EXHIBIT 8

THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF SOUTH CAROLINA
CHARLESTON DIVISION

KENNY, et al. Plaintiffs, v. WILSON, et al. Defendants.	Civil Action No.: 2:16-cv-02794-MBS

DECLARATION OF BROOKE WATSON MADUBUONWU IN SUPPORT OF PLAINTIFFS' CROSS-MOTION FOR SUMMARY JUDGMENT

I, Brooke Watson Madubuonwu, submit this declaration in support of the Plaintiffs' Cross-Motion for Summary Judgment:

1. I am the Director of Legal Analytics and Quantitative Research for the American Civil Liberties Union ("ACLU"). In my role, I supervise the work of four data scientists, social scientists and analysts, and provide data analysis for the ACLU's Racial Justice Program. I have worked for the ACLU since 2018.

2. I have a Master of Science in Epidemiology from the London School of Hygiene and Tropical Medicine at the University of London and a Bachelor of Science in Microbiology from the University of Tennessee-Knoxville.

3. I have over seven years of experience conducting both descriptive and predictive data analysis and using statistical techniques to make causal inferences. I have published my work in peer-reviewed journals and presented widely at academic conferences. At the ACLU in particular, I have conducted several analyses to compare rates of events across different demographic groups.

4. Attached as Exhibit A is an analysis of records received by the ACLU through a subpoena served to the South Carolina Department of Juvenile Justice ("DJJ").

5. DJJ provided the ACLU with an Excel spreadsheet with data representing all instances in which a juvenile was referred to DJJ for the charge of Public Disorderly Conduct, S.C. Code Ann. § 16-17-530, from August 1, 2015 through July 30, 2020. The received Excel

spreadsheet includes the following variables used for analysis: a) Referral Date; b) Approximate Age at Offense; c) Race; d) School Related ("IsSchoolRelated"); e) Referring County; f) Charge ("CHARGEDESCRIPT"); and g) "Most Serious Offense on this referral." Referral Dates ranged over a period of 5 school years, from August 3, 2015, through July 31, 2020.

6. Data analysis was conducted to determine whether any racial disparities occurred in referrals for disorderly conduct in schools. In the DJJ data, race was coded as "Black," "White," "Hispanic," "Am. Indian/Alaskan Native," "Asian or Pacific Islander," or "Other." Due to the small number of referrals classified as "Hispanic," "Am. Indian/Alaskan Native," "Asian or Pacific Islander," or "Other," these referrals were excluded from the analysis. Collectively, referrals for Black and white individuals made up 96.4% of all referrals.

7. Racial disparity was calculated by comparing the rates of referrals for Black and white youth. Rates were calculated by dividing the number of referrals for one demographic group by the total population of that demographic group. Rate ratios were calculated by dividing the rate of referral in the Black population by the rate of referral in the white population. This method is commonly used in data analysis to compare rates of an outcome between two populations.

8. I calculated 95% confidence intervals around each rate ratio. The 95% confidence interval describes a range of plausible values for the true ratio between the two groups.

9. 95% confidence intervals are standard statistical tools used commonly across a wide variety of industries. We used the "rateratio" function from the "fmsb" R package to calculate the confidence interval around the rate ratio.[1] The full mathematical formula for calculating the confidence interval is detailed in the footnote below.[2]

10. Confidence intervals are a measure of the precision of an estimate. In counties with very low numbers of referrals, confidence intervals are very wide, indicating a large range of plausible values for a true rate ratio. This is because small numbers of referrals can have large impacts on the measured rate ratio. The greater the number of referrals, the more precise this estimate is.

11. Confidence intervals are used to help identify situations in which variation is most likely not due to random chance. When the confidence interval for a rate ratio does not overlap with 1, we can reject the hypothesis that the difference in rates between Black and white youth is due to random chance.

[1] The package is available at: https://cran.r-project.org/web/packages/fmsb/index.html. Last accessed February 23, 2021.

[2] The confidence interval is calculated by first calculating the natural logarithm (log) of the rate ratio (RR), and then calculating the standard error (SE) of log(RR) as the square root of $((1/w) + (1/B))$, where w is the number of white referrals and B is the number of Black referrals. The lower bound of the log 95% confidence interval is defined as log(RR) – 1.96*SE(log(RR)), and the upper bound of the 95% confidence interval is defined as log(RR) + 1.96*SE(log(RR)). To obtain the confidence interval around the rate ratio, we take the antilogarithm of these values.

12. The rates and rate ratios were calculated using population data obtained from the 2015–2019 American Community Survey ("ACS"), a survey conducted by the Census Bureau that gathers updated demographic data, including race and age data, on individuals living in the US, over a survey period of five years. We used data for youth aged 5–17 because this age range corresponds to the age range of public school students and of those covered by the juvenile justice system.

13. The ACS reports that in South Carolina from 2015–2019, there were an estimated 811,571 children of all races aged 5–17, 243,028 Black children aged 5–17, and 444,258 white[3] children aged 5–17.

14. I accessed the ACS data through the Census Bureau's application programming interface ("API"), which provides machine-readable access to many datasets that the Census Bureau has publicly released, including the 2015–2019 ACS. I accessed this API via an application in the R programming language called "tidycensus."[4] I used tables B01001, B01001B, and B01001H to obtain data for the total, Black, and white non-Hispanic 5–17-year-old populations, respectively.[5]

Referrals of youth to law enforcement in South Carolina

15. Table 1 shows the total number of referrals to law enforcement involving disorderly conduct for Black, white, and all youth, for each school year, and for the cumulative 5-year period of data. Because the data ranges from August 3, 2015 through July 30, 2020, we defined each school year to include August 1 through July 31 of the following year.

16. Table 1 also shows the annual rate of referrals among Black and white youth, the rate ratio of racial disparity found statewide, and the confidence interval around that ratio, for the full dataset and for each school year of data.

17. There were 5,120 referrals of youth to law enforcement involving disorderly conduct in South Carolina between August 3, 2015 and July 30, 2020.

18. Black youth comprise 74.9% of youth referrals to law enforcement for disorderly conduct, despite comprising only 29.9% of the population aged 5–17.

19. Statewide, Black youth were charged with disorderly conduct in school at 6.36 times the rate of white youth. Because the 95% confidence interval for this rate ratio does not

[3] Because "Hispanic" was listed as a separate racial group in the referral data, I interpret "white" in the referral data to mean "white, non-Hispanic," and correspondingly used Census population data on white non-Hispanic populations.

[4] The application is available at: https://walker-data.com/tidycensus/. Last accessed February 3, 2021.

[5] These tables are available at: https://data.census.gov/cedsci/table?q=B01001&text=B01001&y=2019&tid=ACSDT5Y2019.B01001&hidePreview=false. Last accessed February 23, 2021.

overlap with 1, we reject the hypothesis that the different rates of charges for Black and White youth occurred as a result of random chance.

School-related referrals to law enforcement in South Carolina

20. 3,735 of 5,120 disorderly conduct referrals, or 72.9%, were school-related.

21. Black youth comprise 29.9% of the total statewide youth population aged 5–17, but 75.3% of all school-related disorderly conduct referrals. White youth are 54.74% of the statewide youth population aged 5–17, but only 21.0% of school-related disorderly conduct charges.

22. Of the 3,735 school-related disorderly conduct referrals, in 3,166 cases (or 84.8%), disorderly conduct was identified by DJJ as the only or most serious charge. Black youth were the subject of 74.6% of school-related disorderly conduct referrals where disorderly conduct was the only or top charge.

23. Table 2 shows the total number of Black, white, and total school-related disorderly conduct referrals for each school year between 2015 and 2020.

24. Table 2 also shows the annual rate of school-related referrals among Black and white youth, the rate ratio of racial disparity found statewide, and the confidence interval around that ratio, for each school year of data and for the total 5-year period.

25. Over this 5-year period, Black youth were referred to law enforcement in schools at 6.55 times the rate of white students.

26. Table 3 shows the total number of school-related disorderly conduct referrals in each county between August 2015–July 2020. The number of such referrals for Black students and for white students in each county is also shown.

27. Table 3 also shows the youth population aged 5–17 for Black youth and white youth in South Carolina, by county.

28. Table 4 shows the total rate of average annual school-related referrals, the rate among white youth, the rate among Black youth, and the rate ratio and confidence intervals of the racial disparity between Black and white youth, for each county in South Carolina.

29. Calhoun County was the only county for which zero referrals of any kind were reported. Kershaw and Marlboro counties reported zero school-related referrals, having reported 3 and 2 referrals for disorderly conduct of any kind, respectively.

30. 43 of 46 South Carolina counties reported referrals of youth for school-related disorderly conduct.

31. Allendale, Bamberg, Clarendon, Lee, and Orangeburg counties had no reported referrals of white youth, and Abbeville county had no reported referrals of Black youth.

Additionally, Edgefield and Fairfield Counties' only referrals of white youth were not school-related. A rate of racial disparity could not be calculated in these eight counties. For these counties, the total numbers of referrals by race are reported.

32. Total rates of referral differed from county to county and year to year. Several counties have a greater rate of racial disparity than exists at the state level.

33. Greenville County made the greatest number of school-related referrals, and also the greatest number of school-related referrals of Black youth. Black youth in Greenville County were referred to law enforcement at 14.0x the rate of white youth.

34. Table 5 shows the number of youth subject to school-related disorderly conduct referrals by age.

35. The ages of youth charged under the disorderly conduct law in this data ranged from 8 to 18. More than half (58.1%) of youth charged with disorderly conduct in schools were between the ages of 15 and 16.

36. While there were only five such cases, 100% of all youth charged below the age of 10 were Black.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed _March 12, 2021____

By:_____

Exhibit A

Analysis of South CarolinaYouth Referrals to Law Enforcement

Table 1: All disorderly conduct referrals for Black and white youth in South Carolina, by school year.

School Year	Black Referrals	White Referrals	Total Disorderly Conduct Referrals	Black Referral Rate per 100000	White Referral Rate per 100000	Rate Ratio	95% Confidence Interval
2015-2016	777	279	1098	319.72	62.80	5.09	4.44x - 5.84x
2016-2017	781	223	1035	321.36	50.20	6.40	5.52x - 7.43x
2017-2018	625	167	823	257.17	37.59	6.84	5.77x - 8.12x
2018-2019	840	235	1118	345.64	52.90	6.53	5.65x - 7.55x
2019-2020	810	197	1046	333.29	44.34	7.52	6.43x - 8.78x
Total	3833	1101	5120	315.44	49.57	6.36	5.95x - 6.81x

Table 2: School-related disorderly conduct referralsfor Black and white youth in South Carolina, by school year.

School Year	Black Referrals	White Referrals	Total Disorderly Conduct Referrals	Black Referral Rate per 100000	White Referral Rate per 100000	Rate Ratio	95% Confidence Interval
2015-2016	550	208	784	226.31	46.82	4.83	4.12x - 5.67x
2016-2017	540	147	710	222.20	33.09	6.72	5.6x - 8.06x
2017-2018	450	114	589	185.16	25.66	7.22	5.88x - 8.86x
2018-2019	662	184	882	272.40	41.42	6.58	5.59x - 7.74x
2019-2020	609	131	770	250.59	29.49	8.50	7.04x -10.26x
Total	2811	784	3735	231.33	35.29	6.55	6.06x - 7.09x

Table 3: School-related disorderly conduct referrals for Black and white youth in South Carolina, by county, August 2015-July 2020.

County	Black Youth Population	White Youth Population	Black Referrals	White Referrals	Total Disorderly Conduct Referrals
Abbeville	1025	2529	0	3	3
Aiken	8036	15339	99	25	126
Allendale	1051	166	25	0	25
Anderson	5581	23981	60	71	135
Bamberg	1349	686	4	0	4
Barnwell	2037	1629	84	11	96
Beaufort	6084	12620	113	21	141
Berkeley	9762	21142	159	53	221
Charleston	18608	29502	39	3	44
Cherokee	2142	6464	13	8	23
Chester	2222	2761	49	7	59
Chesterfield	2620	4055	21	3	25
Clarendon	2636	2030	4	0	5

Table 3, continued: School-related disorderly conduct referrals for Black and white youth in South Carolina, by county, August 2015- July 2020.

County	Black Youth Population	White Youth Population	Black Referrals	White Referrals	Total Disorderly Conduct Referrals
Colleton	2572	3043	85	15	101
Darlington	5090	5227	64	10	74
Dillon	3137	2193	88	11	102
Dorchester	7881	16893	172	34	207
Edgefield	1363	2117	6	0	6
Fairfield	2321	866	26	0	26
Florence	11454	10910	199	20	222
Georgetown	3432	4530	69	20	91
Greenville	16442	51029	362	80	487
Greenwood	4031	5788	45	8	55
Hampton	1830	1183	86	5	91
Horry	8219	28705	144	83	235
Jasper	1898	1168	79	4	85
Lancaster	3075	8878	7	6	13
Laurens	2583	6478	6	12	19
Lee	1818	669	16	0	17
Lexington	8984	33818	43	23	70
Marion	3323	1643	49	3	52
McCormick	455	282	1	1	2
Newberry	1999	3044	90	27	123
Oconee	638	8952	5	7	12
Orangeburg	9217	3864	6	0	6
Pickens	1184	14200	15	41	63
Richland	34350	20592	16	2	19

Table 3, continued: School-related disorderly conduct referrals for Black and white youth in South Carolina, by county, August 2015- July 2020.

County	Black Youth Population	White Youth Population	Black Referrals	White Referrals	Total Disorderly Conduct Referrals
Saluda	923	1490	8	2	12
Spartanburg	11449	32065	57	31	93
Sumter	9131	7238	59	1	62
Union	1402	2524	112	53	167
Williamsburg	3478	1250	3	2	5
York	10195	31056	223	78	311
Total	243028	444258	2811	784	3735

Table 4: Average annual school-related disorderly conduct referral rates and rate ratios for Black and white youth in South Carolina, by county, August 2015-July 2020.

County	Avg Total Annual Referrals per 100000	Avg Black Annual Referrals per 100000	Avg White Annual Referrals per 100000	Rate Ratio	95% Confidence Interval
Abbeville	15.85	0.00	23.72	0.00	•
Aiken	93.44	246.39	32.60	7.56	4.87x - 11.72x
Allendale	389.41	475.74	0.00	Inf	•
Anderson	79.62	215.02	59.21	3.63	2.58x - 5.12x
Bamberg	35.97	59.30	0.00	Inf	•
Barnwell	501.96	824.74	135.05	6.11	3.26x - 11.45x
Beaufort	110.85	371.47	33.28	11.16	7.01x - 17.78x
Berkeley	117.38	325.75	50.14	6.50	4.76x - 8.87x
Charleston	15.81	41.92	2.03	20.61	6.37x - 66.69x
Cherokee	46.43	121.38	24.75	4.90	2.03x - 11.83x

Table 4, continued: Average annual school-related disorderly conduct referral rates and rate ratios for Black and white youth in South Carolina, by county, August 2015-July 2020.

County	Avg Total Annual Referrals per 100000	Avg Black Annual Referrals per 100000	Avg White Annual Referrals per 100000	Rate Ratio	95% Confidence Interval
Chester	216.63	441.04	50.71	8.70	3.94x - 19.2x
Chesterfield	65.77	160.31	14.80	10.83	3.23x - 36.32x
Clarendon	19.98	30.35	0.00	Inf	•
Colleton	319.92	660.96	98.59	6.70	3.87x - 11.61x
Darlington	133.06	251.47	38.26	6.57	3.38x - 12.8x
Dillon	355.90	561.05	100.32	5.59	2.99x - 10.47x
Dorchester	139.76	436.49	40.25	10.84	7.51x - 15.67x
Edgefield	30.51	88.04	0.00	Inf	•
Fairfield	156.06	224.04	0.00	Inf	•
Florence	181.43	347.48	36.66	9.48	5.98x - 15.01x
Georgetown	211.28	402.10	88.30	4.55	2.77x - 7.49x
Greenville	113.67	440.34	31.35	14.04	11.02x - 17.89x
Greenwood	93.16	223.27	27.64	8.08	3.81x - 17.13x
Hampton	577.05	939.89	84.53	11.12	4.51x - 27.39x
Horry	104.28	350.41	57.83	6.06	4.63x - 7.94x
Jasper	398.03	832.46	68.49	12.15	4.45x - 33.19x
Lancaster	17.84	45.53	13.52	3.37	1.13x - 10.02x
Laurens	35.01	46.46	37.05	1.25	0.47x - 3.34x
Lee	133.54	176.02	0.00	Inf	•
Lexington	27.68	95.73	13.60	7.04	4.24x - 11.68x
Marion	197.34	294.91	36.52	8.08	2.52x - 25.91x
McCormick	45.56	43.96	70.92	0.62	0.04x - 9.91x
Newberry	403.34	900.45	177.40	5.08	3.3x - 7.8x

Table 4, continued: Average annual school-related disorderly conduct referral rates and rate ratios for Black and white youth in South Carolina, by county, August 2015-July 2020.

County	Avg Total Annual Referrals per 100000	Avg Black Annual Referrals per 100000	Avg White Annual Referrals per 100000	Rate Ratio	95% Confidence Interval
Oconee	20.49	156.74	15.64	10.02	3.18x - 31.58x
Orangeburg	8.22	13.02	0.00	Inf	•
Pickens	72.53	253.38	57.75	4.39	2.43x - 7.93x
Richland	5.88	9.32	1.94	4.80	1.1x - 20.86x
Saluda	74.93	173.35	26.85	6.46	1.37x - 30.41x
Spartanburg	35.21	99.57	19.34	5.15	3.33x - 7.98x
Sumter	66.18	129.23	2.76	46.77	6.48x - 337.55x
Union	767.11	1597.72	419.97	3.80	2.74x - 5.27x
Williamsburg	20.00	17.25	32.00	0.54	0.09x - 3.23x
York	127.98	437.47	50.23	8.71	6.73x - 11.27x
Total	92.04	231.33	35.29	6.55	6.06x - 7.09x

Table 5: School-related referrals by age at offense, August 2015-July 2020.

Approximate Age at Offense	Black Referrals	White Referrals	Total Referrals
8	3	0	3
9	2	0	2
10	4	1	5
11	35	9	45
12	187	44	239
13	319	79	409
14	549	181	761
15	811	228	1082
16	818	227	1087
17	82	15	101
18	1	0	1