Quantitative Analysis of Disparities in Juvenile Delinquency Referrals

Report to the

National Institute of Justice

by

André Rosay

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Justice Center
University of Alaska Anchorage

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Executive Summary

This report begins with a broad overview of the level of disproportionate minority contact in the Alaska juvenile justice system for Anchorage youth. The possible sources of disproportionate minority contact are subsequently narrowed by examining the impact of race and ethnicity, gender, type of referral, and geography. More specifically, we examine whether disproportionate minority contact occurs (1) for all minority youth, (2) for both males and females, (3) for both youth referred for new crimes and youth referred for conduct or probation violations, and (4) throughout the Municipality of Anchorage or in specific geographical areas within the Municipality of Anchorage. By developing a detailed understanding of the scope of disproportionate minority contact, we become much better prepared to identify its causes and to develop promising evidence-based solutions.

The sample in this analysis includes 1,936 youths who resided in Anchorage and were referred to DJJ in Anchorage during fiscal year 2005 for new crimes, probation violations, or conduct violations. Results indicate that:

- 61 percent of youth referred to DJJ were minority. Of the minority youth referred to DJJ, 23 percent were Black, 31 percent were Native, 10 percent were Asian, 7 percent were Pacific, 7 percent were other minority, and 23 percent were multiracial. 14 percent of youth referred to DJJ were Hispanic.
- These racial and ethnic distributions were generally found in both gender groups and both in referrals for new crimes and referrals for probation and conduct violations. Only two significant differences in racial composition were uncovered. The percentage of Native females referred to DJJ for conduct and probation violations (53%) was significantly higher than (1) the percentage of Native females referred to DJJ for new crimes (20%) and (2) the percentage of Native males referred to DJJ for conduct and probation violations (17%). No other significant differences in ethnic composition were uncovered, although no Hispanic females in our sample were referred to DJJ for probation or conduct violations.
- Although 61 percent of youth referred to DJJ were minority, only 34 percent of the youth population in Anchorage is minority. The rates of referral to DJJ were far greater for minority youth than for White youth. Rates of referral to DJJ per 1,000 youth were 34 for White, 120 for Black, 129 for Native, 59 for Asian, 166 for Pacific, 94 for other minority, 84 for multiracial, and 53 for Hispanic.

The extent of disproportionate minority contact was then assessed by comparing the rates of referral to DJJ for minority youth to the rates of referral for White and Caucasian youth. Results indicate that:

- Relative to the rate of referral to DJJ for White youth, the rates of referral were 3.56 times greater for Black youth, 3.83 times greater for Native youth, 1.76 times greater for Asian youth, 4.94 times greater for Pacific youth, 2.80 times greater for other minority youth, and 2.48 times greater for multiracial youth. Relative to the rate of referral to DJJ for Caucasian youth, the rate of referral was 1.53 times greater for Hispanic youth.

- Overall, disproportionate minority contact occurred for all racial and ethnic minorities, for both males and females, and for both referrals for new crimes and referrals for probation or conduct violations. Attempts to narrow disproportionate minority contact to specific racial or ethnic groups, to specific gender groups, or to specific types of referrals were generally unsuccessful. With rare exceptions (mostly found for Asian and Hispanic youth), disproportionate minority contact was not limited in scope by race or ethnicity, gender, or referral type.

By comparison, clear geographical differences were found. Geographical differences were found in both the rates of referral to DJJ and in the levels of disproportionate minority contact. Maps are utilized to show the rates of referral to DJJ for each racial and ethnic group across all census tracts in the Municipality of Anchorage. Results indicate that:

- Vast geographic differences were observed between rates of referral for White youth versus rates of referral for minority youth.

- In particular, we can examine the percent of census tracts that had a rate of referral to DJJ greater than 71 referrals per 1,000 youth. For White youth, the rate of referral to DJJ was greater than 71 referrals per 1,000 youth in only 4 percent of census tracts. This compared to 77 percent of census tracts for Black youth, 73 percent for Native youth, 24 percent for Asian youth, 98 percent for Pacific youth, 56 percent for other minority youth, 58 percent for multiracial youth, and 27 percent for Hispanic youth.

Rates of referral in each census tract were then compared across racial and ethnic groups to identify the census tracts with the highest levels of disproportionate minority contact. These are census tracts where the rates of referral to DJJ were far greater for minority youth than for White

(Caucasian) youth. Results indicate that:

- With rare exceptions (particularly for Asian and Hispanic youth), disproportionate minority contact occurred in all census tracts. Stated differently, most minority youth were more likely to be referred to DJJ than White or Caucasian youth, from most census tracts in Anchorage.

- Nonetheless, the level of disproportionate minority contact varied greatly across census tracts. In 31 (56%) of the 55 census tracts within the Municipality of Anchorage, minority youth were two to five times more likely to be referred to DJJ than White youth; and minority youth were over five times more likely to be referred to DJJ than White youth in five (9%) of the 55 census tracts.

- Furthermore, the level of disproportionate minority contact across census tracts varied substantially by racial and ethnic group. First, the number of census tracts that displayed high levels of disproportionate minority contact varied across racial and ethnic groups. Black youth were over two times more likely to be referred to DJJ than White youth in 79 percent of census tracts. This compares to 73 percent of census tracts for Native youth, 33 percent for Asian youth, 93 percent for Pacific youth, 58 percent for other minority youth, 53 percent for multiracial youth, and 22 percent for Hispanic youth. Second, the census tracts that displayed the highest levels of disproportionate minority contact also varied by racial and ethnic group.

Overall, attempts to narrow the scope of disproportionate minority contact to specific racial or ethnic groups, to a specific gender group, or to a specific type of referral were generally not successful. Conversely, attempts to narrow the scope of disproportionate minority contact to specific geographical areas were quite successful. Census tracts that display high levels of disproportionate minority contact may do so for two reasons. First, minority youth within these census tracts may offend at a higher rate. Second, minority youth within these census tracts may be treated more punitively. Future research will explore these possible explanations in great detail.

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Quantitative Analysis of Disparities in Juvenile Delinquency Referrals

In this report, we begin the process of specifying disproportionate minority contact in the juvenile justice system for youths in Anchorage. To do so, we begin with a broad overview of the level of disproportionate minority contact in Anchorage for Black youth, Native youth, Asian youth, Pacific Islander youth, multiracial youth, other minority youth, and Hispanic youth. We subsequently narrow the sources of disproportionate minority contact by examining the impact of gender, type of referral, and geography. More specifically, we examine whether disproportionate minority contact is limited to one gender group, specific types of referrals, and certain geographical locations. All analyses examine six minority racial groups (Black, Native, Asian, Pacific Islander, multiracial, and other minority) and one ethnic group (Hispanic). By narrowing the source of disproportionate minority contact, we can then begin the process of developing informative and empirically based solutions.

Disproportionate minority contact occurs when minority youth are more likely than their White counterparts to be referred to the Division of Juvenile Justice. Rates of referral to the juvenile justice system are therefore compared across racial and ethnic groups to determine if the rates of referral for minority youth are significantly higher than the rates of referral for White youth. Not surprisingly, given the prior research in Alaska, we again find significant disparities in referral rates across racial and ethnic groups. As shown in several identification studies performed by the Division of Juvenile Justice and the Justice Center at the University of Alaska Anchorage, there are clear, convincing, and undeniable disparities in the referral of minority youth to the juvenile justice system.

However, what remains unclear is the boundary or scope of disproportionate minority contact. More specifically, we do not know if disproportionate minority contact occurs for all minority youth or only for minority youth in specific racial or ethnic groups. We also do not know if disproportionate minority contact occurs for both males and females, for males only, or females only. Similarly, we do not know if disproportionate minority contact occurs for youth referred for new crimes, youth referred for probation and conduct violations, or both. Finally, we do not know if disproportionate minority contact occurs throughout the Municipality of Anchorage or is concentrated in specific geographical areas within the Municipality of Anchorage. These more detailed specifications are a necessary and important component to a thorough and accurate assessment study.

As stated in the OJJDP DMC Technical Assistance manual, the focus of an assessment study is "on ***why*** *minority overrepresentation exists*" (emphasis added). Before explaining why minority overrepresentation exists, it is critical that we obtain a better understanding of the scope of minority

overrepresentation. If disproportionate minority contact occurred only in one racial group (or in only one gender group), the causes of and solutions to disproportionate minority contact should then focus on this group. Disproportionate minority contact would then occur either because of this group's characteristics (e.g., they offend at a higher rate) or because of the justice response to this group (e.g., more punitive responses are utilized in this group). Similarly, if disproportionate minority contact occurred only for youths referred for new crimes, focusing on referrals for probation or conduct violations would not help us to reduce disproportionate minority contact. Stated differently, reducing disparities in referrals for probation or conduct violations would not reduce the overall levels of disproportionate minority contact. Finally, if disproportionate minority contact occurs only in specific areas of Anchorage, then our efforts should naturally focus on these specific areas. We should focus on both the characteristics of these areas (e.g., lack of pro-social opportunities for youth) and characteristics of justice responses to these areas (e.g., greater likelihood of formal rather than informal social controls). Reducing disproportionate minority contact elsewhere would have little effect on overall rates of referral for minority youth. To be most effective, reductions in disproportionate minority contact should concentrate on the greatest sources of disproportionate minority contact. In this report, we begin to identify the greatest sources of disproportionate minority contact by determining whether these sources are found in specific racial or ethnic groups, in a specific gender group, for specific types of referrals, and in specific geographical areas.

It is important to emphasize that this is only the beginning of an assessment study. This report does not explain why disproportionate minority contact exists. Rather, it more narrowly defines disproportionate minority contact so that our efforts to determine causes of and find solutions to disproportionate minority contact are more fruitful. By guiding these efforts with a more detailed understanding of the scope of disproportionate minority contact, we will be much better prepared to identify causes and solutions.

Before discussing results, we provide details on the sample and sources of data. Our sample includes 1,936 youths who resided in Anchorage and were referred to DJJ in Anchorage during fiscal year 2005 for new crimes, probation violations, or conduct violations. Sources of data include geographic data, census data, and juvenile justice data. We also discuss our methodology which includes the calculation of both relative rate indices and relative empirical Bayes (EB) rate indices. These indices are summarized and presented with descriptive and inferential statistics. After presenting detailed findings, we conclude with both a summary of key findings and an outline of future endeavors to delve deeper into a formal assessment study.

Sample and Data

The sample selected for this quantitative analysis of disparities in juvenile delinquency referrals included all youths referred to the Division of Juvenile Justice in Anchorage in fiscal year 2005 (July 1, 2004 to June 30, 2005). Three sources of data were utilized – geographic, census, and juvenile justice data. Each is now described in greater detail.

Geographic Data

All geographic data were obtained from an ArcMap shapefile of U.S. census block groups for the Municipality of Anchorage that was purchased from Geographic Information Services (Information Technology Department, Municipality of Anchorage)[1]. Census block groups are small "areas bounded on all sides by visible features, such as streets, roads, streams, and railroad tracks" (U.S. Census Bureau, Census 2000). Within the Municipality of Anchorage, there are 214 census block groups. These census block groups average 1,216 inhabitants (s = 660). The ArcMap shapefile was modified to correct for errors and to simplify analyses. The original ArcMap shapefile purchased from the Municipality of Anchorage contained 24 extraneous block groups (i.e., block groups that do not exist) and included mislabeled block groups (i.e., block groups with wrong census identifiers). After correcting these errors, we also simplified the shapefile by eliminating bodies of water and the northern tip of Tract 29, Block Group 1. Since there is no population in these geographic areas, these simplifications have no effect whatsoever on our analyses but allow us to enhance the appearance of our maps.

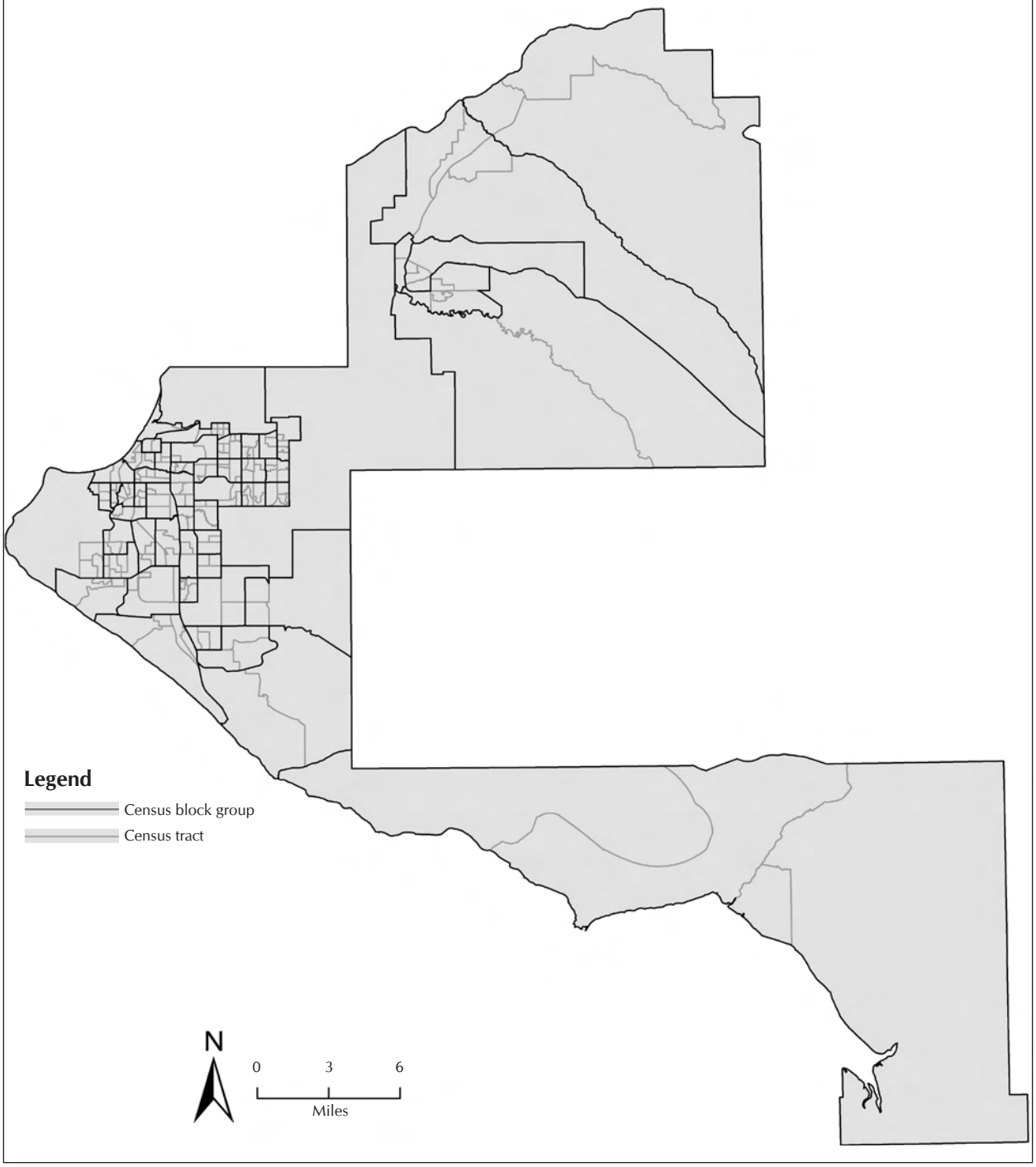
In this report, all analyses are conducted by census tract. Census tracts are defined by the U.S. Census as "small, relatively permanent statistical subdivisions." Within the Municipality of Anchorage, there are 55 census tracts. These census tracts average 3.89 block groups (s = 1.36) and 4,732 inhabitants (s = 1,577). Census tracts were obtained by collapsing census block groups to their respective tract. Census tracts for the Municipality of Anchorage are displayed in Figure 1.

Census Data

Demographic data for each census block group were obtained from Summary File 1 of the 2000 U.S. Census (http://www.census.gov). Summary File 1 includes detailed information on gender, race, ethnicity, and age down to the block group level. Although these data are several years old, they offer the best available demographic information at the block group level of geographic

[1] http://munimaps.muni.org/common/GIS_portal_entry_gold/gis_portal_entry.htm.

Figure 1. Census Tracts for Municipality of Anchorage
(N = 55)



aggregation. Tables P12A to P12I were utilized to calculate the number of juveniles, age 10 to 17, in each gender and race/ethnicity dyad. Gender categories include male and female. Respondents were asked to self-report their race and were allowed to identify multiple racial groups. Race

categories include White only (i.e., White with no other racial group identified), Black only, American Indian and Alaska Native only, Asian only, Native Hawaiian and other Pacific Islander only, some other race only, and two or more races. Hereinafter, these categories are referred to as White, Black, Native, Asian, Pacific, Other, and Multiracial. Overall, 14 dyads were created for analyses by race. These include White males, White females, Black males, Black females, Native males, Native females, Asian males, Asian females, Pacific males, Pacific females, Other males, Other females, Multiracial males, and Multiracial females. Respondents were also asked to self-report their ethnicity. Ethnic categories include Hispanic or Latino (hereinafter Hispanic) and White only non-Hispanic or Latino (hereinafter Caucasian). Four dyads were created for analyses by ethnicity. These include Hispanic males, Hispanic females, Caucasian males, and Caucasian females. The number of individuals in each dyad (age 10 to 17) was computed for each census block group. All census data were collapsed to census tracts and were then merged with the geographic data.

Juvenile Justice Data

All juvenile data were electronically retrieved from the Juvenile Offender Management Information System (JOMIS) maintained by the Division of Juvenile Justice (Department of Health and Social Services, State of Alaska). For each of the 2,098 referrals to DJJ in Anchorage during fiscal year 2005, we retrieved the juvenile's race, ethnicity, gender, and referral type. Race, ethnicity, and gender were coded following the previously described U.S. Census categorizations.

For each referral, we also gathered the youth's residential address at the time of the referral. Address histories are maintained in JOMIS, but these are not directly linked to specific referrals. We examined the last address known prior to the referral and the first address known after the referral as potential candidates for the youth's address at the time of the referral. This was important because addresses may not be updated until after the referral (e.g., during the intake interview). Of the 2,098 referrals, 24 (1.1%) had no address in their address histories. For 15 (62.5%) of these 24, a mailing address was available. For these 15, the youth's address selected was the mailing address. Of the 2,098 referrals, 972 (46.3%) had no address entries prior to their referral. For these 972, the youth's address selected was the first known address. Of the 2,098 referrals, 494 (23.5%) had no address updates after their referral. For these 494, the youth's address selected was the last known address. Of the 2,098 referrals, 287 (13.7%) had two potential addresses, but both addresses were the same. These were duplicate entries in the address history table. For these 287, the youth's address selected was the last known address at the time of the referral. Finally, of the 2,098 referrals, 321 (15.3%) had two different potential addresses, one prior to the referral and one after the referral. The address after the referral was selected if it was entered into JOMIS

on or before the first hearing after the referral. If the address after the referral was not entered into JOMIS on or before the first hearing after the referral, the address prior the referral was selected. Therefore, for these 321 referrals, we selected the last known address at the time of the first hearing after the referral. For 146 (45.5%) of the 321 referrals that had two different potential addresses, we selected the first address after the referral. For the other 175 (54.5%) of the 321 referrals that had two different potential addresses, we selected the last address prior to the referral.

Our sample of 2,098 referrals was then limited to include only referrals from youths in Anchorage. Nine referrals (0.4%) were eliminated because no address information was available. Of the remaining 2,089 referrals, five (0.2%) were eliminated because the youths resided outside of Alaska. Of the remaining 2,084 referrals, 98 (4.7%) were eliminated because the youths resided outside the Municipality of Anchorage. This created a sample of 1,986 youths who resided in Anchorage. Of these 1,986, we were able to successfully geo-code 1,977 addresses (99.5%). The other nine did not match a known residential address. Finally, we selected only youths who had been referred for new crimes, probation violations, or conduct violations. This eliminated eight youths. We also eliminated 33 youths whose race was unknown. Our final sample therefore includes 1,936 youths who resided in Anchorage and were referred to DJJ in Anchorage during fiscal year 2005 for new crimes, probation violations, or conduct violations.

Geo-coded residential locations were then joined to the geographic and census data. Each census tract was given the sum of the numeric attributes of the geo-coded residential locations that fell within its polygon. This provided the total number of youths referred as well as the number of youths referred in each race/ethnicity and gender dyad in all census tracts. Separate totals were calculated for the total sample, the sample referred for new crimes, and the sample referred for conduct and probation violations.

Analysis

The primary determinant of disproportionate minority contact is the relative rate index (RRI). This statistic is the rate of minority youths referred to DJJ per 1,000 minority youths in the population relative to the rate of White youths referred to DJJ per 1,000 White youths in the population. It is simply a ratio of two rates. Mathematically, the relative rate index is calculated as:

$$RRI = \frac{(\#\text{ Minority Youths Referred} / \#\text{ Minority Youths in the Population}) \times 1{,}000}{(\#\text{ White Youths Referred} / \#\text{ White Youths in the Population}) \times 1{,}000}.$$

Substantively, a relative rate index of 1.00 indicates that the rate of referral for minority youth is exactly the same as the rate of referral for White youth. More technically, a relative rate index of 1.00 indicates that the rate of minority youths referred to DJJ per 1,000 minority youths is exactly

the same as the rate of White youths referred to DJJ per 1,000 White youths. A relative rate index of 1.00 indicates that minority contact is not disproportionate relative to White contact.

A relative rate index greater than 1.00 indicates that the rate of referral is greater for minority youths than for White youths. More technically, a relative rate index greater than 1.00 indicates that the rate of minority youths referred to DJJ per 1,000 minority youths is greater than the rate of White youths referred to DJJ per 1,000 White youths. A relative rate index greater than 1.00 indicates that minority contact is disproportionately high relative to White contact. More precisely, the relative rate index, for any given value of '*RRI*' greater than 1.00, can be interpreted by saying that "the rate of youths referred to DJJ per 1,000 youth is '*RRI*' times greater for minority youth than for White youth." For example, if RRI=3 for Black youth, one could then conclude that the rate of referral to DJJ is three times greater for Black youth than for White youth.

A relative rate index less than 1.00 indicates that the rate of referral is lower for minority youths than for White youths. More technically, a relative rate index less than 1.00 indicates that the rate of minority youths referred to DJJ per 1,000 minority youths is less than the rate of White youths referred to DJJ per 1,000 White youths. A relative rate index less than 1.00 indicates that minority contact is disproportionately low relative to White contact. More precisely, the relative rate index, for any given value of '*RRI*' less than 1.00, can be interpreted by saying that "the rate of youths referred to DJJ per 1,000 youths is (1/'*RRI*') times smaller for minority youths than for White youths." For example, if RRI=0.5 for Black youth, one could then conclude that the rate of referral to DJJ is two times smaller for Black youth than for White youth (note that 1/0.5 = 2).

The statistical significance of each relative rate index was calculated using a *Z*-statistic for testing the statistical significance of the difference between two proportions from independent samples, using a two-tailed significance level of 0.05 (see Appendix A for additional details).

Rates and relative rate indices for all minority groups are utilized to examine disproportionate minority contact throughout the Municipality of Anchorage. Analyses are also conducted for each racial and ethnic group, by gender, by referral type, and by both gender and referral type.

Analyses by census tract cannot be based on relative rate indices. As aforementioned, a relative rate index is simply the ratio of two raw rates. A well-known problem with raw rates is that their variances are unstable. The precision of rate estimates varies by the size of the population at risk in each geographical unit. Geographical units with small populations at risk produce imprecise raw rates. In the disproportionate minority contact literature, this problem has been traditionally solved by not analyzing geographical areas where the population at risk represents less than 1 percent of the total population within those geographical areas. This is totally unsatisfying as these are precisely the areas that may produce the highest levels of disproportionate minority contact. To resolve this problem, we examine relative empirical Bayes (EB) rate indices that are ratios of two

empirical Bayes rates. Given that this relative EB rate index has never been used in disproportionate minority contact research, a bit of justification and explanation is provided in Appendix B. The primary limitation to relative EB rate indices is that they are far less interpretable than relative rate indices. However, there are two primary advantages to relative EB rate indices. First, we gain the ability to examine disproportionate minority contact in geographical areas that have small populations at risk. Second, we gain the ability to detect true outliers. Outliers are geographical areas with unusually high levels of disproportionate minority contact. For our purposes, these two advantages are critically important.

To examine disproportionate minority contact by census tract, we therefore rely on empirical Bayes rates of referral and on relative EB rate indices. However, relative EB rate indices were not computed for all census tracts in Anchorage. Analyses of disproportionate minority contact by census tract focus exclusively on census tracts where minority youth live. If no minority youth live within a specific census tract, disproportionate minority contact cannot, by definition, occur within this specific census tract. Therefore, these census tracts are eliminated from our analyses. Furthermore, it is possible that some census tracts had no White youth referred. In these cases, it is not possible to calculate relative rate indices because the denominator, the rate of White youth referral, would be zero. For these census tracts, we simply examined the empirical Bayes rates of referral for minority youth (rather than relative EB rate indices) and identified census tracts whose rates were outliers. When White youth were referred, we examined the relative EB rate indices for minority youth and again identified census tracts whose relative EB rate indices were outliers. All rates were calculated as empirical Bayes rates and all relative rate indices were calculated as relative indices of empirical Bayes rates.

Outliers were identified when a specific empirical Bayes rate or a specific relative EB rate index was outside the inner fence (i.e., 1.5 times the interquartile range above the third quartile). These outliers represent census tracts with unusually large levels of disproportionate minority contact. It is critically important to emphasize that outliers cannot be compared across analyses (e.g., from one figure to the next). If, for example, a census tract is identified as an outlier for Asian youth, it simply means that the level of disproportionate minority contact in this census tract is unusually large *for Asian youth*. It does not in any way imply that the rate of referral for Asian youth in this census tract is higher than the rate of referral for other minority youth.

Results

Results are organized into four sections. The first section provides a brief overview of the racial, ethnic, and gender composition of youth referred to DJJ for new crimes and probation or conduct violations. The second section then examines whether minority youth are disproportionately

referred to DJJ. Analyses are conducted for each racial and ethnic group, by gender group, and by referral type (new crimes versus probation and conduct violations). The third section examines rates of referral for minority youth by census tract. For each racial and ethnic group, we map the empirical Bayes rate of referral to show the distribution of referral rates across census tracts. Finally, we conclude the results section by examining whether disproportionate minority contact varies across census tracts. For each racial and ethnic group, we map the relative EB rate index of referral to show the distribution of disproportionate minority contact across census tracts. As before, analyses are conducted for each racial and ethnic group, by gender group, and by referral type (new crimes versus probation and conduct violations).

Racial, Ethnic, and Gender Composition of Referred Youth

We begin with a simple overview of the racial characteristics of the sample of youths referred to DJJ for new crimes (crime column, N=1,575), the sample of youths referred to DJJ for conduct and probation violations (probation column, N=361), and the sample of all youths referred to DJJ (total column, N=1,936; Table 1).

Table 1. Race of Referred Youth by Referral Type

Column percentages.

	Crime			Probation			Total		
Race	N	% of total	% of minority	N	% of total	% of minority	N	% of total	% of minority
White	649	41.2 %	—	103	28.5 %	—	752	38.8 %	—
Black	215	13.7	23.2 %	58	16.1	22.5 %	273	14.1	23.1 %
Native	280	17.8	30.2	82	22.7	31.8	362	18.7	30.6
Asian	90	5.7	9.7	31	8.6	12.0	121	6.3	10.2
Pacific	66	4.2	7.1	15	4.2	5.8	81	4.2	6.8
Other minority	66	4.2	7.1	11	3.0	4.3	77	4.0	6.5
Multiracial	209	13.3	22.6	61	16.9	23.6	270	13.9	22.8
Total	**1,575**			**361**			**1,936**		

Source of data: *Division of Juvenile Justice (FY05)*

Overall, 58.8 percent of the youth referred to DJJ for new crimes were minority. Among minority youth referred for new crimes, 23.2 percent were Black, 30.2 percent were Native, 9.7 percent were Asian, 7.1 percent were Pacific, 7.1 percent were other minority, and 22.6 percent were multiracial. Minority youth were even more prevalent among those referred to DJJ for conduct and probation violations. Overall, 71.5 percent of youths referred to DJJ for probation or conduct violations were minority. The proportion of White youths in the sample referred to DJJ for probation or conduct violations was significantly lower than the proportion of White youths in the sample referred to DJJ for new crimes ($p < 0.05$). No other significant difference in race composition was found between the crime and probation samples. Across both samples, 61.2

percent of all youth referred to DJJ were minority. Among all minority youth referred to DJJ, 23.1 percent were Black, 30.6 percent were Native, 10.2 percent were Asian, 6.8 percent were Pacific, 6.5 percent were other minority, and 22.8 percent were multiracial.

Racial characteristics by sample and gender group are shown in Table 2. Among males, 57.7 percent of youth referred for new crimes were minority and 68.1 percent of youth referred for conduct and probation violations were minority. Combined, 60.0 percent of males referred to DJJ were minority. Differences across samples (crime versus probation) were not statistically significant for males. Among females, 61.0 percent of youth referred for new crimes were minority and 89.5 percent of youth referred for conduct and probation violations were minority. Combined, 63.8 percent of females referred to DJJ were minority. Only one difference across samples was statistically significant for females. Among females, the percentage of Native youth referred for probation or conduct violations was significantly higher than the percentage of Native youth referred for new crimes (52.6% versus 19.8%, respectively).

Table 2. Race of Referred Youth by Gender and Referral Type

Column percentages

	Crime		Probation		Total	
Race by gender	N	%	N	%	N	%
Male						
White	448	42.3 %	97	31.9 %	545	40.0 %
Black	149	14.1	51	16.8	200	14.7
Native	178	16.8	52	17.1	230	16.9
Asian	73	6.9	30	9.9	103	7.6
Pacific	47	4.4	15	4.9	62	4.5
Other minority	36	3.4	10	3.3	46	3.4
Multiracial	129	12.2	49	16.1	178	13.0
Total	**1060**		**304**		**1364**	
Female						
White	201	39.0 %	6	10.5 %	207	36.2 %
Black	66	12.8	7	12.3	73	12.8
Native	102	19.8	30	52.6	132	23.1
Asian	17	3.3	1	1.8	18	3.1
Pacific	19	3.7	0	0.0	19	3.3
Other minority	30	5.8	1	1.8	31	5.4
Multiracial	80	15.5	12	21.1	92	16.1
Total	**515**		**57**		**572**	

Source of data: *Division of Juvenile Justice (FY05)*

Comparisons can also be made within racial groups, across gender groups (e.g., comparing White males to White females). Within the crime sample and within each racial group, no significant differences were found across gender groups. Within the probation sample, only one significant difference was found across gender groups. This significant difference was again found for Native

youth. Among Native youth, the percentage of females referred for probation or conduct violations was significantly higher than the percentage of males referred for probation or conduct violations (52.6% versus 17.1%, respectively).

To conclude, the majority of youth referred to DJJ for new crimes and for conduct and probation violations were minority (58.8% and 71.5%, respectively). Differences in racial composition were searched across referral type and gender. Only two significant differences were uncovered. The percentage of Native females referred to DJJ for conduct and probation violations (52.6%) was significantly higher than (1) the percentage of Native females referred to DJJ for new crimes (19.8%) and (2) the percentage of Native males referred to DJJ for conduct and probation violations (17.1%). These are substantively important differences to keep in mind while interpreting further results.

Results in Table 3 examine youth referred to DJJ by ethnic group. Overall, 14.4 percent of youth referred to DJJ were Hispanic. Hispanic youth represented 14.7 percent of referrals for new crimes and 12.8 percent of referrals for probation or conduct violations. Note that these analyses compare youth who categorized themselves as Hispanic (or Latino) to youth who categorized themselves as White only and non-Hispanic (or Latino). This analysis and subsequent analyses by ethnic group therefore exclude non-Hispanic minority youth. This explains why the sample size in Table 3 is lower than the sample size in Tables 1 and 2. Rather than comparing Hispanic to non-Hispanic youth, we compare Hispanic to Caucasian youth (i.e., youth who are White and non-Hispanic).

Table 3. Ethnicity of Referred Youth by Referral Type

Column percentages

	Crime		Probation		Total	
Ethnicity	N	%	N	%	N	%
Caucasian	634	85.3 %	102	87.2 %	736	85.6 %
Hispanic	109	14.7	15	12.8	124	14.4
Total	**743**		**117**		**860**	

Source of data: *Division of Juvenile Justice (FY05)*

In Table 4, we examine the ethnic and gender composition of youth referred to DJJ. Overall, 13.7 percent of males referred to DJJ were Hispanic and 16.3 percent of females referred to DJJ were Hispanic. No significant differences across samples (crime versus probation) or across gender groups were observed. Note, however, that no Hispanic females in our sample were referred to DJJ for probation or conduct violations. Empirical Bayes rates and relative EB rate indices for Hispanic females referred for probation and conduct violations (reported in Table 20) are therefore zero. Stated differently, disproportionate minority contact is clearly not due to the referral of Hispanic females for probation or conduct violations.

Table 4. Ethnicity of Referred Youth by Gender and Referral Type

Column percentages

	Crime		Probation		Total	
Ethnicity by gender	N	%	N	%	N	%
Male						
Caucasian	435	86.3 %	96	86.5 %	531	86.3 %
Hispanic	69	13.7	15	13.5	84	13.7
Total	**504**		**111**		**615**	
Female						
Caucasian	199	83.3 %	6	100.0 %	205	83.7 %
Hispanic	40	16.7	0	0.0	40	16.3
Total	**239**		**6**		**245**	

Source of data: *Division of Juvenile Justice (FY05)*

Disproportionate Minority Contact in Anchorage

In this section, we assess the extent of disproportionate minority contact for each minority group in Anchorage and determine whether disproportionate minority contact varies by gender, by referral type, and by both gender and referral type. We first examine disproportionate minority contact across racial groups. We do so by comparing the number of youth referred to DJJ shown in Tables 1 and 2 to the number of youth in the population. We subsequently examine disproportionate minority contact across ethnic groups. We do so by comparing the number of youth referred to DJJ shown in Tables 3 and 4 to the number of youth in the population. This is achieved by computing relative rate indices for the entire Municipality of Anchorage.

Table 5 shows the number of youth referred to DJJ in each racial group, the number of youth in the population in each racial group, the rate of referral per 1,000 youth in the population, and the

Table 5. Relative Rate Indices by Race

	Youth referred		Youth in population (age 10 to 17)		Rate of referrals per 1,000 youth	Relative rate index[1]
Race	N	%	N	%		
White	752	38.8 %	22,308	65.7 %	33.7	—
Black	273	14.1	2,277	6.7	119.9	**3.56**
Native	362	18.7	2,808	8.3	128.9	**3.83**
Asian	121	6.3	2,041	6.0	59.3	**1.76**
Pacific	81	4.2	487	1.4	166.3	**4.94**
Other minority	77	4.0	817	2.4	94.2	**2.80**
Multiracial	270	13.9	3,233	9.5	83.5	**2.48**
Total	**1,936**		**33,971**		**57.0**	

[1] All indices are significantly different than reference category ($\alpha = 0.05$). Reference category is White.

Source of data: *Division of Juvenile Justice (FY05) and 2000 Census (SF1)*

relative rate index for each minority racial group. Again, the relative rate index is a comparison of the minority rate of referral to the White rate of referral. As shown in Table 5, all minority youth were more likely to be referred to DJJ than White youth. For example, the rate of referral per 1,000 youth was 119.9 for Black youth versus 33.7 for White youth. As a result, the rate of referral per 1,000 youth was 3.56 times higher for Black youth than for White youth. Overall, the rate of referral for minority youth was three times higher than the rate of referral for White youth (result not shown). Respectively, the rates of referral for Black, Native, Asian, Pacific, other minority, and multiracial youth were 3.56, 3.83, 1.76, 4.94, 2.80, and 2.48 times higher than the rate of referral for White youth. All of these differences are highly statistically significant.

We now examine whether these results are true for both males and females, for males only, or for females only (Table 6). A similar pattern emerges. Overall, the rate of referral for minority males was 2.96 times higher than the rate of referral for White males and the rate of referral for minority females was 3.27 times higher than the rate of referral for White females (results not shown). Relative to the rate of referral for White males, the rates of referral were 3.68 times higher for Black males, 3.49 times higher for Native males, 2.14 times higher for Asian males, 5.14 times higher for Pacific males, 2.40 times higher for other minority males, and 2.31 times

Table 6. Relative Rate Indices by Race and Gender

	Youth referred		Youth in population (age 10 to 17)		Rate of referrals per 1,000 youth	Relative rate index[1]
Race by gender	N	%	N	%		
Male						
White	545	40.0 %	11,527	66.3 %	47.3	—
Black	200	14.7	1,148	6.6	174.2	**3.68**
Native	230	16.9	1,395	8.0	164.9	**3.49**
Asian	103	7.6	1,018	5.9	101.2	**2.14**
Pacific	62	4.5	255	1.5	243.1	**5.14**
Other minority	46	3.4	406	2.3	113.3	**2.40**
Multiracial	178	13.0	1,632	9.4	109.1	**2.31**
Total	**1,364**		**17,381**			
Female						
White	207	36.2 %	10,781	65.0 %	19.2	—
Black	73	12.8	1,129	6.8	64.7	**3.37**
Native	132	23.1	1,413	8.5	93.4	**4.87**
Asian	18	3.1	1,023	6.2	17.6	0.92
Pacific	19	3.3	232	1.4	81.9	**4.27**
Other minority	31	5.4	411	2.5	75.4	**3.93**
Multiracial	92	16.1	1,601	9.7	57.5	**2.99**
Total	**572**		**16,590**			

[1] Indices in bold are significantly different than the reference category ($\alpha = 0.05$). Reference category is White males for males and White females for females.

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

higher for multiracial males. All of these differences were statistically significant. Although the rate of referral for Asian females did not significantly differ from that of White females, all other differences between White females and minority females were statistically significant. Relative to the rate of referral for White females, the rates of referral were 3.37 times higher for Black females, 4.87 times higher for Native females, 4.27 times higher for Pacific females, 3.93 times higher for other minority females, and 2.99 times higher for multiracial females. Clearly, disproportionate minority contact is not limited to one gender group. Both male and female minority youth are greatly overrepresented in referrals to DJJ, with the exception of Asian females (relative to White females).

Rates of referral can again be compared across gender groups within racial groups (e.g., White males to White females; results not shown). Except for Pacific youth, the rates of referral for male youth significantly exceeded the rates of referral for female youth. No significant difference across gender groups was found among Pacific youth.

We now turn our attention to the extent to which disproportionate minority contact varies by referral type. Rates of referral across samples are shown in Table 7. The rates of referral for new crimes were always significantly higher for minority youth than for White youth. Overall,

Table 7. Relative Rate Indices by Race and Referral Type

Race by referral type	Youth referred		Youth in population (age 10 to 17)		Rate of referrals per 1,000 youth	Relative rate index[1]
	N	%	N	%		
White	649	41.2 %	22,308	65.7 %	29.1	—
Black	215	13.7	2,277	6.7	94.4	**3.25**
Native	280	17.8	2,808	8.3	99.7	**3.43**
Asian	90	5.7	2,041	6.0	44.1	**1.52**
Pacific	66	4.2	487	1.4	135.5	**4.66**
Other minority	66	4.2	817	2.4	80.8	**2.78**
Multiracial	209	13.3	3,233	9.5	64.6	**2.22**
Total	**1,575**		**33,971**			
Probation						
White	103	28.5 %	22,308	65.7 %	4.6	—
Black	58	16.1	2,277	6.7	25.5	**5.52**
Native	82	22.7	2,808	8.3	29.2	**6.32**
Asian	31	8.6	2,041	6.0	15.2	3.29
Pacific	15	4.2	487	1.4	30.8	**6.67**
Other minority	11	3.0	817	2.4	13.5	**2.92**
Multiracial	61	16.9	3,233	9.5	18.9	**4.09**
Total	**361**		**33,971**			

[1] Indices in bold are significantly different than the reference category ($\alpha = 0.05$). Reference category is White.

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

the rate of referral for new crimes was 2.73 times higher for minority youth than for White youth (result now shown). More precisely, relative to the rate of referral for new crimes for White youth, the rates of referral for new crimes were 3.25 times higher for Black youth, 3.43 times higher for Native youth, 1.52 times higher for Asian youth, 4.66 times higher for Pacific youth, 2.78 times higher for other minority youth, and 2.22 times higher for multiracial youth. The same was generally true with referrals for conduct and probation violations. Overall, the rate of referral for conduct and probation violations was 4.79 times higher for minority youth than for White youth (result now shown). All minority youth were more likely to be referred to DJJ for conduct and probation violations than White youth, except Asian youth. More specifically, relative to the rate of referral for conduct and probation violations for White youth, the rates of referral for conduct and probation violations were 5.52 times higher for Black youth, 6.32 times higher for Native youth, 6.67 times higher for Pacific youth, 2.92 times higher for other minority youth, and 4.09 times higher for multiracial youth. Whether differences across samples are statistically significant cannot be determined (because samples are not independent). Nonetheless, it is noteworthy that, on average, the relative rate indices for minority youth were 1.67 times higher with referrals for conduct and probation violations than with referrals for new crimes.

Finally, we examine disproportionate minority contact across both gender and referral type (Table 8). The rate of referral for new crimes was 2.7 times higher for minority males than White males and was 2.9 times higher for minority females than White females (results not shown). Similarly, the rate of referral for conduct and probation violations was 4.2 times higher for minority males than White males and was 15.8 times higher for minority females than White females (results not shown). Among males referred to DJJ for new crimes, the rates of referrals for minority youth were always significantly higher than the rate of referral for White youth. Similarly, among males referred to DJJ for probation and conduct violations, the rates of referrals for minority youth were always significantly higher than the rate of referral for White youth. Among females referred to DJJ for new crimes, the rates of referrals for minority youth were significantly higher than the rate of referral for White youth, except for Asian youth. The rate of referral for new crimes was not significantly higher among Asian females than among White females. Finally, among those referred to DJJ for probation and conduct violations, the rates of referrals were significantly higher for Black females, Native females, and multiracial females than White females.

The extent of disproportionate minority contact across ethnic groups is examined in Tables 9, 10, 11, and 12. In Table 9, we begin by comparing Hispanic youth to Caucasian youth. As shown in Table 9, the rate of referral for Hispanic youth was 52.6 per 1,000 Hispanic youth while the rate of referral for Caucasian youth was 34.3 per 1,000 Caucasian youth. By comparison, the rate of referral for Hispanic youth was 1.53 times greater than the rate of referral for Caucasian youth. As

Table 8. Relative Rate Indices by Race, Referral Type, and Gender

Race by referral type and gender	Youth referred		Youth in population (age 10 to 17)		Rate of referrals per 1,000 youth	Relative rate index[1]
	N	%	N	%		
Crime, male						
White	448	42.3 %	11,527	66.3 %	38.9	—
Black	149	14.1	1,148	6.6	129.8	**3.34**
Native	178	16.8	1,395	8.0	127.6	**3.28**
Asian	73	6.9	1,018	5.9	71.7	**1.85**
Pacific	47	4.4	255	1.5	184.3	**4.74**
Other minority	36	3.4	406	2.3	88.7	**2.28**
Multiracial	129	12.2	1,632	9.4	79.0	**2.03**
Total	**1,060**		**17,381**			
Crime, female						
White	201	39.0 %	10,781	65.0 %	18.6	—
Black	66	12.8	1,129	6.8	58.5	**3.14**
Native	102	19.8	1,413	8.5	72.2	**3.87**
Asian	17	3.3	1,023	6.2	16.6	0.89
Pacific	19	3.7	232	1.4	81.9	**4.39**
Other minority	30	5.8	411	2.5	73.0	**3.92**
Multiracial	80	15.5	1,601	9.7	50.0	**2.68**
Total	**515**		**16,590**			
Probation, male						
White	97	31.9 %	11,527	66.3 %	8.4	—
Black	51	16.8	1,148	6.6	44.4	**5.28**
Native	52	17.1	1,395	8.0	37.3	**4.43**
Asian	30	9.9	1,018	5.9	29.5	**3.50**
Pacific	15	4.9	255	1.5	58.8	**6.99**
Other minority	10	3.3	406	2.3	24.6	**2.93**
Multiracial	49	16.1	1,632	9.4	30.0	**3.57**
Total	**304**		**17,381**			
Probation, female						
White	6	10.5 %	10,781	65.0 %	0.6	—
Black	7	12.3	1,129	6.8	6.2	**11.14**
Native	30	52.6	1,413	8.5	21.2	**38.15**
Asian	1	1.8	1,023	6.2	1.0	1.76
Pacific	0	0.0	232	1.4	0.0	0.00
Other minority	1	1.8	411	2.5	2.4	4.37
Multiracial	12	21.1	1,601	9.7	7.5	**13.47**
Total	**57**		**16,590**			

[1] Indices in bold are significantly different than the reference category ($\alpha = 0.05$). Reference category is White males for males and White females for females.

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

Table 10. Relative Rate Indices by Ethnicity and Gender

Ethnicity by gender	Youth referred N	Youth referred %	Youth in population (age 10 to 17) N	Youth in population (age 10 to 17) %	Rate of referrals per 1,000 youth	Relative rate index[1]
Male						
Caucasian	531	86.3 %	11,083	90.5 %	47.9	—
Hispanic	84	13.7	1,160	9.5	72.4	**1.51**
Total	**615**		**12,243**			
Female						
Caucasian	205	83.7 %	10,344	89.6 %	19.8	—
Hispanic	40	16.3	1,197	10.4	33.4	**1.69**
Total	**245**		**11,541**			

[1] Indices in bold are significantly different than the reference category ($\alpha = 0.05$). Reference category is Caucasian males for males and Caucasian females for females.

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

shown in Table 10, this result was true for both Hispanic males and Hispanic females. The rates of referral were 1.51 times greater for Hispanic males and 1.69 times greater for Hispanic females than for their Caucasian counterparts. All differences between Hispanic and Caucasian youth were statistically significant.

Rates of referral for Hispanic and Caucasian youth are analyzed by referral type in Table 11. Although the rate of referral for Hispanic youth was greater than the rate of referral for Caucasian youth for referrals of both new crimes and probation or conduct violations, only the former difference was statistically significant. More precisely, the rate of referral for new crimes was 1.56 times greater for Hispanic youth than for Caucasian youth. As shown in Table 4, there were

Table 11. Relative Rate Indices by Ethnicity and Referral Type

Ethnicity by referral type	Youth referred N	Youth referred %	Youth in population (age 10 to 17) N	Youth in population (age 10 to 17) %	Rate of referrals per 1,000 youth	Relative rate index[1]
Crime						
Caucasian	634	85.3 %	21,427	90.1 %	29.6	—
Hispanic	109	14.7	2,357	9.9	46.2	**1.56**
Total	**743**		**23,784**			
Probation						
Caucasian	102	87.2 %	21,427	90.1 %	4.8	—
Hispanic	15	12.8	2,357	9.9	6.4	1.34
Total	**117**		**23,784**			

[1] Indices in bold are significantly different than the reference category ($\alpha = 0.05$). Reference category is Caucasian.

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

few Hispanic youth in our sample referred to DJJ for probation or conduct violations, and there were no Hispanic females in our sample referred to DJJ for probation or conduct violations.

In Table 12, we examine the rates of referral for Hispanic and Caucasian youth by gender and referral type. Again, the rates of referral for new crimes for Hispanic youth, both male and female, were significantly higher than the rates of referral for Caucasian youth. Conversely, the rates of referral for probation and conduct violations for Hispanic youth were not significantly higher than the rates of referral for Caucasian youth. This again indicates that the cause of the disproportionate minority contact of Hispanic youth (shown in Table 9) is not related to referrals for probation and conduct violations. Too few Hispanic youth are referred to DJJ for probation and conduct violations to explain the disproportionate minority contact of Hispanic youth.

Table 12. Relative Rate Indices by Ethnicity, Referral Type, and Gender

Ethnicity by referral type and gender	Youth referred		Youth in population (age 10 to 17)		Rate of referrals per 1,000 youth	Relative rate index[1]
	N	%	N	%		
Crime, male						
Caucasian	435	86.3 %	11,083	90.5 %	39.2	—
Hispanic	69	13.7	1,160	9.5	59.5	**1.52**
Total	**504**		**12,243**			
Crime, female						
Caucasian	199	83.3 %	10,344	89.6 %	19.2	—
Hispanic	40	16.7	1,197	10.4	33.4	**1.74**
Total	**239**		**11,541**			
Probation, male						
Caucasian	96	86.5 %	11,083	90.5 %	8.7	—
Hispanic	15	13.5	1,160	9.5	12.9	1.49
Total	**111**		**12,243**			
Probation, female						
Caucasian	6	100.0 %	10,344	89.6 %	0.6	—
Hispanic	0	0.0	1,197	10.4	0.0	0.00
Total	**6**		**11,541**			

[1] Indices in bold are significantly different than the reference category ($\alpha = 0.05$). Reference category is Caucasian males for males and Caucasian females for females.

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

Overall, it is clear that minority youths were disproportionately represented in referrals to DJJ (see Tables 5 and 9). It is also clear that disproportionate minority contact occurred for both males and females (Tables 6 and 10). For minority racial groups, disproportionate minority contact existed for referrals of both new crimes and conduct and probation violations (Table 7). For minority ethnic groups (i.e., Hispanic youth), disproportionate minority contact existed only for referrals of new crimes (Table 11). By and large, disproportionate minority contact occurred also

for males referred for new crimes, females referred for new crimes, males referred for probation and conduct violations, and for females referred for probation and conduct violations (Tables 8 and 12). The only exception was that Hispanic youth were not disproportionately referred for probation or conduct violations.

However, of the 54 relative rate indices in Tables 5 through 8 (that examine disproportionate minority contact by race), only six (11.1%) were not statistically significant. Stated differently, of the 54 racial differences examined, only six failed to reach statistical significance. Four of these non-significant differences were found for Asian youth. Rates of referrals were not significantly higher for Asian females than for White females, for Asian youth referred for probation or conduct violations than for White youth referred for probation or conduct violations, for Asian females referred for new crimes than for White females referred for new crimes, or for Asian females referred for probation or conduct violations than for White females referred for probation or conduct violations.

Similarly, of the nine relative rate indices in Tables 9 through 12 (that examine disproportionate minority contact by ethnicity), only three (33.3%) were not statistically significant. All three of these non-significant differences were found for youth referred for probation or conduct violations. Very few Hispanic youth were referred to DJJ for probation or conduct violations (i.e., 15 males and zero females; see Table 4). As a result, no significant disproportionate minority contact was noted for Hispanic youth referred to DJJ for probation or conduct violations.

Overall, we conclude that the disproportionate minority contact is not limited to specific racial or gender groups. Youth in all minority racial and ethnic groups, both male and female, experienced rates of referral to DJJ that were significantly higher than the rates of their White or Caucasian counterparts. In order to reduce the levels of disproportionate minority contact, it is clear that our efforts should focus on the referrals of all minority youth, both males and females. Eliminating disproportionate minority contact in one gender group may significantly decrease disproportionate minority contact, but will not eliminate it. Similarly, we conclude that disproportionate minority contact is not limited to referrals for new crimes only or to referrals for conduct and probation violations only (except for Hispanic youth). With rare exceptions (mostly found for Asian and Hispanic youth), disproportionate minority contact was not limited to one gender group or one referral type.

Rates of Referral by Census Tract

Before describing the extent to which disproportionate minority contact varied across census tracts, we provide an overview of the rates of referral to DJJ across census tracts. Rates of referral to DJJ were calculated as empirical Bayes rates. These rates were not calculated in census tracts

with no minority youth population at-risk (age 10 to 17). Empirical Bayes rates were calculated for White youth, Black youth, Native youth, Asian youth, Pacific youth, other minority youth, multiracial youth, and Hispanic youth. Rates are then graphically displayed in Figures 2 through 9. The scale utilized in each Figure is constant so that direct comparisons across maps can be made. Areas in white are census tracts where the rate of referral was less than 41 referrals per 1,000 youth. Areas in light gray are census tracts where the rate of referral was between 41 and 71 referrals per 1,000 youth. Areas in dark gray are census tracts where the rate of referral was between 71 and 132 referrals per 1,000 youth. Finally, areas in black are census tracts where the rate of referral was between 132 to 755 referrals per 1,000 youth.

Rates of referral for White youth are shown in Figure 2. Of the 55 census tracts within the Municipality of Anchorage, all but two had rates of referral to DJJ below 71 referrals per 1,000 youth. Only two census tracts had rates of referral to DJJ greater than 71 referrals per 1,000 youth and none had rates of referral to DJJ greater than 132 referrals per 1,000 youth. As shown in the subsequent Figures, the rates of referral for most minority youth were vastly different.

In Figure 3, for example, the rates of referral to DJJ for Black youth were substantially higher than the rates of referral to DJJ for White youth. When these rates are compared in the next section, the extent to which Black youth were disproportionately referred to DJJ will be clearly revealed. Although only two census tracts had rates of referral to DJJ greater than 71 referrals per 1,000 youth for White youth, 40 census tracts had rates of referral to DJJ greater than 71 referrals per 1,000 youth for Black youth. Twenty of these census tracts had rates of referral to DJJ greater than 132 referrals per 1,000 youth.

Figure 4 displays the rates of referral for Native youth. Again, we see much higher rates of referral than those shown in Figure 2, for White youth. For Native youth, only seven census tracts had rates of referral below 71 referrals per 1,000 youth (compared to 33 for White youth). In addition, for Native youth, 25 census tracts had rates of referral greater than 132 referrals per 1,000 youth (compared to zero for White youth). Overall, the rate of referral to DJJ for Native youth was greater than the rate of referral to DJJ for White youth in all but two census tracts within the Municipality of Anchorage (result not shown).

Rates of referral to DJJ for Asian youth are shown in Figure 5. The rates of referral for Asian youth across census tracts were noticeably lower than those for Black and Native youth. Nonetheless, the rates of referral for Asian youth across census tracts were still noticeably greater than those for White youth. More census tracts had a rate of referral between 71 and 132 referrals per 1,000 youth for Asian youth than White youth (15 versus two). Similarly, more census tracts had a rate of referral between 132 and 755 referrals per 1,000 youth for Asian youth than White youth (five versus zero).

Figure 2. EB Rate of Referral by Census Tract for White Youth

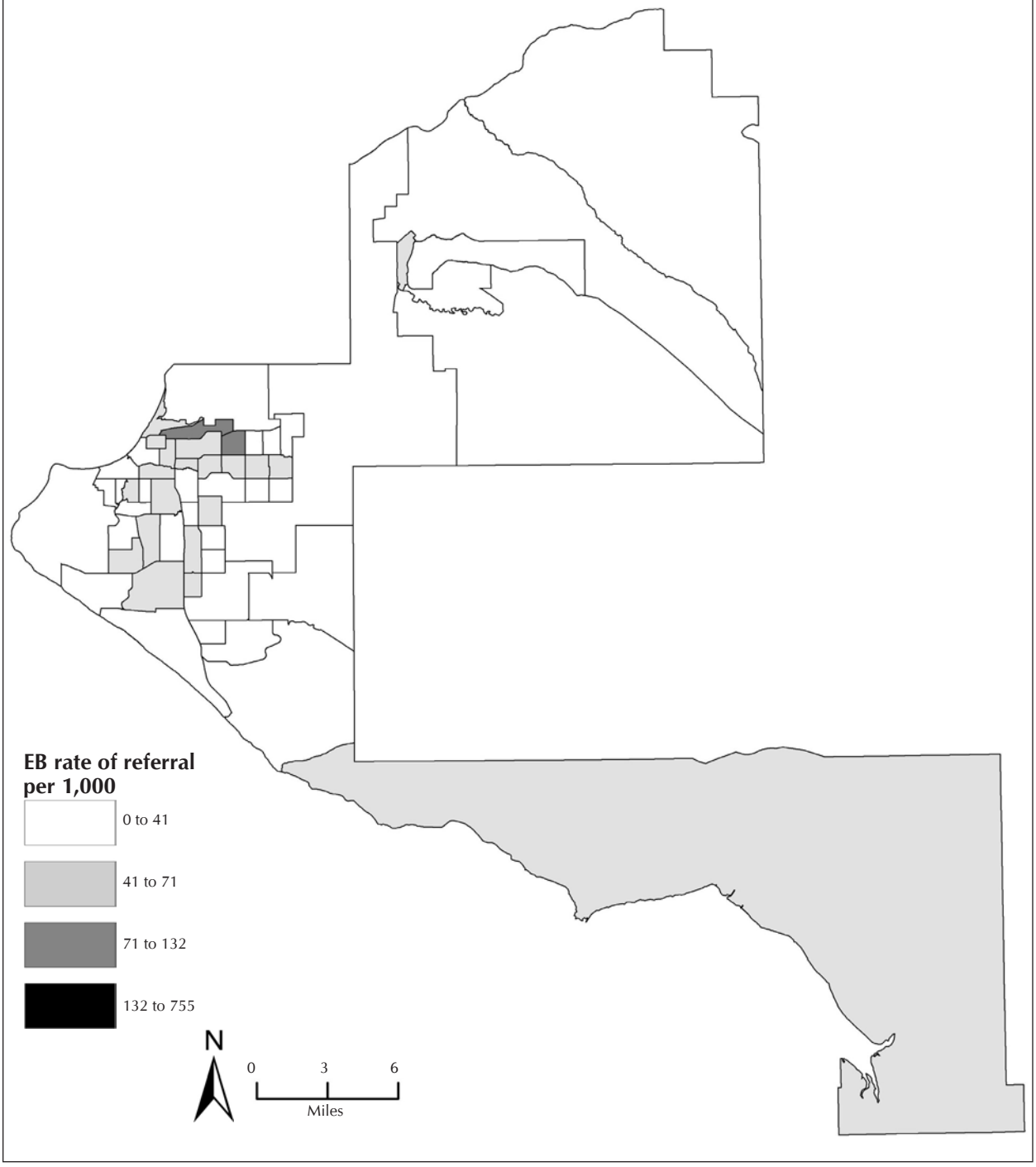


Figure 3. EB Rate of Referral by Census Tract for Black Youth

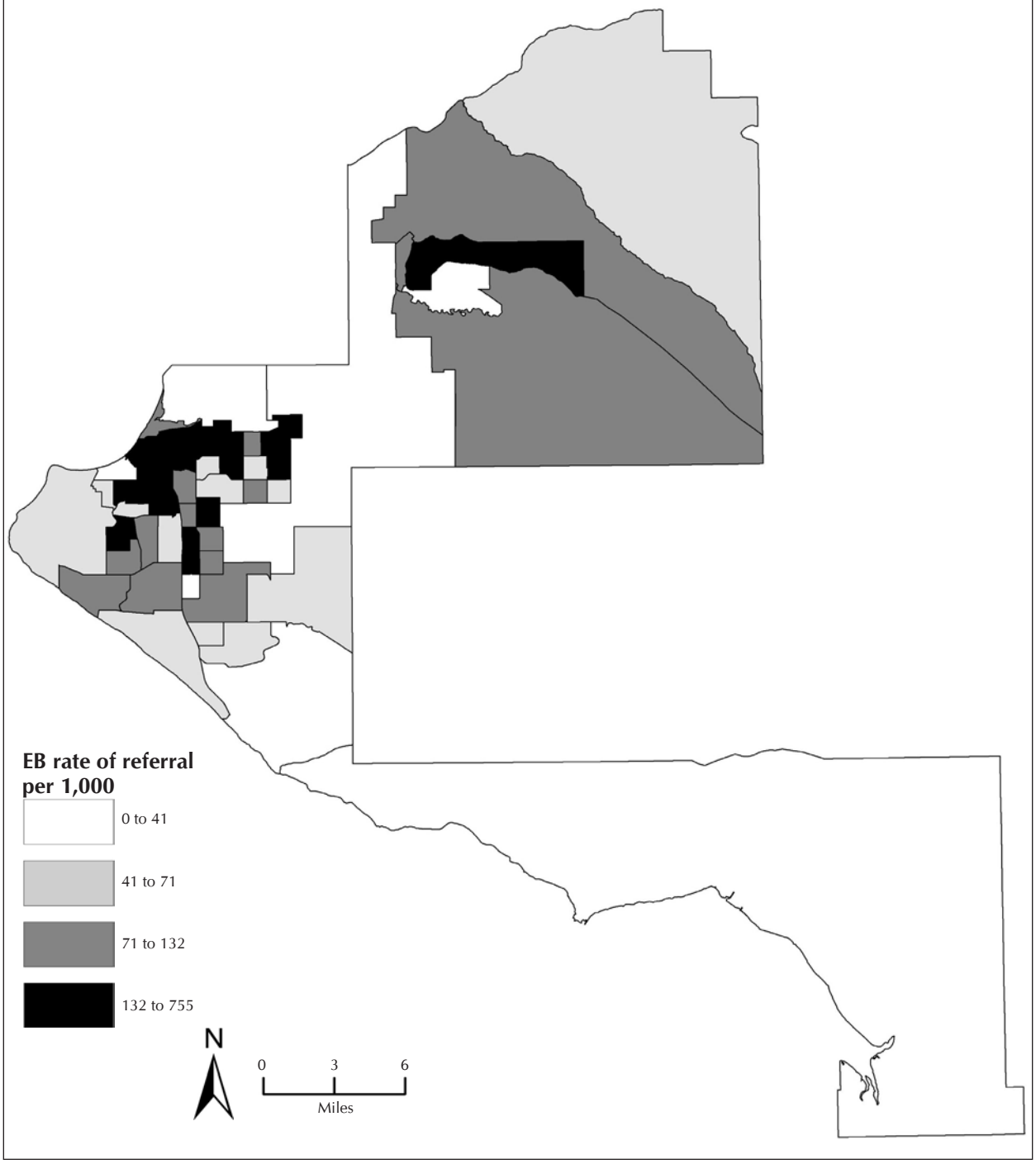


Figure 4. EB Rate of Referral by Census Tract for Native Youth

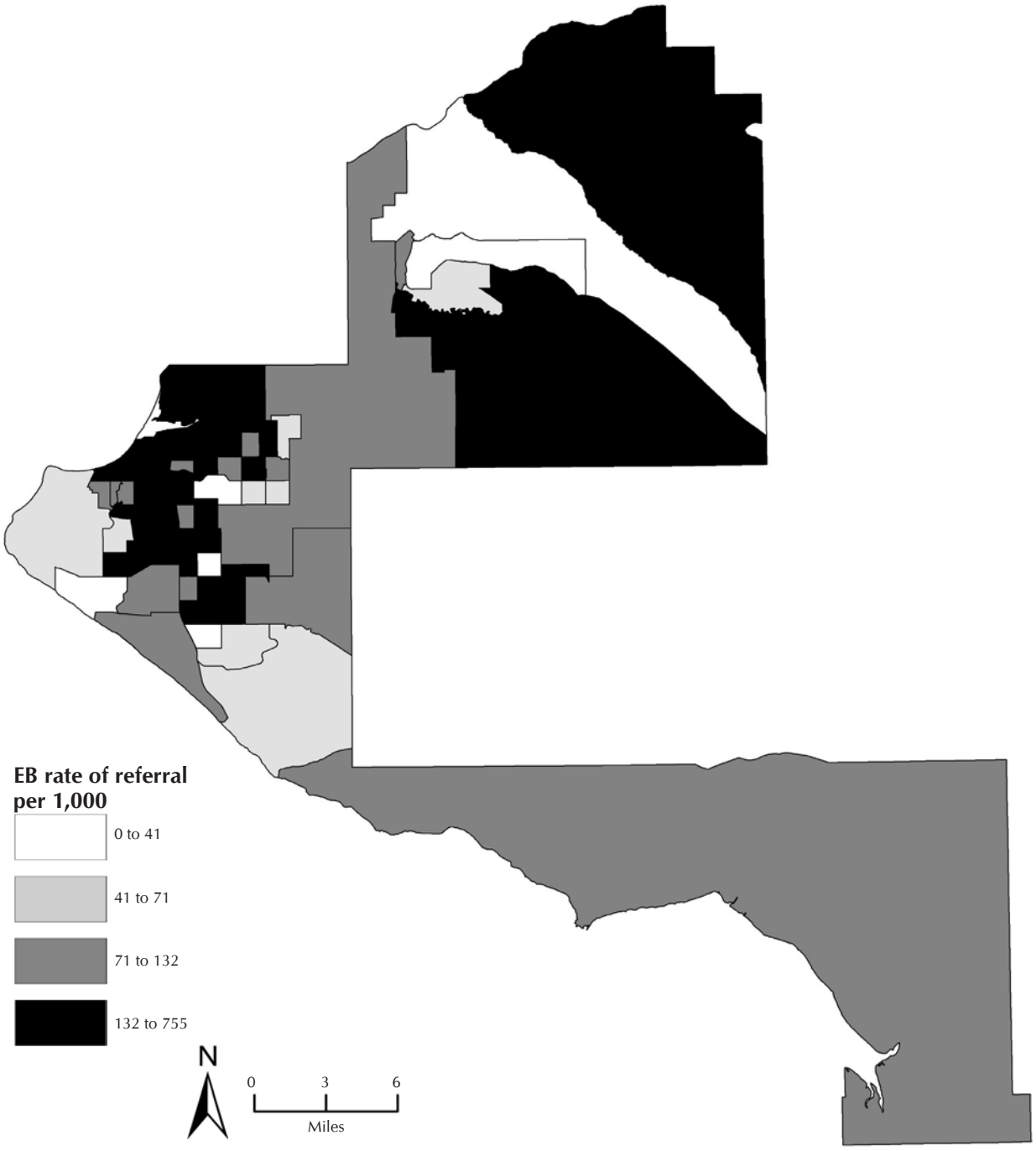


Figure 5. EB Rate of Referral by Census Tract for Asian Youth

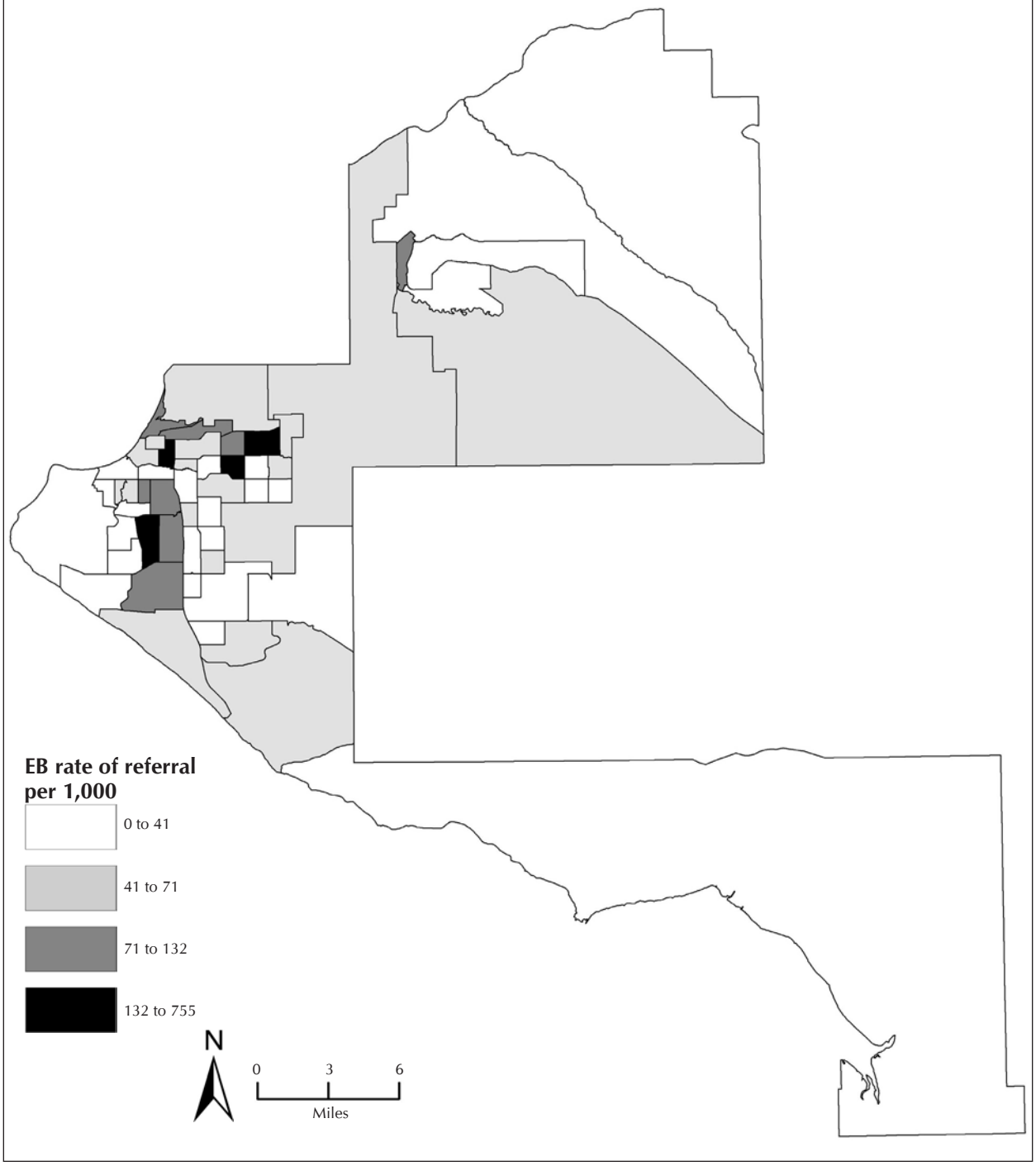


Figure 6. EB Rate of Referral by Census Tract for Pacific Youth

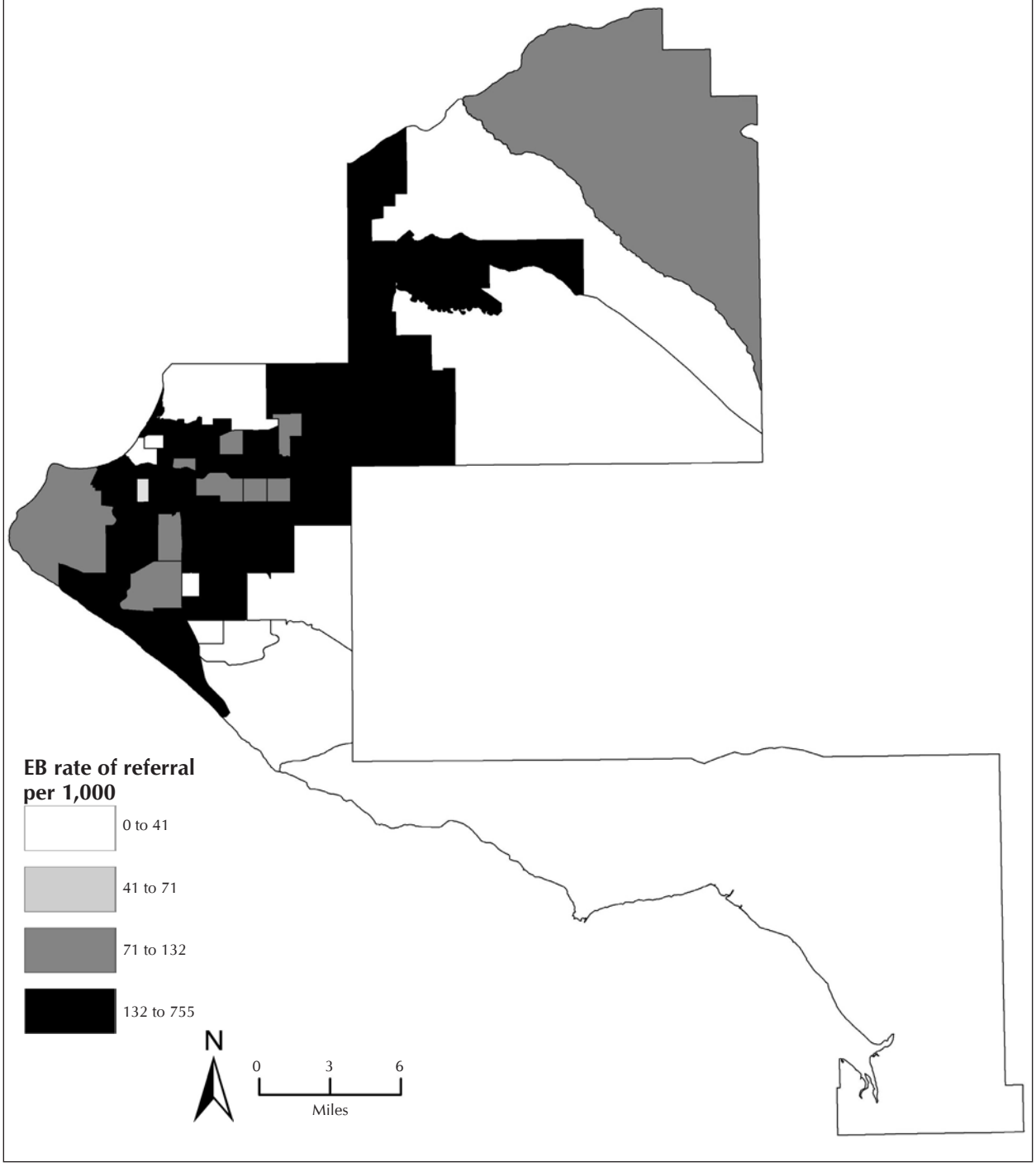


Figure 7. EB Rate of Referral by Census Tract for Other Minority Youth

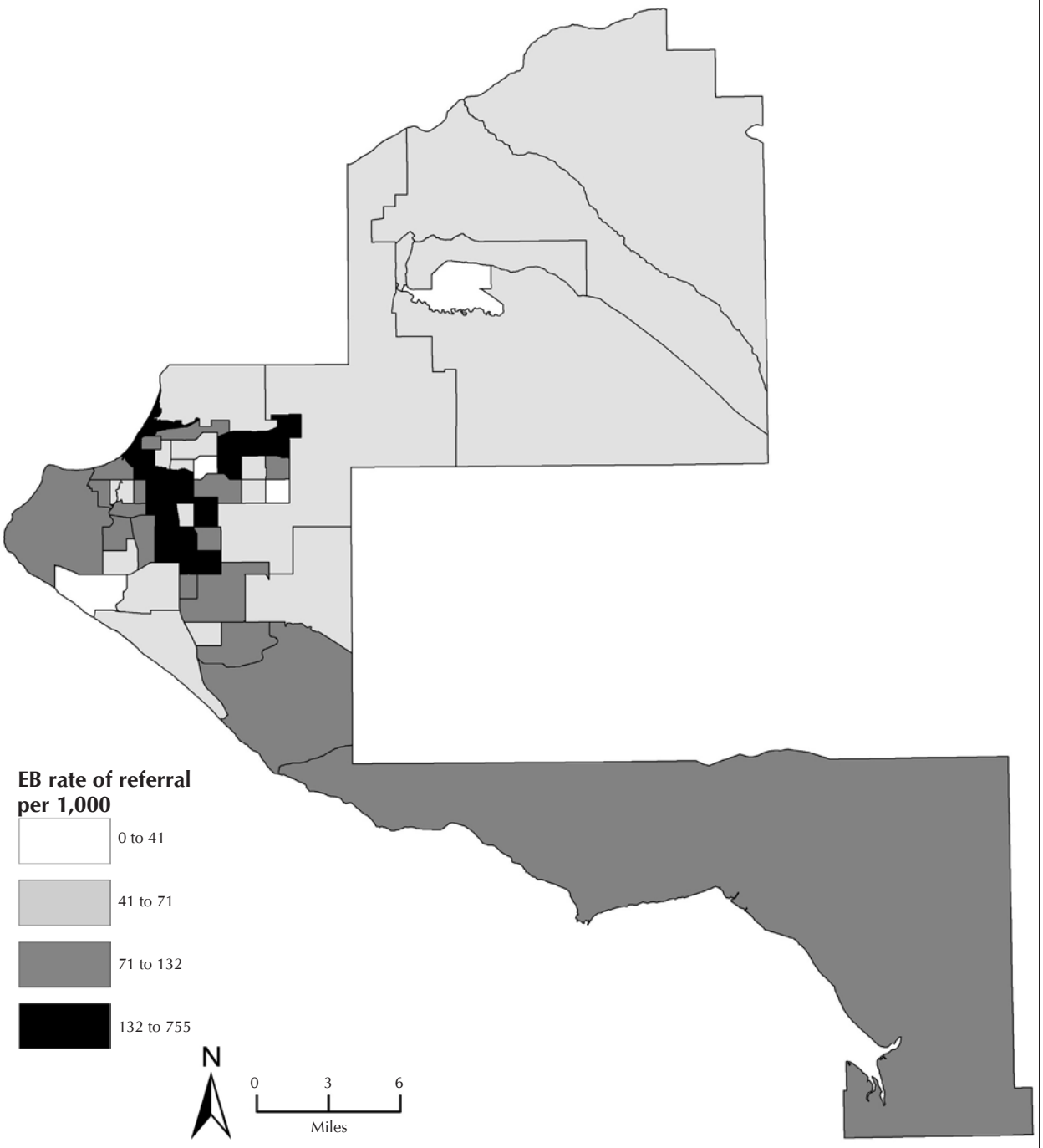


Figure 8. EB Rate of Referral by Census Tract for Multiracial Youth

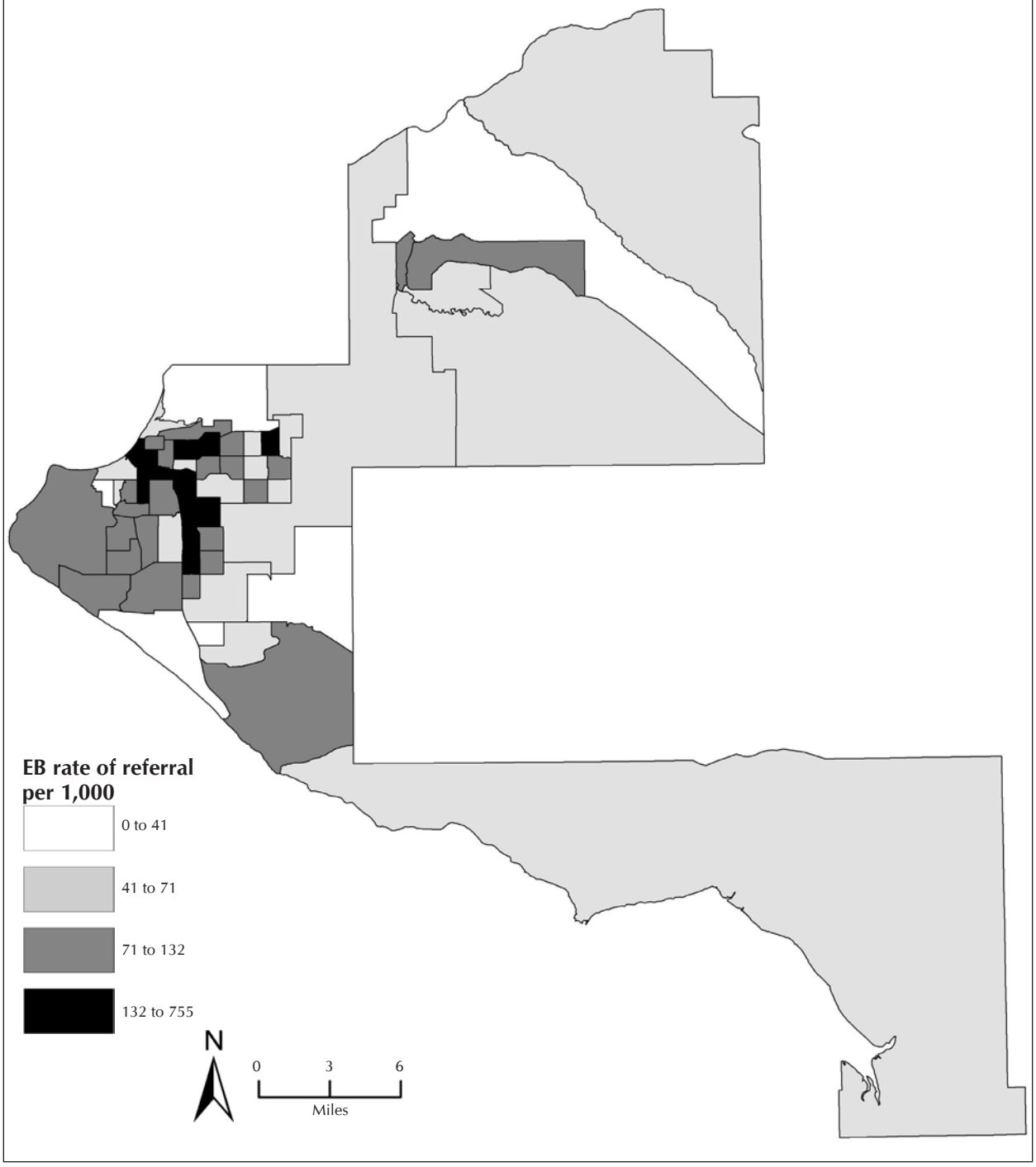
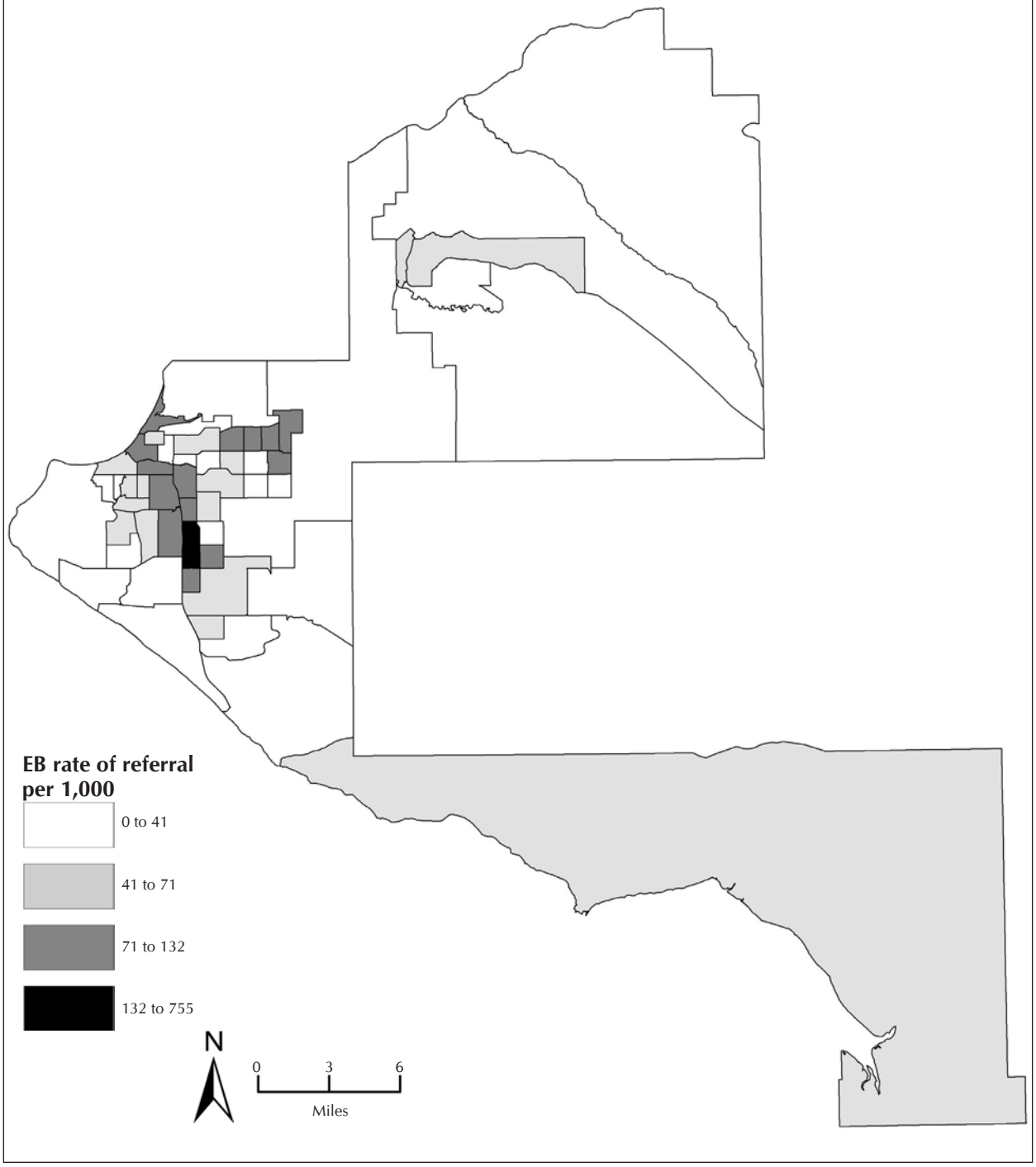


Figure 9. EB Rate of Referral by Census Tract for Hispanic Youth



Pacific youth displayed high rates of referral to DJJ in many census tracts, as shown in Figure 6. What is most striking is that 33 census tracts (out of 44 census tracts where Pacific youth [age 10 to 17] live) displayed a rate of referral to DJJ greater than 132 referrals per 1,000 youth. Pacific youth clearly displayed the highest rates of referral to DJJ across census tracts. In none of the 44 census tracts where Pacific youth (age 10 to 17) live was the rate of referral to DJJ lower than 71 referrals per 1,000 youth (compared to 60.0% for White youth). Although the population of Pacific youth is relatively small (see Table 5), Pacific youth clearly had high rates of referral to DJJ. This was generally true throughout the Municipality of Anchorage (as shown in Figure 6).

Rates of referral to DJJ were also high for other minority youth and were high in the vast majority of census tracts (see Figure 7). The rate of referral to DJJ for other minority youth was greater than 71 referrals per 1,000 youth in 51 of the 55 census tracts within the Municipality of Anchorage (compared to 22 of the 55 census tracts for White youth). Conversely, the rate of referral to DJJ for other minority youth was lower than 71 referrals per 1,000 youth in only 4 of the 55 census tracts (compared to 33 of the 55 census tracts for White youth).

Figure 8 displays the rates of referral to DJJ across census tracts for multiracial youth. We again see high rates of referral to DJJ in many census tracts, spread throughout the Municipality of Anchorage. Only six census tracts had a rate of referral to DJJ lower than 41 referrals per 1,000 youth (compared to 33 for White youth). All other census tracts had a rate of referral to DJJ greater than 41 referrals per 1,000 youth, with 17 census tracts having a rate between 41 and 71 referrals per 1,000 youth, 23 having a rate between 71 and 132 referrals per 1,000 youth, and nine having a rate greater than 132 referrals per 1,000 youth.

Finally, we examine the rates of referral to DJJ across census tracts for Hispanic youth in Figure 9. Relatively fewer census tracts displayed high rates of referral to DJJ. In fact, 24 of the 55 census tracts within the Municipality of Anchorage had a rate of referral to DJJ lower than 41 referrals per 1,000 youth (compared to four for Black youth, seven for Native youth, zero for Pacific youth, four for other minority youth, and six for multiracial youth). Similar to the rates of referral to DJJ for Asian youth (see Figure 5), the census tracts with high rates of referral to DJJ for Hispanic youth tended to be more geographically clustered rather than spread throughout the Municipality of Anchorage.

Results are summarized in Table 13. Again, vast differences were observed between rates of referral for White youth versus rates of referral for minority youth. In particular, while the percent of census tracts with rates of referral to DJJ greater than 71 referrals per 1,000 youth was only 3.6 percent for White youth, it was 77.0 percent for Black youth, 72.8 percent for Native youth, 24.1 percent for Asian youth, 97.7 percent for Pacific youth, 56.4 percent for other minority youth, 58.2 percent for multiracial youth, and 27.3 percent for Hispanic youth. Rates of referral to DJJ

across census tracts were substantially higher for Black youth, Native youth, Pacific youth, other minority youth, and multiracial youth. But even for Asian and Hispanic youth, some census tracts displayed very high rates of referral.

It is important to note that the specific census tracts that displayed very high rates of referral varied by racial and ethnic group. While some census tracts displayed very high rates of referral for one minority group, they also displayed very low rates of referral for other minority groups. For example, census tract 1.01 (the northernmost census tract within the Municipality of Anchorage) had a rate of referral to DJJ lower than 41 referrals per 1,000 youth for White youth, Asian youth, and Hispanic youth; had a rate of referral to DJJ between 41 and 71 referrals per 1,000 youth for Black youth, other minority youth, and multiracial youth; had a rate of referral to DJJ between 71 and 132 referrals per 1,000 youth for Pacific youth; and had a rate of referral to DJJ greater than 132 referrals per 1,000 youth for Native youth. These are important differences that should be further investigated.

Disproportionate Minority Contact By Census Tract

We now compare the figures presented in the previous section to examine the extent to which disproportionate minority contact varies across census tracts. Mathematically, we simply divide the minority rates by the White (or Caucasian) rate. Substantively, we simply examine the census tracts where the minority rates far exceed the White (or Caucasian) rate. Stated differently, we compare the minority rates to the White (or Caucasian) rate to see how much larger (or smaller) the minority rates were. It is important to emphasize that census tracts with high levels of disproportionate minority contact do not necessarily have high rates of referral. Rather, this section examines the areas where there is a big difference between the minority rate of referral and the White (or Caucasian) rate of referral. The previous section examined the census tracts where youth are most likely to be referred from. This section now examines the census tracts where minority youth are most likely to be disproportionately referred from. Census tracts where youth are most likely to be disproportionately referred from may or may not be the same as the census tracts where youth are most likely to be referred from. Stated differently, high levels of disproportionate minority contact can occur both in census tracts with low rates of referral to DJJ and in census tracts with high rates of referral to DJJ.

In this section, we now examine disproportionate minority contact for Black youth, Native youth, Asian youth, Pacific youth, other minority youth, multiracial youth, and Hispanic youth. As explained in our analysis section, the type of analysis used to examine disproportionate minority contact by census tract varies. If no minority youth lived within a specific census tract, that census tract was not analyzed (disproportionate minority contact cannot, by definition, occur within that

census tract). If minority youth did live within a specific census tract, the type of analysis then depended on whether White youth were referred to DJJ. If White youth were referred to DJJ, analyses were based on relative EB rate indices. If White youth were not referred to DJJ, analyses were based on empirical Bayes rates (because relative EB rate indices could not be calculated). The type of analysis used to examine disproportionate minority contact by census tract is fully shown in Appendix C1 through C4.

Disproportionate Minority Contact by Census Tract, for All Minority Youth

We begin our analysis of disproportionate minority contact by census tract by examining the extent to which all minorities combined are disproportionately referred to DJJ by census tract. These analyses focus on minority racial groups and therefore include Black youth, Native youth, Asian youth, Pacific youth, other minority youth, and multiracial youth. We subsequently examine how disproportionate minority contact varies by census tract and gender, by census tract and referral type, and by census tract, gender, and referral type. Results are shown in Table 14 and in Figures 10 and 11.

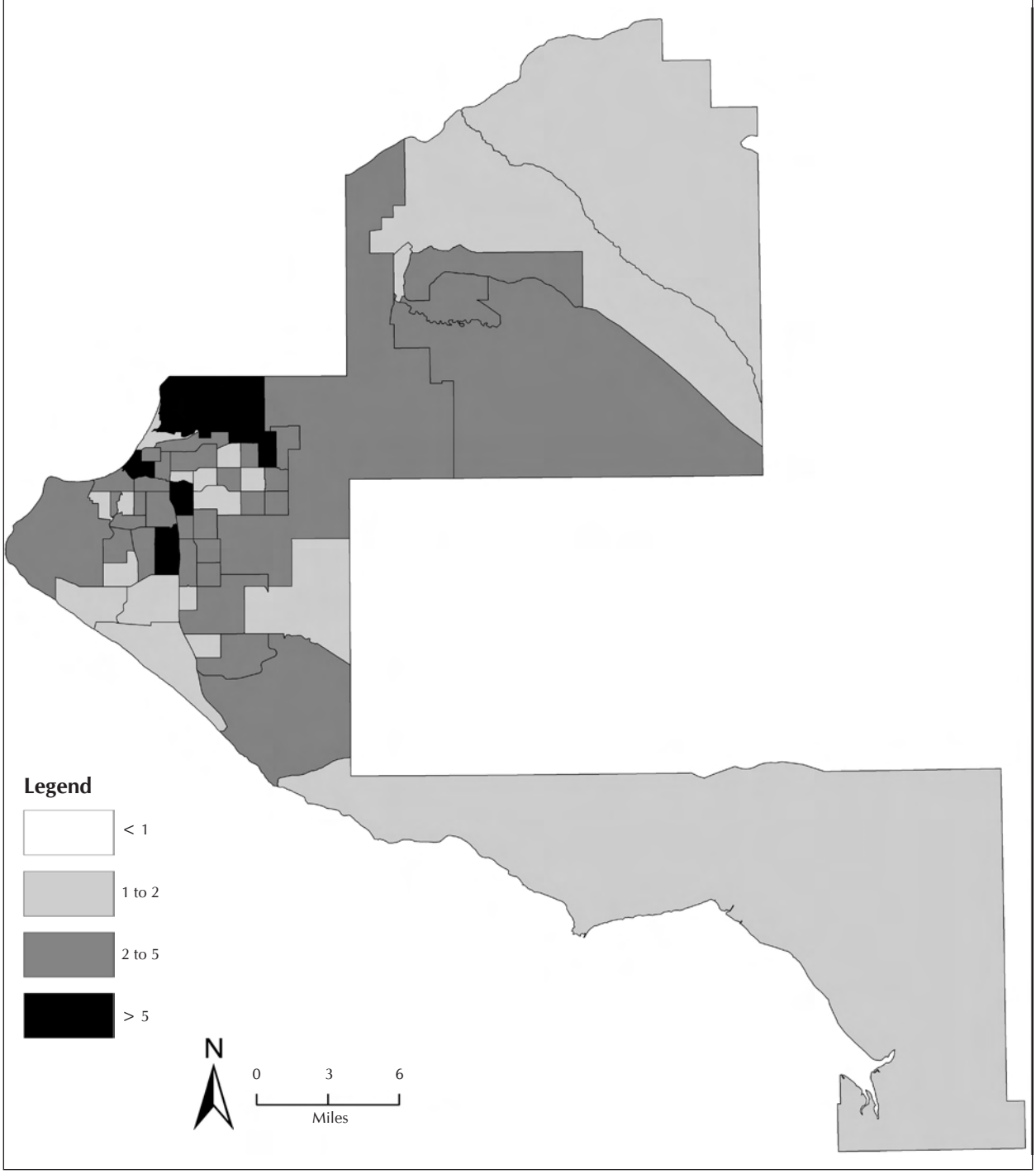
In Table 14, we show how many census tracts were examined with relative EB rate indices (when White youth were referred) and how many were examined with empirical Bayes rates (when White youth were not referred). For each type of analysis, we then provide the minimum, maximum, and median statistic (for both relative rate indices and rates). We also show the number of outliers identified through each analysis. Outliers are simply census tracts whose relative rate index (or rate) was substantially higher than the median relative rate index (or rate). As shown in Table 14, both rates of referral and relative rate indices varied substantially across census tracts. The rates of referral varied from a low of 3.08 per 1,000 youth for minority females referred to DJJ for probation and conduct violations to a high of 199.59 per 1,000 youth for minority females referred to DJJ for new crimes. Relative rate indices varied from a low of 0.38 for minority

Table 14. Disproportionate Minority Contact by Census Tract, for all Minority Youth

	Summary statistics for empirical Bayes rates					Summary statistics for relative EB rate indices				
Sample	N	Min	Max	Median	# outliers	N	Min	Max	Median	# outliers
Full	0	—	—	—	—	55	1.17	11.00	2.17	6
Male	0	—	—	—	—	55	1.10	12.42	2.23	4
Female	10	37.46	179.38	60.70	1	45	1.19	8.50	2.68	1
New crime	0	—	—	—	—	55	1.11	8.77	2.21	2
P/C violations	18	6.52	78.18	25.46	2	37	0.55	12.26	2.22	3
Male & new crime	0	—	—	—	—	55	1.07	9.31	2.34	3
Male & P/C violations	18	9.73	140.20	34.30	2	37	0.44	13.63	1.62	5
Female & new crime	11	16.24	199.59	53.63	1	44	1.22	6.35	2.40	1
Female & P/C violations	51	3.08	36.70	6.28	5	4	0.38	2.59	1.01	0

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

Figure 10. Relative EB Rate Indices by Census Tract, for All Minority Youth



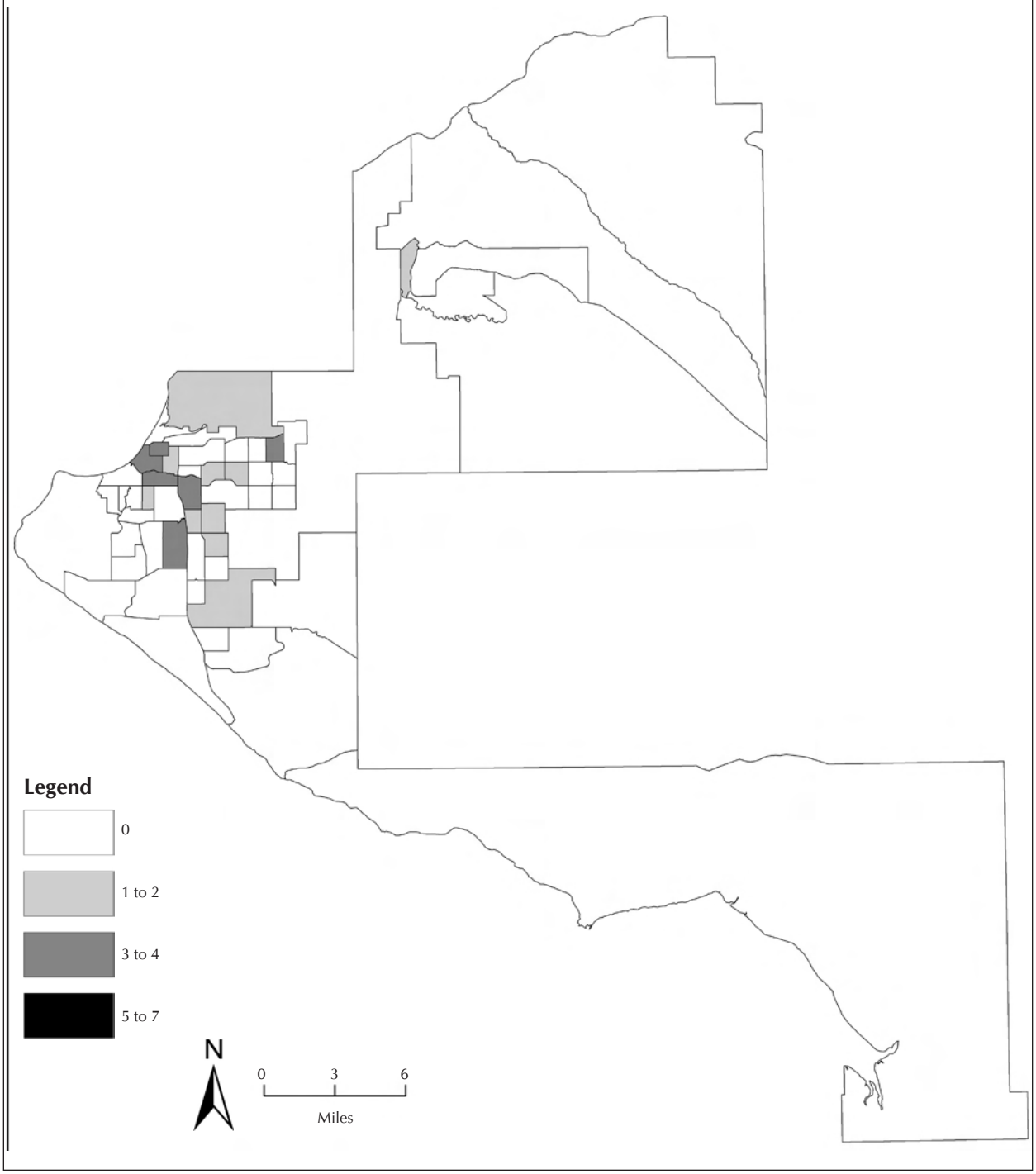
females referred to DJJ for probation and conduct violations to a high of 13.63 for minority males referred to DJJ for probation and conduct violations. In some census tracts, minority females had relatively low rates of referral to DJJ for probation and conduct violations and in some census tracts, minority females were less likely to be referred to DJJ for probation and conduct violations than White females. Examining the minimum relative rate indices, there were clearly some census tracts where disproportionate minority contact did not exist or was very low. In particular, there are some census tracts where the rates of referral for minority youth were less than the rates of referral for White youth (i.e., for minority youth, male minority youth, and female minority youth that were referred to DJJ for probation and conduct violations). Overall, however, the median relative rate indices hovered around 2, with the exception of the median relative rate index for minority females referred to DJJ for probation and conduct violations (although only four census tracts were analyzed with relative rate indices).

Nonetheless, maximum relative rate indices were often quite high. So although disproportionate minority contact did not occur everywhere, it clearly occurred in some census tracts. In some census tracts, the rates of referral for minority youth were over 10 times higher than the rates of referral for White youth (full sample, male sample, sample referred for probation and conduct violations, and male sample referred for probation and conduct violations). These areas of high disproportionate minority contact are mapped in Figure 10.

In Figure 10, we display the values of the relative rate indices for the full sample. Of the 55 census tracts, none had a relative rate index less than one, 19 (34.5%) had a relative rate index between one and two, 31 (56.4%) had a relative rate index between two and five, and five (9.1%) had a relative rate index greater than five. In 36 (65.5%) of the 55 census tracts, the rate of referral for minority youth was over two times higher than the rate of referral for White youth. Extreme values of relative rate indices were found in five census tracts. These census tracts included 25.02 (approximately North of Dimond, South of International Airport, East of C, and West of Seward), 15 (approximately North of Tudor, South of 20th, East of Seward, and West of Lake Otis), 12 (approximately North of 15th, South of 4th, and West of C), 4 (approximately North of the Glenn Highway and West of Boniface), and 7.02 (approximately North of Debarr, South of the Glenn Highway, East of Turpin, and West of Muldoon). In these five census tracts, the rates of referral for minority youth were at least five times greater than the rate of referral for White youth. Again, the extent to which minority youth were disproportionately referred to DJJ clearly varied by census tract.

From Table 14, a total of 16 census tracts were identified as outliers (either because of their rate of referral or their relative rate index). These census tracts and the number of times they were identified as an outlier are shown in Figure 11. Of the 55 census tracts, 29 (52.7%) were never

Figure 11. Number of Outliers by Census Track, for All Minority Youth



identified as an outlier, 10 (18.2%) were identified as an outlier once or twice, and six (10.9%) were identified as an outlier three or four times.

Disproportionate Minority Contact by Census Tract, for Black Youth

The extent to which Black youth were disproportionately referred to DJJ also clearly varied by census tract. In some census tracts, Black youth were referred to DJJ at a lower rate than White youth. Overall, however, all median relative rate indices were above 2, with the exception of the four census tracts where no Black females were referred to DJJ for probation or conduct violations. This indicates that the rates of referral for Black youth were at least two times higher than the rate of referral for White youth in more than half of the 55 census tracts. For all Black youth (full sample), the median relative rate index was greater than three. This was also true for all Black males and all Black males referred to DJJ for probation and conduct violations. Overall, relative rate indices varied from a low of 0.00 for Black females referred to DJJ for probation and conduct violations (i.e., there were four census tracts where no Black females were referred to DJJ for probation and conduct violations) to a high of 13.76 for Black males referred to DJJ for probation and conduct violations. Rates of referral varied from a low of 1.99 per 1,000 for Black females referred to DJJ for probation and conduct violations to a high of 139.64 per 1,000 for Black females generally. High rates of referral for Black females were more prevalent in referrals for new crimes than in referrals for probation and conduct violations.

Table 15. Disproportionate Minority Contact by Census Tract, for Black Youth

	Summary statistics for empirical Bayes rates					Summary statistics for relative EB rate indices				
Sample	N	Min	Max	Median	# outliers	N	Min	Max	Median	# outliers
Full	0	—	—	—	—	52	0.67	9.93	3.18	1
Male	0	—	—	—	—	52	0.90	8.79	3.20	3
Female	8	13.75	139.64	64.38	0	42	1.24	5.06	2.54	0
New crime	0	—	—	—	—	52	0.66	8.45	2.78	2
P/C violations	17	7.53	83.52	28.74	1	35	0.86	12.54	2.33	2
Male & new crime	0	—	—	—	—	52	0.87	8.10	2.79	2
Male & P/C violations	17	25.35	81.93	49.13	2	35	0.85	13.76	3.01	3
Female & new crime	9	10.89	129.07	42.48	1	41	1.44	4.73	2.67	0
Female & P/C violations	46	1.99	54.96	4.98	3	4	0.00	0.00	0.00	0

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

The extent to which disproportionate minority contact varied across census tracts for all Black youth is graphically displayed in Figure 12. Of the 52 census tracts analyzed with relative rate indices, one (1.9%) had a relative rate index less than one, 10 (19.2%) had a relative rate index between one and two, 34 (65.4%) had a relative rate index between two and five, and seven (13.5%) had a relative rate index greater than five. A slightly different pattern emerged than the

Figure 12. Relative EB Rate Indices by Census Tract, for Black Youth

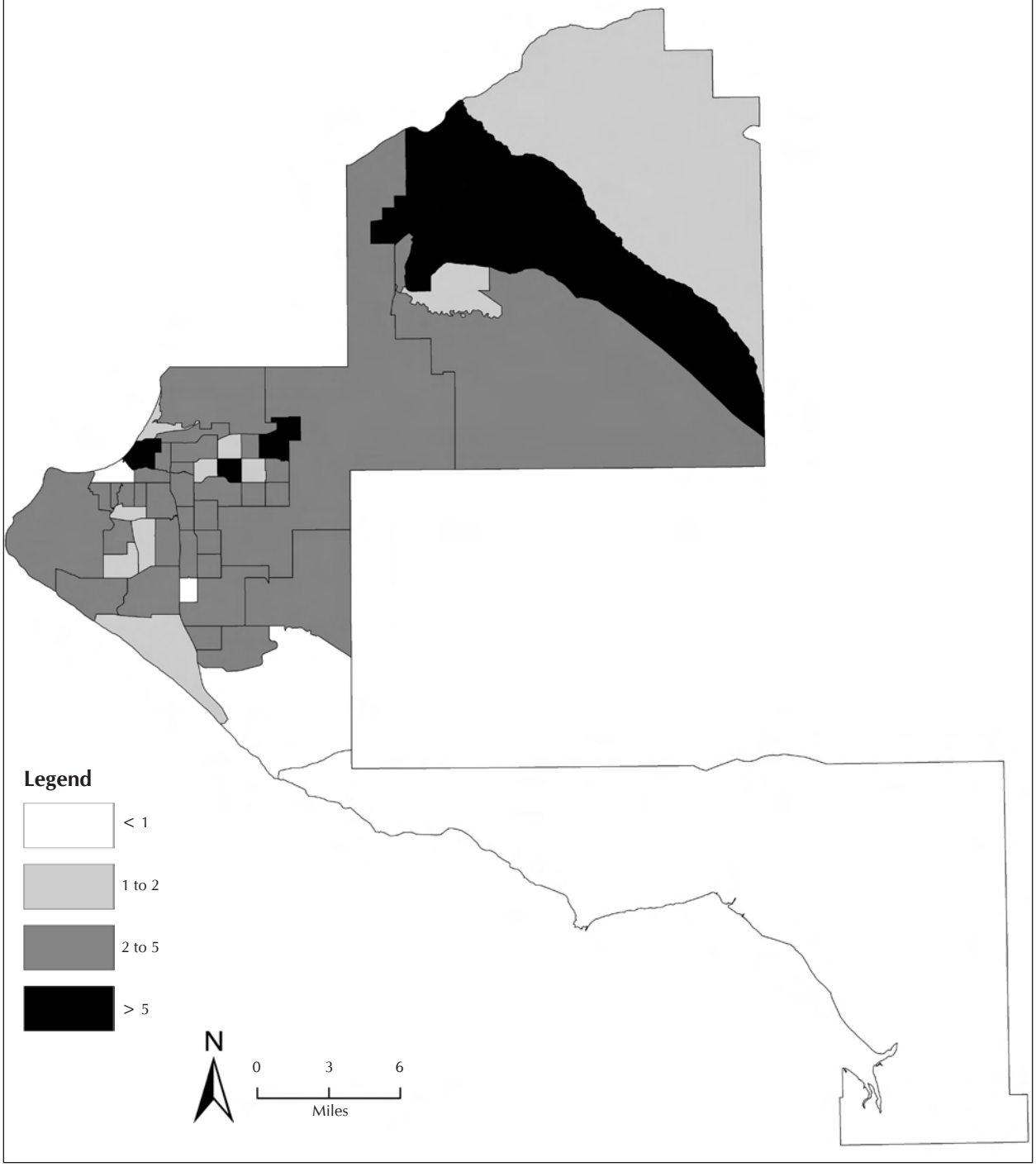
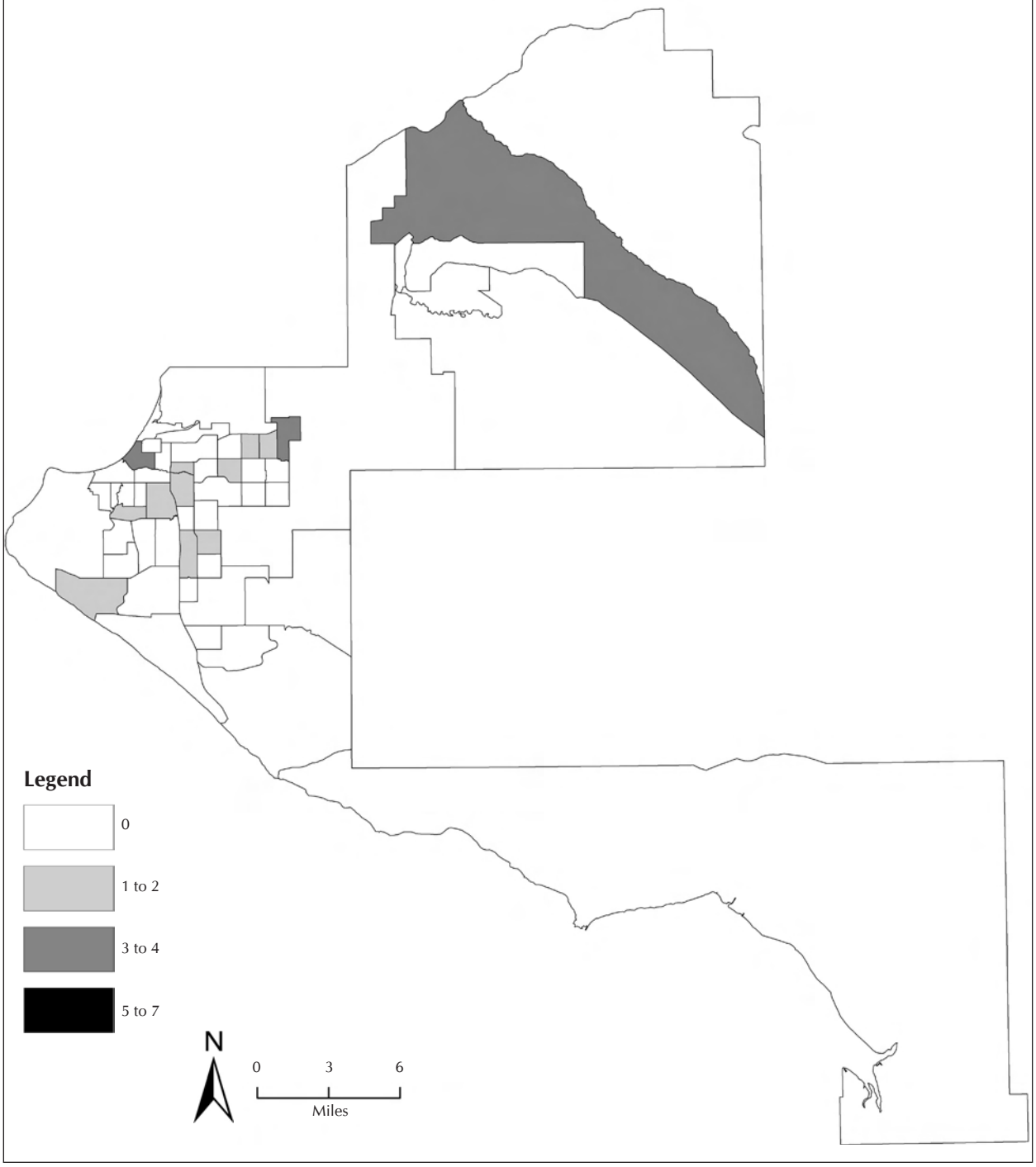


Figure 13. Number of Outliers by Census Tract, for Black Youth



one for all minority youth. In particular, census tracts 1.02 and 2.02 now displayed a high relative rate index. In these census tracts, approximately from north Eagle River to south Chugiak, the rate of referral for Black youth was over six times greater than the rate of referral for White youth. This, however, was not the census tract with the highest relative rate index for Black youth. Other census tracts with high relative rate indices included tracts 11 and 12 (approximately North of 15th, South of 1st, and West of Cordova), tract 8.02 (approximately north of Northern Lights, south of Debarr, east of Bragaw, and west of Boniface), and tracts 7.02 and 7.03 (approximately north of Debarr and east of Turpin). The map in Figure 12 clearly shows that in over half of the census tracts in Anchorage, the rate of referral for Black youth was at least two times higher than the rate of referral for White youth. Of the 52 analyzed census tracts, only one displayed a relative rate index less than one. This was census tract 28.11 (approximately north of O'Malley, south of Abbott, east of New Seward and west of Lake Otis).

Census tracts that were identified as outliers, either by rates of referral or by relative rate indices, are displayed in Figure 13. A total of 13 census tracts were identified as outliers. Of these 13 census tracts, three (23.1%) were identified as outliers three or four times and 10 (76.9%) were identified as outliers once or twice. The three most frequent outliers were census tracts 1.02 (approximately south Chugiak), 12 (approximately North of 15th, South of 4th, and West of C), and 7.03 (approximately north of Debarr and east of Muldoon).

Disproportionate Minority Contact by Census Tract, for Native Youth

Disproportionate minority contact by census tract for Native youth is shown in Table 16 and Figures 14 and 15. Once again, it is clear that the extent to which Native youth were disproportionately referred to DJJ varied across census tracts. In some census tracts, the rates of referral were as low as 0.27 per 1,000 (for Native females referred for probation and conduct

Table 16. Disproportionate Minority Contact by Census Tract, for Native Youth

	Summary statistics for empirical Bayes rates					Summary statistics for relative EB rate indices				
Sample	N	Min	Max	Median	# outliers	N	Min	Max	Median	# outliers
Full	0	—	—	—	—	55	0.70	110.36	2.85	6
Male	0	—	—	—	—	55	0.82	19.80	2.47	5
Female	10	0.71	5274.01	15.82	2	45	1.27	16.69	3.47	1
New crime	0	—	—	—	—	55	1.17	22.35	3.09	3
P/C violations	18	1.51	1203.11	16.12	2	37	0.52	16.37	2.85	3
Male & new crime	0	—	—	—	—	55	0.99	13.93	2.85	4
Male & P/C violations	18	8.56	403.14	37.08	3	37	0.39	11.24	1.92	2
Female & new crime	11	3.76	598.01	49.58	1	44	1.28	12.86	3.10	2
Female & P/C violations	51	0.27	3501.55	0.96	10	4	0.70	9.42	2.80	1

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

Figure 14. Relative EB Rate Indices by Census Tract, for Native Youth

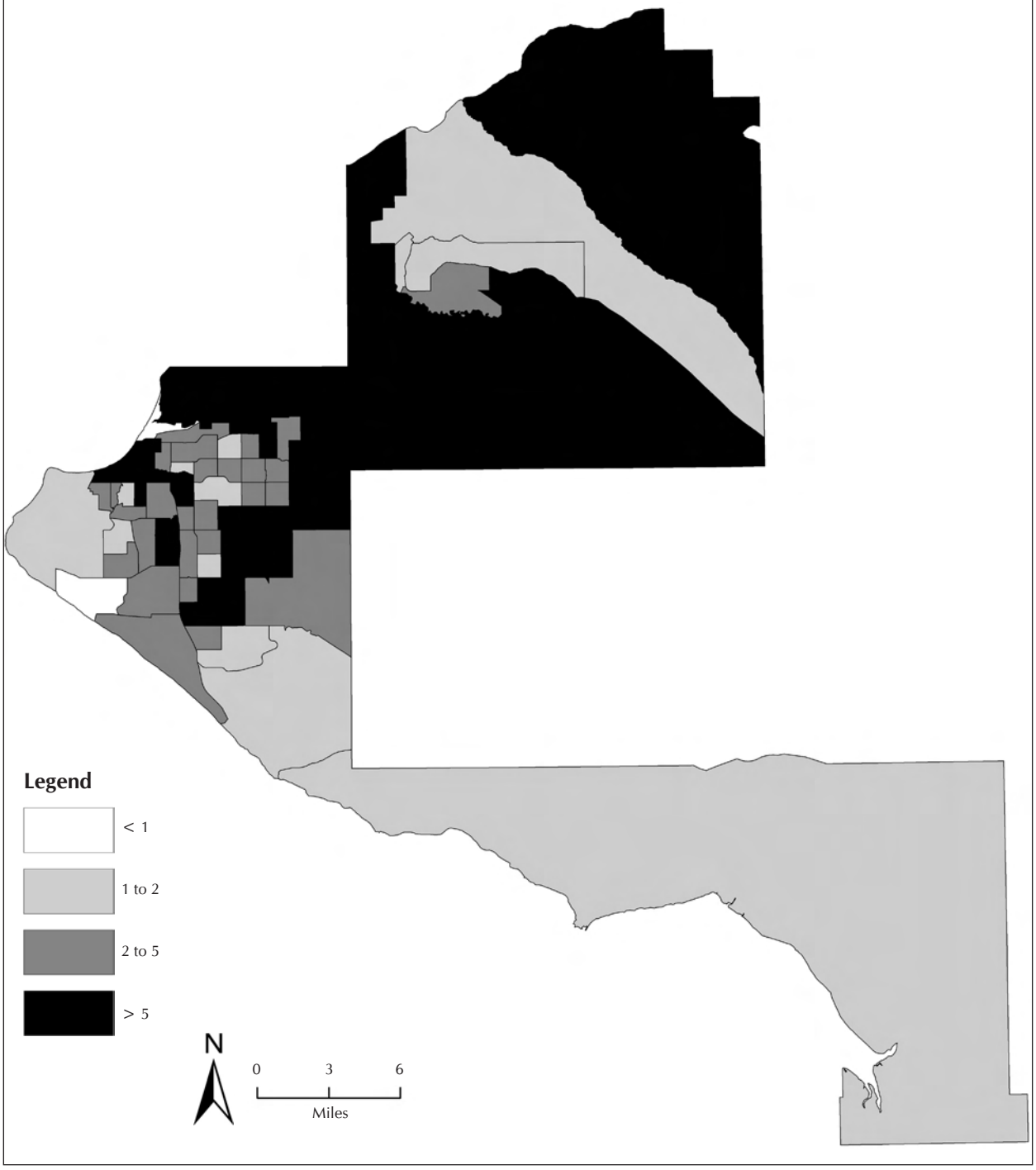
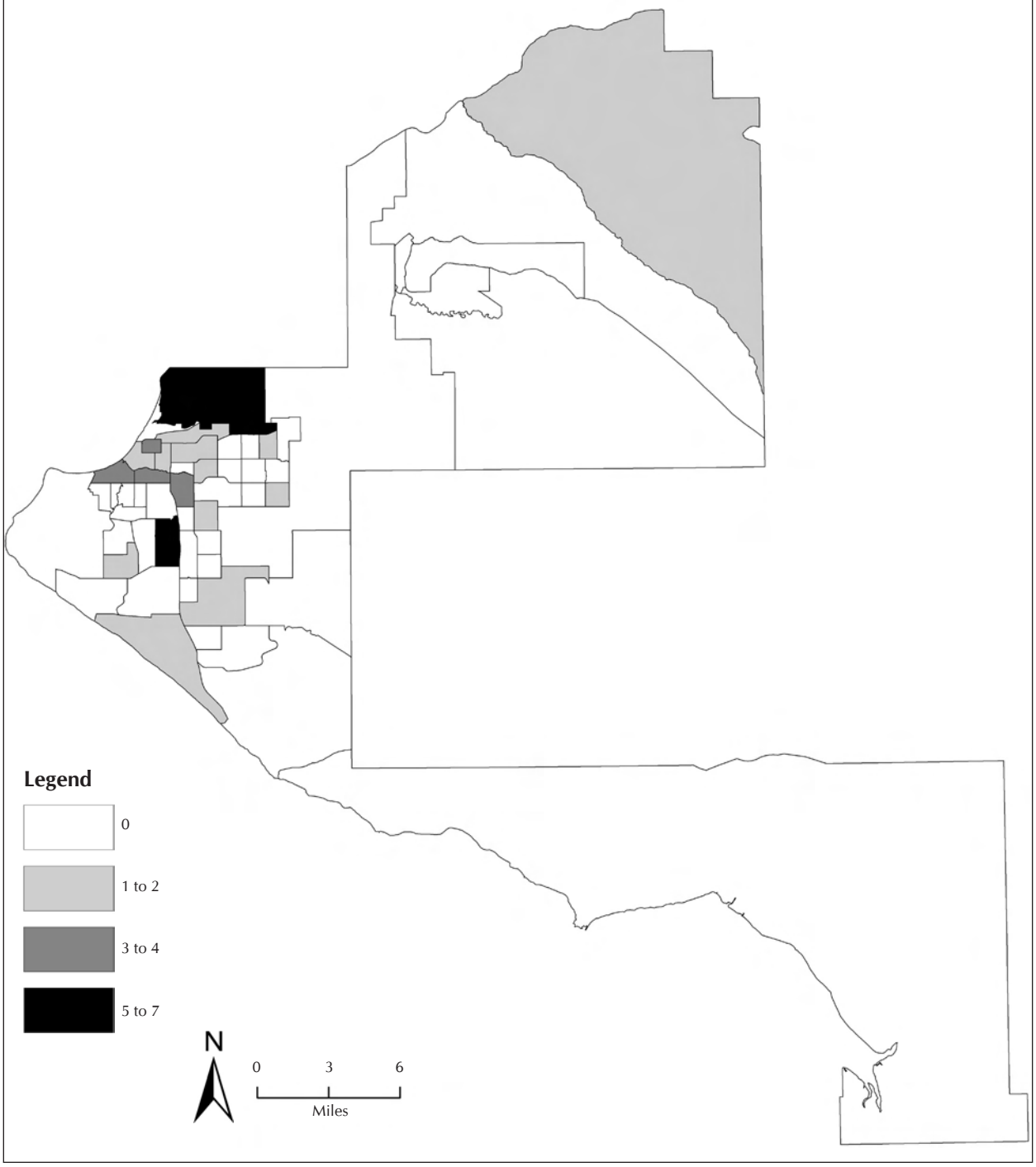


Figure 15. Number of Outliers by Census Tract, for Native Youth



violations) and the relative rate indices were as low as 0.52 (for Native youth referred for probation and conduct violations). Nonetheless, some census tracts clearly had high rates of referral or high relative rate indices. The maximum relative rate index was 110.36 in the full sample analyses. In this census tract, the rate of referral for Native youth was 110.36 times higher than the rate of referral for White youth. The lowest median relative rate index was 1.92. Again, in over half of all census tracts, the rate of referral for Native youth was at least two times higher than the rate of referral for White youth. Very large rates of referral were noted in some census tracts for Native females (rate = 5,274 per 1,000), Native youth referred for probation and conduct violations (rate = 1,203 per 1,000), and Native females referred for probation and conduct violations (rate = 3,502 per 1,000). Although the variation in disproportionate minority contact seems comparable for Black and Native youth, the extent to which Native youth were disproportionately referred to DJJ in some census tracts was far greater. This is best displayed in Figure 14, where we map the relative rate indices for the full sample.

Of the 55 census tracts in Anchorage, 13 (23.6%) had a relative rate index greater than five. In these 13 census tracts, the rate of referral for Native youth was at least five times higher than the rate of referral for White youth (up to a maximum of 110.36 times higher, see Table 16). Another 27 (49.1%) census tracts had a relative rate index between two and five. Together, 40 (72.7%) of the 55 census tracts had a relative rate index above two. Thirteen (23.6%) of census tracts had a relative rate index between one and two and two (3.6%) had a relative rate index less than one. The preponderance of census tracts where Native youth were disproportionately referred to DJJ is clearly shown in Figure 14. The 13 census tracts with relative rate indices greater than five included tracts 1.01 (north Chugiak), tracts 2.04 and 3 (approximately northeast Anchorage to south Eagle River), tract 7.02 (approximately North of Debarr, South of the Glenn Highway, East of Turpin, and West of Muldoon), tract 4 (approximately North of the Glenn Highway and West of Boniface), tract 28.12 (approximately north of Huffman, south of Abbott, east of Brayton, and west of Birch), tract 25.02 (approximately North of Dimond, South of International Airport, East of C, and West of Seward), tract 15 (approximately north of Tudor, south of 20th, west of Lake Otis, and east of Seward), tract 21 (approximately north of Tudor, south of Northern Lights, west of Arctic, and east of Minnesota), and a cluster of tracts (11, 12, 13, and 14) generally located north of Northern Lights and west of C. Two census tracts had a relative rate index less than one. These included tract 5 (approximately north of Ship Creek and south of Elmendorf) and tract 27.11 (approximately south of Dimond and west of Victor).

In Figure 15, we focus exclusively on the 18 census tracts that were identified as outliers in Table 16. Two census tracts were identified as outliers five to seven times, four were identified as outliers three of four times, and 12 were identified as outliers once or twice. The two most

prominent outliers were tracts 4 (approximately North of the Glenn Highway and West of Boniface) and 25.02 (approximately North of Dimond, South of International Airport, East of C, and West of Seward).

Disproportionate Minority Contact by Census Tract, for Asian Youth

Disproportionate minority contact was less prevalent for Asian youth than for Black or Native youth. Three of the median relative rate indices in Table 17 are less than one and none are above two. The maximum median relative rate index was 1.72, for Asian males referred to DJJ for probation and conduct violations. Similarly, the median rates of referral were low, relative to those for Black and Native youth. Nonetheless, variability across census tracts was present. Although median relative rate indices were lower for Asian youth than for Black or Native youth, maximum relative rate indices were still high. In some census tracts, relative rate indices were over 20. In some census tracts, the rate of referral to DJJ for probation and conduct violation for Asian youth was more than 20 times higher the rate of referral for White youth. This was particularly true among Asian males referred to DJJ for probation and conduct violations. Overall, relative rate indices varied from a low of 0.00 (because four census tracts had no Asian females referred to DJJ for probation or conduct violations) to a high of 23.14 (for Asian youth referred to DJJ for probation or conduct violations). Although disproportionate minority contact was less prevalent and less intense for Asian youth, disproportionate minority contact clearly existed in some census tracts. These census tracts are identified in Figure 16.

As shown in Figure 16, there were 19 census tracts where the relative rate index for Asian youth was less than one. In these 19 census tracts, Asian youth were less likely to be referred to DJJ than White youth. In another 17 census tracts, the relative rate indices were less than two. Fourteen census tracts had a relative rate index between two and five and four had a relative rate index greater

Table 17. Disproportionate Minority Contact by Census Tract, for Asian Youth

	Summary statistics for empirical Bayes rates					Summary statistics for relative EB rate indices				
Sample	N	Min	Max	Median	# outliers	N	Min	Max	Median	# outliers
Full	0	—	—	—	—	54	0.28	9.48	1.40	6
Male	0	—	—	—	—	53	0.37	12.99	1.64	6
Female	9	29.13	29.13	29.13	0	43	0.12	2.57	0.61	0
New crime	0	—	—	—	—	54	0.39	6.31	1.39	2
P/C violations	17	10.91	55.15	21.76	3	37	0.33	23.14	1.59	4
Male & new crime	0	—	—	—	—	53	0.60	8.47	1.68	2
Male & P/C violations	17	31.62	74.70	43.57	3	36	0.36	21.64	1.72	3
Female & new crime	10	28.57	28.57	28.57	0	42	0.11	2.68	0.56	2
Female & P/C violations	48	0.22	23.81	0.73	1	4	0.00	0.00	0.00	0

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

Figure 16. Relative EB Rate Indices by Census Tract, for Asian Youth

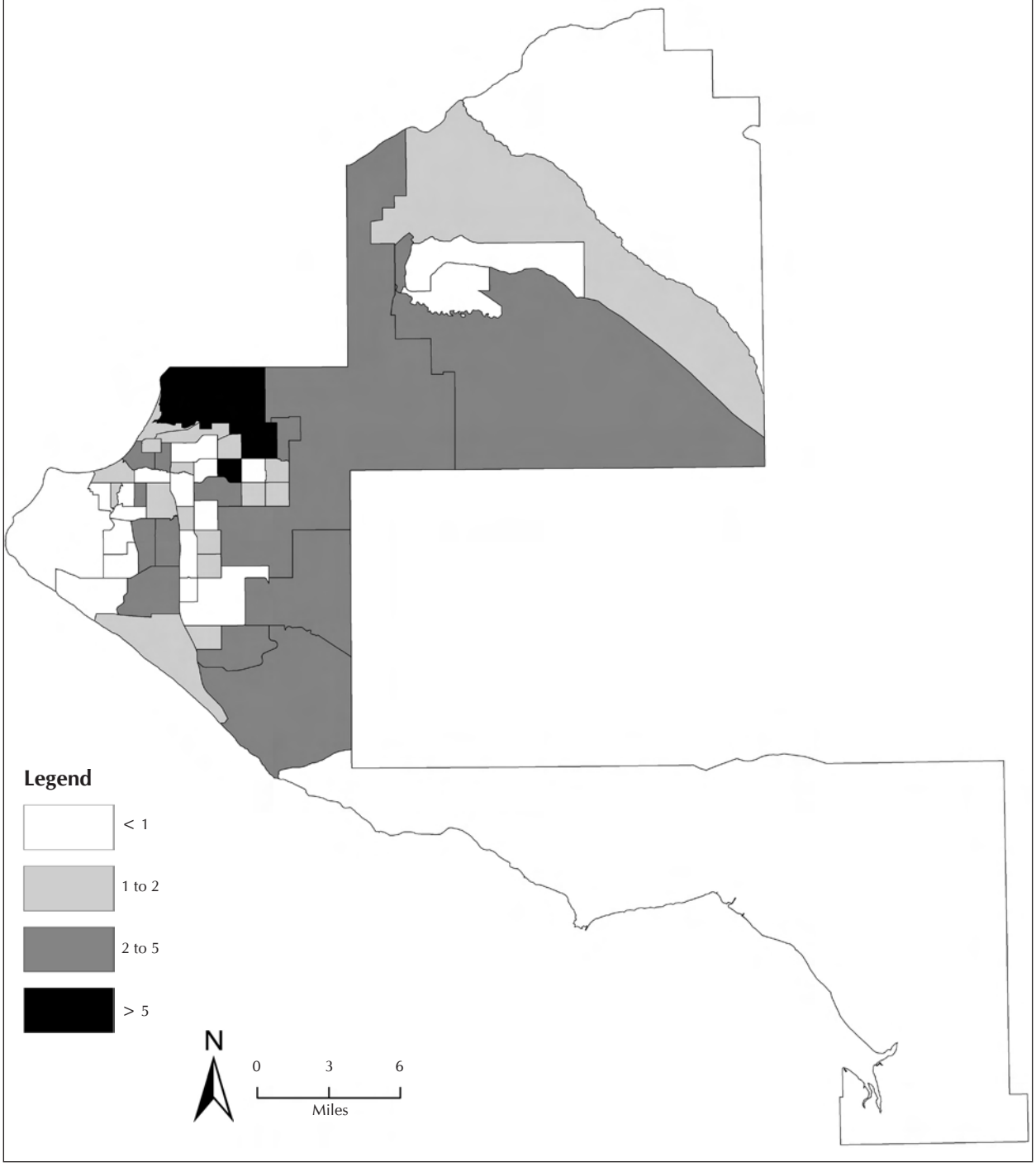
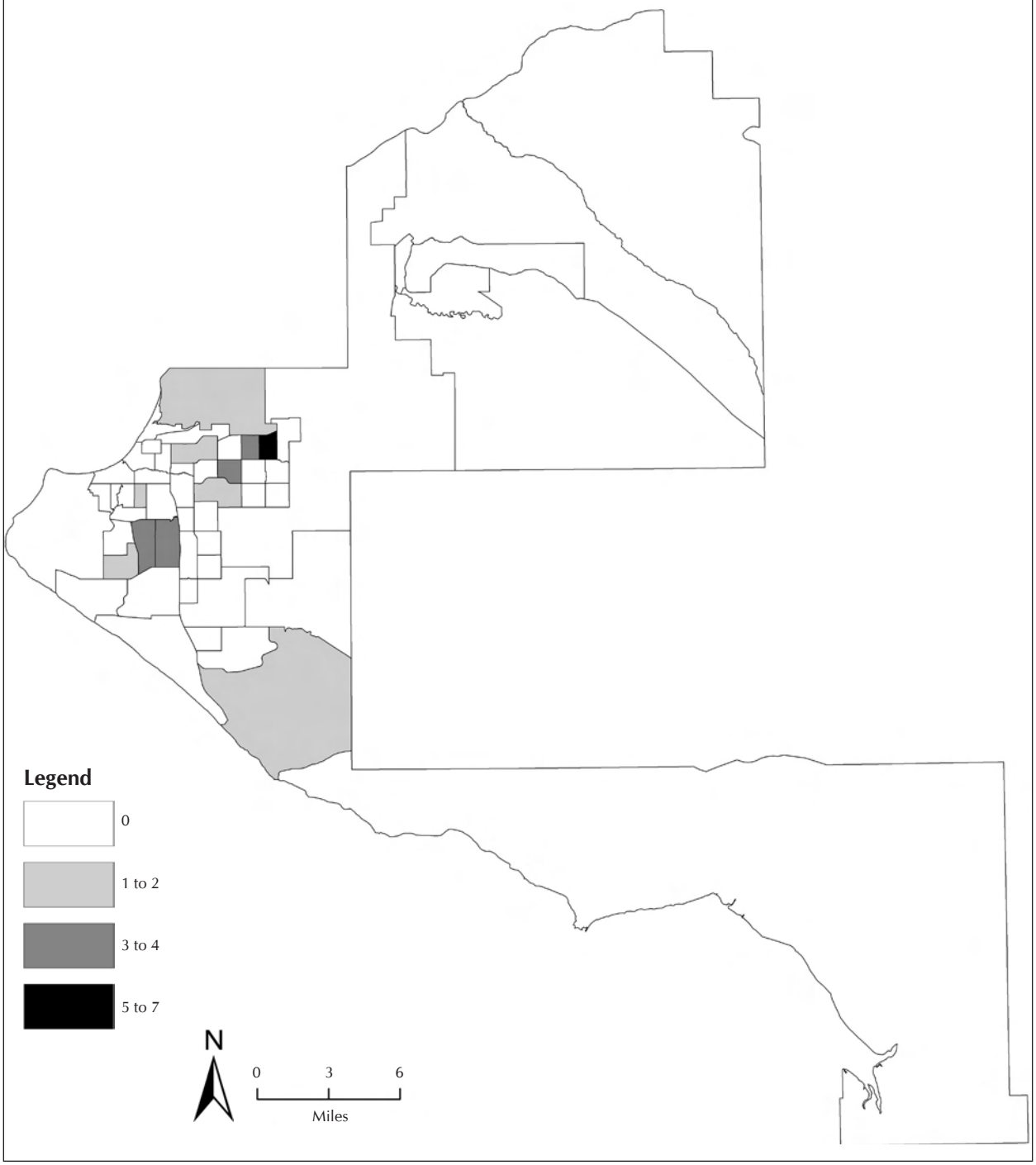


Figure 17. Number of Outliers by Census Tract, for Asian Youth



than five. So again, although disproportionate minority contact was less prevalent for Asian youth, there were clearly areas where Asian youth experienced high levels of disproportionate minority contact. These included census tract 4 (approximately north of the Glenn Highway and west of Boniface), tracts 7.01 and 7.02 (approximately north of Debarr, south of the Glenn Highway, west of Muldoon, and east of Boniface), and tract 8.02 (approximately north of Northern Lights, south of Debarr, west of Boniface, and east of Bragaw). In these four census tracts, the rates of referral for Asian youth were more than five times greater than the rates of referral for White youth.

Eleven census tracts were identified as outliers. Many have already been identified as outliers, but some have not. Of these 11 census tracts, one was identified as an outlier five to seven times, four were identified three to four times, and six were identified once or twice. The most prominent outlier, identified five to seven times, was tract 7.02 (approximately north of Debarr, south of the Glenn Highway, west of Muldoon, and east of Turpin). Other census tracts commonly identified as outliers included tract 7.01 (approximately north of Debarr, south of the Glenn Highway, west of Turpin, and east of Boniface), tract 8.02 (approximately north of Northern Lights, south of Debarr, west of Boniface, and east of Bragaw), and tracts 25.01 and 25.02 (approximately north of Dimond, south of International Aiport, west of Seward and East of Minnesota).

Disproportionate Minority Contact by Census Tract, for Pacific Youth

The extent of disproportionate minority contact by census tract for Pacific youth is shown in Table 18. Pacific youth resided in a total of 44 census tracts in the Municipality of Anchorage. Among these 44 census tracts, the lowest relative rate index was 1.33 while the highest relative rate index was 13.21. Half of these 44 census tracts had a relative rate index of four or greater. Stated differently, the rate of referral for Pacific youth was at least four times higher than the rate of referral for White youth in half of the 44 census tracts where Pacific youth resided. In

Table 18. Disproportionate Minority Contact by Census Tract, for Pacific Youth

	Summary statistics for empirical Bayes rates					Summary statistics for relative EB rate indices				
Sample	N	Min	Max	Median	# outliers	N	Min	Max	Median	# outliers
Full	0	—	—	—	—	44	1.33	13.21	3.93	4
Male	0	—	—	—	—	38	1.83	13.37	4.27	2
Female	6	11.66	409.45	179.41	0	34	1.68	4.00	2.62	0
New crime	0	—	—	—	—	44	1.28	12.12	4.25	5
P/C violations	10	7.07	342.50	25.48	2	34	0.23	20.06	2.67	1
Male & new crime	0	—	—	—	—	38	2.40	10.31	4.35	1
Male & P/C violations	9	24.79	476.22	64.65	2	29	0.12	35.07	2.22	2
Female & new crime	7	18.74	345.00	170.90	0	33	1.83	3.58	2.55	0
Female & P/C violations	36	0.00	0.00	0.00	0	4	0.00	0.00	0.00	0

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

comparison to other minority groups, disproportionate minority contact was more severe among Pacific youth. The median relative rate index for all Pacific youth was 180.7 percent higher than that for Asian youth, 37.9 percent higher than that for Native youth, and 23.6 percent higher than that for Black youth. The maximum relative rate index, however, was higher for Native youth (110.36) than for Pacific youth (13.21). No Pacific females were referred to DJJ for probation or conduct violations. With that as the exception, all other relative rate indices were above two. The minimum relative rate indices were below one only for Pacific youth referred to DJJ for probation and conduct violations and for Pacific males referred to DJJ for probation and conduct violations. Variation across census tracts was nonetheless clearly present. The range between the minimum and maximum statistics (for both rates and relative rate indices) indicates a substantial amount of variation. The minimum rates and relative rate indices were both for Pacific females referred to DJJ for probation or conduct violations (again, there were none). The maximum rate was found for Pacific males referred to DJJ for probation or conduct violations and the maximum relative rate index was also found for Pacific males referred to DJJ for probation or conduct violations. The maximum rate for Pacific males referred to DJJ for probation or conduct violations was 476.22 per 1,000 (among nine census tracts) and the maximum relative rate index for Pacific males referred to DJJ for probation or conduct violations was 35.07 (among 29 other census tracts). In one of these 29 other census tracts, the rate for Pacific males referred to DJJ for probation or conduct violations was 35.07 times greater than that for White males. Examining the minimum and maximum statistics reveals the variability in the disproportionate minority contact of Pacific youth.

Where disproportionate minority contact occurred for Pacific youth is shown in Figure 18. Of the 44 census tracts analyzed with relative rate indices, there were none with a relative rate index less than one. The census tracts shown in white in Figure 18 were all unanalyzed census tracts, because no Pacific youth lived within these census tracts. Only three (6.8%) of the 44 census tracts had a relative rate index less than two. Stated differently, 41 census tracts (93.2%) had a relative rate index greater than two (compared to 65.4% for all minority youth, 78.8% for Black youth, 72.7% for Native youth, and 33.3% for Asian youth). Of the 41 census tracts with a relative rate index greater than two, 12 (29.3%) had a relative rate index greater than five. Given that the median relative rate indices in Table 18 were quite high, it is not surprising that a large number of census tracts displayed a high rate of disproportionate minority contact for Pacific youth. The specific census tracts that displayed high rates of disproportionate minority contact were not geographically clustered, but appeared throughout the Municipality of Anchorage. These census tracts with an empirical rate index greater than five included tract 2.03 (approximately east Eagle River), tract 3 (approximately northeast Anchorage to southwest Eagle river), tracts 7.01 and 7.02 (approximately north of Debarr, south of the Glenn Highway, west of Muldoon,

Figure 18. Relative EB Rate Indices by Census Tract, for Pacific Youth

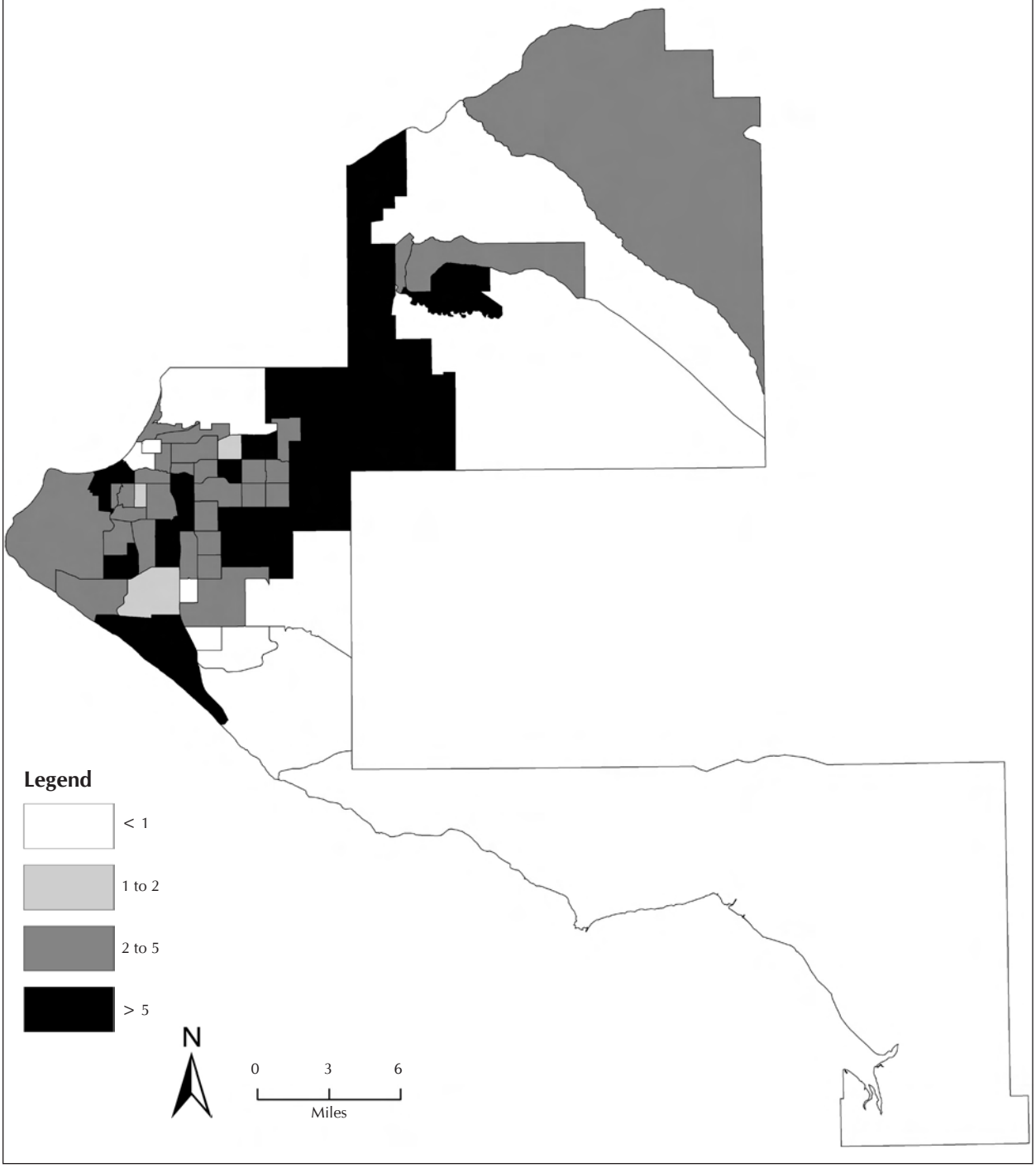
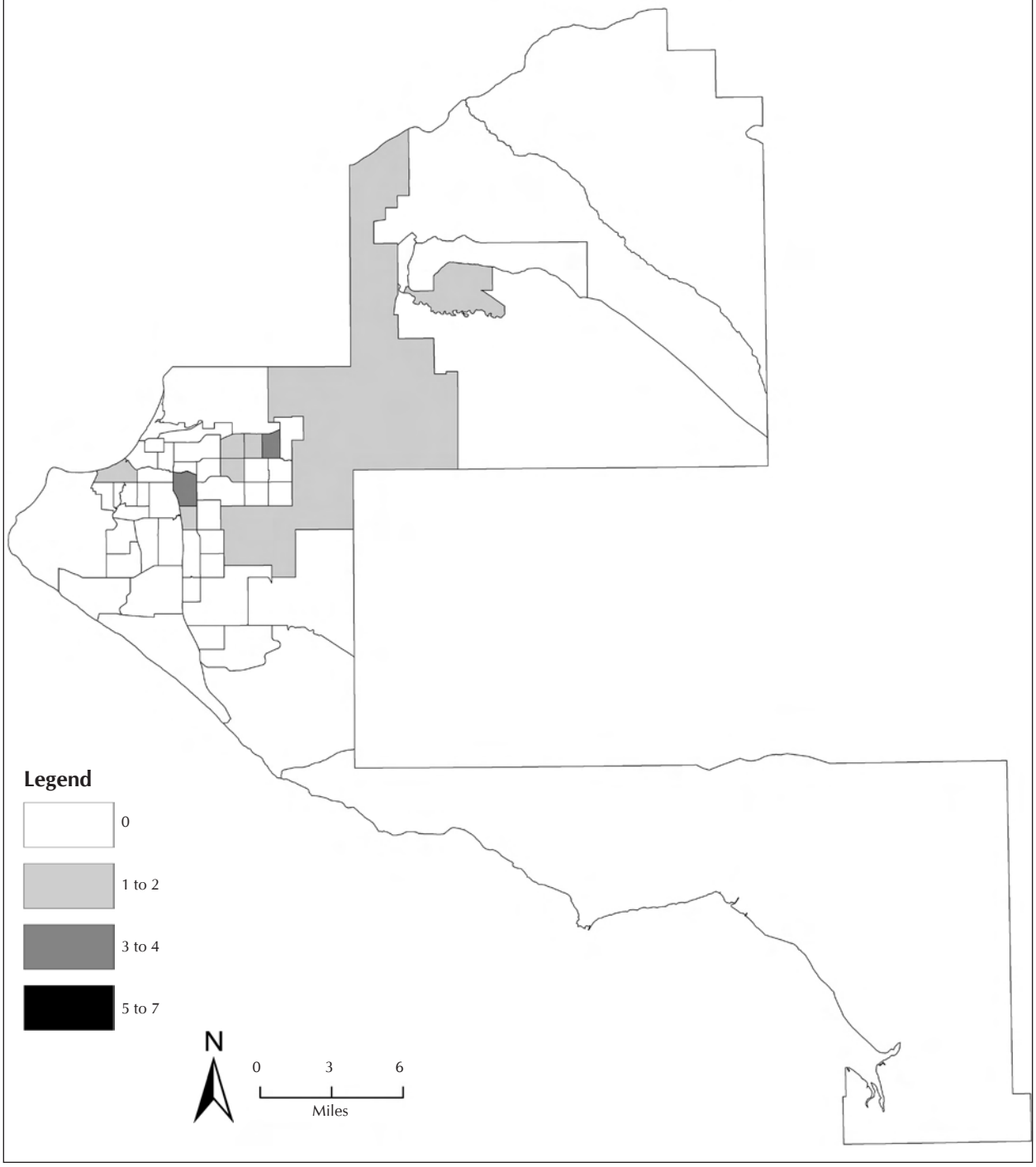


Figure 19. Number of Outliers by Census Tract, for Pacific Youth



and east of Boniface), tract 8.02 (approximately north of Northern Lights, south of Debarr, west of Boniface, and east of Bragaw), tracts 15 and 18.01 (approximately north of Dowling, south of 20th, west of Lake Otis, and east of Seward), tract 25.02 (approximately North of Dimond, South of International Airport, East of C, and West of Seward), tract 13 (approximately north of Northern Lights and east of Minnesota), tract 22.01 (approximately north of International Airport, south of Northern Lights, west of Wisconsin), tract 23.03 (approximately north of Dimond, south of Strawberry, west of Minnesota, and east of Jewel Lake), and tract 27.02 (approximately south of Klatt and west of Seward). These census tracts occupy a large section of Anchorage.

Given the high rates and relative rate indices noted in Table 18 and Figure 18, it may be surprising that few census tracts were identified as outliers. These outliers are shown in Figure 19. A total of nine census tracts were identified as outliers. Seven were identified as outliers once or twice and two were identified as outliers three or four times. These include the aforementioned census tracts (i.e., 2.03, 3, 7.01, 7.02, 8.02, 15, 18.01, and 13) and also include tract 8.01 (approximately north of Debarr, south of the Glenn Highway, east of Bragaw, and west of Boniface). The lack of outliers in Figure 18 given the high level of disproportionate minority contact in Figure 18 indicates that less variability is present in the disproportionate minority contact of Pacific youth than of other youth. Nonetheless, it is clear that Pacific youth were disproportionately referred to DJJ from most of Anchorage (see Figure 18). Because so many census tracts had very high levels of disproportionate minority contact (Figure 18), few had *unusually* high levels of disproportionate minority contact (Figure 19). Stated differently, levels of disproportionate minority contact for Pacific youth were rarely *unusually* high, because all census tracts tended to have high levels of disproportionate minority contact.

Disproportionate Minority Contact by Census Tract, for Other Minority Youth

Disproportionate minority contact was generally less prevalent for other minority youth than it was for Pacific youth. Both rates of referral and relative rate indices were generally lower for other minority youth than for Pacific youth. The lowest rate of referral for other minority youth was zero, for both other minority females and other minority females referred to DJJ for new crimes (see Table 19). The lowest relative rate index was again zero, for other minority females referred to DJJ for probation and conduct violations. Five (55.6%) of the nine median relative rate indices reported in Table 19 are less than two. The highest median relative rate index was 3.41, for both other minority females and other minority females referred to DJJ for new crimes. Although the minimum relative rate indices (and to some extent the rates of referral) were low, this does not imply that other minority youth were not disproportionately referred to DJJ. Instead, it simply shows that in at least one census tract, the rates of referral for other minority youth were

Table 19. Disproportionate Minority Contact by Census Tract, for Other Minority Youth

	Summary statistics for empirical Bayes rates					Summary statistics for relative EB rate indices				
Sample	N	Min	Max	Median	# outliers	N	Min	Max	Median	# outliers
Full	0	—	—	—	—	55	0.57	13.31	2.43	5
Male	0	—	—	—	—	53	0.42	12.70	1.53	6
Female	10	0.00	0.00	0.00	0	45	0.95	15.42	3.41	3
New crime	0	—	—	—	—	55	0.69	10.75	2.69	4
P/C violations	18	22.47	22.47	22.47	0	37	0.36	4.12	1.58	0
Male & new crime	0	—	—	—	—	53	0.50	9.93	1.84	6
Male & P/C violations	16	30.70	64.94	39.50	4	37	0.20	5.63	1.50	2
Female & new crime	11	0.00	0.00	0.00	0	44	1.01	15.32	3.41	3
Female & P/C violations	51	2.65	2.65	2.65	0	4	0.00	0.00	0.00	0

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

actually lower than the rate of referral for White youth. This was generally true for all other minority youth, in both gender groups, and for both types of referral (with one exception; other minority females referred to DJJ for new crimes). Maximum relative rate indices were still quite high, with seven (77.8%) of the nine above five, and five (55.6%) of the nine above ten. In at least one census tract, the rate of referral for all Pacific youth was 13.31 times higher than the rate of referral for White youth. Although other minority youth may seem less likely than other youth to be disproportionately referred to DJJ, there is still substantial variation across census tracts in the extent to which other minority youth were disproportionately referred to DJJ and, in some census tracts, the level of disproportionate minority contact for other minority youth was clearly not negligible. This is substantiated by the presence of outliers, as shown in Table 19.

The geographical pattern of disproportionate minority contact for other minority youth (shown in Figure 20) is somewhat similar to that for all minority youth (shown in Figure 10). One key difference is the presence of census tracts where the relative rate index was less than one. For other minority youth, five (9.1%) of the 55 census tracts had a relative rate index less than one. In these five census tracts (which include ones identified as outliers for other minority groups), the rate of referral for other minority youth was less than the rate of referral for White youth. Eighteen (32.7%) of the 55 census tracts had a relative rate index between one and two, 25 (45.4%) had a relative rate index between two and five, and seven (12.7%) had a relative rate index greater than five. The five census tracts where relative rate indices were greater than five are census tracts that have been previously identified as having high levels of disproportionate minority contact. These included tract 4 (approximately North of the Glenn Highway and West of Boniface), tracts 7.01, 7.02, and 7.03 (approximately north of Debarr, south of the Glenn Highway, and east of Boniface), tract 12 (approximately north of 15th, south of 4th, and west of C), tract 15 (approximately north of Tudor, south of 20th, west of Lake Otis, and east of Seward), and tract 25.02 (approximately north of Dimond, south of International Airport, east of C, and west of Seward). Overall, 32 (58.2%) of

Figure 20. Relative EB Rate Indices by Census Tract, for Other Minority Youth

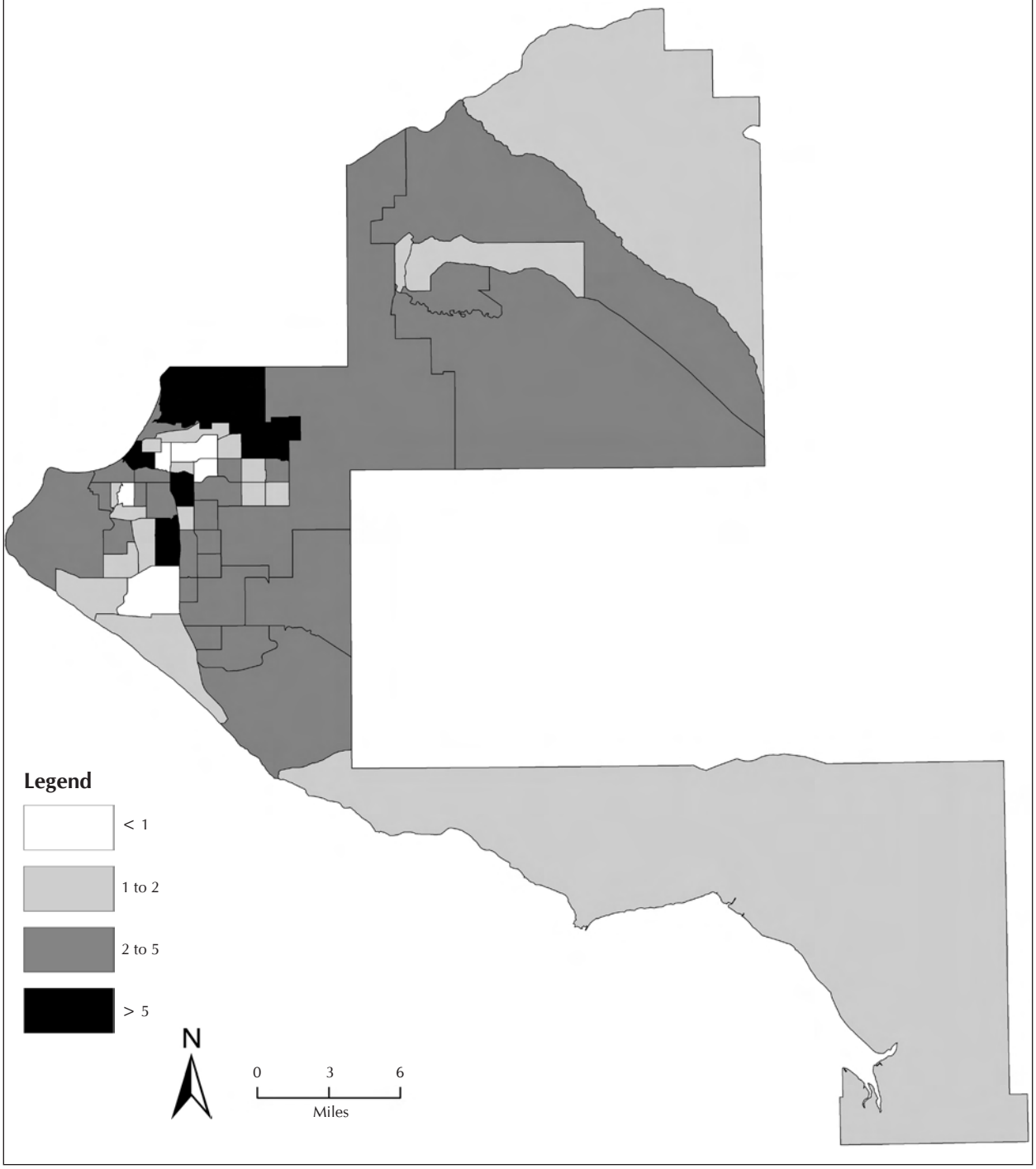
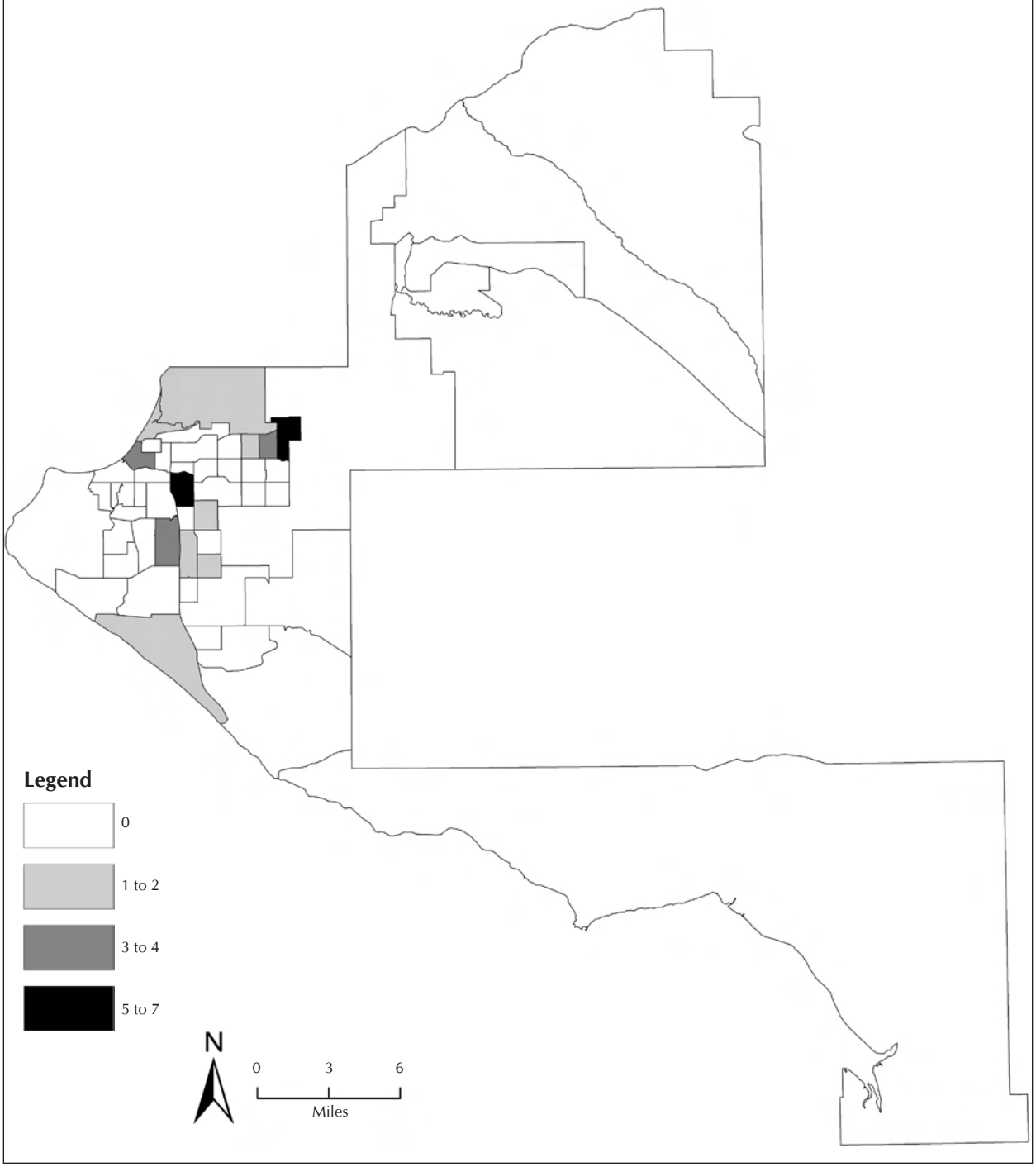


Figure 21. Number of Outliers by Census Tract, for Other Minority Youth



the 55 census tracts within the Municipality of Anchorage had a relative rate index above two. So once again, it is clear that disproportionate minority contact occurred in many census tracts.

The census tracts with a rate or a relative rate index that was designated as an outlier are shown in Figure 21. Twelve census tracts were identified as outliers. Seven (58.3%) of these 12 were identified as an outlier once or twice, three were identified as outliers three or four times, and two were identified as outliers five to seven times. These two included tract 7.03 (approximately north of Debarr and east of Muldoon) and tract 15 (approximately north of Tudor, south of 20th, west of Lake Otis, and east of Seward). Tract 27.02 emerged as an outlier (approximately south of Klatt and west of Seward). This census tract also had a high relative rate index for Pacific youth (although it was not identified as an outlier).

Disproportionate Minority Contact by Census Tract, for Multiracial Youth

Results for multiracial youth are shown in Table 20. These results are similar to the ones shown in Table 19 for other minority youth. Rates of referral for multiracial youth were generally similar to or less than the rates of referral for White youth in at least one census tract. But again, the rates of referral were often at least two times greater for multiracial youth than for White youth in at least half of the census tracts. Although minimum rates and minimum relative rate indices were quite low, maximum statistics indicate that disproportionate minority contact occurred in some census tracts. The maximum rate of referral for multiracial youth was 143.82 per 1,000 for multiracial males referred to DJJ for probation or conduct violations and the maximum relative rate index for multiracial youth was 16.39, also for multiracial males referred to DJJ for probation or conduct violations.

Results for all multiracial youth were mapped in Figure 22. This figure shows the relative rate indices for the 55 census tracts in the Municipality of Anchorage. Two census tracts had a relative

Table 20. Disproportionate Minority Contact by Census Tract, for Multiracial Youth

	Summary statistics for empirical Bayes rates					Summary statistics for relative EB rate indices				
Sample	N	Min	Max	Median	# outliers	N	Min	Max	Median	# outliers
Full	0	—	—	—	—	55	0.92	9.31	2.32	3
Male	0	—	—	—	—	55	0.55	9.89	1.82	3
Female	10	21.60	42.31	26.65	0	45	1.04	7.22	2.52	2
New crime	0	—	—	—	—	55	0.73	7.32	2.21	1
P/C violations	18	3.99	83.67	8.59	3	37	0.18	12.42	2.19	3
Male & new crime	0	—	—	—	—	55	0.46	6.92	1.79	3
Male & P/C violations	18	8.40	143.82	17.75	3	37	0.13	16.39	1.18	3
Female & new crime	11	18.45	45.29	23.98	0	44	1.22	4.83	2.30	0
Female & P/C violations	51	3.34	46.83	5.69	8	4	0.19	2.51	0.74	1

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

Figure 22. Relative EB Rate Indices by Census Tract, for Multiracial Youth

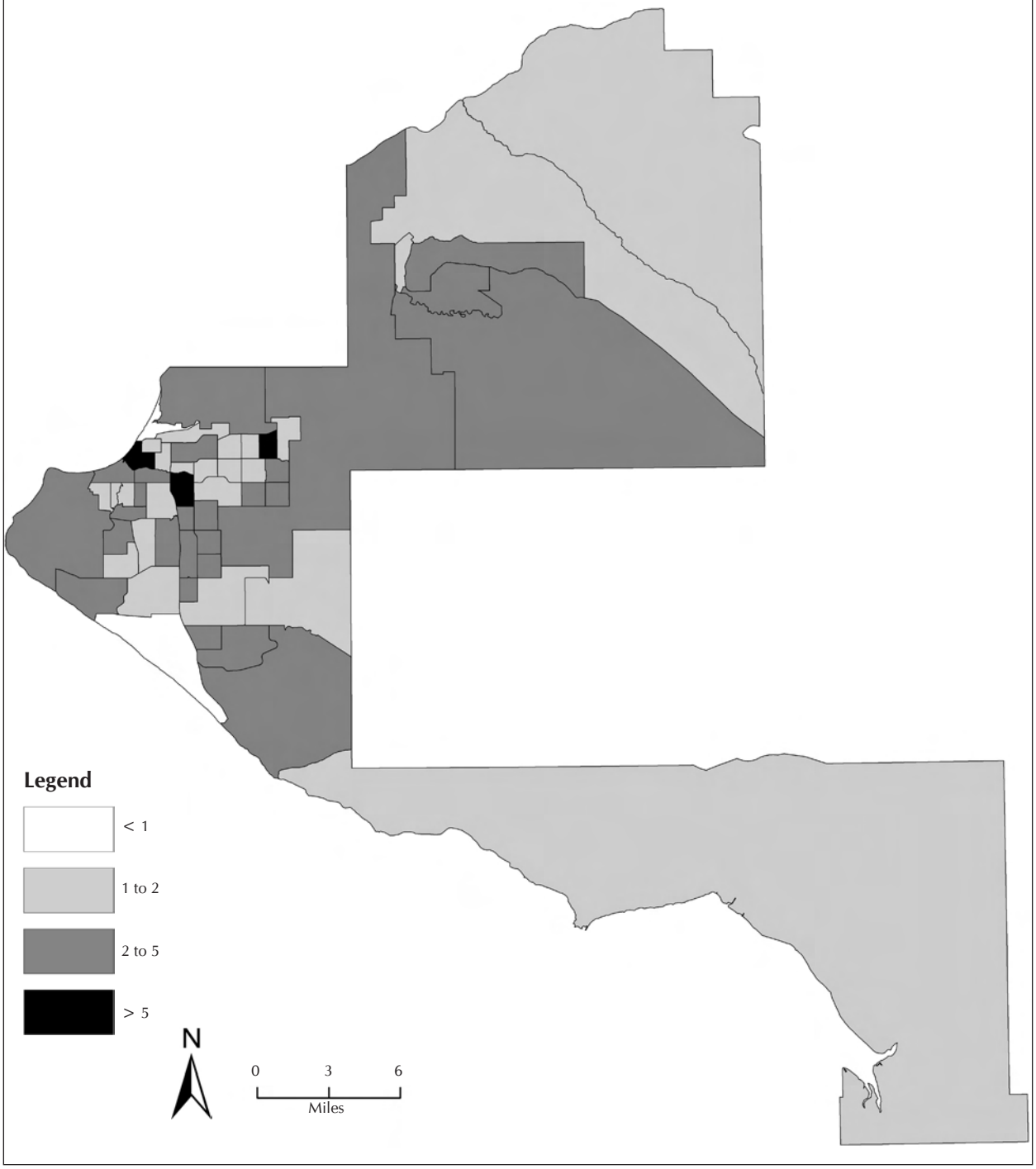
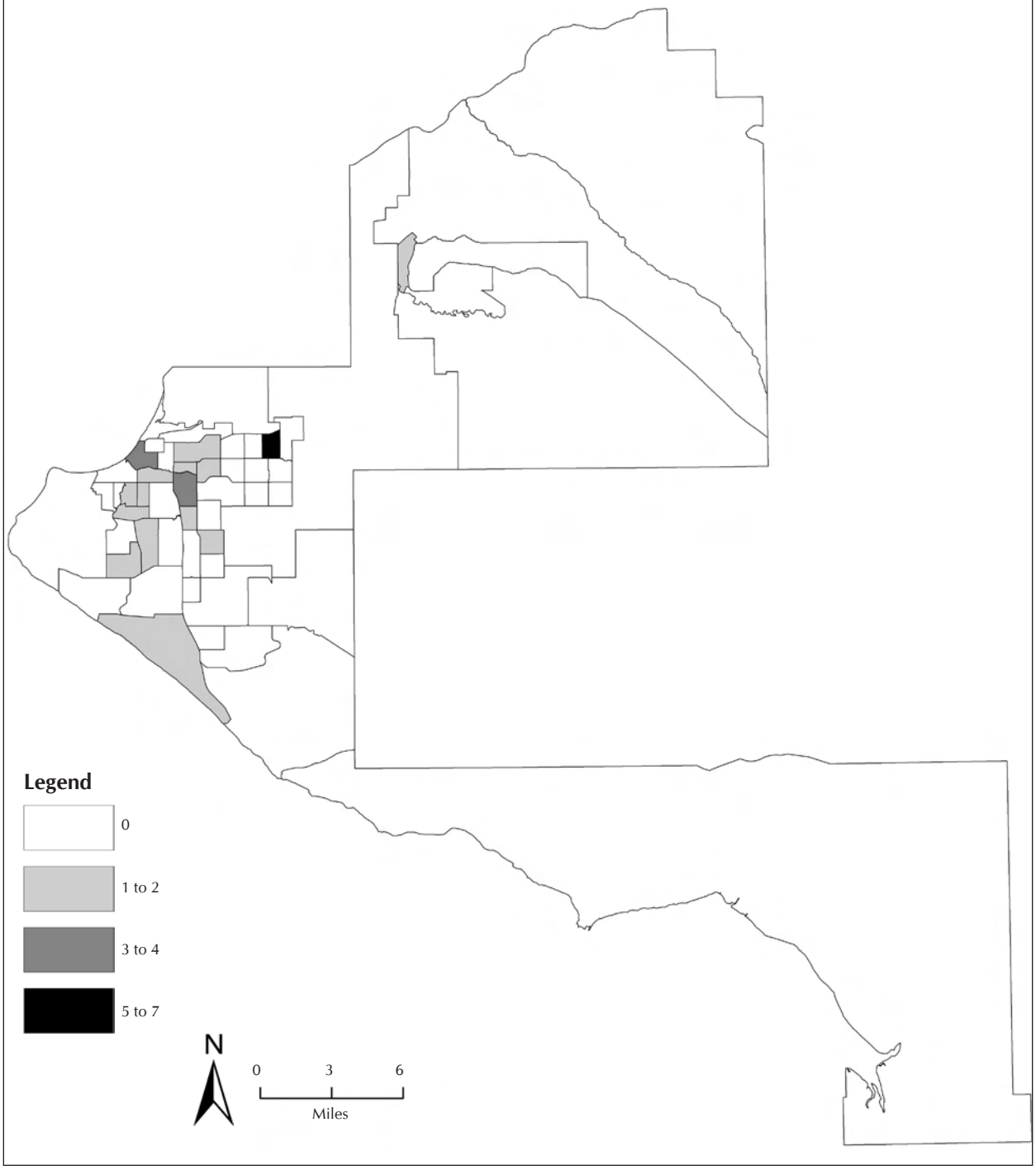


Figure 23. Number of Outliers by Census Tract, for Multiracial Youth



rate index less than one. These two census tracts included tract 27.02 (approximately south of Klatt and west of Seward) and tract 5 (approximately north of Ship Creek and south of Elmendorf). Tract 27.02 was an outlier for other minority youth and Native youth and had a high relative rate index for Pacific youth. Tract 5 had a high relative rate index for Native youth. Of the 55 census tracts, 24 (43.6%) had a relative rate index between one and two, 26 (47.3%) had a relative rate index between two and five, and three (5.4%) had a relative rate index greater than five. Overall, 29 (52.7%) of the 55 census tracts had a relative rate index greater than two. Although overall levels of disproportionate minority contact for multiracial youth may again seem low, it is clear that levels were high in at least some census tracts. The three census tracts with relative rate indices greater than five included tract 7.02 (approximately north of Debarr, south of the Glenn Highway, east of Turpin, and west of Muldoon), tract 15 (approximately north of Tudor, south of 20th, east of Seward, and west of Lake Otis), and tract 12 (approximately north of 15th, south of 4th, and west of C). These three census tracts also displayed high rates of disproportionate minority contact for other racial groups. Throughout our analyses of disproportionate minority contact for multiracial youth, a total of 16 outliers were found. These are shown in Figure 23.

Thirteen of these 16 census tracts were identified as outliers once or twice. Two were identified as outliers three or four times, and one was identified as an outlier five to seven times. This census tract, identified as an outlier five to seven times, is again tract 7.02 (approximately north of Debarr, south of the Glenn Highway, east of Turpin, and west of Muldoon).

Disproportionate Minority Contact by Census Tract, for Hispanic Youth

The level of disproportionate minority contact for Hispanic youth was typically much lower than that for Black youth, Native youth, Pacific youth, other minority youth, and multiracial youth. For males, for youth referred for probation or conduct violations, and for males referred for probation or

Table 21. Disproportionate Minority Contact by Census Tract, for Hispanic Youth

	Summary statistics for empirical Bayes rates					Summary statistics for relative EB rate indices				
Sample	N	Min	Max	Median	# outliers	N	Min	Max	Median	# outliers
Full	0	—	—	—	—	55	0.28	6.10	1.32	5
Male	0	—	—	—	—	54	0.23	6.24	0.98	4
Female	10	7.04	7.04	7.04	0	45	0.40	5.99	1.40	1
New crime	0	—	—	—	—	55	0.36	4.97	1.43	1
P/C violations	18	5.67	5.67	5.67	0	37	0.10	5.42	0.40	5
Male & new crime	0	—	—	—	—	54	0.32	6.44	1.18	3
Male & P/C violations	17	11.11	11.11	11.11	0	37	0.11	6.48	0.45	4
Female & new crime	11	6.62	6.62	6.62	0	44	0.42	6.11	1.47	2
Female & P/C violations	51	0.00	0.00	0.00	0	4	0.00	0.00	0.00	0

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

Figure 24. Relative EB Rate Indices by Census Tract, for Hispanic Youth

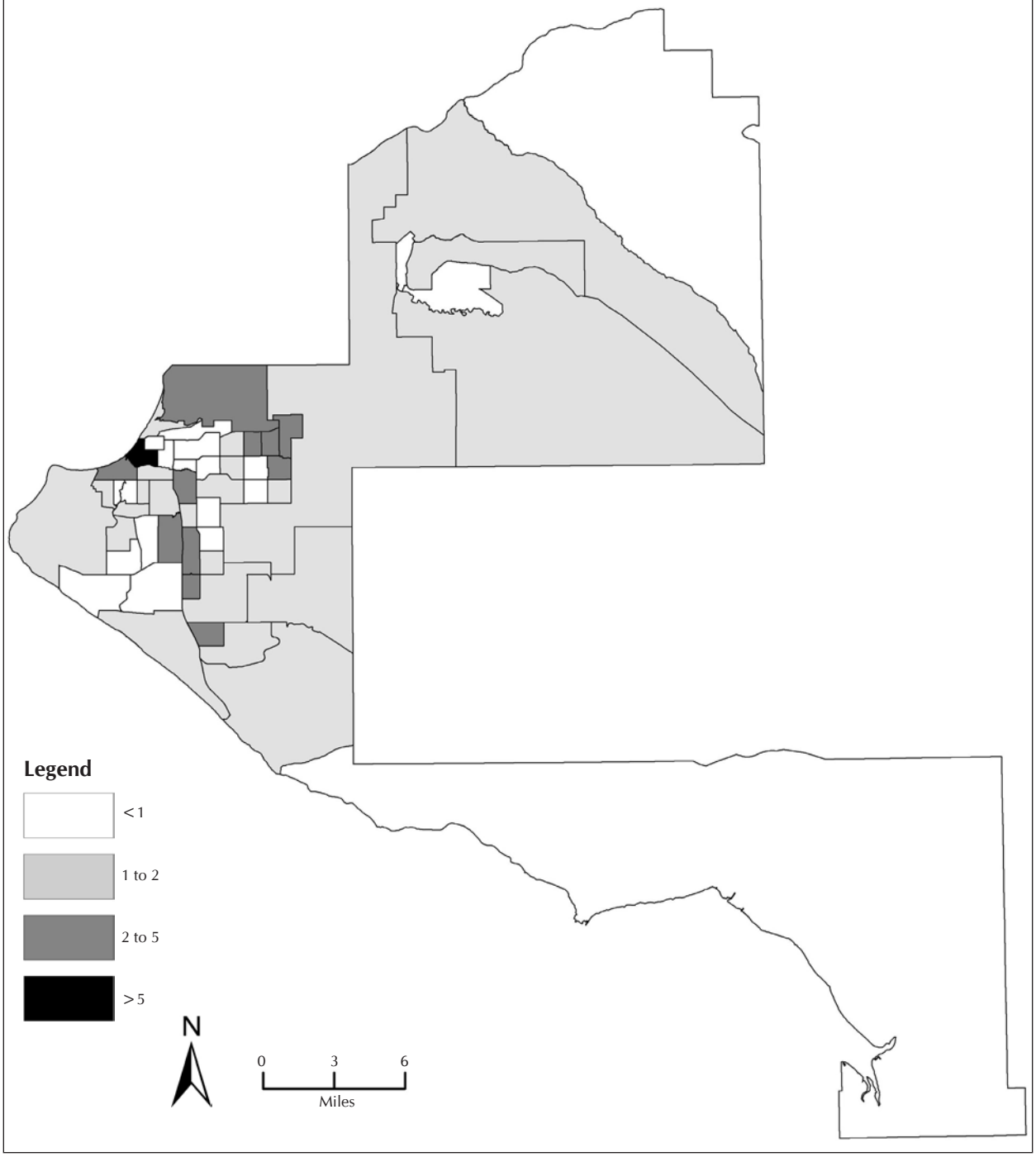
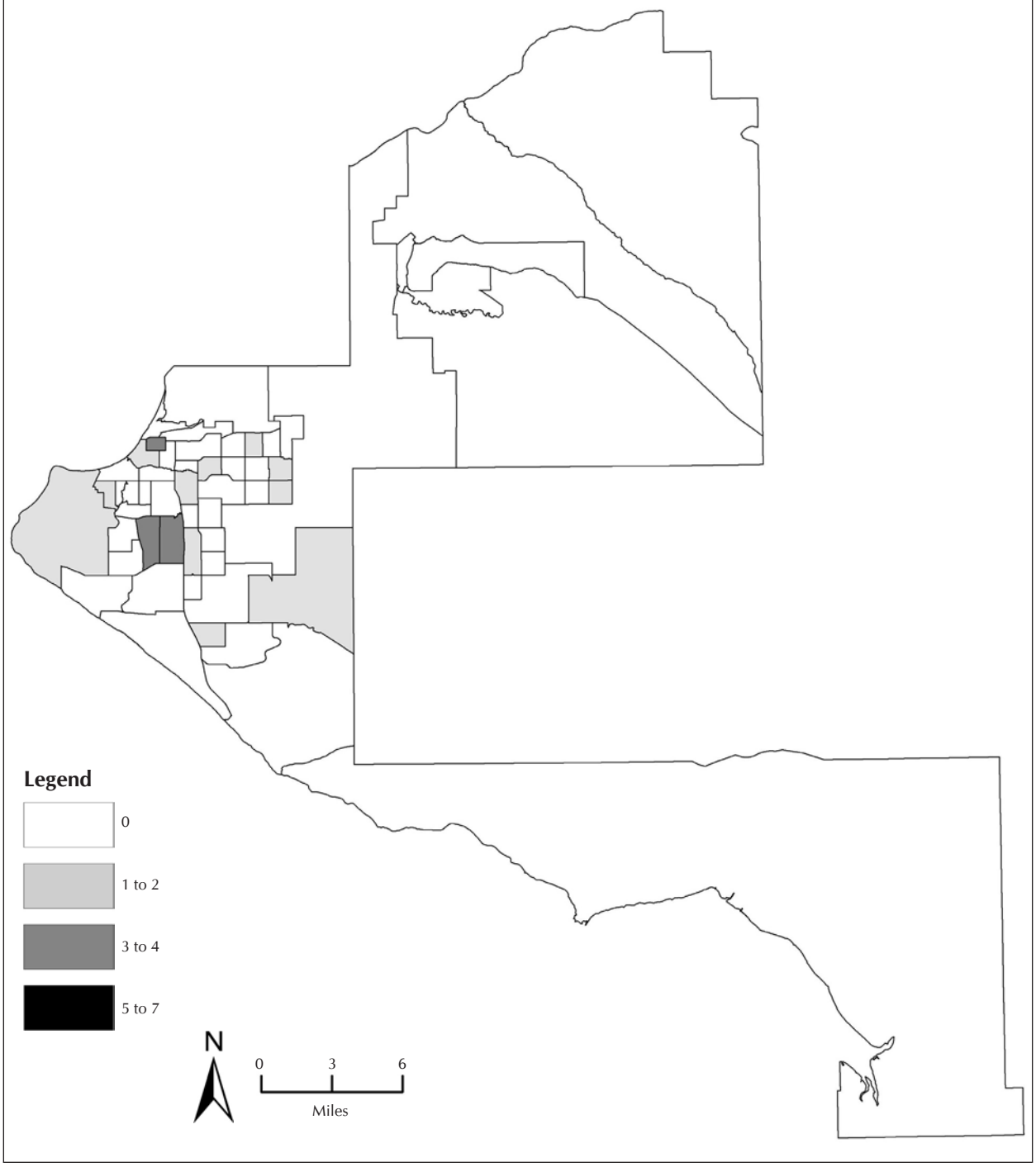


Figure 25. Number of Outliers by Census Tract, for Hispanic Youth



conduct violations, the rates of referral were lower for Hispanic youth than for Caucasian youth in over half of the census tracts analyzed. Nonetheless, there are again clearly some census tracts that displayed high levels of disproportionate minority contact for Hispanic youth. Maximum relative rate indices were never below five, except for Hispanic females referred to DJJ for probation or conduct violations (because none were in our sample). For all other analyses, there was at least one census tract where the rate of referral for Hispanic youth was at least five times greater than the rate of referral for Caucasian youth. Conversely, for all analyses, there was at least one census tract where the rate of referral for Hispanic youth was actually less than the rate of referral for Caucasian youth.

The specific locations of the census tracts with high levels of disproportionate minority contact for Hispanic youth are shown in Figure 24. As aforementioned, there were many census tracts where the rate of referral was lower for Hispanic youth than for Caucasian youth. Among the 55 census tracts within the Municipality of Anchorage, 20 (36.4%) had a relative rate index less than one. Twenty three (41.8%) had a relative rate index between one and two and 11 (20.0%) had a relative rate index between two and five. Only one census tract had a relative rate index greater than five. This was census tract 12 (approximately north of 15th, south of 4th, and west of C).

Census tracts with unusually high levels of disproportionate minority contact for Hispanic youth are shown in Figure 25. A total of 14 census tracts were identified as outliers. Most (11) were identified as outliers once or twice only and three were identified as outliers three or four times. These three census tracts included tract 11 (approximately north of 9th, south of 1st, west of Cordova, and east of L) and tracts 25.01 and 25.02 (approximately north of Dimond, south of International Aiport, west of Seward and east of Minnesota).

Summary of DMC Analyses by Census Tract

The analyses of disproportionate minority contact by census tract revealed that the extent to which disproportionate minority contact occurred varied by census tract. Even when minorities were likely to be disproportionately referred to DJJ everywhere, there were places where the levels of disproportionate minority contact were far greater than others. These places can be identified in two ways. For each minority group (and for all minority groups combined), we examined the relative rate indices (for the full sample) in Figures 10, 12, 14, 16, 18, 20, 22, and 24. To protect the confidentiality of the youth referred to DJJ, detailed figures by gender and referral type could not be presented. Nonetheless, results were tabulated across all analyses to sum the number of times that each census tract was identified as an outlier. These results were shown in Figures 11, 13, 15, 17, 19, 21, 23, and 25. These results are now summarized in Table 22 and Figure 26. Table 22 shows the distribution of relative rate indices (shown in Figures 10, 12, 14, 16, 18, 20, 22, and 24)

for all minority youth, Black youth, Native youth, Asian youth, Pacific youth, other minority youth, multiracial youth, and Hispanic youth. Figure 26 shows the number of times that each census tract was identified as an outlier. Again, we caution the reader that census tracts identified as outliers did not necessarily have the highest levels of disproportionate minority contact *overall*, but instead were simply the census tracts that had the highest levels of disproportionate minority contact *for a specific group* (i.e., for a particular racial or ethnic group, gender group, and referral type). It is quite possible, for example, that all census tracts had extremely high levels of disproportionate minority contact for a specific group but that none were outliers (because none of the rates were unusually high for this specific group). This was apparently true for Pacific youth. Most census tracts had very high levels of disproportionate minority contact, but few were outliers. The extent to which census tracts had high rates of disproportionate minority contact is shown in Table 22 whereas the extent to which census tracts had unusually high levels of disproportionate minority contact for each specific racial and ethnic group is shown in Figure 26.

Table 22 clearly shows the variability in the extent to which minority youth were disproportionately referred to DJJ across census tracts. It also clearly shows how this variability extends across racial and ethnic groups. For all minority youth combined, 19 (34.5%) of the 55 census tracts had a relative rate index between one and two, 31 (56.4%) had a relative rate index between two and five, and five (9.1%) had a relative rate index greater than five. Overall, 36 (65.5%) of the 55 census tracts had a relative rate index greater than two. Minority youth were clearly disproportionately referred to DJJ from a majority of census tracts within the Municipality of Anchorage. However, the extent to which that was true did vary by racial and ethnic group. The percentage of census tracts with a relative rate index greater than two was 78.9 percent for Black youth (N=52), 72.7 percent for Native youth (N=55), 33.3 percent for Asian youth (N=54), 93.2 percent for Pacific youth (N=44), 58.2 percent for other minority youth (N=55), 52.8 percent for multiracial youth (N=55), and 21.8 percent for Hispanic youth (N=55). Although 11 census

Table 22. Distribution of Relative EB Rate Indices Across Census Tracts

Row percentages

	Less than 1		1 to 2		2 to 5		Greater than 5		
Race/ethnicity	N	%	N	%	N	%	N	%	**Total**
All minority	0	0.0 %	19	34.5 %	31	56.4 %	5	9.1 %	**55**
Black	1	1.9	10	19.2	34	65.4	7	13.5	**52**
Native	2	3.6	13	23.6	27	49.1	13	23.6	**55**
Asian	19	35.2	17	31.5	14	25.9	4	7.4	**54**
Pacific	0	0.0	3	6.8	29	65.9	12	27.3	**44**
Other minority	5	9.1	18	32.7	25	45.5	7	12.7	**55**
Multiracial	2	3.6	24	43.6	26	47.3	3	5.5	**55**
Hispanic	20	36.4	23	41.8	11	20.0	1	1.8	**55**

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

tracts had no disproportionate minority contact for Pacific youth (because no Pacific youth lived within these census tracts), the remaining 44 census tracts displayed high levels of disproportionate minority contact. More precisely, 29 (65.9%) of these 44 census tracts had a relative rate index between two and five and 12 (27.3%) had a relative rate index greater than five (up to a maximum relative rate index of 13.21, see Table 18). Stated differently, in 41 (93.2%) of the remaining 44 census tracts, the rates of referral for Pacific youth were more than two times greater than the rates of referral for White youth. Pacific youth were clearly the most likely youth to be disproportionately referred to DJJ across all census tracts. Less variability in disproportionate minority contact was noted for Pacific youth than for other youth (fewer outliers were consequently identified).

This does not suggest that other minority youth did not have high levels of disproportionate minority contact. By comparison, however, the extent to which other minority youth were disproportionately referred to DJJ varied more across census tracts. A good example is for Native youth. Native youth also displayed high levels of disproportionate minority contact. Thirteen (23.6%) of the 55 census tracts had a relative rate index greater than five (up to a maximum of 110.36, see Table 14). There were also 15 (27.3%) of the census tracts that had a relative rate index less than two (versus three or 6.8% for Pacific youth). The extent to which Native youth were disproportionately referred to DJJ therefore varied across census tracts more for Native youth than for Pacific youth. For all racial and ethnic groups, there were census tracts where disproportionate minority contact was less likely to happen. This was particularly true for Asian and Hispanic youth and slightly less true for Pacific youth. For all racial and ethnic groups, there were also census tracts where disproportionate minority contact occurred at a high level. This was generally true for all racial and ethnic groups, although the percentage of census tracts with a relative rate index greater than five varied from a low of 1.8 percent for Hispanic youth to a high of 27.3 percent for Pacific youth.

Another way to identify the areas that produced the highest levels of disproportionate minority contact is to search for outliers. The advantage of searching for outliers is that we can identify which census tracts had large relative rate indices when compared to their median, across all analyses (i.e., by race, gender, and referral type). We can also identify outliers that had high rates of referral (when no White youth were referred). This provides a much broader overview of disproportionate minority contact. The primary disadvantage of searching for outliers is that whether a census tract is identified as an outlier depends on its statistic (relative rate index or rate) and its median. If the median is high (as it is for Pacific youth), outliers will be difficult to identify because all census tracts have high statistics. Nonetheless, these analyses are useful, especially when combined with Figures 10, 12, 14, 16, 18, 20, 22, and 24 showing the distribution of relative rate indices across census tracts.

Figure 26. Number of Outliers by Census Tract

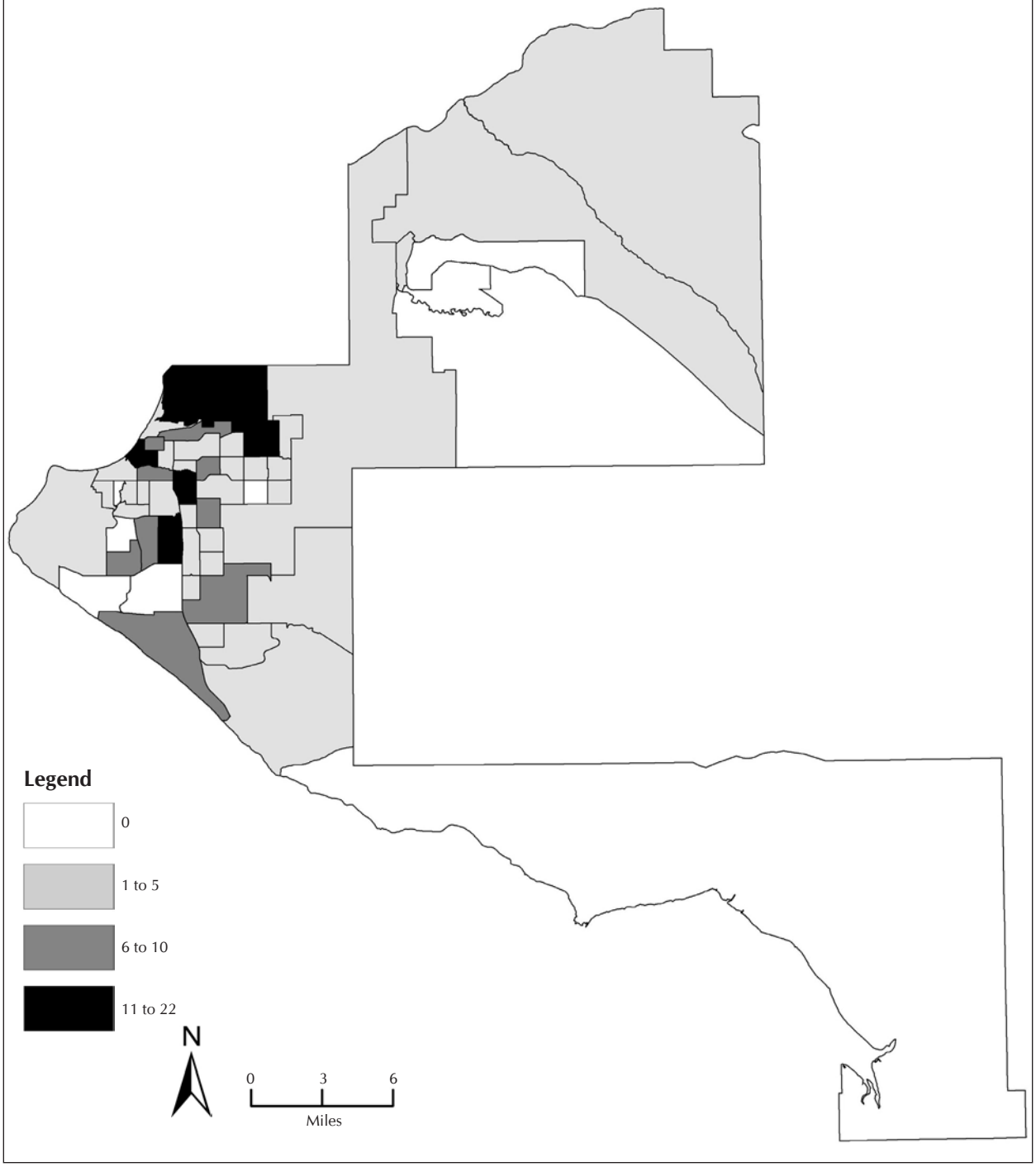


Figure 26 shows the total number of times that each census tract was identified as an outlier (either because of its relative rate index or rate) in the previous analyses. As shown in Figure 26, nine (16.4%) of the 55 census tracts were never identified as outliers (although, again, some had high levels of disproportionate minority contact), 31 (56.4%) were identified as outliers one to five times, nine (16.4%) were identified as outliers six to 10 times, and six (9.1%) were identified as outliers 11 to 22 times. These six census tracts that were identified as outliers 11 to 22 times included tract 4 (approximately North of the Glenn Highway and West of Boniface), tracts 7.01 and 7.02 (approximately north of Debarr, south of the Glenn Highway, west of Muldoon, and east of Boniface), tract 12 (approximately north of 15th, south of 4th, and west of C), tract 15 (approximately North of Tudor, South of 20th, East of Seward, and West of Lake Otis), and tract 25.02 (approximately North of Dimond, South of International Airport, East of C, and West of Seward).

Summary and Conclusion

Disproportionate minority contact occurs when the rate of referral to DJJ for minority youth is higher than the rate of referral to DJJ for White or Caucasian youth. This report provided a thorough overview of the level of disproportionate minority contact in referrals to DJJ. It did not explain why disproportionate minority contact occurs but specified in great detail where and for whom disproportionate minority contact occurred. More specifically, we examined the extent to which disproportionate minority contact occurred for all racial and ethnic minorities, for both males and females, for both referrals for new crimes and referrals for probation or conduct violations, and across the entire Municipality of Anchorage or within specific census tracts.

From the outset, clear evidence of disparity was noted. Although 34.3 percent of the youth population was minority, 61.2 percent of youth referred to DJJ were minority. By contrast, 65.7 percent of the youth population was White, but only 38.8 percent of youth referred to DJJ were White. Large disparities were particularly found for Black, Native, and Pacific youth. More specifically, Black youth were 3.56 times more likely to be referred to DJJ than White youth; Native youth were 3.83 times more likely to be referred to DJJ than White youth; and Pacific youth were 4.94 times more likely to be referred to DJJ than White youth. By and large, these differences were not affected by gender or by type of referral. It is important to emphasize, however, that with very rare exceptions (mostly found for Asian and Hispanic youth), disproportionate minority contact occurred for all minority youth.

Similarly, with rare exceptions (again mostly found for Asian and Hispanic youth), disproportionate minority contact occurred in all census tracts within the Municipality of Anchorage. However, substantial variability in disproportionate minority contact was found. First, the number

of census tracts with high levels of disproportionate minority contact varied greatly. For example, Native youth were more than five times more likely to be referred to DJJ than White youth in 13 (24%) of census tracts. By comparison, Hispanic youth were more than five times more likely to be referred to DJJ than Caucasian youth in only one (2%) of census tracts. Second, the census tracts that displayed high levels of disproportionate minority contact varied greatly across racial and ethnic groups. While one census tract may display a high level of disproportionate minority contact for one racial group, it may display a low level of disproportionate minority contact for another racial group.

Census tracts may have high levels of disproportionate minority contact for two reasons. First, it is possible that minority youth within these census tracts offend at a higher rate than White or Caucasian youth. Second, it is possible that minority youth within these census tracts are treated more punitively than White or Caucasian youth. Our research will never be able to conclusively determine which of these two factors is the primary cause of the high levels of disproportionate minority contact observed in this report. Nonetheless, future research can and will examine why minority youth within these census tracts may be offending at a higher rate. Similarly, future research can and will examine why minority youth within these census tracts may be treated more punitively. Both possible explanations will receive scientific attention.

Future research will also examine disparities that occur within the juvenile justice system. Several research projects have already examined these disparities here in Alaska. However, these studies have not controlled for the prior disparities in juvenile delinquency referrals presented in this report. The most recent and sophisticated research on disproportionate minority contact clearly shows that disparities within the juvenile justice system cannot be studied without taking into account prior disparities in referrals. To examine disparities at one decision point, without taking into account the disparities that have occurred prior to this decision point, can be (and most often is) very misleading. Consequently, our future research will examine disparities within the juvenile justice system, while taking into account that many disparities already exist when youth are referred to DJJ.

In the end, our research program will provide a comprehensive assessment study that includes a thorough assessment of the scope and causes of disproportionate minority contact. At that point, we believe that sensible, concrete, and promising solutions to disproportionate minority contact will be identifiable. Until then, this report is just the beginning of this assessment study. Nonetheless, we now know more than ever about the scope of disproportionate minority contact in Anchorage and are therefore well positioned to begin the process of identifying "**why** minority overrepresentation exists."

Appendix A. Technical Notes on Relative Rate Indices

The relative rate index is the rate of minority youths referred to DJJ per 1,000 minority youths *relative* to the rate of White youths referred to DJJ per 1,000 White youths. It is a ratio of two rates, as shown in the following formulas:

$$RRI = \frac{\text{Rate of Minority Youths Referred per 1,000 Minority Youths}}{\text{Rate of White Youths Referred per 1,000 White Youths}}$$

$$RRI = \frac{(\text{\# Minority Youths Referred} / \text{\# Minority Youths in the Population}) \times 1{,}000}{(\text{\# White Youths Referred} / \text{\# White Youths in the Population}) \times 1{,}000}$$

The statistical significance of each relative rate index was calculated using a *Z*-statistic for testing the statistical significance of the difference between two proportions from independent samples, using a two-tailed significance level of 0.05.

Let $\hat{p}_M$ be the sample proportion of minority youths referred, defined as:

$$\hat{p}_M = \frac{\text{\# Minority Youths Referred}}{\text{\# Minority Youths in the Population}}, \text{ and}$$

$\hat{p}_W$ be the sample proportion of White youths referred, defined as:

$$\hat{p}_W = \frac{\text{\# White Youths Referred}}{\text{\# White Youths in the Population}}.$$

Then,

$$z = \frac{\hat{p}_M - \hat{p}_W}{\hat{s}_{p_M - p_W}}, \text{ where}$$

$\hat{s}_{p_M - p_W}$ is the estimated standard error of the difference between proportions.

This standard error of the difference between proportions was estimated as:

$$\hat{s}_{p_M - p_W} = \sqrt{\hat{p}\hat{q}}\sqrt{\frac{n_M + n_W}{n_M n_W}}, \text{ where}$$

$\hat{p}$ is the pooled population proportion, $\hat{q}$ is 1 - $\hat{p}$, and n_M and n_W are the sizes of the minority and White populations, respectively. The pooled population proportion ($\hat{p}$) was calculated as:

$$\hat{p} = \frac{n_M p_M + n_W p_W}{n_M + n_W}$$, where

p_M and p_W are the sample proportions of minority and White youths referred (as defined above), and n_M and n_W are again the sizes of the minority and White populations, respectively.

Appendix B. Technical Notes on Relative EB Rate Indices

A relative EB rate index (SRRI) is simply the ratio of two empirical Bayes rates (EB rates). More precisely, the relative EB rate index is the empirical Bayes rate of minority youths referred to DJJ per 1,000 minority youths *relative* to the empirical Bayes rate of White youths referred to DJJ per 1,000 White youths. Again, it is a ratio of two empirical Bayes rates, as shown in the following formula:

$$SRRI = \frac{\text{Empirical Bayes Rate of Minority Youths Referred per 1,000 Minority Youths}}{\text{Empirical Bayes Rate of White Youths Referred per 1,000 White Youths}}$$

An empirical Bayes rate adjusts the raw rate by utilizing information from other geographical units. In a statistical sense, the raw rates are shrunk to some more global estimate. In this research, the more global estimate is always set to be the overall mean rate. The extent of shrinking depends on the size of the population at risk within each geographical unit. Rates from geographical units with small populations at risk will be shrunk to a much greater extent than others.

We now describe empirical Bayes rates in greater detail. Consider the raw rate of referral, for any demographic group, in geographical unit i to be:

$R_i = \frac{n_i}{P_i}$, where n_i is the number of youth referred and P_i is the number of youth at risk.

Now consider the global estimate of the raw rate, for any demographic group, and for all geographical units (i = 1 to N) to be the simple average raw rate:

$$\overline{R} = \sum_{i=1}^{N} n_i \Big/ \sum_{i=1}^{N} P_i$$

The EB rate is then a weighted average of R_i and the global estimate:

$EBR_i = w_i R_i + (1 - w_i)\overline{R}$, where w_i is the weight, calculated as:

$w_i = \frac{s^2}{s^2 + \left(\overline{R}/P_i\right)}$, where s^2 is the variance of the global estimate estimated as:

$$s^2 = \frac{\left[\sum_{i=1}^{N} P_i \left(R_i - \overline{R}\right)^2\right]}{\sum_{I=1}^{N} P_i} - \frac{\overline{R}}{\sum_{i=1}^{N} P_i \Big/ N}.$$

The weight, w_i, is assigned so that as the population at risk becomes large (i.e., as $P_i \to \infty$), little shrinkage will happen to R_i (i.e., $EBR_i \to R_i$). Conversely, as the population at risk becomes small (i.e., as $P_i \to 0$), significant shrinkage will happen to R_i (i.e., $EBR_i \to \bar{R}$).

Appendix C. Type of Analysis by Census Tract

Type of Census Tract Analysis by Race/Ethnicity

Row percentages

	EB rate		EB RRI		Unanalyzed		
Race/ethnicity	**N**	**%**	**N**	**%**	**N**	**%**	**Total**
All minority	0	0.0 %	55	100.0 %	0	0.0 %	55
Black	0	0.0	52	94.5	3	5.5	55
Native	0	0.0	55	100.0	0	0.0	55
Asian	0	0.0	54	98.2	1	1.8	55
Pacific	0	0.0	44	80.0	11	20.0	55
Other minority	0	0.0	55	100.0	0	0.0	55
Multiracial	0	0.0	55	100.0	0	0.0	55
Hispanic	0	0.0	55	100.0	0	0.0	55

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

Type of Census Tract Analysis by Race/Ethnicity and Gender

Row percentages

	EB rate		EB RRI		Unanalyzed		
Race/ethnicity by referral type	**N**	**%**	**N**	**%**	**N**	**%**	**Total**
Males							
All minority	0	0.0 %	55	100.0 %	0	0.0 %	55
Black	0	0.0	52	94.5	3	5.5	55
Native	0	0.0	55	100.0	0	0.0	55
Asian	0	0.0	53	96.4	2	3.6	55
Pacific	0	0.0	38	69.1	17	30.9	55
Other minority	0	0.0	53	96.4	2	3.6	55
Multiracial	0	0.0	55	100.0	0	0.0	55
Females							
All minority	10	18.2 %	45	81.8 %	0	0.0 %	55
Black	8	14.5	42	76.4	5	9.1	55
Native	10	18.2	45	81.8	0	0.0	55
Asian	9	16.4	43	78.2	3	5.5	55
Pacific	6	10.9	34	61.8	15	27.3	55
Other minority	10	18.2	45	81.8	0	0.0	55
Multiracial	10	18.2	45	81.8	0	0.0	55
Hispanic	10	18.2	45	81.8	0	0.0	55

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

Type of Census Tract Analysis by Race/Ethnicity and Referral Type

Row percentages

Race/ethnicity by referral type	EB rate		EB RRI		Unanalyzed		Total
	N	%	N	%	N	%	
Crime							
All minority	0	0.0 %	55	100.0 %	0	0.0 %	55
Black	0	0.0	52	94.5	3	5.5	55
Native	0	0.0	55	100.0	0	0.0	55
Asian	0	0.0	54	98.2	1	1.8	55
Pacific	0	0.0	44	80.0	11	20.0	55
Other minority	0	0.0	55	100.0	0	0.0	55
Multiracial	0	0.0	55	100.0	0	0.0	55
Probation							
All minority	18	32.7 %	37	67.3 %	0	0.0 %	55
Black	17	30.9	35	63.6	3	5.5	55
Native	18	32.7	37	67.3	0	0.0	55
Asian	17	30.9	37	67.3	1	1.8	55
Pacific	10	18.2	34	61.8	11	20.0	55
Other minority	18	32.7	37	67.3	0	0.0	55
Multiracial	18	32.7	37	67.3	0	0.0	55
Hispanic	18	32.7	37	67.3	0	0.0	55

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*

Type of Census Tract Analysis by Race/Ethnicity, Gender, and Referral

Row percentages

Race/ethnicity by gender and referral type	EB rate		EB RRI		Unanalyzed		Total
	N	%	N	%	N	%	
Crime, male							
All minority	0	0.0 %	55	100.0 %	0	0.0 %	55
Black	0	0.0	52	94.5	3	5.5	55
Native	0	0.0	55	100.0	0	0.0	55
Asian	0	0.0	53	96.4	2	3.6	55
Pacific	0	0.0	38	69.1	17	30.9	55
Other minority	0	0.0	53	96.4	2	3.6	55
Multiracial	0	0.0	55	100.0	0	0.0	55
Hispanic	0	0.0	54	98.2	1	1.8	55
Crime, female							
All minority	11	20.0 %	44	80.0 %	0	0.0 %	55
Black	9	16.4	41	74.5	5	9.1	55
Native	11	20.0	44	80.0	0	0.0	55
Asian	10	18.2	42	76.4	3	5.5	55
Pacific	7	12.7	33	60.0	15	27.3	55
Other minority	11	20.0	44	80.0	0	0.0	55
Multiracial	11	20.0	44	80.0	0	0.0	55
Hispanic	11	20.0	44	80.0	0	0.0	55
Probation, male							
All minority	18	32.7 %	37	67.3 %	0	0.0 %	55
Black	17	30.9	35	63.6	3	5.5	55
Native	18	32.7	37	67.3	0	0.0	55
Asian	17	30.9	36	65.5	2	3.6	55
Pacific	9	16.4	29	52.7	17	30.9	55
Other minority	16	29.1	37	67.3	2	3.6	55
Multiracial	18	32.7	37	67.3	0	0.0	55
Hispanic	17	30.9	37	67.3	1	1.8	55
Probation, female							
All minority	51	92.7 %	4	7.3 %	0	0.0 %	55
Black	46	83.6	4	7.3	5	9.1	55
Native	51	92.7	4	7.3	0	0.0	55
Asian	48	87.3	4	7.3	3	5.5	55
Pacific	36	65.5	4	7.3	15	27.3	55
Other minority	51	92.7	4	7.3	0	0.0	55
Multiracial	51	92.7	4	7.3	0	0.0	55
Hispanic	51	92.7	4	7.3	0	0.0	55

Source of data: *Division of Juvenile Justice (FY05) & 2000 Census (SF1)*