

10 Years After: A 2024 Look at the *State of Exclusion*¹

In 2013, the UNC Center for Civil Rights published *The State of Exclusion: An Empirical Analysis of the Legacy of Segregated Communities in North Carolina*,² analyzing the structural impacts of housing segregation. The original report was based upon 2010 census data. This report is a ten-year update, asking whether we could measure any improvement in the environmental justice related racial disparities found in the initial study.

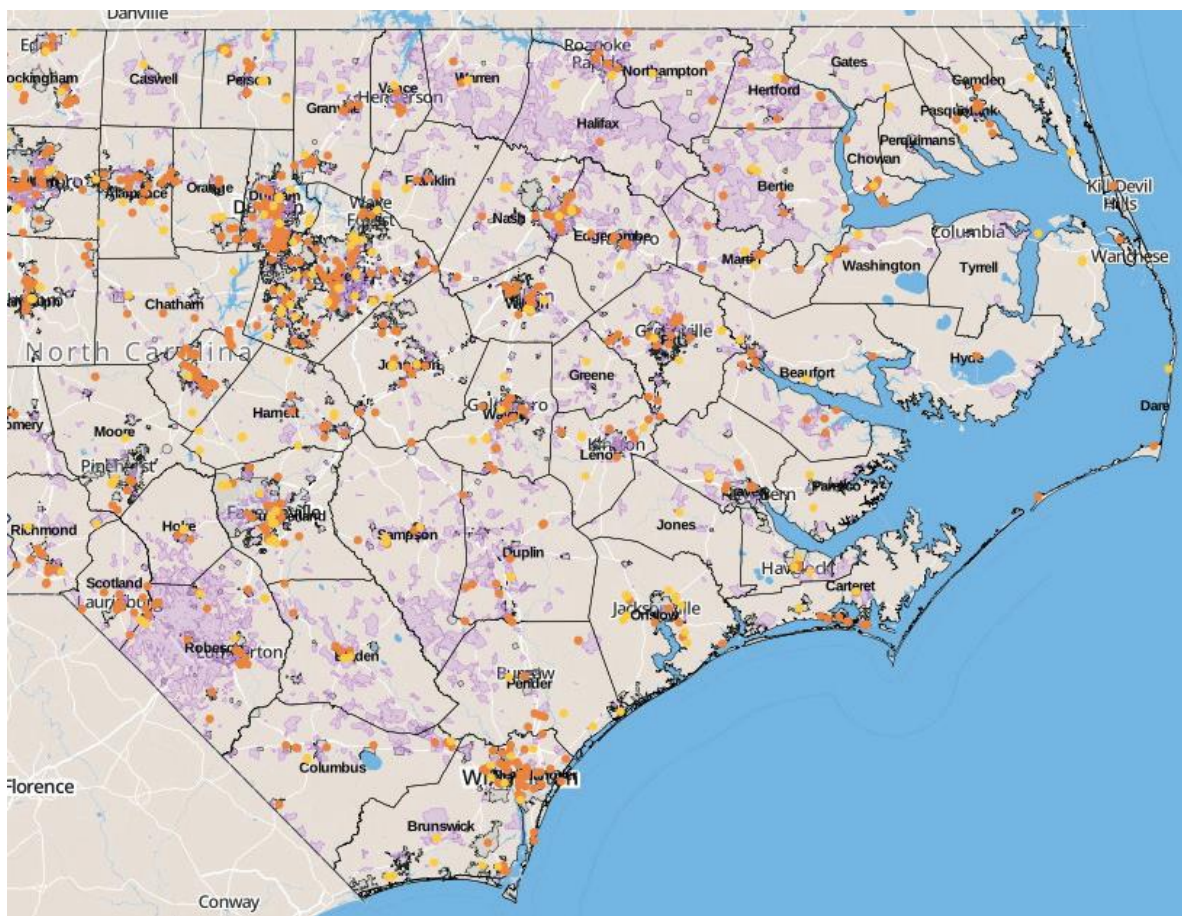


Image of the interactive map created with the 2013 report showing the clusters of supermajority non-white census blocks in purple, with the orange and yellow dots representing solid waste facilities and EPA registered point-source polluting facilities.

¹ This follow up report is the result of a collaboration between the N.C. Environmental Justice Network and Legal Aid of North Carolina's Fair Housing Project. Special thanks to Dr. Dani Lin Hunter with the NC Environmental Justice Network who coordinated this project and researchers Amaree J. Gardner, Klaus Mayr, and Acton McHenry whose research forms the basis of this report.

² UNC Center for Civil Rights, *The State of Exclusion: An Empirical Analysis of the Legacy of Segregated Communities in North Carolina*, p. 11 (2013) (hereinafter "*State of Exclusion*").

I. Methodology

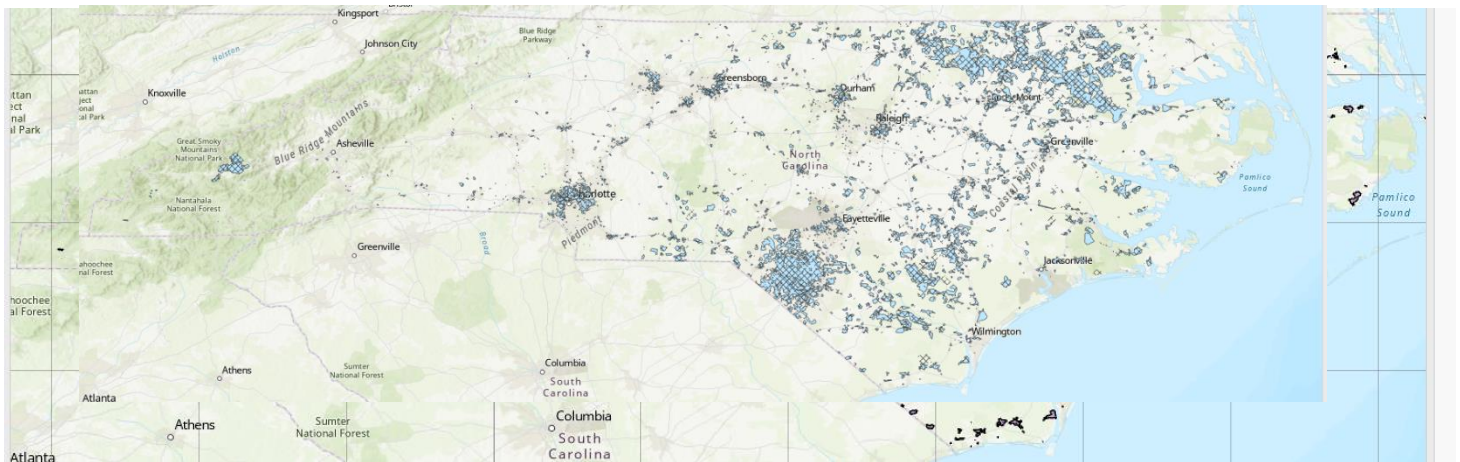
Both studies utilize the publicly available Census Redistricting Data for North Carolina, with the previous report using the 2010 census data and this 2024 report using the 2020 census data. Methodology was initially conceptualized in the 2013 report, as a standardized way to analyze community exclusion at the state level. Analysis for both reports began with identifying every census block in North Carolina where 75% or more of the population identified as any race other than white and did not identify as Hispanic or Latino. These super-majority non-white census blocks were then grouped into contiguous “clusters” as an approximation for neighborhoods or communities. This methodology is based upon a recognition that housing segregation operates at the community level. While most fair housing cases deal with individual experiences of discrimination, environmental racism and other forms of systemic discrimination are manifestations of the perpetuation of segregation. As the original report asserted, “When a neighborhood is overwhelmingly one race, all of the residents face impacts of that segregation, regardless of their own race or circumstances.”³

The original report identified 3,194 clusters of census blocks after excluding those with a population of fewer than 25 people.⁴ Between the 2010 and 2020 censuses, block definitions changed and, of course, the population increased. Repeating the same process

³ *State of Exclusion*, p. 3.

⁴ *Id.*, p. 11.

with 2020 census data identified 4,267 clusters with a population of at least 25 people, based upon 26,475 census blocks, that were 75% or more non-white, not identifying as Hispanic or Latino. The new clusters retain a similar geographic distribution, concentrated in the piedmont and Black Belt of eastern North Carolina. The increase in the number of clusters may result from the re-definition of census blocks or could reflect increasing segregation. This analysis cannot definitively answer that question, but overall, the percentage of North Carolina's population living in these hyper-segregated clusters increased substantially to 16.4% of the population, up from 13.7%.⁵



Map with both the clusters from the original study (cross-hatched) and the newly identified clusters based upon 2020 census data (blue).

After identifying the hyper-segregated clusters, or communities, the 2013 report attempted to quantify the impacts of the legacy of housing segregation in five areas, access to education, proximity to environmental hazards, access to infrastructure, quality and type of housing stock, and voting rights. The most significant quantifiable disparities were found in access to education and in the proximity to environmental hazards.

⁵ The 2013 State of Exclusion report found 1,309,073 cluster residents out of a total population of 9,535,483. Based on the 2020 census analysis, there are now 1,739,403 cluster residents out of a total state population of 10,610,803.

II. Access to Education

As school assignment maps were not available statewide, the 2013 report looked at data for the closest elementary school and found that, for residents of these hyper-segregated clusters, “the chance that the closest school is failing more than doubles.”⁶ The report found similar disparities when determining the location of high-poverty schools: “Residents of Latino and African American clusters overall have twice the likelihood that their nearest elementary school is high-poverty as the state average.”⁷

A recent study⁸ by researchers at North Carolina State University and the Civil Rights Project at UCLA focused specifically on school segregation in North Carolina in the last ten years. The report acknowledged the “connection between residential segregation and school segregation.”⁹ As one of the authors summarized, “Over the last decade, our schools in North Carolina have become more diverse, but they have also become more segregated, so we're trending in the wrong direction.”¹⁰ Because the UCLA/NCSU study addressed the question of the impacts of segregation on education, this paper does not repeat that analysis.

⁶ UNC Center for Civil Rights, *Executive Summary, The State of Exclusion: An Empirical Analysis of the Legacy of Segregated Communities in North Carolina*, p. 2 (2013) (hereinafter “Executive Summary”).

⁷ *Id.* at 3.

⁸ Ayscue, Jennifer, et. al., *Can Our Schools Capture the Educational Gains of Diversity?: North Carolina School Segregation, Alternatives and Possible Gains*, Civil Rights Project UCLA (May 2024) <https://civilrightsproject.ucla.edu/research/k-12-education/integration-and-diversity/north-carolina-report/Can-Our-Schools-Capture-the-Educational-Gains-of.pdf>

⁹ *Id.* at 23.

¹⁰ Schlemmer, Liz, *Study finds North Carolina public schools are growing more segregated*, WUNC (May 13, 2024), <https://www.wunc.org/education/2024-05-13/study-north-carolina-public-schools-segregated-race>.

III. Housing Stock and Political Exclusion

In analyzing the housing stock, the 2013 report looked at rental versus home-ownership rates, mobile homes, and vacant homes, and found significant disparities with respect to home ownership rates, but data limitations complicated the analysis of home value, construction type, and vacancy rates.¹¹ Similarly for the analysis of access to infrastructure and political exclusion, “there was insufficient available data to reach strong conclusions about exclusion based on clusters.”¹² These data limitations persist.

Underbounding, the phenomenon whereby communities are excluded from municipal boundaries and thus deprived of municipal services, and the right to vote in municipal elections, is a key aspect of exclusion and segregation and was a primary focus of the original study.¹³ One of the most surprising findings of the new analysis was the sharp increase in the population of clusters which were potentially underbounded. The 2013 study found 211,796 cluster residents were likely underbounded due to their proximity to a municipality, 16.2% of all cluster residents. The current analysis found that percentage had increased to 22.6%. The percentage of cluster residents likely underbounded from a majority white municipality increased from 3.6% to 4.7%.

Another key metric of political exclusion analyzed in the prior report looked at counties that were required to submit electoral changes to the U.S. Department of Justice for preclearance under Section 5 of the Voting Rights Act,¹⁴ a process that was struck down

¹¹ *State of Exclusion*, p. 28 (housing data is only reported at the block group level).

¹² *Executive Summary*, p. 7.

¹³ *State of Exclusion*, pp. 5-8.

¹⁴ See [Shelby Cty. v. Holder, 570 U.S. 529, 133 S. Ct. 2612 \(2013\)](#).

by the US Supreme Court in the *Shelby County v. Holder* decision just as the report was being published. Ultimately, these known impacts of racial segregation continue to elude quantification at the statewide scale. The prior State of Exclusion project addressed these issues through county level reports where more granular data could be combined with narrative history to analyze these impacts, an effort beyond the scope of the current updating project.

IV. Access to Water and Sewer

Information on the location of water and sewer lines, already scarce in 2012, is even more limited now as more and more jurisdictions are refusing to release the data due to national security concerns. As discussed, ten years ago:

Data in North Carolina on the location of water and sewer lines are incomplete, outdated, and inaccurate. Although the N.C. Rural Economic Development Center attempted to put together statewide GIS data sets to show water, sewer, and storm-water infrastructure, they often display only the boundaries of the systems, sometimes an entire county, not where the pipes actually exist. The data were collected by each individual county or utility provider. Some provided actual locations of infrastructure; most just offered blanket maps of their “service area.” Other data cover only certain counties, or are more than ten years out of date.¹⁵

Unfortunately, access to data on the location of water and sewer lines statewide has not improved. A review of the same GIS mapping library reviewed in 2013 for water and sewer data, NCOneMap.gov, still does not include block level data on the location of water and sewer lines.¹⁶ Even counties and municipalities that used to provide GIS data on the location of these utility lines have now curtailed access to that data. Raleigh, for example,

¹⁵ *State of Exclusion* at 33.

¹⁶ <https://www.nconemap.gov/>

used to include the location of its water lines on its publicly available GIS map, which now only includes city sewer lines.¹⁷

As data and maps on the location of water service remain inaccessible, another way to examine water access is by analyzing who relies on well water. Statewide, a smaller percentage of NC households now rely on well water. The 2013 report, relying on data from the North Carolina Groundwater Association (NCGWA), reported that 52% of NC households relied on wells or groundwater;¹⁸ they still report the same percentages.¹⁹ Unfortunately, NCGWA does not report race data, and “The U.S. Census stopped asking citizens their source of water supply following the 1990 Census.”²⁰ Researchers at the UNC School of Public Health have created a promising tool that may assist in future analysis of the location of wells that have been tested for various heavy metals and environmental indicators, which can be overlaid with racial demographic data, to help better understand both where excluded communities lack access to municipal water, and where the greatest need is due to well quality tests: <https://enviroscan-map.renci.org/>.²¹

V. Solid Waste Facility Proximity and Exposure

One of the starkest disparities found in the original study was the greater exposure of the super-majority non-white communities to solid waste facilities monitored by the state:

For all of North Carolina the exposure rate is only 5.34%; in other words, an average of 509,177 people live within one mile of these facilities. *Residents of majority-African American clusters are nearly twice as likely to live within*

¹⁷ <https://maps.raleighnc.gov/imaps/>.

¹⁸ *State of Exclusion*, p. 33.

¹⁹ <https://ncgwa.org/>.

²⁰ <https://www.ncgwa.org/content/uploads/2016/08/Groundwater-Use-in-NC.pdf>

²¹ See, Eaves, Lauren, et. al, *Analysis of the novel NCWELL database highlights two decades of co-occurrence of toxic metals in North Carolina private well water: Public health and environmental justice implications*, Nov. 9, 2021, <https://pubmed.ncbi.nlm.nih.gov/34767890/>.

one mile of a solid waste facility; exposure rates are 10.36% for residents of these clusters.²²

This same analysis was repeated for the new clusters based upon the 2020 census data, using an updated list of solid waste facilities. Of this list, 869 total facilities were identified, 404 of which were still considered “active” in 2024. Analyzing those 404 facilities, with the new clusters, in the same manner as the 2013 report, found a slightly lower average exposure rate for the residents of the state as a whole, 3.3% (as opposed to 5.34% in 2013), but the same disparity: **cluster residents are still approximately twice as likely to live within one mile of a solid waste facility.**²³ The new analysis found that residents of majority African American clusters have an exposure rate of 6.3%, almost twice the state average, while for those in majority African American clusters that are unincorporated but near a majority white municipality, the exposure rate is nearly trebled, at 8.9%. The below tables show the similarities; the first is from the 2013 report, (with a statewide exposure rate of 5.34%), the second shows the current analysis, with an exposure rate of 3.3%:

2013 Solid Waste Exposure Rates for Clusters by Majority Race:

	ALL CLUSTERS		UNINCORPORATED CLUSTERS NEAR ANY MUNICIPALITY		UNINCORPORATED CLUSTERS NEAR A MAJORITY WHITE MUNICIPALITY	
	POPULATION	%	POPULATION	%	POPULATION	%
LATINO	140,120	5.44%	12,425	4.45%	6,495	8.51%
ASIAN	9,478	3.45%	407	0.00%	407	0.00%
BLACK	1,097,755	10.36%	152,864	5.59%	40,296	8.14%
NATIVE AMERICAN	61,720	1.75%	46,100	2.28%	33	0.00%
TOTAL	1,309,073	9.37%	211,796	4.79%	47,231	8.12%

²² State of Exclusion, p.17.

²³ The apparent decrease in exposure rates overall is probably mostly due to changes in how the state Department of Environmental Quality tracks and reports solid waste facilities, but also may reflect overall population shifts away from rural areas.

2024 Solid Waste Exposure Rates for Clusters by Majority Race:

	ALL CLUSTERS		ALL CLUSTERS NEAR A MUNICIPALITY		CLUSTERS NEAR A MAJORITY WHITE MUNICIPALITY	
	POPULATION	%	POPULATION	%	POPULATION	%
LATINO	354,378	6.3%	103,339	6.8%	21,876	13.8%
ASIAN	89,259	5.1%	19,381	2.9%	5,899	3.7%
BLACK	992,086	6.3%	216,629	6.2%	42,504	8.9%
NATIVE AMERICAN	79,640	2.2%	9,800	3.4%	1,100	10.1%
TOTAL	1,714,088	5.9%	392,347	6.0%	81,544	9.8%

Comparing these charts reveals that while the overall populations of Black and Native American clusters have been relatively stable, the number of people living in majority Latino or Asian clusters has increased dramatically, as have their exposure rates to solid waste facilities, relative to the overall lower state average exposure rate.

The similarities to the 2013 results persist when comparing the solid waste facility exposure rates across regions of the state:

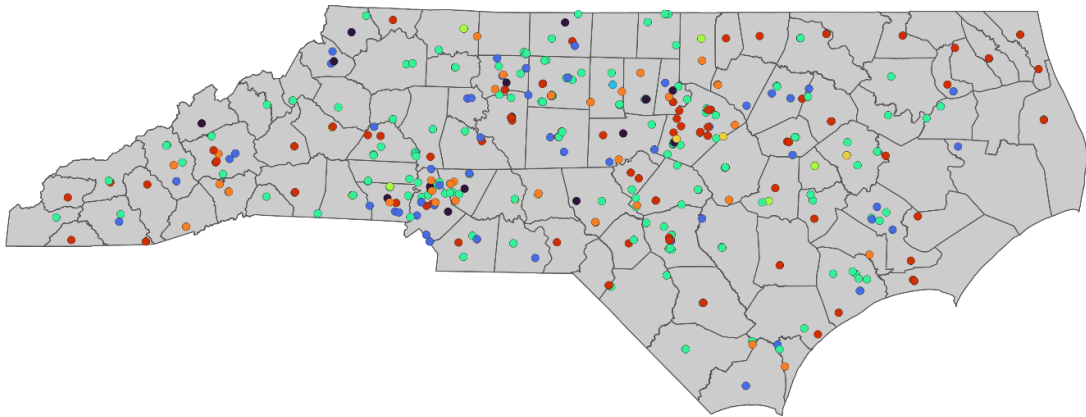
2013 Solid Waste Exposure Rates for Clusters by Region:

	ALL CLUSTERS		GENERAL POPULATION		LIKELY UNDERBOUNDED CLUSTERS	
	POPULATION	%	POPULATION	%	POPULATION	%
COASTAL PLAIN	439,729	5.25	2,504,184	4.17	155,565	4.10
MOUNTAIN	17,177	4.55	1,110,320	5.19	3,298	10.79
PIEDMONT	852,167	11.60	5,920,979	5.86	52,933	6.44
STATEWIDE	1,309,073	9.37	9,535,483	5.34	211,796	4.79

2024 Solid Waste Exposure Rates for Clusters by Region:

	ALL CLUSTERS		GENERAL POPULATION		LIKELY UNDERBOUNDED CLUSTERS	
	POPULATION	%	POPULATION	%	POPULATION	%
COASTAL PLAIN	514,126	2.6%	2,806,814	1.6%	52,295	1.7%
MOUNTAIN	20,649	1.3%	1,155,179	2.8%	1,996	5.4%
PIEDMONT	1,179,313	7.4%	6,648,810	4.0%	339,176	6.6%
STATEWIDE	1,714,088	5.9%	10,439,388	3.3%	392,347	6.0%

NC Solid Waste Facilities By Type (Open in 2024)



- Collection
- Compost
- Incinerator
- Landfill
- Material Recovery
- Tire Processing
- Transfer

Another way to examine whether NC has made any progress is by examining those facilities which were operational but are no longer active facilities. Across North Carolina, environmental justice communities have continued to advocate for the closure of solid waste facilities which disproportionately burden their communities. Four facilities listed as active in 2012 were closed by 2024: two municipal solid waste landfills and two LCID (land-clearing and inert debris) landfills. Three of them were in majority white areas, as analyzed using the EPA's EJScreen tool for a one-mile radius from the facility, and the fourth was in an area that had a slight majority People of Color, but not a high enough majority to qualify as a cluster.²⁴ None of the facilities which closed were those that were disproportionately burdening the clusters, nor were any of them in predominantly low income communities.

²⁴ <https://ejscreen.epa.gov/mapper/>

EPA-Monitored Polluting Sites

This analysis was based on the EPA’s ECHO Exporter file²⁵ which includes data about facilities monitored by the EPA. Since the last State of Exclusion report was published, the way this data is organized has changed. Without more clarification from the agency about how the reporting of this data has changed, it is not possible to do a perfect one-to-one comparison between EPA-monitored polluting facilities in 2013 vs. 2024.²⁶ However, while the datasets have changed, the exposure rates are comparable. The 2013 study found that:

Almost a quarter (24.25%) of all North Carolinian residents live within one mile of an EPA-registered polluter, but 41% of residents of Latino clusters and 44% of residents of African American clusters live within a mile of such pollution sources.²⁷

Based upon the current, presumably smaller, list of EPA facilities, only 7.4% of North Carolina residents live within a mile of one of these facilities, but 10.7% of residents of majority Latino clusters and 11.9% of residents of majority African American clusters are within a one-mile exposure radius. While the overall exposure rates are lower based upon

²⁵ <https://echo.epa.gov/tools/data-downloads#exporter>

²⁶ The 2024 ECHO Exporter files columns “CAA_PERMIT_TYPES” and “CWA_PERMIT_TYPES” which indicate the Clean Air Act (CAA) and Clean Water Act (CWA) permit types associated with the facility. The values in these columns include, for CAA permits: Major, Federally Reportable Minor, Other Minor, Synthetic Minor, and NULL; and for CWA permits: Major and Minor. RCRA permitted facilities do not have the flags that indicate if it is a “major” facility, but the ECHO data does include a separate FAC_MAJOR_FLAG field which “Determines if the facility is a designated as a major.” This analysis filtered out only the facilities either have a CWA or CAA major flag, or are designated RCRA facilities which also have FAC_MAJOR_FLAG. This process resulted in a list of 642 facilities. The data used here differs from the data used in the original report, which used the EPA Geospatial Data Download Service rather than the EPA ECHO Exporter data. Because the structure of these datasets differs, it is not possible to do a one-to-one comparison between this data and the 2013 data.

²⁷ State of Exclusion, p. 20.

the newer, updated list, the ratios of exposure rates for cluster residents as compared to the state average are similar to 2013.

2024 EPA Facility Exposure Rates for Clusters by Region

	ALL CLUSTERS		GENERAL POPULATION		LIKELY UNDERBOUNDED CLUSTERS	
	POPULATION	%	POPULATION	%	POPULATION	%
COASTAL PLAIN	512,404	6.8%	2,806,814	5.0%	52,295	16.0%
MOUNTAIN	20,653	9.1%	1,155,179	7.0%	1,996	39.9%
PIEDMONT	1,206,346	13.2%	6,648,810	8.5%	339,176	9.3%
STATEWIDE	1,739,403	11.2%	10,610,803	7.4%	393,467	10.3%

VI. Conclusions:

Unfortunately, major changes in the way data is collected and reported prevented a direct comparison and update of the original 2013 *State of Exclusion* report. However, an analysis of what data is available does not suggest the hoped-for improvement. More North Carolinians, both as a percentage and gross numbers, now live in hyper-segregated communities that are more than 75% or more non-white. Of those cluster residents, a higher percentage than before show the earmarks of being underbounded or excluded from municipal boundaries. Cluster residents are still about twice as likely to live within a mile of a solid waste facility and have similar disproportionality ratios for exposure to EPA monitored polluting facilities as in 2013.

The work that provided the basis for this publication was supported by funding under a grant with the U.S. Department of Housing and Urban Development. The substance and findings of the work are dedicated to the public. The author and publisher are solely responsible for the accuracy of the statements and interpretations contained in this publication. Such interpretations do not necessarily reflect the views of the Federal Government.