

Durham County Tax Appeal Study

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I. Executive Summary

Durham County contracted with the University of North Carolina at Chapel Hill School of Government (the “School”) to study recent property tax appeal data for evidence of systemic bias (the “Study”).

To conduct the Study, the School analyzed residential property tax appeal data related to Durham County’s two most recent county-wide reassessments in 2016 and 2019 to determine if appeal rates or appeal results varied based on three independent variables: (i) property values; (ii) a neighborhood’s minority population percentage; or, (iii) a neighborhood’s average per capita income. Stated differently, the Study sought to determine if residential property owners in whiter, more affluent neighborhoods were more likely to appeal their property tax assessments and/or more likely to obtain a better result when they did appeal as compared to property owners in less white, less affluent neighborhoods.²

a. Appeal Rates

The data from both 2016 and 2019 demonstrated that **appeal rates are generally higher for (i) neighborhoods with lower minority populations and (ii) higher value homes**. In other words, taxpayers in more white neighborhoods and those who owned more expensive homes on average appealed their tax assessments more often than did taxpayers in less white neighborhoods and those who owned less expensive homes.

	2016 Reassessment Appeal Rates (%)	2019 Reassessment Appeal Rates (%)
All Properties in Study	5.4	4.2
Majority White Neighborhoods ³	6.6	4.6
Majority Minority Neighborhoods	3.6	3.6
Low Minority % Neighborhoods ⁴	9.8	6.2
High Minority % Neighborhoods ⁵	3.4	4.1
High Value Properties (%) ⁶	14.9	11.2
Low Value Properties (%) ⁷	6.9	2.8

There was no consistent relationship between appeal rates and neighborhood per capita income, the third independent variable included in the Study.

b. Appeal Results

Appeal results, defined as percentage reduction in tax assessment, did not present a consistent relationship to property values, race, or income. In other words, when taxpayers in poorer, less white neighborhoods appealed their tax assessments they did not suffer worse results on average than did taxpayers from wealthier, more white neighborhoods.

II. Methodology

The original data set provided by Durham County consisted of 5,793 property tax appeals⁸ from 2016 and 4,756 appeals from 2019, out of roughly 100,000 residential property tax parcels in the county.⁹ To ensure that the Study focused on “typical” residential property, the School removed from the data set properties with very low appraised values (<\$15,000), batch appeals of identical properties submitted by developers, and appeals that produced extreme results (decreases in appraised values > 40% or increases in appraised values >20%). This process reduced the databases by just over twenty percent, leaving 4,442 appeals in 2016 and 3,756 in 2019 to be analyzed.

Because it was impossible to determine the actual race or income level of all of Durham County’s residential property owners, the Study instead relied on demographic information from the United States Census Bureau (the “Census”) organized by block group.¹⁰ The School located each of Durham County’s residential property parcels into one of the county’s 152 block groups. For each block group, the Census provided minority population percentage and average per capita income. As a result, the School was able to determine an average appeal rate for each block group and organize those block groups based on minority population percentage and on average per capita income. Similarly, the School could determine the demographics of the “neighborhood” (in other words, the block group) from which each appeal arose.

For each of the independent variables—property value, neighborhood minority population percentage, and neighborhood average per capita income—the appeals were segmented into “bins” containing roughly 500 appeals each. There were 8 bins for the 2016 appeal data and 7 bins for the 2019 data. The 2016 data set was larger and required an extra bin to keep all bins at roughly similar size. For 2016, each bin contains an average of 555 appeals, or roughly 12.5% of that year’s appeals. For 2019, each bin contains an average of 536 appeals, or roughly 14.25% of that year’s appeals.

For each bin, average values for each of the three independent variables were calculated. Scatter plot graphs were then created to determine if any of these independent variables had a consistent and material impact on the dependent variables (appeal rates or appeal results).

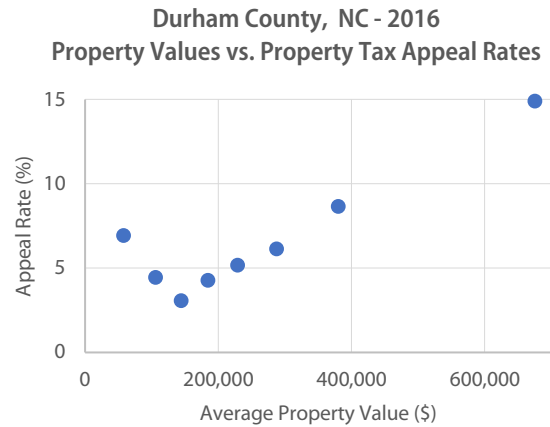
Note that the large variance in the data made it impossible to add curves (trend lines) to the scatter plots that would accurately illustrate the specific statistical relationships between the independent variables (property value, neighborhood race, and neighborhood per capita income) and the dependent variables (appeal rate and appeal results). In other words, while the data reveal that appeal rates generally increase as property values increase, the data did not allow for the calculation of exactly how much the appeal rate would increase for a given increase in property value. Similarly, the data show that appeal rates generally decrease as minority population percentages increase, but it did not allow for the calculation of exactly how much the appeal rate would decrease for a given increase in minority population percentage.

III. Results

As property values *increased*, appeal rates generally *increased*.

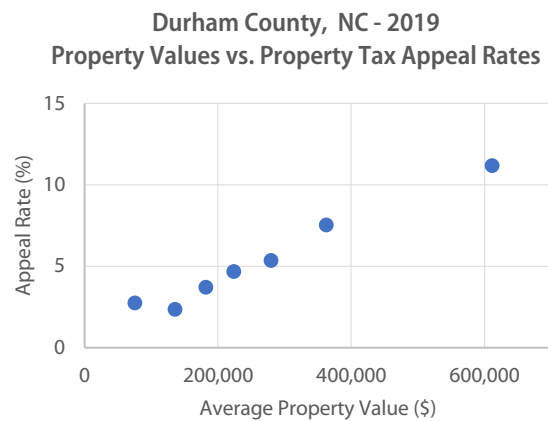
2016 Data

Bin #	Average Property Value (\$)	Appeal Rate (%)
1	57800	6.92
2	105300	4.44
3	144200	3.07
4	184500	4.26
5	229100	5.15
6	287300	6.12
7	380100	8.67
8	674600	14.92



2019 Data

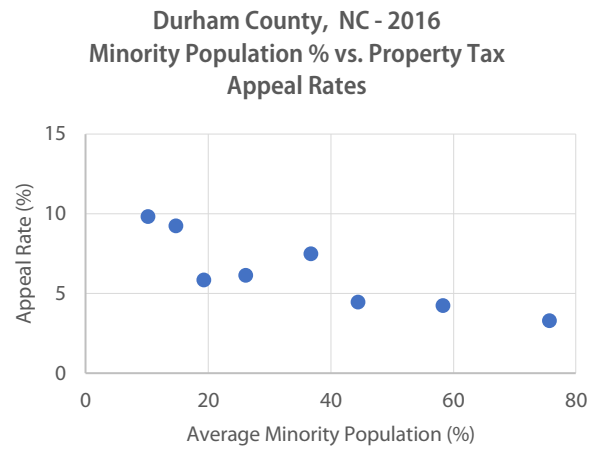
Bin #	Average Home Value (\$)	Appeal Rate (%)
1	74820	2.76
2	135380	2.34
3	181040	3.72
4	223570	4.68
5	279440	5.35
6	362200	7.55
7	610660	11.20



As minority population percentages *increased*, appeal rates generally *decreased*.

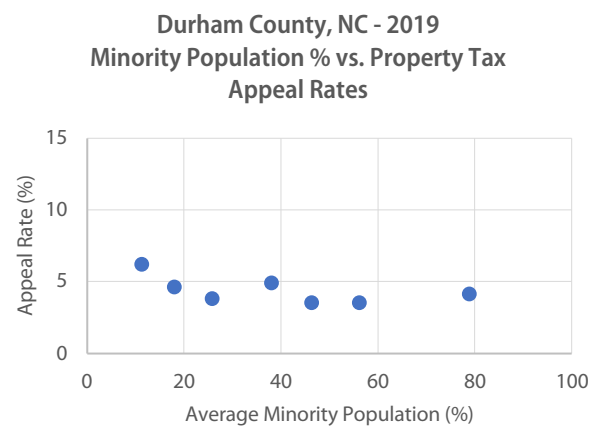
2016 Data

Bin	Average Minority Population %	Appeal Rate (%)
1	10.1	9.8
2	14.7	9.23
3	19.2	5.82
4	26.1	6.12
5	36.7	7.49
6	44.4	4.43
7	58.2	4.22
8	75.6	3.28



2019 Data

Bin	Average Minority Population (%)	Appeal Rate (%)
1	11.3	6.2
2	18.1	4.6
3	25.8	3.8
4	38.1	4.9
5	46.4	3.5
6	56.2	3.5
7	78.9	4.1



But neither property values nor minority population percentages had a similarly consistent relationship to appeal *results*.

Note that in scatter plot graphs for appeal results the Y-axis values show percentage *decrease* in assessment value after the appeal; a higher Y value indicates a more successful appeal for the taxpayer.

Property Values vs. Appeal Results, 2016 Data

Bin	Average Property Value (\$)	Median % Reduction in Assessment
1	57800	10.0
2	105300	10.8
3	144200	6.1
4	184500	7.2
5	229100	7.5
6	287300	7.7
7	380100	8.7
8	674600	9.9

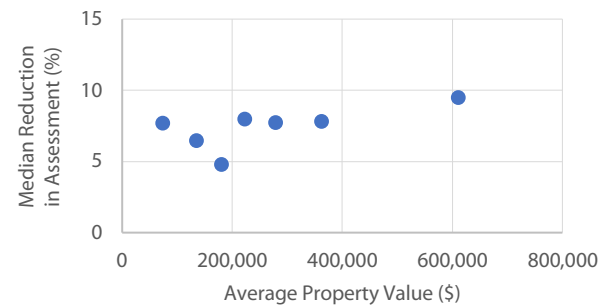
Durham County, NC - 2016
Property Values vs. Property Tax Appeals Results



Property Values vs. Appeal Results, 2019 Data

Bin	Average Home Value (\$)	Median Reduction % in Assessment
1	74820	7.7
2	135380	6.46
3	181040	4.81
4	223570	7.97
5	279440	7.74
6	362200	7.8
7	610660	9.5

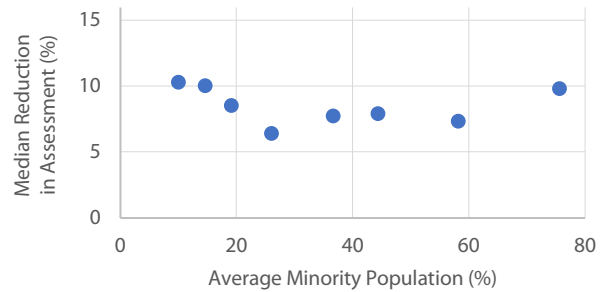
Durham County, NC - 2019
Property Values vs. Property Tax Appeals Results



**Minority Population Percentage vs.
Appeal Results, 2016 Data**

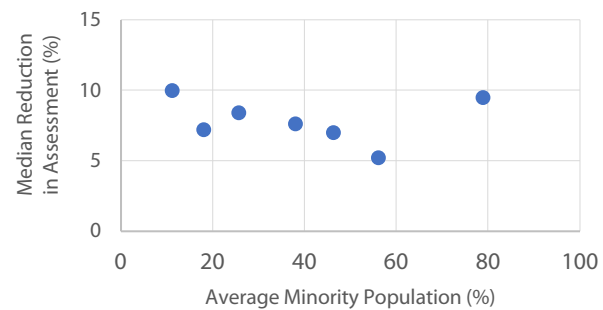
Bin	Average Minority Population %	Median % Reduction in Assessment
1	10.1	10.30
2	14.7	10.00
3	19.2	8.50
4	26.1	6.40
5	36.7	7.70
6	44.4	7.90
7	58.2	7.30
8	75.6	9.80

Durham County, NC - 2016
Minority Population % vs. Property Tax
Appeal Results


**Minority Population Percentage vs.
Appeal Results, 2019 data**

Bin	Average Minority Population %	Median Reduction % in Assessment
1	11.3	10.00
2	18.1	7.20
3	25.8	8.40
4	38.1	7.60
5	46.4	7.00
6	56.2	5.20
7	78.9	9.50

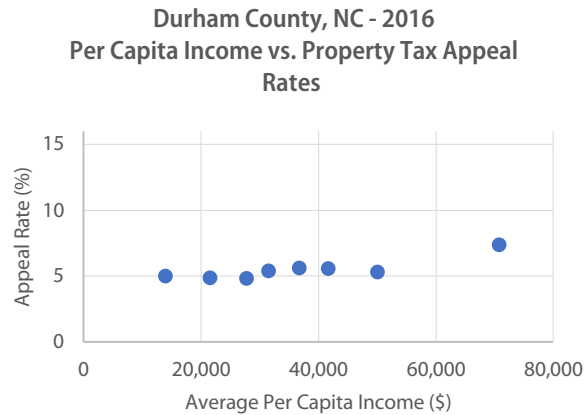
Durham County NC - 2019
Minority Population % vs. Property Tax
Appeal Results



Neighborhood per capita income did not have a consistent relationship with appeal rates or appeal *results*.

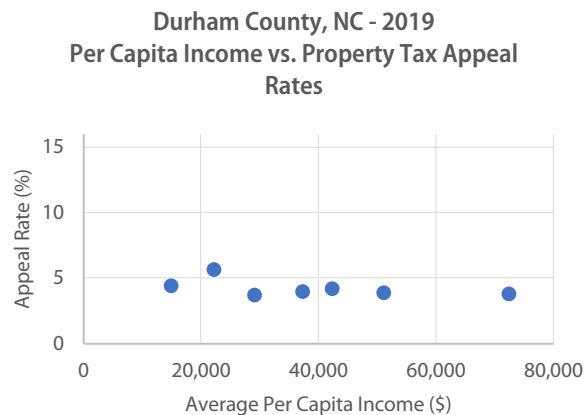
Per Capita Income vs. Appeal Rates, 2016

Bin	Average Per Capita Income (\$)	Appeal Rate (%)
1	13900	5.03
2	21500	4.90
3	27700	4.83
4	31400	5.44
5	36700	5.65
6	41600	5.58
7	50000	5.31
8	70700	7.39



Per Capita Income vs. Appeal Rates, 2019

Bin	Average Per Capita Income (\$)	Appeal Rate (%)
1	14900	4.40
2	22200	5.66
3	29100	3.71
4	37300	3.98
5	42300	4.21
6	51100	3.88
7	72400	3.82

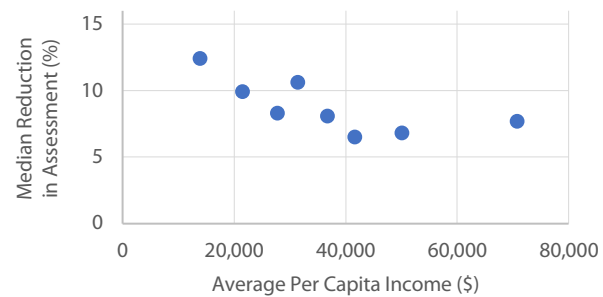


While there appears to be a negative relationship between per capita income and appeal results for 2016, those results were not repeated in 2019.

Per Capita Income vs. Appeal Results, 2016

Bin	Average Per Capita Income (\$)	Median Reduction % in Property Assessment
1	13900	12.40
2	21500	9.90
3	27700	8.30
4	31400	10.60
5	36700	8.10
6	41600	6.50
7	50000	6.80
8	70700	7.70

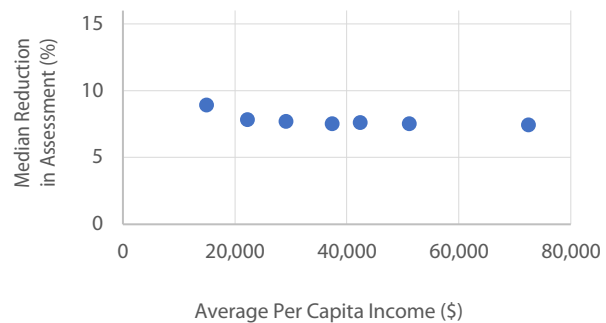
Durham County, NC - 2016
Per Capita Income vs. Property Tax Appeal Results



Per Capita Income vs. Appeal Results, 2019

Bin	Average Per Capita Income (\$)	Median Reduction % in Assessment
1	14900	8.90
2	22200	7.80
3	29100	7.70
4	37300	7.50
5	42300	7.60
6	51100	7.50
7	72400	7.40

Durham County, NC - 2019
Per Capita Income vs. Property Tax Appeal Results



IV. Impact

What do these results mean for the Durham County tax office and its practices going forward?

First, the lower appeal rates among taxpayers who live in minority neighborhoods or who own less expensive homes may contribute to a “property tax assessment gap” that benefits whiter, more expensive neighborhoods. This assessment gap is the gap between the ratio of tax assessments to sales prices for Black-owned property as compared to that same ratio for non-Black owned property. One national study concluded that the assessment gap in North Carolina was 11%. In other words, Black-owned properties in North Carolina were assessed about 11% higher than white-owned properties as compared to actual sales prices. This result places North Carolina just below the study’s national average assessment gap of 12.7% but in the highest third overall.¹¹

Most appeals produce reductions in assessed values.¹² If taxpayers owning less expensive homes and living in majority minority neighborhoods are less likely to appeal their tax appraisals, it follows that the property owned by those taxpayers on average would be assessed higher relative to market value than property owned by other taxpayers.

Second, the lower appeal rates for certain groups of taxpayers may occur in part due to a lack of education and information about the property tax appeal process. Additional outreach by the tax office targeting minority and less affluent neighborhoods might alleviate some of that information deficit. Taxpayers may be more likely to take advantage of the property tax appeal process if they learn that the process is free, does not require an attorney, and generally does not involve a home inspection.

One important and very positive result from the Study is that there is no evidence of systemic bias in appeal *results* based on property values or a taxpayer’s race. Appeal hearings before the county board of equalization and review are held in person, meaning the race of the taxpayer would be apparent to the tax office and to the board. If these decision makers were biased against minority taxpayers, one would assume that bias would reveal itself in appeal results that vary by the race of the appealing taxpayer. The Study finds no evidence of racially biased appeal results in Durham County.

NOTE:

I am grateful to Dwane Brinson, Durham County tax administrator, and his staff, in particular Starlin Beatty, Kimberly Horton, and Aloysius Corcoran for providing the appeals data and helping us understand it. David Dunmire conducted the expert data analysis necessary for this study and authored a more detailed summary of his work in a separate memo that is also being shared with Durham County.

Endnotes

1. McLaughlin is a professor of public law and government at the School who focuses on local taxation. mccloughlin@sog.unc.edu
2. As used in the Study, the term “neighborhood” refers to block groups defined by the United States Census Bureau. See section II and note 10 for more details.
3. Based on current data, 88 of Durham County’s 152 census block groups are majority white and 64 are majority minority.
4. The “Low Minority % Neighborhood” category represents the appeal rate for census block groups with the lowest minority population percentages. For 2016, the average minority population percentage for these census blocks was 10.1%. For 2019, the average minority population percentage for these census blocks was 11.3%. See section II for more details.
5. The “High Minority % Neighborhood” category represents the appeal rate for census block groups with the highest minority population percentages. For 2016, the average minority population percentage for these census blocks was 75.6%. For 2019, the average minority population percentage for these census blocks was 78.9%. See section II for more details.
6. The “High Value Property” category represents the appeal rate for properties with the highest initial assessed values. For 2016, this category included all appeals for properties with initial assessed values above \$450,000, which amounted to 558 appeals with an average assessed value of \$674,600. For 2019, this category included all appeals for properties with initial assessed values above \$425,000, which amounted to 545 appeals with an average assessed value of \$610,660. See section II for more details.
7. The “Low Value Property” category represents the appeal rate for properties with the lowest initial assessed values. For 2016, this category included all appeals for properties with initial assessed values below \$85,000, which amounted to 557 appeals with an average assessed value of \$57,800. For 2019, this category included all appeals for properties with initial assessed values below \$110,000, which amounted to 508 appeals with an average assessed value of \$74,800. See section II for more details.
8. The Study analyzed formal appeals by taxpayers that were heard by the county board of equalization and review. It did not include informal inquiries by taxpayers about their assessments that were resolved by the assessor prior to the filing of formal appeals.
9. Durham County listed 97,644 residential property parcels in 2016 and 102,323 residential property parcels in 2019. As used in the Study, the term “residential property” includes free-standing homes, multiplex homes, townhomes, and condominiums, regardless of whether the property is occupied by the owner or a tenant. The term excludes apartment buildings in which all units are owned by a single party.
10. A census block group is the smallest geographical unit for which the Census publishes sample demographic data. In the 2010 Census, there were 217,740 block groups across the United States, 6,155 across North Carolina, and 152 across Durham County. See *2010 Census Tallies*, www.census.gov. Using the 2016 estimated Durham County population of 307,826, the county’s 152 block groups had an average population of 2,025 residents.
11. For more about the assessment gap, see this post from the School’s Local Government Law blog: <https://canons.sog.unc.edu/systemic-bias-and-property-taxes/>. A related study that analyzed statistics specific to Durham County concluded that in 2016 the county’s least expensive homes and homes from neighborhoods with higher minority population percentages were assessed higher than the county’s most expensive homes and homes from white neighborhoods. (Results available here: https://s3.us-east-2.amazonaws.com/propertytaxdata.uchicago.edu/nationwide_reports/desktop/Durham%20County_North%20Carolina.pdf) These results are consistent with those from the Study discussed in this paper.
12. Roughly 80% of appeals from Durham County in both 2016 and 2019 resulted in a reduction in assessed values.