverished Hispanic populations by census tract. Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table S1701.

Moving from Percentages to Density

Aligning Puerto Rico's concentrated poverty populations with the current risk-based needs assessment to ensure agreement between "high risk" areas and PR-R/ECAPs requires a shift from impoverished percentages by tract to impoverished density counts (per hexagonal grid). As previously discussed, high percentages of a specific vulnerability/protected class characteristic at a census tract level are not a guarantee of high numbers (population counts) for those areas. This discrepancy can be seen when visualizing descriptive statistics for Puerto Rico's U.S. Census derived ethnically and racially concentrated areas of poverty (Figure 13). Here, if population totals increased along with percentage impoverished by census tract the blue bars would be increasing in height from left (areas with lower percentages) to right (areas with higher percentages of impoverished Hispanic populations). However, as we can see in both Figure 13A (Impoverished Hispanic Populations) and Figure 13B (Impoverished Non-White Populations) most impoverished people are situated in areas with medium and low poverty percentages, respectively. Considering this fact, aligning data on ethnic and racial poverty with the risk-based needs assessment imposes a shift from percentages to density.

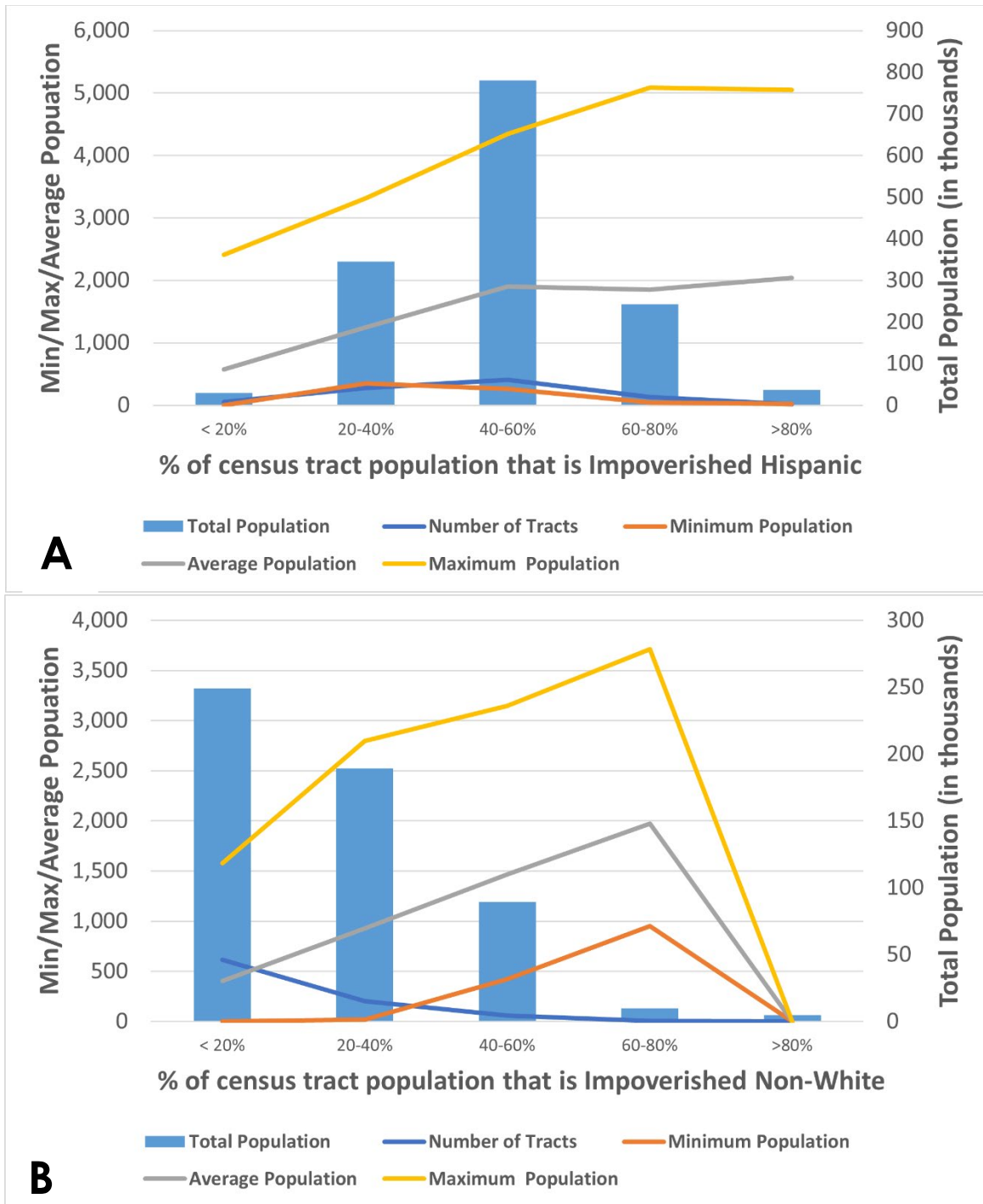


Figure 13: Descriptive Statistics for A: Impoverished Hispanic populations and B: Impoverished Non-White populations by census tract (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table S1701)

Translating impoverished poverty counts by census tract to the ½ mile hexagonal grid requires the implementation of several geospatial analytic procedures. **First**, the total count of impoverished Hispanic populations and impoverished non-white populations

was converted into a random set of “points” laid out across each census tract (Figure 14). The resulting dataset has the exact number of points in each tract as the impoverished Hispanic or Non-White population.

Note that, in the example, the tract in the center of Figure 14 (72113072600), located in the northern part of the Municipality of Ponce, has 1,664 impoverished Hispanics spread across one of the larger census tracts in the area. In comparison, the census tract to the southwest (72113072900) has nearly the same total number of impoverished Hispanics, but the size of each census tract determines the density of the resulting point surface. These differences in tract area/size and number of impoverished Hispanics will result in a different population density for each place across Puerto Rico.

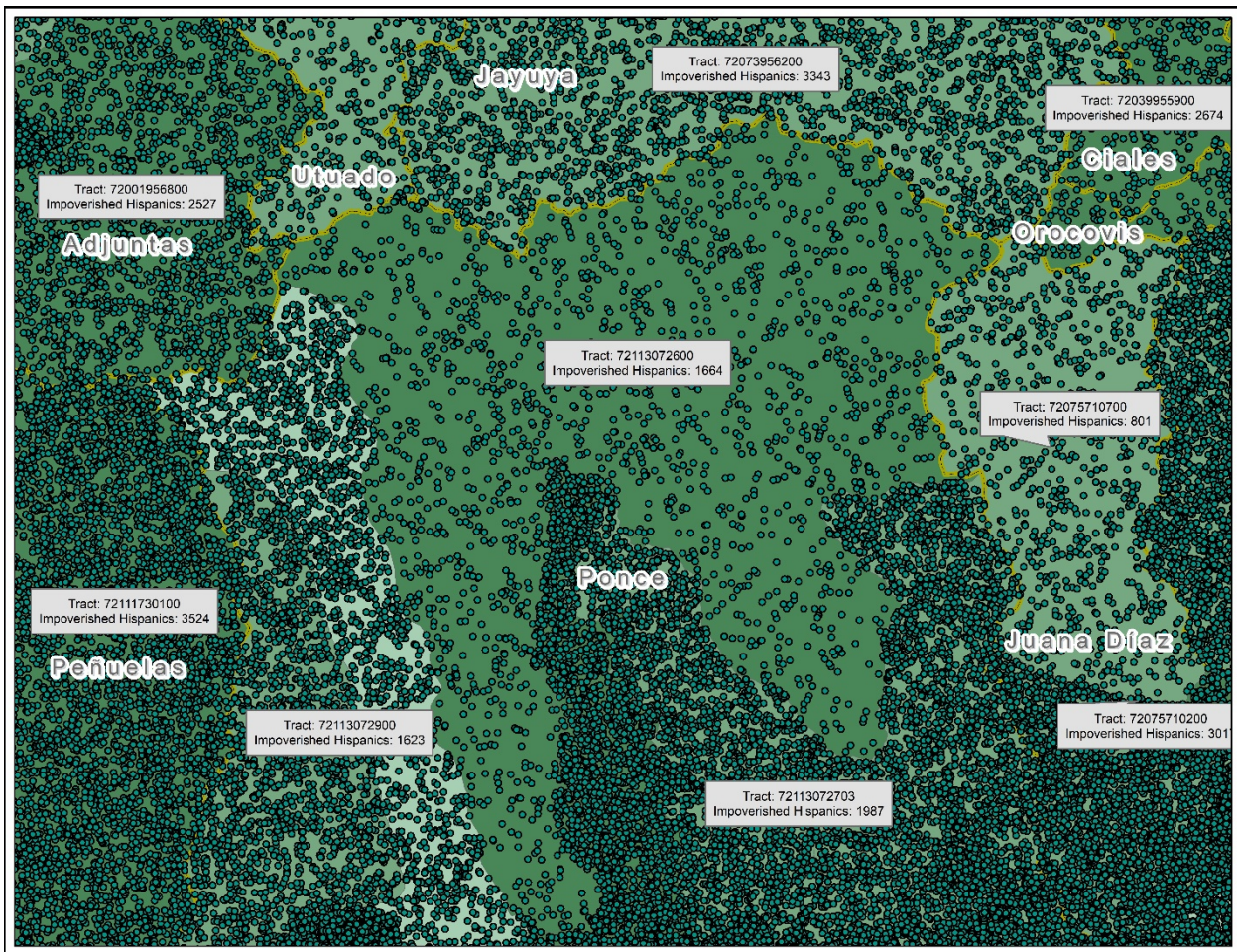


Figure 14: Example of Results from Step 1 of Building PR-R/ECAPs, converting census tract impoverished Hispanic populations into spatial representations across each tract (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table S1701)

Second, the ½-mile hexagonal grid is overlaid on these points and a count of points is calculated for each hexagonal grid (Figure 15). Here, the count of the population in any given hexagonal grid is derived from the underlying point data. **Third and finally**, each hexagonal grid contains an impoverished Hispanic population density value that is

automatically standardized using the ½ hexagonal grid. These values are classified by natural breaks and symbolized (Figure 16) for Puerto Rico resulting in a visualization of PR-R/ECAPs that show very similar patterns to those in the final risk assessment (Figure 17). This process is repeated for impoverished Non-White populations, resulting in a somewhat similar map for Puerto Rico (Figure 18).

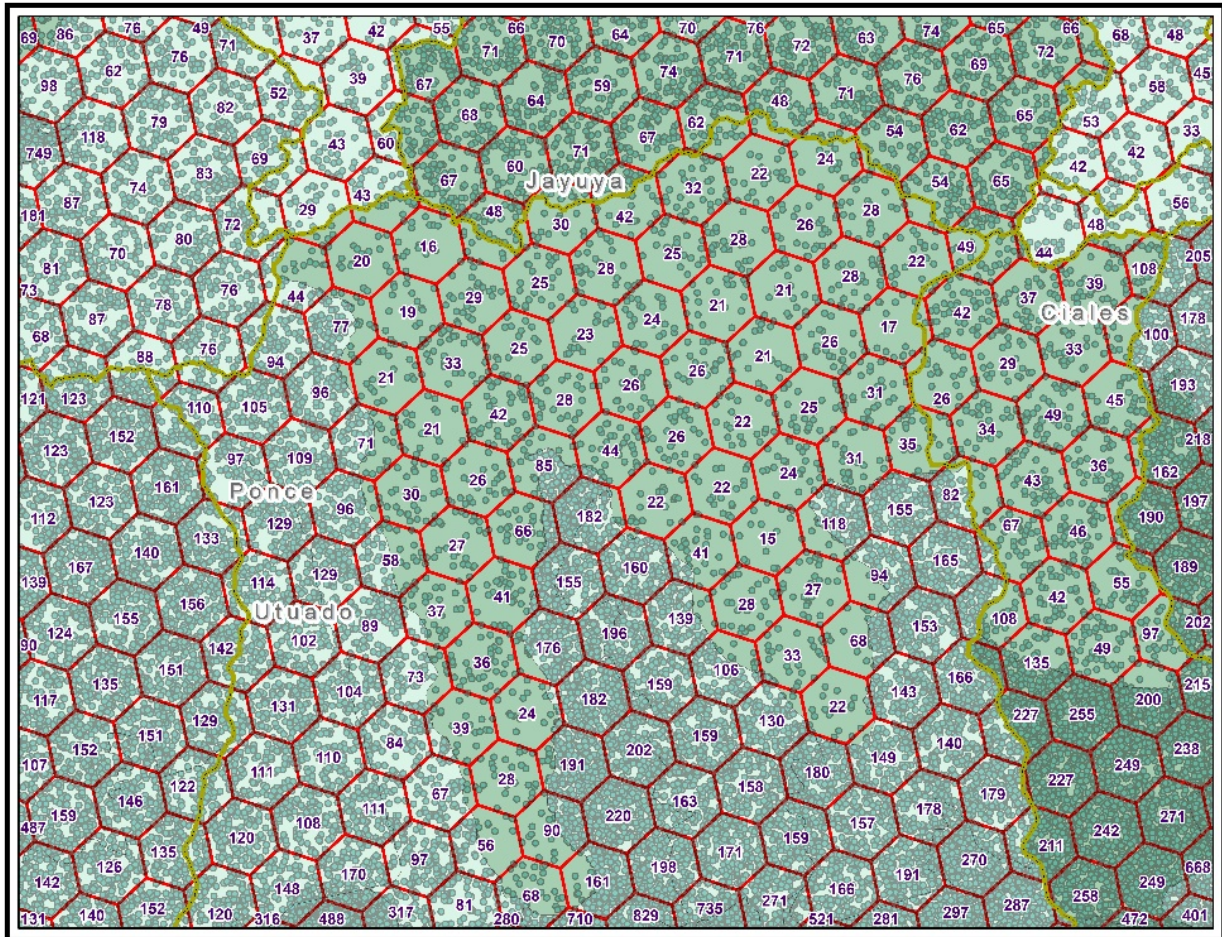


Figure 15: Example of Results from Step 2 of Building PR-R/ECAPs, converting census tract impoverished Hispanic populations into spatial representations across each tract (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table S1701)

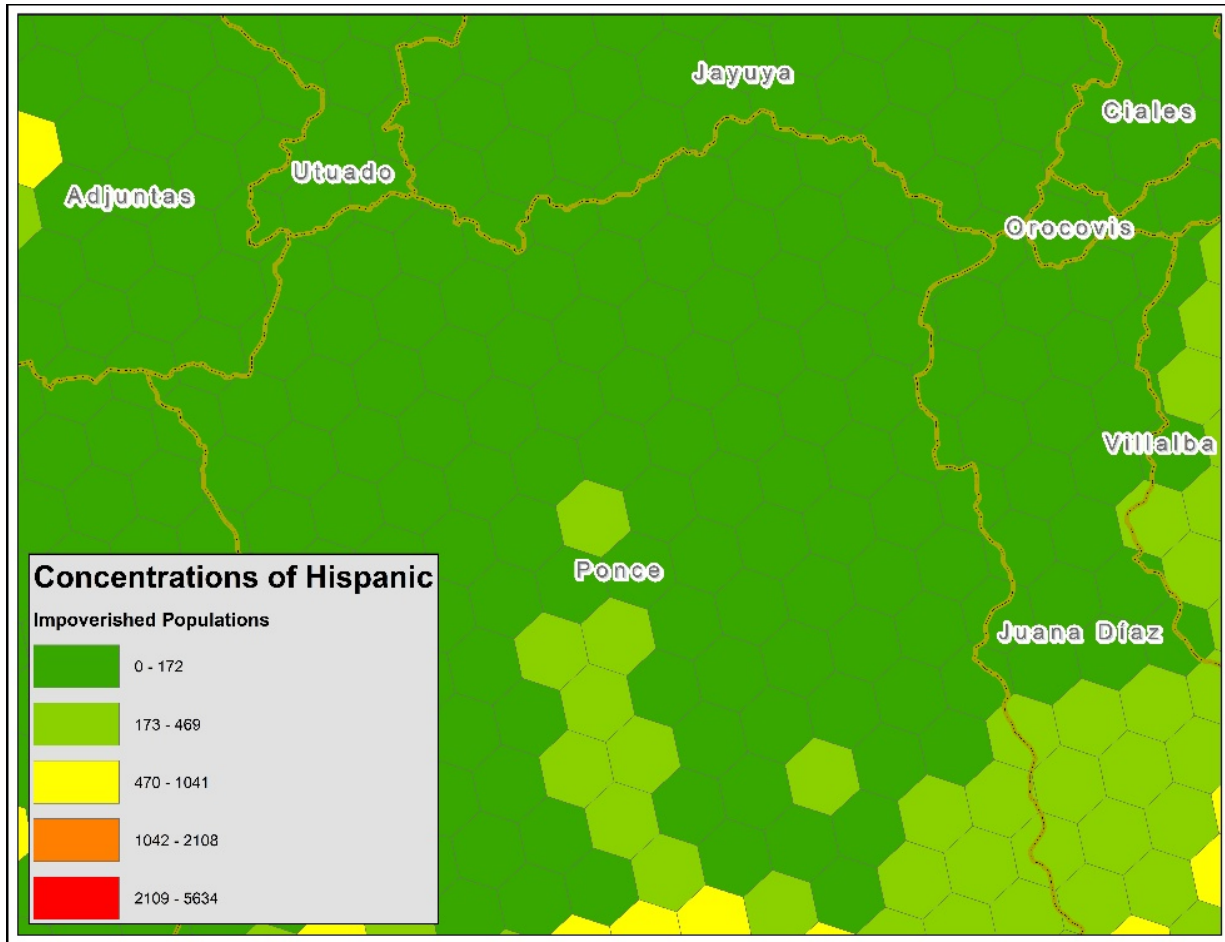


Figure 16: Example of results from Step 3 of building PR-R/ECAPs, converting census tract impoverished Hispanic populations into spatial representations across each tract (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table S1701)

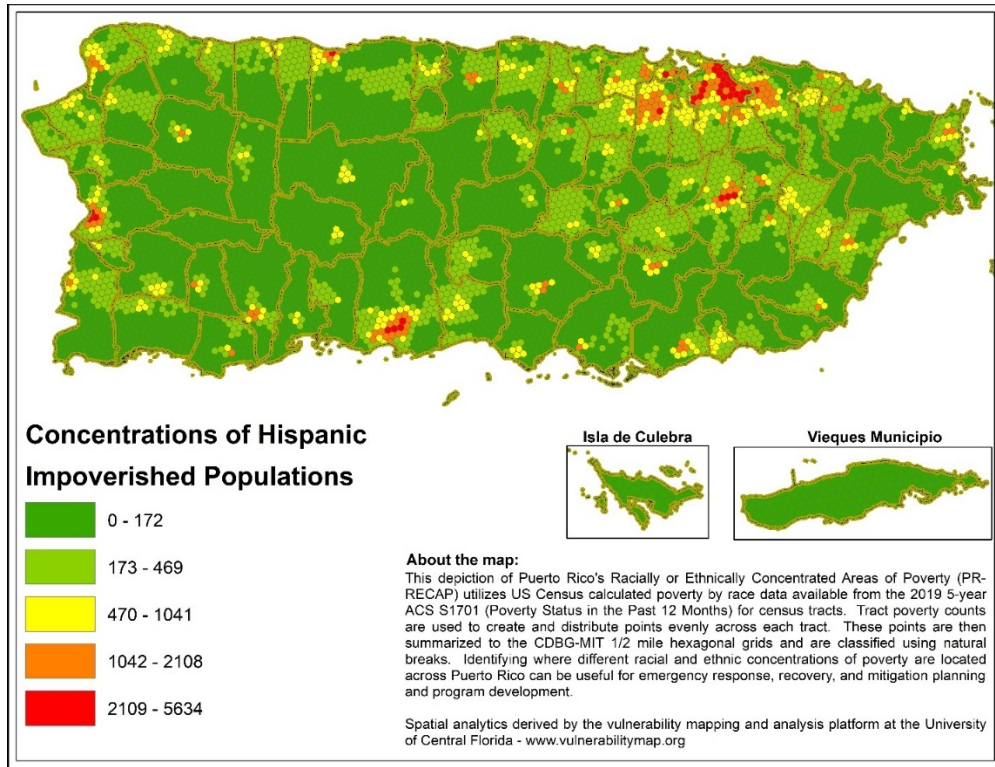


Figure 17: PR-R/ECAP Impoverished Hispanic Populations by 1/2 mile Hexagonal Grid (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table S1701)

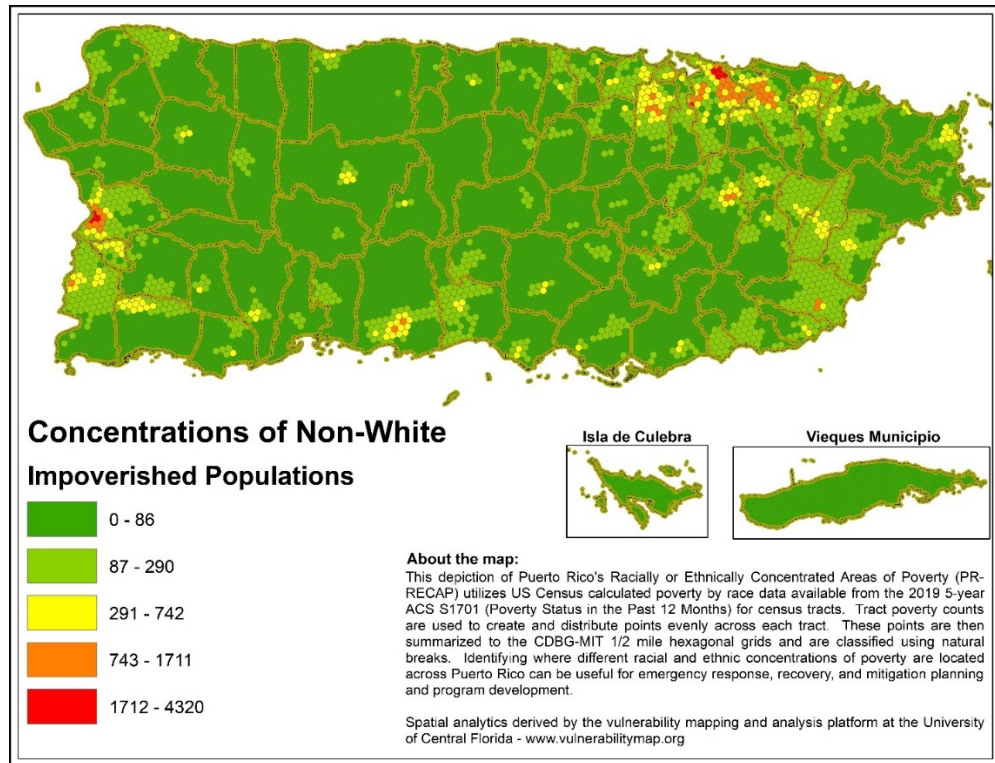


Figure 18: PR-R/ECAP Impoverished Non-White Populations by 1/2 mile Hexagonal Grid (Source: United States Census, American Community Survey 5-year (2015-2019) estimates – Table S1701)

PR-R/ECAP Alignment with the Impact on the Electrical System

Puerto Rico's needs assessment moves several steps beyond basic identification of populations and infrastructure intersections with hazard zones. Both underlying social vulnerability concentrations, which include race, class, poverty, age, and special needs variables and population density, form the basis for identifying those people facing the highest threat and with the lowest ability to cope with shocks and stresses. The Social Vulnerability Index (SoVI®),¹¹ most recently released as part of FEMA's National Risk Index,¹² provides a standardized method for identifying pre-existing socio-economic characteristics known to lead to a community's lack of capacity to prepare for, respond to, and rebound from disaster events. Although social vulnerability indicators and population density do identify the most vulnerable areas across Puerto Rico, they do not provide a comprehensive representation of all protected classes. Fortunately, populations of protected classes such as racially and ethnically concentrated areas of poverty do share a significant correlation with population at large across Puerto Rico's census tracts (Figure 19). Here, counts of impoverished Hispanic and Non-White populations for each hexagonal grid – derived from census tract data on these protected classes - correlate at greater than 92.1% and 77.7% respectively indicating that the total population component of the needs assessment is highly reliable in determining locations and concentrations of these other protected class populations of interest. Puerto Rico's needs assessment leverages the fact that total population sufficiently identifies areas where other special needs populations reside and builds upon current HUD R/ECAP data to provide a more nuanced representation of risk.

¹¹ Vulnerability Mapping Analysis Platform, www.vulnerabilitymap.org.

¹² The National Risk Index, <https://hazards.fema.gov/nri/>.

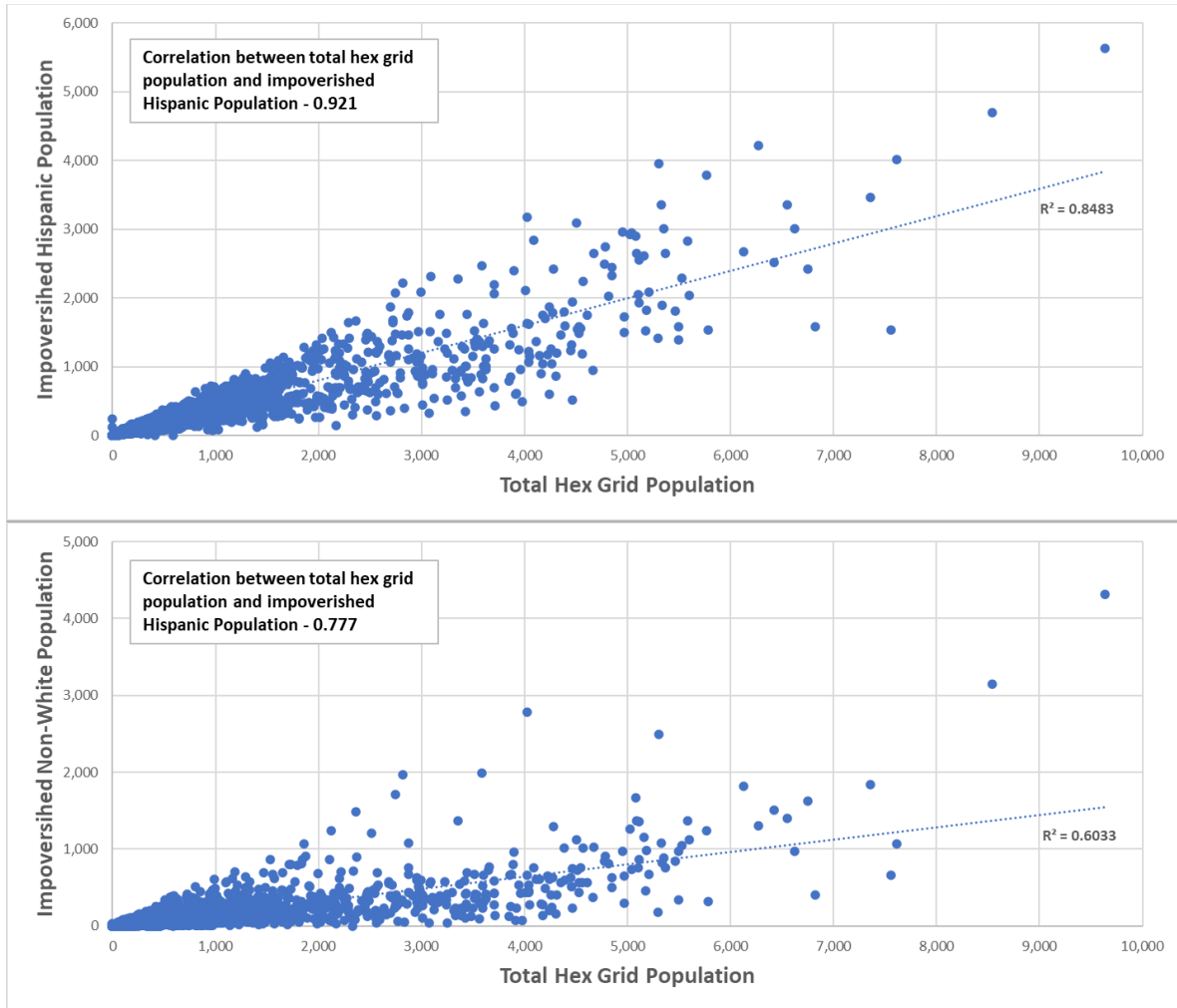


Figure 19:A. Correlation between impoverished Hispanic populations (Y-axis) and total population (x-axis), and B. Correlation between impoverished Non-White populations (Y-axis) and total population (x-axis).

To evaluate the relationship between the areas with concentrations of Hispanic Impoverished populations and R/ECAPs, Puerto Rico compared those areas to the nineteen (19) municipalities that were without power as of November 20, 2017, as illustrated in Figure 20A and 20B below.

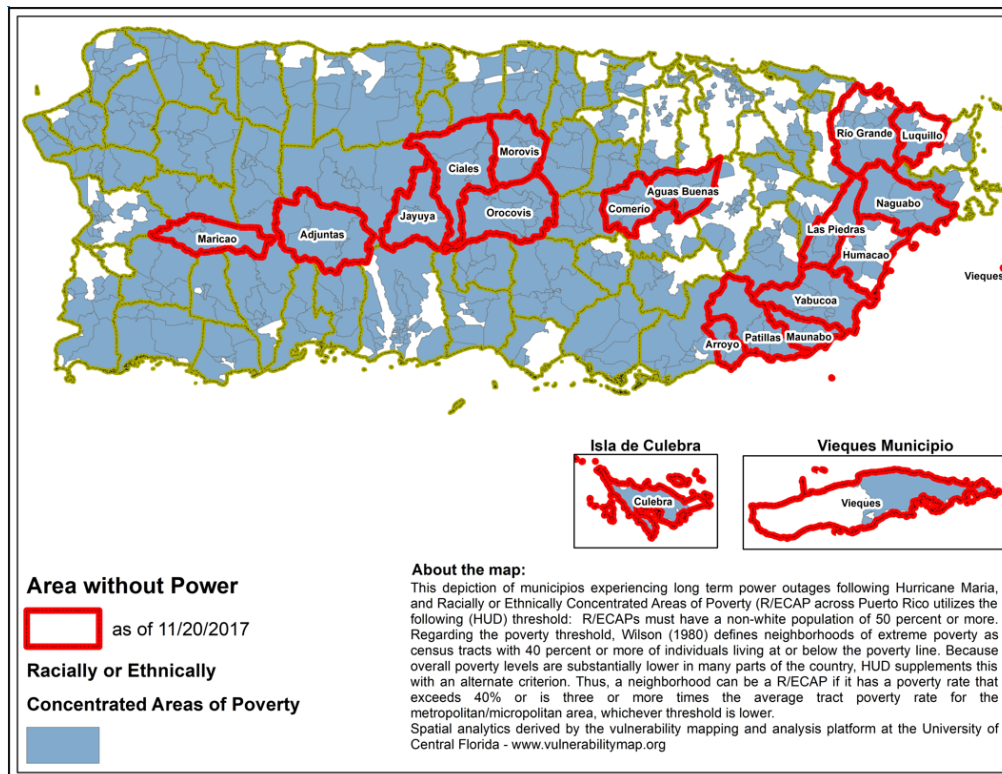
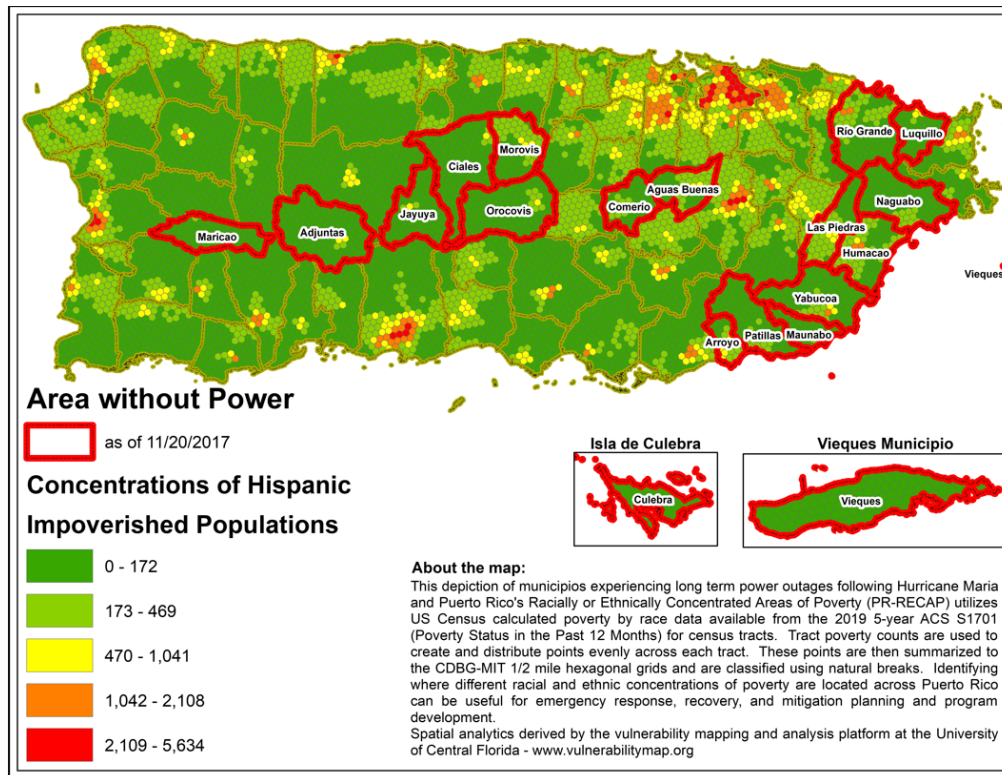


Figure 20:A. Correlation between Areas without Power as of 11/20/2017 and Impoverished Hispanic Populations, and B. Correlation between Areas without Power as of 11/20/2017 and PR-R/ECAPs.

Additionally, Puerto Rico evaluated the R/ECAP data against the non-PRASA communities that do not have solar backup available to support their water systems in times of an electrical outage or emergency (Figure 21).

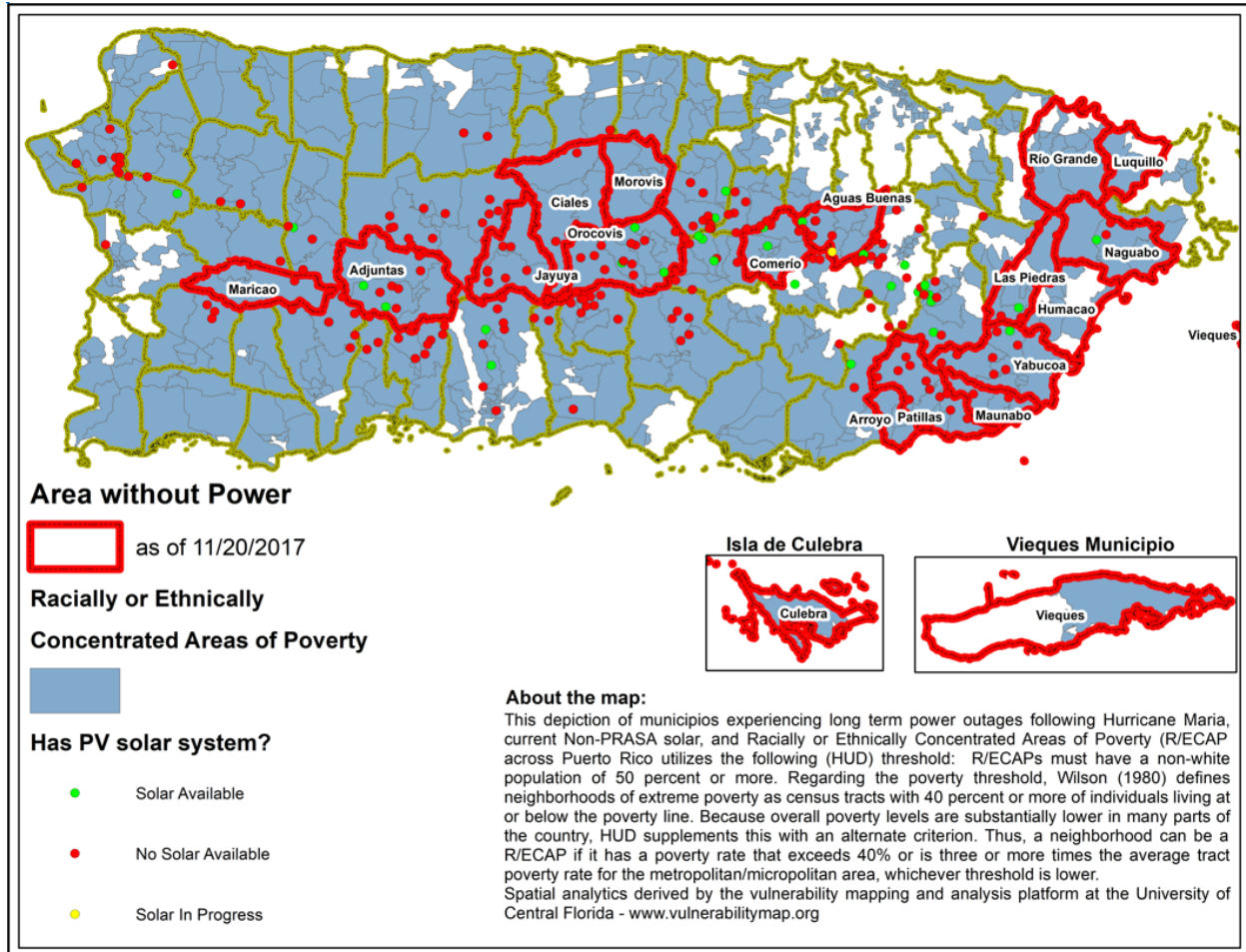


Figure 21 - Correlation between R/ECAP data against the non-PRASA communities without solar backup.

The analysis of concentrations of Hispanic impoverished populations shows that significant vulnerable populations exist in the urban metro areas and have a remaining unmet need in terms of underserved communities that were economically distressed prior to the disaster. An additional view indicates that the R/ECAP areas generally align with the non-urban metro areas (also corresponding with low-income rural areas). Puerto Rico has identified high-impact areas that include vulnerable populations, protected classes, and underserved communities as a funding priority for program implementation. The nineteen municipalities that were without power as of November 20, 2017, will be served as a priority since they address needs across many sectors and have a clear relationship to the energy unmet need tied to the storm. Since the entire Island was also without power and continues to suffer from outages and high electricity rates, Puerto Rico will also serve vulnerable populations, protected classes, and underserved communities in other areas of the Island.