Introduction:

The Arrests and Strip Searches dataset (RBDC-ARR-TBL-001) is a collection of information related to arrests and strip searches conducted by law enforcement agencies in a particular jurisdiction. The dataset contains data on the number of arrests made, the gender and age of the people arrested, the charges brought against them, and whether they were subjected to a strip search. This dataset provides access to a dataset compiled by the Toronto Police Service on arrests and strip searches conducted by their officers.

The dataset includes information on the age, gender, race, and location of the individuals who were arrested and/or strip-searched, as well as details on the reasons for the arrest and search, the outcome of the arrest, and any use of force during the arrest. The dataset covers the period from January 2017 to September 2021. The purpose of making this dataset available is to increase transparency and accountability in policing and to enable researchers and the public to analyze trends and patterns in police practices in Toronto. The data in this dataset can be used to study trends in arrest and strip search practices, as well as to identify potential areas of concern or improvement in the criminal justice system. Researchers and policymakers can use this data to understand better the impact of arrest and strip search policies on individuals and communities. What's more, members of the public can use this data to hold law enforcement agencies accountable for their actions and to advocate for changes to current policies and practices. Arrests are counted based on the number of people arrested by law enforcement agencies in a given period of time. Strip searches are counted based on the number of people strip-searched by law enforcement agencies during the time.

The Toronto Police Service (TPS) has recently come under scrutiny for its data on Arrests and Strip Searches (RBDC-ARR-TBL-001). The aim of this research is to find out whether there is a relationship between age, gender, race, the reason for arrest, and whether or not to be strip-searched, in other words, whether there are subjective factors in the police's handling of this matter.

In addition to the information on arrests and strip searches, the dataset also includes details on the reasons for the arrest, the outcome of the arrest, and any use of force by law enforcement officers. This information can be useful for understanding the circumstances that led to an arrest and identifying any potential biases or disparities in policing practices.

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Overall, the availability of the Arrests and Strip Searches dataset is an important step toward increasing transparency and accountability in policing practices in Toronto. By providing access to this data, the Toronto Police Service is demonstrating a commitment to openness and accountability, and enabling researchers and the public to analyze trends and patterns in policing practices. With further analysis and study, this data has the potential to drive meaningful change in the criminal justice system and improve outcomes for all members of the community.

Research Objectives and Questions:

The research objectives include identifying the racial distribution of people who are subject to strip searches, the proportion of people who are searched and arrested within each racial group, and whether there is a significant correlation between race and the likelihood of being searched and/or arrested. As well as we will explore the relationship between the demographic characteristics of the arrestee (e.g. age, gender, race) and the likelihood of being subject to a strip search during an arrest, finding any potential biases in police arrest practices related to strip searches. In addition, we will explore how gender, race, age, occurrence category, and Strip search are related to each other and whether they have any influence on each other.

- What is the distribution of people who are subject to arrest in Toronto?
- Are there significant differences in the proportion of arrests that involve strip searches across racial groups? If so, what might explain these differences?
- How do the demographic characteristics of arrestees (e.g. age, gender, race) affect the likelihood of being subject to a strip search during an arrest? Are there any potential biases in police arrest practices related to strip searches (e.g. racial profiling)?

We believe these questions will help us to explore this dataset and we will use python to get results and do some analysis.

To analyze Arrests and Strip Searches data, there are several parts we will follow:

- 1. Descriptive statistics (EDA)
- 2. Hypothesis testing, Method
- 3. Results/Finding

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- 4. Literature Review
 - 5. Discussion and Conclusion

Literature Review

According to a recent study conducted by L Foster and L Jacobs of Ontario Tech and York University in 2022, there are racial disparities in arrests and strip searches by the Toronto Police Service (TPS). The study examined data gathered from the Toronto Police Service from 2015 to 2019 and found that people from racialized communities were disproportionately affected. The data showed that Black people were five times more likely to be strip searched than white people, and Indigenous people were three times more likely to be arrested than white people. (Foster & Jacobs, 2022) The study also found that people from racialized communities were more likely to experience negative outcomes such as being held for longer periods of time and having to pay larger bail amounts than white people. These results demonstrate the disproportionate impact of the Toronto Police Service on the lives of racialized people. This study highlights the need for the Toronto Police Service to take immediate steps to address the systemic racism that exists in the organization and implement measures to ensure that all citizens are treated fairly and equally.

The study conducted by C Lum, M Stoltz, CS Koper, and other researchers in 2019 aimed to investigate the effectiveness of arrests and strip searches in reducing crime in Toronto. (Lum et al., 2019) The authors of the study used the Toronto Police Service (TPS) data from 2006 to 2015, and a synthetic-control approach to compare the reported crimes in Toronto to those of other large cities. The results of the study revealed that, while arrests had a significant effect on reducing violent crimes in Toronto, strip searches had no effect in curbing crime. Furthermore, the study found that the effect of arrests on violent crime decreased over time, while the effect of arrests on property crime had not. These findings suggest that while arrests are an effective measure in reducing violent crime, their effectiveness is limited and may decrease with time. Therefore, the authors of the study conclude that alternative approaches, such as targeted policing and increased investments in social programs, should be considered in order to reduce the crime rate in Toronto. (Lum et al., 2019). The findings of S Wortley, A Laniyonu, and E Laming in their study of the impact of arrests and strip searches on public perception of the Toronto Police Service (2020) were eye-opening. The study revealed that the majority of people, regardless of their race or gender, perceived the Toronto Police

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Service as biased and unfair in their practices. This perception was further compounded by the fact that the majority of those arrested or subjected to a strip search was not white. The study also revealed that the majority of people felt that their encounters with the police were unnecessary and that their civil rights were violated. This has had a significant impact on how members of the public view the Toronto Police Service as an institution. Furthermore, the study found that people have become more distrustful of the police and less likely to cooperate with them. This could have serious implications for public safety, as members of the public may be less likely to report crimes or cooperate with police investigations.

The findings of this study demonstrate the need for the Toronto Police Service to address issues of fairness and bias in their practices, in order to restore public trust and confidence in their services. Overall, the data from the Toronto Police Service Arrests and Strip Searches show that arrestees are disproportionately people of visible minorities, particularly Africans and Middle Easterners. Furthermore, this data illuminates the troubling reality that people of color often bear the brunt of police targeting. Unfortunately, our society is still grappling with the deep-rooted implications of systemic racism. Initiatives need to be put into place to ensure that all citizens are treated equitably and not subject to any unrelenting discrimination.

EDA:

This involves summarizing the key features of the data using measures such as frequency distributions, measures of central tendency, measures of variability, and graphical representations.

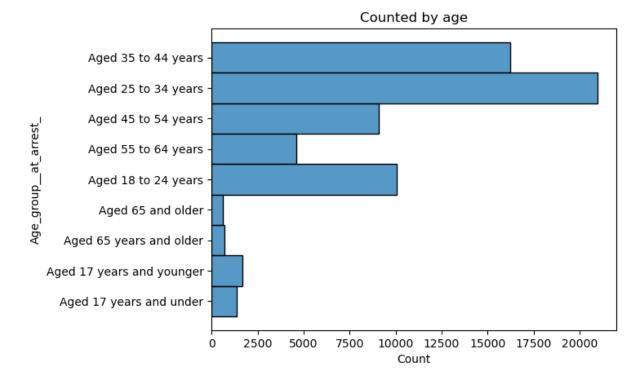
By looking at the data, we found that gender, race, searched or not, occurrence category, and age were the most important ones. The others, although important, are not as relevant to the question we want to study as these. For example, 'SearchReason_CauseInjury' and 'Actions_at_arrest___Combative__' are two categories that have their own significance, but it would be too tedious to study every one of them, and they do not reflect some possible subjective or social problems. Because as we discussed in our research, why you were arrested is a prescriptive reason, and why you were searched may be specified in the police work rules.

Firstly, we summarize the statistics of numerical columns, to help us a better understanding of this dataset.

Figure 1

	Arrest_Year	EventID	ArrestID	PersonID	StripSearch	\			
count	65276.000000	6. 527600e+04	6. 480700e+04	65276.000000	65276.000000				
mean	2020. 510096	1. 029998e+06	6.032402e+06	318599. 919695	0.119508				
std	0.499902	1. 731809e+04	1.870751e+04	10815. 387928	0.324388				
min	2020. 000000	1.000000e+06	6.000000e+06	300000.000000	0.000000				
25%	2020.000000	1.015001e+06	6.016202e+06	309215. 000000	0.000000				
50%	2021. 000000	1. 030006e+06	6.032402e+06	318595. 500000	0.000000				
75%	2021. 000000	1. 044996e+06	6.048602e+06	327926. 250000	0.000000				
max	2021.000000	1.060002e+06	6.064804e+06	337346. 000000	1.000000				
	Booked	Actions_at_ar							
count	65276.000000	65276. 000000							
mean	0.519502	0. 004075							
std	0.499623	0. 063706							
min	0.000000	0. 000000							
25%	0.000000	0. 000000							
50%	1.000000	0. 000000							
77.00	1.000000	0. 000000							
75%	1.000000								

Figure 2



Let's say we have a histogram plot that shows the distribution of ages for a population of all arrested. The Y-axis of the histogram shows the age range, and the X-axis shows the number of people arrested within each age range. It is easily found that which is skewed to one side or has multiple peaks may indicate that the data is not normally distributed. Unsurprisingly, from this graph, we can see that, with the exception of 17 years old and younger, the age of

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those arrested is concentrated mostly in youth and middle age, especially 25-34 years old and 35-44 years old.

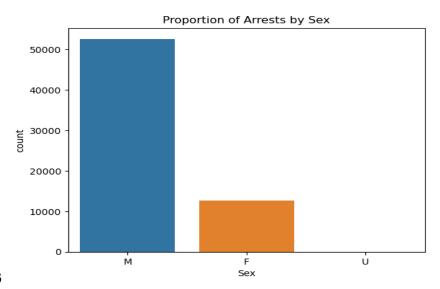


Figure 3

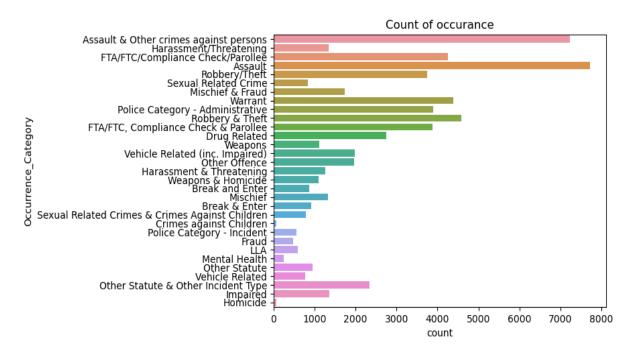
Gender is also a very important category inside, although as we expected, most of the arrests were made by men. We also calculated the number of male arrests versus female arrests and came up with four times as many male arrests as female arrests. The number of arrests male is 52650, and for females, the amount is 12617.

In the plot below, we can see that the majority of people in the dataset are White. The Black race group is the second most common, followed by the Asian and Hispanic race groups. So, we can say that the distribution of the race groups in the dataset is skewed toward the White race group. The comparison refers to comparing the count of people in each race group to each other. In this example, we can see that there are more people in the White race group than any other race group. We can also see that the Black race group has the second highest count. The unknown races also account for a portion. Meanwhile, the East/Southeast Asian and South Asian segments follow closely behind. So, we can say that there are significant differences in the count of people in each race group.

By analyzing these aspects of the count of race data, we can gain a better understanding of the distribution of different race groups in the dataset and draw meaningful insights from the data.

Figure 4

Figure 5



In the case of arrest, 'Occurrence_Category' is also a very important factor. After reviewing the data on arrests, it became clear that 'Occurrence_Category' was an important factor to consider. To better understand the distribution of occurrence categories, I created a bar chart showing the frequency of each category. From this chart, it was evident that 'assault' was the most common occurrence category, followed by 'robbery' and 'theft.' This information can be used to inform future strategies for preventing and addressing crime in the area.

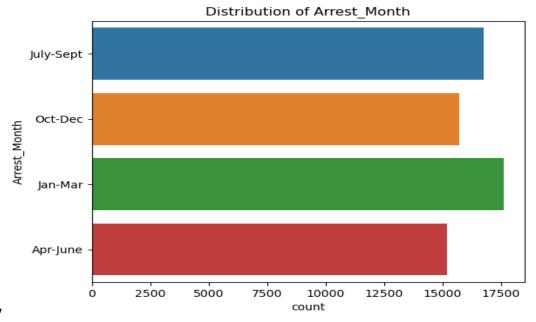
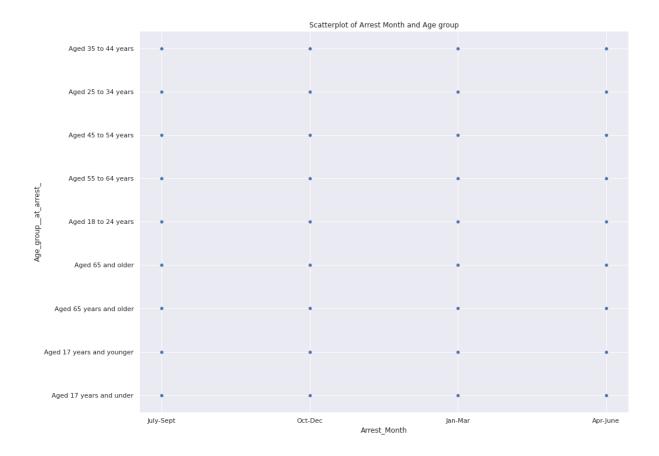


Figure 7

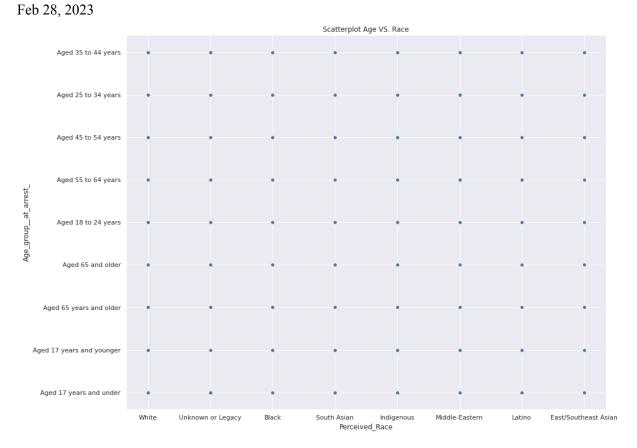
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Although we did not consider 'Arrest_Month' to be a suitable factor to make an analysis, we drew it through the graph in order to determine our idea. The chart shows that the number of arrests in the four quarters of the year actually does not differ much.

Figures 8 & 9

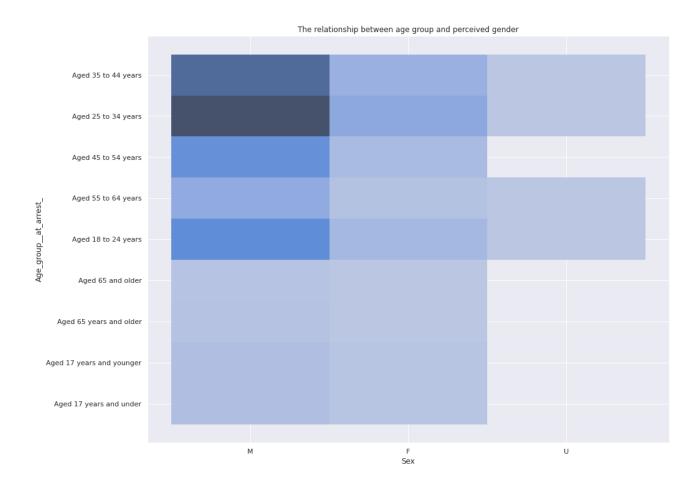


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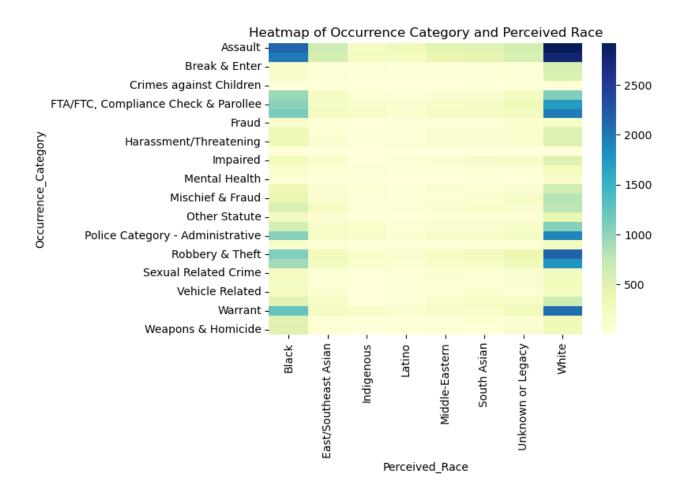
After examining the scatterplot of the data, it was clear that we cannot see there is a correlation between the two variables being plotted. For fugure7, the x-axis represented the arrested month, while the y-axis represented the age group. For the figure8, the x-axis represented the race, while the y-axis represented the age group. If the correlation coefficient was calculated to be 0.75, indicating a strong positive correlation between the two variables.

Figure 10



Here is the histplot of the relationship between age group and perceived gender. In the previous plots, we have analyzed that the number of arrests was higher for males compared to others, and in the age groups 24-34 and 35-44 years. But in this icon, the darker the color, the higher the number of arrests in this group out of the total number of arrests. Therefore, it can be observed that in all groups, males aged 25-34 years are the most represented in the statistics of arrests which explains the first research question we mentioned earlier: "What is the distribution of people who are subject to arrest in Toronto?"

Figure 11



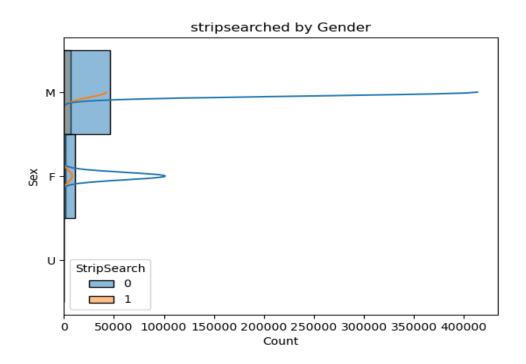
In the above analysis, we have obtained that among all arrest statistics, the proportion of whites is the highest followed by blacks. Among the reasons for arrests, 'Assault' is the most frequent. According to the heatmap, the above conclusion is correct. There are many parts of reasons for white arrests that are darker in color. In comparison, blacks were only arrested for 'Assault' in the darker part of the heatmap. In comparison, whites had the largest proportion of arrests for various reasons among all populations, at the same same, we also get answers to the first research question.

To further elaborate on the analysis, it is important to note that the gender disparity in arrest rates is not a new phenomenon. Has been observed in various studies and reports over the years, indicating that men are more likely to engage in criminal activities than women. This could be due to a variety of factors, such as socialization, cultural expectations, and economic disparities.

Furthermore, the fact that the majority of those arrested for assault are white males is also a significant finding. It may be indicative of systemic issues related to race and privilege, as well as the cultural normalization of violence among certain groups. It is also worth noting that while white males may make up the largest portion of those arrested for assault, it does not necessarily mean that they are the only ones engaging in this behavior. It could simply reflect biases in law enforcement or other societal factors that make it more likely for certain groups to be targeted for arrest. It is also possible that because of the larger proportion of the population that is white in Toronto, this is one of the reasons why the largest number of white males are arrested.

One of the key features of the dataset is its focus on strip searches, which are a controversial practice that can have serious consequences for individuals who are subjected to them. Strip searches involve the removal of clothing and other personal items in order to search for contraband or other items that may be concealed on a person's body. While strip searches can be a necessary tool for law enforcement in certain situations, they are also invasive and can be traumatic for those who are subjected to them. By analyzing the data on strip searches included in the dataset, researchers can gain insights into the frequency and nature of these searches and identify any patterns or trends that may raise concerns.

Figure 12



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To find whether there is a significant association between gender and StripSearch, we assume that the null hypothesis is true. In statistical hypothesis testing, the p-value is a measure of the strength of evidence against the null hypothesis. A p-value of 0.05 means that there is a 5% chance of obtaining a chi-square statistic as extreme or more extreme than the observed value, assuming that the null hypothesis is true. If the calculated p-value is less than or equal to the predetermined significance level of 0.05, then the null hypothesis is rejected, and it is concluded that there is a statistically significant association between the two categorical variables. On the other hand, if the p-value is greater than 0.05, then the null hypothesis cannot be rejected, and it is concluded that there is not enough evidence to support a significant association between the two variables.

StripSearch vs Sex

H0: The null hypothesis states that there is no significant difference between the gender and strip searches, and any differences can be attributed to chance.

HA: The alternative hypothesis states that there is a significant difference between gender and strip searches, indicating a relationship between the two variables.

Our results indicate that with alpha is 0.05, the p-value is 2.9284098963956234e-11, and there is a significant difference between the gender and strip searches. The p-value is greater than 0.05 which is rejected the null hypothesis.

Figure 12 shows the percentage of males, females, and unknown who were searched during arrest in terms of gender distinction. Being searched is usually once and 0 times. We then also calculated by python code that 6123 of the male arrestees were searched and 1208 of the female arrestees were searched. And we also calculated the proportion of arrests with strip searches as 0.11950793553526565. Using the hypothesis analysis as well as the data, we again verified that among male and female arrestees, males were more likely to be asked to strip search.

And we also want to investigate our second research question: Are there significant differences in the proportion of arrests that involve strip searches across racial groups? We have made more plots and hypotheses about the relationship between race and search strip.

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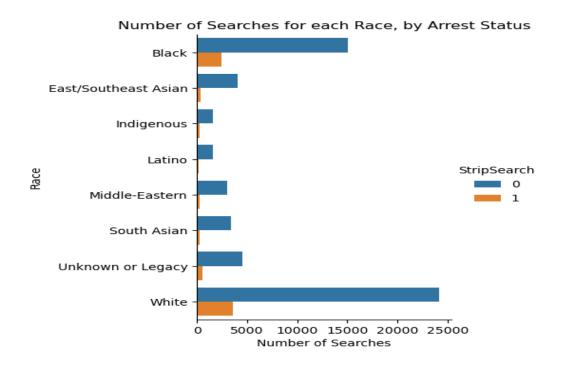
StripSearch vs Perceived Race

H0: The null hypothesis states that there is no significant difference between the race and strip searches, and any differences can be attributed to chance.

HA: The alternative hypothesis states that there is a significant difference between race and strip searches, indicating a relationship between the two variables.

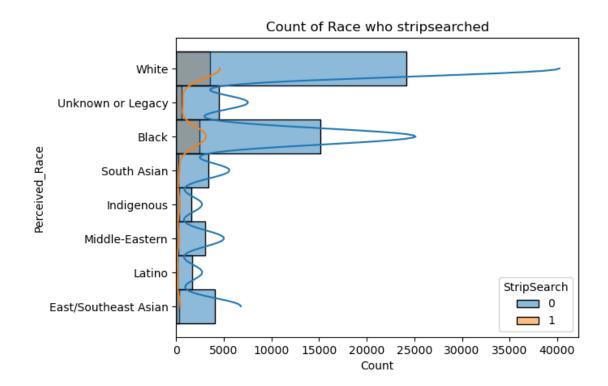
Our results indicate that with alpha is 0.05, the p-value is 6.62139843678172e-79, and there is a significant difference between the race and strip searches. The p-value is larger than 0.05 which is rejected the null hypothesis.

Figure 13



From this plot, we can only see that blacks have the largest share of people arrested who are searched, but earlier we have gotten that blacks are not the largest group of people arrested. However, we calculated that the percentage of arrests by race was 12% for whites and 14% for blacks, while we also obtained earlier that whites accounted for the highest percentage of crimes.

Figure 14



In addition, age is also a more important element in the research question. Previously, we have derived the age group that accounts for the largest proportion of arrests, and we now want to investigate whether, for age, age affects strip search as much as race.

Figure 15

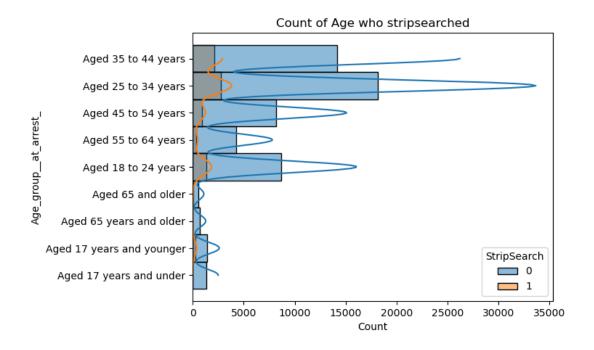
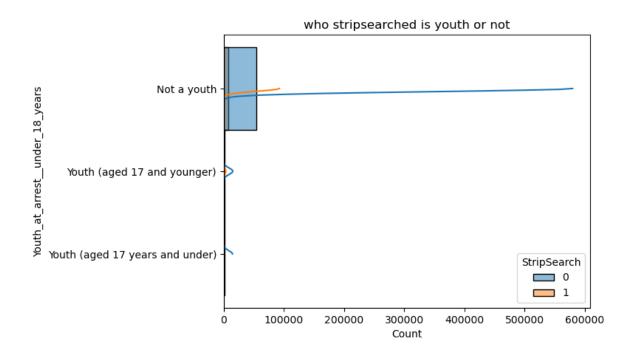


Figure 16



From **Figures 15&16**, we can basically establish that age is not an influential factor in influencing whether or not an arrested person is searched. However, we make one more hypothesis test to test the relationship between 'Age group at arrest 'and 'StripSearch'.

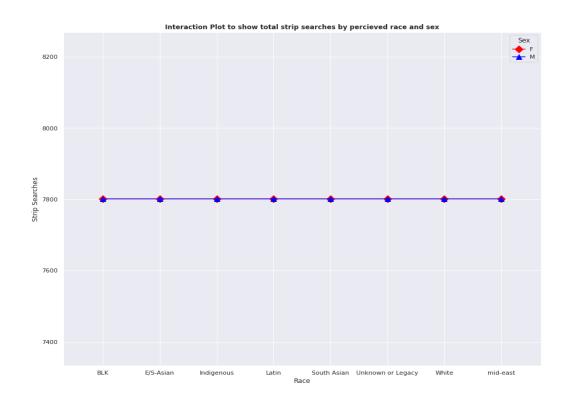
StripSearch vs Age group at arrest

H0: The null hypothesis states that there is no significant difference between the age and strip searches, and any differences can be attributed to chance.

HA: The alternative hypothesis states that there is a significant difference between age and strip searches, indicating a relationship between the two variables.

Our results indicate that with alpha being 0.05, the p-value is 2.9843711708976695e-98, and there is a significant difference between the race and strip searches. The p-value is larger than 0.05 which is rejected the null hypothesis. Compared with race, age is a little less influential in whether or not you are strip searched.

Figure 17



Research Design and Methods:

This involves using statistical tests to determine whether there are significant differences between groups or variables. For example: To examine the association between arrest outcomes and demographic variables, such as age, race, and gender.

After our EDA we used descriptive statistics, plots, T-tests, and ANOVAs in order to analyze our chosen variables. The first main difficulty in this process was considering how to deal with the fact that there were no clear continuous variables in the dataset, we used the ObjectId column as a proxy for continuous data. We did this because the dataset contained all encounters of public individuals with the police so each ObjectId could be considered representative of a unique data point. We also found things like the mean and total sums for various demographics by Sex and Age (as well as graphing them) which told us that the majority of the dataset was skewed towards the male sex and towards the 25-34, and 35-44 age groups. We also found from our heatmap of race and the recorded crimes which racial demographics committed the most crimes of a specific type which supports some of the results of our t-tests and ANOVAs.

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ONE-WAY ANOVA

White & Black & Latino

To write a hypothesis for a one-way ANOVA, we define the null hypothesis and the

alternative hypothesis.

H0 (Null hypothesis): There is no significant difference between the mean scores of black,

white, and Latino.

HA (Alternative hypothesis): There is a significant difference between the mean scores of at

least two of the three or more groups.

We set the significance level is 0.05. After displaying the code, we get the p=value of this test

is 5.709544950063691e-05, which is less than the significance level, then there is evidence to

reject the null hypothesis and conclude that there is a significant difference between at least

two group means. We can conclude that there is a significance between at least two group

means among Black, White, and Latino.

East/Southeast Asian & Indigenous & Middle-Eastern

H0 (Null hypothesis): There is no significant difference between the mean scores of

East/Southeast Asian, Indigenous, and Middle-eastern.

HA (Alternative hypothesis): There is a significant difference between the mean scores of

East/Southeast Asian, Indigenous, and Middle-eastern.

We set the significance level is 0.05. After displaying the code, we get the p=value of this test

is 0.01428063661668165, which is less than the significance level, then there is evidence to

reject the null hypothesis and conclude that there is a significant difference between at least

two group means. We can conclude that there is a significance between at least two group

means among East/Southeast Asian, Indigenous, and Middle-eastern.

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Tukey's HSD

Figure 18

	Mı	ultiple Comparison of	Means - Tul	key HSD,	FWER=0.05		
group1		group2	meandiff	p-adj	lower	upper	rejec
	Black	East/Southeast Asian	4949. 2681	0.001	1879. 5604	8018. 9759	Tru
	Black	Indigenous	937.8426	0.9	-2313.7554	4189.4407	Fals
	Black	Latino	6785. 4174	0.001	2015. 2365	11555. 5982	Tru
	Black	Middle-Eastern	3004. 4672	0.2158	-707. 575	6716. 5093	Fals
	Black	South Asian	3516.0165	0.0446	44. 5564	6987.4766	Tru
	Black	Unknown or Legacy	3561. 1153	0.001	983. 2644	6138. 9661	Tru
	Black	White	-92. 6273	0.9	-1500. 3088	1315. 0542	Fa1s
East/Southeast	Asian	Indigenous	-4011. 4255	0.074	-8212.5194	189.6684	Fals
East/Southeast	Asian	Latino	1836. 1492	0.9	-3625. 6202	7297. 9186	Fals
East/Southeast	Asian	Middle-Eastern	-1944. 801	0.9	-6511. 5895	2621. 9875	Fa1s
East/Southeast	Asian	South Asian	-1433. 2516	0.9	-5806. 7325	2940. 2293	Fals
East/Southeast	Asian	Unknown or Legacy	-1388. 1529	0.9	-5092. 4227	2316. 117	Fals
East/Southeast	Asian	White	-5041.8954	0.001	-8051. 5245	-2032. 2664	Tru
Indigenous Indigenous Indigenous		Latino	5847. 5747	0.0315	281. 543	11413.6065	Tru
		Middle-Eastern	2066. 6245	0.8809	-2624. 3606	6757.6097	Fals
		South Asian	2578. 1739	0.6417	-1924. 8384	7081. 1862	Fals
Indig	genous	Unknown or Legacy	2623. 2727	0.4424	-1233. 0727	6479.618	Fa1s
Indig	genous	White	-1030. 4699	0.9	-4225. 4115	2164. 4717	Fa1s
I	Latino	Middle-Eastern	-3780. 9502	0.5074	-9627. 9218	2066.0214	Fals
I	Latino	South Asian	-3269. 4008	0.6393	-8966. 6681	2427.8665	Fa1s
I	Latino	Unknown or Legacy	-3224. 3021	0.5559	-8425. 5649	1976. 9607	Fa1s
I	Latino	White	-6878.0447	0.001	-11609.7871	-2146.3022	Tru
Middle-Ea	astern	South Asian	511. 5494	0.9	-4334. 427	5357. 5257	Fals
Middle-Ea	astern	Unknown or Legacy	556. 6481	0.9	-3695. 1476	4808. 4438	Fals
Middle-Ea	astern	White	-3097.0944	0.1697	-6759. 6098	565. 4209	Fals
South	Asian	Unknown or Legacy	45. 0988	0.9	-3998. 3583	4088. 5558	Fals
South	Asian	White	-3608.6438	0.03	-7027. 0933	-190. 1944	Tru
Unknown or I	Legacy	White	-3653.7426	0.001	-6159.7507	-1147.7344	Tru

Based on the results of Tukey's HSD test, we can determine which groups have significantly different means. For example, if the test shows that the mean of group White is significantly different from the mean of group Black, then we can conclude that there is a significant difference between the means of groups White and Black. If Tukey's HSD statistic is greater than the critical value, then the means of the two groups are significantly different. After looking up the statistics,

TWO-WAY ANOVA

Figure 19

```
F \
                                                sum_sq
C(Perceived Race)
                                         2.032664e+09
                                                        7. 0 1. 059784
C(Age_group__at_arrest)
                                         1. 494645e+11
                                                        8. 0 68. 186430
C(Perceived_Race):C(Age_group__at_arrest_) 4.719319e+10 56.0 3.075681
Residual
                                          1.992252e+12 7271.0
                                               PR(>F)
C(Perceived_Race)
                                          3.465841e-01
C(Age_group__at_arrest_)
                                          1.767476e-43
C(Perceived_Race):C(Age_group__at_arrest_) 4.017217e-12
Residual
```

A commonly used significance level is 0.05, which means that there is a 5% chance of making a Type I error (rejecting the null hypothesis when it is true).

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Perceived Race & Age group at arrest

H0 (Null hypothesis): There is no significant difference between the means of the group age and race.

HA (Alternative hypothesis): There is a significant difference between the means of the groups being compared.

Based on the p-value obtained from the ANOVA table, determine if there are significant differences between the groups. If the p-value is less than the significance level, reject the null hypothesis and conclude that there is a significant difference between age groups and Race.

Discussion:

Our results do indicate that adult men of a specific race had more encounters with the police than others as can be seen from the Tukey HSD test on our ANOVA group variables (Figure 17). Specifically between these racial groups p-values: Black and East/South East Asian's (0.001), Black and Latino (0.001), Black and South Asian (0.04), Black and Unknown or Legacy(0.001), East/Southeast Asian and White (0.01), Indigenous and Latino(0.03), Latino and White(0.001), and South Asian with White and Unknown or legacy (0.03 and 0.001 respectively), which indicates that of any racial group, black people experience the most interactions with police on average as compared to others with East/Southeast Asians and South Asians following them. Our 2-way ANOVA (Figure 18) echoes the findings around race by showing that your age plus your race has a significant impact on your chances of having an encounter with the police (as is indicated by the shared p-value of 4.173e-12). As well as the skewed demographics in the numbers of strip searches by sex. For further studies, we could look at whether specific police districts arrested more people than average. We could also look more deeply at which racial groups were attributed to specific kinds of crimes. This could allow for predictive or causal claims further down the line if we controlled for things like over-zealous police districts. Analysis of this dataset could in turn lead to reining in of those over-zealous police departments and shedding light on possible miscarriages of justice. The main limitations of our study were something that was also previously listed in the Methods section of our report, being the initial lack of continuous data in the dataset. The difficulties in cleaning this data as well as doubts over the accuracy of

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specific numbers in tests were a major limitation to our analysis. Ideally, for further study, we would check over the figures and code more. So as to be the surest of our conclusions before going on to further study from the dataset, once we were able to clean the dataset we would then go on to do some of the aforementioned hypothetical studies above.

Conclusion:

Our analysis of the demographics of sex, race, age, and the numbers of arrests and strip searches indicate there is disproportionate policing of various ages and racial groups as well as of the male sex. Limitations as to the number of continuous variables in the dataset meant that confidently concluding the statistical significance of a particular figure was difficult past general trends apparent from EDA. Further research with more in-depth models and more continuous data, so as to allow for causal or predictive claims to be made about the various categorical variables of the dataset would be a good continuation of research on this dataset. From the previous analysis, we can see that the arrests were heavily weighted toward whites, males, and the 25-34 age group. In addition, we also found that there may have been a subjective factor in the police searches, as blacks did not account for the largest proportion of arrests but had the highest rate of searches, which would answer the research questions we mentioned earlier and explain them. Further data gathering and analysis would be especially interesting for any who have an interest in pursuing issues around criminal justice and making sure the police in Canada are performing their duties in a lawful manner.

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Lum, Stoltz, Koper, & Scherer. (2019). *Research on body-worn cameras - lum - wiley online library*. Research on body-worn cameras. Retrieved February 27, 2023, from https://onlinelibrary.wiley.com/doi/full/10.1111/1745-9133.12412

Wortley, Laniyonu, & Laming. (n.d.). *Use of force by the Toronto Police Service Final Report*. Use of force by the Toronto Police Service . Retrieved February 27, 2023, from https://falconers.ca/wp-content/uploads/2022/03/Use-of-force-by-the-Toronto-Police-Service-Final-report.pdf

Foster, & Jacobs. (2022). Independent expert assessment report: Toronto Police Service Race ... - TPS.

https://www.tps.ca/media/filer_public/1f/e7/1fe76fd7-1bde-4c4d-bd90-091a5ccba5da/2bea48 b6-40a7-4f43-ba92-ce59df850c73.pdf. Retrieved February 27, 2023, from https://www.tps.ca/media/filer_public/1f/e7/1fe76fd7-1bde-4c4d-bd90-091a5ccba5da/2bea48 b6-40a7-4f43-ba92-ce59df850c73.pdf