

## **S1 Appendix. Model specifications and list of NAICS codes.**

### *Analytic approach.*

R code for the final analysis models corresponding to the publicly available data can be found below. Alternative model specifications and analytic approaches were considered, and all models produced similar results to the primary analytic approach. First, multilevel models were run using county as the cluster, but due to having only 2 counties this approach was excluded. Second, as suggested by Wagner and colleagues (23), a model was run including a third interaction term between treatment city and the amount of time since treatment was initiated (coded such that months prior to the tax were 0 and post-tax months were coded 1-14). This was to test for a change in the monthly unemployment trends post tax in Philadelphia compared to the aggregated neighboring counties. This approach was excluded out of concern for over-saturating the model and the possibility that this last interaction may absorb much of any true treatment effect. Results are shown in Appendix Table 2 and are consistent with the primary results excluding the third interaction and lower order terms.

### *Final R Code*

```
# Attach package
install.packages("nlme") # run this line if you have never used "nlme" package
library(nlme)

# Import data from directory
df <- read.table(paste(directory, "/RawData_Public.txt", sep = ""), header = TRUE, stringsAsFactors = FALSE)

#Data Dictionary:

# Date: month and year
# NAICS: North American Industry Classification System code corresponding to the industry the claims filings are associated with
# NoUnemp: number of new unemployment compensation claims filings in the given month
```

```

# County: claimant county of residence (coded as Philadelphia, Bucks, Montgomery, Delaware,
Allegheny, and Neighbor [sum of Montgomery, Bucks, Delaware])
# time: months coded 1-38 for Jan 2015 through Feb 2018
# posttax: dummy variable for tax implementation date (1=months from Jan 2017 - Feb 2018; 0=months
prior to Jan 2017)
# tx: dummy variable to treatment county (1=Philadelphia; 0=all others)
# txtime: post-tax slop variable coded such that months prior to Jan 1 2017 are 0 and months after are 1,
2, 3...14
# spring: dummy variable for fall season for months Jan-Mar each year
# summer: dummy variable for summer season for months Apr-June each year
# fall: dummy variable for fall season for months July-Sept each year

```

#Final Models for Lawman et al manuscript "Unemployment claims in Philadelphia one year after implementation of the sweetened beverage tax"

```

# selecting Philly vs Aggregated Neighboring counties and releveling reference group
df2<- df[df$County=="Philadelphia"| df$County=="Neighbor", ]
df2$County <- as.factor(df2$County)
df2$County <- relevel(df2$County, ref="Neighbor")

```

#THIS IS THE FINAL MODEL: SUPERMARKETS

```

analysisdf1 <- df2[df2$NAICS=="44511",]
mfinal1 <- gls(NoUnemp ~ spring + summer + fall + time*County + posttax*County, data = analysisdf1,
correlation=corAR1(form = ~ 1 | County)) #generalized least squares model with AR1 correlation
structure to account for correlation within county
summary(mfinal1)
confint(mfinal1)

```

#THIS IS THE FINAL MODEL: SOFT DRINK MANF

```

analysisdf2 <- df2[df2$NAICS=="312111",]
mfinal2 <- gls(NoUnemp ~ spring + summer + fall + time*County + posttax*County, data = analysisdf2,
correlation=corAR1(form = ~ 1 | County)) #generalized least squares model with AR1 correlation
structure to account for correlation within county
summary(mfinal2)
confint(mfinal2)

```

#THIS IS THE FINAL MODEL: ALL PBT INDUSTRIES

```

analysisdf3 <- df2[df2$NAICS=="PBT Industries",]
mfinal3 <- gls(NoUnemp ~ spring + summer + fall + time*County + posttax*County, data = analysisdf3,
correlation=corAR1(form = ~ 1 | County)) #generalized least squares model with AR1 correlation
structure to account for correlation within county
summary(mfinal3)
confint(mfinal3)

```

```
#THIS IS THE FINAL MODEL: TOTAL
analysisdf4 <- df2[df2$NAICS=="All NAICS",]
mfinal4 <- gls(NoUnemp ~ spring + summer + fall + time*County + posttax*County, data = analysisdf4,
correlation=corAR1(form = ~ 1 | County)) #generalized least squares model with AR1 correlation
structure to account for correlation within county
summary(mfinal4)
confint(mfinal4)
```

S1 Appendix Table A. North American Industry Classification System (NAICS) codes for industries potentially affected by a sweetened beverage excise tax.

5 Digit NAICS	NAICS Description	Industry Grouping
42441	General Line Grocery Wholesalers	Wholesale Groceries
42442	Packaged Frozen Food Wholesalers	Wholesale Groceries
42443	Dairy Products (Exc Dried/Can) Wholesalers	Wholesale Groceries
42444	Poultry/Poultry Prod Wholesalers	Wholesale Groceries
42445	Confectionery Wholesalers	Wholesale Groceries
42446	Fish/Seafood Wholesalers	Wholesale Groceries
42447	Meat/Meat Prod Wholesalers	Wholesale Groceries
42448	Fresh Fruit/Vege Wholesalers	Wholesale Groceries
42449	Other Grocery/Related Prod Wholesalers	Wholesale Groceries
31211	Soft Drink & Ice Manufacturing	Soda and Ice Manufacture
44511	Supermarkets (Exc Convenience) Retail	Retail Groceries - Supermarkets
44529	Other Specialty Food Store Retail	Retail Groceries - Specialty Food Stores
44512	Convenience Stores Retail	Retail Groceries - Convenience Stores
45421	Vending Machine Operators Retail	Retail _Vending Machine Companies
44611	Pharmacies/Drug Stores Retail	Retail - Drug Stores
45211	Department Stores Retail	Retail - Dept Stores, Superstores
45291	Warehouse Clubs/Superstore Retail	Retail - Dept Stores, Superstores
72221	Restaurants Take-Out	Restaurants - Take Out
72211	Restaurants Full-Service	Restaurants - Full Service
72233	Mobile Food Services (Trucks)	Food Service - Food Trucks
72231	Food Serv Concession/Contractor	Food Service - Concessionaires
72232	Caterers	Food Service - Caterers
72241	Drinking Places (Alcoholic Bev)	Bars and Taverns

Note: These industry codes were aggregated to create one measure of potentially affected industries.

S1 Appendix Table B. Controlled interrupted time series analysis results of new monthly unemployment benefit claims filing in Philadelphia and surrounding counties, Jan 2015 – Feb 2018.

	Supermarkets		Soft Drink Manufacturers		Potentially Affected Industries		All Industries	
	Est (SE)	p-value	Est (SE)	p-value	Est (SE)	p-value	Est (SE)	p-value
(Intercept)	167.11 (28.99)	<0.01	2.42 (2.65)	0.36	838.44 (162.67)	<0.01	9693.04 (1314.69)	<0.01
Spring	-41.25 (19.29)	0.04	1.20 (1.58)	0.45	-86.46 (105.65)	0.42	850.50 (715.14)	0.24
Summer	-41.35 (19.76)	0.04	0.39 (1.67)	0.82	164.09 (109.19)	0.14	87.63 (763.43)	0.91
Fall	-19.28 (18.52)	0.30	3.73 (1.50)	0.02	-122.86 (101.29)	0.23	-926.4 (672.16)	0.17
Time	-2.99 (1.69)	0.08	0.07 (0.16)	0.64	-8.59 (9.56)	0.37	-106.55 (80.27)	0.19
Philadelphia	52.94 (32.73)	0.11	-0.89 (3.12)	0.78	671.94 (185.41)	0.00	268.50 (1594.66)	0.87
Pre-Post Tax	11.91 (39.85)	0.77	-2.71 (3.53)	0.44	24.71 (222.54)	0.91	762.92 (1677.01)	0.65
Time Since TX	0.42 (4.01)	0.92	-0.18 (0.38)	0.64	3.54 (22.62)	0.88	56.58 (189.14)	0.77
Time* PHL	0.08 (2.29)	0.97	0.23 (0.22)	0.29	-6.64 (12.94)	0.61	12.16 (109.23)	0.91
Pre-Post* PHL	-4.31 (53.35)	0.94	2.17 (4.73)	0.65	7.93 (298.08)	0.98	-476.84 (2245.74)	0.83
Time Since TX*PHL	-1.21 (5.63)	0.83	-0.64 (0.53)	0.23	-0.35 (31.79)	0.99	-9.80 (266.46)	0.97

PHL=Philadelphia; TX=Treatment; Supermarkets = NAICS 44551, Soft Drink Manufacturers = NAICS 312111, All Industries = NAICS 10; Potentially Affected Industries = wholesale groceries, soda and ice manufacturing, retail groceries, retail vending machines, retail drug stores, retail department stores, restaurants, food service, and bars and taverns. Spring/Summer/Fall = dummy season covariates; Time = month ranging from 1-38 starting in Jan 2015; PHL/Philadelphia = binary indicator of treatment city; Pre-post Tax = binary indicator of month before or after-tax implementation (Jan 1, 2017); Time since treatment = months prior to tax coded 0 and post-tax months coded 1-14. The three interaction terms can be interpreted as baseline trend differences by county, level changes at the time of the tax by county, and trend changes after the tax by county, respectively.