

IV. Residential Segregation¹

Any thorough study of impediments to fair housing choice must include an analysis of where different types of people live. While the description of past and present patterns of racial, ethnic and income segregation is not conclusive proof of specific acts of illegal discrimination, it can provide important insights into the extent to which discrimination continues to exist, and the degree to which the effects of previous discrimination are being undone.

Using census data at the tract level for the years 1970, 1980, 1990 and 2000, three dimensions of residential segregation were analyzed for this study; they are: *centralization*, *clustering* and *dissimilarity*. Massey and Denton (1988) define these terms as follows:

- *Centralization* is the extent to which a particular population sub-group is located in proximity to the central core of an urban area.
- *Clustering* measures the degree to which geographical areas inhabited by specific population sub-groups adjoin one another. A high degree of clustering within an area indicates that a racial, ethnic or poverty enclave exists.
- *Dissimilarity* has to do with how evenly or unevenly a specific population sub-group is geographically distributed across a city or county.

The analysis of *centralization* and *clustering* in this study was accomplished by tabulating and mapping data on race, ethnicity and poverty for each of Delaware's three counties. As appropriate, comparisons were made between urban and suburban areas.

To measure the third dimension of segregation, *dissimilarity*, the "index of dissimilarity" ("D") was employed.² This is the most commonly used and accepted method of measuring segregation, and compares how evenly one population sub-group is spread out geographically compared to another population sub-group. The sub-groups analyzed can be defined in a variety of ways, including race (e.g., blacks compared to whites), ethnicity (e.g.,

¹ The authors thank Andrew Carswell, Asst. Professor in the Department of Housing and Consumer Studies at the University of Georgia, and a doctoral candidate in the University of Delaware's School of Urban Affairs & Public Policy, for his assistance in compiling and analyzing the data for this section of the report.

² The Index of Dissimilarity is calculated mathematically as follows:

$$D = 100 * 0.5 * \Sigma | P_{xi}/P_x - P_{yi}/P_y |$$

Where:

D = the index of dissimilarity for two groups being compared within a specific geographic area

P_{xi} = the population of group x in census tract i

P_x = the total population of group x in the overall geographic area

P_{yi} = the population of group y in census tract i

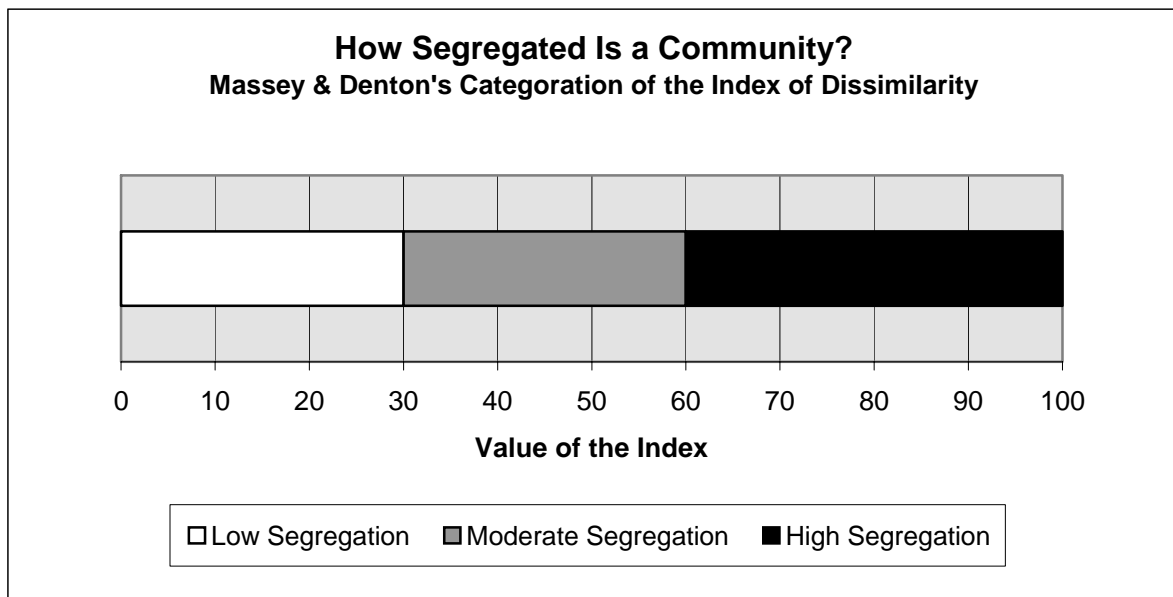
P_y = the total population of group y in the overall geographic area

Σ = the Greek letter "sigma" indicating the summation of terms

Hispanics compared to non-Hispanics) or income (e.g., people in poverty compared to those not in poverty). The index equals 0.0, indicating complete integration of the two sub-groups, when all census tracts within the geographic area being analyzed have the same proportion of population sub-group members as in the whole geographic area. The opposite extreme is when the index equals 100.0, indicating complete segregation. In this extreme case, a few census tracts consist entirely of members of one population sub-group, while all the others contain all the members of the other population sub-group. Another, perhaps easier way to interpret the value of the index is that it indicates the percentage of either sub-group (e.g., blacks or whites) who would have to move to another census tract in order for both sub-groups to be distributed evenly so as to achieve complete integration. In a totally segregated environment (D = 100.0), 100% of either sub-group would have to move to achieve complete integration.

Index values between 0.0 and 30.0 indicate low segregation, values between 31.0 and 60.0 indicate moderate segregation, and values between 61.0 and 100.0 indicate a high level of segregation (Massey and Denton, 1993, p. 20) (Exhibit IV-1).

Exhibit IV-1



Sources: Massey and Denton, 1993, p. 20; University of Delaware

Segregation Nationally

For racial and ethnic segregation, a study recently done by the Mumford Center at the State University of New York at Albany reports that within America's metropolitan areas:

“The average non-Hispanic white person continues to live in a neighborhood that looks very different from those neighborhoods where the average black, Hispanic, and Asian live. The average white person in metropolitan America lives in a neighborhood that is 80% white and only 7% black. Despite a substantial shift of minorities from cities to suburbs,

these groups have not gained access to largely white neighborhoods. A typical black individual lives in a neighborhood that is only 33% white and as much as 51% black. Diversity is experienced very differently in the daily lives of whites, blacks, Hispanics and Asians” (The Mumford Center, 2001, p.1).

The Mumford Center report goes on to state that there were some positive signs of racial and ethnic integration during the decade of the 1980s when the index of dissimilarity dropped an average of 5 points (from 73.8 to 68.8). Progress continued, but at a slower rate during the 1990's when the index dropped an average of another 4 points. While the trend is positive, the pace of improvement is slow. The metropolitan areas with the highest black-white segregation in 2000 were: Detroit (D=85), Milwaukee-Waukesha (D=82), and New York (D=82). The metro areas with the lowest levels (all with D=46) were Greenville-Spartanburg-Anderson (South Carolina), Riverside-San Bernardino (California), Norfolk-Virginia Beach-Newport News (Virginia/North Carolina), Raleigh-Durham-Chapel Hill (North Carolina), and Augusta-Aiken (Georgia/South Carolina) (The Mumford Center, 2001). Importantly, data on the residential patterns of Hispanics and Asians show that they are less segregated than African Americans. However, the growth in the sizes of these two minority populations has been substantial over the past decade, and there has been no change nationally in their overall level of segregation (The Mumford Center, 2001).

While research shows a steady lessening of racial segregation over the last 30 years in major metropolitan areas of the U.S., the opposite is the case regarding economic segregation. Research by Kasarda (1993), Jargowsky (1996), Mayer (2001) and others conclude that residential isolation of the poor has been increasing. Abramson, et al. (1995) report that in large metropolitan areas the average proportion of poor people in a typical poor person's census tract rose from 19.5% to 21.3 % over the 1970 to 1990 period. Unfortunately, poor neighborhoods are becoming poorer as households with limited income become increasingly concentrated in the inner city. Because households belonging to protected classes often experience disproportionately high rates of poverty, increases in the concentration of poverty works against the residential integration of protected class members. This means that a lessening of economic segregation would result in a more rapid reduction of residential segregation for most if not all protected classes.

Segregation in New Castle County

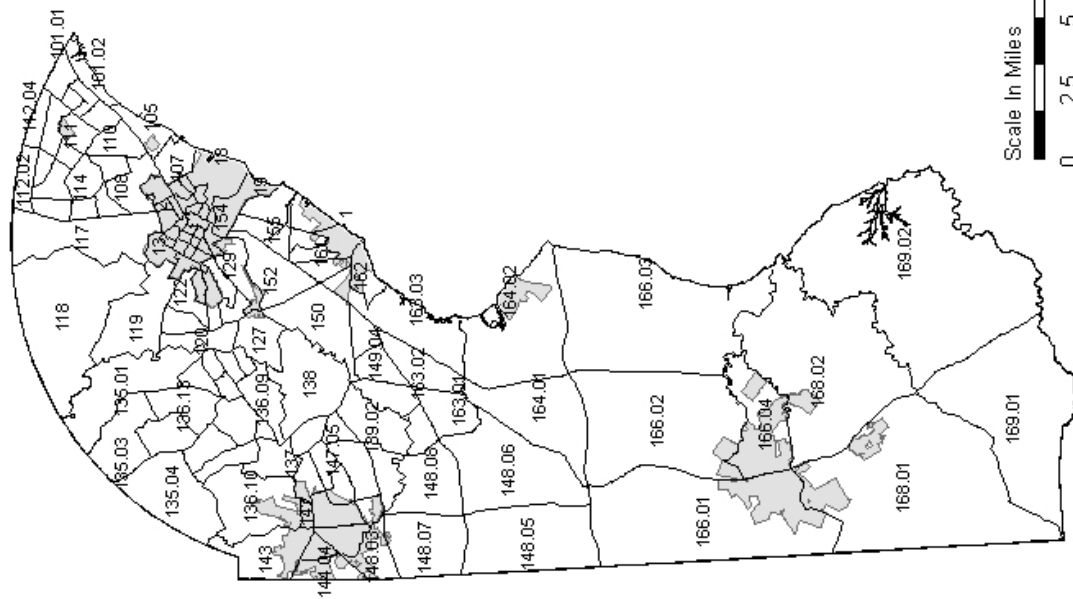
Centralization and Clustering

The residential geographic patterns of households in New Castle County are similar to those typically found in urban areas in the U.S. African-Americans and Hispanics live in the core area of the central city, while more affluent, predominately white people live in the suburbs. The centralized geographic concentration of African Americans and Hispanics in and immediately around the city of Wilmington can be readily seen when census tract level data is mapped.

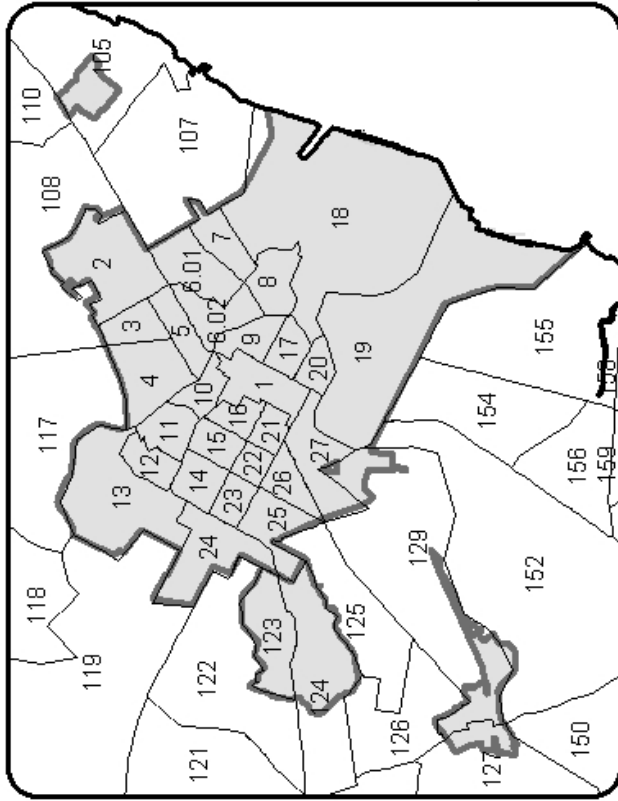
Exhibit IV-4 reveals that in 2000, the 25% of census tracts with the highest proportion of blacks (ranging from 28% to 96%) are almost all located in and adjacent to Wilmington, with a few tracts clustered in-between the city of New Castle and the Bear area. Conversely, the 25% of all tracts in the County with the lowest percentages of blacks (ranging from 0% to

New Castle County Census Tracts, 2000

Exhibit IV-2



Wilmington Area



Legend

- 2000 Census Tracts
- Municipalities

Scale In Miles



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Exhibit IV-3

Northern New Castle County Census Tracts, 2000

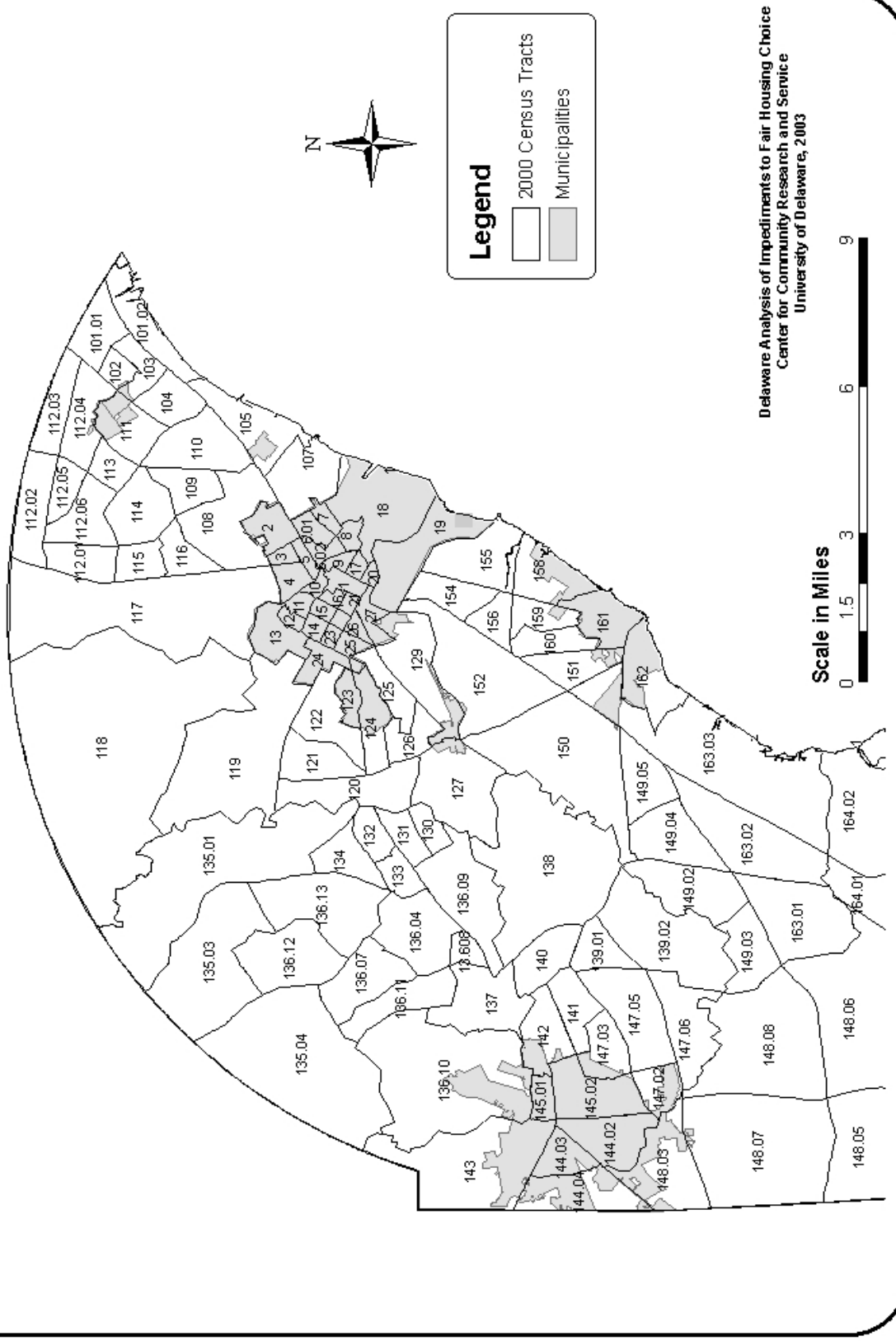
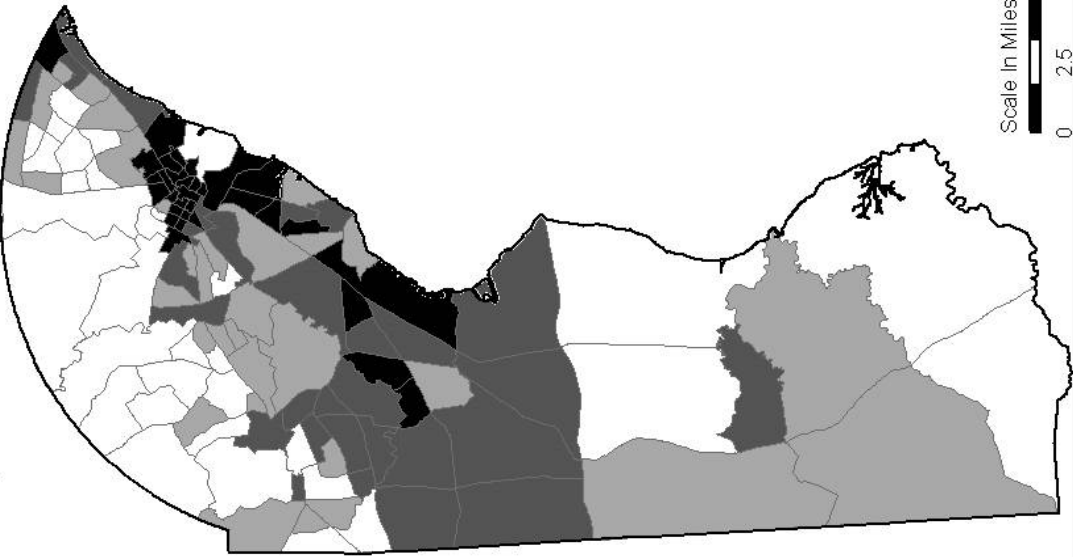
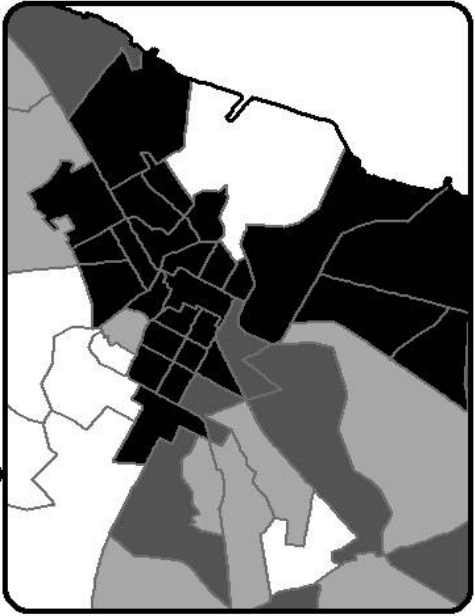


Exhibit IV-4

**African Americans as a Percent of All Persons
by Census Tract, New Castle County, 2000**



Wilmington Area



Legend

- 0.0%-4.6%
- 4.7%-10.7%
- 10.8%-27.9%
- 28.0%-96.2%

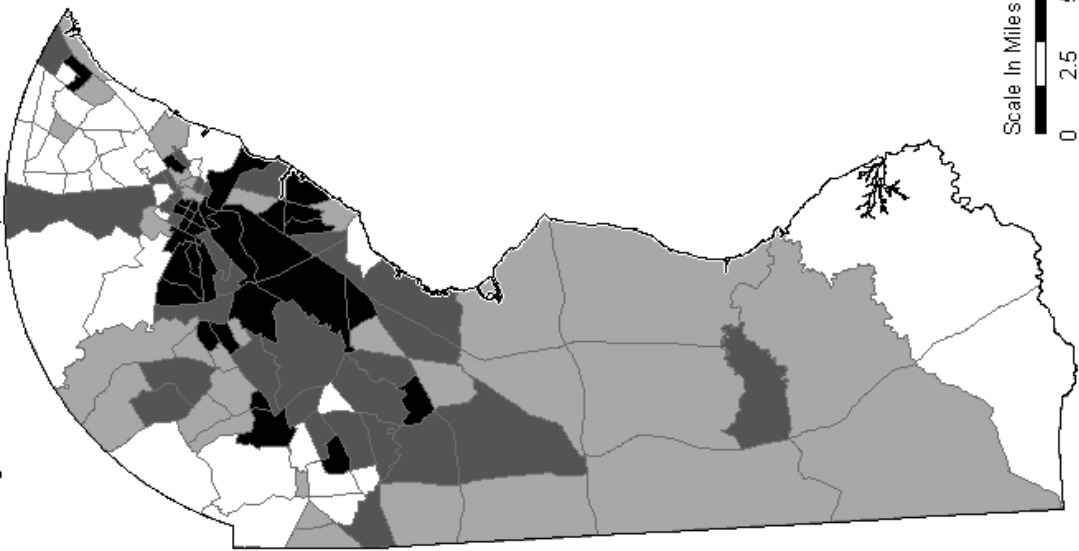
Scale in Miles



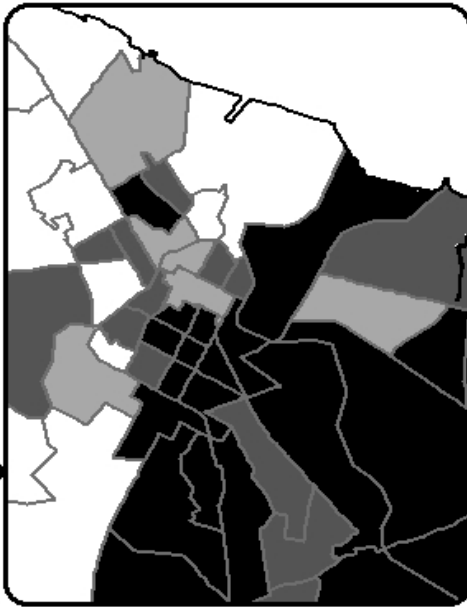
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Exhibit IV-5

**Hispanics as a Percent of All Persons
by Census Tract, New Castle County, 2000**

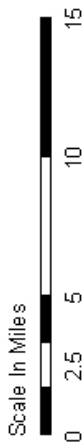


Wilmington Area



Legend

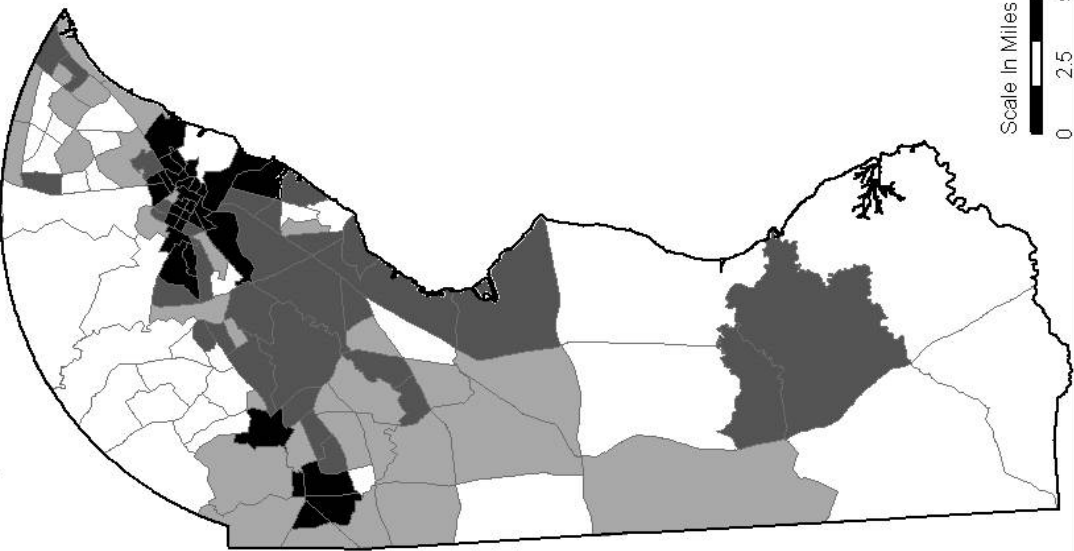
- 0.0%–1.5%
- 1.6%–3.1%
- 3.2%–6.3%
- 6.4%–41.1%



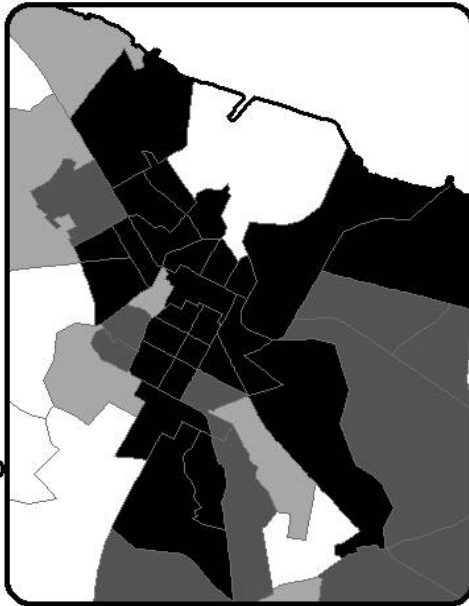
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Exhibit IV-6

**Persons in Poverty as a Percent of All Persons
by Census Tract, New Castle County, 2000**



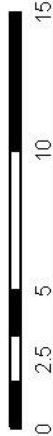
Wilmington Area



Legend

- 0.3%-2.6%
- 2.7%-5.3%
- 5.4%-11.5%
- 11.6%-61.3%

Scale In Miles



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4.6%) are found along the northern boundary of the county, including communities north of Newark; the Hockessin, Centerville, Greenville areas; and the territory west of Claymont. These “whitest tracts” are also found in the eastern portion of the county below the Delaware & Chesapeake Canal.

For Hispanics, a picture similar to the one for blacks emerges. Exhibit IV-5 shows that the 25% of census tracts with the highest proportions of Hispanics are located in and around the city of Wilmington as well as in and around the city of New Castle. One can also see that, similar to blacks, the census tracts with the lowest percentage of Hispanics are located along the northern rim of the county and south of the Delaware and Chesapeake Canal.

The census tracts with the highest percentages of blacks and Hispanics are the same tracts that have the highest percentages of households with incomes below the federally defined poverty level. The map in Exhibit IV-6 shows this point very clearly.

Dissimilarity

While the maps discussed above provide insight into patterns of centralization and clustering, they do not clearly depict the extent to which the distribution of any particular sub-group is evenly or unevenly distributed across the land area of the county, and how this might be changing over time. To measure this we have employed the *index of dissimilarity* using census tract level data from the U.S. Census of Population and Housing for 1970, 1980, 1990 and 2000.

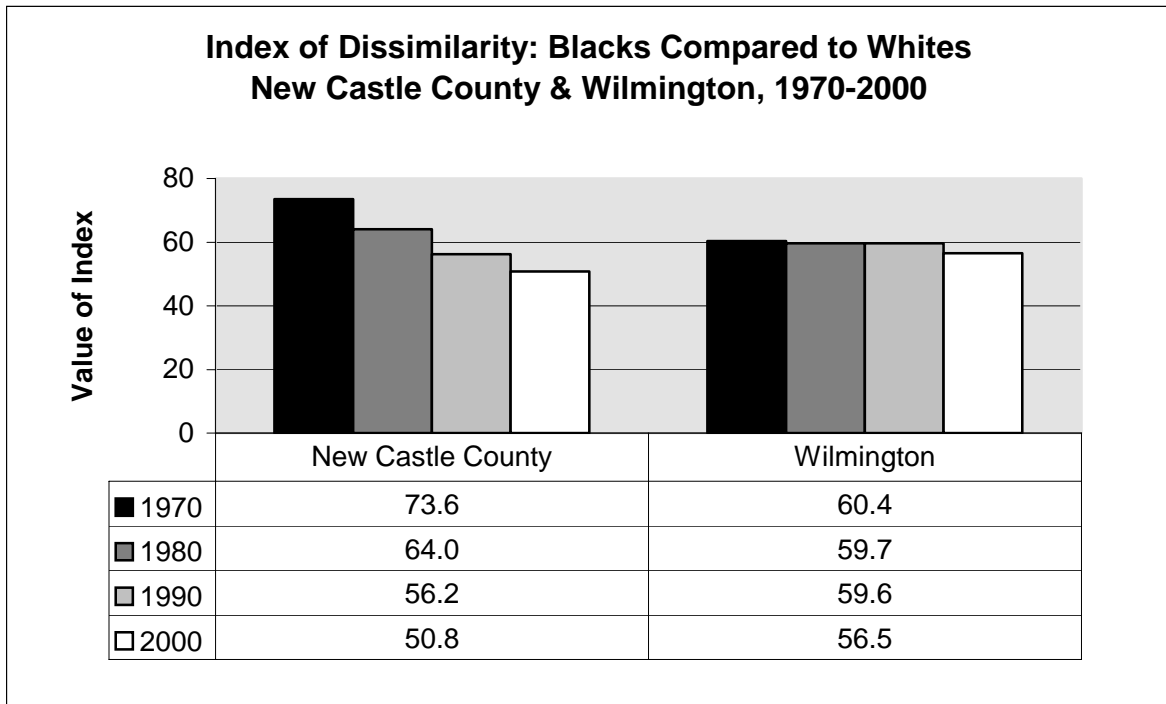
In our analysis of African Americans (blacks) and Caucasians (whites), the results show that the index has been dropping consistently over this 30-year period for the county as a whole. The index stood at 73.6 in 1970, 64.0 in 1980, 56.2 in 1990, and continued to fall to 50.8 in 2000 (Exhibit IV-7). This means that in the year 2000, 51% of blacks would have had to move from their present census tract to other tracts for the county to have become totally unsegregated.

When the city of Wilmington is analyzed separately, a positive, albeit minor improvement is apparent. The City’s index value stood at 60.4 in 1970, then fell slightly to 59.7 and 59.6 for 1980 and 1990 respectively. By the end of the 20th century the index stood at 56.5, only a minor downward change from where it was 30 years earlier in 1970 (Exhibit IV-7).

Overall, while the downward trend in the level of the black/white index of dissimilarity is encouraging, index values of 51.8 and 56.5 for New Castle County and Wilmington respectively for the year 2000 are within the upper part of the range which Massey and Denton define as “moderately segregated.”

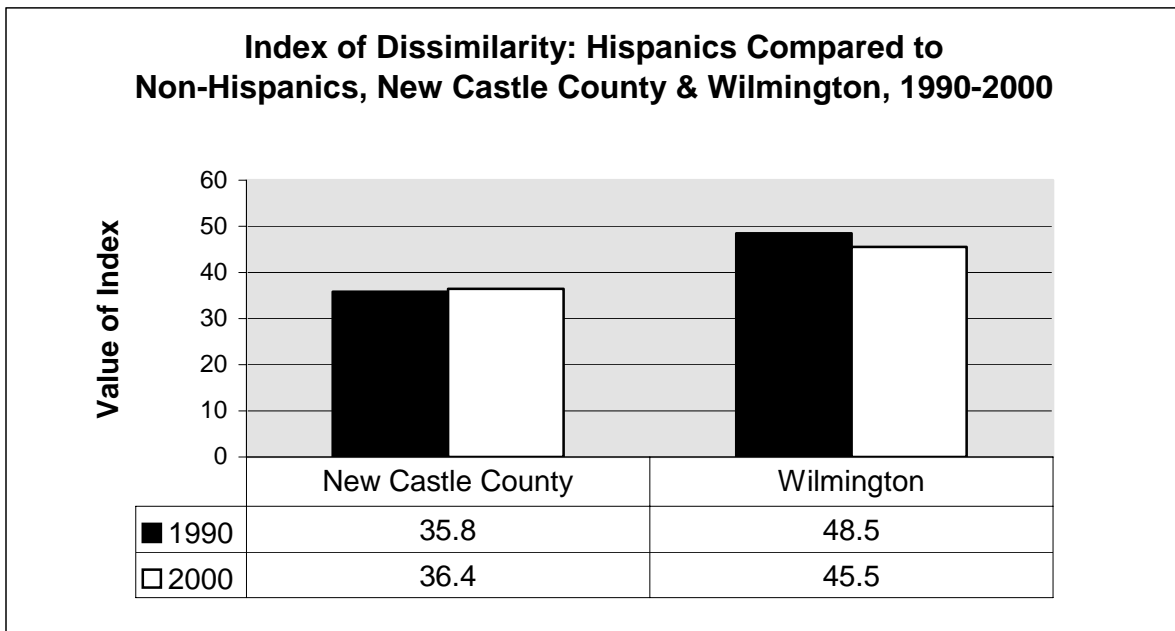
The index of dissimilarity was also calculated for Hispanics and non-Hispanics for the years 1990 and 2000. This index for the overall county stood at 35.8 in 1990 and increased slightly to 36.4 in 2000. For Wilmington the index dropped slightly from 48.5 to 45.5 over this 10-year period (Exhibit IV-8). Like national findings, the results in New Castle County show that as the size of the Hispanic population continues to grow, it is not nearly as segregated as the African American population, and the degree of its segregation has changed little over the recent past.

Exhibit IV-7



Sources: University of Delaware; U.S. Census Bureau

Exhibit IV-8



Sources: University of Delaware; U.S. Census Bureau

Segregation in Kent County

Centralization and Clustering

Kent County is less urban than New Castle County, and Dover, its largest city and the state capitol, is located near its geographical center. As Exhibit IV-10 shows, the 25% of the county's census tracts with the highest percentages of African-Americans (ranging from 27.6-48.5%) are located in and around the Dover area. The only exception is one tract located on the north side of Milford, a city situated on the southern edge of Kent County that is bisected by the Kent County/Sussex County line. The 25% of the county's "whitest tracts" (with black populations ranging from 2.6% to 9.9%) are clustered on the west side of the County. Kent County, like New Castle to the north, exhibits the same type of centralized and clustered black-white segregation pattern typical in U.S. metropolitan areas.

The picture for Hispanics is somewhat similar to the pattern for African Americans. As Exhibit IV-11 shows, in 2000 the census tracts with the highest proportions of Hispanics tended to be centralized and clustered around Dover, but also around Milford to the south.

In Kent County, the census tracts with the highest percentages of persons in poverty do not follow the same pattern as the tracts with the highest proportions of blacks and Hispanics. The tracts with the highest poverty rates (ranging from 14.0% to 21.7%) are scattered across the entire county (Exhibit IV-12).

Dissimilarity

Concerning the distribution of blacks relative to whites, both the level and trends in dissimilarity are different in Kent County compared to New Castle County. The overall black-white index of dissimilarity for Kent County in 1980 was 27.0.³ The index for New Castle County for this same year stood considerably higher at 64.0. From 27.0 in 1980, Kent's index increased slightly to 28.8 in 1990, and increased more significantly to 33.2 in 2000 (Exhibit IV-13). While the degree of black/white segregation in Kent County was considerably lower than in New Castle County between 1980 and 2000, the two counties were trending in opposite directions--segregation was waning in New Castle, but waxing in Kent. Between 1990 and 2000, Kent County moved from the "low segregation" category to the "moderate segregation" category for its black and white populations.

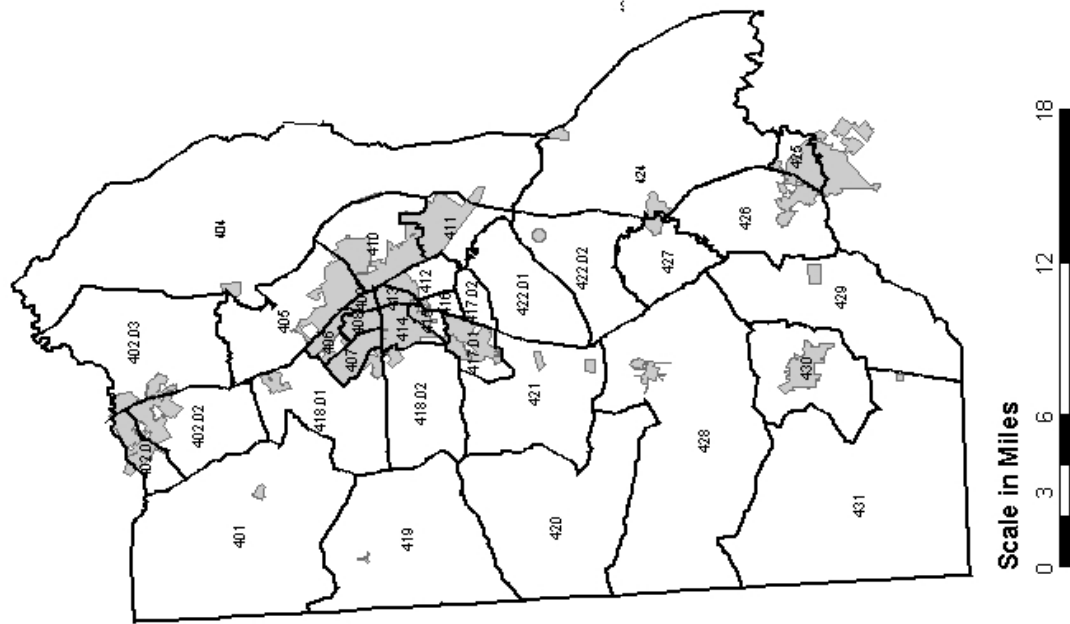
When the Dover/Camden urban area⁴ is analyzed separately, the trend in the index is basically unchanged (Exhibit IV-13). In 1980 the index stood at 24.9, dropped to 22.7 in 1990, and essentially stayed at that same level for 2000. Improvements in the degree of segregation within the immediate Dover/Camden area over the 20-year period have been minimal.

³ Census tract level data for Kent County was not available until 1980, so an analysis back to 1970 is not possible.

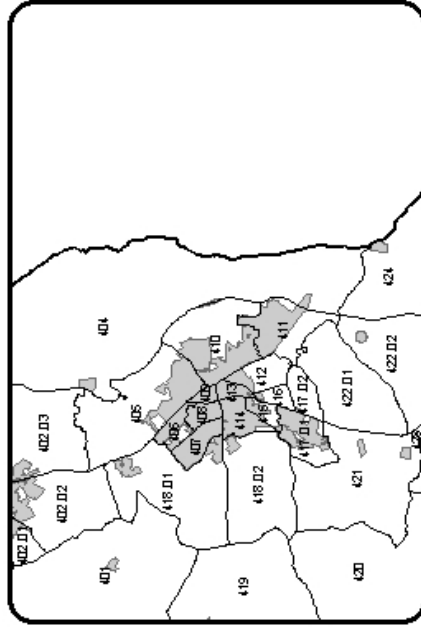
⁴ The Dover/Camden area, for purposes of this analysis, is defined as census tracts 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417 (for 1980 and 1990 only), 417.01 (for 2000 only) and 417.02 (for 2000 only).

Kent County Census Tracts, 2000

Exhibit IV-9



Dover Area



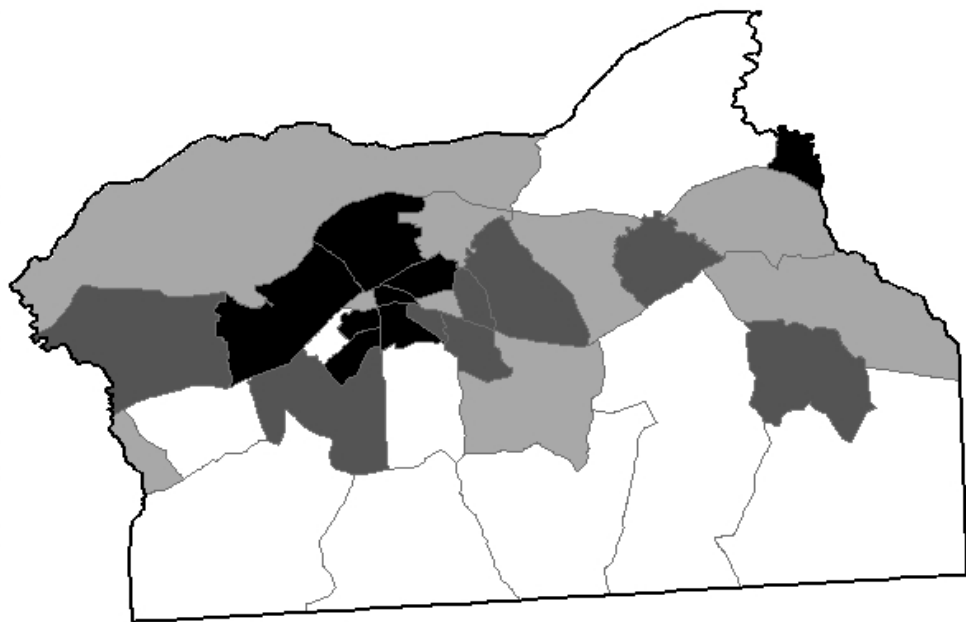
Legend

- 2000 Census Tracts
- Municipalities

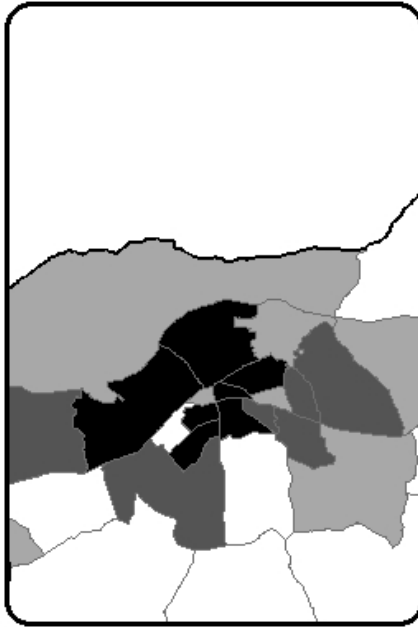
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**African Americans as a Percent of the All Persons
by Census Tract, Kent County, 2000**

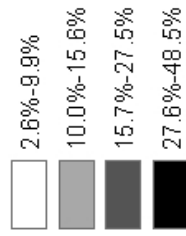
Exhibit IV-10



Dover Area



Legend



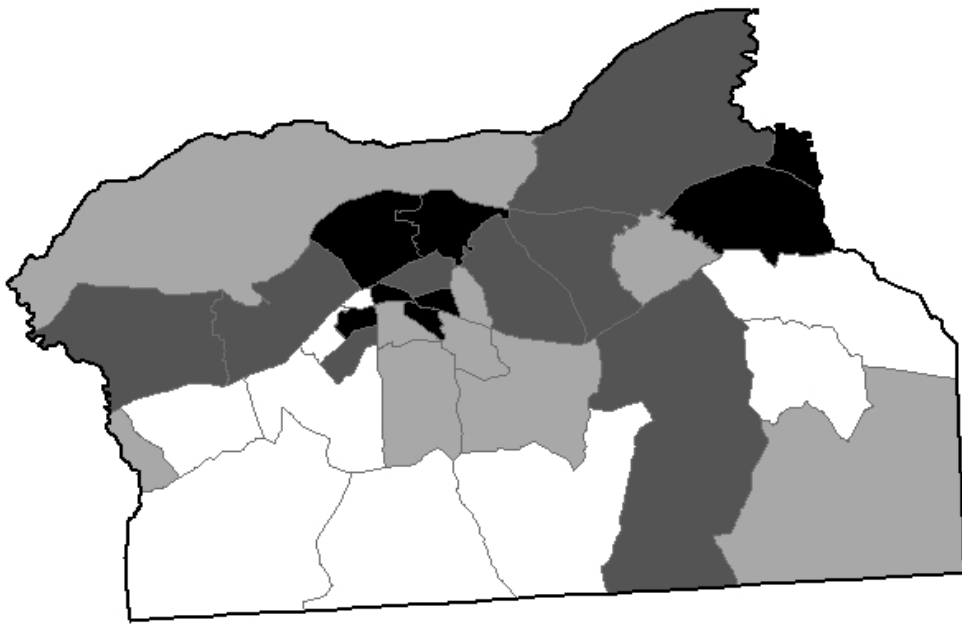
Scale in Miles



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Exhibit IV-11

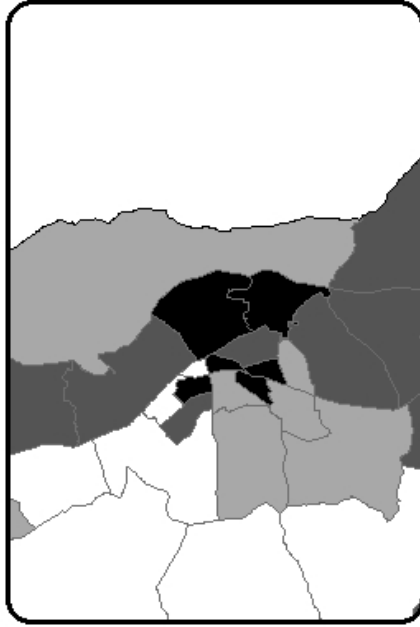
**Hispanics as a Percent of All Persons
by Census Tract, Kent County, 2000**



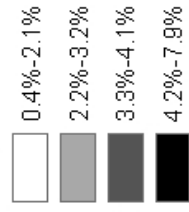
Scale in Miles



Dover Area



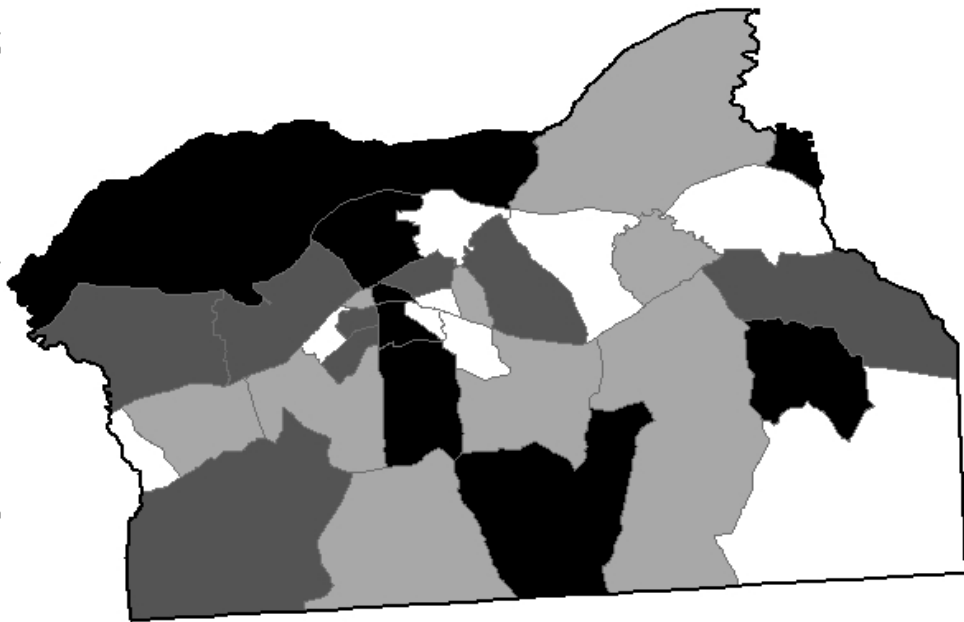
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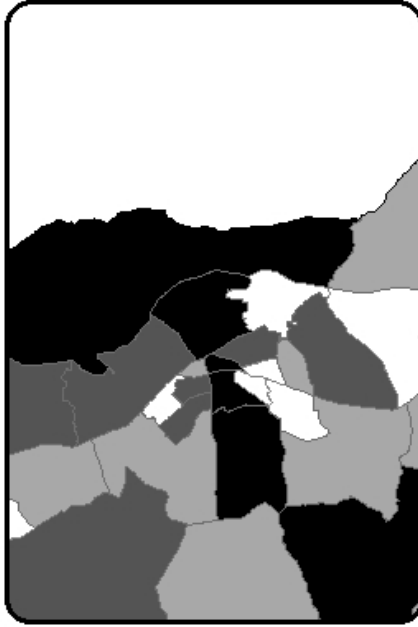
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**Persons in Poverty as a Percent of All Persons
by Census Tract, Kent County, 2000**

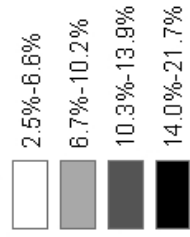
Exhibit IV-12



Dover Area



Legend

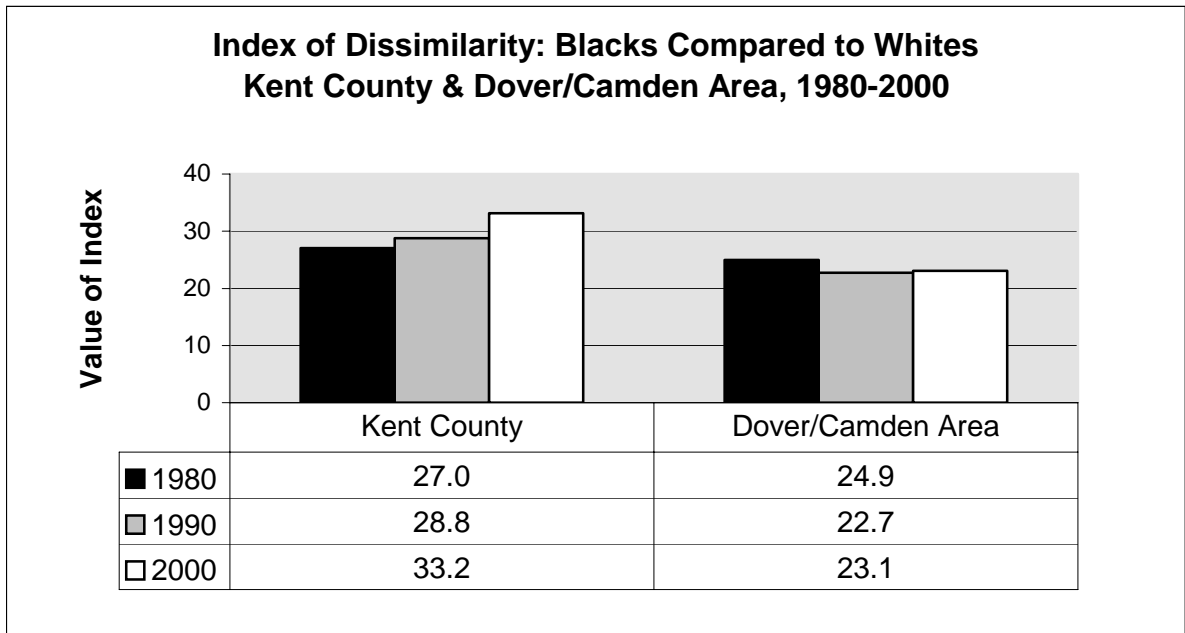


Scale in Miles



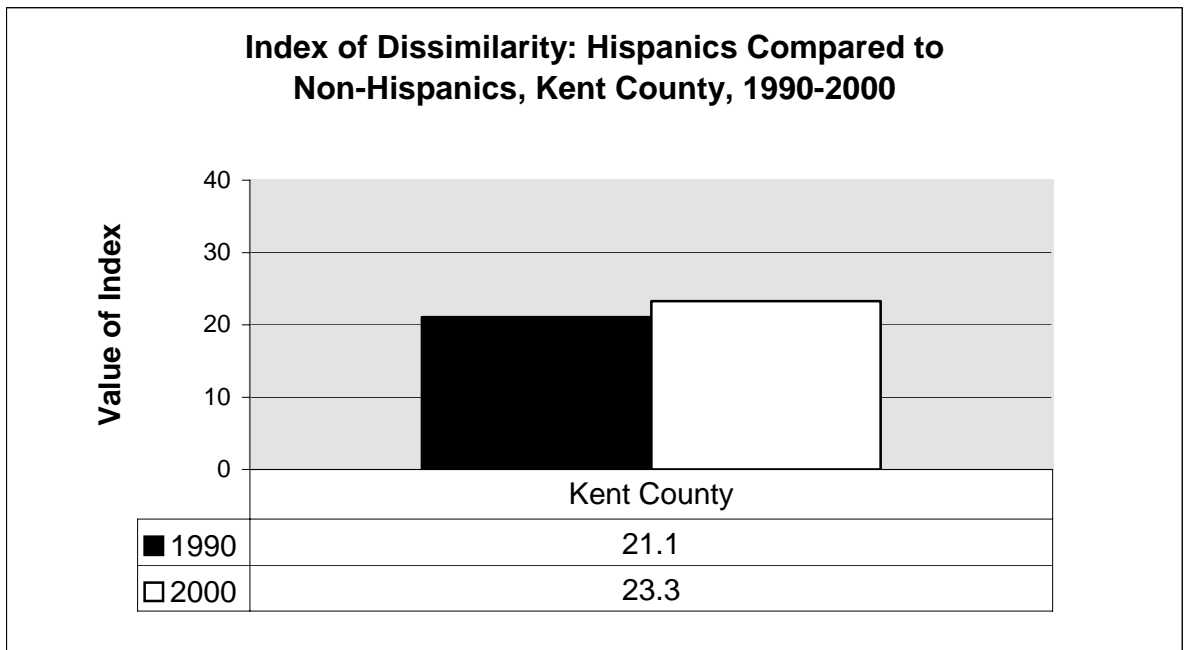
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Exhibit IV-13



Sources: University of Delaware; U.S. Census Bureau

Exhibit IV-14



Sources: University of Delaware; U.S. Census Bureau

Like black/white segregation, Hispanic/non-Hispanic segregation has recently increased in Kent County. The index of dissimilarity rose from 21.1 in 1990 to 23.3 in 2000 (Exhibit IV-14). While these values lie within the “low segregation” range of the index, the trend is toward increased Hispanic/non-Hispanic segregation in the county.

Segregation in Sussex County

Centralization and Clustering

Sussex County is the least urban of the state’s three counties, and has a distinctively different economy. The central area, including Georgetown the county seat, and the Western portion are predominately oriented toward agriculture and food processing activities. The Eastern side of the county, especially the portion facing the Atlantic Ocean, is dominated by leisure activities, including vacation activities and second home and retirement communities.

As Exhibit IV-16 shows, the 25% of the county’s census tracts with the highest percentages of African Americans (ranging from 21.4% to 36.0%) are not centralized around a single town, but rather are scattered into three separate nodes. The first node is in to the north central part of the county, and includes the south side of the city of Milford. The second node is in the south central part, and includes the communities of Dagsboro and Frankford, and Selbyville further south on the Maryland border. The third node is on the western side of the county surrounding the towns of Seaford and Blades. While there is some pattern of the “blackest tracts” being located in and around larger towns, there is no strong pattern of urban centralization, at least in part because the county is very rural in nature.

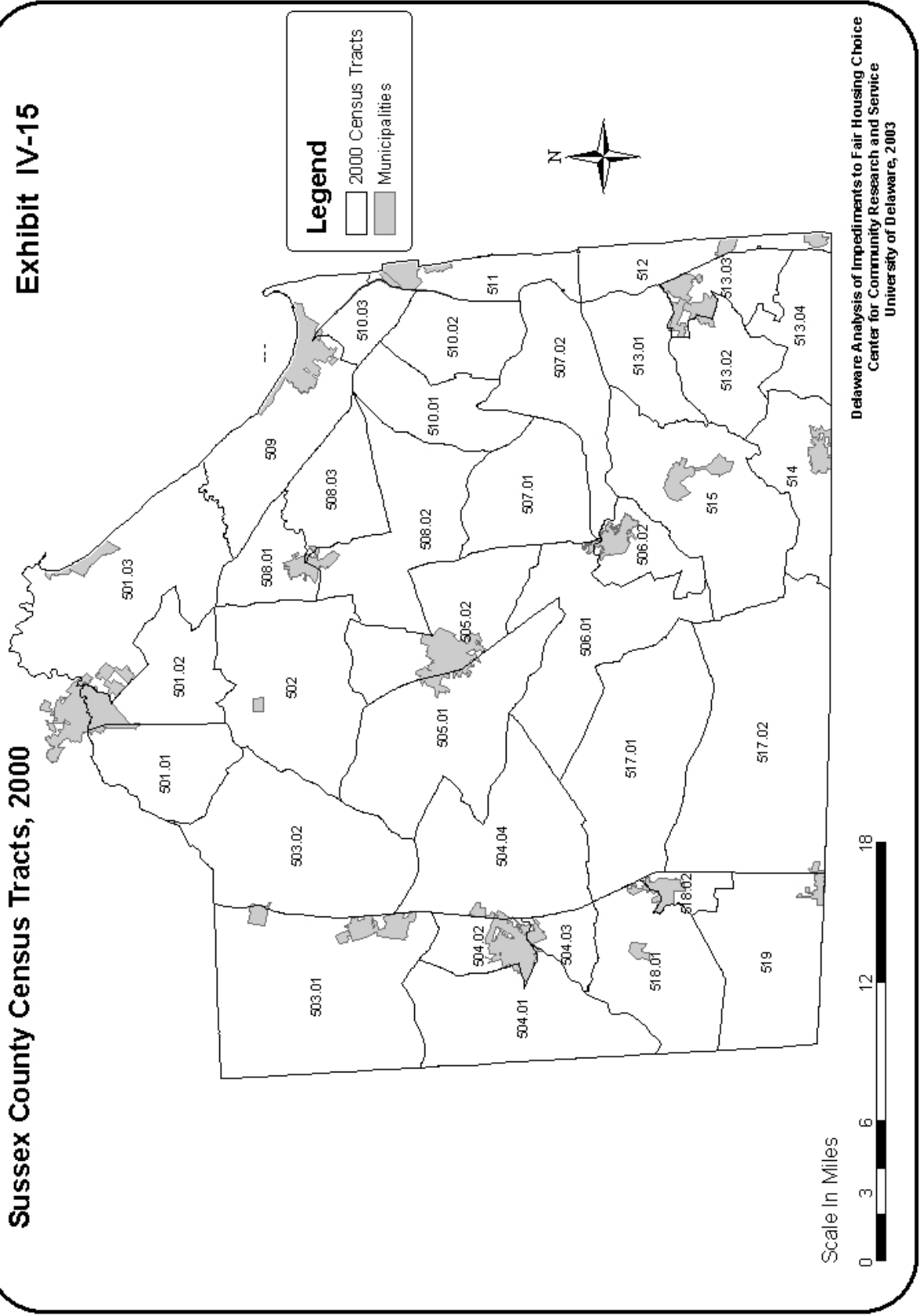
As one might guess, the 25% of the county’s “whitest tracts” are located along the oceanfront, and to some extent along the shore of the Delaware Bay. These tracts have between 0% and 5.1% of their populations that are African American. Instead of the centralized race patterns seen in most major American metropolitan areas, and in Delaware’s two counties to the north, Sussex County has a distinctive racial pattern influenced by its rural character and it’s proximity to desirable coastline real estate.

The residential pattern for Hispanics in Sussex County is somewhat different than it is for blacks. As Exhibit IV-17 shows, in 2000 the census tracts with the highest proportions of Hispanics (ranging from 5.1% to 20.7% of the tract’s population) were clearly centralized and clustered around Georgetown, and to a lesser extent along the Delaware/Maryland border and in the south Milford area. The tracts bordering the bay and ocean had very low proportions of Hispanics (ranging from 0% to 1.2%).

As was the case for Kent County, the correspondence between high minority tracts and high poverty tracts is not as pronounced in Sussex County as it is in New Castle County. The east side of Georgetown (tract 505.02) is home to an area with a high concentration of Hispanics, and also has a relatively high poverty rate. The same is the case for the Selbyville area where tract 514 is a high black, Hispanic and poverty area. However, in the rest of Sussex County the intersection of high minority and high poverty tracts is less common. The tracts that face the ocean are not only those with the lowest percentages of minorities, but those with the lowest poverty rates as well (Exhibit IV-18).

Sussex County Census Tracts, 2000

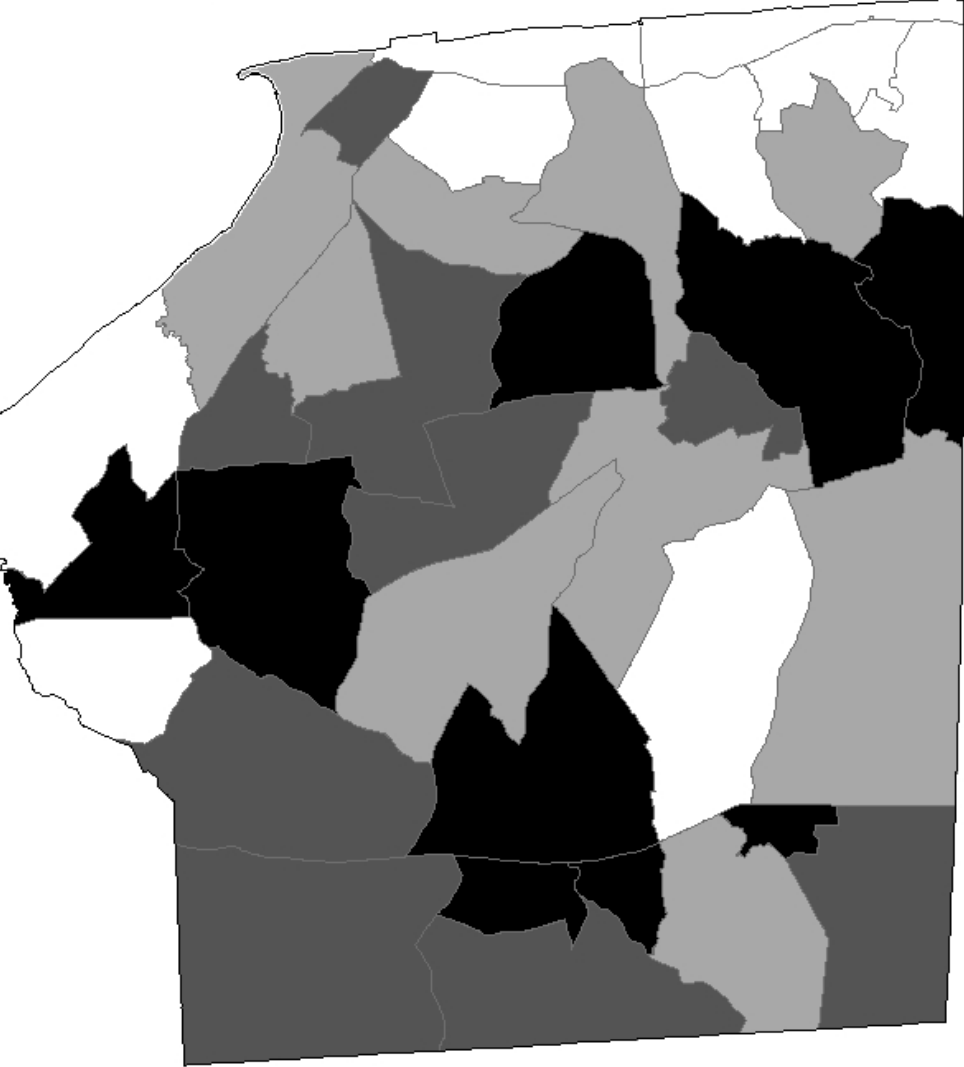
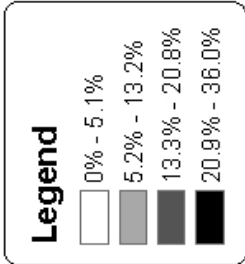
Exhibit IV-15



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Exhibit IV-16

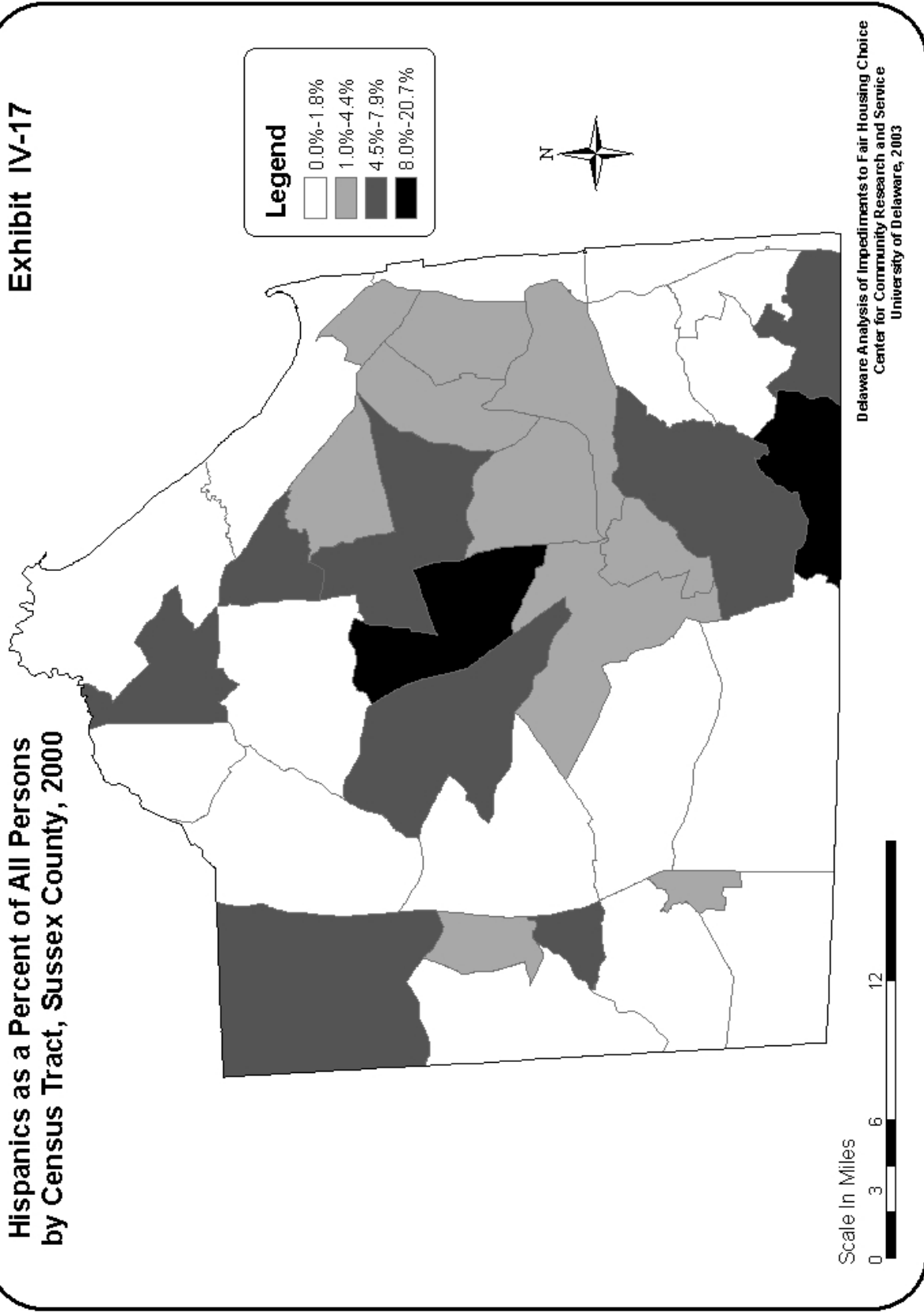
**African Americans as a Percent of All Persons
by Census Tract, Sussex County, 2000**



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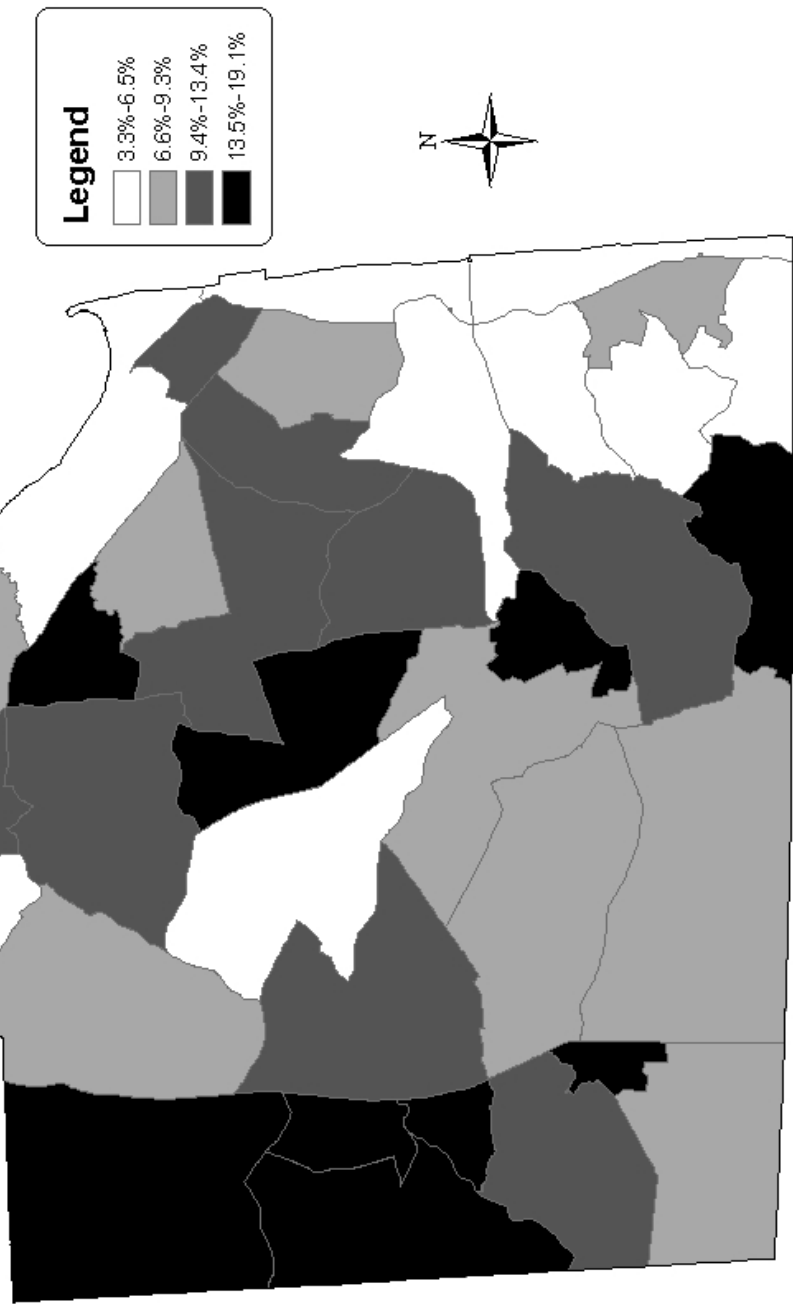
Exhibit IV-17

**Hispanics as a Percent of All Persons
by Census Tract, Sussex County, 2000**



**Persons in Poverty as a Percent of All Persons
by Census Tract, Sussex County, 2000**

Exhibit IV-18

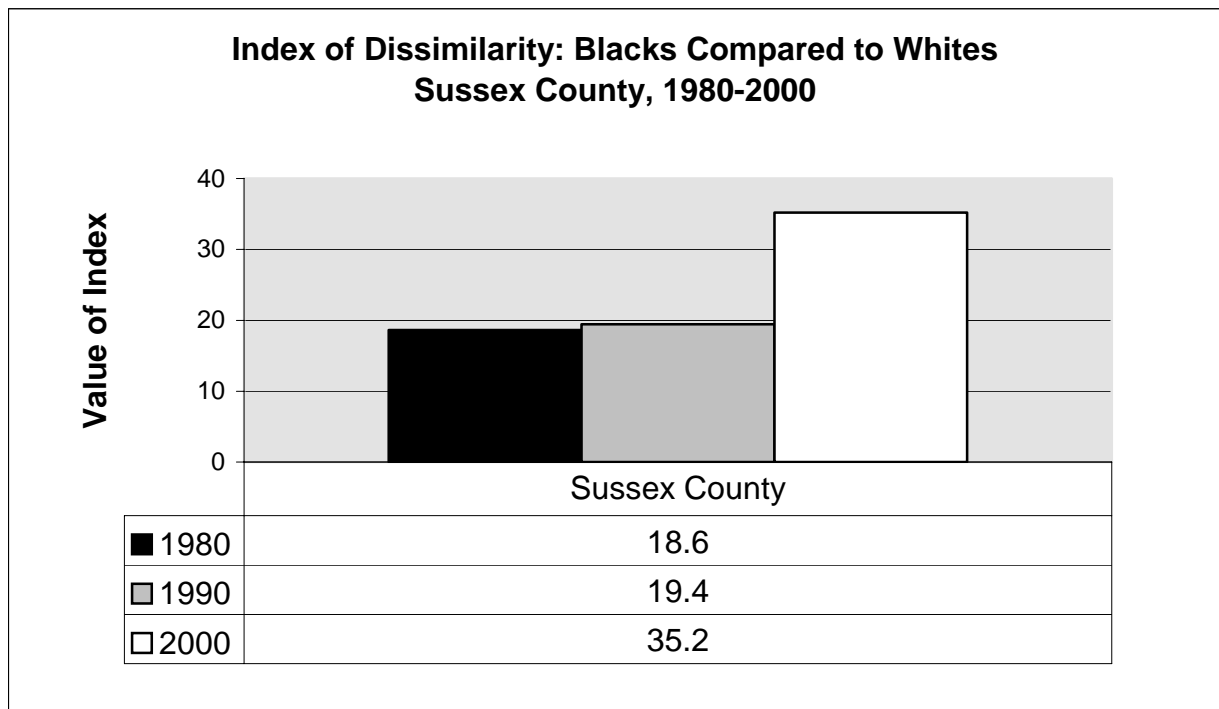


Dissimilarity

The trend in the black/white index of dissimilarity is very different in Sussex County than in either New Castle or Kent counties for the 1980 to 2000 period.⁵ While the countywide index over this period fell significantly in New Castle, it increased slightly in Kent, but grew dramatically in Sussex. Starting at 18.6 in 1980, the black/white index for Sussex County stayed basically unchanged for 1990 (19.4), but then nearly doubled to 35.2 for 2000 (Exhibit IV-19). Sussex County ended the 20th Century with an index slightly higher than Kent County, considerably lower than New Castle County, but one that has been increasing rapidly. Sussex during the 1990s was a place of “low segregation,” but in just ten years or less has become a place of “moderate black/white segregation.”

Another dramatic and startling trend in Sussex County is apparent when comparing the Hispanic population to non-Hispanics. For these two groups, the index of dissimilarity rose from 27.5 in 1990 to 36.9 in 2000, a jump of almost ten points (Exhibit IV-20). Over the 1990s, Sussex County went from being a place of low Hispanic segregation to being squarely within the “moderately segregated” category.

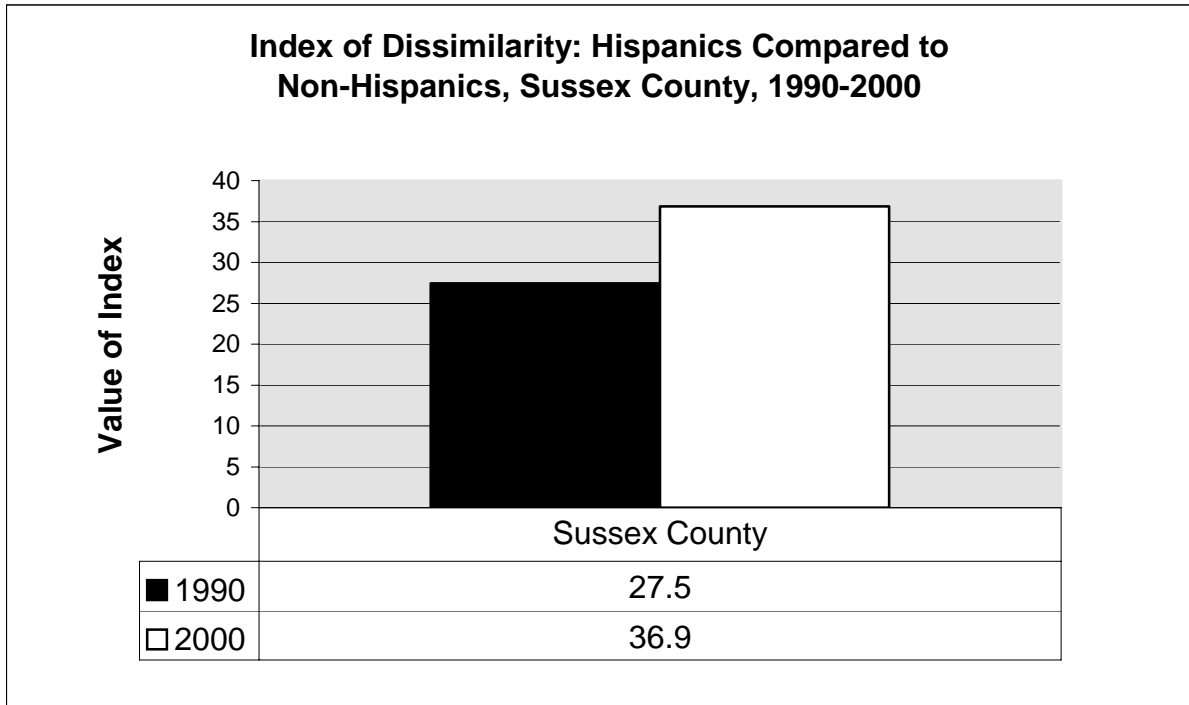
Exhibit IV-19



Sources: University of Delaware; U.S. Census Bureau

⁵ Census tract level data for Sussex County was not available until 1980, so an analysis back to 1970 is not possible.

Exhibit IV-20



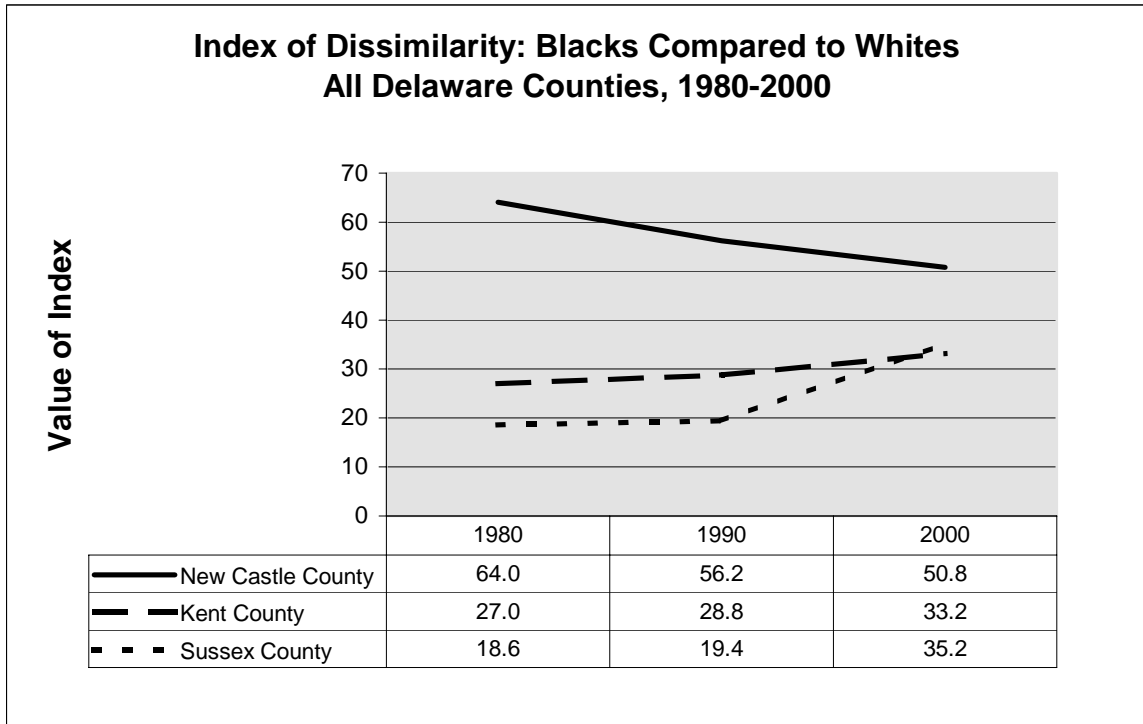
Sources: University of Delaware; U.S. Census Bureau

Conclusions

The national pattern of the centralization of blacks and Hispanics in and around the core of larger cities is also found in Delaware, especially in New Castle and Kent Counties, which are the most urbanized of the three. Also consistent with the national picture is that minority populations tend to be geographically clustered, and often overlap with lower income areas.

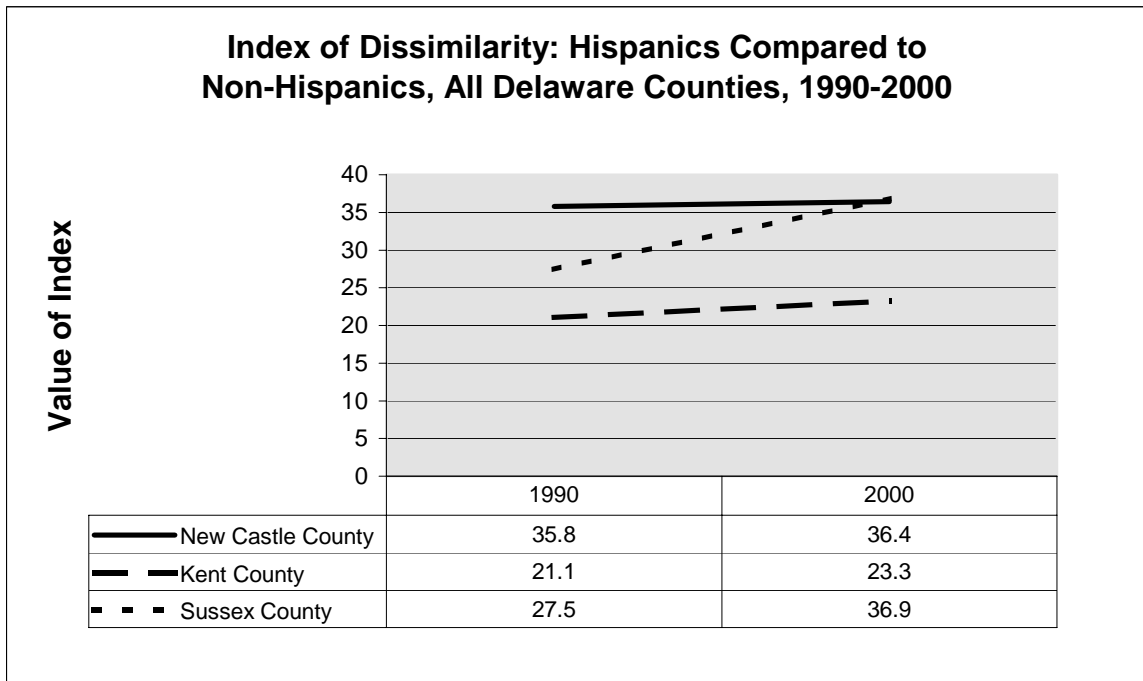
The quantitative analysis of segregation using the index of dissimilarity has produced a mixed bag of results, some of which are quite disturbing. Of the three counties, New Castle has had the highest black/white dissimilarity index over the last 30 years, but the good news is that the index has been decreasing steadily. Kent and Sussex Counties on the other hand have had considerably lower index values, but the bad news is that they have been rising, especially for Sussex. Plotting these trends on a graph, as in Exhibit IV-21, shows a pattern of convergence, where high index values are falling, and low index values are rising. In ten or more years will these values converge at some middle point with an index somewhere in the mid 40s for each of the counties? The reader is reminded that an index of dissimilarity within the range of 40 to 50 constitutes a moderate level of segregation.

Exhibit IV-21



Sources: University of Delaware; U.S. Census Bureau

Exhibit IV-22



Sources: University of Delaware; U.S. Census Bureau

Switching the focusing to the index for Hispanics and non-Hispanics, the trends in the State's southern most county is very alarming. While the level of Hispanic segregation measured by the index of dissimilarity remained relatively unchanged in New Castle and Kent Counties between 1990 and 2000, it increased sharply in Sussex County (Exhibit IV-22). It is clear that further reductions in the index need to occur for New Castle, upward movement in the index for Kent County needs to be prevented, and strong attention must be paid to preventing any continuation of the rapid increase in Hispanic segregation in Sussex, where in just ten years segregation went from being low to being in the upper part of the moderate range.

