

INF2178H Experimental Design for Data Science

Study on Factors Affecting the Likelihood of Being Strip-Searched in Occurrence Categories

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1. Introduction

A strip search is a thorough search of an individual's body, including their clothing and personal belongings, to look for any items or contraband that may be concealed. This type of search is typically conducted by law enforcement officers or security personnel, such as policemen, when they believe some people may have prohibited items, such as drugs or weapons. However, Strip searches can be highly intrusive and cause significant emotional distress to the person being searched.

Strip search policies vary widely in different countries. Some countries, such as the United States, have specific guidelines on when and how strip searches should be conducted. But in other countries, strip searches are more common and invasive. Human rights will be used against strip searches. The European Convention on Human Rights prohibits inhumane and degrading strip searches (Mavronicola & Webster, 2023). Section 51 of the UK Immigration Act states that a person in immigration detention or prison may be strip-searched for Citizenship documents (Spalding, 2021).

Strip searches generally select law enforcement officers of the same gender. However, how to define transgender people creates additional complexity in the execution of strip searches. Due to the failure of the binary gender system, especially in Canada, the policing of the body has become an acute issue, not only for the police but also for society as a whole (Kirkup, 2009). The Supreme Court of Canada called strip searches “*one of the most extreme exercises of police power*” and “*inherently humiliating and degrading*”. In Ontario, there are no legislated safeguards restricting these highly invasive searches. However, there may be legislated safeguards in federal prisons and many other provinces (*Strip Searches in Ontario Prisons – CCLA, 2022*).

Through the analysis of the Toronto Police Service's release of race-based data on strip searches as part of its Race and Identity-based Data Collection Strategy, Monika points out that although black people account for 10% of the population in the Toronto area, about 1 /3 of the people who were strip-searched are black people. And about 1/3 of the Aboriginal people arrested accepted strip searches (Lemke, n.d.). The effectiveness of strip-searched has been met with skepticism,

and possible racialized issues deserve attention. Thus, in our study, we will do some empirical analysis on the strip search in Toronto and find out if the strip search is abused in the policy system.

2. Literature Review

In strip searches, human rights, race, gender, and other aspects are examined. The approach requires a person to disrobe or undergo a cavity search, which can violate their privacy and dignity. Increasingly, it is acknowledged that strip searches, especially when they are discriminatory or abusive, are damaging. Hence, legal and policy frameworks have been established to guarantee that strip searches respect human rights and promote dignity.

Smith (2022) conducted a literature review on cognitive-behavioral therapy for anxiety disorders. This study explored how this treatment alleviates symptoms and enhances the patient's quality of life. Smith has shown that cognitive-behavioral therapy effectively treats anxiety disorders like generalized anxiety disorder, panic disorder, and social anxiety disorder. Mavronicola and Webster (2023) investigate the relationship between the European Court of Human Rights' strip search case law and Article 3's bar on cruel and humiliating treatment. The authors investigate the Supreme Court's context-sensitive approach to determining allowed and prohibited conduct, as well as the variables that render strip searches either harsh and demeaning or compatible with human dignity. This demonstrates how the Court balances the necessity and propriety of prison action. Gilmartin and Scull (2022) analyze the responses of republican women and the Catholic Church to Northern Ireland's strip searches in the 1980s and 1990s. The authors point out that the women viewed the practice as a gendered weapon used to demoralize and humiliate them and the nationalist group. In addition, they examine how, despite condemning republican violence, the Catholic Church came to view strip-searching as a violation of fundamental human rights. The authors demonstrate how some Catholic clergymen blended pastoral care for their parishioners with political statements against the British government, raising questions about the role of the Church in the Northern Ireland conflict.

Several provinces in Canada have varied legislation regarding strip searches. Gorman (2022) discusses whether or not strip searches are permissible in Canada based on the court review. It

concentrates on the case of Golden, in which the illegality of the search was ruled, and other examples such as Ali and Tim. The Golden case established guidelines for strip searches, including the need for a valid arrest and a reasonable suspicion that evidence could be concealed on the body of the arrested individual. Since Golden, this article explores how Canadian courts have interpreted and implemented these standards. It also raises fears that Golden police may not adhere to the regulations when conducting strip searches. The author summarizes the Key principles, including the necessity for a valid reason and the requirement that the search does not infringe on section 8 of the Canadian Charter of Rights and Freedoms.

Ottawa police sergeant Steven Desjourdy was the first officer in Canada to be convicted of sexual assault on the basis of an illegal strip search of a woman, which might be deemed "sexual assault by the state." Sexual assault cases provide numerous barriers for all complainants, but when the accused is a police officer conducting his duties, these obstacles are almost insurmountable. Given that Desjourdy was white and SB was a violent and dangerous Black Canadian woman, the likelihood of racism loomed large (Gorman, 2022).

It can be observed that there is a correlation between gender, race, and strip searches, and that strip searches conducted on women and people of non-white races frequently have negative social consequences. Due to Canada's observable seasonal variations, the crime rate similarly varies with the seasons. Thus, strip searches may also exhibit seasonal variations. According to Linning's research, the number of crimes fluctuates with the seasons, with the majority occurring in the summer. Yet, the analysis demonstrates that seasonal shifts in crime patterns are not uniform across all forms of crime and locations (Linning, 2015). His findings could impact crime prevention and police operations. If politicians are aware of how climate influences crime trends, they can spend resources more effectively and devise more targeted strategies to combat crime.

There might also be a connection between the age of the person being searched and the strip search. According to Grewcock and Sentas (2019), nearly half (45%) of all documented strip searches conducted in the 2017/18 fiscal year were conducted on young people aged 25 years or younger, and strip searches took place in a variety of settings. In New South Wales, there has been an uptick in recent years. Many studies have also been done on strip searches of children

(Donahoe, 2010; Liptak & Souter, 2009). According to the research discussed before, there may also be a connection between one's age and the likelihood of being subjected to a strip search.

3. Research Objects and Questions

A strip search checks an individual's body, clothing, and belongings for hidden objects or contraband. When authorities suspect someone has drugs or weapons, they undertake this type of search. Strip searches can be unpleasant and upsetting. Some countries have specific rules on when and how to strip search. Strip searches are against the EU Human Rights Convention.

Strip searches evaluate gender, race, and other aspects. Police and society are concerned about body policing. The Supreme Court of Canada deemed strip searches "excessive police power" and "humiliating and degrading." Empirical research demonstrates that coloured people are disproportionately strip searched. Strip searches are controversial and may have racial implications. Consequently, this study examines Toronto strip searches to evaluate if the policy system abuses them.

From the previous literature review and introduction, we decided to study which factors will affect the likelihood of being strip-searched from the dataset provided by the Toronto Police Service. The research questions are listed as the following:

- RQ1: How does sex affect the likelihood of being strip-searched in occurrence categories?
- RQ2: How does perceived race (white vs. non-white) affect the likelihood of being strip-searched in occurrence categories?
- RQ3: How does age_group affect the likelihood of being strip-searched in occurrence categories?
- RQ4: How do seasons (arrest_month) affect the likelihood of being strip-searched in occurrence categories?

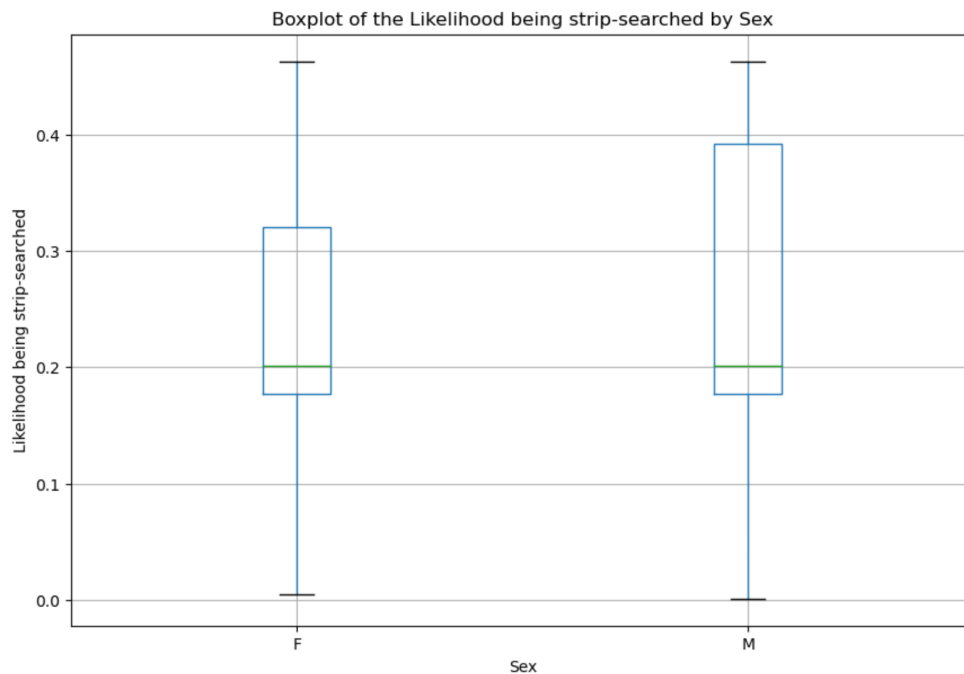
4. Exploratory Data Analysis

RQ1: How does sex affect the likelihood of being strip-searched in occurrence categories?

Table 1 shows the descriptive results for the likelihood of being strip-searched in occurrence categories by sex.

Table1. Likelihood of Being Strip-Searches in Occurrence Categories by Sex		
	Male	Female
Mean	0.252466	0.245305
Min	0.001059	0.005140
Max	0.462882	0.462882
Median	0.201596	0.201596
Std	0.119566	0.112956
IQR	0.21442	0.142761

Figure 1 shows the boxplot for the likelihood of being strip-searched in occurrence categories by sex.



From the summary table and the boxplot, we can see that group of females has a median of 0.201596, an IQR of 0.142761 (ranging from 0.177074 to 0.319835), and no outliers. The group of males has a median of 0.201596, an IQR of 0.21442 (ranging from 0.177074 to 0.391494),

and no outliers. We can infer that the likelihood of being strip-searched in occurrence categories for males is more spread out than for females. In other words, the likelihood of males being strip-searched in occurrence categories is more diverse and variable.

To discover how sex affects the likelihood of being strip-searched in occurrence categories, we conduct a t-test; the null hypothesis is that there is no significant difference between the means of the likelihood of the two groups (males/females) being strip-searched. The alternative hypothesis is that the means of the likelihood of the two groups (males/females) being strip-searched are different. The t-test result is the following:

Table 2. The t-test Result for the Likelihood of Being Strip-Searches in Males/Females two groups	
t-statistic	2.0554354098057157
p-value	0.0399739624433901

The p-value is about 0.04, which is less than the significance level 0.05, we reject the null hypothesis and conclude that there is a significant difference between the means of the likelihood of the two groups (males/females). In other words, sex affects the likelihood of being strip-searched in occurrence categories.

RQ2: How does perceived race (white vs. non-white) affect the likelihood of being strip-searched in occurrence categories?

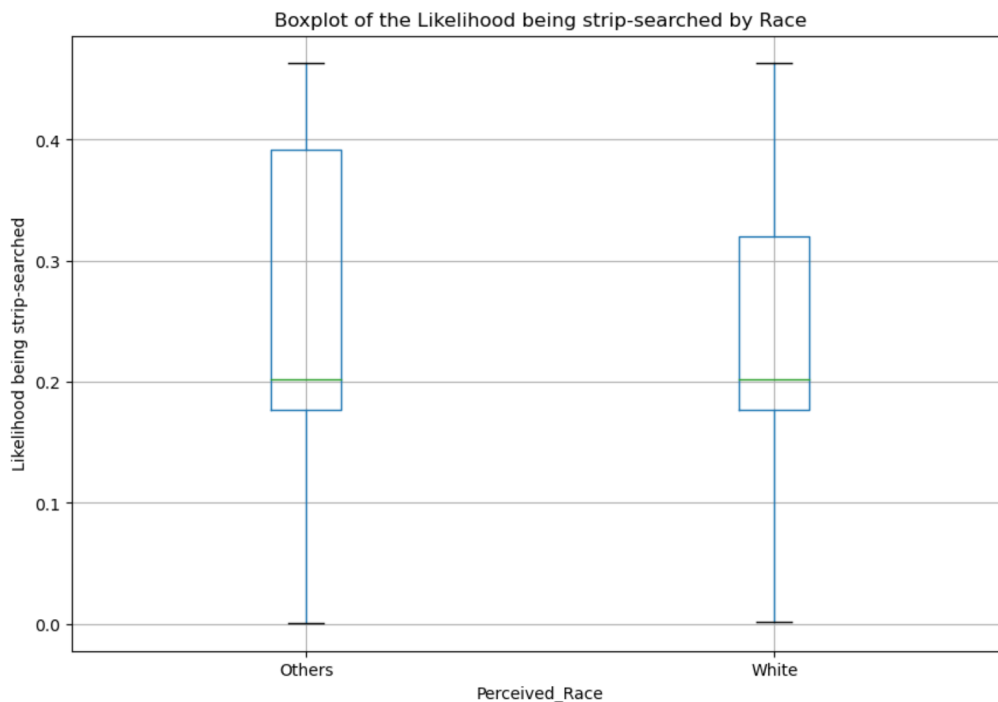
In this research question, we reclassify the perceived race by white and others. We will discover how the likelihood of being strip-searched in occurrence categories changes for these two groups.

Table 3 shows the descriptive results for the likelihood of being strip-searched in occurrence categories by perceived race.

Table3. Likelihood of Being Strip-Searches in Occurrence Categories by Perceived Race		
	White	Others
Mean	0.251179	0.251391

Min	0.002110	0.001059
Max	0.462882	0.462882
Median	0.201596	0.201596
Std	0.121124	0.116320
IQR	0.142761	0.21442

Figure 2 shows the boxplot for the likelihood of being strip-searched in occurrence categories by perceived race.



We can see that group of others has a median of 0.201596, an IQR of 0.21442 (ranging from 0.177074 to 0.391494), and no outliers. The group of white has a median of 0.201596, an IQR of 0.142761 (ranging from 0.177074 to 0.319835), and no outliers. We can infer that the likelihood of being strip-searched in occurrence categories for other races is more spread out than for white. In other words, the likelihood of other races being strip-searched in occurrence categories is more diverse and variable.

To discover how perceived race affects the likelihood of being strip-searched in occurrence categories, we conduct a t-test; the null hypothesis is that there is no significant difference

between the means of the likelihood of the two groups (white/other races) being strip-searched. The alternative hypothesis is that the means of the likelihood of the two groups (white/other races) being strip-searched are different. The t-test result is the following:

Table 4. The t-test Result for the Likelihood of Being Strip-Searches in White/Other races two groups	
t-statistic	-0.07841619141073725
p-value	0.9374990968539462

The p-value is about 0.94, which is far greater than the significance level 0.05, we fail to reject the null hypothesis and conclude that there is not enough evidence to support a significant difference between the means of the likelihood of being strip-searched of white and other races two groups.

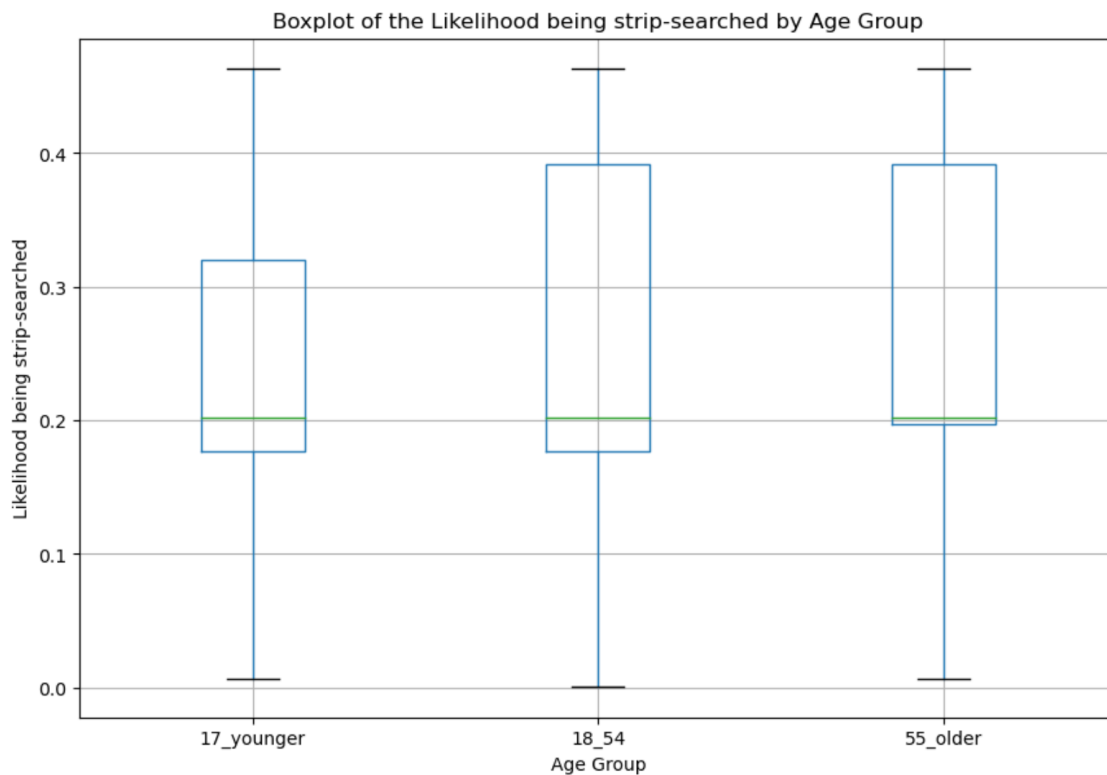
RQ3: How does age_group affect the likelihood of being strip-searched in occurrence categories?

We regrouped the age group into Aged 17 years old or younger, Aged 18 to 54 years old, and Aged 55 or older to conduct the research question effectively.

Table 5 shows the descriptive results for the likelihood of being strip-searched in occurrence categories by age group.

Table 5. Likelihood of Being Strip-Searches in Occurrence Categories by Age_Group			
	17_younger	Aged 18 to 54	55_older
Mean	0.246568	0.251112	0.257880
Min	0.006686	0.001059	0.006510
Max	0.462882	0.462882	0.462882
Median	0.201596	0.201596	0.201596
Std	0.111083	0.119130	0.112780
IQR	0.142761	0.21442	0.194258

Figure 3 shows the boxplot for the likelihood of being strip-searched in occurrence categories by age group.



We can see that group of Aged 17 years old or younger has a median of 0.201596, an IQR of 0.142761 (ranging from 0.177074 to 0.319835), and no outliers. The Aged 18 to 54 years old group has a median of 0.201596, an IQR of 0.21442 (ranging from 0.177074 to 0.391494), and no outliers. The Aged 55 or older group has a median of 0.201596, an IQR of 0.194258 (ranging from 0.197236 to 0.391494), and no outliers. We can infer that the likelihood of being strip-searched in occurrence categories for Aged 18 to 54 years old is more spread out than for Aged 55 or older, than for Aged 17 years old or younger. In other words, the likelihood of Aged 18 to 54 years old being strip-searched in occurrence categories is the most diverse and variable among the three groups.

To discover how different age group affects the likelihood of being strip-searched in occurrence categories, we conduct a series of t-test; firstly, the null hypothesis is that there is no significant difference between the means of the likelihood of the two groups (Aged 17 years old or younger/Aged 18 to 54 years old) being strip-searched. The alternative hypothesis is that the

means of the likelihood of the two groups (Aged 17 years old or younger/Aged 18 to 54 years old) being strip-searched are different. The t-test result is the following:

Table 6. The t-test Result for the Likelihood of Being Strip-Searched in Aged 17 years old or younger/Aged 18 to 54 years old two groups	
t-statistic	-0.6695032561876009
p-value	0.5036813652308522

The p-value is about 0.5, which is far greater than the significance level 0.05, we fail to reject the null hypothesis and conclude that there is not enough evidence to support a significant difference between the means of the likelihood of being strip-searched of Aged 17 years old or younger/Aged 18 to 54 years old two groups.

Secondly, the null hypothesis is that there is no significant difference between the means of the likelihood of the two groups (Aged 17 years old or younger/Aged 55 or older) being strip-searched. The alternative hypothesis is that the means of the likelihood of the two groups (Aged 17 years old or younger/Aged 55 or older) being strip-searched are different. The t-test result is the following:

Table 7. The t-test Result for the Likelihood of Being Strip-Searched in Aged 17 years old or younger/Aged 55 or older two groups	
t-statistic	-1.2972882283935105
p-value	0.19502544002537764

The p-value is about 0.2, which is greater than the significance level 0.05, we fail to reject the null hypothesis and conclude that there is not enough evidence to support a significant difference between the means of the likelihood of being strip-searched of Aged 17 years old or younger/Aged 55 or older two groups.

Thirdly, the null hypothesis is that there is no significant difference between the means of the likelihood of the two groups (Aged 18 to 54 years old /Aged 55 or older) being strip-searched.

The alternative hypothesis is that the means of the likelihood of the two groups (Aged 18 to 54 years old /Aged 55 or older) being strip-searched are different. The t-test result is the following:

Table 8. The t-test Result for the Likelihood of Being Strip-Searches in Aged 18 to 54 years old/Aged 55 or older two groups	
t-statistic	-1.1614808094494713
p-value	0.2460649246888497

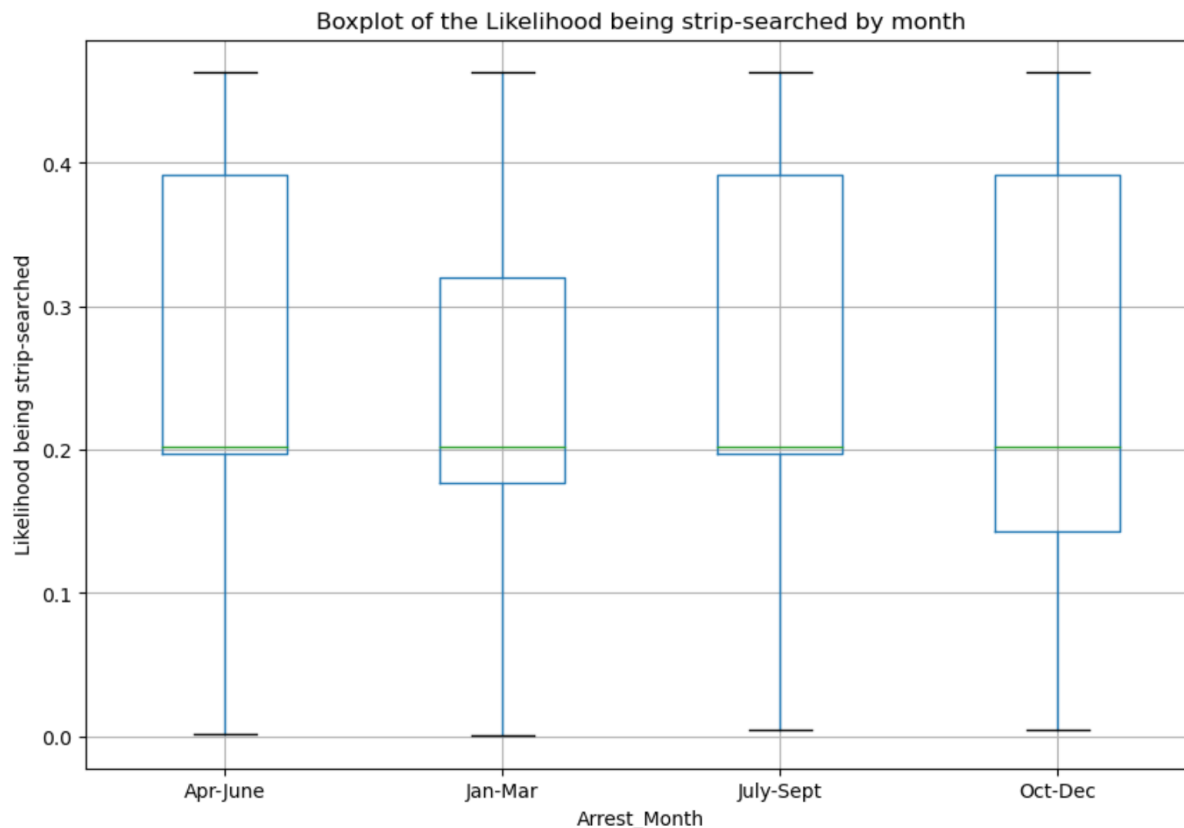
The p-value is about 0.25, which is greater than the significance level 0.05, we fail to reject the null hypothesis and conclude that there is not enough evidence to support a significant difference between the means of the likelihood of being strip-searched of Aged 18 to 54 years old/Aged 55 or older two groups.

RQ4: How do seasons (arrest_month) affect the likelihood of being strip-searched in occurrence categories?

Table 9 shows the descriptive results for the likelihood of being strip-searched in occurrence categories by Arrest month.

Table 9. Likelihood of Being Strip-Searches in Occurrence Categories by Arrest month				
	Apr-June	Jan-Mar	July-Sept	Oct-Dec
Mean	0.256089	0.242870	0.259497	0.243295
Min	0.001706	0.001059	0.005140	0.005140
Max	0.462882	0.462882	0.462882	0.462882
Median	0.201596	0.201596	0.201596	0.201596
Std	0.119302	0.114524	0.117015	0.141828
IQR	0.194258	0.142761	0.194258	0.248884

Figure 4 shows the boxplot for the likelihood of being strip-searched in occurrence categories by Arrest month.



We can see that group of Apr-June has a median of 0.201596, an IQR of 0.194258 (ranging from 0.197236 to 0.391494), and no outliers. The Jan-Mar group has a median of 0.201596, an IQR of 0.142761 (ranging from 0.177074 to 0.319835), and no outliers. The group of July-Sept has a median of 0.201596, an IQR of 0.194258 (ranging from 0.197236 to 0.391494), and no outliers. The group of Oct-Dec has a median of 0.201596, an IQR of 0.248884 (ranging from 0.142610 to 0.391494), and no outliers. We can infer that the likelihood of being strip-searched in occurrence categories in Oct-Dec is the most diverse and variable compared with the other three groups.

We chose two groups (Apr-June/Jan-Mar) to conduct a t-test; the null hypothesis is that there is no significant difference between the means of the likelihood of being strip-searched in the two groups (Apr-June/Jan-Mar). The alternative hypothesis is that the means of the likelihood of being strip-searched in the two groups (Apr-June/Jan-Mar) are different. The t-test result is the following:

<p>Table 10. The t-test Result for the Likelihood of Being Strip-Searched in Apr-June/Jan-Mar two groups</p>
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t-statistic	3.8709246557522192
p-value	0.00011012433746293573

The p-value is about 0.0001, which is far less than the significance level 0.05, we reject the null hypothesis and conclude that there is a significant difference between the means of the likelihood of being strip-searched in the two groups(Apr-June/Jan-Mar). In other words, season (arrest month) affects the likelihood of being strip-searched in occurrence categories.

5. Methods

In our proposed project, we will use a dataset that contains information related to all arrests and strip searches conducted by Toronto Police Service. The dataset consists of 65,276 observations and 19 columns; it can be found through the following link: <https://data.torontopolice.on.ca/datasets/TorontoPS::arrests-and-strip-searches-rbdc-arr-tbl-001/about>. The dataset contains the following variables, arrest year, arrest month, EventID, ArrestID, PersonID, Perceived Race, Sex, Age group (at arrest), Youth at arrest (under 18 years), Arrest Location, StripSearch, Booked, Occurrence Category, actions at arrest (Concealed items / Combative, violent or spitter/biter / Resisted, defensive or escape risk / Mental instability or possibly suicidal / Assaulted officer / Cooperative), search reasons (CauseInjury / AssistEscape / PossessWeapons / PossessEvidence), and ItemsFound. We have provided a full list of the attributes in the appendix. Data is provided in text format, binary 0 or 1 format, or numeric integer format.

Since there is no apparent continuous variable in the dataset, we created a new continuous variable by calculating the likelihood of being strip-searched based on occurrence categories. We will use this continuous variable as a dependent variable to conduct four research questions.

Given our exploratory data analysis on the dataset, we conducted t-tests to compare the means of the likelihood of being strip-searched in occurrence categories among selected two groups (Male vs. Female, White vs. Other Races, Age Groups, and Arrest Months). After getting the significant results for two categorical variables (Sex and Seasons (Arrest Months)), since there

are four subgroups in the categorical variable Arrest_Month, we applied one-way ANOVA to determine if there is a significant difference between the means of the likelihood of being strip-searched in occurrence categories of four arrest_month groups. The null hypothesis is that all four arrest_month group means of the likelihood of being strip-searched are equal. The alternative hypothesis is that at least one group's mean of the likelihood of being strip-searched is different from the others. And then a post-hoc test Tukey's HSD can be used to determine which subgroups differ significantly from each other.

We also run a two-way ANOVA to conduct a study on the effects of two factors, Age_group__at_arrest_ (Aged 17 years old or younger, Aged 18 to 54 years old, and Aged 55 or older) and Perceived_Race (White vs. Other races) on the likelihood of being strip-searched in each occurrence category. Null hypothesis contains three statements, there is no significant difference between the means of the likelihood of being strip-searched in occurrence categories for the different levels of the age group; there is no significant difference between the means of the likelihood of being strip-searched in occurrence categories for the different levels of the perceived race; there is no significant interaction effect between the age group and the perceived race on the means of the likelihood of being strip-searched in occurrence categories. The alternative hypothesis is that there is a significant difference between the means of the likelihood of being strip-searched in occurrence categories for at least one level of the age group; there is a significant difference between the means of the likelihood of being strip-searched in occurrence categories for at least one level of the perceived race; there is a significant interaction effect between the age group and the perceived race on the means of the likelihood of being strip-searched in occurrence categories. Similarly, a post-hoc test Tukey HSD will be run to discover the difference between each group.

Then we use an interaction plot to visually interpret the interaction effect between the age group and the perceived race in two-way ANOVA. By plotting the means of the dependent variable for each combination of the two independent variables, we can intuitively see if the effect of one independent variable on the dependent variable differs across levels of the other independent variable.

6. Results

The one-way ANOVA result is the following:

Table 11. One-way ANOVA for Four Arrest_Month Group	
S value (within-group sd)	10.653688182900858
P-value	5.499643668690072e-07

The P-value is far less than 0.001, we reject the null hypothesis and conclude that there is a significant difference between the means of Arrest_Month groups. Therefore, a post-hoc test such as Tukey's test can be used to determine which groups differ significantly from each other.

Tukey's HSD result shows the following:

Table 12. Tukey's HSD for One-way ANOVA			
Group 1	Group 2	p-value	reject
month_Apr_June	month_Jan_Mar	0.0007	True
month_Apr_June	month_July_Sept	0.7809	False
month_Apr_June	month_Oct_Dec	0.1486	False
month_Jan_Mar	month_July_Sept	0.0	True
month_Jan_Mar	month_Oct_Dec	0.9999	False
month_July_Sept	month_Oct_Dec	0.0327	True

From the Tukey's HSD table, we can see that the p-value of the groups between month_Apr_June and month_Jan_Mar, month_Jan_Mar and month_July_Sept, month_July_Sept and month_Oct_Dec are less than 0.05. It indicates that the difference between these two group means of the likelihood of being strip-searched in each occurrence category is statistically significant and that the two groups differ significantly from each other. Conversely, the p-value of the rest three groups is greater than 0.05. We suggest that there is not enough evidence to reject the null hypothesis that the two group means of the likelihood of being strip-searched in occurrence categories are equal, and therefore, these two groups do not differ significantly from each other.

Here is the output of the two-way ANOVA table:

Table 13. Two-way ANOVA result:		
	F	PR(>F)
C(Age_group__at_arrest_)	41.488567	9.845139e-19
C(Perceived_Race)	7.277386	6.984606e-03
C(Age_group__at_arrest_):C(Perceived_Race)	2.180817	1.129575e-01
Residual	NaN	NaN

Since the F value of Age_group__at_arrest_ is about 41.5, and a p-value of less than 0.05. There is a significant difference in the likelihood of being strip-searched in occurrence categories between different age groups after controlling for perceived race. Similarly, the F value of Perceived_Race is about 7.3. It indicates that there is also a significant difference in the likelihood of being strip-searched in occurrence categories between white and other races after controlling for the age group. The main effect of both age group and perceived race is significant, respectively.

The interaction effect between age group and perceived race is insignificant, with an F value of 2.18 and a p-value of 0.113, greater than the significant interval of 0.05. We fail to reject the null hypothesis and conclude that the effect of age group on the likelihood of being strip-searched in occurrence categories is not significantly different between white and other races.

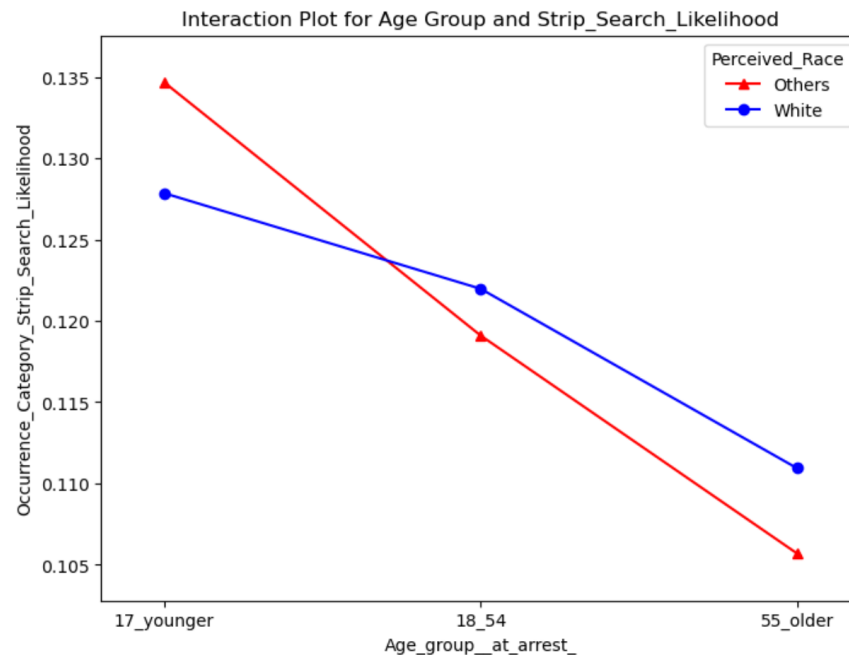
Although the result of the interaction effect is not significant, we still discover some interesting ideas after conducting a Tukey's HSD for the two-way ANOVA. Here is the result of Tukey's HSD for two-way ANOVA:

Table 14. Tukey's HSD for Two-way ANOVA			
Group 1	Group 2	p-value	reject
17_youngerOthers	18_54Others	0.0	True
17_youngerOthers	18_54White	0.0001	True

17_youngerOthers	55_olderOthers	0.0	True
17_youngerOthers	55_olderWhite	0.0	True
17_youngerWhite	55_olderOthers	0.0	True
17_youngerWhite	55_olderWhite	0.0036	True
18_54Others	55_olderOthers	0.0	True
18_54Others	55_olderWhite	0.005	True
18_54White	55_olderOthers	0.0	True
18_54White	55_olderWhite	0.0	True

Based on the results, the p-value is less than the significant interval 0.05, it indicates that we reject the null hypothesis test and conclude that the means of the likelihood of being strip-searched in occurrence categories between these groups, 17_younger Other race vs. 18_54 Other race, 17_younger Other race vs. 18_54 White, 17_younger Other race vs. 55_older Other race, 17_youngerOthers vs. 55_olderWhite, 17_youngerWhite vs. 55_olderOthers, 17_youngerWhite vs. 55_olderWhite, 18_54Others vs. 55_olderOthers, 18_54Others vs. 55_olderWhite, 18_54White vs. 55_olderOthers, 18_54White vs. 55_olderWhite, still differ significantly from each other. We need to do further measurement on the interaction effect to figure out why the p-value of the interaction of two categorical variables indicates non-significant results, and there still are some significant results between several special groups.

Figure 5 depicts the interaction plot for age group and the likelihood of being strip-searched



Although the two lines are not exactly parallel, we can see the slope of the two lines is similar, especially for the segments of Aged 18 to 54 years old and Aged 55 or older two groups. Therefore the interaction plot does not provide any information on a statistically significant difference, the plot showed: (a) White people younger than 17 years old have slightly less likelihood of being strip-searched than other races in the same age group; (b) White people older than 18 years old have slightly more likelihood of being strip-searched than other races for both Aged 18 to 54 years old and Aged 55 or older two groups

7. Discussion and Conclusion

The previous findings demonstrated that males and females undergo strip searches of varying frequency and scope; nevertheless, the frequency is more common among males. Men are more likely to be subjected to strip searches because of their broader scope. On the other hand, the statement continues by saying that there are no statistically significant disparities in the incidence of strip searches solely based on race or age. Yet, the findings showed a discernible shift in the frequency of strip searches depending on the time of year. Between April and September, there was a significantly higher likelihood of being subjected to a strip search. This demonstrates that the environment may affect the frequency with which persons are subjected to strip searches

because individuals may be more likely to conceal contraband when wearing more garments in colder weather.

There is a big and significant difference in the likelihood of being subjected to a strip search when multiple characteristics, such as race, gender, and age, are considered combined. This implies that while certain factors alone may not result in significant disparities in the frequency of strip searches, the intersection of these factors may result in bias in the execution of strip searches. The public's perception of the police department's ability to treat people fairly and in a just manner may suffer due to this possible instance of prejudice, which may further undermine public confidence in the force. As a consequence of this, the Toronto Police Service may find it necessary to reevaluate its policies and procedures on strip searches in order to guarantee that these searches are conducted without favoritism and in an equitable manner. Doing so can help create public trust, which in turn can contribute to the development of a more positive link between law enforcement and the community.

Reference

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List of Appendices

1. List of Attributes:

Name	Type
Arrest Year	Number
Arrest Month	Text
EventID	Number
ArrestID	Number
PersonID	Number
Perceived Race	Text
Sex	Text
Age group (at arrest)	Text
Youth at arrest (under 18 years)	Text
ArrestLocDiv	Text
StripSearch	Number
Booked	Number
Occurrence Category	Text
Actions at arrest - Concealed items	Number
Actions at arrest - Combative, violent or spitter/biter	Number
Actions at arrest - Resisted, defensive or escape risk	Number
Actions at arrest - Mental instability or possibly suicidal	Number
Actions at arrest - Assaulted officer	Number
Actions at arrest - Cooperative	Number
SearchReason-CauseInjury	Text
SearchReason-AssistEscape	Text
SearchReason-PossessWeapons	Text

SearchReason-PossessEvidence	Text
ItemsFound	Text

2. One-way ANOVA and Tukey's HSD Result:

One-way ANOVA: s = 10.653688182900858, p = 5.499643668690072e-07						
The p-value is <0.001 (***)						
Multiple Comparison of Means - Tukey HSD, FWER=0.05						
group1	group2	meandiff	p-adj	lower	upper	reject
month_Apr_June	month_Jan_Mar	-0.0132	0.0007	-0.0221	-0.0044	True
month_Apr_June	month_July_Sept	0.0034	0.7809	-0.0059	0.0127	False
month_Apr_June	month_Oct_Dec	-0.0128	0.1486	-0.0283	0.0028	False
month_Jan_Mar	month_July_Sept	0.0166	0.0	0.0083	0.025	True
month_Jan_Mar	month_Oct_Dec	0.0004	0.9999	-0.0146	0.0154	False
month_July_Sept	month_Oct_Dec	-0.0162	0.0327	-0.0315	-0.0009	True

3. Two-way ANOVA and Tukey's HSD Result:

	sum_sq	df	F	\		
C(Age_group__at_arrest_)	1.305639	2.0	41.488567			
C(Perceived_Race)	0.114509	1.0	7.277386			
C(Age_group__at_arrest_):C(Perceived_Race)	0.068630	2.0	2.180817			
Residual	1023.982003	65077.0	NaN			
PR(>F)						
C(Age_group__at_arrest_)	9.845139e-19					
C(Perceived_Race)	6.984606e-03					
C(Age_group__at_arrest_):C(Perceived_Race)	1.129575e-01					
Residual	NaN					
Multiple Comparison of Means - Tukey HSD, FWER=0.05						
=====						
group1	group2	meandiff	p-adj	lower	upper	reject

17_youngerOthers	17_youngerWhite	-0.0068	0.7364	-0.0209	0.0072	False
17_youngerOthers	18_54Others	-0.0156	0.0	-0.0236	-0.0075	True
17_youngerOthers	18_54White	-0.0127	0.0001	-0.0209	-0.0045	True
17_youngerOthers	55_olderOthers	-0.029	0.0	-0.0395	-0.0185	True
17_youngerOthers	55_olderWhite	-0.0237	0.0	-0.0337	-0.0137	True
17_youngerWhite	18_54Others	-0.0088	0.2811	-0.0206	0.0031	False
17_youngerWhite	18_54White	-0.0059	0.7209	-0.0178	0.006	False
17_youngerWhite	55_olderOthers	-0.0222	0.0	-0.0358	-0.0086	True
17_youngerWhite	55_olderWhite	-0.0169	0.0036	-0.0301	-0.0037	True
18_54Others	18_54White	0.0029	0.0793	-0.0002	0.0059	False
18_54Others	55_olderOthers	-0.0134	0.0	-0.0207	-0.0061	True
18_54Others	55_olderWhite	-0.0082	0.005	-0.0147	-0.0016	True
18_54White	55_olderOthers	-0.0163	0.0	-0.0237	-0.0089	True
18_54White	55_olderWhite	-0.011	0.0	-0.0177	-0.0044	True
55_olderOthers	55_olderWhite	0.0052	0.6022	-0.0041	0.0146	False
