Ontarians' Perception on the New Moderna's COVID-19 Vaccine

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Abstract

The COVID-19 pandemic is one of the most significant challenges that Ontarians are facing. In this report, I conducted a mock survey using simulated respondents to give a cursory look into the broader trends in public health awareness regarding COVID-19. This survey is for the Ontario public in regards to the current COVID-19 pandemic to better understand whether people are confident in the current vaccine coming. I find out that majority of the ontario public is open to the vaccine due to almost a year of social distancing and lockdowns.

Keywords: COVID-19, ONTARIO, SIMULATED DATA, SIMPLE SYSTEMATIC SAMPLING, SURVEY, VACCINE

Part I. Introduction

As a COVID-19 vaccine starts to distribute and hopefully the pandemic comes to an end, many citizens still remain uncertain or misinformed about the measures necessary to keep this public health crisis contained. In order for things to get things back to normal and minimize the risk of a pandemic occurring again, I would like to survey the Ontario public's knowledge about COVID-19 and their feelings on the current vaccine. I would like to figure out whether the Ontario population welcomes the vaccine or worries about it. Granted there are a portion of the Ontario population which identify as "anti-vaccine" activist and would like to see this pandemic end naturally.

To help end this pandemic, I conducted a large-scale phone survey (using simulated data) to poll Ontarians regarding the COVID-19 pandemic. However, since our survey included questions relying on respondents to report their personal habits and knowledge regarding COVID-19, I believe these responses could be embellished to view the respondent in a more favourable light. The survey was designed to extract information regarding the adherence of Ontario residents to current COVID-19 containment policies. I found that non-compliance with public health guidelines remains a significant obstacle to combating the pandemic. My key findings suggest that misinformation, specifically that relating to social media use, are significant contributing factors towards these less than optimal compliance rates.

I found with our simulated data that there still exists a significant degree of non-compliance that is not ideal for containing the pandemic. In particular, I have evidence that media misinformation and social media may be a key factor in these elevated non-compliance rates. In summary, I found that government strategy should be to increase public information and trust by targeting social media with information campaigns. Future studies should use a similar sampling population and study their social media habits.

Part II. Data

Survey methodology

I would like to survey the whole population of Ontario via telephone. This is done by using the area code. The area codes are 365, 548, 705, 226, 289, 613, 807, 437, 249, 343, 416, 519, 647, 905. I sampled all publicly

available residential phone numbers starting with those area codes and ending in the digit '3'. This is a form of simple systematic sampling that provides a structured way to gather a large number of samples from the population frame while being representative of the true population.

A typical issue with simple systematic sampling is the existence of periodic patterns in the sample which may cause our sample to be unrepresentative of the true population. This is resolved through our survey methodology as each residential phone number is assumed to be independent of any others and therefore sampled points should be evenly distributed throughout the population (Changbao and Thomspon, 2020).

I required respondents to answer all questions of the survey and any respondents who failed to answer all questions were removed from the sample. Significant non-response biases were also resolved through post-survey methods that reweighted responses from sub-populations with higher non-response rates. To protect the privacy of the respondent, they were simply assigned an ID number and minimal identifying information.

Part III. Survey

The survey can be accessed at the following link: https://forms.gle/9waeXYTdBY72wn3Z8

Part IV. Simulated Survey Results

For the purposes of this report, my dataset was simulated through some assumptions made about the population frame. For example, age demographics were sourced from Statistics Canada and adjusted for non-response bias to provide an accurate representation of the potential survey respondents.

IV.a) Demographic Data

Figure 1.1: Distribution of Respondent Age

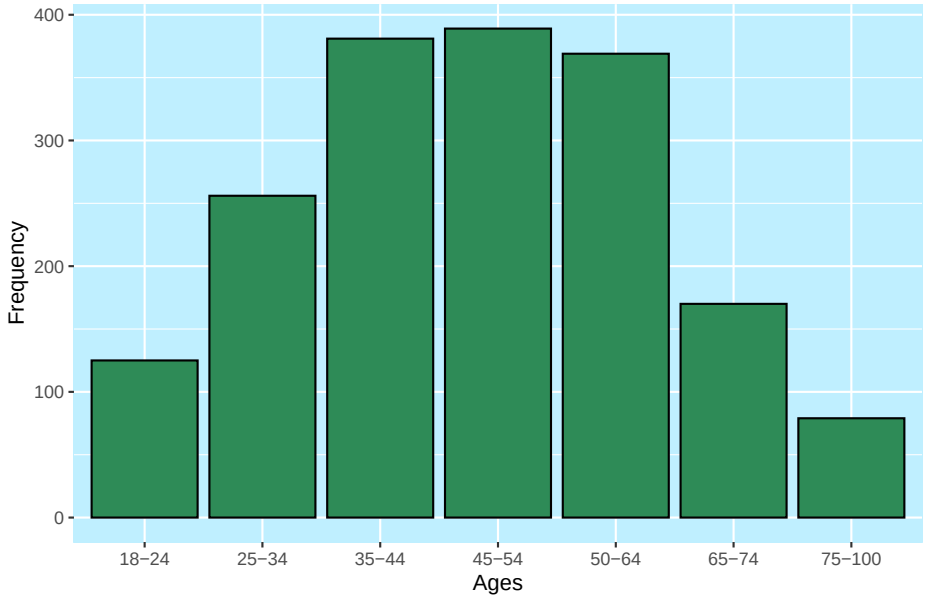
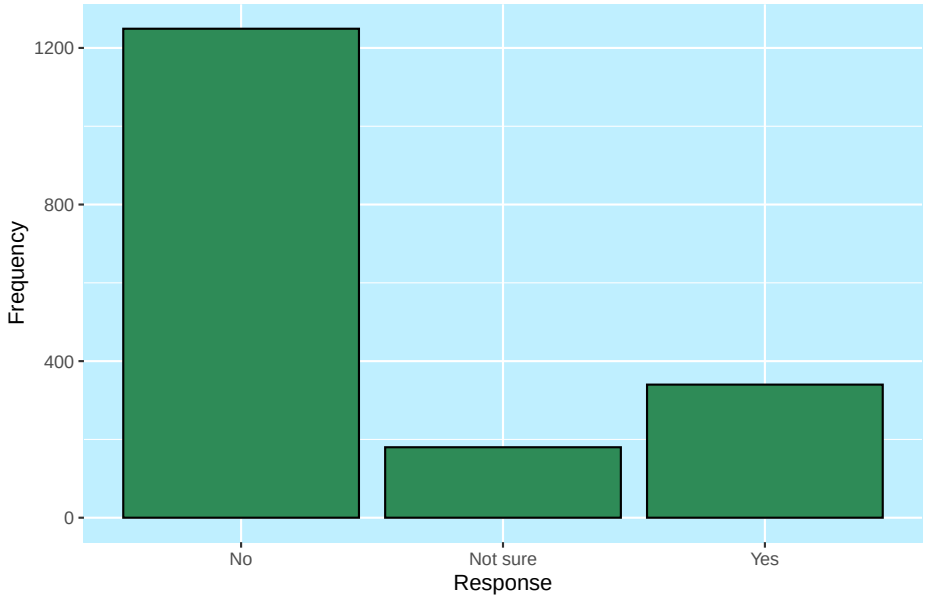
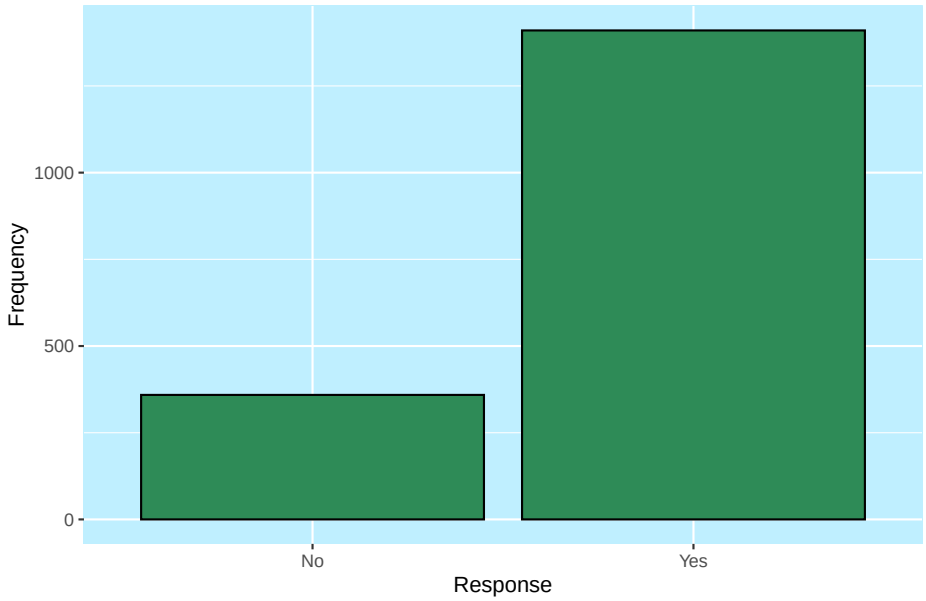


Figure 1.2: 'Are you a member of a COVID−19 vulnerable group?'



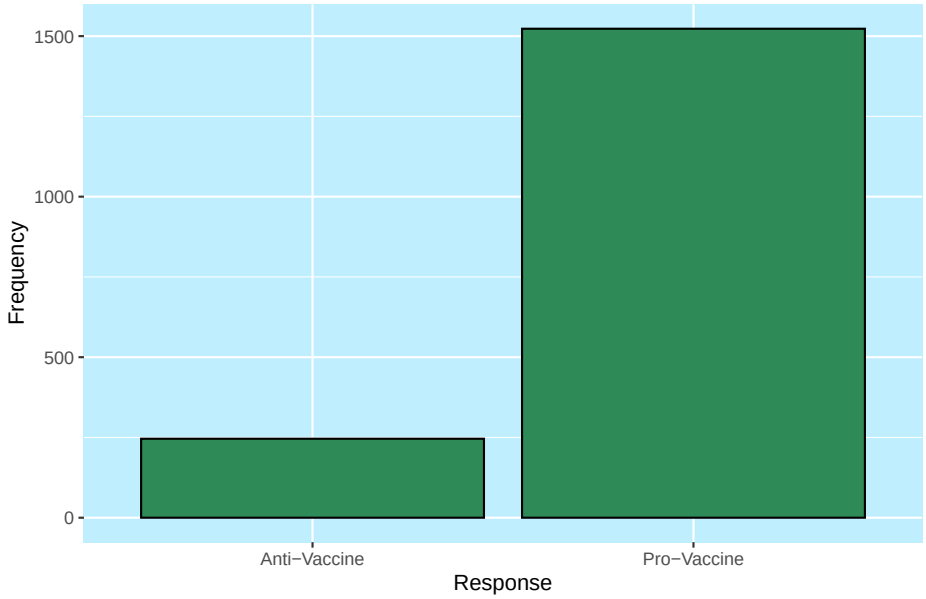
For the purposes of this question, participants were told that vulnerable groups included (but were not limited to) those over the age of 60, obese individuals, and those with pre-existing health conditions like respiratory infections, any type of cancer, and neurological conditions like dementia (Government of Canada, 2020).

Figure 1.3: 'Do you live in a COVID−19 hotspot?'



For the purposes of this question, COVID hotspots included Toronto (excluding the Greater Toronto Area), Ottawa, Windsor-Essex, and Peel region. These regions have been identified as consistently having a higher count of new cases as compared to the rest of Ontario (Mae Jones, 2020).

Figure 1.4: 'Are you Pro−Vaccine or Anti−Vaccine?'



IV.b) Respondent Information and Trust in COVID-19 Resources

Figure 2.1 Primary Source for COVID−19 Information

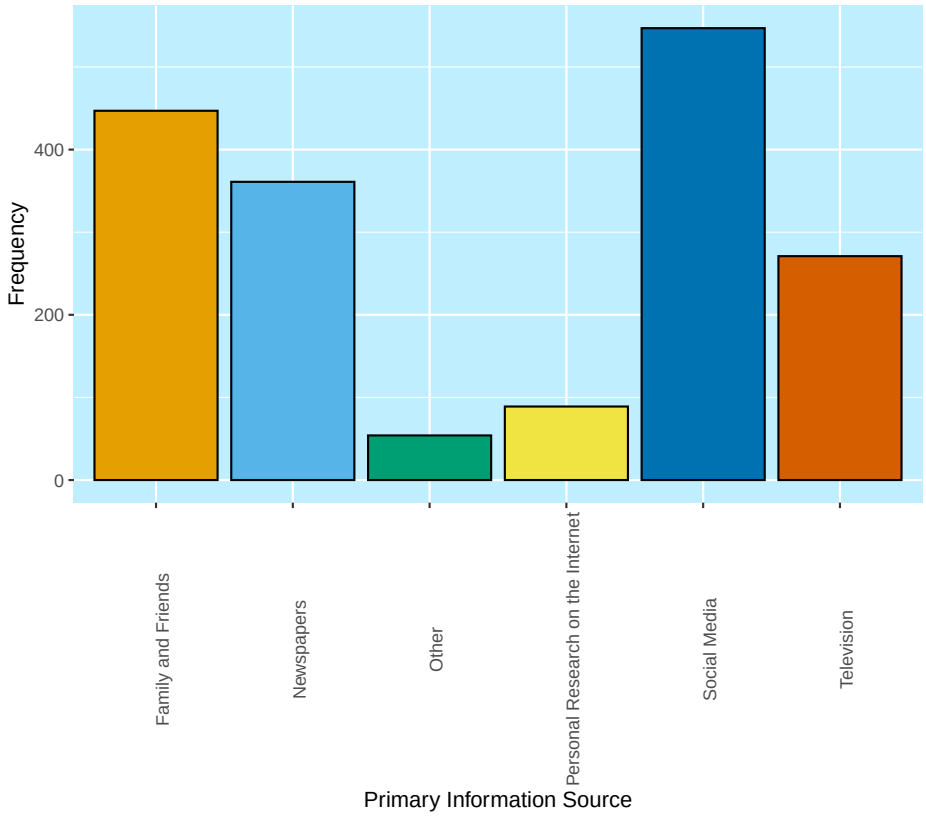
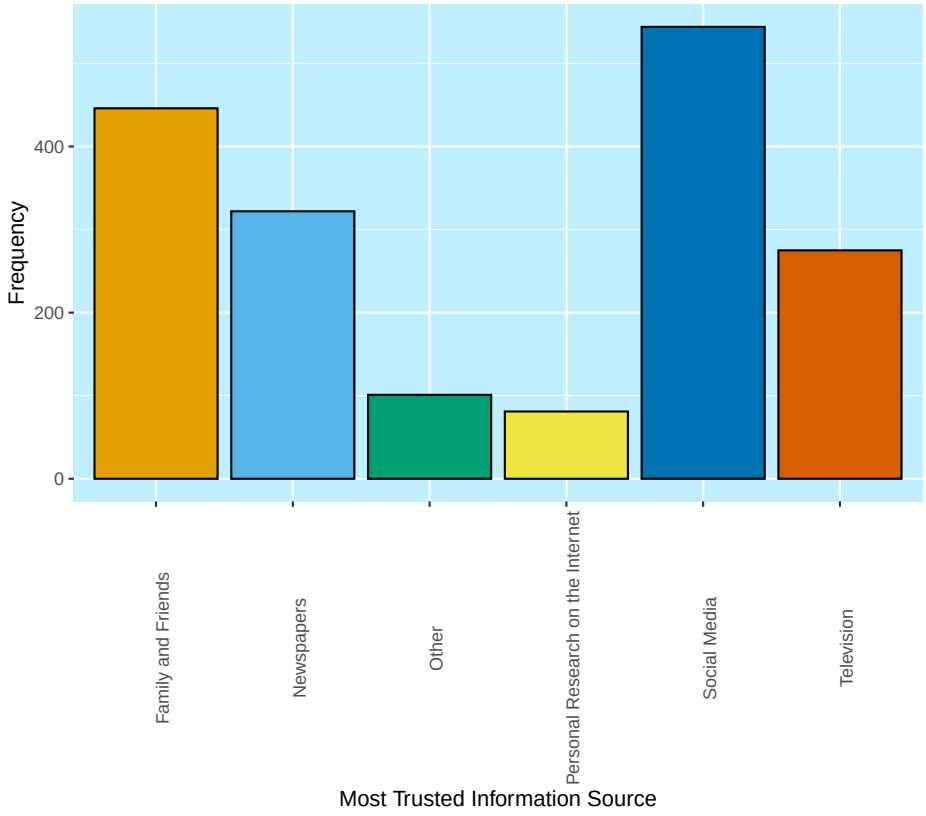
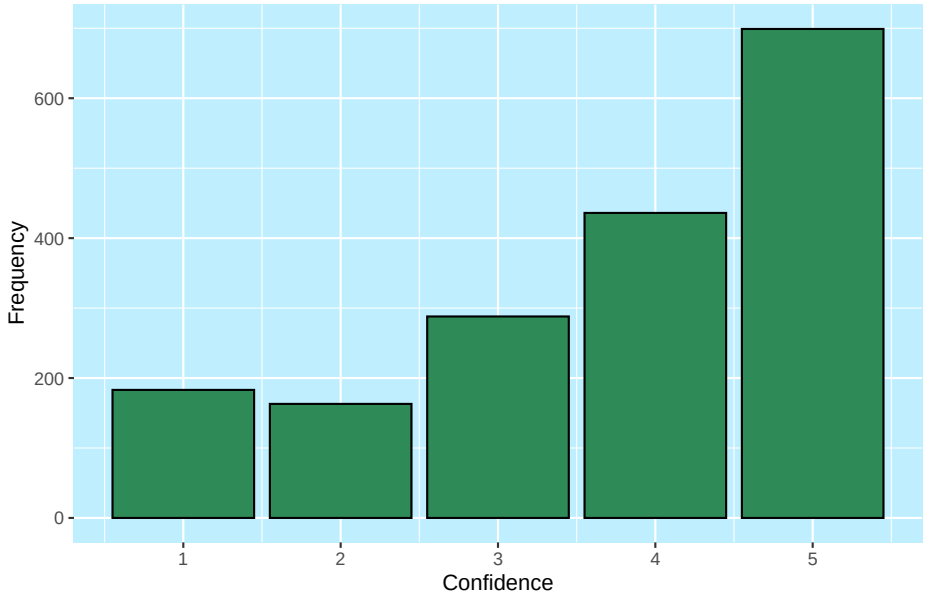


Figure 2.2 Most Trusted Source for COVID−19 Information



I polled respondents on how they gather information about COVID-19 and their attitudes and trust towards different media sources. In Figure 2.1 above, I find that the majority of people get their news from social media and television. In Figure 2.2. I find however that the most trusted sources of news are television news and newspapers.

Figure 2.3: Respondent Knowledgeability Levels in COVID−19 Awareness

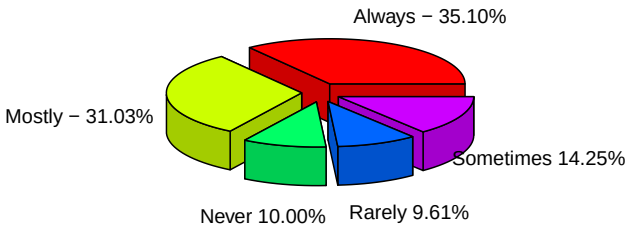


For this question, respondents were asked to self-report their knowledgeability of COVID-19 information. 1

was considered to be least knowledgeable and 5 was considered most knowledgeable.

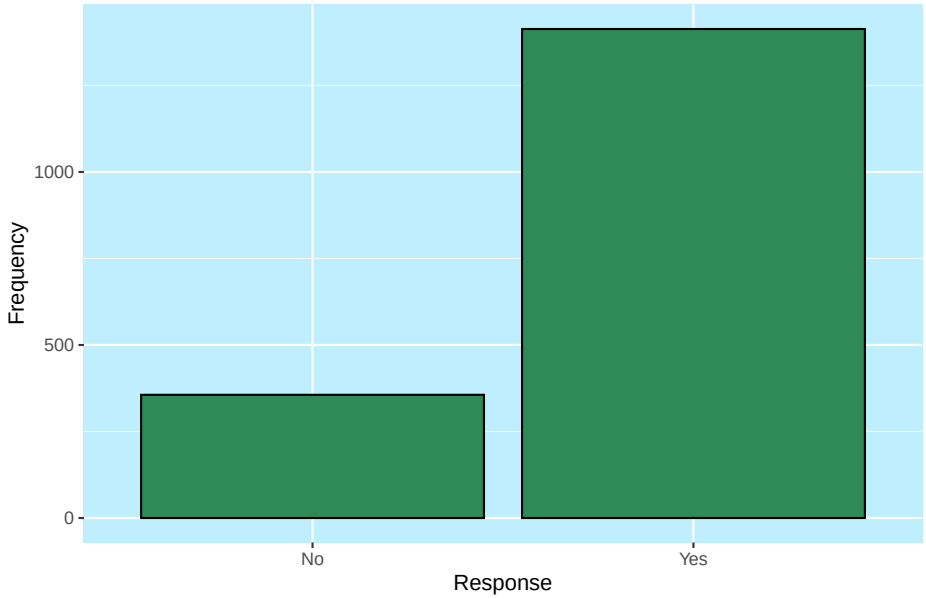
IV.c) Respondent Habits During COVID-19

Figure 3.1: How Often Respondents Wear a Mask When Out in Public



For this purposes of this question, respondents were polled on how often they wear a mask when outdoors, in public, where social distancing is not possible.

Figure 3.2: 'Do you adhere to a social bubble/circle?'



For the purposes of this question, a social bubble/circle is defined as a group of no more than 10 people (including household members) who can interact with each other without following social distancing protocols (Ministry of Health Ontario, 2020).

Figure 3.3: 'Do you follow all health measures at private establishments?'

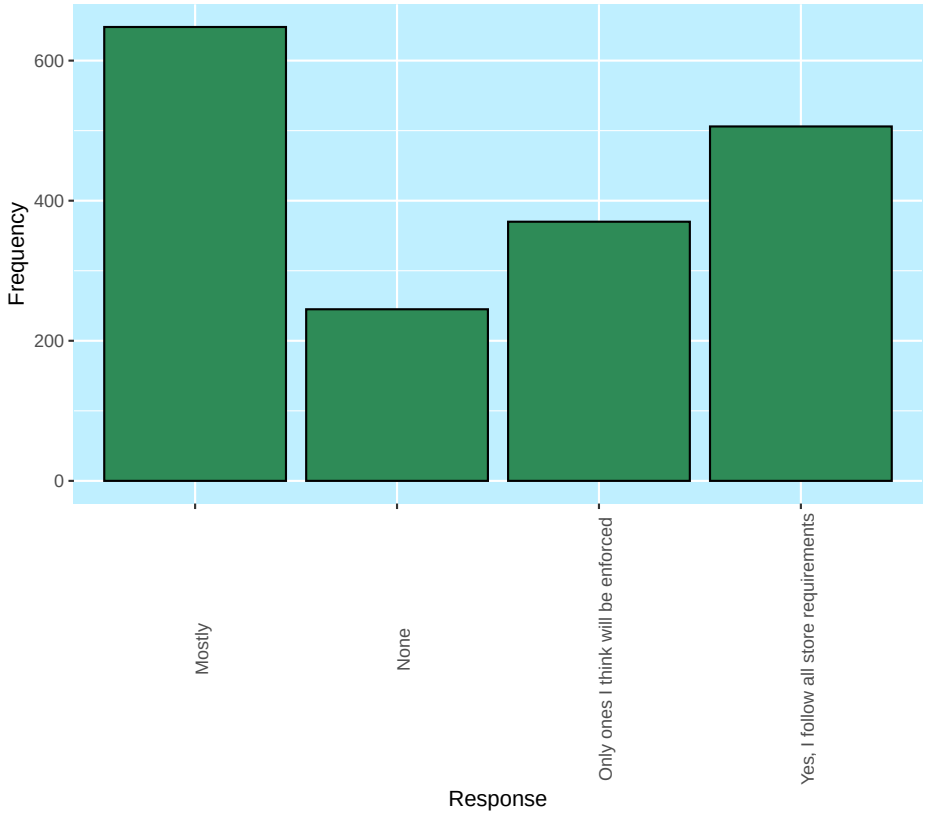


Figure 3.4: Frequency of Participation in Non−Essential Activities

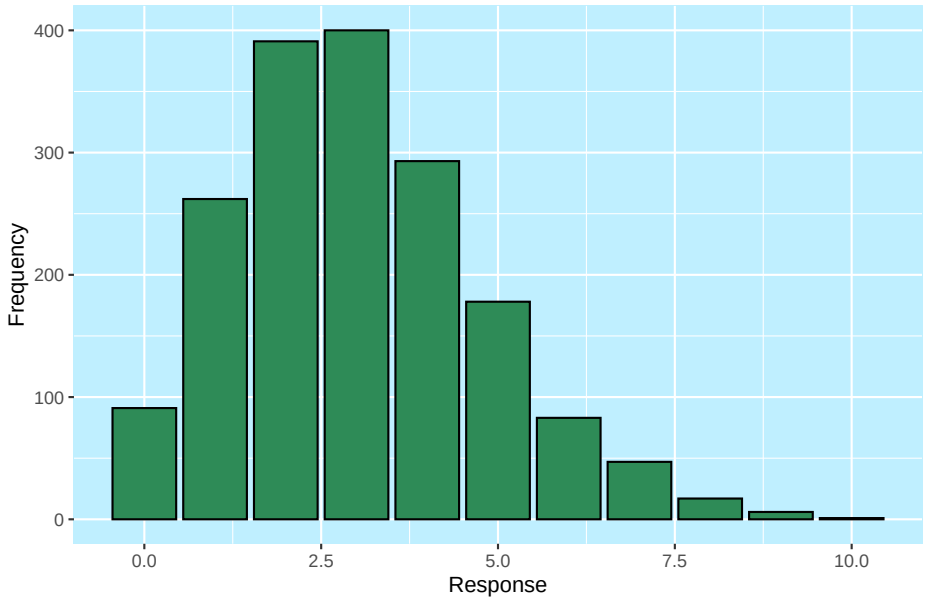


Figure 3.5: 'Have you travelled within Canada within the past 6 months?'

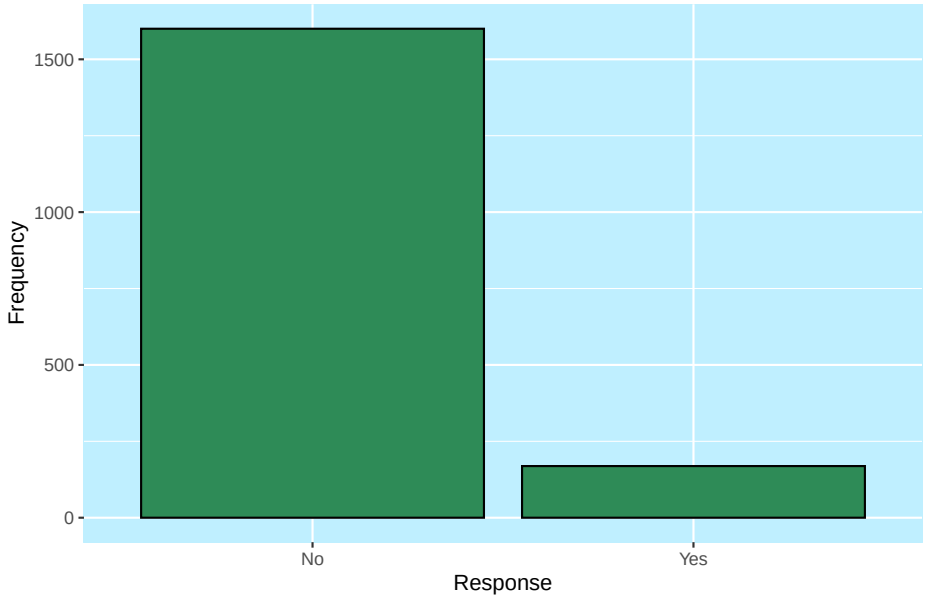


Figure 3.6: 'Have you travelled outside of Canada in the past 6 months?'

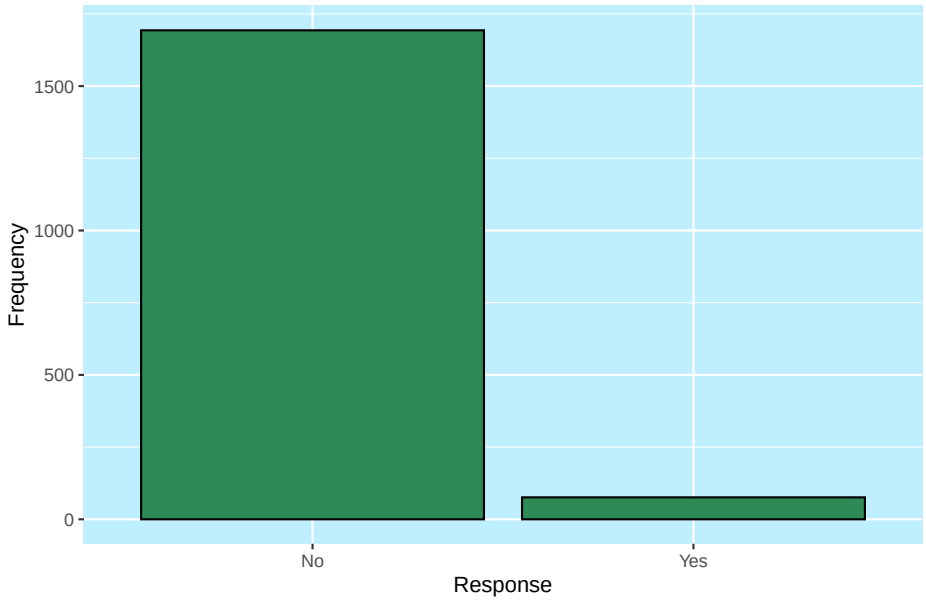


Figure 3.7: 'Do you have confidence in the vaccine?'

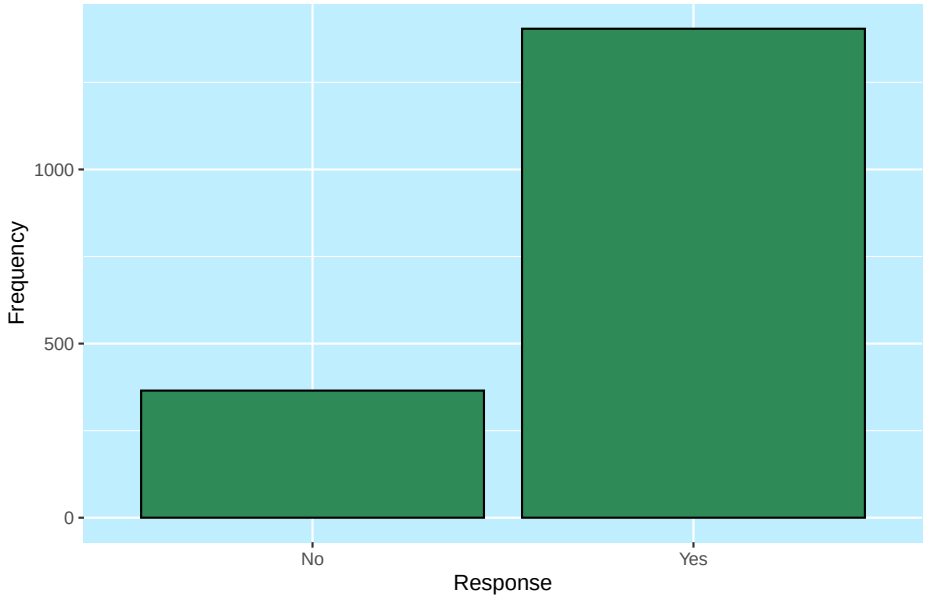
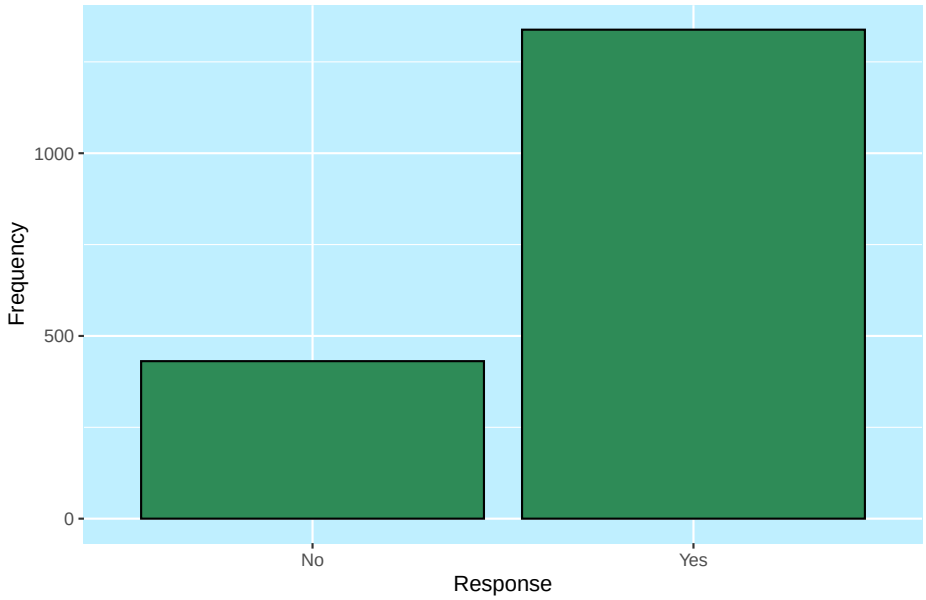


Figure 3.8: 'Would you take the vaccine?'



Part V. Discussion

As Canada gain early access to the Moderna's COVID-19 vaccine and hopefully this pandemic comes to an end. Canada first received 168 000 doses of the Moderna's COVID-19 vaccine in December 2020 and secured a contract with Moderna that guarantees 40 million doses of the vaccine (Canada.ca reference). This vaccine is different from other vaccines as it is a messenger mRNA vaccine. Since this vaccine is different from other vaccines, I surveyed the Ontario public to figure out their thoughts about the vaccine; see if they are getting the correct information as there are a lot of fake news on the internet and figure out if Ontario population is following COVID-19 procedures to minimize another wave.

My survey results shows that majority of Ontarians are pro-vaccine and feels positive towards the vaccine. For example, despite that this vaccine different we can see from Figure 1.4 that majority of the Ontario

population consider themselves as pro-vaccine; more specifically 86.09% of the population is pro-vaccine, 79.37% is confident in the vaccine and over 75% will take the vaccine. I originally thought more people would be confident in the vaccine as other vaccine helped contain deadlier disease but there are still 19.61% of the population who would rarely to never wear a mask when out in public.

Furthermore, Figure 2.1 shows where people are obtaining their information about COVID-19 and the vaccine. Majority of people are getting their information from social media, family and friends. Which sometimes can be right but fake news and misinformation is known the spread easily through those methods. As television and newspaper company would get more penalized for spreading false information. Also Figure 2.2 and Figure 2.3 shows us that people trust social media, family and friends for their sources of information and is confident on their knowledgeability on COVID-19. This can be very harmful as in the recent years, the raise of misinformation spreading and the population not trusting in experts could cause raise the risk of another pandemic to occur.

Overall, majority of the Ontario population have trust in the vaccine and is willing to take it. But there are still a handful of the population who are sceptical. Granted they have the right to question it since this vaccine is different from others. But instead of research or getting the proper information, Ontarians are relying on social media, family and friends for their source of information as this is one more risky ways of obtaining misinformation.

Part VI. Weaknesses and Next Steps

One major weakness of our survey is the potential for self-reporting bias. Respondents are more likely to offer responses that they view would portray them in a better light. A specific question that may have inflated responses is how respondents view their own knowledge on COVID-19. Conducting our survey through residential phones may also have introduced non-response bias in which the younger age brackets were not accurately represented. Individuals belonging to the younger age brackets are more likely to reside in households such that elders respond to their landline or live alone without a landline.

Additionally, the subject matter of the survey may lead to a response bias towards those who are directly affected by COVID-19, either being a member of or close to a member of a vulnerable population. These results gathered from this subset of the population are likely to show they are informed of COVID-19 and the best practices surrounding it.

As we pointed out in our discussion above, social media is a key factor that can influence public information about health and other important sectors. Future studies that can be conducted should be concentrated on the social media use of Ontarians. A follow up survey could also have a similar sampling frame and ask questions regarding the specific social media platforms they use and the average time spent browsing each in a day. All of this provides groundwork to end this pandemic and minimize the risk of another wave.

Appendix

The code and simulated data used in this report's analysis can also be found at the GitHub tab linked on the blog header as well as at the following link: https://github.com/JinLong-Cao/STA304-FINAL-PROJECT

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