

Division of Governmental Studies and Services

Final Report

Montana Highway Patrol

**2017 MHP Traffic Stop Data--Decision to Stop
Analysis**

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Executive Summary

This report, the fourth in a series, presents research conducted for the Montana Highway Patrol (MHP) to assess yearly traffic stop data for evidence of biased policing. This report analyzes traffic stops that occurred from January 1, 2017 through December 31, 2017. The Montana Highway Patrol provided data to the Washington State University's Division of Governmental Studies and Services (DGSS) which was converted for analysis to examine 2017 MHP activities. We conduct several "benchmark" comparisons to assess potential disproportionality in the decision to stop in regard to race/ethnicity. This year, we also combined data from prior years in order to examine potential disproportionality in enforcement activities, which is provided in a supplementary report. Data provided by the MHP for 2017 include:

- 96,131 traffic stops in the state
- 16,747 drivers involved in crashes attended by MHP officers
- 8,595 service/self-initiated physical assists

Decision to Stop Findings

The descriptive analysis of several benchmark comparisons utilized in previous reports did not find evidence of systemic racial bias in the decision to stop for 2017. These comparisons did reveal some disproportionality for some counties, similar to previous years. However, comparisons at the county-level are limited because of too few stops in several counties, especially by group, and too few cases available in other benchmark comparisons for many of the counties.

For the 2017 data, we added a disparity index analysis to examine whether any groups may be potentially overrepresented in stops by Montana Highway Patrol officers. The disparity index analysis compares stops of a particular group to their proportion of the driving population to determine if potential overrepresentation is occurring. It is important to note that this analysis has limitations, as a finding of overrepresentation cannot indicate whether potential differences are due to bias (as there are several potential explanations for overrepresentation that cannot be examined in disparity index analysis). More importantly, disparity index results are subject to error when less than 15% of the population are people of color, which can lead to a false overrepresentation finding when none is in fact present. As people of color in Montana comprise less than 15% of the total population, these results should be treated with extreme caution.

Finally, population estimates were obtained from the Census and it should be noted that population estimates are more accurate at the national and state-level. While the 2010 Census was overall highly accurate, it undercounted people of color, including missing 2.1% of Black Americans, 1.5% Hispanics, and 5% of Native Americans on reservations (United States Census Bureau, 2012). The 2010 Census is an important source for population projections, and undercounting impacts these estimates. More importantly, undercounts are higher at the county-level, and several counties in Montana are designated as at-risk for undercounting in the 2020 Census based on 2010 participation, including Blaine, Ravalli, Flathead, Mineral, Big Horn, and Rosebud, among others. Flathead, Glacier, Ravalli, and Big Horn have been identified as some of the hardest areas to count in the entire U.S. (Center for Urban Research, CUNY). As county-level data was used to estimate district-level populations for disparity index analysis, the proportion of people of color are likely to be underestimated. Thus, these results should be further treated with caution at the district-level.

Despite limitations, we provided disparity index analysis to analyze potential overrepresentation in order to help with MHP efforts to examine this important issue. The disparity index analysis revealed potential overrepresentation for some groups in state-wide stops; Black drivers may be overrepresented in state-level stops compared to their proportion of the population. Black drivers may also be overrepresented in stops at the district level, while Asian and Hispanic drivers are underrepresented in district-level stops as are Native American drivers, except potentially in District 4. White drivers are stopped at rates expected based on their proportion of the state population, except potentially in District 8. As stated, this analysis cannot be used to conclusively state that overrepresentation is occurring, due to the limitations stated above, and it does not provide any explanation for causes of potential overrepresentation. Potential overrepresentation should be examined further to evaluate what could be contributing to possible differences in stops between groups.

Key findings for the decision to stop include:

- Based on all combined analysis, we did not find evidence of systemic bias in the decision to stop by Montana State Patrol Officers.
- There is potential overrepresentation in stops at the state-level for Black drivers in 2017 compared to their proportion of the driving population. Analysis overtime (2014-2017) suggests that potential overrepresentation for Black drivers may be

increasing at the state-level. Due to limitations of this analysis, these results should be treated with caution until researchers can use statistical analysis to control for alternative explanations and determine whether differences in stops between groups in fact do exist. This analysis will be attempted in the final report (2019) by combining all previous years' data.

- Potential overrepresentation in stops for Black drivers at the District-level. Black drivers are potentially overrepresented in each district in 2017, with the exception of District 6.
- Some counties show disproportionality for people of color in stops when compared to Census data or other benchmarks; however, for most of these counties there are too few cases to detect variation to determine whether disproportionality is truly present. The final 2019 report will combine all previous years' data to attempt to address county-level analysis limitations.

Theoretical approaches

Past reports established the difficulties of conducting research examining potential bias in law enforcement decision-making, especially when examining the decision to stop. These difficulties include accurately assessing the total driver population in an area (Walker, 2003; Alpert, Dunham, & Smith, 2007), and that there are several potential explanations of disproportionality which may not be rooted in bias. Similar to our past analyses, we utilized benchmark comparisons, with both internal agency data and external data (Census), to examine whether there is evidence of racial bias in the decision to stop. As noted in previous reports, one of our major methods of analysis, comparison to Census rates, is limited because it does not reflect the true population of drivers, but the total population in a given area (Thomas, 2002). However, in an attempt to more accurately reflect the driving population in the area of interest (whether state, District or county), we provided additional analysis where non-Montana residents are removed from the stop data to match numerator/denominator as closely as possible.

As with previous reports, we incorporated similar analyses conducted by Thomas (2002), Alpert et al. (2007), McLean & Wheler (2012), and Horrace & Rohlin (2016) by conducting internal benchmark comparisons with crash data, calls for assistance, and “veil of darkness”

(comparing day/night stops) to examine for evidence of bias in the decision to stop. The difficulties examining the decision to stop are well-known, and many scholars instead focus on examining outcomes of stops, such as issuance of warnings or citations, conducting searches, and other post-stop activities. Some research has found that race impacts rate of frisks and searches (Carrol & Gonzalez, 2014; Baumgartner, Christiani, Epp, Roach & Shoub, 2017), and issuance of warnings and citations in combination with other factors such as age and gender (Tillyer & Engel, 2010). It is important to note that while searches are very rare, Baumgarnter et al. (2017) found that Black and Hispanic individuals were searched at more than double the rate of White individuals.

Several studies have argued that simple outcome analysis, such as comparing rates of searches, are inherently limited because they do not incorporate assessment of risk distributions (e.g. Simoiu et al. 2017; Becker, 1993; Ayers, 2002; Knowles, Persico, Todd, 2001; Tillyer, 2008). Rooted in the work of Becker (1993), who argued that assessing repayment of loans and loan decisions was a more appropriate test for determining bias than comparing loan decision rates alone, Simoiu et al. (2017) argues that if searches of people of color produce lower rates of illegal contraband, it is indicative of lower standards for initiating searches based on race and ethnicity; therefore, an indicator of bias. Simoiu et al (2017) use data from 100 different North Carolina police agencies to develop a “threshold” test based on race of driver, officer department, whether a search was conducted, and whether the search was successful. Using these components, the authors determine the threshold for searches, finding that the threshold for Black and Hispanic drivers is lower than White drivers in most departments. Notably, the authors conducted traditional outcome analysis (rates of searches) and found little evidence of bias, which led them to conclude that standard outcome analysis was insufficient.

Similar to previous years, we began this analysis by focusing on stops occurring within one year, calendar year 2017. We conducted benchmark comparisons with Census rates, crash data, day/nighttime stops, and calls for service/assistance. We added an additional analysis, disparity index analysis, to examine for potential overrepresentation in stops at the state-level and District-level. Additionally, this year we extended our initial analysis to include outcomes by examining searches at the state and District-level (county-level does not have enough searches for this analysis), and enforcement-level at the state and District-level. We conducted

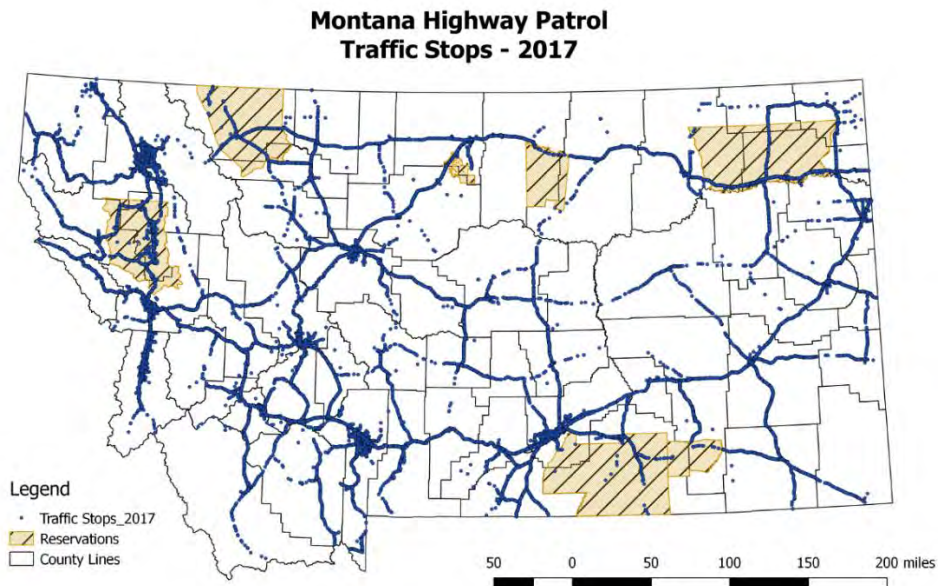
this analysis using stop data from 2014 to 2017, combining previous years' data to examine for evidence of bias with a more robust analysis.

Methods

Analysis of 2017 Data and the Decision to Stop

Based on the scholarly literature and past applied research experience, we conducted descriptive comparisons to assess whether there is evidence of racial bias in the decision to stop. These comparisons included; comparisons of Census data and Montana Highway Patrol (MHP) stop data, and comparison of 2017 stop data with internal MHP data, such as MHP 2017 crash data, 2017 MHP calls for service/assistance data, and day/nighttime stops. This included conducting these analyses at multiple-levels, state, county, District and city, where there is enough data to conduct these initial comparisons. We also conducted disparity index analysis (a comparison to the driving age population) at the state and district-level to examine for overrepresentation in stops compared to proportion of the population. As noted in previous reports, these analyses, especially at the county-level where there are few stops to examine, is limited and should be interpreted with caution.

State Level Analysis



The

Montana Highway Patrol (MHP) provided data on a total of 96,131 traffic stops that occurred in 2017, including 1,037 commercial vehicle stops and 20 non-motor vehicle stops. Non-motor vehicle stops and commercial vehicle stops were removed from the analysis for a total of 95,074 traffic stops analyzed for 2017. The majority of drivers stopped were male (66.1%, 62,852) and White (89.8%, 85,389). Most stops occurred during the day (76.5%, 72,719). The reason for most stops was hazardous moving violations (83.9%, 79,760). The city of Great Falls had the most stops with 2,683 (2.8%), and Missoula County had the most stops at the county-level (8.8%, 8,410). The MHP District with the most stops was District 1 (17.4%, 16,537). Both the District and county with the largest number of stops differs from previous years. From 2014-2016, Flathead county and District 5 had the most stops.

Tables 1 and 2 contain Census demographic estimates for Montana and the percentage of drivers stopped in 2017 by race/ethnicity. State-wide data indicates that White, Asian and Black drivers are slightly overrepresented in stops when compared to their portion of the population. For example, Asians make up 0.7% of the population in Montana but comprise 1.1% of the drivers stopped. Hispanic and Latino drivers are slightly underrepresented in the number of contacts with MHP when compared to census estimates. Hispanic/Latinos make up approximately 3.7% of the population in Montana but constitute only 2% of the total drivers stopped in 2017 (see Table 3). The 5% threshold, used in past analyses to determine whether there was evidence of systemic bias, is not exceeded suggesting minimal differences in stops by race/ethnicity.

Table 1: Montana Statewide Demographics

2017 Population Estimates	Percent
White	86.3%
Black or African American	0.4%
American Indian and Alaska Native	5.9%
Asian	0.7%
Hispanic or Latino (of any race)	3.7%

Table 2: Statewide Percentage of Stops by Race/Ethnicity

	<i>White Drivers</i>	<i>Asian Drivers</i>	<i>Black Drivers</i>	<i>Native American Drivers</i>	<i>Hispanic Drivers</i>
Stops	85,389	1,008	1,422	5,101	1,861
	89.8%	1.1%	1.5%	5.4%	2.0%
2017 Population Estimates	906,575	7,353	4,202	61,979	38,868
	86.3%	0.7%	0.4%	5.9%	3.7%

A related method for determining if disproportionality potentially exists among people of color in the number of MHP stops as compared to the Census estimated population is to calculate a disparity index. The disparity index is calculated by dividing the percentage of a group of drivers stopped by the percentage among the benchmark group (in this case the US Census). A value under 1 represents underrepresentation of the group in the number of stops; a value over 1 represents potential overrepresentation of the group in the number of stops. The closer the value is to 1 the closer the group’s proportion of traffic stops equals its proportion of the residential population.

A disparity index analysis is not without limitations. As noted by Fridell (2004), the disparity index utilizes Census information to calculate proportions, which in addition to undercounting people of color, does not necessarily reflect the driving population. A low disparity index could potentially mean a group is underrepresented in the driving population. Additionally, institutions, such as universities, or events that attract numerous motorists from outside of a jurisdiction potentially changes the driving demographics in a region that cannot be captured by Census driving age population statistics. However, at the state-level these Census estimates should more closely reflect the driving population. Therefore, we calculated the disparity index for the state and district-levels only to examine for potential disparity. An additional limitation of disparity analysis is that it cannot explain why the potential disproportionality exists and there are many possible reasons for disproportionality outside of racial bias. Lastly, disparity index results are highly influenced by the proportion of the population that are people of color. If less than 15% of the population are people of color, as is the case in Montana, disparity analysis can be susceptible to showing overrepresentation in stops

for these groups.¹ Given these limitations, these results should be interpreted with caution and used to examine potential overrepresentation further. They should not be used to determine that overrepresentation is conclusively occurring nor can potential differences in stops be linked to any specific explanation (such as bias).

When using the disparity index, it is important to match the denominator (i.e., census) and the numerator (i.e., stops) as closely as possible. In other words, the stop data population and the census data population should be similar. To do this, we adjusted both the stop and census data by including only stops of resident drivers in the stop data (determined by whether the driver had a Montana driver's license) and using census statistics of the driving age population (16 years and older). After removing stop data of drivers with non-Montana driver's licenses from the data, there were 71,427 stops remaining. As an example of how the data was adjusted, in 2017 there were 5,101 Native American drivers stopped by MHP, but only 4,587 of those drivers stopped had Montana-issued driver's licenses. The Census estimates 61,979 Native Americans residing in Montana in 2017, but only 44,448 are of driving age. The following analyses use adjusted data for the census and the stop data as shown in Table 3.

The disparity indices suggest that Asian and Hispanic drivers were underrepresented in stops, Black drivers may be overrepresented in stops, and White and Native American drivers were stopped at a rate to be expected based on the Census. For example, 65,008 White drivers were stopped in 2017 accounting for 91.0% of all traffic stops, whereas Whites comprise 86.6% of the driving population in Montana. The disparity index for Whites is therefore 1.05 ($.910/.866$). A disparity index of 1.05 means that Whites were stopped at nearly the rate to be expected based on their proportion of the driving-age population from the 2010 Census. Native Americans drivers were also stopped at a rate to be expected with a disparity index of 1.03. Conversely, Hispanic drivers account for 1.15% of all traffic stops, but 3.56% of the driving population. The disparity index for Hispanics is therefore .32 signifying that Hispanics were stopped at a rate less than expected based on their proportion of the driving-age population. Similarly, Asians with a disparity index of .55 were stopped at a rate less than expected. Black

¹ We report the disparity index rather than other disparity measures due to the low population of people of color in stops and in the State of Montana. The disparity index, which provides an estimate of absolute difference, provides a more cautious estimate of potential difference than other measures, such as ratio of disparity based on relative difference between groups.

drivers, however, are potentially stopped at a rate greater than expected with a disparity index of 2.06.

Table 3 Statewide Summary of Results

<i>Key Indicators</i>	<i>Total</i>	<i>White</i>	<i>Asian</i>	<i>Black</i>	<i>Native American</i>	<i>Hispanic</i>
Population	846,952	747,456	7,139	4,132	44,448	26,920
Stops	71,427	65,008	278	583	4,587	823
State Population %	100.00%	86.61%	0.71%	0.40%	6.23%	3.56%
Stops %	100.00%	91.01%	0.39%	0.82%	6.42%	1.15%
Disparity Index	---	1.05	0.55	2.06	1.03	0.32

Notes: Population figures are 2010 Census data based on persons 16 and older who designated a single race. Hispanics may be of any race. Stop data only includes vehicles stopped with MT-issued driver's licenses. Disparity index = (proportion of stops / proportion of population). A value of 1 represents no disparity; values greater than 1 indicate overrepresentation; values less than 1 indicate underrepresentation. Ratio of Disparity = (disparity index of group X / disparity index of reference group).

Reason for Stop

In order to provide a more detailed examination of the decision to stop, DGSS researchers categorized officer-indicated “reason for stop” into 5 major categories: Moving Violation Hazardous, Moving Violations Serious, Equipment, License/Registration/Insurance, and Other.² The most frequent reasons for stop in 2017 were Moving Violations Hazardous (83.9%, 79,760), and License/Registration/Insurance (11.3%, 10,725). For each of the infraction categories, White drivers were the largest percentage of drivers stopped (See Table 4 below).

As demonstrated in Table 5 below, the majority of stops for every group were categorized as Moving Violations Hazardous. Moving violations accounted for a higher percentage of stops of Asian drivers when compared with other groups; this was also the case in 2015 and 2016. Over 92% of Asian drivers were stopped due to Moving Violations Hazardous infractions in 2017 as compared to 87.8% of Black drivers and 79.2% of Native American Drivers. The second most common reason for stops in every group was

² Stop categories were created in cooperation with MHP personnel in 2014. Moving Violation Hazardous includes offenses such as speeding, violation of right away, and driving without headlights while motor vehicle serious includes offenses such as careless driving, driving under the influence, and reckless driving. Other offenses included open container, throwing debris, etc.

License/Registration/Insurance. Asian drivers were stopped at a lower rate for License/Registration/Insurance infractions (4.4%) in comparison to other groups.

For Equipment violations, a slightly higher percentage of Native American drivers were stopped compared to other groups. The differences in infraction type in each group could indicate socioeconomic factors that impact the decision to stop by MHP officers.

Table 4 Reason for Stop by Race/Ethnicity--Statewide

<i>Specific Infractions</i>	<i>White Drivers</i>	<i>Asian Drivers</i>	<i>Black Drivers</i>	<i>Native American Drivers</i>	<i>Hispanic Drivers</i>
Moving Violations Hazardous	89.90% 71,706	1.17% 930	1.57% 1,249	5.06% 4,038	1.99% 1,585
Moving Violations Serious	87.29% 1,003	0.78% 9	1.65% 19	6.79% 78	2.61% 30
Equipment	86.53% 1,683	0.26% 5	0.62% 12	10.69% 208	1.70% 33
License/Registration/Insurance	90.45% 9,701	0.41% 44	1.13% 121	6.12% 656	1.71% 183
Other	86.69% 1,296	1.34% 20	1.40% 21	8.09% 121	2.01% 30

Table 5 Within-group comparison of reason for stop by race/ethnicity

<i>Type of Infraction</i>	<i>White Drivers</i>	<i>Asian Drivers</i>	<i>Black Drivers</i>	<i>Native American Drivers</i>	<i>Hispanic Drivers</i>
Moving Violations Hazardous	83.98% 71,706	92.26% 930	87.83% 1,249	79.16% 4,038	85.17% 1,585
Moving Violations Serious	1.17% 1,003	0.89% 9	1.34% 19	1.53% 78	1.61% 30
Equipment	1.97% 1,683	0.50% 5	0.84% 12	4.08% 208	1.77% 33
License/Registration/Insurance	11.36% 9,701	4.37% 44	8.51% 121	12.86% 656	9.83% 183
Other	1.52% 1,296	1.98% 20	1.48% 21	2.37% 121	1.61% 30

Day and Night Stops³

An additional benchmark comparison, daytime and nighttime stops, uses civil twilight times in Helena, Montana to examine differences in the demographic makeup of drivers stopped during the day versus at night. If members of a particular population group are stopped in larger percentages during the day (a difference of 5% or more) compared to night, it could indicate potential bias in the decision to stop; if bias is a factor in the decision, it can only be applied when officers can see the drivers in question.

The majority of MHP stops occurred during the day (76.5%, 72,719), with 23.5% (22,355) of the stops occurring at night. The differences in the percentage of groups stopped between day and night statewide were less than 1% for each group, suggesting no evidence of systemic bias in the decision to stop by MHP officers with this benchmark comparison.

Table 6 Percentage of Day and Night Stops by Race/Ethnicity

<i>Time of Day</i>	<i>White Drivers</i>	<i>Black Drivers</i>	<i>Asian Drivers</i>	<i>Native American Drivers</i>	<i>Hispanic Drivers</i>
Day	89.98% 65,434	1.40% 1020	1.14% 826	5.25% 3,819	1.94% 1,409
Night	89.26% 19,955	1.80% 402	0.81% 182	5.73% 1,282	2.02% 452

Involvement in Crashes

Crashes are analyzed as an additional benchmark comparison which involves comparing traffic stops and crashes by race/ethnicity. Crashes provide the opportunity to compare MHP contacts where officers have discretion in their interactions with drivers (discretion in decision to stop) and where they do not. Ideally this benchmark would use not-at-fault drivers only. Not-at-fault drivers are essentially *randomly selected* and therefore offer a more representative sample of the driving population. For purposes of this study, however, we did not remove at fault drivers

³ The classification for daytime and nighttime that was used for this analysis was based on civil twilight times for Helena, Montana throughout the year. Information on civil twilight times for Helena, Montana were collected from TimeandDate.com at <https://www.timeanddate.com/sun/usa/helena>.

from the analysis because it would reduce the number of crashes analyzed below what is needed for effective comparison.

Crash data for 32,577 individuals was provided by Montana Highway Patrol. However, as in previous years, this number is reflective of the total number of citations and warnings received by drivers involved in crashes. We followed the same procedures developed in previous years to examine crashes, using the driver as the level of analysis, rather than the crash incident. Duplicate cases (one driver receiving multiple warnings or citations) are consolidated to ensure that each driver represents one case. For crashes with multiple drivers receiving citations and/or warnings, each driver is treated as a unique case. This process yielded 16,747 drivers involved in crashes to analyze. For this benchmark comparison, the percentage of groups involved in crashes (as drivers) is compared to the rate at which they are stopped, to examine potential disproportionality in the decision to stop. If drivers are stopped at a rate higher than 5% more than their involvement in crashes, this could indicate potential disproportionality. Likewise, if groups are involved in crashes in a higher percentage than their proportion of the population, it could indicate differences in driving behavior that can potentially be utilized in subsequent analysis of enforcement levels. This measure did not show any substantial disparities when examined on the state level.

Table 7 Statewide Crashes by Race/Ethnicity

	<i>White Drivers</i>	<i>Asian Drivers</i>	<i>Black Drivers</i>	<i>Native American Drivers</i>	<i>Hispanic Drivers</i>
Crashes	15,441 92.20%	183 1.09%	233 1.39%	505 3.02%	311 1.86%
Stops	85,389 89.81%	1,008 1.06%	1,422 1.50%	5,101 5.37%	1,861 1.96%
Census	86.30%	0.70%	0.40%	5.90%	3.70%

Calls for Service

Calls for service and self-initiated physical assists is an additional “blind” benchmark as officers have no discretion in deciding which individuals call for assistance. However, it may be possible that certain groups may need assistance at higher rates than other groups due to various

factors and/or certain groups may be more likely to call in for assistance than other groups. This may be a limitation of using calls for service as a benchmark. There were 8,595 calls for service or self-initiated physical assists recorded by MHP in 2017. Three hundred fourteen of those calls did not provide information indicating race/ethnicity. As noted in previous reports, cases without race/ethnicity data are events that involved only the removal of debris or abandoned vehicles, thus there were no individuals present at the scene.

Of the cases where race/ethnicity/gender was provided, 85.6% (7,359) were White and most individuals were male (60.3%). There are only small differences between the frequency of stops in each race/ethnicity category and the frequency of calls for service and self-initiated physical assists indicating that there is not systemic racial bias in the propensity to stop by MHP.

Table 8 Statewide Assistance Contacts by Race/Ethnicity

	<i>White Drivers</i>	<i>Asian Drivers</i>	<i>Black Drivers</i>	<i>Native American Drivers</i>	<i>Hispanic Drivers</i>
Assistance	7,359 85.62%	71 0.83%	189 2.20%	462 5.38%	200 2.33%
Stops	85,389 89.81%	1,008 1.06%	1,422 1.50%	5,101 5.37%	1,861 1.96%
Census	86.30%	0.70%	0.40%	5.90%	3.70%

County-Level Analysis

As with the statewide analysis, stops in each county are compared to census data. We provide the percentage of stops by group in each county (Table 9 below), and the proportion of the group's population in each county subtracted from their percentage stopped (Table 10 below). As seen in Table 10 below, 16 counties have a group that is stopped more than 5% of their proportion of the population: Big Horn, Blaine, Cascade, Choteau, Glacier, Hill, Lake, Liberty, McCone, Musselshell, Petroleum, Prairie, Roosevelt, Rosebud, Toole, and Valley.

Native American drivers were stopped more than their proportion of the population in six counties (Liberty, McCone, Musselshell, Petroleum, Toole, and Valley), while Black drivers are overrepresented in stops in one county (Prairie). For 9 of the 16 counties, White drivers are stopped in higher percentages (5%+) than their proportion of the population (Big Horn, Blaine, Cascade, Choteau, Glacier, Hill, Lake, Roosevelt, and Rosebud).

It is important to note that disproportionality is not evidence that systemic bias is occurring; alternative explanations of disproportionality must be examined prior to drawing any conclusions. As with previous years, many of the counties have too few stops for 2017 to adequately detect and assess variation. More stops are needed to assess whether disproportionality is present. These findings suggest further analysis is needed once more stops are available. For the final analysis report in 2019, we will combine all previous year stops at the county-level to analyze for potential disproportionality.

Table 9: Percentage of County Stops by Race/Ethnicity

County	White Drivers	Asian Drivers	Black Drivers	Native American Drivers	Hispanic Drivers	Number of Stops
Beaverhead	93.15% (775)	1.44% (12)	0.72% (6)	1.56% (13)	3.13% (26)	832
Big Horn	64.17% (926)	1.52% (22)	3.53% (51)	27.44% (396)	3.26% (47)	1443
Blaine	67.64% (487)	0.28% (2)	0.97% (7)	29.44% (212)	0.69% (5)	720
Broadwater	96.56% (898)	1.08% (10)	0.75% (7)	0.11% (1)	1.40% (13)	930
Carbon	95.33% (531)	0.72% (4)	0.00% (0)	1.44% (8)	2.15% (12)	557
Carter	88.00% (88)	2.00% (2)	5.00% (5)	1.00% (1)	4.00% (4)	100
Cascade	91.92% (6,527)	0.62% (44)	2.68% (190)	3.11% (221)	1.52% (108)	7101
Chouteau	84.62% (1,403)	0.78% (13)	1.27% (21)	11.70% (194)	1.51% (25)	1658
Custer	90.18% (4,011)	1.26% (56)	2.29% (102)	2.50% (111)	2.99% (133)	4448
Daniels	96.35% (211)	0.00% (0)	0.46% (1)	3.20% (7)	0.00% (0)	219
Dawson	85.92% (2,050)	1.68% (40)	4.27% (102)	2.56% (61)	5.32% (127)	2386
Deer Lodge	91.64% (1,238)	2.52% (34)	2.37% (32)	1.04% (14)	1.92% (26)	1351
Fallon	96.69% (146)	0.00% (0)	1.32% (2)	1.32% (2)	0.00% (0)	151
Fergus	92.11% (1,109)	0.75% (9)	1.08% (13)	3.82% (46)	1.50% (18)	1204
Flathead	97.30% (7,685)	0.48% (38)	0.30% (24)	0.90% (71)	0.85% (67)	7898
Gallatin	93.97% (6,494)	1.65% (114)	1.19% (82)	0.64% (44)	2.36% (163)	6911
Garfield	96.21% (203)	0.00% (0)	1.90% (4)	0.95% (2)	0.95% (2)	211
Glacier	55.29% (617)	1.34% (15)	0.99% (11)	41.13% (459)	0.63% (7)	1116
Golden Valley	94.05% (79)	2.38% (2)	1.19% (1)	2.38% (2)	0.00% (0)	84
Granite	95.15% (412)	1.39% (6)	2.08% (9)	0.92% (4)	0.46% (2)	433
Hill	77.10% (1,313)	0.47% (8)	1.64% (28)	19.55% (333)	0.59% (10)	1703
Jefferson	93.52% (1,169)	1.68% (21)	1.44% (18)	1.12% (14)	2.00% (25)	1250
Judith Basin	93.93% (464)	0.61% (3)	2.02% (10)	2.23% (11)	0.81% (4)	494
Lake	76.74% (1,564)	0.59% (12)	0.34% (7)	20.61% (420)	1.42% (29)	2038
Lewis and Clark	95.87% (3,270)	0.53% (18)	0.94% (32)	1.14% (39)	1.29% (44)	3411
Liberty	91.67% (165)	1.11% (2)	0.00% (0)	6.11% (11)	0.56% (1)	180
Lincoln	97.81% (2,101)	0.37% (8)	0.23% (5)	0.51% (11)	0.65% (14)	2148
Madison	95.21% (855)	1.11% (10)	0.89% (8)	0.89% (8)	1.78% (16)	898
McCone	83.33% (190)	0.88% (2)	0.44% (1)	14.04% (32)	1.32% (3)	228
Meagher	98.69% (377)	0.26% (1)	0.52% (2)	0.00% (0)	0.26% (1)	382
Mineral	91.40% (2,412)	2.05% (54)	2.12% (56)	1.78% (47)	2.20% (58)	2639
Missoula	94.20% (7,937)	1.03% (87)	1.09% (92)	1.83% (154)	1.50% (126)	8426
Musselshell	88.96% (419)	0.85% (4)	1.70% (8)	7.01% (33)	0.85% (4)	471
Park	93.08% (1,588)	1.70% (29)	1.76% (30)	0.41% (7)	2.29% (39)	1706
Petroleum	80.65% (25)	3.23% (1)	3.23% (1)	6.45% (2)	6.45% (2)	31
Phillips	87.10% (351)	0.25% (1)	0.25% (1)	11.17% (45)	1.24% (5)	403
Pondera	78.42% (923)	1.95% (23)	1.19% (14)	15.97% (188)	1.78% (21)	1177
Powder River	84.96% (921)	4.06% (44)	4.24% (46)	2.12% (23)	4.61% (50)	1084
Powell	91.95% (1,325)	2.01% (29)	2.15% (31)	1.60% (23)	2.29% (33)	1441
Prairie	80.45% (284)	3.40% (12)	5.38% (19)	3.97% (14)	6.52% (23)	353
Ravalli	96.40% (4,071)	0.36% (15)	0.57% (24)	0.21% (9)	1.70% (72)	4223
Richland	91.08% (1,623)	0.62% (11)	1.18% (21)	2.81% (50)	4.32% (77)	1782
Roosevelt	55.11% (1,154)	0.43% (9)	1.58% (33)	41.40% (867)	1.38% (29)	2094
Rosebud	83.05% (970)	1.11% (13)	2.23% (26)	10.53% (123)	2.83% (33)	1168
Sanders	94.92% (1,233)	1.15% (15)	0.23% (3)	2.16% (28)	1.46% (19)	1299
Sheridan	90.41% (245)	1.11% (3)	3.32% (9)	1.11% (3)	2.95% (8)	271
Silver Bow	94.34% (2,418)	1.17% (30)	1.05% (27)	1.48% (38)	1.76% (45)	2563
Stillwater	89.62% (501)	1.61% (9)	2.33% (13)	1.79% (10)	4.47% (25)	559
Sweet Grass	88.89% (176)	2.53% (5)	2.53% (5)	1.52% (3)	4.55% (9)	198
Teton	91.19% (290)	1.26% (4)	0.94% (3)	4.09% (13)	2.52% (8)	318
Toole	85.45% (1,163)	1.47% (20)	1.10% (15)	9.85% (134)	1.47% (20)	1361
Treasure	85.03% (125)	2.04% (3)	2.04% (3)	6.12% (9)	4.76% (7)	147
Valley	81.95% (1,221)	0.74% (11)	1.14% (17)	14.30% (213)	1.81% (27)	1490
Wheatland	92.06% (232)	1.59% (4)	1.59% (4)	2.78% (7)	1.19% (3)	252
Wibaux	90.30% (242)	1.49% (4)	1.49% (4)	4.10% (11)	2.61% (7)	268
Yellowstone	89.12% (7,060)	1.05% (83)	2.65% (210)	4.00% (317)	2.97% (235)	7922

Table 10: County-Level Percent Contacted Minus Census Population

County	White Drivers	Black Drivers	Native American Drivers	Asian Drivers	Hispanic Drivers
Beaverhead	2.51%	0.41%	-0.06%	0.91%	-1.36%
Big Horn*	35.52%	2.35%	-33.37%	1.04%	-2.78%
Blaine*	22.40%	0.72%	-19.15%	-0.16%	-2.17%
Broadwater	3.42%	0.30%	-1.38%	0.76%	-1.52%
Carbon	1.22%	-0.55%	0.32%	0.40%	-0.52%
Carter	-6.24%	2.36%	0.32%	1.14%	3.73%
Cascade*	6.71%	1.17%	-1.18%	-0.33%	-2.94%
Chouteau*	7.97%	1.11%	-6.81%	0.35%	-1.06%
Custer	-1.55%	1.77%	0.76%	0.68%	-0.45%
Daniels	4.97%	0.14%	0.54%	-0.17%	-3.80%
Dawson	-6.71%	3.76%	0.78%	1.21%	2.34%
Deer Lodge	1.77%	1.81%	-2.14%	2.07%	-1.71%
Fallon	1.91%	0.52%	0.74%	-0.70%	-1.60%
Fergus	-1.97%	0.86%	2.43%	0.47%	-0.92%
Flathead	4.43%	0.03%	-0.25%	-0.27%	-1.90%
Gallatin	2.13%	0.77%	-0.20%	0.28%	-1.26%
Garfield	-0.43%	1.74%	0.44%	-0.08%	-0.98%
Glacier*	24.36%	0.75%	-21.68%	1.03%	-2.16%
Golden Valley	2.94%	0.85%	1.21%	2.06%	-4.01%
Granite	1.16%	1.08%	0.20%	0.98%	-1.57%
Hill*	7.81%	1.22%	-3.25%	-0.04%	-3.13%
Jefferson	0.37%	1.09%	-0.50%	1.25%	-0.36%
Judith Basin	-1.75%	2.01%	1.30%	0.47%	-1.57%
Lake*	11.74%	-0.13%	-2.10%	0.01%	-3.15%
Lewis and Clark	4.49%	0.49%	-0.78%	-0.16%	-1.98%
Liberty*	-4.75%	-0.45%	5.44%	0.95%	-0.10%
Lincoln	4.80%	-0.14%	-0.67%	0.03%	-2.12%
Madison	3.16%	0.13%	-0.22%	0.64%	-2.22%
McCone*	-11.47%	-0.07%	13.31%	0.55%	-0.22%
Meagher	3.99%	0.31%	-0.76%	-0.28%	-1.85%
Mineral	0.03%	1.56%	-0.10%	1.41%	-0.89%
Missoula	4.69%	0.63%	-0.51%	-0.59%	-1.73%
Musselshell*	-1.91%	0.82%	5.51%	-0.70%	-2.68%
Park	-0.40%	1.35%	-0.59%	1.28%	-0.58%
Petroleum*	-14.00%	3.23%	5.50%	3.23%	5.30%
Phillips	3.18%	0.13%	2.14%	-0.04%	-1.50%
Pondera	-3.40%	0.84%	2.50%	1.73%	-0.07%
Powder River	-6.84%	3.20%	0.58%	3.51%	1.95%
Powell	3.05%	0.78%	-3.37%	1.63%	-0.45%
Prairie*	-9.99%	5.20%	3.15%	2.68%	2.64%
Ravalli	3.55%	0.21%	-0.74%	-0.20%	-1.89%
Richland	2.10%	0.55%	0.85%	0.11%	-0.88%
Roosevelt*	20.60%	-0.39%	-16.00%	-0.06%	-2.26%
Rosebud*	27.65%	1.69%	-24.92%	0.25%	-2.39%
Sanders	4.89%	-0.08%	-1.66%	0.70%	-1.43%
Sheridan	-1.18%	2.44%	-0.74%	0.76%	0.05%
Silver Bow	3.93%	0.40%	-0.35%	0.38%	-2.68%
Stillwater	-3.31%	1.92%	0.85%	1.22%	0.77%
Sweet Grass	-4.91%	2.16%	0.57%	2.02%	2.08%
Teton	-2.65%	0.77%	2.50%	0.77%	0.92%
Toole*	-1.32%	0.02%	5.08%	0.92%	-2.71%
Treasure	-4.30%	2.19%	3.92%	0.58%	-0.61%
Valley*	-2.81%	0.83%	5.43%	-0.05%	-0.98%
Wheatland	0.94%	1.17%	1.29%	0.67%	-1.85%
Wibaux	-3.21%	1.50%	3.35%	0.92%	-1.29%
Yellowstone	2.73%	1.98%	-0.04%	0.43%	-2.66%

Day and Night Stops

There are 11 counties that indicate that some individuals were stopped in higher proportions during the day compared to night stops. For seven of the 11 counties, Blaine, Choteau, Garfield, Glacier, Pondera, Roosevelt, and Wibaux, it appears that White drivers were pulled over in higher percentages during the day compared to stops during the night. In the remaining four counties, Carter, Prairie, Petroleum, Treasure, people of color were stopped in higher percentages during the day than the night. In Petroleum County, Native American drivers were 6.9% of all stops during the day, and 0% of all stops at night. However, Petroleum County had only 31 stops in 2017, and only 2 of these stops occurred at night. For these counties, the number of stops is too few to ascertain whether there is disproportionality, and it is likely the differences are due to the small number of stops being assessed.

Table 11: County-Level Percentage of Day and Night stops by Race/Ethnicity (2017)

County	White Drivers		Asian Drivers		Black Drivers		Native American Drivers		Hispanic Drivers		Number of Stops	
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
Beaverhead	92.75%	94.67%	1.66%	0.59%	0.60%	1.18%	1.81%	0.59%	3.17%	2.96%	662	169
Big Horn	63.54%	60.13%	1.68%	0.65%	2.77%	2.61%	29.15%	32.35%	2.87%	3.92%	1012	306
Blaine*	69.73%	64.02%	0.21%	0.00%	1.25%	0.42%	27.77%	33.05%	0.84%	0.42%	479	239
Broadwater	96.33%	97.24%	1.50%	0.31%	0.83%	0.61%	0.00%	0.00%	1.17%	1.84%	600	326
Carbon	94.78%	97.37%	1.00%	0.00%	0.00%	0.00%	1.74%	0.66%	1.99%	1.97%	402	152
Carter*	89.61%	100.00%	1.30%	0.00%	2.60%	0.00%	1.30%	0.00%	5.19%	0.00%	77	5
Cascade	92.69%	90.29%	0.61%	0.59%	1.95%	4.27%	3.11%	3.09%	1.47%	1.63%	4884	2203
Chouteau*	85.57%	80.36%	0.46%	1.79%	1.38%	0.89%	10.90%	15.48%	1.53%	1.49%	1303	336
Custer	90.04%	91.47%	1.32%	0.78%	2.43%	0.58%	2.59%	2.52%	2.85%	3.88%	3784	516
Daniels	96.05%	100.00%	0.00%	0.00%	0.56%	0.00%	3.39%	0.00%	0.00%	0.00%	177	30
Dawson	85.09%	89.47%	1.91%	0.69%	4.49%	3.20%	2.73%	1.83%	5.47%	4.81%	1938	437
Deer Lodge	91.82%	92.11%	2.52%	2.63%	2.43%	1.32%	0.90%	1.75%	1.80%	1.75%	1113	228
Fallon	97.50%	96.15%	0.00%	0.00%	0.83%	0.00%	1.67%	0.00%	0.00%	0.00%	120	26
Fergus	91.57%	93.73%	0.70%	0.90%	0.94%	1.49%	4.57%	2.09%	1.29%	1.79%	854	335
Flathead	97.31%	97.27%	0.52%	0.34%	0.26%	0.45%	0.87%	1.02%	0.87%	0.80%	6123	1761
Gallatin	94.61%	92.82%	1.69%	1.60%	0.80%	1.96%	0.56%	0.71%	2.23%	2.59%	4618	2243
Garfield*	97.27%	90.00%	0.00%	0.00%	1.09%	10.00%	1.09%	0.00%	0.55%	0.00%	183	20
Glacier*	56.36%	51.07%	1.59%	0.43%	0.91%	1.29%	40.00%	45.49%	0.57%	0.86%	880	233
Golden Valley	91.80%	100.00%	3.28%	0.00%	1.64%	0.00%	3.28%	0.00%	0.00%	0.00%	61	14
Granite	96.64%	91.76%	1.53%	0.00%	1.22%	3.53%	0.00%	4.71%	0.61%	0.00%	327	85
Hill	76.74%	77.67%	0.59%	0.20%	1.60%	1.78%	19.65%	19.57%	0.59%	0.59%	1191	506
Jefferson	93.77%	92.27%	1.63%	2.21%	1.34%	1.66%	1.15%	1.10%	1.82%	2.76%	1043	181
Judith Basin	94.02%	94.02%	0.27%	1.71%	2.17%	1.71%	2.17%	2.56%	0.82%	0.00%	368	117
Lake	77.52%	74.30%	0.57%	0.65%	0.38%	0.22%	20.06%	22.68%	1.08%	2.16%	1570	463
Lewis and Clark	95.88%	95.79%	0.58%	0.36%	0.89%	1.08%	1.17%	1.08%	1.32%	1.20%	2575	831
Liberty	90.85%	96.15%	1.31%	0.00%	0.00%	0.00%	6.54%	3.85%	0.65%	0.00%	153	26
Lincoln	97.63%	98.42%	0.44%	0.20%	0.19%	0.20%	0.56%	0.39%	0.62%	0.79%	1601	507
Madison	96.59%	95.74%	1.14%	0.71%	0.57%	0.71%	0.28%	1.42%	1.28%	1.42%	703	141
McCone	82.63%	84.38%	1.05%	0.00%	0.53%	0.00%	14.21%	15.63%	1.58%	0.00%	190	32
Meagher	98.80%	98.00%	0.30%	0.00%	0.60%	0.00%	0.00%	0.00%	0.30%	0.00%	332	50
Mineral	91.98%	90.35%	2.28%	1.33%	1.98%	2.33%	1.58%	2.50%	1.68%	3.16%	2020	601
Missoula	94.76%	92.59%	1.02%	1.09%	0.89%	1.61%	1.61%	2.50%	1.49%	1.51%	6292	2118
Musselshell	88.92%	88.31%	1.06%	0.00%	1.32%	2.60%	7.39%	6.49%	0.79%	1.30%	379	77
Park	93.46%	91.84%	1.76%	1.51%	1.76%	1.21%	0.29%	0.91%	2.06%	3.32%	1361	331
Petroleum*	79.31%	100.00%	3.45%	0.00%	3.45%	0.00%	6.90%	0.00%	6.90%	0.00%	29	2
Phillips	86.91%	87.38%	0.34%	0.00%	0.00%	0.97%	11.07%	11.65%	1.68%	0.00%	298	103
Pondera*	79.33%	73.08%	2.22%	0.55%	0.91%	2.75%	15.02%	21.43%	1.92%	1.10%	992	182
Powder River	86.32%	88.29%	3.95%	2.93%	3.68%	1.95%	2.50%	1.95%	3.55%	4.88%	760	205
Powell	92.46%	90.79%	1.95%	2.63%	1.86%	2.19%	1.69%	1.32%	2.03%	3.07%	1180	228
Prairie*	80.42%	80.95%	3.31%	4.76%	5.72%	0.00%	4.22%	0.00%	6.02%	14.29%	332	21
Ravalli	96.63%	95.72%	0.40%	0.20%	0.46%	0.92%	0.19%	0.31%	1.61%	1.94%	3230	981
Richland	91.26%	89.80%	0.72%	0.00%	1.17%	1.22%	2.94%	2.04%	3.91%	6.94%	1533	245
Roosevelt*	56.71%	47.49%	0.48%	0.24%	1.57%	1.43%	39.72%	49.40%	1.39%	1.43%	1654	419
Rosebud	83.08%	81.20%	1.01%	2.26%	2.11%	1.50%	10.67%	12.03%	2.82%	3.01%	993	133
Sanders	95.45%	93.46%	1.21%	0.65%	0.20%	0.33%	1.82%	3.27%	1.21%	2.29%	989	306
Sheridan	89.95%	93.55%	1.59%	0.00%	3.17%	1.61%	1.06%	1.61%	3.70%	1.61%	189	62
Silver Bow	94.20%	94.65%	1.45%	0.52%	1.17%	0.78%	1.23%	2.09%	1.79%	1.69%	1792	767
Stillwater	89.14%	91.39%	1.98%	0.66%	1.98%	2.65%	2.22%	0.66%	4.44%	4.64%	405	151
Sweet Grass	88.89%	88.57%	3.09%	0.00%	1.23%	8.57%	1.85%	0.00%	4.94%	2.86%	162	35
Teton	90.72%	96.00%	1.37%	0.00%	1.03%	0.00%	4.12%	4.00%	2.75%	0.00%	291	25
Toole	86.08%	83.46%	1.55%	1.15%	1.09%	1.15%	9.55%	11.15%	1.36%	1.54%	1099	260
Treasure*	86.89%	85.71%	1.64%	0.00%	0.82%	14.29%	7.38%	0.00%	3.28%	0.00%	122	14
Valley	81.69%	82.68%	0.88%	0.00%	1.20%	0.87%	14.54%	13.85%	1.61%	2.60%	1245	231
Wheatland	92.53%	92.86%	1.15%	1.43%	2.30%	0.00%	2.30%	2.86%	1.72%	0.00%	174	70
Wibaux*	90.87%	84.21%	1.24%	0.00%	1.24%	5.26%	4.15%	5.26%	2.49%	5.26%	241	19
Yellowstone	89.60%	88.05%	1.15%	0.80%	2.43%	3.07%	3.48%	5.33%	3.18%	2.40%	5634	2251

Involvement in Crashes

Seventeen counties show differences in the proportion of groups involved in crashes compared to their proportion of drivers stopped, but only eight counties have more than 100 crashes to examine. We recommend caution when interpreting potential disproportionality in the analysis below, especially when a county has less than 100 crashes for comparison.

In eight counties, White drivers were stopped more than their involvement in crashes (Beaverhead, Carter, Fallon, Garfield, Judith Basin, Liberty, Phillips, Powder River, and Roosevelt). However, all but two of these counties, Beaverhead and Roosevelt, have less than 100 crashes for comparison. In 8 counties, Native Americans were stopped more than their involvement in crashes attended by MHP officers (Big Horn, Glacier, Lake, McCone, Musselshell, Petroleum, Rosebud and Valley). Of these six counties, three have less than 100 crashes for 2017 (McCone, Musselshell, and Petroleum).

Big Horn, Lake, and Petroleum also revealed differences in percentage stopped and involvement in crashes attended by the MHP for the previous three years (2014-2016). For the final year of analysis, we will combine all stops and crashes over the five-year period to examine whether disproportionality is present.

Table 12: County-Level Crashes

County	White Drivers	Asian Drivers	Black Drivers	Native American Drivers	Hispanic Drivers	Total
Beaverhead	85.42% (123)	1.39% (2)	2.08% (3)	3.47% (5)	6.94% (10)	(144)
Big Horn	71.43% (120)	1.19% (2)	2.98% (5)	20.83% (35)	2.38% (4)	(168)
Blaine	68.00% (34)	0.00% (0)	0.00% (0)	30.00% (15)	2.00% (1)	(50)
Broadwater	93.16% (177)	0.53% (1)	2.63% (5)	1.58% (3)	0.53% (1)	(190)
Carbon	96.59% (255)	1.14% (3)	1.14% (3)	0.38% (1)	0.76% (2)	(264)
Carter	41.67% (5)	0.00% (0)	33.33% (4)	8.33% (1)	16.67% (2)	(12)
Cascade	92.32% (589)	0.78% (5)	1.41% (9)	3.13% (20)	2.04% (13)	(638)
Chouteau	83.50% (86)	1.94% (2)	1.94% (2)	10.68% (11)	0.97% (1)	(103)
Custer	95.54% (150)	0.00% (0)	1.27% (2)	1.27% (2)	1.91% (3)	(157)
Daniels	100.00% (8)	0.00% (0)	0.00% (0)	0.00% (0)	0.00% (0)	(8)
Dawson	93.63% (147)	2.55% (4)	2.55% (4)	0.00% (0)	1.27% (2)	(157)
Deer Lodge	97.32% (109)	0.89% (1)	0.89% (1)	0.00% (0)	0.89% (1)	(112)
Fallon	87.50% (7)	0.00% (0)	0.00% (0)	0.00% (0)	0.00% (0)	(8)
Fergus	91.98% (149)	1.23% (2)	1.23% (2)	2.47% (4)	2.47% (4)	(162)
Flathead	96.28% (2304)	0.96% (23)	0.50% (12)	1.17% (28)	1.04% (25)	(2393)
Gallatin	93.70% (1905)	1.33% (27)	0.79% (16)	0.93% (19)	3.00% (61)	(2033)
Garfield	87.50% (14)	0.00% (0)	0.00% (0)	6.25% (1)	6.25% (1)	(16)
Glacier	65.63% (105)	1.88% (3)	1.25% (2)	28.75% (46)	1.25% (2)	(160)
Golden Valley	92.86% (13)	0.00% (0)	0.00% (0)	7.14% (1)	0.00% (0)	(14)
Granite	91.94% (171)	1.61% (3)	2.15% (4)	1.08% (2)	2.69% (5)	(186)
Hill	77.46% (110)	0.00% (0)	1.41% (2)	19.01% (27)	1.41% (2)	(142)
Jefferson	92.31% (468)	2.76% (14)	1.78% (9)	0.99% (5)	1.38% (7)	(507)
Judith Basin	89.04% (65)	1.37% (1)	0.00% (0)	1.37% (1)	8.22% (6)	(73)
Lake	90.13% (566)	0.16% (1)	0.32% (2)	7.64% (48)	1.27% (8)	(628)
Lewis and Clark	96.44% (894)	0.43% (4)	0.76% (7)	1.19% (11)	0.97% (9)	(927)
Liberty	83.33% (5)	0.00% (0)	0.00% (0)	16.67% (1)	0.00% (0)	(6)
Lincoln	97.94% (332)	0.00% (0)	0.29% (1)	0.29% (1)	0.88% (3)	(339)
Madison	93.33% (182)	0.00% (0)	0.51% (1)	1.03% (2)	4.10% (8)	(195)
McCone	87.50% (21)	4.17% (1)	0.00% (0)	8.33% (2)	0.00% (0)	(24)
Meagher	94.59% (35)	0.00% (0)	2.70% (1)	0.00% (0)	2.70% (1)	(37)
Mineral	88.21% (374)	3.30% (14)	3.77% (16)	1.18% (5)	2.36% (10)	(424)
Missoula	94.16% (1322)	0.57% (8)	1.21% (17)	2.21% (31)	1.21% (17)	(1404)
Musselshell	94.92% (56)	1.69% (1)	0.00% (0)	1.69% (1)	1.69% (1)	(59)
Park	95.06% (385)	1.98% (8)	1.48% (6)	0.00% (0)	1.48% (6)	(405)
Petroleum	94.44% (17)	0.00% (0)	5.56% (1)	0.00% (0)	0.00% (0)	(18)
Phillips	76.19% (32)	0.00% (0)	0.00% (0)	19.05% (8)	2.38% (1)	(42)
Pondera	76.42% (81)	3.77% (4)	1.89% (2)	14.15% (15)	2.83% (3)	(106)
Powder River	78.85% (41)	5.77% (3)	3.85% (2)	5.77% (3)	5.77% (3)	(52)
Powell	90.74% (343)	2.12% (8)	3.17% (12)	1.06% (4)	2.38% (9)	(378)
Prairie	85.19% (46)	1.85% (1)	3.70% (2)	3.70% (2)	1.85% (1)	(54)
Ravalli	96.66% (781)	1.24% (10)	0.62% (5)	0.00% (0)	0.87% (7)	(808)
Richland	89.81% (97)	0.00% (0)	2.78% (3)	3.70% (4)	3.70% (4)	(108)
Roosevelt	48.87% (65)	0.00% (0)	0.00% (0)	48.12% (64)	2.26% (3)	(133)
Rosebud	80.58% (112)	4.32% (6)	5.04% (7)	5.76% (8)	2.88% (4)	(139)
Sanders	96.49% (275)	0.70% (2)	0.70% (2)	1.05% (3)	0.70% (2)	(285)
Sheridan	100.00% (20)	0.00% (0)	0.00% (0)	0.00% (0)	0.00% (0)	(20)
Silver Bow	90.81% (257)	1.41% (4)	4.24% (12)	1.41% (4)	1.77% (5)	(283)
Stillwater	88.85% (239)	1.49% (4)	4.09% (11)	1.49% (4)	3.72% (10)	(269)
Sweet Grass	92.70% (165)	1.12% (2)	3.93% (7)	0.00% (0)	2.25% (4)	(178)
Teton	91.53% (108)	0.85% (1)	1.69% (2)	4.24% (5)	0.85% (1)	(118)
Toole	86.79% (46)	1.89% (1)	0.00% (0)	5.66% (3)	3.77% (2)	(53)
Treasure	91.49% (43)	2.13% (1)	2.13% (1)	2.13% (1)	2.13% (1)	(47)
Valley	91.06% (112)	0.81% (1)	1.63% (2)	5.69% (7)	0.81% (1)	(123)
Wheatland	90.00% (27)	0.00% (0)	3.33% (1)	3.33% (1)	3.33% (1)	(30)
Wibaux	92.31% (24)	0.00% (0)	0.00% (0)	0.00% (0)	7.69% (2)	(26)
Yellowstone	91.96% (1224)	0.38% (5)	1.88% (25)	3.01% (40)	2.33% (31)	(1331)

Table 13: County Level Percent Contacted Minus Involvement in Collisions by Race

<i>County</i>	<i>White Drivers</i>	<i>Asian Drivers</i>	<i>Black Drivers</i>	<i>Native American Drivers</i>	<i>Hispanic Drivers</i>
Beaverhead*	7.77%	0.05%	-1.36%	-1.91%	-3.84%
Big Horn*	-10.10%	0.17%	-1.04%	11.51%	0.58%
Blaine	0.02%	0.00%	0.97%	-0.38%	-1.29%
Broadwater	3.61%	0.55%	-1.88%	-1.69%	0.87%
Carbon	-0.94%	-0.41%	-1.14%	1.07%	1.07%
Carter*	50.82%	0.44%	-33.45%	-6.89%	-10.91%
Cascade	-0.36%	-0.19%	1.25%	-0.04%	-0.51%
Chouteau	0.89%	-1.26%	-0.65%	1.30%	0.57%
Custer	-5.30%	1.26%	0.86%	1.39%	1.06%
Daniels	-3.11%	0.00%	0.50%	2.60%	0.00%
Dawson	-7.77%	-0.86%	1.68%	2.58%	4.10%
Deer Lodge	-5.22%	1.66%	1.21%	1.04%	0.77%
Fallon*	10.33%	0.00%	0.04%	1.42%	0.00%
Fergus	0.27%	-0.47%	-0.13%	1.45%	-1.11%
Flathead	1.02%	-0.48%	-0.20%	-0.27%	-0.19%
Gallatin	0.35%	0.32%	0.37%	-0.36%	-0.60%
Garfield*	9.39%	0.00%	2.04%	-5.22%	-6.22%
Glacier*	-10.40%	-0.52%	-0.26%	12.42%	-0.62%
Golden Valley	-0.24%	2.96%	1.47%	-4.19%	0.00%
Granite	4.15%	-0.57%	-0.83%	-0.05%	-2.17%
Hill	-0.47%	0.47%	0.25%	0.64%	-0.82%
Jefferson	1.23%	-1.00%	-0.43%	0.19%	0.55%
Judith Basin*	5.07%	-0.74%	2.10%	0.94%	-7.79%
Lake*	-13.28%	0.43%	0.03%	13.05%	-0.04%
Lewis and Clark	-0.55%	0.10%	0.13%	-0.03%	0.32%
Liberty*	8.24%	1.13%	0.00%	-10.48%	0.56%
Lincoln	-0.11%	0.39%	-0.15%	0.24%	-0.21%
Madison	4.35%	1.03%	-0.22%	-0.97%	-3.28%
McCone*	-5.07%	-3.25%	0.46%	6.45%	1.38%
Meagher	4.10%	0.26%	-2.18%	0.00%	-2.44%
Mineral	3.67%	-1.27%	-1.73%	0.60%	-0.54%
Missoula	0.08%	0.46%	-0.16%	-0.38%	0.29%
Musselshell*	-6.24%	-0.79%	1.38%	5.77%	-0.79%
Park	-1.82%	-0.26%	0.06%	0.41%	0.83%
Petroleum*	-13.80%	3.23%	-2.33%	6.45%	6.45%
Phillips*	10.77%	0.25%	0.25%	-7.78%	-1.12%
Pondera	1.82%	-1.80%	-0.69%	1.96%	-1.03%
Powder River*	9.84%	-2.47%	-1.35%	-3.19%	-2.82%
Powell	1.69%	-0.01%	-1.49%	0.61%	-0.27%
Prairie	-4.73%	1.55%	1.68%	0.26%	4.66%
Ravalli	-0.22%	-0.88%	-0.05%	0.21%	0.80%
Richland	1.24%	0.62%	-1.60%	-0.89%	0.63%
Roosevelt*	5.72%	0.43%	1.50%	-6.16%	-0.84%
Rosebud*	2.09%	-3.12%	-3.18%	5.38%	-0.03%
Sanders	-1.59%	0.31%	-0.47%	1.11%	0.77%
Sheridan	-8.73%	1.29%	2.26%	1.29%	3.43%
Silver Bow	3.53%	-0.24%	-3.19%	0.07%	-0.01%
Stillwater	1.03%	0.14%	-2.10%	0.32%	0.81%
Sweet Grass	-3.92%	1.42%	-1.38%	1.52%	2.34%
Teton	-0.44%	0.43%	-0.74%	-0.10%	1.69%
Toole	-1.00%	-0.41%	1.12%	4.11%	-2.44%
Treasure	-2.80%	-1.25%	0.21%	4.89%	-1.05%
Valley*	-9.32%	-0.06%	-0.46%	8.87%	0.90%
Wheatland	3.18%	0.87%	-1.64%	-1.19%	-2.06%
Wibaux	-2.15%	1.51%	1.51%	4.18%	-5.04%
Yellowstone	-2.82%	0.66%	0.73%	0.97%	0.64%

Calls for Service and Self-Initiated Physical Assists

Due to the low number of calls for service and self-initiated physical assists at the county-level it is difficult to draw conclusions from the data; however, the benchmark comparison was conducted to guide future analysis where more data is available. Comparing the percentage of contacts by group to the proportion involved in calls for service and self-initiated physical assists reveals 23 counties where groups are stopped more than their involvement in calls for service and self-initiated physical assists at the 5% threshold (Big Horn, Blaine, Carter, Deer Lodge, Fergus, Flathead, Glacier, Granite, Hill, Judith Basin, Liberty, Madison, McCone, Musselshell, Petroleum, Phillips, Powder River, Prairie, Silver Bow, Teton, Treasure, Wheatland, and Yellowstone). However, sixteen of these counties have fewer than 100 calls for assistance or self-initiated physical assists, while 13 have less than 50. Only Big Horn, Deer Lodge, Silver Bow and Yellowstone have more than 100 assists by MHP officers. For most counties showing differences in stops versus assistance, in fifteen of these counties, White drivers are stopped more than their rate of assistance. In seven counties, Big Horn, Liberty, McCone, Musselshell, Petroleum, Phillips, and Treasure, Native American drivers are stopped more than their involvement in assists, but only one has more than 100 assists to compare (Big Horn). Prairie shows differences for Black drivers (with only 33 total assists in 2017 to compare). While Big Horn and Yellowstone have enough assists for comparison, they do not consistently show differences in this benchmark comparison in previous years.

Table 14: County-Level Calls for Service and Self-Initiated Physical Assists by Race/Ethnicity

County	White Drivers		Asian Drivers		Black Drivers		Native American Drivers		Hispanic Drivers		Number of Calls
Beaverhead	93.33%	(14)	0.00%	(0)	0.00%	(0)	6.67%	(1)	0.00%	(0)	(15)
Big Horn	66.38%	(156)	0.00%	(0)	8.09%	(19)	19.57%	(46)	4.26%	(10)	(235)
Blaine	57.14%	(12)	0.00%	(0)	9.52%	(2)	33.33%	(7)	0.00%	(0)	(21)
Broadwater	95.06%	(77)	0.00%	(0)	1.23%	(1)	1.23%	(1)	2.47%	(2)	(81)
Carbon	96.77%	(60)	1.61%	(1)	0.00%	(0)	1.61%	(1)	0.00%	(0)	(62)
Carter	50.00%	(3)	16.67%	(1)	16.67%	(1)	0.00%	(0)	16.67%	(1)	(6)
Cascade	87.27%	(562)	1.24%	(8)	2.17%	(14)	3.73%	(24)	2.48%	(16)	(644)
Chouteau	83.02%	(44)	0.00%	(0)	0.00%	(0)	16.98%	(9)	0.00%	(0)	(53)
Custer	92.39%	(182)	0.00%	(0)	3.55%	(7)	1.02%	(2)	1.52%	(3)	(197)
Daniels	100.00%	(28)	0.00%	(0)	0.00%	(0)	0.00%	(0)	0.00%	(0)	(28)
Dawson	85.49%	(165)	1.04%	(2)	2.59%	(5)	4.66%	(9)	3.11%	(6)	(193)
Deer Lodge	83.02%	(88)	0.94%	(1)	2.83%	(3)	1.89%	(2)	2.83%	(3)	(106)
Fallon	95.45%	(21)	0.00%	(0)	0.00%	(0)	0.00%	(0)	0.00%	(0)	(22)
Fergus	57.78%	(52)	0.00%	(0)	0.00%	(0)	1.11%	(1)	0.00%	(0)	(90)
Flathead	88.20%	(740)	0.36%	(3)	0.24%	(2)	0.83%	(7)	1.07%	(9)	(839)
Gallatin	91.17%	(537)	0.68%	(4)	1.70%	(10)	0.85%	(5)	3.23%	(19)	(589)
Garfield	100.00%	(7)	0.00%	(0)	0.00%	(0)	0.00%	(0)	0.00%	(0)	(7)
Glacier	28.99%	(20)	1.45%	(1)	1.45%	(1)	40.58%	(28)	0.00%	(0)	(69)
Golden Valley	100.00%	(6)	0.00%	(0)	0.00%	(0)	0.00%	(0)	0.00%	(0)	(6)
Granite	83.08%	(54)	0.00%	(0)	7.69%	(5)	0.00%	(0)	6.15%	(4)	(65)
Hill	52.08%	(25)	0.00%	(0)	2.08%	(1)	45.83%	(22)	0.00%	(0)	(48)
Jefferson	91.95%	(240)	0.38%	(1)	1.15%	(3)	1.15%	(3)	2.68%	(7)	(261)
Judith Basin	73.91%	(34)	2.17%	(1)	0.00%	(0)	4.35%	(2)	0.00%	(0)	(46)
Lake	77.78%	(175)	0.00%	(0)	0.89%	(2)	16.89%	(38)	0.00%	(0)	(225)
Lewis and Clark	91.67%	(407)	0.45%	(2)	1.80%	(8)	2.70%	(12)	2.03%	(9)	(444)
Liberty	100.00%	(17)	0.00%	(0)	0.00%	(0)	0.00%	(0)	0.00%	(0)	(17)
Lincoln	96.95%	(191)	0.00%	(0)	0.51%	(1)	1.02%	(2)	0.00%	(0)	(197)
Madison	92.11%	(105)	2.63%	(3)	1.75%	(2)	0.00%	(0)	1.75%	(2)	(114)
McCone	90.91%	(20)	0.00%	(0)	0.00%	(0)	4.55%	(1)	4.55%	(1)	(22)
Meagher	100.00%	(8)	0.00%	(0)	0.00%	(0)	0.00%	(0)	0.00%	(0)	(8)
Mineral	88.31%	(287)	0.62%	(2)	7.08%	(23)	1.23%	(4)	2.15%	(7)	(325)
Missoula	89.62%	(656)	1.91%	(14)	0.96%	(7)	3.01%	(22)	2.87%	(21)	(732)
Musselshell	85.00%	(17)	0.00%	(0)	5.00%	(1)	0.00%	(0)	10.00%	(2)	(20)
Park	95.83%	(115)	0.83%	(1)	0.83%	(1)	0.00%	(0)	1.67%	(2)	(120)
Petroleum	100.00%	(1)	0.00%	(0)	0.00%	(0)	0.00%	(0)	0.00%	(0)	(1)
Phillips	94.29%	(33)	0.00%	(0)	0.00%	(0)	2.86%	(1)	0.00%	(0)	(35)
Pondera	79.59%	(39)	2.04%	(1)	4.08%	(2)	12.24%	(6)	0.00%	(0)	(49)
Powder River	69.64%	(39)	10.71%	(6)	12.50%	(7)	5.36%	(3)	1.79%	(1)	(56)
Powell	90.16%	(110)	2.46%	(3)	2.46%	(3)	0.00%	(0)	3.28%	(4)	(122)
Prairie	87.88%	(29)	0.00%	(0)	0.00%	(0)	3.03%	(1)	3.03%	(1)	(33)
Ravalli	93.45%	(214)	0.00%	(0)	1.31%	(3)	0.44%	(1)	1.75%	(4)	(229)
Richland	86.49%	(64)	1.35%	(1)	1.35%	(1)	5.41%	(4)	2.70%	(2)	(74)
Roosevelt	50.00%	(97)	0.52%	(1)	0.00%	(0)	47.94%	(93)	0.00%	(0)	(194)
Rosebud	81.67%	(49)	0.00%	(0)	3.33%	(2)	10.00%	(6)	3.33%	(2)	(60)
Sanders	95.42%	(146)	0.65%	(1)	0.65%	(1)	1.31%	(2)	1.96%	(3)	(153)
Sheridan	90.91%	(10)	0.00%	(0)	0.00%	(0)	0.00%	(0)	0.00%	(0)	(11)
Silver Bow	88.76%	(237)	1.12%	(3)	2.62%	(7)	0.75%	(2)	1.87%	(5)	(267)
Stillwater	89.15%	(115)	0.78%	(1)	3.10%	(4)	3.10%	(4)	3.88%	(5)	(129)
Sweet Grass	88.24%	(75)	2.35%	(2)	3.53%	(3)	1.18%	(1)	3.53%	(3)	(85)
Teton	86.05%	(37)	2.33%	(1)	2.33%	(1)	9.30%	(4)	0.00%	(0)	(43)
Toole	81.18%	(69)	1.18%	(1)	2.35%	(2)	10.59%	(9)	1.18%	(1)	(85)
Treasure	90.00%	(9)	0.00%	(0)	10.00%	(1)	0.00%	(0)	0.00%	(0)	(10)
Valley	84.96%	(113)	0.00%	(0)	1.50%	(2)	10.53%	(14)	0.75%	(1)	(133)
Wheatland	59.09%	(13)	0.00%	(0)	0.00%	(0)	4.55%	(1)	4.55%	(1)	(22)
Wibaux	93.94%	(31)	0.00%	(0)	3.03%	(1)	0.00%	(0)	0.00%	(0)	(33)
Yellowstone	81.48%	(704)	0.58%	(5)	3.47%	(30)	7.06%	(61)	4.98%	(43)	(864)

Table 15: County-Level Percent Contacted Minus Calls for Service and Assists by Race/Ethnicity

County	White Drivers	Asian Drivers	Black Drivers	Native American Drivers	Hispanic Drivers
Beaverhead	-0.15%	1.44%	0.72%	-5.11%	3.12%
Big Horn*	-5.06%	1.36%	-6.15%	12.77%	-1.29%
Blaine*	10.87%	0.00%	-8.55%	-3.72%	0.71%
Broadwater	1.70%	1.08%	-0.48%	-1.34%	-1.07%
Carbon	-1.13%	-0.89%	0.00%	-0.17%	1.83%
Carter*	42.48%	-16.23%	-16.79%	1.44%	-10.91%
Cascade	4.70%	-0.65%	0.48%	-0.63%	-0.96%
Chouteau	1.36%	0.68%	1.29%	-5.00%	1.55%
Custer	-2.15%	1.26%	-1.42%	1.65%	1.44%
Daniels	-3.11%	0.00%	0.50%	2.60%	0.00%
Dawson	0.37%	0.65%	1.64%	-2.08%	2.27%
Deer Lodge*	9.08%	1.61%	-0.72%	-0.84%	-1.17%
Fallon	2.38%	0.00%	0.04%	1.42%	0.00%
Fergus*	34.47%	0.77%	1.10%	2.81%	1.36%
Flathead*	9.10%	0.12%	0.07%	0.07%	-0.22%
Gallatin	2.88%	0.97%	-0.54%	-0.27%	-0.83%
Garfield	-3.11%	0.00%	2.04%	1.03%	0.03%
Glacier*	26.24%	-0.09%	-0.46%	0.59%	0.63%
Golden Valley	-7.39%	2.96%	1.47%	2.96%	0.00%
Granite*	13.01%	1.05%	-6.37%	1.02%	-5.64%
Hill*	24.91%	0.47%	-0.43%	-26.18%	0.59%
Jefferson	1.59%	1.38%	0.19%	0.03%	-0.75%
Judith Basin*	20.20%	-1.55%	2.10%	-2.04%	0.43%
Lake	-0.93%	0.59%	-0.54%	3.80%	1.24%
Lewis and Clark	4.23%	0.08%	-0.92%	-1.55%	-0.73%
Liberty*	-8.43%	1.13%	0.00%	6.19%	0.56%
Lincoln	0.87%	0.39%	-0.36%	-0.48%	0.67%
Madison*	5.58%	-1.61%	-1.46%	0.05%	-0.93%
McCone*	-8.48%	0.92%	0.46%	10.24%	-3.16%
Meagher	-1.31%	0.26%	0.52%	0.00%	0.26%
Mineral	3.57%	1.42%	-5.04%	0.55%	-0.34%
Missoula	4.62%	-0.88%	0.09%	-1.18%	-1.37%
Musselshell*	3.68%	0.91%	-3.62%	7.47%	-9.09%
Park	-2.59%	0.89%	0.71%	0.41%	0.64%
Petroleum*	-19.35%	3.23%	3.23%	6.45%	6.45%
Phillips*	-7.32%	0.25%	0.25%	8.41%	1.26%
Pondera	-1.35%	-0.07%	-2.89%	3.87%	1.80%
Powder River*	19.04%	-7.42%	-10.00%	-2.78%	1.16%
Powell	2.26%	-0.35%	-0.77%	1.66%	-1.17%
Prairie*	-7.43%	3.40%	5.38%	0.94%	3.49%
Ravalli	2.99%	0.36%	-0.74%	-0.22%	-0.08%
Richland	4.57%	-0.73%	-0.17%	-2.60%	1.63%
Roosevelt	4.59%	-0.08%	1.50%	-5.98%	1.42%
Rosebud	1.00%	1.19%	-1.48%	1.13%	-0.48%
Sanders	-0.53%	0.36%	-0.42%	0.85%	-0.48%
Sheridan	0.36%	1.29%	2.26%	1.29%	3.43%
Silver Bow*	5.57%	0.05%	-1.57%	0.73%	-0.12%
Stillwater	0.73%	0.85%	-1.11%	-1.29%	0.65%
Sweet Grass	0.54%	0.20%	-0.98%	0.35%	1.06%
Teton*	5.04%	-1.05%	-1.37%	-5.17%	2.54%
Toole	4.61%	0.30%	-1.24%	-0.82%	0.15%
Treasure*	-1.31%	0.88%	-7.66%	7.02%	1.08%
Valley	-3.23%	0.76%	-0.34%	4.03%	0.96%
Wheatland*	34.09%	0.87%	1.69%	-2.41%	-3.28%
Wibaux	-3.78%	1.51%	-1.52%	4.18%	2.65%
Yellowstone*	7.66%	0.46%	-0.86%	-3.08%	-2.01%

District-Level Analysis

As with previous reports, we conducted analysis at the MHP district level to further explore differences based on geographic location. As can be seen in Table 16 below, the proportion of drivers stopped is very similar across districts. For instance, for each district, White drivers constitute the majority of drivers stopped, and more than 90% of drivers stopped in 5 Districts (1, 2, 3, 6 and 7). In three districts, Native American drivers are stopped in higher percentages compared to other districts (District 4, 5, and 8). These differences are consistent with the data of the last 3 years, and most likely reflect the population of these Districts, which have higher percentages of Native American residents.

Table 16: Percentage of District Stops and Population by Race/Ethnicity 2017

<i>District</i>		<i>White Drivers</i>	<i>Asian Drivers</i>	<i>Black Drivers</i>	<i>Native American Drivers</i>	<i>Hispanic Drivers</i>	<i>Total</i>
1	Stops	94.42% (15,614)	1.03% (170)	1.03% (171)	1.44% (238)	1.63% (269)	16,537
	Population	90.42% (159,107)	1.26% (2,216)	0.41% (724)	2.09% (3,680)	1.26% (5,778)	175,970
2	Stops	91.90% (9,082)	0.70% (69)	2.31% (228)	3.37% (333)	1.47% (145)	9,883
	Population	87.27% (95,221)	0.84% (919)	1.20% (1,310)	3.57% (3,897)	3.96% (4,317)	109,115
3	Stops	94.11% (10,522)	1.33% (149)	1.31% (146)	1.30% (145)	1.75% (196)	11,181
	Population	91.25% (137,910)	0.64% (962)	0.50% (754)	1.99% (3,007)	3.51% (5,306)	151,134
4	Stops	86.20% (9,060)	1.14% (120)	2.46% (259)	6.96% (731)	3.04% (319)	10,510
	Population	83.26% (163,310)	0.57% (1,124)	0.60% (1,184)	7.70% (15,102)	5.32% (10,440)	196,146
5	Stops	83.46% (13,314)	1.23% (197)	2.28% (363)	9.55% (1,524)	3.17% (506)	15,953
	Population	78.42% (59,986)	0.57% (434)	0.40% (306)	14.64% (11,197)	3.61% (2,762)	76,497
6	Stops	93.92% (11,294)	0.48% (58)	0.29% (35)	4.17% (502)	0.90% (108)	12,025
	Population	87.26% (130,646)	0.67% (997)	0.32% (486)	5.52% (8,271)	3.10% (4,648)	149,713
7	Stops	94.47% (10,113)	1.52% (163)	1.15% (123)	0.50% (53)	2.10% (225)	10,705
	Population	92.26% (129,273)	1.15% (1,615)	0.40% (560)	0.84% (1,184)	3.49% (4,896)	140,125
8	Stops	77.17% (6,390)	0.99% (82)	1.17% (97)	19.02% (1,575)	1.12% (93)	8,280
	Population	63.34% (37,984)	0.38% (226)	0.37% (220)	30.18% (18,101)	2.96% (1,774)	59,968

We conducted a disparity index analysis at the District-level by dividing the percentage of drivers stopped by the percentage among the benchmark group (in this case the US Census). A value under 1 represents underrepresentation of the group in the number of stops; a value over 1 represents potential overrepresentation of the group in the number of stops. The closer the value is to 1 the closer the group's proportion of traffic stops equals its proportion of the residential population. As mentioned previously, this analysis has several limitations. The disparity index is susceptible to showing overrepresentation when less than 15% of the population are people of

color. It is also best conducted at a state-level due to more localized factors that could impact the driving population of an area that is not captured by the Census, such as a university or high-levels of tourism in some areas at specific times of the year. Additionally, district-level population estimates were obtained by combining county Census estimates in each district. As noted, Census estimates are more likely to undercount people of color at the county-level, especially in several counties in Montana. Therefore, these results should be treated with caution as findings of overrepresentation in stops may be due to error (due to inaccurate projections and a susceptibility to overrepresentation when populations are less than 15% of total populations), and alternative explanations for potential overrepresentation cannot be ruled-out.

As can be seen in Table 17 below, Black drivers may be potentially overrepresented in stops compared to their proportion of the population for all districts except District 6, while Native American drivers are potentially overrepresented in District 4 and White drivers are possibly overrepresented in District 8. Asian drivers and Hispanic drivers appear to be underrepresented in every district. Given that each group makes up far fewer than 15% of the total population in each district, these results should be interpreted with caution.

Table 17: District Disparity Indexes, 2017

	<i>White Drivers</i>	<i>Black Drivers</i>	<i>Native Americans Drivers</i>	<i>Asian Drivers</i>	<i>Hispanic Drivers</i>
District 1	1.06	1.41	0.73	0.38	0.40
District 2	1.06	1.56	0.98	0.46	0.30
District 3	1.06	1.16	0.53	0.68	0.30
District 4	1.05	2.62	1.14	0.63	0.37
District 5	1.05	1.58	1.05	0.57	0.29
District 6	1.08	0.75	0.80	0.45	0.22
District 7	1.05	1.63	0.36	0.44	0.42
District 8	1.18	2.24	0.76	0.82	0.19

Notes: Disparity index = (proportion of stops / proportion of population). A value of 1 represents no disparity; values greater than 1 indicate overrepresentation; values less than 1 indicate underrepresentation. Stops only include vehicles with MT issued drivers licenses. Population estimates based on 2010 US Census.

Day and Night Stops

Table 18 indicates that there are not any substantial differences in daytime and nighttime stops on the District level. This finding is consistent with prior analyses (2014, 2015, and 2016), which also show no significant disparities.

Table 18: District-Level Percentage of Day and Night Stops by Race/Ethnicity

District	White Drivers		Asian Drivers		Black Drivers		Native American Drivers		Hispanic Drivers		Number of Stops	
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
District 1	94.84% (11,885)	93.09% (3,729)	1.08% (135)	0.87% (35)	0.90% (113)	1.45% (58)	1.25% (157)	2.02% (81)	1.53% (192)	1.92% (77)	12,531	4,006
District 2	92.27% (6,496)	90.96% (2,586)	0.71% (50)	0.67% (19)	1.78% (125)	3.62% (103)	3.51% (247)	3.02% (86)	1.45% (102)	1.51% (43)	7,040	2,843
District 3	94.09% (8,178)	94.17% (2,344)	1.44% (125)	0.96% (24)	1.32% (115)	1.25% (31)	1.22% (106)	1.57% (39)	1.75% (152)	1.77% (44)	8,692	2,489
District 4	86.37% (6,577)	85.77% (2,483)	1.30% (99)	0.73% (21)	2.30% (175)	2.90% (84)	6.70% (510)	7.63% (221)	3.18% (242)	2.66% (77)	7,615	2,895
District 5	83.79% (11,344)	81.57% (1,970)	1.32% (179)	0.75% (18)	2.39% (323)	1.66% (40)	9.10% (1,232)	12.09% (292)	3.08% (417)	3.69% (89)	13,538	2,415
District 6	94.02% (8,738)	93.59% (2,556)	0.52% (48)	0.37% (10)	0.27% (25)	0.37% (10)	4.06% (377)	4.58% (125)	0.86% (80)	1.03% (28)	9,294	2,731
District 7	94.90% (7,226)	93.40% (2,887)	1.58% (120)	1.39% (43)	0.95% (72)	1.65% (51)	0.42% (32)	0.68% (21)	1.94% (148)	2.49% (77)	7,614	3,091
District 8	78.03% (4,990)	74.27% (1,400)	1.09% (70)	0.64% (12)	1.13% (72)	1.33% (25)	18.11% (1,158)	22.12% (417)	1.19% (76)	0.90% (17)	6,395	1,885

Involvement in Crashes

Tables 19 and 20 display statistics for crashes in each District by race and ethnicity. When comparing the stop and crash data at the District level, no Districts or groups present any potential disparity.

Table 19: District Crashes by Race/Ethnicity

District	White Drivers	Asian Drivers	Black Drivers	Native American Drivers	Hispanic Drivers	Total Crashes
District 1	94.21% (2752)	1.16% (34)	1.37% (40)	1.34% (39)	1.23% (36)	2921
District 2	92.09% (1024)	0.90% (10)	1.35% (15)	2.97% (33)	2.34% (26)	1112
District 3	93.35% (2697)	1.25% (36)	1.77% (51)	1.21% (35)	1.97% (57)	2889
District 4	90.63% (2003)	0.72% (16)	2.31% (51)	3.62% (80)	2.31% (51)	2210
District 5	82.20% (762)	1.83% (17)	2.70% (25)	10.03% (93)	2.59% (24)	927
District 6	95.30% (3202)	0.71% (24)	0.45% (15)	2.29% (77)	1.07% (36)	3360
District 7	93.88% (2502)	1.35% (36)	1.05% (28)	0.83% (22)	2.59% (69)	2665
District 8	75.38% (499)	1.51% (10)	1.21% (8)	19.03% (126)	1.81% (12)	662

Table 20: District-Level Percent Contacted Minus Involvement in Collisions by Race/Ethnicity

<i>District</i>	<i>White Drivers</i>	<i>Asian Drivers</i>	<i>Black Drivers</i>	<i>Native American Drivers</i>	<i>Hispanic Drivers</i>
District 1	0.21%	-0.13%	-0.34%	0.10%	0.40%
District 2	-0.19%	-0.20%	0.96%	0.40%	-0.87%
District 3	0.76%	0.08%	-0.46%	0.09%	-0.22%
District 4	-4.43%	0.42%	0.15%	3.34%	0.73%
District 5	1.26%	-0.60%	-0.42%	-0.48%	0.58%
District 6	-1.38%	-0.23%	-0.16%	1.88%	-0.17%
District 7	0.59%	0.17%	0.10%	-0.33%	-0.49%
District 8	1.79%	-0.52%	-0.04%	-0.01%	-0.69%

Calls for Service and Self-Initiated Physical Assists

Table 21 displays how many drivers called for service and/or assistance in 2017 by race/ethnicity at the District level. For example, in 2017, District 1 had 1,439 calls for service and self-initiated physical assists. Of those 1,439 calls, 17 of the calls were from Asian drivers (1.18%). Table 23 displays the percentage of how many drivers in each District were contacted by MHP minus the percentage of drivers calling for service and self-initiating assistance. In Districts 2, 4, 5, 6, and 8 White drivers are stopped more than they are contacted through calls for service or assists. In District 2, there is a 9.1 percentage points difference between the number of White drivers stopped and the number of White drivers calling for service and initiating assistance.

Table 21: District Calls for Service and Self-Initiated Physical Assists by Race/Ethnicity

<i>District</i>	<i>White Drivers</i>	<i>Asian Drivers</i>	<i>Black Drivers</i>	<i>Native American Drivers</i>	<i>Hispanic Drivers</i>	<i>Number of Stops</i>
District 1	90.55% (1303)	1.18% (17)	2.36% (34)	2.02% (29)	2.43% (35)	1439
District 2	82.80% (722)	1.15% (10)	1.83% (16)	3.67% (32)	2.18% (19)	872
District 3	90.32% (1437)	0.82% (13)	2.39% (38)	1.38% (22)	2.33% (37)	1591
District 4	80.73% (1110)	0.65% (9)	4.07% (56)	8.22% (113)	4.44% (61)	1375
District 5	77.66% (685)	1.25% (11)	2.27% (20)	14.85% (131)	1.70% (15)	882
District 6	87.71% (1106)	0.24% (3)	0.40% (5)	3.73% (47)	0.71% (9)	1261
District 7	92.36% (737)	0.63% (5)	1.50% (12)	0.75% (6)	2.88% (23)	798
District 8	68.70% (259)	0.80% (3)	2.12% (8)	21.75% (82)	0.27% (1)	377

Table 22: District Percent Contacted Minus Calls for Service and Assists by Race/Ethnicity

<i>District</i>	<i>White Drivers</i>	<i>Asian Drivers</i>	<i>Black Drivers</i>	<i>Native American Drivers</i>	<i>Hispanic Drivers</i>
District 1	3.87%	-0.15%	-1.33%	-0.58%	-0.80%
District 2*	9.10%	-0.45%	0.48%	-0.30%	-0.71%
District 3	3.79%	0.51%	-1.08%	-0.08%	-0.58%
District 4*	5.47%	0.49%	-1.61%	-1.26%	-1.40%
District 5*	5.80%	-0.02%	0.01%	-5.30%	1.47%
District 6*	6.21%	0.24%	-0.11%	0.44%	0.19%
District 7	2.11%	0.89%	-0.35%	-0.25%	-0.78%
District 8*	8.47%	0.19%	-0.95%	-2.73%	0.85%

City-Level Analysis

The last area of geographic examination is at the city level. City level analysis was limited to those cities with at least 400 stops, which helps ensure enough data to adequately detect variation in stops between groups to assess disproportionality. Comparisons with crashes and calls for service/self-initiated physical assists cannot be conducted at this level due to limited data for this level of analysis. The cities with enough stops to conduct this analysis are: Billings, Bozeman, Butte, Great Falls, Helena, Kalispell, and Missoula. As can be seen in Table 23, White drivers make up the majority of stops in each of these cities, comprising more than 87% of the stops in every city. The proportion of stops by race in each city reflects the population makeup of the city with none differing by more than 5% in all cities except Helena (See Table 24 below). In Helena, 96.30% of all drivers stopped were White whereas Whites makeup only 91.1% of the population.

Table 23: Percentage of City Stops by Race/Ethnicity

<i>City</i>	<i>White Drivers</i>	<i>Asian Drivers</i>	<i>Black Drivers</i>	<i>Native American Drivers</i>	<i>Hispanic Drivers</i>	<i>Total</i>
Billings	87.64% (1,942)	0.72% (16)	2.57% (57)	5.73% (127)	2.84% (63)	2216
Bozeman	94.44% (1,122)	1.35% (16)	1.09% (13)	0.93% (11)	1.94% (23)	1188
Butte	96.08% (661)	0.58% (4)	0.29% (2)	1.45% (10)	1.31% (9)	688
Great Falls	89.56% (2,403)	0.71% (19)	3.95% (106)	3.54% (95)	2.01% (54)	2683
Helena	96.30% (599)	0.32% (2)	1.77% (11)	0.32% (2)	1.13% (7)	622
Kalispell	97.38% (558)	0.52% (3)	0.00% (0)	1.40% (8)	0.70% (4)	573
Missoula	94.20% (1,039)	0.82% (9)	1.45% (16)	1.90% (21)	1.54% (17)	1103

Table 24: City Percentage of Stops minus Percentage of Population

City	White Drivers	Asian Drivers	Black Drivers	Native American Drivers	Hispanic Drivers
Billings	3.62%	-0.12%	1.81%	2.19%	-3.36%
Bozeman	2.46%	0.33%	0.89%	-0.09%	-1.52%
Butte	4.80%	-0.32%	-0.31%	-0.65%	-2.81%
Great Falls	4.96%	-0.19%	2.65%	-0.76%	-2.49%
Helena	5.18%	-0.08%	1.67%	-0.48%	-2.07%
Kalispell	4.50%	-0.18%	-0.20%	-0.22%	-2.10%
Missoula	4.82%	-0.70%	1.35%	-0.40%	-1.66%

*2017 estimates for Butte not available, 2016 estimates used.

Day and Night Stops

The city level analysis, like the District level analysis, shows no substantial differences between the percentages of groups stopped during the daytime and nighttime hours. This indicates that the rates at which drivers of different races are pulled over does not change when they are more easily visible to the officer.

Table 25: City Daytime and Nighttime Stops

City	White Drivers		Asian Drivers		Black Drivers		Native American Drivers		Hispanic Drivers		Number of Stops	
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
Billings	89.16% (1,160)	85.46% (782)	0.54% (7)	0.98% (9)	2.61% (34)	2.51% (23)	4.38% (57)	7.65% (70)	2.92% (38)	2.73% (25)	1,301	915
Bozeman	95.52% (576)	93.33% (546)	1.16% (7)	1.54% (9)	0.33% (2)	1.88% (11)	0.66% (4)	1.20% (7)	2.32% (14)	1.54% (9)	603	585
Butte	94.91% (373)	97.63% (288)	0.76% (3)	0.34% (1)	0.25% (1)	0.34% (1)	1.78% (7)	1.02% (3)	2.04% (8)	0.34% (1)	393	295
Great Falls	90.41% (1,376)	88.46% (1,027)	0.79% (12)	3.74% (7)	2.96% (45)	5.25% (61)	3.48% (53)	3.62% (42)	2.10% (32)	1.89% (22)	1522	1161
Helena	97.01% (422)	94.65% (177)	0.23% (1)	0.53% (1)	1.61% (7)	2.14% (4)	0.00% (0)	1.07% (2)	0.92% (4)	1.60% (3)	435	187
Missoula	97.34% (403)	97.48% (155)	0.72% (3)	0.00% (0)	0.00% (0)	0.00% (0)	1.21% (5)	1.89% (3)	0.72% (3)	0.63% (1)	414	159
Kalispell	94.51% (706)	93.54% (333)	0.94% (7)	0.56% (2)	0.94% (7)	2.53% (9)	1.74% (13)	2.25% (8)	1.74% (13)	1.12% (4)	747	356

Statewide Analysis 2014-2017

We also combined the stop data provided by MHP from years 2014 to 2017 to examine for potential disproportionality using disparity index analyses. As with single year analysis, we removed all non-motor vehicle stops and commercial vehicle stops for a total of 408,105 traffic stops analyzed over the 4-year period. With multiple years of data, it is possible to ascertain whether there are changes in potential disparities among groups in the number of stops over time. To do this, we created a disparity index for each year of data. As done previously, we included only stops of resident drivers (determined by whether the driver had a Montana-issued driver’s license) and used census statistics of the driving age population (16 years and older). The following analyses use adjusted data for the census and the stop data. These results should be interpreted with caution given that a false finding of overrepresentation can occur when a groups proportion of the total population is less than 15% (which is the case for all people of color in Montana), and alternative explanations of overrepresentation cannot be ruled out.

The disparity indexes (Table 26) suggest Asian and Hispanic drivers are underrepresented in stops each year, while Black drivers are potentially overrepresented in stops. Native American drivers may have been slightly overrepresented in 2015. White drivers are stopped at a rate to be expected based on the Census as their disparity index is nearly 1.00 each year. The disparity index also suggests that disproportionality in stops for Black drivers may be increasing from 2014 to 2017. While the disparity index analysis cannot provide an explanation for this disproportionality, as many explanations for disproportionality exist outside of bias, potential contributions to this disproportionality should be discussed and evaluated.

Table 26: Disparity Index, Longitudinal, Statewide 2014-2017

	<i>White Drivers</i>	<i>Black Drivers</i>	<i>Native American Drivers</i>	<i>Asian Drivers</i>	<i>Hispanic Drivers</i>
2014	1.06	1.23	0.92	0.53	0.28
2015	1.05	1.30	1.10	0.52	0.32
2016	1.05	1.65	0.98	0.50	0.27
2017	1.05	2.06	1.03	0.55	0.32

Notes: Disparity index = (proportion of stops / proportion of population). A value of 1 represents no disparity; values greater than 1 indicate over-representation; values less than 1 indicate underrepresentation.

Conclusions

As with the analysis of previous years (2014-2016), the 2017 data analysis did not reveal evidence of systemic bias in stops based on a combination of benchmark comparisons. For this year we added the disparity index analysis at both the state and district level which did reveal potential overrepresentation of Black drivers at the state-level, and potential overrepresentation of Black drivers in each district except for District 6. While the disparity analysis is limited because it cannot provide an explanation of overrepresentation, and results may be inaccurate when people of color are less than 15% of the total population, potential overrepresentation for these drivers may need to be examined further. As with previous years, the analysis of select cities and the other benchmark comparisons at the District-level analysis did not reveal evidence of disproportionality in stops for people of color by the Montana Highway Patrol, and thus, we do not conclude that systemic bias is occurring in the decision to stop by the MHP.

The county-level analysis did reveal some counties where potential disproportionality exists in stops conducted by the MHP. The county-level Census comparison revealed 16 counties where some groups are stopped in higher percentages than their proportion of the population. For nine counties, White drivers are overrepresented in stops. In six counties, Native Americans were overrepresented, while Black drivers are overrepresented in Prairie County. As with previous years, data for several of these counties, including Prairie, are limited because there are too few cases to detect variation in analysis. Additionally, as mentioned previously, Census projections at the county-level for people of color may not be accurate due to undercounting. Much of the county-level analysis is ambiguous, with some benchmark comparisons suggesting potential disproportionality, but not others. This is likely due to the number of cases examined which do not allow for enough analysis to detect disproportionality.

We also combined data from 2014 to 2017 and analyze potential disproportionality using disparity index analysis at the state-level. This analysis suggests that Black drivers are potentially overrepresented in stops each year at the state-level, and this potential overrepresentation has increased from 2014 to 2017. Hispanic and Asian drivers were underrepresented each year, and Native Americans drivers were stopped at rates to be expected based on their proportion of the state population.

Despite the limitations of disparity index analysis, potential overrepresentation in stops warrants further consideration, particularly for Black drivers who are potentially overrepresented

at the state-level and in most districts. It is recommended that potential overrepresentation at the state and district-level be examined further. The best way to examine this issue further is to conduct statistical analysis that can determine whether differences in stops between people of color and White drivers exists while controlling for alternative explanations. In the final year of analysis, we will address the limitations of current and past analysis by analyzing combined data from each year. Combining stops across all years will allow us to conduct additional analyses that require more stops, such as current veil of darkness approaches. This analysis should also help address some weaknesses in county-level comparisons although it should be noted that for some counties the combined stops will still not be enough to accurately assess variation. However, it should be noted that this analysis will depend on the number of stops among people of color at specific times throughout the day which is likely to not be the case for specific groups even when all yearly data is combined. While we do not conclude that there is evidence of systemic bias in the decision to stop by the Montana Highway Patrol based on the previous analyses detailed in this report, in the final year of data collection we will attempt to address limitations in our analysis through multivariate statistical methods that control for competing explanations and may statistically determine if a difference in stops exists.

Bibliography

- Alpert, G. D. (2007). Investigating racial profiling by the Miami-Dade police department: a multimethod approach. *Criminology and Public Policy*, 25-55.
- Baumgartner, F. R., Christiani, L., Epp, D. A., Roach, K., & Shoub, K. (2017). Racial Disparities in Traffic Stop Outcomes. *Duke Forum for Law & Social Change*, 21-53.
- Becker, G. (1993). Nobel lecture: The economic way of looking at behavior. *Journal of Political Economy*, 101, 385-409.
- Carroll, L. &. (2014). Out of place: Racial stereotypes and the ecology of frisks and searches following traffic stops. *Journal of Research in Crime and Delinquency*.
- Center for Urban Research, CUNY. (n.d.). Mapping Hard to Count (HTC) Communities for Fair and Accurate 2020 Census. New York, NY, United States.
- Cochran, J. C. (2012). Perceptions of the police the salience of officer race within the context of racial profiling. *Journal of Contemporary Criminal Justice* , 206-227.
- Fridell, L. (2004). *By the Numbers: A Guide for Analyzing Race Data from Vehicle Stops*. Washington, DC: U.S. Department of Justice.
- Gaffney, M. & Hoard, S. (2013). *MONTANA HIGHWAY PATROL*.
- Graziano, L. S. (2010). Police misconduct, media coverage, and public perceptions of racial profiling: An experiment. *Justice Quarterly*, 52-76.
- Grogger, J. &. (2006). Testing for racial profiling in traffic stops from behind a veil of darkness. *Journal of the American Statistical Association*, 878-887.
- Horrace, W. C. (forthcoming). How dark is dark? Bright lights, big city, racial profiling. *The Review of Economics and Statistics*.
- Knowles, J. P. (2001). Racial bias in motor vehicle searches: Theory and evidence. *The Journal of Political Economy*, 203-229.
- Novak, K. J. (2012). Racial threat, suspicion, and police behavior the impact of race and place in traffic enforcement. *Crime and Delinquency*, 275-300.
- Peterson, R. &. (2009). *Race, crime and justice: contexts and complexities*. Thousand Oaks: Sage.
- (2013). *Racial profiling in traffic stops*. Washington D.C.: National Institute of Justice.
- Renauer, B. C. (2011). Examining the relationship between police experiences and perceptions of police bias . *Policing: An International Journal of Police Strategies & Management*, 497 - 514.
- Simoiu, C., Corbett-Davies, S., & Goel, S. (2017). The problem of infra-marginality in outcome tests for discrimination. *The Annals of Applied Statistics*, 11(3), 1193-1216.
- Thomas, D. (2002). *1st Annual Report Denver Police Department Contact Card Data Analysis*.
- Tillyer, R. &. (2013). The impact of drivers' race, gender, and age during traffic stops: Assessing interaction terms and the social conditioning model. *Crime and Delinquency*, 1-27.
- United States Census Bureau. (2012). *Census Bureau Releases Estimates of Undercount and Overcount in the 2010 Census*. Washington, DC.

- Walker, S. (2001). Searching for the denominator: problems with police traffic stop data and an early warning system solution. *Justice Research and Policy*, 63-95.
- Warren, P. Y. (2009). The environmental context of racial profiling. *The Annals of the American Academy of Political and Social Science*, 52-63.
- Wheeler, M. (2008). The Statistical Evidence of Racial Profiling in Traffic Stops and Searches: Rethinking the Use of Statistics to Prove Discriminatory Effect. *Boston College Law Review*, 263-299.
- Whitney, M. (2008). The statistical evidence of racial profiling in traffic stops and searches: Rethinking the use of statistics to prove discriminatory intent. *Boston College Law Review*, 262-299.
- Wilkins, V. M. ((2008)). Black or blue: Racial profiling and representative bureaucracy. *Public Administrative Review*, 654-664.
- Worden, R. M. (2012). Testing for Racial Profiling with the Veil-of-Darkness Method. *Police Quarterly*, 92-111.