Officer Contacts with Civilians and Race in the City of Spokane:

A Quantitative Analysis

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Acknowledgements

Executive Summary

Research Questions

This study answers three overarching research questions:

1. What is the relationship between civilians' race and the occurrence of and outcomes from officer-initiated contacts in the City of Spokane?
2. What is the relationship between civilians' race and the occurrence of and outcomes from officer-initiated contacts at the neighborhood level?
3. What is the relationship between neighborhood characteristics, contact characteristics, officers' race, and civilians' gender and race, and the outcomes of officer-initiated contacts?

These questions inform a total of 15 sub-questions that are answered in this study.

Data

Data for this study came from three sources. A data collection tool specifically designed for officer-initiated contacts was developed by the researchers, and implemented using the City of Spokane's OnBase system. The SPD Computer Assisted Dispatch (CAD) database provided information about which neighborhoods contacts occurred in, and the date of the contact. The CAD database also provided a count of traffic stops occurring in the City of Spokane for use in calculating the overall study margin-of-error. The SPD personnel database was used for data about officers' race, gender, rank, and assignment to the traffic unit.

Study Sample

This study includes data from 39,730 officer initiated contacts occurring between March 20th, 2014 and September 30th, 2016. There were 37,238 incidents in CAD that were coded as Traffic Stops, and 33,745 of these were also listed as Motor Vehicle stops in the OnBase data set, so 90.6% of Traffic Stops from CAD were captured as Motor Vehicle stops in OnBase , for a 0.2% margin of error for contact reporting. Of the 268 commissioned personnel who would make civilian contacts, there were 237 who did report data for this study, for an 88.4% data reporting rate, and an officer based margin of error of 2.2%.

Results

City Level

At the City of Spokane level, African Americans and Native Americans were significantly more likely to experience officer-initiated contacts, and to be searched or arrested, in comparison to other racial groups. Native Americans were also more likely to experience a use of force incident. Middle Easterners were more likely to experience contacts. Pacific Islanders were more likely to be contacted or arrested, and were more likely to be arrested for a new charge.

Neighborhood Level

Neighborhood level results were quite similar to the city level ones, with African Americans, Native Americans, and Middle Easterners more likely to experience an officer-initiated contacted in the majority of neighborhoods analyzed. Native Americans and African Americans were more likely to be

searched or arrested in at least half of the neighborhoods analyzed. The experiences of other racial groups around contacts, searches and arrests varied between neighborhoods.

The neighborhood level results are remarkably consistent with the city level results in terms of contacts for African Americans, Native Americans and Middle Easterners. Additionally, at the neighborhood level, the experiences of African Americans and Native Americans are consistent with the city level results for searches and arrests. Although there is some neighborhood level variation in these phenomena, the consistency of the results between neighborhoods, and between city and neighborhood levels, points to a minimal neighborhood effect on disproportionality in contacts, searches, and arrests.

There were insufficient use of force incidents when distributed at the neighborhood level to conduct a sufficiently robust probability analysis. Although this limits data analysis it is very good news for civilians and officers alike that only 0.2% of officer-initiated contacts resulted in a use of force.

Multivariate

Consistencies between the six Logistic Regression analysis results include: (1) Contacts occurring in higher index crime neighborhoods are between 32% and 72% more likely to result in searches or arrests; (2) Race of the civilian involved in a contact significantly increases the likelihood of searches, arrests, and uses of force, increasing likelihoods by between 45% and 103% for searches, 49% and 348% for arrests, and 169% for use of force; (3) When the race of the contacting officer is White, the likelihood of searches significantly decreases by between 35% and 41%, the likelihood of arrests decreases by between 28% and 35%, and does not significantly change the likelihood of force being used.

When force was used, being male, or Native American, increased the likelihood of force being used by 119% and 169%, respectively, and being arrested increased the likelihood by 379%. With arrests being a substantial driver of force, one should note that of the 2,607 arrests made, 25 (0.96%) involved a use of force.

The multivariate analysis results therefore indicate that contacts occurring in high index crimes are more likely to result in arrests and searches, that race is a strong predictor of searches, arrests and use of force, that being arrested is the strongest predictor of use of force, and that White officers are less likely to be involved in contacts resulting in searches or arrests.

Conclusions

The researchers have refrained from making causal interpretations of the results, for empirical reasons, and to avoid circumscribing the necessary conversations that must occur between civilians and police officers to effectively address the racial disproportionality identified in this study, and its predecessor.

It still appears that a focus for discussing change is at the initial point of contact. Rates of disproportionality appear to increase incrementally from contacts, through searches and arrests, though use of force. It is important to consider that very few searches are safety frisks and these frisks are applied uniformly across racial groups – it therefore does not appear that SPD officers are creating reasons to search people on the basis of race. The overwhelming majority of searches are post-arrest,

and reasons for arrest are applied fairly uniformly across races – it therefore does not appear that SPD officers are creating reasons to arrest people on the basis of race.

Recommendations

It remains time to complete with dialogue what cannot be completed with numbers. The researchers are recommending that the Spokane City Council convene and charge an ad hoc commission that includes civilians and police officers, and is led by civilians who are independent of City Hall, with identifying approaches to address the racial disproportionality in contacts that is now identified in two quantitative reports, and to report their recommendations to the City Council and Chief of Police. As officers are compensated for their community engagement time, we also recommend that members of this commission be compensated for their effort.

History and Background

Development Time Line

This research project developed from conversations that forged a partnership between Ed Byrnes of Eastern Washington University (EWU) and Brad Arleth of the Spokane Police Department[1]. The conversation began more broadly and was about many issues confronting officers and civilians as they try to come together for a safer and more positive community, then moved to a sharper focus on the intersection of race with relations between officers and civilians.

This is the time line of key events leading to this report:

July 2012: Brad Arleth writes to Ed Byrnes following testimony about research and racial disproportionality give at a Use of Force Commission (UOFC) hearing, which begins their working discussions.

July 2013 through November 2013: Brad Arleth and Ed Byrnes collaboratively develop the data collection instrument for this study. They are influenced by:

- Northeastern University Racial Profiling Data Collection Resource Center for Best Practices
- The NYPD Stop & Frisk Data Collection Form
- The RAND NYPD Stop & Frisk Report
- Revised Code of Washington (RCW) 43.43.80
- U.S. House Bill (HR) 2851: End Racial Profiling Act.

November 2013: Lisa Smith, SPD Crime Analyst creates an electronic version of the instrument for on line use by officers.

January 2014 through February 2014: The SPD Executive Team and City Legal Department review then approve instrument and procedures.

February 2014: SPD Patrol officers are trained in data collection procedures.

March 2014: Data collection by officers begins.

July 2014: Preliminary data are download and the analysis at the level of events subsequent to initial contact demonstrates a need more cases before the analysis can continue.

October and November 2014: The second set of data are download.

December 2014 through February 2015: Ed Byrnes engages in the data analysis that results in this report.

March 2015: The first report, including bivariate city level analysis is released to the public.

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[1] This project resulted from Ed and Brad donating their own time to it since 2013. The Spokane City Council provided funding for EWU administration to release Ed from one class between January and March of 2017, so that the data for this report could be analyzed with more in depth neighborhood level and multivariate approaches.

March 2015 through Present: Data collection by SPD officers continues.

August 2016: Ed Byrnes submits a proposal to the Spokane City Council to fund his release from teaching one class, in order to complete more detailed and complex data analyses.

September and October 2016: The Spokane City Council agrees to fund the additional analyses, and the contract between EWU and the City of Spokane is executed.

January 2017: Data are provided by the Spokane Police Department, and analysis begins.

March 2017: This report is released to the Spokane Police Department and Spokane City Council.

Study Method

Research Questions

This study answers three overarching research questions, which are stated with their sub-questions:

4. What is the relationship between civilians' race and the occurrence of and outcomes from officer-initiated contacts in the City of Spokane?
    a. How does the proportion of people of different races who experienced officer-initiated contacts compare with their racial proportions in the City of Spokane?
    b. How does the proportion of people of different races who were searched compare with their racial proportions among those who experienced officer-initiated contacts?
        i.   How does the proportion of people who were searched for either an officer safety frisk, or subsequent to being arrested, within their racial groups, compare with the overall proportions for these reasons among those who were searched?
    c. How does the proportion of people of different races who were arrested compare with their racial proportions among those who experienced officer-initiated contacts?
        i.   How does the proportion of people who were arrested for either an arrest warrant, or for a new charge, within their racial groups, compare with the overall proportions for these reasons among those who were arrested?
    d. How does the proportion of people of different races who experienced an officer use of force compare with their racial proportions among those who experienced officer-initiated contacts?
5. What is the relationship between civilians' race and the occurrence of and outcomes from officer-initiated contacts at the neighborhood level?
    a. How does the proportion of people of different races who experienced officer-initiated contacts compare with their racial proportions at the neighborhood level?
    b. How does the proportion of people of different races who were searched compare with their racial proportions among those who experienced officer-initiated contacts at the neighborhood level?
        i.   How does the proportion of people who were searched for either an officer safety frisk, or subsequent to being arrested, within their racial groups, compare with the overall proportions for these reasons among those who were searched at the neighborhood level?
    c. How does the proportion of people of different races who were arrested compare with their racial proportions among those who experienced officer-initiated contacts at the neighborhood level?
        i.   How does the proportion of people who were arrested for either an arrest warrant, or for a new charge, within their racial groups, compare with the overall proportions for these reasons among those who were arrested at the neighborhood level?

d. How does the proportion of people of different races who experienced an officer use of force compare with their racial proportions among those who experienced officer-initiated contacts at the neighborhood level?

6. What is the relationship between neighborhood characteristics, contact characteristics, officers' race, and civilians' gender and race, and the outcomes of officer-initiated contacts?

a. What is the relationship between these variables when the outcome is a search, and the civilians' race is African American or Native American?

b. What is the relationship between these variables when the outcome is an arrest, and the civilians' race is African American, Native American, or Pacific Islander?

c. What is the relationship between these variables when the outcome is the use of force, and the civilians' race is Native American?

Data Sources

Data for this study came from three sources. A data collection tool specifically designed for officer-initiated contacts, which is Appendix A in this report, was developed by the SPD and the research partner, and implemented using the City of Spokane's OnBase system. The OnBase data collection tool was described in more detail in the following Instrument section of this report. The SPD Computer Assisted Dispatch (CAD) database provided information about which neighborhoods contacts occurred in, and the date of the contact. The CAD database also provided a count of traffic stops occurring in the City of Spokane for use in calculating the overall study margin-of-error. The SPD personnel database was used for data about officers' race, gender, rank, and assignment to the traffic unit.

Instrument

The verbatim text used in the electronic data collection instrument is included in this report as Appendix A. As reported in the project time line this instrument was influenced by and conforms with the best practices of the Racial Profiling Data Collection Resource Center, RCW 43.43.80 and HR 2851 (the End Racial Profiling Act). Although HR 2851 is not law and is not anticipated to be heard or debated soon, our efforts conformed with every aspect of the proposed legislation except for collecting data about civilians religion, since officer perceptions would be very challenging to gauge for that variable. Additionally, HR 2851 includes pilot study and university partner requirements that this project meets without requiring any legal mandate to do so.

Categories of data collected by this instrument include:

- Background information to connect contact with officer and details in the CAD database;
- The type of contact and precipitating reason for it;
- The result of the contact, including arrests and reasons for them;
- Whether reportable force was used during the contact;
- Whether a search was conducted during the contact and the reasons for any searches;
- The civilian's gender;
- The civilian's age group;
- The civilian's race and how it was identified by officers.

This study focuses on how officers' perceptions of civilians' race relates to contacts and the results of contacts between officers and civilians. Given that the essential question is about officers' perception no procedure requiring officers to ask civilians about their race was included in this study. This was the case for two reasons:

The fundamental research question is about officers' perceptions of civilians' race;

When a contact between an officer and civilian involves any level of conflict, asking about race risks escalating rather than de-escalating the contact for no purpose whatsoever, and no rational officer or civilian wants to introduce procedures that risk escalating contacts between officers and civilians.

Analysis

Statistical Terms

The following statistical terms define the approaches used in analyses of the data used in this report:

Margin of Error: A margin of error is the range of percentages within which the true population percent will lie, given the sample percent. For example if there is 1% margin of error and 10% of a sample has a characteristic, for example brown eyes, then in the population the true percent of people with brown eyes would lie between 9% and 11%.

Expected Frequency: This is how often a value is expected to occur in a sample of cases, based on the probability of it occurring in the population. For instance, if the population of children under 18 in a city is 20%, then a sample of 100 people from the city would have an expected frequency of 20 for children under 18 years old.

Chi Square: Chi Square is a statistical method to test whether the frequency that is observed within a sample is different from what the expected frequency is[2].

Statistical Significance: A result is statistically significant if it is unlikely to occur by chance alone. In social sciences, when the probability that a result is from chance alone is less than or equal .05, then it is considered statistically significant. When testing more than one hypothesis within a given research question, the significance level of .05 must be divided by the number of hypothesis tests being performed, so that the probability of a chance finding remains at .05, overall. So if we test four hypotheses within a research question, we divide .05 by 4, and use .0125 as the probability of a chance result for statistical significance.

Effect Size: Effect size refers to how much of an actual difference was observed, and this observation is standardized. In this study the appropriate indicator of effect size is the Cramer's V Coefficient, and these values of the coefficient correspond with these effect sizes - .10 = small, .30 = medium, .50 = large.

Standardized Residual: A standardized residual is the difference between what was observed in a sample and what would be expected in a population, placed in the context of what would be expected. Standardized residuals are calculated at the level of each cell in a table, whereas Chi Square is calculated across all cells in a table. When a standardized residual has a value that is lower than -2 or greater than 2, then it means the difference is substantial. So if the cell of a table where race is African American and being searched is Yes has a standardized residual of 7, then there is a substantial difference between what is observed and what would be expected by chance alone.

Logistic Regression: This is a multivariate statistical approach that analyzes the relationship between multiple variables as predictors and covariates, and a single outcome. For example one could use this approach to analyze the relationship between predictors of neighborhood crime level and race with whether a person is searched during a contact. Logistic Regression allows us learn about the size of the

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[2] See Pett, M.A. (1997). *Nonparametric Statistics for Health Care Research: Statistics for Small Samples and Unusual Distributions*. Thousand Oaks, CA: Sage Publications.

relationship between a predictor and outcome, and whether that relationship is beyond what chance alone would predict[3].

Predictor: This is the variable of interest in predicting an outcome when using Logistic Regression, and in the study it is a person's membership in a specific racial group.

Covariate: These are other variables that are included in a Logistic Regression analysis because they have an influence over the outcome, and therefore on the relationship between the predictor and outcome.

Odds Ratio: This is a number that describes the change in the likelihood of an outcome occurring when a variable is in place. When an odds ratio is greater than 1, it means the likelihood is greater, when it is less than 1, it means the likelihood is less, and when it is 1 it means that the likelihood is unchanged. The decimals in an odds ratio can be converted into percentages, so if being male has an odds ratio of 1.2 for being arrested, it means males are 20% more likely than females to be arrested, and if being contacted for a hazardous moving traffic violation has an odds ratio of .80, it means that there is 20% less likelihood of being arrested.

Results

Study Sample

This study includes data from 39,730 officer initiated contacts occurring between March 20th, 2014 and September 30th, 2016. Data from these contacts were recorded using the OnBase data collection instrument.

Margin of Error

There were 588,089 incidents listed in the CAD database during the same time as the OnBase data collection was occurring. Of the 39,730 contacts in the OnBase data set, 29,734 (74.8%) had incident numbers that matched one in the CAD, for a 0.3% margin of error for incident matching. The unmatched incident numbers were because of keystroke errors at the time of OnBase data entry, and efforts to establish what the intended incident numbers were would be speculative at best, and were thus avoided since the margin-of-error was quite far from being problematic. To estimate the OnBase data set margin of error, traffic stops were used, as they were consistently defined between the OnBase sample and the CAD population of contacts. There were 37,238 incidents in CAD that were coded as Traffic Stops, and 33,745 of these were also listed as Motor Vehicle stops in the OnBase data set, so 90.6% of Traffic Stops from CAD were captured as Motor Vehicle stops in OnBase , for a 0.2% margin of error for contact reporting. This margin of error means that when generalizing findings about reported contacts, percentages should be considered with a range of $\pm$ 0.2%.

Of 307 commissioned personnel reported to the researchers on January 30th, 2017, 237 had contributed data to the OnBase system. Of the 70 commissioned personnel who did not contribute data, 32 were detectives, and 7 were at the rank of major, captain, or lieutenant, for a total of 39 commissioned personnel who would not be initiating contacts with civilians that would qualify for this

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[3] See Hosmer, D.W. & Lemeshow, S. (2004). *Applied Logistic Regression (2nd Ed.)*. New York: John Wiley & Sons.

study. This leaves a remainder of 268 commissioned personnel who would make civilian contacts. Of these 268 qualifying personnel, there were 31 who were at the rank of officer, senior officer, corporal, or sergeant, who would possibly initiate civilian contacts, and who did not report data. This means that of the 268 commissioned personnel who would make civilian contacts, there were 237 who did report data for this study, for an 88.4% data reporting rate, and an officer based margin of error of 2.2%. This margin of error means that when generalizing findings about officers, percentages should be considered with a range of ± 2.2%.

City Level Analysis

Contact Characteristics

Of the 39,730 officer initiated contacts, there were 33,745 (84.9%) that were motor vehicle stops, 3,477 (8.8%) that were pedestrian stops, and 2,495 (6.3%) that were bicycle stops. There were 13 (4.9%) officers who were assigned to the Traffic Unit at various times during the study period, and they accounted for 19,202 (48.3%) of the contacts in this study. The reasons for officer initiated contacts included 415 (1%) that were from calls for service, 188 (0.5%) for civilian assistance, 97 (0.2%) for DUI, 5,192 (13.1%) for investigatory stops, 24,305 (61.2%) for hazardous moving violations, and 9,504 (23.9%) for non-hazardous moving violations. The most common result of officer initiated contacts was a verbal warning, which occurred in 18,073 (45.5%) cases, with traffic citations occurring in 18,103 (45.6%) of cases, and 3,538 (8.9%) officer initiated contacts resulting in arrest. There were 25,557 (64.3%) males, and 14,152 (35.6%) females who experience officer initiated contacts. Age group data were only collected beginning on October 1, 2015, and there are only data on 11,828 (29.8%) cases, nonetheless these 11,828 cases included 10 (0.1%) who were under that age of 15, 743 (6.3%) who were between the ages of 15 to 19, 4,007 (33.9%) who were 20 to 29, 3,051 (25.8%) who were 30 to 39, 1,928 (16.3%) who were 40 to 49, 1,737 (14.7%) who were 50 to 64, and 352 (3.0%) who were over 64 years of age. Contact results including searches, arrests, and uses of force, and details about race, are analyzed in greater depth in subsequent sections of this report.

Officer-Civilian Contacts and Outcomes

The benchmark for testing the relationship between race and contacts is the population of the City of Spokane. The racial proportions for the City of Spokane for this study come from the U.S. Census Bureau American Community Survey 2015 three-year population estimates. Spokane is a relatively homogenous city racially, with 86.7% of the population being White and 13.3% belonging to racial Minority groups. The largest racial Minority group in Spokane is Latinos, who make up 5.9% of the population. Table 1 displays proportion data and statistical analysis for officer initiated contacts and outcomes for the City of Spokane. When analyzing contacts and their outcomes, there are six hypothesis tests being conducted, resulting in a .05 / 6 = .008 probability level for statistical significance[4].

Race and Contacts

This analysis answers the research question of: How does the proportion of people of different races who experienced officer-initiated contacts compare with their racial proportions in the City of Spokane? There were 39,730 officer initiated contacts during the study period. As one can see in Table

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[4] See Keppel, G. (1991). *Design and analysis: A researcher's handbook*. Englewood Cliffs, N.J: Prentice-Hall.

1, when racial proportions of those contacted were compared with racial proportions in the City of Spokane population, African Americans, Native Americans, Middle Easterners, and Pacific Islanders were substantially overrepresented in their proportions of contacts[5], and this difference was statistically significant[6]. Specifically, African Americans, Native Americans, Middle Easterners, and Pacific Islanders made up 2.5%, 5.9%, 1.7%, 0.1%, and 0.5% of the Spokane population, and 6%, 3.2%, 2.5%, 0.7%, and 0.7% of those who experienced officer initiated contacts, respectively.

Race and Searches

This analysis answers the research question of: How does the proportion of people of different races who were searched compare with their racial proportions among those who experienced officer-initiated contacts? Of the 39,730 contacts there were 2,318 searches conducted, which was 5.8% of all contacts. The Searched action category in Table 1 displays the percent of civilians being search by their race, using the 39,730 contacts as a benchmark. As one can see in Table 1 African Americans made up 6% of contacts and 9.4% of civilians searched, and Native Americans made up 2.5% of contacts and 7.8% of searches. The observed difference between contacted and searched proportions was beyond what chance alone would predict[7], though the effect size was small[8].

This additional analysis answers the research question of: How does the proportion of people who were searched for either an officer safety frisk, or subsequent to being arrested, within their racial groups, compare with the overall proportions for these reasons among those who were searched? The Search Authority action category in Table 1 displays the percent of civilians being search by their race, using the 39,730 contacts as a benchmark.[9]. Of the 2,318 searches reported in the data there were 2,729 (84.9%) that included data about the reason for the search[10]. There were 2,252 (97.2%) of searches were post-arrest and 62 (2.7%) were officer safety frisks[11]. As one can see in Table 1 the differences in proportions of search reasons between races was not greater than what chance alone would predict, the effect size was very small[12].

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[5] Standardized residuals were 45.3, 11.6, 64.9, and 8.4 for African Americans, Native Americans, Middle Easterners, and Pacific Islanders, respectively.

[6] *Chi Square* = 7252.3, *df* = 1, *p* < .008

[7] *Chi Square* = 447.28, *df* = 6, *p* < .0008. Examining the standardized residuals revealed that differences between observed counts of contacts and the number predicted by chance were sufficiently large for African Americans (*sresid* = 7.3) and Native Americans (*sresid* = 17.5) to influence statistical significance.

[8] The *Cramer's V* coefficient was .11, indicating a small effect size. See Cohen, J. (1977). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

[9] Recall that when examining the relationship between race and the reason for a search, the appropriate benchmark is having been searched, since one would have to be searched for any of those reasons to have applied.

[10] We acknowledge that 15% missing data is problematic and the researchers will examine the electronic data collection instrument to ensure full data collection becomes implemented.

[11] There were 4 (0.2%) searches with warrant authority and the races of the civilians were 3 Whites and 1 African American.

[12] *Chi Square* = 5.32, *df* = 12, *p* = .95. The *Cramer's V* coefficient was .03, which corresponds to a very small effect size.

Table 1. Proportion data and statistical analysis for officer initiated contacts and outcomes for the City of Spokane.

Action Category	Number Category	Race							
		White	Asian	African American	Latino	Native American	Middle Eastern	Pacific Islander	
Contacted	Contacted Pct	85.0%	1.4%	**6.0%**	3.2%	**2.5%**	**0.7%**	**0.7%**	
	Population Pct	86.7%	2.9%	**2.5%**	5.9%	**1.7%**	**0.1%**	**0.5%**	
	Significance*	**< .008**							
Searched	Searched Pct	78.5%	0.3%	**9.4%**	3.0%	**7.8%**	0.3%	0.7%	
	Contacted Pct	85.0%	1.4%	**6.0%**	3.2%	**2.5%**	0.7%	1.1%	
	Std Residual	-3.7	-5.1	*7.3*	-0.6	*17.5*	-4.2	-0.1	
	Significance*	**< .008**							
	Magnitude**	.11							Overall Pct
***Search Authority	Post Arrest Pct	97.4%	100.0%	95.5%	95.6%	97.7%	100.0%	93.8%	97.2%
	Safety Frisk Pct	2.5%	0.0%	4.0%	4.4%	2.3%	0.0%	6.3%	2.7%
	Std Residual****	-0.5	-0.4	1.2	0.9	-0.3	-0.4	0.9	
	Significance*	0.95							
	Magnitude***	.03							
Arrested	Arrested Pct	78.3%	0.5%	**9.6%**	3.3%	**6.8%**	0.3%	**1.1%**	
	Contacted Pct	85.0%	1.4%	**6.0%**	3.2%	**2.5%**	0.7%	**0.7%**	
	Std Residual	-4.3	-4.6	*8.7*	0.2	*16.2*	-4.3	*2.2*	
	Significance*	**< .008**							
	Magnitude**	.11							Overall Pct
Arrest Cause	New Charge Pct	56.1%	77.8%	63.5%	59.8%	50.2%	66.7%	**81.6%**	57.0%
	Warrant Pct	43.9%	22.2%	36.5%	40.2%	49.8%	33.3%	**18.4%**	43.0%
	Std Residual*****	-0.6	1.2	1.6	0.4	-1.4	0.4	*2.0*	
	Significance*	**< .008**							
	Magnitude***	.08							
Force Used	Force Used Pct	77.9%	1.2%	10.5%	1.2%	**9.3%**	0.0%	0.0%	
	Contacted Pct	85.0%	1.4%	6.0%	3.2%	**2.5%**	0.7%	1.1%	
	Std Residual	-0.7	-0.2	1.7	-1.1	*4.0*	-1.0	-0.8	
	Significance*	**< .008**							
	Magnitude**	.02							

*Denotes statistical significance at the .05 / 6 = .008 criterion level.

**Effect Size from Cramer's V Coefficient, .10 = small, .30 = medium, .50 = large.

***There were 4 (0.2%) searches with authority from a search warrant.

****Standardized residual for Safety Frisk searches is reported.

*****Standardized residual for New Charge arrests is reported.

Race and Arrests

This analysis answers the research question of: How does the proportion of people of different races who were arrested compare with their racial proportions among those who experienced officer-initiated contacts? Of the 39,730 contacts there were 3,538 arrests made, which was 8.9% of all contacts[13]. The Arrested action category in Table 1 displays the percent of civilians being arrested by their race, using the 39,730 contacts as a benchmark. As one can see in Table 1 African Americans made up 6% of contacts and 9.6% of civilians who were arrested, Native Americans made up 2.5% of contacts and 6.8% of arrests, and Pacific Islanders made up 0.7% of contacts and 1.1% of arrests. The observed difference between contacted and arrested proportions was beyond what chance alone would predict[14], though the effect size was small[15].

Although it remains true that the study data cannot ascertain the thinking of either officers or civilians, the study data again allow us to dig deeper and examine the relationship between the reason for an arrest and the race of the civilian being arrested. This additional analysis answers the research question of: How does the proportion of people who were arrested for either an arrest warrant, or for a new charge, within their racial groups, compare with the overall proportions for these reasons among those who were arrested? The Arrested Cause action category in Table 1 displays the percent of civilians being search by their race, using the 3,538 arrests as a benchmark.[16]. There were two reasons for an arrest being made, which were for (a) a new charge or (b) an arrest warrant having been issued by a judge. Of the 3,538 arrests made there were 2,016 (57%) for a new charge and 1,522 (43%) for a warrant. As one can see in Table 1, the proportions of members of different racial groups arrested for new charges or warrants are very similar to each other and to the overall proportions for the entire group of arrestees. One group that diverged from this pattern were the Asian-Pacific Islander group, of whom 81.6% were arrested for new charges, and 18.4% were arrested for a warrant. This observed difference was beyond what chance alone[17], though the effect size was small[18]. It was also observed that among African Americans, 63.5% were arrested for a new charge, and 36.5% were arrested for a warrant, with a standardized residual of 1.6.

Race and Use of Force

This analysis answers the research question of: How does the proportion of people of different races who experienced an officer use of force compare with their racial proportions among those who experienced officer-initiated contacts? Of the 39,730 contacts there were 86 incidents involving a reportable UOF, which was 0.2% of all contacts. The Arrested action category in Table 1 displays Use of

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[13] The number of searches being lower than the number of arrests results from officers not indicating a search subsequent to 1,220 (33.4%) of arrests, on the assumption that searches were implied by arrests. The researchers left the reported data as they were, rather than altering the original data set to reflect this assumption.

[14] *Chi Square* = 439.47, *df* = 6, *p* < .0008. Examining the standardized residuals revealed that differences between observed counts of contacts and the number predicted by chance were sufficiently large for African Americans (*sresid* = 8.7), Native Americans (*sresid* = 16.2), and Pacific Islanders (*sresid* = 2,2) to influence statistical significance.

[15] The *Cramer's V* coefficient was .11, indicating a small effect size.

[16] Recall that when examining the relationship between race and the reason for an arrest, the appropriate benchmark is having been arrested, since one would have to be arrested for any of those reasons to have applied.

[17] *Chi Square* = 24.67, *df* = 6, *p* < .0008.

[18] The *Cramer's V* coefficient was .08, indicating a small effect size.

Force by race, using the 39,730 contacts as a benchmark. As one can see in Table 1, Native Americans made up 2.5% of contacts and 9.3% of the Use of Force cases, with a standardized residual of 4.0. The observed differences between racial groups in UOF cases was beyond what chance alone would predict[19], though the effect size was very small[20]. It was also observed that African Americans made up 6% of contacts and 10.5% of UOF cases, with a standardized residual of 1.7.

Neighborhood Level Analysis

The analyses in this section answer the overarching research question of: What is the relationship between civilians' race and the occurrence of and outcomes from officer-initiated contacts at the neighborhood level? In order to conduct valid analyses of contacts and outcomes at the neighborhood level, using Chi Square tests, there must be a minimum expected frequency of 5 within each group. What this means is that neighborhoods being analyzed must have a sufficient number of contacts, arrests, and uses of force to be included in these analyses. Because the City of Spokane is relatively homogenous, with small proportions of minority group members residing here, the approach taken was to apply the expected frequencies for African American and Native American neighborhood residents for contacts, arrests and searches. This was because in the city level analysis, these two racial groups were most consistently disproportionately overrepresented in contacts and outcomes, and of the overrepresented groups, they have the largest numbers of residents at both the city and neighborhood levels.

For data consistency, the neighborhoods were defined by the 31 patrol blocks that the Spokane Police Department uses in their database. Census tracts were visually matched to patrol blocks by the researchers, who then used data from the U.S. Census Bureau 2015 Community Survey 3 year estimates to calculate the proportions of neighborhood residents, which were used as neighborhood level benchmarks, and to calculate expected frequencies. Using a minimum expected frequency of 5, again a key assumption to be met before using Chi Square analysis[21], for African American and Native American residents who would experience a contact, search or arrest, 14 neighborhoods were identified for analysis of contacts, and 6 neighborhoods were identified for searches and arrests. Table 2 displays the proportion and expected frequency for contacts by race and patrol block for contacts. Similar tables will be displayed in subsequent sections of this report about searches, arrests, and uses of force.

When analyzing contacts and their outcomes, there are six hypothesis tests being conducted within each neighborhood, resulting in a .05 / 6 = .008 probability level for statistical significance. Patrol Blocks were identified by joining data from the CAD system to the OnBase data set. As stated earlier in this report, of the 39,730 contacts in the OnBase data set, 29,734 (74.8%) had incident numbers that matched one in the CAD, due to keystroke errors at the time of OnBase data entry. This results in a 0.3% margin of error for neighborhood level analyses.

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[19] *Chi Square* = 21.99, *df* = 6, *p* < .0008.

[20] The *Cramer's V* coefficient was .03, indicating a very small effect size.

[21] See Pett, M.A. (1997). *Nonparametric Statistics for Health Care Research: Statistics for Small Samples and Unusual Distributions*. Thousand Oaks, CA: Sage Publications.

Table 2. The proportion and expected frequency for contacts by race and patrol block for contacts.

Patrol Block	Number of Contacts	African American Pct	Native American Pct	African American Ef	Native American Ef
Nevada Lidgerwood	4,386	3.4%	2.1%	147	91
East Central	4,273	3.1%	0.9%	133	38
Riverside South	2,907	1.5%	1.4%	43	39
Emerson Garfield	2,818	1.4%	6.8%	40	190
Logan	2,565	3.6%	1.4%	93	35
Garry Park	1,743	3.9%	3.9%	67	68
Hillyard	1,552	2.8%	2.4%	44	37
Bemis	1,547	4.6%	3.2%	71	49
West Central	1,130	2.8%	2.5%	31	27
Lincoln Heights	905	3.0%	1.4%	27	12
Northwest	862	1.3%	1.2%	11	9
Cliff Cannon	844	1.8%	0.6%	15	5
Whitman	697	1.8%	2.3%	12	16
Minnehaha	337	3.2%	3.5%	10	11
Pct = Percent; Ef = Expected Frequency					

Race and Contacts

This analysis answers the research question of: How does the proportion of people of different races who experienced officer-initiated contacts compare with their racial proportions at the neighborhood level? Table 3 displays the percent of persons residing in, and experiencing an officer-initiated contact, within each neighborhood. The observed disproportionality between neighborhood population and officer initiated contact proportions were statistically significant in each neighborhood analyzed. As one can see in Table 3, the three most consistently racial groups who were overrepresented in contacts were African Americans, who were overrepresented in 11 (79%) of 14 neighborhoods, Native Americans, who were overrepresented in 6 (43%) of neighborhoods, and people who were Middle Easterners or Asian Indians, who were overrepresented in 9 (64%) of neighborhoods. Although some of these patterns of overrepresentation are more pervasive across neighborhoods, there is some neighborhood level variability present, which will hopefully stimulate honest and productive discussions within the police units who patrol those neighborhoods and neighborhood residents.

Race and Searches

When applying the same minimum expected frequency criterion to searches that was applied to contacts, there were 6 neighborhoods identified for analysis. Table 4 displays the proportion and expected frequency by race and patrol block for searches. Table 5 displays the percent of neighborhood residents searched by race, with standardized residuals, significance and effect size. Table 6 displays the

percent of neighborhood residents searched by reason and race, with standardized residuals, significance and effect size.

Table 3. The percent of persons residing in, and experiencing an officer-initiated contact, within each neighborhood.

Patrol Block	Percentages	Race						
		White	Asian	African American	Latino	Native American	Middle Eastern	Pacific Islander
Northwest	Contacted Pct	89.3%	*1.6%*	*4.4%*	2.4%	1.4%	0.5%	*0.3%*
	Population Pct	90.6%	*0.7%*	*1.3%*	6.3%	1.0%	0.0%	*0.1%*
Emerson Garfield	Contacted Pct	84.8%	*1.0%*	6.5%	3.1%	3.3%	*0.7%*	0.6%
	Population Pct	85.7%	*2.5%*	1.5%	3.3%	7.0%	*0.1%*	0.0%
West Central	Contacted Pct	79.2%	0.4%	*9.3%*	3.3%	*7.1%*	*0.3%*	0.4%
	Population Pct	83.5%	0.8%	*2.5%*	10.8%	*2.2%*	*0.1%*	0.0%
Nevada Lidgerwood	Contacted Pct	83.1%	2.0%	*6.9%*	3.1%	*2.6%*	*1.2%*	*1.1%*
	Population Pct	81.7%	3.4%	*3.4%*	7.7%	*2.1%*	*0.1%*	*1.8%*
Whitman	Contacted Pct	85.8%	1.3%	6.5%	2.3%	*2.7%*	0.3%	1.1%
	Population Pct	87.6%	3.2%	5.6%	3.3%	*0.3%*	0.0%	0.0%
Bemis	Contacted Pct	*84.6%*	0.9%	*6.5%*	3.6%	2.8%	*0.6%*	0.8%
	Population Pct	*81.2%*	2.9%	*4.6%*	8.0%	3.2%	*0.1%*	0.0%
Hillyard	Contacted Pct	88.6%	0.7%	*4.5%*	3.2%	1.1%	*1.4%*	*0.5%*
	Population Pct	85.7%	3.0%	*2.8%*	4.9%	2.3%	*0.1%*	*1.2%*
Logan	Contacted Pct	*82.2%*	2.4%	*6.7%*	3.6%	*2.3%*	*1.8%*	1.0%
	Population Pct	*79.6%*	2.4%	*3.4%*	12.2%	*1.3%*	*0.1%*	1.0%
Minnehaha	Contacted Pct	88.1%	*1.2%*	4.2%	3.3%	1.5%	0.3%	1.5%
	Population Pct	90.8%	*0.3%*	3.1%	2.4%	3.4%	0.0%	0.0%
East Central	Contacted Pct	82.5%	1.3%	*7.9%*	4.2%	*2.0%*	*1.3%*	0.7%
	Population Pct	82.7%	3.8%	*3.1%*	8.8%	*0.9%*	*0.1%*	0.6%
Garry Park	Contacted Pct	*86.5%*	1.2%	*6.1%*	3.0%	1.4%	*0.7%*	1.1%
	Population Pct	*78.4%*	7.0%	*3.8%*	6.8%	3.9%	*0.1%*	0.0%
Lincoln Heights	Contacted Pct	85.5%	2.3%	*6.4%*	3.1%	0.9%	1.5%	0.2%
	Population Pct	86.2%	4.1%	*3.0%*	5.4%	1.3%	0.0%	0.0%
Cliff Cannon	Contacted Pct	87.8%	1.0%	*4.9%*	2.1%	2.6%	1.1%	0.6%
	Population Pct	88.5%	3.3%	*1.8%*	5.7%	0.6%	0.0%	0.0%
Riverside South	Contacted Pct	82.0%	1.3%	*7.0%*	3.4%	*4.4%*	*1.5%*	0.4%
	Population Pct	90.8%	1.0%	*1.5%*	5.3%	*1.3%*	*0.1%*	0.0%
All overall differences between percents contacted and resideing in the patrol block population were significant.								
Paired percentages in bold indicate a substantial overrepresentation in contacts, based on standardized residuals.								

This analysis answers the research question of: How does the proportion of people of different races who were searched compare with their racial proportions among those who experienced officer-initiated contacts at the neighborhood level? As one can see in Table 5, Native Americans were disproportionately searched in five of the six patrol blocks, based on standardized residuals, and this disproportionality was statistically significant in four of these five neighborhoods. The standardized residuals for Native Americans being searched in the Bemis, Emerson Garfield, Logan, Nevada Lidgerwood, and Riverside South patrol blocks were 3.3, 4.9, 5.0, 7.8, and 3.2, respectively. African

Americans were disproportionally overrepresented in searches in the Nevada Lidgerwood and Riverside South patrol blocks, with standardized residuals of 2.3 and 3.2, respectively.

Table 4. The proportion and expected frequency for race and patrol block for searches.

Patrol Block	Number of Searches	African American Pct	Native American Pct	African American Ef	Native American Ef
Bemis	110	4.6%	3.2%	5	4
East Central	278	3.1%	0.9%	9	2
Emerson Garfield	171	1.4%	6.8%	2	12
Logan	153	3.6%	1.4%	6	2
Nevada Lidgerwood	284	3.4%	2.1%	10	6
Riverside South	435	1.5%	1.4%	7	6
Pct = Percent; Ef = Expected Frequency					

Table 5. The percent of neighborhood residents searched by race, with standardized residuals, significance and effect size.

Patrol Block	Percentages	Race						
		White	Asian	African American	Latino	Native American	Middle Eastern	Pacific Islander
Bemis	Searched Pct	78.2%	0.9%	4.5%	5.5%	8.2%	0.9%	1.8%
	Contacted Pct	84.6%	0.9%	6.5%	3.6%	2.8%	0.6%	0.8%
	Std Residual	-0.7	0.0	-0.8	1.0	**3.3**	0.3	1.1
	Significance	.02						
	Effect Size**	.10						
East Central	Searched Pct	83.1%	0.4%	9.0%	3.2%	3.6%	0.0%	0.7%
	Contacted Pct	82.5%	1.3%	7.9%	4.2%	2.0%	1.3%	0.7%
	Std Residual	0.1	-1.3	0.6	-0.8	1.9	-1.9	-0.1
	Significance	.09						
	Effect Size**	.05						

Table 5 - CONTINUED. The percent of neighborhood residents searched by race, with standardized residuals, significance and effect size.

Patrol Block	Percentages	Race						
		White	Asian	African American	Latino	Native American	Middle Eastern	Pacific Islander
Emerson Garfield	Searched Pct	74.3%	0.0%	9.4%	5.3%	9.9%	0.0%	1.2%
	Contacted Pct	84.8%	1.0%	6.5%	3.1%	3.3%	0.7%	0.6%
	Std Residual	-1.5	-1.3	1.4	1.6	**4.9**	-1.1	1.0
	Significance	*<.008*						
	Effect Size**	.12						
Logan	Searched Pct	77.8%	0.7%	9.2%	3.9%	8.5%	0.0%	0.0%
	Contacted Pct	82.2%	2.4%	6.7%	3.6%	2.3%	1.8%	1.0%
	Std Residual	-0.6	-1.4	1.2	0.2	**5.0**	-1.7	-1.2
	Significance	*<.008*						
	Effect Size**	.12						
Nevada Lidgerwood	Searched Pct	74.3%	0.4%	10.9%	1.8%	10.2%	1.1%	1.4%
	Contacted Pct	83.1%	2.0%	6.9%	3.1%	2.6%	1.2%	1.1%
	Std Residual	-1.6	-2.0	**2.6**	-1.3	**7.8**	-0.2	0.5
	Significance	*<.008*						
	Effect Size**	.14						
Riverside South	Searched Pct	80.2%	0.2%	9.9%	1.4%	7.6%	0.5%	0.2%
	Contacted Pct	82.0%	1.3%	7.0%	3.4%	4.4%	1.5%	0.4%
	Std Residual	-0.4	-1.9	**2.3**	-2.3	**3.2**	-1.7	-0.7
	Significance	*<.008*						
	Effect Size**	.11						
*Denotes statistical significance at the .05 / 6 = .008 criterion level.								
**Effect Size from Cramer's V Coefficient, .10 = small, .30 = medium, .50 = large.								
Standardized residuals in bold indicate a substantial overrepresentation in searches.								

This additional analysis answers the research question of: How does the proportion of people who were searched for either an officer safety frisk, or subsequent to being arrested, within their racial

groups, compare with the overall proportions for these reasons among those who were searched at the neighborhood level? Table 6 displays the percent of civilians being search by reason and race by neighborhood, using the number of civilians searched within each neighborhood as a benchmark[22]. As one can see in Table 6, across the overwhelming majority of the neighborhood, the relationship between race and the reason for being searched was not statistically significant. It was observed that in the Nevada Lidgerwood neighborhood, 8.3% of African Americans searched for an officer safety frisk, and the overall percentage of safety frisks in that neighborhood was 1.7%, for a standardized residual of 2.5. Otherwise, the relationship between race and reason for searches at the neighborhood level is very similar to what was found at the level of the city as a whole.

Race and Arrests

When applying the same minimum expected frequency criterion to arrests that was applied to contacts and searches, there were 6 neighborhoods identified for analysis. Table 7 displays the proportion and expected frequency by race and patrol block for searches. Table 8 displays the percent of neighborhood residents arrested by race, with standardized residuals, significance and effect size. Table 9 displays the percent of neighborhood residents arrested by reason and race, with standardized residuals, significance and effect size.

This analysis answers the research question of: How does the proportion of people of different races who were arrested compare with their racial proportions among those who experienced officer-initiated contacts at the neighborhood level? As one can see in Table 8, Native Americans were disproportionately arrested in four of the six patrol blocks, based on standardized residuals, and this disproportionality was statistically significant in three of these four neighborhoods. The standardized residuals for Native Americans being searched in the Emerson Garfield, Logan, Nevada Lidgerwood, and Riverside South patrol blocks were 3.9, 3.7, 7.4, and 3.4, respectively. African Americans were disproportionately arrested in two of the six patrol blocks, based on standardized residuals, and this disproportionality was statistically significant in both of these neighborhoods. The standardized residuals for African Americans being searched in the East Central and Emerson Garfield patrol blocks were 2.9 and 2.4, respectively.

This additional analysis answers the research question of: How does the proportion of people who were arrested for either an arrest warrant, or for a new charge, within their racial groups, compare with the overall proportions for these reasons among those who were arrested at the neighborhood level? As one can see in Table 9, there were no statistically significant relationships between race and reason for arrest at the neighborhood level. Although there were some effect sizes that were between small and medium, one should bear in mind that these are still small, and that the relationship between race and reason for arrest, observed at the neighborhood level, was not beyond what random chance alone predicts[23].

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[22] Recall that when examining the relationship between race and the reason for a search, the appropriate benchmark is having been searched, since one would have to be searched for any of those reasons to have applied.

[23] Although there was a relationship detected at the city level between being a Pacific Islander and being arrested for a new charge, readers should recall from Table 1 that although the relationship was not statistically significant, and the effect size was .08, which is a small effect size, so finding no significant effect at the neighborhood level is not surprising.

Table 6. The percent of civilians being search by reason and race by neighborhood.

Patrol Block	Percentages	Overall	Race						
			White	Asian	African American	Latino	Native American	Middle Eastern	Pacific Islander
Bemis	Post Arrest Pct	98.9%	98.6%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Safety Frisk Pct	1.1%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Std Residual		0.2	0.0	-0.2	-0.2	-0.2	-0.1	-0.1
	Significance		0.99						
	Effect Size**		.05						
East Central****	Post Arrest Pct	96.0%	95.8%	100.0%	94.4%	100.0%	100.0%	0.0%	100.0%
	Safety Frisk Pct	3.5%	3.7%	5.6%	0.0%	0.0%	0.0%	0.0%	0.0%
	Std Residual**		0.1	-0.2	0.5	-0.5	-0.5	0.0	-0.2
	Significance		0.99						
	Effect Size**		.05						
Emerson Garfield	Post Arrest Pct	93.2%	92.6%	0.0%	92.9%	87.5%	100.0%	0.0%	100.0%
	Safety Frisk Pct	6.8%	7.4%	0.0%	7.1%	12.5%	0.0%	0.0%	0.0%
	Std Residual		0.2	0.0	0.0	0.6	-1.0	0.0	-0.4
	Significance		0.80						
	Effect Size**		0.11						
Logan	Post Arrest Pct	97.6%	96.8%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%
	Safety Frisk Pct	2.4%	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Std Residual		0.4	-0.2	-0.6	-0.3	-0.5	0.0	0.0
	Significance		0.92						
	Effect Size**		0.09						
Nevada Lidgerwood	Post Arrest Pct	98.3%	99.4%	0.0%	91.7%	100.0%	96.0%	100.0%	100.0%
	Safety Frisk Pct	1.7%	0.6%	0.0%	8.3%	0.0%	4.0%	0.0%	0.0%
	Std Residual		-1.2	0.0	**2.5**	-0.3	0.9	-0.2	-0.3
	Significance		0.13						
	Effect Size**		0.19						
Riverside South	Post Arrest Pct	98.5%	98.4%	100.0%	97.4%	100.0%	100.0%	100.0%	100.0%
	Safety Frisk Pct	1.5%	1.6%	0.0%	2.6%	0.0%	0.0%	0.0%	0.0%
	Std Residual		0.1	-0.1	0.5	-0.3	-0.7	-0.1	-0.1
	Significance		0.99						
	Effect Size**		.05						

*Denotes statistical significance at the .05 / 6 = .008 criterion level.

**Standardized residuals for officer safety frisks are reported.

***Effect Size from Cramer's V Coefficient, .10 = small, .30 = medium, .50 = large.

****In the East Central patrol block there was one search authorized by a warrant, and all other searches across all patrol blocks were otherwise post arrest or officer safety frisks.

Table 7. The proportion and expected frequency for race and patrol block for arrests.

Patrol Block	Number of Arrests	African American Pct	Native American Pct	African American Ef	Native American Ef
Bemis	164	4.6%	3.2%	8	5
East Central	421	3.1%	0.9%	13	4
Emerson Garfield	193	1.4%	6.8%	3	13
Logan	233	3.6%	1.4%	8	3
Nevada Lidgerwood	352	3.4%	2.1%	12	7
Riverside South	554	1.5%	1.4%	8	8
Pct = Percent; Ef = Expected Frequency					

Table 8. The percent of neighborhood residents arrested by race, with standardized residuals, significance and effect size.

Patrol Block	Percentages	Race						
		White	Asian	African American	Latino	Native American	Middle Eastern	Pacific Islander
Bemis	Arrested Pct	78.7%	0.6%	13.9%	4.9%	5.5%	0.6%	1.2%
	Contacted Pct	84.6%	0.9%	6.5%	3.6%	2.8%	0.6%	0.8%
	Std Residual	-0.8	-0.4	1.0	0.8	2.0	-0.1	0.5
	Significance	.26						
	Magnitude**	.07						
East Central	Arrested Pct	79.1%	1.0%	11.9%	4.0%	3.3%	0.0%	0.7%
	Contacted Pct	82.5%	1.3%	7.9%	4.2%	2.0%	1.3%	0.7%
	Std Residual	-0.8	-0.6	*2.9*	-0.2	1.9	-2.4	-0.1
	Significance	*<.008**						
	Magnitude**	.07						
Emerson Garfield	Arrested Pct	73.1%	0.5%	11.4%	4.7%	8.3%	1.0%	1.6%
	Contacted Pct	84.8%	1.0%	6.5%	3.1%	3.3%	0.7%	0.6%
	Std Residual	-1.8	-0.7	*2.4*	1.3	*3.9*	0.5	1.8
	Significance	*<.008**						
	Magnitude**	.11						
Logan	Arrested Pct	79.0%	1.7%	6.9%	3.9%	6.0%	0.9%	1.7%
	Contacted Pct	82.2%	2.4%	6.7%	3.6%	2.3%	1.8%	1.0%
	Std Residual	-0.5	-0.7	0.1	0.2	*3.7*	-1.1	1.1
	Significance	.005						
	Magnitude**	.09						

Table 8 - CONTINUED. The percent of neighborhood residents arrested by race, with standardized residuals, significance and effect size.

Patrol Block	Percentages	Race						
		White	Asian	African American	Latino	Native American	Middle Eastern	Pacific Islander
Nevada Lidgerwood	Arrested Pct	74.4%	0.3%	11.1%	2.3%	9.1%	0.9%	2.0%
	Contacted Pct	83.1%	2.0%	6.9%	3.1%	2.6%	1.2%	1.1%
	Std Residual	-1.8	-2.3	*3.0*	-0.9	*7.4*	-0.5	1.6
	Significance	*<.008**						
	Magnitude**	.14						
Riverside South	Arrested Pct	80.1%	0.2%	8.8%	2.2%	7.4%	0.4%	0.9%
	Contacted Pct	82.0%	1.3%	7.0%	3.4%	4.4%	1.5%	0.4%
	Std Residual	-0.5	-2.3	1.7	-1.6	*3.4*	-2.2	1.6
	Significance	*<.008**						
	Magnitude**	.11						
*Denotes statistical significance at the .05 / 6 = .008 criterion level.								
**Effect Size from Cramer's V Coefficient, .10 = small, .30 = medium, .50 = large.								
Standardized residuals in bold indicate a substantial overrepresentation in arrests.								

Table 9. The percent of civilians being arrested by reason and race by neighborhood.

Patrol Block	Percentages	Overall	Race						
			White	Asian	African American	Latino	Native American	Middle Eastern	Pacific Islander
Bemis	New Charge Pct	59.8%	59.7%	0.0%	71.4%	50.0%	55.6%	0.0%	100.0%
	Warrant Pct	40.2%	40.3%	100.0%	28.6%	50.0%	44.4%	100.0%	0.0%
	Std Residual		0.0	-0.8	0.6	-0.4	-0.2	-0.8	0.7
	Significance		0.48						
	Magnitude***		.18						
East Central	New Charge Pct	64.1%	74.1%	75.0%	76.0%	88.2%	78.6%	0.0%	100.0%
	Warrant Pct	35.9%	39.9%	25.0%	24.0%	11.8%	21.4%	0.0%	0.0%
	Std Residual**		-0.9	0.3	1.0	1.2	0.7	0.8	-1.0
	Significance		0.02						
	Magnitude***		.18						
Emerson Garfield	New Charge Pct	56.0%	56.7%	100.0%	61.9%	33.3%	43.8%	100.0%	66.7%
	Warrant Pct	44.0%	43.3%	0.0%	38.1%	66.7%	56.3%	0.0%	33.3%
	Std Residual		0.1	0.6	0.4	-0.9	-0.7	0.8	0.2
	Significance		0.46						
	Magnitude***		0.17						

Table 9 - CONTINUED. The percent of civilians being arrested by reason and race by neighborhood.

Patrol Block	Percentages	Overall	Race						
			White	Asian	African American	Latino	Native American	Middle Eastern	Pacific Islander
Logan	New Charge Pct	66.5%	68.5%	100.0%	43.8%	66.7%	50.0%	100.0%	75.0%
	Warrant Pct	33.5%	31.5%	0.0%	56.3%	33.3%	50.0%	0.0%	25.0%
	Std Residual		0.3	0.8	-1.1	0.0	-0.8	0.6	0.2
	Significance		0.18						
	Magnitude***		0.20						
Nevada Lidgerwood	New Charge Pct	64.8%	63.4%	100.0%	76.9%	75.0%	59.4%	33.3%	71.4%
	Warrant Pct	35.2%	36.6%	0.0%	23.1%	25.0%	40.6%	66.7%	28.6%
	Std Residual		-0.3	0.4	0.9	0.4	-0.4	-0.7	0.2
	Significance		0.48						
	Magnitude***		0.13						
Riverside South	New Charge Pct	48.2%	48.9%	100.0%	44.9%	58.3%	36.6%	50.0%	80.0%
	Warrant Pct	51.8%	51.1%	0.0%	55.1%	41.7%	63.4%	50.0%	20.0%
	Std Residual		0.2	0.7	-0.3	0.5	-1.1	0.0	1.0
	Significance		0.41						
	Magnitude***		.10						

*Denotes statistical significance at the .05 / 6 = .008 criterion level.

**Standardized residuals for officer new charges are reported.

***Effect Size from Cramer's V Coefficient, .10 = small, .30 = medium, .50 = large.

Race and Use of Force

This analysis answers the research question of: How does the proportion of people of different races who experienced an officer use of force compare with their racial proportions among those who experienced officer-initiated contacts at the neighborhood level? When applying the same minimum expected frequency criterion[24] that was applied to all other neighborhood level analyses, it becomes clear that there were no neighborhoods with a sufficient expected frequency of African American or Native American residents who would experience a use of force incident with the police. Rather than engage in an analysis that would yield possibly inaccurate results, it is more accurate to discuss police use of force at the city-wide level of analysis. Table 10 displays the number of use of force incidents, and African American and Native American proportion of residents and expected frequencies, for the Riverside South and Nevada Lidgerwood neighborhoods, which were the two highest frequency neighborhoods for use of force. As one can see in table 10, the data clearly support the decision to not proceed with further probability analysis, with expected frequencies being less than one-tenth of the minimum required for analysis.

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[24] See Pett, 1997.

Table 10. The number of use of force incidents, and African American and Native American proportion of residents and expected frequencies, for the Riverside South and Nevada Lidgerwood neighborhoods.

Patrol Block	Number of Force Incidents	African American Pct	Native American Pct	African American Ef	Native American Ef
Riverside South	15	1.5%	1.4%	0.2	0.2
Nevada Lidgerwood	10	3.4%	2.1%	0.3	0.2
Pct = Percent; Ef = Expected Frequency					

Multivariate Analysis

Although the bivariate probability analyses, with accompanying data about effect sizes and standardized residuals, inform the discussion of race and police-civilian contacts in a precise way, and are indeed useful, such issues are often more complicated than the relationship between two variables. Multivariate analyses can contribute to a more contextual understanding of quantitative data, and the contribution of several variables to an outcome. For this reason the U.S. Department of Justice is recommending that multivariate analyses be an integral part of studies on disproportionality and policing[25]. The approach that is used for this report is Binary Logistic Regression, which examines the relative contribution of multiple variables in predicting a single, dichotomous outcome[26]. The multivariate analyses in this study answer the overarching research question of: What is the relationship between neighborhood characteristics, contact characteristics, officers' race, and civilians' gender and race, and the outcomes of officer-initiated contacts?

Analysis Sample

To conduct the Logistic Regression analyses, data had to be joined between the OnBase primary study data, the CAD data, and SPD data about officer demographics. Recall that there were 29,734 (74.8%) contacts within the OnBase data that could be clearly matched, by incident number, to the CAD data. Additionally, there were 1,589 (4.0%) contacts that could not be clearly matched to officers based on employee badge number. The Logistic Regression analyses are proceeding based on the 28,145 (70.8%) cases that have complete data from the three sources. Both the incident and employee badge numbers that could not be matched were apparently due to keystroke errors, and attempting to retroactively correct these errors would be too speculative of an approach to these data. Fortunately, the number of available cases allows the analysis sample to be representative with a 0.3% margin of error[27].

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[25] McMahon, J., Garner, J., Davis, R., & Kraus, A. (2002) *How to Correctly Collect and Analyze Racial Profiling Data: Your Reputation Depends On It!, Final Project Report for Racial Profiling Data Collection and Analysis*. Washington, DC: Government Printing Office.

[26] Hosmer, D.W. & Lemeshow, S. (2004). *Applied Logistic Regression (2nd Ed.)*. New York: John Wiley & Sons.

[27] Based on a sample of 28,145 from a population of 29,734 contacts, assuming a 50% probably of a correct response because of dichotomous outcome, and a 95% confidence interval.

Variables

In Logistic Regression variables are grouped into three categories, which are criterion and predictor variables, and covariates. Criterion variables are the outcomes of interest, in this study the criterion variables were whether or not a civilian who was stopped was subsequently searched, arrested or experienced a use of force incident[28]. There were a total of 6 Logistic Regression analyses conducted in this study, one for each different criterion variable, with predictors variables being the race of the civilian involved in the contact, and the racial groups included in each analysis were based on their being overrepresented for the criterion variable in the initial city level analysis, so the racial groups included were African American, Native Americans, and Pacific Islanders. Covariates are variables that are related to both the criterion and predictor variables, and are included in the analysis to gain a more precise understanding of the complex relationship between the predictor variables, covariates and criterion variables.

Criterion Variables

The criterion variables[29], their definitions, and their prevalence in the analysis sample are as follows:

Searched – A contact was classified as having a search occur if a search for any reason was reported in the OnBase primary data set. Of the 28,145 contacts in the analysis sample, there were 1,951 (6.9%) searches conducted;

Arrested[30] – A contact was classified as having an arrest occur if an arrest for any reason was reported in the OnBase primary data set. Of the 28,145 contacts in the analysis sample, there were 2,607 (9.3%) arrests made;

Use of Force – A contact was classified as being use of force incident if any use of force was reported in the OnBase primary data set. Of the 28,145 contacts in the analysis sample, there were 62 (0.2%) use of force incidents.

Predictor Variables

The predictor variables, their definitions, and their prevalence in the analysis sample are as follows:

African American Civilian – A contact was classified as involving an African American civilian if their race was reported as African American in the OnBase primary data set. Of the 28,145 contacts in the analysis sample, there were 1,801 (6.4%) that involved African American civilians;

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[28] Being initially contacted by a police officer could not be analyzed with this method, since no predictor or covariate data were present for the population of Spokane residents who did not experience a law enforcement contact.

[29] All of the criterion and predictor variables, and covariates, are coded as 1 if it is true for the case, and 0 if not.

[30] Arrested was also used as a covariate in the analysis with use of force as the criterion variable. Searches and arrests were not used as interchanging covariates in their respective analyses, because there was too much overlap between them, and they therefore would have made the analyses invalid had they been included.

Native American Civilian – A contact was classified as involving a Native American civilian if their race was reported as Native American in the OnBase primary data set. Of the 28,145 contacts in the analysis sample, there were 706 (2.5%) that involved Native American civilians;

Pacific Islander Civilian – A contact was classified as involving a Pacific Islander civilian if their race was reported as Pacific Islander in the OnBase primary data set. Of the 28,145 contacts in the analysis sample, there were 193 (0.7%) that involved Pacific Islander civilians.

Covariates

The covariates, their definitions, and their prevalence in the analysis sample are as follows:

High Index Crime Neighborhood - This covariate focuses on neighborhood crime, and was computed using SPD Uniform Crime Report (UCR) data, for the entire study period, for attempted and completed reported index crimes against persons or property. Once the index crime counts were calculated for each SPD patrol block[31], the patrol blocks were ranked by total number of index crimes, and those that were in the top 25% (the 75th percentile) were coded as 1, with all other patrol blocks coded as zero. Of the 28,145 contacts in the analysis sample, there were 15,221 (54.1%) that occurred in a high index crime neighborhood;

> African American Neighborhood – This covariate focuses on neighborhood racial composition, and was computed using U.S. Census Bureau 2015 American Community Survey data at the level of Spokane census tracts. Using SPD patrol block and Census Bureau tract maps, the researchers visually identified which census tracts were located within each patrol block, counted the frequency of African American residents, and divided that by the total neighborhood population, to arrive at the percent of African American residents there were in each patrol block. The patrol blocks were ranked by their percent of African American residents, and those that were in the top 25% (the 75th percentile) were coded as 1, with all other patrol blocks coded as zero. Of the 28,145 contacts in the analysis sample, there were 6,277 (22.3%) that occurred in a 75th percentile African American neighborhood;

> Native American Neighborhood – This covariate also focuses on neighborhood racial composition, and was also computed using U.S. Census Bureau 2015 American Community Survey data at the level of Spokane census tracts. Patrol blocks were ranked by their percent of Native American residents, and those that were in the top 25% (the 75th percentile) were coded as 1, with all other patrol blocks coded as zero. Of the 28,145 contacts in the analysis sample, there were 9,401 (33.4%) that occurred in a 75th percentile Native American neighborhood;

> Pacific Islander Neighborhood – This covariate also focuses on neighborhood racial composition, and was also computed using U.S. Census Bureau 2015 American Community Survey data at the level of Spokane census tracts. Patrol blocks were ranked by their percent of Pacific Islander residents, and those that were in the top 25% (the 75th percentile) were coded as 1, with all other patrol blocks coded as zero. Of the 28,145 contacts in the analysis sample, there were 13,179 (46.8%) that occurred in a 75th percentile Pacific Islander neighborhood;

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[31] Patrol blocks were the best available definition for neighborhoods within the data sets that were used in this study.

White Law Enforcement Officer – A contact was classified as involving a White officer if their race was reported as white in the SPD personnel database. Of the 28,145 contacts in the analysis sample, there were 25,561 (90.8%) that involved White officers;

Investigatory Contact – A contact was classified as being an investigatory contact if the contact reason was reported as investigatory contact in the OnBase primary data set. Of the 28,145 contacts in the analysis sample, there were 3,675 (13.1%) that were investigatory contacts;

Hazardous Moving Violation Contact – A contact was classified as being a hazardous moving violation contact if the contact reason was reported as hazardous moving violation in the OnBase primary data set. Of the 28,145 contacts in the analysis sample, there were 16,979 (60.3%) that were for hazardous moving violations;

Non-hazardous Moving Violation Contact – A contact was classified as being a non-hazardous moving violation contact if the contact reason was reported as non-hazardous moving violation in the OnBase primary data set. Of the 28,145 contacts in the analysis sample, there were 7007 (24.9%) that were for non-hazardous moving violations[32];

Male Civilian – A contact was classified as involving a male civilian if their gender was reported as male in the OnBase primary data set. Of the 28,145 contacts in the analysis sample, there were 18,347 (65.2%) that involved male civilians.

Results

Searches

Two Logistic Regression Models were computed to answer the research question of: What is the relationship between neighborhood, officer race, contact reason, and civilian gender and race when the outcome is a search, and the civilians' race is African American or Native American? In these two models the criterion variable was a search occurring, the predictor was either African American or Native American civilian's race, and the covariates were consistent across both models, with only African American and Native American neighborhoods varying. Figure 1 displays the Logistic Regression model used for analyzing searches. When examining the following six results tables, recall that when an odds ratio is greater than 1, it means the likelihood of the criterion variable occurring is greater, and when it is less than 1, it means the likelihood is less. The decimals in an odds ratio can be converted into percentages for interpreting changes in likelihood as more or less likely, and that approach is taken in reporting these analyses in text[33]. In the tables p is the probability that the observed relationship

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[32] Investigatory, hazardous moving violations, and non-hazardous moving violations, combined, accounted for 98.3% of all contact reasons, so the other contact reasons, for example civilian assistance, were not included in these analyses.

[33] For an odds ratio > 1, subtract 1 from the odds ratio and multiply the remainder by 100, and this product is the percent of increase in likelihood that the criterion variable will occur. For an odds ration < 1, subtract the odds ratio from 1 and multiply the remainder by 100, and this product is the percent of decrease in likelihood that the criterion variable will occur. See Hosmer & Lemeshow (2004).

between the predictor or covariate and the criterion variable is by chance alone, with < .05 being statistically significant, and n.s. meaning not significant, or > .05[34].

Searches and African American Race

In this analysis the criterion variable was the occurrence of a search, the predictor variable was African American Civilian, the neighborhood race covariate was > African American Neighborhood, and the other covariates defined in the previous section were included. Table 11 displays the Logistic Regression results analyzing searches and African American race[35].

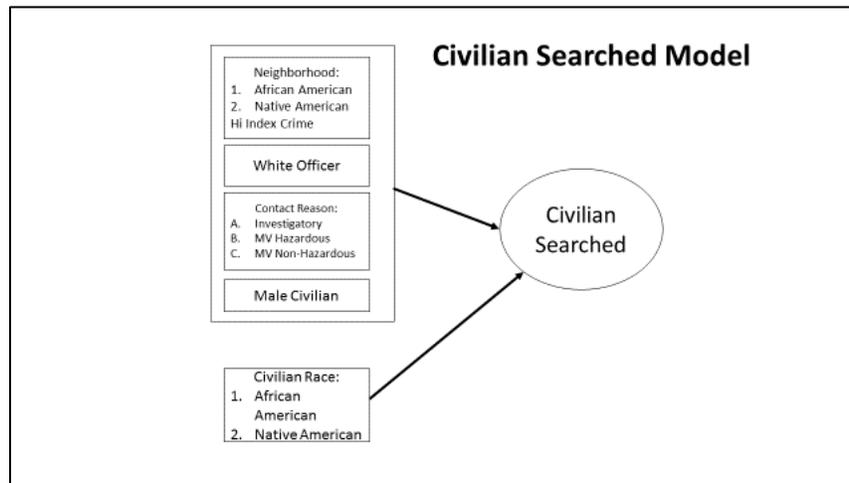**Figure 1.** The Logistic Regression model used for analyzing searches.

Table 11. Logistic Regression results analyzing searches and African American race.

Variable	Beta	Wald Chi Square	p	Odds Ratio
> African American Neighborhood	0.09	0.7	n.s.	1.10
High Index Crime Neighborhood	0.51	36.6	**< .05**	**1.66**
White Law Enforcement Officer	-0.53	20.4	**< .05**	**0.59**
Investigatory Contact	-0.67	38.1	**< .05**	**0.51**
Hazardous Moving Violation Contact	-20.41	0.0	n.s.	0.00
Non-hazardous Moving Violation Contact	-20.58	0.0	n.s.	0.00
Male Civilian	1.27	116.5	**< .05**	**3.56**
African American Civilian	0.37	8.7	**< .05**	**1.45**

As on can see in Table 11, there were three variables that significantly increased the likelihood of a civilian being searched, including: (1) The contact occurring in a higher index crime neighborhood,

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[34] In multivariate analysis the probability is not adjusted for a number of hypothesis test, since the hypothesis testing all occurs within a single analysis. See Hosmer & Lemeshow (2004).

[35] For the statistically curious, this regression model was an adequate model: (A) This model significantly improved classification, decreasing selectivity by 0.1% for a gain in sensitivity of 5.3%, with an overall classification gain of 0.1%; (B) this model explained 53.8% of the variance in searches; (C) Although this model departed from an ideally fitting model, it did so minimally, with inconsistent classification at higher probabilities of a search occurring. There were 991 (3.5%) cases filtered from the final model as multivariate outliers.

which increased the likelihood of a search by 66%; (2) The civilian being a male, which increased the likelihood by 256%; and (3) The civilian being African American, which increased the likelihood by 45%. There were two variables that significantly decreased the likelihood of a civilian being searched, including: (1) The contacting police officer being White, which decreased the likelihood of a search by 41%; and (2) The contact being initiated for an investigatory purpose, which decreased the likelihood by 49%. The accurate way to understand the relationship between an investigatory contact and a search is within the context of the other two contact reasons, which are motor vehicle moving violations, and which almost completely eliminate the likelihood of a search occurring. In this context, a contact being initiated for an investigatory purpose can be considered the contact reason, of the three most frequent reasons, with the greatest likelihood of a search occurring.

Searches and Native American Race

In this analysis the criterion variable was the occurrence of a search, the predictor variable was Native American Civilian, the neighborhood race covariate was > Native American Neighborhood, and the other covariates defined in the previous section were included. Table 12 displays the Logistic Regression results analyzing searches and Native American race[36].

Table 12. Logistic Regression results analyzing searches and Native American race.

| Variable	Beta	Wald Chi Square	p	Odds Ratio
> Native American Neighborhood	0.37	18.9	**< .05**	**1.44**
High Index Crime Neighborhood	0.54	41.7	**< .05**	**1.72**
White Law Enforcement Officer	-0.44	13.6	**< .05**	**0.65**
Investigatory Contact	-0.64	33.4	**< .05**	**0.53**
Hazardous Moving Violation Contact	-20.39	0.0	n.s.	0.00
Non-hazardous Moving Violation Contact	-20.57	0.0	n.s.	0.00
Male Civilian	1.26	118.8	**< .05**	**3.51**
Native American Civilian	0.71	23.0	**< .05**	**2.03**

As on can see in Table 12, there were four variables that significantly increased the likelihood of a civilian being searched, including: (1) The contact occurring in a neighborhood with a relatively higher Native American population, which increased the likelihood of a search by 44%; (2) The contact occurring in a higher index crime neighborhood, which increased the likelihood by 72%; (3) The civilian being a male, which increased the likelihood by 251%; and (4) The civilian being Native American, which increased the likelihood by 103%. There were two variables that significantly decreased the likelihood of a civilian being searched, including: (1) The contacting police officer being White, which decreased the likelihood of a search by 35%; and (2) The contact being initiated for an investigatory purpose, which decreased the likelihood by 47%.

Arrests

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[36] This regression model was a strong model: (A) This model significantly improved classification, decreasing selectivity by 0.2% for a gain in sensitivity of 6.1 %, with an overall classification gain of 0.1%; (B) this model explained 54% of the variance in searches; (C) This model did not depart from an ideally fitting model. There were 984 (3.5%) cases filtered from the final model as multivariate outliers.

Three Logistic Regression Models were computed to answer the research question of: What is the relationship between neighborhood, officer race, contact reason, and civilian gender and race when the outcome is an arrest, and the civilians' race is African American, Native American, or Pacific Islander? In these three models the criterion variable was an arrest occurring, the predictor was African American, Native American, or Pacific Islander civilian's race, and the covariates were consistent across both models, with only African American, Native American, and Pacific Islander neighborhoods varying. Figure 2 displays the Logistic Regression model used for analyzing arrests.

Figure 2. The Logistic Regression model used for analyzing arrests.
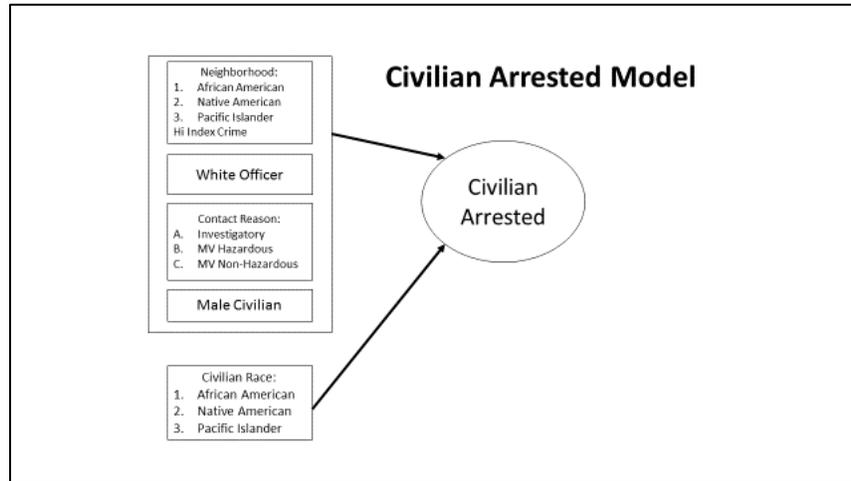
Arrests and African American Race

In this analysis the criterion variable was the occurrence of an arrest, the predictor variable was African American Civilian, the neighborhood race covariate was > African American Neighborhood, and the other covariates defined in the previous section were included. Table 13 displays the Logistic Regression results analyzing arrests and African American race[37].

Table 13. Logistic Regression results analyzing arrests and African American race.

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[37] This regression model was a strong model: (A) This model significantly improved classification, with a decrease in selectivity of 0.1%, for a gain in sensitivity of 0.8%, with an overall classification gain of 0.01%; (B) this model explained 53.9% of the variance in arrests; (C) This model did not depart from an ideally fitting model. There were 1,309 (4.6%) cases filtered from the final model as multivariate outliers.

Variable	Beta	Wald Chi Square	p	Odds Ratio
> African American Neighborhood	-0.06	0.4	n.s.	0.94
High Index Crime Neighborhood	0.29	15.8	**< .05**	**1.33**
White Law Enforcement Officer	-0.43	16.5	**< .05**	**0.65**
Investigatory Contact	-0.20	3.8	**< .05**	**0.82**
Hazardous Moving Violation Contact	-20.50	0.0	n.s.	0.00
Non-hazardous Moving Violation Contact	-5.39	382.5	**< .05**	**0.005**
Male Civilian	0.10	1.7	n.s.	1.11
African American Civilian	0.40	11.9	**< .05**	**1.49**

As on can see in Table 13, there were two variables that significantly increased the likelihood of a civilian being arrested, including: (1) The contact occurring in a higher index crime neighborhood, which increased the likelihood by 33%; and (2) The civilian being African American, which increased the likelihood by 49%. There were three variables that significantly decreased the likelihood of a civilian being searched, including: (1) The contacting police officer being White, which decreased the likelihood of a search by 35%; (2) The contact being initiated for an investigatory purpose, which decreased the likelihood by 18%; and (3) The contact being initiated for a non-hazardous moving violation, which decreased the likelihood by 99.5%.

Arrests and Native American Race

In this analysis the criterion variable was the occurrence of an arrest, the predictor variable was Native American Civilian, the neighborhood race covariate was > Native American Neighborhood, and the other covariates defined in the previous section were included. Table 14 displays the Logistic Regression results analyzing arrests and African American race[38].

Table 14. Logistic Regression results analyzing arrests and Native American race.

Variable	Beta	Wald Chi Square	p	Odds Ratio
> Native American Neighborhood	0.00	0.0	n.s.	1.00
High Index Crime Neighborhood	0.32	20.5	**< .05**	**1.38**
White Law Enforcement Officer	-0.32	9.2	**< .05**	**0.72**
Investigatory Contact	-0.23	5.2	**< .05**	**0.79**
Hazardous Moving Violation Contact	-20.52	0.0	n.s.	0.00
Non-hazardous Moving Violation Contact	-5.72	326.1	**< .05**	**0.003**
Male Civilian	0.11	2.0	n.s.	1.12
Native American Civilian	0.51	14.1	**< .05**	**1.66**

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[38] This regression model was an adequate model: (A) This model significantly improved classification, with no change in selectivity for a gain in sensitivity of 0.4%, with an overall classification gain of 0.01%; (B) this model explained 54.2% of the variance in searches; (C) This model did not depart from an ideally fitting model. . There were 1,313 (4.7%) cases filtered from the final model as multivariate outliers.

As on can see in Table 14, there were two variables that significantly increased the likelihood of a civilian being arrested, including: (1) The contact occurring in a higher index crime neighborhood, which increased the likelihood by 38%; and (2) The civilian being Native American, which increased the likelihood by 66%. There were three variables that significantly decreased the likelihood of a civilian being searched, including: (1) The contacting police officer being White, which decreased the likelihood of a search by 28%; (2) The contact being initiated for an investigatory purpose, which decreased the likelihood by 21%; and (3) The contact being initiated for a non-hazardous moving violation, which decreased the likelihood by 99.7%.

Arrests and Pacific Islander Race

In this analysis the criterion variable was the occurrence of an arrest, the predictor variable was Pacific Islander Civilian, the neighborhood race covariate was > Pacific Islander Neighborhood, and the other covariates defined in the previous section were included. Table 15 displays the Logistic Regression results analyzing arrests and Pacific Islander race[39].

Table 15. Logistic Regression results analyzing arrests and Pacific Islander race.

Variable	Beta	Wald Chi Square	p	Odds Ratio
> Pacific Islander Neighborhood	-0.28	15.1	**< .05**	**0.76**
High Index Crime Neighborhood	0.28	14.7	**< .05**	**1.32**
White Law Enforcement Officer	-0.39	13.1	**< .05**	**0.68**
Investigatory Contact	-0.21	4.2	**< .05**	**0.81**
Hazardous Moving Violation Contact	-20.53	0.0	n.s.	0.00
Non-hazardous Moving Violation Contact	-6.31	225.9	**< .05**	**0.002**
Male Civilian	0.08	1.1	n.s.	1.09
Pacific Islander Civilian	1.50	12.4	**< .05**	**4.48**

As on can see in Table 15, there were two variables that significantly increased the likelihood of a civilian being arrested, including: (1) The contact occurring in a higher index crime neighborhood, which increased the likelihood by 32%; and (2) The civilian being a Pacific Islander, which increased the likelihood by 348%. There were four variables that significantly decreased the likelihood of a civilian being searched, including: (1) The contact occurring in a relatively higher percentage Pacific Islander neighborhood, which decreased the likelihood of an arrest by 24%; (2) The contacting police officer being White, which decreased the likelihood by 32%; (3) The contact being initiated for an investigatory purpose, which decreased the likelihood by 19%; and (4) The contact being initiated for a non-hazardous moving violation, which decreased the likelihood by 99.8%.

Use of Force

One Logistic Regression Models were computed to answer the research question of: What is the relationship between neighborhood, officer race, contact reason, and civilian gender and race variables

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[39] This regression model was an adequate model: (A) This model significantly improved classification, with a decrease in selectivity of 0.1%, for a gain in sensitivity of 0.8%, with an overall classification gain of 0.01%; (B) this model explained 54.8% of the variance in arrests; (C) This model did not depart from an ideally fitting model. . There were 1,318 (4.7%) cases filtered from the final model as multivariate outliers.

when the outcome is the use of force, and the civilians' race is Native American? In this model the criterion variable was the occurrence of police use of force, the predictor variable was Native American Civilian, the neighborhood race covariate was > Native American Neighborhood, and the other covariates defined in the previous sections were included, with the occurrence of an arrest also included as a covariate. Figure 3 displays the Logistic Regression model used for analyzing arrests, and Table 16 displays the Logistic Regression results analyzing use of force and Native American race[40].

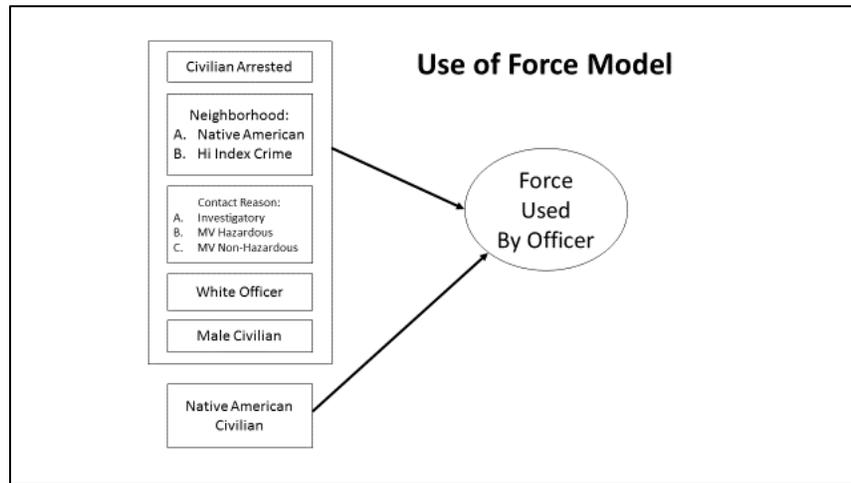**Figure 3.** The Logistic Regression model used for analyzing arrests.

Table 16. Logistic Regression results analyzing use of force and Native American race.

Variable	Beta	Wald Chi Square	p	Odds Ratio
Civilian Arrested	1.57	27.0	**< .05**	**4.79**
> Native American Neighborhood	-0.18	0.4	n.s.	0.83
High Index Crime Neighborhood	0.16	0.4	n.s.	1.18
White Law Enforcement Officer	0.52	1.0	n.s.	1.69
Investigatory Contact	0.40	0.3	n.s.	1.49
Hazardous Moving Violation Contact	-0.08	0.0	n.s.	0.93
Non-hazardous Moving Violation Contact	-0.75	0.9	n.s.	0.47
Male Civilian	0.79	5.5	**< .05**	**2.19**
Native American Civilian	0.99	5.0	**< .05**	**2.69**

As on can see in Table 16, there were three variables that significantly increased the likelihood of force being used, including: (1) The civilian being arrested during the contact, which increased the likelihood by 379%; (2) The civilian being male, which increased the likelihood by 119%; and (2) The civilian being a Native American, which increased the likelihood by 169%. There were no variables that significantly decreased the likelihood of a force being used. As stated in footnote number 40, this was a

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[40] This regression model was a weak model: (A) That this model significantly improved classification was an artifact of the large sample size, with no changes in selectivity, sensitivity, or overall classification; (B) This model explained only 7.4% of the variance in use of force; (C) This model did not depart from an ideally fitting model. Filtering cases as multivariate outliers would have removed all instances when force was used, so no cases were filtered.

weak model, so the results should be viewed as somewhat fluid, and generally, rather than highly precisely, indicative of the relationships between variables.

Implication and Application: Evidence Informed Community Conversation

The reader has no doubt noticed that the researchers have not offered causal explanations of the results. The methodologically rooted reason for this is that the purpose of the study was to describe the relationship between race and officer-initiated contacts, and the results of those contacts. An additional purpose of this study was to arrive at inferences about the correlation between race, officer-civilian contacts and their results, and other variables that were identified from both extant empirical evidence and narratives that are sometimes at odds with each other. Empirically, no causal relationships were identified from this study because, by design, causal inferences were precluded. Although one may be tempted to draw causal inferences from multivariate analyses, one should remain steadfastly aware that "you cannot infer with statistics that which was not taken care of by design[41]." The researchers are therefore avoiding any causal statements about the findings because such statements would be inherently speculative, and they would, to no benefit, run the risk of pre-emptively circumscribing the necessary conversations between members of our community and police force.

Study Strengths and Limitations

The methodology of this study consistently meets the best practices put forth by the Northeastern University Racial Profiling Data Collection Resource Center[42], exceeds the requirements of Washington State Law[43], and heeds the call of the U.S. Department of Justice for neighborhood level and multivariate analyses of data on race and policing[44].

A substantive strength of this study is the sample size, which allowed for more robust and thorough analyses than the original study that was completed in March of 2015. Additionally, when the data collected by police officers were put in the context of overall police-civilian contacts they were clearly representative of contacts between officers and civilians, with a $\pm$ 0.2% margin of error. Although there are a mix of encouraging and discouraging results from this study, the fact that they were not consistently flattering toward the SPD indicates that officers were honest in their data collection. The results, particularly when one examines the reasons for searches and arrests, have a level of detail that a simple population study would not.

A limitation of this study is that because of keystroke errors, there were data lost when different data sets were merged for the neighborhood level and multivariate analyses. Although the rate of missing data are of concern, the sheer volume of usable data allows for these results to be considered as accurately representative within a very small margin of error. Given the representativeness of the data collected by the officers through OnBase, with a $\pm$ 0.2% margin of error, and a $\pm$ 0.3% margin of error for data matched between data sets, our community can use these data to accurate inform, and therefore reinvigorate our discussion of race and policing.

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[41] Pett, M.A.: Personal communication to Ed Byrnes during May of 2001.
[42] Information about this and other NEU race and justice work can be found at:
http://www.northeastern.edu/irj/projects/criminal-justice/

[43] RCW 43.101
[44] McMahon, J., Garner, J., Davis, R., & Kraus, A. (2002) *How to Correctly Collect and Analyze Racial Profiling Data: Your Reputation Depends On It!, Final Project Report for Racial Profiling Data Collection and Analysis*. Washington, DC: Government Printing Office.

Summary of Results

    City Level Analysis

At the City of Spokane level, African Americans and Native Americans were significantly more likely to experience officer-initiated contacts, and to be searched or arrested, in comparison to other racial groups. Native Americans were also more likely to experience a use of force incident. Middle Easterners were more likely to experience contacts. Pacific Islanders were more likely to be contacted or arrested, and were more likely to be arrested for a new charge.

    Neighborhood Level Analysis

Neighborhood level results were quite similar to the city level ones, with African Americans, Native Americans, and Middle Easterners more likely to experience an officer-initiated contacted in the majority of neighborhoods analyzed. Native Americans and African Americans were more likely to be searched or arrested in at least half of the neighborhoods analyzed. The experiences of other racial groups around contacts, searches and arrests varied between neighborhoods.

There were insufficient use of force incidents when distributed at the neighborhood level to conduct a sufficiently robust probability analysis. Although this limits data analysis it is very good news for civilians and officers alike that only 0.2% of officer-initiated contacts resulted in a use of force.

The neighborhood level results are remarkably consistent with the city level results in terms of contacts for African Americans, Native Americans and Middle Easterners. Additionally, at the neighborhood level, the experiences of African Americans and Native Americans are consistent with the city level results for searches and arrests. Although there is some neighborhood level variation in these phenomena, the consistency of the results between neighborhoods, and between city and neighborhood levels, points to a minimal neighborhood effect on disproportionality in contacts, searches, and arrests.

    Multivariate Results

Consistencies between the six Logistic Regression analysis results include: (1) Contacts occurring in higher index crime neighborhoods are between 32% and 72% more likely to result in searches or arrests; (2) Race of the civilian involved in a contact significantly increases the likelihood of searches, arrests, and uses of force, increasing likelihoods by between 45% and 103% for searches, 49% and 348% for arrests, and 169% for use of force; (3) When the race of the contacting officer is White, the likelihood of searches significantly decreases by between 35% and 41%, the likelihood of arrests decreases by between 28% and 35%, and does not significantly change the likelihood of force being used.

When force was used, being male, or Native American, increased the likelihood of force being used by 119% and 169%, respectively, and being arrested increased the likelihood by 379%. With arrests being a substantial driver of force, one should note that of the 2,607 arrests made, 25 (0.96%) involved a use of force.

The multivariate analysis results therefore indicate that contacts occurring in high index crimes are more likely to result in arrests and searches, that race is a strong predictor of searches, arrests and use of force, that being arrested is the strongest predictor of use of force, and that White officers are less likely to be involved in contacts resulting in searches or arrests.

Applying the Results

Recall that the authors have refrained from making causal interpretations of the results, for empirical reasons, and to avoid circumscribing the necessary conversations that must occur between civilians and police officers to effectively address the racial disproportionality identified in this study, and its predecessor.

At the conclusion of the first report, the Mayor's Advisory Council on Multicultural Affairs convened a workgroup that met approximately a dozen times over a six month period. This group examined SPD policies, and reviewed and observed potential officer training programs, though no concluding report was ever forward to the Mayor's Office. The reasons that this group ceased meetings and did not submit a report are not known, and need not be known in order to move forward. The researchers are recommending that the Spokane City Council convene and charge an ad hoc commission that includes civilians and police officers, and is led by civilians who are independent of City Hall, with identifying approaches to address the racial disproportionality in contacts that is now identified in two quantitative reports, and to report their recommendations to the City Council and Chief of Police. As officers are compensated for their community engagement time, we also recommend that members of this commission be compensated for their effort.

It still appears that a focus for discussing change is at the initial point of contact. Rates of disproportionality appear to increase incrementally from contacts, through searches and arrests, though use of force. It is important to consider that very few searches are safety frisks and these frisks are applied uniformly across racial groups – it therefore does not appear that SPD officers are creating reasons to search people on the basis of race. The overwhelming majority of searches are post-arrest, and reasons for arrest are applied fairly uniformly across races – it therefore does not appear that SPD officers are creating reasons to arrest people on the basis of race. The presence of disproportionality at contacts, searches, arrests and uses of force, and the comparative absence thereof in reasons for searches and arrests, strengthen the argument that focusing on the initial point of contact is a viable place for community-police discussions to begin.

That the SPD has opened itself to outside data analysis, is sharing the results with the community and continues to collect and share these data will hopefully encourage us to engage in ongoing and deliberate conversations about disproportionate minority contacts with officers in our community. It remains time to complete with dialogue what cannot be completed with numbers.

Appendix A: Data Collection Instrument

Interaction Background

Incident Number:_____

Officer Name: _____

Officer Personnel Number: _____

Stop Type:

o   Motor Vehicle
o   Bicycle
o   Pedestrian

Interaction Reason:

o   Moving Violation:
    o   Hazardous
    o   Non-Hazardous
o   CFS Related
o   Investigatory Stop
o   Civilian Assistance
o   General Broadcast
o   DUI

Interaction Outcome:

o   Verbal Warning:
o   Traffic Citation:
    o   Hazardous
    o   Non-Hazardous
o   Arrest Made:
    o   Warrant
    o   New Charge

Reportable Force Used?

o   Yes
o   No

Civilian Characteristics

Gender:

o   Male
o   Female

Race/Ethnicity:

o   White
o   Black
o   Hispanic

o   Eastern European
o   Native American
o   Asian
o   Pacific Islander
o   Middle Eastern/East Indian

How Race Identified:

o   Visually
o   Civilians Speech
o   Civilians Name
o   Civilian Self Report

Civilians Age

o   Under 15 years old
o   Between 15 and 19 years old
o   Between 20 and 29 years old
o   Between 30 and 39 years old
o   Between 40 and 49 years old
o   Between 50 and 64 years old
o   More than 64 years old

How Age Was Determined

o   Civilian's appearance
o   Civilian's self-report
o   Civilian's driver's license or other document
o   Asked civilian about their age

Search Conducted?

o   No
o   Yes
    o   Vehicle Searched
    o   Person Searched
o   **Authority For Search:**
    o   Incident To Arrest
    o   Search Warrant
    o   Officer Safety Frisk
    o   Consent Search
    o   Inventory Search
o   **Contraband Found?**
    o   No
    o   Yes
o   **Property Seized?**
    o   No
    o   Yes