TBD*

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19 February 2021

Abstract

First sentence. Second sentence. Third sentence. Fourth sentence.

1 Data

1.1 Results

Questions pertaining to the characteristics of the restaurants, such as location, size, type, and age of restaurants (Figures 1-5) show us that:

- the largest concentration (nearly 60%) of restaurants in the Greater Toronto Area are centralized in downtown Toronto (28.26%), North York (15.78%), and Scarborough (13.74%),
- most restaurants are of medium or larger scale, with seating areas of at least 30,
- a majority of the restaurants are relatively new (1-4 years old),
- fast-food/quick service restaurants are most common, followed by casual dining, and then fine dining,
- and UberEats is the most popular food courier service in the city.

Tables 1 and 2 speak to changes in numbers of employees for restaurants prior to the intervention period (Oct 1) and following the intervention period (Dec 31). This shows us that initially, both the control and treatment group had a very similar number of employees on average. Following the intervention period, however, the treatment group appears to have 10.26 fewer employees on average. Two-tailed Welch's t-tests comparing the two groups' mean employees shows that the difference prior to the intervention period is not a significant finding ($t(330) = -8.56$, $p > .05$)., but the difference in employee numbers between the two groups post-intervention is significant($t(330) = 19.46$, $p < .05$).

In terms of effects on revenue and/or overall sales for restaurants during the intervention period, Figure 5 shows us that more restaurants within the treatment group saw decreases in revenue compared to the prior quarter (July 1 - Sep 30), while the control group's revenue largely remained the same. In addition to this, Figure 6 shows that of those restaurants that saw a decrease in revenue, the treatment group saw the harshest declines in revenue during the intervention period. A Chi-Square test for whether the restaurant saw a decrease in revenue showed that restaurants in the treatment group were more likely to report a decrease in revenue X^1 (2, $N = 330$) = 220.73, $p < 2.2e\text{-}16$. The percentage decrease in revenues also showed a significant relationship, where restaurants in the treatment group are most likely to report higher loss of revenue during the intervention period X^2 (3, $N = 330$) = 178.33, $p < 2.2e\text{-}16$. Prior to the intervention period, it appears as though both groups had similar breakdowns of revenue coming from take-out and/or delivery (Figure 7).
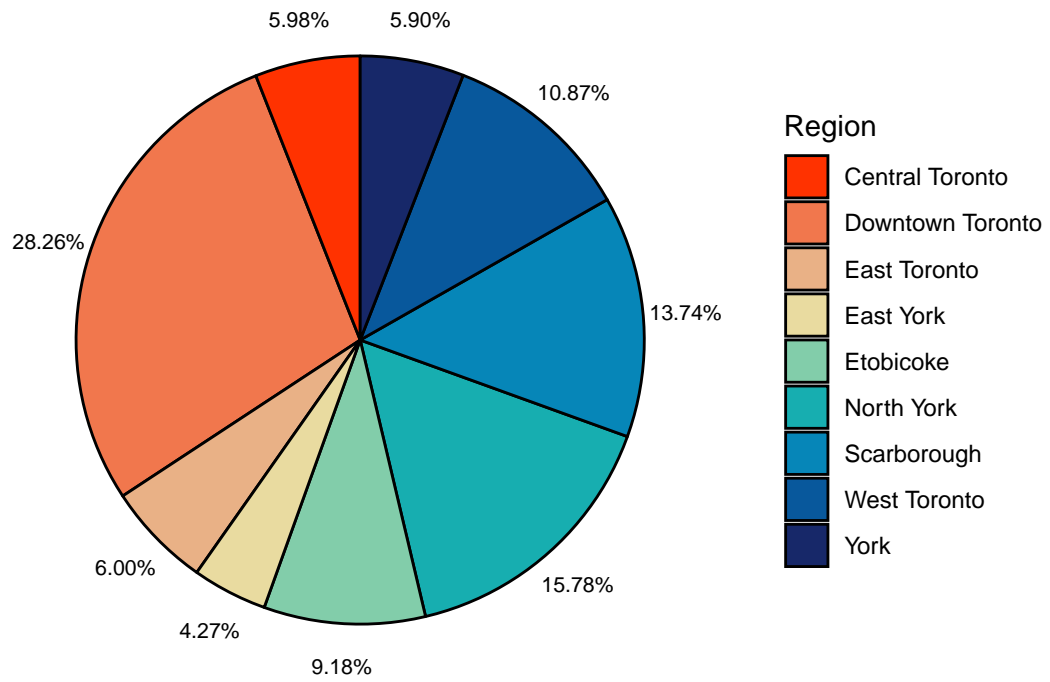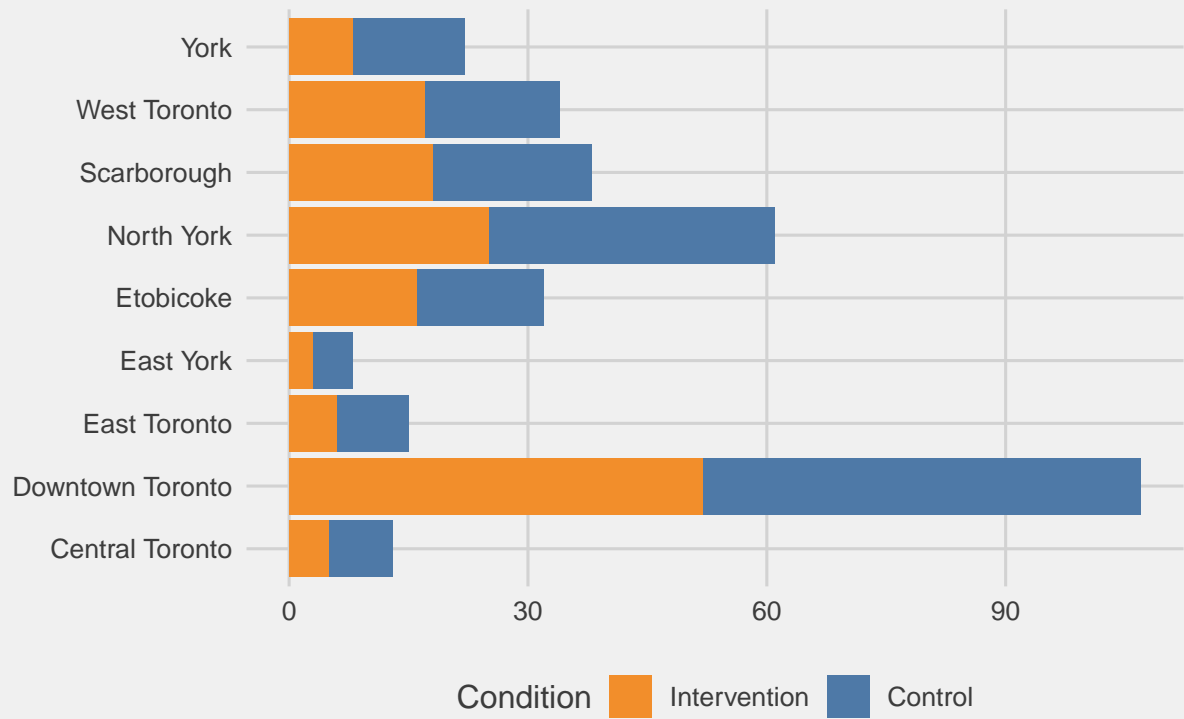
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*Code and data are available at: LINK.

1.2 Figures

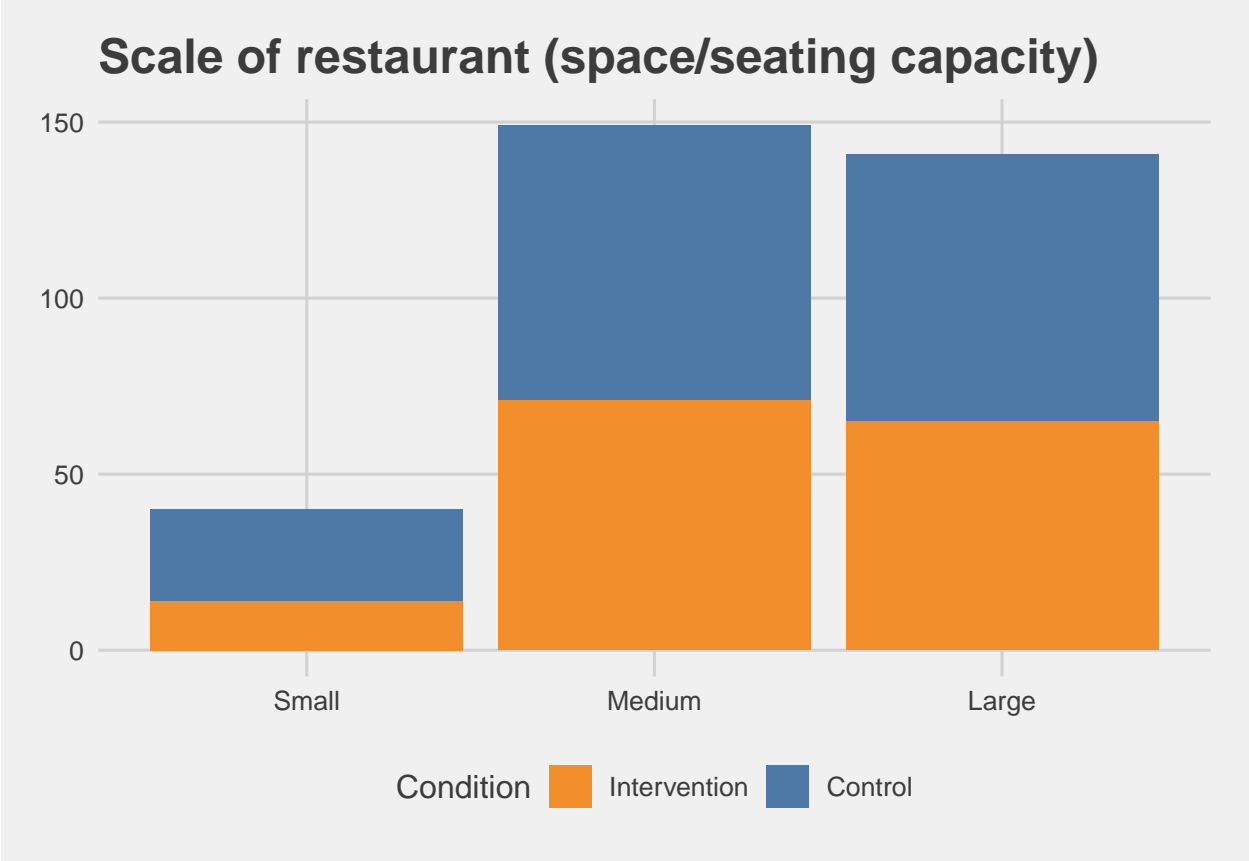### 1.2.1 Sample Characteristics

Proportion of Restaurants in Toronto by Borough

Location of restaurants

Scale of restaurant (space/seating capacity)

Condition: Intervention, Control

Type of restaurant

Condition: Intervention, Control
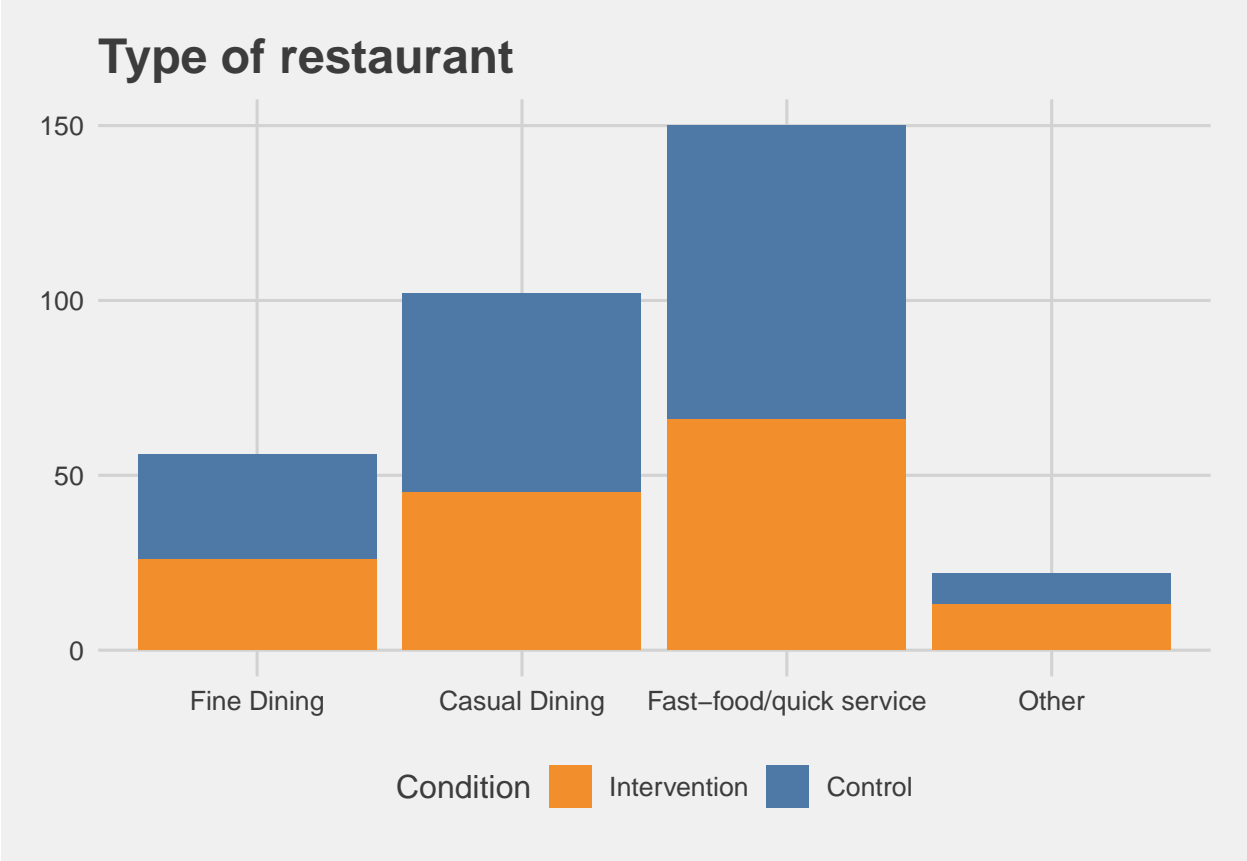
Number of years restaurants have been in operation

Food courier service popularity (most c
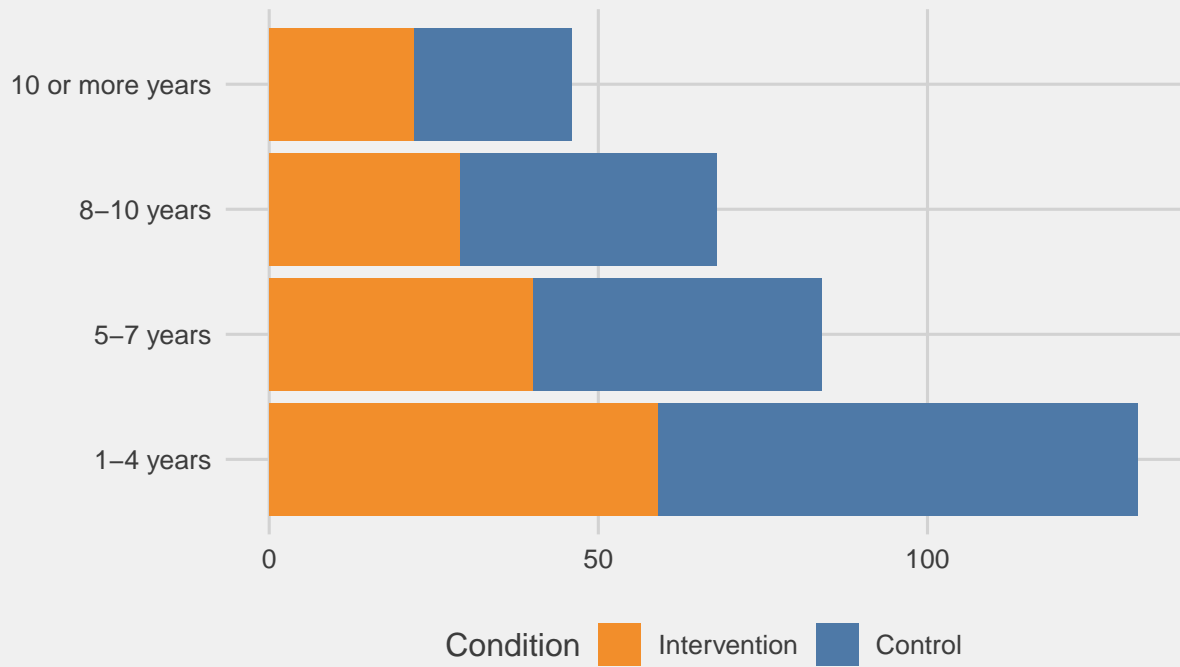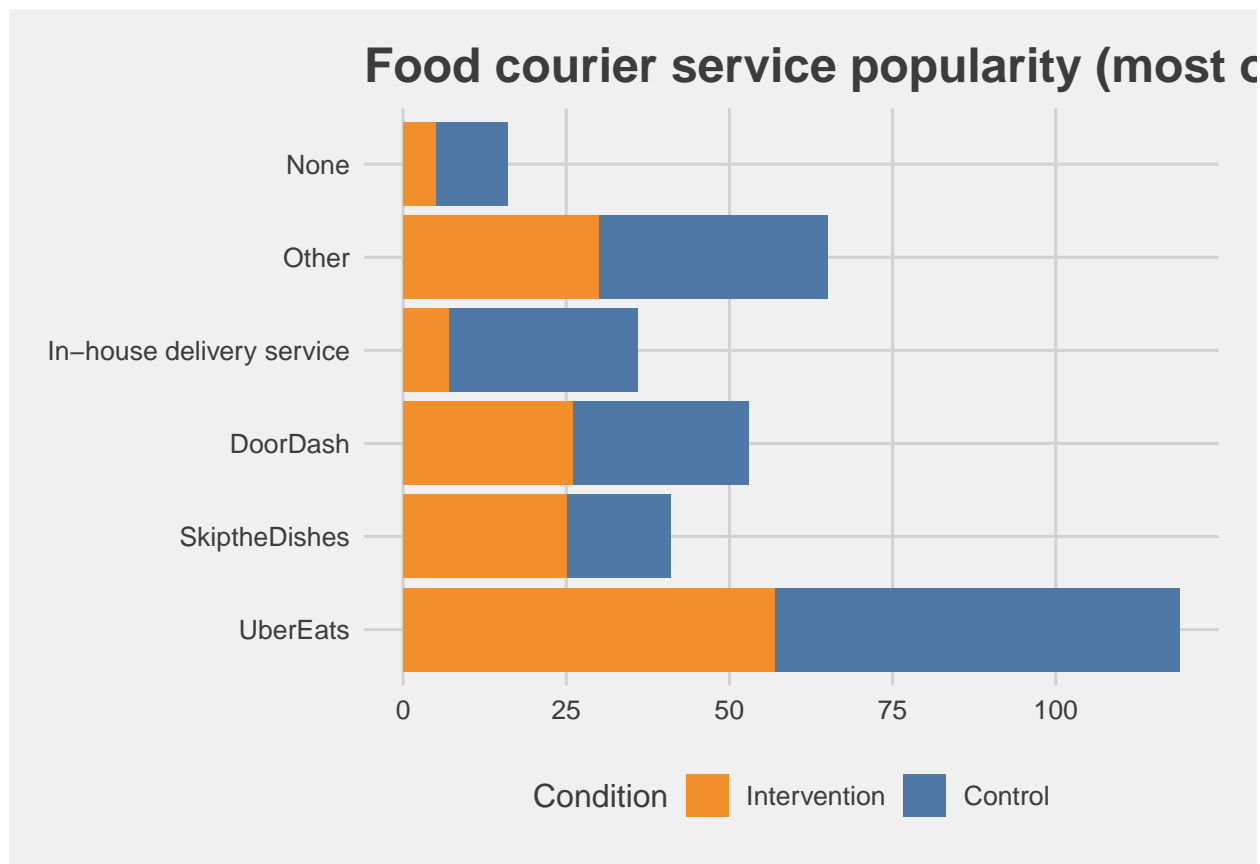
1.2.2 Effects of Intervention on Number of Employees

| Intervention Group	# of Employees Prior to Intervention	Current # of Employees
Control	30.18889	30.02778
Treated	30.66000	19.76667

Note:

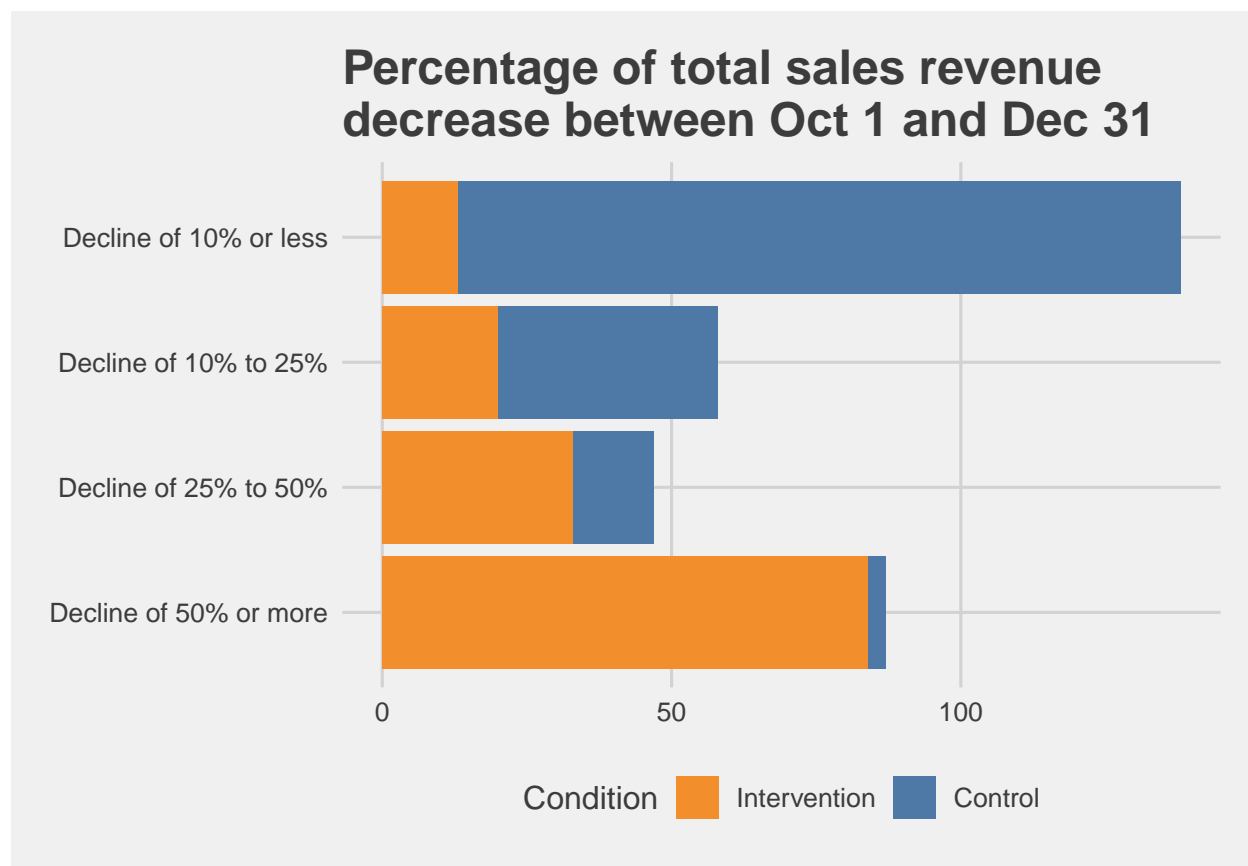Change in # of employees before and after intervention period (Q5 + Q6)

Mean of the Differences	Control	Treated				Confidence	
	Mean (Employees Before Intervention)	Mean (Employees Post-Intervention)	t	p	df	Low	H
-0.4711111	30.18889	30.66000	-0.857249	0.3919509	318.9758	-1.552334	0.6101
10.2611111	30.02778	19.76667	19.457259	0.0000000	327.9816	9.223663	11.2985

∞

1.2.3 Effects of Intervention on Revenue

Revenue changes between Oct 1 and Dec 31
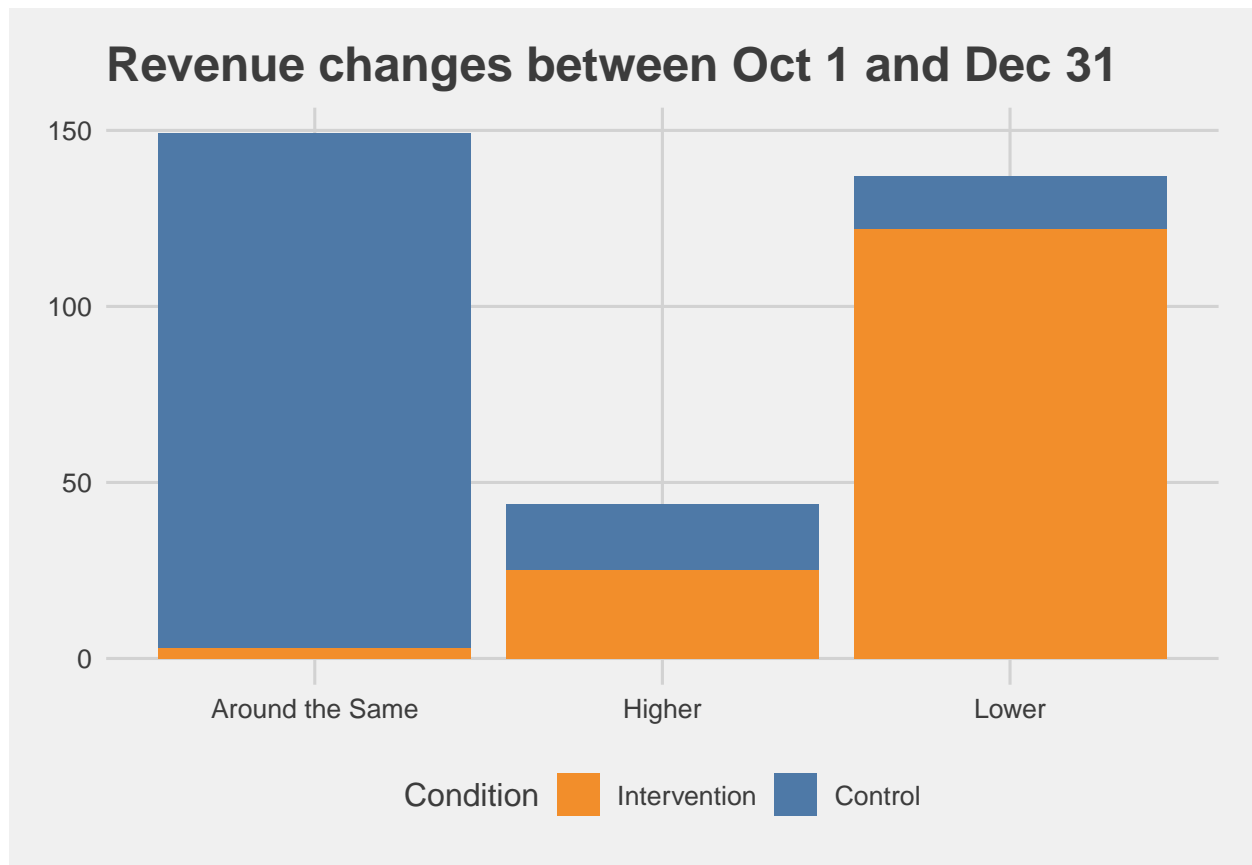

```
## 
##  Pearson's Chi-squared test
## 
## data:  q7_chi
## X-squared = 220.73, df = 2, p-value < 2.2e-16
```

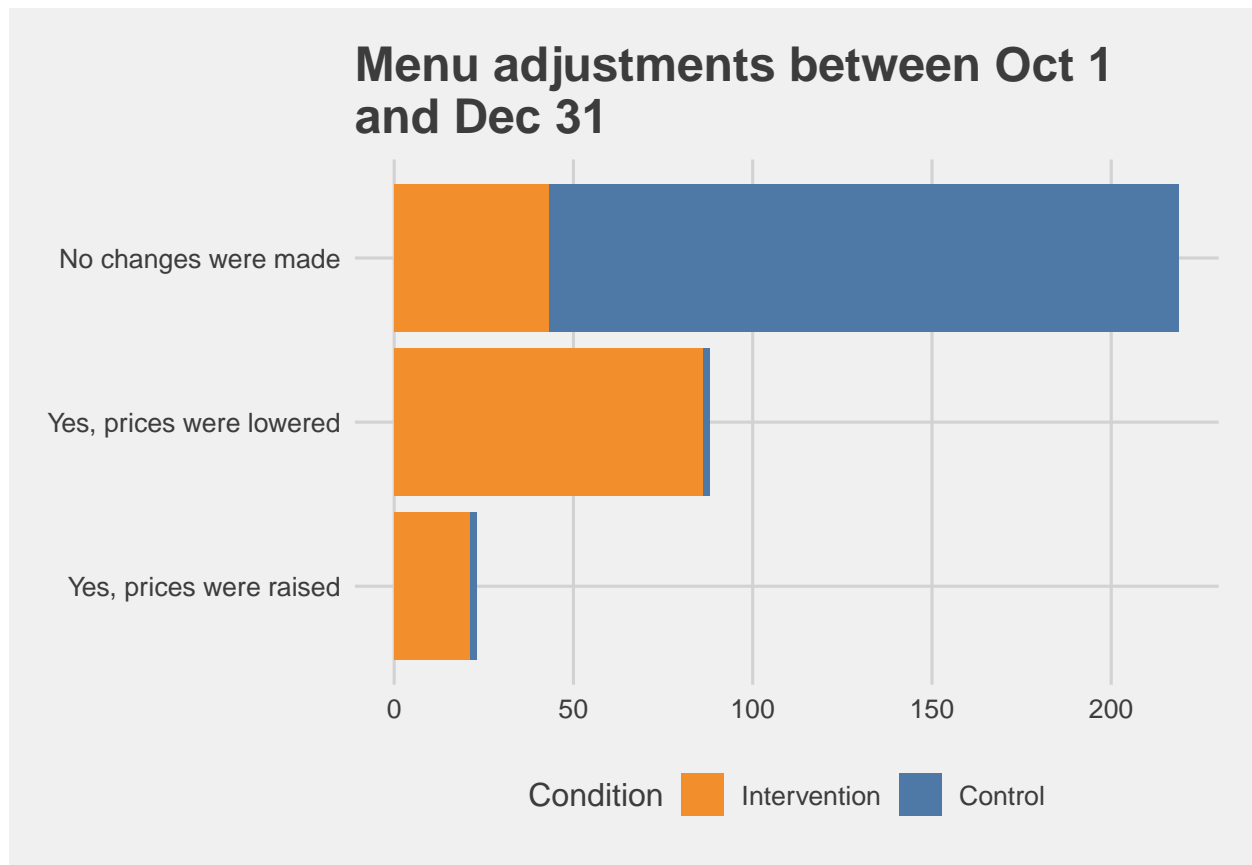**Percentage of total sales revenue decrease between Oct 1 and Dec 31**


```
## 
##  Pearson's Chi-squared test
## 
## data:  q8_chi
## X-squared = 178.33, df = 3, p-value < 2.2e-16
```

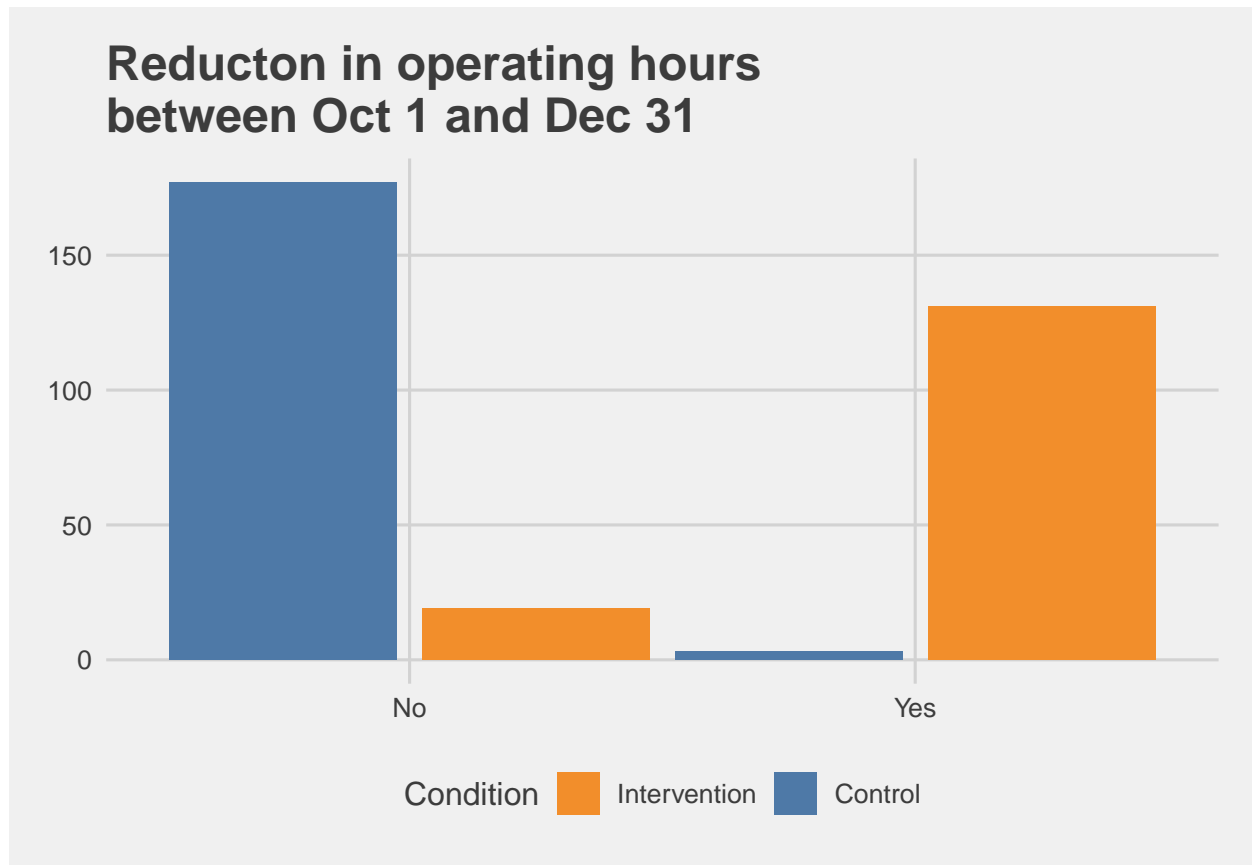**Total revenue from takeout or delivery prior to Oct 1**
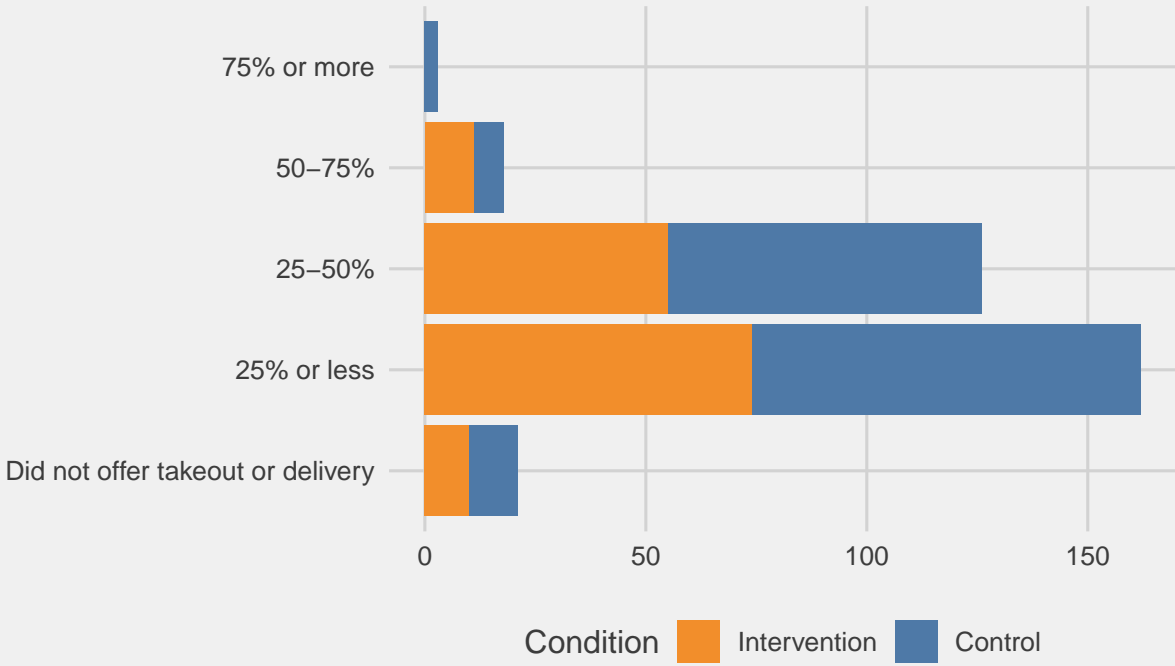
1.3   Effects of Intervention on Menu Prices

Menu adjustments between Oct 1 and Dec 31


```
##
##  Pearson's Chi-squared test
##
## data:  q10_chi
## X-squared = 175.37, df = 2, p-value < 2.2e-16
```

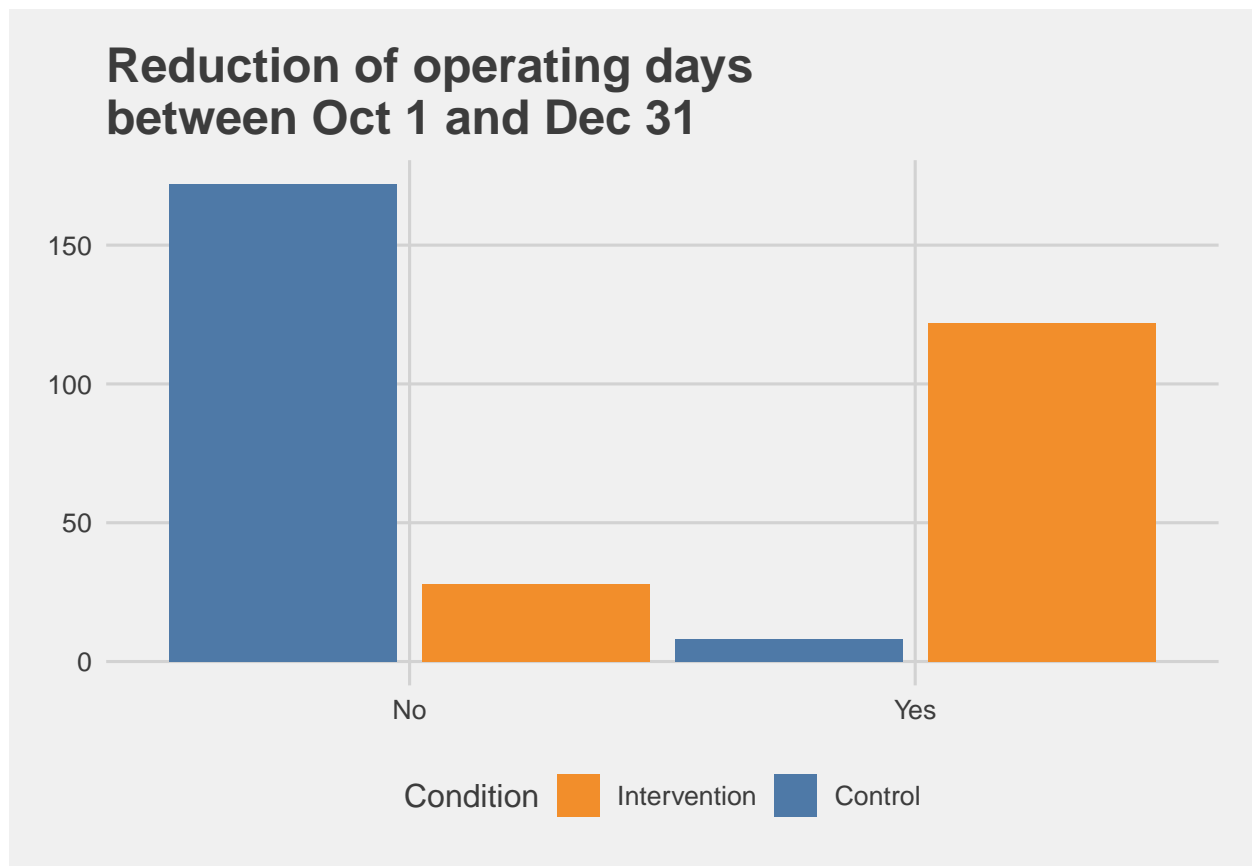## 1.4 Effects of Intervention on Hours/Days of Operation

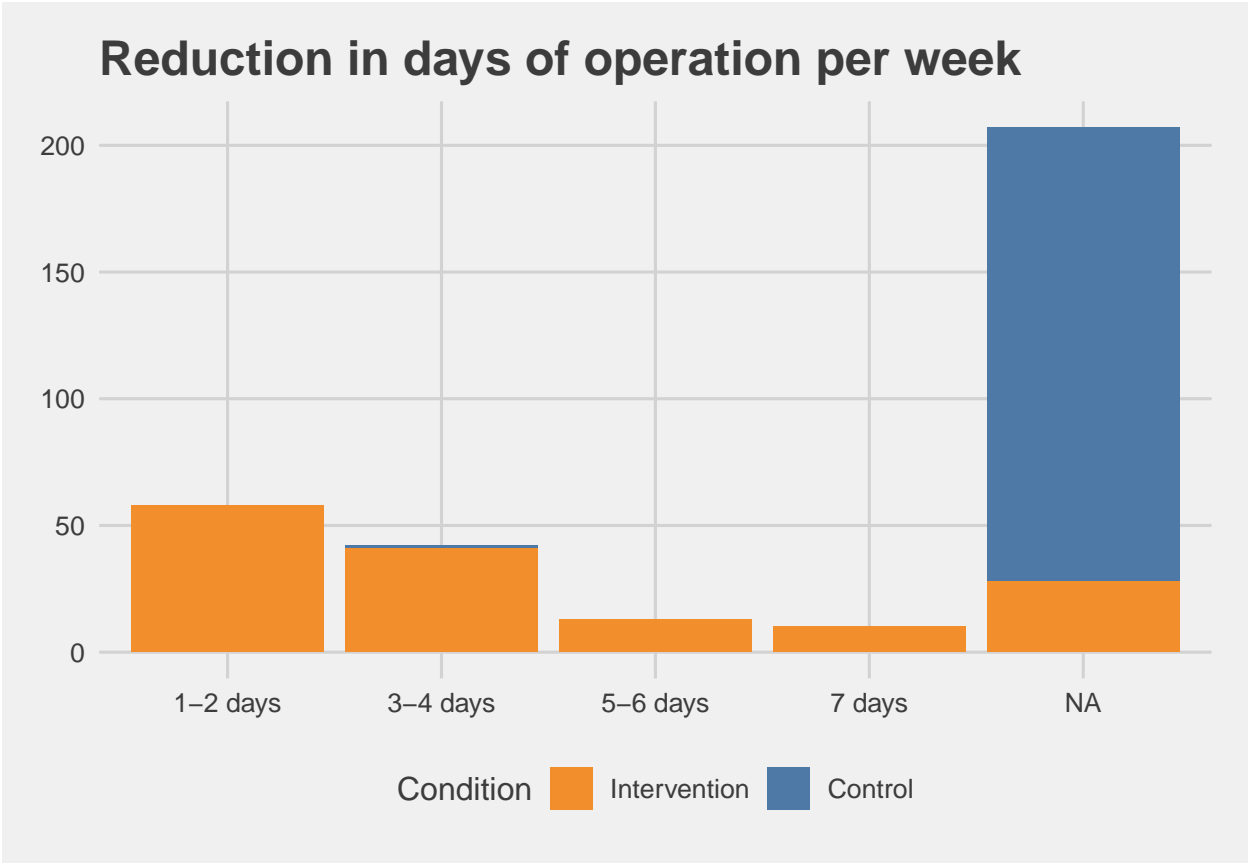**Reducton in operating hours between Oct 1 and Dec 31**


```
##
##  Pearson's Chi-squared test with Yates' continuity correction
##
## data:  q12_chi
## X-squared = 245.43, df = 1, p-value < 2.2e-16
```

Percentage of hours reduced between Oct 1 and Dec 31

Condition — Intervention — Control

Reduction of operating days between Oct 1 and Dec 31
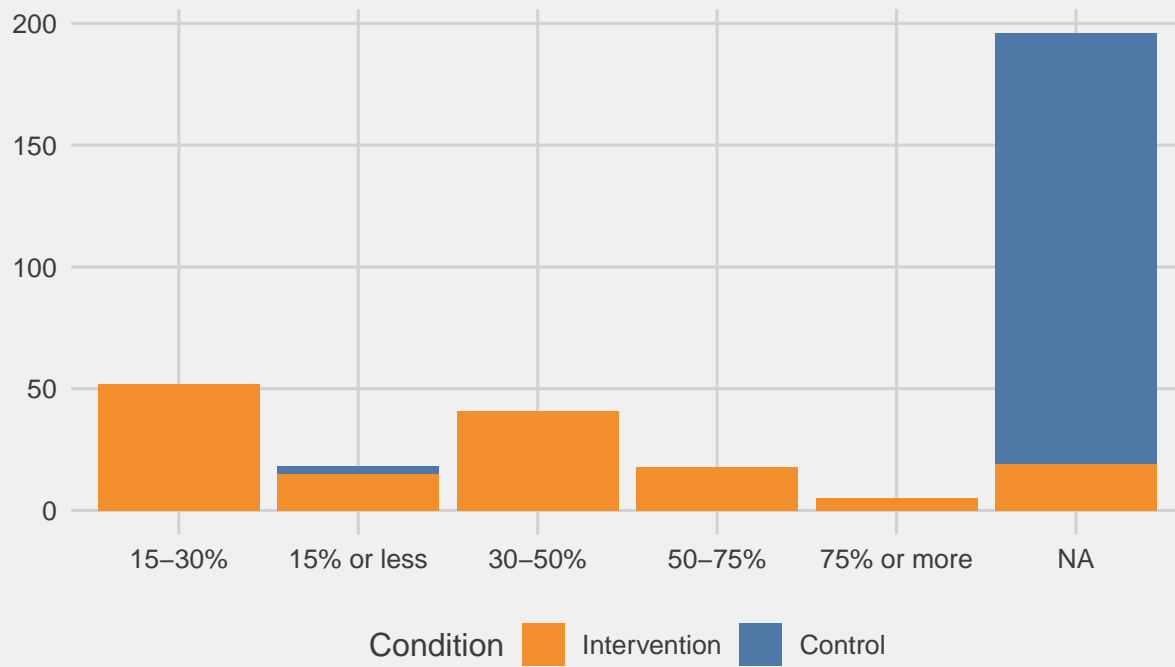

```
## 
##  Pearson's Chi-squared test with Yates' continuity correction
## 
## data:  q14_chi
## X-squared = 199.39, df = 1, p-value < 2.2e-16
```

Reduction in days of operation per week

Condition ■ Intervention ■ Control

Appendix

2   References