

# Appendix 3

## Comprehensive Analysis of BPD Arrest Data

Stephen L. Morgan  
Johns Hopkins University

Rhiannon N. Miller  
Johns Hopkins University

May 11, 2020

### Navigation of this Document

In order to jump to results of interest, display the Table of Contents for this pdf file in the left pane of your pdf viewer. The top level of the Table of Contents contains labeled sections for each outcome, within which subsections are nested for each piece of the analysis. Clicking the items in the pane will take you to the relevant set of results.

## 1 Introduction

For this updated analysis of BPD's arrest data, we offer comprehensive results that extend the results summarized in a Spring 2016 report and its Fall 2016 update:

- Morgan, Stephen L. and Joel A. Pally. 2016. "Ferguson, Gray, and Davis: An Analysis of Recorded Crime Incidents and Arrests in Baltimore City, March 2010 through December 2015." A Report Prepared for the 21st Century Cities Initiative at Johns Hopkins University. Baltimore, MD: Johns Hopkins University, March 15, 2016. (URL: <https://osf.io/preprints/socarxiv/nshme/>)
- Morgan, Stephen L. 2016. "Fall 2016 Update for Ferguson, Gray, and Davis: An Analysis of Recorded Crime Incidents and Arrests in Baltimore City, March 2010 through October 2016." Baltimore, MD: Johns Hopkins University, November 15, 2016. (URL: <https://osf.io/preprints/socarxiv/6gdra/>)

The results in the original report and its update were based on arrest data through December 2015 and October 2016, respectively. In this final report, we offer models that incorporate arrest data through Sunday, March 1, 2020.

The basic analysis strategy is the same as in the original report. We first model the prevailing cyclical arrest trend from Monday, January 7, 2013 through Sunday, August 10, 2014. Then, we use that estimated model to predict a counterfactual arrest trend, as if the protest events and any changes in police practice from August 11, 2014 onward had not occurred. We then estimate period effects as average differences between observed and counterfactual values from August 11, 2014 onward in distinct time intervals.

Unlike the original report, with the availability of additional data it is reasonable to now divide the interval after Police Commissioner Anthony Batts was fired into (1) a transition period while Kevin Davis was the Interim Police Commissioner and (2) two additional periods after Kevin Davis was sworn in as Batts' permanent replacement and with a five-year contract as the city's 38th Police Commissioner. For the analysis reported here, the transition period begins with the week of Monday, July 13, 2015 and ends on Sunday, October 18, 2015. The first period for Davis as commissioner encompasses the first full year of his term, from the week of Monday, October 19, 2015 (10/19/15 to 10/25/15) through the week of Monday, October 10, 2016 (10/10/16 to 10/16/16). The second period for Davis begins with the second full year of his term, from the week of Monday, October 17, 2016 (10/17/16 to 10/23/16) through his final week as commissioner, Monday, January 15, 2018 (1/15/18 to 1/21/18).

More than three full years have passed since 2016, and the city has had three new police commissioners since then, necessitating three new periods for a parallel structure of models. The fourth period for De

Sousa as commissioner commences with the week of Monday, January 22, 2018 (1/22/18 to 1/28/18) and ends with the week of Monday, May 7, 2018 (5/7/18 to 5/13/18). The fifth period for Tuggle as commissioner commences with the week of Monday, May 14, 2018 (5/14/18 to 5/20/18) and ends with the week of Monday, February 4, 2019 (2/4/19 to 2/10/19). Finally, the sixth period for Harrison as commissioner commences with the week of Monday, February 11, 2019 (2/11/19 to 2/17/19) and ends with the week of February 24, 2020 (2/24/20 to 3/1/20), which is the final full week before Governor Hogan declared a state of emergency because of the COVID-19 pandemic. Thus, the final period is approximately the first full year of Harrison's term as commissioner.

### **Descriptive Summary of the Data**

The types of arrests analyzed in subsequent sections are listed and summarized in Table 2.1 in the Data section, after which a breakdown of types of arrests is provided by police district in Table 2.2. For this final report, we use an updated version of the keyword search routine in order to categorize arrests (see Appendix 1 for details).

Two figures then display the distributions of the variables utilized for subsequent models: (1) variables for weather and hours of darkness; (2) variables that parameterize types of days per week, such as holidays, vacations, and other days without school in the Baltimore City Schools. For this final report, we introduce a new set of variables for types of days within each week, separating holidays and vacation days from other types of non-school days.

### **Results for Each Outcome**

For each outcome, we first offer a table with coefficients from four estimated models:

- Model 1 is a naive model with nine estimated coefficients for the period indicator variables for the full time series;
- Model 2 is a "pretreatment" model, estimated only for data prior to August 11, 2014, that fits coefficients for weather, hours of darkness, and types of days;
- Model 3 is analogous to Model 1 but utilizes an outcome variable for the full time series that has been de-trended using coefficients for weather, hours of darkness, and types of days estimated by Model 2 using data from the "pretreatment" period only;
- Model 4 is an alternative to Model 3 that fits coefficients for weather, hours of darkness, and types of days simultaneously with coefficients for the six period indicator variables.

The period effects estimated for Model 3 are our preferred estimates, and the period effects estimated for Model 4 are plausible alternatives.

We then offer two figures that depict the fit of Model 2 as well as the variation that generates the period effects estimated for the preferred Model 3. For both figures, the black line is the predicted time series from Model 2 while the red line is an extrapolated cyclical trend, generated by forming predictions that utilize the coefficients from Model 2 and the observed values for weather, hours of darkness, and school days from August 11, 2014 onward.

For this final report, we do not utilize a baseline time counter for the arrest models, unlike for the crime models. As a result, the counterfactual trend is determined only by weather, hours of darkness, and types of days. We made this change because the pre-Ferguson period for arrests is comparatively short, resulting in estimated underlying time trends that were more of a distraction than an aid to interpretation. In other words, with several more years of data, it has become clear that the pattern for arrests is easily interpretable without needing to fit an underlying time trend.

The first figure of each pair overlays gray dots for the observed weekly total for each outcome, and the second figure substitutes a light blue line for the three-week moving average of the observed weekly totals. The differences between the gray dots (or the light blue line) and the red line is the source of variation that

generates the period effects estimated for the preferred Model 3. Additional details of Model 3 are offered in the main document for this updated report.

Finally, for each outcome a diagnostic model is also fit to assess the extent to which the least squares estimation of Model 2 adequately represents the underlying time series up through August 10, 2014. For this alternative model, a poisson distribution is assumed for the outcome because it is a weekly count bounded by zero. In general, these alternative models support the decision to utilize the simpler Model 2 to estimate the underlying time series that structures the extrapolated counterfactual trend. In this final report, we continue to offer the R output for the estimated poisson regression so that it can be checked against the similar results in the original report. However, we no longer offer analogous figures to demonstrate the near equivalence of results based on Model 2 and its poisson regression alternative. Interested readers can consult the close similarity from the original report, which holds for this updated analysis as well.

## 2 Data

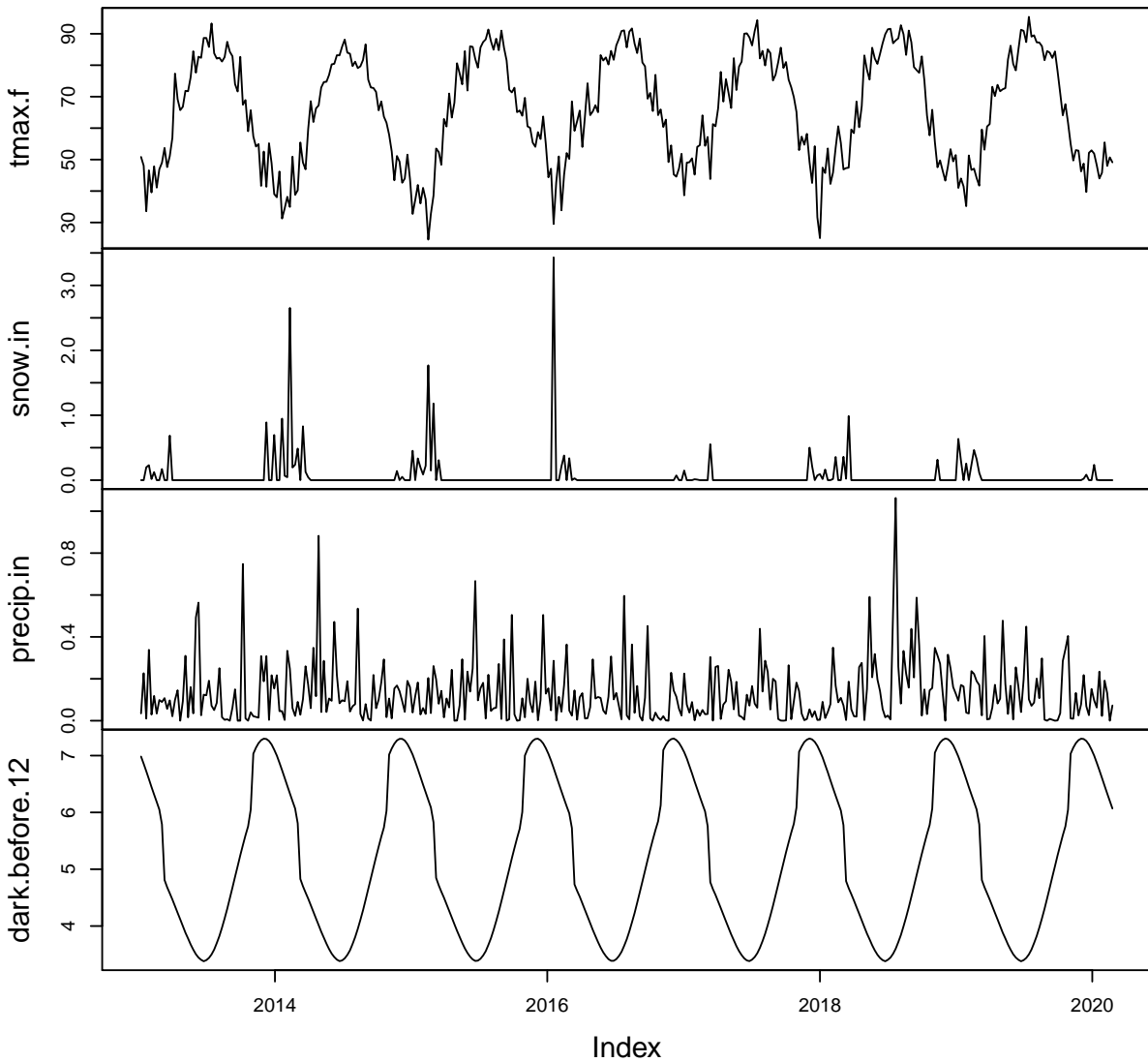
Table 2.1: Descriptive Statistics for Weekly Reported Arrests, with Breakdown by Type of Charge

Statistic	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
murder.g	6.0	2.6	0	4	6	8	15
arson	1.1	1.1	0	0	1	2	5
robbery	26.2	9.3	5	20	25	33	56
aggravated.assault	22.0	6.3	7	18	22	26	46
deadly.weapon	20.6	6.7	3	16	20	25	47
common.assault	81.5	13.3	36	72	81	90	123
sex.offense.g	10.3	5.5	0	7	9	13	35
domestic	2.8	2.0	0	1	3	4	11
non.deadly.weapon	1.1	1.1	0	0	1	2	7
burglary	11.7	5.1	1	8	11	14	52
larceny	29.8	10.4	7	22	28	36	63
court.non.compliance	86.3	21.4	40	72	82	98	165
property.destruction	5.0	2.6	0	3	5	7	14
forgery.fraud.extortion	1.4	1.3	0	0	1	2	6
police.non.compliance	5.0	4.5	0	2	3	7	22
driving.violation	8.7	5.9	0	4	7	13	26
trespass	6.4	5.0	0	3	5	9	25
drug.g	144.7	94.4	17	83	107	170	423
loitering.vagabond	0.4	1.1	0	0	0	0	8
disorderly.conduct	10.5	12.1	0	4	7	15	189
prostitution	6.7	5.6	0	2	5	10	27
only.temp.detained	7.9	3.5	1	5	8	10	20
unknown	28.3	16.6	4	16	24	38	121
ungrouped	5.7	3.9	0	3	5	8	28
total	530.0	170.8	219	410	471	641	928

Table 2.2: Descriptive Statistics for Weekly Reported Arrests, with Breakdown by District

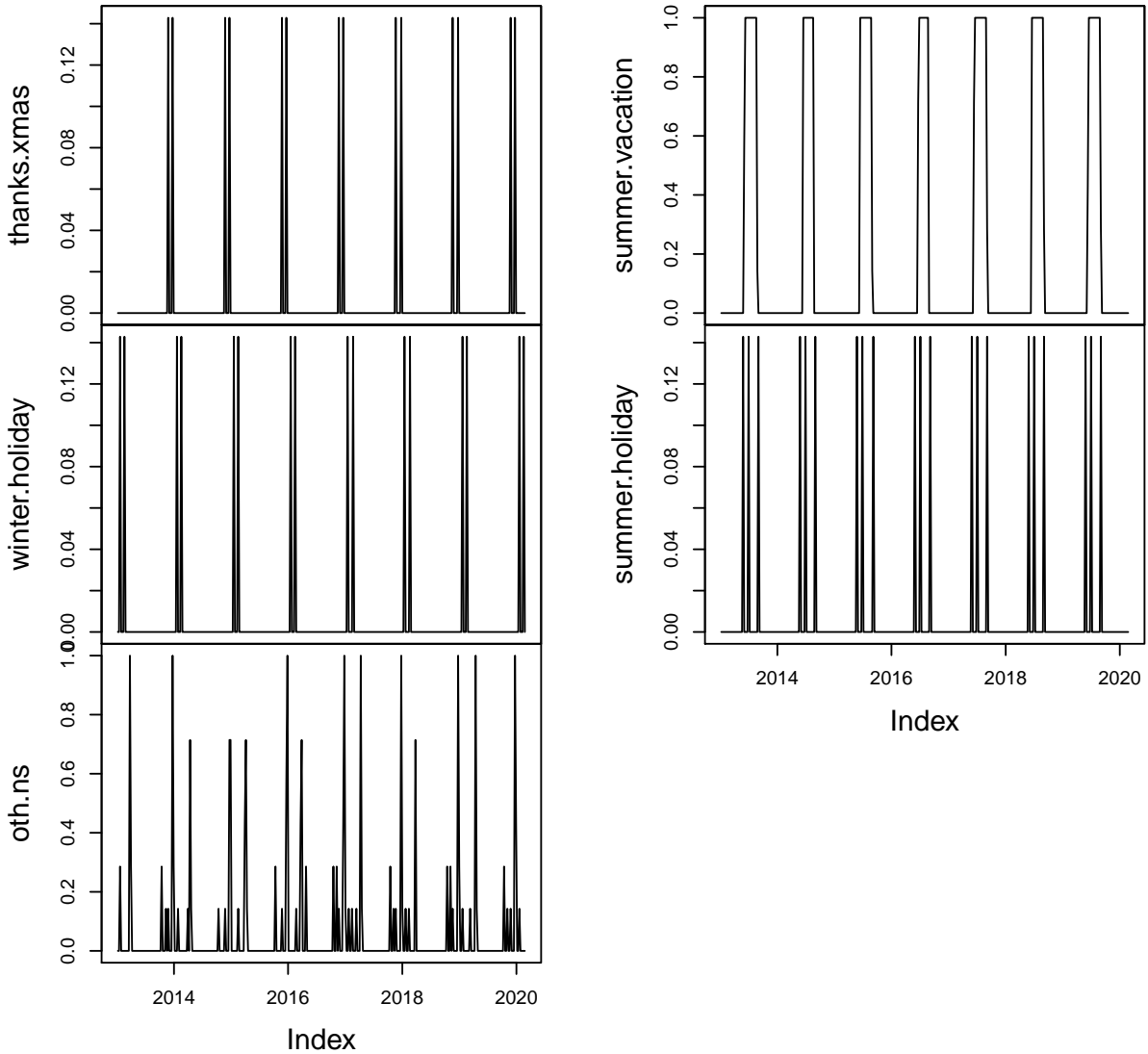
Statistic	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
northwestern	25.5	15.4	6	15	20	32	95
northern	19.3	9.5	1	12	18	25	56
northeastern	34.8	16.6	8	23	31	41	93
western	37.9	21.1	6	22	31	52	113
central	32.8	18.1	6	20	27	40	87
eastern	38.2	22.5	6	22	32	49	116
southwestern	29.1	11.0	8	20	27	36	65
southern	38.6	21.8	8	22	30	56	109
southeastern	36.9	18.9	8	23	30	47	93
total	530.0	170.8	219	410	471	641	928

## Weather and Darkness Variables for Subsequent Models



- tmax.f is the weekly average of the daily maximum temperature, measured in degrees Fahrenheit
- snow.in is the weekly average of total daily snowfall, measured in inches
- precip.in is the weekly average of total daily precipitation, measured in inches
- dark.before.12 is the weekly average of daily hours between sunset and midnight

## Types of Day Variables for Subsequent Models



- thanks.xmas is the proportion of days of the week that are either Thanksgiving or Christmas
- winter.holiday is the proportion of days of the week that are a winter holiday other than Thanksgiving or Christmas
- other.ns is the proportion of days of the week that are other types of non-school days for the Baltimore City Schools (e.g., professional development days and winter vacation days)
- summer.vacation is the proportion of days of the week that are summer vacation for the Baltimore City Schools
- summer.holiday is the proportion of days of the week that are a summer holiday (e.g., 4th of July)

### 3 Results for total

#### 3.1 Summary Values for total

Table 3.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
total	83	800.952	73.407	565	772.5	807	855.5	928

Table 3.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
total	290	452.514	94.496	219	392.2	444	492	865

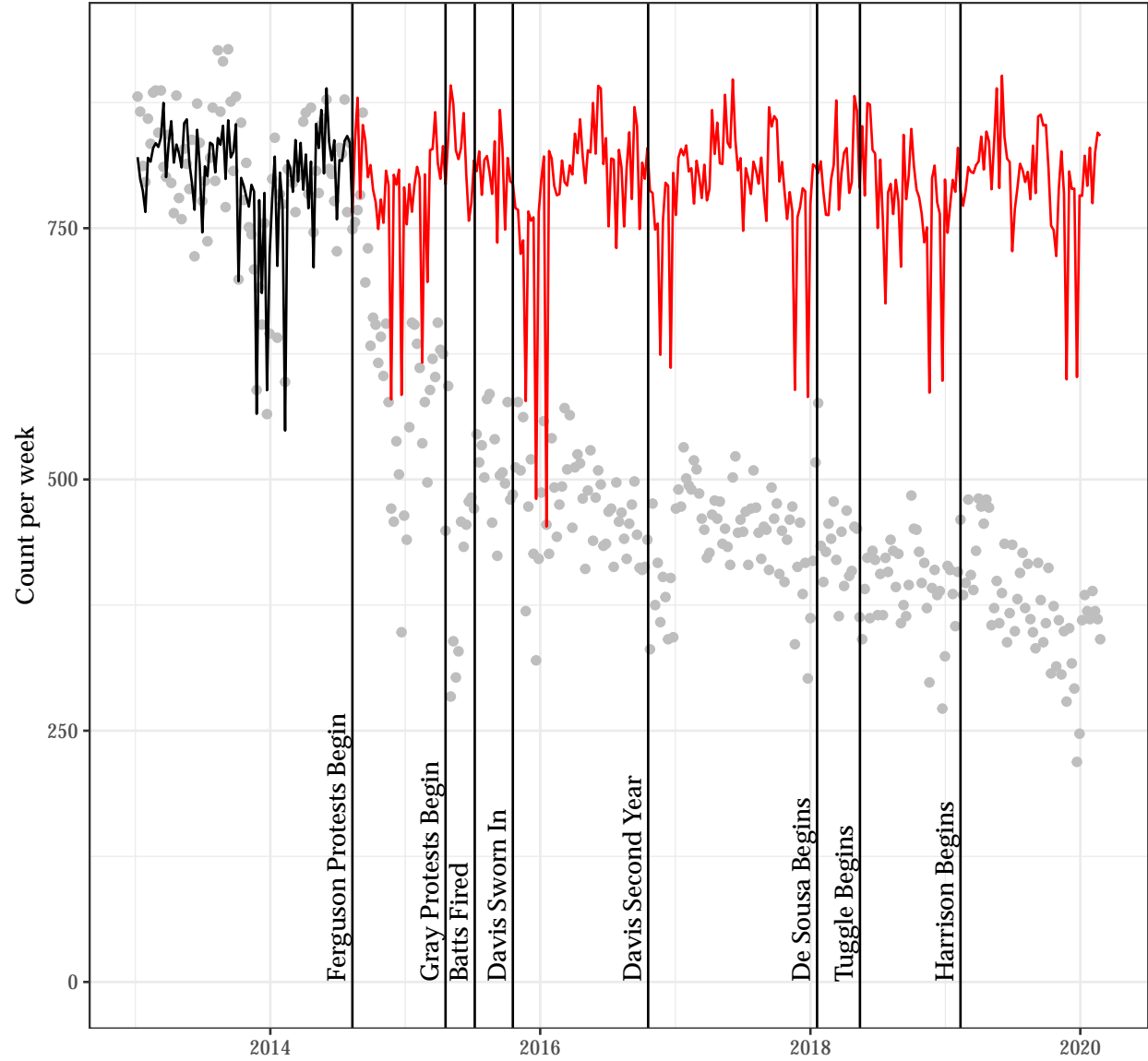
### 3.2 Four Models for total

Table 3.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

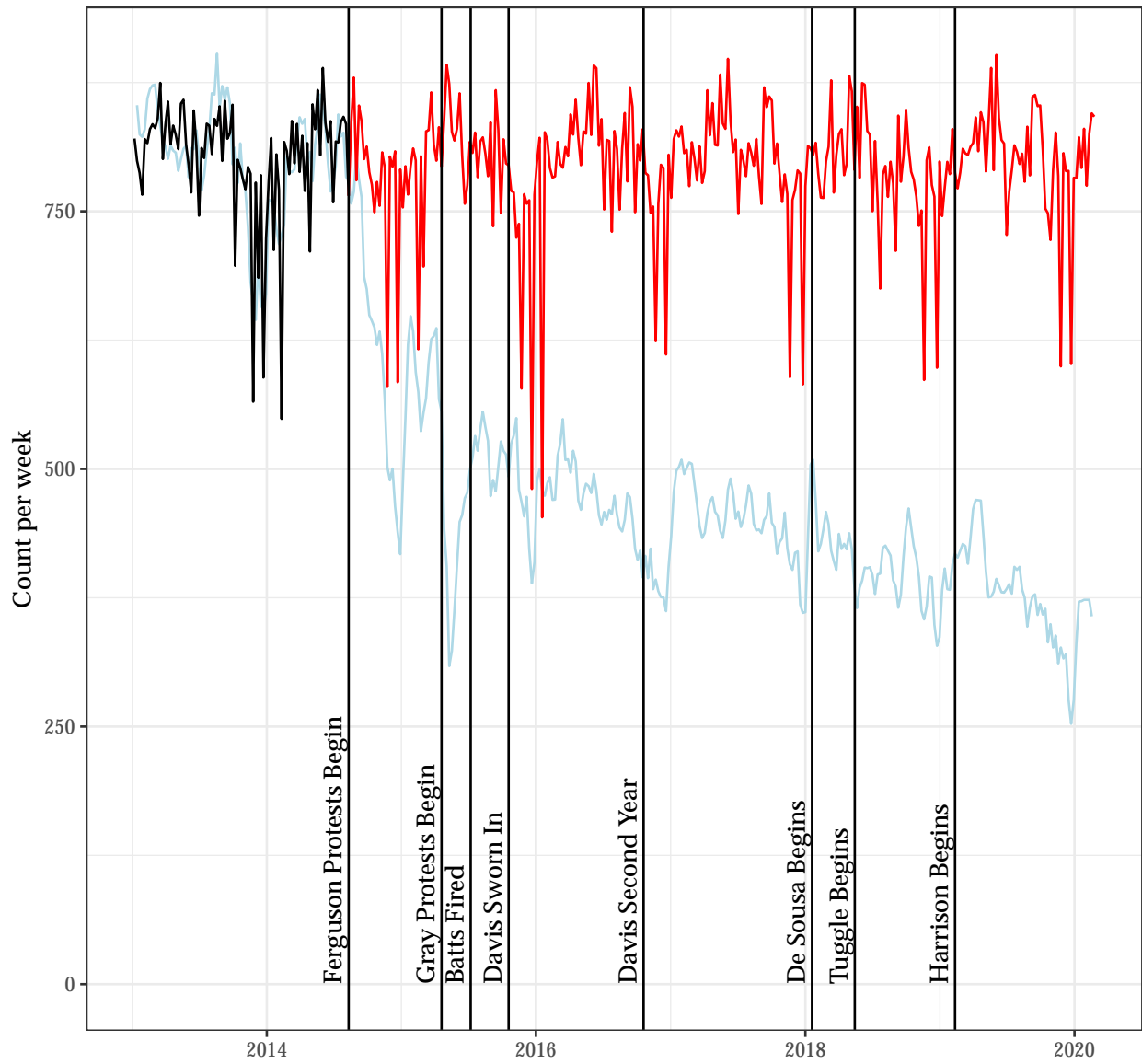
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-188.42		-170.07	-171.84
After Gray Protests Begin (week of 4/20/15 onward)	-205.16		-245.64	-237.88
Unrest and National Guard (4/27/15 - 5/3/2015)	185.64		169.59	160.30
After Batts Fired (week of 7/13/15 onward)	110.35		127.73	119.17
After Davis Confirmed (week of 10/19/15 onward)	-43.79		-25.87	-32.95
After Davis First Year (week of 10/17/16 onward)	-31.91		-37.50	-30.51
After De Sousa Begins (week of 1/19/18 onward)	-3.08		-20.94	-14.51
After Tuggle Begins (week of 5/14/18 onward)	-46.27		-15.30	-21.99
After Harrison Begins (week of 2/11/19 onward)	-16.27		-37.18	-32.82
Average Maximum Temperature to 50 Degrees		1.83		2.55
Plus Degrees in the 50s		-9.51		-3.43
Plus Degrees in the 60s		9.32		1.66
Plus Degrees in the 70s		3.27		-1.79
Plus Degrees Greater Than 80		-8.33		-1.73
Snowfall (inches)		-88.87		-30.07
Precipitation (inches)		-143.98		-91.09
Darkness Before Midnight (hours)		-23.89		-13.17
Thanksgiving/Christmas (proportion of week)		-1,396.50		-765.85
Winter Holiday (proportion of week)		-1.88		237.57
Other Out-of-School Days (proportion of week)		-5.46		-38.26
Summer Vacation (proportion of week)		-46.77		10.16
Summer Holiday (proportion of week)		-468.88		-148.99
Observations	373	83	373	373
R <sup>2</sup>	0.86	0.66	0.87	0.91



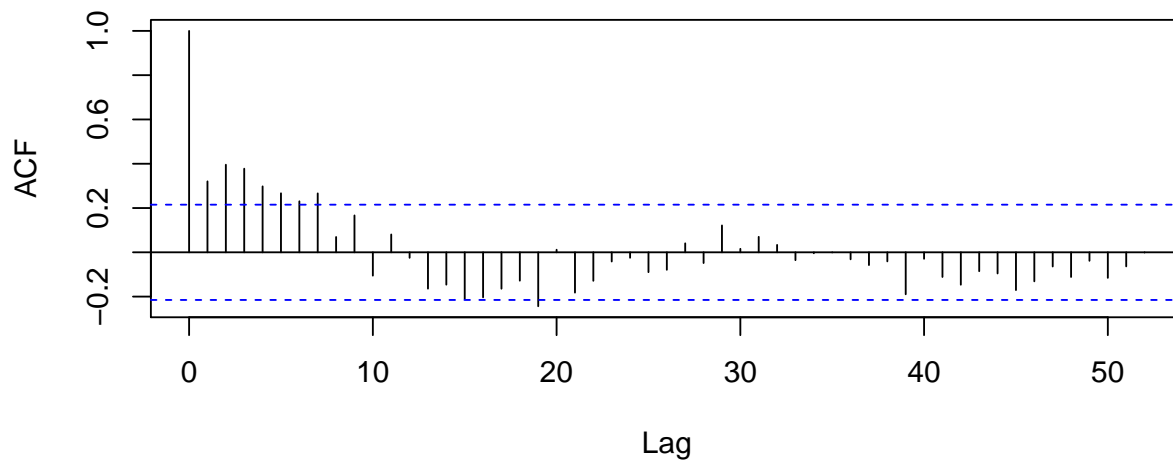
3.3 Least Squares Updated Model (2) for total total



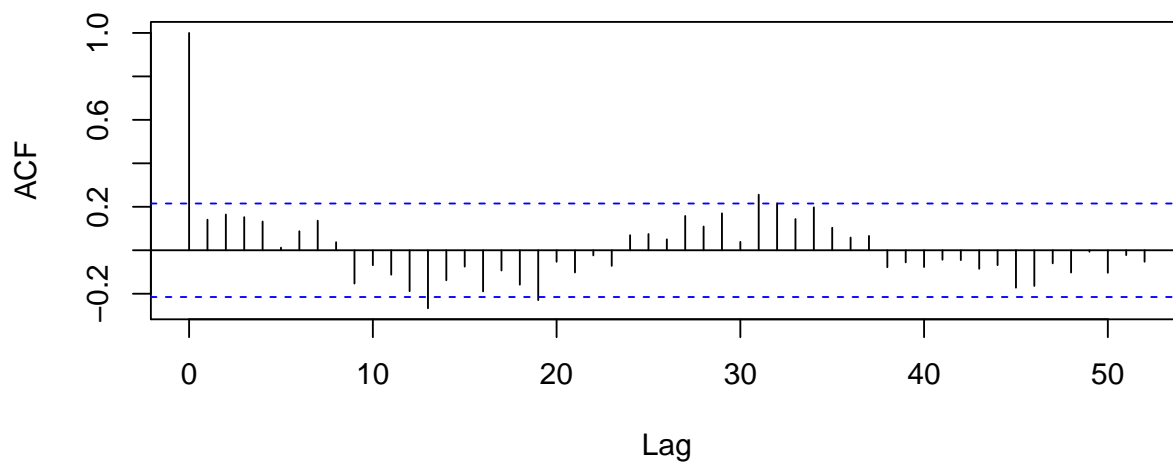
total



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



### 3.4 A Poisson Regression Model as an Alternative to Model (2) for total

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.1909  -1.0829   0.0549   1.2503   2.9398

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      6.818965   0.079699  85.560 < 2e-16 ***
tmax.f.spline1   0.002382   0.001399   1.702 0.088717 .
tmax.f.spline2  -0.012562   0.003105  -4.046 5.21e-05 ***
tmax.f.spline3   0.012413   0.004412   2.813 0.004902 **
tmax.f.spline4   0.003814   0.004057   0.940 0.347162
tmax.f.spline5  -0.010301   0.003487  -2.954 0.003137 **
snow.in          -0.129153   0.015323  -8.429 < 2e-16 ***
precip.in        -0.184064   0.026249  -7.012 2.35e-12 ***
dark.before.12  -0.030186   0.005806  -5.199 2.01e-07 ***
thanks.xmas      -2.123148   0.248354  -8.549 < 2e-16 ***
summer.holiday  -0.582527   0.129553  -4.496 6.91e-06 ***
winter.holiday   0.011429   0.144604   0.079 0.937001
summer.vacation  -0.057286   0.016044  -3.571 0.000356 ***
oth.ns           0.001719   0.027038   0.064 0.949307
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 573.14  on 82  degrees of freedom
Residual deviance: 186.72  on 69  degrees of freedom
AIC: 921.83

Number of Fisher Scoring iterations: 3
```

## 4 Results for b

### 4.1 Summary Values for b

Table 4.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
b	83	654.723	66.943	450	625	661	703	772

Table 4.2: Descriptives for Outcome After Ferguson Protests Begin

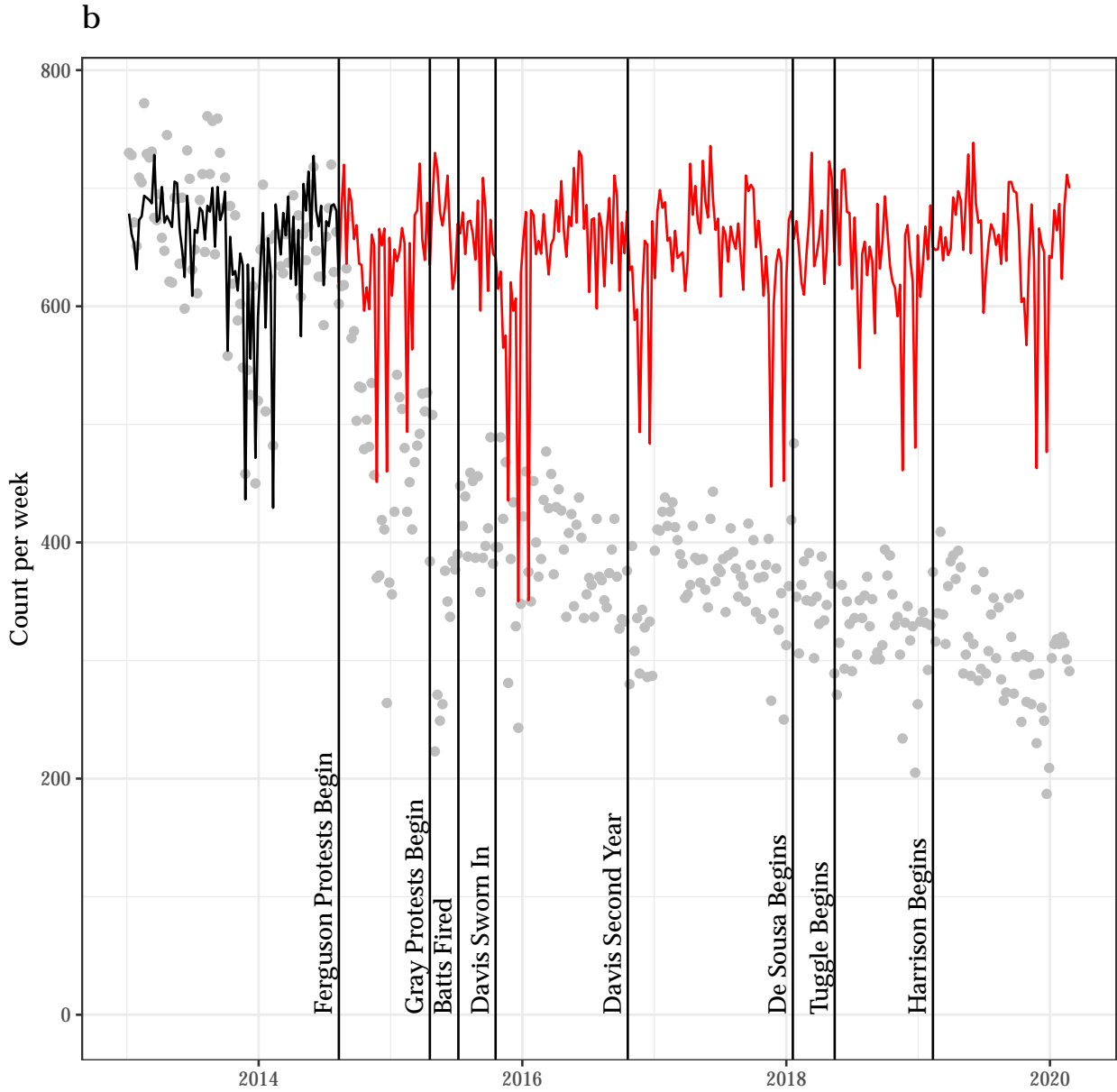
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
b	290	371.410	75.813	187	327.2	365.5	410.8	676

## 4.2 Four Models for b

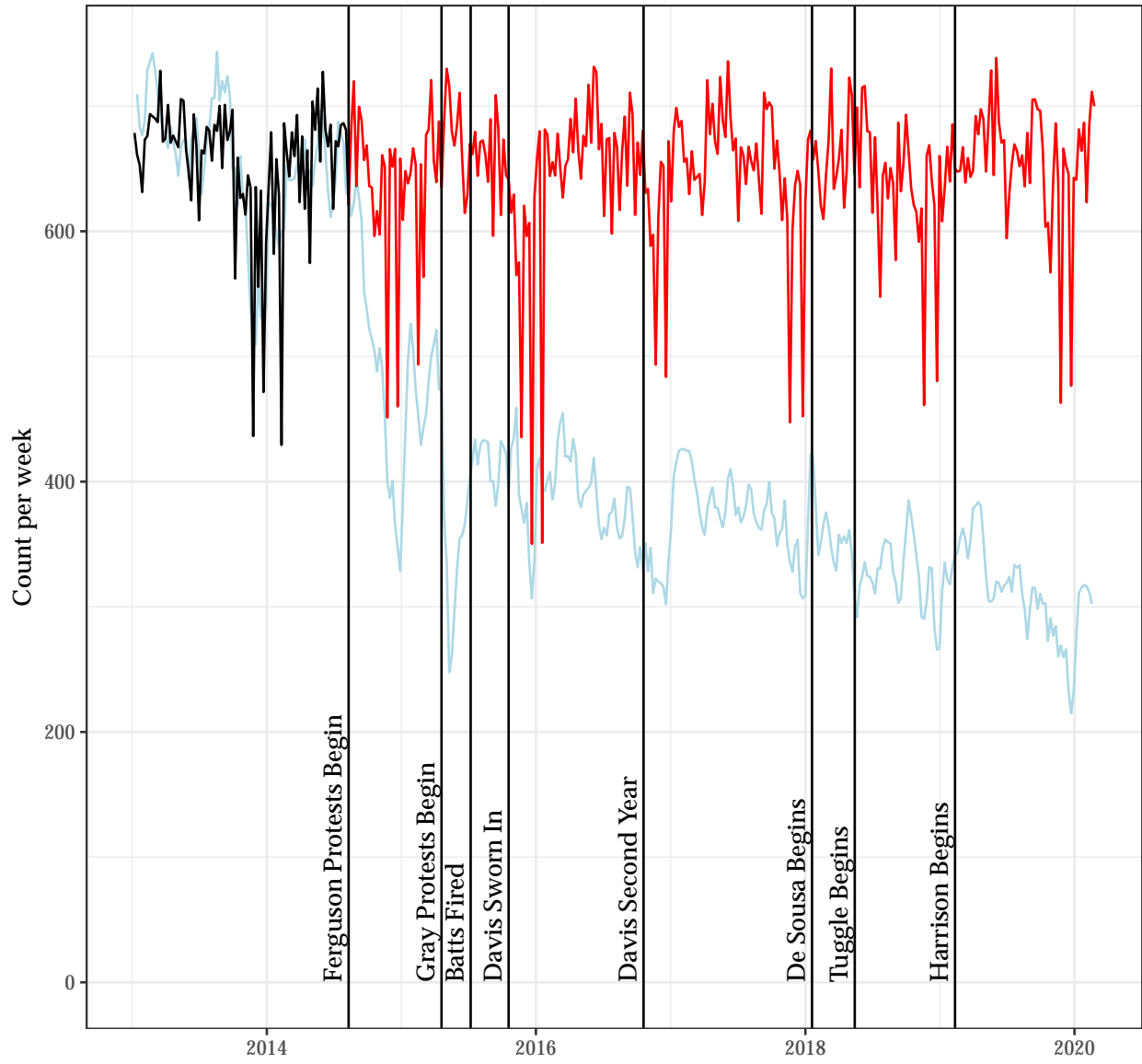
Table 4.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-164.31		-147.16	-150.73
After Gray Protests Begin (week of 4/20/15 onward)	-162.78		-197.48	-188.67
Unrest and National Guard (4/27/15 - 5/3/2015)	180.36		164.31	156.70
After Batts Fired (week of 7/13/15 onward)	91.51		103.92	99.15
After Davis Confirmed (week of 10/19/15 onward)	-30.32		-10.34	-21.77
After Davis First Year (week of 10/17/16 onward)	-19.89		-26.35	-19.09
After De Sousa Begins (week of 1/19/18 onward)	-7.88		-22.19	-18.98
After Tuggle Begins (week of 5/14/18 onward)	-38.04		-14.70	-16.20
After Harrison Begins (week of 2/11/19 onward)	-11.57		-30.01	-26.27
Average Maximum Temperature to 50 Degrees		2.38		2.36
Plus Degrees in the 50s		-12.50		-4.06
Plus Degrees in the 60s		14.43		2.88
Plus Degrees in the 70s		-1.09		-2.34
Plus Degrees Greater Than 80		-5.38		-0.92
Snowfall (inches)		-78.91		-27.00
Precipitation (inches)		-125.05		-77.39
Darkness Before Midnight (hours)		-21.46		-11.61
Thanksgiving/Christmas (proportion of week)		-1,338.96		-714.44
Winter Holiday (proportion of week)		72.71		237.83
Other Out-of-School Days (proportion of week)		5.89		-32.74
Summer Vacation (proportion of week)		-40.41		4.57
Summer Holiday (proportion of week)		-414.94		-122.92
Observations	373	83	373	373
R <sup>2</sup>	0.84	0.63	0.84	0.90

4.3 Least Squares Updated Model (2) for b

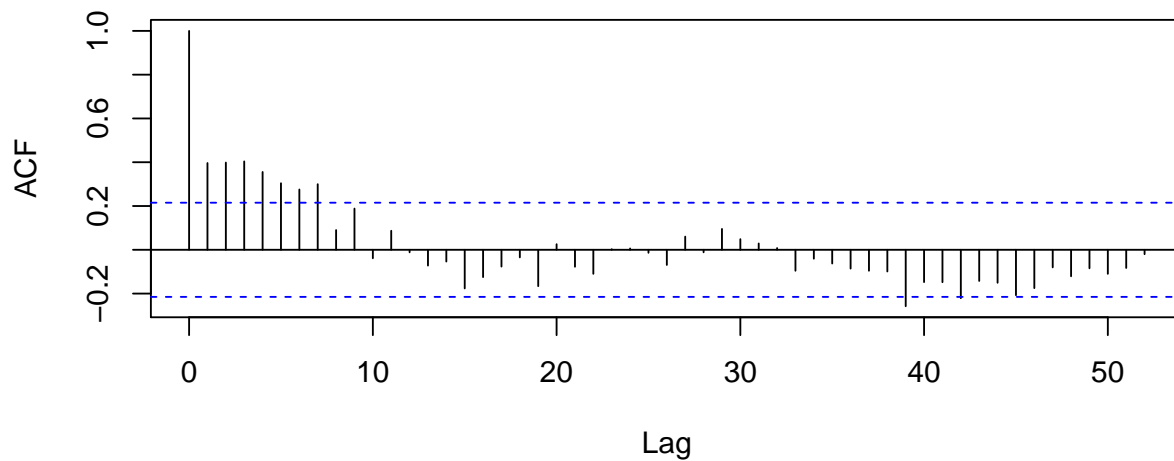


b

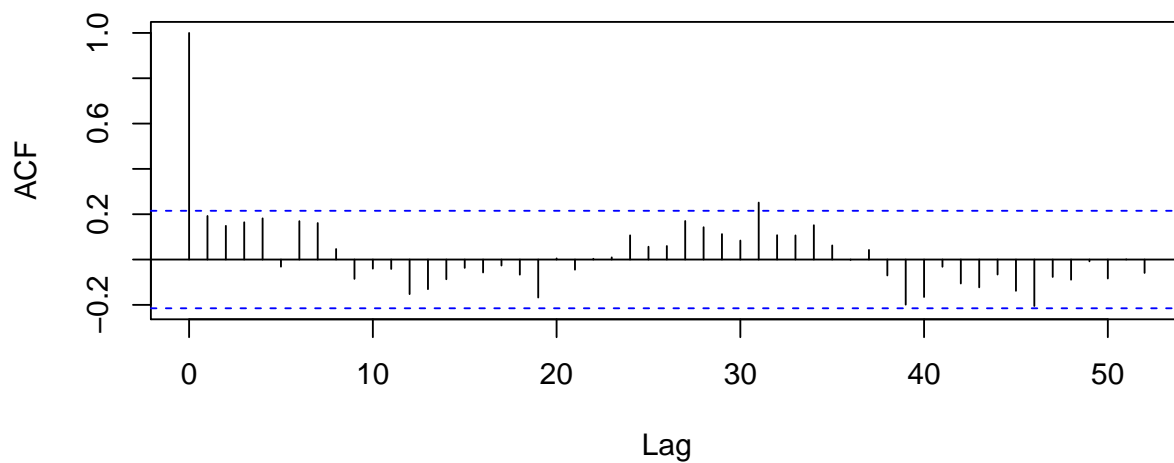




Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 4.4 A Poisson Regression Model as an Alternative to Model (2) for b

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.640  -1.205   0.061   1.248   2.828

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      6.587334   0.088086  74.783 < 2e-16 ***
tmax.f.spline1   0.003738   0.001543   2.423 0.015401 *
tmax.f.spline2  -0.019961   0.003437  -5.807 6.34e-09 ***
tmax.f.spline3   0.023107   0.004911   4.705 2.53e-06 ***
tmax.f.spline4  -0.002036   0.004498  -0.453 0.650816
tmax.f.spline5  -0.008174   0.003853  -2.122 0.033857 *
snow.in         -0.142333   0.017118  -8.315 < 2e-16 ***
precip.in       -0.196179   0.029114  -6.738 1.60e-11 ***
dark.before.12  -0.033083   0.006427  -5.148 2.64e-07 ***
thanks.xmas     -2.520600   0.278907  -9.037 < 2e-16 ***
summer.holiday -0.630657   0.143383  -4.398 1.09e-05 ***
winter.holiday  0.126126   0.158715   0.795 0.426803
summer.vacation -0.060463   0.017746  -3.407 0.000657 ***
oth.ns          0.021147   0.029873   0.708 0.479007
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 583.67  on 82  degrees of freedom
Residual deviance: 200.92  on 69  degrees of freedom
AIC: 919.21

Number of Fisher Scoring iterations: 3
```

## 5 Results for w

### 5.1 Summary Values for w

Table 5.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
w	83	126.530	15.761	96	115	126	134	171

Table 5.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
w	290	69.152	20.425	25	56	65	78	174

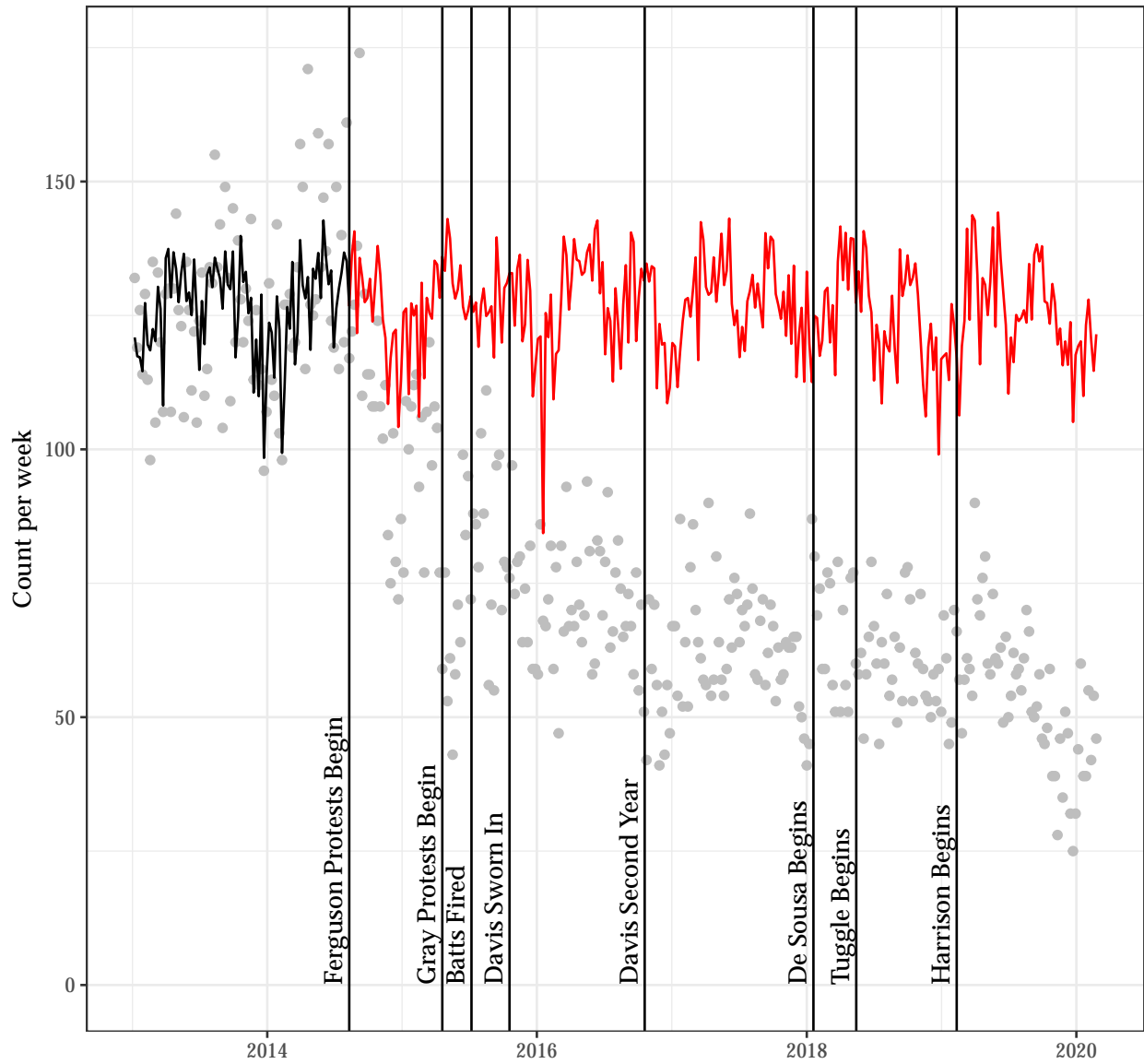
## 5.2 Four Models for $w$

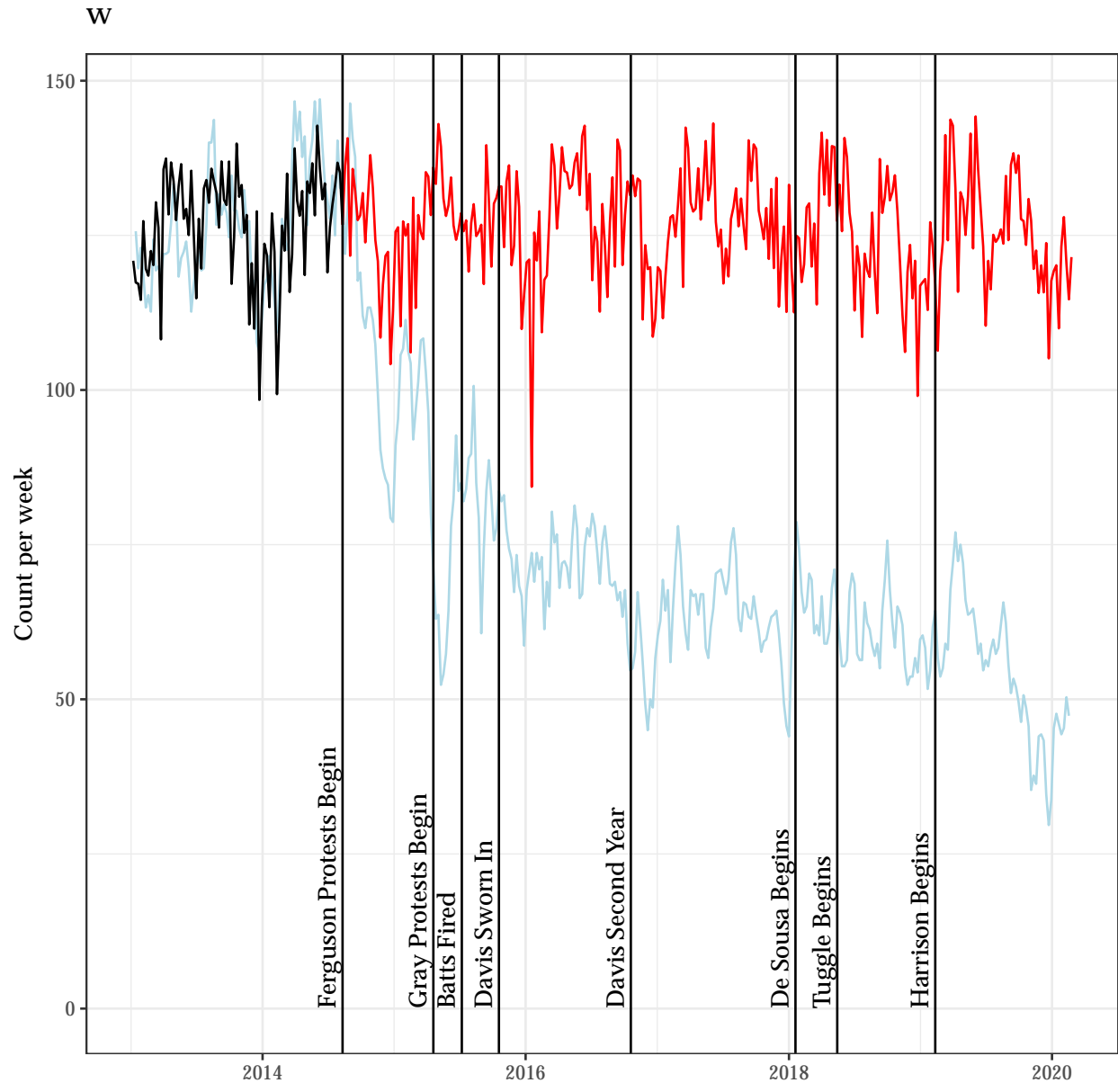
Table 5.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-20.53		-19.15	-17.65
After Gray Protests Begin (week of 4/20/15 onward)	-37.00		-43.41	-43.85
Unrest and National Guard (4/27/15 - 5/3/2015)	8.00		6.24	6.19
After Batts Fired (week of 7/13/15 onward)	13.79		18.56	14.97
After Davis Confirmed (week of 10/19/15 onward)	-10.77		-11.36	-8.17
After Davis First Year (week of 10/17/16 onward)	-9.59		-9.06	-9.06
After De Sousa Begins (week of 1/19/18 onward)	3.83		1.61	3.81
After Tuggle Begins (week of 5/14/18 onward)	-6.15		-0.04	-4.16
After Harrison Begins (week of 2/11/19 onward)	-6.03		-8.44	-7.78
Average Maximum Temperature to 50 Degrees		-0.64		0.08
Plus Degrees in the 50s		2.51		0.62
Plus Degrees in the 60s		-3.44		-0.88
Plus Degrees in the 70s		2.90		0.30
Plus Degrees Greater Than 80		-2.68		-0.75
Snowfall (inches)		-10.33		-3.48
Precipitation (inches)		-18.26		-13.49
Darkness Before Midnight (hours)		-2.52		-1.57
Thanksgiving/Christmas (proportion of week)		-47.62		-52.12
Winter Holiday (proportion of week)		-60.18		6.00
Other Out-of-School Days (proportion of week)		-11.03		-5.33
Summer Vacation (proportion of week)		-6.06		4.56
Summer Holiday (proportion of week)		-72.71		-25.42
Observations	373	83	373	373
R <sup>2</sup>	0.80	0.32	0.80	0.84

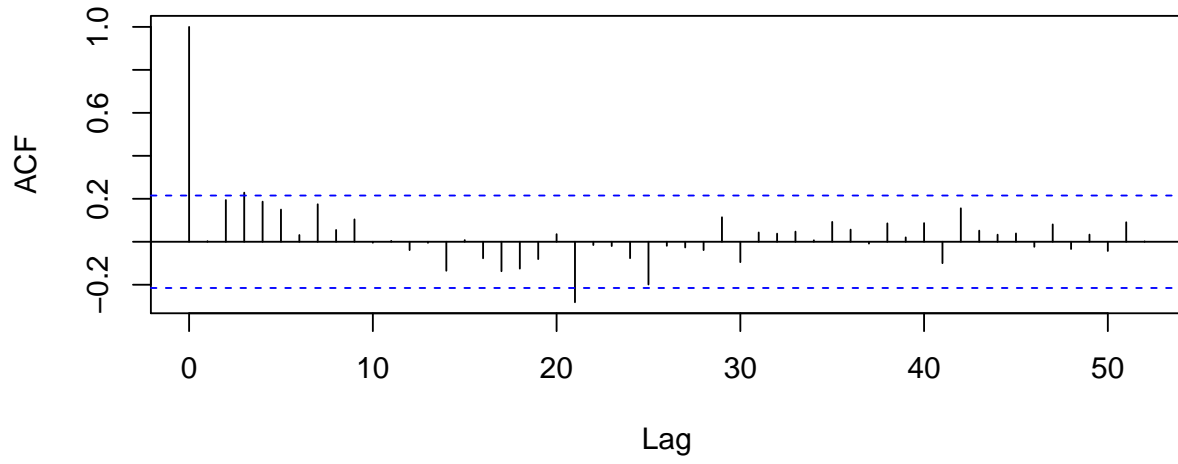
### 5.3 Least Squares Updated Model (2) for w

W

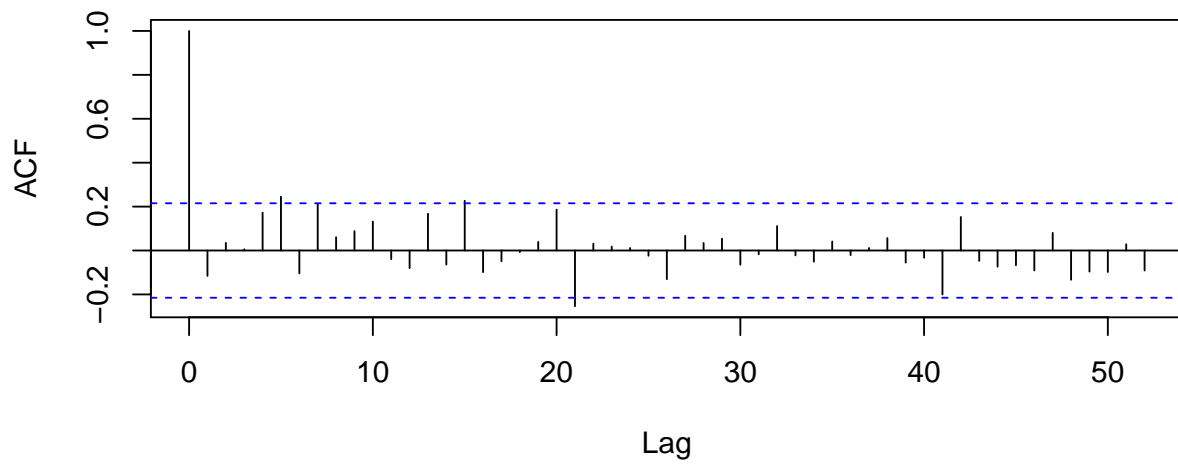




Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 5.4 A Poisson Regression Model as an Alternative to Model (2) for w

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.7296  -0.8185   0.0263   0.7154   3.2350

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)    5.193639   0.201904  25.723  <2e-16 ***
tmax.f.spline1 -0.005315   0.003583  -1.484   0.1379
tmax.f.spline2  0.019941   0.007860   2.537   0.0112 *
tmax.f.spline3 -0.026939   0.010891  -2.474   0.0134 *
tmax.f.spline4  0.022520   0.010083   2.233   0.0255 *
tmax.f.spline5 -0.020726   0.008797  -2.356   0.0185 *
snow.in        -0.091531   0.037435  -2.445   0.0145 *
precip.in      -0.144492   0.065085  -2.220   0.0264 *
dark.before.12 -0.020129   0.014626  -1.376   0.1687
thanks.xmas    -0.484660   0.591636  -0.819   0.4127
summer.holiday -0.569983   0.327015  -1.743   0.0813 .
winter.holiday -0.491918   0.377482  -1.303   0.1925
summer.vacation -0.046735   0.040206  -1.162   0.2451
oth.ns        -0.092157   0.069053  -1.335   0.1820
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 159.45  on 82  degrees of freedom
Residual deviance: 106.12  on 69  degrees of freedom
AIC: 687.91

Number of Fisher Scoring iterations: 4
```



## 6 Results for u

### 6.1 Summary Values for u

Table 6.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
u	83	15.940	5.285	5	13	15	18	32

Table 6.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
u	290	9.610	3.823	2	7	9	12	28

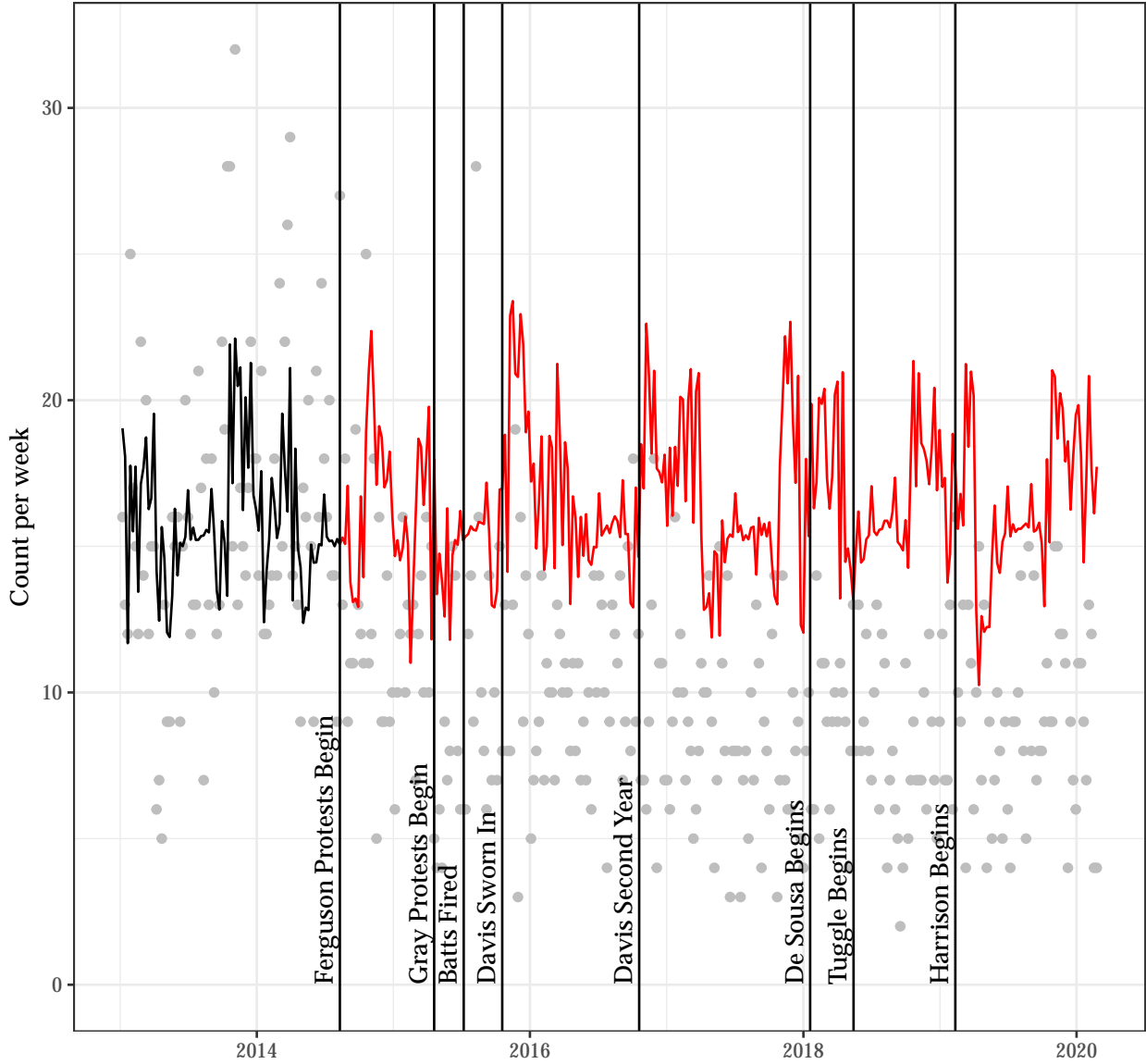
## 6.2 Four Models for $u$

Table 6.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

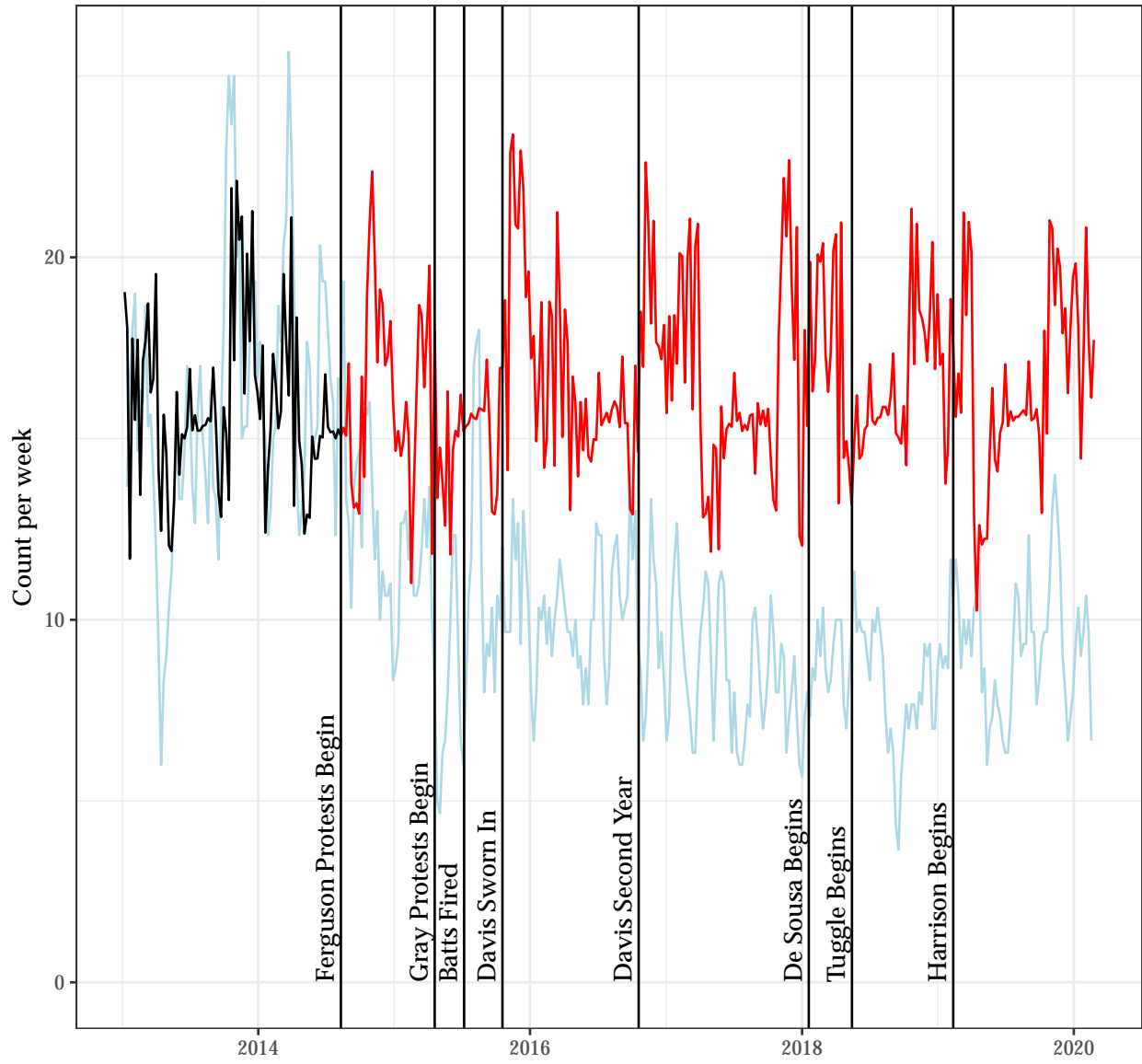
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-3.22		-3.56	-3.07
After Gray Protests Begin (week of 4/20/15 onward)	-4.72		-3.31	-4.61
Unrest and National Guard (4/27/15 - 5/3/2015)	-4.00		-2.49	-3.94
After Batts Fired (week of 7/13/15 onward)	3.57		3.16	3.45
After Davis Confirmed (week of 10/19/15 onward)	-1.30		-2.88	-1.63
After Davis First Year (week of 10/17/16 onward)	-1.60		-1.47	-1.63
After De Sousa Begins (week of 1/19/18 onward)	-0.04		-1.02	-0.23
After Tuggle Begins (week of 5/14/18 onward)	-0.37		0.81	0.08
After Harrison Begins (week of 2/11/19 onward)	1.00		1.01	0.82
Average Maximum Temperature to 50 Degrees		0.26		0.18
Plus Degrees in the 50s		0.20		-0.12
Plus Degrees in the 60s		-1.42		-0.25
Plus Degrees in the 70s		1.28		0.24
Plus Degrees Greater Than 80		-0.28		-0.14
Snowfall (inches)		1.17		0.90
Precipitation (inches)		0.13		-0.99
Darkness Before Midnight (hours)		0.76		0.18
Thanksgiving/Christmas (proportion of week)		-1.76		3.64
Winter Holiday (proportion of week)		-15.75		-5.76
Other Out-of-School Days (proportion of week)		-1.50		-0.42
Summer Vacation (proportion of week)		0.55		1.24
Summer Holiday (proportion of week)		11.11		-2.22
Observations	373	83	373	373
R <sup>2</sup>	0.35	0.20	0.36	0.38

6.3 Least Squares Updated Model (2) for u

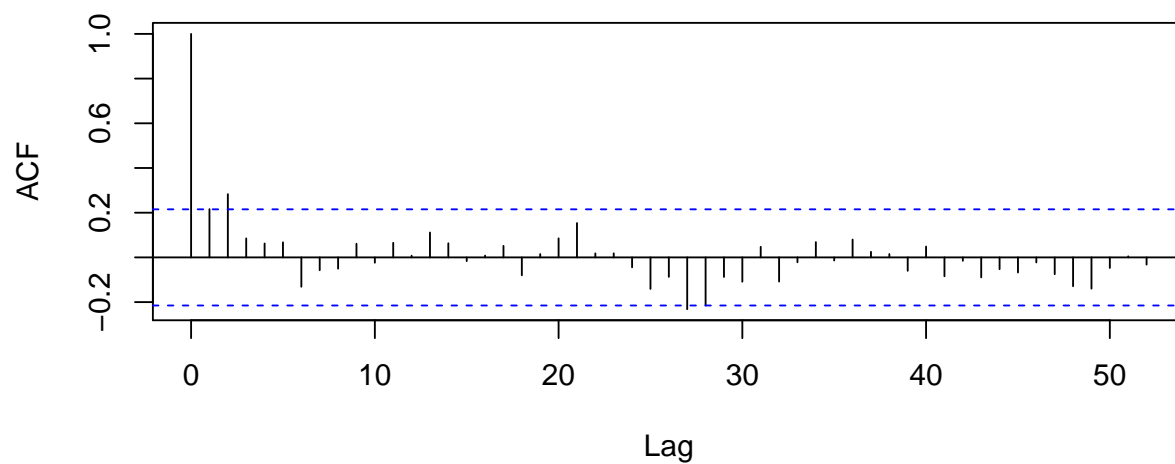
u



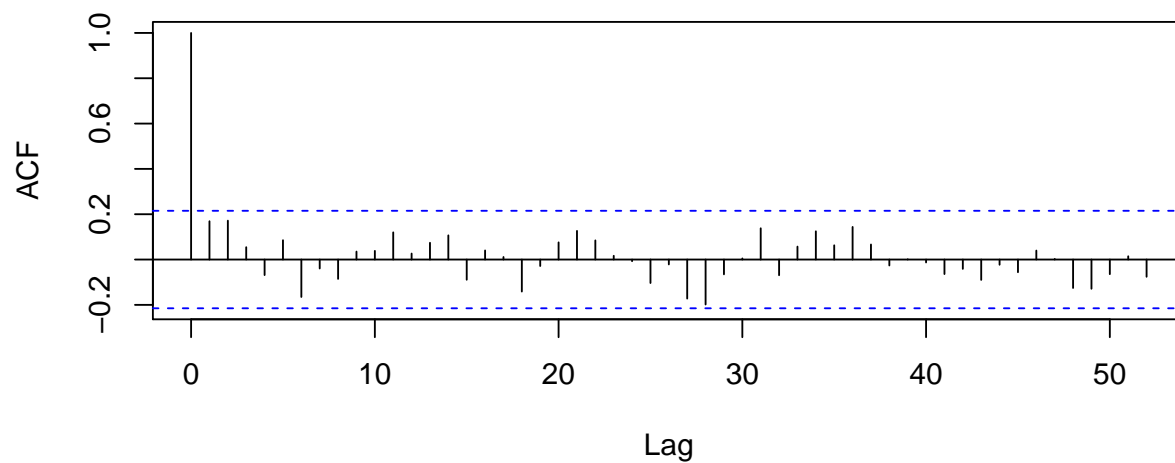
u



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 6.4 A Poisson Regression Model as an Alternative to Model (2) for u

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.0612  -0.7866  -0.2478   0.6548   3.5255

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      1.809101   0.555084   3.259  0.00112 **
tmax.f.spline1    0.016298   0.009891   1.648  0.09938 .
tmax.f.spline2    0.008796   0.020820   0.422  0.67268
tmax.f.spline3   -0.082267   0.029083  -2.829  0.00467 **
tmax.f.spline4    0.078342   0.029397   2.665  0.00770 **
tmax.f.spline5   -0.017407   0.025742  -0.676  0.49892
snow.in           0.072665   0.095430   0.761  0.44639
precip.in         0.022909   0.187358   0.122  0.90268
dark.before.12    0.043233   0.039380   1.098  0.27226
thanks.xmas      -0.096987   1.534540  -0.063  0.94960
summer.holiday   0.710821   0.912076   0.779  0.43578
winter.holiday  -1.069472   1.075102  -0.995  0.31985
summer.vacation  0.035079   0.118499   0.296  0.76721
oth.ns          -0.083584   0.181167  -0.461  0.64454
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 142.01  on 82  degrees of freedom
Residual deviance: 114.10  on 69  degrees of freedom
AIC: 520.75

Number of Fisher Scoring iterations: 4
```

## 7 Results for i

### 7.1 Summary Values for i

Table 7.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
i	83	1.759	1.303	0	1	2	2.5	6

Table 7.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
i	290	1.310	1.436	0	0	1	2	8

## 7.2 Four Models for i

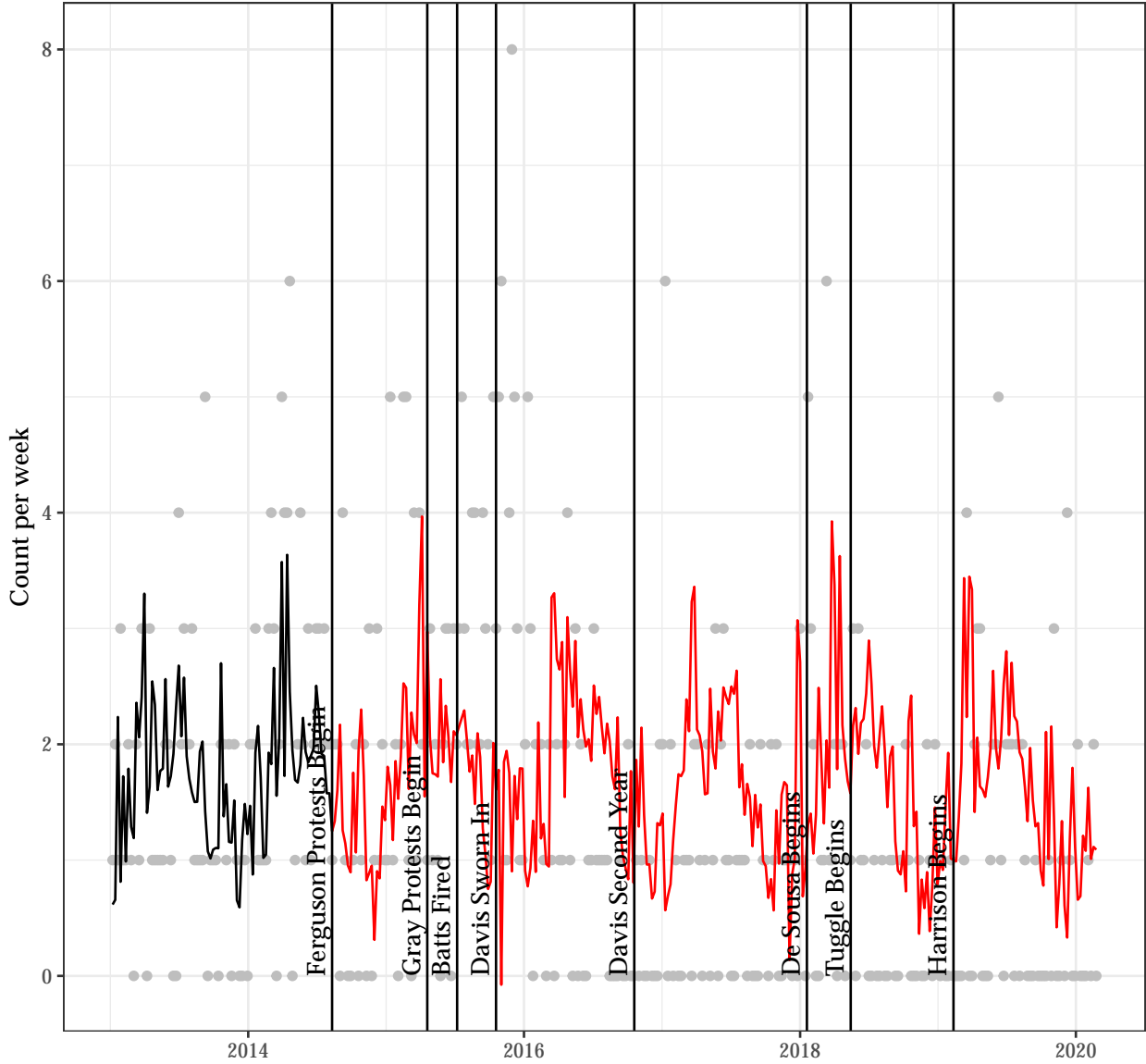
Table 7.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

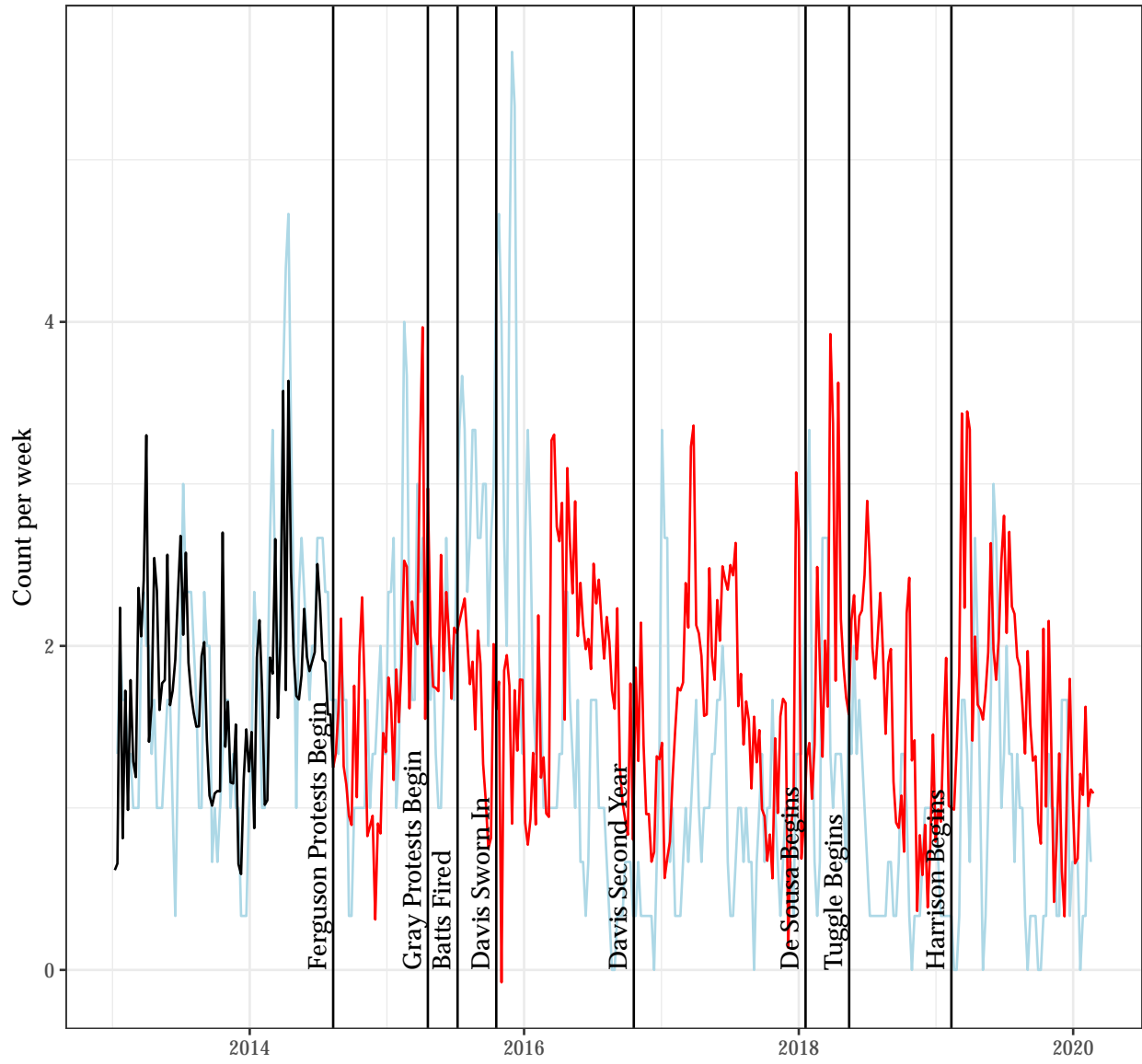
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-0.04		0.10	-0.09
After Gray Protests Begin (week of 4/20/15 onward)	-0.09		-0.54	0.04
Unrest and National Guard (4/27/15 - 5/3/2015)	1.36		1.38	1.09
After Batts Fired (week of 7/13/15 onward)	1.36		1.75	1.44
After Davis Confirmed (week of 10/19/15 onward)	-1.33		-1.45	-1.43
After Davis First Year (week of 10/17/16 onward)	-0.75		-0.52	-0.74
After De Sousa Begins (week of 1/19/18 onward)	0.76		0.29	0.63
After Tuggle Begins (week of 5/14/18 onward)	-0.94		-0.43	-0.68
After Harrison Begins (week of 2/11/19 onward)	0.18		0.09	0.08
Average Maximum Temperature to 50 Degrees		-0.09		-0.05
Plus Degrees in the 50s		0.25		0.06
Plus Degrees in the 60s		-0.39		-0.05
Plus Degrees in the 70s		0.23		0.01
Plus Degrees Greater Than 80		0.07		0.02
Snowfall (inches)		-0.42		-0.08
Precipitation (inches)		-0.36		-0.66
Darkness Before Midnight (hours)		-0.60		-0.16
Thanksgiving/Christmas (proportion of week)		3.33		-2.25
Winter Holiday (proportion of week)		0.27		-2.16
Other Out-of-School Days (proportion of week)		0.62		0.46
Summer Vacation (proportion of week)		-0.25		0.19
Summer Holiday (proportion of week)		2.60		-0.23
Observations	373	83	373	373
R <sup>2</sup>	0.14	0.22	0.10	0.16



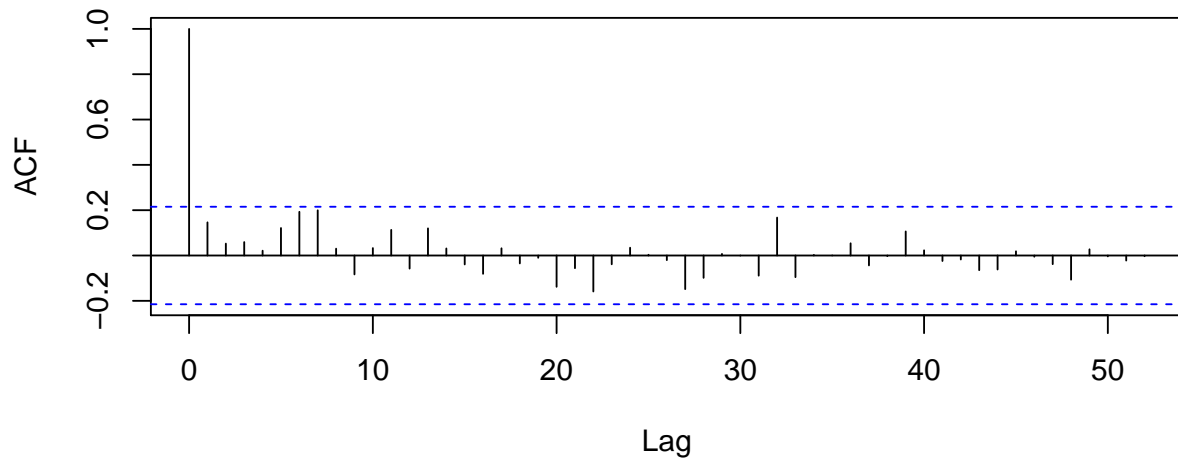
7.3 Least Squares Updated Model (2) for i

i

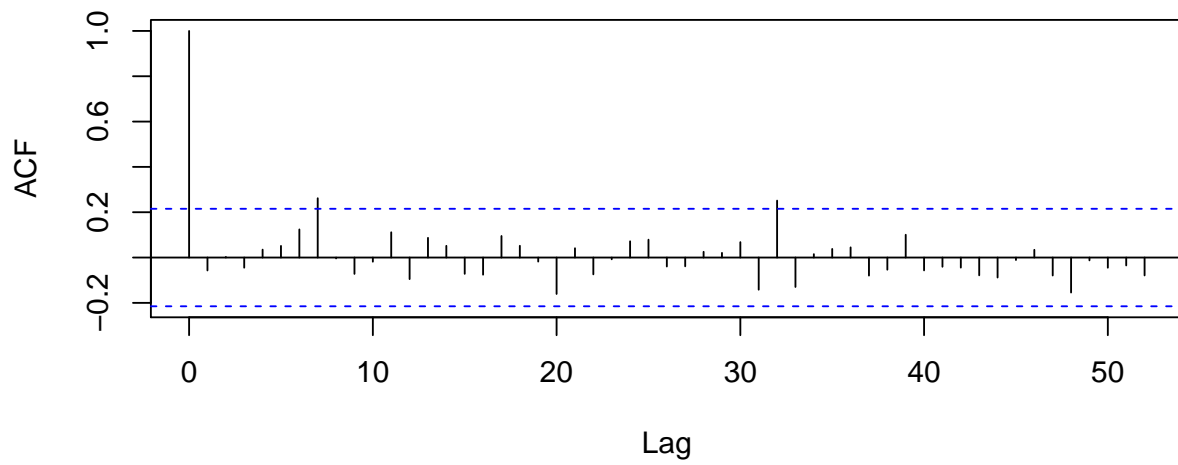




Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 7.4 A Poisson Regression Model as an Alternative to Model (2) for i

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.15653  -0.67419  -0.06811   0.38629   2.34201

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)    5.03486    1.83438   2.745  0.00606 **
tmax.f.spline1 -0.05504    0.03171  -1.736  0.08255 .
tmax.f.spline2  0.13147    0.06489   2.026  0.04276 *
tmax.f.spline3 -0.18481    0.08396  -2.201  0.02773 *
tmax.f.spline4  0.10785    0.08406   1.283  0.19948
tmax.f.spline5  0.03255    0.07102   0.458  0.64673
snow.in        -0.26398    0.34495  -0.765  0.44410
precip.in      -0.28757    0.57005  -0.504  0.61393
dark.before.12 -0.36121    0.13590  -2.658  0.00786 **
thanks.xmas     2.81712    4.93262   0.571  0.56792
summer.holiday  1.17722    2.43070   0.484  0.62817
winter.holiday  0.24025    3.24496   0.074  0.94098
summer.vacation -0.13468    0.34725  -0.388  0.69814
oth.ns         0.25076    0.50720   0.494  0.62102
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 88.146  on 82  degrees of freedom
Residual deviance: 70.964  on 69  degrees of freedom
AIC: 277.69

Number of Fisher Scoring iterations: 5
```

## 8 Results for murder.g

### 8.1 Summary Values for murder.g

Table 8.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
murder.g	83	6.506	2.864	1	4	6	8	15

Table 8.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
murder.g	290	5.821	2.533	0	4	6	7	13

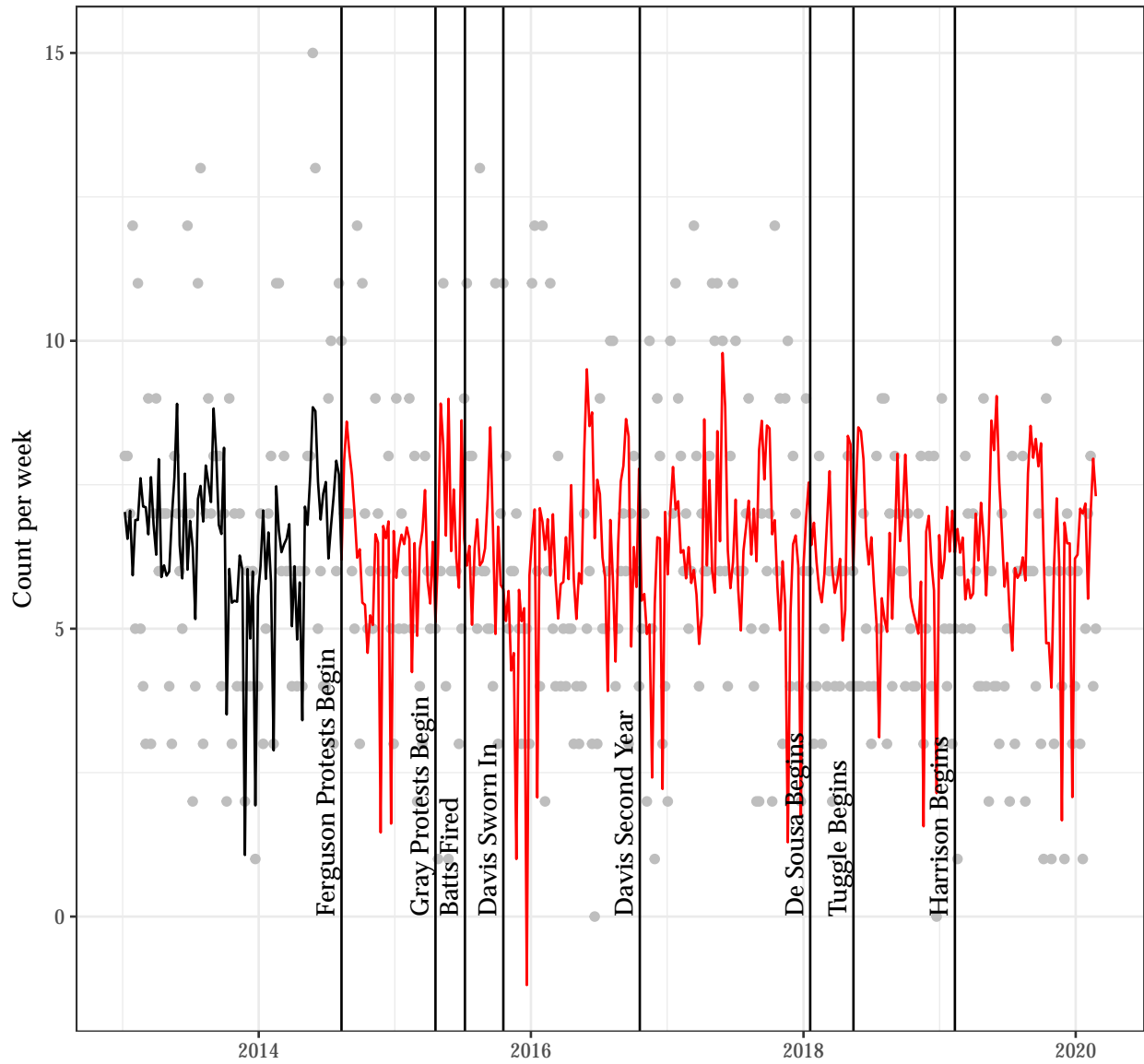
## 8.2 Four Models for murder.g

Table 8.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

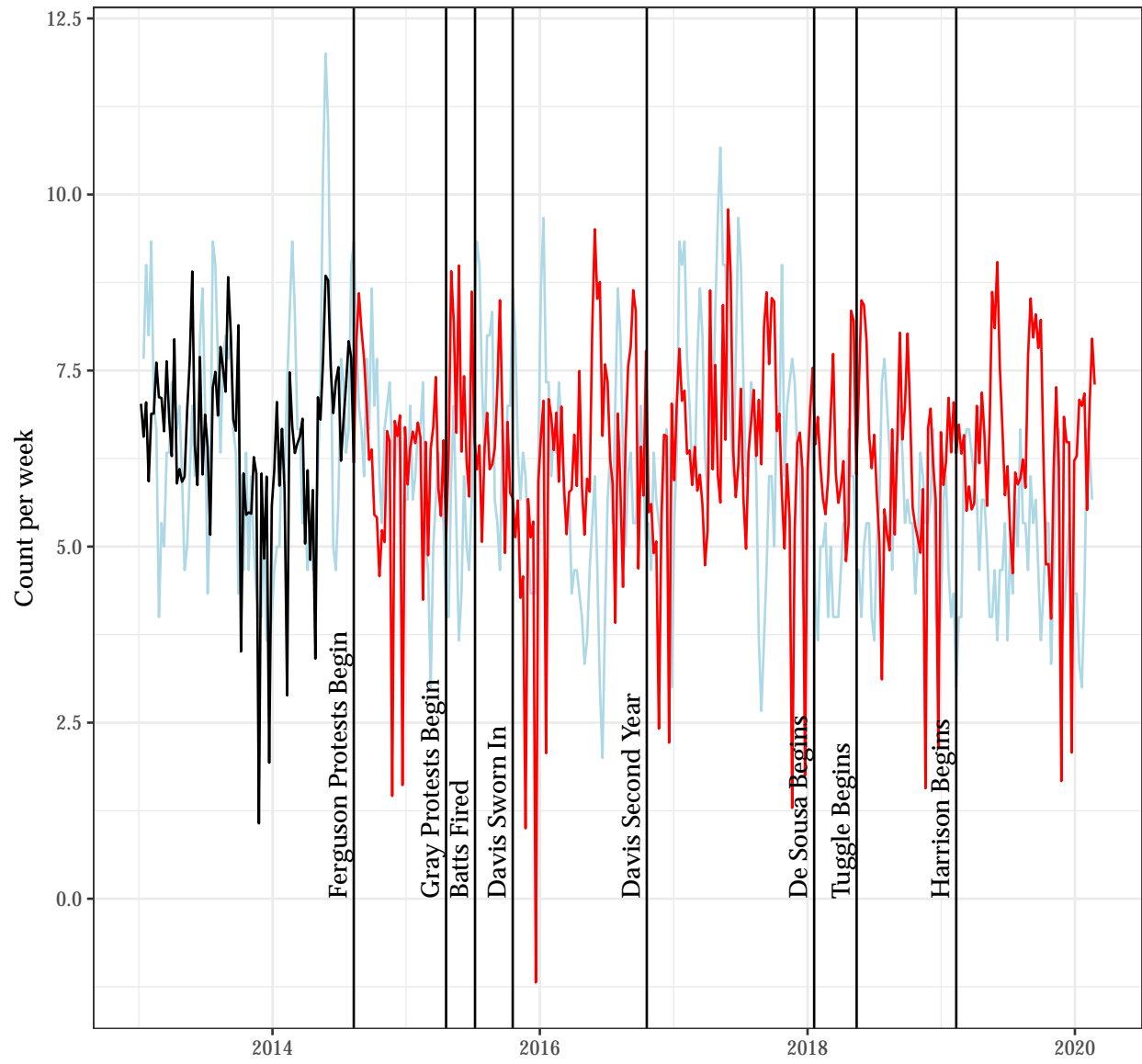
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-0.14		0.26	0.09
After Gray Protests Begin (week of 4/20/15 onward)	-0.72		-1.78	-1.13
Unrest and National Guard (4/27/15 - 5/3/2015)	-4.64		-3.80	-4.76
After Batts Fired (week of 7/13/15 onward)	1.36		2.12	1.37
After Davis Confirmed (week of 10/19/15 onward)	-1.17		-0.81	-0.89
After Davis First Year (week of 10/17/16 onward)	0.78		0.52	0.76
After De Sousa Begins (week of 1/19/18 onward)	-1.79		-1.85	-1.89
After Tuggle Begins (week of 5/14/18 onward)	0.55		0.82	0.65
After Harrison Begins (week of 2/11/19 onward)	-0.40		-0.72	-0.53
Average Maximum Temperature to 50 Degrees		0.05		0.06
Plus Degrees in the 50s		-0.29		-0.16
Plus Degrees in the 60s		0.33		0.14
Plus Degrees in the 70s		0.17		-0.04
Plus Degrees Greater Than 80		-0.47		-0.0002
Snowfall (inches)		-1.18		-0.26
Precipitation (inches)		-3.22		-1.31
Darkness Before Midnight (hours)		-0.25		-0.10
Thanksgiving/Christmas (proportion of week)		-34.06		-9.43
Winter Holiday (proportion of week)		4.09		-3.75
Other Out-of-School Days (proportion of week)		0.26		-2.02
Summer Vacation (proportion of week)		-0.89		0.16
Summer Holiday (proportion of week)		5.92		0.25
Observations	373	83	373	373
R <sup>2</sup>	0.07	0.23	0.07	0.14

### 8.3 Least Squares Updated Model (2) for murder.g

murder.g

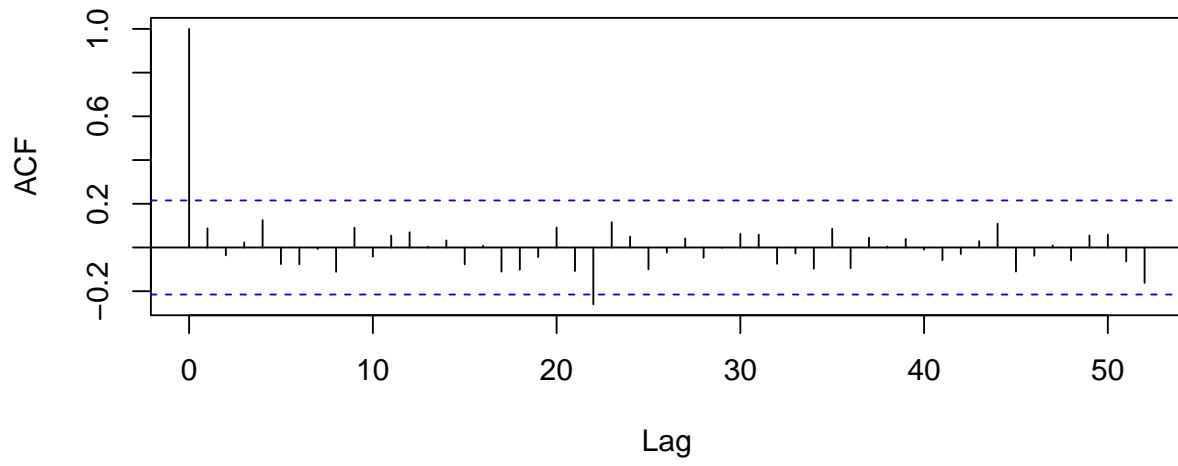


# murder.g

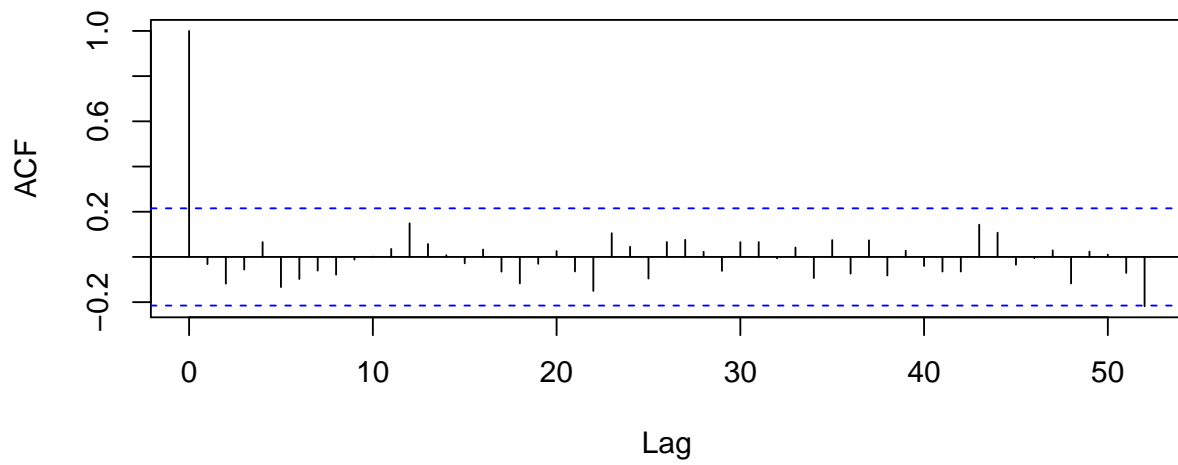




Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 8.4 A Poisson Regression Model as an Alternative to Model (2) for murder.g

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.01858  -0.67991  -0.05361   0.50505   2.24277

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      1.916112   0.893762   2.144  0.0320 *
tmax.f.spline1    0.007755   0.015493   0.501  0.6167
tmax.f.spline2   -0.050630   0.035567  -1.423  0.1546
tmax.f.spline3    0.058766   0.051949   1.131  0.2580
tmax.f.spline4    0.021349   0.046310   0.461  0.6448
tmax.f.spline5   -0.070029   0.039054  -1.793  0.0730 .
snow.in          -0.243270   0.188561  -1.290  0.1970
precip.in        -0.570987   0.317241  -1.800  0.0719 .
dark.before.12   -0.040788   0.065696  -0.621  0.5347
thanks.xmas     -10.310875   4.380014  -2.354  0.0186 *
summer.holiday   0.738081   1.310913   0.563  0.5734
winter.holiday   0.625080   1.545799   0.404  0.6859
summer.vacation  -0.118736   0.168152  -0.706  0.4801
oth.ns           0.091355   0.320463   0.285  0.7756
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 103.981  on 82  degrees of freedom
Residual deviance:  76.462  on 69  degrees of freedom
AIC: 406.22

Number of Fisher Scoring iterations: 4
```

## 9 Results for arson

### 9.1 Summary Values for arson

Table 9.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
arson	83	1.241	1.043	0	0.5	1	2	5

Table 9.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
arson	290	1.072	1.081	0	0	1	2	5

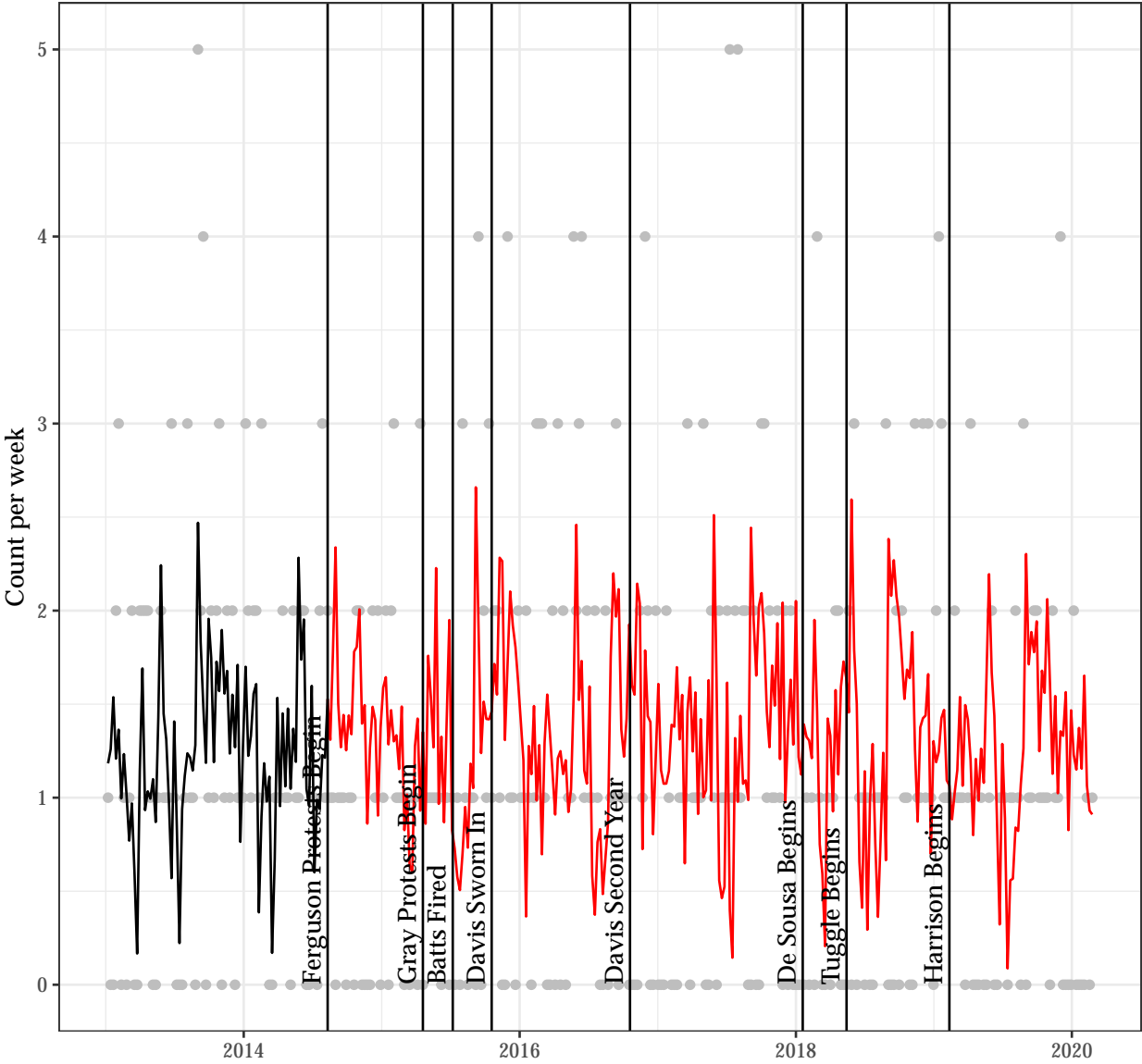
## 9.2 Four Models for arson

Table 9.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

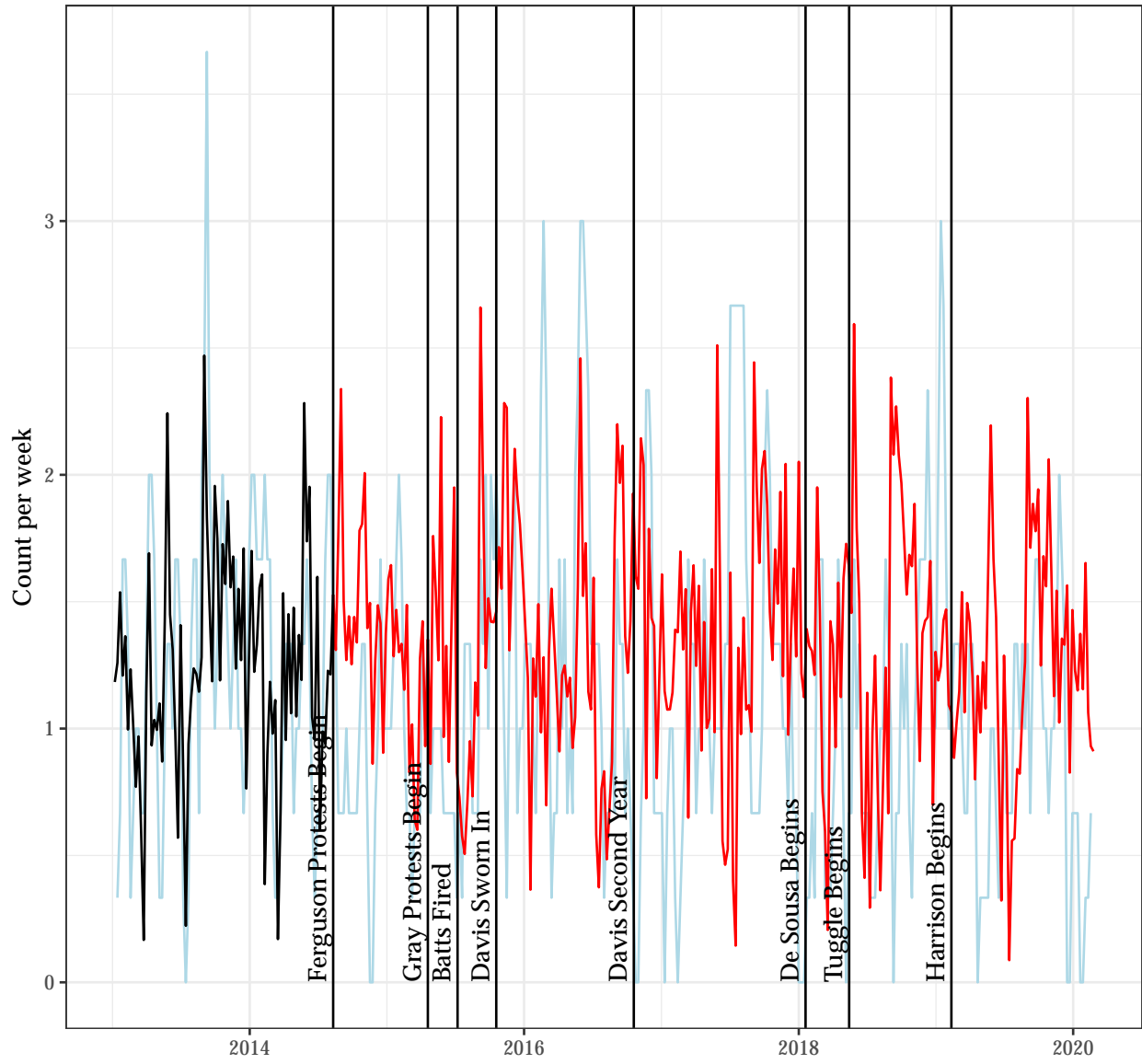
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-0.27		-0.39	-0.27
After Gray Protests Begin (week of 4/20/15 onward)	-0.24		-0.29	-0.26
Unrest and National Guard (4/27/15 - 5/3/2015)	0.27		0.82	0.39
After Batts Fired (week of 7/13/15 onward)	0.49		0.71	0.46
After Davis Confirmed (week of 10/19/15 onward)	0.13		-0.03	0.19
After Davis First Year (week of 10/17/16 onward)	-0.22		-0.25	-0.26
After De Sousa Begins (week of 1/19/18 onward)	-0.31		-0.17	-0.24
After Tuggle Begins (week of 5/14/18 onward)	0.34		0.22	0.28
After Harrison Begins (week of 2/11/19 onward)	-0.28		-0.17	-0.26
Average Maximum Temperature to 50 Degrees		-0.04		0.0002
Plus Degrees in the 50s		0.15		-0.01
Plus Degrees in the 60s		-0.17		0.02
Plus Degrees in the 70s		0.17		0.03
Plus Degrees Greater Than 80		-0.18		-0.07
Snowfall (inches)		-0.48		0.01
Precipitation (inches)		0.64		-0.11
Darkness Before Midnight (hours)		0.26		0.10
Thanksgiving/Christmas (proportion of week)		-3.01		-3.35
Winter Holiday (proportion of week)		-0.07		-1.53
Other Out-of-School Days (proportion of week)		-0.12		-0.25
Summer Vacation (proportion of week)		-0.53		-0.06
Summer Holiday (proportion of week)		5.84		-1.80
Observations	373	83	373	373
R <sup>2</sup>	0.03	0.18	0.03	0.05

9.3 Least Squares Updated Model (2) for arson

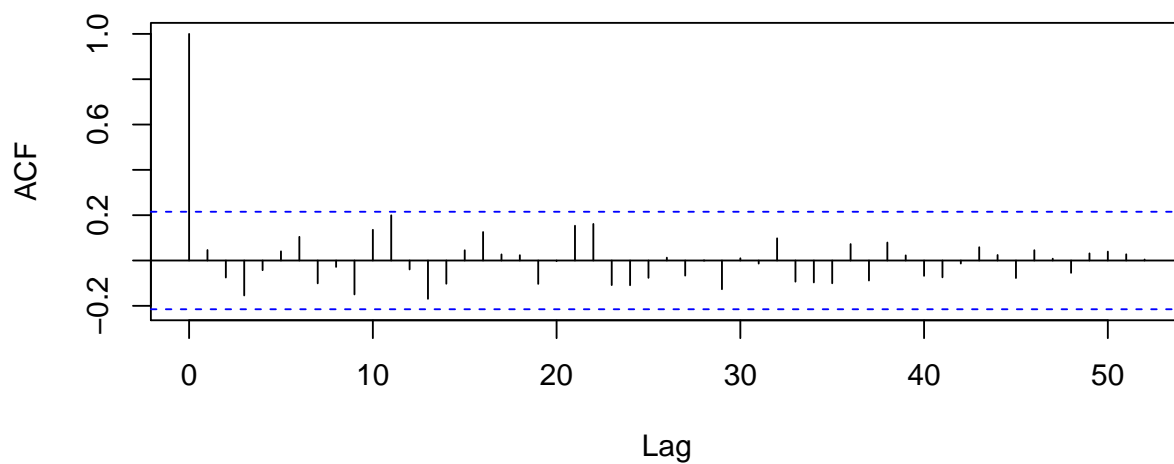
arson



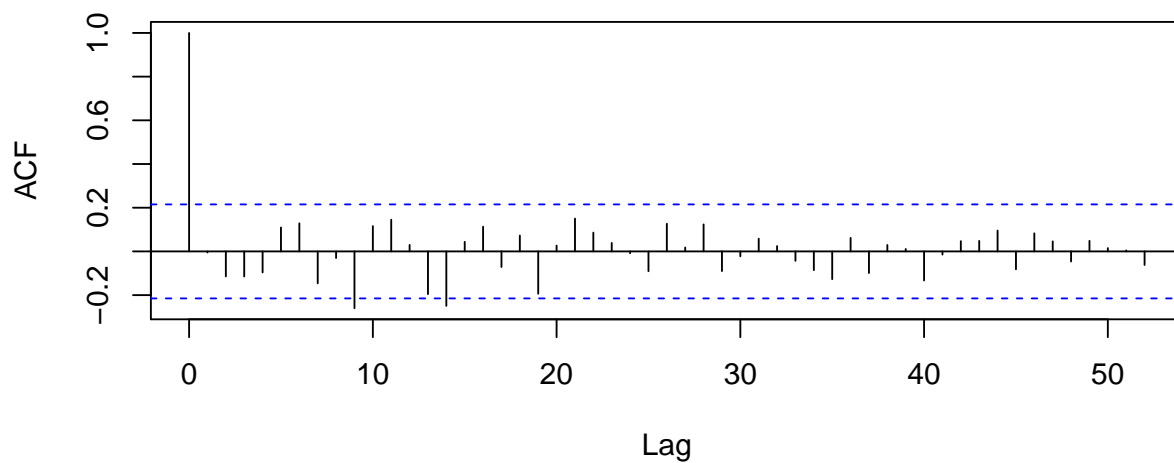
arson



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 9.4 A Poisson Regression Model as an Alternative to Model (2) for arson

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-2.0455	-0.8778	-0.1206	0.3496	2.1382

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	0.43286	1.96650	0.220	0.826
tmax.f.spline1	-0.04117	0.03629	-1.134	0.257
tmax.f.spline2	0.13765	0.08438	1.631	0.103
tmax.f.spline3	-0.14624	0.11035	-1.325	0.185
tmax.f.spline4	0.13283	0.10120	1.313	0.189
tmax.f.spline5	-0.16114	0.09937	-1.622	0.105
snow.in	-0.56690	0.48563	-1.167	0.243
precip.in	0.53681	0.60730	0.884	0.377
dark.before.12	0.23361	0.15036	1.554	0.120
thanks.xmas	-2.20432	5.95841	-0.370	0.711
summer.holiday	4.23907	2.85765	1.483	0.138
winter.holiday	0.17378	3.74287	0.046	0.963
summer.vacation	-0.30321	0.38816	-0.781	0.435
oth.ns	-0.21680	0.81199	-0.267	0.789

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 84.305 on 82 degrees of freedom  
Residual deviance: 71.230 on 69 degrees of freedom  
AIC: 245.19

Number of Fisher Scoring iterations: 5



## 10 Results for robbery

### 10.1 Summary Values for robbery

Table 10.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
robbery	83	24.771	12.796	5	14.5	21	38	55

Table 10.2: Descriptives for Outcome After Ferguson Protests Begin

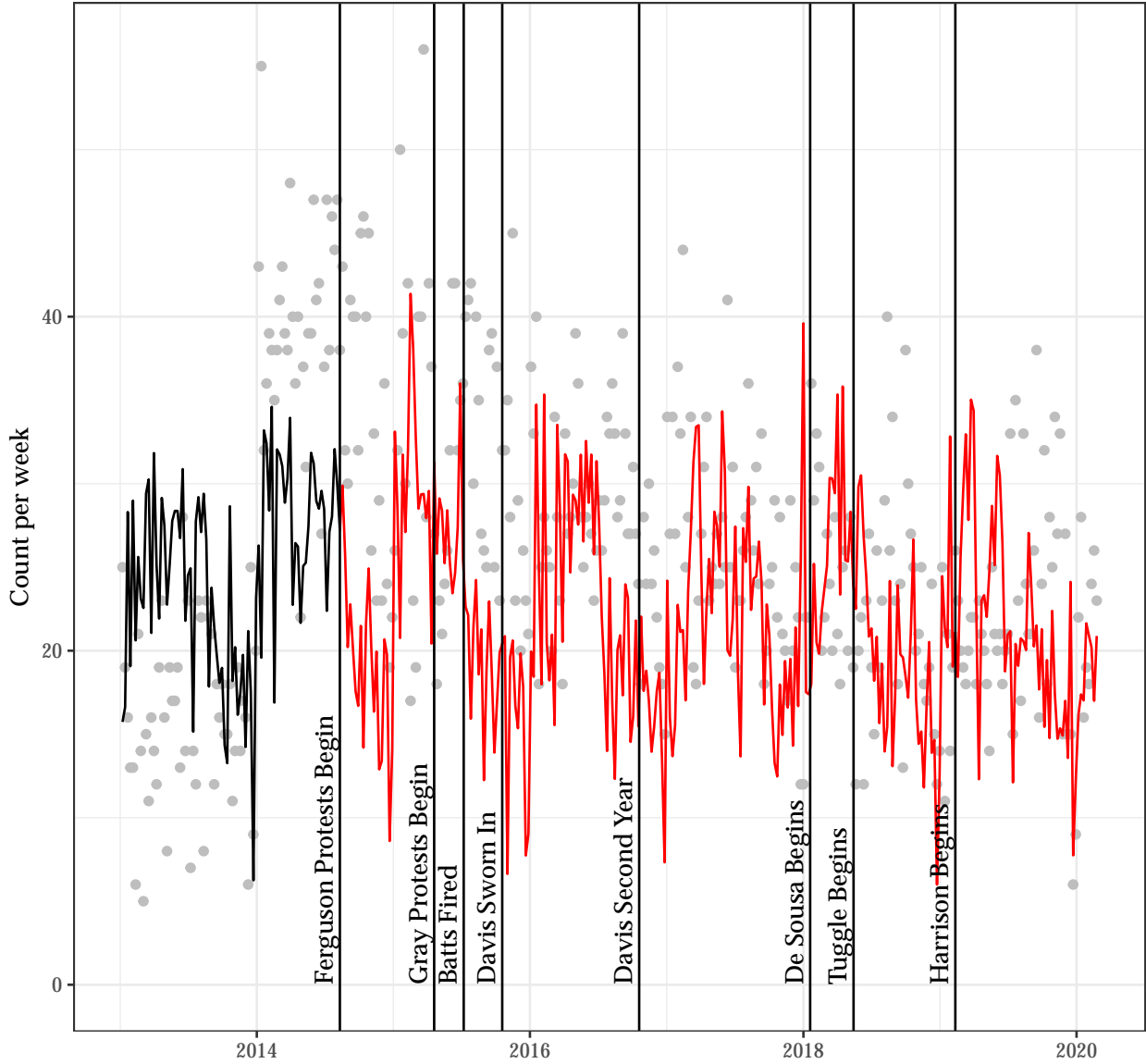
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
robbery	290	26.583	7.980	6	21	26	32	56

## 10.2 Four Models for robbery

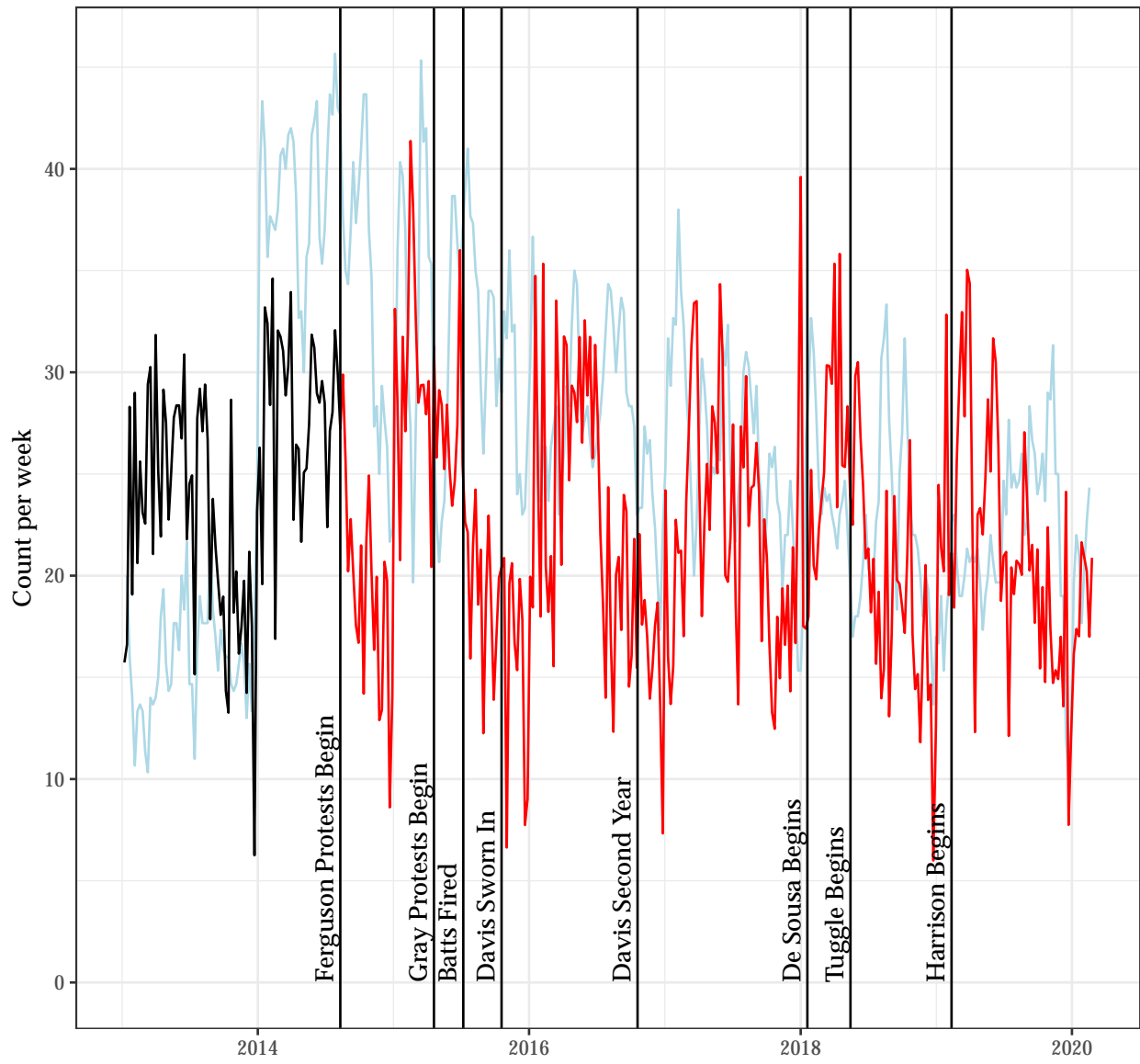
Table 10.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	9.34		10.25	10.64
After Gray Protests Begin (week of 4/20/15 onward)	-3.20		-7.04	-5.55
Unrest and National Guard (4/27/15 - 5/3/2015)	-12.91		-11.02	-13.03
After Batts Fired (week of 7/13/15 onward)	2.52		10.95	3.20
After Davis Confirmed (week of 10/19/15 onward)	-4.39		-7.43	-3.64
After Davis First Year (week of 10/17/16 onward)	-3.55		-2.56	-3.14
After De Sousa Begins (week of 1/19/18 onward)	0.02		-4.82	-0.79
After Tuggle Begins (week of 5/14/18 onward)	-3.99		2.54	-2.85
After Harrison Begins (week of 2/11/19 onward)	0.60		-0.89	0.01
Average Maximum Temperature to 50 Degrees		-1.04		0.12
Plus Degrees in the 50s		1.76		-0.02
Plus Degrees in the 60s		-2.35		-0.25
Plus Degrees in the 70s		2.30		0.14
Plus Degrees Greater Than 80		-2.03		-0.26
Snowfall (inches)		0.60		1.74
Precipitation (inches)		-6.36		-3.36
Darkness Before Midnight (hours)		-5.56		-0.77
Thanksgiving/Christmas (proportion of week)		3.33		-35.87
Winter Holiday (proportion of week)		-22.51		8.02
Other Out-of-School Days (proportion of week)		-8.27		-5.68
Summer Vacation (proportion of week)		1.42		3.61
Summer Holiday (proportion of week)		19.75		-6.40
Observations	373	83	373	373
R <sup>2</sup>	0.18	0.20	0.14	0.25

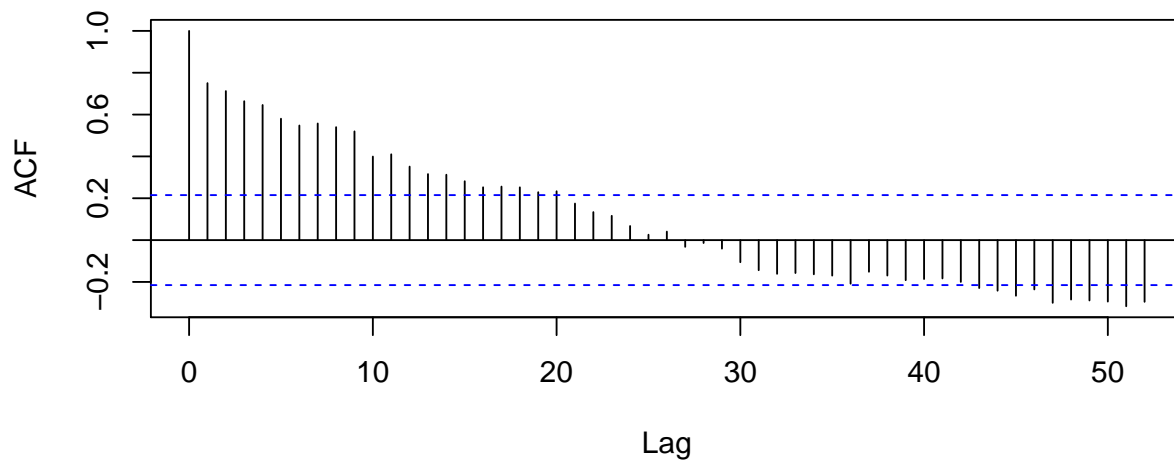
10.3 Least Squares Updated Model (2) for robbery  
robbery



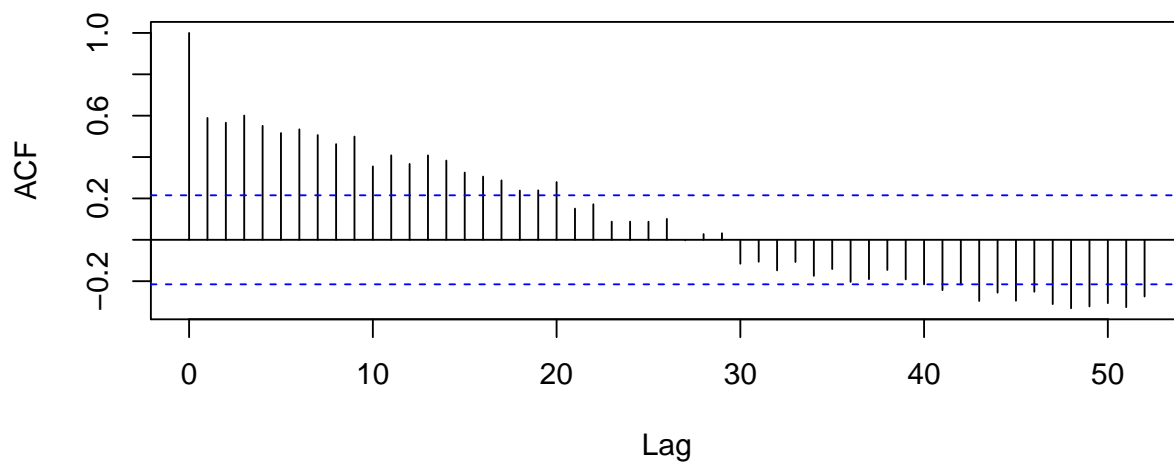
# robbery



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 10.4 A Poisson Regression Model as an Alternative to Model (2) for robbery

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-4.6788 -1.8462 -0.3553  1.7688  6.6251

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      6.737005   0.465655  14.468 < 2e-16 ***
tmax.f.spline1  -0.045157   0.007995  -5.648 1.62e-08 ***
tmax.f.spline2   0.074394   0.017641   4.217 2.47e-05 ***
tmax.f.spline3  -0.097372   0.024623  -3.955 7.67e-05 ***
tmax.f.spline4   0.095707   0.023626   4.051 5.10e-05 ***
tmax.f.spline5  -0.084418   0.020775  -4.064 4.83e-05 ***
snow.in          0.004771   0.069035   0.069  0.9449
precip.in       -0.255149   0.151163  -1.688  0.0914 .
dark.before.12  -0.244303   0.034849  -7.010 2.38e-12 ***
thanks.xmas     -0.791006   1.544141  -0.512  0.6085
summer.holiday  0.821021   0.715890   1.147  0.2514
winter.holiday -0.978125   0.821085  -1.191  0.2336
summer.vacation 0.053911   0.092224   0.585  0.5588
oth.ns         -0.405470   0.164358  -2.467  0.0136 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 543.46  on 82  degrees of freedom
Residual deviance: 428.71  on 69  degrees of freedom
AIC: 864.29

Number of Fisher Scoring iterations: 5
```

# 11 Results for aggravated.assault

## 11.1 Summary Values for aggravated.assault

Table 11.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
aggravated.assault	83	25.422	7.566	7	20	25	30.5	46

Table 11.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
aggravated.assault	290	21.014	5.582	7	17	21	24.8	40

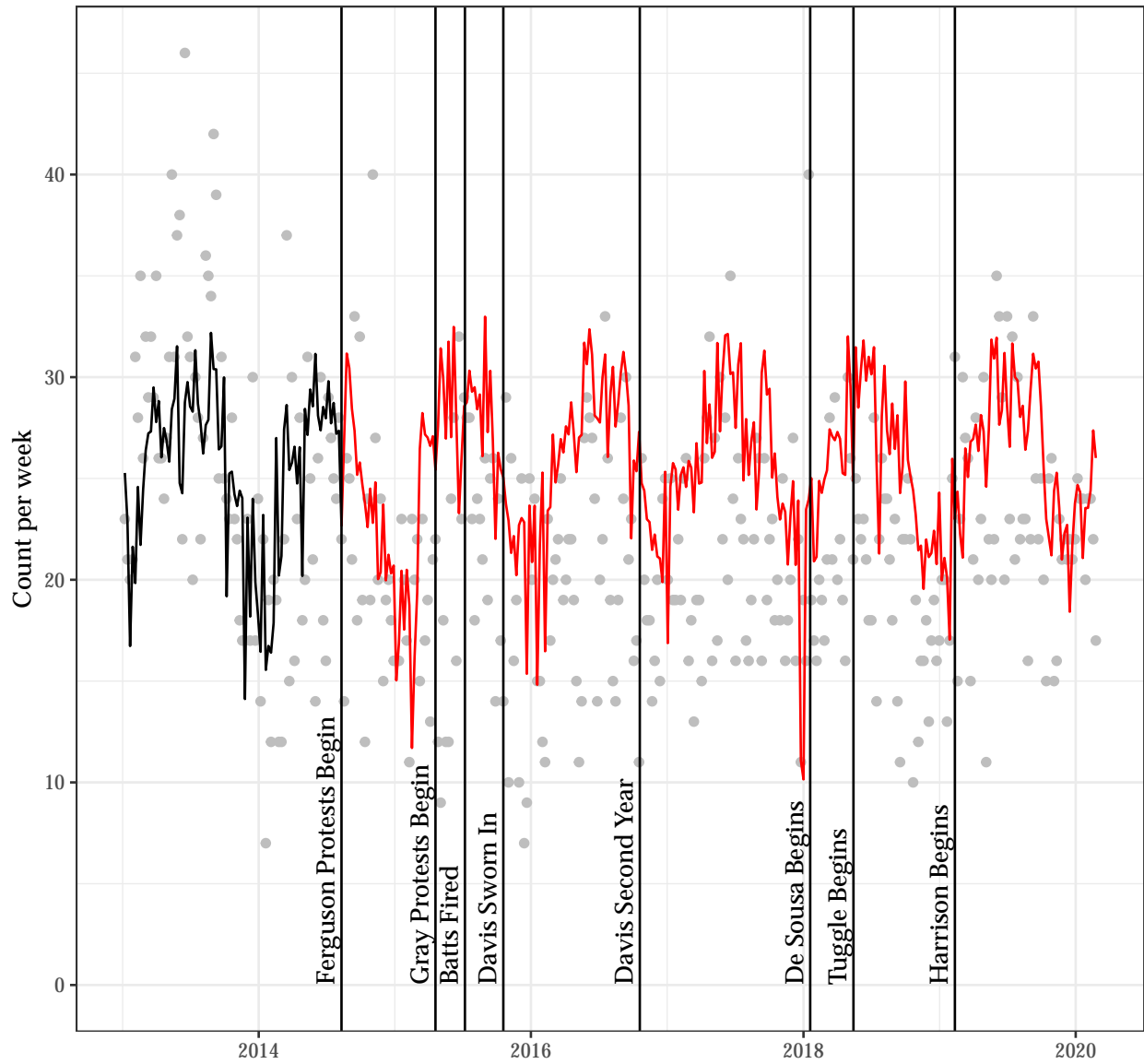
## 11.2 Four Models for aggravated.assault

Table 11.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

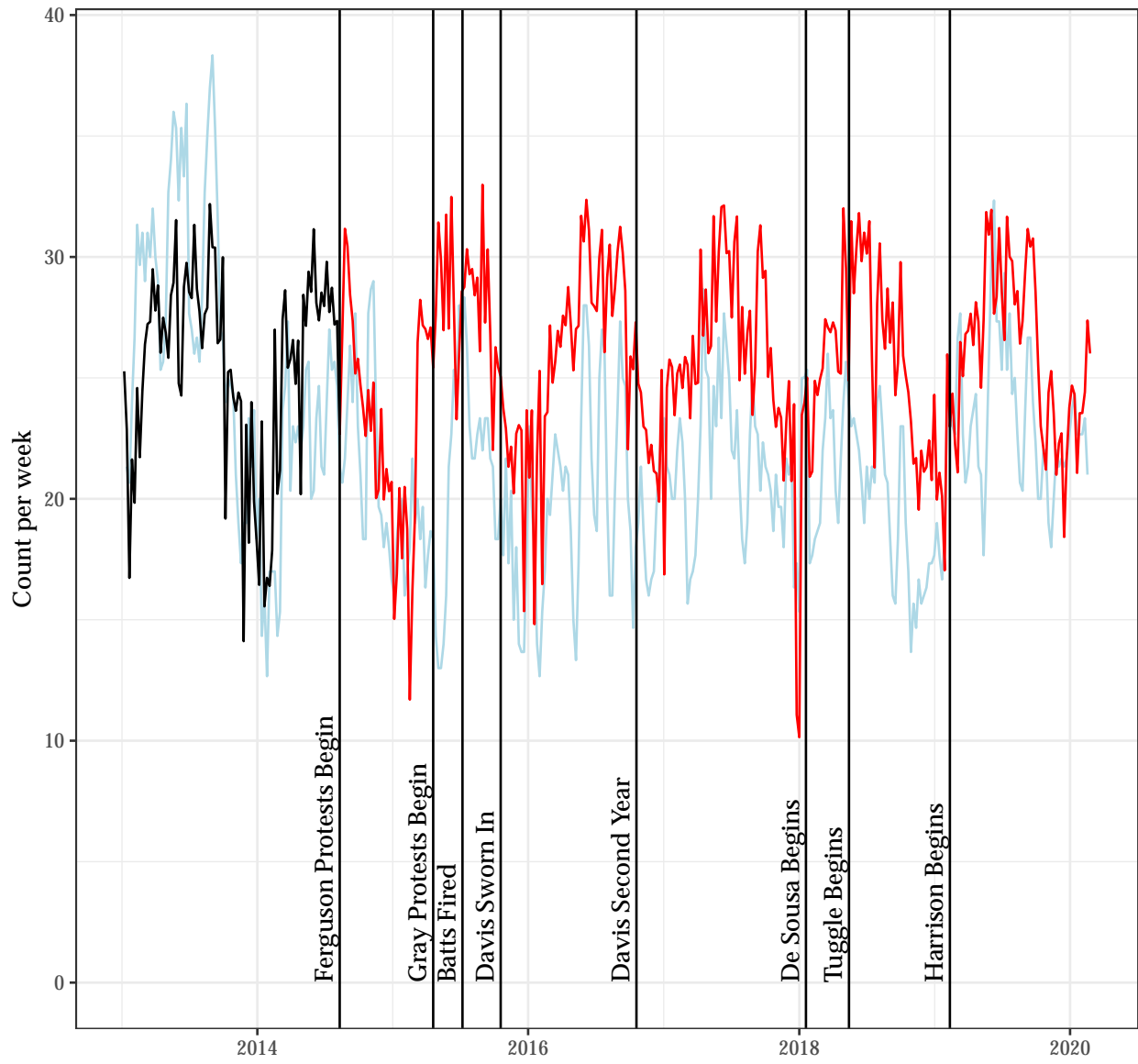
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-4.87		-2.40	-3.28
After Gray Protests Begin (week of 4/20/15 onward)	-0.10		-5.39	-3.49
Unrest and National Guard (4/27/15 - 5/3/2015)	-8.45		-7.79	-7.55
After Batts Fired (week of 7/13/15 onward)	2.12		2.32	2.09
After Davis Confirmed (week of 10/19/15 onward)	-2.71		-0.43	-1.06
After Davis First Year (week of 10/17/16 onward)	1.24		1.76	1.61
After De Sousa Begins (week of 1/19/18 onward)	0.14		-0.49	-0.15
After Tuggle Begins (week of 5/14/18 onward)	-1.89		-1.36	-1.91
After Harrison Begins (week of 2/11/19 onward)	3.91		3.16	3.61
Average Maximum Temperature to 50 Degrees		0.63		0.36
Plus Degrees in the 50s		-0.88		-0.52
Plus Degrees in the 60s		0.24		0.17
Plus Degrees in the 70s		0.37		0.26
Plus Degrees Greater Than 80		-0.07		-0.02
Snowfall (inches)		0.98		0.87
Precipitation (inches)		-8.42		-4.48
Darkness Before Midnight (hours)		-1.52		-0.92
Thanksgiving/Christmas (proportion of week)		-24.32		-13.71
Winter Holiday (proportion of week)		4.07		13.24
Other Out-of-School Days (proportion of week)		0.48		-0.12
Summer Vacation (proportion of week)		-3.72		-2.40
Summer Holiday (proportion of week)		-8.40		-7.09
Observations	373	83	373	373
R <sup>2</sup>	0.12	0.30	0.15	0.27



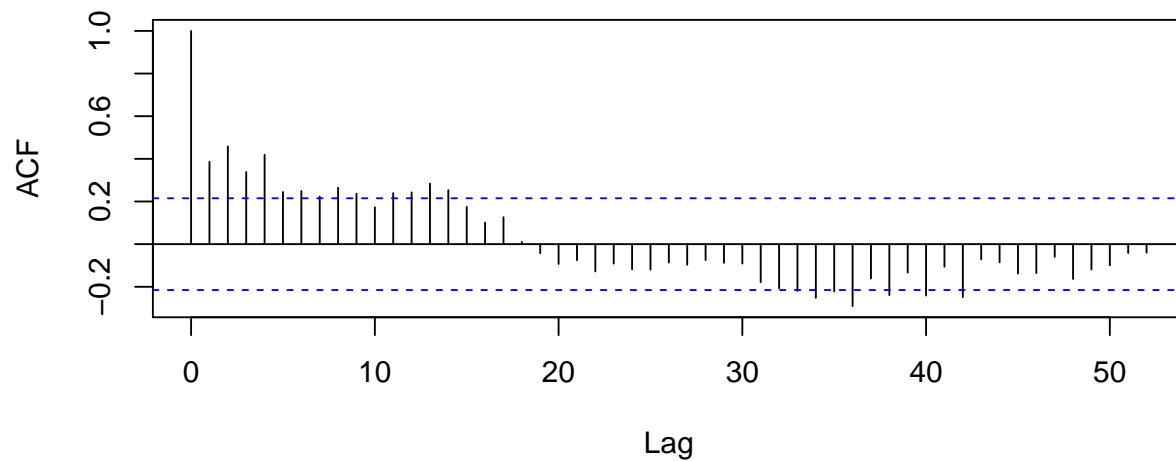
### 11.3 Least Squares Updated Model (2) for aggravated.assault aggravated.assault



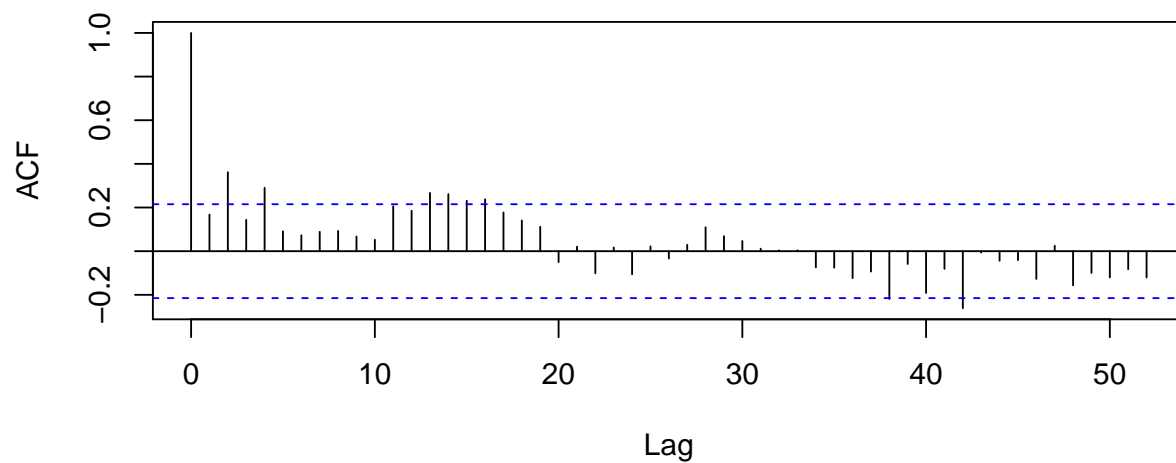
# aggravated.assault



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 11.4 A Poisson Regression Model as an Alternative to Model (2) for aggravated.assault

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.4981  -0.7067  -0.1221   0.7601   2.9145

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      2.208635   0.482431   4.578 4.69e-06 ***
tmax.f.spline1    0.029496   0.008592   3.433 0.000597 ***
tmax.f.spline2   -0.041035   0.017813  -2.304 0.021242 *
tmax.f.spline3    0.011383   0.024706   0.461 0.644984
tmax.f.spline4    0.012877   0.022440   0.574 0.566095
tmax.f.spline5   -0.003480   0.018656  -0.187 0.852024
snow.in           0.038226   0.089352   0.428 0.668787
precip.in        -0.348199   0.151693  -2.295 0.021709 *
dark.before.12   -0.061156   0.032850  -1.862 0.062649 .
thanks.xmas      -1.376824   1.458885  -0.944 0.345297
summer.holiday  -0.316279   0.674556  -0.469 0.639163
winter.holiday   0.160377   0.881713   0.182 0.855667
summer.vacation  -0.132261   0.086010  -1.538 0.124111
oth.ns           0.021907   0.149285   0.147 0.883334
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 189.78  on 82  degrees of freedom
Residual deviance: 130.19  on 69  degrees of freedom
AIC: 575.85

Number of Fisher Scoring iterations: 4
```

## 12 Results for deadly.weapon

### 12.1 Summary Values for deadly.weapon

Table 12.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
deadly.weapon	83	21.289	6.529	9	17	21	25	43

Table 12.2: Descriptives for Outcome After Ferguson Protests Begin

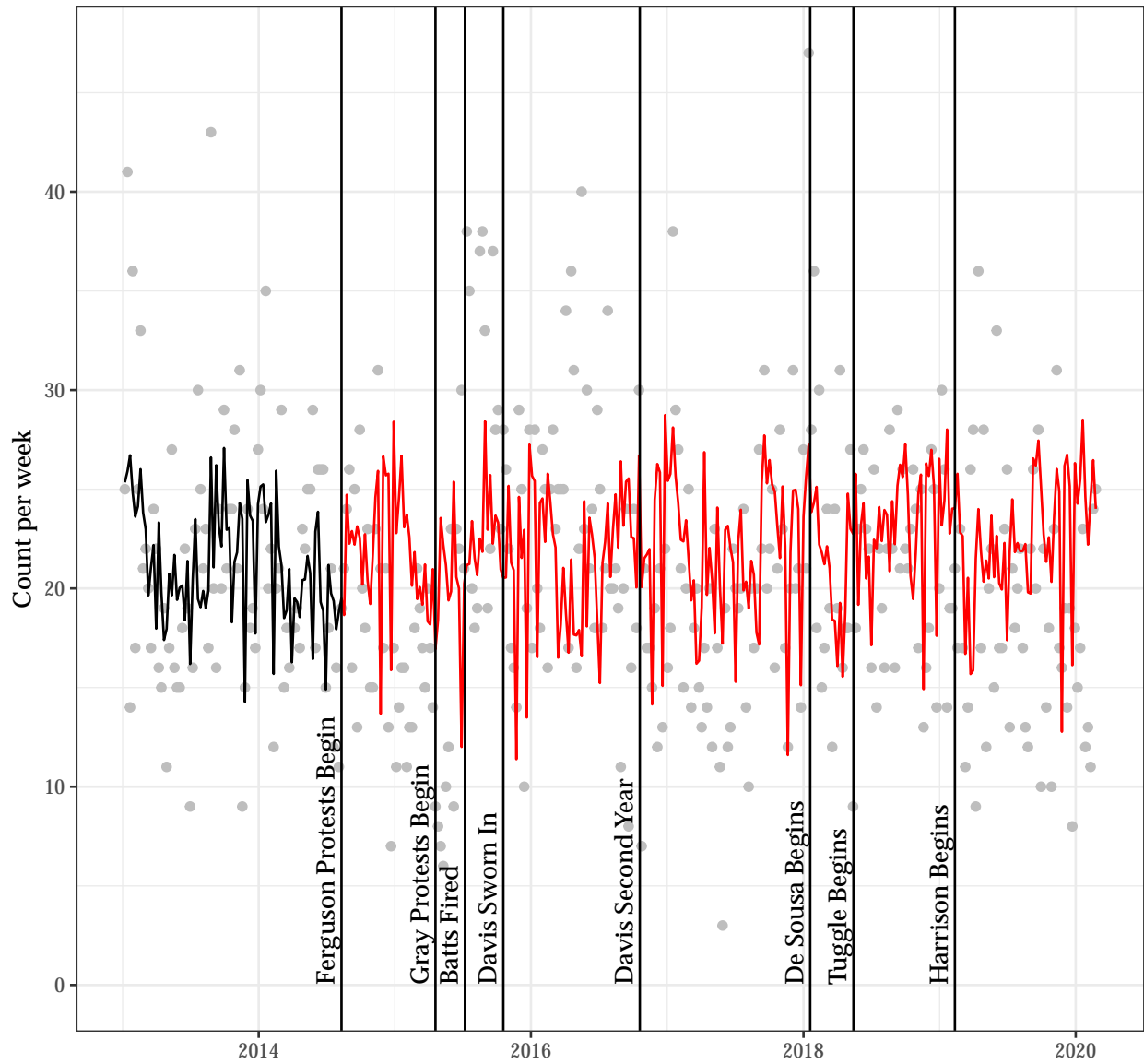
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
deadly.weapon	290	20.390	6.804	3	16	20	24.8	47

## 12.2 Four Models for deadly.weapon

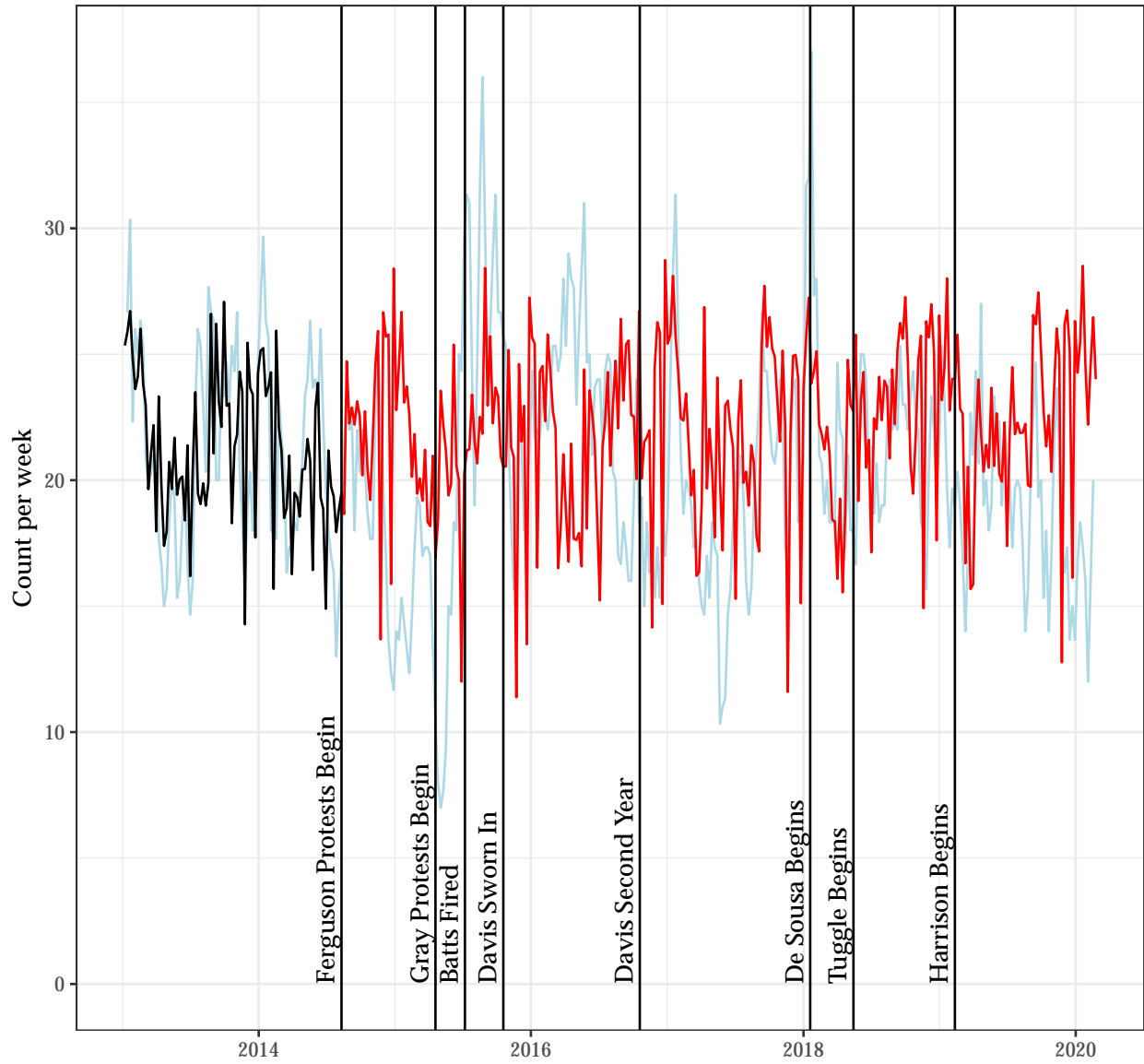
Table 12.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-3.29		-3.93	-3.26
After Gray Protests Begin (week of 4/20/15 onward)	-2.36		-0.55	-1.75
Unrest and National Guard (4/27/15 - 5/3/2015)	-7.64		-5.93	-8.48
After Batts Fired (week of 7/13/15 onward)	12.65		9.94	11.67
After Davis Confirmed (week of 10/19/15 onward)	-5.67		-4.25	-5.06
After Davis First Year (week of 10/17/16 onward)	-2.99		-3.67	-3.43
After De Sousa Begins (week of 1/19/18 onward)	2.38		3.48	2.67
After Tuggle Begins (week of 5/14/18 onward)	-0.90		-3.17	-0.96
After Harrison Begins (week of 2/11/19 onward)	-2.14		-1.36	-2.56
Average Maximum Temperature to 50 Degrees		0.10		0.16
Plus Degrees in the 50s		-0.65		-0.59
Plus Degrees in the 60s		1.06		0.83
Plus Degrees in the 70s		-0.10		-0.47
Plus Degrees Greater Than 80		0.03		0.12
Snowfall (inches)		-2.97		-1.23
Precipitation (inches)		2.80		-3.02
Darkness Before Midnight (hours)		1.99		0.55
Thanksgiving/Christmas (proportion of week)		-87.82		-58.96
Winter Holiday (proportion of week)		18.93		18.10
Other Out-of-School Days (proportion of week)		3.65		2.20
Summer Vacation (proportion of week)		-4.95		-0.09
Summer Holiday (proportion of week)		-36.60		-4.77
Observations	373	83	373	373
R <sup>2</sup>	0.12	0.21	0.12	0.19

### 12.3 Least Squares Updated Model (2) for deadly.weapon deadly.weapon

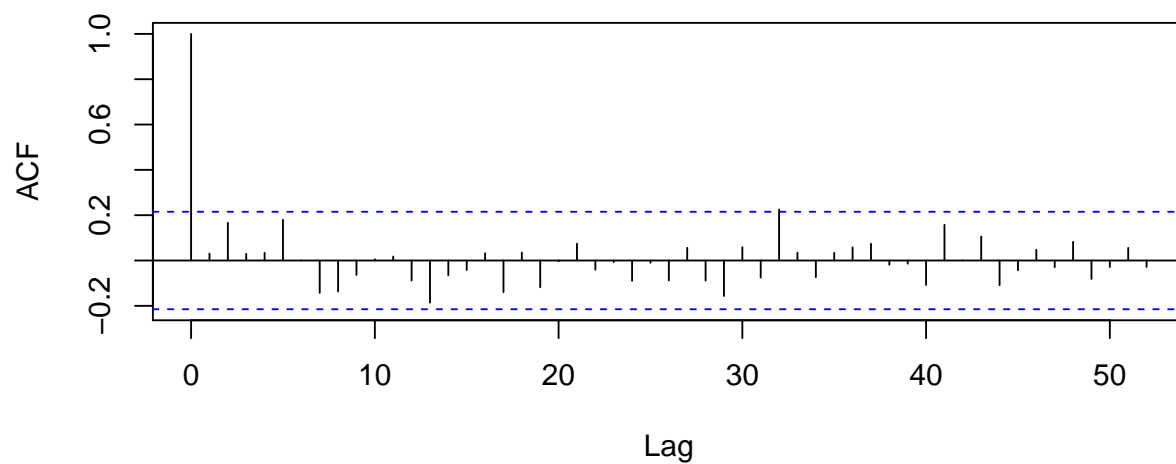


# deadly.weapon

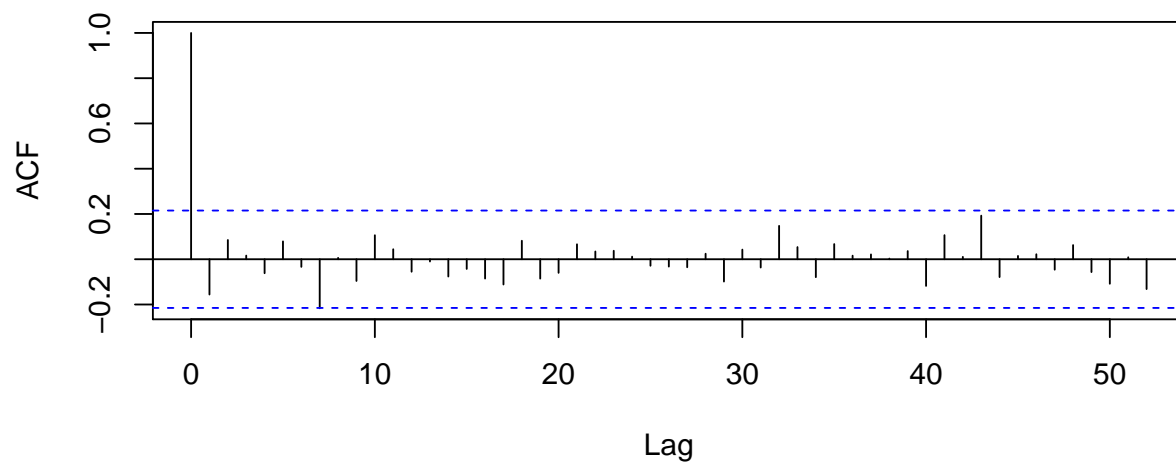




Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 12.4 A Poisson Regression Model as an Alternative to Model (2) for deadly.weapon

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.3896  -0.8658  -0.1118   0.6463   2.8304

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      2.371621   0.467458   5.073 3.91e-07 ***
tmax.f.spline1   0.004847   0.008098   0.599 0.54947
tmax.f.spline2  -0.031786   0.018927  -1.679 0.09307 .
tmax.f.spline3   0.052138   0.027961   1.865 0.06223 .
tmax.f.spline4  -0.006750   0.025429  -0.265 0.79067
tmax.f.spline5   0.001709   0.021571   0.079 0.93683
snow.in         -0.146330   0.089943  -1.627 0.10375
precip.in        0.132961   0.157107   0.846 0.39738
dark.before.12   0.092256   0.035343   2.610 0.00905 **
thanks.xmas     -4.404940   1.503374  -2.930 0.00339 **
summer.holiday  -1.818171   0.846478  -2.148 0.03172 *
winter.holiday   0.819940   0.814767   1.006 0.31425
summer.vacation -0.229308   0.099077  -2.314 0.02064 *
oth.ns           0.183999   0.163372   1.126 0.26006
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 158.57  on 82  degrees of freedom
Residual deviance: 124.48  on 69  degrees of freedom
AIC: 555.78

Number of Fisher Scoring iterations: 4
```

## 13 Results for common.assault

### 13.1 Summary Values for common.assault

Table 13.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
common.assault	83	91.434	12.240	52	83	90	101	117

Table 13.2: Descriptives for Outcome After Ferguson Protests Begin

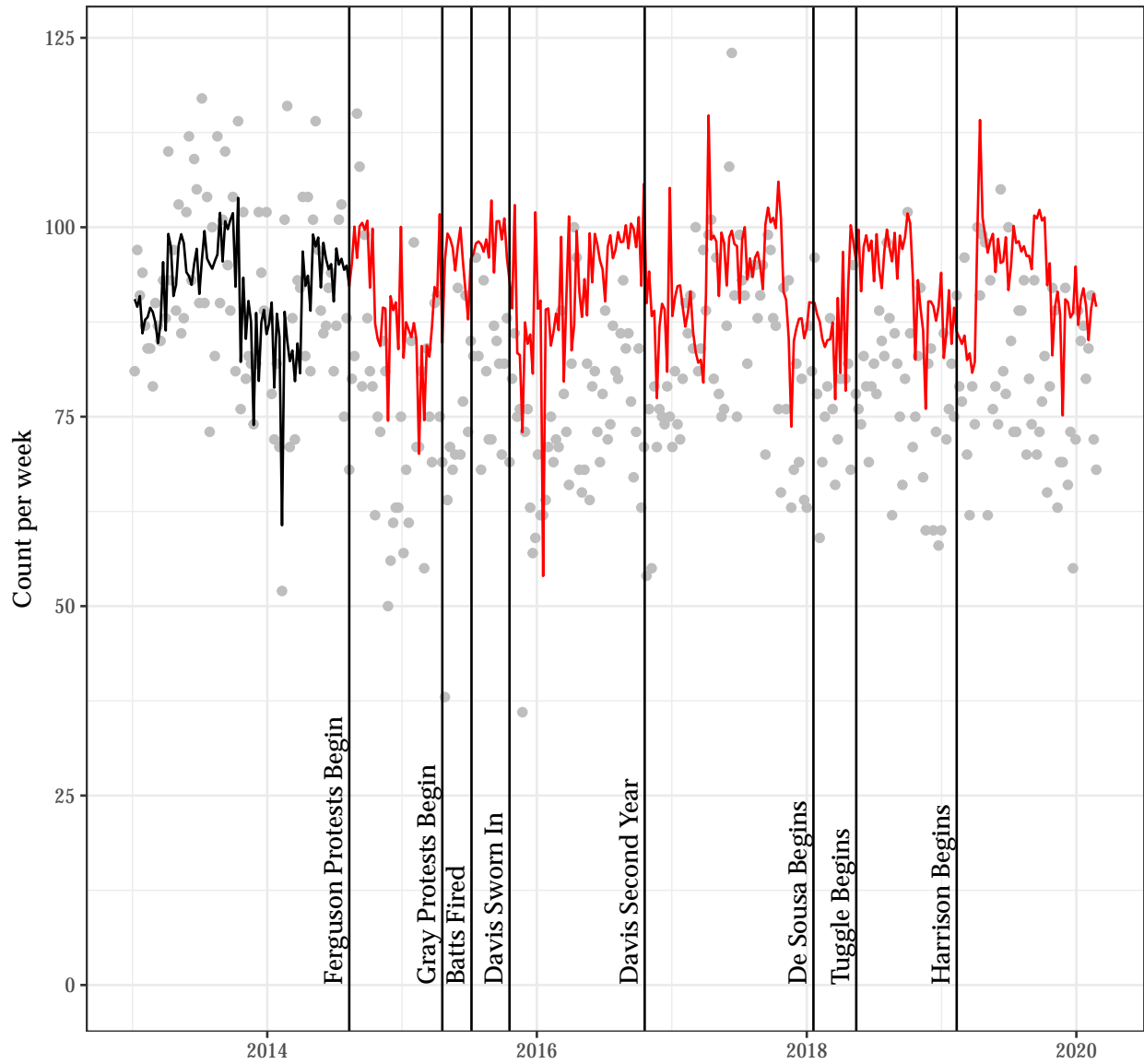
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
common.assault	290	78.714	12.217	36	71	79	87	123

### 13.2 Four Models for common.assault

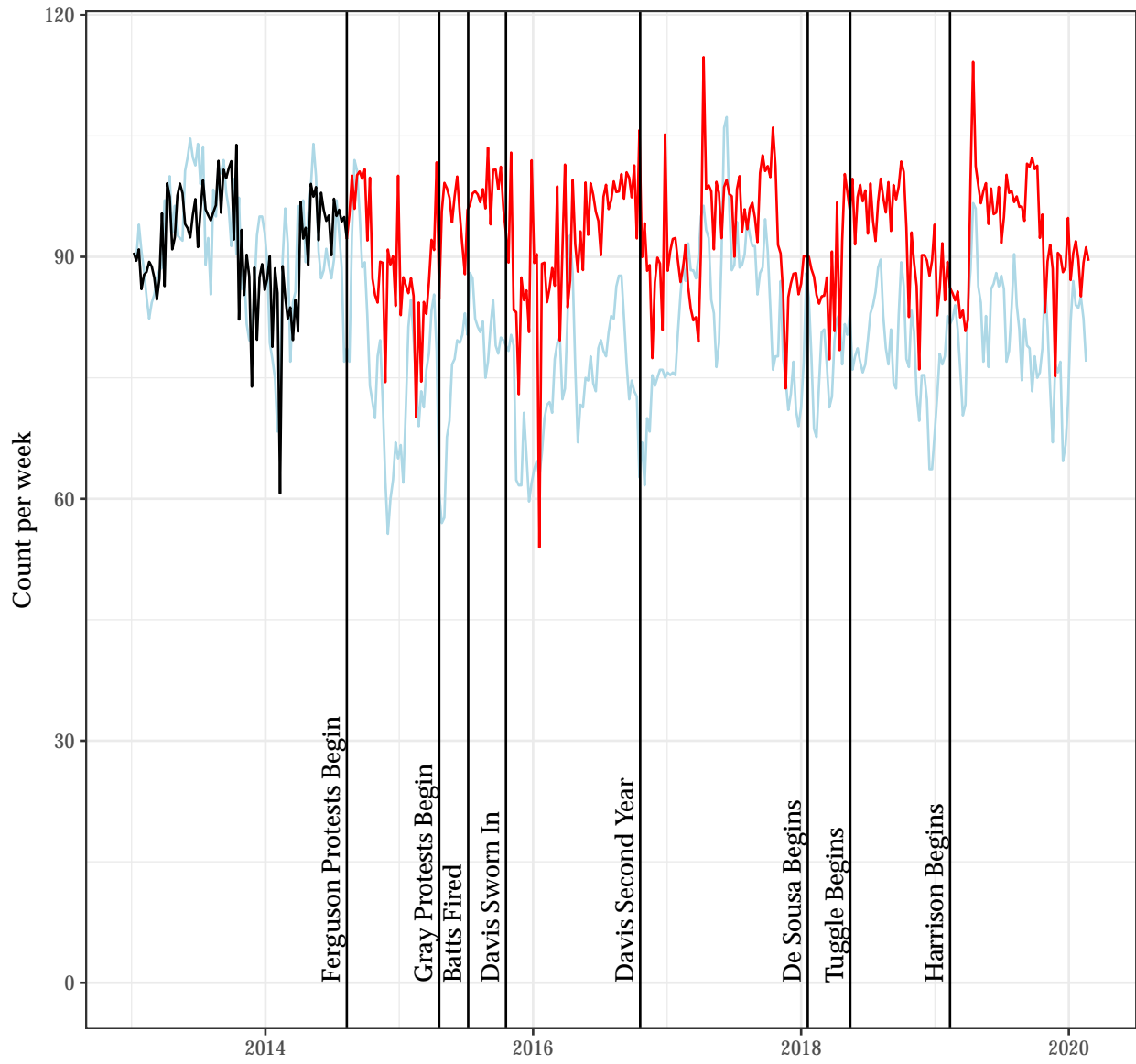
Table 13.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-14.91		-13.00	-12.24
After Gray Protests Begin (week of 4/20/15 onward)	-1.07		-6.27	-7.84
Unrest and National Guard (4/27/15 - 5/3/2015)	-37.45		-38.36	-38.88
After Batts Fired (week of 7/13/15 onward)	6.12		2.56	5.74
After Davis Confirmed (week of 10/19/15 onward)	-7.09		-0.49	-2.56
After Davis First Year (week of 10/17/16 onward)	8.50		7.63	9.10
After De Sousa Begins (week of 1/19/18 onward)	-4.86		-0.27	-3.85
After Tuggle Begins (week of 5/14/18 onward)	-0.28		-5.44	-1.62
After Harrison Begins (week of 2/11/19 onward)	2.63		2.78	2.11
Average Maximum Temperature to 50 Degrees		0.25		0.09
Plus Degrees in the 50s		-1.07		-0.24
Plus Degrees in the 60s		2.89		1.02
Plus Degrees in the 70s		-2.12		-1.29
Plus Degrees Greater Than 80		0.46		0.72
Snowfall (inches)		-9.33		-5.25
Precipitation (inches)		-5.53		-5.11
Darkness Before Midnight (hours)		1.40		-1.09
Thanksgiving/Christmas (proportion of week)		-114.30		-97.98
Winter Holiday (proportion of week)		10.28		11.10
Other Out-of-School Days (proportion of week)		15.22		0.79
Summer Vacation (proportion of week)		-3.85		0.27
Summer Holiday (proportion of week)		-41.98		12.12
Observations	373	83	373	373
R <sup>2</sup>	0.23	0.32	0.26	0.41

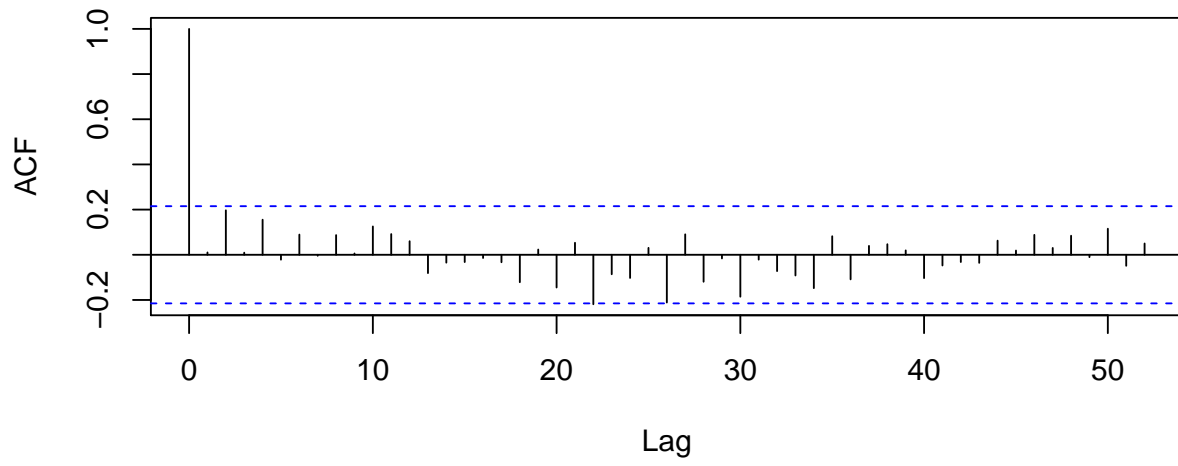
### 13.3 Least Squares Updated Model (2) for common.assault common.assault



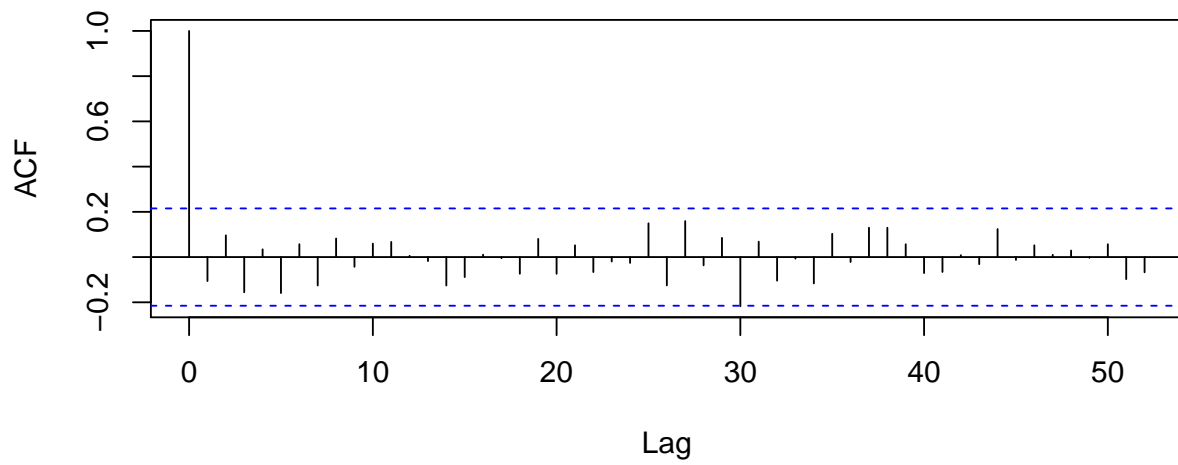
common.assault



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



### 13.4 A Poisson Regression Model as an Alternative to Model (2) for common.assault

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.3687  -0.8312  -0.1138   0.7472   3.2022

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      4.268825   0.238700  17.884 < 2e-16 ***
tmax.f.spline1    0.002828   0.004210   0.672  0.50174
tmax.f.spline2   -0.012734   0.009387  -1.357  0.17491
tmax.f.spline3    0.032814   0.013300   2.467  0.01362 *
tmax.f.spline4   -0.023563   0.011959  -1.970  0.04880 *
tmax.f.spline5    0.004841   0.010136   0.478  0.63296
snow.in          -0.124399   0.046186  -2.693  0.00707 **
precip.in        -0.057241   0.075754  -0.756  0.44988
dark.before.12   0.015351   0.017394   0.883  0.37748
thanks.xmas      -1.386922   0.688992  -2.013  0.04412 *
summer.holiday  -0.437305   0.377042  -1.160  0.24612
winter.holiday   0.134440   0.436200   0.308  0.75793
summer.vacation  -0.038978   0.047097  -0.828  0.40788
oth.ns           0.178685   0.077988   2.291  0.02195 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 136.442  on 82  degrees of freedom
Residual deviance:  91.628  on 69  degrees of freedom
AIC: 646.36

Number of Fisher Scoring iterations: 4
```



## 14 Results for sex.offense.g

### 14.1 Summary Values for sex.offense.g

Table 14.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
sex.offense.g	83	15.060	5.709	5	11	14	17	33

Table 14.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
sex.offense.g	290	8.997	4.683	0	6	8	12	35

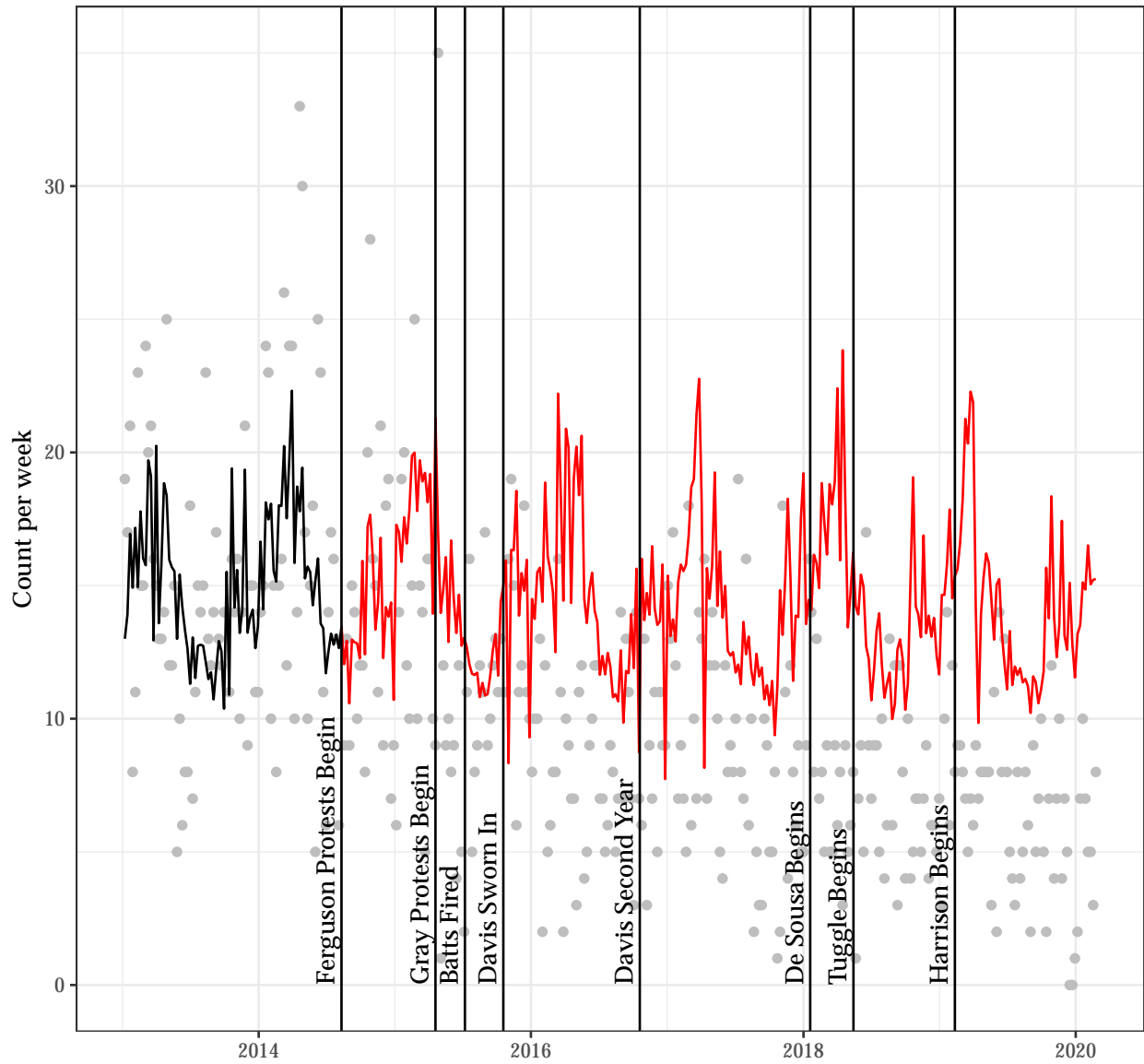
## 14.2 Four Models for sex.offense.g

Table 14.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

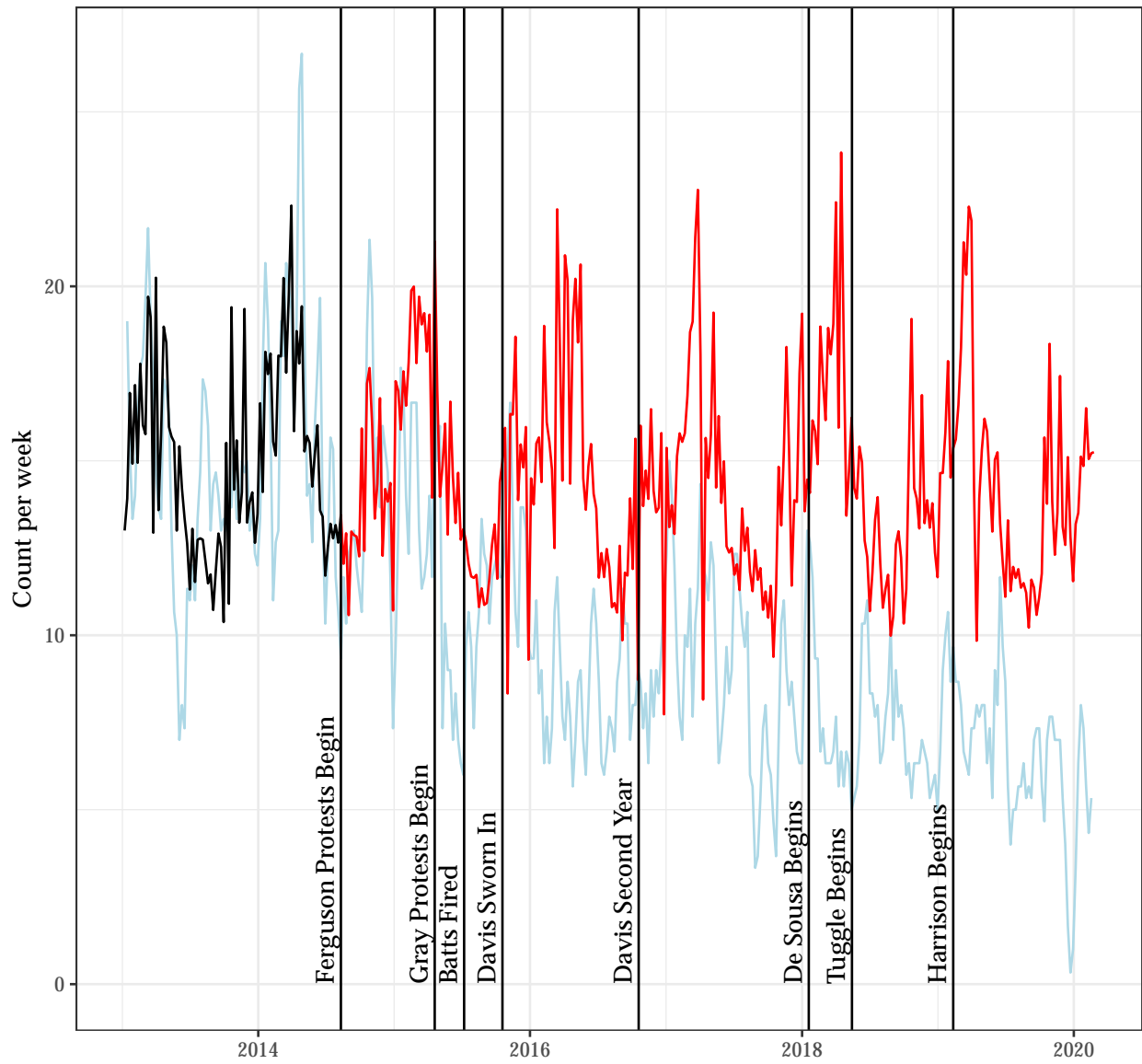
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-1.31		-1.75	-1.54
After Gray Protests Begin (week of 4/20/15 onward)	-6.39		-5.79	-5.90
Unrest and National Guard (4/27/15 - 5/3/2015)	27.64		25.54	27.18
After Batts Fired (week of 7/13/15 onward)	3.85		6.82	4.39
After Davis Confirmed (week of 10/19/15 onward)	-1.89		-4.68	-2.76
After Davis First Year (week of 10/17/16 onward)	-0.36		0.27	-0.11
After De Sousa Begins (week of 1/19/18 onward)	-1.47		-4.72	-2.66
After Tuggle Begins (week of 5/14/18 onward)	-0.04		3.90	1.16
After Harrison Begins (week of 2/11/19 onward)	-1.04		-1.82	-1.17
Average Maximum Temperature to 50 Degrees		-0.31		-0.10
Plus Degrees in the 50s		0.73		0.29
Plus Degrees in the 60s		-1.30		-0.55
Plus Degrees in the 70s		0.72		0.34
Plus Degrees Greater Than 80		-0.001		0.06
Snowfall (inches)		-1.41		-1.27
Precipitation (inches)		1.86		2.15
Darkness Before Midnight (hours)		-2.47		-0.51
Thanksgiving/Christmas (proportion of week)		35.51		-6.34
Winter Holiday (proportion of week)		2.82		12.36
Other Out-of-School Days (proportion of week)		-5.26		-1.93
Summer Vacation (proportion of week)		-1.66		-1.15
Summer Holiday (proportion of week)		-8.88		-9.69
Observations	373	83	373	373
R <sup>2</sup>	0.39	0.22	0.33	0.43

### 14.3 Least Squares Updated Model (2) for sex.offense.g

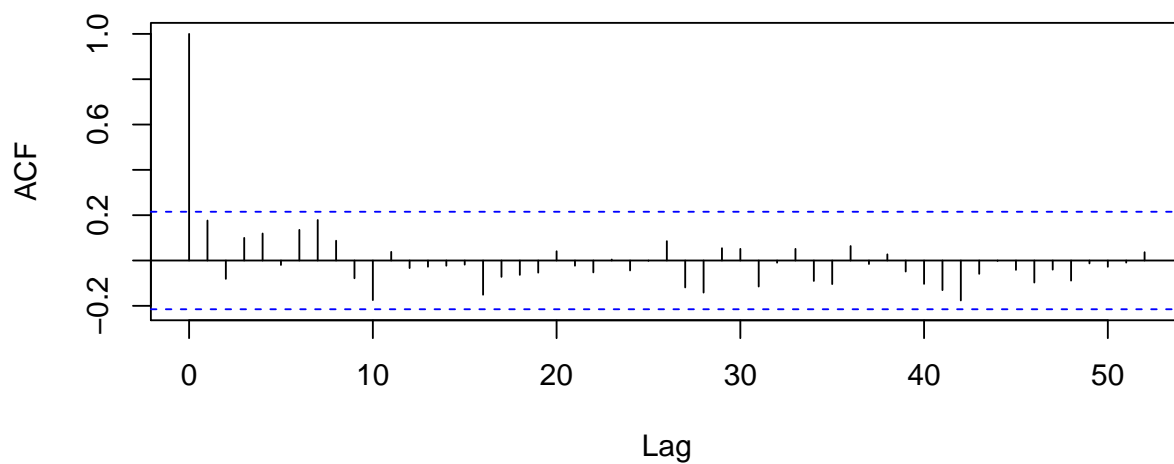
sex.offense.g



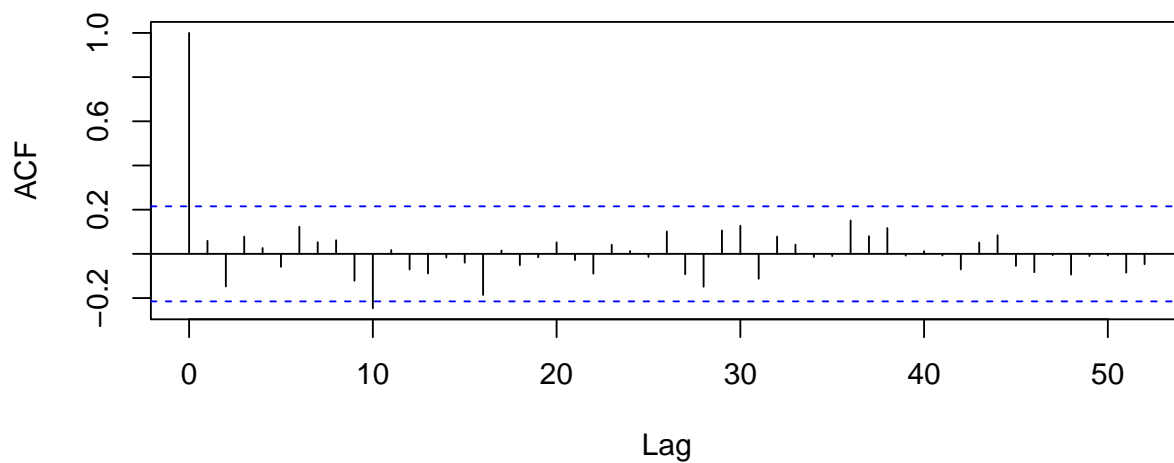
sex.offense.g



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 14.4 A Poisson Regression Model as an Alternative to Model (2) for sex.offense.g

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.9902  -0.9849  -0.0602   0.8262   3.2619

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      4.612496   0.561300   8.218 < 2e-16 ***
tmax.f.spline1  -0.019564   0.009764  -2.004 0.045102 *
tmax.f.spline2   0.043614   0.021207   2.057 0.039728 *
tmax.f.spline3  -0.076429   0.029709  -2.573 0.010093 *
tmax.f.spline4   0.041537   0.029279   1.419 0.155989
tmax.f.spline5  -0.001655   0.027322  -0.061 0.951710
snow.in         -0.088567   0.097160  -0.912 0.362002
precip.in        0.129157   0.179029   0.721 0.470644
dark.before.12  -0.155583   0.041610  -3.739 0.000185 ***
thanks.xmas      2.152149   1.516547   1.419 0.155867
summer.holiday  -0.617843   1.037742  -0.595 0.551595
winter.holiday   0.207820   0.999986   0.208 0.835367
summer.vacation -0.099934   0.128512  -0.778 0.436792
oth.ns          -0.340189   0.190362  -1.787 0.073928 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 174.30  on 82  degrees of freedom
Residual deviance: 136.22  on 69  degrees of freedom
AIC: 536.83

Number of Fisher Scoring iterations: 4
```

# 15 Results for domestic

## 15.1 Summary Values for domestic

Table 15.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
domestic	83	3.602	2.295	0	2	3	5	11

Table 15.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
domestic	290	2.569	1.905	0	1	2	4	9

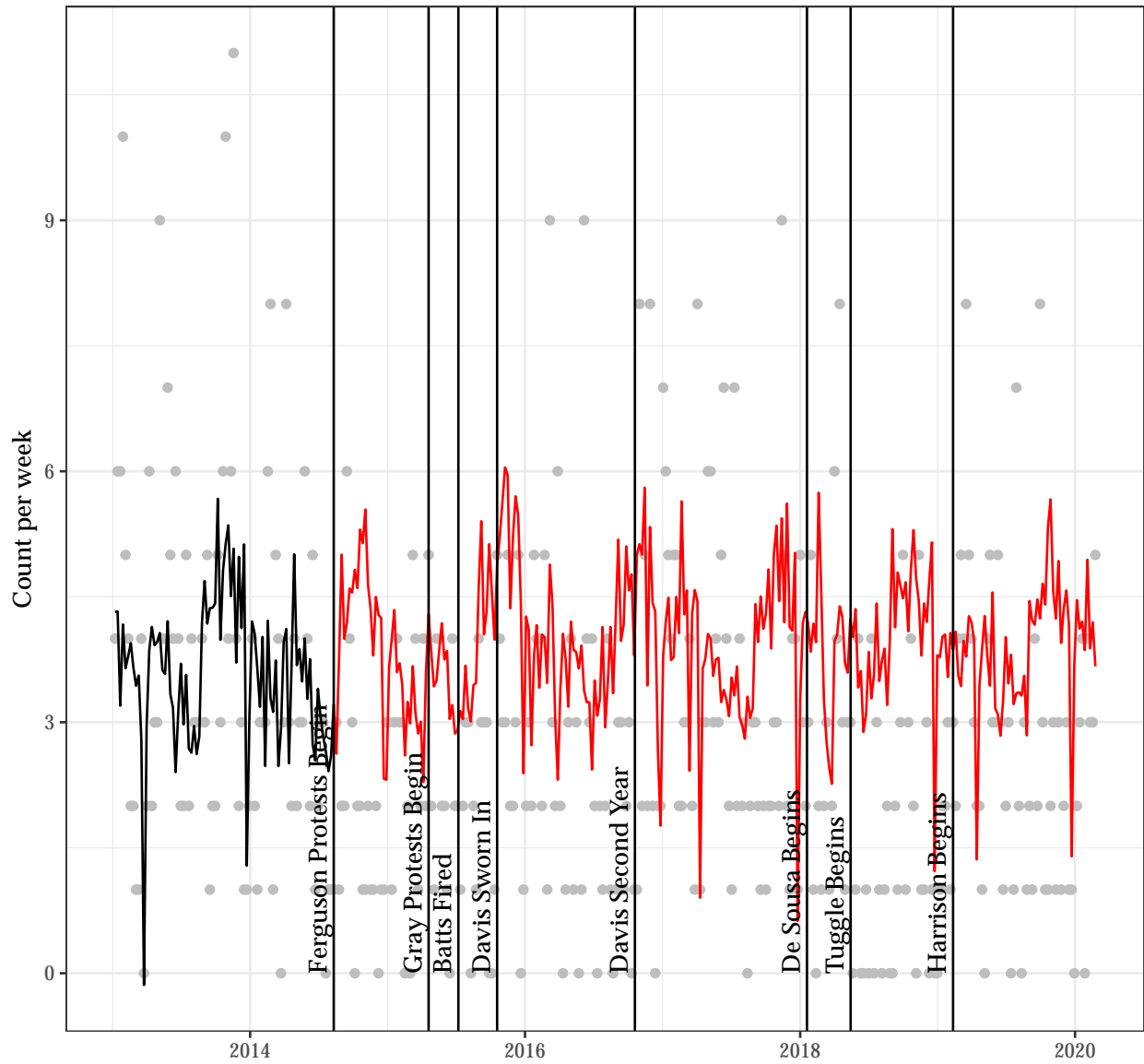
## 15.2 Four Models for domestic

Table 15.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

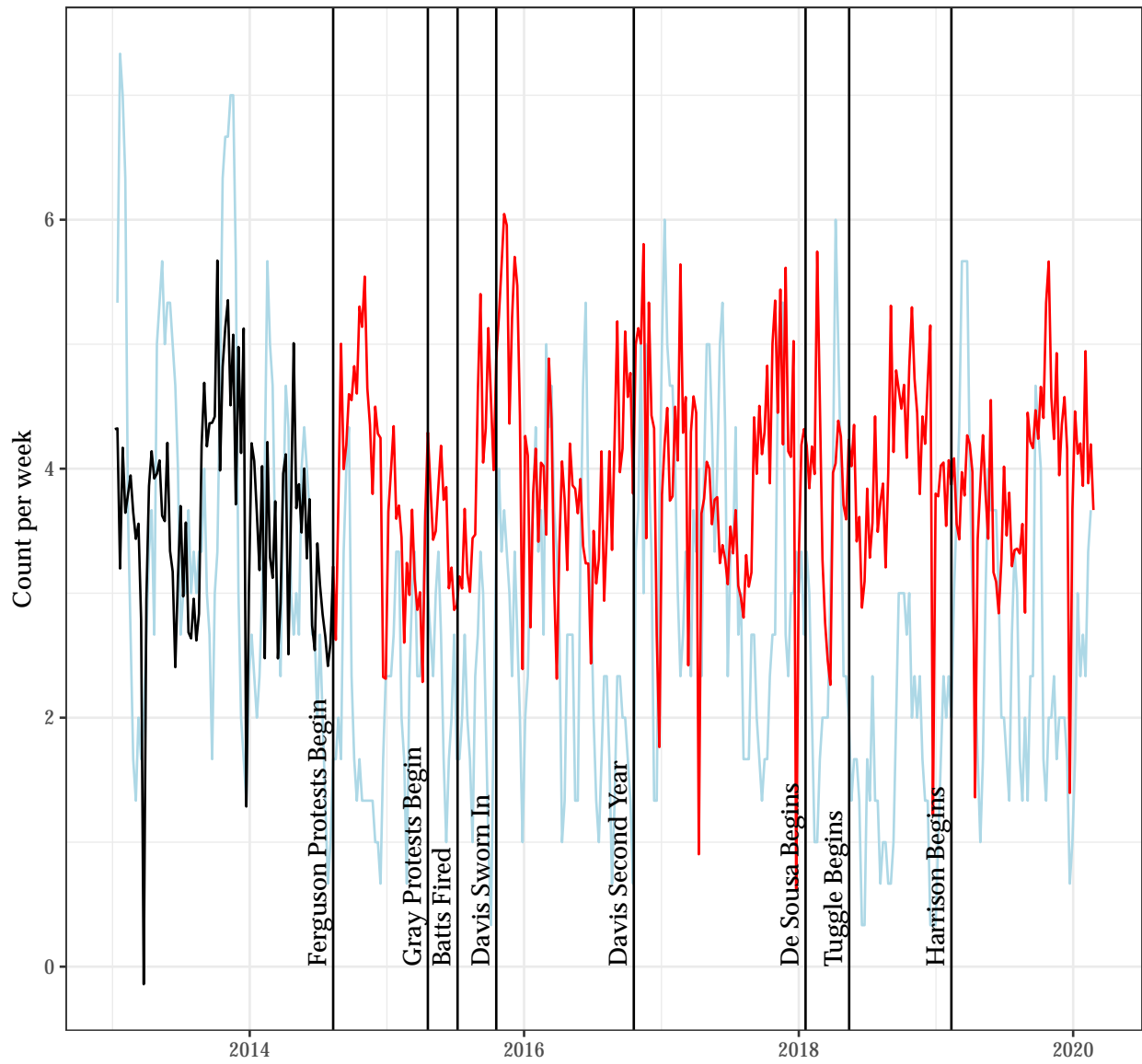
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-1.49		-1.72	-1.61
After Gray Protests Begin (week of 4/20/15 onward)	0.34		0.64	0.42
Unrest and National Guard (4/27/15 - 5/3/2015)	-0.45		-0.76	-1.05
After Batts Fired (week of 7/13/15 onward)	-0.60		-0.99	-0.33
After Davis Confirmed (week of 10/19/15 onward)	0.85		0.74	0.56
After Davis First Year (week of 10/17/16 onward)	0.59		0.68	0.68
After De Sousa Begins (week of 1/19/18 onward)	-0.49		-0.37	-0.90
After Tuggle Begins (week of 5/14/18 onward)	-1.25		-1.45	-0.74
After Harrison Begins (week of 2/11/19 onward)	1.14		1.28	1.03
Average Maximum Temperature to 50 Degrees		0.02		-0.05
Plus Degrees in the 50s		0.14		0.13
Plus Degrees in the 60s		-0.17		-0.15
Plus Degrees in the 70s		-0.03		0.04
Plus Degrees Greater Than 80		0.13		0.05
Snowfall (inches)		-0.49		-0.94
Precipitation (inches)		1.32		0.29
Darkness Before Midnight (hours)		0.60		-0.17
Thanksgiving/Christmas (proportion of week)		-3.11		-3.51
Winter Holiday (proportion of week)		2.90		-1.11
Other Out-of-School Days (proportion of week)		-2.80		-1.91
Summer Vacation (proportion of week)		-0.91		-0.81
Summer Holiday (proportion of week)		3.98		-2.20
Observations	373	83	373	373
R <sup>2</sup>	0.10	0.15	0.13	0.19



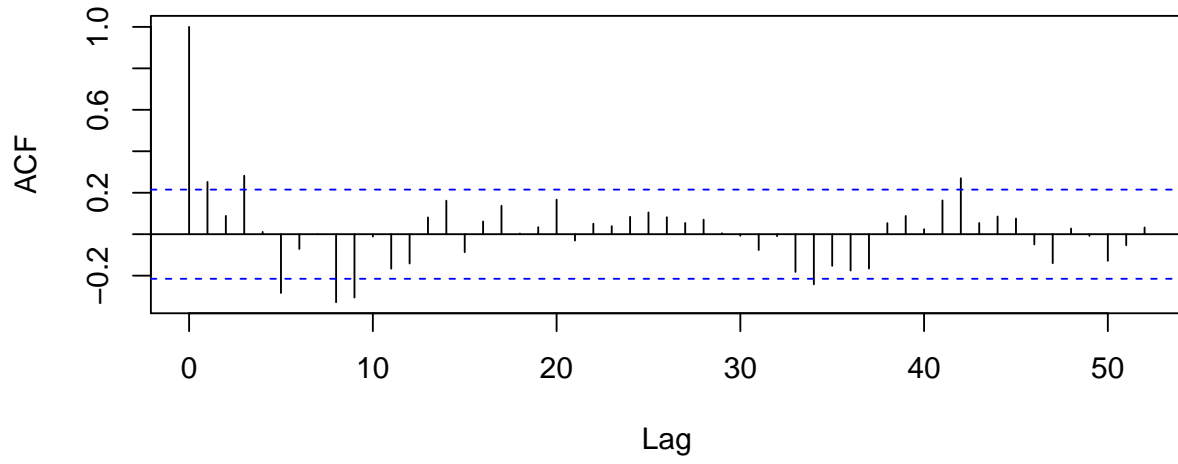
### 15.3 Least Squares Updated Model (2) for domestic domestic



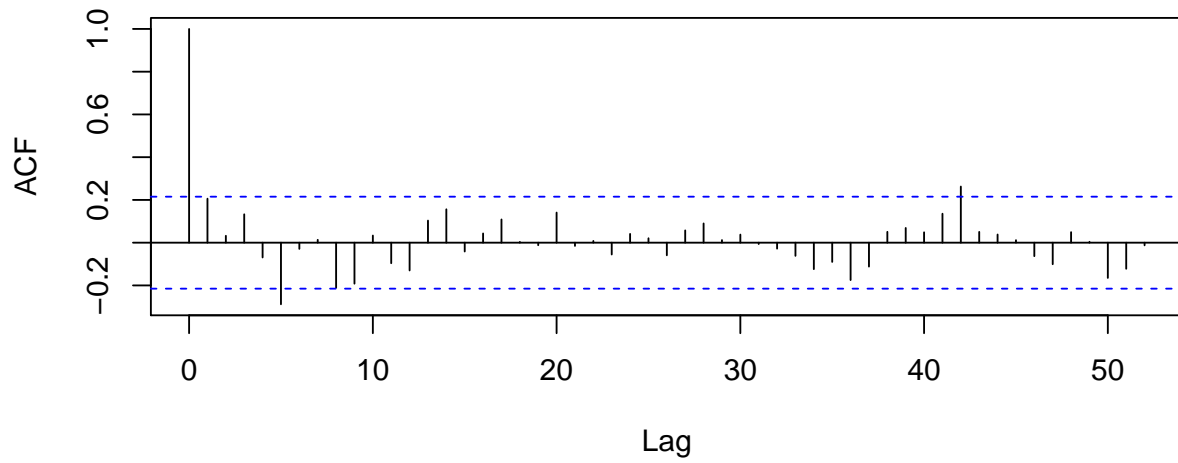
domestic



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 15.4 A Poisson Regression Model as an Alternative to Model (2) for domestic

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.4225  -0.9220  -0.1839   0.6321   2.5075

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      0.412173   1.162124   0.355  0.7228
tmax.f.spline1 -0.002150   0.021141  -0.102  0.9190
tmax.f.spline2  0.050123   0.047219   1.062  0.2885
tmax.f.spline3 -0.054090   0.064186  -0.843  0.3994
tmax.f.spline4 -0.005705   0.058813  -0.097  0.9227
tmax.f.spline5  0.040695   0.053281   0.764  0.4450
snow.in         -0.195869   0.234380  -0.836  0.4033
precip.in       0.325675   0.349201   0.933  0.3510
dark.before.12  0.153692   0.084132   1.827  0.0677 .
thanks.xmas     -0.305539   3.618148  -0.084  0.9327
summer.holiday  1.067454   1.860483   0.574  0.5661
winter.holiday  0.856756   2.093718   0.409  0.6824
summer.vacation -0.280467   0.247838  -1.132  0.2578
oth.ns         -1.219779   0.558861  -2.183  0.0291 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 119.238  on 82  degrees of freedom
Residual deviance:  98.836  on 69  degrees of freedom
AIC: 370.43

Number of Fisher Scoring iterations: 5
```

## 16 Results for non.deadly.weapon

### 16.1 Summary Values for non.deadly.weapon

Table 16.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
non.deadly.weapon	83	1.217	1.230	0	0	1	2	5

Table 16.2: Descriptives for Outcome After Ferguson Protests Begin

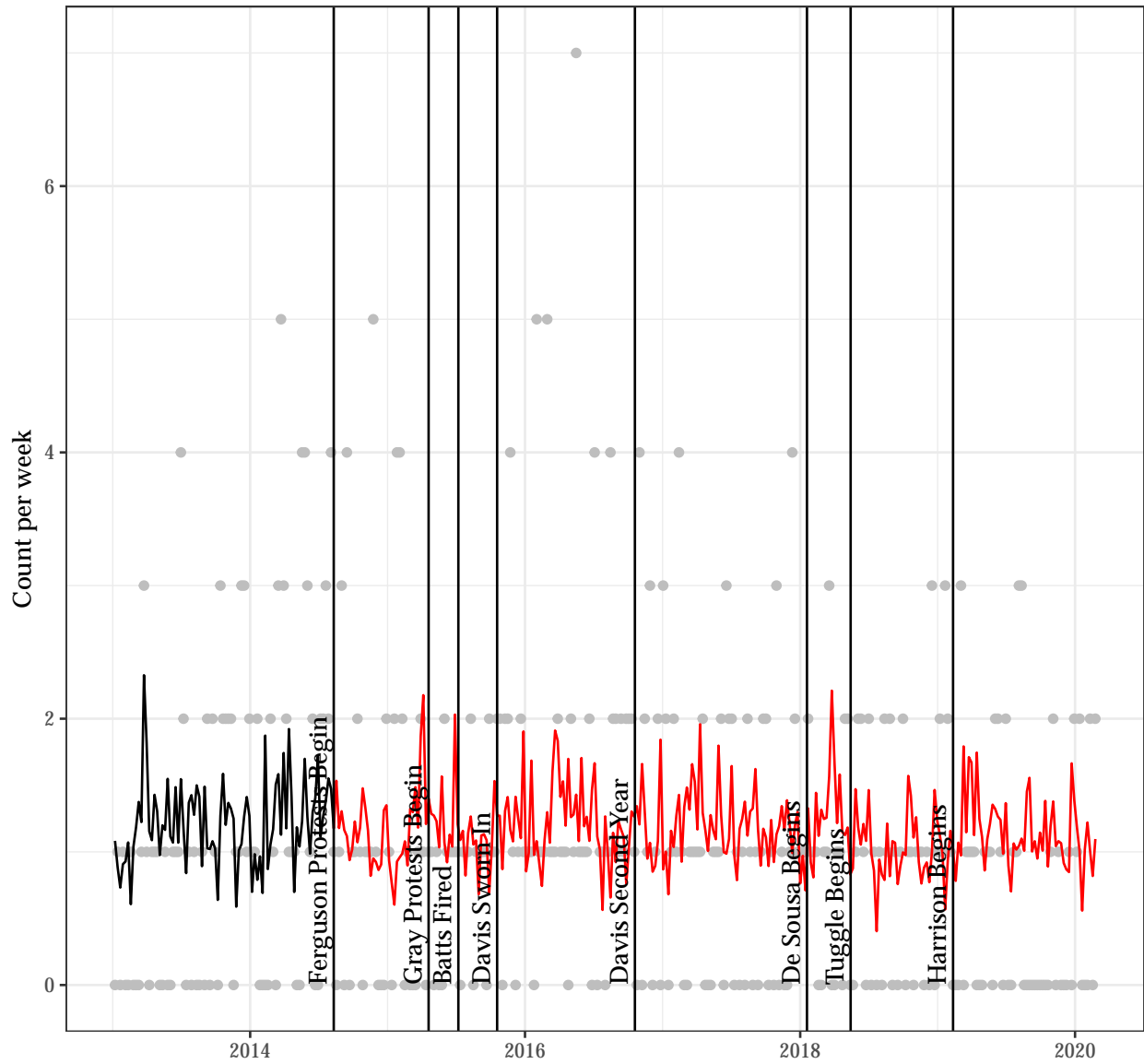
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
non.deadly.weapon	290	1.086	1.108	0	0	1	2	7

## 16.2 Four Models for non.deadly.weapon

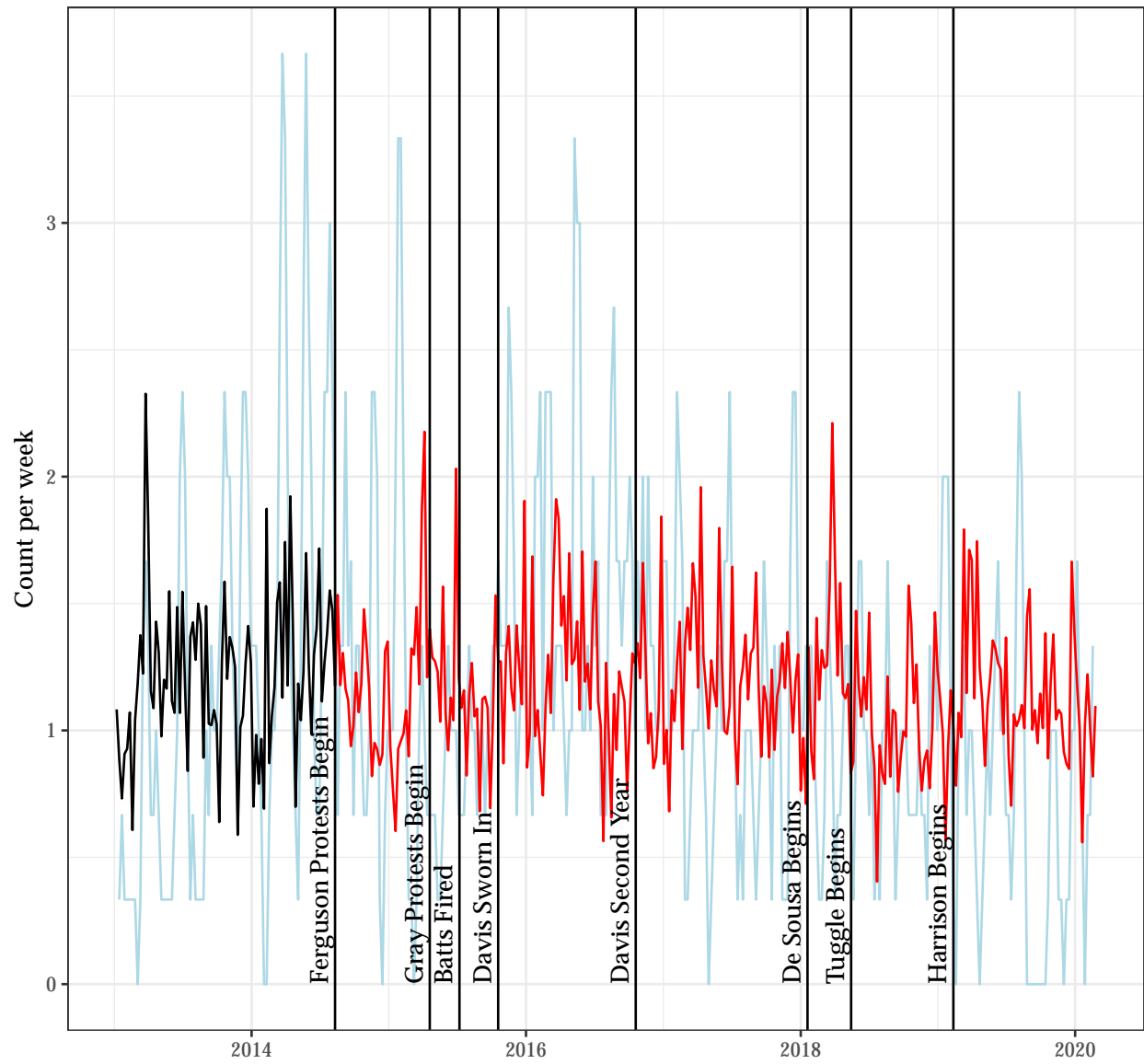
Table 16.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-0.02		0.04	-0.01
After Gray Protests Begin (week of 4/20/15 onward)	-0.38		-0.48	-0.37
Unrest and National Guard (4/27/15 - 5/3/2015)	0.18		0.16	0.15
After Batts Fired (week of 7/13/15 onward)	0.11		0.31	0.17
After Davis Confirmed (week of 10/19/15 onward)	0.65		0.49	0.60
After Davis First Year (week of 10/17/16 onward)	-0.46		-0.43	-0.46
After De Sousa Begins (week of 1/19/18 onward)	-0.12		-0.25	-0.18
After Tuggle Begins (week of 5/14/18 onward)	-0.03		0.27	0.06
After Harrison Begins (week of 2/11/19 onward)	-0.27		-0.38	-0.30
Average Maximum Temperature to 50 Degrees		0.02		0.01
Plus Degrees in the 50s		0.03		-0.03
Plus Degrees in the 60s		-0.11		0.01
Plus Degrees in the 70s		0.08		0.01
Plus Degrees Greater Than 80		-0.07		0.01
Snowfall (inches)		0.45		0.15
Precipitation (inches)		-0.73		-0.34
Darkness Before Midnight (hours)		-0.10		-0.07
Thanksgiving/Christmas (proportion of week)		-1.29		1.60
Winter Holiday (proportion of week)		-2.55		-3.49
Other Out-of-School Days (proportion of week)		0.73		-0.29
Summer Vacation (proportion of week)		0.27		0.11
Summer Holiday (proportion of week)		3.34		2.17
Observations	373	83	373	373
R <sup>2</sup>	0.05	0.07	0.04	0.07

### 16.3 Least Squares Updated Model (2) for non.deadly.weapon non.deadly.weapon

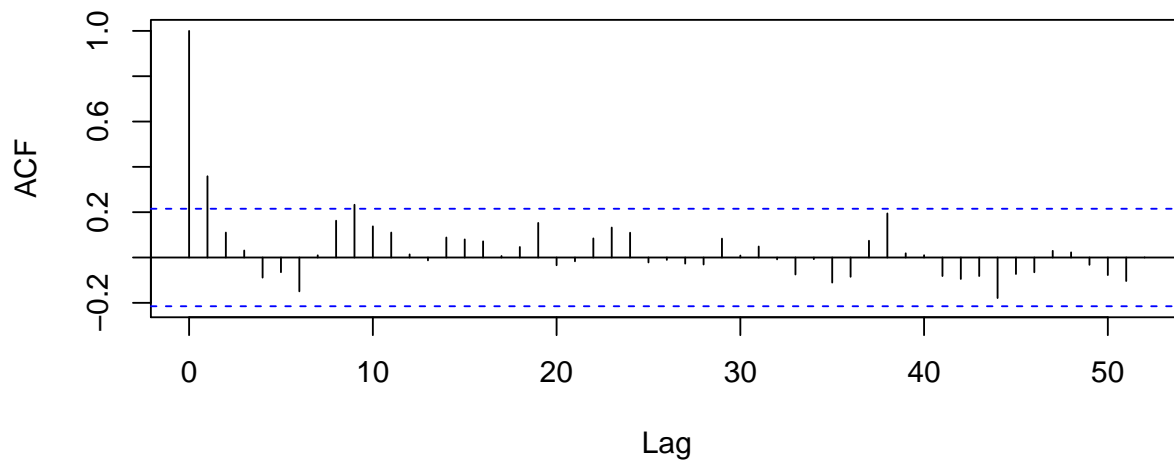


non.deadly.weapon

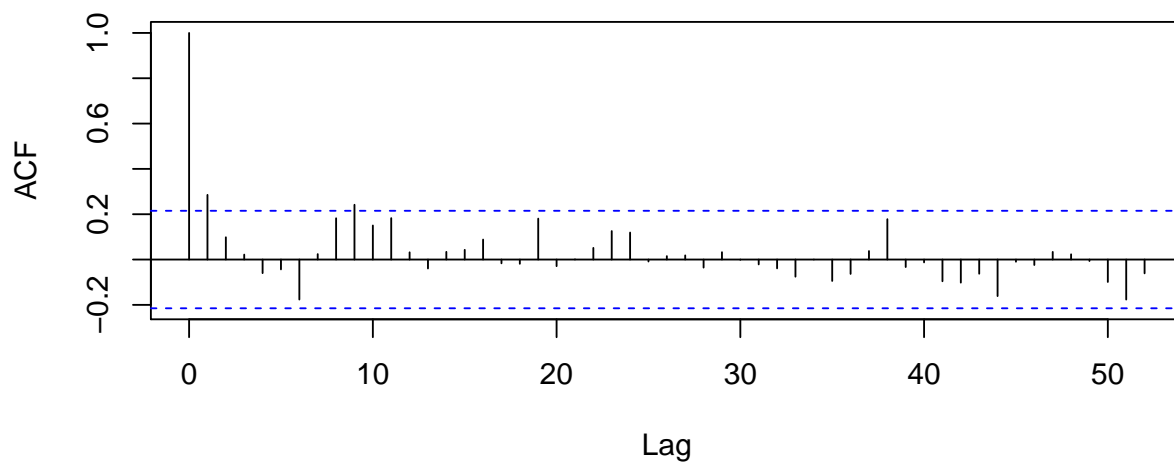




Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 16.4 A Poisson Regression Model as an Alternative to Model (2) for non.deadly.weapon

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.9442	-1.4150	-0.0811	0.6428	2.7364

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	-0.20125	2.20799	-0.091	0.927
tmax.f.spline1	0.01617	0.03929	0.412	0.681
tmax.f.spline2	0.01772	0.07710	0.230	0.818
tmax.f.spline3	-0.08247	0.10311	-0.800	0.424
tmax.f.spline4	0.05928	0.10301	0.575	0.565
tmax.f.spline5	-0.05717	0.09330	-0.613	0.540
snow.in	0.34682	0.32215	1.077	0.282
precip.in	-0.68596	0.74009	-0.927	0.354
dark.before.12	-0.07550	0.14857	-0.508	0.611
thanks.xmas	-0.74051	6.09667	-0.121	0.903
summer.holiday	2.51871	3.05301	0.825	0.409
winter.holiday	-2.54448	4.54135	-0.560	0.575
summer.vacation	0.22922	0.41913	0.547	0.584
oth.ns	0.45709	0.57233	0.799	0.424

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 115.13 on 82 degrees of freedom  
Residual deviance: 108.50 on 69 degrees of freedom  
AIC: 268.18

Number of Fisher Scoring iterations: 6

## 17 Results for burglary

### 17.1 Summary Values for burglary

Table 17.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
burglary	83	14.530	4.735	2	12	14	17	26

Table 17.2: Descriptives for Outcome After Ferguson Protests Begin

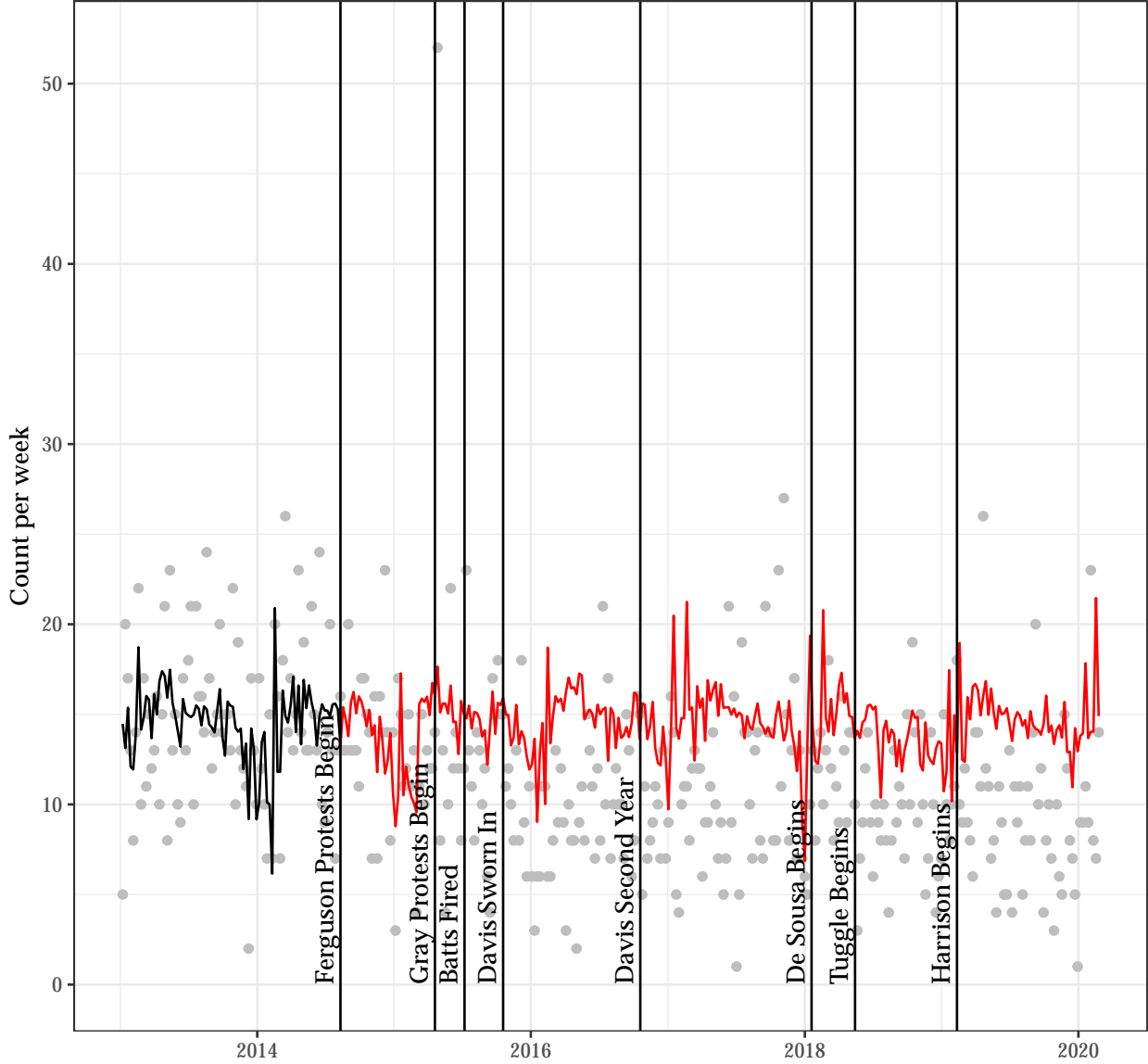
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
burglary	290	10.897	4.974	1	8	10	13	52

## 17.2 Four Models for burglary

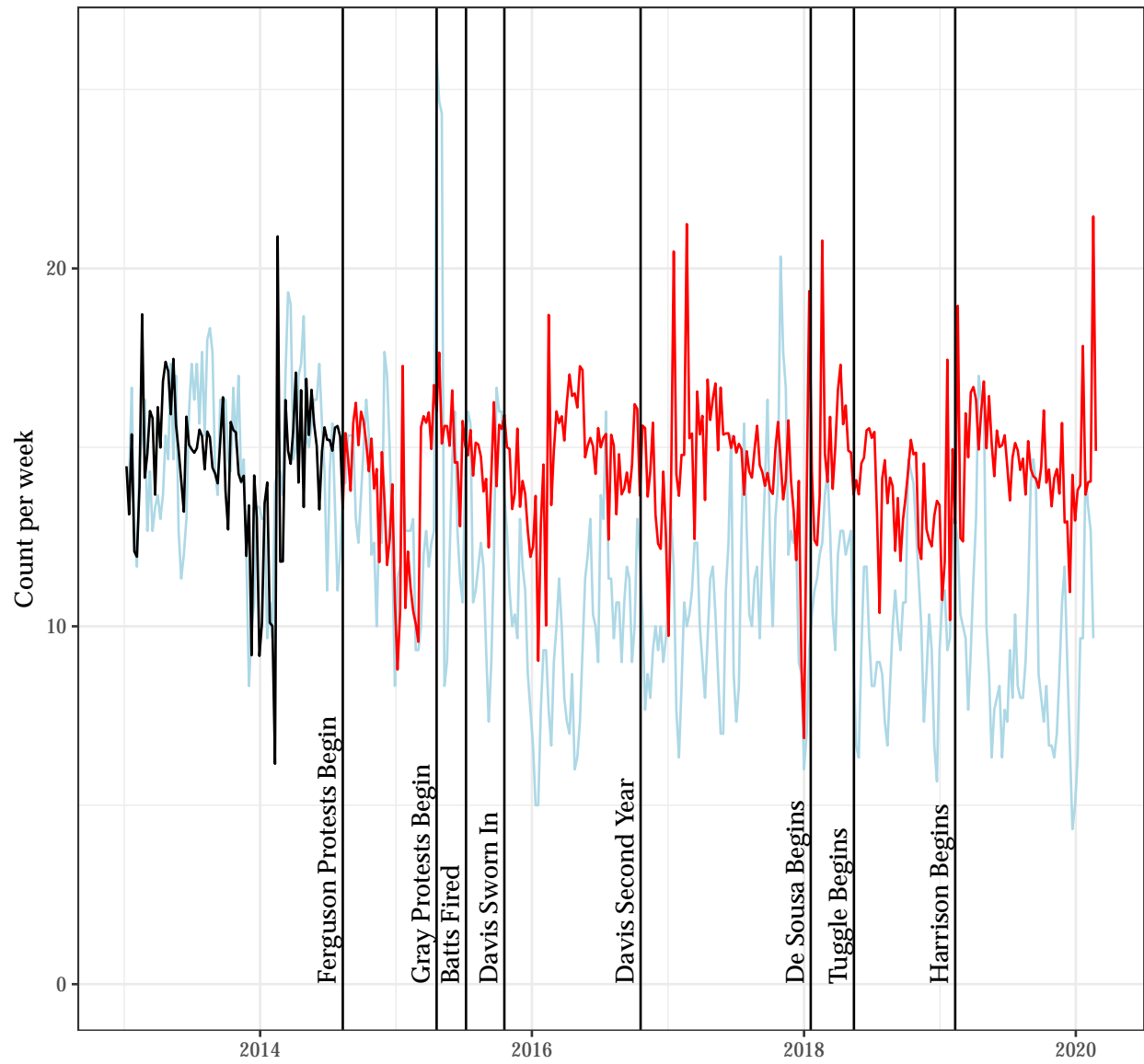
Table 17.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-1.53		-0.69	-1.22
After Gray Protests Begin (week of 4/20/15 onward)	-1.27		-2.74	-1.67
Unrest and National Guard (4/27/15 - 5/3/2015)	40.27		37.78	38.33
After Batts Fired (week of 7/13/15 onward)	1.06		1.56	0.23
After Davis Confirmed (week of 10/19/15 onward)	-2.90		-2.90	-2.32
After Davis First Year (week of 10/17/16 onward)	0.90		0.98	0.88
After De Sousa Begins (week of 1/19/18 onward)	1.34		0.75	1.59
After Tuggle Begins (week of 5/14/18 onward)	-2.48		-0.94	-2.18
After Harrison Begins (week of 2/11/19 onward)	0.10		-1.04	-0.43
Average Maximum Temperature to 50 Degrees		0.29		0.15
Plus Degrees in the 50s		-0.33		-0.15
Plus Degrees in the 60s		0.11		0.19
Plus Degrees in the 70s		-0.35		-0.36
Plus Degrees Greater Than 80		0.22		0.26
Snowfall (inches)		-1.32		-0.80
Precipitation (inches)		-4.83		-3.97
Darkness Before Midnight (hours)		-0.92		0.12
Thanksgiving/Christmas (proportion of week)		12.28		-4.51
Winter Holiday (proportion of week)		42.61		10.58
Other Out-of-School Days (proportion of week)		-1.79		-1.33
Summer Vacation (proportion of week)		0.49		-0.04
Summer Holiday (proportion of week)		-0.87		-12.79
Observations	373	83	373	373
R <sup>2</sup>	0.30	0.21	0.29	0.36

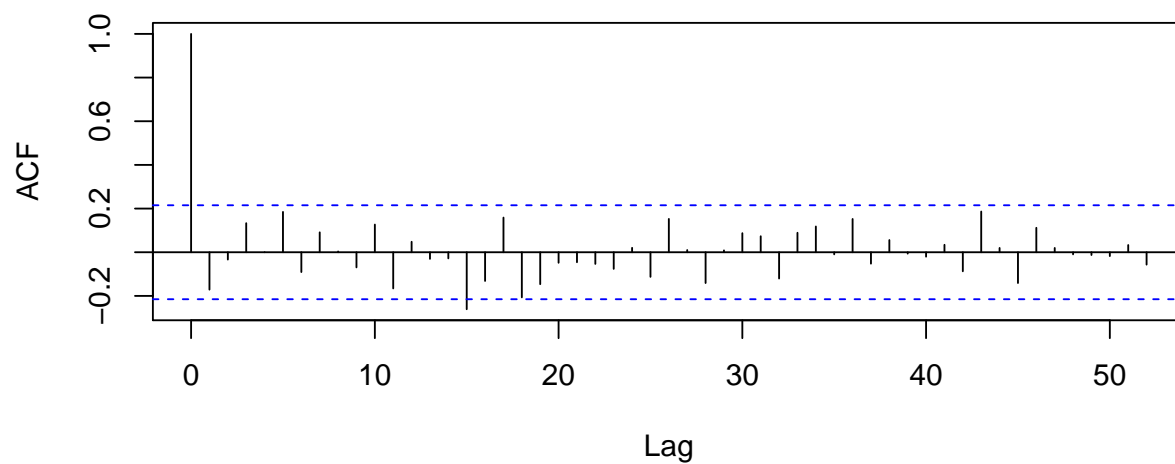
17.3 Least Squares Updated Model (2) for burglary  
burglary



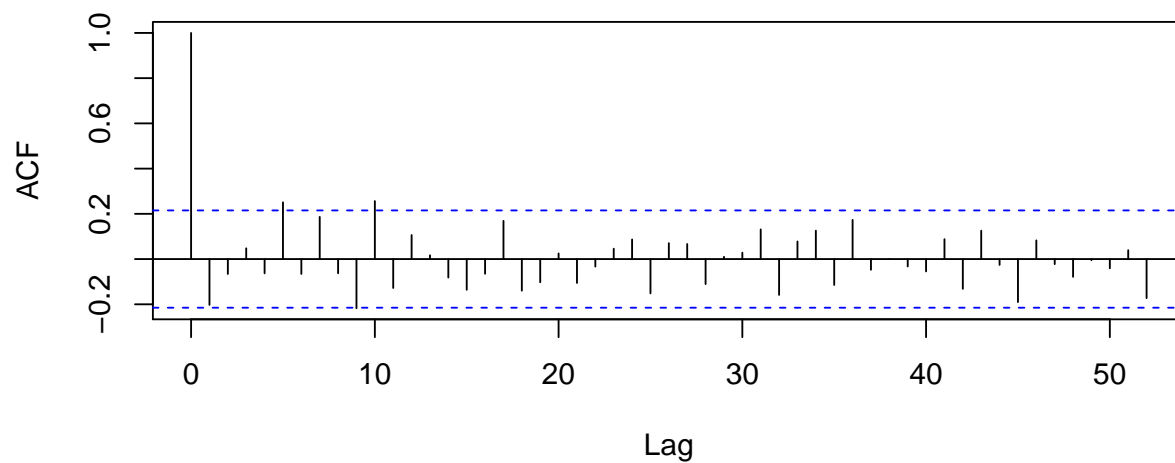
# burglary



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 17.4 A Poisson Regression Model as an Alternative to Model (2) for burglary

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.91980  -0.67848  -0.01918   0.65127   2.82081

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      2.095678   0.605005   3.464 0.000532 ***
tmax.f.spline1    0.020994   0.010652   1.971 0.048737 *
tmax.f.spline2   -0.024061   0.022902  -1.051 0.293449
tmax.f.spline3    0.007578   0.032121   0.236 0.813496
tmax.f.spline4   -0.022466   0.029478  -0.762 0.445970
tmax.f.spline5    0.014379   0.025654   0.560 0.575155
snow.in          -0.156048   0.130280  -1.198 0.231001
precip.in        -0.340649   0.196534  -1.733 0.083045 .
dark.before.12   -0.066545   0.043322  -1.536 0.124527
thanks.xmas       0.752802   1.761658   0.427 0.669142
summer.holiday  -0.065213   0.944013  -0.069 0.944926
winter.holiday   2.904646   0.999588   2.906 0.003663 **
summer.vacation  0.031153   0.120962   0.258 0.796761
oth.ns           -0.100211   0.201406  -0.498 0.618796
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 133.15  on 82  degrees of freedom
Residual deviance: 105.31  on 69  degrees of freedom
AIC: 503.78

Number of Fisher Scoring iterations: 4
```



## 18 Results for larceny

### 18.1 Summary Values for larceny

Table 18.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
larceny	83	42.193	8.510	18	36	41	47	63

Table 18.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
larceny	290	26.190	7.924	7	20	25.5	30	54

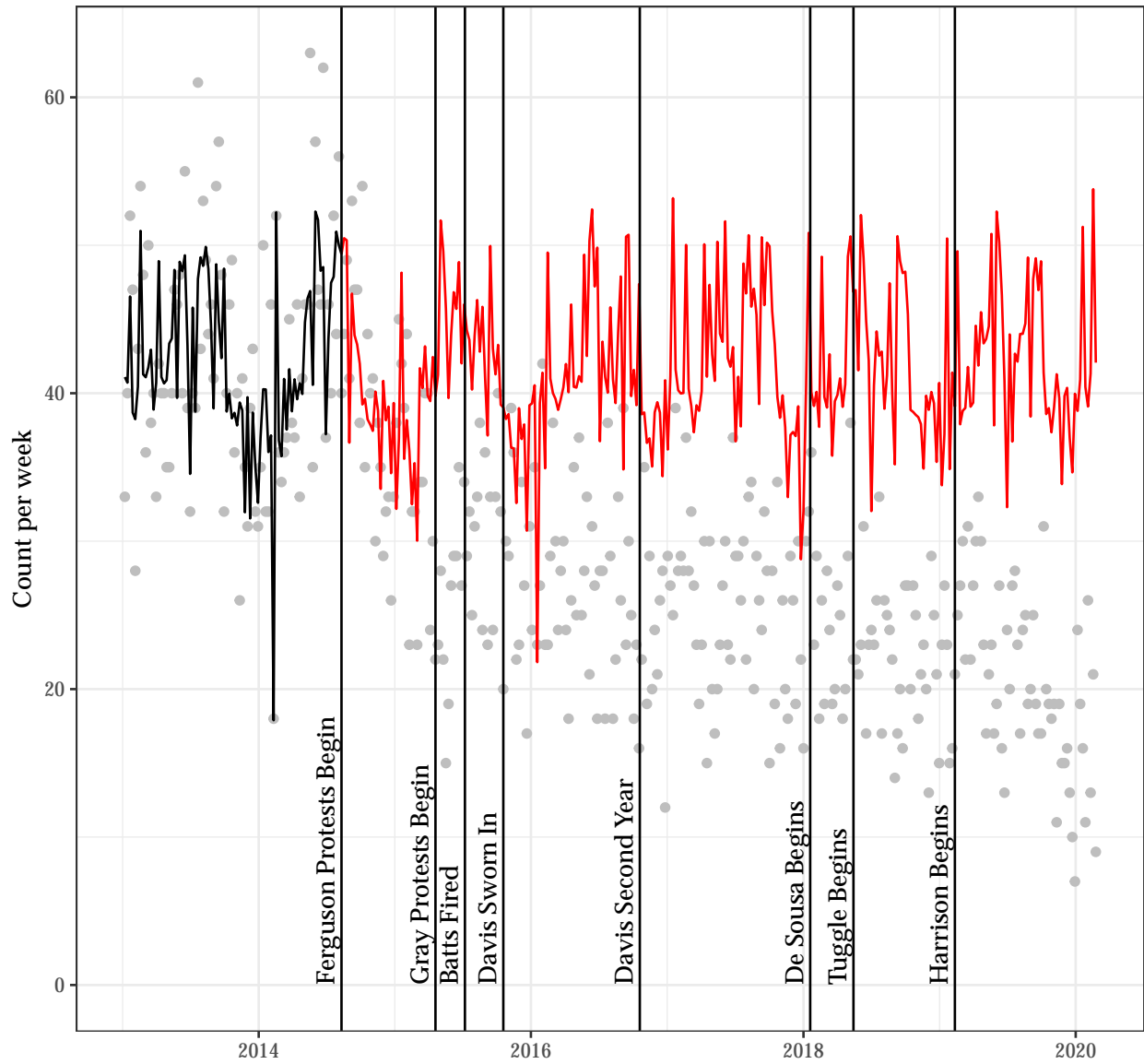
## 18.2 Four Models for larceny

Table 18.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

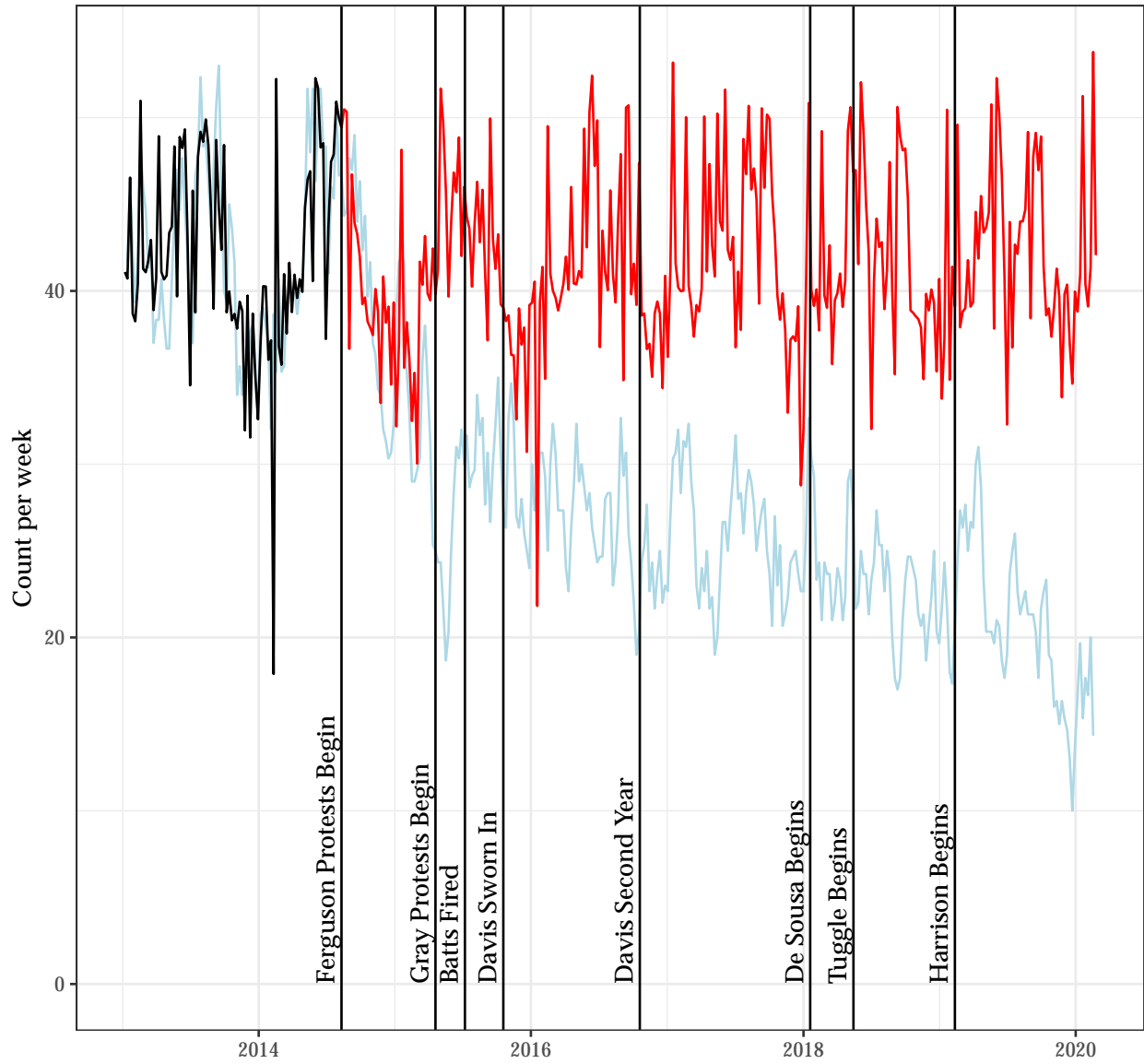
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-4.72		-2.30	-3.37
After Gray Protests Begin (week of 4/20/15 onward)	-11.38		-17.05	-14.46
Unrest and National Guard (4/27/15 - 5/3/2015)	-3.09		1.10	-1.64
After Batts Fired (week of 7/13/15 onward)	4.84		7.28	5.35
After Davis Confirmed (week of 10/19/15 onward)	-3.43		-1.39	-1.99
After Davis First Year (week of 10/17/16 onward)	-2.02		-2.84	-2.21
After De Sousa Begins (week of 1/19/18 onward)	-0.55		-0.22	-0.08
After Tuggle Begins (week of 5/14/18 onward)	-2.86		-3.17	-3.46
After Harrison Begins (week of 2/11/19 onward)	-1.51		-2.06	-1.68
Average Maximum Temperature to 50 Degrees		0.35		0.20
Plus Degrees in the 50s		-0.85		-0.28
Plus Degrees in the 60s		0.71		0.20
Plus Degrees in the 70s		0.84		0.11
Plus Degrees Greater Than 80		-2.00		-0.56
Snowfall (inches)		-7.04		-4.08
Precipitation (inches)		-1.28		0.41
Darkness Before Midnight (hours)		-1.00		-0.09
Thanksgiving/Christmas (proportion of week)		-42.21		-25.61
Winter Holiday (proportion of week)		82.65		40.46
Other Out-of-School Days (proportion of week)		0.44		-2.34
Summer Vacation (proportion of week)		-1.20		1.34
Summer Holiday (proportion of week)		-60.54		-16.97
Observations	373	83	373	373
R <sup>2</sup>	0.59	0.45	0.59	0.65

### 18.3 Least Squares Updated Model (2) for larceny

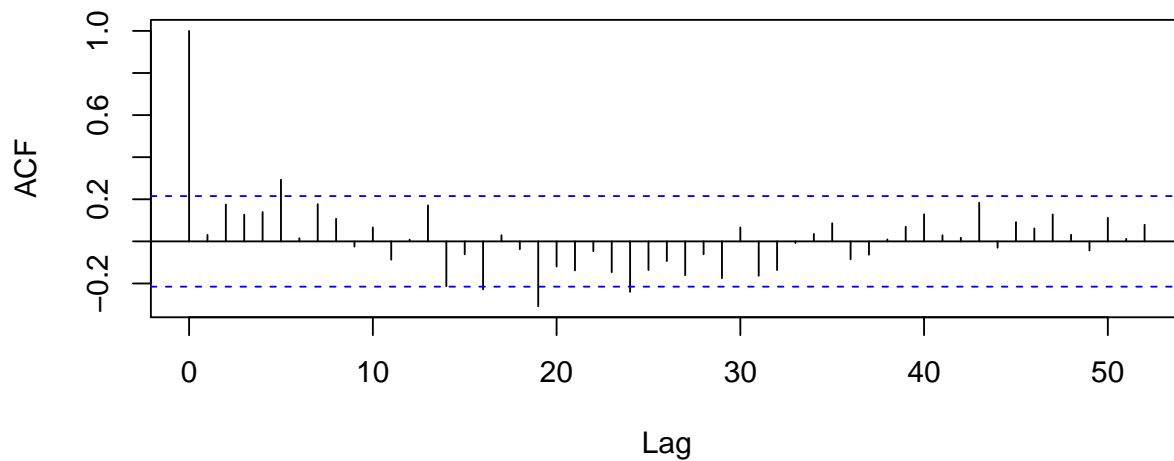
larceny



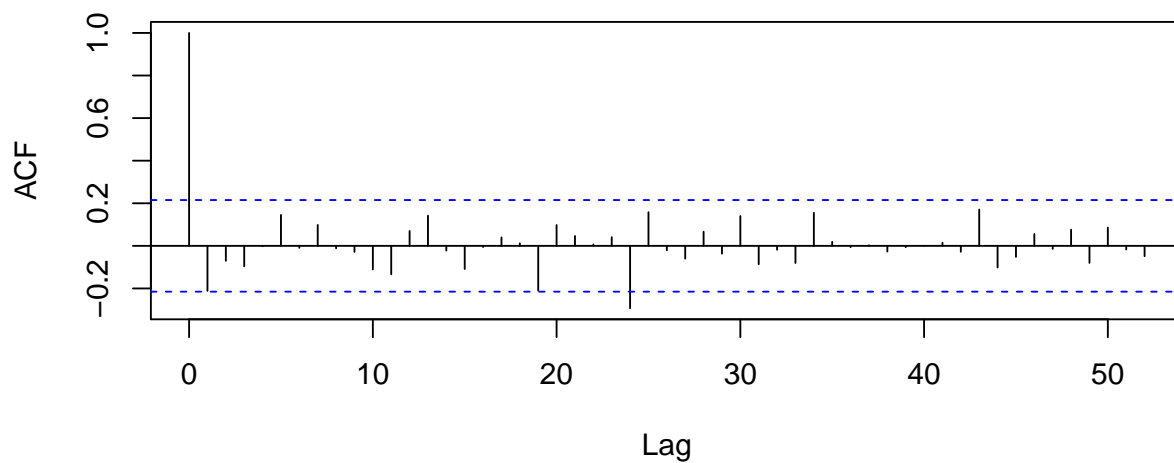
# larceny



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 18.4 A Poisson Regression Model as an Alternative to Model (2) for larceny

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.49348  -0.74269  -0.09825   0.61961   2.22247

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      3.488019   0.353121   9.878 < 2e-16 ***
tmax.f.spline1    0.008490   0.006183   1.373  0.16972
tmax.f.spline2   -0.022143   0.013819  -1.602  0.10908
tmax.f.spline3    0.019758   0.019770   0.999  0.31762
tmax.f.spline4    0.017046   0.017815   0.957  0.33866
tmax.f.spline5   -0.044387   0.015075  -2.944  0.00324 **
snow.in          -0.236962   0.075633  -3.133  0.00173 **
precip.in        -0.035598   0.111627  -0.319  0.74980
dark.before.12   -0.025889   0.025899  -1.000  0.31750
thanks.xmas      -1.291775   1.062199  -1.216  0.22393
summer.holiday  -1.426351   0.579387  -2.462  0.01382 *
winter.holiday   1.971989   0.600480   3.284  0.00102 **
summer.vacation  -0.029509   0.067808  -0.435  0.66343
oth.ns           0.034335   0.120412   0.285  0.77553
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 142.178  on 82  degrees of freedom
Residual deviance:  75.216  on 69  degrees of freedom
AIC: 564.96

Number of Fisher Scoring iterations: 4
```

## 19 Results for court.non.compliance

### 19.1 Summary Values for court.non.compliance

Table 19.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
court.non.compliance	83	105.048	22.247	68	88	100	122	165

Table 19.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
court.non.compliance	290	80.921	17.930	40	70	78	88.8	143

## 19.2 Four Models for court.non.compliance

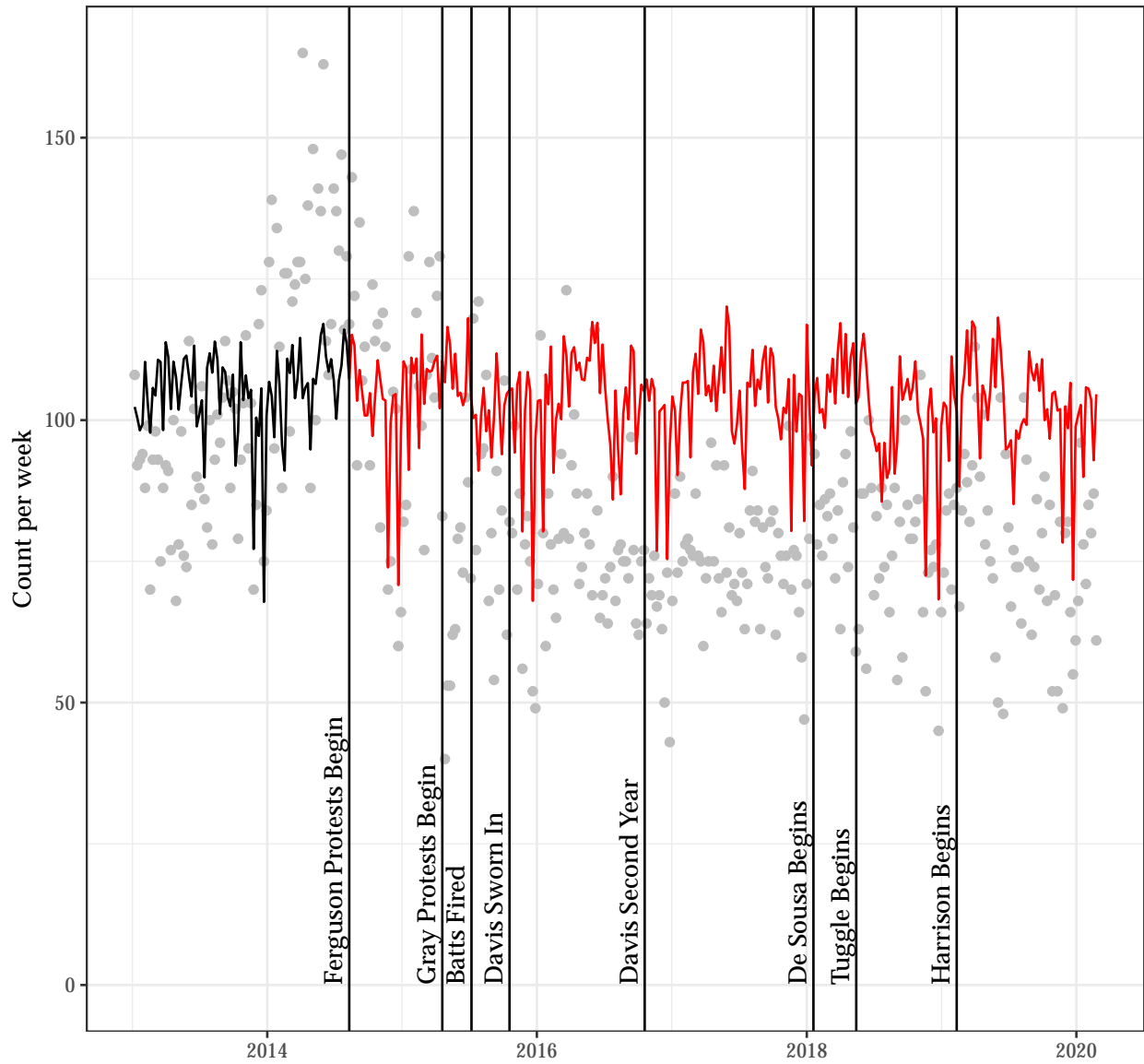
Table 19.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	0.90		2.01	3.26
After Gray Protests Begin (week of 4/20/15 onward)	-32.13		-36.95	-36.57
Unrest and National Guard (4/27/15 - 5/3/2015)	-33.82		-31.77	-38.65
After Batts Fired (week of 7/13/15 onward)	13.97		22.08	17.14
After Davis Confirmed (week of 10/19/15 onward)	-9.23		-11.82	-9.07
After Davis First Year (week of 10/17/16 onward)	-4.09		-3.97	-3.59
After De Sousa Begins (week of 1/19/18 onward)	8.22		3.91	5.08
After Tuggle Begins (week of 5/14/18 onward)	-6.17		1.46	-0.09
After Harrison Begins (week of 2/11/19 onward)	1.03		-1.42	-2.03
Average Maximum Temperature to 50 Degrees		-0.67		0.07
Plus Degrees in the 50s		1.52		0.20
Plus Degrees in the 60s		-2.53		-0.59
Plus Degrees in the 70s		3.07		0.10
Plus Degrees Greater Than 80		-3.44		-0.87
Snowfall (inches)		-5.66		-1.96
Precipitation (inches)		-15.15		-14.36
Darkness Before Midnight (hours)		-3.23		-2.87
Thanksgiving/Christmas (proportion of week)		-167.26		-121.83
Winter Holiday (proportion of week)		-86.75		22.92
Other Out-of-School Days (proportion of week)		-7.27		-10.32
Summer Vacation (proportion of week)		-1.05		6.15
Summer Holiday (proportion of week)		15.26		-37.12
Observations	373	83	373	373
R <sup>2</sup>	0.39	0.12	0.38	0.49

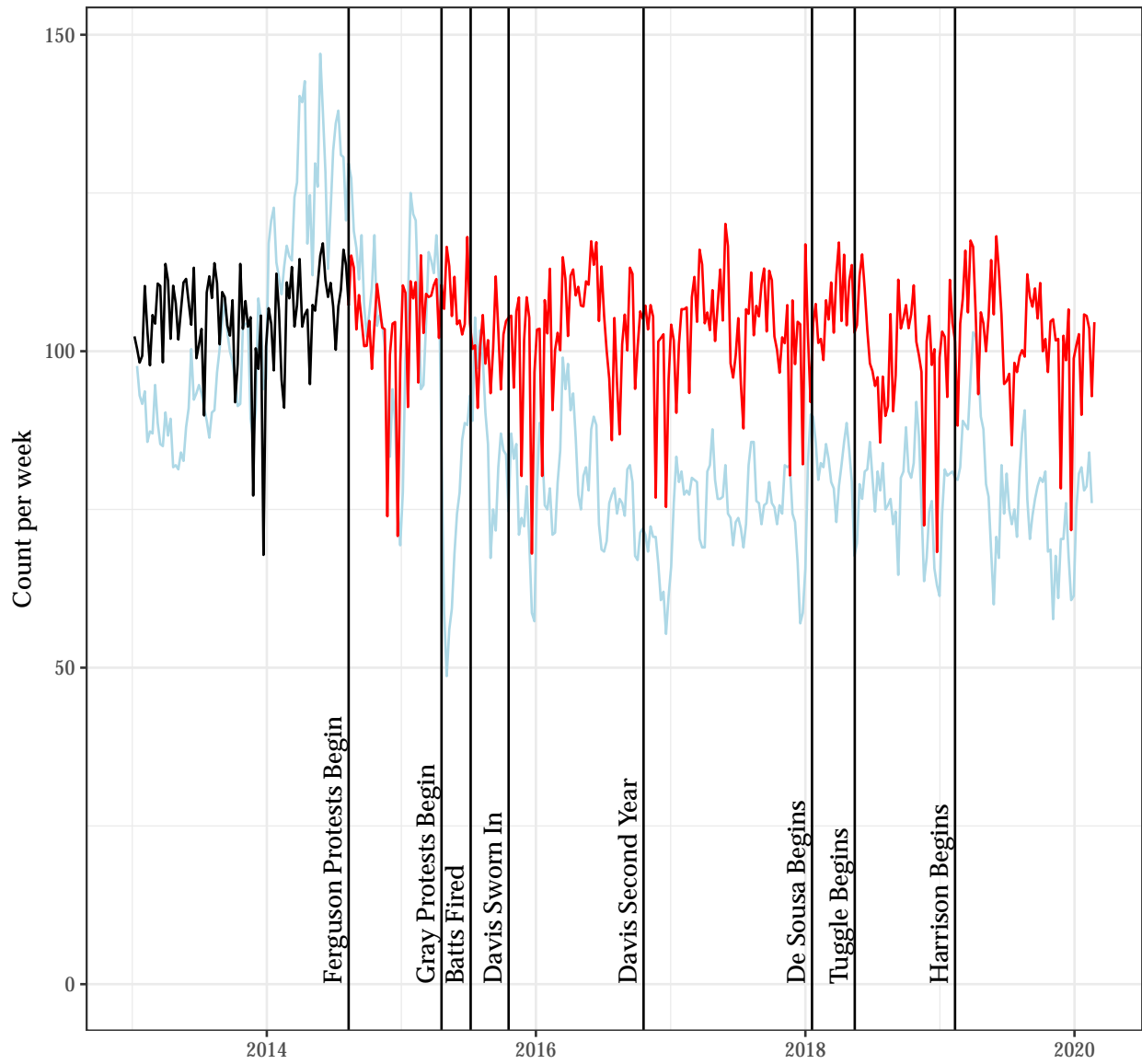


### 19.3 Least Squares Updated Model (2) for court.non.compliance

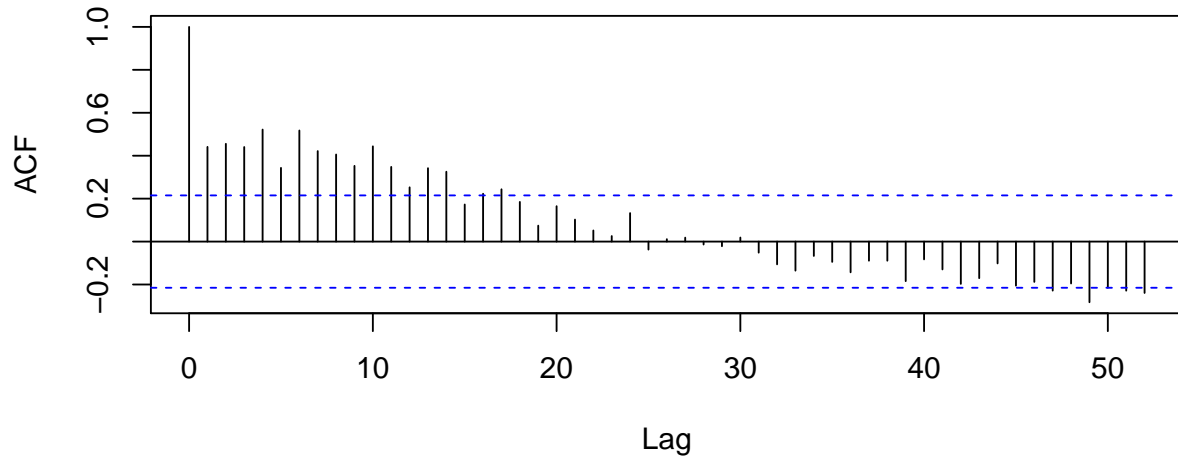
court.non.compliance



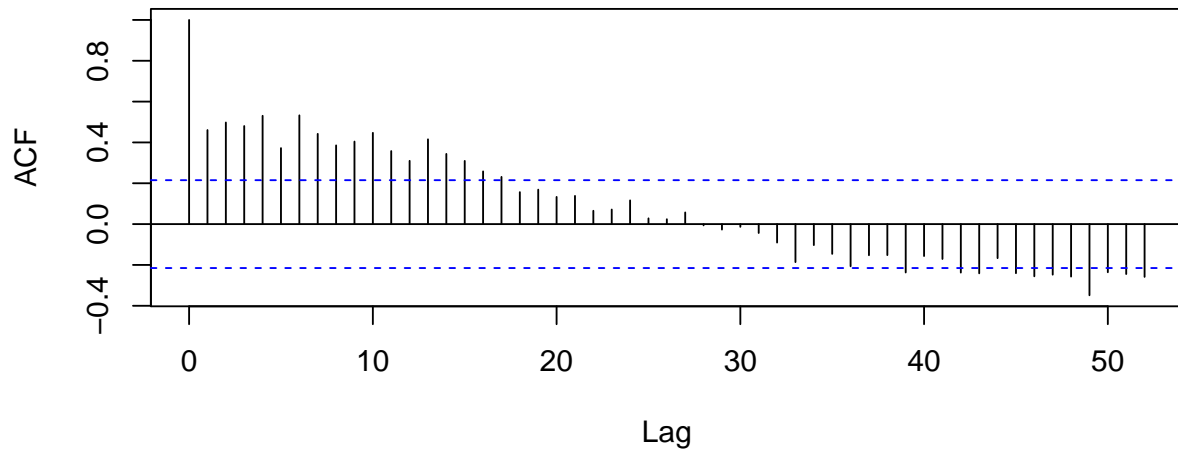
court.non.compliance



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 19.4 A Poisson Regression Model as an Alternative to Model (2) for court.non.compliance

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-4.0888 -1.2853 -0.4877  1.2963  5.5265

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      5.168622   0.220137  23.479 < 2e-16 ***
tmax.f.spline1  -0.006535   0.003880  -1.684 0.092095 .
tmax.f.spline2   0.014644   0.008557   1.711 0.087025 .
tmax.f.spline3  -0.024043   0.011996  -2.004 0.045035 *
tmax.f.spline4   0.029127   0.011209   2.599 0.009363 **
tmax.f.spline5  -0.032789   0.009814  -3.341 0.000835 ***
snow.in          -0.055406   0.039007  -1.420 0.155485
precip.in        -0.146165   0.072035  -2.029 0.042452 *
dark.before.12  -0.030956   0.016024  -1.932 0.053380 .
thanks.xmas      -1.996977   0.689888  -2.895 0.003796 **
summer.holiday   0.147990   0.352513   0.420 0.674620
winter.holiday  -0.856022   0.412572  -2.075 0.038001 *
summer.vacation  -0.009795   0.044411  -0.221 0.825436
oth.ns           -0.075417   0.075542  -0.998 0.318109
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 377.77  on 82  degrees of freedom
Residual deviance: 326.82  on 69  degrees of freedom
AIC: 892.04

Number of Fisher Scoring iterations: 4
```

## 20 Results for property.destruction

### 20.1 Summary Values for property.destruction

Table 20.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
property.destruction	83	6.542	2.981	1	5	6	8	14

Table 20.2: Descriptives for Outcome After Ferguson Protests Begin

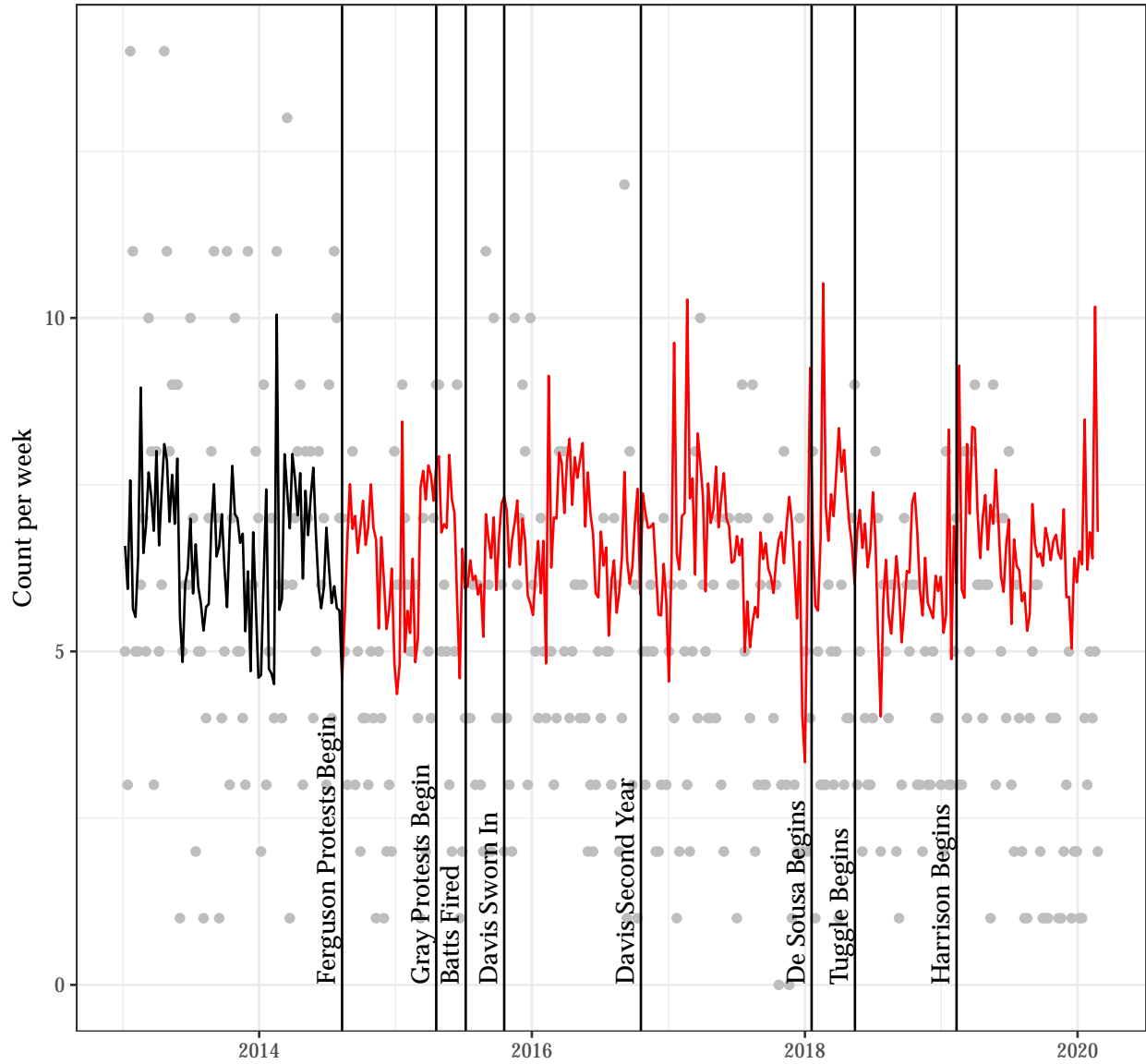
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
property.destruction	290	4.531	2.286	0	3	4	6	12

## 20.2 Four Models for property.destruction

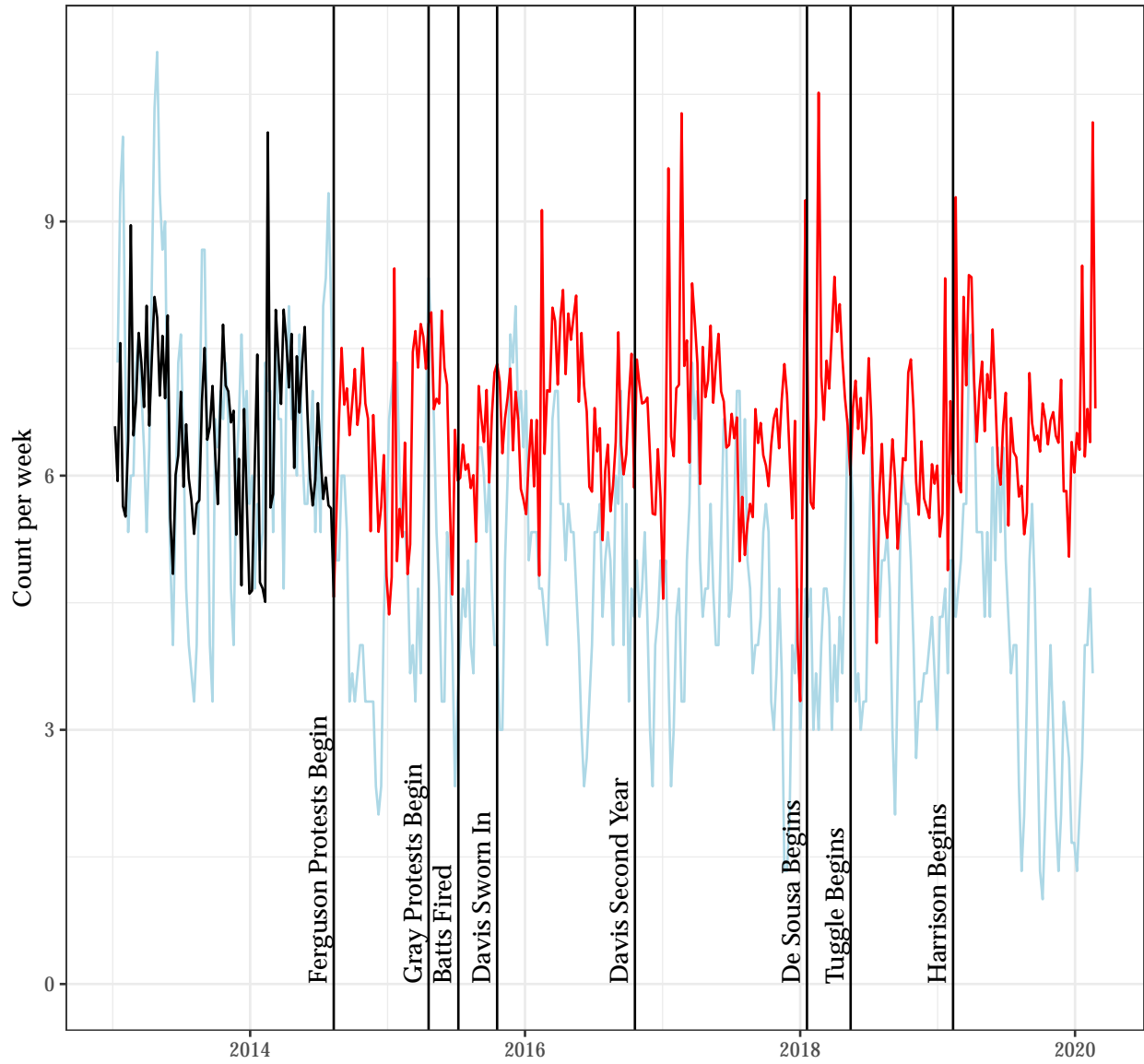
Table 20.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-1.93		-1.73	-1.81
After Gray Protests Begin (week of 4/20/15 onward)	0.03		-0.31	-0.30
Unrest and National Guard (4/27/15 - 5/3/2015)	4.36		3.12	4.05
After Batts Fired (week of 7/13/15 onward)	0.44		0.78	0.55
After Davis Confirmed (week of 10/19/15 onward)	0.02		-0.41	0.001
After Davis First Year (week of 10/17/16 onward)	-0.58		-0.40	-0.37
After De Sousa Begins (week of 1/19/18 onward)	-0.33		-1.00	-0.85
After Tuggle Begins (week of 5/14/18 onward)	0.15		1.28	0.67
After Harrison Begins (week of 2/11/19 onward)	-0.37		-0.93	-0.52
Average Maximum Temperature to 50 Degrees		0.12		-0.02
Plus Degrees in the 50s		-0.06		0.10
Plus Degrees in the 60s		-0.16		-0.21
Plus Degrees in the 70s		-0.01		0.13
Plus Degrees Greater Than 80		0.17		0.15
Snowfall (inches)		-0.01		-0.50
Precipitation (inches)		-2.18		-0.61
Darkness Before Midnight (hours)		-0.50		-0.50
Thanksgiving/Christmas (proportion of week)		4.68		-4.90
Winter Holiday (proportion of week)		21.90		5.58
Other Out-of-School Days (proportion of week)		-0.85		0.63
Summer Vacation (proportion of week)		-1.09		-1.33
Summer Holiday (proportion of week)		5.30		-2.28
Observations	373	83	373	373
R <sup>2</sup>	0.13	0.12	0.13	0.19

### 20.3 Least Squares Updated Model (2) for property.destruction property.destruction

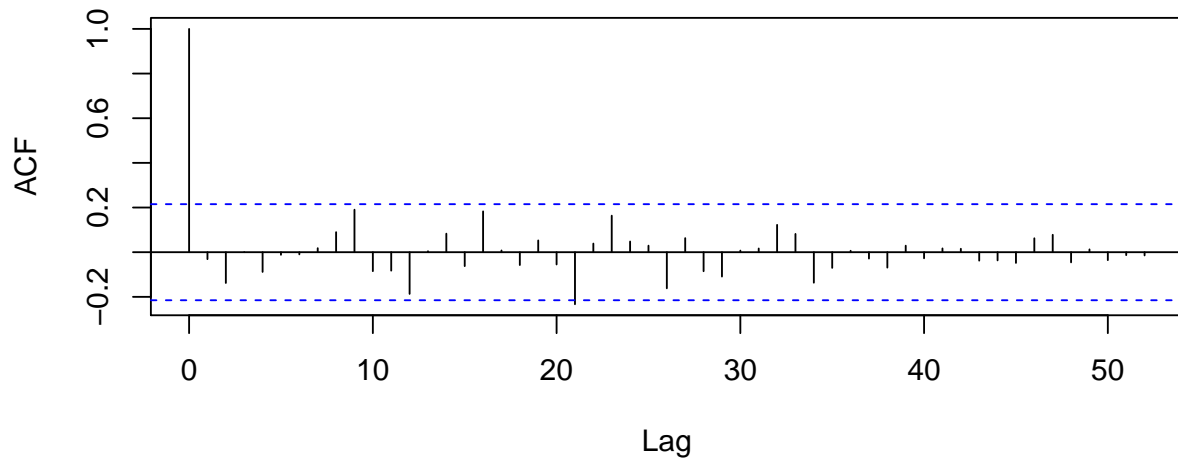


# property.destruction

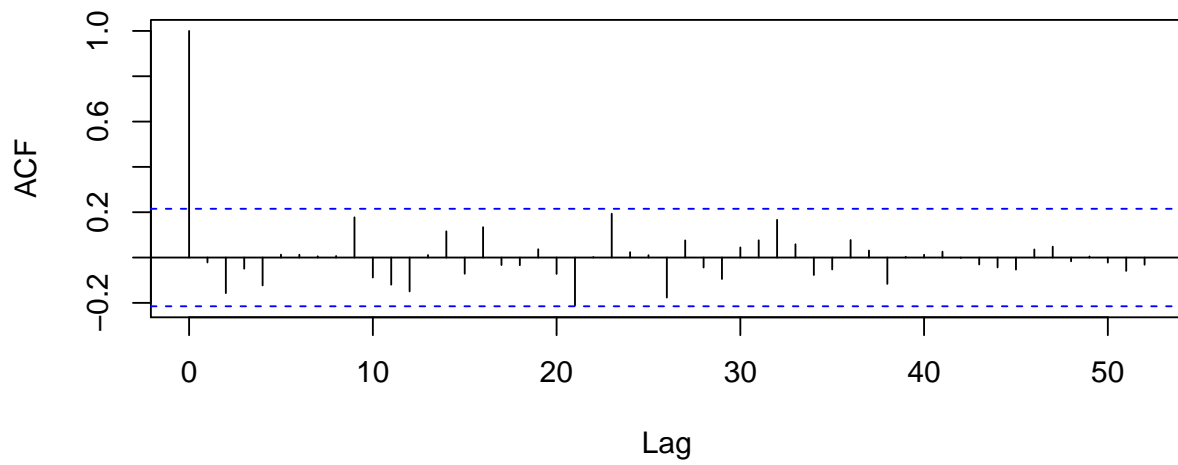




Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 20.4 A Poisson Regression Model as an Alternative to Model (2) for property.destruction

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-2.76745	-0.74160	0.01132	0.53755	2.18925

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	1.465813	0.879562	1.667	0.0956 .
tmax.f.spline1	0.018700	0.015383	1.216	0.2241
tmax.f.spline2	-0.009483	0.032811	-0.289	0.7726
tmax.f.spline3	-0.022674	0.046128	-0.492	0.6230
tmax.f.spline4	-0.002580	0.043438	-0.059	0.9526
tmax.f.spline5	0.027376	0.039090	0.700	0.4837
snow.in	-0.013550	0.170582	-0.079	0.9367
precip.in	-0.345172	0.296234	-1.165	0.2439
dark.before.12	-0.074909	0.063302	-1.183	0.2367
thanks.xmas	0.624327	2.607989	0.239	0.8108
summer.holiday	0.762199	1.370492	0.556	0.5781
winter.holiday	3.073450	1.438073	2.137	0.0326 *
summer.vacation	-0.171786	0.183224	-0.938	0.3485
oth.ns	-0.112111	0.288679	-0.388	0.6978

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 118.13 on 82 degrees of freedom  
Residual deviance: 104.74 on 69 degrees of freedom  
AIC: 433.02

Number of Fisher Scoring iterations: 5

# 21 Results for forgery.fraud.extortion

## 21.1 Summary Values for forgery.fraud.extortion

Table 21.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
forgery.fraud.extortion	83	2.036	1.365	0	1	2	3	5

Table 21.2: Descriptives for Outcome After Ferguson Protests Begin

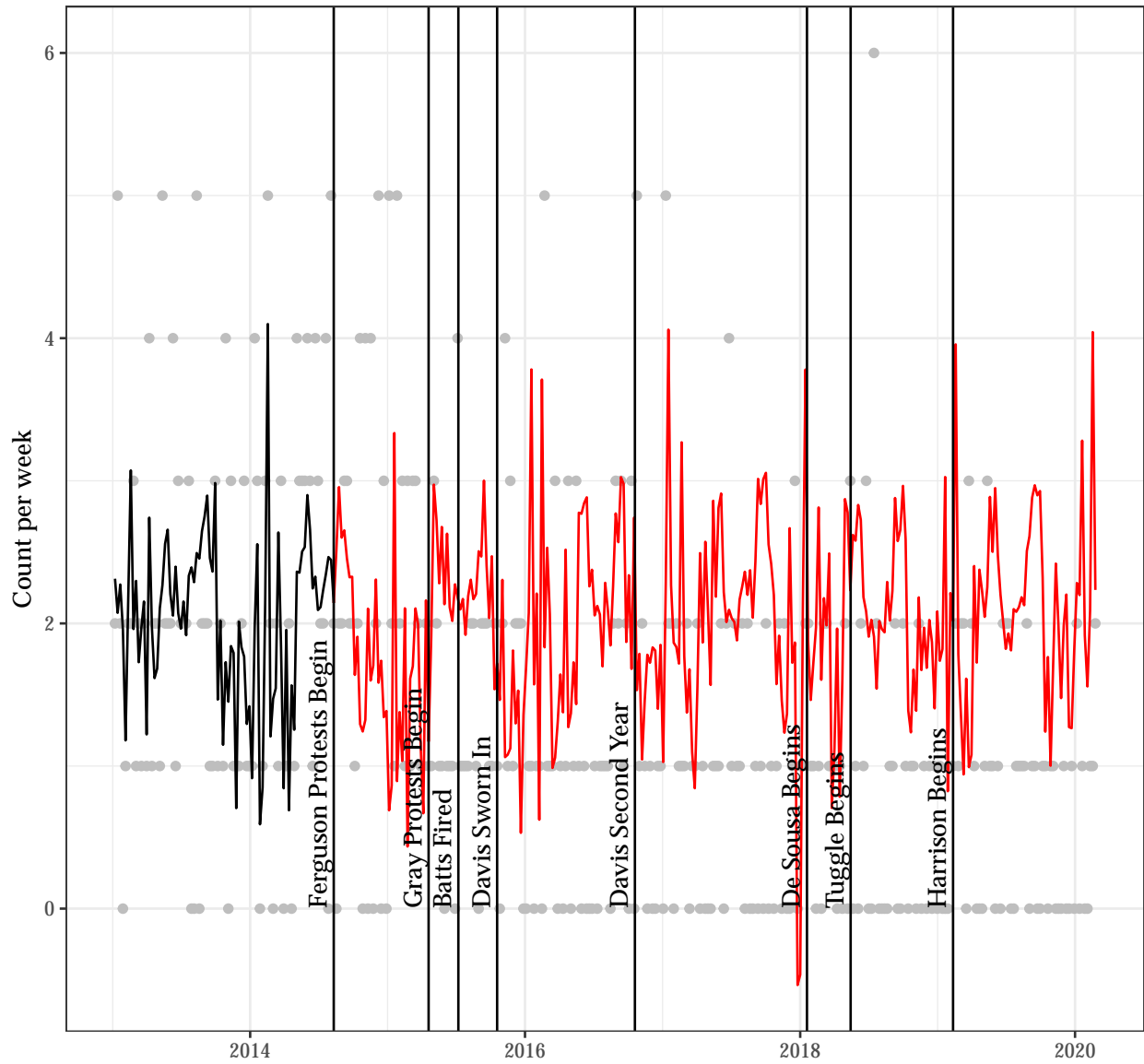
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
forgery.fraud.extortion	290	1.186	1.170	0	0	1	2	6

## 21.2 Four Models for `forgery.fraud.extortion`

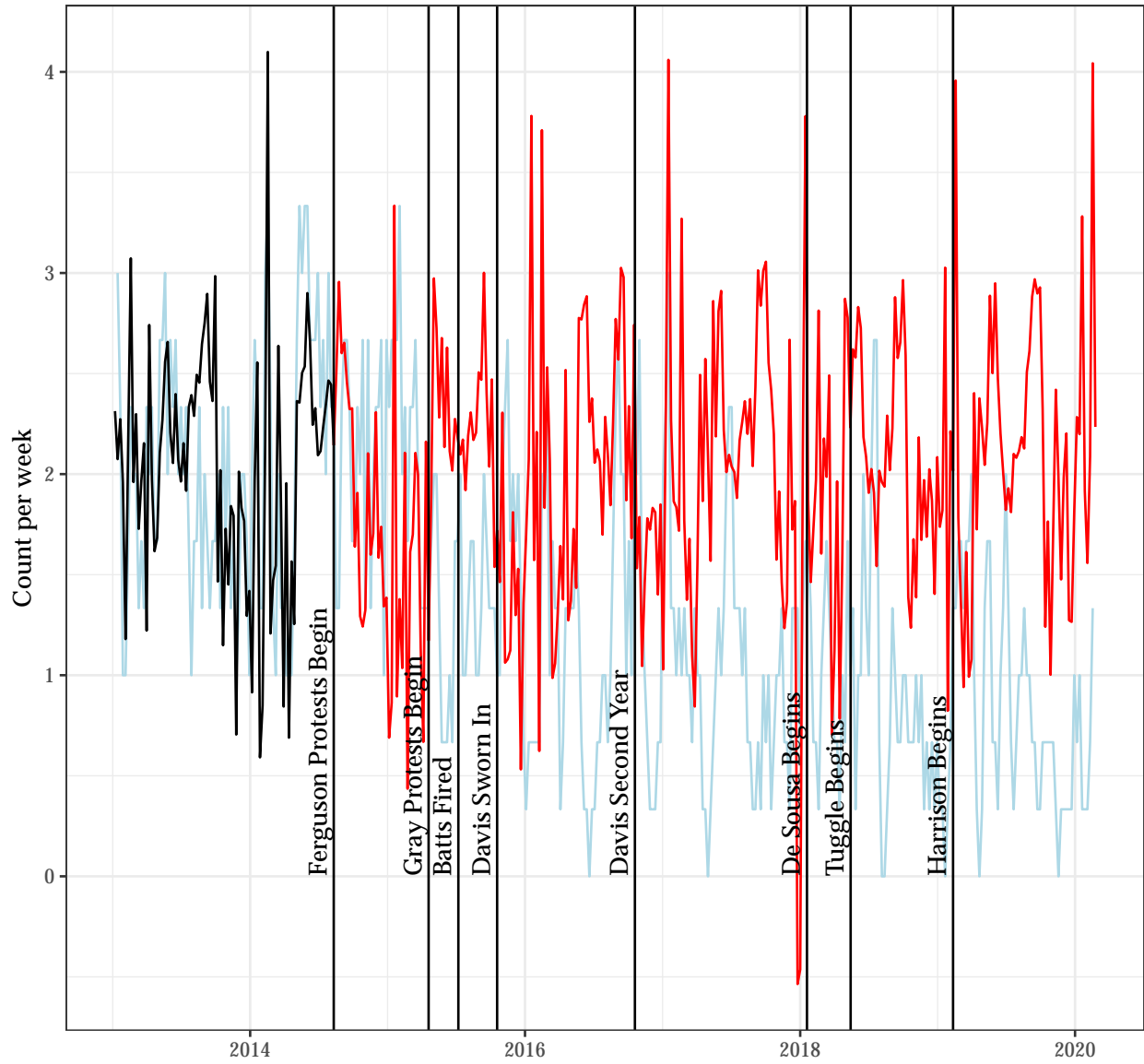
Table 21.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	0.07		0.35	0.14
After Gray Protests Begin (week of 4/20/15 onward)	-0.75		-1.28	-0.89
Unrest and National Guard (4/27/15 - 5/3/2015)	-0.36		0.02	-0.22
After Batts Fired (week of 7/13/15 onward)	-0.01		0.03	0.01
After Davis Confirmed (week of 10/19/15 onward)	-0.11		0.19	-0.09
After Davis First Year (week of 10/17/16 onward)	-0.17		-0.23	-0.14
After De Sousa Begins (week of 1/19/18 onward)	-0.14		0.003	-0.22
After Tuggle Begins (week of 5/14/18 onward)	-0.07		-0.27	-0.02
After Harrison Begins (week of 2/11/19 onward)	0.001		-0.05	0.005
Average Maximum Temperature to 50 Degrees		0.12		0.02
Plus Degrees in the 50s		-0.25		0.005
Plus Degrees in the 60s		0.26		-0.07
Plus Degrees in the 70s		-0.04		0.09
Plus Degrees Greater Than 80		-0.13		-0.03
Snowfall (inches)		0.63		-0.002
Precipitation (inches)		-0.61		-0.002
Darkness Before Midnight (hours)		0.07		-0.02
Thanksgiving/Christmas (proportion of week)		-3.82		0.56
Winter Holiday (proportion of week)		12.23		1.95
Other Out-of-School Days (proportion of week)		-0.35		-0.72
Summer Vacation (proportion of week)		-0.45		-0.16
Summer Holiday (proportion of week)		-0.77		-1.26
Observations	373	83	373	373
R <sup>2</sup>	0.15	0.20	0.15	0.17

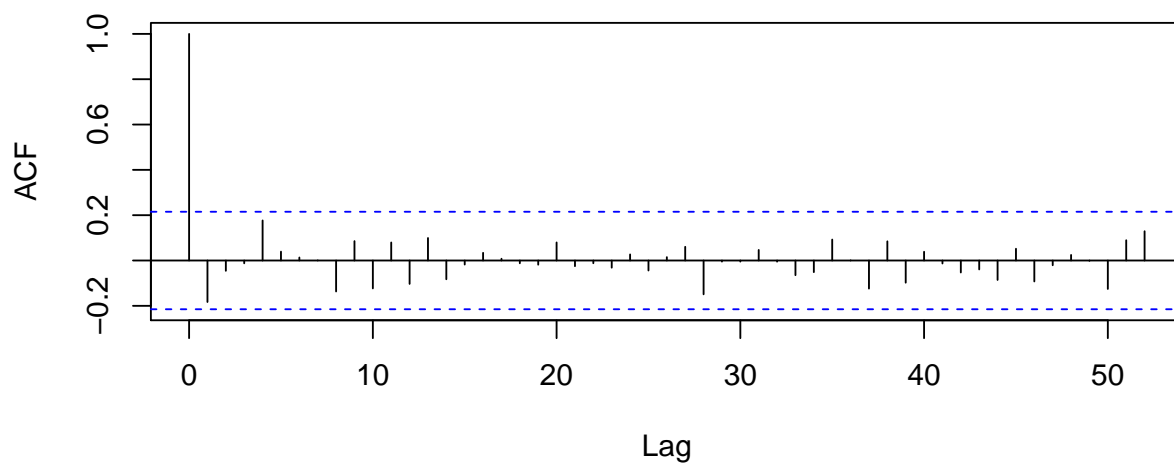
### 21.3 Least Squares Updated Model (2) for `forgery.fraud.extortion`



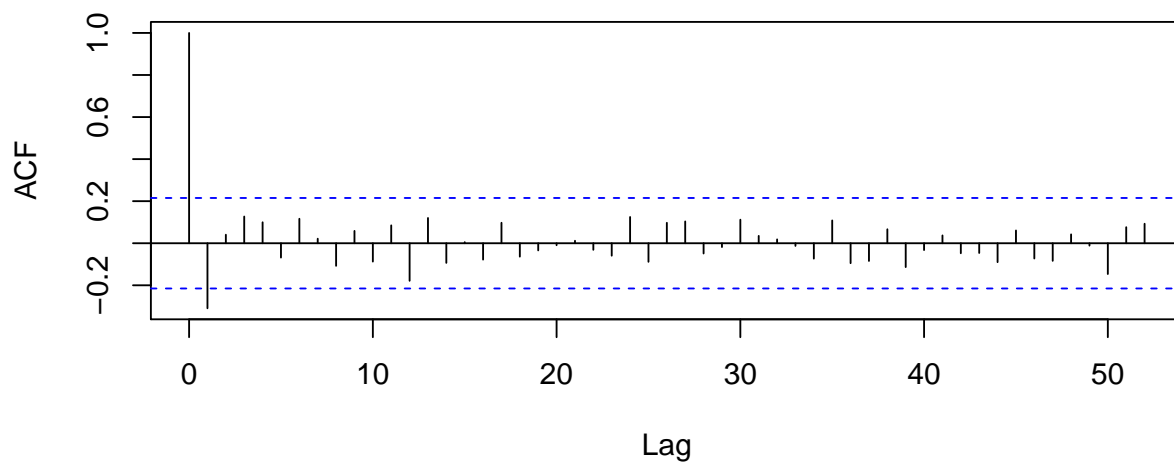
forgery.fraud.extortion



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 21.4 A Poisson Regression Model as an Alternative to Model (2) for `forgery.fraud.extortion`

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-2.23733	-0.64467	-0.07083	0.48333	1.77046

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	-2.45948	1.68294	-1.461	0.1439
tmax.f.spline1	0.06080	0.02866	2.122	0.0338 *
tmax.f.spline2	-0.13849	0.06663	-2.079	0.0376 *
tmax.f.spline3	0.15726	0.10304	1.526	0.1270
tmax.f.spline4	-0.04502	0.08582	-0.525	0.5999
tmax.f.spline5	-0.05448	0.06765	-0.805	0.4206
snow.in	0.34888	0.27678	1.261	0.2075
precip.in	-0.34938	0.55472	-0.630	0.5288
dark.before.12	0.04574	0.12107	0.378	0.7056
thanks.xmas	-3.17090	5.86786	-0.540	0.5889
summer.holiday	-0.29494	2.37051	-0.124	0.9010
winter.holiday	5.26377	2.43550	2.161	0.0307 *
summer.vacation	-0.16397	0.29231	-0.561	0.5748
oth.ns	-0.15655	0.57809	-0.271	0.7865

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 87.683 on 82 degrees of freedom  
Residual deviance: 72.564 on 69 degrees of freedom  
AIC: 292.71

Number of Fisher Scoring iterations: 5



## 22 Results for police.non.compliance

### 22.1 Summary Values for police.non.compliance

Table 22.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
police.non.compliance	83	11.566	4.165	3	8.5	12	15	22

Table 22.2: Descriptives for Outcome After Ferguson Protests Begin

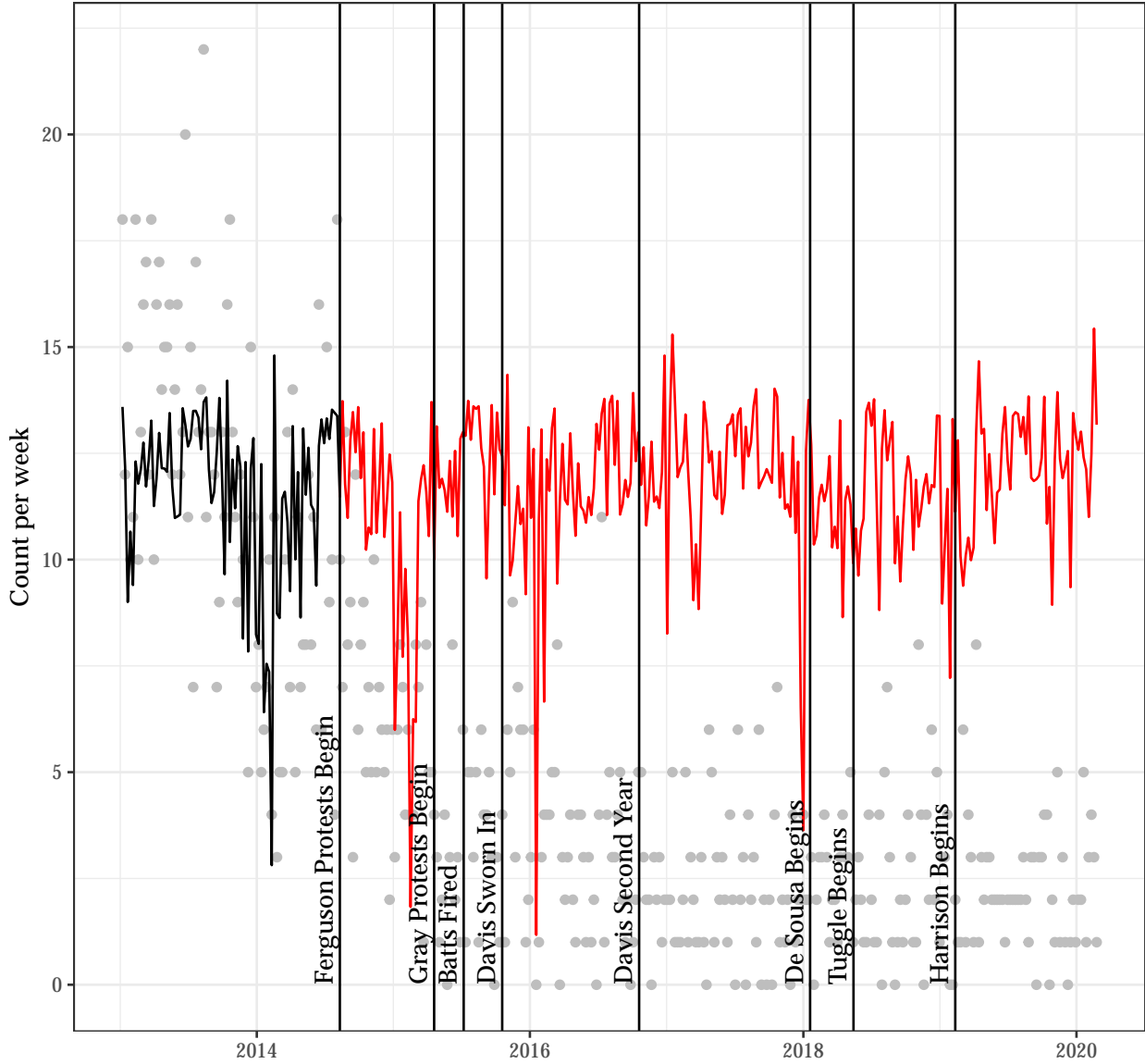
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
police.non.compliance	290	3.128	2.362	0	1	3	4	13

## 22.2 Four Models for police.non.compliance

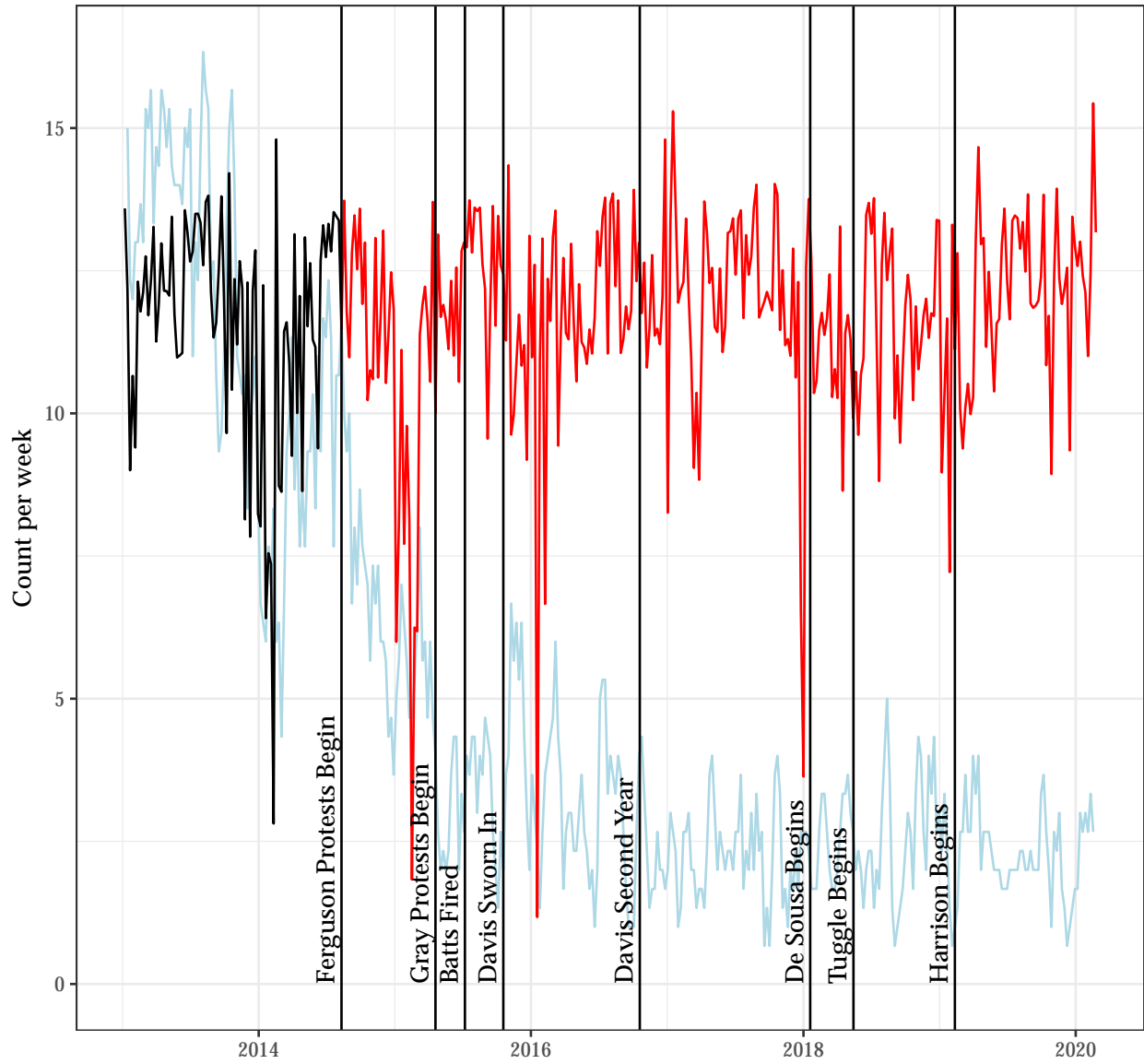
Table 22.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-5.07		-4.28	-4.74
After Gray Protests Begin (week of 4/20/15 onward)	-3.41		-4.32	-3.88
Unrest and National Guard (4/27/15 - 5/3/2015)	-0.09		-1.53	-0.42
After Batts Fired (week of 7/13/15 onward)	0.19		-0.80	-0.25
After Davis Confirmed (week of 10/19/15 onward)	0.06		1.16	0.53
After Davis First Year (week of 10/17/16 onward)	-1.03		-1.43	-1.14
After De Sousa Begins (week of 1/19/18 onward)	0.31		1.05	0.63
After Tuggle Begins (week of 5/14/18 onward)	-0.19		-0.45	-0.38
After Harrison Begins (week of 2/11/19 onward)	-0.14		-0.79	-0.32
Average Maximum Temperature to 50 Degrees		0.42		0.15
Plus Degrees in the 50s		-0.80		-0.20
Plus Degrees in the 60s		0.81		0.17
Plus Degrees in the 70s		-0.65		-0.16
Plus Degrees Greater Than 80		0.24		0.05
Snowfall (inches)		-1.37		-0.90
Precipitation (inches)		-4.68		-1.15
Darkness Before Midnight (hours)		0.21		0.23
Thanksgiving/Christmas (proportion of week)		-8.69		-6.72
Winter Holiday (proportion of week)		12.55		8.93
Other Out-of-School Days (proportion of week)		1.50		-0.17
Summer Vacation (proportion of week)		2.07		0.77
Summer Holiday (proportion of week)		-3.68		-3.09
Observations	373	83	373	373
R <sup>2</sup>	0.67	0.24	0.67	0.70

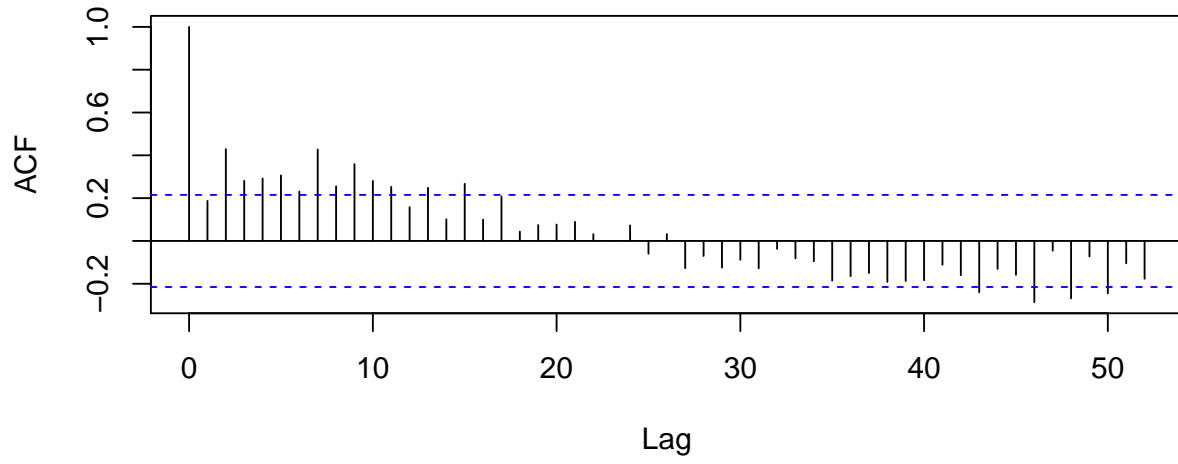
22.3 Least Squares Updated Model (2) for police.non.compliance  
police.non.compliance



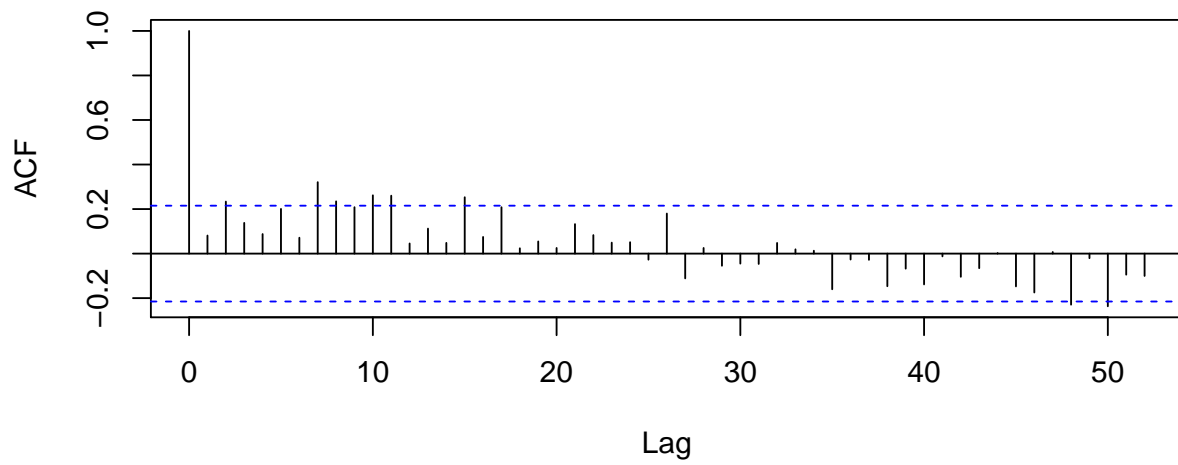
# police.non.compliance



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 22.4 A Poisson Regression Model as an Alternative to Model (2) for police.non.compliance

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-3.04242	-0.74216	-0.00389	0.65299	2.17809

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	0.57060	0.69673	0.819	0.41280	
tmax.f.spline1	0.04055	0.01243	3.262	0.00111	**
tmax.f.spline2	-0.07843	0.02662	-2.946	0.00322	**
tmax.f.spline3	0.07582	0.03755	2.019	0.04347	*
tmax.f.spline4	-0.05683	0.03374	-1.684	0.09215	.
tmax.f.spline5	0.01989	0.02821	0.705	0.48077	
snow.in	-0.25584	0.16461	-1.554	0.12013	
precip.in	-0.41723	0.22627	-1.844	0.06519	.
dark.before.12	0.01260	0.04843	0.260	0.79467	
thanks.xmas	-1.12487	1.99796	-0.563	0.57343	
summer.holiday	-0.30679	1.05521	-0.291	0.77125	
winter.holiday	1.13234	1.22707	0.923	0.35611	
summer.vacation	0.16929	0.13395	1.264	0.20628	
oth.ns	0.17249	0.22232	0.776	0.43781	

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 129.910 on 82 degrees of freedom  
Residual deviance: 96.181 on 69 degrees of freedom  
AIC: 474.98

Number of Fisher Scoring iterations: 4

## 23 Results for driving.violation

### 23.1 Summary Values for driving.violation

Table 23.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
driving.violation	83	15.012	4.419	7	11.5	15	18	25

Table 23.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
driving.violation	290	6.907	4.955	0	3	6	9.8	26

## 23.2 Four Models for driving.violation

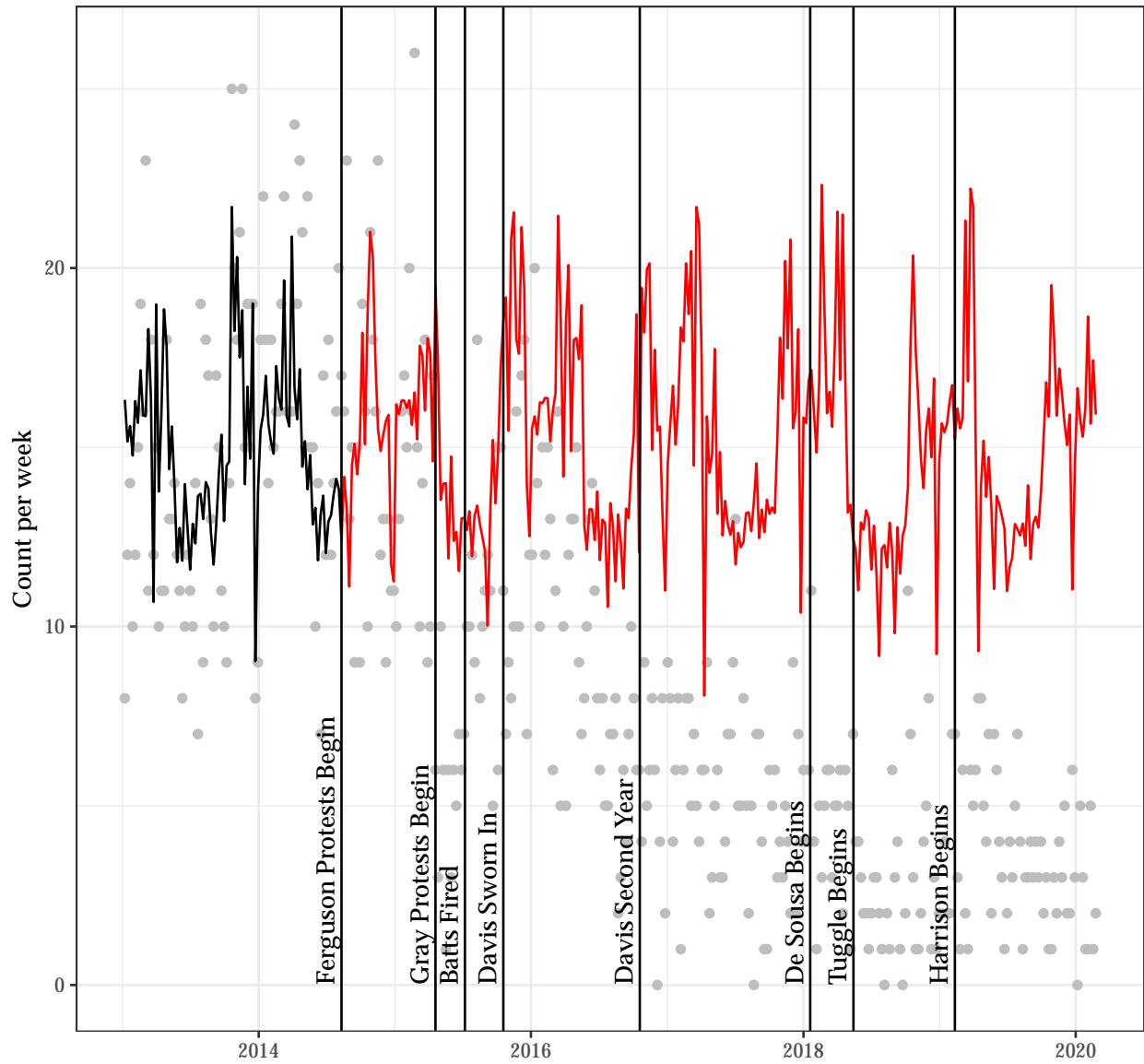
Table 23.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-0.15		-0.90	-0.48
After Gray Protests Begin (week of 4/20/15 onward)	-9.13		-7.04	-8.33
Unrest and National Guard (4/27/15 - 5/3/2015)	-2.73		-6.37	-4.01
After Batts Fired (week of 7/13/15 onward)	5.13		5.52	5.56
After Davis Confirmed (week of 10/19/15 onward)	-0.97		-3.33	-1.83
After Davis First Year (week of 10/17/16 onward)	-4.64		-4.37	-4.63
After De Sousa Begins (week of 1/19/18 onward)	-0.62		-2.47	-1.26
After Tuggle Begins (week of 5/14/18 onward)	-1.57		1.94	-0.33
After Harrison Begins (week of 2/11/19 onward)	0.53		-0.65	0.08
Average Maximum Temperature to 50 Degrees		-0.03		-0.07
Plus Degrees in the 50s		0.64		0.16
Plus Degrees in the 60s		-1.28		-0.24
Plus Degrees in the 70s		0.43		0.05
Plus Degrees Greater Than 80		0.11		0.001
Snowfall (inches)		-0.30		-0.07
Precipitation (inches)		-3.87		-1.84
Darkness Before Midnight (hours)		-0.24		-0.28
Thanksgiving/Christmas (proportion of week)		-0.93		0.22
Winter Holiday (proportion of week)		5.99		1.35
Other Out-of-School Days (proportion of week)		-5.93		-1.76
Summer Vacation (proportion of week)		0.64		0.07
Summer Holiday (proportion of week)		-8.26		0.71
Observations	373	83	373	373
R <sup>2</sup>	0.67	0.29	0.61	0.69

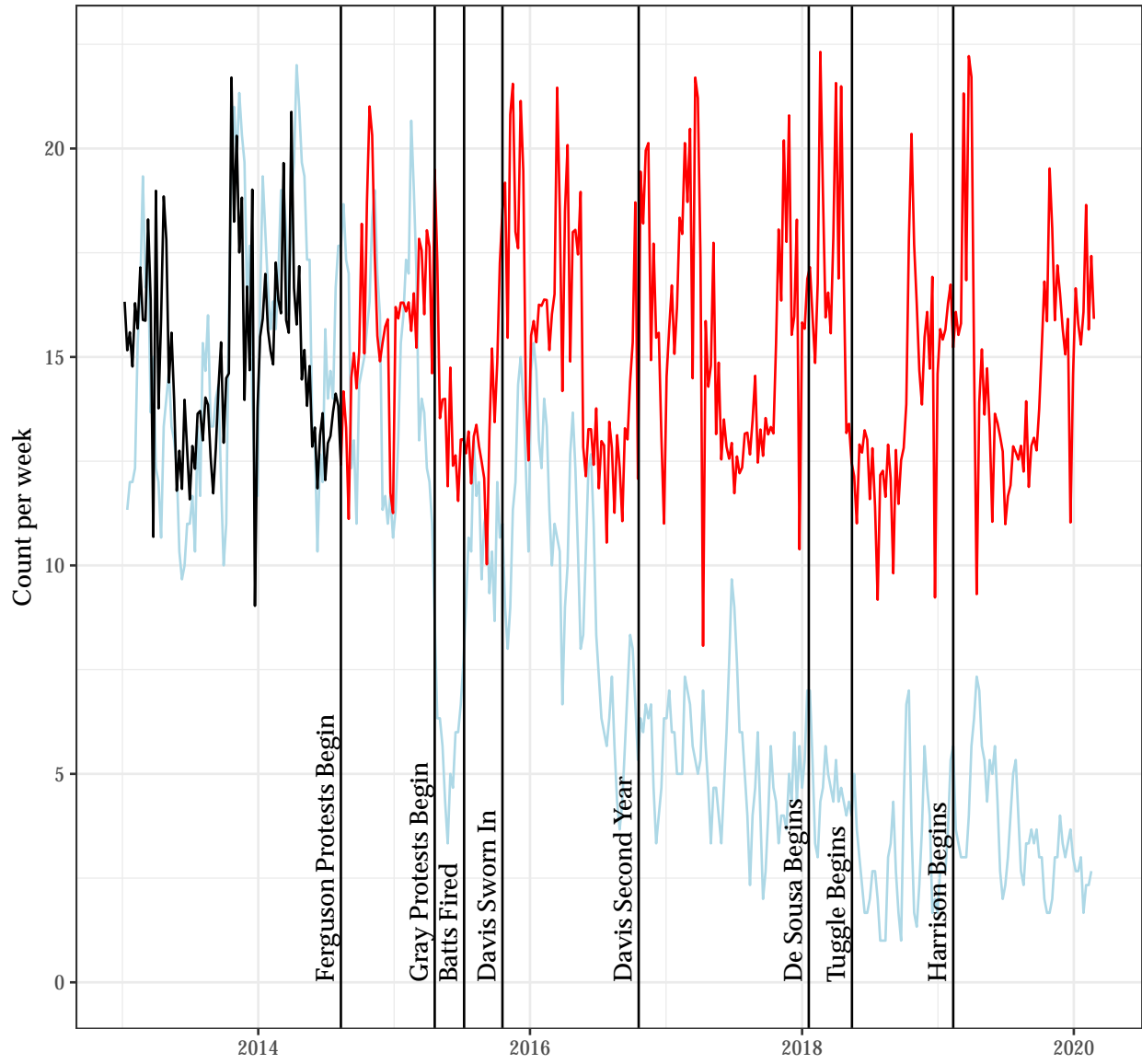


### 23.3 Least Squares Updated Model (2) for driving.violation

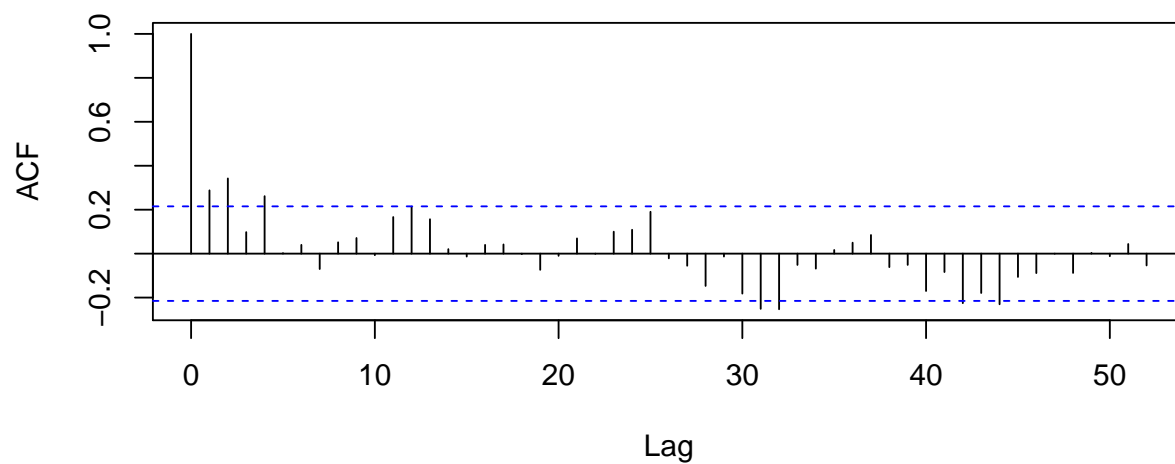
driving.violation



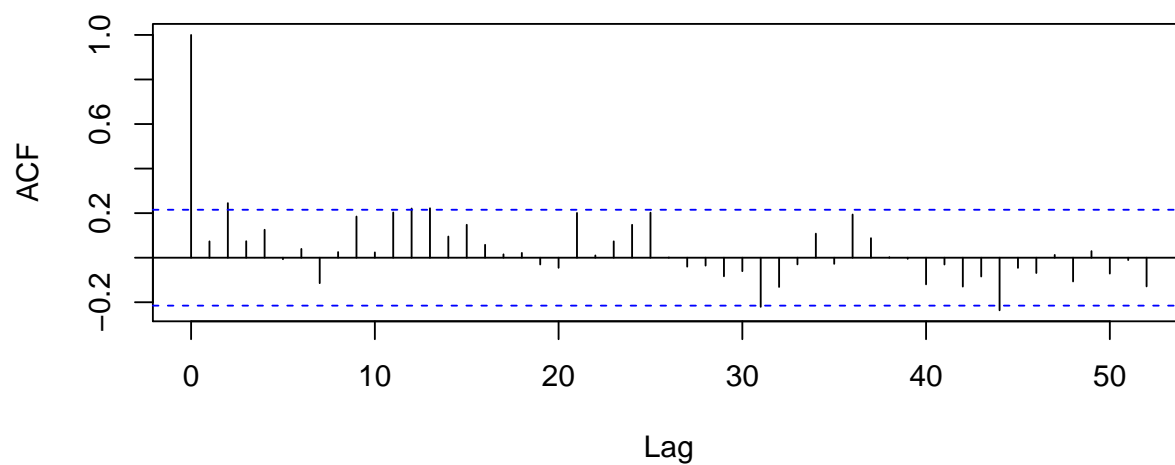
# driving.violation



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 23.4 A Poisson Regression Model as an Alternative to Model (2) for driving.violation

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-2.27019	-0.76045	0.03543	0.57514	2.01009

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	3.011006	0.557708	5.399	6.71e-08	***
tmax.f.spline1	-0.002690	0.009877	-0.272	0.7853	
tmax.f.spline2	0.038162	0.021408	1.783	0.0747	.
tmax.f.spline3	-0.074266	0.029502	-2.517	0.0118	*
tmax.f.spline4	0.021019	0.029119	0.722	0.4704	
tmax.f.spline5	0.008021	0.027226	0.295	0.7683	
snow.in	-0.024123	0.100066	-0.241	0.8095	
precip.in	-0.248033	0.190952	-1.299	0.1940	
dark.before.12	-0.015801	0.040537	-0.390	0.6967	
thanks.xmas	-0.338946	1.728059	-0.196	0.8445	
summer.holiday	-0.631086	1.042558	-0.605	0.5450	
winter.holiday	0.362557	1.000895	0.362	0.7172	
summer.vacation	0.049160	0.128187	0.384	0.7013	
oth.ns	-0.409655	0.204763	-2.001	0.0454	*

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 107.453 on 82 degrees of freedom  
Residual deviance: 77.204 on 69 degrees of freedom  
AIC: 479.86

Number of Fisher Scoring iterations: 4

## 24 Results for trespass

### 24.1 Summary Values for trespass

Table 24.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
trespass	83	12.446	4.551	3	9	11	16	25

Table 24.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
trespass	290	4.641	3.585	0	2	4	6	22

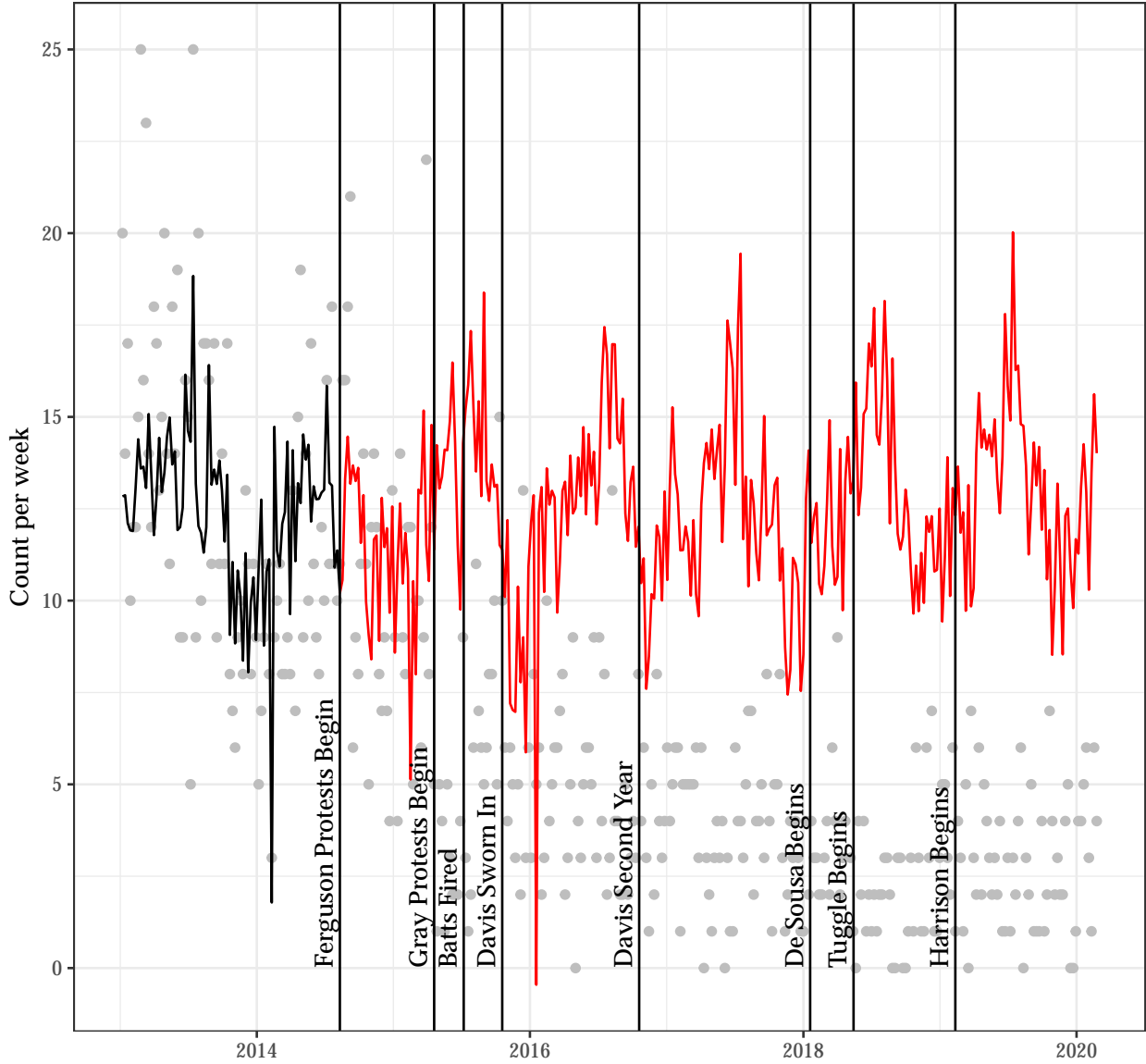
## 24.2 Four Models for trespass

Table 24.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

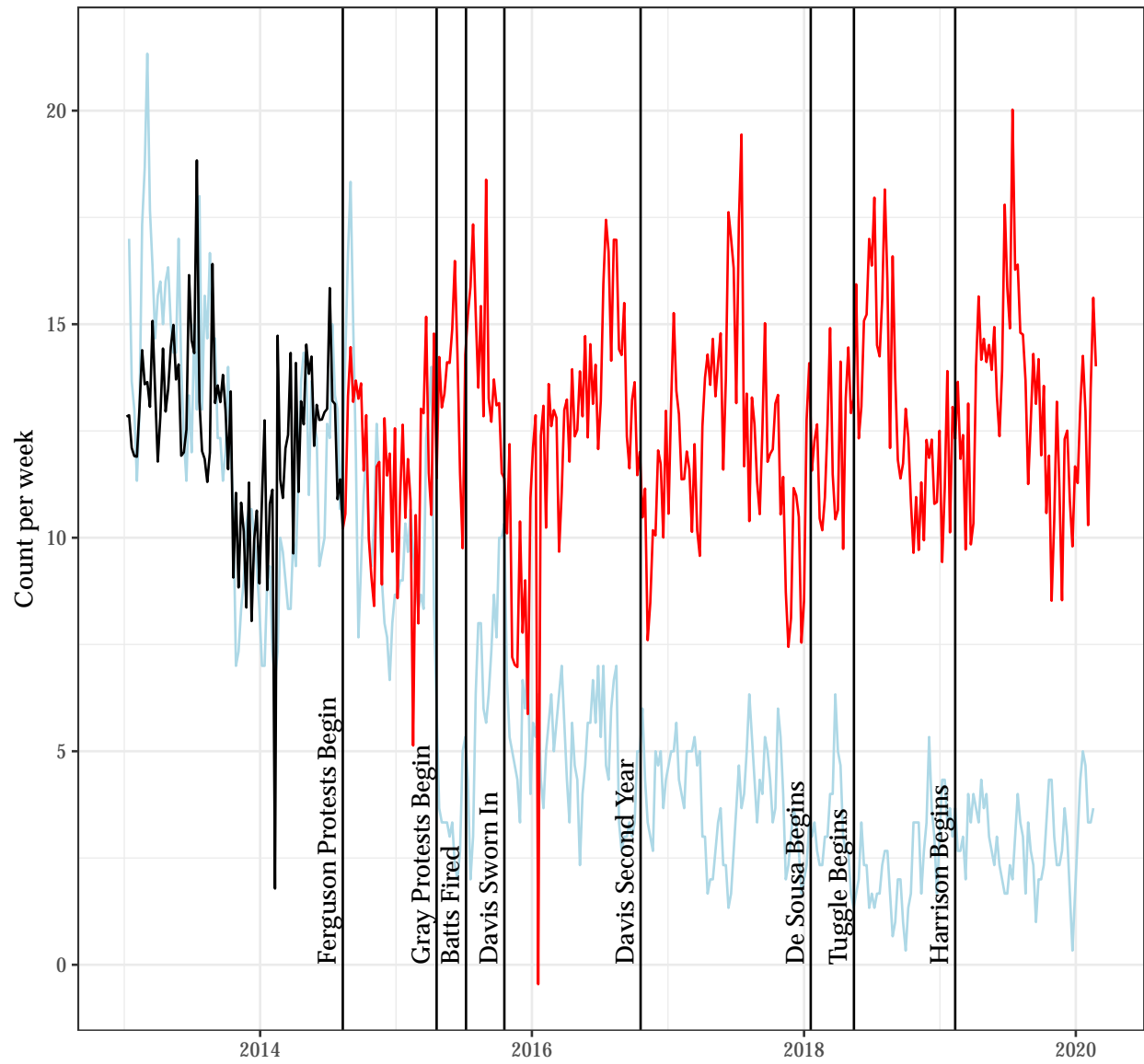
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-1.83		-0.83	-1.52
After Gray Protests Begin (week of 4/20/15 onward)	-6.79		-8.73	-7.29
Unrest and National Guard (4/27/15 - 5/3/2015)	-2.82		-3.67	-3.56
After Batts Fired (week of 7/13/15 onward)	2.82		1.83	2.93
After Davis Confirmed (week of 10/19/15 onward)	-1.57		0.62	-1.44
After Davis First Year (week of 10/17/16 onward)	-1.23		-1.19	-1.29
After De Sousa Begins (week of 1/19/18 onward)	-0.41		-0.29	-0.51
After Tuggle Begins (week of 5/14/18 onward)	-1.03		-2.01	-0.59
After Harrison Begins (week of 2/11/19 onward)	0.52		0.44	0.09
Average Maximum Temperature to 50 Degrees		0.18		0.13
Plus Degrees in the 50s		-0.79		-0.22
Plus Degrees in the 60s		1.12		0.20
Plus Degrees in the 70s		-0.78		-0.22
Plus Degrees Greater Than 80		0.86		0.07
Snowfall (inches)		-3.45		-0.79
Precipitation (inches)		-1.31		-1.84
Darkness Before Midnight (hours)		-0.95		-0.13
Thanksgiving/Christmas (proportion of week)		-20.64		-17.08
Winter Holiday (proportion of week)		13.38		13.72
Other Out-of-School Days (proportion of week)		0.89		0.78
Summer Vacation (proportion of week)		-1.99		0.52
Summer Holiday (proportion of week)		-10.61		6.82
Observations	373	83	373	373
R <sup>2</sup>	0.61	0.24	0.57	0.64

24.3 Least Squares Updated Model (2) for trespass

trespass

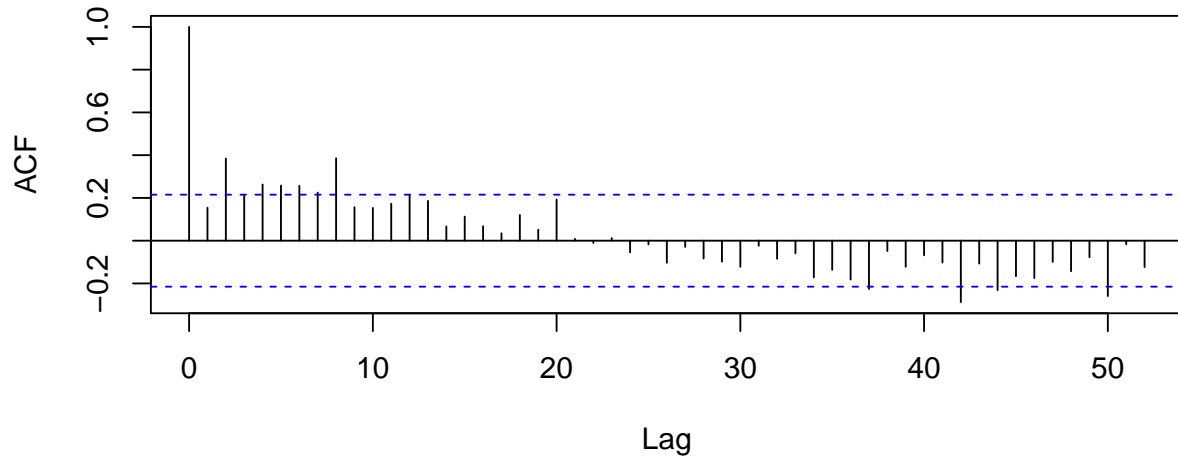


# trespass

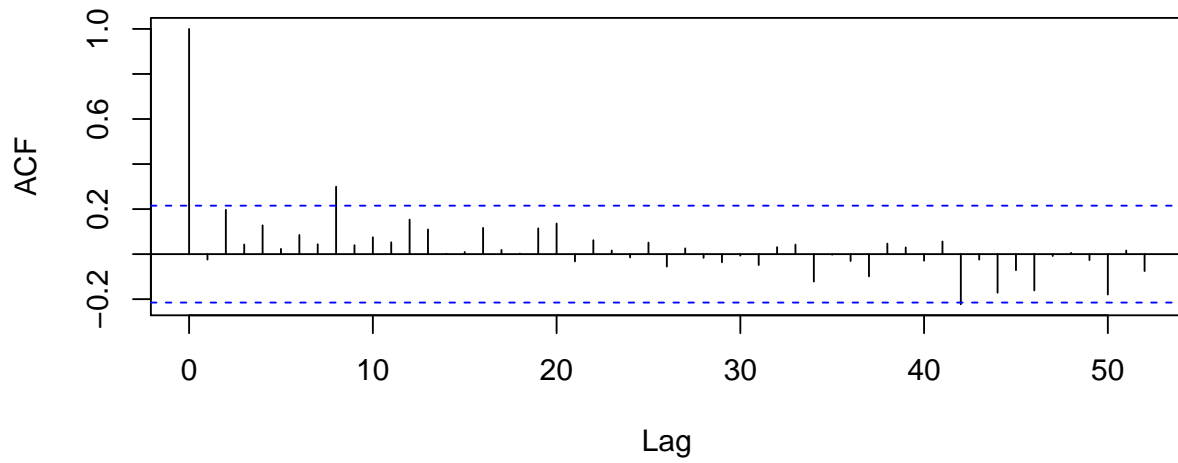




Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 24.4 A Poisson Regression Model as an Alternative to Model (2) for trespass

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.81124  -0.81387  -0.09264   0.56929   2.65267

Coefficients:
            Estimate Std. Error z value Pr(>|z|)
(Intercept)    2.40310    0.65515   3.668 0.000244 ***
tmax.f.spline1  0.01570    0.01148   1.368 0.171348
tmax.f.spline2 -0.07259    0.02587  -2.806 0.005022 **
tmax.f.spline3  0.10164    0.03749   2.711 0.006708 **
tmax.f.spline4 -0.06518    0.03276  -1.990 0.046621 *
tmax.f.spline5  0.06145    0.02624   2.342 0.019176 *
snow.in        -0.47503    0.16339  -2.907 0.003646 **
precip.in      -0.10038    0.20751  -0.484 0.628577
dark.before.12 -0.08150    0.04758  -1.713 0.086739 .
thanks.xmas    -2.40601    2.00939  -1.197 0.231157
summer.holiday -0.72763    0.98655  -0.738 0.460785
winter.holiday  1.19170    1.14261   1.043 0.296965
summer.vacation -0.15150    0.12750  -1.188 0.234727
oth.ns         0.15610    0.21939   0.712 0.476767
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 134.39  on 82  degrees of freedom
Residual deviance:  97.96  on 69  degrees of freedom
AIC: 483.38

Number of Fisher Scoring iterations: 4
```

## 25 Results for drug.g

### 25.1 Summary Values for drug.g

Table 25.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
drug.g	83	300.916	55.036	179	260	296	337	423

Table 25.2: Descriptives for Outcome After Ferguson Protests Begin

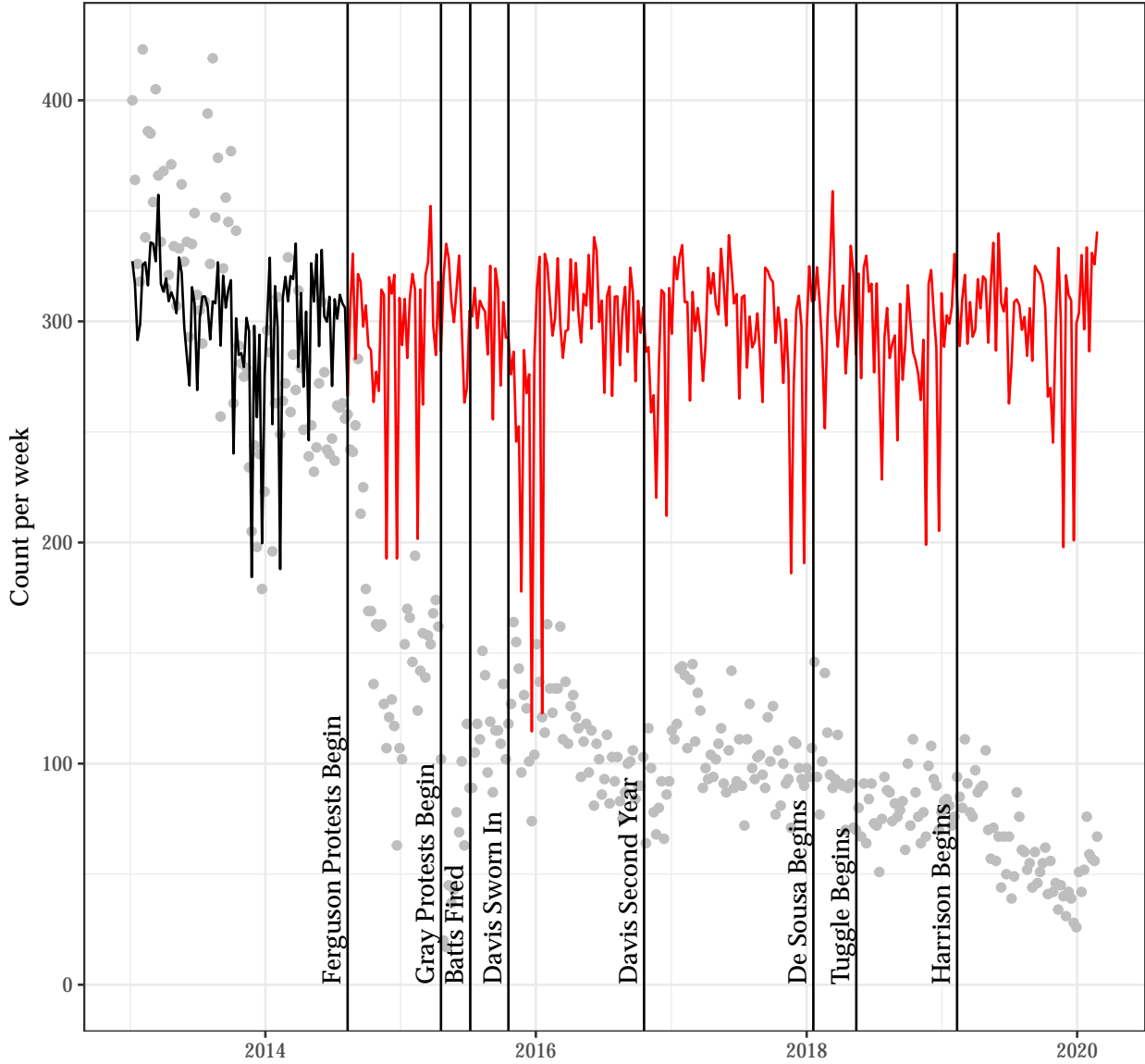
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
drug.g	290	99.962	39.986	17	76	94	116.8	283

## 25.2 Four Models for drug.g

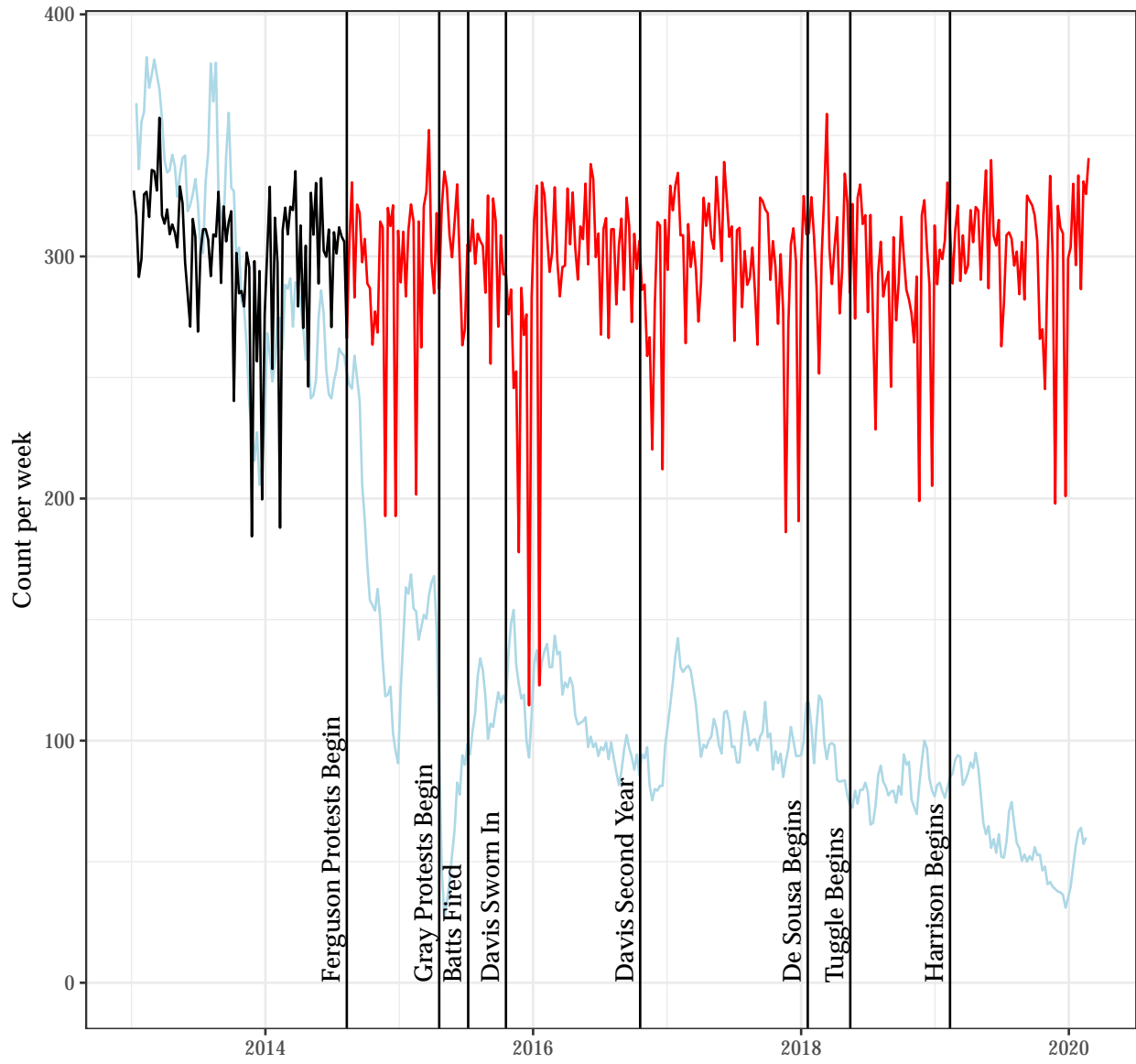
Table 25.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-135.94		-129.46	-132.15
After Gray Protests Begin (week of 4/20/15 onward)	-95.70		-104.74	-100.88
Unrest and National Guard (4/27/15 - 5/3/2015)	-49.27		-66.33	-63.16
After Batts Fired (week of 7/13/15 onward)	44.51		47.16	48.56
After Davis Confirmed (week of 10/19/15 onward)	-0.75		8.67	-0.86
After Davis First Year (week of 10/17/16 onward)	-10.90		-15.60	-11.87
After De Sousa Begins (week of 1/19/18 onward)	-4.32		-14.81	-9.92
After Tuggle Begins (week of 5/14/18 onward)	-17.53		-1.67	-4.55
After Harrison Begins (week of 2/11/19 onward)	-19.19		-30.52	-27.22
Average Maximum Temperature to 50 Degrees		1.38		0.99
Plus Degrees in the 50s		-8.81		-2.11
Plus Degrees in the 60s		10.11		1.37
Plus Degrees in the 70s		-1.88		-0.97
Plus Degrees Greater Than 80		-0.73		-0.78
Snowfall (inches)		-43.57		-10.70
Precipitation (inches)		-81.84		-44.40
Darkness Before Midnight (hours)		-12.50		-5.16
Thanksgiving/Christmas (proportion of week)		-778.54		-268.80
Winter Holiday (proportion of week)		-105.57		72.04
Other Out-of-School Days (proportion of week)		-3.47		-9.73
Summer Vacation (proportion of week)		-24.01		5.70
Summer Holiday (proportion of week)		-274.26		-37.79
Observations	373	83	373	373
R <sup>2</sup>	0.87	0.30	0.83	0.89

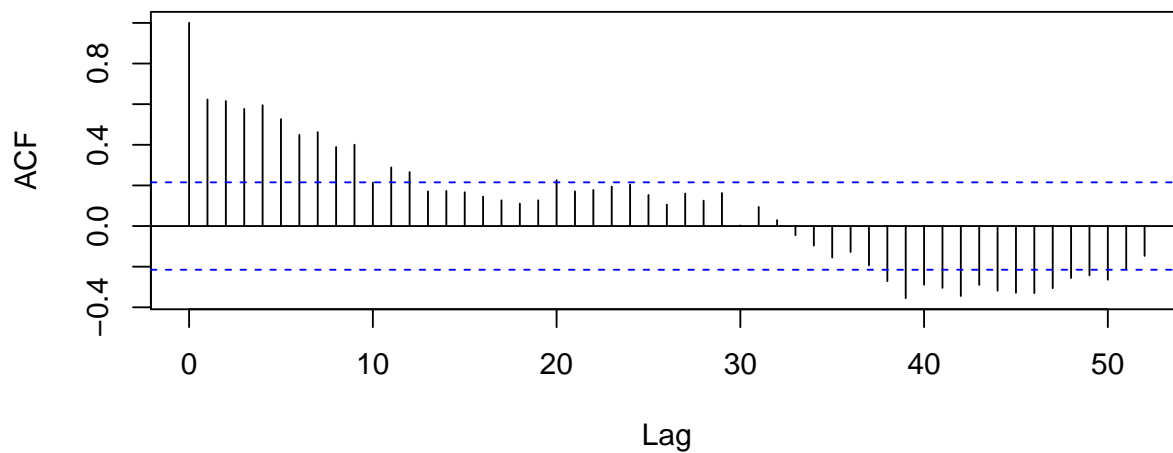
25.3 Least Squares Updated Model (2) for drug.g  
drug.g



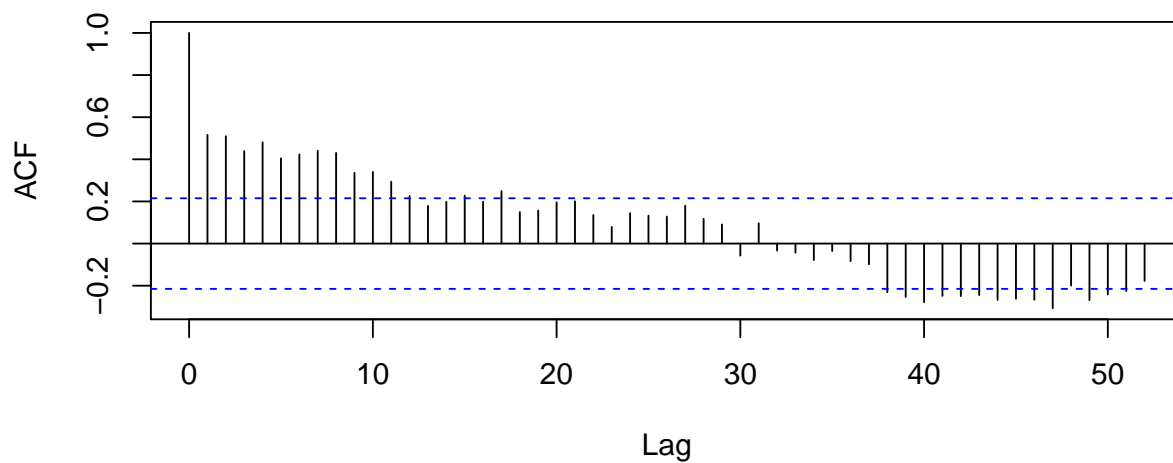
drug.g



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 25.4 A Poisson Regression Model as an Alternative to Model (2) for drug.g

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-5.1006  -2.3980   0.1578   2.0394   5.8990

Coefficients:
            Estimate Std. Error z value Pr(>|z|)
(Intercept)  5.881388  0.128922  45.620 < 2e-16 ***
tmax.f.spline1  0.004664  0.002255   2.069  0.03857 *
tmax.f.spline2 -0.030078  0.005046  -5.961 2.51e-09 ***
tmax.f.spline3  0.034727  0.007253   4.788 1.68e-06 ***
tmax.f.spline4 -0.006460  0.006656  -0.971  0.33178
tmax.f.spline5 -0.002856  0.005700  -0.501  0.61628
snow.in      -0.169741  0.025421  -6.677 2.44e-11 ***
precip.in    -0.283722  0.043670  -6.497 8.19e-11 ***
dark.before.12 -0.041164  0.009411  -4.374 1.22e-05 ***
thanks.xmas   -3.257879  0.423626  -7.690 1.47e-14 ***
summer.holiday -0.921454  0.214627  -4.293 1.76e-05 ***
winter.holiday -0.334648  0.235276  -1.422  0.15492
summer.vacation -0.078715  0.026346  -2.988  0.00281 **
oth.ns        0.004091  0.044202   0.093  0.92625
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 829.05  on 82  degrees of freedom
Residual deviance: 564.74  on 69  degrees of freedom
AIC: 1217.6

Number of Fisher Scoring iterations: 4
```



## 26 Results for loitering.vagabond

### 26.1 Summary Values for loitering.vagabond

Table 26.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
loitering.vagabond	83	1.422	1.754	0	0	1	2	8

Table 26.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
loitering.vagabond	290	0.169	0.480	0	0	0	0	4

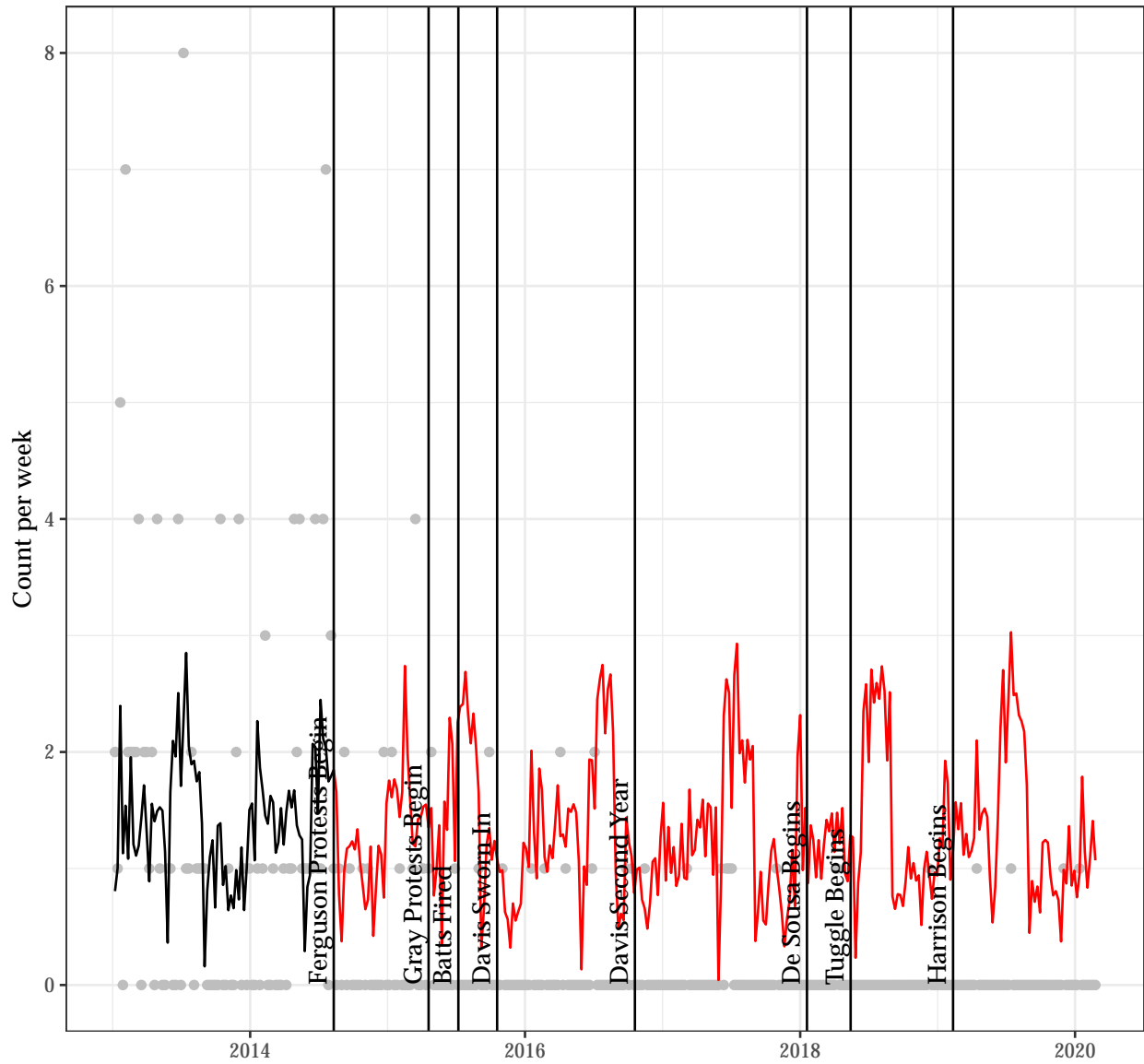
## 26.2 Four Models for loitering.vagabond

Table 26.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

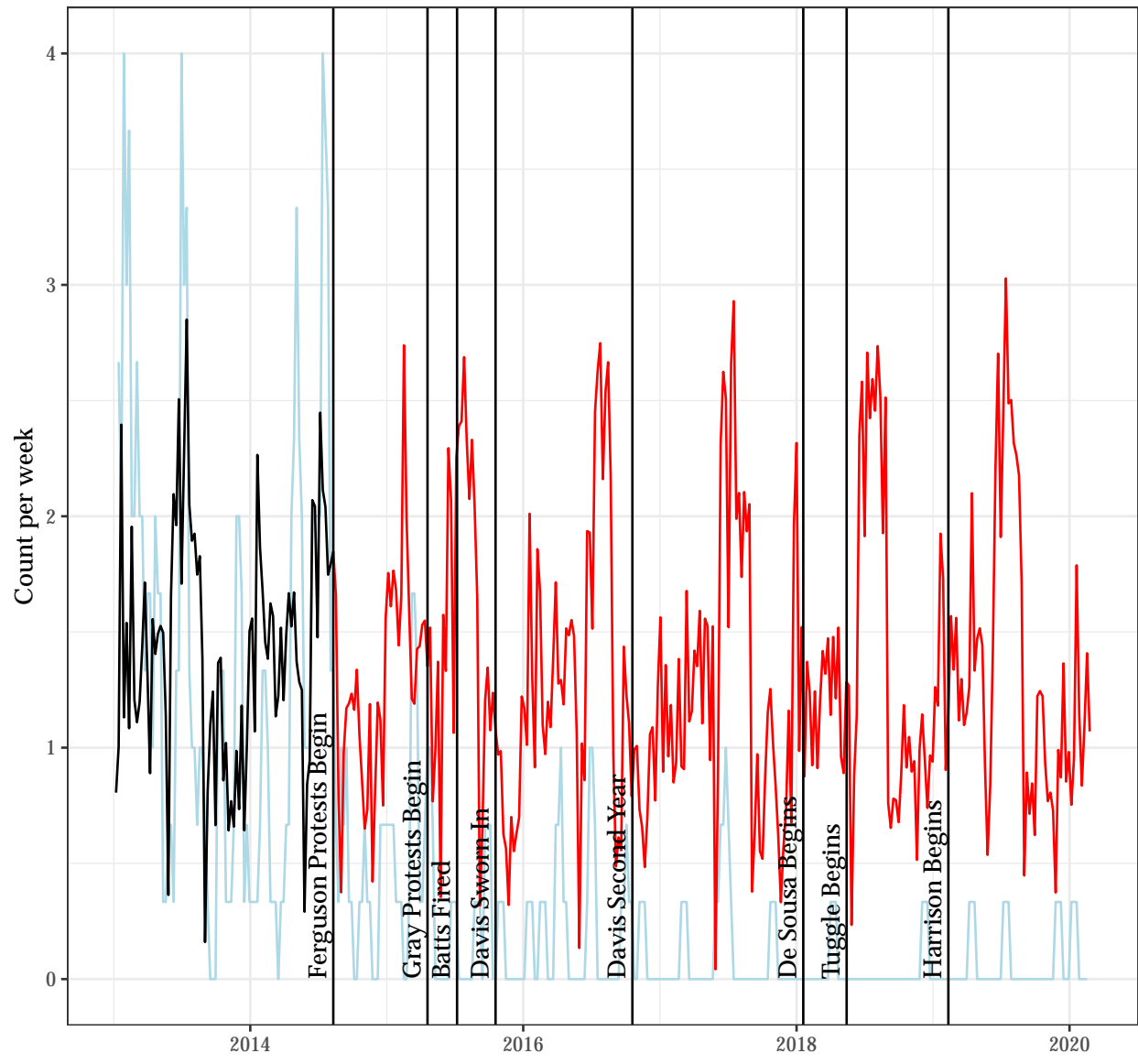
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-0.92		-0.80	-0.87
After Gray Protests Begin (week of 4/20/15 onward)	-0.32		-0.42	-0.39
Unrest and National Guard (4/27/15 - 5/3/2015)	1.82		1.70	1.77
After Batts Fired (week of 7/13/15 onward)	0.03		-0.26	0.06
After Davis Confirmed (week of 10/19/15 onward)	-0.003		0.39	0.04
After Davis First Year (week of 10/17/16 onward)	-0.11		-0.04	-0.09
After De Sousa Begins (week of 1/19/18 onward)	-0.04		-0.001	-0.07
After Tuggle Begins (week of 5/14/18 onward)	-0.04		-0.23	-0.01
After Harrison Begins (week of 2/11/19 onward)	0.05		0.10	0.03
Average Maximum Temperature to 50 Degrees		-0.06		0.0004
Plus Degrees in the 50s		0.04		-0.01
Plus Degrees in the 60s		0.06		0.02
Plus Degrees in the 70s		-0.13		-0.04
Plus Degrees Greater Than 80		0.17		0.02
Snowfall (inches)		-0.16		0.06
Precipitation (inches)		0.21		0.01
Darkness Before Midnight (hours)		-0.20		-0.08
Thanksgiving/Christmas (proportion of week)		-2.80		0.03
Winter Holiday (proportion of week)		3.13		0.71
Other Out-of-School Days (proportion of week)		0.52		0.09
Summer Vacation (proportion of week)		0.94		0.34
Summer Holiday (proportion of week)		-5.55		-0.27
Observations	373	83	373	373
R <sup>2</sup>	0.26	0.09	0.20	0.28

### 26.3 Least Squares Updated Model (2) for loitering.vagabond

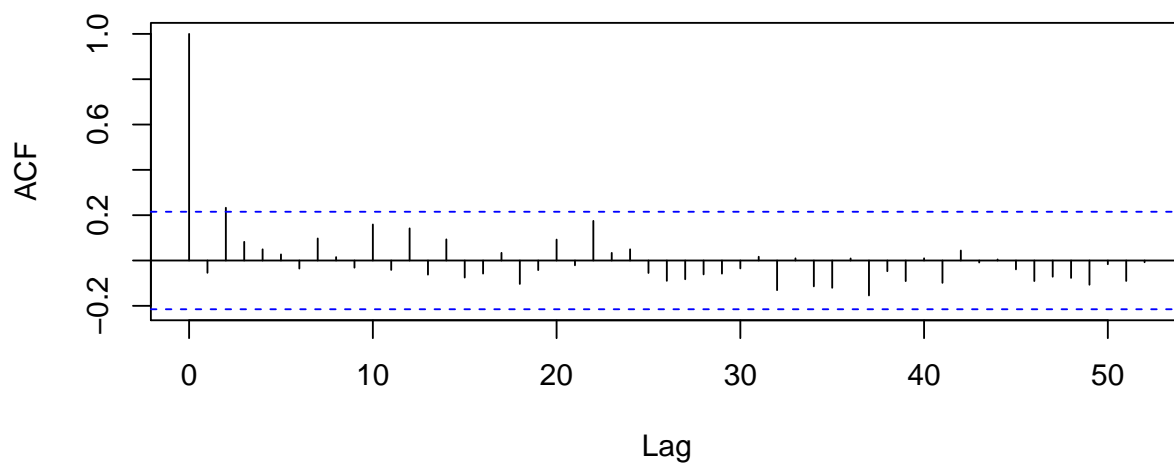
loitering.vagabond



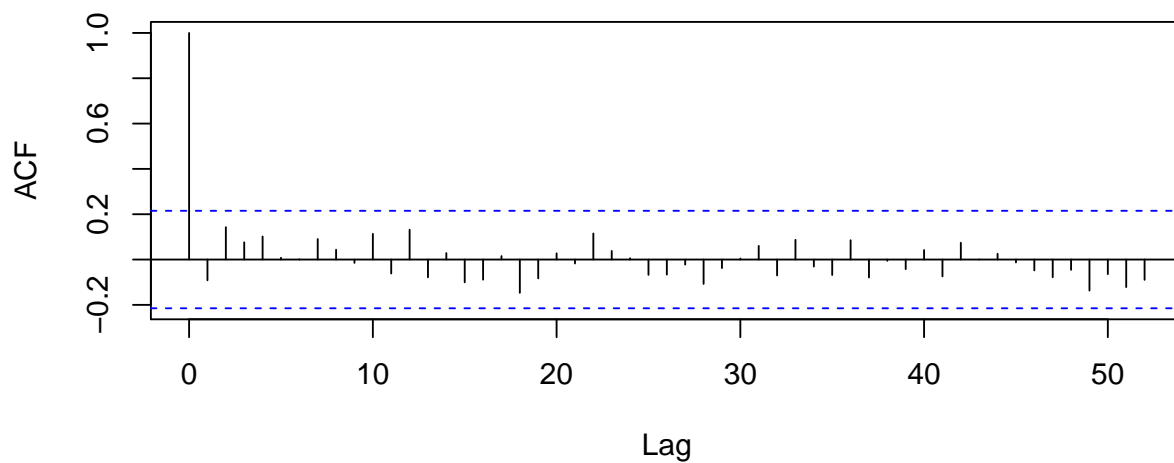
# loitering.vagabond



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 26.4 A Poisson Regression Model as an Alternative to Model (2) for loitering.vagabond

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.0917  -1.4663  -0.4690   0.6559   3.2605

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      3.19669    1.98025   1.614  0.1065
tmax.f.spline1  -0.04201    0.03299  -1.273  0.2029
tmax.f.spline2   0.01598    0.07765   0.206  0.8369
tmax.f.spline3   0.06487    0.11596   0.559  0.5759
tmax.f.spline4  -0.12177    0.10781  -1.130  0.2587
tmax.f.spline5   0.12361    0.07922   1.560  0.1187
snow.in         -0.10678    0.31780  -0.336  0.7369
precip.in        0.16141    0.58680   0.275  0.7833
dark.before.12  -0.17656    0.15575  -1.134  0.2570
thanks.xmas     -1.90589    5.90888  -0.323  0.7470
summer.holiday -4.61280    3.76390  -1.226  0.2204
winter.holiday  1.74131    3.13235   0.556  0.5783
summer.vacation  0.79463    0.45485   1.747  0.0806 .
oth.ns          0.36672    0.60457   0.607  0.5441
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 164.31  on 82  degrees of freedom
Residual deviance: 148.19  on 69  degrees of freedom
AIC: 309.35

Number of Fisher Scoring iterations: 6
```

## 27 Results for disorderly.conduct

### 27.1 Summary Values for disorderly.conduct

Table 27.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
disorderly.conduct	83	20.783	6.002	9	17	21	24	42

Table 27.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
disorderly.conduct	290	7.597	11.815	0	4	6	9	189

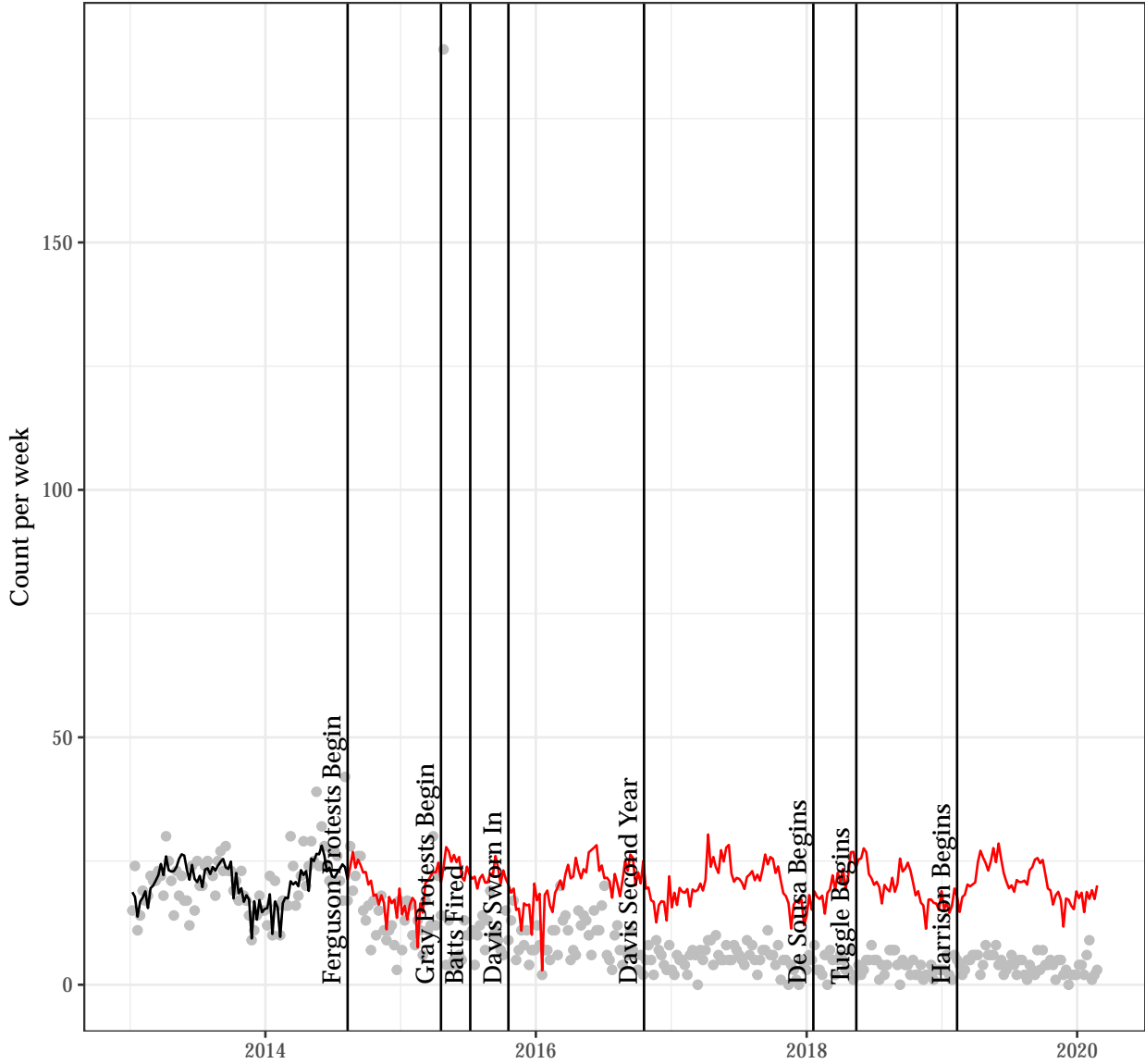
## 27.2 Four Models for disorderly.conduct

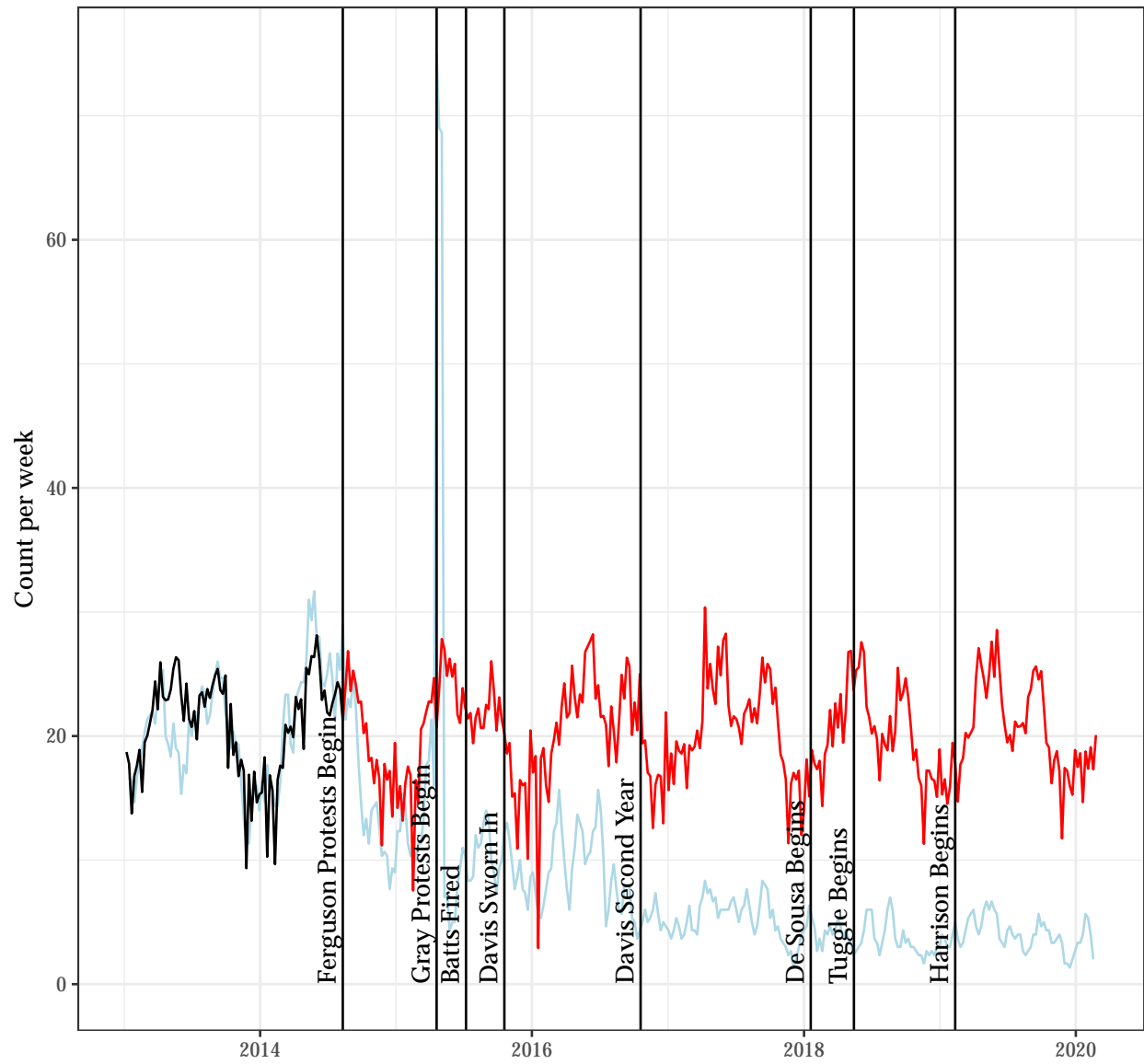
Table 27.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-6.20		-4.32	-5.06
After Gray Protests Begin (week of 4/20/15 onward)	-6.58		-11.88	-9.41
Unrest and National Guard (4/27/15 - 5/3/2015)	181.00		181.36	180.43
After Batts Fired (week of 7/13/15 onward)	2.57		4.84	3.74
After Davis Confirmed (week of 10/19/15 onward)	-1.34		0.32	-0.73
After Davis First Year (week of 10/17/16 onward)	-3.99		-3.89	-3.91
After De Sousa Begins (week of 1/19/18 onward)	-1.12		-1.40	-1.28
After Tuggle Begins (week of 5/14/18 onward)	-0.54		0.08	0.29
After Harrison Begins (week of 2/11/19 onward)	0.43		-0.29	-0.30
Average Maximum Temperature to 50 Degrees		0.21		0.17
Plus Degrees in the 50s		-0.51		-0.15
Plus Degrees in the 60s		0.65		0.04
Plus Degrees in the 70s		-0.02		-0.06
Plus Degrees Greater Than 80		-0.71		-0.28
Snowfall (inches)		-2.29		-1.62
Precipitation (inches)		-5.22		-3.87
Darkness Before Midnight (hours)		-1.64		-0.89
Thanksgiving/Christmas (proportion of week)		-45.37		-11.98
Winter Holiday (proportion of week)		-20.35		5.05
Other Out-of-School Days (proportion of week)		3.72		1.13
Summer Vacation (proportion of week)		-3.66		0.53
Summer Holiday (proportion of week)		-4.46		4.78
Observations	373	83	373	373
R <sup>2</sup>	0.88	0.46	0.87	0.91

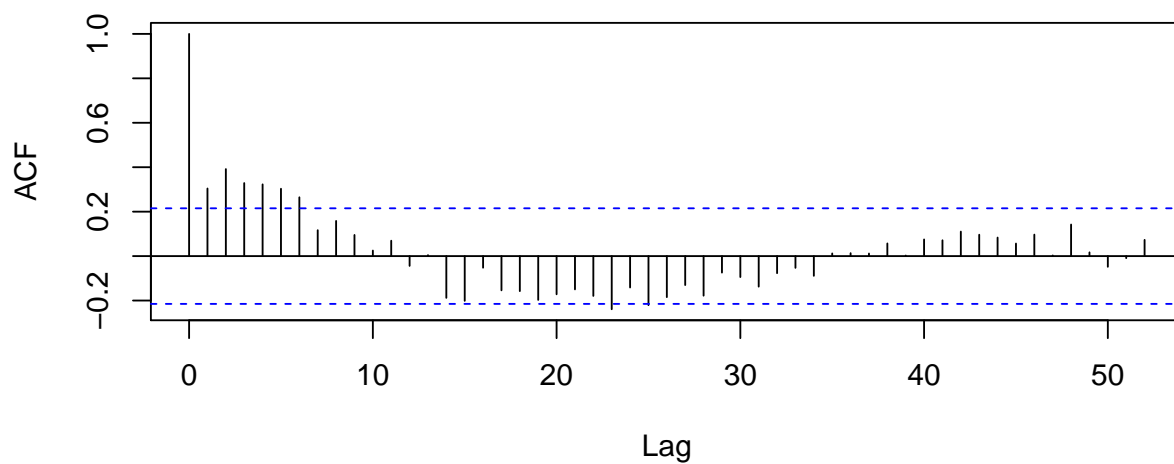


27.3 Least Squares Updated Model (2) for disorderly.conduct  
disorderly.conduct

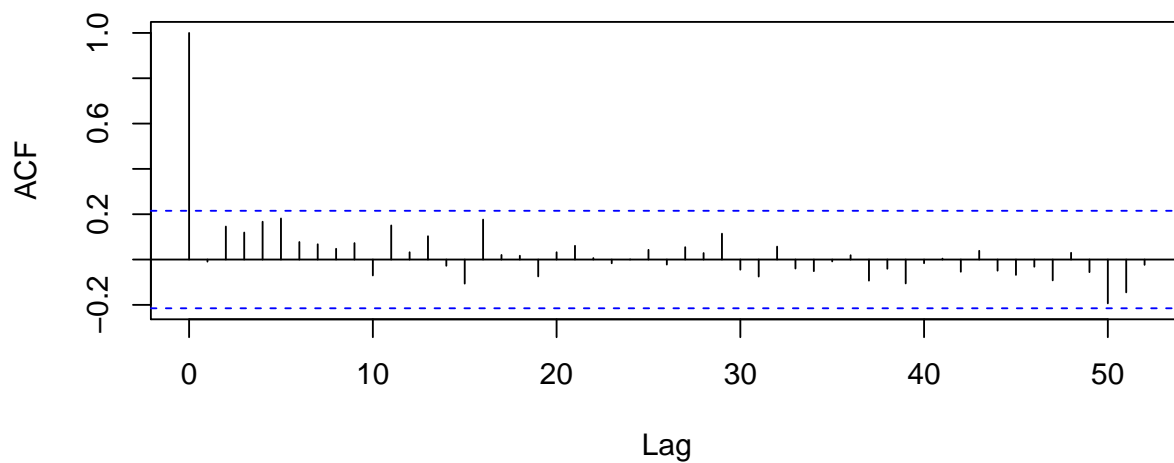




Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 27.4 A Poisson Regression Model as an Alternative to Model (2) for disorderly.conduct

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-2.1468	-0.5030	-0.0054	0.4310	3.3806

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	2.868884	0.536935	5.343	9.14e-08	***
tmax.f.spline1	0.013380	0.009607	1.393	0.1637	
tmax.f.spline2	-0.031406	0.020311	-1.546	0.1220	
tmax.f.spline3	0.036113	0.027872	1.296	0.1951	
tmax.f.spline4	-0.004599	0.024487	-0.188	0.8510	
tmax.f.spline5	-0.029965	0.020932	-1.431	0.1523	
snow.in	-0.177636	0.110469	-1.608	0.1078	
precip.in	-0.254675	0.161292	-1.579	0.1143	
dark.before.12	-0.081918	0.036870	-2.222	0.0263	*
thanks.xmas	-3.273113	1.707122	-1.917	0.0552	.
summer.holiday	-0.221326	0.749948	-0.295	0.7679	
winter.holiday	-1.232928	1.052037	-1.172	0.2412	
summer.vacation	-0.156181	0.094043	-1.661	0.0968	.
oth.ns	0.220075	0.166014	1.326	0.1850	

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 140.155 on 82 degrees of freedom  
Residual deviance: 70.955 on 69 degrees of freedom  
AIC: 500.57

Number of Fisher Scoring iterations: 4

## 28 Results for prostitution

### 28.1 Summary Values for prostitution

Table 28.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
prostitution	83	12.084	5.912	1	7.5	11	17	27

Table 28.2: Descriptives for Outcome After Ferguson Protests Begin

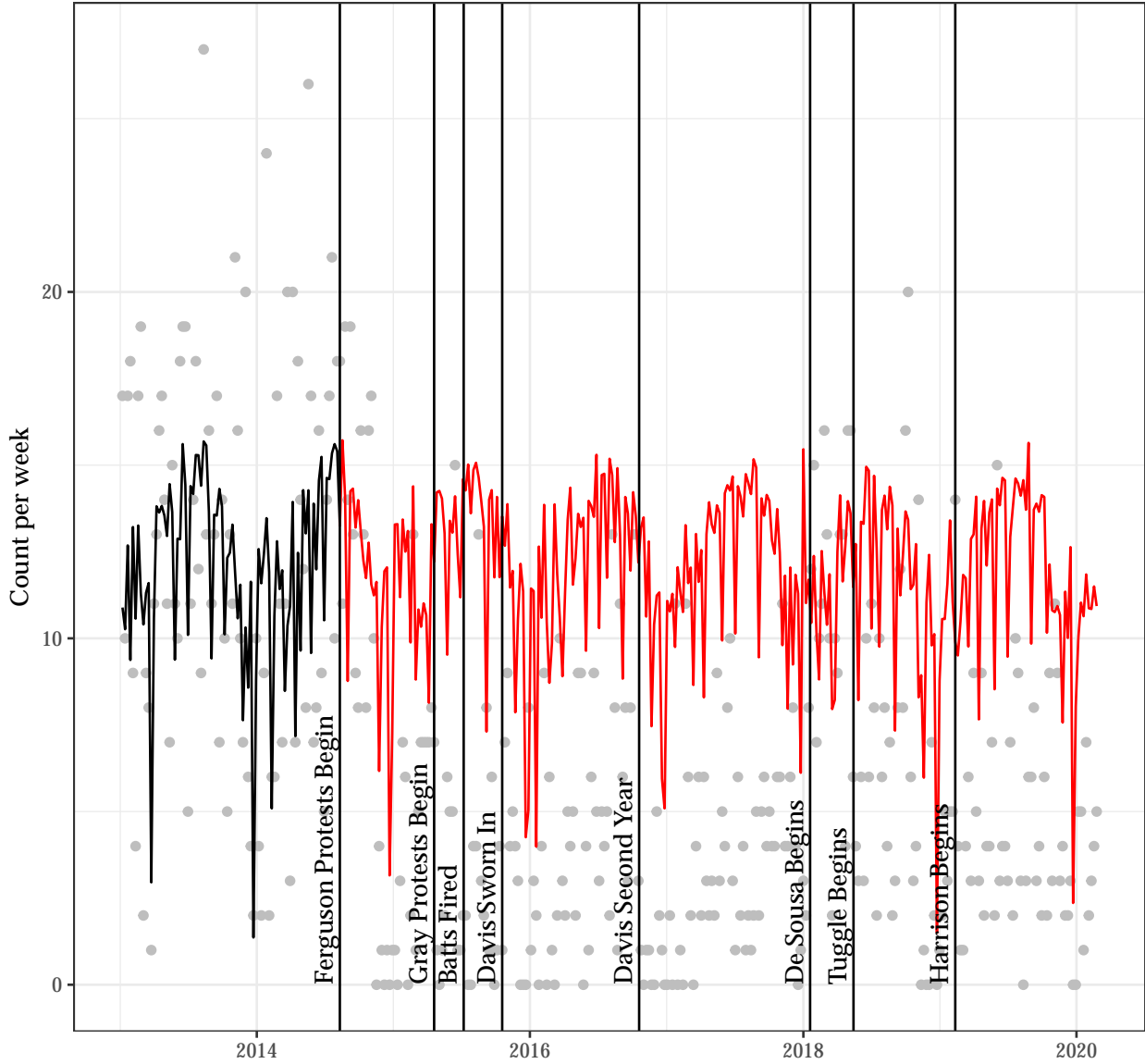
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
prostitution	290	5.172	4.413	0	2	4	8	20

## 28.2 Four Models for prostitution

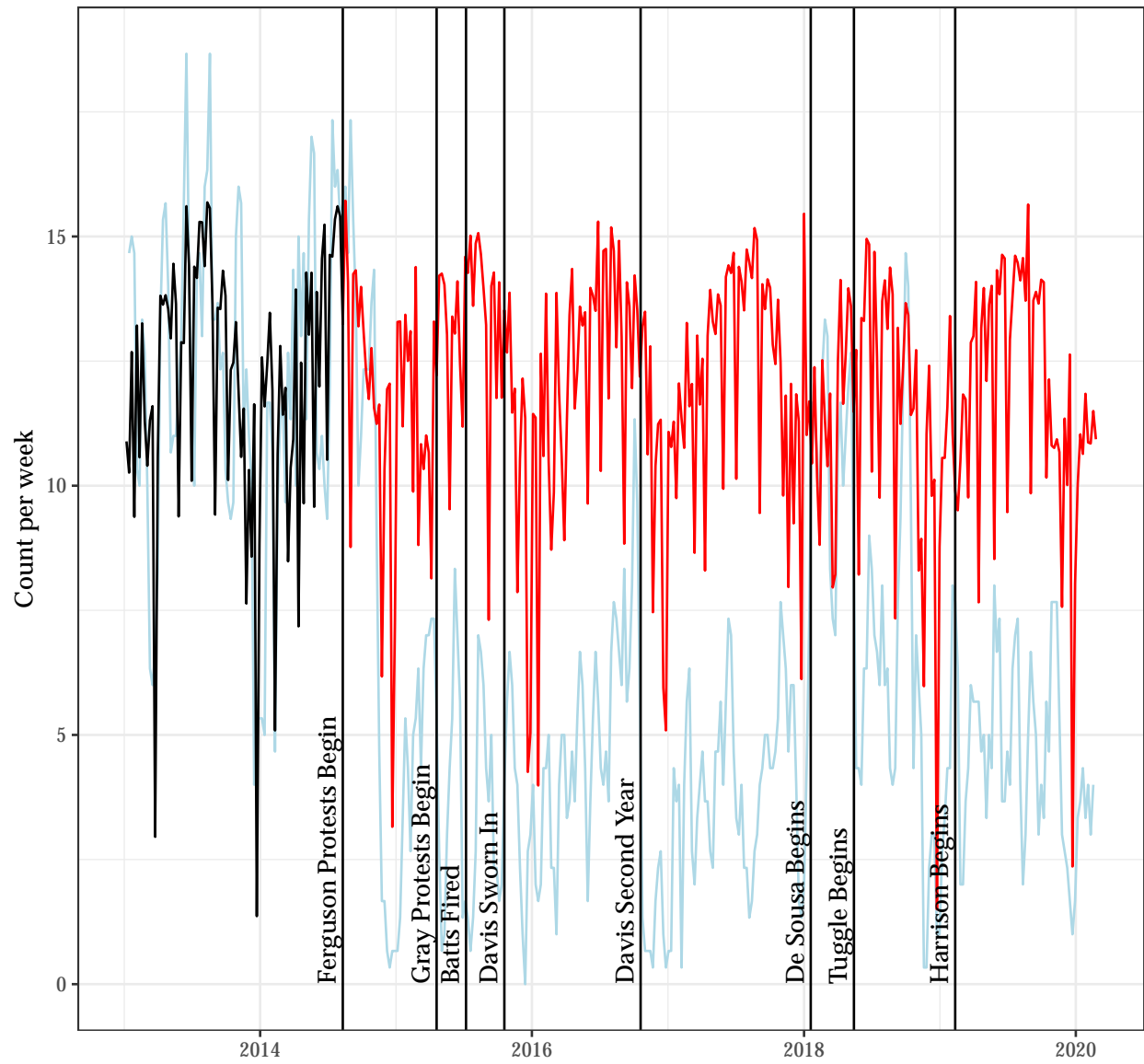
Table 28.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-4.53		-4.02	-3.97
After Gray Protests Begin (week of 4/20/15 onward)	-3.46		-4.78	-5.08
Unrest and National Guard (4/27/15 - 5/3/2015)	-3.09		-4.41	-3.44
After Batts Fired (week of 7/13/15 onward)	-0.66		-1.19	-1.13
After Davis Confirmed (week of 10/19/15 onward)	1.30		2.79	2.43
After Davis First Year (week of 10/17/16 onward)	-1.19		-1.23	-1.10
After De Sousa Begins (week of 1/19/18 onward)	7.52		8.09	8.21
After Tuggle Begins (week of 5/14/18 onward)	-5.40		-5.43	-5.77
After Harrison Begins (week of 2/11/19 onward)	-1.01		-1.41	-1.18
Average Maximum Temperature to 50 Degrees		-0.23		-0.01
Plus Degrees in the 50s		0.37		0.26
Plus Degrees in the 60s		0.01		-0.16
Plus Degrees in the 70s		-0.18		-0.01
Plus Degrees Greater Than 80		-0.09		-0.14
Snowfall (inches)		-3.07		-1.58
Precipitation (inches)		-5.02		-2.74
Darkness Before Midnight (hours)		-0.17		0.31
Thanksgiving/Christmas (proportion of week)		-19.30		-13.51
Winter Holiday (proportion of week)		2.23		6.58
Other Out-of-School Days (proportion of week)		-5.97		-2.47
Summer Vacation (proportion of week)		1.58		0.04
Summer Holiday (proportion of week)		-30.39		-13.11
Observations	373	83	373	373
R <sup>2</sup>	0.36	0.21	0.38	0.45

28.3 Least Squares Updated Model (2) for prostitution  
prostitution

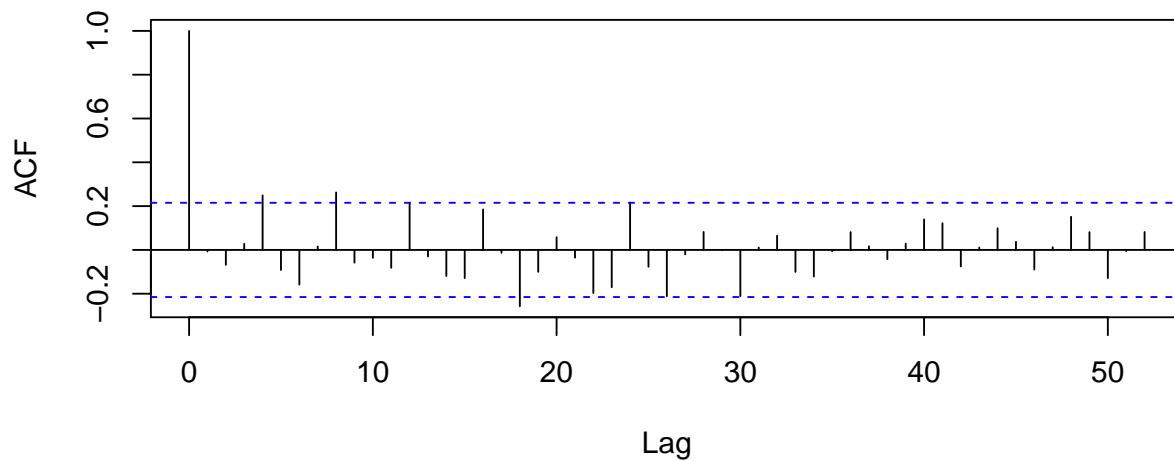


# prostitution

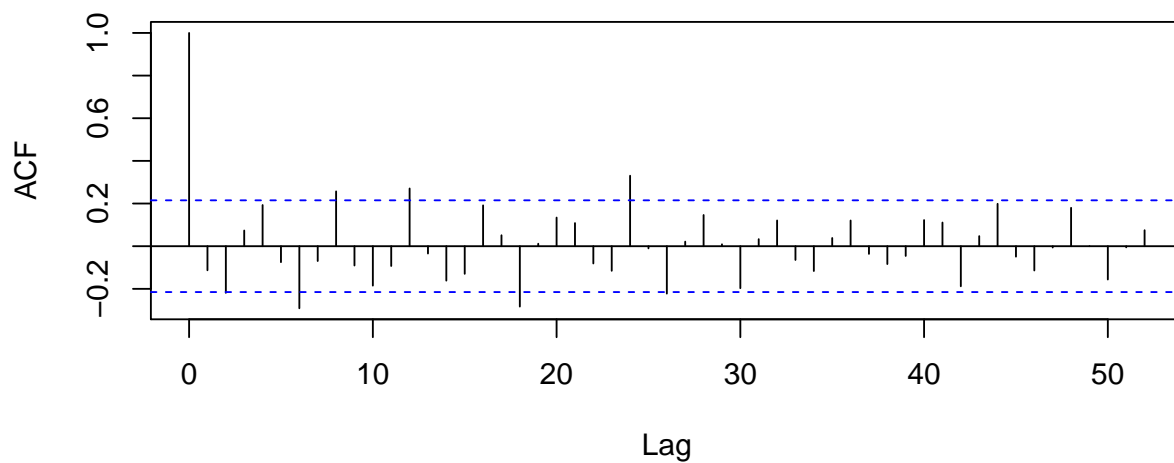




Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 28.4 A Poisson Regression Model as an Alternative to Model (2) for prostitution

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.6740  -1.2762  -0.0583   0.8554   2.7577

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   3.716894   0.667509   5.568 2.57e-08 ***
tmax.f.spline1 -0.024755   0.011938  -2.074  0.03811 *
tmax.f.spline2  0.044612   0.027607   1.616  0.10610
tmax.f.spline3 -0.012367   0.037846  -0.327  0.74385
tmax.f.spline4 -0.010286   0.033169  -0.310  0.75649
tmax.f.spline5 -0.004726   0.027134  -0.174  0.86172
snow.in       -0.360807   0.144211  -2.502  0.01235 *
precip.in     -0.405186   0.214617  -1.888  0.05903 .
dark.before.12 -0.015918   0.049194  -0.324  0.74626
thanks.xmas   -3.263798   2.577128  -1.266  0.20535
summer.holiday -2.571373   1.121299  -2.293  0.02184 *
winter.holiday  0.320311   1.181929   0.271  0.78639
summer.vacation  0.114645   0.127597   0.898  0.36892
oth.ns        -0.878271   0.310542  -2.828  0.00468 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 257.70  on 82  degrees of freedom
Residual deviance: 199.53  on 69  degrees of freedom
AIC: 574.97

Number of Fisher Scoring iterations: 5
```

## 29 Results for only.temp.detained

### 29.1 Summary Values for only.temp.detained

Table 29.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
only.temp.detained	83	9.482	3.497	2	7	9	12	20

Table 29.2: Descriptives for Outcome After Ferguson Protests Begin

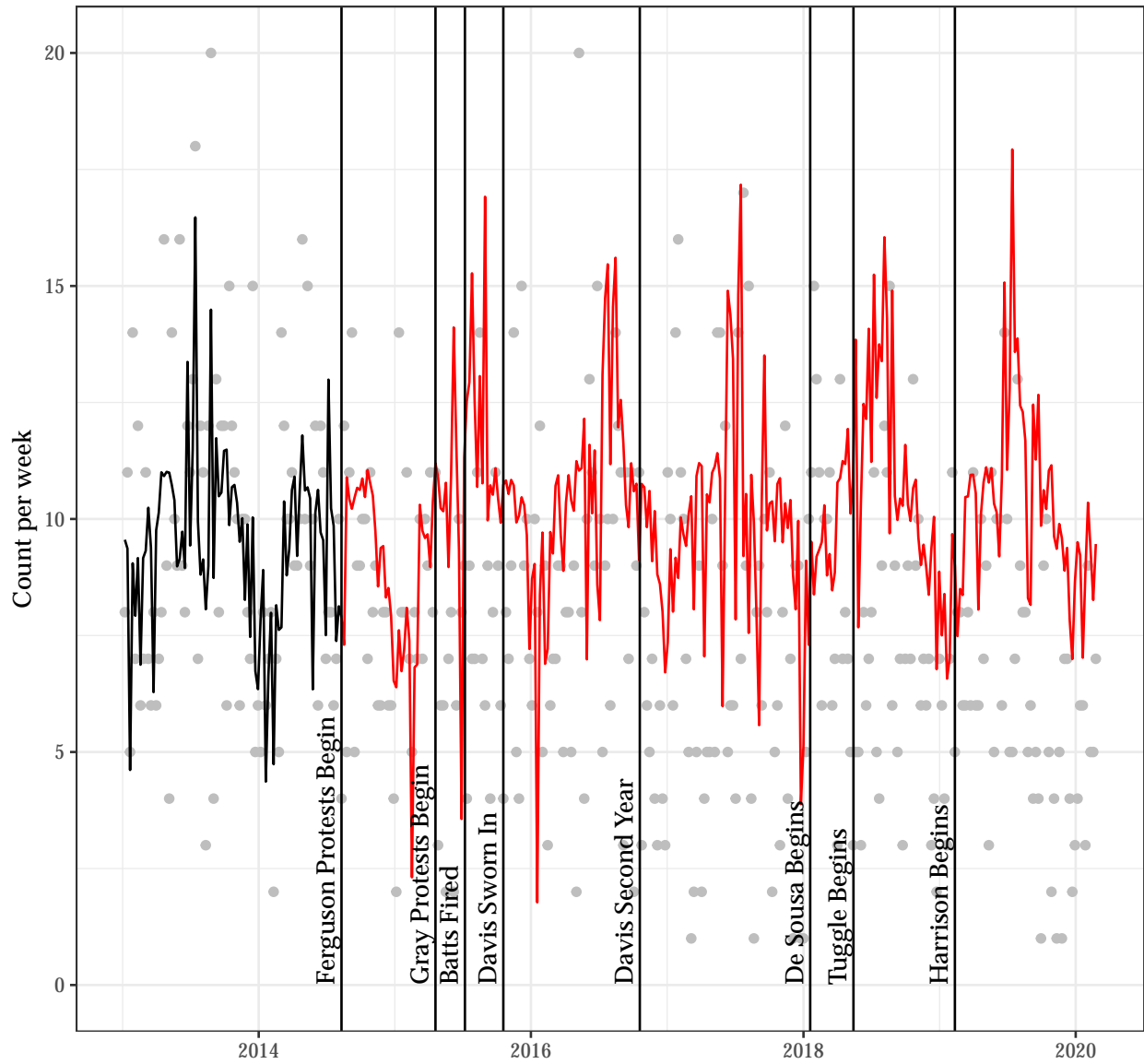
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
only.temp.detained	290	7.434	3.400	1	5	7	10	20

## 29.2 Four Models for only.temp.detained

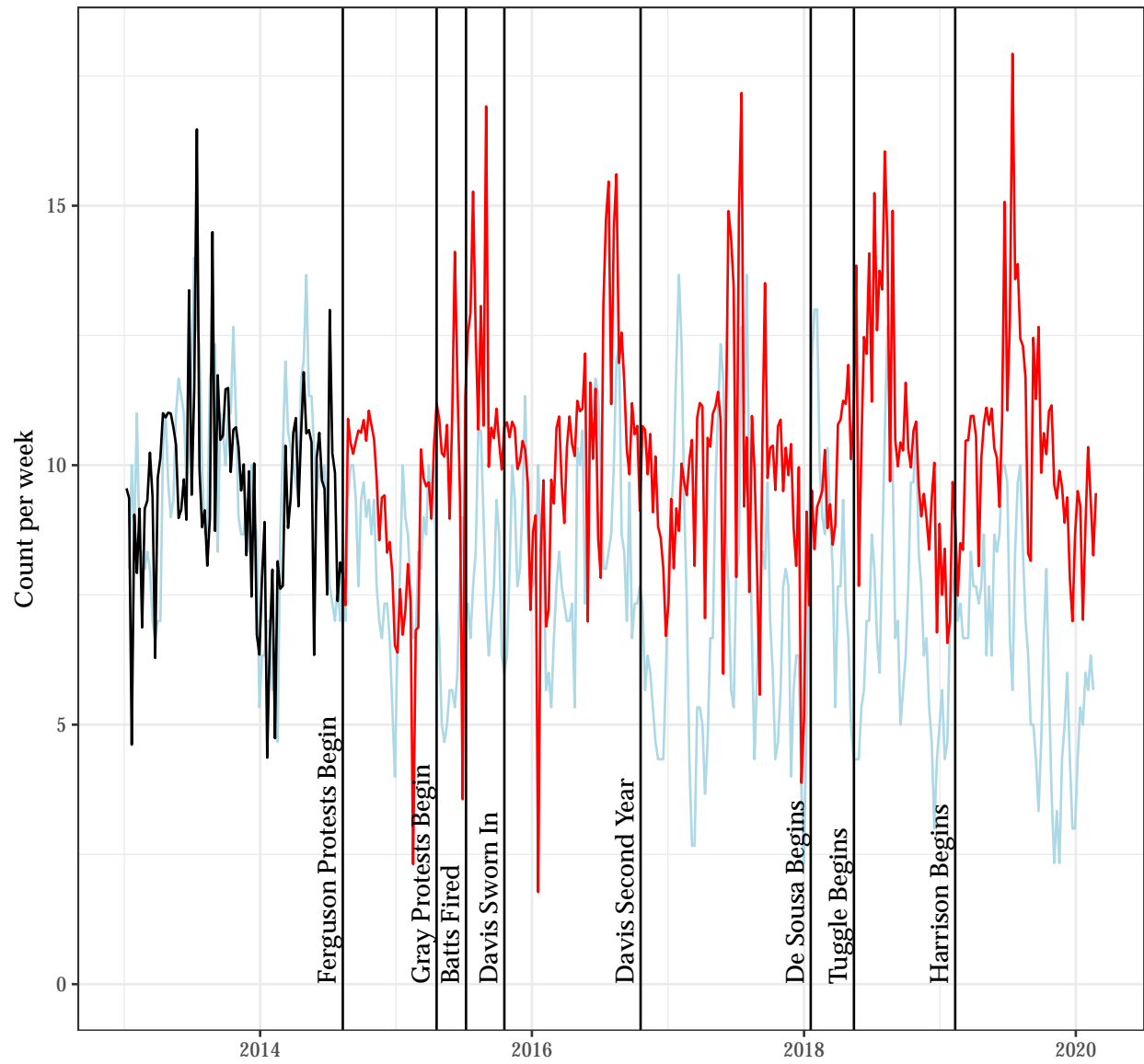
Table 29.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-1.34		-0.71	-0.81
After Gray Protests Begin (week of 4/20/15 onward)	-1.32		-2.67	-2.45
Unrest and National Guard (4/27/15 - 5/3/2015)	-3.82		-4.51	-3.90
After Batts Fired (week of 7/13/15 onward)	1.18		-0.57	1.00
After Davis Confirmed (week of 10/19/15 onward)	0.46		2.04	1.14
After Davis First Year (week of 10/17/16 onward)	-1.34		-0.77	-1.15
After De Sousa Begins (week of 1/19/18 onward)	1.82		1.76	1.70
After Tuggle Begins (week of 5/14/18 onward)	-2.01		-2.84	-2.10
After Harrison Begins (week of 2/11/19 onward)	-0.56		-0.20	-0.57
Average Maximum Temperature to 50 Degrees		0.15		0.07
Plus Degrees in the 50s		-0.03		-0.04
Plus Degrees in the 60s		-0.14		-0.06
Plus Degrees in the 70s		-0.09		-0.03
Plus Degrees Greater Than 80		0.79		0.14
Snowfall (inches)		-1.03		-0.76
Precipitation (inches)		1.00		-0.07
Darkness Before Midnight (hours)		-0.12		-0.20
Thanksgiving/Christmas (proportion of week)		1.76		-10.03
Winter Holiday (proportion of week)		-9.33		-5.91
Other Out-of-School Days (proportion of week)		-2.94		-2.19
Summer Vacation (proportion of week)		-2.55		0.63
Summer Holiday (proportion of week)		-27.55		-4.63
Observations	373	83	373	373
R <sup>2</sup>	0.11	0.32	0.16	0.19

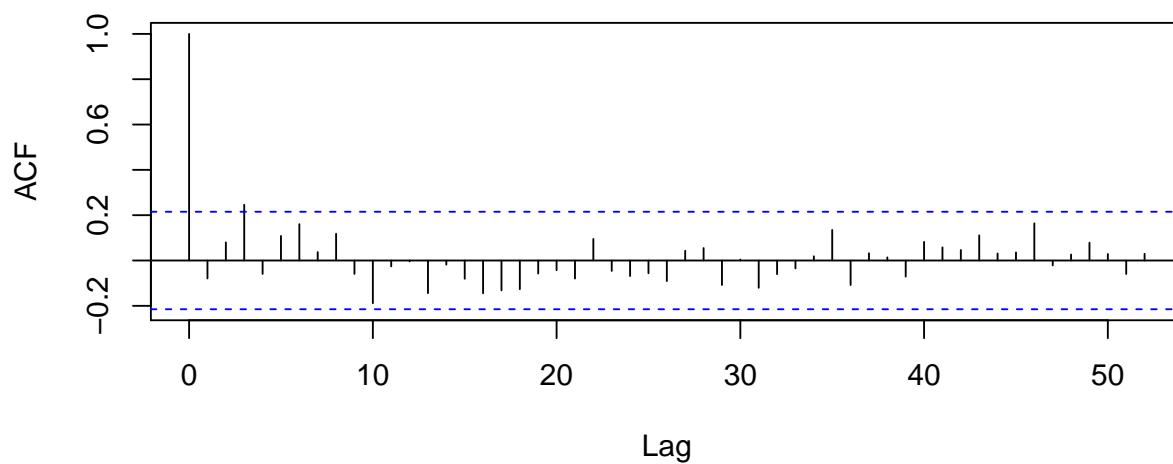
### 29.3 Least Squares Updated Model (2) for only.temp.detained only.temp.detained



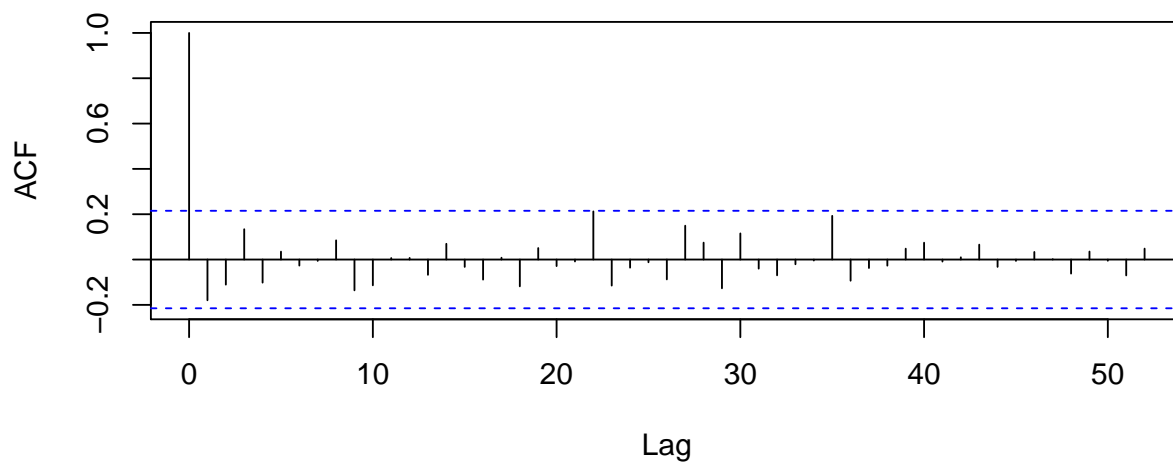
only.temp.detained



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 29.4 A Poisson Regression Model as an Alternative to Model (2) for only.temp.detained

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-2.43300	-0.66405	-0.03006	0.56423	2.12067

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	1.355336	0.783557	1.730	0.0837 .
tmax.f.spline1	0.020015	0.014297	1.400	0.1615
tmax.f.spline2	-0.009365	0.029700	-0.315	0.7525
tmax.f.spline3	-0.013166	0.039730	-0.331	0.7403
tmax.f.spline4	-0.007572	0.035852	-0.211	0.8327
tmax.f.spline5	0.069917	0.029256	2.390	0.0169 *
snow.in	-0.159951	0.161107	-0.993	0.3208
precip.in	0.106142	0.223774	0.474	0.6353
dark.before.12	-0.013596	0.052734	-0.258	0.7965
thanks.xmas	0.154574	2.223617	0.070	0.9446
summer.holiday	-2.678197	1.221969	-2.192	0.0284 *
winter.holiday	-1.442705	1.580879	-0.913	0.3615
summer.vacation	-0.241382	0.144723	-1.668	0.0953 .
oth.ns	-0.350935	0.270312	-1.298	0.1942

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 106.339 on 82 degrees of freedom  
Residual deviance: 72.442 on 69 degrees of freedom  
AIC: 435.3

Number of Fisher Scoring iterations: 4



## 30 Results for unknown

### 30.1 Summary Values for unknown

Table 30.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
unknown	83	48.783	12.519	26	40.5	50	57	94

Table 30.2: Descriptives for Outcome After Ferguson Protests Begin

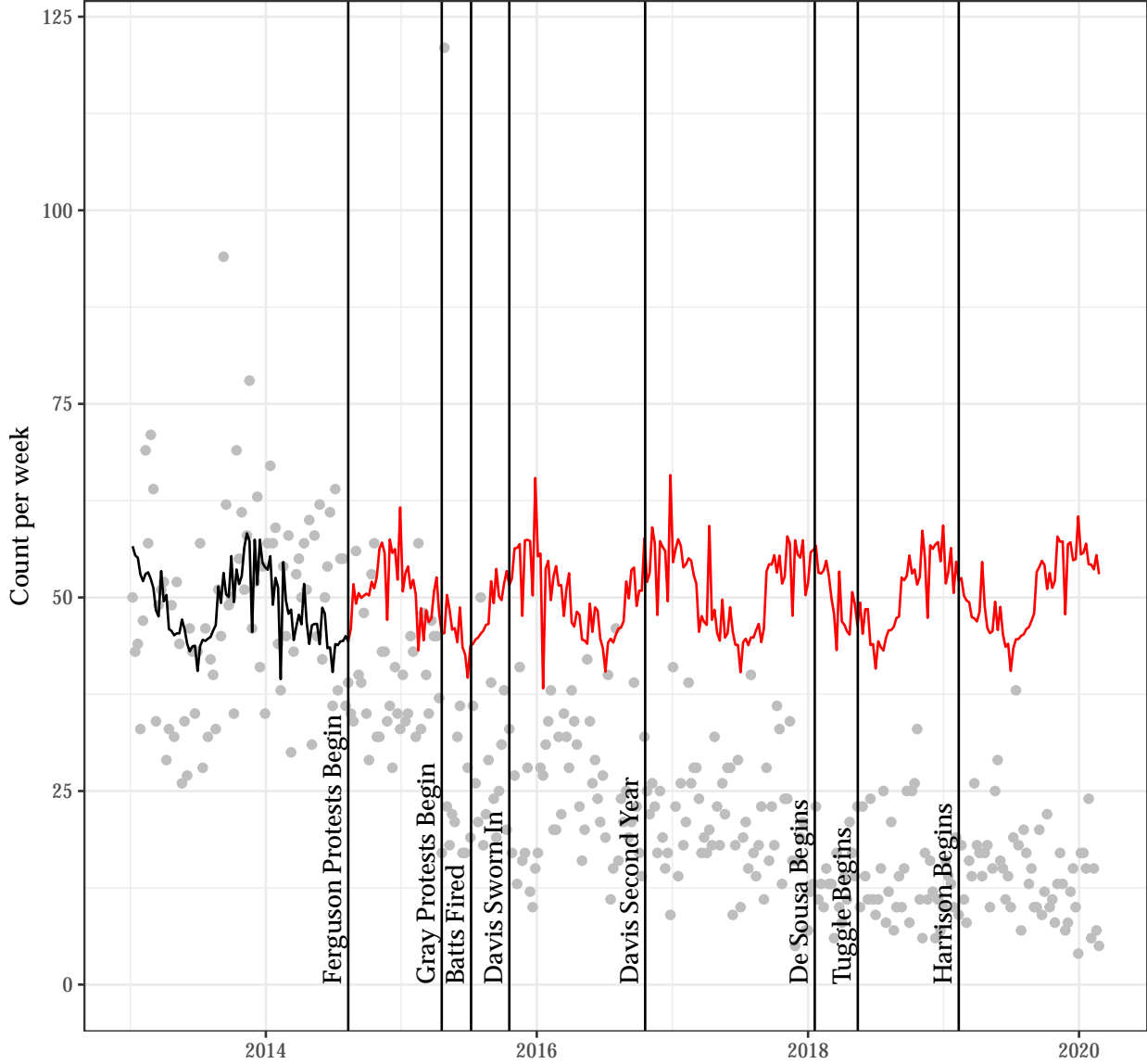
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
unknown	290	22.379	12.473	4	14	19	28.8	121

### 30.2 Four Models for unknown

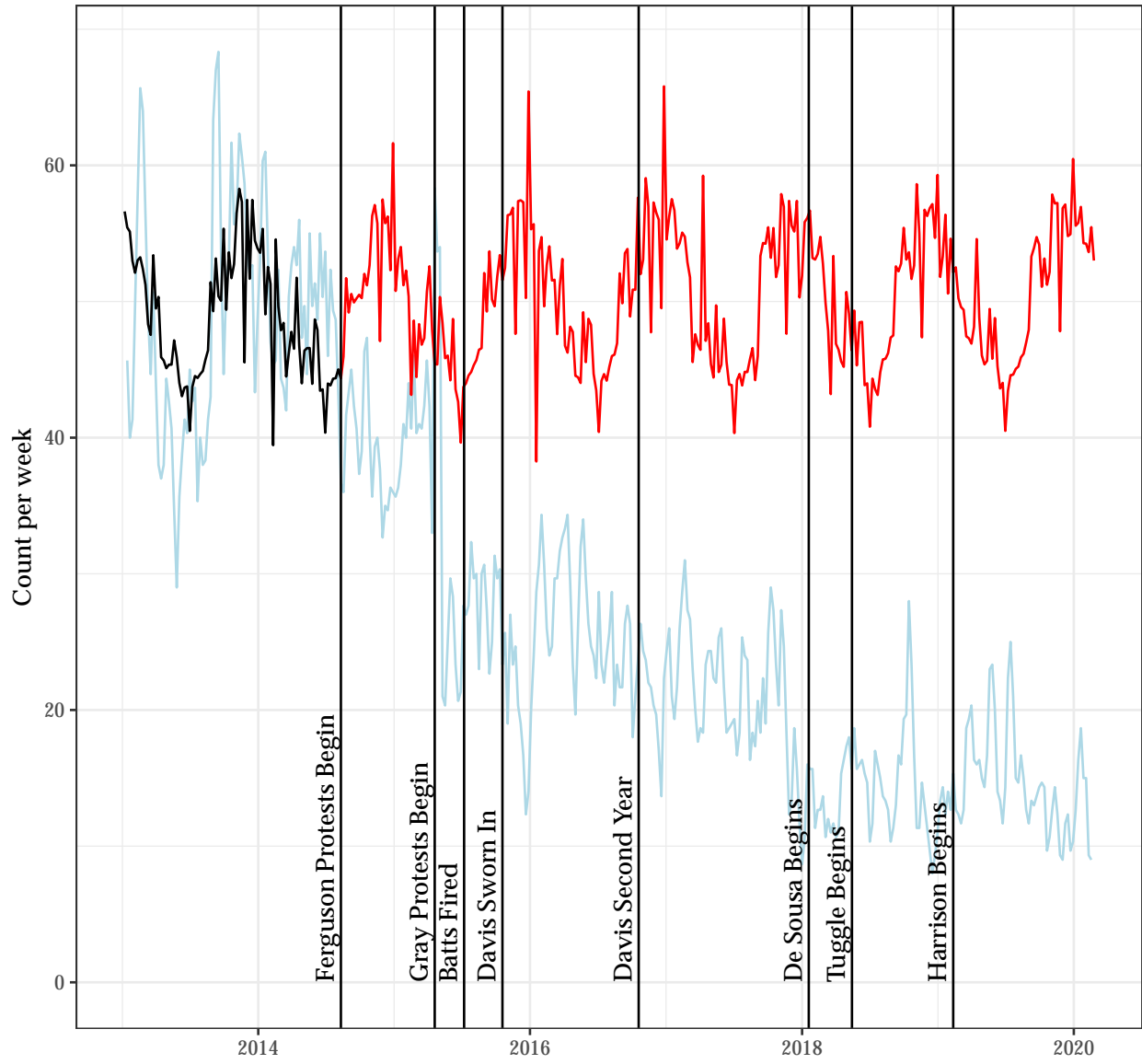
Table 30.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-8.84		-11.16	-8.87
After Gray Protests Begin (week of 4/20/15 onward)	-17.22		-11.43	-17.34
Unrest and National Guard (4/27/15 - 5/3/2015)	98.27		98.21	97.38
After Batts Fired (week of 7/13/15 onward)	5.70		2.63	5.97
After Davis Confirmed (week of 10/19/15 onward)	-3.27		-4.84	-3.66
After Davis First Year (week of 10/17/16 onward)	-4.02		-5.43	-3.59
After De Sousa Begins (week of 1/19/18 onward)	-7.64		-6.41	-8.98
After Tuggle Begins (week of 5/14/18 onward)	1.09		0.77	2.52
After Harrison Begins (week of 2/11/19 onward)	-0.14		-0.20	-0.45
Average Maximum Temperature to 50 Degrees		0.24		0.01
Plus Degrees in the 50s		-0.29		0.09
Plus Degrees in the 60s		0.06		-0.27
Plus Degrees in the 70s		0.52		0.33
Plus Degrees Greater Than 80		-0.48		0.01
Snowfall (inches)		-4.10		0.95
Precipitation (inches)		-1.49		-1.12
Darkness Before Midnight (hours)		3.70		-0.45
Thanksgiving/Christmas (proportion of week)		-77.08		-37.39
Winter Holiday (proportion of week)		11.80		1.70
Other Out-of-School Days (proportion of week)		8.61		-1.27
Summer Vacation (proportion of week)		-4.81		-4.78
Summer Holiday (proportion of week)		-23.44		-17.68
Observations	373	83	373	373
R <sup>2</sup>	0.72	0.13	0.69	0.73

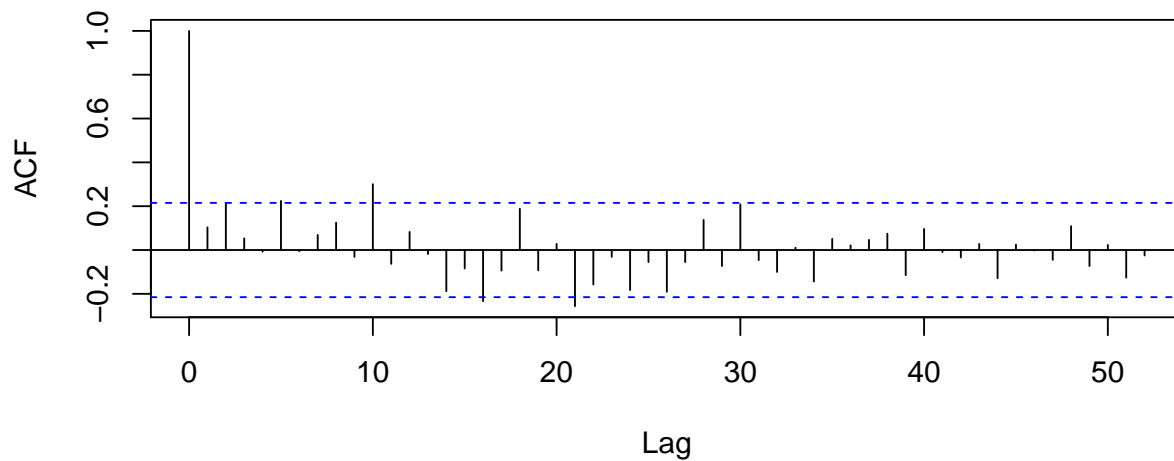
30.3 Least Squares Updated Model (2) for unknown unknown



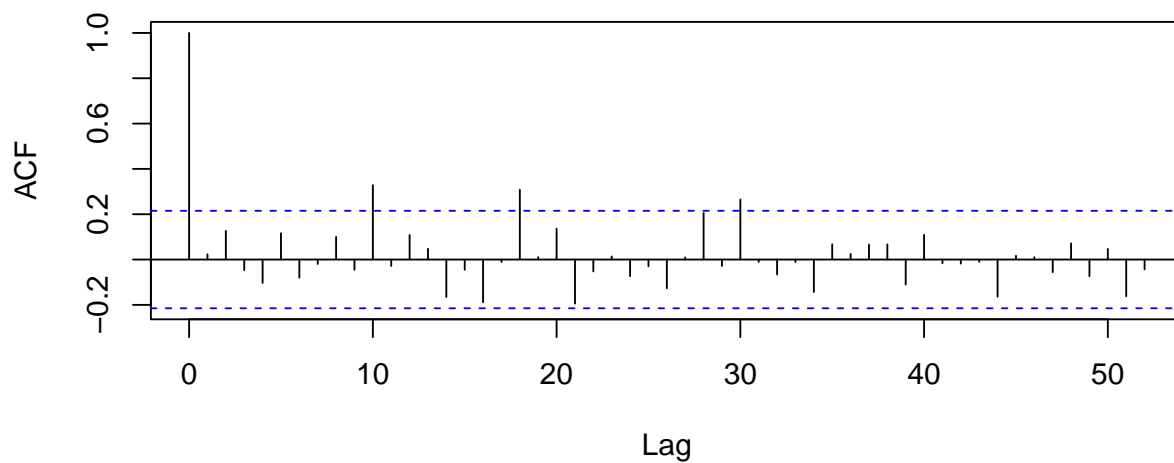
unknown



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



### 30.4 A Poisson Regression Model as an Alternative to Model (2) for unknown

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.3777  -1.0151  -0.0646   1.0868   5.0370

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      3.312288   0.309684  10.696 < 2e-16 ***
tmax.f.spline1   0.004464   0.005431   0.822  0.41111
tmax.f.spline2  -0.005654   0.012205  -0.463  0.64320
tmax.f.spline3   0.001366   0.017499   0.078  0.93780
tmax.f.spline4   0.010804   0.016504   0.655  0.51272
tmax.f.spline5  -0.010045   0.014696  -0.684  0.49429
snow.in          -0.088867   0.058492  -1.519  0.12868
precip.in        -0.032130   0.105658  -0.304  0.76105
dark.before.12   0.072455   0.023024   3.147  0.00165 **
thanks.xmas      -1.553513   0.888939  -1.748  0.08053 .
summer.holiday  -0.520545   0.546457  -0.953  0.34080
winter.holiday   0.233138   0.560754   0.416  0.67759
summer.vacation  -0.104819   0.066979  -1.565  0.11760
oth.ns           0.175301   0.102958   1.703  0.08863 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 261.11  on 82  degrees of freedom
Residual deviance: 225.98  on 69  degrees of freedom
AIC: 726.74

Number of Fisher Scoring iterations: 4
```

## 31 Results for ungrouped

### 31.1 Summary Values for ungrouped

Table 31.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
ungrouped	83	7.566	4.776	1	4	7	9	28

Table 31.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
ungrouped	290	5.155	3.484	0	3	5	6	25

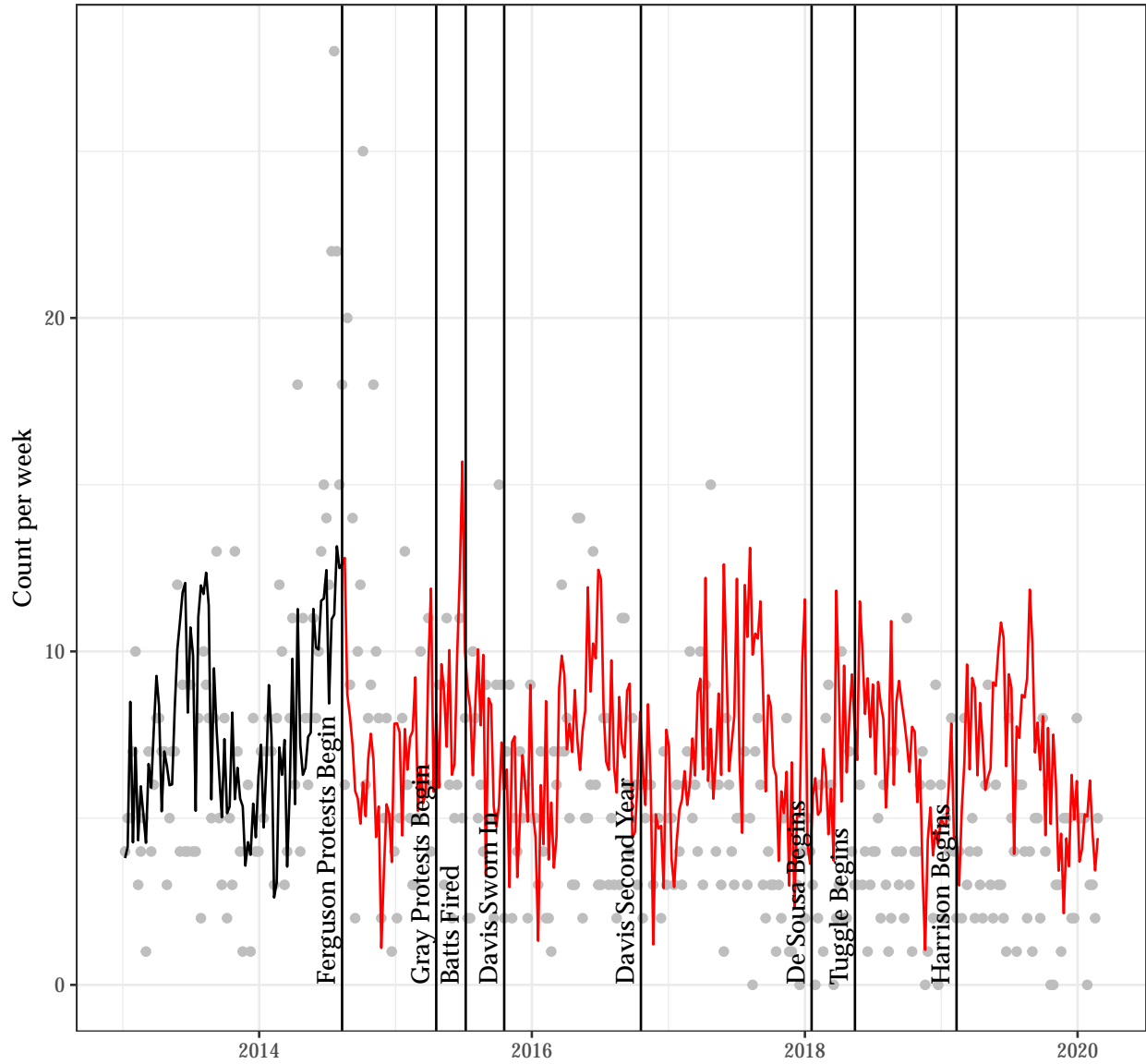
### 31.2 Four Models for ungrouped

Table 31.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

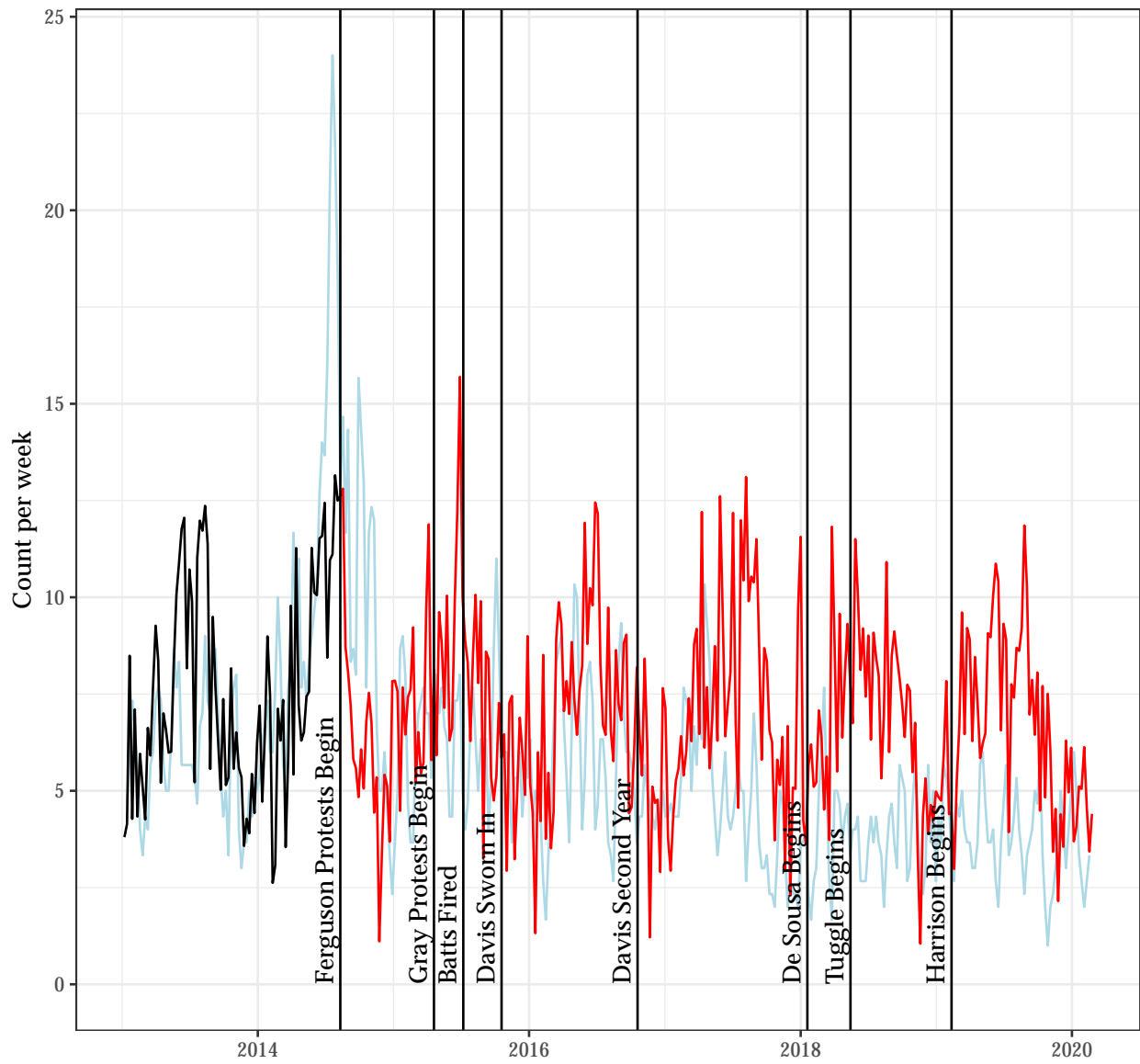
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	0.57		1.40	1.10
After Gray Protests Begin (week of 4/20/15 onward)	-1.59		-4.35	-3.06
Unrest and National Guard (4/27/15 - 5/3/2015)	2.45		6.03	3.34
After Batts Fired (week of 7/13/15 onward)	-0.05		2.11	0.68
After Davis Confirmed (week of 10/19/15 onward)	-0.79		-0.46	-0.49
After Davis First Year (week of 10/17/16 onward)	-1.04		-1.02	-1.03
After De Sousa Begins (week of 1/19/18 onward)	-0.60		-0.44	-0.58
After Tuggle Begins (week of 5/14/18 onward)	-0.14		-0.12	-0.04
After Harrison Begins (week of 2/11/19 onward)	-0.16		-0.03	-0.25
Average Maximum Temperature to 50 Degrees		-0.32		0.02
Plus Degrees in the 50s		0.74		0.08
Plus Degrees in the 60s		-0.91		-0.18
Plus Degrees in the 70s		0.98		0.24
Plus Degrees Greater Than 80		-1.11		-0.39
Snowfall (inches)		-2.28		-1.12
Precipitation (inches)		-0.06		-0.25
Darkness Before Midnight (hours)		-0.75		-0.17
Thanksgiving/Christmas (proportion of week)		-19.50		-16.76
Winter Holiday (proportion of week)		-6.31		-1.01
Other Out-of-School Days (proportion of week)		3.55		0.62
Summer Vacation (proportion of week)		3.12		0.71
Summer Holiday (proportion of week)		17.97		3.09
Observations	373	83	373	373
R <sup>2</sup>	0.17	0.33	0.13	0.24



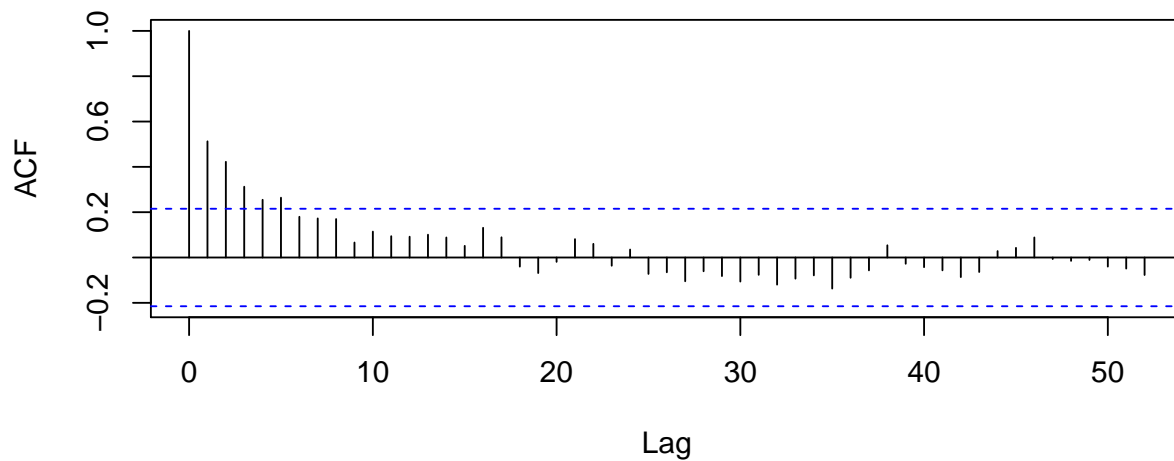
### 31.3 Least Squares Updated Model (2) for ungrouped ungrouped



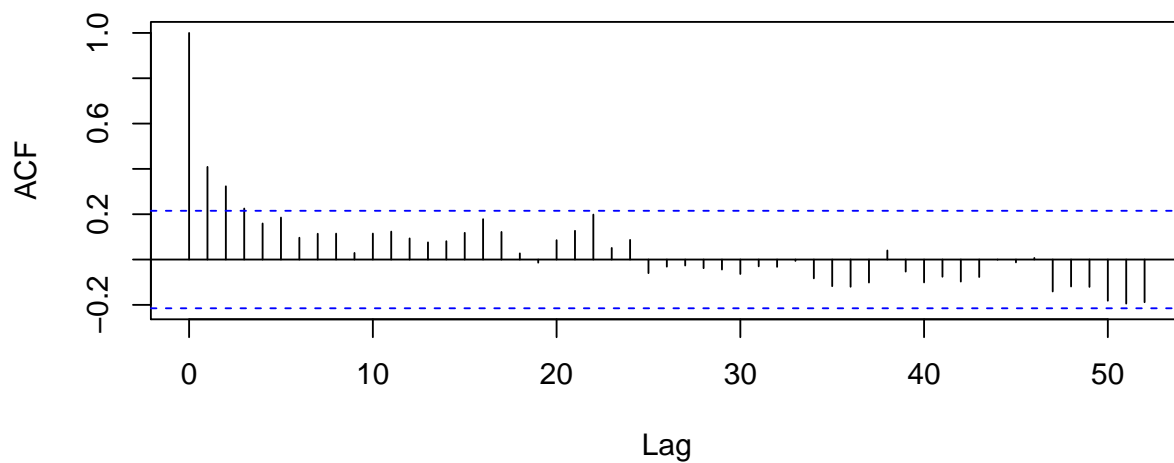
ungrouped



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



### 31.4 A Poisson Regression Model as an Alternative to Model (2) for ungrouped

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.5983  -0.7993  -0.0781   0.4877   4.2804

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      4.72668    0.90111   5.245 1.56e-07 ***
tmax.f.spline1  -0.05088    0.01598  -3.184 0.001453 **
tmax.f.spline2   0.11130    0.03528   3.155 0.001606 **
tmax.f.spline3  -0.12629    0.04658  -2.711 0.006703 **
tmax.f.spline4   0.13013    0.04335   3.002 0.002683 **
tmax.f.spline5  -0.13403    0.03545  -3.781 0.000156 ***
snow.in         -0.42484    0.19338  -2.197 0.028025 *
precip.in       -0.04435    0.26729  -0.166 0.868222
dark.before.12  -0.11559    0.06719  -1.721 0.085341 .
thanks.xmas     -3.43685    2.91347  -1.180 0.238142
summer.holiday  1.95062    1.16161   1.679 0.093107 .
winter.holiday -1.10233    1.70806  -0.645 0.518690
summer.vacation  0.29825    0.15295   1.950 0.051183 .
oth.ns          0.52139    0.28209   1.848 0.064564 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 217.45  on 82  degrees of freedom
Residual deviance: 137.16  on 69  degrees of freedom
AIC: 473

Number of Fisher Scoring iterations: 5
```

## 32 Results for northwestern

### 32.1 Summary Values for northwestern

Table 32.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
northwestern	83	48.253	13.548	26	38	47	57	95

Table 32.2: Descriptives for Outcome After Ferguson Protests Begin

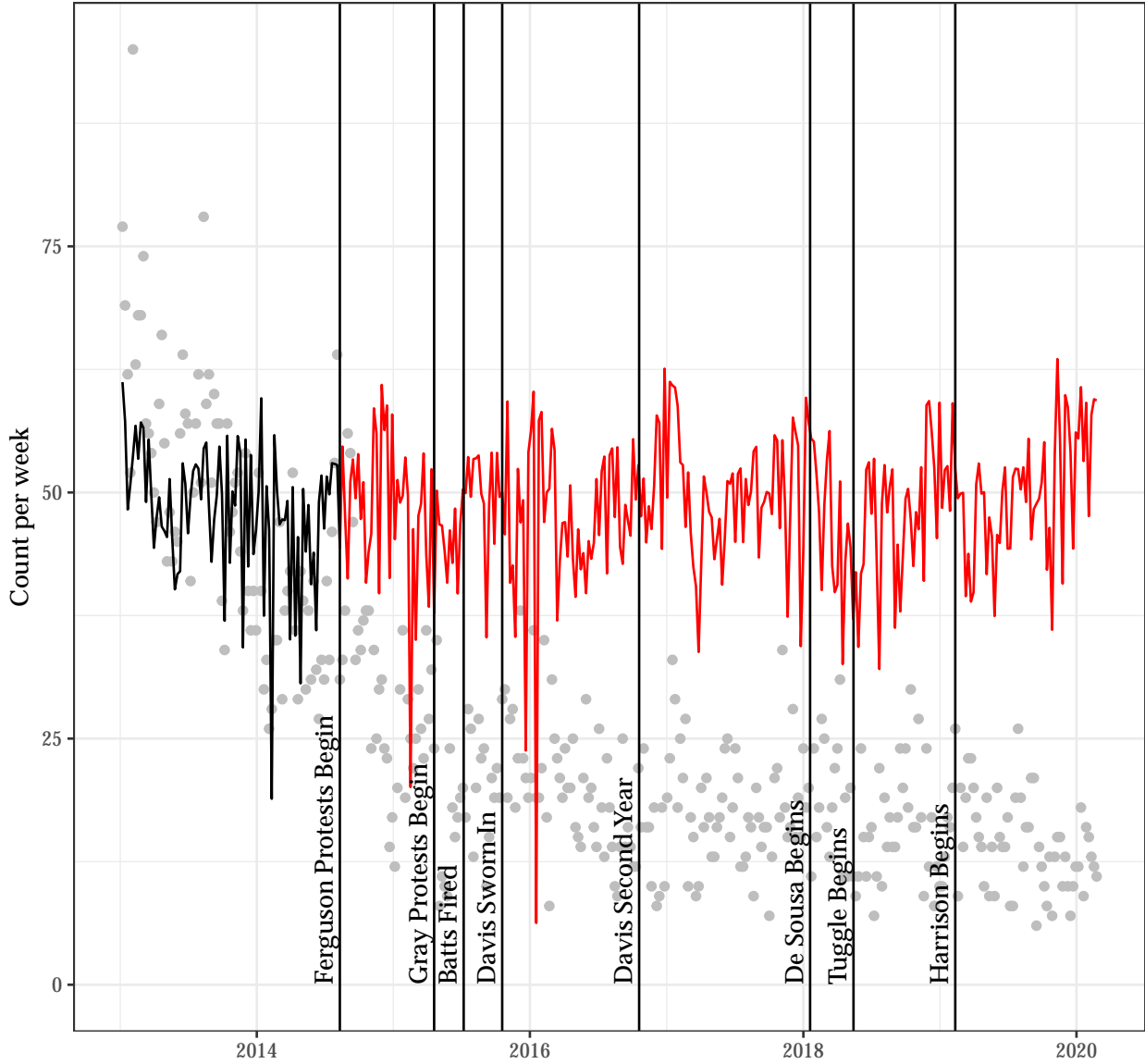
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
northwestern	290	19.038	7.925	6	14	18	23.8	56

## 32.2 Four Models for northwestern

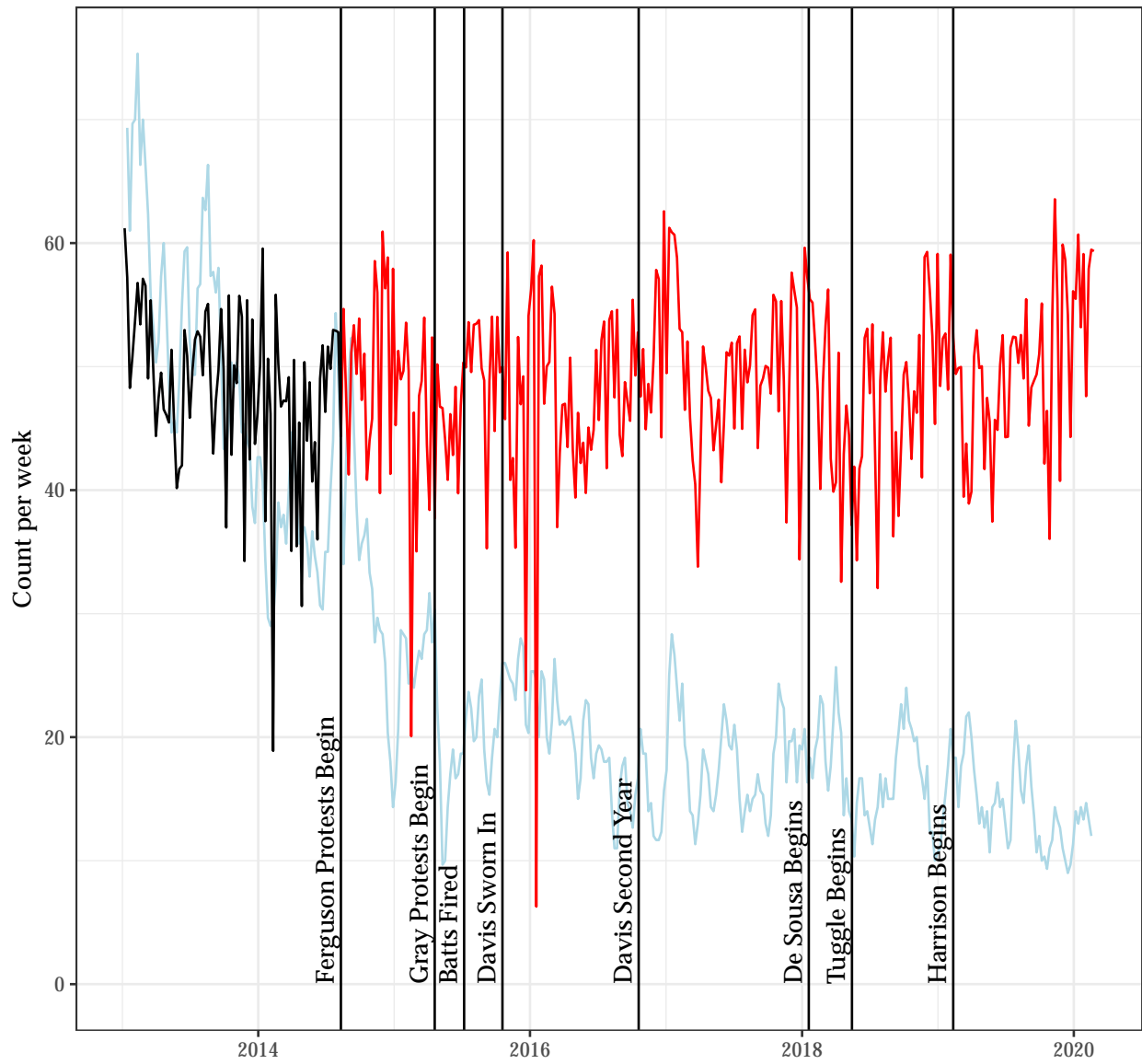
Table 32.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-18.00		-18.05	-17.79
After Gray Protests Begin (week of 4/20/15 onward)	-14.34		-10.62	-14.03
Unrest and National Guard (4/27/15 - 5/3/2015)	19.09		13.48	16.37
After Batts Fired (week of 7/13/15 onward)	4.38		-0.97	3.33
After Davis Confirmed (week of 10/19/15 onward)	0.14		3.12	0.40
After Davis First Year (week of 10/17/16 onward)	-2.76		-5.67	-3.32
After De Sousa Begins (week of 1/19/18 onward)	1.40		4.39	1.95
After Tuggle Begins (week of 5/14/18 onward)	-3.24		-4.17	-2.20
After Harrison Begins (week of 2/11/19 onward)	-1.49		-3.65	-2.79
Average Maximum Temperature to 50 Degrees		0.76		0.28
Plus Degrees in the 50s		-2.75		-0.35
Plus Degrees in the 60s		3.63		0.25
Plus Degrees in the 70s		-2.27		-0.40
Plus Degrees Greater Than 80		0.63		0.07
Snowfall (inches)		-10.09		-2.98
Precipitation (inches)		-20.56		-9.44
Darkness Before Midnight (hours)		2.30		0.75
Thanksgiving/Christmas (proportion of week)		-124.28		-37.37
Winter Holiday (proportion of week)		-6.41		19.30
Other Out-of-School Days (proportion of week)		2.77		-2.26
Summer Vacation (proportion of week)		7.91		2.72
Summer Holiday (proportion of week)		-35.76		8.67
Observations	373	83	373	373
R <sup>2</sup>	0.70	0.26	0.64	0.72

32.3 Least Squares Updated Model (2) for northwestern northwestern

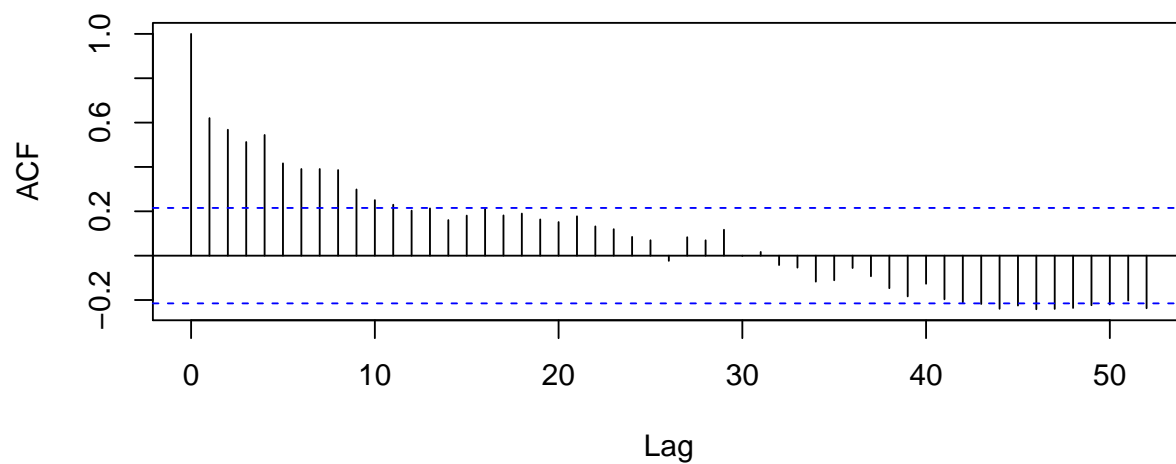


northwestern

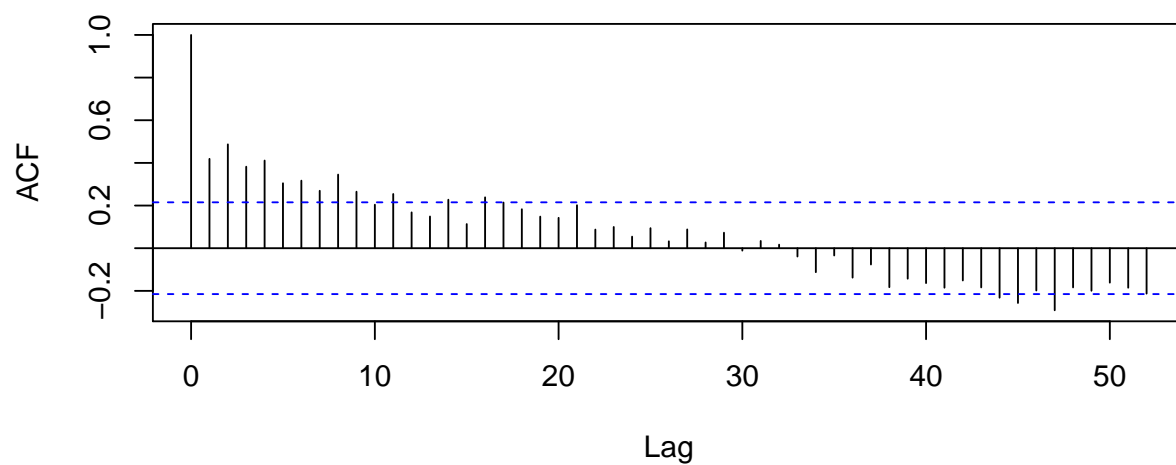




Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 32.4 A Poisson Regression Model as an Alternative to Model (2) for northwestern

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.3987 -1.2601  0.0455  1.1731  4.9723

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      3.108401   0.316940   9.808 < 2e-16 ***
tmax.f.spline1   0.015466   0.005546   2.789  0.00529 **
tmax.f.spline2  -0.059867   0.012722  -4.706  2.53e-06 ***
tmax.f.spline3   0.080597   0.018582   4.337  1.44e-05 ***
tmax.f.spline4  -0.049639   0.017011  -2.918  0.00352 **
tmax.f.spline5   0.013593   0.014330   0.949  0.34283
snow.in         -0.279714   0.070141  -3.988  6.67e-05 ***
precip.in       -0.468714   0.113719  -4.122  3.76e-05 ***
dark.before.12  0.045696   0.023443   1.949  0.05126 .
thanks.xmas     -2.862741   0.988697  -2.895  0.00379 **
summer.holiday -0.778440   0.546987  -1.423  0.15470
winter.holiday -0.126225   0.574490  -0.220  0.82609
summer.vacation 0.166162   0.067555   2.460  0.01391 *
oth.ns          0.089269   0.111005   0.804  0.42129
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 305.14  on 82  degrees of freedom
Residual deviance: 219.00  on 69  degrees of freedom
AIC: 718.41

Number of Fisher Scoring iterations: 4
```

### 33 Results for northern

#### 33.1 Summary Values for northern

Table 33.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
northern	83	30.771	8.284	15	25	30	36	56

Table 33.2: Descriptives for Outcome After Ferguson Protests Begin

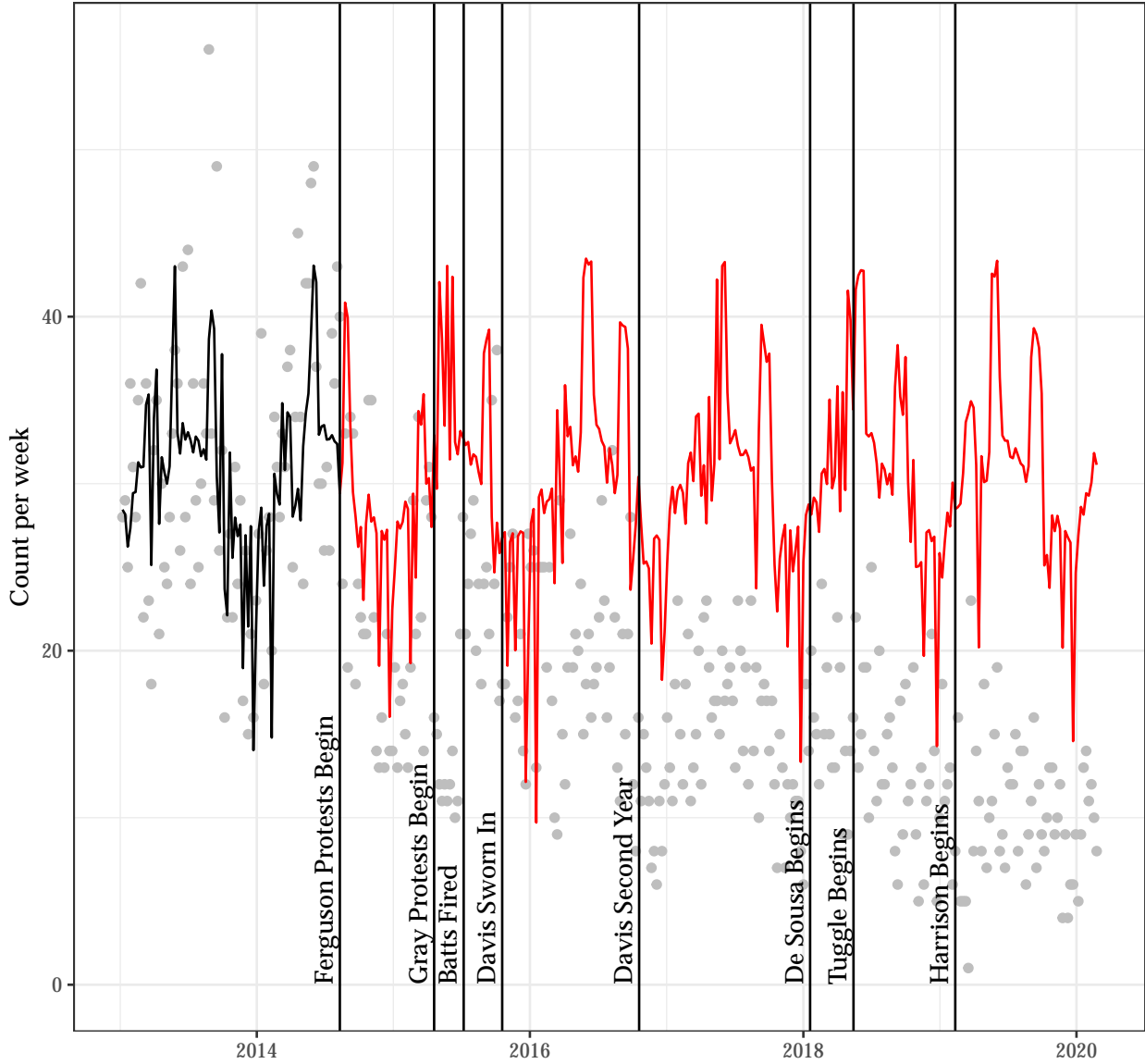
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
northern	290	15.997	6.851	1	11	15	20	40

### 33.2 Four Models for northern

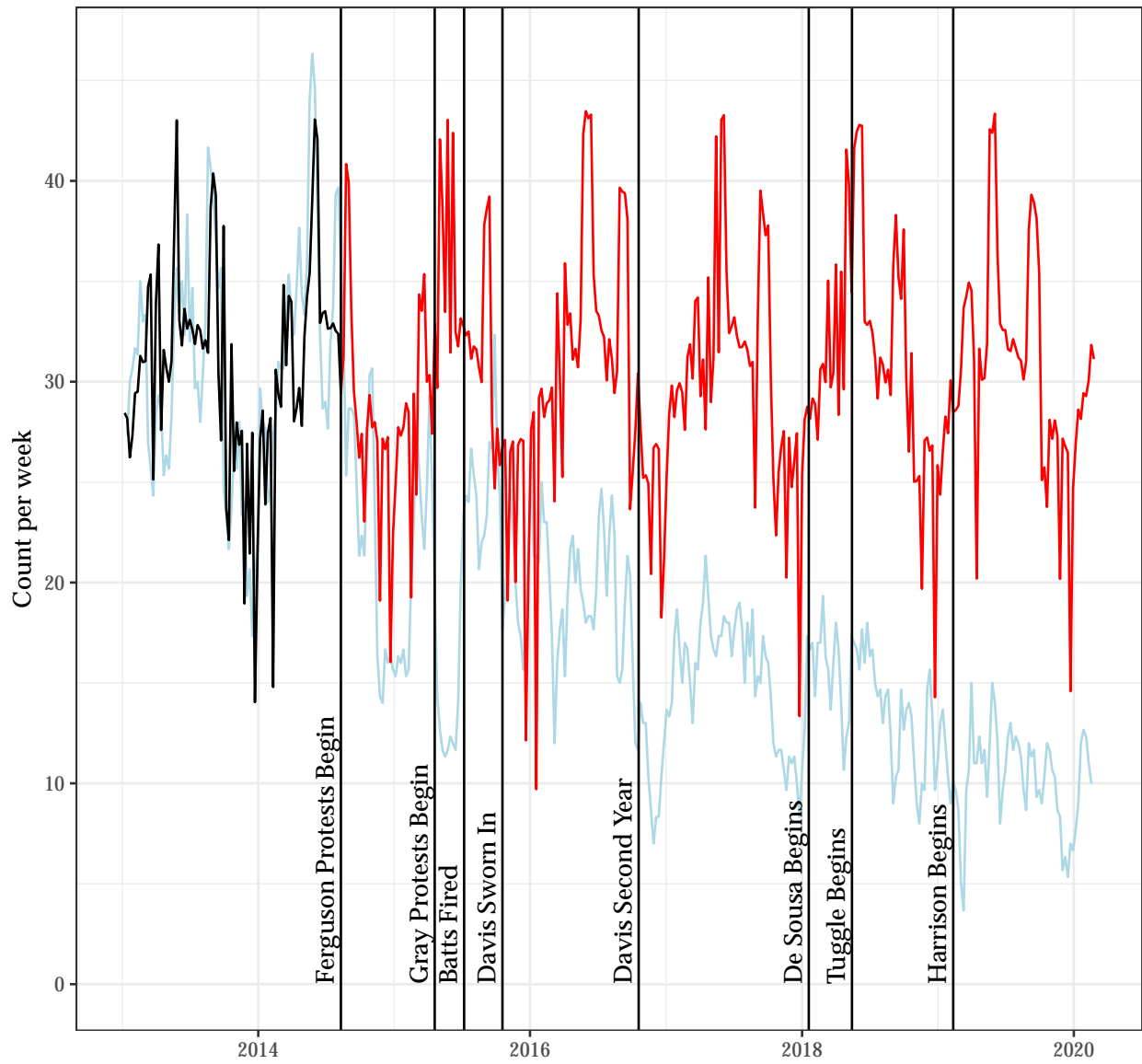
Table 33.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-8.33		-5.79	-6.87
After Gray Protests Begin (week of 4/20/15 onward)	-8.08		-15.68	-11.62
Unrest and National Guard (4/27/15 - 5/3/2015)	0.64		6.78	1.41
After Batts Fired (week of 7/13/15 onward)	10.42		14.70	11.45
After Davis Confirmed (week of 10/19/15 onward)	-5.15		-3.77	-4.07
After Davis First Year (week of 10/17/16 onward)	-5.06		-4.43	-4.70
After De Sousa Begins (week of 1/19/18 onward)	0.99		-1.38	0.27
After Tuggle Begins (week of 5/14/18 onward)	-2.28		-1.04	-1.52
After Harrison Begins (week of 2/11/19 onward)	-3.08		-3.17	-3.57
Average Maximum Temperature to 50 Degrees		0.06		0.12
Plus Degrees in the 50s		-0.12		-0.01
Plus Degrees in the 60s		-0.86		-0.33
Plus Degrees in the 70s		2.31		0.41
Plus Degrees Greater Than 80		-1.51		-0.22
Snowfall (inches)		-5.32		-2.61
Precipitation (inches)		-3.09		-2.88
Darkness Before Midnight (hours)		-3.07		-1.17
Thanksgiving/Christmas (proportion of week)		-44.26		-37.05
Winter Holiday (proportion of week)		6.10		15.78
Other Out-of-School Days (proportion of week)		-6.84		-1.02
Summer Vacation (proportion of week)		-9.73		-0.71
Summer Holiday (proportion of week)		3.47		2.57
Observations	373	83	373	373
R <sup>2</sup>	0.59	0.41	0.56	0.66

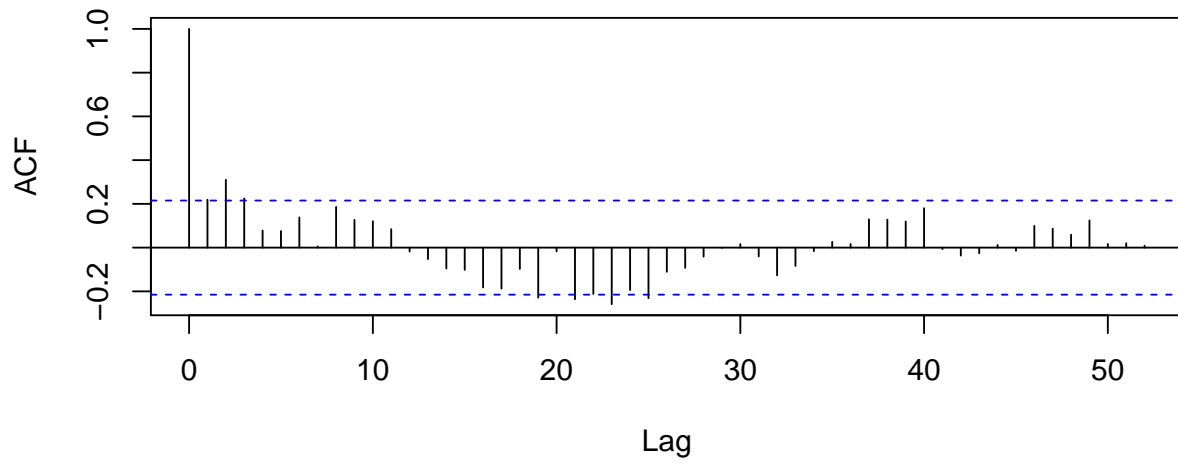
33.3 Least Squares Updated Model (2) for northern  
northern



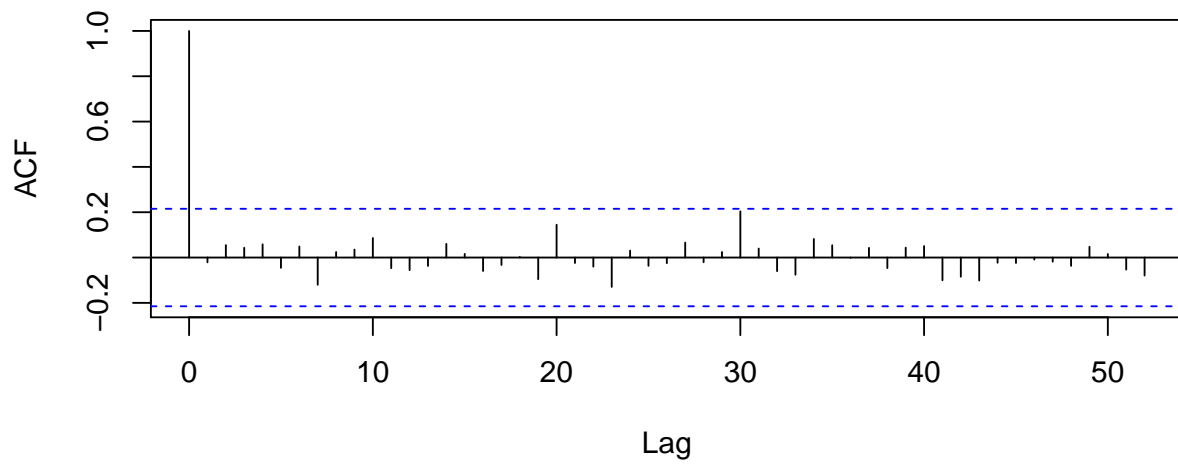
northern



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



### 33.4 A Poisson Regression Model as an Alternative to Model (2) for northern

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.3419  -0.8557  -0.2028   0.5997   3.2026

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      3.988762   0.421774   9.457 < 2e-16 ***
tmax.f.spline1    0.002010   0.007450    0.270 0.787359
tmax.f.spline2   -0.005184   0.016217   -0.320 0.749235
tmax.f.spline3   -0.026607   0.022688   -1.173 0.240896
tmax.f.spline4    0.070892   0.020704    3.424 0.000617 ***
tmax.f.spline5   -0.044859   0.017316   -2.591 0.009580 **
snow.in          -0.232808   0.086928   -2.678 0.007403 **
precip.in        -0.112431   0.133896   -0.840 0.401083
dark.before.12   -0.104856   0.030119   -3.481 0.000499 ***
thanks.xmas      -2.465265   1.416722   -1.740 0.081838 .
summer.holiday   0.042865   0.602246    0.071 0.943259
winter.holiday   0.252574   0.762199    0.331 0.740361
summer.vacation  -0.281414   0.076918   -3.659 0.000254 ***
oth.ns           -0.245136   0.150554   -1.628 0.103476
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 180.77  on 82  degrees of freedom
Residual deviance: 101.92  on 69  degrees of freedom
AIC: 564.35

Number of Fisher Scoring iterations: 4
```



## 34 Results for northeastern

### 34.1 Summary Values for northeastern

Table 34.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
northeastern	83	59.072	14.665	26	50	57	66	93

Table 34.2: Descriptives for Outcome After Ferguson Protests Begin

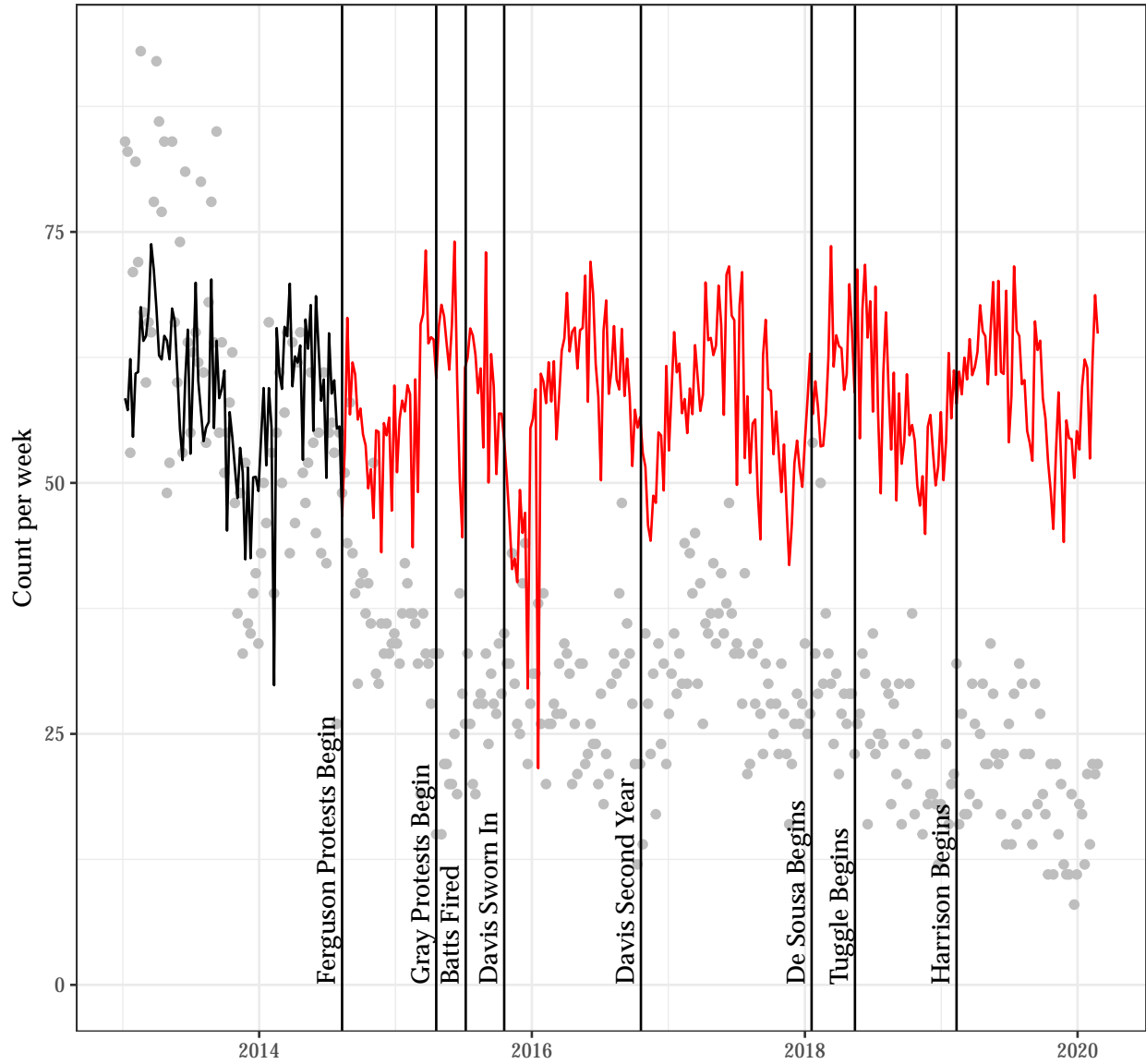
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
northeastern	290	27.841	8.601	8	22	28	33	58

### 34.2 Four Models for northeastern

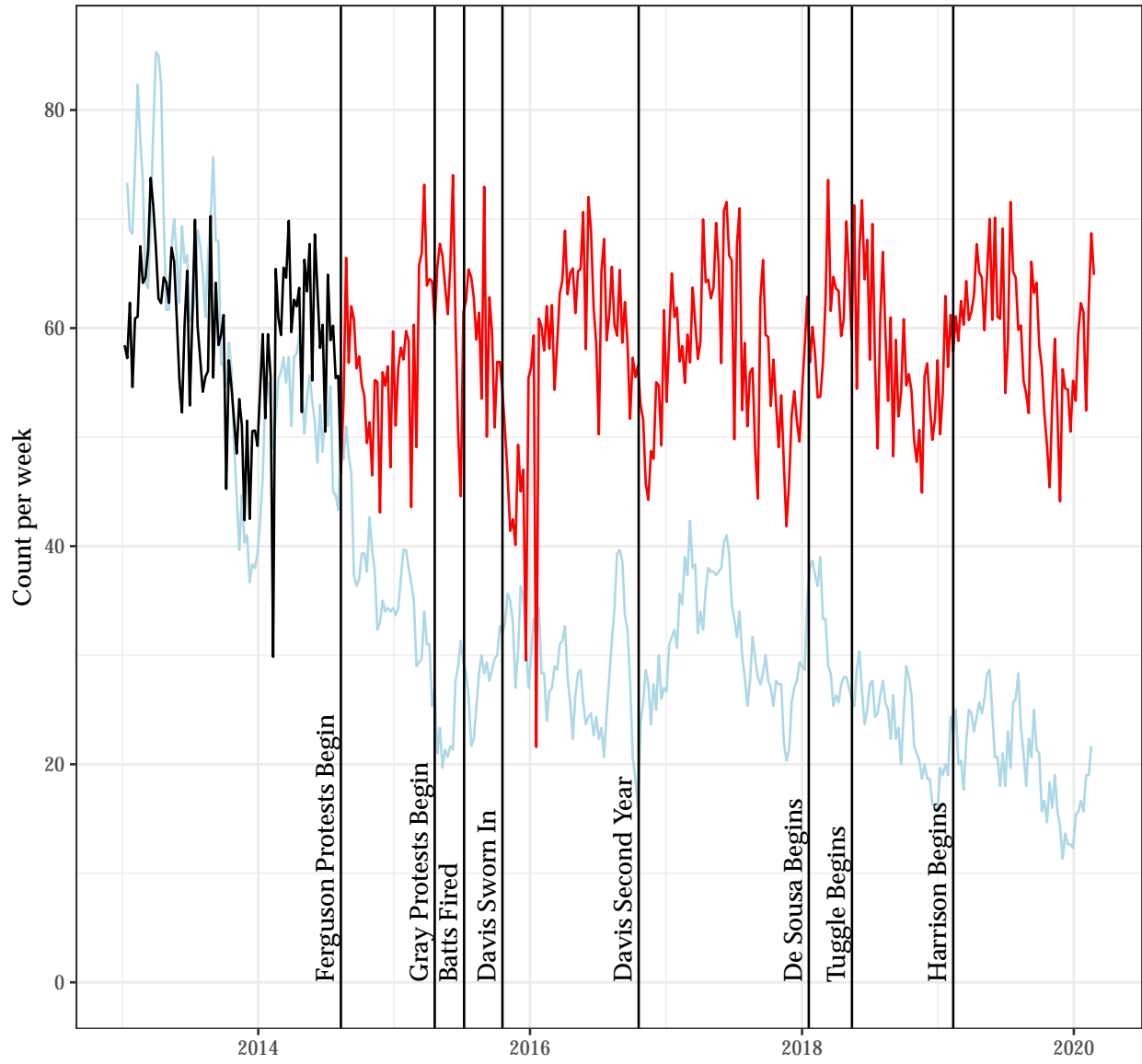
Table 34.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-21.93		-19.41	-20.73
After Gray Protests Begin (week of 4/20/15 onward)	-14.23		-19.17	-17.01
Unrest and National Guard (4/27/15 - 5/3/2015)	10.09		6.00	9.23
After Batts Fired (week of 7/13/15 onward)	4.88		6.41	5.70
After Davis Confirmed (week of 10/19/15 onward)	1.27		3.85	2.23
After Davis First Year (week of 10/17/16 onward)	1.58		1.75	2.02
After De Sousa Begins (week of 1/19/18 onward)	1.36		-2.88	-0.03
After Tuggle Begins (week of 5/14/18 onward)	-8.92		-4.68	-7.52
After Harrison Begins (week of 2/11/19 onward)	-2.75		-5.16	-3.49
Average Maximum Temperature to 50 Degrees		0.21		0.10
Plus Degrees in the 50s		-1.72		-0.28
Plus Degrees in the 60s		1.67		0.11
Plus Degrees in the 70s		-0.12		0.13
Plus Degrees Greater Than 80		0.96		0.22
Snowfall (inches)		-10.44		-1.81
Precipitation (inches)		-15.02		-4.70
Darkness Before Midnight (hours)		-6.48		-1.98
Thanksgiving/Christmas (proportion of week)		-72.78		-27.13
Winter Holiday (proportion of week)		31.35		12.79
Other Out-of-School Days (proportion of week)		5.66		-0.16
Summer Vacation (proportion of week)		-12.18		-3.54
Summer Holiday (proportion of week)		-85.95		-12.99
Observations	373	83	373	373
R <sup>2</sup>	0.70	0.25	0.64	0.72

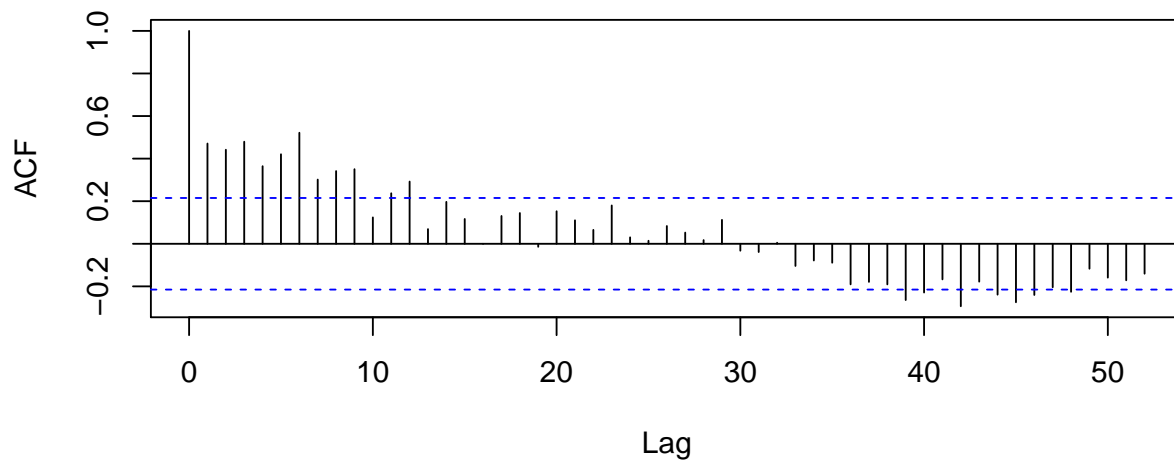
### 34.3 Least Squares Updated Model (2) for northeastern northeastern



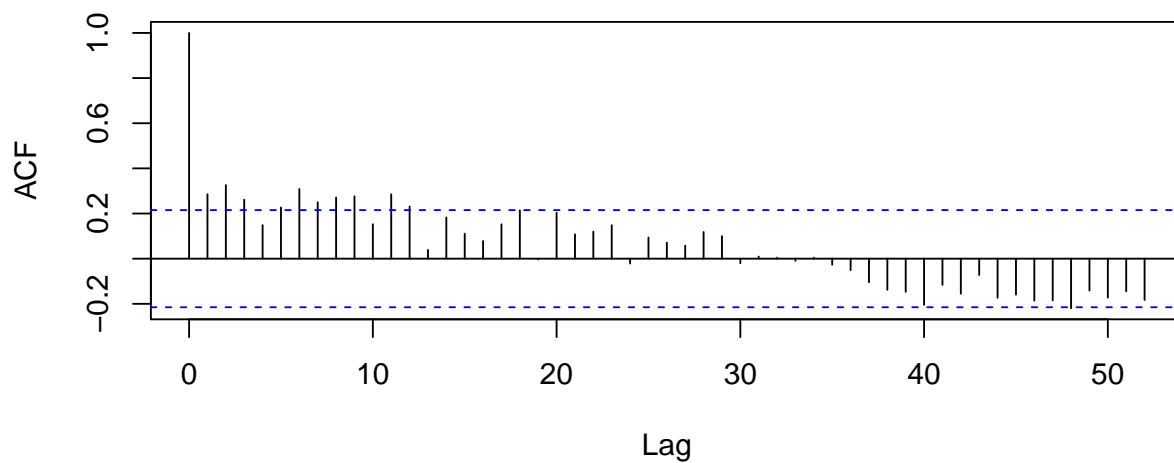
northeastern



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



### 34.4 A Poisson Regression Model as an Alternative to Model (2) for northeastern

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-4.4378 -1.2637 -0.1278  1.0241  3.1971

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   4.701791   0.293670  16.010 < 2e-16 ***
tmax.f.spline1 0.003351   0.005107   0.656 0.511752
tmax.f.spline2 -0.030235   0.011291  -2.678 0.007413 **
tmax.f.spline3  0.030497   0.016213   1.881 0.059963 .
tmax.f.spline4 -0.002708   0.014866  -0.182 0.855454
tmax.f.spline5  0.015100   0.012606   1.198 0.230973
snow.in       -0.227509   0.060565  -3.756 0.000172 ***
precip.in     -0.264552   0.098122  -2.696 0.007014 **
dark.before.12 -0.110391   0.021480  -5.139 2.76e-07 ***
thanks.xmas   -1.508657   0.889757  -1.696 0.089965 .
summer.holiday -1.445356   0.483879  -2.987 0.002817 **
winter.holiday  0.569189   0.518941   1.097 0.272717
summer.vacation -0.202190   0.059250  -3.412 0.000644 ***
oth.ns        0.116426   0.094790   1.228 0.219352
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 299.97 on 82 degrees of freedom
Residual deviance: 222.67 on 69 degrees of freedom
AIC: 739.37

Number of Fisher Scoring iterations: 4
```

## 35 Results for western

### 35.1 Summary Values for western

Table 35.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
western	83	66.217	16.286	29	56	64	72.5	113

Table 35.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
western	290	29.810	14.168	6	20	27	37	93

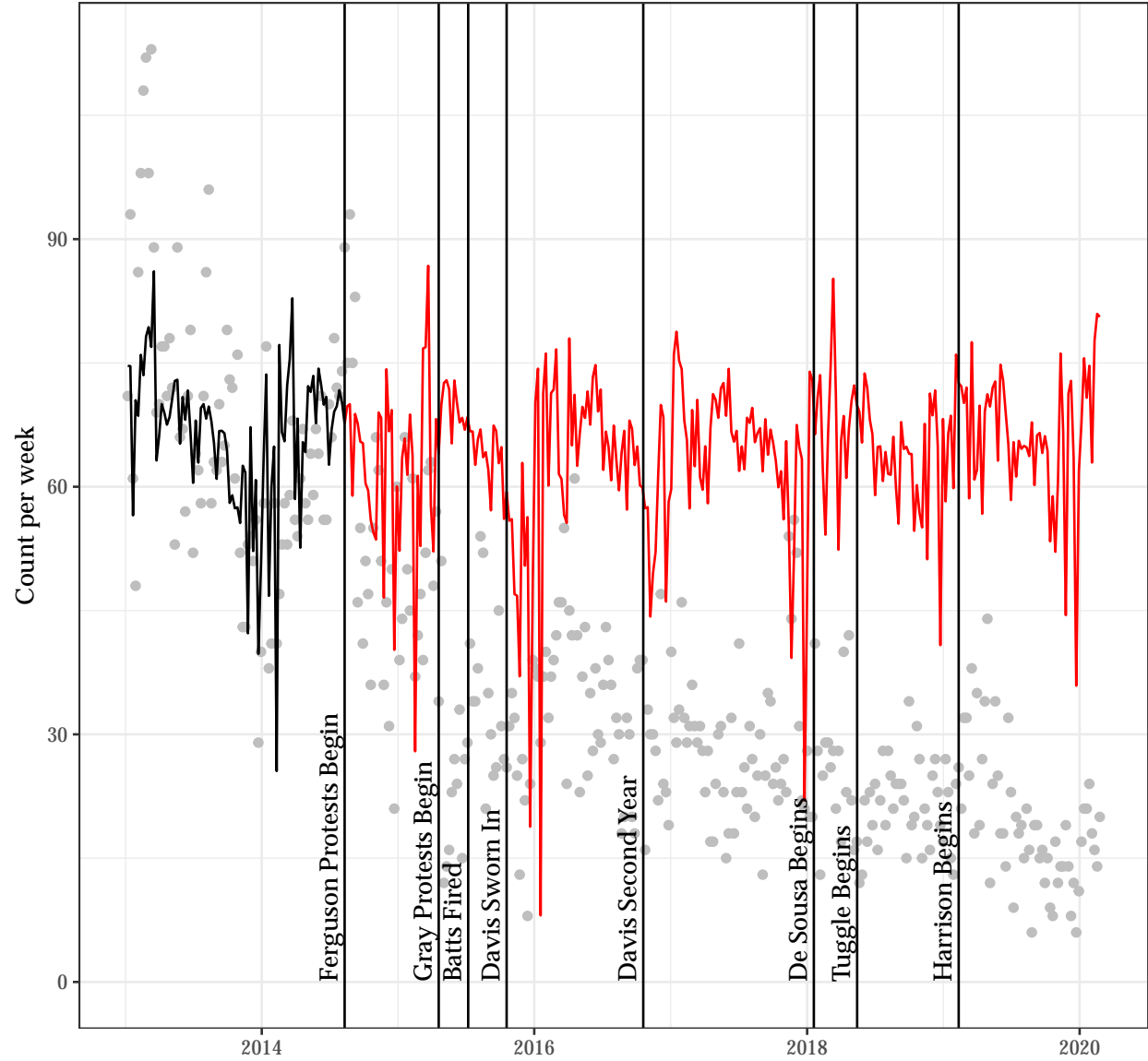
### 35.2 Four Models for western

Table 35.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

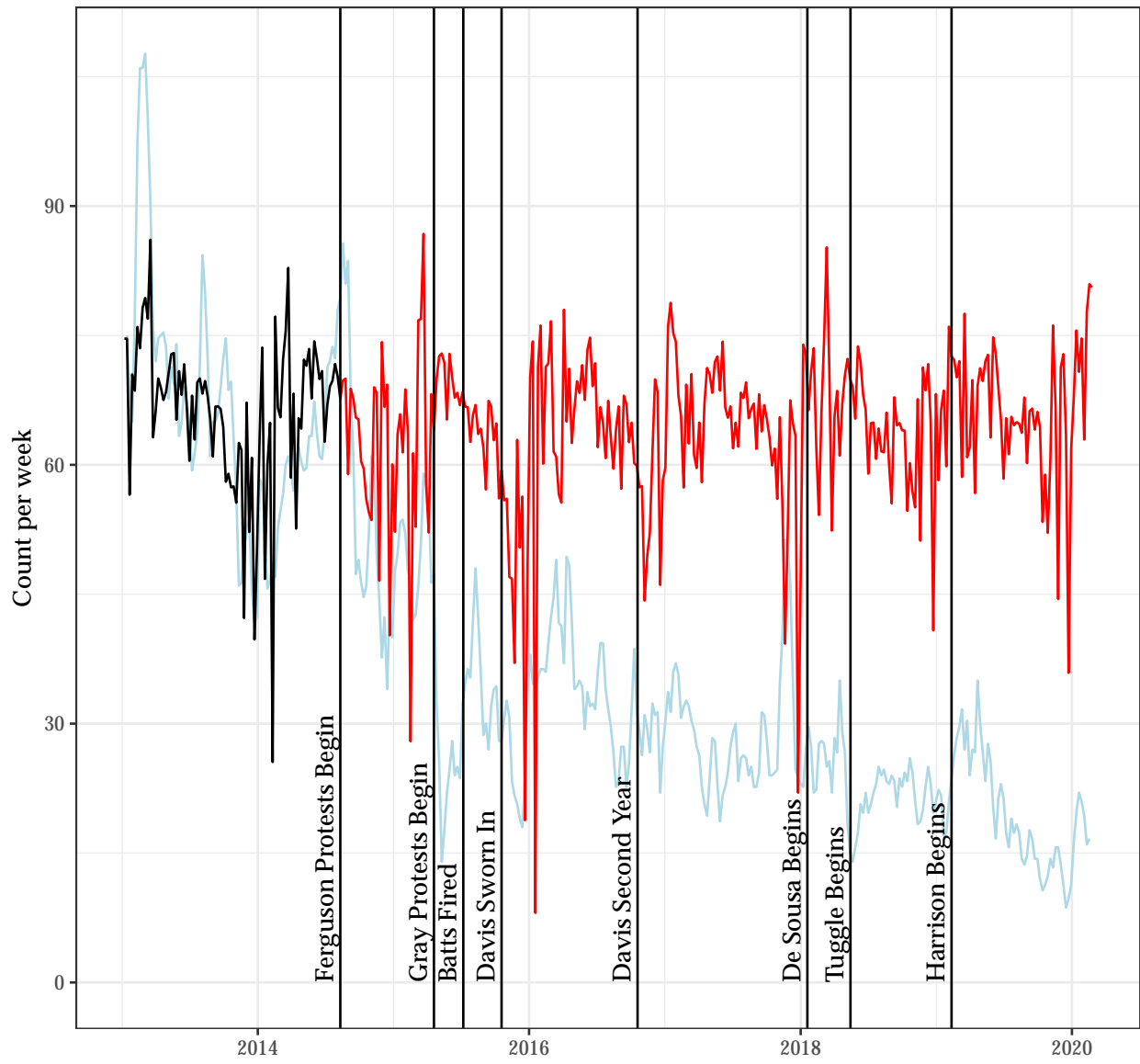
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-12.86		-9.09	-11.05
After Gray Protests Begin (week of 4/20/15 onward)	-30.27		-37.01	-33.27
Unrest and National Guard (4/27/15 - 5/3/2015)	27.91		27.22	25.46
After Batts Fired (week of 7/13/15 onward)	12.12		17.48	14.31
After Davis Confirmed (week of 10/19/15 onward)	-2.14		-0.20	-1.99
After Davis First Year (week of 10/17/16 onward)	-4.56		-5.91	-4.67
After De Sousa Begins (week of 1/19/18 onward)	-1.77		-6.12	-4.31
After Tuggle Begins (week of 5/14/18 onward)	-5.47		-1.67	-1.95
After Harrison Begins (week of 2/11/19 onward)	-1.90		-4.37	-3.82
Average Maximum Temperature to 50 Degrees		1.05		0.46
Plus Degrees in the 50s		-3.95		-1.11
Plus Degrees in the 60s		3.72		0.52
Plus Degrees in the 70s		-0.73		-0.11
Plus Degrees Greater Than 80		-0.83		-0.04
Snowfall (inches)		-14.23		-5.05
Precipitation (inches)		-5.74		-7.69
Darkness Before Midnight (hours)		-5.06		-2.64
Thanksgiving/Christmas (proportion of week)		-148.35		-57.17
Winter Holiday (proportion of week)		12.30		8.84
Other Out-of-School Days (proportion of week)		-12.77		-4.85
Summer Vacation (proportion of week)		-2.09		1.59
Summer Holiday (proportion of week)		-42.40		-4.29
Observations	373	83	373	373
R <sup>2</sup>	0.70	0.32	0.66	0.74



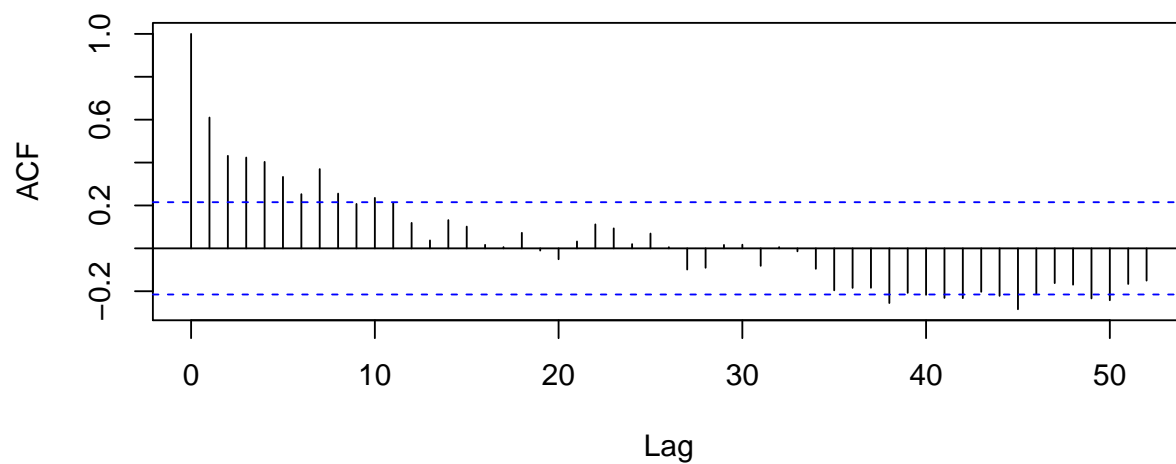
35.3 Least Squares Updated Model (2) for western western



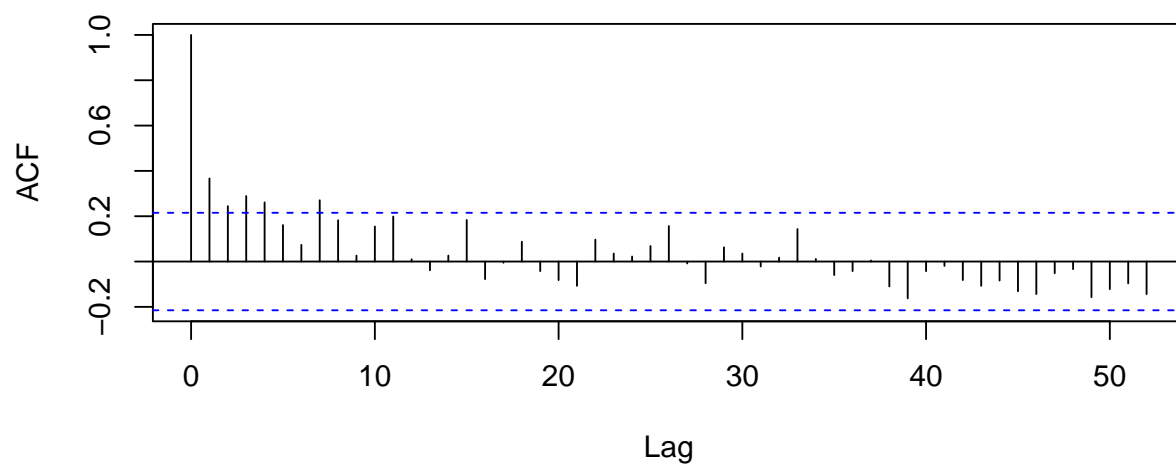
western



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



### 35.4 A Poisson Regression Model as an Alternative to Model (2) for western

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.6952  -1.2441  -0.0936   0.9357   3.7699

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)    4.095545   0.278756  14.692 < 2e-16 ***
tmax.f.spline1  0.015974   0.004884   3.271 0.001072 **
tmax.f.spline2 -0.061515   0.010891  -5.648 1.62e-08 ***
tmax.f.spline3  0.059379   0.015802   3.758 0.000172 ***
tmax.f.spline4 -0.012480   0.014352  -0.870 0.384555
tmax.f.spline5 -0.012216   0.012194  -1.002 0.316418
snow.in        -0.294954   0.060607  -4.867 1.13e-06 ***
precip.in      -0.087530   0.089787  -0.975 0.329632
dark.before.12 -0.076031   0.020101  -3.782 0.000155 ***
thanks.xmas    -3.045140   0.917819  -3.318 0.000907 ***
summer.holiday -0.640232   0.455153  -1.407 0.159537
winter.holiday  0.192116   0.499583   0.385 0.700569
summer.vacation -0.030628   0.056205  -0.545 0.585800
oth.ns        -0.168675   0.098919  -1.705 0.088160 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 321.30 on 82 degrees of freedom
Residual deviance: 206.53 on 69 degrees of freedom
AIC: 732.85

Number of Fisher Scoring iterations: 4
```

## 36 Results for central

### 36.1 Summary Values for central

Table 36.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
central	83	61.072	12.740	27	54	61	69.5	87

Table 36.2: Descriptives for Outcome After Ferguson Protests Begin

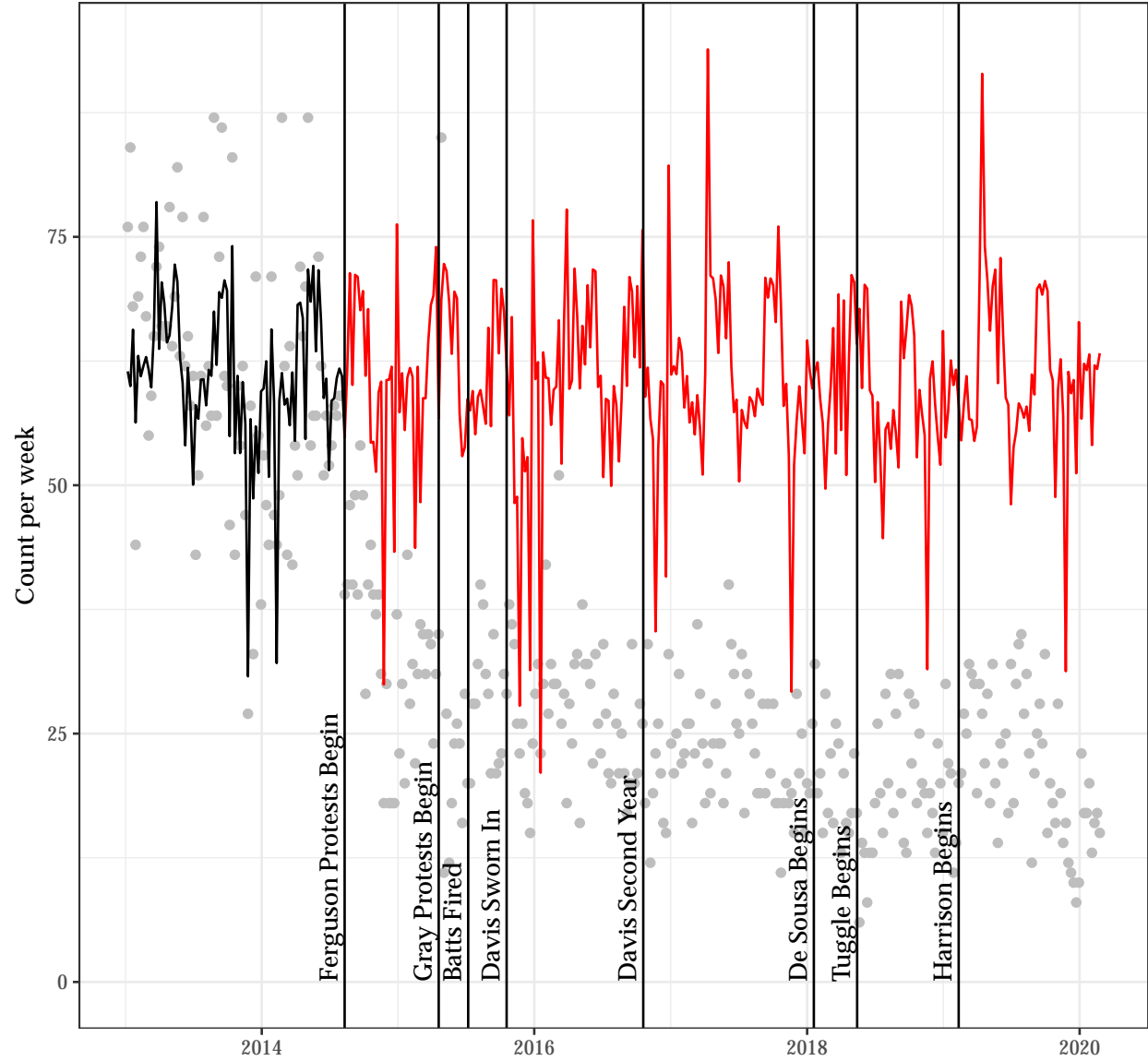
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
central	290	24.683	8.935	6	18	24	30	85

### 36.2 Four Models for central

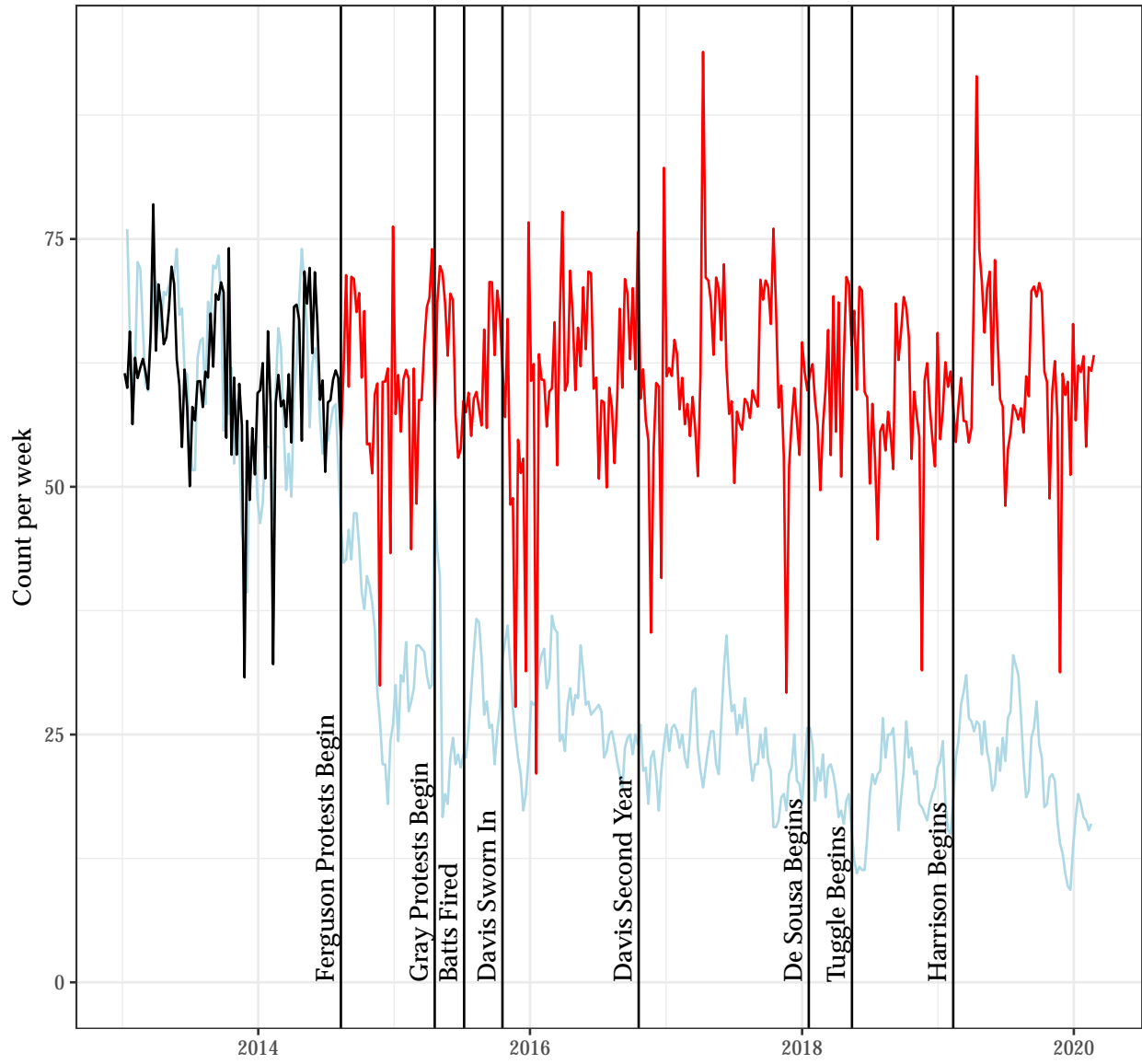
Table 36.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-27.43		-26.72	-26.19
After Gray Protests Begin (week of 4/20/15 onward)	-11.64		-14.30	-14.10
Unrest and National Guard (4/27/15 - 5/3/2015)	63.00		57.41	59.66
After Batts Fired (week of 7/13/15 onward)	6.50		7.50	6.57
After Davis Confirmed (week of 10/19/15 onward)	-1.19		1.19	0.15
After Davis First Year (week of 10/17/16 onward)	-4.03		-5.29	-3.98
After De Sousa Begins (week of 1/19/18 onward)	-2.84		-2.69	-3.31
After Tuggle Begins (week of 5/14/18 onward)	-1.33		0.64	0.22
After Harrison Begins (week of 2/11/19 onward)	2.59		0.22	1.17
Average Maximum Temperature to 50 Degrees		0.02		0.25
Plus Degrees in the 50s		-1.30		-0.54
Plus Degrees in the 60s		3.04		0.75
Plus Degrees in the 70s		-1.73		-0.74
Plus Degrees Greater Than 80		-0.43		0.28
Snowfall (inches)		-10.59		-1.89
Precipitation (inches)		-14.15		-8.75
Darkness Before Midnight (hours)		-1.42		-1.13
Thanksgiving/Christmas (proportion of week)		-213.58		-62.55
Winter Holiday (proportion of week)		-10.72		8.37
Other Out-of-School Days (proportion of week)		22.10		2.50
Summer Vacation (proportion of week)		-10.14		-0.66
Summer Holiday (proportion of week)		-55.33		-12.67
Observations	373	83	373	373
R <sup>2</sup>	0.78	0.36	0.70	0.81

36.3 Least Squares Updated Model (2) for central  
central

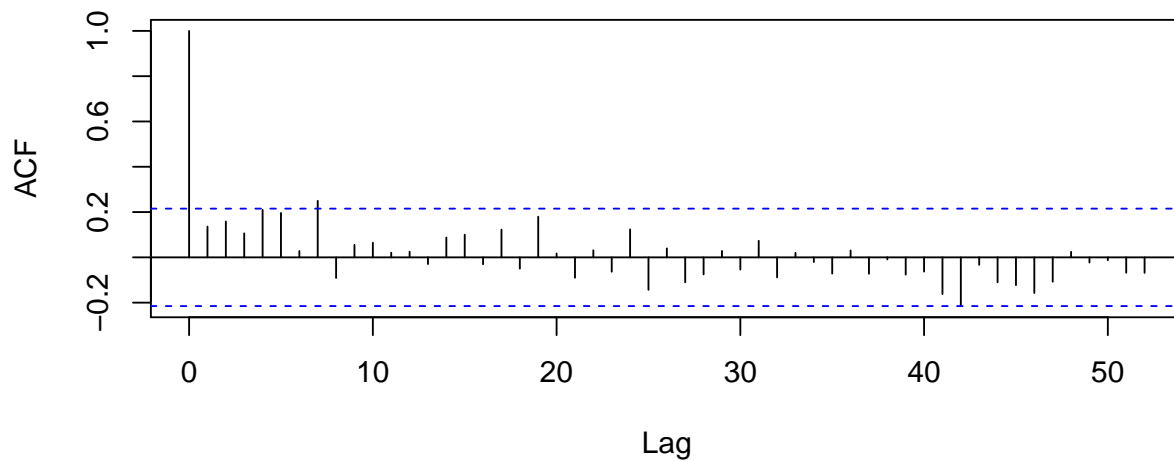


central

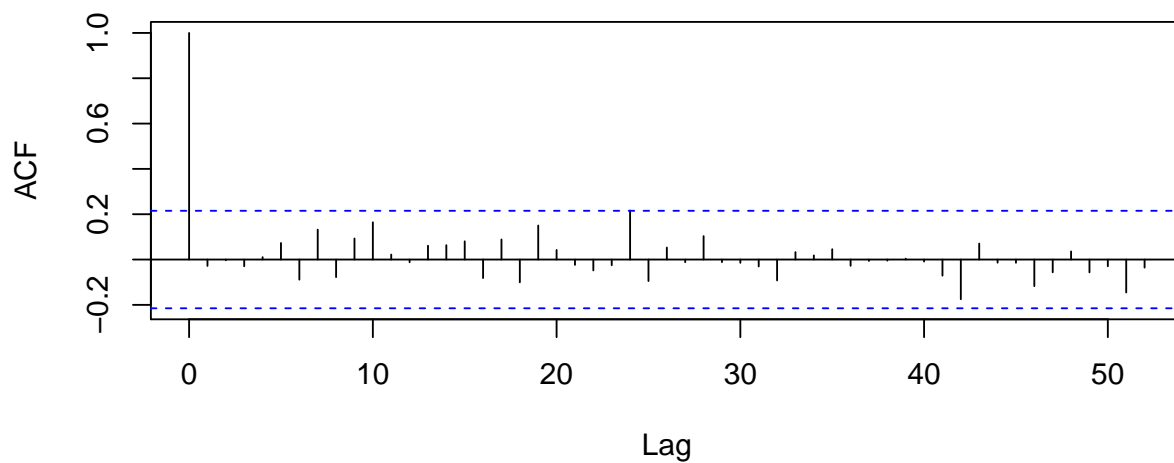




Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 36.4 A Poisson Regression Model as an Alternative to Model (2) for central

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.8021  -0.8774  -0.0869   0.7986   3.1648

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   4.2772609  0.2885868  14.821 < 2e-16 ***
tmax.f.spline1 0.0006831  0.0050568   0.135 0.892539
tmax.f.spline2 -0.0234978  0.0113147  -2.077 0.037824 *
tmax.f.spline3  0.0518958  0.0160920   3.225 0.001260 **
tmax.f.spline4 -0.0281310  0.0144067  -1.953 0.050863 .
tmax.f.spline5 -0.0077330  0.0126903  -0.609 0.542285
snow.in       -0.2222581  0.0594219  -3.740 0.000184 ***
precip.in     -0.2309575  0.0946218  -2.441 0.014653 *
dark.before.12 -0.0229463  0.0210852  -1.088 0.276479
thanks.xmas   -4.2164499  0.9319885  -4.524 6.06e-06 ***
summer.holiday -0.9074548  0.4751255  -1.910 0.056143 .
winter.holiday -0.1280991  0.5284835  -0.242 0.808478
summer.vacation -0.1609969  0.0578421  -2.783 0.005379 **
oth.ns        0.3826628  0.0920387   4.158 3.22e-05 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 222.91  on 82  degrees of freedom
Residual deviance: 140.70  on 69  degrees of freedom
AIC: 660.87

Number of Fisher Scoring iterations: 4
```

## 37 Results for eastern

### 37.1 Summary Values for eastern

Table 37.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
eastern	83	73.253	15.432	42	62	70	84.5	116

Table 37.2: Descriptives for Outcome After Ferguson Protests Begin

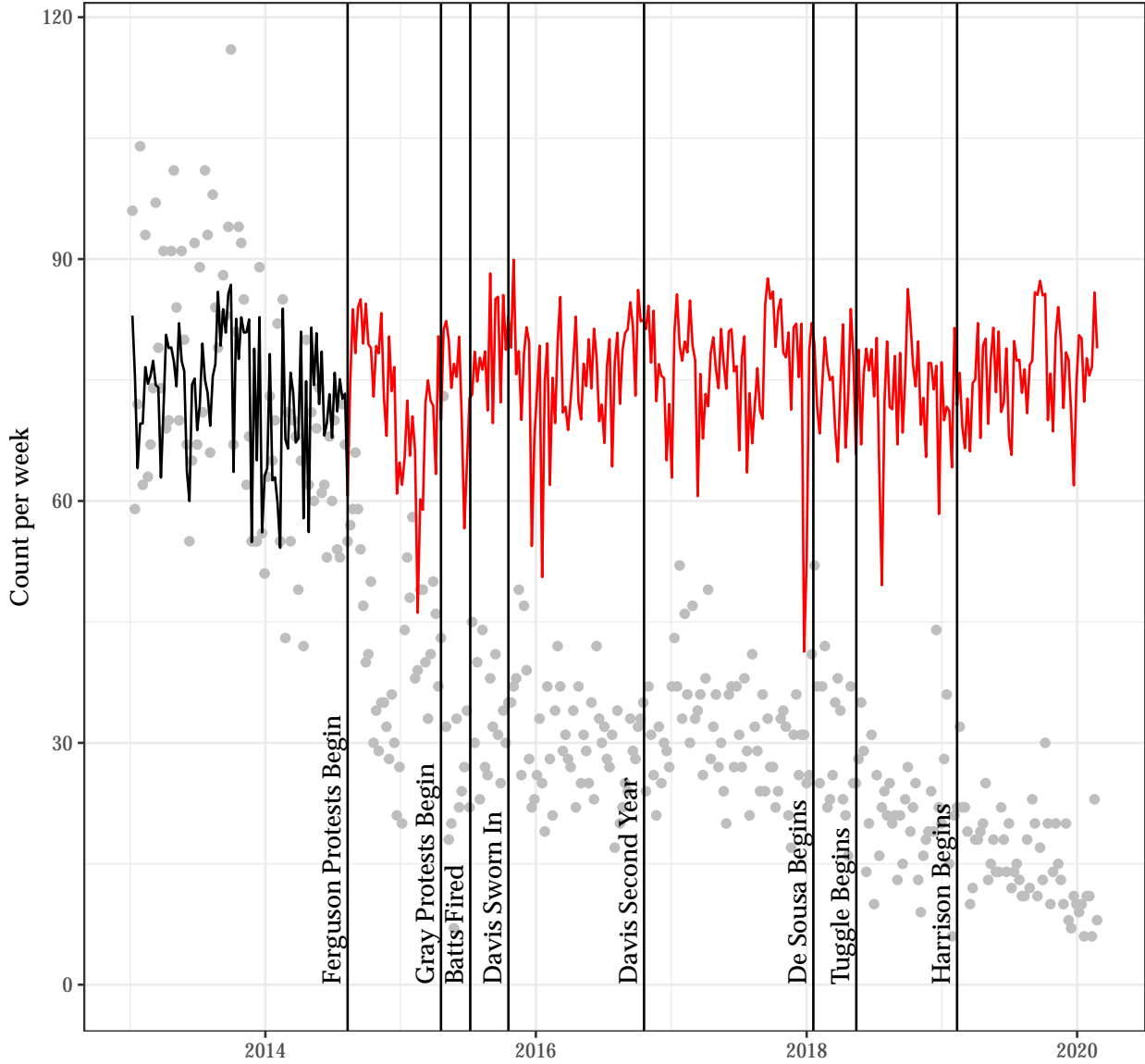
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
eastern	290	28.169	11.496	6	20.2	27	35	73

### 37.2 Four Models for eastern

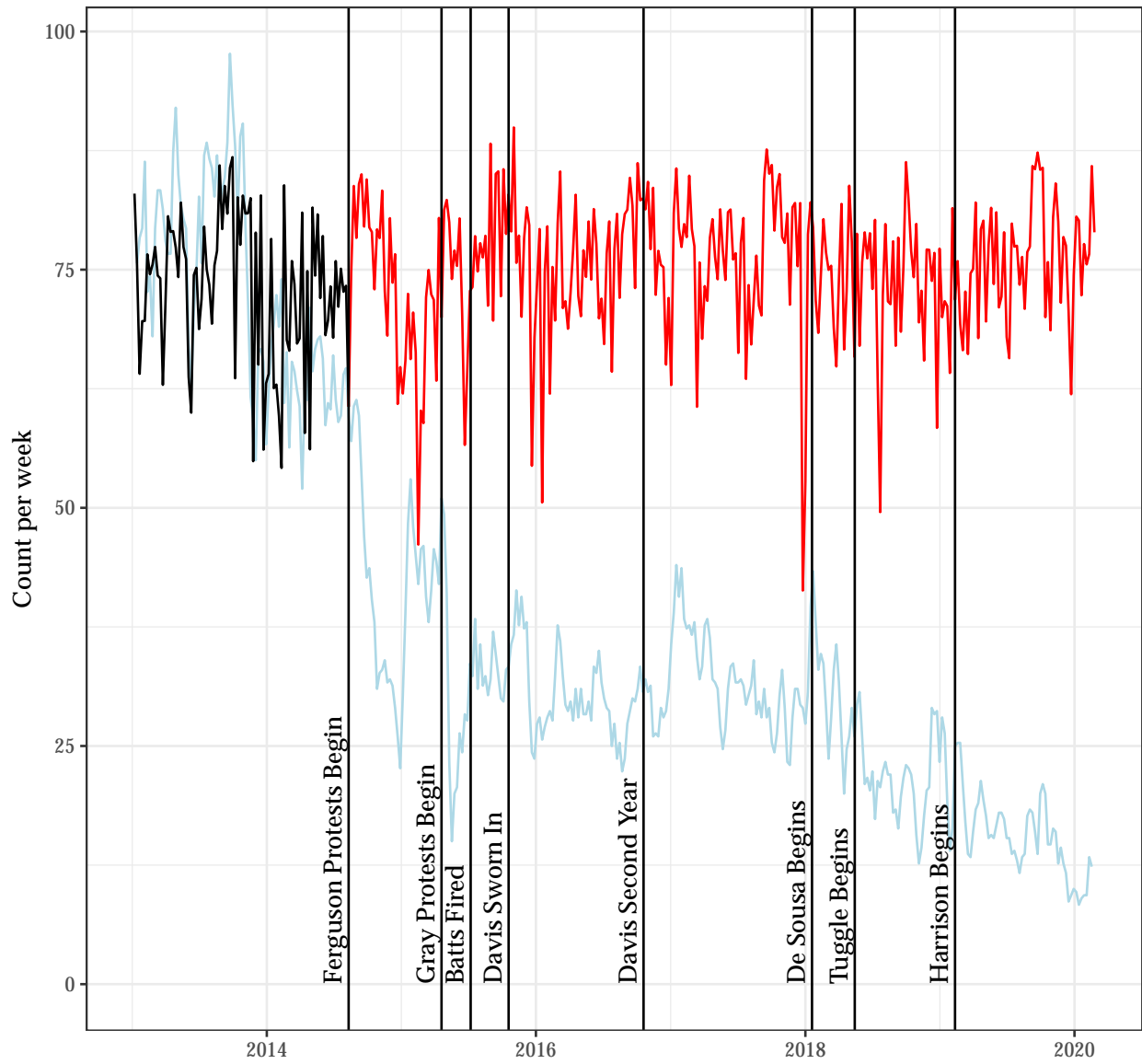
Table 37.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-31.31		-30.35	-30.42
After Gray Protests Begin (week of 4/20/15 onward)	-16.31		-17.05	-17.63
Unrest and National Guard (4/27/15 - 5/3/2015)	47.36		39.13	44.66
After Batts Fired (week of 7/13/15 onward)	7.65		2.46	7.05
After Davis Confirmed (week of 10/19/15 onward)	-2.96		-0.26	-2.44
After Davis First Year (week of 10/17/16 onward)	1.14		0.45	1.03
After De Sousa Begins (week of 1/19/18 onward)	-0.66		1.06	-0.93
After Tuggle Begins (week of 5/14/18 onward)	-9.22		-7.95	-7.37
After Harrison Begins (week of 2/11/19 onward)	-6.15		-8.94	-7.72
Average Maximum Temperature to 50 Degrees		1.20		0.49
Plus Degrees in the 50s		-1.59		-0.54
Plus Degrees in the 60s		1.44		0.21
Plus Degrees in the 70s		-1.14		-0.13
Plus Degrees Greater Than 80		0.66		-0.11
Snowfall (inches)		-1.38		-0.13
Precipitation (inches)		-27.43		-11.32
Darkness Before Midnight (hours)		2.52		0.17
Thanksgiving/Christmas (proportion of week)		-70.34		-55.63
Winter Holiday (proportion of week)		26.94		25.56
Other Out-of-School Days (proportion of week)		-11.26		-1.70
Summer Vacation (proportion of week)		-6.86		-1.12
Summer Holiday (proportion of week)		-45.91		-5.61
Observations	373	83	373	373
R <sup>2</sup>	0.81	0.26	0.80	0.82

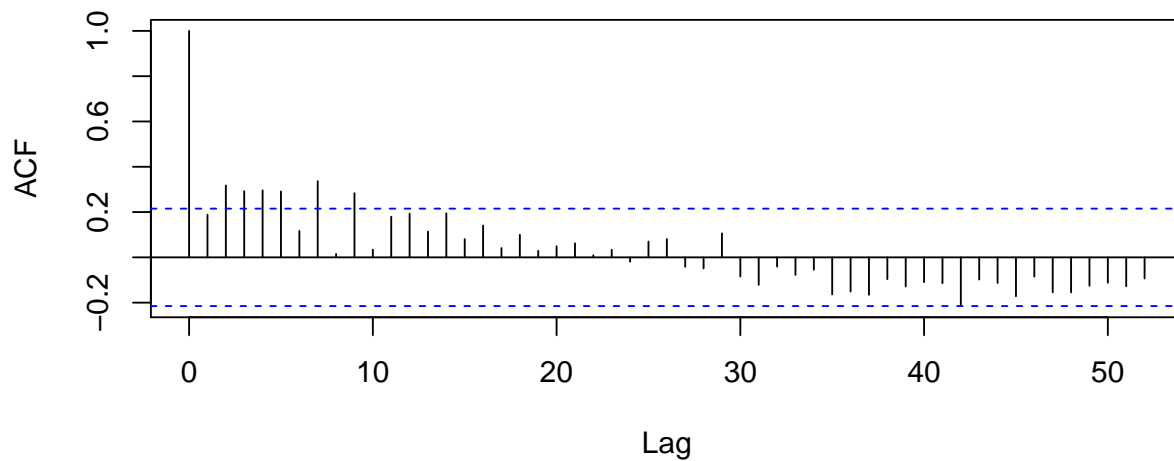
37.3 Least Squares Updated Model (2) for eastern  
eastern



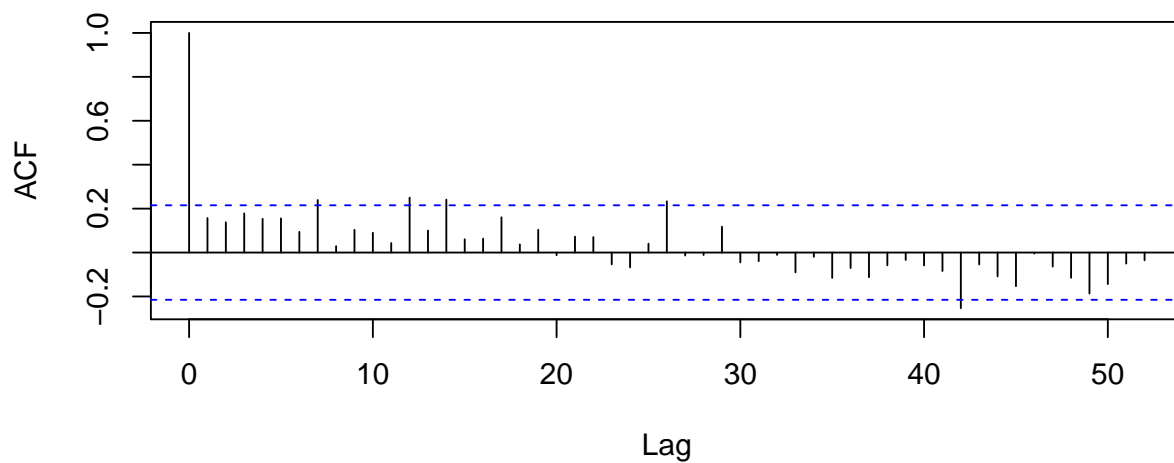
eastern



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



### 37.4 A Poisson Regression Model as an Alternative to Model (2) for eastern

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.2023  -1.1634  -0.0172   0.8236   3.8989

Coefficients:
            Estimate Std. Error z value Pr(>|z|)
(Intercept)  3.388031  0.265540  12.759 < 2e-16 ***
tmax.f.spline1  0.016669  0.004711   3.539 0.000402 ***
tmax.f.spline2 -0.022965  0.010319  -2.225 0.026049 *
tmax.f.spline3  0.020412  0.014525   1.405 0.159938
tmax.f.spline4 -0.015602  0.013242  -1.178 0.238727
tmax.f.spline5  0.008594  0.011439   0.751 0.452493
snow.in       -0.027961  0.050296  -0.556 0.578265
precip.in     -0.391141  0.089676  -4.362 1.29e-05 ***
dark.before.12  0.031912  0.018940   1.685 0.092006 .
thanks.xmas   -1.125813  0.811469  -1.387 0.165327
summer.holiday -0.607975  0.425049  -1.430 0.152612
winter.holiday  0.361202  0.478007   0.756 0.449864
summer.vacation -0.088991  0.052868  -1.683 0.092321 .
oth.ns        -0.162162  0.092926  -1.745 0.080972 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 264.86  on 82  degrees of freedom
Residual deviance: 194.03  on 69  degrees of freedom
AIC: 729.34

Number of Fisher Scoring iterations: 4
```



## 38 Results for southwestern

### 38.1 Summary Values for southwestern

Table 38.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
southwestern	83	42.639	8.467	23	36.5	42	47.5	65

Table 38.2: Descriptives for Outcome After Ferguson Protests Begin

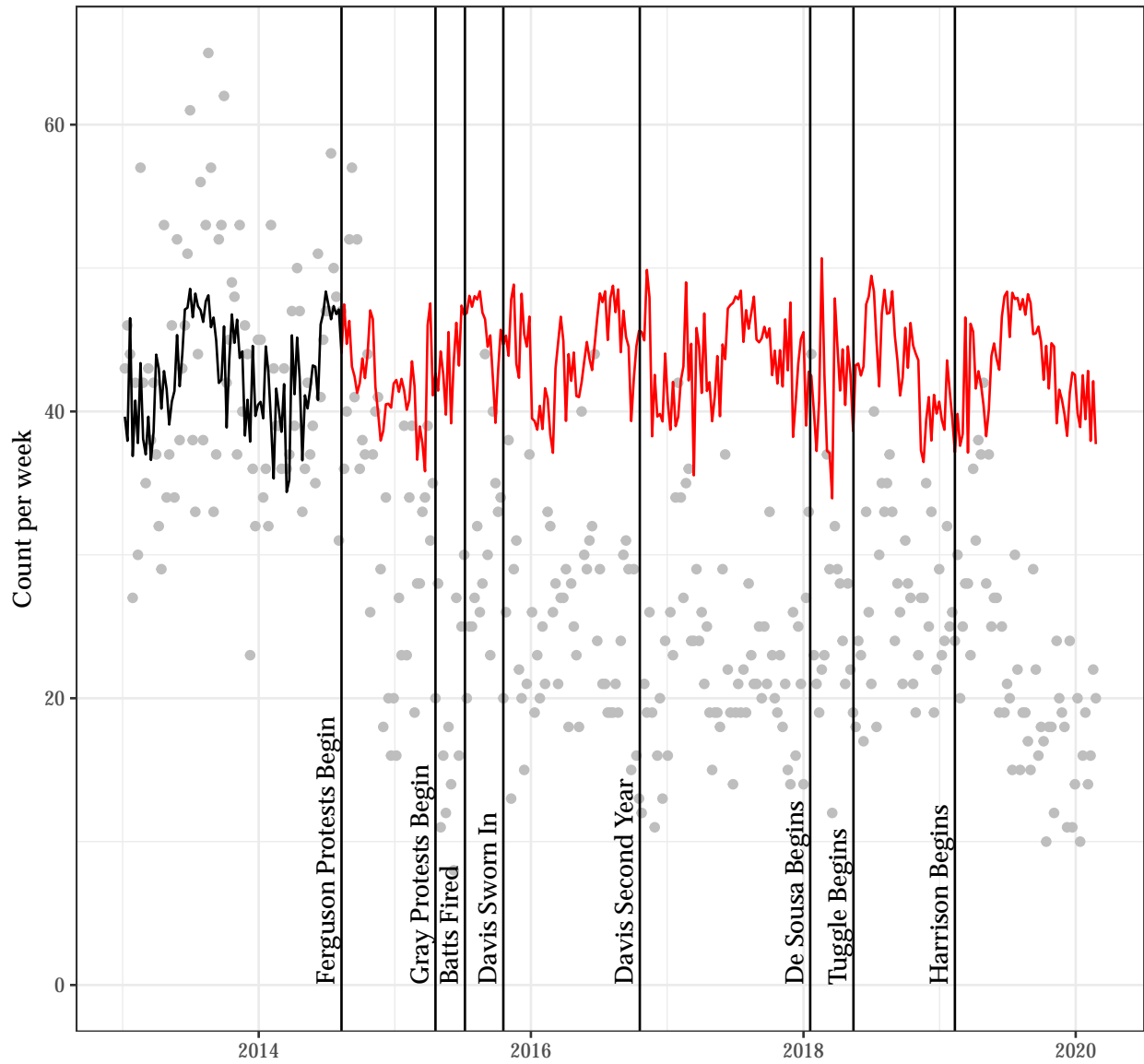
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
southwestern	290	25.183	8.225	8	19	24	30	57

### 38.2 Four Models for southwestern

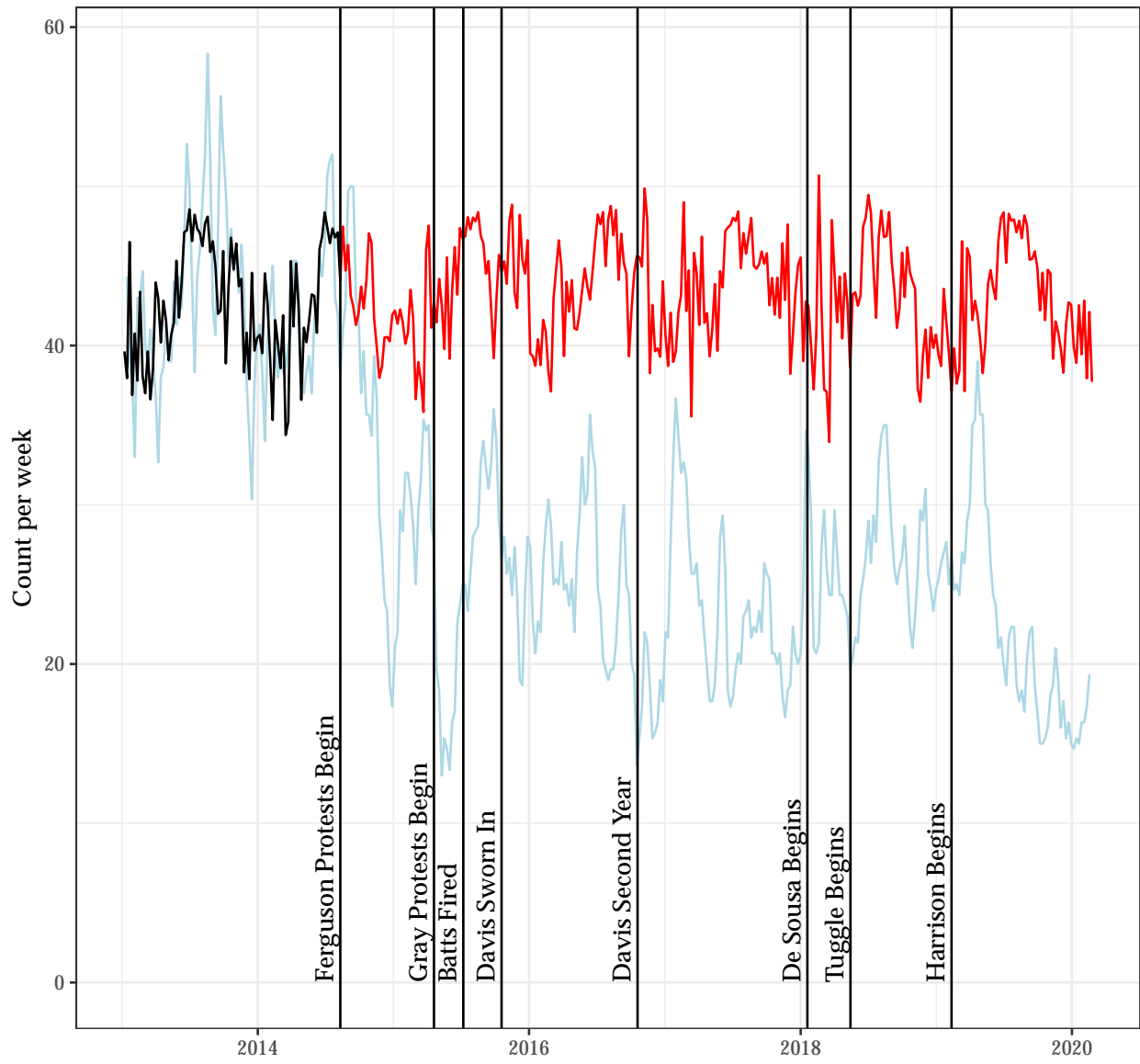
Table 38.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-9.06		-8.47	-7.92
After Gray Protests Begin (week of 4/20/15 onward)	-15.67		-17.34	-18.20
Unrest and National Guard (4/27/15 - 5/3/2015)	10.09		12.35	9.28
After Batts Fired (week of 7/13/15 onward)	12.23		10.26	13.02
After Davis Confirmed (week of 10/19/15 onward)	-4.89		-3.11	-4.17
After Davis First Year (week of 10/17/16 onward)	-2.78		-2.59	-2.80
After De Sousa Begins (week of 1/19/18 onward)	3.41		5.39	3.57
After Tuggle Begins (week of 5/14/18 onward)	0.71		-0.73	1.58
After Harrison Begins (week of 2/11/19 onward)	-4.77		-4.59	-5.77
Average Maximum Temperature to 50 Degrees		-0.25		0.17
Plus Degrees in the 50s		1.27		-0.15
Plus Degrees in the 60s		-1.56		0.15
Plus Degrees in the 70s		0.93		-0.18
Plus Degrees Greater Than 80		-0.27		-0.30
Snowfall (inches)		-1.95		-0.72
Precipitation (inches)		-6.01		-6.44
Darkness Before Midnight (hours)		1.14		-0.56
Thanksgiving/Christmas (proportion of week)		-11.63		-23.91
Winter Holiday (proportion of week)		23.04		34.15
Other Out-of-School Days (proportion of week)		3.13		1.27
Summer Vacation (proportion of week)		3.46		1.29
Summer Holiday (proportion of week)		8.98		10.81
Observations	373	83	373	373
R <sup>2</sup>	0.54	0.19	0.55	0.58

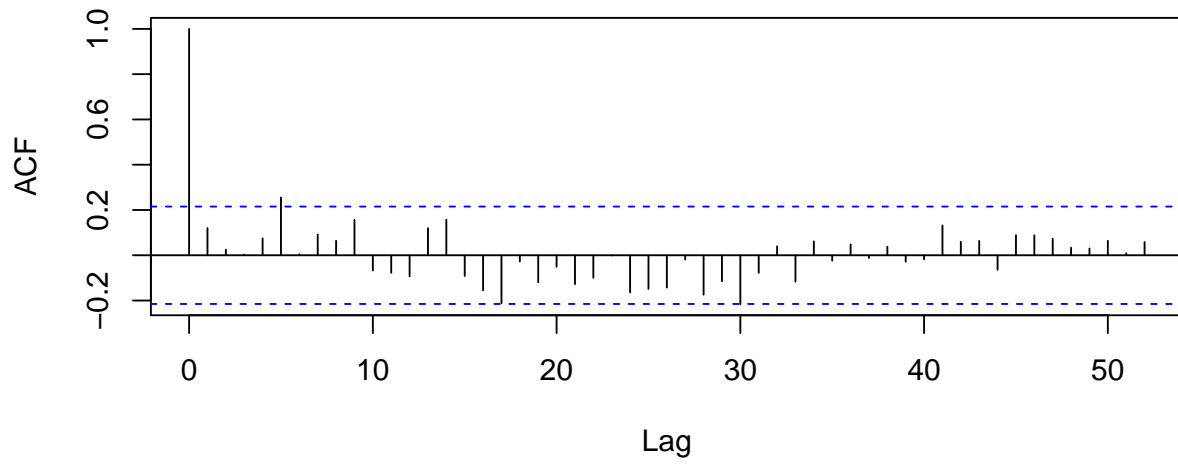
### 38.3 Least Squares Updated Model (2) for southwestern southwestern



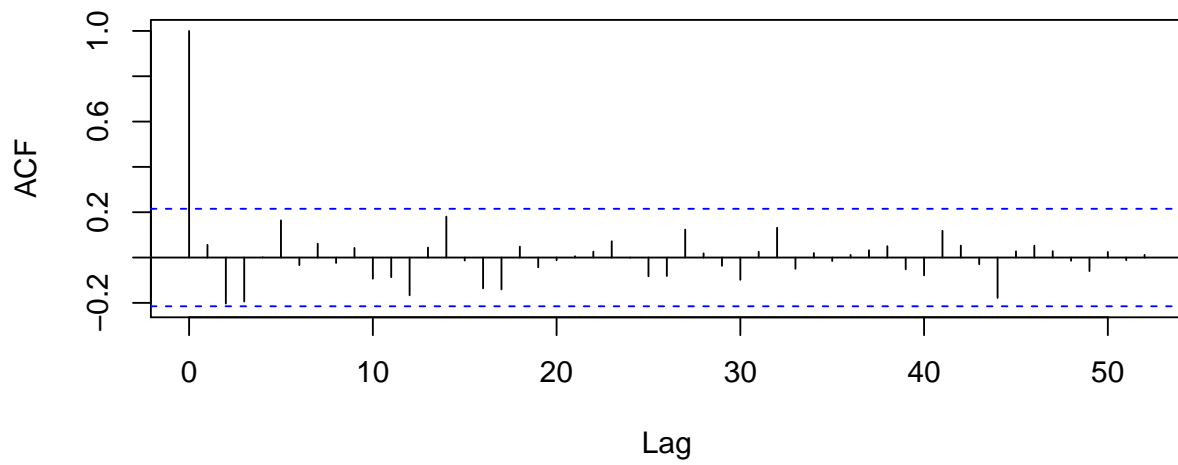
southwestern



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



### 38.4 A Poisson Regression Model as an Alternative to Model (2) for southwestern

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.6027  -0.8509   0.1688   0.7084   2.2816

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)    3.775358   0.347952  10.850  <2e-16 ***
tmax.f.spline1 -0.006165   0.006150  -1.002   0.3161
tmax.f.spline2  0.030721   0.013611   2.257   0.0240 *
tmax.f.spline3 -0.037186   0.018939  -1.963   0.0496 *
tmax.f.spline4  0.021836   0.017652   1.237   0.2161
tmax.f.spline5 -0.006809   0.014855  -0.458   0.6467
snow.in        -0.051376   0.063713  -0.806   0.4200
precip.in      -0.144315   0.114241  -1.263   0.2065
dark.before.12  0.027847   0.025609   1.087   0.2769
thanks.xmas    -0.290379   0.992200  -0.293   0.7698
summer.holiday 0.200505   0.537656   0.373   0.7092
winter.holiday 0.556579   0.625373   0.890   0.3735
summer.vacation 0.078310   0.069052   1.134   0.2568
oth.ns         0.078387   0.116031   0.676   0.4993
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 137.18  on 82  degrees of freedom
Residual deviance: 111.11  on 69  degrees of freedom
AIC: 601.84

Number of Fisher Scoring iterations: 4
```

## 39 Results for southern

### 39.1 Summary Values for southern

Table 39.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
southern	83	72.265	11.562	40	64.5	72	77.5	109

Table 39.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
southern	290	29.017	12.448	8	20	26	35	83

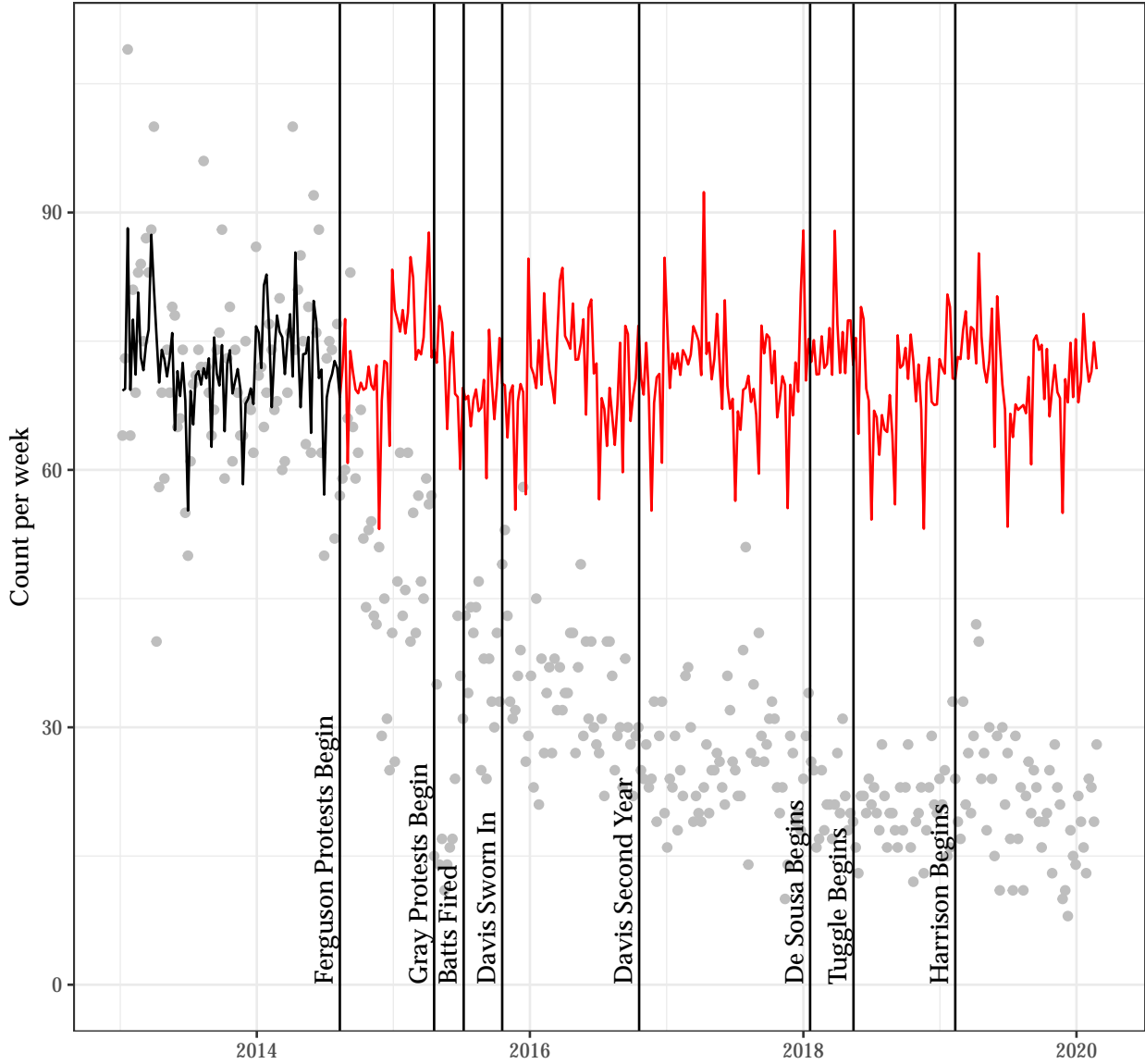
### 39.2 Four Models for southern

Table 39.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

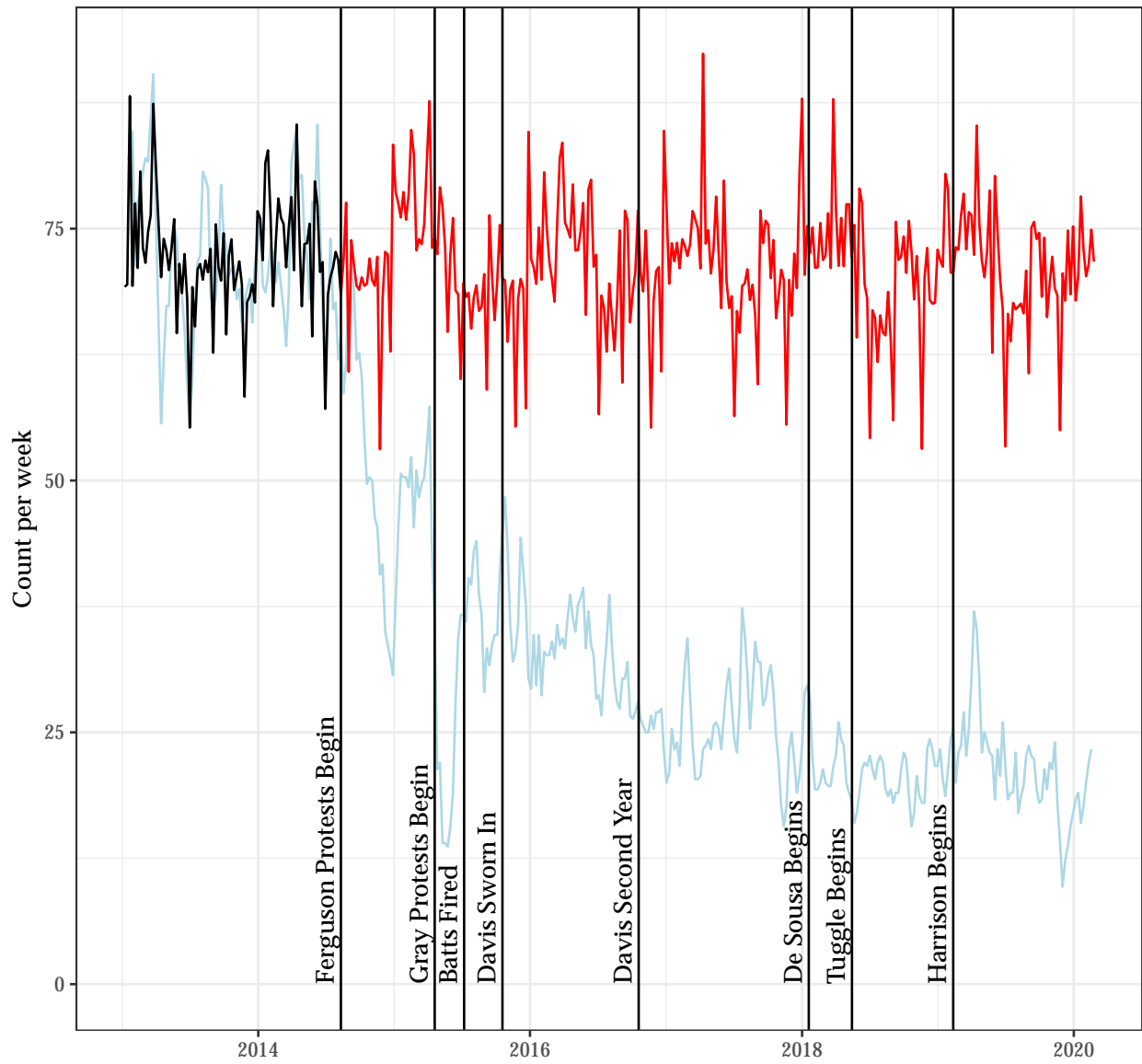
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-21.40		-22.41	-20.64
After Gray Protests Begin (week of 4/20/15 onward)	-29.22		-27.20	-30.47
Unrest and National Guard (4/27/15 - 5/3/2015)	13.36		12.12	11.05
After Batts Fired (week of 7/13/15 onward)	15.15		17.76	16.07
After Davis Confirmed (week of 10/19/15 onward)	-2.80		-5.23	-2.99
After Davis First Year (week of 10/17/16 onward)	-8.07		-8.45	-7.94
After De Sousa Begins (week of 1/19/18 onward)	-4.35		-7.64	-5.26
After Tuggle Begins (week of 5/14/18 onward)	-1.10		4.27	1.35
After Harrison Begins (week of 2/11/19 onward)	0.92		-0.75	-0.43
Average Maximum Temperature to 50 Degrees		-0.68		0.07
Plus Degrees in the 50s		0.85		0.12
Plus Degrees in the 60s		-0.91		-0.20
Plus Degrees in the 70s		1.55		-0.06
Plus Degrees Greater Than 80		-1.42		-0.38
Snowfall (inches)		-4.62		0.64
Precipitation (inches)		-6.63		-6.06
Darkness Before Midnight (hours)		-2.51		-0.91
Thanksgiving/Christmas (proportion of week)		-113.16		-41.43
Winter Holiday (proportion of week)		24.48		31.20
Other Out-of-School Days (proportion of week)		15.67		2.23
Summer Vacation (proportion of week)		-6.69		1.92
Summer Holiday (proportion of week)		-89.38		-22.48
Observations	373	83	373	373
R <sup>2</sup>	0.84	0.24	0.80	0.85



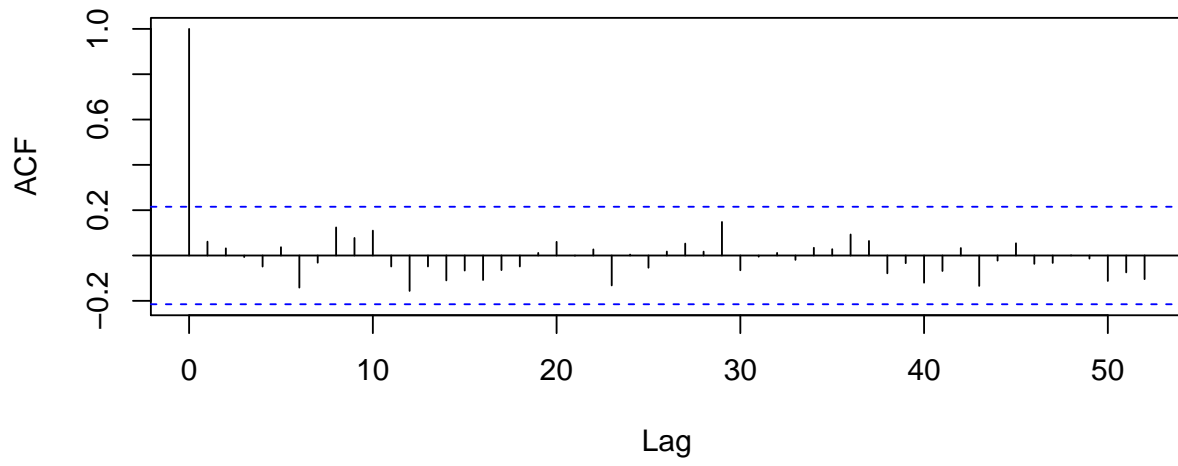
39.3 Least Squares Updated Model (2) for southern  
southern



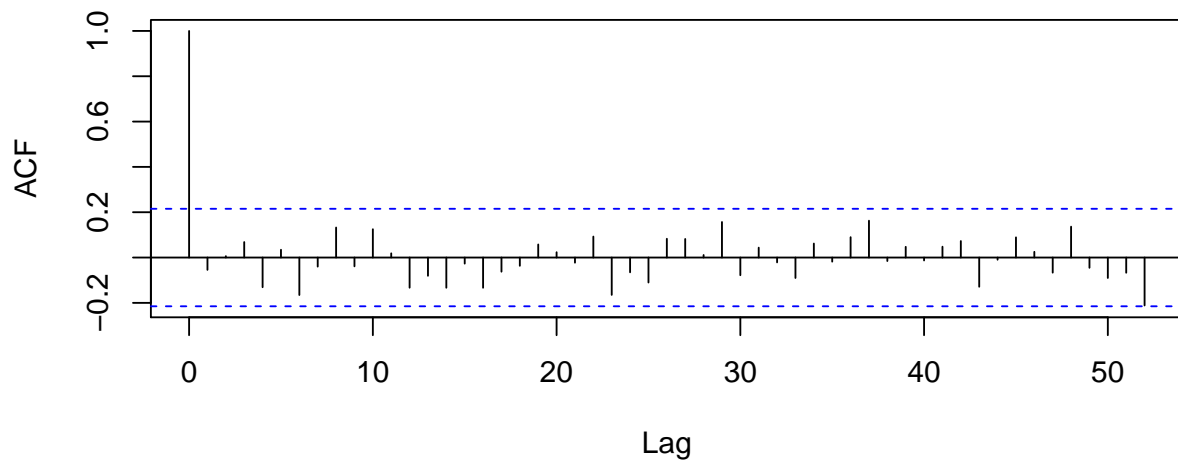
southern



Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



### 39.4 A Poisson Regression Model as an Alternative to Model (2) for southern

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-4.5203	-0.7152	0.1018	0.5821	3.2554

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	4.927096	0.259025	19.022	< 2e-16	***
tmax.f.spline1	-0.008964	0.004500	-1.992	0.04638	*
tmax.f.spline2	0.011037	0.010049	1.098	0.27207	
tmax.f.spline3	-0.011939	0.014352	-0.832	0.40548	
tmax.f.spline4	0.021311	0.013504	1.578	0.11453	
tmax.f.spline5	-0.020313	0.011934	-1.702	0.08873	.
snow.in	-0.062333	0.046077	-1.353	0.17612	
precip.in	-0.095626	0.086560	-1.105	0.26928	
dark.before.12	-0.033994	0.019311	-1.760	0.07834	.
thanks.xmas	-1.581732	0.765773	-2.066	0.03887	*
summer.holiday	-1.337663	0.459817	-2.909	0.00362	**
winter.holiday	0.305645	0.460629	0.664	0.50699	
summer.vacation	-0.093730	0.054626	-1.716	0.08619	.
oth.ns	0.203780	0.083151	2.451	0.01426	*

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 151.14 on 82 degrees of freedom  
Residual deviance: 114.47 on 69 degrees of freedom  
AIC: 649.42

Number of Fisher Scoring iterations: 4

## 40 Results for southeastern

### 40.1 Summary Values for southeastern

Table 40.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
southeastern	83	65.735	11.248	43	58.5	64	71	93

Table 40.2: Descriptives for Outcome After Ferguson Protests Begin

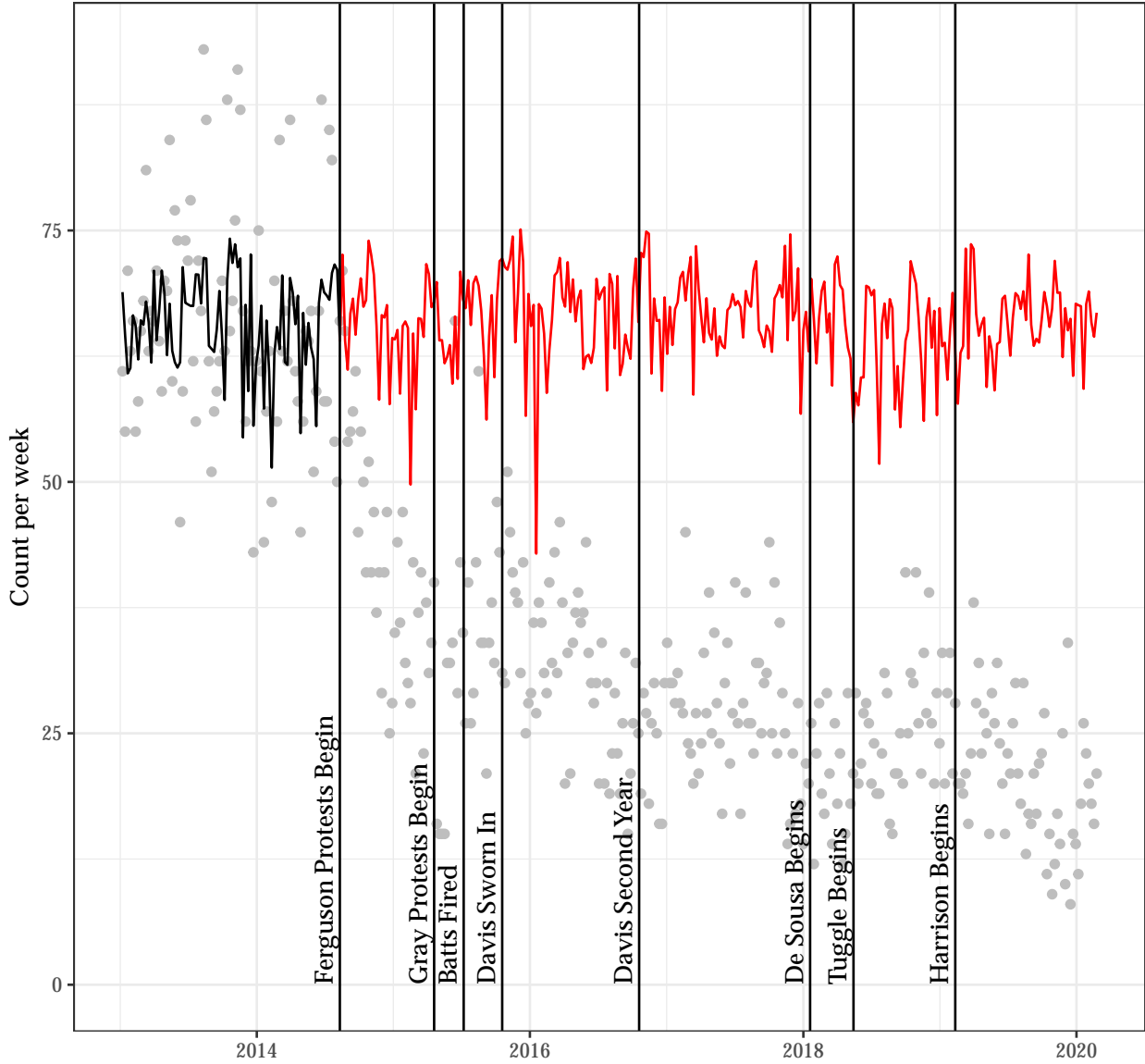
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
southeastern	290	28.607	10.751	8	21	27	34	71

## 40.2 Four Models for southeastern

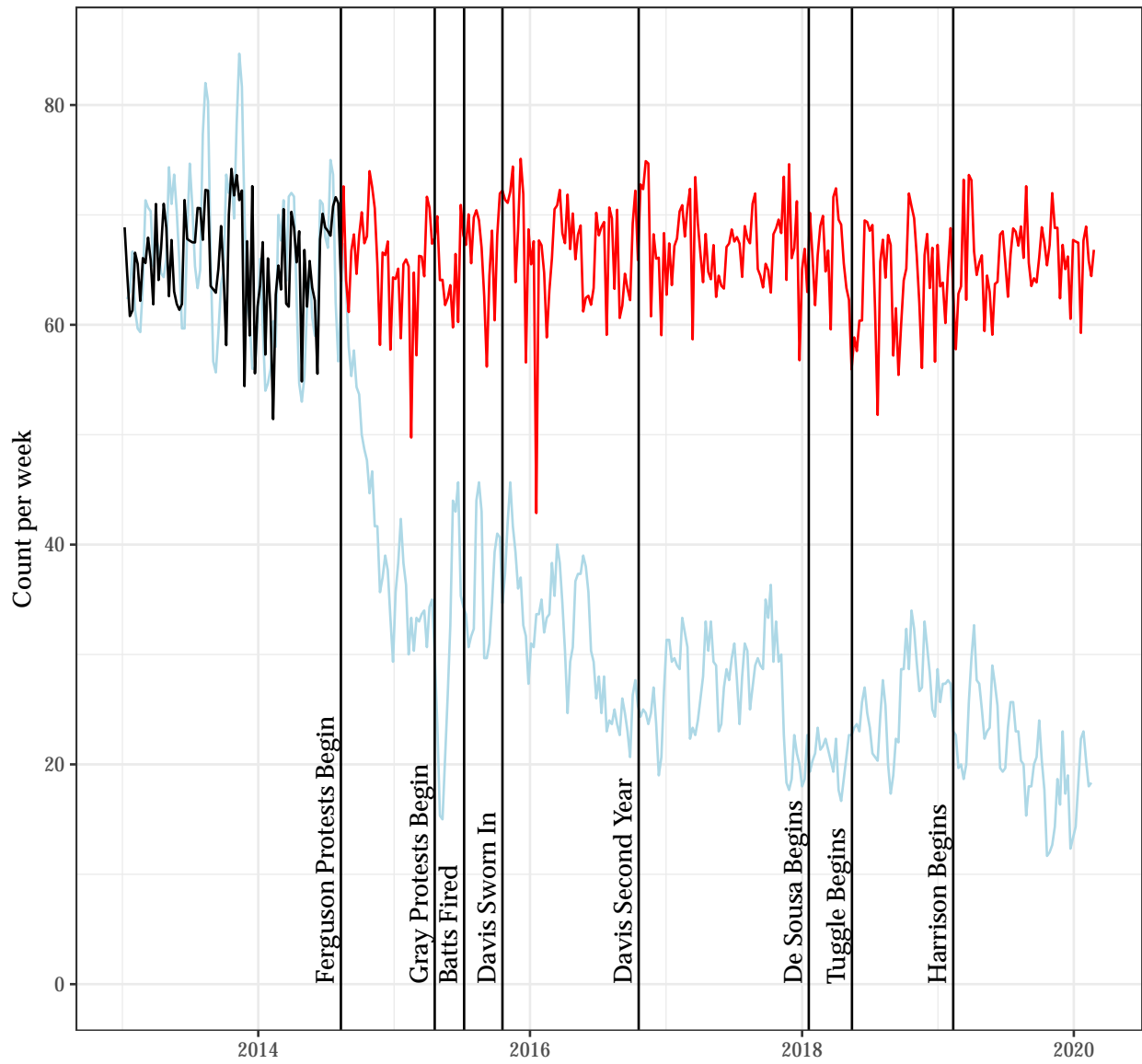
Table 40.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
After Ferguson Protests Begin (week of 8/11/14 onward)	-23.32		-23.18	-22.65
After Gray Protests Begin (week of 4/20/15 onward)	-10.14		-9.03	-11.13
Unrest and National Guard (4/27/15 - 5/3/2015)	-16.27		-21.65	-19.86
After Batts Fired (week of 7/13/15 onward)	4.01		1.94	3.22
After Davis Confirmed (week of 10/19/15 onward)	-4.57		-4.67	-3.92
After Davis First Year (week of 10/17/16 onward)	-5.00		-5.42	-5.50
After De Sousa Begins (week of 1/19/18 onward)	-6.09		-5.79	-4.80
After Tuggle Begins (week of 5/14/18 onward)	5.14		8.18	6.40
After Harrison Begins (week of 2/11/19 onward)	-4.99		-7.21	-6.66
Average Maximum Temperature to 50 Degrees		0.13		0.25
Plus Degrees in the 50s		0.56		0.04
Plus Degrees in the 60s		-1.15		-0.02
Plus Degrees in the 70s		-0.005		-0.50
Plus Degrees Greater Than 80		0.18		-0.31
Snowfall (inches)		-4.04		-1.76
Precipitation (inches)		-17.46		-13.03
Darkness Before Midnight (hours)		0.75		0.83
Thanksgiving/Christmas (proportion of week)		-56.05		-27.01
Winter Holiday (proportion of week)		-30.59		6.86
Other Out-of-School Days (proportion of week)		-1.52		-0.83
Summer Vacation (proportion of week)		8.60		5.31
Summer Holiday (proportion of week)		-1.56		0.56
Observations	373	83	373	373
R <sup>2</sup>	0.77	0.18	0.78	0.80

40.3 Least Squares Updated Model (2) for southeastern  
southeastern

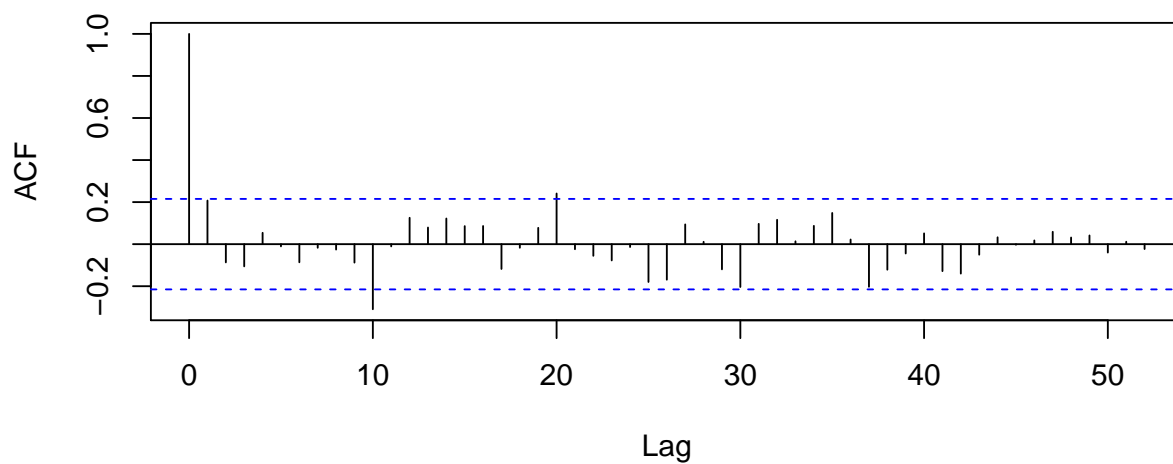


southeastern

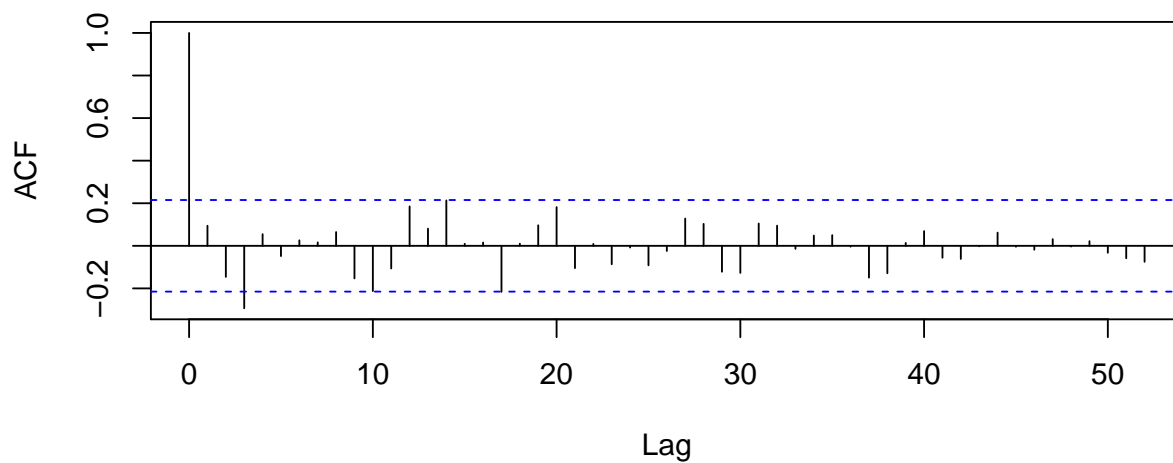




Autocorrelation Function for the Observed Outcome for Updated Model (2)



Autocorrelation Function for the Residuals from Updated Model (2)



## 40.4 A Poisson Regression Model as an Alternative to Model (2) for southeastern

```
Call:
glm(formula = model.formula, family = poisson, data = df.windowed.pre)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.64536  -1.12551  -0.07515   0.77327   2.50990

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   4.0593735  0.2775545  14.625 < 2e-16 ***
tmax.f.spline1 0.0020162  0.0049186   0.410  0.68188
tmax.f.spline2 0.0076155  0.0107728   0.707  0.47961
tmax.f.spline3 -0.0160482  0.0150215  -1.068  0.28536
tmax.f.spline4 -0.0008734  0.0141414  -0.062  0.95075
tmax.f.spline5 0.0031854  0.0122426   0.260  0.79472
snow.in       -0.0700406  0.0518939  -1.350  0.17712
precip.in     -0.2727034  0.0928369  -2.937  0.00331 **
dark.before.12 0.0106777  0.0201094   0.531  0.59543
thanks.xmas   -0.9688099  0.8208105  -1.180  0.23788
summer.holiday -0.0225471  0.4521064  -0.050  0.96023
winter.holiday -0.4764079  0.5182059  -0.919  0.35792
summer.vacation 0.1303634  0.0574900   2.268  0.02335 *
oth.ns       -0.0183275  0.0937506  -0.195  0.84501
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 155.94  on 82  degrees of freedom
Residual deviance: 126.33  on 69  degrees of freedom
AIC: 653.31

Number of Fisher Scoring iterations: 4
```