

The Effect of DineSafe Food Safety Disclosure System on the Patronage of Customers

Svitlana Barysheva

500695640

Supervisor: Dr. Richard Meldrum

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1. Abstract

While public health agencies have established food safety disclosure systems like DineSafe to provide the necessary tools for consumers to make informed decisions, there still are many cases of food borne illness in Canada. Based on the previous studies conducted in this area, the clear disclosure of results to diners helps improve food safety within restaurants and also maintains transparency between government authorities and the public. This study explores Torontonians' awareness and documents their use of DineSafe and extrapolates the potential impact that the results of DineSafe can have on consumers' dining habits. To evaluate the disclosure system, a questionnaire was administered via Google Forms to individuals above legal age (n=25) living within the Greater Toronto Area. The survey was distributed on a social media platform to allow access to a wider demographic of Canadians. The study indicates that despite that awareness and low utilization of the food disclosure system remains among the public, the understanding of the inspection results has improved from the initial assessment conducted in 2002. On-site disclosure of results remains to be the most popular option when a diner wants to check inspection reports even though the majority of people have access to the internet. The majority of consumers however indicate that when results are actually used, they do have an influence on the consumers' decision to dine at a particular establishment. Low awareness and use of the system underlines the fact that there are still gaps in consumer knowledge that need to be addressed by the public health officials.

2. Introduction

Since the majority of adults spend a significant amount of time at work, less time for activities such as cooking leads to an increase of meals eaten that were prepared outside of

their homes (Knight et al, 2009). Individuals that have extra disposable income often choose to save time and effort by relying on food prepared in the restaurants. This allows them to improve their quality of life by redirecting their energy towards other equally important components. On the other end of the spectrum, retailers have an incentive to provide delivery services to tap into a new emerging demographic of consumers. Overall, the consumer market is always finding new innovative ways to implement technology for our benefit (Mintel Group, 2019). The habits of consumers and how they interact with the restaurant industry is also rapidly changing. For instance, many customers are embracing new technological features because of the benefits that they present such as shorter waiting periods and quicker delivery in metropolitan areas (Mintel Group, 2019). This only became possible recently with the emergence of companies like UberEats™. As a result, food delivery and take out options provide a feasible solution to alleviate the time constraints or other situations present in our day to day lives. According to Statistics Canada, more than half of Canadians eat out more than once a week (Statistics Canada, 2019). Unfortunately, this popular practice places customer's food safety in the hands of third parties since diners are not in direct control of their food preparation process. Age appears to be an important factor in usage of internet applications that require pre-order or mobile payment. Based on the report published by Mintel Group in 2019, roughly 27% of consumers in Canada are using mobile applications for food delivery services. This percentage is projected to increase when the younger consumers will make-up the largest demographic that use quick service deliveries (Mintel Group, 2019). As a result, growing reliance on eating outside of home presents new challenges to the public health officials.

In Ontario, Boards of Health appoint public health inspectors to perform food safety inspections to ensure compliance with established hygienic standards (Serapiglia et al., 2007; Wong et al, 2015). Inspection frequency is dictated by a risk assessment process which is conducted once a year and is influenced by the establishment's compliance history. Depending on the risk assessment analysis, public health inspectors can be expected to inspect a single premise a maximum of three times per year (Newbold et al., 2008). But, despite all the health and safety measures in place in the food safety industry at all levels of government, Canadians are still affected by retail-acquired foodborne illnesses. The Government of Canada approximates that roughly four million people suffer from food-borne illnesses per year (Government of Canada, 2016). Norovirus alone contributes to 65% of known food-borne illness cases and 30% of those cases result in hospitalization (Government of Canada, 2016). This puts a strain on Canadian health care system and economy. Unfortunately, these estimates do not represent the true incidence of food-borne illness since the majority of individuals affected only seek treatment when their symptoms are severe (Serapiglia et al., 2007). Nevertheless, it is evident that legal requirements and manufacturer's monitoring practices are not enough to maintain long term compliance and subsequently prevent consumers from health implications (Waters et al, 2013).

In 2001, Toronto's food safety disclosure system DineSafe became the first of its kind in Canada to make results on inspection available to the public (Serapiglia et al., 2007). This change toward transparency and accountability at the municipal level has motivated other neighbouring health units to implement a similar system. The system was established to provide patrons with information to make informed decisions and subsequently as a form of

public sanctioning for the operators with poor inspection results. In addition, some positive outcomes that were expected during implementation were reduction in costs associated with foodborne illness, and reduction in employee expenditure that comes with frequent re-inspections of premises. DineSafe operates on the basis of pass or fail with an option for a conditional pass (Toronto Public Health, 2002). If the premise obtains a conditional pass, they can still operate, but in the meantime the operator is required to correct set violations and display a conditional pass in a publicly accessible area within the food premises. To make sure the premise is in compliance, the inspector will conduct a re-inspection within several days of initial inspection. Afterwards based on the risk assessment, the premise will either receive a pass or will be closed until the health hazard is mitigated. Based on the Toronto Public Health's initial research: the disclosure system showed promising results in reducing the incidence of food borne illnesses and encouraged operators to adhere to proper food handling requirements within the food establishments. In addition, the system has proven to be beneficial in reducing the number of infractions and improved transparency between the customers, public health inspectors, and business owners. Despite the system's effectiveness in reducing the overall amount of infractions, the owners were still concerned about the customer's understanding of inspection results (Toronto Public Health, 2002).

Since DineSafe was first evaluated in 2002, a year after implementation, new legislative requirements came into effect. In 2018, the revised *Food Safety Protocol* required Boards of Health in Ontario to disclose inspection results to the public (MHLTC, 2019). Prior to this mandate, disclosure of results was handled differently by each health unit, where some treated this information as confidential. Due to lack of standardization in this area, mixed access

prevented the public from being fully informed. Although the legal requirement to disclose results is a step in the right direction, current protocol does not explicitly specify the method of disclosure a health unit should implement. Some public health authorities have implemented either an active or passive disclosure. Active disclosure is when results are posted at the food premise location easily visible to the patrons, while passive disclosure is when results are only available online. This creates a discrepancy as to which method is more effective at reaching the public. While an online disclosure system provides rapid access to in-depth results of the inspection regardless of the location, on-site inspection reports appear to be more convenient and consumer friendly because it does not require access to the internet. In addition, *Food Premises Regulation (O. Reg. 493/17)* under the *Health Protection and Promotion Act* has specified new requirements for food handlers. New regulation mandates that at least one person per shift during the operation of the premises needs to be a certified food handler (Food Premise Regulation, 2018). Based on findings presented by Toronto Public Health in 2002, the presence of a food handler on the premises did lead to improved inspection results and findings were deemed statistically significant. Considering the last evaluation was conducted in 2002, it would be in the interest of public health authorities and business owners to conduct a re-assessment of consumer knowledge and use of inspection results.

3. Materials and Methods

A cross-sectional study was conducted to assess consumer knowledge, awareness and use of DineSafe. A Google Forms survey was distributed and made available on Facebook through an anonymous third-party account to reduce bias. The survey was published on various Facebook groups. These social media outlets have a variety of people with different age groups

and employment status. Distribution of the survey on these websites was done with the purpose to be representative of the clientele that visit various dining establishments, as a result reducing sampling bias. The questionnaire was composed of 14 close-ended and open-ended questions (Appendix A). In addition, to the three primary objectives of the study, the questions involved demographic indicators (age range, employment status, location) related to dining establishment choice and dining frequency. JMP Statistical Software was used to analyse and visualise the data.

A study sample consisted of 25 respondents who were 18 years old and above and lived in the Greater Toronto Area (GTA). The jurisdiction was expanded from Toronto to GTA to account for the people that frequent Toronto for employment or academic purposes. These individuals spend a significant amount of time in the city thus are also susceptible to retail acquired foodborne illness. The commuters from neighboring municipalities are also likely familiar with Toronto's food disclosure scheme. Neighboring Boards of Health have implemented a very similar food safety disclosure system. Despite the fact that new legislative requirement applies to the entire province of Ontario, there is no guidance provided on the exact form of disclosure that the Board of Health should implement. Some Boards of Health in Ontario do not follow the tri-coloured approach or do not provide the on-site disclosure of results and as a result were not included in the study.

4. Results

4.1 Demographic Data

A total of 25 persons responded to the questionnaire. Of the respondents, 52.0% (n=13) were from Toronto and the remaining 48.0% (n=12) were from the Greater Toronto Area which

includes Durham, Halton, Peel and York Regions. Majority of responders belonged to the age group 18-29 and accounted for 88.0% (n=22) of responders. Age group 30-39 was not represented in this study as no responders belonging to that age group filled out the questionnaire. Age group 40-49 represent 8.0% (n=2) of the participants and people over 50 years of age account for 4.0% (n=1). More than half of the responders were students (52.0%, n=13) and the remainder are working professionals (48.0%; n=12) (Table1).

Table 1 - Socio-demographic characteristics of study population in Toronto and Greater Toronto Area

Socio-demographic Characteristics	Number (%)
Residence	
Toronto	13 (52.0 %)
Greater Toronto Area (GTA)	12 (48.0 %)
Age Range	
18-29	22 (88.0 %)
30-39	0 (0%)
40-49	2 (8.0 %)
>50	1 (4.0 %)
Employment Status	
Student	13 (52.0%)
Working Professional	12 (48.0%)
Unemployed	0 (0%)

4.2 Awareness of the Inspection System

Out of 25 responders, only 40.0% (n=10) were aware that Toronto Public Health provides disclosure of inspection results to the public. Correspondingly, 36.0% (n=9) were not aware of the disclosure scheme entirely, and 24.0% (n=6) had heard of the system but were not clear of the purpose behind the scheme. Among those that were aware or heard about DineSafe, 64.0% of responders indicated knowledge about the on-site inspection signs, 28.0%

frequently see the results of adverse inspections reported on blogs like BlogTO, and only 16.0% were aware of DineSafe website, with 4.0% that know of food safety hotline. Only 32.0% (n=8) have indicated that they occasionally check inspection results prior to consumption from a food establishment. The vast majority of 68.0% (n=17) report never checking the inspection status of the dining facilities. In addition, 88.0% (n=22) of responders indicated that they would primarily use on-site reports if they were indeed interested in the results, while 12.0% (n=3) indicated that they would refer to the DineSafe website. This could be attributed to the fact that on-site reports are simply more convenient for the consumers, considering accessing the DineSafe website would require access to the internet.

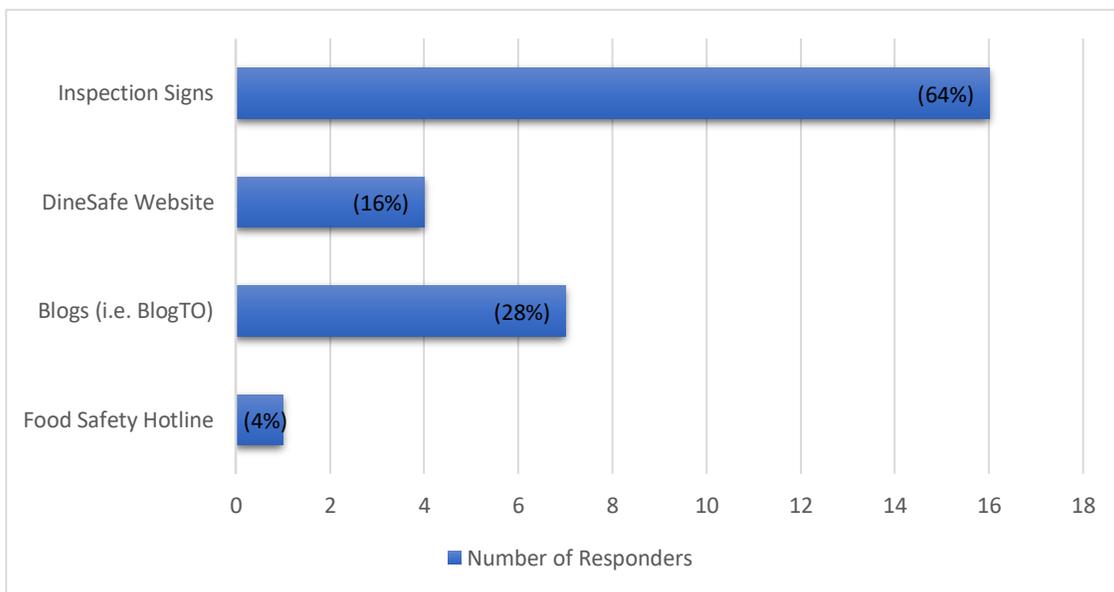


Figure 1 – Consumer Knowledge About Various Methods of Inspection Results

4.3 Understanding of Food Safety Disclosure System and Impact on the Dining Habits of Patrons

Evaluation indicates that all responders (n=25) were confident that the green sign indicates “Infractions that present a minimal health risk. It is safe to eat at the establishment.” On the other hand, there was slight confusion when responders were asked about the meaning behind yellow and red inspection signs. For yellow inspection signs (conditional pass), 96.0% (n=24) responders indicated that the “Infractions present potential health hazard. One should exercise caution.”. Similarly, 96.0% (n=24) of respondents were aware of the meaning behind the red inspection sign (closure sign). Only 4.0% (n=1) responded that the red and yellow sign represents insignificant risk to human health.

Overall, a vast majority of 84.0% (n=21) indicated that inspection results of the premises (signs displayed at restaurant, DineSafe website results, blog posts) when actually sought out did have an impact on the diner’s decision to eat at the establishment. Which means that regardless of the inspection status (pass or conditional), the results of the inspection were taken into account before purchasing food. Only 16.0% (n=4) reported that inspection results had absolutely no impact on their decision. This could be attributed to other factors that influence the customer's decision-making process. Out of 25 responders, 32.0% (n=8) were willing to dine at the establishment with a conditional pass, while 68.0% (n=17) indicated they would discriminate against their patronage. Factors that played a significant role in this decision-making process were prior reputation of establishment and taste. These elements turned out almost equally important for consumers when purchasing food from a restaurant with a conditional pass (Figure 2).

When looking at dining out frequency, age, and employment status, students tend to eat out more when compared to working professionals. While the age group of 18-29 eats out

the most frequently regardless of employment status (Appendix B). Which means that students within this age group are more vulnerable to retail acquired food-borne illness. Simply based on dining out frequency, they are increasing the probability of experiencing gastrointestinal symptoms. Furthermore, a trend between dining frequency and referencing of inspection results indicates that individuals that eat out more frequently are less likely to check inspection results. While individuals that dine out only once or twice a week are more likely to check the inspection status. This could be attributed to the fact that eating out frequently creates complacency and as a result, the diner is less worried about health-related implications like food-borne illness (Appendix C). The act of eating out becomes more of a routine practice.

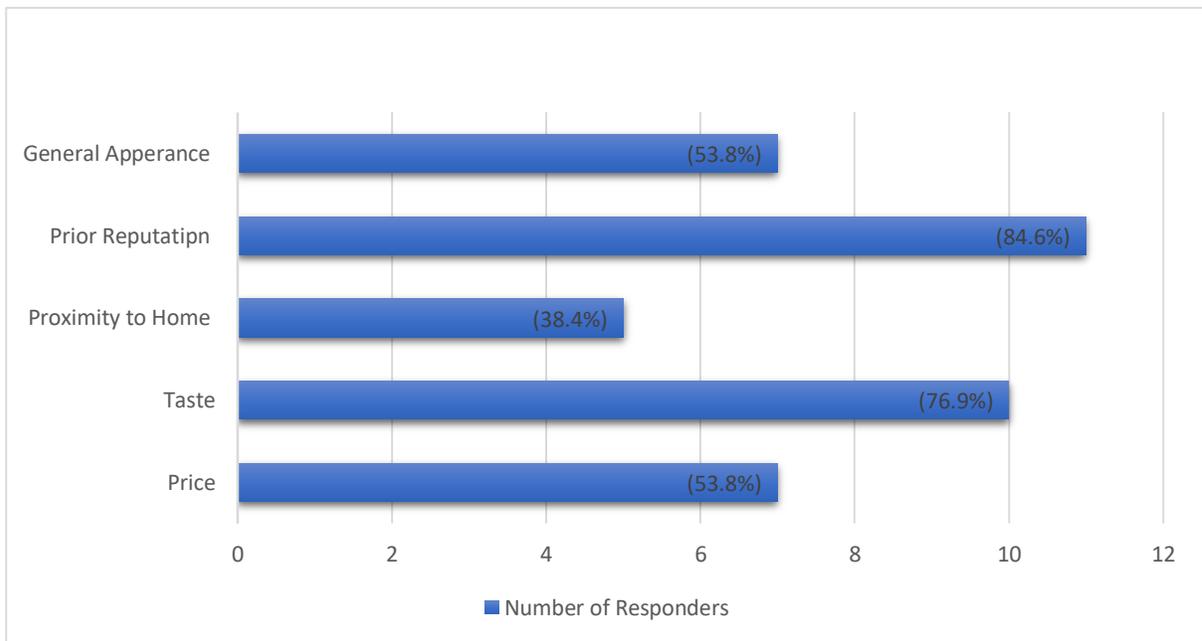


Figure 2 - Factors Influencing Consumers Choice of Dining at the Establishment with a Conditional Pass

5. Discussion

Many instances of foodborne illnesses in consumers are associated with meals prepared in restaurants (Vainio et al., 2020). Assessment of food safety risks is a challenging process since

patrons are delegating responsibility of cooking to someone else and often, they are not able to observe the food preparation process to judge the risks for themselves. In this cross-sectional study, the consumers' knowledge, awareness and the relationship between consumers' use of inspection results and its influence on dining establishment choice was examined. To date, very few studies have discussed the consumer's use of food safety disclosure systems with the goal of assessing their establishment choice. Based on rapid changes in lifestyle, it was unsurprising to see that the youngest generation between 18 to 29 were the biggest consumers of food outside of home. This leads to believing that these results can be used to market the disclosure system towards an age group that is the most susceptible to retail acquired food-borne illness. It is also fair to point out that these results are skewed since they do not properly represent people of other age groups. To maintain transparency, these findings could be attributed to potential self-selection bias. Due to the nature of the study, the responders participated on volunteer basis based on the description of the recruitment poster. People who engaged in this study were more likely to participate because of their interest in the subject. As displayed in the results, the majority of participants belong to the 18-29 age group. An interest in this topic within this age group could be attributed to the fact that they also dine out more frequently and thus are more concerned about the potential impact on their health. In the end, the results were minor. This is attributed to a small sample size.

Contrary to our expectations, DineSafe is still not widely known and used despite the fact that it was implemented nearly twenty years ago. Lack of awareness is demonstrated by less than half of consumers even knowing that Toronto Public Health discloses inspection results to the public. Some discrepancy was observed during analysis. According to the

responders only 40.0% of people indicated awareness about disclosure of inspection reports by Toronto Public Health. But when further inquired about which methods they were aware of, all responders indicated awareness of at least one form of disclosure. An explanation for these unforeseen findings may lie in the wording of the questions. The questions may have unintentionally placed emphasis on the creator of the disclosure system, which in this case is Toronto Public Health. Thus, the responders could have been responding “No” because they were simply unaware that this system is managed by Toronto Public Health. This could also indicate that consumers do not fully understand the responsibilities of the public health authorities and who exactly is responsible for conducting inspections of food premises. These possible explanations require further research.

Alternatively, some improvements were observed in interpretation of inspection results since initial assessment. A majority of responders were clear on the meaning behind a conditional pass. This is considered a vast improvement since the results of initial study indicated that 37% of responders misinterpreted the signage and equated the results with unsafe food handling (Toronto Public Health, 2002). Furthermore, results suggest that a significant number of diners would not discriminate their patronage to a restaurant that received a conditional pass. A third would dine at a restaurant that has received yellow sign compared to 22% of responders indicated in the previous study (Toronto Public Health, 2002). Taste and prior reputation of the premises were leading factors for consumers. This could be interpreted such as that customers are more lenient with establishment’s food safety practices if they have received positive experience in the dining facility.

While the presence of on-site inspection reports proved to be the most popular way of obtaining inspection results, it does not provide the same in-depth level of information as compared to the web page. DineSafe website describes in detail the reasoning behind the violations. This can have a positive and a negative implication on the business, and consumer. Detailed information that is available on the DineSafe website is open to interpretation to the customers and media. Depending on client's interpretation, the conclusions they make could result in unjust discrimination of patronage against the establishment and on the opposite end, the diner would be putting themselves at risk of acquiring food-borne illness (Bavorova et al., 2017). In other words, the colour of the inspection report is not enough for consumers to judge the level of risk, they also require information about the type of risk at hand to make a fully informed decision. Bavorova et al. suggests that it is best to supplement disclosure of results with education to aid in interpretation (2017).

Moreover, awareness of alternative disclosure methods like websites and food safety hotlines has increased. In the previous study, only 10% of responders were aware of these disclosure methods while new findings indicate that 12% of responders knew of the website and hotline (Toronto Public Health, 2002). In other words, despite a slight increase, DineSafe does not have strong internet presence. Multitude of food delivery services have gained popularity in the last several years, but they are not legally required to display the inspection results in the application itself. This creates a gap in public's knowledge of hygienic conditions at restaurants. With less patrons going to the physical location itself, they are less likely to come across the signage. And with restaurants being implicated in a number of outbreaks, it is imperative to divert efforts towards food safety awareness on food delivery and takeaway

apps. By partnering up with these companies, public health officials would be able to reach a valuable group of diners. In addition, a legal mandate to disclose results in the app would solve the problem with a new emerging concept of ghost and virtual kitchens. Although the premises where kitchens are located are inspected by the health authorities, they do not typically serve walking in customers and are strictly designed for take-out meals. This greatly reduces the chance that customers will come across the inspection report in real life. This gap lets some restaurants get away with poor inspection results and defeats the purpose of social sanctioning.

Finally, evidence suggests that DineSafe does actually exert influence on the customer's decision to dine at an establishment. Vast majority indicated that results of the inspection were taken into account when inspection reports were actually used. But as was indicted before, more than half of responders never check results before purchasing food. With the current state of technology, the DineSafe website that discloses in depth inspection results and has the potential to exert meaningful influence on consumer's choices, seems rather outdated for today's standards. Instead a development of an app that provides results on demand and has a friendly user interface may be a more viable option if the health authorities are interested in cultivating awareness in food safety culture.

In conclusion, implementation of the food safety disclosure system was a step in the right direction but there are still gaps that need to be addressed. Implementation of this system was ultimately done with a goal of communicating food safety risks to consumers. Evidence from such studies can be utilized to influence government bodies to design intervention with the goal of influencing hygiene standards and designing outreach campaigns to inform consumers.

6. Conclusion

Socioeconomic implications associated with retail-acquired food borne illness is an ongoing battle of government agencies across all levels. The implementation of a food safety disclosure system has demonstrated positive results when it comes to compliance with hygiene standards in the restaurant. Unfortunately to date an inadequate amount of studies have been published that concentrate on the effect food safety disclosure has on consumer practices. This study revealed that despite the fact that Toronto's DineSafe grading program has demonstrated a positive impact on non-regulatory enforcement, the awareness of the system itself is still lacking among consumers. These findings can be further used as an advantage to fill in the gaps in knowledge within populations that are the most susceptible. Further studies with a larger sample size would be beneficial in this area of consumer safety considering that takeout and food delivery services have a high potential of becoming a staple among younger generations.

Ethics Approval

This study was granted approval by School of Occupational and Public Health Departmental Ethics Board of Ryerson University.

Conflict of Interest

No known conflicts of interest are present.

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Appendix A

1. **What is your age range?**
 - Below 18
 - 18-29
 - 30-39
 - 40-49
 - >50
2. **Where do you reside?**
 - Toronto
 - GTA (Greater Toronto Area)
 - Outside of GTA, but in Ontario
 - Outside of Ontario
3. **How often do you eat out?**
 - Rarely (less than once a week)
 - Occasionally (one or twice a week)
 - Frequently (several time a week)
4. **Which category applies to you the most?**
 - Student
 - Working professional
 - Unemployed
 - Other (please specify): _____
5. **Are you aware that Toronto Public Health has a food safety disclosure system called DineSafe (DineSafe provides disclosure of inspection results of food establishments to the public)?**
 - Yes
 - No
 - Heard of it, but not sure what it is
6. **If yes, which disclosure methods are you aware of?**
 - Inspection signs displayed in the restaurants
 - DineSafe website
 - Food safety hotline
 - Blog posts (i.e. BlogTO)
7. **How often do you check the inspection report prior to eating?**
 - Every time
 - Occasionally
 - Never
8. **If you were to look for an inspection report, which system do you use the most?**
 - On-site inspection signs at the restaurant
 - DineSafe website
 - Food safety hotline
 - Other (please specify): _____
9. **Do you know what the green inspection sign indicates?**
 - Infractions that present a minimal health risk. It is safe to eat at the establishment.
 - Infractions that present a potential health hazard. One should exercise caution.

- Infractions that present an immediate health hazard. One should not eat at the establishment.
- 10. Do you know what the yellow inspection sign indicates?**
- Infractions that present a minimal health risk. It is safe to eat at the establishment.
 - Infractions that present a potential health hazard. One should exercise caution.
 - Infractions that present an immediate health hazard. One should not eat at the establishment.
- 11. Do you know what the red inspection sign indicates?**
- Infractions that present a minimal health risk. It is safe to eat at the establishment.
 - Infractions that present a potential health hazard. One should exercise caution.
 - Infractions that present an immediate health hazard. One should not eat at the establishment.
- 12. Are you willing to dine at the establishment that received a Conditional Pass (yellow sign)?**
- Yes
 - No
- 13. If yes, which factors influence your decision to eat at establishments that received a Conditional Pass?**
- Price
 - Taste
 - Proximity to home
 - Reputation
 - General appearance
 - Other (please specify) _____
- 14. After checking the inspection report of a restaurant, did it change/reaffirm your decision to eat at that particular place?**
- Yes
 - No
 - Other: _____

Appendix B

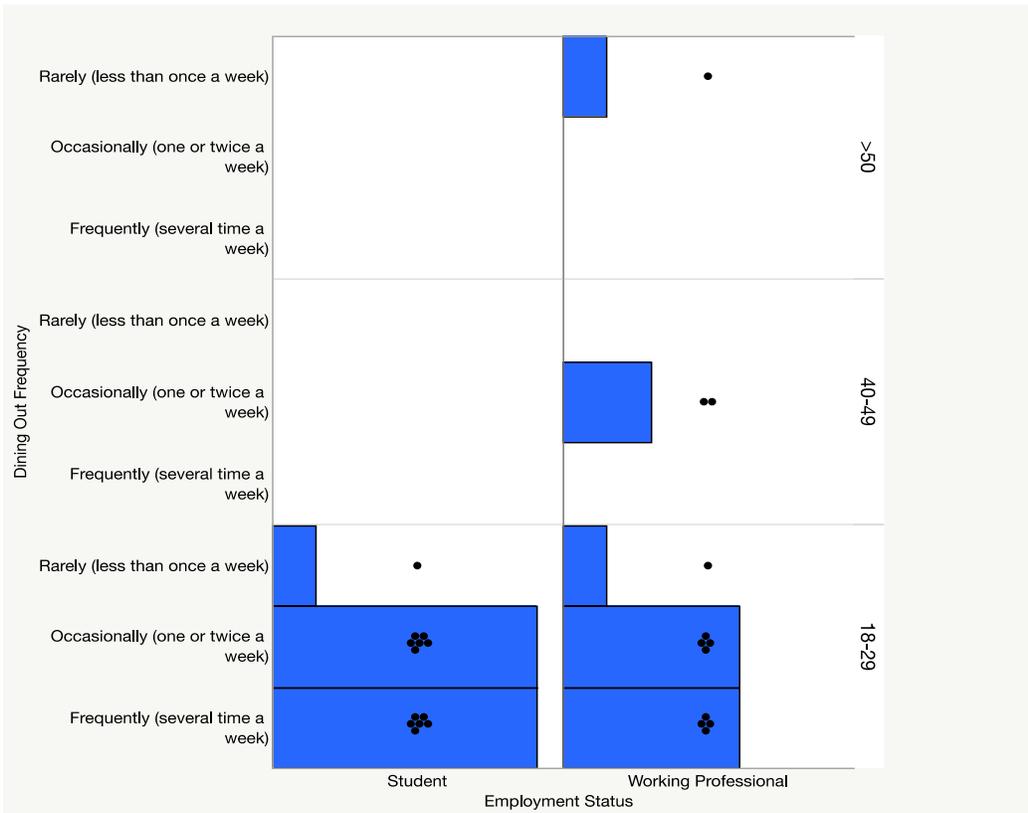


Figure 3 - Relationship between age, employment status, and dining out frequency

Appendix C

Relationship between dining out frequency and reference of inspection results prior to food consumption

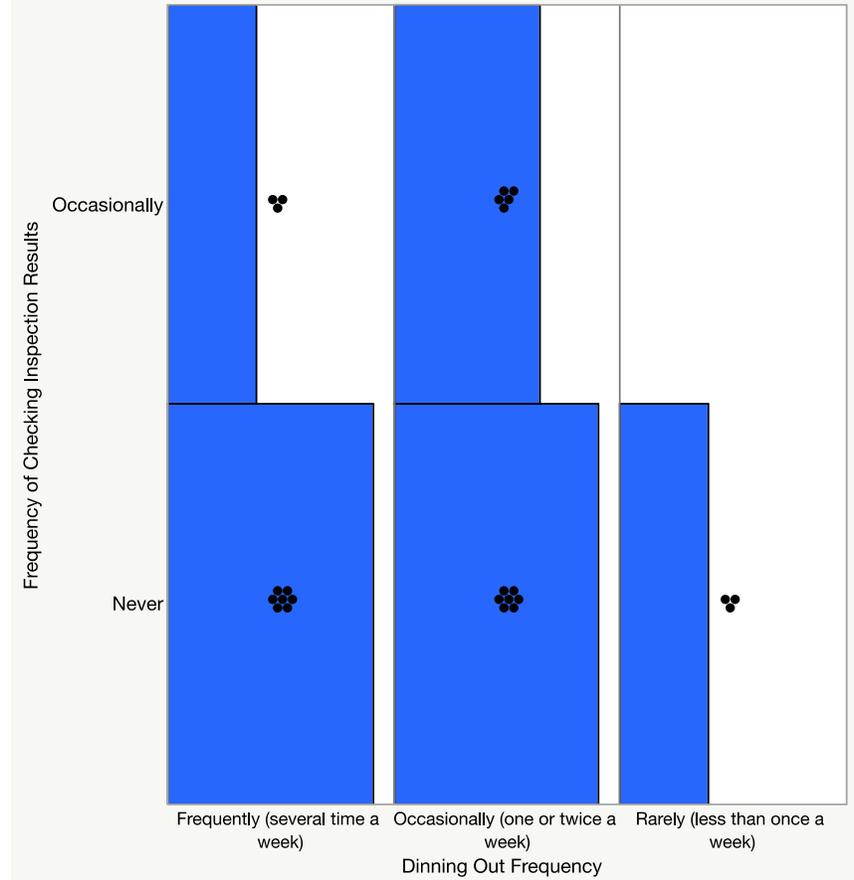


Figure 4 - Relationship between dining out frequency and reference of inspection results prior to food consumption