

JSTF Meeting Agenda

November 14, 2017

Ellis Jacobs will chair the meeting.

7:00 pm. Approve minutes

7:15 pm. Facilitated conversation, facilitated by Janet Mueller.

#1. The purpose of this facilitated conversation is to support the working relations among the JSTF members. Everyone on the JSTF will have an opportunity to share their thinking, concerns, clarify misunderstandings, and share new information. Then members of the public will be invited to share.

#2. Discuss and decide if there is anything more which needs to happen to support a working relationship among the Task Force.

8:15 pm. Data Report on YSPD.

Yellow Springs JSTF Data Analysis of Police Warnings and Citations November 9 2017

Overview: Why analyze policing data? Creating a culture of transparency is a critical step in establishing *Community-based Policing*. Policing data offers a platform for local government, community, and law enforcement to examine and reflect on topics such as: 1) the types of crime occurring in a community; 2) policing activities and how police interact with community (e.g. who do they cite, and for what?); 3) whether policing activities align with community values; and, 4) how to improve policing. These are all important questions that the JSTF has been concerned with.

Establishing on-going collection and analysis of policing data is not a small task, but it's one that municipal governments are increasingly investing in. The JSTF wanted to see what could be learned about our own policing practices and the effort/time investment involved in analyzing policing data. This report summarizes an initial, exploratory study using data from the YSPD. It provides a look at how the study was carried out and its major findings, but does not attempt to provide interpretations or explanations of the findings.

The Study: For this initial study, we looked at whether there are any disparities in the warnings and citations police issued to YS residents based on their age, gender and/or race. We examined the warnings and citations issued by the YSPD between April 1, 2010-December 31, 2016. We framed the study around a simple question: does the policing data indicate any imbalances in how police respond to YS residents based on their age, gender and/or race?

To answer that question, you can't just look at the total number of citations or warnings. Why not? Because the Yellow Springs population isn't evenly spread across age, gender, or racial groups. For example, there are many more whites in YS than blacks. Based on that, you would expect whites to receive higher numbers of warnings and citations than blacks (and they do). To make meaningful comparisons, we needed to use measures with a common baseline. For one measure, we used proportions (%) of people in various groups who had gotten a warning or a citation, and compared those numbers to census data %s for those same groups. For another measure, we identified the total number of warnings or citations issued to individuals who had received at least one warning or citation. Based on those data, we calculated the average number of warnings or citations issued to various groups and compared those averages across groups.

The attached report examines the warnings and citations issued by the Yellow Springs Police Department to Yellow Springs residents covering the period from April 1, 2010 to December 31, 2016. Data were provided by the Yellow Springs Police Department, based on their records of warnings and citations issued during that period.¹

Findings: The analysis conducted by the WSU Statistical Center (attached) is very detailed. The WSU report provides the full set of findings and explanations of various statistical tests, along with a detailed description of the dataset. The analysis used 2 gender categories (male, female), 6 age categories (10-14; 15-24; 25-34; 45-59; 60+), and 3 racial categories (White, Black/African-American, All Other Races [Asians, Native Americans, Mixed, etc.])

¹ The dataset has some missing data, particularly regarding racial identification. Of the 921 YS residents who received at least one warning, race is not identified in 201 (21.8%) of the records. Similarly, of the 401 residents who received at least one citation, race is not identified in 41 (10.2%) of the records.

The major findings from the report are summarized below.

Warnings: The analysis of % of residents who receive at least one warning showed one significant effect. The results indicate that:

- the % of warnings issued to people of different racial groups and gender groups aligns with what you'd expect, based on their representation in the YS population;
- the % of warnings departs significantly from census data across age groups. Younger residents, particularly 15-24 and 25-34 year-olds, were issued warnings at much higher rates compared to the % of those groups in the larger YS population, while people 60+ get a lower % of warnings compared to census data %s.

The analysis of the average number of warnings issued to residents indicates that:

- The average number of warnings differs markedly depending both on a person's race and their gender, but not their age. Specifically, Black males are issued a significantly higher number of warnings, on average, compared to other gender and racial groups. This finding held across all ages levels.

Citations: The analysis of % residents who receive at least one citation showed several significant effects. The results indicate that:

- the % of Black residents who are receiving citations is significantly greater than we would expect it to be based on the % of Blacks in the YS population.
- The % of male residents who are receiving citations is significantly greater than we would expect, based on the % of males in the YS population.
- The % of residents in some age groups receiving citations is significantly greater/less than we would expect based on census data, in the same pattern described above for warnings (e.g. younger age groups receive disproportionately more and older age groups receive disproportionately less compared to census data).

The analysis of the average number of citations issued to residents indicates:

- the average number of citations does not differ across racial groups.
- the average number of citations is markedly different for males and females, with males getting a higher average number than females (and this is true across various age groups).
- Number of citations also differs by age, with people in younger age groups receiving more citations on average than those in older age groups

(Note: The findings are also provided in tabular form at the end of this report.)

What conclusions can we draw? The findings suggest that the YSPD has focused greater attention in its warnings and citations on some age, gender, and racial groups than others. We believe that the analysis employed statistical tests appropriately, and the statistical significance of differences when they did occur are pronounced.

The findings should be taken seriously, but not also overstated. Our point here is that it is as important to pay attention to findings that indicate no difference as those that show differences--the overall pattern of findings is at least as important as individual tests. Across the four measures considered (rates of warnings, average warnings; rates of citations, average citations) two of the four measures showed racial effects: the proportion of Black residents receiving citations is higher than would be expected based on census data, and Black male residents received more warnings, on average, than other groups, although not more citations.

We also see significant age differences on three of the four measures, with younger citizens receive higher rates of warnings and citations than one might expect based on census data, and more citations on average, than older citizens. While the findings related to age are not totally surprising, it may be useful to consider what behaviors and situations are eliciting warnings and citations from the YSPD, and putting our younger residents at risk.

How can the report be used? There are several uses for this type of data analysis. First, the YS Police Department can objectively see patterns in their actions that can be the basis for reflection and internal discussions regarding policing practices. Second, the findings lend themselves to an examination of current YSPD training, and whether it needs to be augmented or changed. Third, the data is useful as a source of objective feedback to Village Council and the larger YS community to confirm or correct perceptions and concerns regarding policing practices. Findings can lead to dialogue about behaviors/actions on the part of Council, YSPD, and community members that need to be addressed.

Finally, the analyses conducted for this report are exploratory, and findings are open to differing interpretations and explanations. We have not taken it upon ourselves to provide interpretation of the findings. However, the fact that Black male residents of Yellow Springs received significantly more warnings than other groups, and Black residents of both genders are cited at significantly higher proportional rates than other groups, requires attention from the JSTF, Village Council, the YSPD, and the Yellow Springs community.

Key Findings				
	% Warnings	Average # Warnings	% Citations	Average # Citations
Race	No significant differences	Depends on a combination of gender and race (see below)	YES Higher rates of citation to Black residents	No significant differences
Age	YES High rates of warnings to younger residents	No significant differences	YES High rates of citation to younger residents	Yes Higher averages for younger residents than for older
Gender	No significant differences	Depends on a combination of gender and race (see below)	YES High rates of citation to male residents	Yes Higher average for males than females
Interactions	None	YES - Average number of warnings issued to Black males higher than other groups, including Black females or White males	None	None



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DATE: 6 November 2017

TO: Hempfling, John

FROM: Mike Bottomley

SUBJECT: Yellow Springs Residents Citations and Warnings Report

Dear Mr. Hempfling,

Here are the results of the warnings and citations data analysis for Yellow Springs municipal residents for the time period beginning on April 1, 2010 and ending on December 29, 2016. You are interested in determining if any race, sex, or age group is getting a disproportionate number of warnings or citations. Warnings in this report refer only to written warnings, oral warnings are not taken into account. For the purposes of this analysis, criminal, traffic, and juvenile citations are being combined into one category, as are criminal and traffic warnings. You have the number of citations and warnings issued to residents of Yellow Springs during this period. In addition, you have the recipients' age, sex, and race. There are three options for race: White, Black/African American, and All Other (which is comprised of American Indian/Native Alaskan, Asian, and Mixed). Since an individual can show up in the data set multiple times the observations cannot be treated as independent. To deal with this, the data are being analyzed two ways:

- (i) Yes/No to individual was given at least one citation in the time period
- (ii) Total number of warnings/citations per individual

For (i) the total number of unique individuals is being counted. This is then compared to census records for that demographic and a chi-square test of independence is done to test for an association between the variable of interest and warnings or citations. The census data are estimates from 2011-2015. Subjects' ages have been categorized into the same ranges as in the census data, except with 15-19 and 20-24 combined into one category, 45-54 and 55-59 combined into another, and everyone 60 or older combined. Obviously, residents have moved to and out of Yellow Springs in that time frame, so these numbers are not exact. But they should serve as a relative baseline for each demographic. This attempts to answer the question, "who is being stopped and is it disproportionate relative to other groups?"

For (ii) the total number of warnings/citations are being analyzed. These are being analyzed via ANOVAs with number of warnings or citations as the dependent variable and age group, sex, and race as independent variables. This attempts to answer "when an individual is cited or warned, how many

warnings and citations are different demographics getting, on average?ö Since the ages of individuals in the data set are naturally changing over time, it is possible for someone to start in one age group and end up in the next age group up (however they can never go two or more age groups up). For this analysis the age group that an individual appears in the most number of times is used as their age group. In the event that someone is in two age groups the same number of times, the lower age group is used.

Due to the exploratory nature of this data, no correction was made to alpha to control for potentially inflated type I error rate (claiming there is statistical significance when in reality there is not and the results were just due to chance) and a level of significance $\alpha = 0.05$ was used throughout. SAS version 9.4 (SAS Systems Inc., Carey, NC) was used for all analyses.

I. Warnings

i. Yes/No to “individual was given at least one warning in the time period”

Frequency tables of counts of warnings given to unique Yellow Springs residents are listed below in Tables 1 - 3.

Race				
Race	Count in Data	Percent of Data (%)	Yellow Springs Representation Estimate (%)	Yellow Springs Representation Margin of Error (%)
American Indian/Alaskan Native	4	0.56	0	0.7
Asian	9	1.25	1.1	1.81
Black/African American	112	15.56	13.5	2.9
Other, includes multi-racial	15	2.08	3.2	2.1
White	580	80.56	82.2	3.8
Frequency Missing = 201				

Table 1: Warnings by race

Sex				
Sex	Count in Data	Percent of Data (%)	Yellow Springs Representation Estimate (%)	Yellow Springs Representation Margin of Error (%)
Female	459	50.33	51.7	3.7
Male	453	49.67	48.3	3.7
Frequency Missing = 9				

Table 2: Warnings by sex

Age				
Age	Count in Data	Percent of Data (%)	Yellow Springs Representation Estimate (%)	Yellow Springs Representation Margin of Error (%)
10-14	2	0.22	7.3	2.3
15-24	175	19.21	4.8	2.1
25-34	159	17.45	7.5	2.5
35-44	130	14.27	14.7	2.9
45-59	247	27.11	11.2	2.9
60+	198	21.73	7.9	2.1
Frequency Missing = 10				

Table 3: Warnings by age group

Note: for the combined categories I simply averaged the census estimates for representation and margin of error

The results of the chi-square tests of independence are given below in Tables 4 & 6. This test compares the observed frequencies in the cells to their expected frequencies to test for an association between the two variables. The "None" column is the estimate given in the census data minus the number in the "At Least One" column. It represents the number of Yellow Springs residents who were issued no warnings in the time period. The top number in each cell is the observed count and the bottom number is the percentage for that row (each row sums to 100%). For example, the top left cell in Table 5 indicates that 19.16% of white Yellow Springs residents were issued at least one warning in the duration of the study (580 out of the 3,027 in the census estimate, with the 2,447 in the "None" cell being 3,027 - 580).

Table of Race by Warning			
Race	Warning		
Frequency Row Pct	At Least One	None	Total
White	580 19.16	2447 80.84	3027
Black/African American	112 22.54	385 77.46	497
All Other	28 17.61	131 82.39	159
Total	720	2963	3683

Statistic	DF	Value	Prob
Chi-Square	2	3.4880	0.1748

Table 4: Chi-square test for **race**

Based on the P -value of 0.17 in Table 4, there is not strong evidence to suggest there is a significant association between race and getting at least one warning.

Table of Sex by Warning			
Sex	Warning		
Frequency Row Pct	At Least One	None	Total
Male	453 25.45	1327 74.55	1780
Female	459 24.12	1444 75.88	1903
Total	912	2771	3683

Statistic	DF	Value	Prob
Chi-Square	1	0.8727	0.3502

Table 5: Chi-square test for **sex**

Based on the P -value of 0.35 in Table 5, there is not strong evidence to suggest there is a significant association between sex and getting at least one warning.

Table of Age by Warning			
Age	Warning		
Frequency Row Pct Col Pct	At Least One	None	Total
10-14	2 0.74 0.22	267 99.26 10.64	269
15-24	175 49.72 19.17	177 50.28 7.05	352
25-34	159 57.61 17.42	117 42.39 4.66	276
35-44	130 23.94 14.24	413 76.06 16.46	543
45-59	248 30.10 27.16	576 69.90 22.96	824
60+	199 17.18 21.80	959 82.82 38.22	1158
Total	913	2509	3422

Statistic	DF	Value	Prob
Chi-Square	5	383.3279	<.0001

Table 6: Chi-square test for **age group**

Based on the P -value of < 0.0001 in Table 6, there is strong evidence to suggest there is a significant association between age group and whether the individual was given at least one warning. Odds ratios were calculated to try and quantify this association. Odds are the probability of an event occurring divided by the probability of the event not occurring. For example, the odds of someone aged 15-24 getting at least one warning are $(49.72/50.28) = 0.9889$. Odds ratios are the odds of one group divided by the odds of another group, which tell you the odds of something happening to one group **relative** to it happening to another group. One group is used as the baseline for odds ratios and all other groups are compared to them. In this instance 60+ is the baseline. The odds of someone 60+ getting at least one warning are 0.2074. Therefore the odds ratio for the 15-24 group relative to the 60+ group is $(0.9889/0.2074) = 4.77$ (or as it is colloquially said, ̈4.77 to 1̈). This means that the odds of getting at least one warning for a Yellow Springs resident aged 15-24 are about 4.77 times the odds of a Yellow Springs resident aged 60+ (you could also say the odds are 377% higher for the 15-24 year old). The 95% Wald confidence limits give us a range of plausible values for the true odds ratios. For example, the odds ratio estimate for 15-24 vs 60+ is 4.77, but the true odds ratio could feasibly be as low as 3.68 or as high as 6.17. The rest of the odds ratios are given below in Table 7.

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
Age 10-14 vs 60+	0.036	0.009	0.146
Age 15-24 vs 60+	4.765	3.678	6.172
Age 25-34 vs 60+	6.549	4.933	8.695
Age 35-44 vs 60+	1.517	1.182	1.946
Age 45-59 vs 60+	2.075	1.676	2.568

Table 7: Odds ratio estimates for age groups

Note that for an odds ratio less than one, like the 10-14 age group, you could either say the odds of a child aged 10-14 getting at least one warning are 0.04 times the odds of an individual aged 60+, or you could say the odds of a child aged 10-14 getting at least one warning are 96% less than the odds of an individual aged 60+.

(ii) Total number of warnings per individual

Descriptive statistics by the various demographics are given below in Tables 8 to 11.

Analysis Variable : Number of Warnings							
Age	Sex	Race	N Obs	Mean	Std Dev	Minimum	Maximum
10-14	Male	Black/African American	1	2.00	.	2.00	2.00
		All Other Races	1	1.00	.	1.00	1.00
15-24	Female	White	57	1.51	0.78	1.00	4.00
		Black/African American	8	1.25	0.71	1.00	3.00
		All Other Races	6	1.33	0.52	1.00	2.00
	Male	White	56	1.61	1.11	1.00	6.00
		Black/African American	12	2.25	1.91	1.00	6.00
		All Other Races	3	2.67	1.53	1.00	4.00
25-34	Female	White	53	1.51	0.95	1.00	5.00
		Black/African American	6	1.50	0.84	1.00	3.00
		All Other Races	2	1.00	0.00	1.00	1.00
	Male	White	51	1.59	0.85	1.00	4.00
		Black/African American	8	2.50	1.69	1.00	5.00
		All Other Races	2	2.00	1.41	1.00	3.00
35-44	Female	White	48	1.52	0.97	1.00	5.00
		Black/African American	9	1.89	0.78	1.00	3.00

Analysis Variable : Number of Warnings							
Age	Sex	Race	N Obs	Mean	Std Dev	Minimum	Maximum
	Male	White	37	1.54	1.02	1.00	5.00
		Black/African American	7	1.57	0.53	1.00	2.00
		All Other Races	2	1.50	0.71	1.00	2.00
45-59	Female	White	74	1.27	0.65	1.00	5.00
		Black/African American	20	1.95	1.47	1.00	6.00
		All Other Races	3	1.67	0.58	1.00	2.00
	Male	White	82	1.54	1.14	1.00	8.00
		Black/African American	19	2.89	2.60	1.00	9.00
		All Other Races	3	1.00	0.00	1.00	1.00
60+	Female	White	58	1.57	0.88	1.00	5.00
		Black/African American	10	1.40	0.52	1.00	2.00
		All Other Races	3	1.00	0.00	1.00	1.00
	Male	White	57	1.44	0.85	1.00	5.00
		Black/African American	10	2.40	2.22	1.00	7.00
		All Other Races	2	1.50	0.71	1.00	2.00

Table 8: Descriptive statistics for warnings by **age, sex, and race**

Analysis Variable : Number_of_Warnings					
Age	N Obs	Mean	Std Dev	Minimum	Maximum
10-14	2	1.50	0.71	1.00	2.00
15-24	175	1.54	1.02	1.00	6.00
25-34	159	1.53	0.92	1.00	5.00
35-44	130	1.50	0.87	1.00	5.00
45-59	247	1.55	1.22	1.00	9.00
60+	198	1.47	0.90	1.00	7.00

Table 9: Descriptive statistics for warnings by **age**

Analysis Variable : Number of Warnings					
Sex	N Obs	Mean	Std Dev	Minimum	Maximum
Female	459	1.45	0.83	1.00	6.00
Male	453	1.59	1.17	1.00	9.00

Table 10: Descriptive statistics for warnings by sex

Analysis Variable : Number of Warnings					
Race	N Obs	Mean	Std Dev	Minimum	Maximum
White	580	1.50	0.92	1.00	8.00
Black/African American	112	2.06	1.68	1.00	9.00
All Other Races	28	1.46	0.79	1.00	4.00

Table 11: Descriptive statistics for warnings by race

A three-way ANOVA, which tests for mean differences amongst the factor levels of the groups, was run with number of warnings as the dependent variable and age group, sex, and race as independent variables. There was no evidence of a three-way interaction, but there was strong evidence of a two-way interaction between sex and race (P -value = 0.0071). This implies that the effect of sex is not constant across all three levels of race (or vice-versa). To investigate the interaction, Tukey's multiple comparison procedure was performed, which compares each of the six sex/race combinations to each other and controls the level of significance for the number of comparisons made. There was strong evidence to suggest that the mean number of warnings received by black males was significantly greater than the mean number of warnings for each of the other groups except for the "All Other Males" group. There was not sufficient evidence that there were any significant differences in the age groups (P -value = 0.96). The results of the significant comparisons and least squared mean differences (these are just means that control for unequal sample sizes) are given below in Table 12. For example, on average, black males in the data set received 0.91 more warnings than white males.

Comparison	Mean Difference	P -value
Black Males vs White Males	0.91	< 0.0001
Black Males vs All Other Males	0.71	0.26
Black Males vs White Females	0.99	< 0.0001
Black Males vs Black Females	0.77	0.0028
Black Males vs All Other Females	1.17	0.0038

Table 12: Results from Tukey's multiple comparison procedure (all are significant except Black Males vs All Other Males)

II. Citations

(i) Yes/No to “individual was given at least one citation in the time period”

The same process was repeated for citations. Frequency tables of counts of warnings given to unique Yellow Springs residents are listed below in Tables 13 - 15.

Race				
Race	Count in Data	Percent of Data (%)	Yellow Springs Representation Estimate (%)	Yellow Springs Representation Margin of Error (%)
American Indian/Alaskan Native	2	0.56	0	0.7
Asian	2	0.56	1.1	1.81
Black/African American	65	18.06	13.5	2.9
Other, includes multi-racial	6	1.67	3.2	2.1
White	285	79.17	82.2	3.8
Frequency Missing = 41				

Table 13: Citations by race

Sex				
Sex	Count in Data	Percent of Data (%)	Yellow Springs Representation Estimate (%)	Yellow Springs Representation Margin of Error (%)
Female	164	40.90	51.7	3.7
Male	237	59.10	48.3	3.7

Table 14: Citations by sex

Age				
Age	Count in Data	Percent of Data (%)	Yellow Springs Representation Estimate (%)	Yellow Springs Representation Margin of Error (%)
10-14	12	2.99	7.3	2.3
15-24	87	21.70	4.8	2.1
25-34	94	23.44	7.5	2.5
35-44	73	18.20	14.7	2.9
45-59	78	19.45	11.2	2.9
60+	57	14.21	7.9	2.1

Table 15: Citations by age

The results of the chi-square tests are given in Tables 16-18.

Table of Race by Citation			
Race	Citation		
Frequency Row Pct	At Least One	None	Total
All Other Races	10 6.29	149 93.71	159
Black/African American	65 13.08	432 86.92	497
White	285 9.42	2742 90.58	3027
Total	360	3323	3683

Statistic	DF	Value	Prob
Chi-Square	1	6.8921	0.0124

Table 16: Chi-square test for race

Based on the *P*-value of 0.0124 in Table 16, there is strong evidence to suggest there is a significant association between race and getting at least one citation. Odds ratios are given below in Table 17.

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
Race All Other Races vs White	0.646	0.336	1.239
Race Black/African American vs White	1.448	1.086	1.931

Table 17: Odds ratios for **race**

Since the confidence interval for the odds ratio for "All Other Races" vs white includes 1 (which happens when the odds are the same), we would not consider the odds ratio estimate of 0.65 to be significant and therefore not draw any conclusions about it. However, the odds ratio for black vs white is significant. The odds of receiving at least one citation for a black Yellow Springs resident are about 1.45 times the odds of a white Yellow Springs resident (or you could say the odds of receiving at least one citation for black residents are 45% higher than white residents).

Table of Sex by Citation			
Sex	Citation		
Frequency Row Pct	At Least One	None	Total
Male	237 13.31	1543 86.69	1780
Female	164 8.62	1739 91.38	1903
Total	401	3282	3683

Statistic	DF	Value	Prob
Chi-Square	1	20.9099	<.0001

Table 18: Chi-square test for **sex**

Based on the *P*-value of <0.0001 in Table 17, there is strong evidence to suggest there is a significant association between sex and getting at least one citation. Specifically, the odds of receiving at least one citation for male Yellow Springs residents are about 1.63 times the odds for female Yellow Springs residents.

Table of Age by Citation			
Age	Citation		
Frequency Row Pct	At Least One	None	Total
10-14	12 4.46	257 95.54	269
15-24	87 24.72	265 75.28	352
25-34	94 34.06	182 65.94	276
35-44	73 13.44	470 86.56	543
45-59	78 9.47	746 90.53	824
60+	57 4.92	1101 95.08	1158
Total	401	3021	3422

Statistic	DF	Value	Prob
Chi-Square	5	261.6259	<.0001

Table 19: Chi-square test for **age**

Based on the *P*-value of <0.0001 in Table 19, there is strong evidence of a significant association between age and getting at least one citation. Odds ratios are given below in Table 20.

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
Age 10-14 vs 60+	0.902	0.477	1.706
Age 15-24 vs 60+	6.341	4.425	9.088
Age 25-34 vs 60+	9.976	6.929	14.364
Age 35-44 vs 60+	3.000	2.087	4.313
Age 45-59 vs 60+	2.020	1.418	2.877

Table 20: Odds ratios for **age**

All odds ratios other than 10-14 vs 60+ are considered to be significant (since the only one that includes 1 is 10-14 vs 60).

(ii) **Total number of citations per individual**

Descriptive statistics for total number of citations per individual are given below in Tables 21-24.

Analysis Variable : Number_of_Citations							
Age	Sex	Race	N Obs	Mean	Std Dev	Minimum	Maximum
10-14	Female	Black/African American	1	1.00	.	1.00	1.00
		All Other Races	1	1.00	.	1.00	1.00
	Male	White	6	1.67	1.21	1.00	4.00
		Black/African American	2	2.50	0.71	2.00	3.00
15-24	Female	White	19	1.74	1.10	1.00	5.00
		Black/African American	2	1.50	0.71	1.00	2.00
	Male	White	42	3.29	4.36	1.00	26.00
		Black/African American	13	2.92	3.30	1.00	13.00
		All Other Races	1	7.00	.	7.00	7.00
25-34	Female	White	37	1.89	1.45	1.00	8.00
		Black/African American	2	1.00	0.00	1.00	1.00
		All Other Races	1	3.00	.	3.00	3.00
	Male	White	34	2.29	1.62	1.00	6.00
		Black/African American	11	2.55	1.75	1.00	7.00
		All Other Races	1	1.00	.	1.00	1.00
35-44	Female	White	29	2.17	2.12	1.00	11.00
		Black/African American	5	1.60	0.89	1.00	3.00
	Male	White	24	2.50	2.28	1.00	10.00
		Black/African American	5	4.00	2.24	1.00	7.00
		All Other Races	1	2.00	.	2.00	2.00
45-59	Female	White	24	1.75	1.29	1.00	5.00
		Black/African American	6	1.67	1.21	1.00	4.00
		All Other Races	3	2.67	1.15	2.00	4.00
	Male	White	27	2.44	2.04	1.00	11.00
		Black/African American	12	2.17	1.40	1.00	4.00
		All Other Races	1	2.00	.	2.00	2.00
60+	Female	White	18	1.39	1.04	1.00	5.00
	Male	White	25	1.28	0.61	1.00	3.00
		Black/African American	6	1.67	1.03	1.00	3.00
		All Other Races	1	1.00	.	1.00	1.00

Table 21: Descriptive statistics for citations by age, sex, and race

Analysis Variable : Number of Citations					
Age	N Obs	Mean	Std Dev	Minimum	Maximum
10-14	12	1.67	0.98	1.00	4.00
15-24	87	2.72	3.42	1.00	26.00
25-34	94	2.10	1.51	1.00	8.00
35-44	73	2.25	2.05	1.00	11.00
45-59	78	2.08	1.58	1.00	11.00
60+	57	1.33	0.79	1.00	5.00

Table 22: Descriptive statistics for citations by **age**

Analysis Variable : Number of Citations					
Sex	N Obs	Mean	Std Dev	Minimum	Maximum
Female	164	1.78	1.40	1.00	11.00
Male	237	2.38	2.50	1.00	26.00

Table 23: Descriptive statistics for citations by **sex**

Analysis Variable : Number_of_Citations					
Race	N Obs	Mean	Std Dev	Minimum	Maximum
White	285	2.16	2.29	1.00	26.00
Black/African American	65	2.32	1.99	1.00	13.00
All Other Races	10	2.50	1.84	1.00	7.00

Table 24: Descriptive statistics for citations by **race**

A three-way ANOVA was run with number of citations as the dependent variable and sex and race as independent variables. This time there were no interactions (which implies any differences in any group are constant across the other groups) so the effects of each variable could be analyzed directly. There was not strong evidence to suggest there is a significant difference in mean number of citations based on the race of the residents (P -value = 0.79). However, there was strong evidence to suggest there was a significant difference in mean citations between males and females (P -value = 0.0073). Based on the difference between the least square means, males received, on average, 0.65 more citations than females. There was also strong evidence to suggest there was a significant difference between the mean number of citations received by residents aged 15-24 years and 60+ years (P -value = 0.0048). On average, residents aged 15-24 years received 1.43 more citations than those aged 60+ years.

Let me know if you have any questions pertaining to anything in this report or any other aspect of the research.

Sincerely,

Mike Bottomley

Re: Corrected report

Inbox x



John Hempfling

Nov 6 (4 days ago)

to Al, thezazupits, Judy, me, Patricia, Kate, Steve, Laura, Bill, Cyndi, Marianne, Ellis

Whoops, forgot to attach the report.

On Nov 6, 2017 10:16 AM, "John Hempfling" <john.m.hempfling@gmail.com> wrote:

At work right now, but thought I should share this immediately. I will be preparing a "lessons learned" document regarding how to find these errors faster in the future. This is due to the consultant's use of the wrong census numbers for black people in the citation analysis and 15-24 year-olds in the warning analysis specifically.

----- Forwarded message -----

From: "John Hempfling" <john.m.hempfling@gmail.com>

Date: Nov 6, 2017 10:08 AM

Subject: Re: High priority chi-square error

To: "Bottomley, Mike" <Michael.bottomley@wright.edu>

Cc:

I'm certainly ok with sharing with him the most recent dataset I've sent you (with the additional 6 or 7 criminal citations) you can have him contact me directly if he wants more.

On Nov 6, 2017 9:48 AM, "Bottomley, Mike" <michael.bottomley@wright.edu> wrote:

Hi John,

Here is the report with the corrections made to tables 6, 7, 16, and 17, and the two paragraphs summarizing the results. Nothing has significantly changed.

Also, a statistics faculty member here at Wright State lives in Yellow Springs and has heard about this research. He's interested in seeing the data set and I wanted to ask if you had any objections with me sharing it with him. I think it's public record, but I'm not sure.

Mike

Re: High priority chi-square error

Inbox x



John Hempfling

Nov 4 (6 days ago)

to Mike, Beth, bcc: me

Here's the other error. You reported in Table 6 that there are a total of 437 15-24-year-old residents of Yellow Springs. There are, in fact, only 352. Therefore, the proportion of 15-24-year-old residents that received at least one warning is actually 49.72%, not 40.05%. Don't forget to also fix the numbers of people that received no citations in both Table 6 and Table 16.

Thank you,
John Hempfling

High priority chi-square error

Inbox x



John Hempfling

Nov 4 (6 days ago)

to Mike, Beth, bcc: me

Dear Mike Bottomley,

I have found two more chi-square errors in your report. Your report states in Table 16 that there are a total of 491 black residents in Yellow Springs according to the census estimates. There are in fact 497. This is the reason why the number of residents reported in that chi-square is 3677 rather than 3683. Obviously, this changes the percent of black residents that received at least one citation from 13.24% to 13.08%. I imagine this would also change the statistical results of chi-square and the odds ratio that's reported in Table 17.

This was considered by the committee to be the central finding of the report. Fortunately, we have not yet publicly released the report, but we will be very soon. Please report back with a corrected version of the report as soon as possible.

RE: issues on Data Analysis

Inbox x



Beth Crandall

Oct 16

to Patricia, me, Al, Bill, John, thezazupits, Steve, Ellis, Nia, Kate, Cyndi, Marianne

My apologies, I see several numbers in tables in the "Citations" section that were not copied correctly from the WSU source document. I have made those corrections and highlighted the...at numbers I've changed. My error highlights the importance of checking and rechecking all the numbers on any document that would be released to the public.

Sent from [Mail](#) for Windows 10

From: [Deweese, Patricia](#)

Sent: Monday, October 16, 2017 8:25 AM

To: [Judith Hempfling](#); [Al Schlueter](#); [Bill Randolph](#); [John Hempfling](#); thezazupits@hotmail.com; [Steve McQueen](#); [Ellis Jacobs](#); [Nia Stewart](#); [Kate Hamilton](#); [Cyndi Pauwels](#); [Deweese, Patricia](#); [Marianne Macqueen](#)

Cc: [Beth Crandall](#)

Subject: issues on Data Analysis

I met with Beth on Friday and she reported on several phone conversations she had during the week about lingering questions on John's report. The main issue, from my own perspective, is that the ENTIRE committee needs to fully understand the report's findings and BE ABLE to speak to them to the public before it is put out to the public. For those of us with limited stat skills or background we need to use the time we have set aside to do this before our next meeting.

So thank you to both John and Beth for their patience and willingness to explain and of course, their hard work going into the report. John has sent us some corrections already, and I am attaching further insights from Beth's draft of what might end up part of a coversheet or edits in the report. Lets all make the time to study this info and I feel certain that both Beth and John are willing to answer more questions if needed. Obviously the topic will be priority at our next meeting on November 14. I am focusing my limited skill on explaining context-why it is important to do this kind of work and share with community.

also, I made an error on Beth's email in my last list. It is Beth Crandall bcrandall2@woh.rr.com

Pat

Re: My issues on the pending data analysis

Inbox x



divad renrut

Nov 2 (8 days ago)

to Cyndi, Al, Bill, Ellis, John, me, Kate, Marianne, Nia, Steve, Laura

I also have problems with the data. I count up total citations and warnings by race, gender, and age groupings. The citations totals are:

401 by gender

360 by race (white vs. non-white total)

This is a 10% difference.

Warnings show a similar problem:

912 by gender

720 by race (white vs. non-white total)

This is about a 21% difference.

I assume that some or all can be explained by offices not putting race down, but it is a large percentage in both cases that can skew the results.

I also feel we need to look at all data, not just that for residents of YS.

Data presentation should have up front simple tables of totals by race, gender, and age. After that, more involved charts by age range, etc. would be useful, but too much detail up front will be confusing to many. Leave out jargon as well.

David

My issues on the pending data analysis

Inbox x



Cyndi Pauwels

Nov 1 (9 days ago)

to Al, Bill, David, Ellis, John, me, Kate, Marianne, Nia, Steve, Laura

Since I have such trouble explaining myself in public conversation (I'm a writer; I do much better with a blank page, and time to edit), let me try again here.

First, as I've said, I commend John and the WSU folks for their work gathering and analyzing the arrest data as they have. It's a monumental job, I know. I've done enough of that kind of work, albeit on a broader level.

Second, while the data certainly raises issues that need to be examined further, I repeat my concern that while expansive, the data is and therefore the analysis is incomplete. To release anything at this stage would be premature and irresponsible, as it will most certainly be misconstrued. We as an appointed body have a duty to provide as clear and exact a picture of our findings as possible, and I do not believe this is it.

As much as any other member of this task force, I want to see our police department held accountable as necessary, and improved as much as possible. To do that, we need accurate, *complete*, data. And I don't believe we're there yet.

Currently, the findings as presented in the standing reports paint the entire Yellow Springs Police Department with the same brush. I continue to maintain that we need to know if the questionable stops were performed by a small number of officers (who may no longer be with the department) or if such practices were/are more widespread. Those findings could have direct consequence on any recommendations the JSTF would make (better hiring practices vs. better/different training for all existing officers, etc.).

If I'm not mistaken, John has said that data is in fact already available. And Al (I believe) pointed out that each of the officers involved could be given random, anonymous identifiers for such further analysis.

My vote is that this work should be completed prior to any public release of our findings.

Thanks.

Take care,
Cyndi Pauwels