

# Appendix 2

## Comprehensive Analysis of BPD Crime Data

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### 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 analysis of BPD's crime data, we offer comprehensive results that are summarized in our main report. The basic analysis strategy is to first model the prevailing cyclical crime trend from Monday, March 1st, 2010 through Sunday August 10, 2014. Then, we use that estimated model to predict a counterfactual crime trend, as if the protest events and any changes in police practice from August 10, 2014 onward had not occurred. We then estimate period effects as average differences between observed and counterfactual values from August 11, 2014 onward in four distinct time intervals. In the remaining subsections of this introduction, we provide details on the content that follows.

### Descriptive Summary of the Data

The outcomes analyzed in subsequent sections are listed and summarized in Table 2.1 in the Data section, after which a breakdown of totals across all outcomes is provided by police district in Table 2.2. Finally, a five-panel figure displays the distribution of the five variables utilized to represent weather, hours of darkness, and school days for the full time series.

### 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 four 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 school 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 school 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 school days simultaneously with coefficients for the four 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 our 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 the predictions from the coefficients for Model 2 applied to the observed values for weather, hours of darkness, and school days from August 11, 2014 onward. The first figure 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 our preferred Model 3.

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 our decision to utilize the simpler Model 2 to estimate the underlying time series that structures the extrapolated counterfactual trend. In addition to R output for the estimated poisson regression, analogous figures are offered to demonstrate the near equivalence of Model 2 and its poisson regression alternative.

## 2 Data

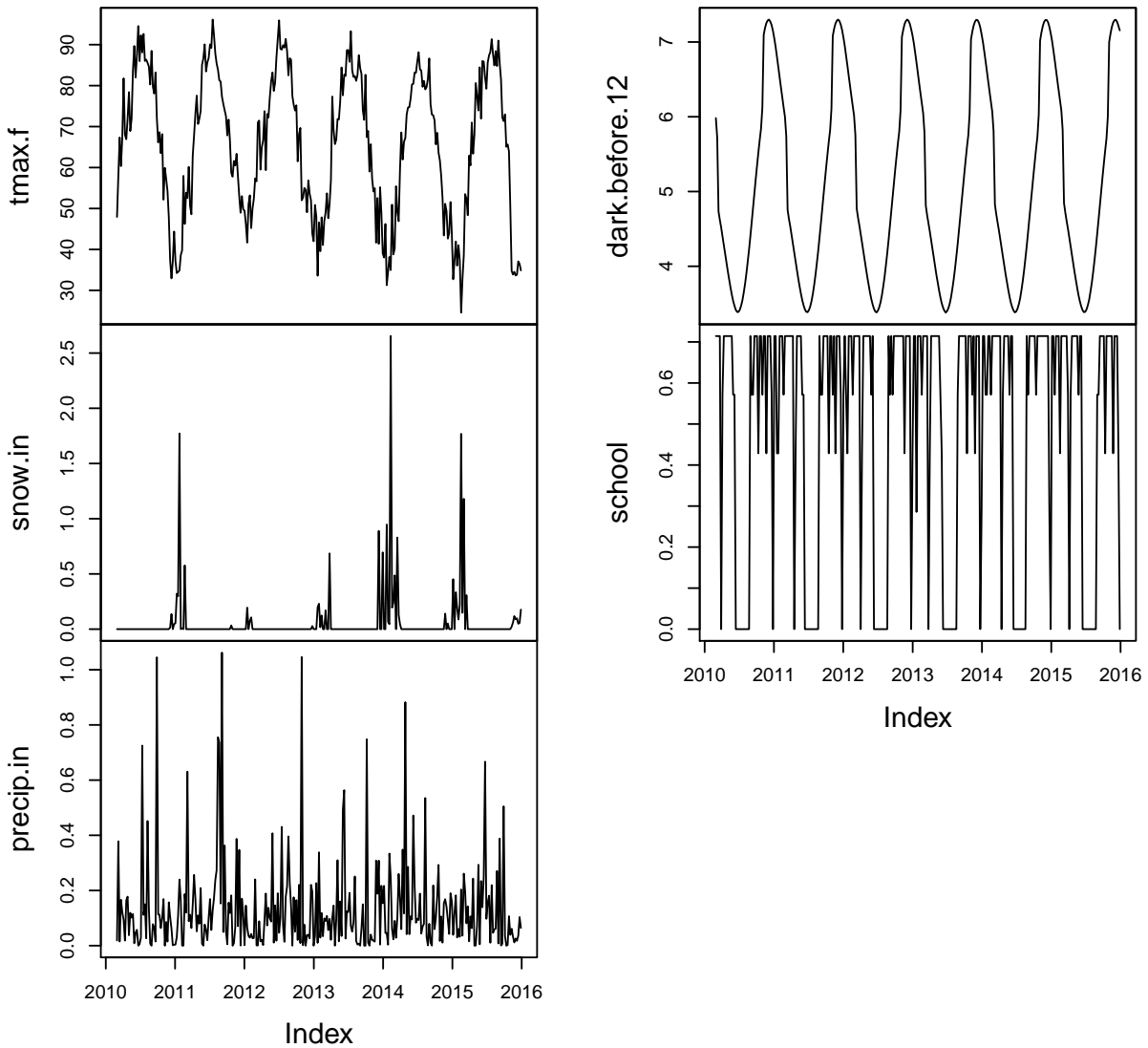
Table 2.1: Descriptive Statistics for Weekly Reported Incidents of Victim-Based Crime, with Breakdown by Type of Crime

Statistic	Min	Median	Max
homicide	0	4	17
shooting	0	8	33
rape	0	5	16
robbery.carjacking	0	3	15
robbery.street	22	51	100
robbery.commercial	2	11	43
robbery.residence	1	9	27
aggravated.assault	45	92	150
assault.by.threat	1	12	28
common.assault	92	160	241
burglary	81	148	399
larceny.from.auto	47	130	207
larceny	115	203	302
auto.theft	47	83	181
arson	0	5	33
total	542	951	1,121

Table 2.2: Descriptive Statistics for Weekly Reported Incidents of Victim-Based Crime, with Breakdown by District

Statistic	Min	Median	Max
northwestern	57	94	152
northern	56	105	171
northeastern	91	150	207
western	43	76	142
central	52	111	193
eastern	41	77	120
southwestern	42	84	121
southern	51	110	185
southeastern	61	127	183
total	542	951	1,121

## Adjustment 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
- school is the proportion of days of the week when school was scheduled for Baltimore City Schools

### 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	Median	Max
total	232	946.966	97.124	626	960	1,119

Table 3.2: Descriptives for Outcome After Ferguson Protests Begin

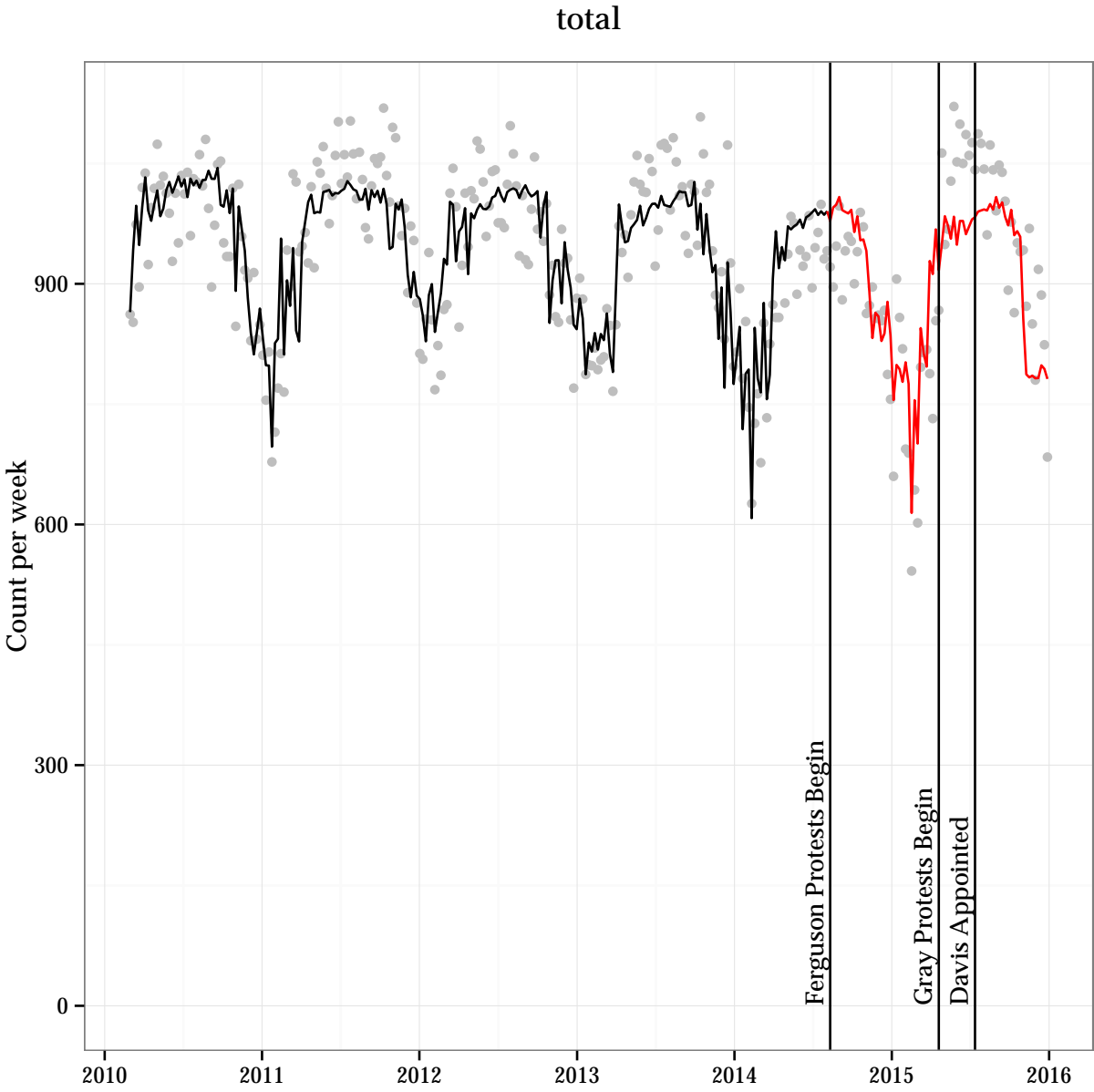
Statistic	N	Mean	St. Dev.	Min	Median	Max
total	73	908.151	126.994	542	918	1,121

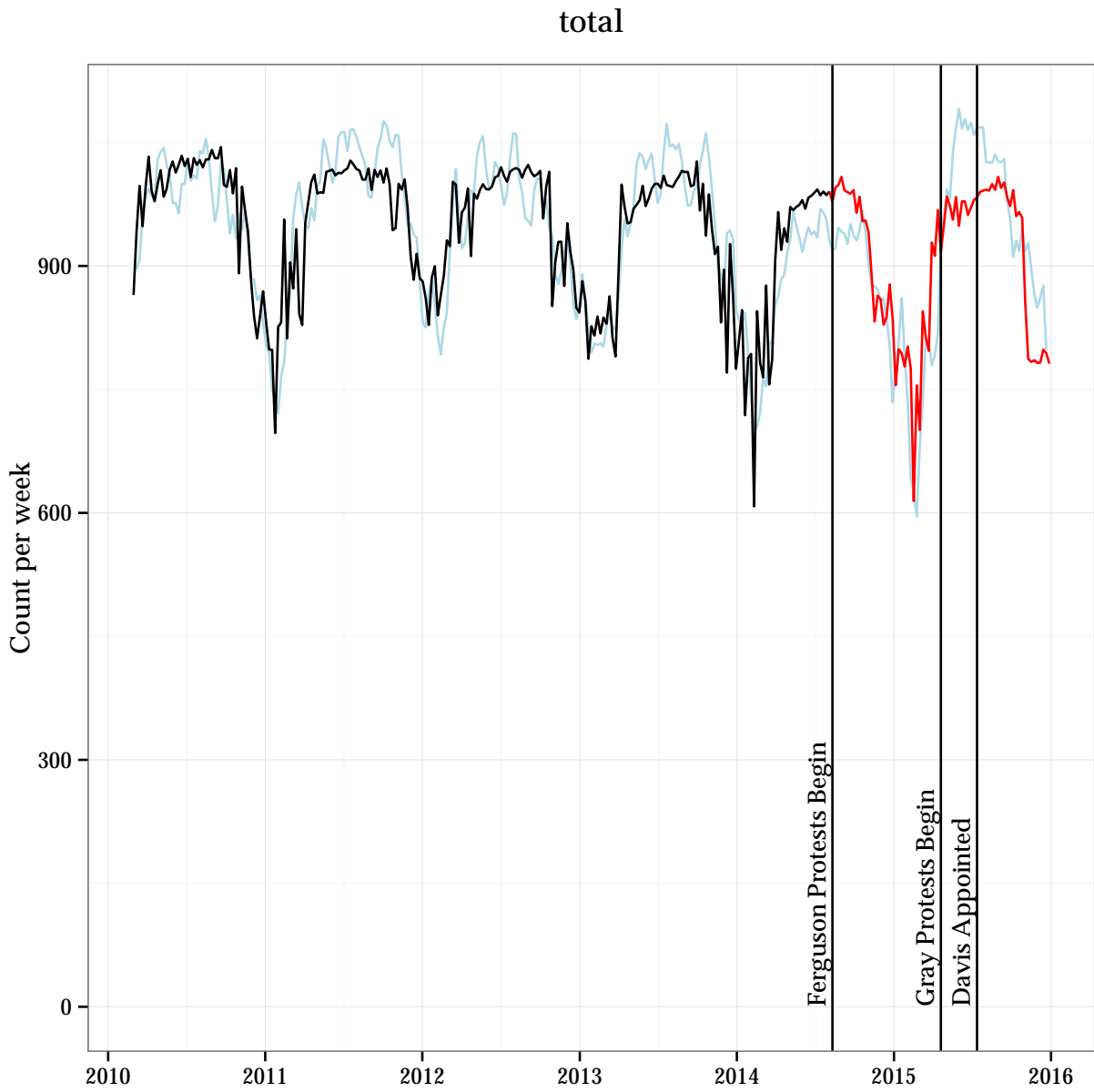
### 3.2 Four Models for total

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

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.33	−0.14		−0.14
After Ferguson Protests Begin (week of 8/11/14 onward)	−65.71		−41.08	−42.48
After Gray Protests Begin (week of 4/20/15 onward)	203.72		106.85	109.81
Unrest and National Guard (during week of 4/27/15)	29.01		48.18	56.99
After Commissioner Batts Fired (week of 7/13/15 onward)	−76.23		−32.79	−38.87
Average Maximum Temperature to 50 Degrees		4.25		4.04
Plus Degrees in the 50s		6.27		4.27
Plus Degrees in the 60s		−4.42		−1.62
Plus Degrees in the 70s		−3.59		−3.10
Plus Degrees greater than 80		−1.08		−0.70
Snowfall (inches)		−65.45		−81.31
Precipitation (inches)		−24.70		−14.51
Darkness Before Midnight (hours)		20.87		22.60
School Days (proportion of week)		−5.73		11.07
Observations	305	232	305	305
R <sup>2</sup>	0.18	0.68	0.13	0.71

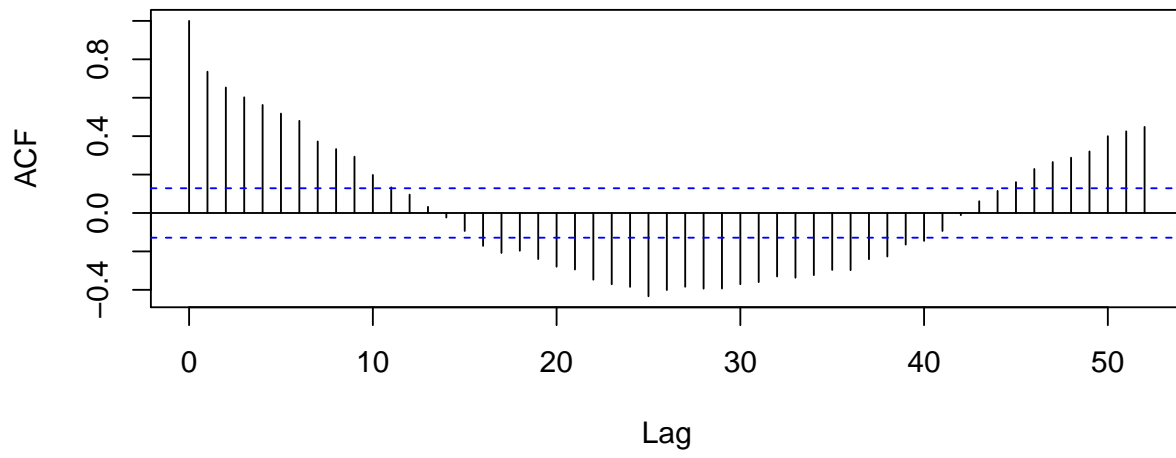
3.3 Least Squares Model (2) for total



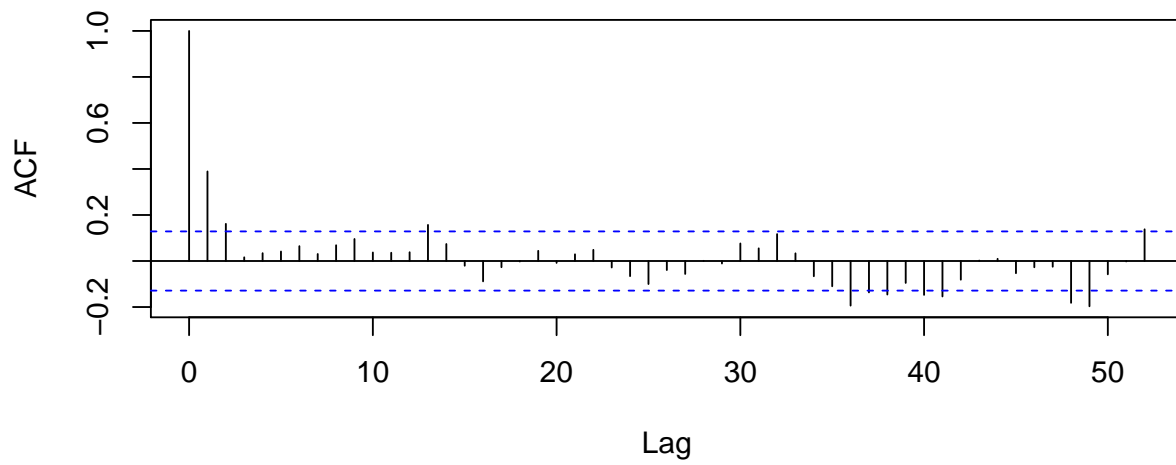




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from 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
-4.7459	-1.3798	0.0171	1.1651	6.0825

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	6.397e+00	4.662e-02	137.200	< 2e-16 ***
t	-1.507e-04	3.289e-05	-4.581	4.63e-06 ***
tmax.f.spline1	4.949e-03	8.627e-04	5.737	9.65e-09 ***
tmax.f.spline2	6.531e-03	1.724e-03	3.788	0.000152 ***
tmax.f.spline3	-5.141e-03	2.044e-03	-2.516	0.011884 *
tmax.f.spline4	-3.747e-03	1.879e-03	-1.994	0.046127 *
tmax.f.spline5	-1.205e-03	1.626e-03	-0.741	0.458710
snow.in	-9.222e-02	1.198e-02	-7.698	1.38e-14 ***
precip.in	-2.596e-02	1.196e-02	-2.171	0.029922 *
dark.before.12	2.238e-02	3.129e-03	7.153	8.49e-13 ***
school	-7.474e-03	9.467e-03	-0.789	0.429865

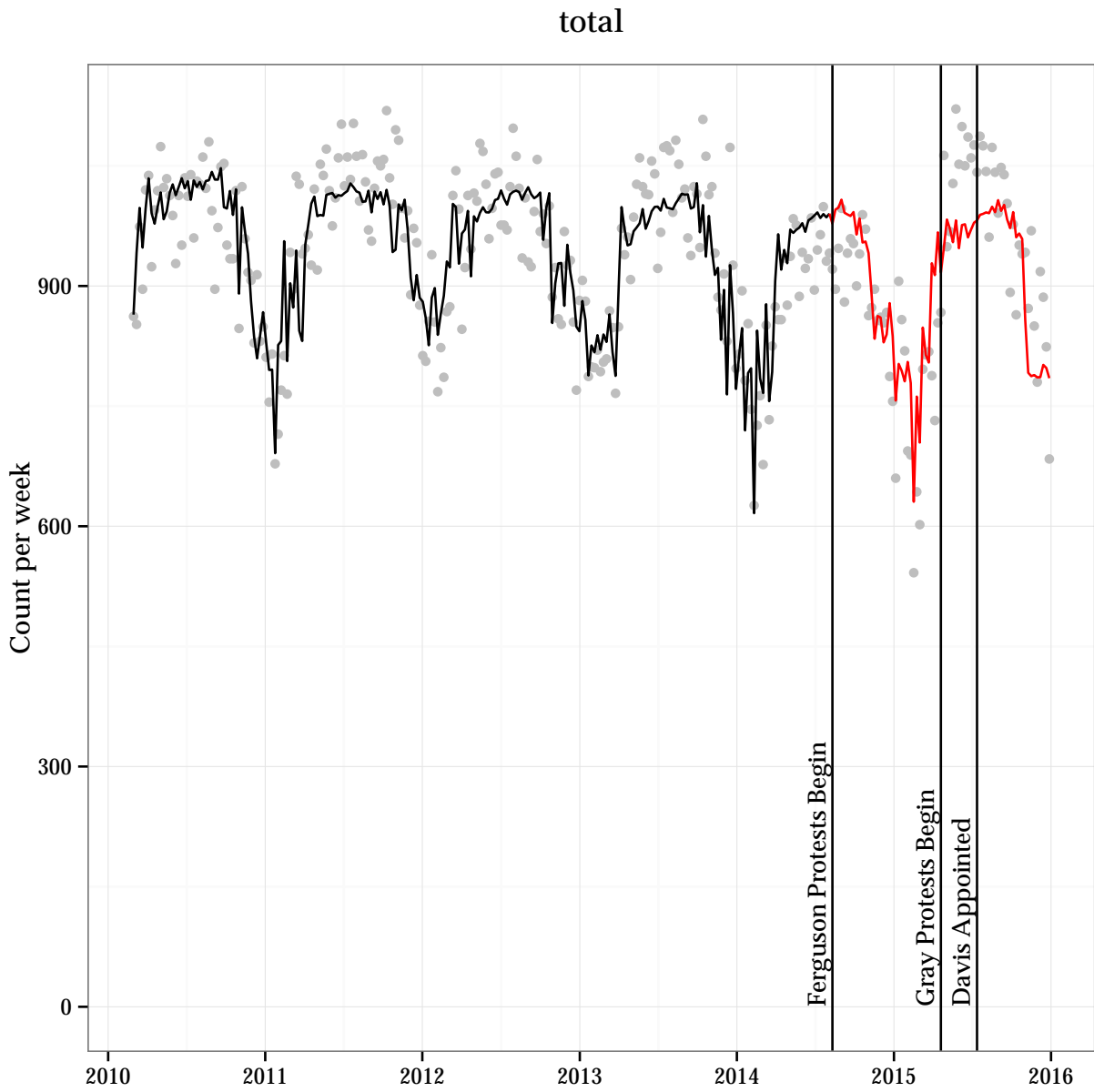
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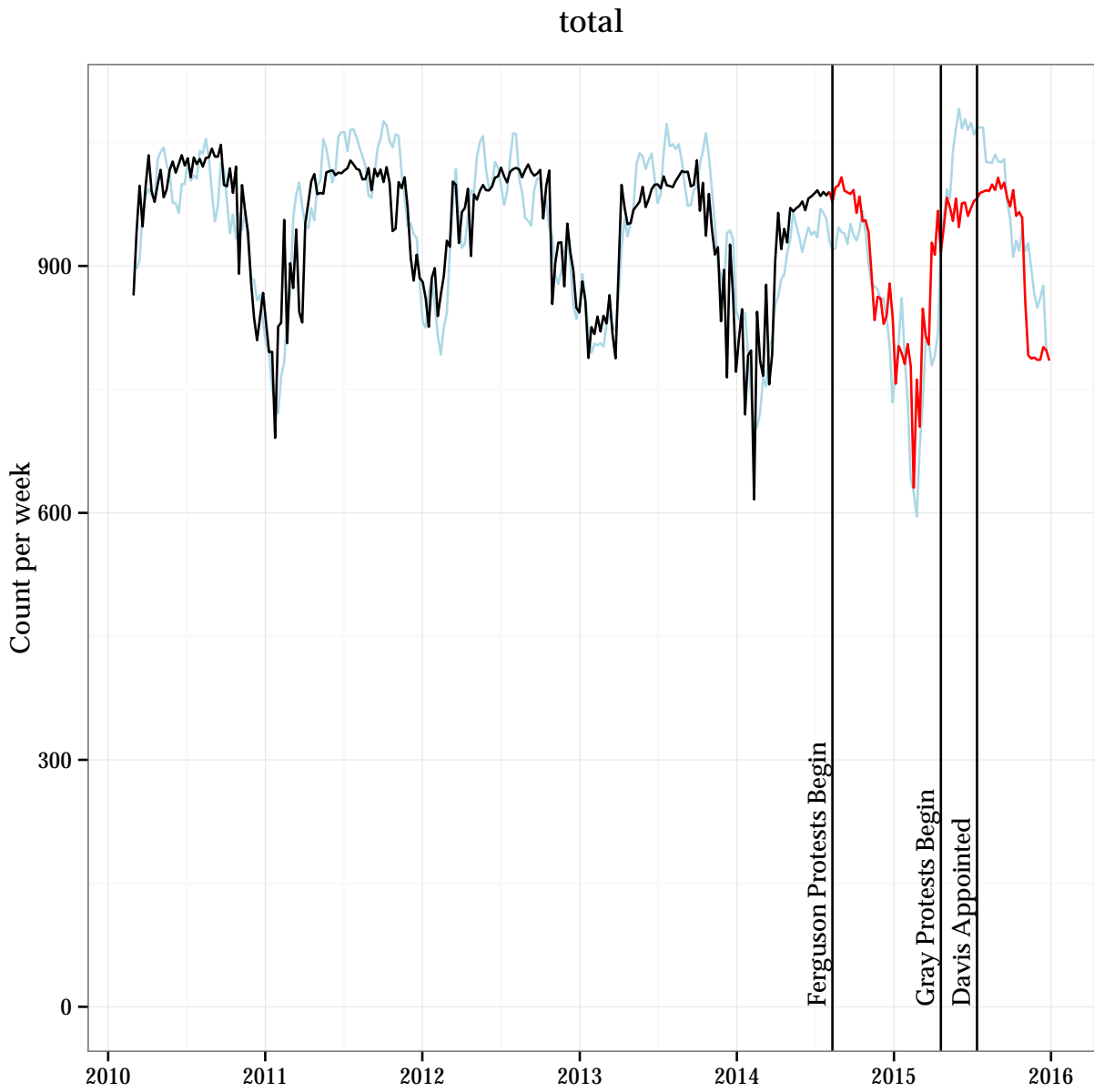
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 2364.87 on 231 degrees of freedom  
Residual deviance: 739.35 on 221 degrees of freedom  
AIC: 2776.5

Number of Fisher Scoring iterations: 3





## 4 Results for homicide

### 4.1 Summary Values for homicide

Table 4.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide	232	4.203	2.164	0	4	11

Table 4.2: Descriptives for Outcome After Ferguson Protests Begin

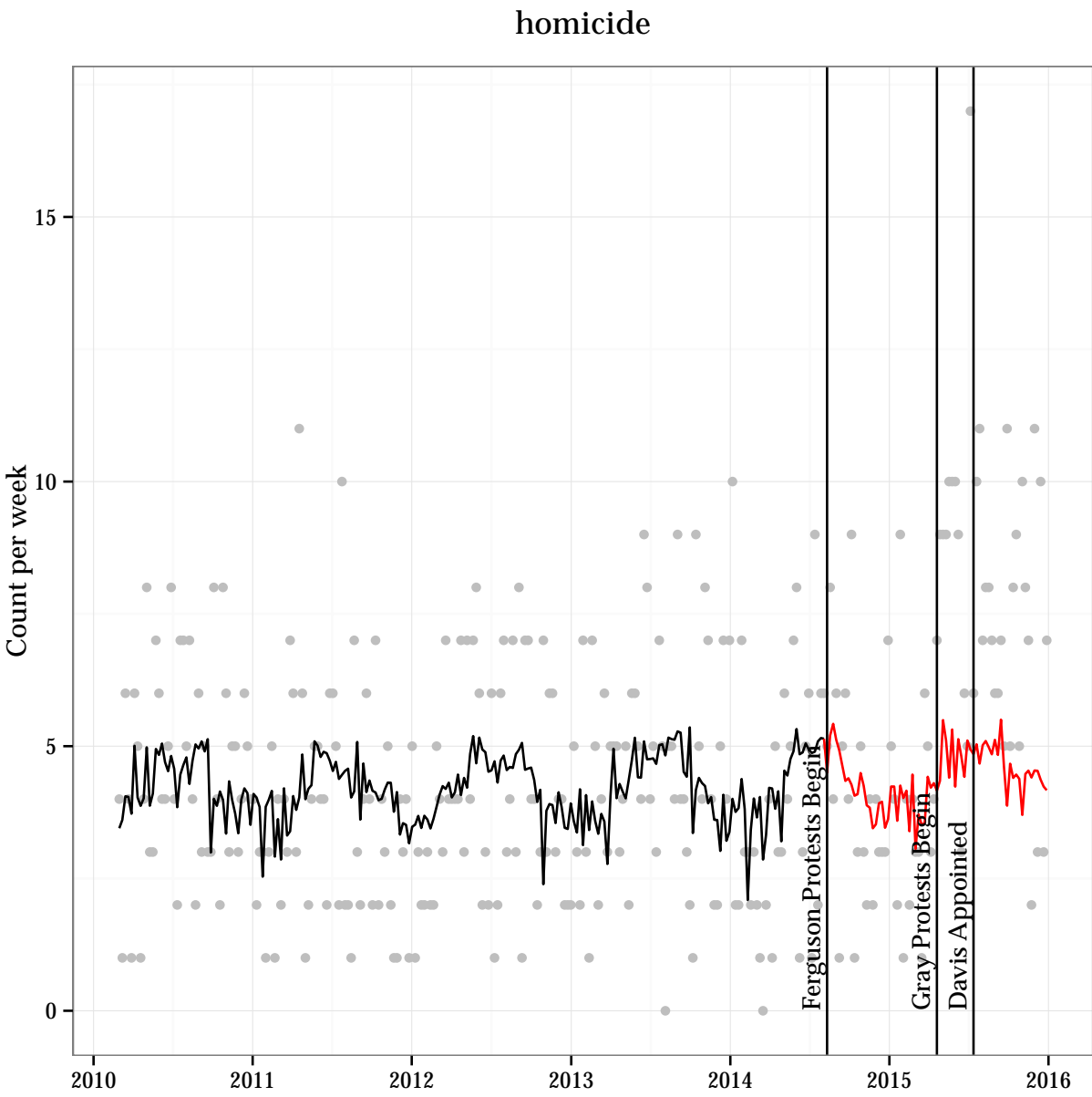
Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide	73	5.863	3.119	1	5	17

## 4.2 Four Models for homicide

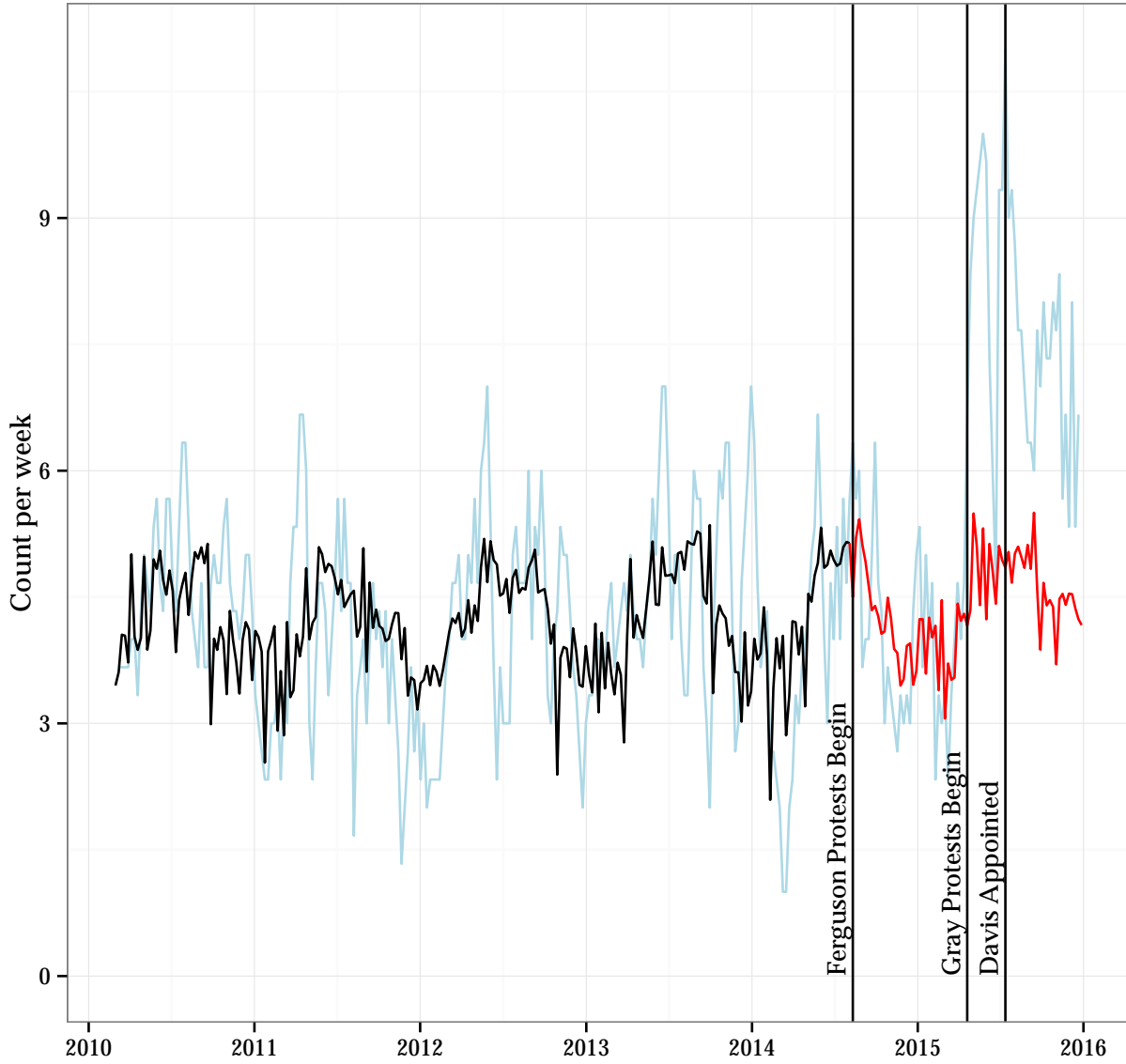
Table 4.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.0002	0.001		0.001
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.23		−0.12	−0.10
After Gray Protests Begin (week of 4/20/15 onward)	4.63		3.93	3.91
Unrest and National Guard (during week of 4/27/15)	0.36		0.85	0.71
After Commissioner Batts Fired (week of 7/13/15 onward)	−1.44		−1.22	−1.22
Average Maximum Temperature to 50 Degrees		−0.06		−0.05
Plus Degrees in the 50s		0.15		0.11
Plus Degrees in the 60s		−0.12		−0.07
Plus Degrees in the 70s		0.15		0.09
Plus Degrees greater than 80		−0.16		−0.09
Snowfall (inches)		−0.77		−0.93
Precipitation (inches)		−1.25		−1.18
Darkness Before Midnight (hours)		0.02		−0.02
School Days (proportion of week)		0.27		0.23
Observations	305	232	305	305
R <sup>2</sup>	0.22	0.08	0.18	0.27

4.3 Least Squares Model (2) for homicide

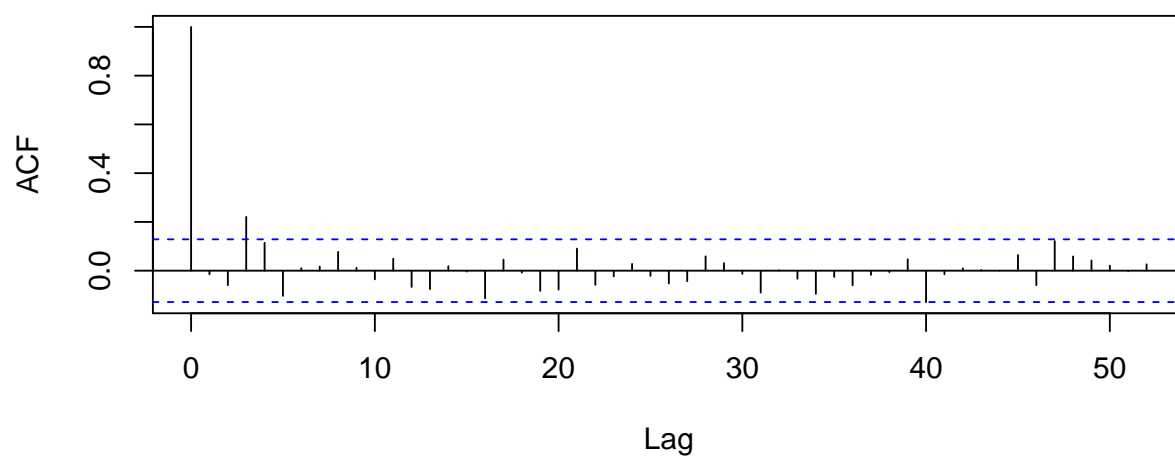


## homicide

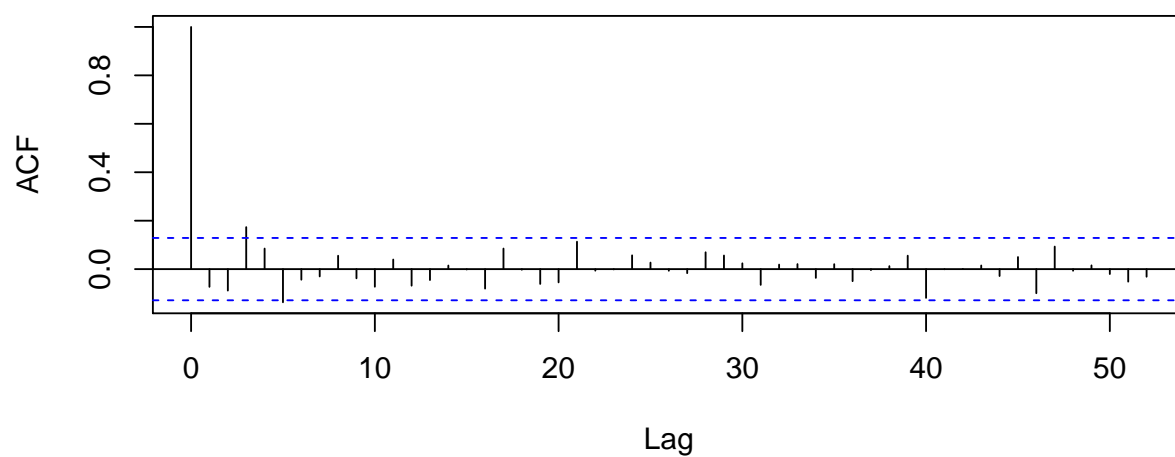




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



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

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

Deviance Residuals:

Min	1Q	Median	3Q	Max
-3.09840	-0.84804	-0.08955	0.56674	2.86009

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	1.9271071	0.6884994	2.799	0.00513 **
t	0.0002722	0.0004911	0.554	0.57947
tmax.f.spline1	-0.0156726	0.0127652	-1.228	0.21954
tmax.f.spline2	0.0401386	0.0264053	1.520	0.12849
tmax.f.spline3	-0.0306815	0.0312627	-0.981	0.32639
tmax.f.spline4	0.0334396	0.0285715	1.170	0.24185
tmax.f.spline5	-0.0345014	0.0240374	-1.435	0.15120
snow.in	-0.2461342	0.1927876	-1.277	0.20170
precip.in	-0.3143222	0.1933945	-1.625	0.10410
dark.before.12	0.0045624	0.0478840	0.095	0.92409
school	0.0579551	0.1409291	0.411	0.68090

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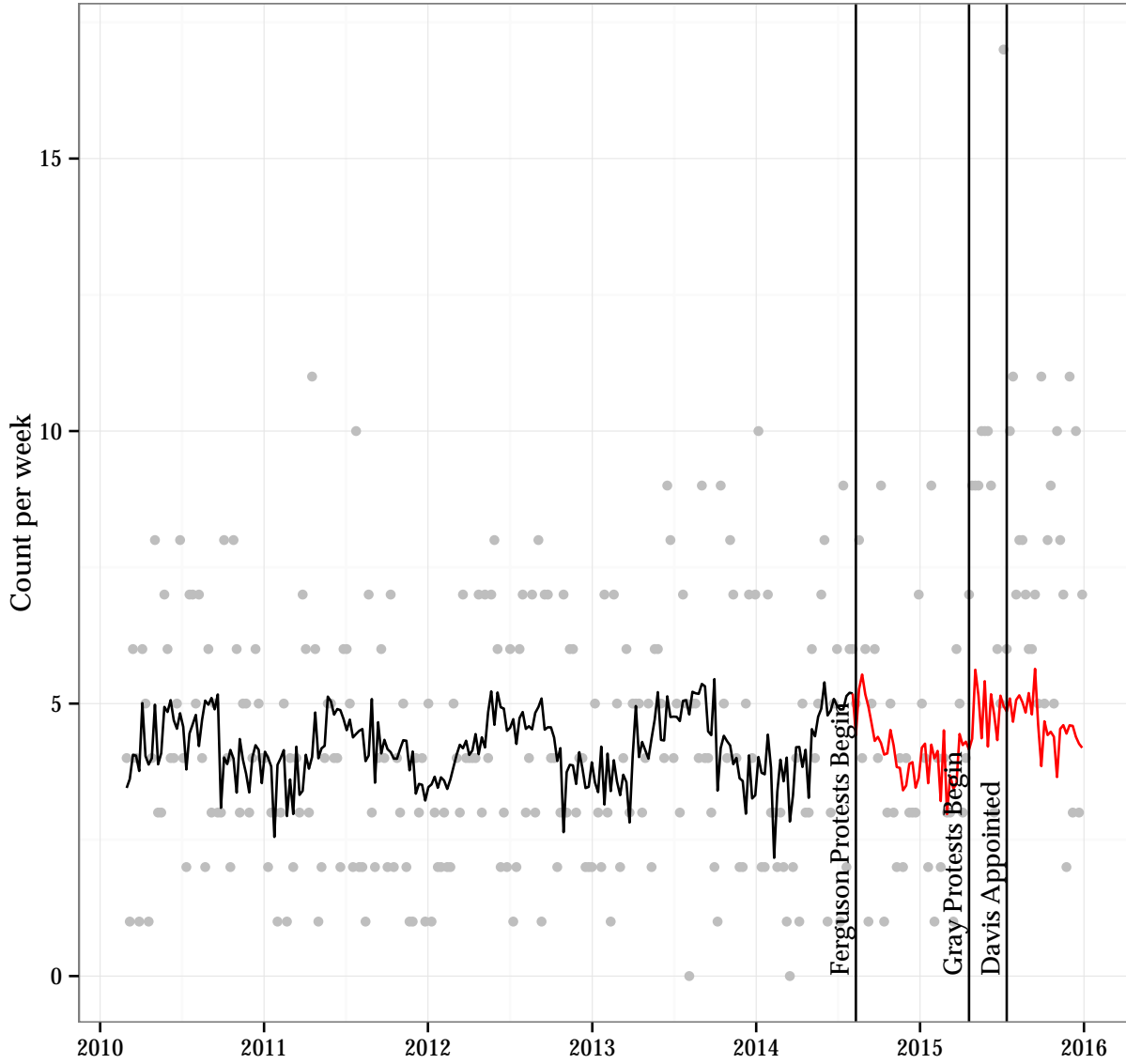
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

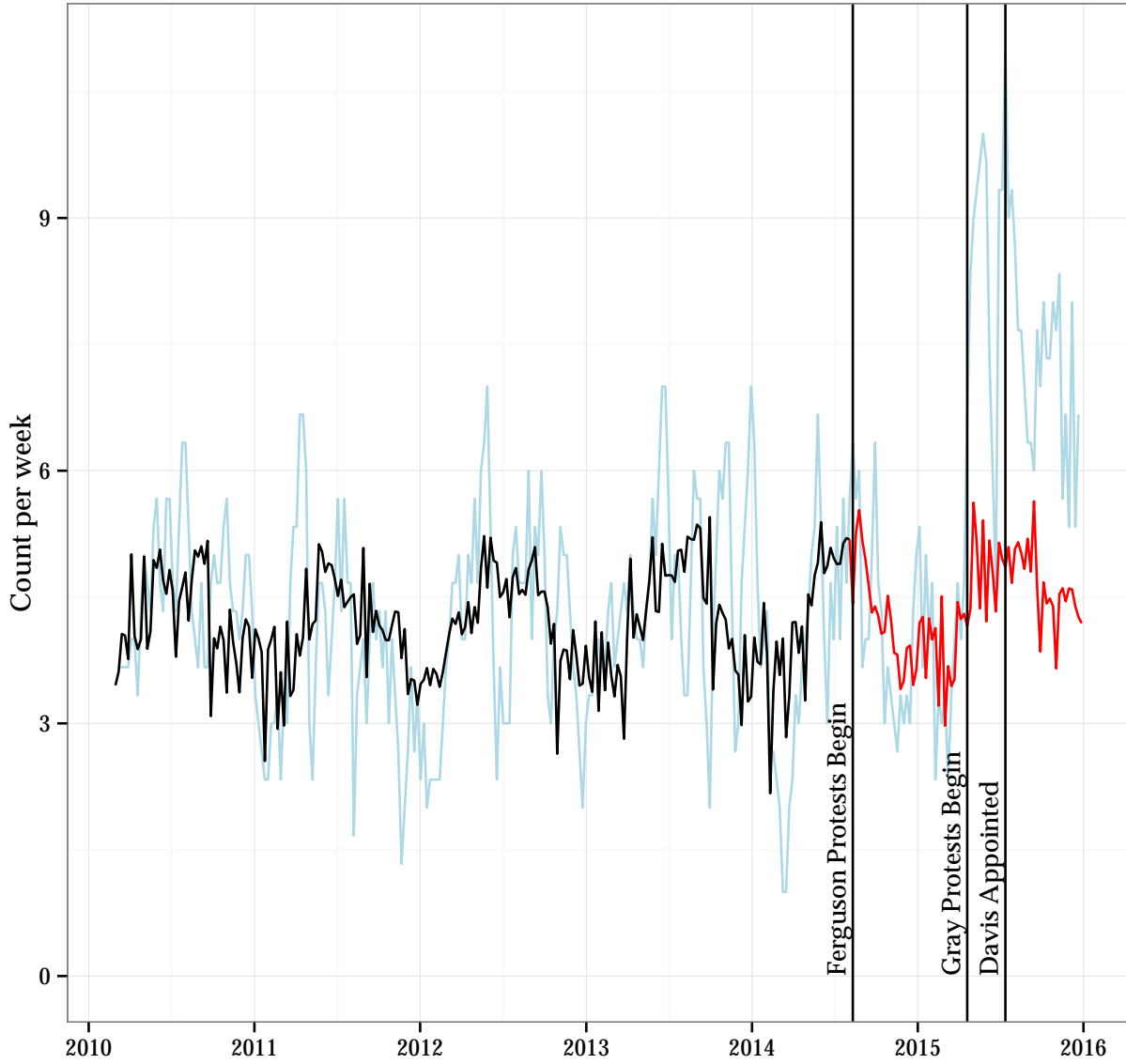
Null deviance: 268.52 on 231 degrees of freedom  
Residual deviance: 246.95 on 221 degrees of freedom  
AIC: 1002.2

Number of Fisher Scoring iterations: 5

# homicide



## homicide



## 5 Results for shooting

### 5.1 Summary Values for shooting

Table 5.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting	232	7.534	3.620	0	7	22

Table 5.2: Descriptives for Outcome After Ferguson Protests Begin

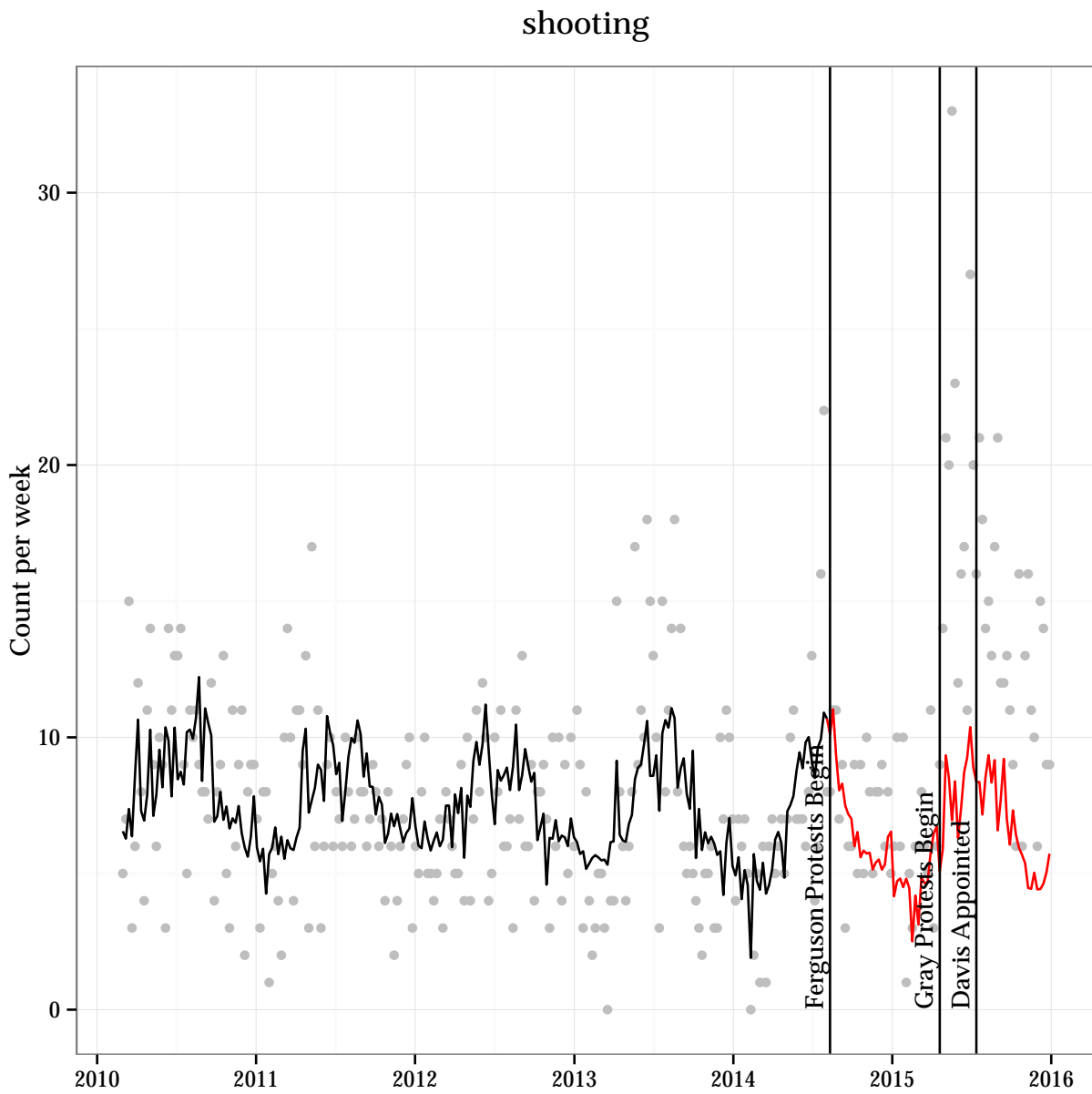
Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting	73	10.877	5.956	1	9	33

## 5.2 Four Models for shooting

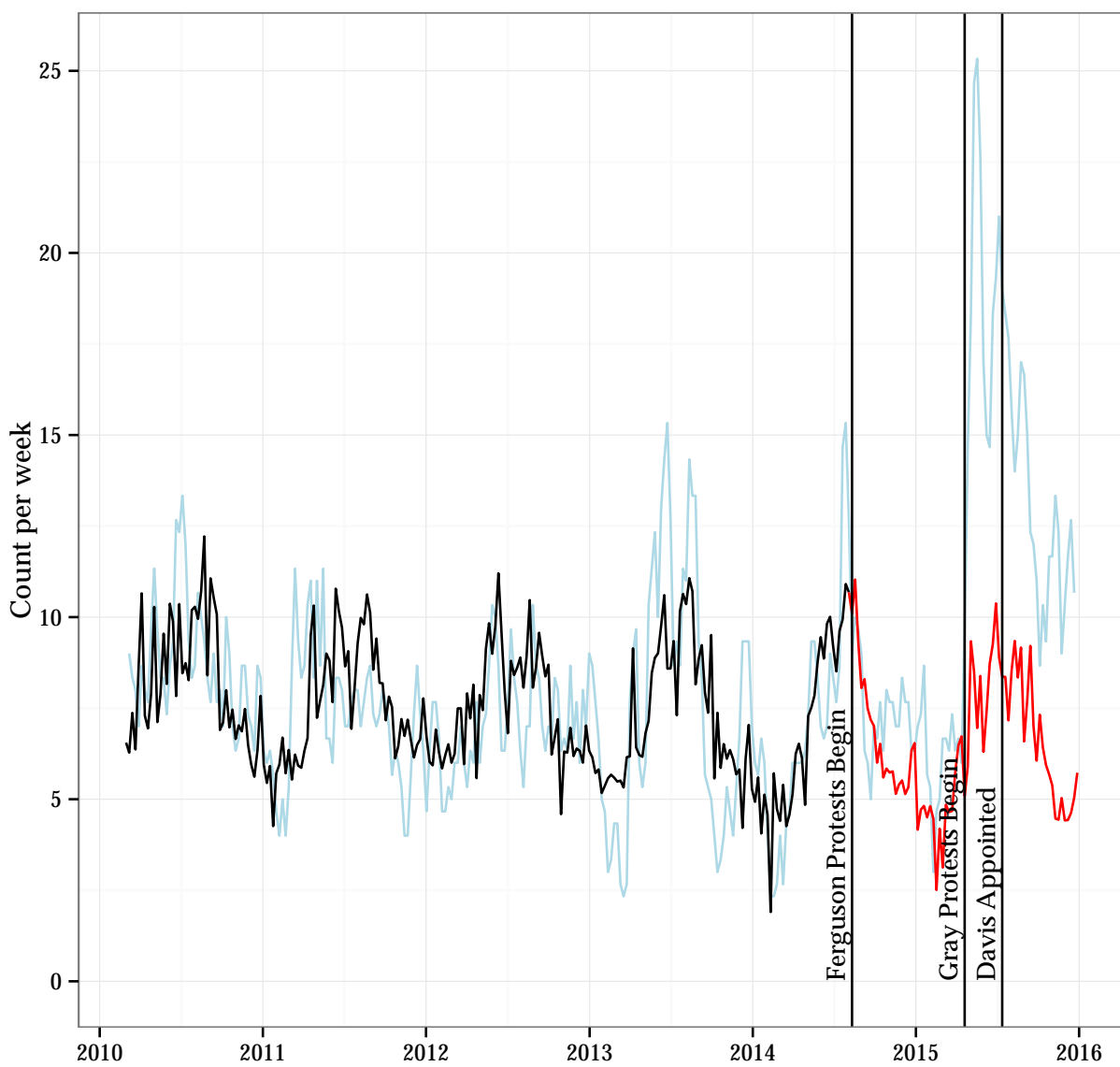
Table 5.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.01	−0.01		−0.005
After Ferguson Protests Begin (week of 8/11/14 onward)	0.10		0.95	0.89
After Gray Protests Begin (week of 4/20/15 onward)	12.25		9.94	10.01
Unrest and National Guard (during week of 4/27/15)	−5.03		−2.79	−2.72
After Commissioner Batts Fired (week of 7/13/15 onward)	−5.98		−4.56	−4.70
Average Maximum Temperature to 50 Degrees		0.06		0.05
Plus Degrees in the 50s		−0.03		−0.07
Plus Degrees in the 60s		0.09		0.11
Plus Degrees in the 70s		0.24		0.29
Plus Degrees greater than 80		−0.64		−0.60
Snowfall (inches)		−0.98		−1.04
Precipitation (inches)		−1.39		−1.88
Darkness Before Midnight (hours)		0.26		0.20
School Days (proportion of week)		−2.01		−1.11
Observations	305	232	305	305
R <sup>2</sup>	0.33	0.24	0.38	0.47

### 5.3 Least Squares Model (2) for shooting

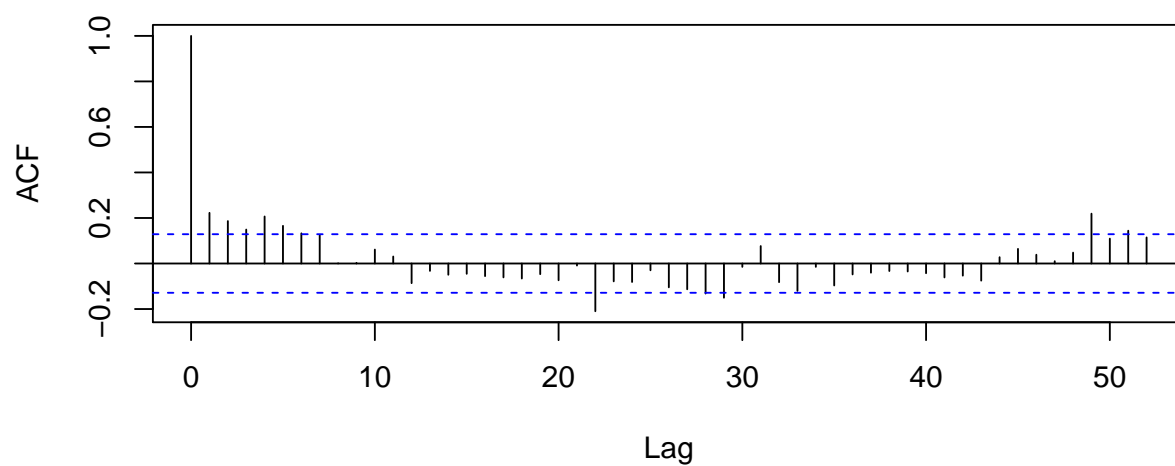


## shooting

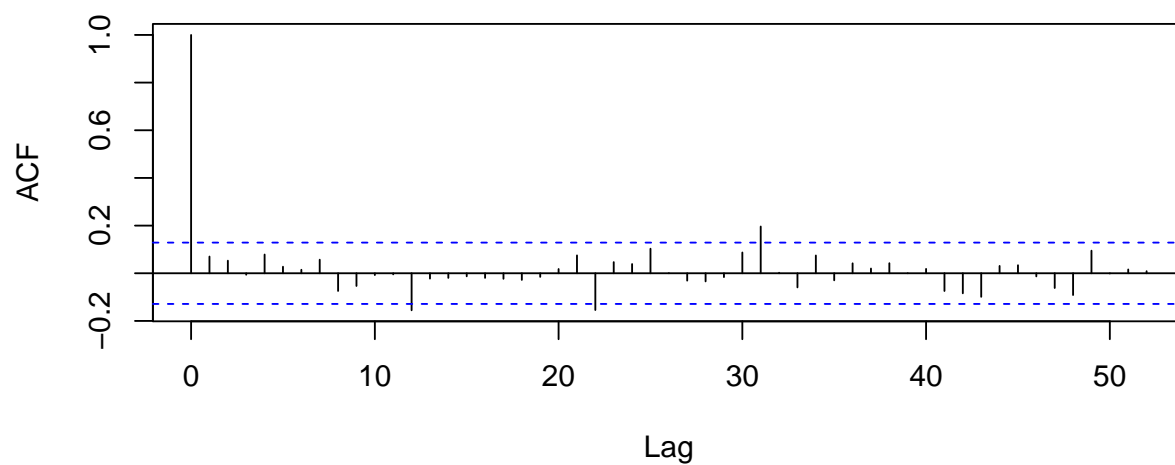




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.3092  -0.9181  -0.1674   0.7400   2.9091

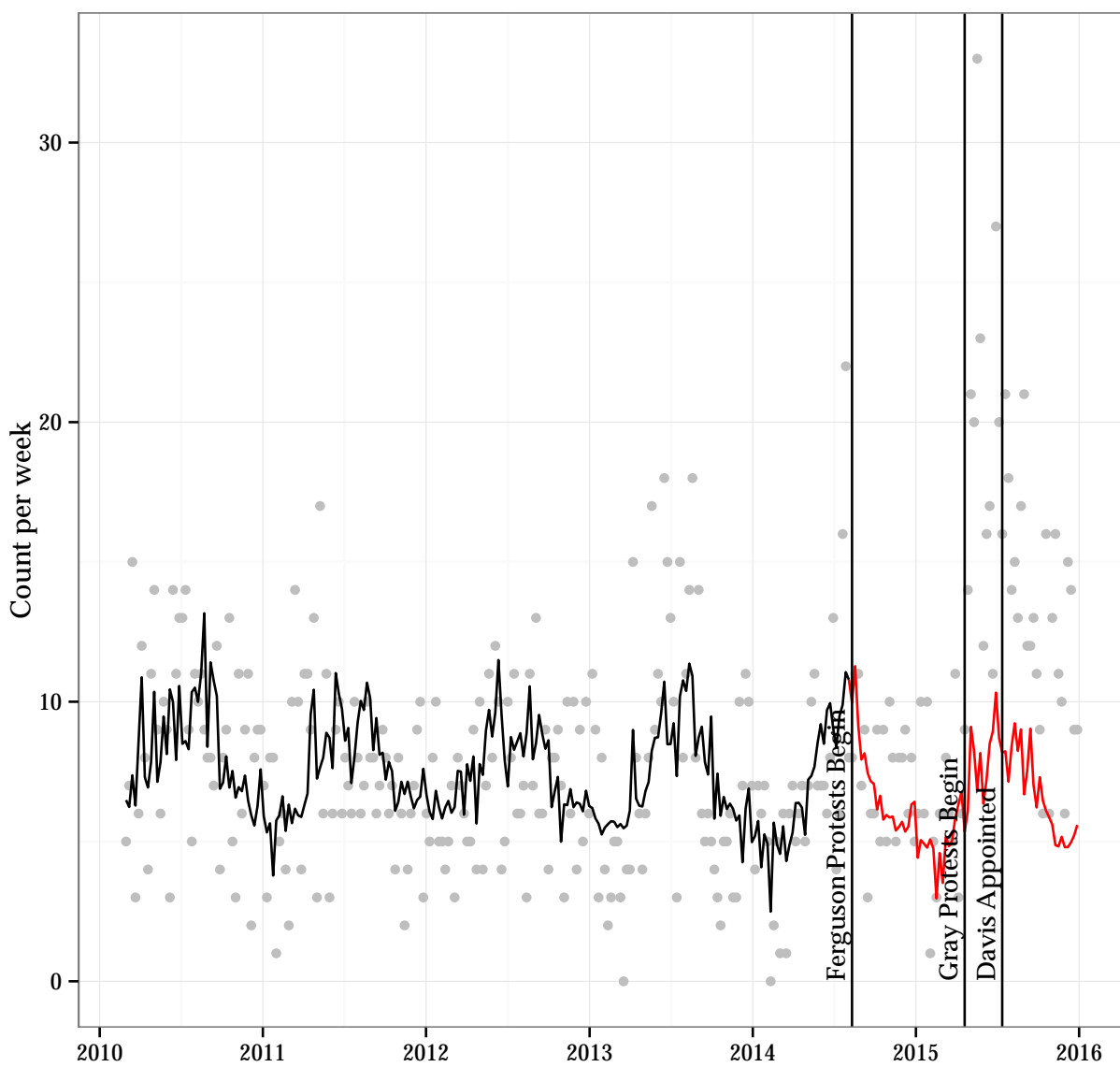
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   1.4009316   0.5587666   2.507   0.0122 *
t             -0.0006787   0.0003652  -1.858   0.0631 .
tmax.f.spline1  0.0087156   0.0104225   0.836   0.4030
tmax.f.spline2 -0.0058696   0.0207928  -0.282   0.7777
tmax.f.spline3  0.0150615   0.0246050   0.612   0.5405
tmax.f.spline4  0.0216909   0.0216587   1.001   0.3166
tmax.f.spline5 -0.0734749   0.0175194  -4.194 2.74e-05 ***
snow.in        -0.2538440   0.1655404  -1.533   0.1252
precip.in      -0.1896043   0.1362468  -1.392   0.1640
dark.before.12  0.0391750   0.0368658   1.063   0.2879
school         -0.2518473   0.1015766  -2.479   0.0132 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

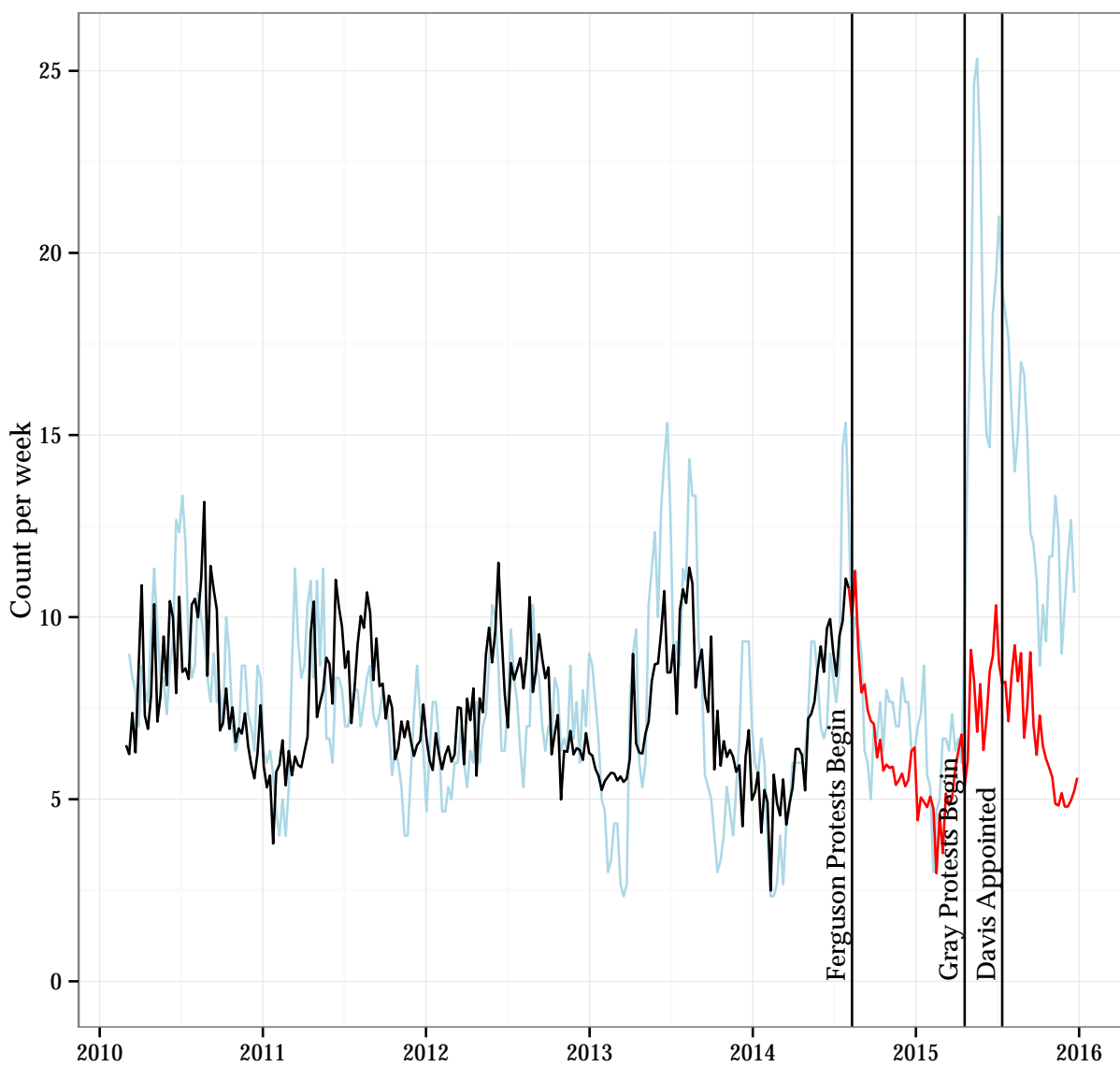
    Null deviance: 409.56  on 231  degrees of freedom
Residual deviance: 310.94  on 221  degrees of freedom
AIC: 1200.8

Number of Fisher Scoring iterations: 5
```

# shooting



## shooting



## 6 Results for rape

### 6.1 Summary Values for rape

Table 6.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
rape	232	5.638	2.582	0	5	16

Table 6.2: Descriptives for Outcome After Ferguson Protests Begin

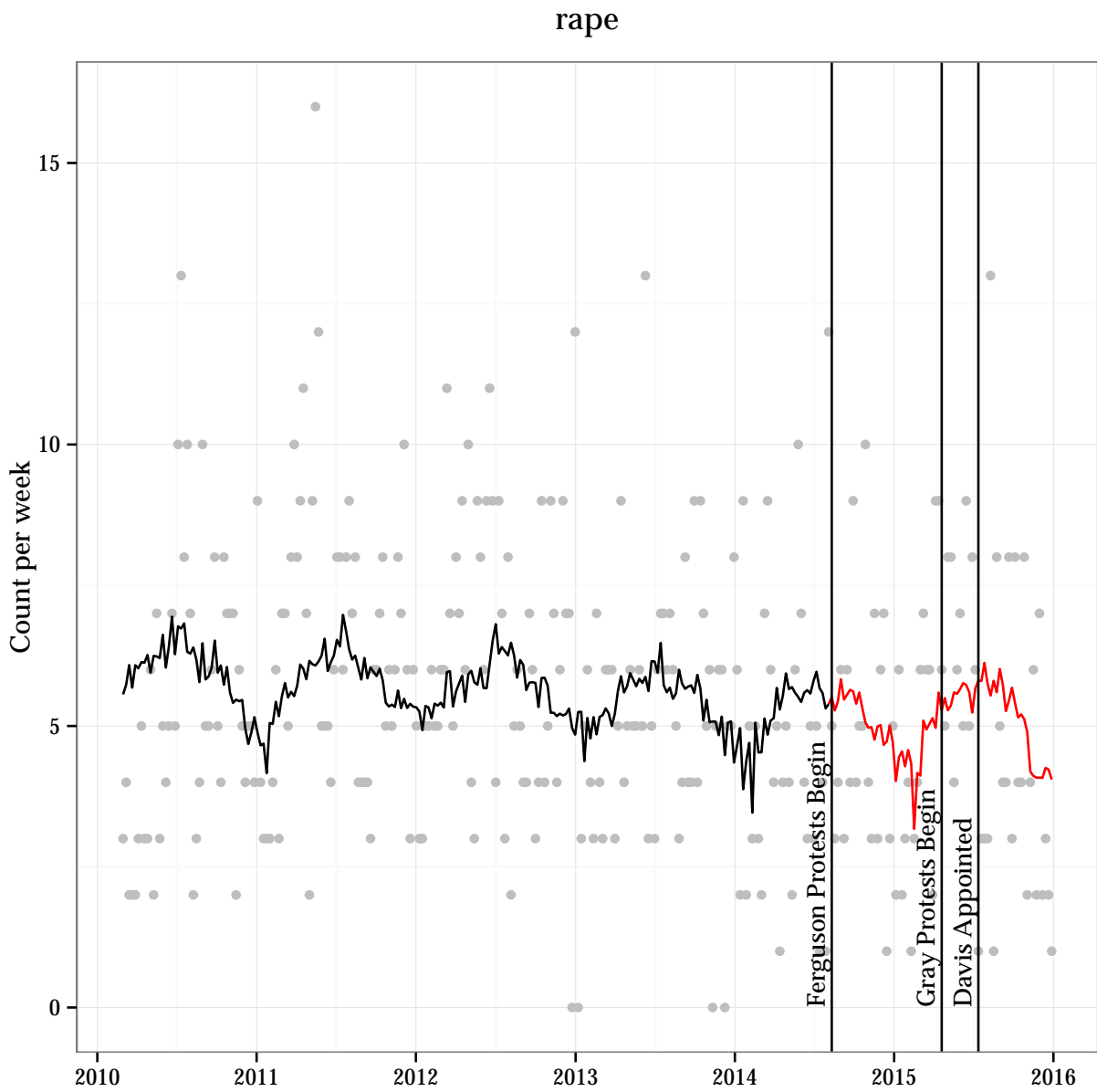
Statistic	N	Mean	St. Dev.	Min	Median	Max
rape	73	4.918	2.499	1	5	13

## 6.2 Four Models for rape

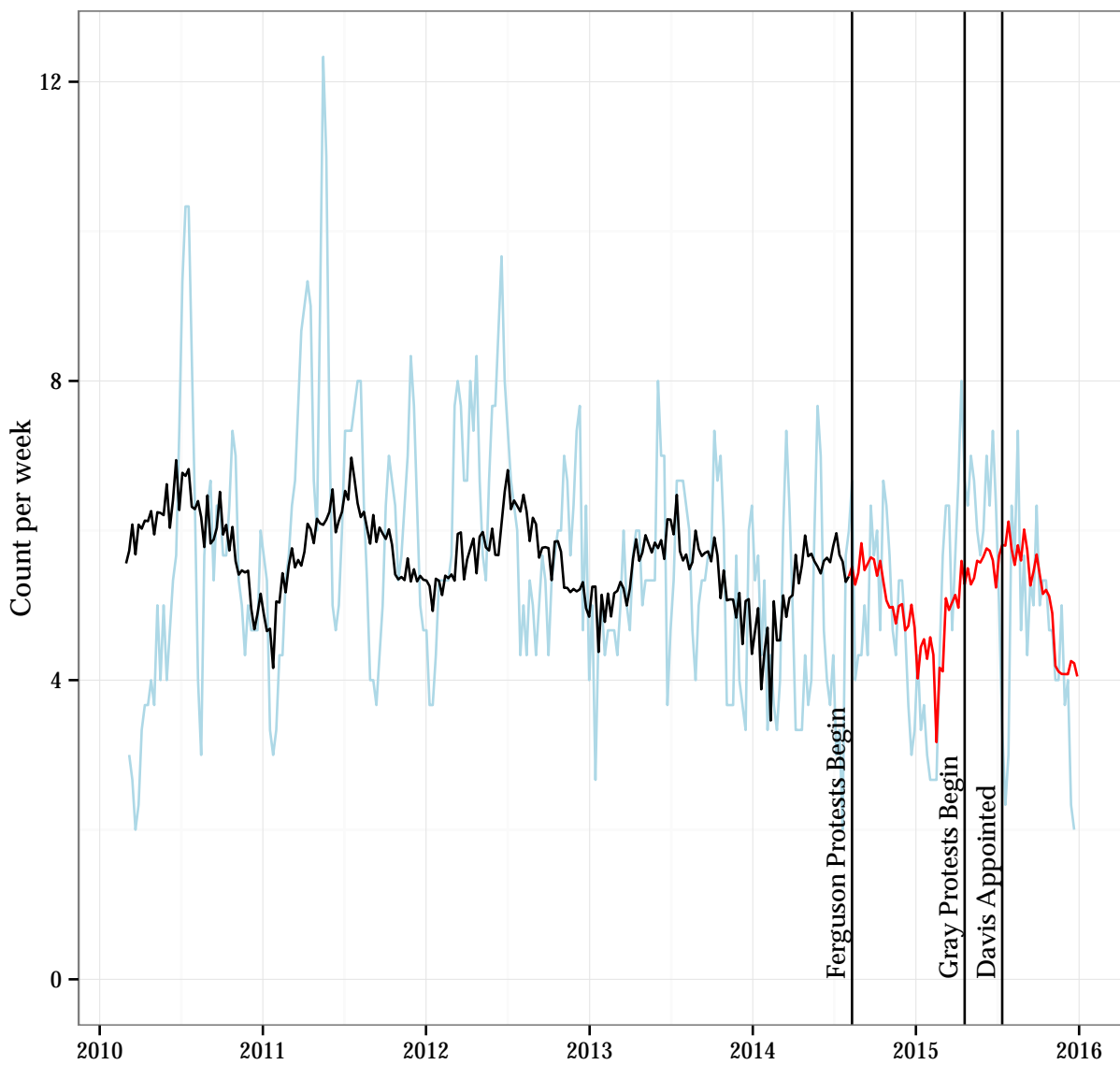
Table 6.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.003	−0.002		−0.002
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.36		−0.14	−0.16
After Gray Protests Begin (week of 4/20/15 onward)	1.83		1.16	1.13
Unrest and National Guard (during week of 4/27/15)	−1.56		−1.52	−1.71
After Commissioner Batts Fired (week of 7/13/15 onward)	−2.12		−1.76	−1.66
Average Maximum Temperature to 50 Degrees		0.05		0.05
Plus Degrees in the 50s		−0.06		−0.03
Plus Degrees in the 60s		0.08		0.03
Plus Degrees in the 70s		−0.11		−0.10
Plus Degrees greater than 80		0.12		0.10
Snowfall (inches)		−0.41		−0.34
Precipitation (inches)		0.42		0.12
Darkness Before Midnight (hours)		−0.04		−0.10
School Days (proportion of week)		0.09		0.02
Observations	305	232	305	305
R <sup>2</sup>	0.04	0.05	0.01	0.08

6.3 Least Squares Model (2) for rape

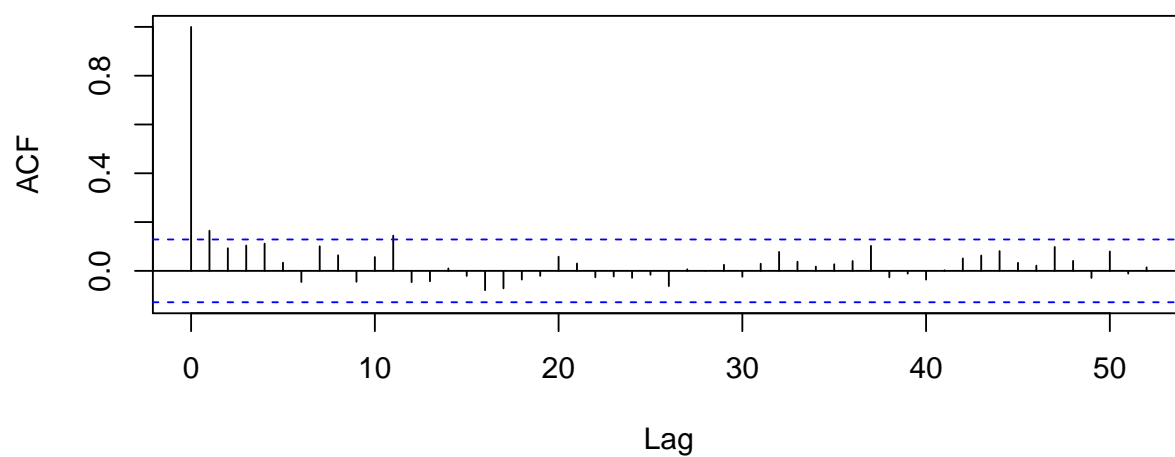


# rape

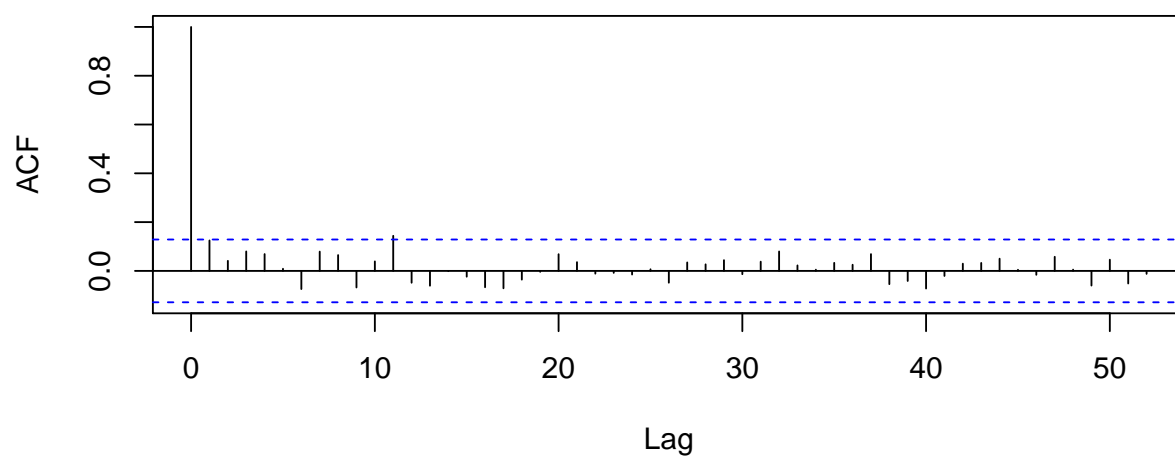




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.2445  -0.7691  -0.0730   0.5462   3.3316

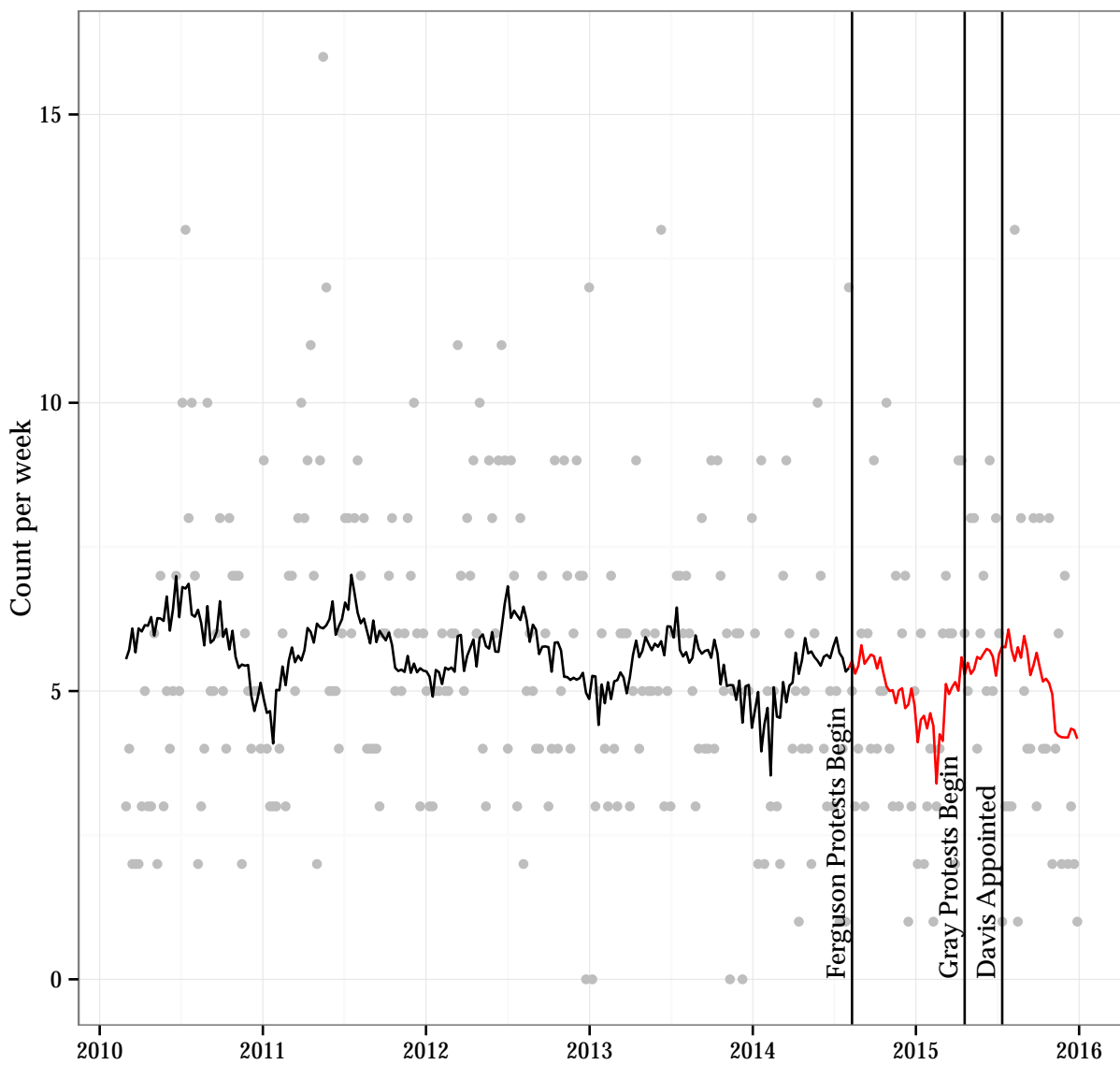
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   1.3026886   0.6103915   2.134  0.0328 *
t             -0.0004326   0.0004266  -1.014  0.3105
tmax.f.spline1  0.0092846   0.0112435   0.826  0.4089
tmax.f.spline2 -0.0114574   0.0223705  -0.512  0.6085
tmax.f.spline3  0.0138586   0.0267766   0.518  0.6048
tmax.f.spline4 -0.0183465   0.0244755  -0.750  0.4535
tmax.f.spline5  0.0191810   0.0209635   0.915  0.3602
snow.in        -0.0962218   0.1564143  -0.615  0.5384
precip.in       0.0709546   0.1514863   0.468  0.6395
dark.before.12 -0.0075127   0.0406727  -0.185  0.8535
school          0.0148476   0.1230992   0.121  0.9040
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

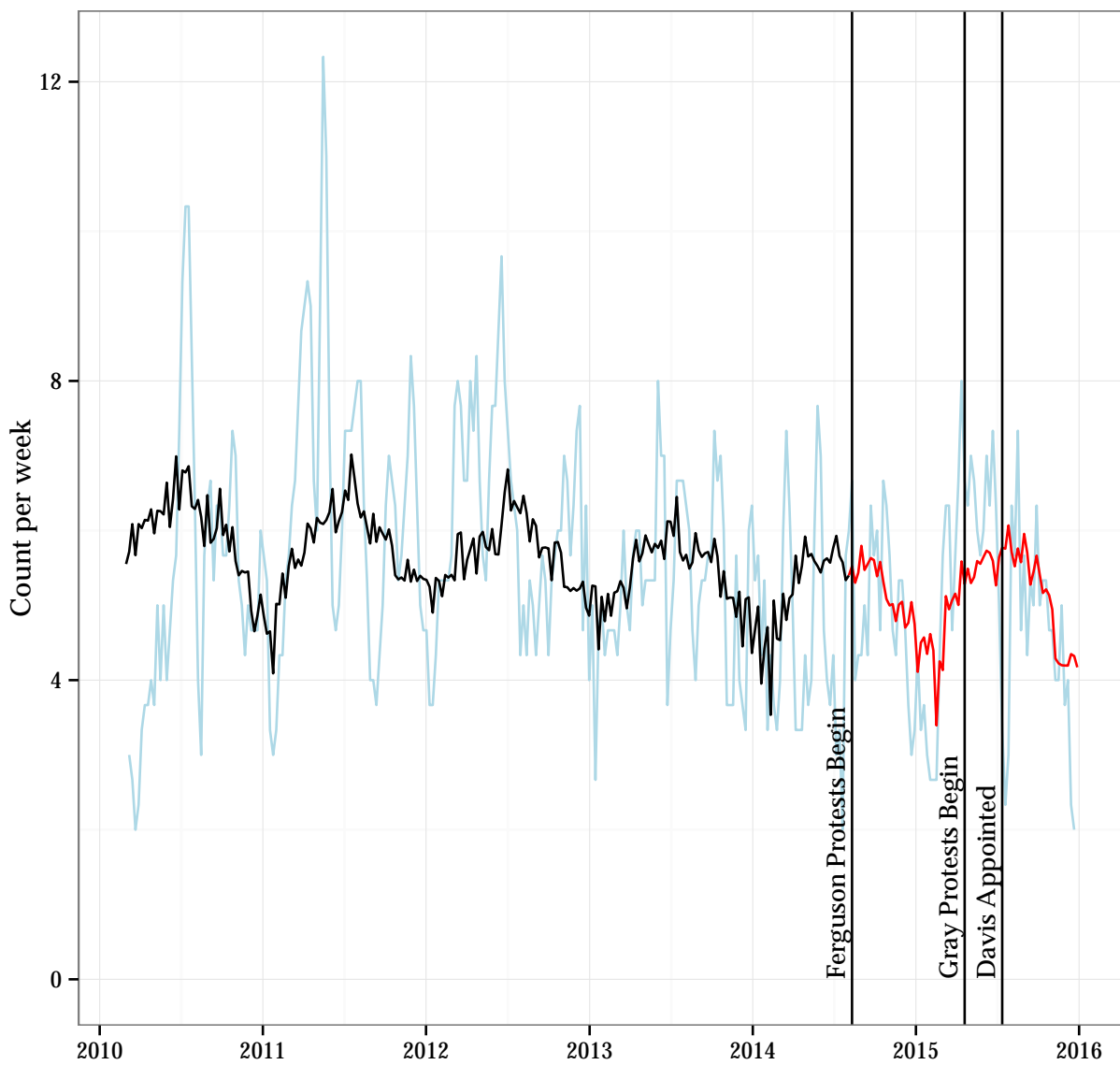
    Null deviance: 287.55  on 231  degrees of freedom
Residual deviance: 274.43  on 221  degrees of freedom
AIC: 1099

Number of Fisher Scoring iterations: 4
```

# rape



# rape



## 7 Results for robbery.carjacking

### 7.1 Summary Values for robbery.carjacking

Table 7.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
robbery.carjacking	232	3.155	2.071	0	3	11

Table 7.2: Descriptives for Outcome After Ferguson Protests Begin

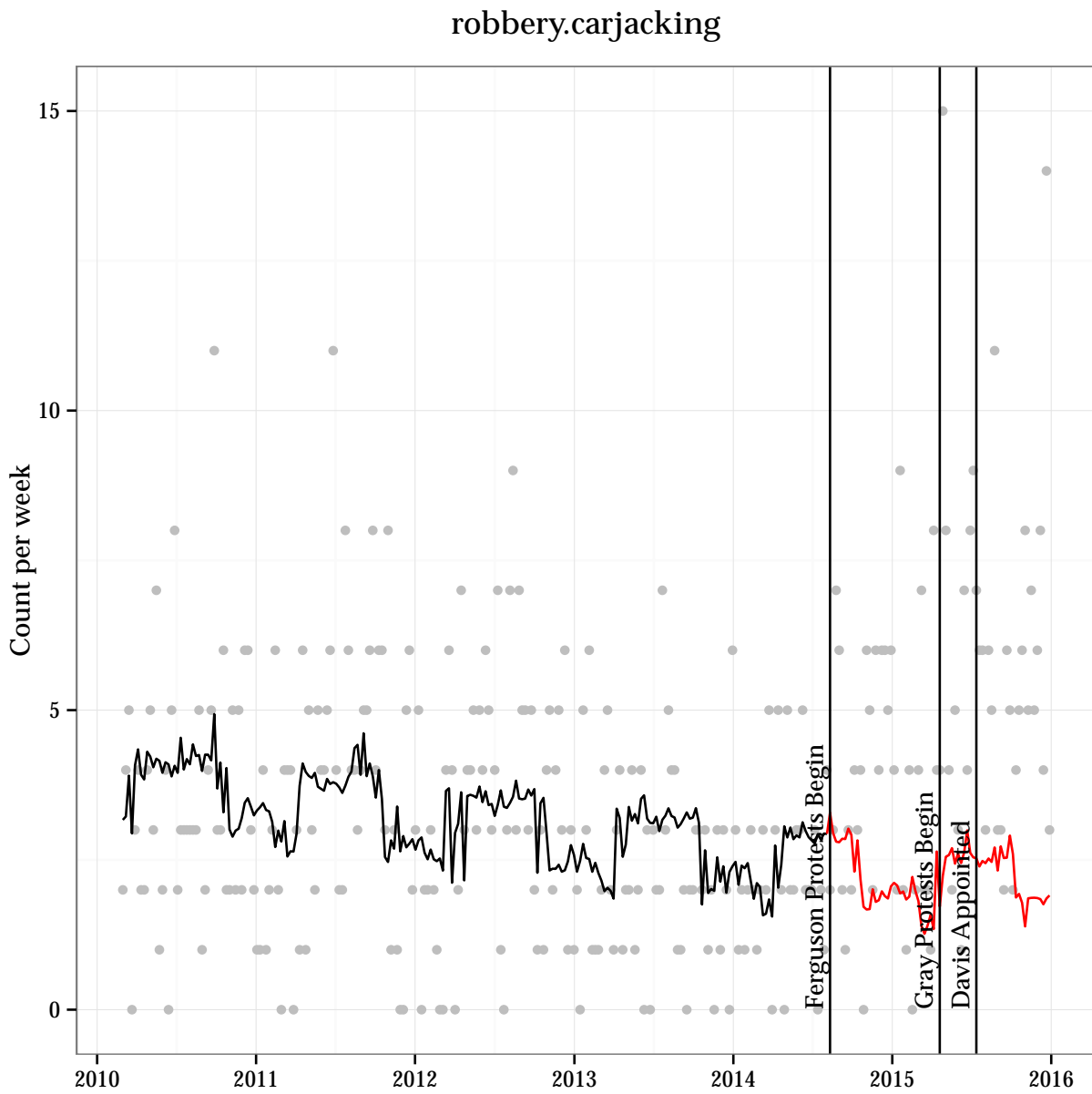
Statistic	N	Mean	St. Dev.	Min	Median	Max
robbery.carjacking	73	4.726	2.854	0	4	15

## 7.2 Four Models for robbery.carjacking

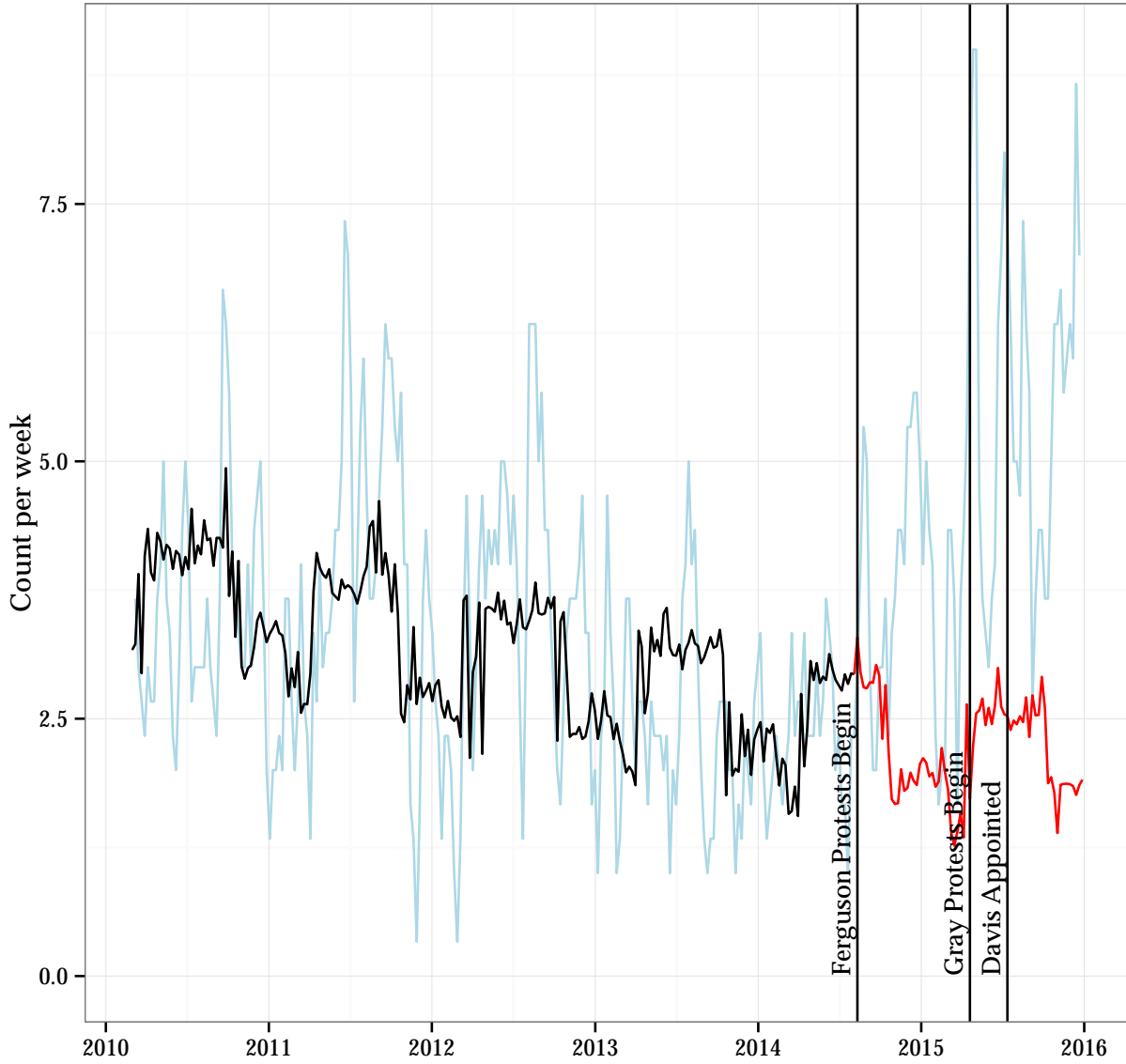
Table 7.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.01	−0.01		−0.01
After Ferguson Protests Begin (week of 8/11/14 onward)	1.46		1.62	1.59
After Gray Protests Begin (week of 4/20/15 onward)	1.41		0.85	1.03
Unrest and National Guard (during week of 4/27/15)	9.97		10.30	10.55
After Commissioner Batts Fired (week of 7/13/15 onward)	0.72		0.93	0.79
Average Maximum Temperature to 50 Degrees		−0.03		−0.01
Plus Degrees in the 50s		0.02		−0.02
Plus Degrees in the 60s		0.16		0.12
Plus Degrees in the 70s		−0.14		−0.05
Plus Degrees greater than 80		−0.03		−0.08
Snowfall (inches)		−0.12		−0.54
Precipitation (inches)		0.71		0.66
Darkness Before Midnight (hours)		0.13		0.14
School Days (proportion of week)		−0.15		−0.76
Observations	305	232	305	305
R <sup>2</sup>	0.20	0.11	0.27	0.23

### 7.3 Least Squares Model (2) for robbery.carjacking

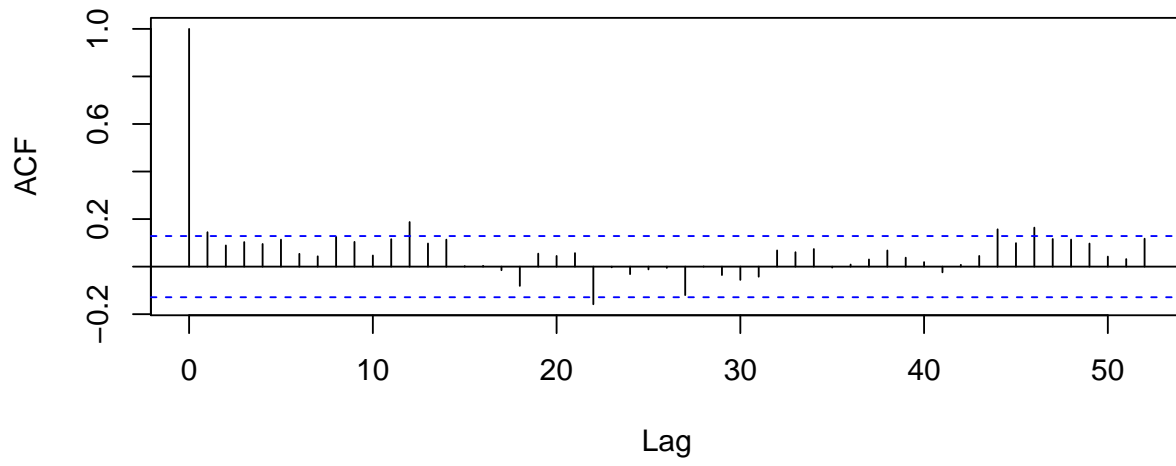


## robbery.carjacking

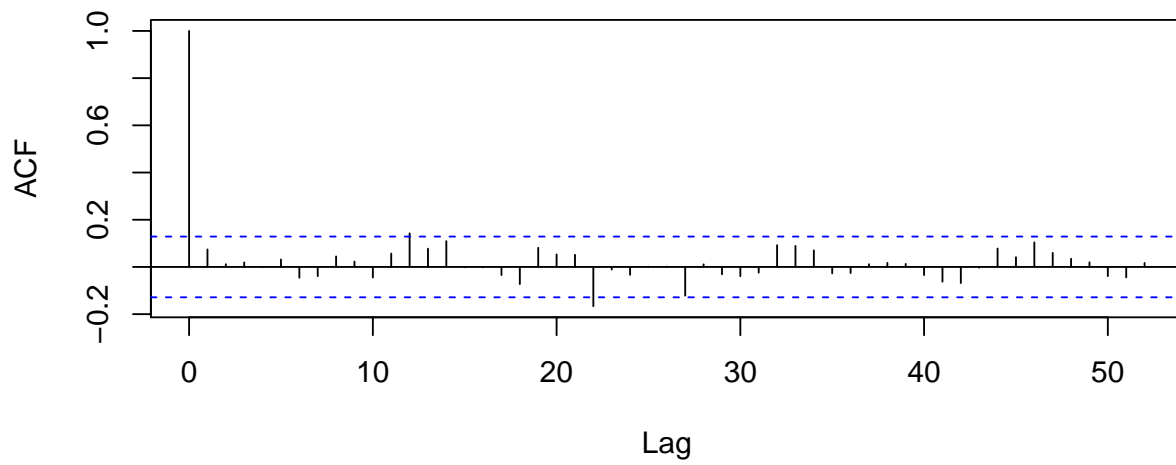




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 7.4 A Poisson Regression Model as an Alternative to Model (2) for robbery.carjacking

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

Deviance Residuals:

Min	1Q	Median	3Q	Max
-2.8859	-0.8440	-0.1248	0.5621	3.0047

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	1.394403	0.814352	1.712	0.086844 .
t	-0.001958	0.000568	-3.448	0.000565 ***
tmax.f.spline1	-0.011062	0.014983	-0.738	0.460338
tmax.f.spline2	0.007270	0.031598	0.230	0.818020
tmax.f.spline3	0.054628	0.038458	1.420	0.155475
tmax.f.spline4	-0.049485	0.032876	-1.505	0.132271
tmax.f.spline5	-0.007083	0.027285	-0.260	0.795186
snow.in	-0.059603	0.201245	-0.296	0.767098
precip.in	0.197707	0.192151	1.029	0.303521
dark.before.12	0.047916	0.057159	0.838	0.401866
school	-0.051071	0.162160	-0.315	0.752805

---

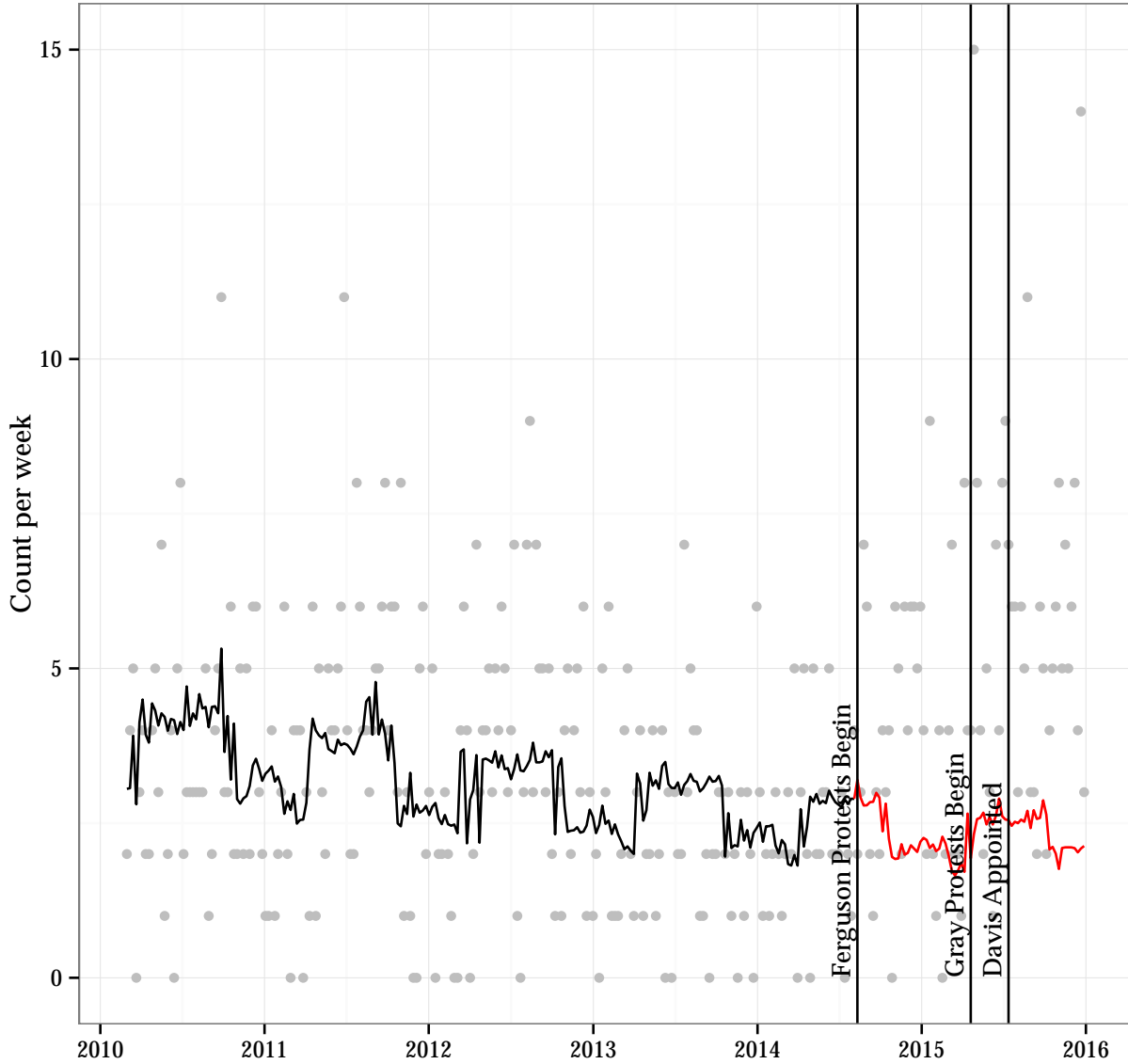
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

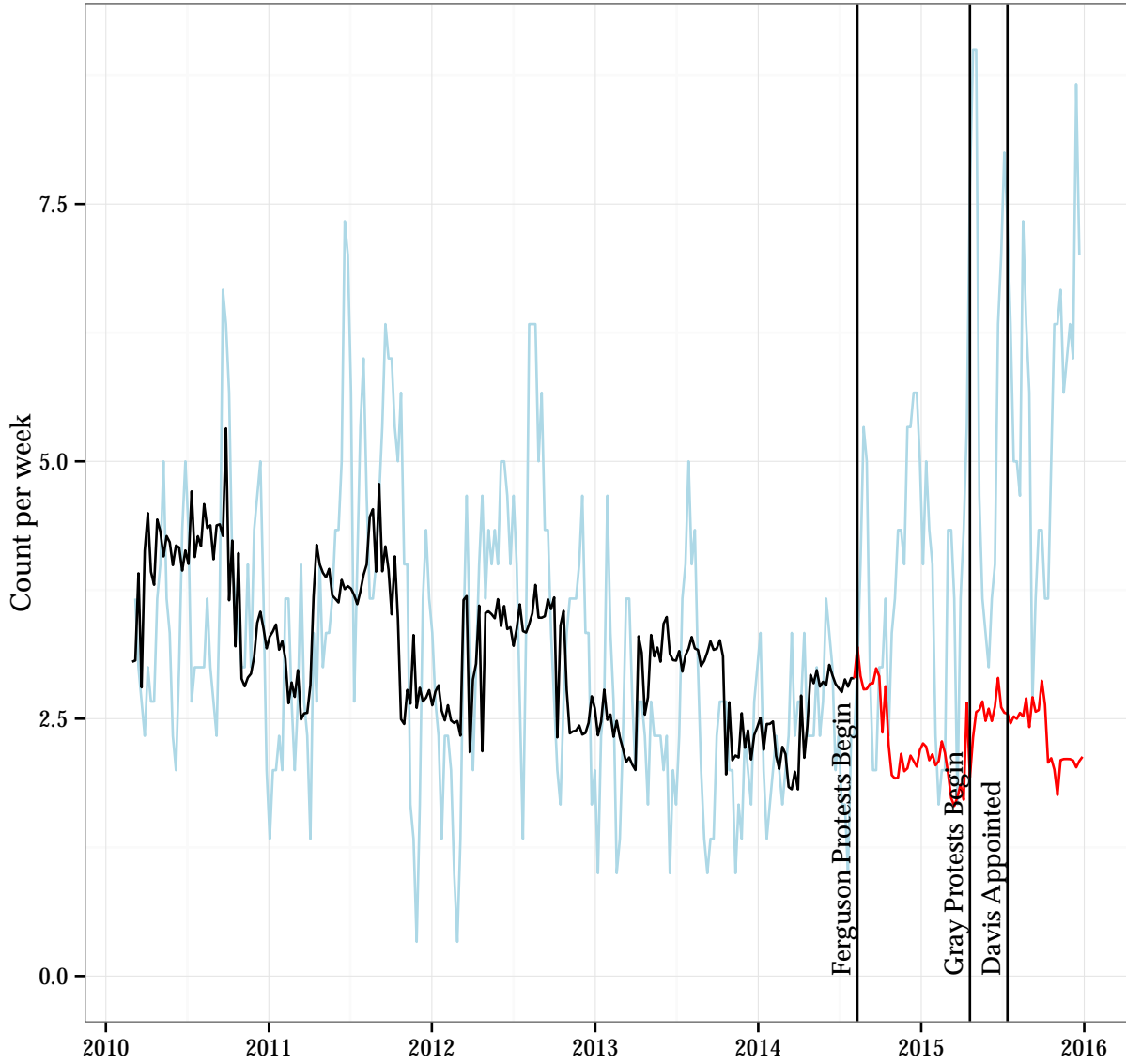
Null deviance: 346.44 on 231 degrees of freedom  
Residual deviance: 310.60 on 221 degrees of freedom  
AIC: 965.15

Number of Fisher Scoring iterations: 5

# robbery.carjacking



# robbery.carjacking



## 8 Results for robbery.street

### 8.1 Summary Values for robbery.street

Table 8.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
robbery.street	232	50.621	12.474	24	50	97

Table 8.2: Descriptives for Outcome After Ferguson Protests Begin

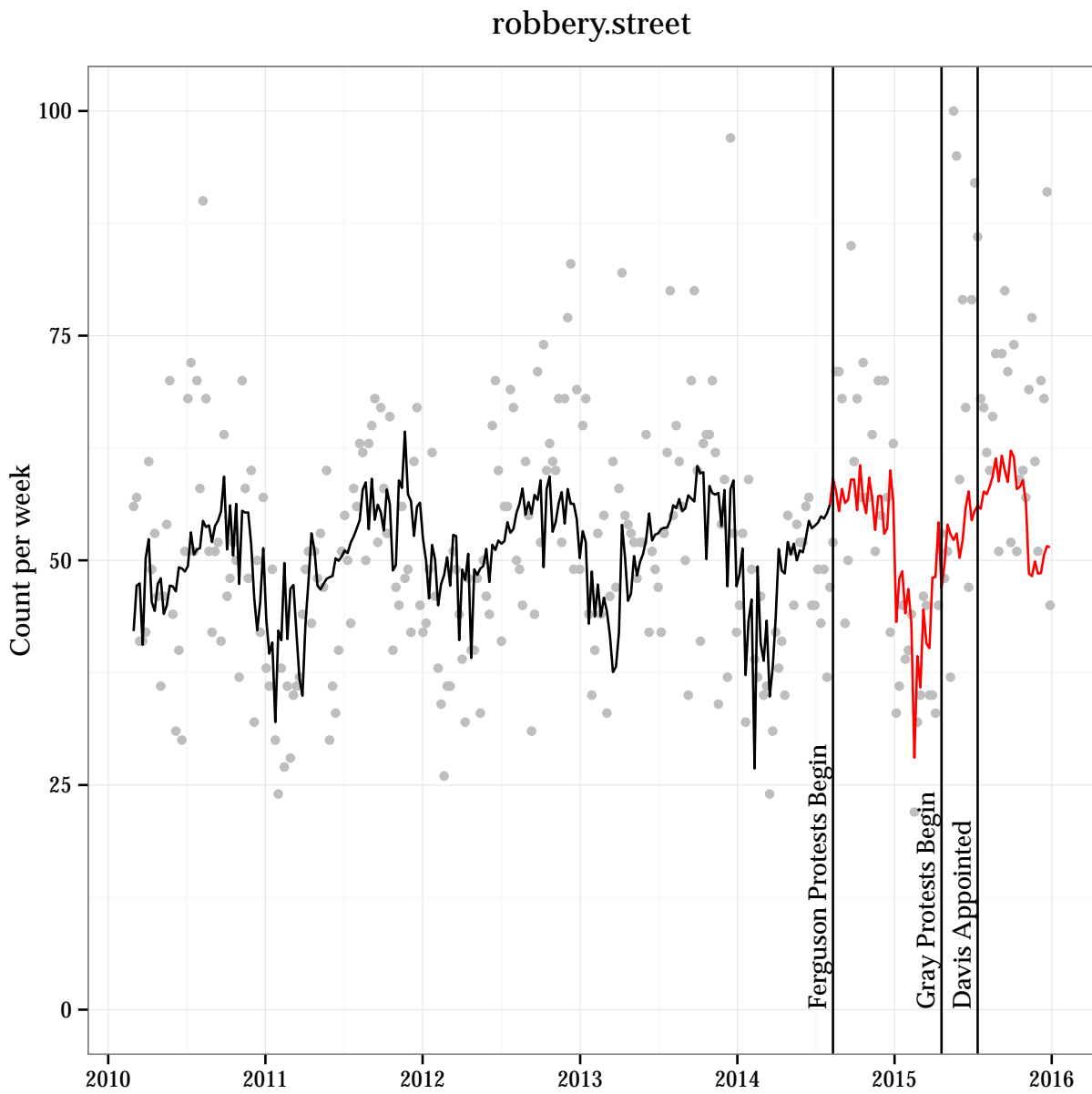
Statistic	N	Mean	St. Dev.	Min	Median	Max
robbery.street	73	58.877	16.588	22	59	100

## 8.2 Four Models for robbery.street

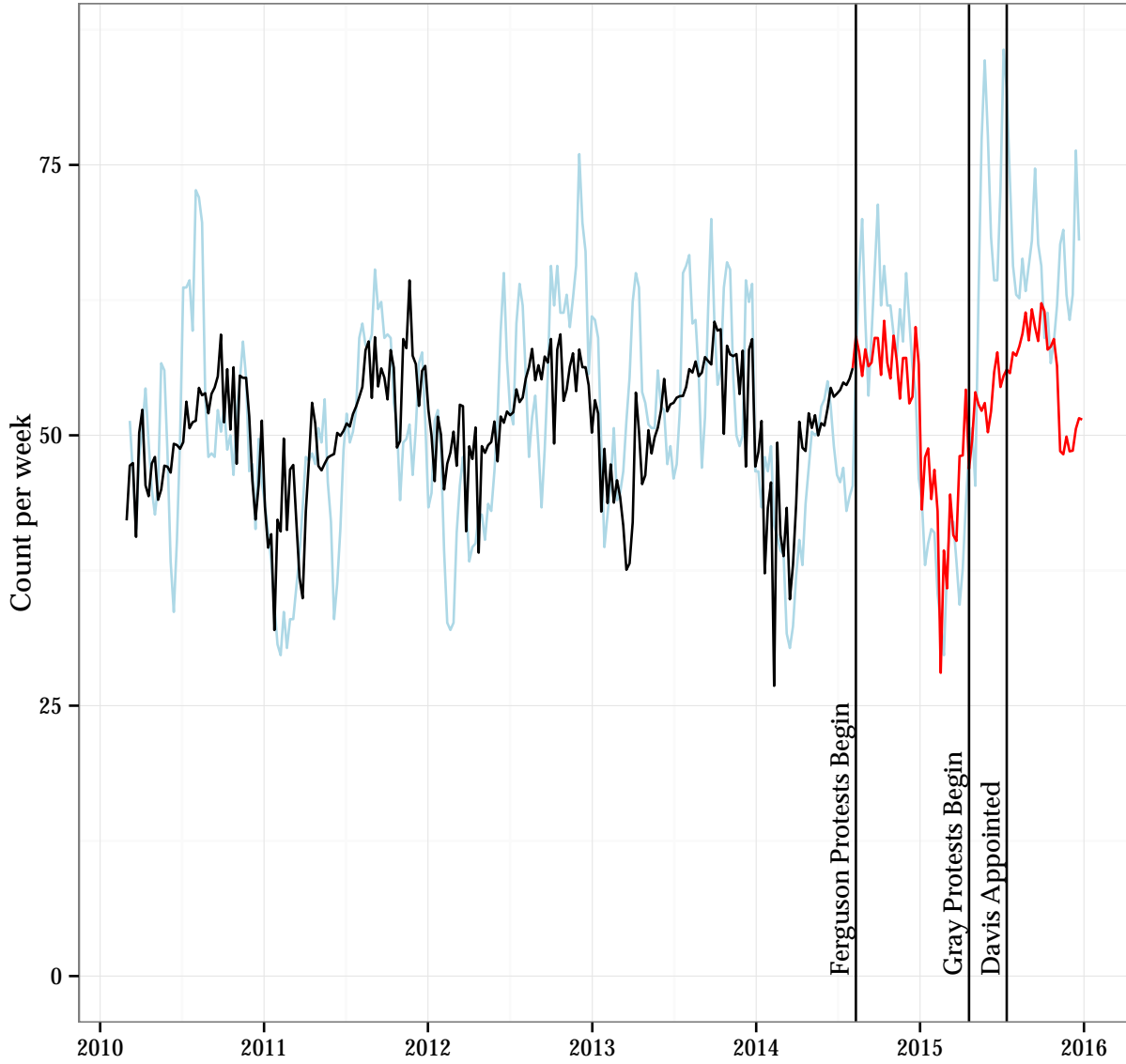
Table 8.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.01	0.02		0.02
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.28		−0.01	−0.01
After Gray Protests Begin (week of 4/20/15 onward)	17.45		15.83	15.91
Unrest and National Guard (during week of 4/27/15)	−20.96		−17.40	−16.76
After Commissioner Batts Fired (week of 7/13/15 onward)	−3.46		−6.04	−6.59
Average Maximum Temperature to 50 Degrees		0.55		0.52
Plus Degrees in the 50s		−0.08		−0.17
Plus Degrees in the 60s		0.52		0.76
Plus Degrees in the 70s		−0.67		−0.63
Plus Degrees greater than 80		−0.27		−0.36
Snowfall (inches)		−6.05		−7.24
Precipitation (inches)		5.14		4.13
Darkness Before Midnight (hours)		6.22		6.63
School Days (proportion of week)		−4.69		−2.98
Observations	305	232	305	305
R <sup>2</sup>	0.14	0.22	0.10	0.33

### 8.3 Least Squares Model (2) for robbery.street

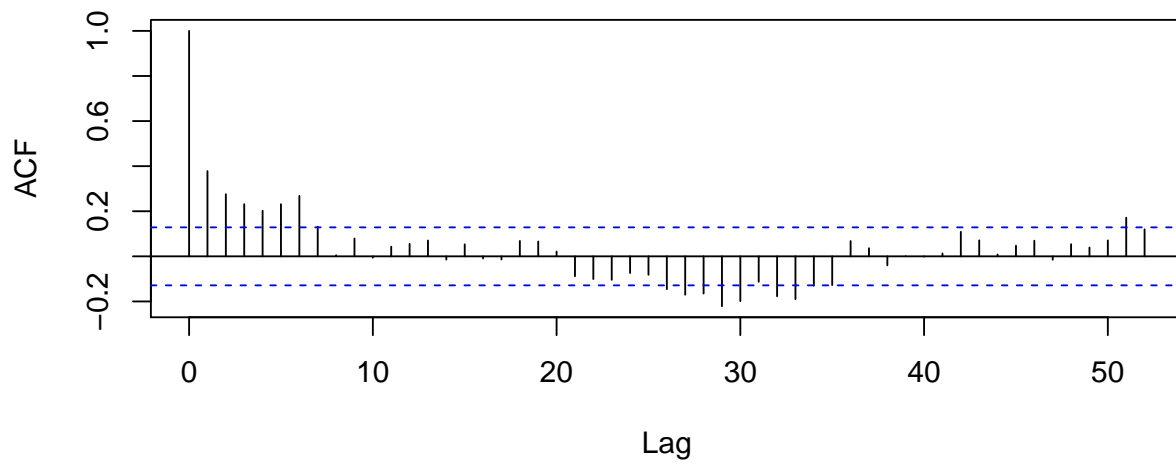


# robbery.street

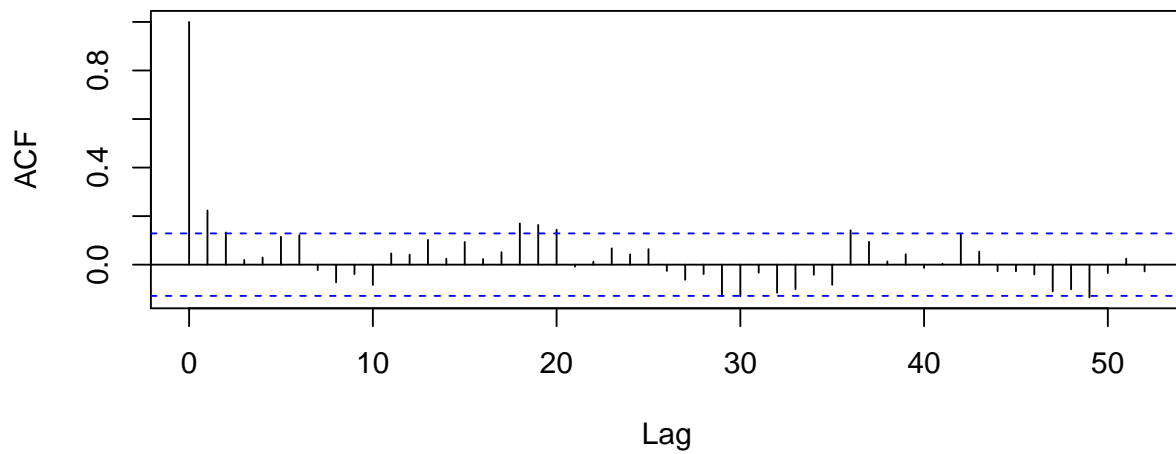




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 8.4 A Poisson Regression Model as an Alternative to Model (2) for robbery.street

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

Deviance Residuals:

Min	1Q	Median	3Q	Max
-3.5553	-1.1323	-0.0218	0.9383	4.6420

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	2.5466784	0.2000041	12.733	< 2e-16 ***
t	0.0004394	0.0001434	3.064	0.00218 **
tmax.f.spline1	0.0109230	0.0037038	2.949	0.00319 **
tmax.f.spline2	-0.0020143	0.0074362	-0.271	0.78648
tmax.f.spline3	0.0113611	0.0089265	1.273	0.20311
tmax.f.spline4	-0.0139803	0.0082103	-1.703	0.08861 .
tmax.f.spline5	-0.0051763	0.0071127	-0.728	0.46676
snow.in	-0.1646672	0.0543344	-3.031	0.00244 **
precip.in	0.0985153	0.0500650	1.968	0.04910 *
dark.before.12	0.1246308	0.0136016	9.163	< 2e-16 ***
school	-0.0954594	0.0407744	-2.341	0.01922 *

---

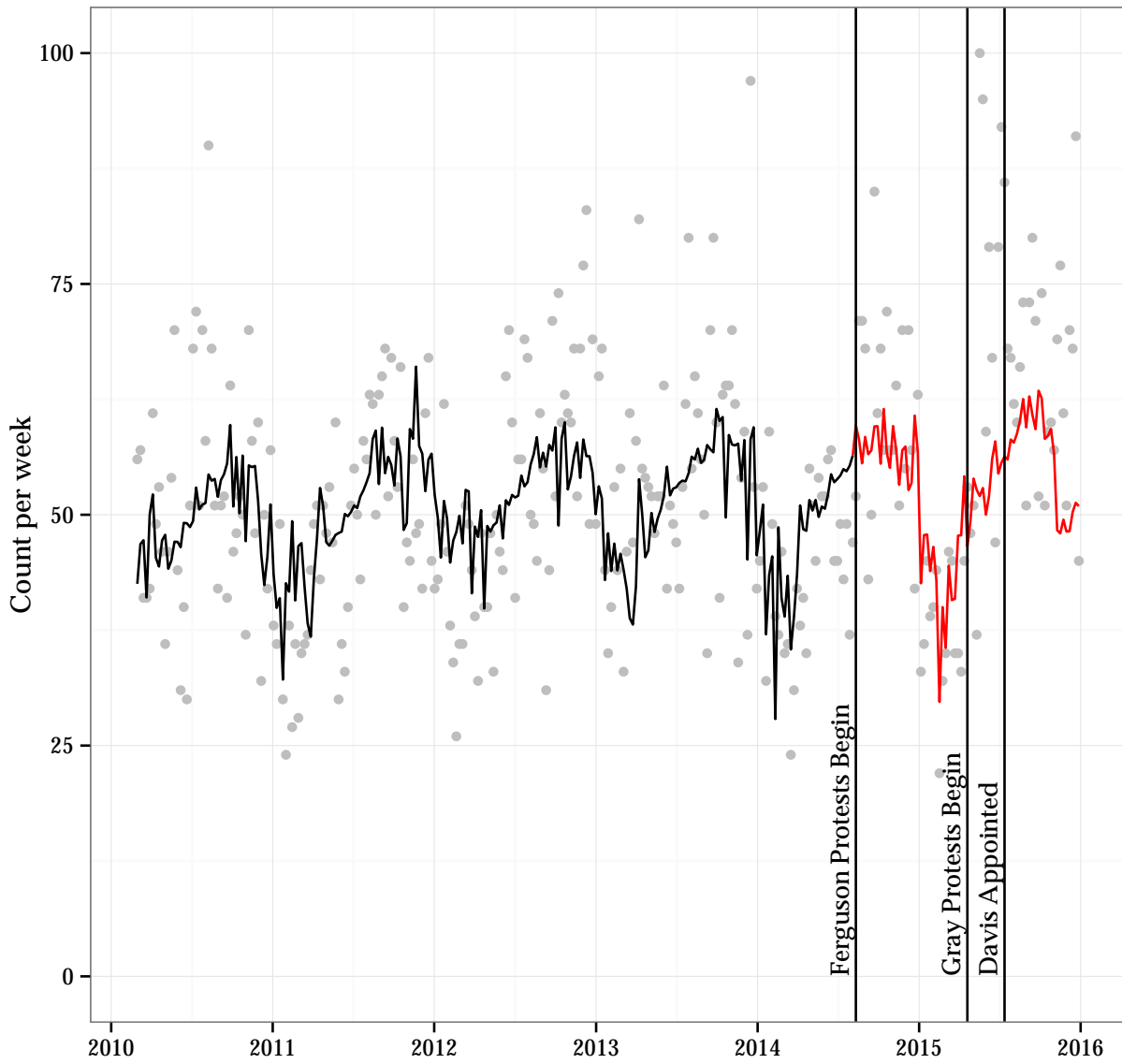
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

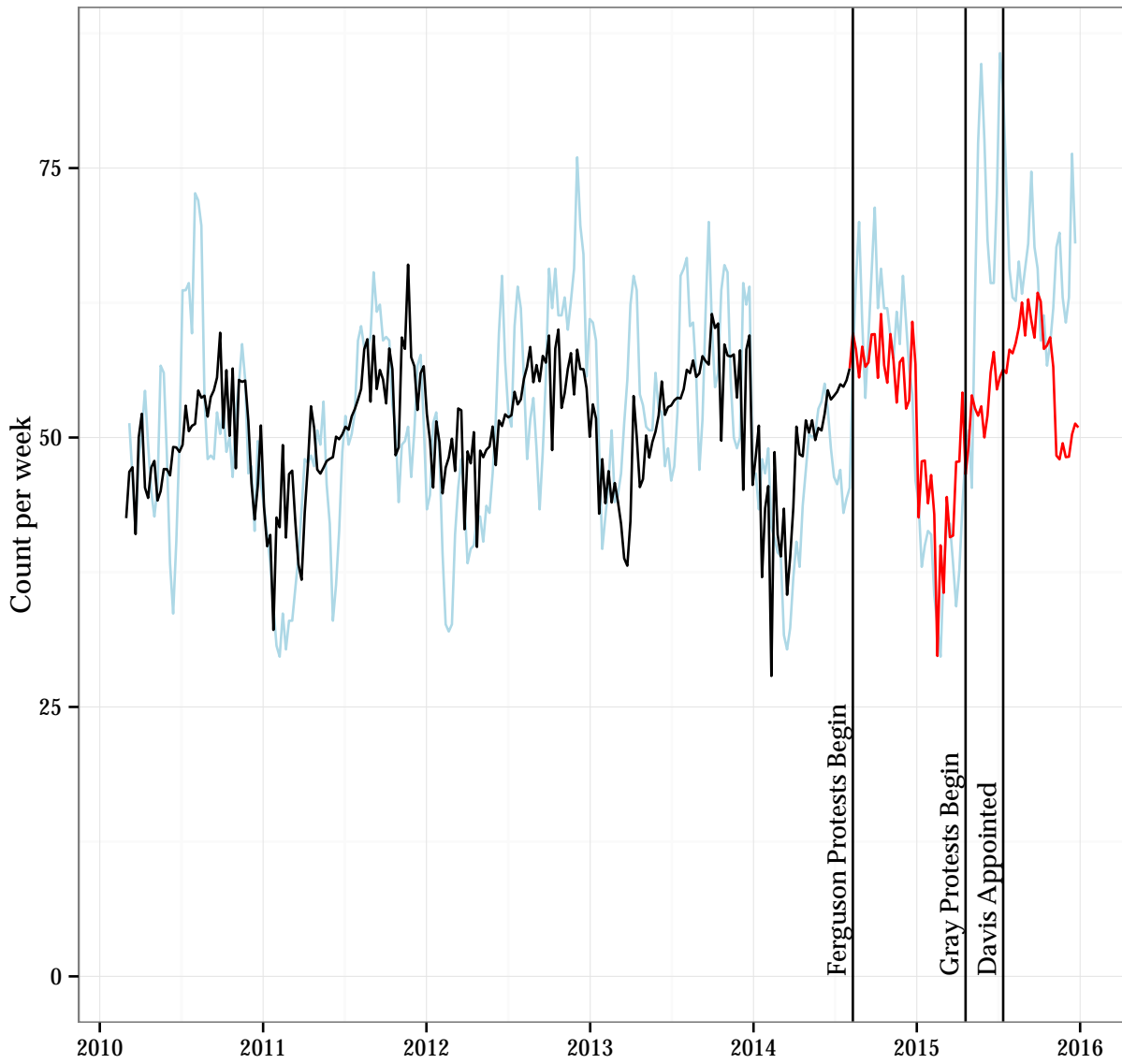
Null deviance: 703.34 on 231 degrees of freedom  
Residual deviance: 542.72 on 221 degrees of freedom  
AIC: 1895.3

Number of Fisher Scoring iterations: 4

# robbery.street



# robbery.street



## 9 Results for robbery.commercial

### 9.1 Summary Values for robbery.commercial

Table 9.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
robbery.commercial	232	10.569	4.376	2	10	25

Table 9.2: Descriptives for Outcome After Ferguson Protests Begin

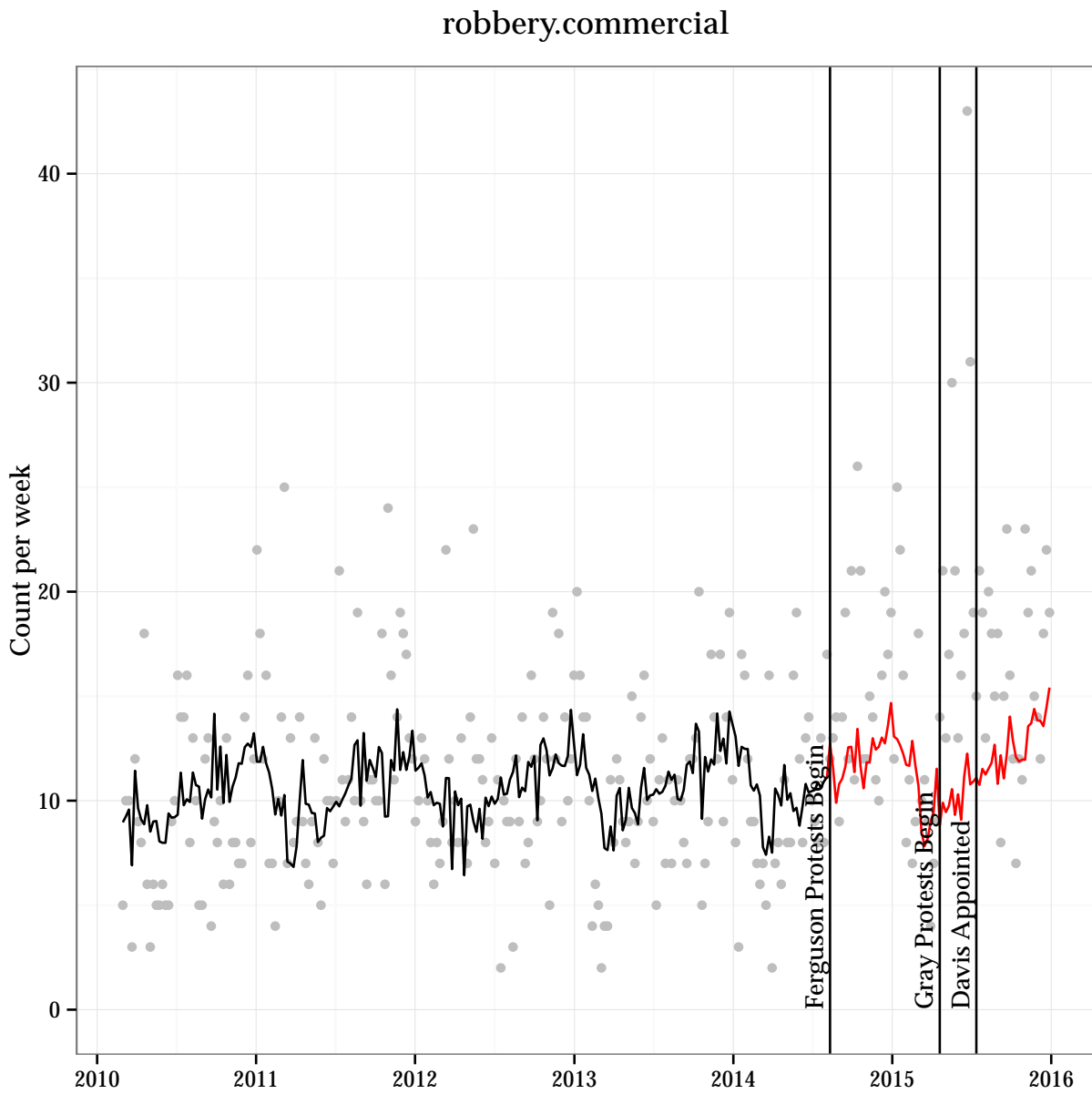
Statistic	N	Mean	St. Dev.	Min	Median	Max
robbery.commercial	73	15.863	6.297	4	15	43

## 9.2 Four Models for robbery.commercial

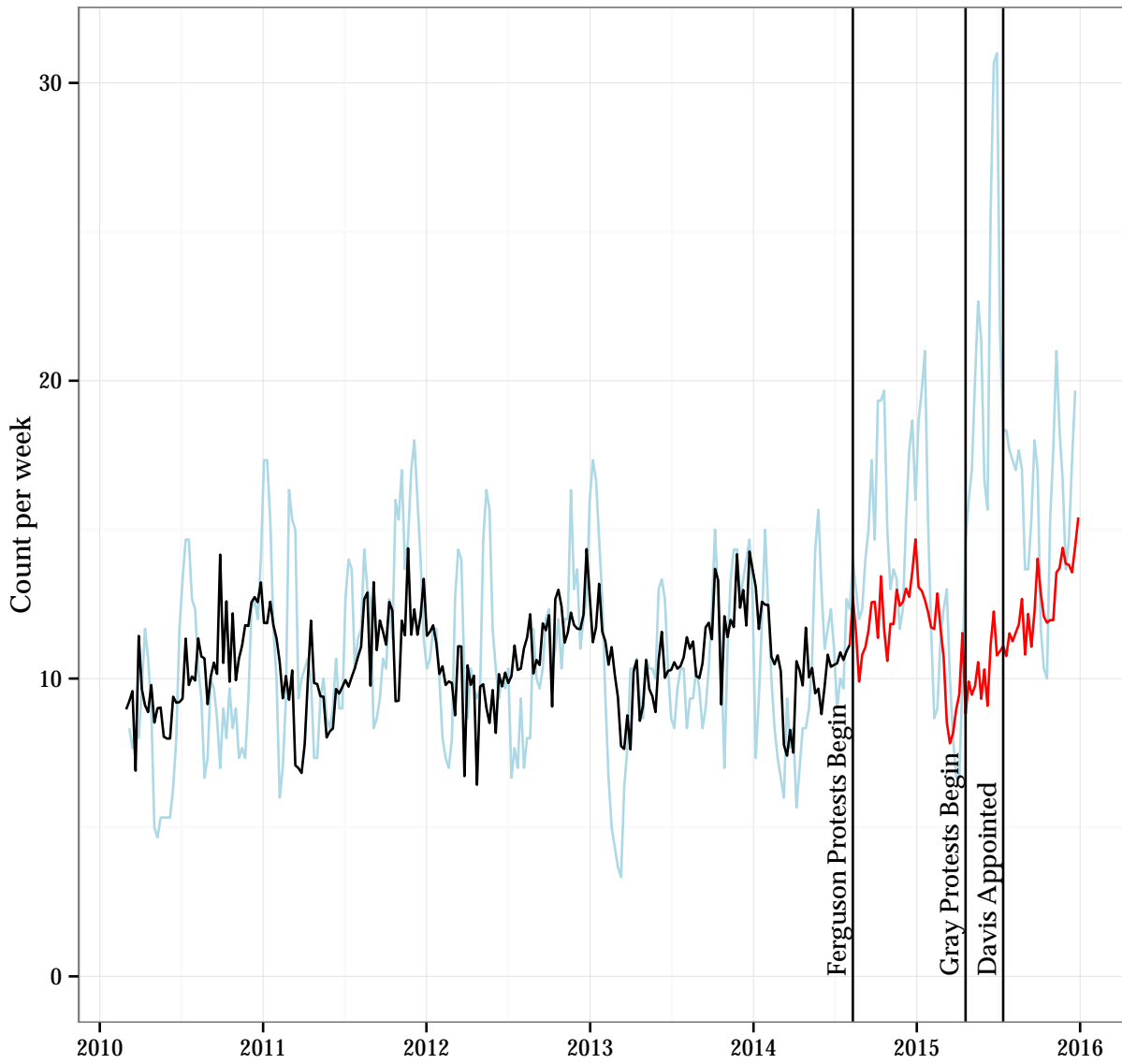
Table 9.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.003	0.005		0.004
After Ferguson Protests Begin (week of 8/11/14 onward)	2.74		2.12	2.30
After Gray Protests Begin (week of 4/20/15 onward)	7.50		9.03	8.97
Unrest and National Guard (during week of 4/27/15)	−0.35		−0.05	0.31
After Commissioner Batts Fired (week of 7/13/15 onward)	−5.19		−7.49	−7.48
Average Maximum Temperature to 50 Degrees		−0.09		−0.02
Plus Degrees in the 50s		0.08		−0.13
Plus Degrees in the 60s		0.43		0.70
Plus Degrees in the 70s		−0.52		−0.66
Plus Degrees greater than 80		0.11		0.10
Snowfall (inches)		−0.60		−0.94
Precipitation (inches)		2.75		3.61
Darkness Before Midnight (hours)		1.70		1.88
School Days (proportion of week)		−2.56		−3.34
Observations	305	232	305	305
R <sup>2</sup>	0.24	0.13	0.22	0.34

### 9.3 Least Squares Model (2) for robbery.commercial

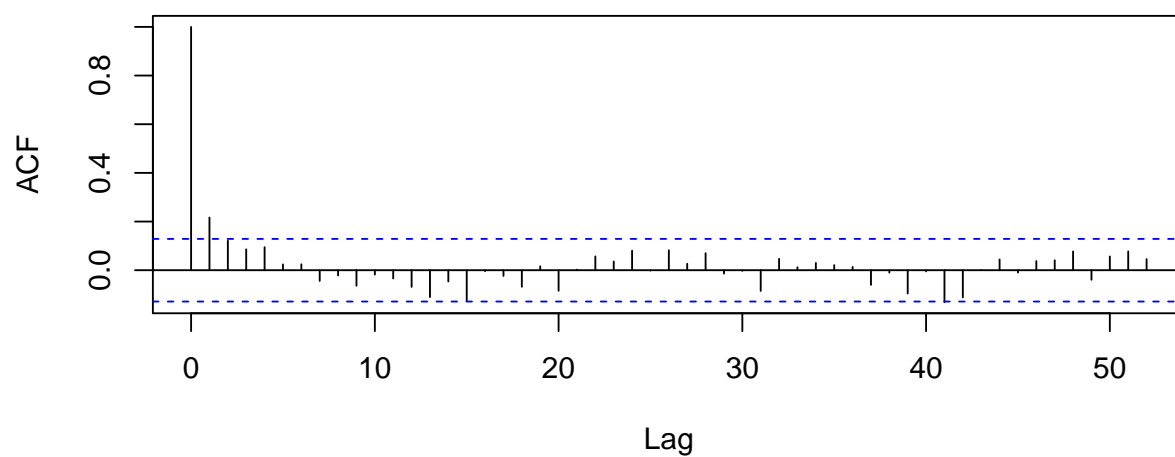


# robbery.commercial

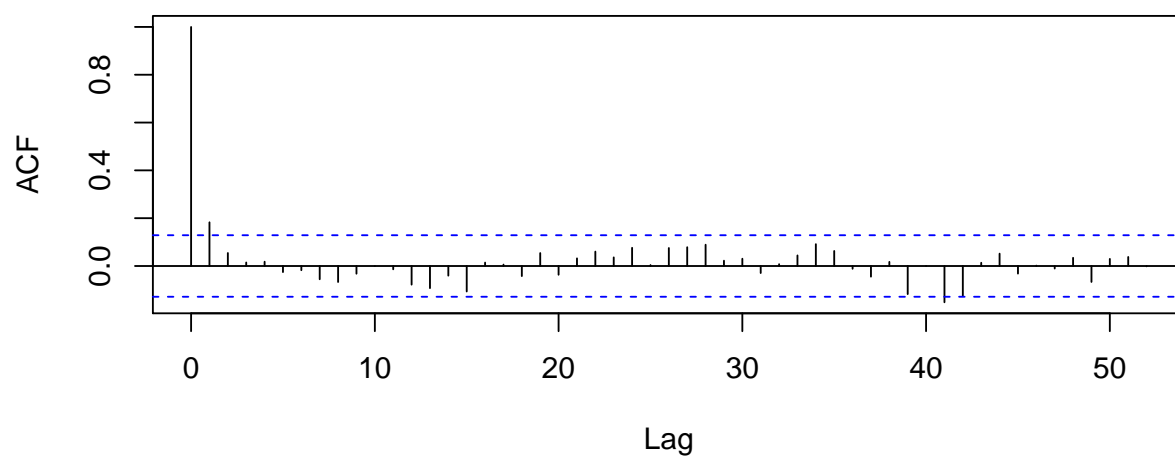




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 9.4 A Poisson Regression Model as an Alternative to Model (2) for robbery.commercial

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

Deviance Residuals:

Min	1Q	Median	3Q	Max
-3.3485	-0.9069	-0.1250	0.7197	4.0681

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	1.7481203	0.4049811	4.317	1.58e-05	***
t	0.0004627	0.0003141	1.473	0.14077	
tmax.f.spline1	-0.0080208	0.0073012	-1.099	0.27196	
tmax.f.spline2	0.0062707	0.0157604	0.398	0.69072	
tmax.f.spline3	0.0431014	0.0199994	2.155	0.03115	*
tmax.f.spline4	-0.0508913	0.0183077	-2.780	0.00544	**
tmax.f.spline5	0.0099556	0.0160577	0.620	0.53526	
snow.in	-0.0514877	0.0952686	-0.540	0.58889	
precip.in	0.2453300	0.1067963	2.297	0.02161	*
dark.before.12	0.1660912	0.0301154	5.515	3.48e-08	***
school	-0.2426033	0.0892249	-2.719	0.00655	**

---

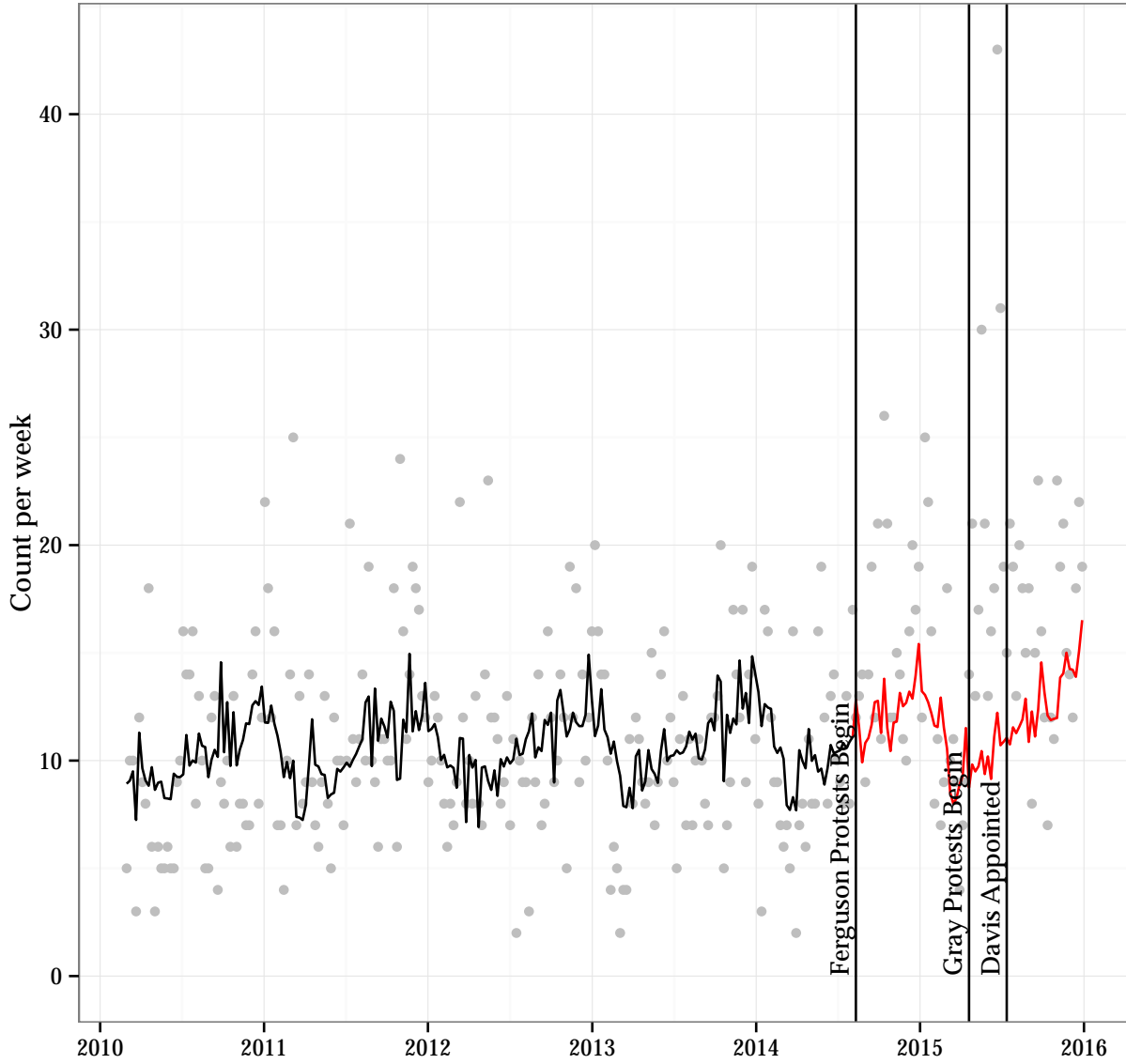
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

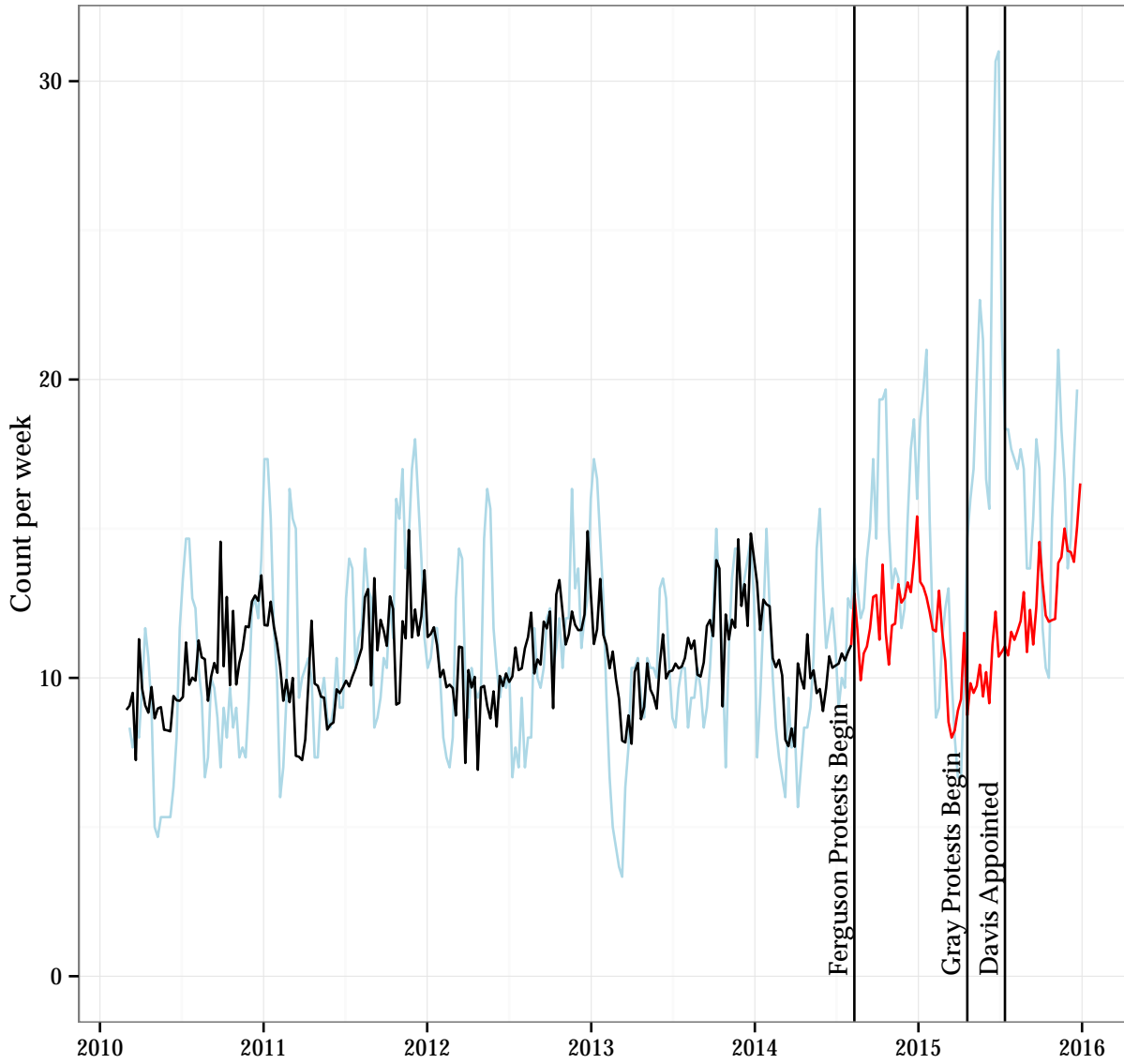
Null deviance: 415.77 on 231 degrees of freedom  
Residual deviance: 362.08 on 221 degrees of freedom  
AIC: 1340.5

Number of Fisher Scoring iterations: 4

# robbery.commercial



# robbery.commercial



## 10 Results for robbery.residence

### 10.1 Summary Values for robbery.residence

Table 10.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
robbery.residence	232	10.276	4.052	1	10	27

Table 10.2: Descriptives for Outcome After Ferguson Protests Begin

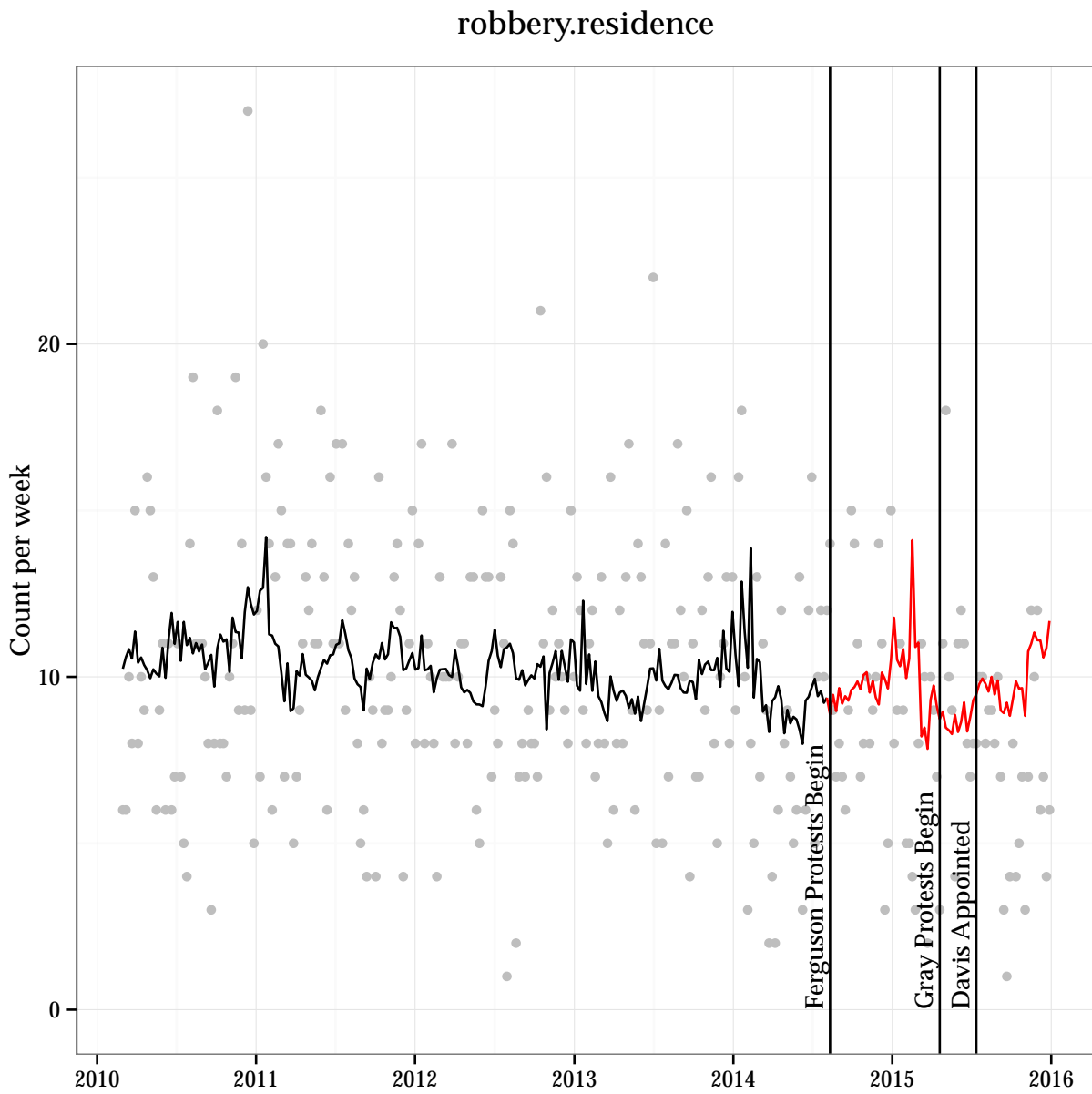
Statistic	N	Mean	St. Dev.	Min	Median	Max
robbery.residence	73	8.233	3.344	1	8	18

## 10.2 Four Models for robbery.residence

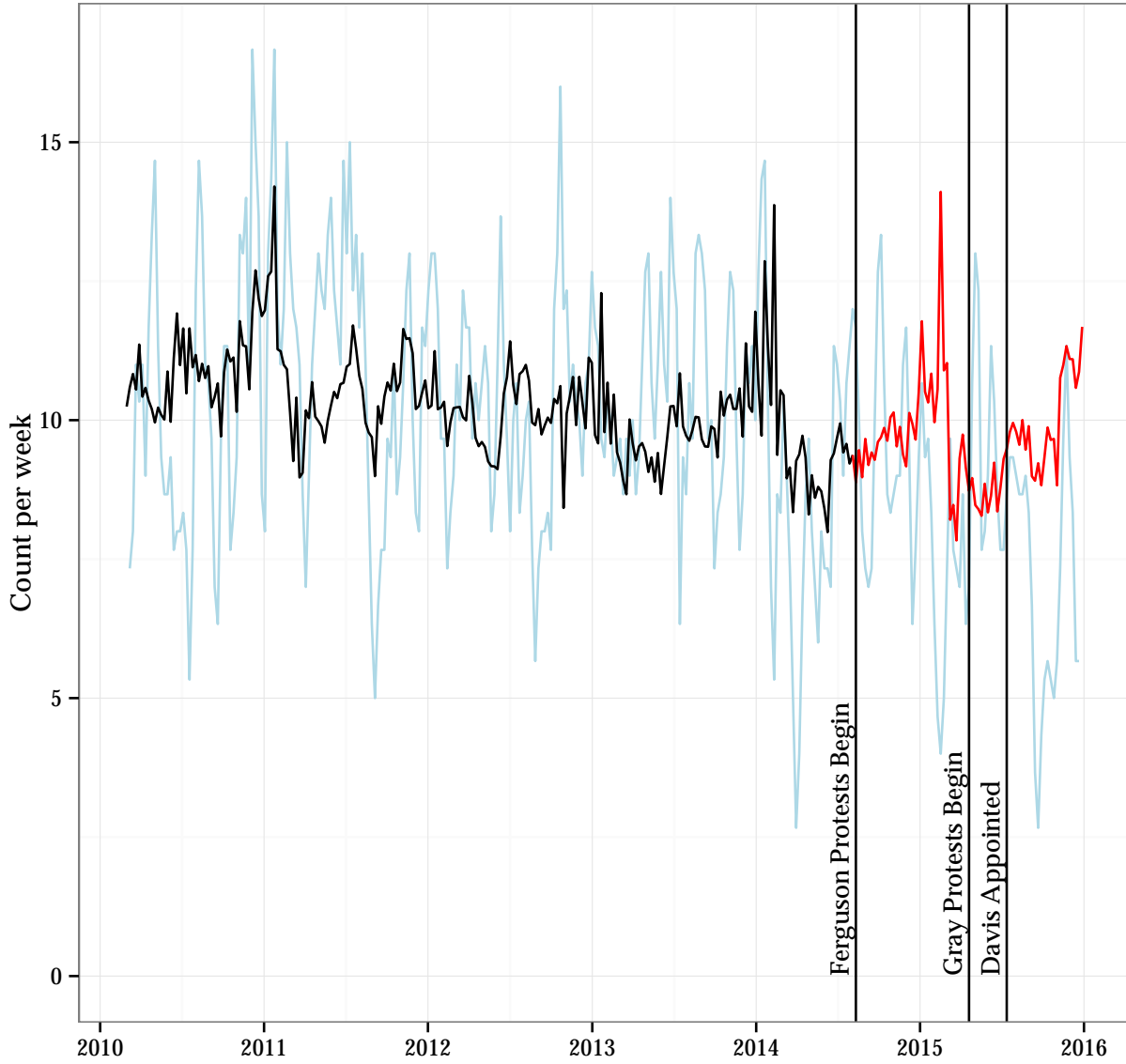
Table 10.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.01	−0.01		−0.01
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.76		−1.21	−0.98
After Gray Protests Begin (week of 4/20/15 onward)	0.70		1.72	1.44
Unrest and National Guard (during week of 4/27/15)	1.79		1.53	1.78
After Commissioner Batts Fired (week of 7/13/15 onward)	−1.94		−3.37	−3.17
Average Maximum Temperature to 50 Degrees		−0.13		−0.04
Plus Degrees in the 50s		0.27		0.14
Plus Degrees in the 60s		−0.14		−0.06
Plus Degrees in the 70s		−0.06		−0.07
Plus Degrees greater than 80		0.16		0.15
Snowfall (inches)		1.21		0.79
Precipitation (inches)		−1.07		−0.84
Darkness Before Midnight (hours)		0.51		0.65
School Days (proportion of week)		−1.06		−1.21
Observations	305	232	305	305
R <sup>2</sup>	0.07	0.05	0.05	0.10

### 10.3 Least Squares Model (2) for robbery.residence

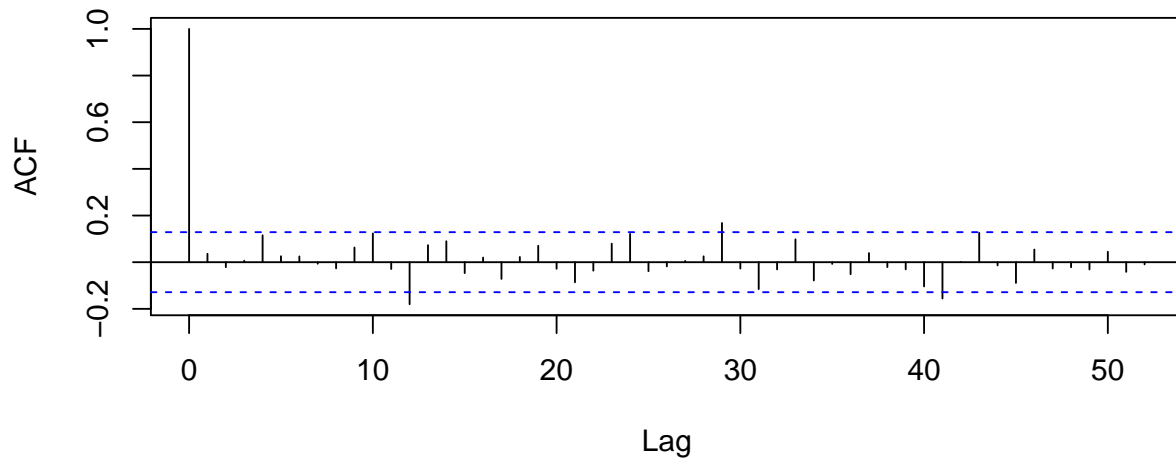


# robbery.residence

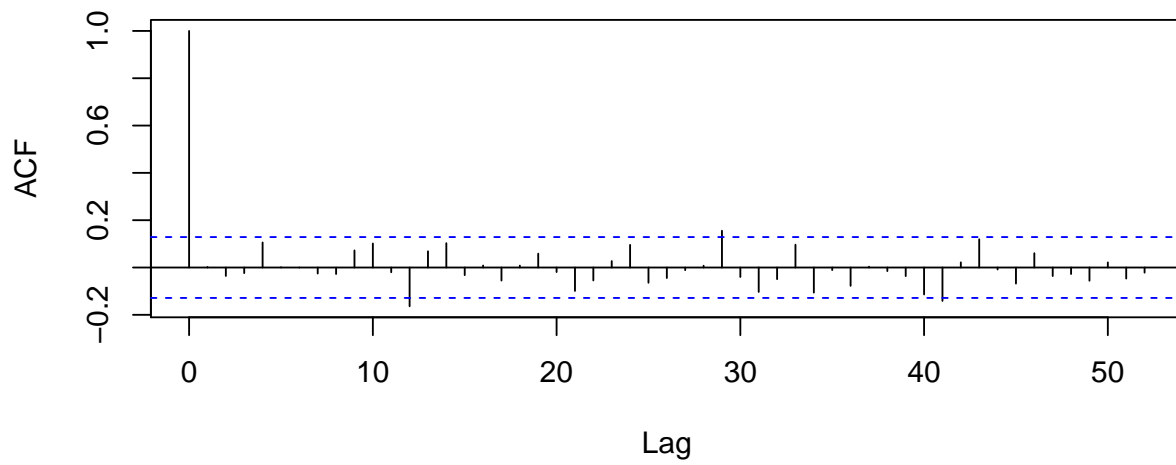




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



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

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

Deviance Residuals:

Min	1Q	Median	3Q	Max
-3.8711	-0.9067	-0.0681	0.8078	3.4436

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	2.6614262	0.4124000	6.454	1.09e-10	***
t	-0.0005602	0.0003166	-1.769	0.0768	.
tmax.f.spline1	-0.0116436	0.0074481	-1.563	0.1180	
tmax.f.spline2	0.0252532	0.0157333	1.605	0.1085	
tmax.f.spline3	-0.0125825	0.0194718	-0.646	0.5182	
tmax.f.spline4	-0.0060145	0.0184200	-0.327	0.7440	
tmax.f.spline5	0.0154016	0.0161009	0.957	0.3388	
snow.in	0.1030499	0.0887432	1.161	0.2456	
precip.in	-0.1092442	0.1197418	-0.912	0.3616	
dark.before.12	0.0501403	0.0300398	1.669	0.0951	.
school	-0.1052944	0.0914853	-1.151	0.2498	

---

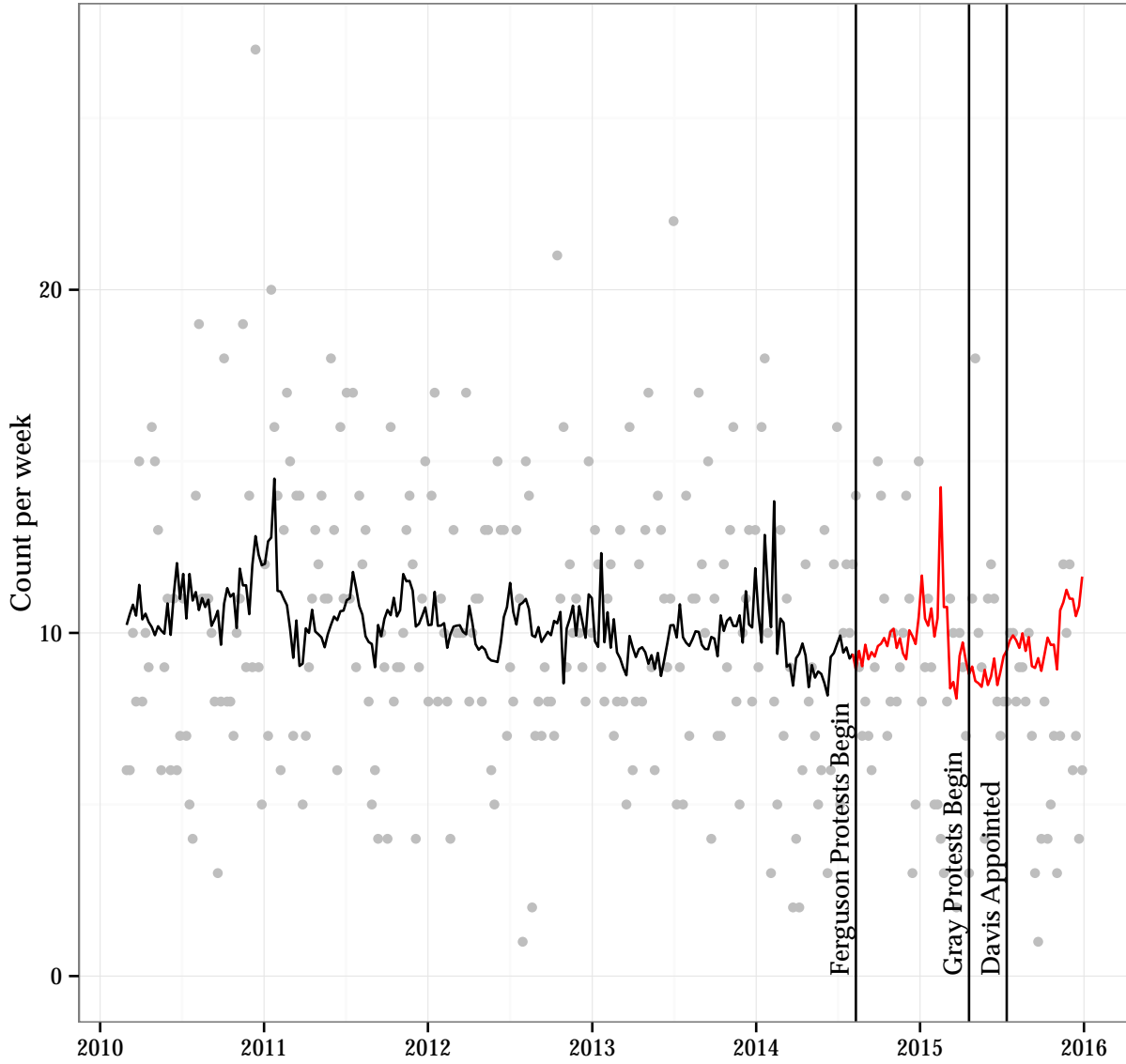
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

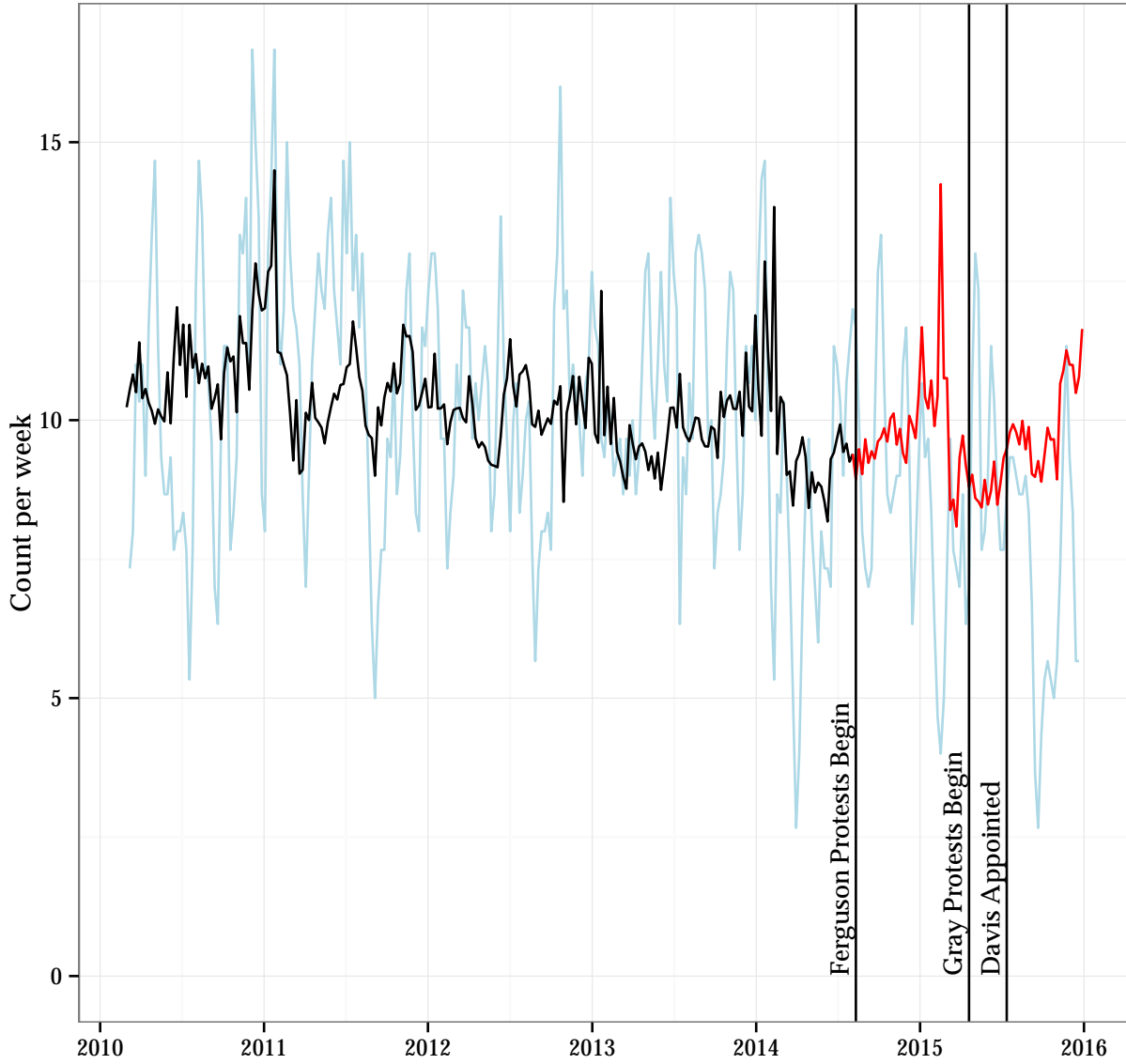
Null deviance: 377.06 on 231 degrees of freedom  
Residual deviance: 358.14 on 221 degrees of freedom  
AIC: 1330.7

Number of Fisher Scoring iterations: 4

# robbery.residence



# robbery.residence



## 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	Median	Max
aggravated.assault	232	95.315	19.169	47	94	150

Table 11.2: Descriptives for Outcome After Ferguson Protests Begin

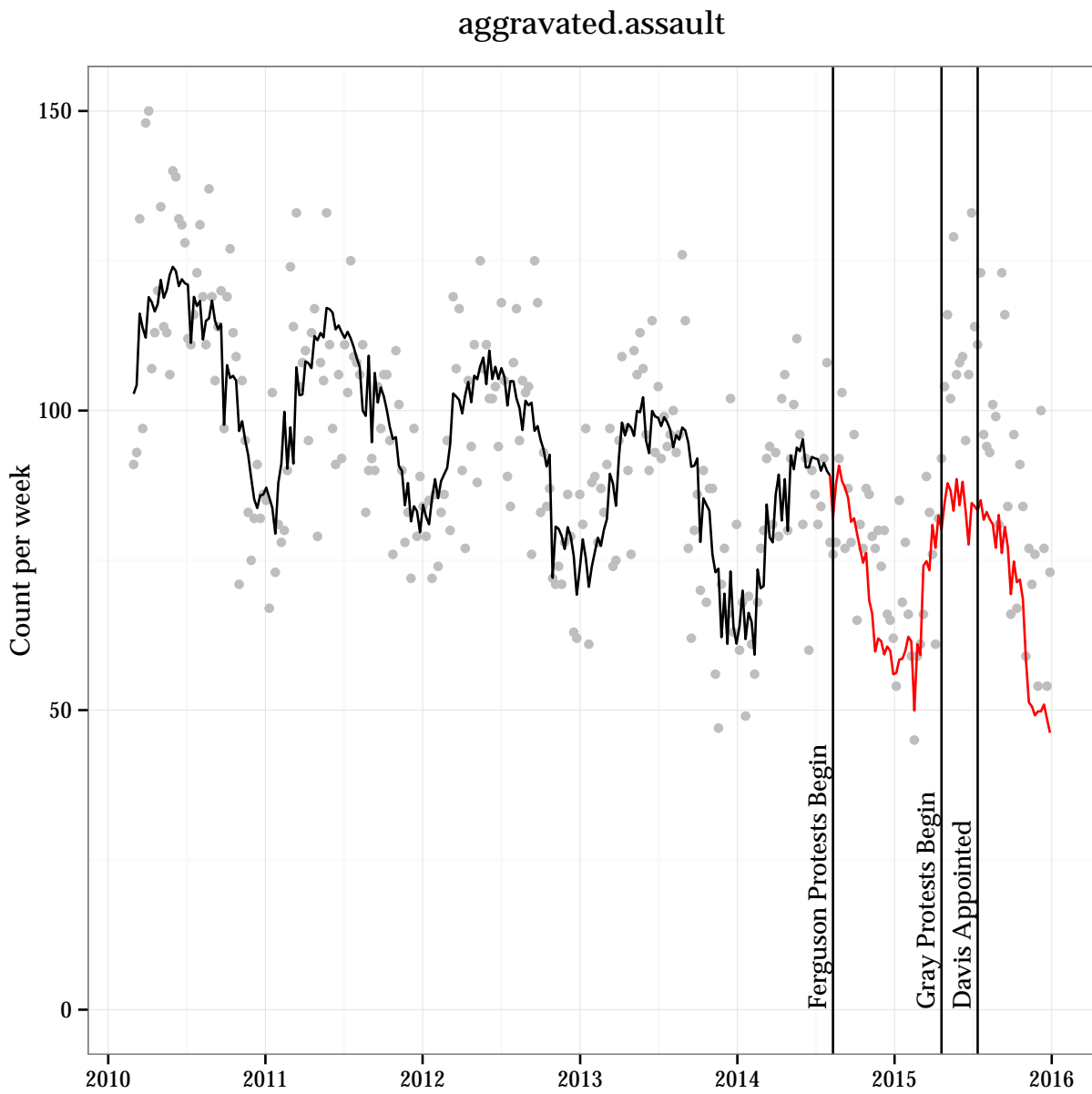
Statistic	N	Mean	St. Dev.	Min	Median	Max
aggravated.assault	73	84.630	19.478	45	81	133

## 11.2 Four Models for aggravated.assault

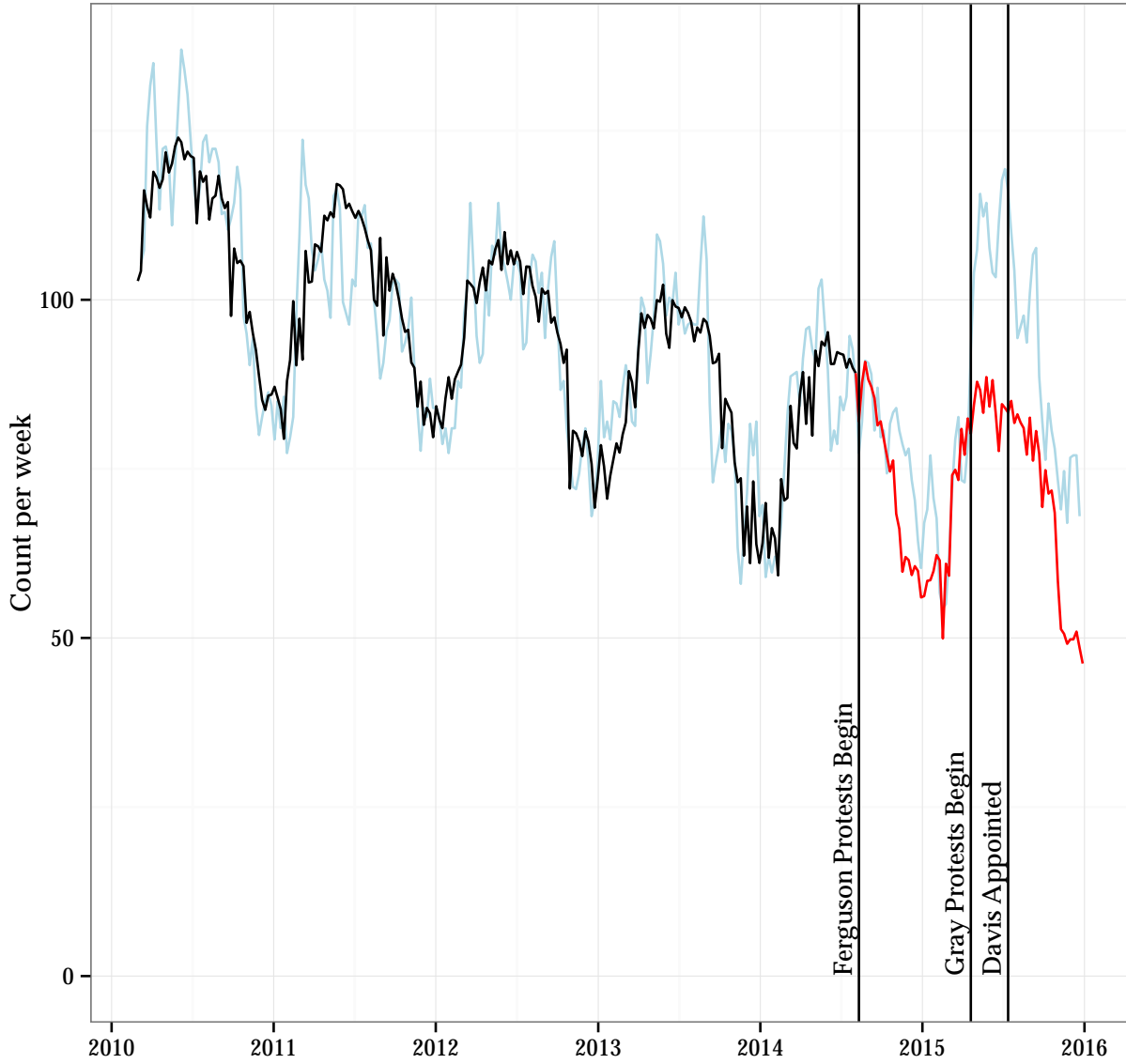
Table 11.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.15	−0.13		−0.13
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.66		4.53	4.25
After Gray Protests Begin (week of 4/20/15 onward)	38.65		21.08	21.66
Unrest and National Guard (during week of 4/27/15)	−6.72		−6.06	−4.35
After Commissioner Batts Fired (week of 7/13/15 onward)	−20.70		−6.98	−7.96
Average Maximum Temperature to 50 Degrees		0.39		0.33
Plus Degrees in the 50s		0.13		−0.04
Plus Degrees in the 60s		−0.39		−0.11
Plus Degrees in the 70s		0.14		0.37
Plus Degrees greater than 80		−0.21		−0.49
Snowfall (inches)		−2.29		−4.37
Precipitation (inches)		−13.01		−12.45
Darkness Before Midnight (hours)		−5.34		−4.76
School Days (proportion of week)		4.97		6.32
Observations	305	232	305	305
R <sup>2</sup>	0.34	0.59	0.24	0.62

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

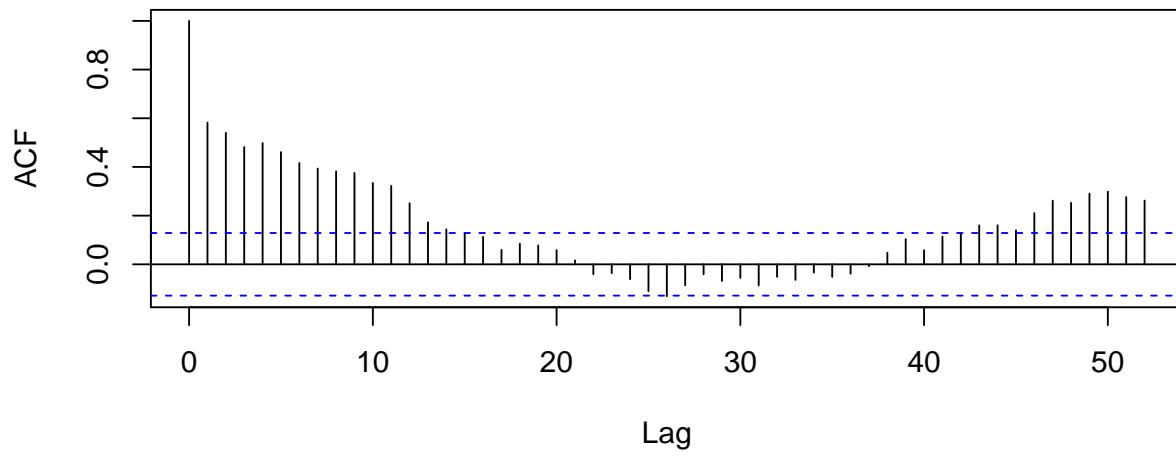


# aggravated.assault

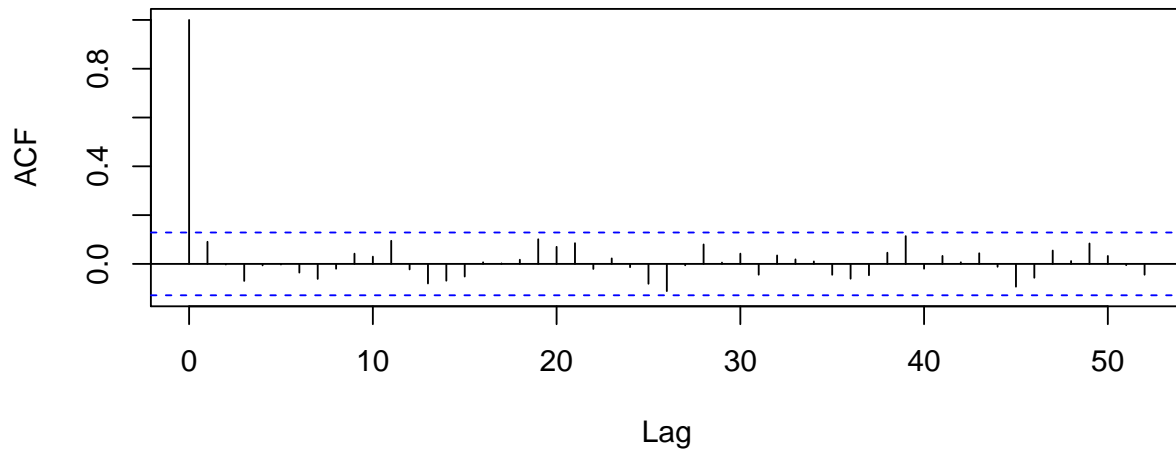




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from 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
-3.4957	-0.8568	-0.0141	0.6979	3.1426

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	4.6945787	0.1508006	31.131	< 2e-16 ***
t	-0.0013868	0.0001032	-13.439	< 2e-16 ***
tmax.f.spline1	0.0048931	0.0027872	1.756	0.079160 .
tmax.f.spline2	0.0014124	0.0055041	0.257	0.797480
tmax.f.spline3	-0.0054006	0.0064601	-0.836	0.403156
tmax.f.spline4	0.0017940	0.0058795	0.305	0.760265
tmax.f.spline5	-0.0028612	0.0050389	-0.568	0.570160
snow.in	-0.0435809	0.0380276	-1.146	0.251781
precip.in	-0.1364102	0.0386309	-3.531	0.000414 ***
dark.before.12	-0.0572183	0.0099424	-5.755	8.67e-09 ***
school	0.0493643	0.0297951	1.657	0.097562 .

---

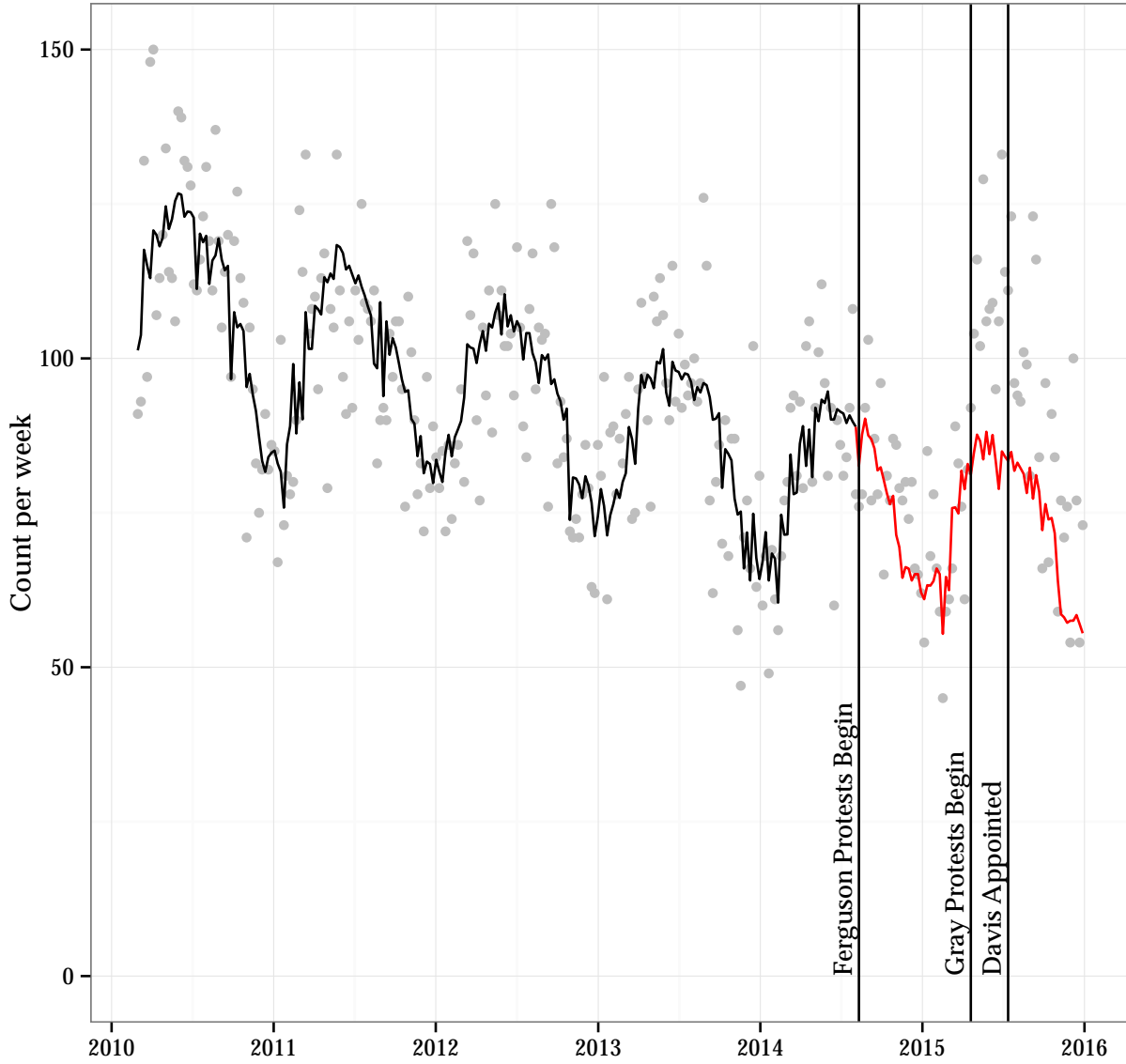
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

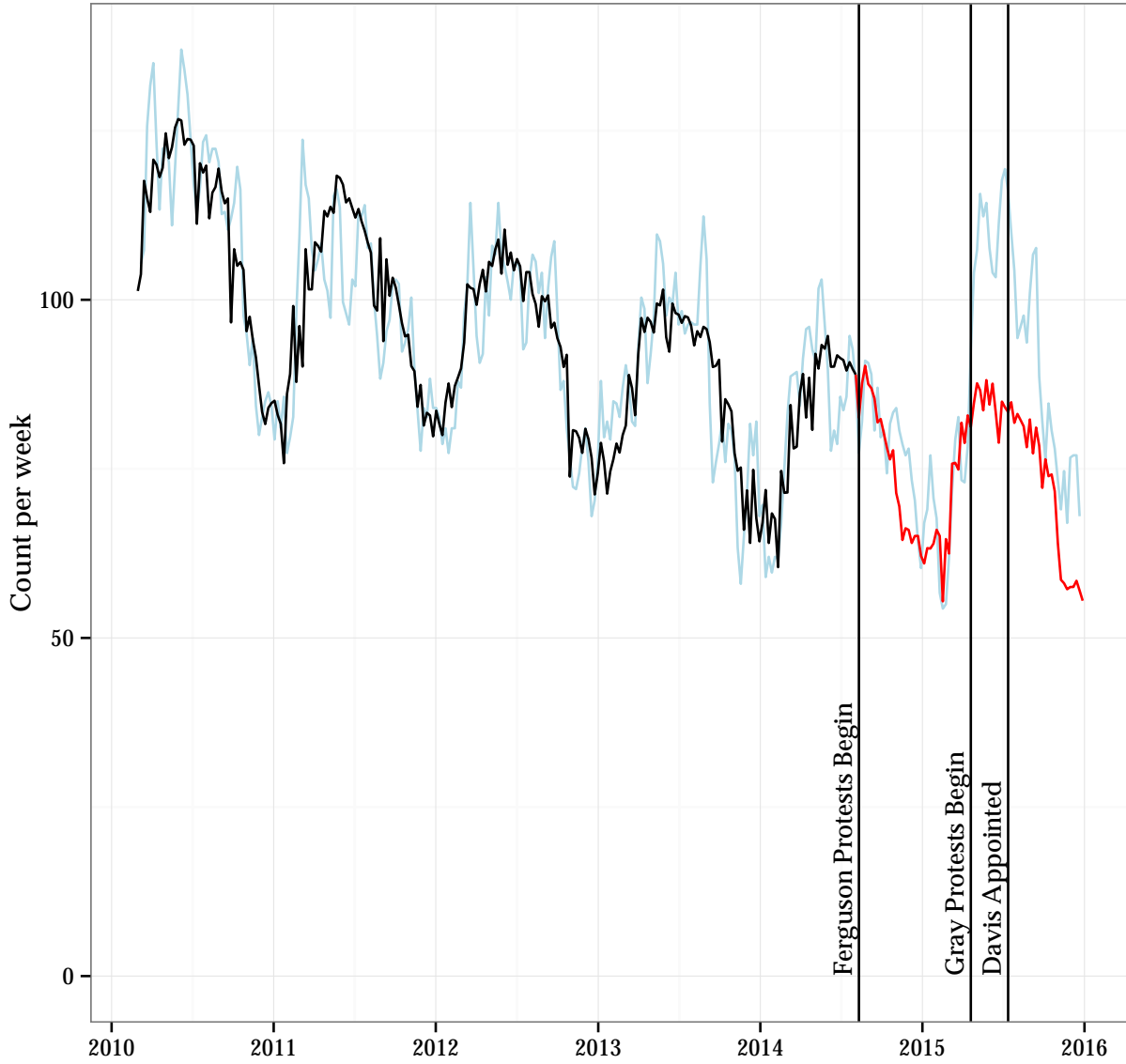
Null deviance: 895.77 on 231 degrees of freedom  
Residual deviance: 360.27 on 221 degrees of freedom  
AIC: 1861.5

Number of Fisher Scoring iterations: 4

# aggravated.assault



# aggravated.assault



## 12 Results for assault.by.threat

### 12.1 Summary Values for assault.by.threat

Table 12.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
assault.by.threat	232	12.366	4.351	1	12	28

Table 12.2: Descriptives for Outcome After Ferguson Protests Begin

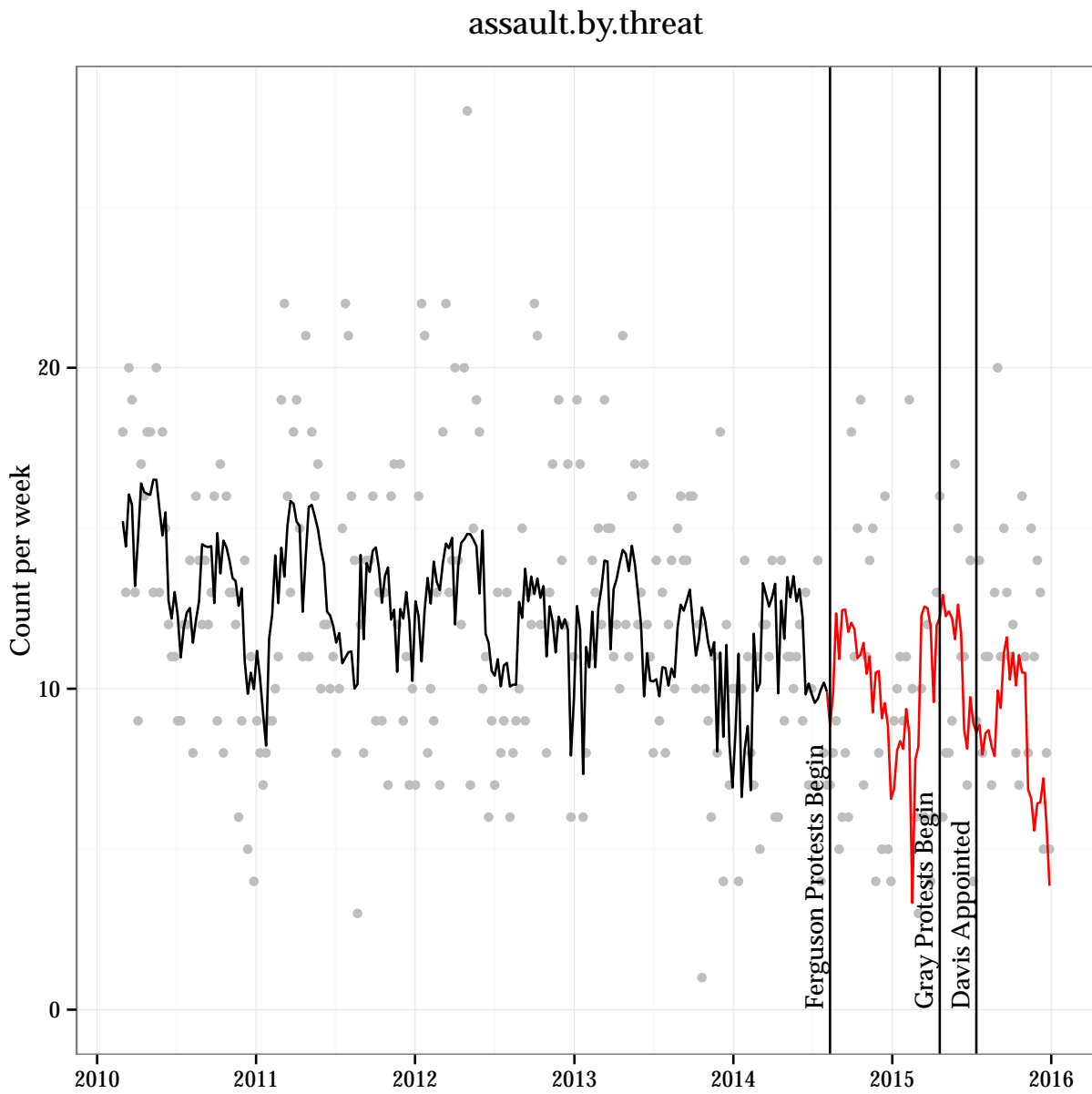
Statistic	N	Mean	St. Dev.	Min	Median	Max
assault.by.threat	73	10.164	4.127	3	10	20

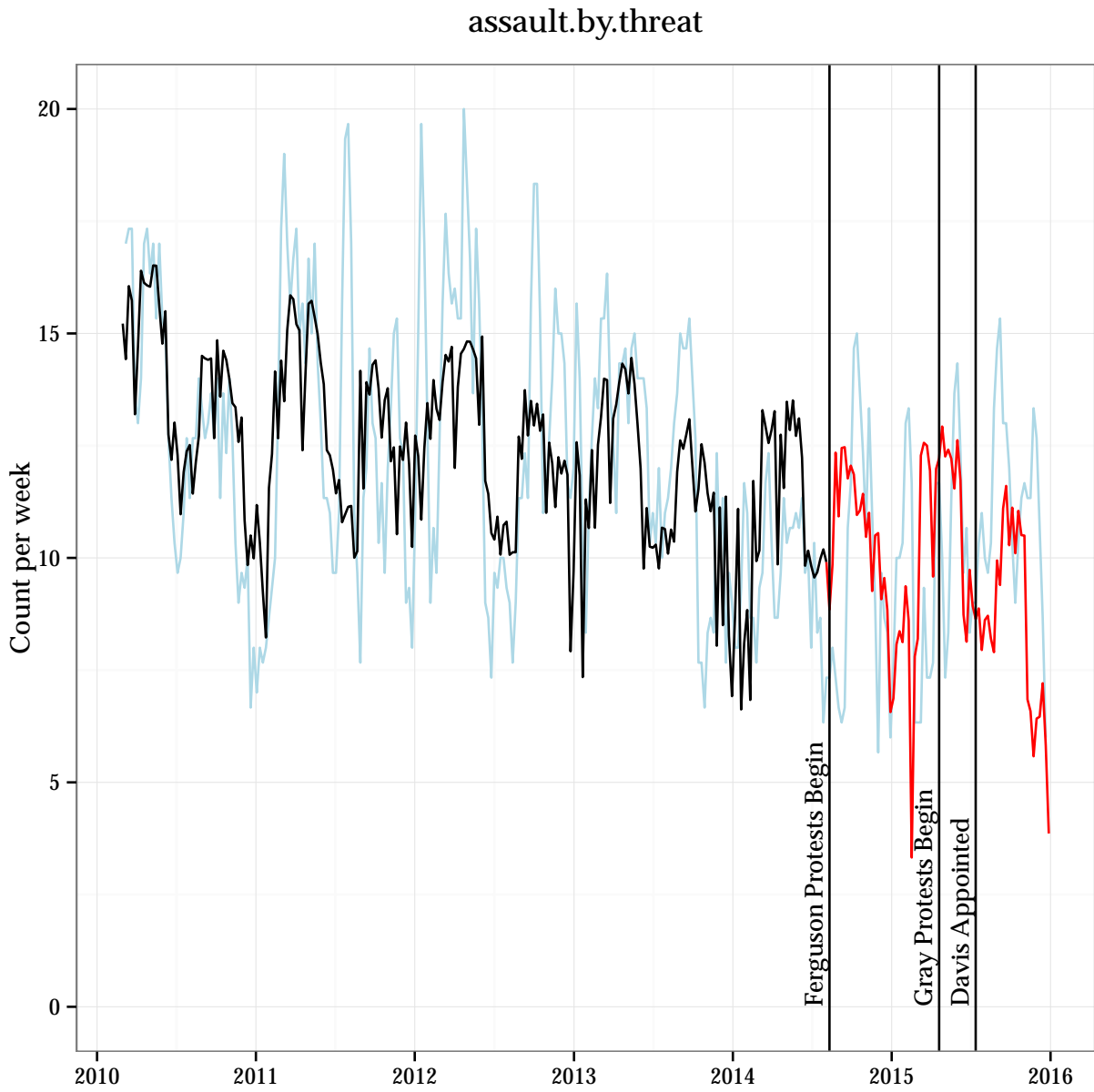
## 12.2 Four Models for assault.by.threat

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

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.01	−0.01		−0.01
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.93		−0.60	−0.90
After Gray Protests Begin (week of 4/20/15 onward)	1.83		0.55	0.95
Unrest and National Guard (during week of 4/27/15)	−4.98		−6.88	−6.93
After Commissioner Batts Fired (week of 7/13/15 onward)	0.40		2.56	1.87
Average Maximum Temperature to 50 Degrees		0.23		0.09
Plus Degrees in the 50s		−0.31		−0.12
Plus Degrees in the 60s		0.09		0.05
Plus Degrees in the 70s		−0.08		−0.11
Plus Degrees greater than 80		−0.03		0.05
Snowfall (inches)		−0.60		−1.09
Precipitation (inches)		−2.40		−2.14
Darkness Before Midnight (hours)		−0.89		−0.79
School Days (proportion of week)		3.87		4.19
Observations	305	232	305	305
R <sup>2</sup>	0.10	0.21	0.04	0.22

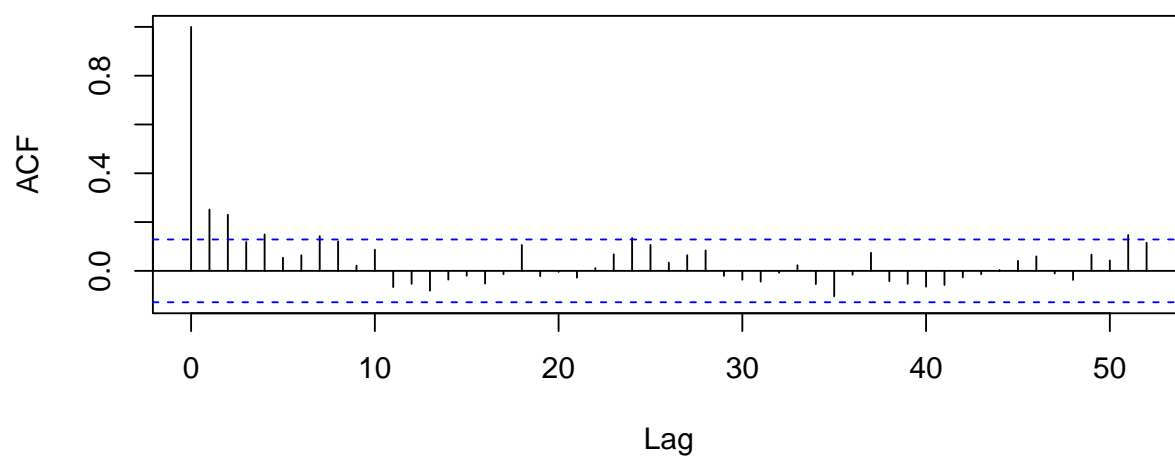
### 12.3 Least Squares Model (2) for assault.by.threat



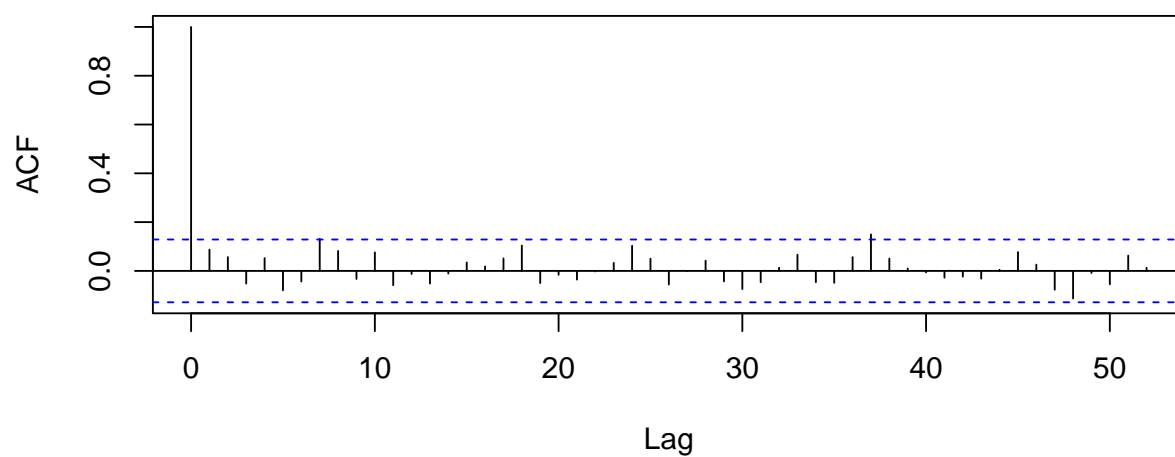




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 12.4 A Poisson Regression Model as an Alternative to Model (2) for assault.by.threat

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

Deviance Residuals:

Min	1Q	Median	3Q	Max
-4.2261	-0.7272	-0.1242	0.6598	3.0441

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	1.9030408	0.4150922	4.585	4.55e-06	***
t	-0.0011291	0.0002875	-3.928	8.58e-05	***
tmax.f.spline1	0.0213223	0.0076794	2.777	0.005494	**
tmax.f.spline2	-0.0283304	0.0146808	-1.930	0.053636	.
tmax.f.spline3	0.0073556	0.0171478	0.429	0.667956	
tmax.f.spline4	-0.0052617	0.0159752	-0.329	0.741878	
tmax.f.spline5	-0.0026327	0.0146432	-0.180	0.857318	
snow.in	-0.0797787	0.1092436	-0.730	0.465217	
precip.in	-0.1941217	0.1083544	-1.792	0.073206	.
dark.before.12	-0.0690565	0.0264352	-2.612	0.008994	**
school	0.3204446	0.0855362	3.746	0.000179	***

---

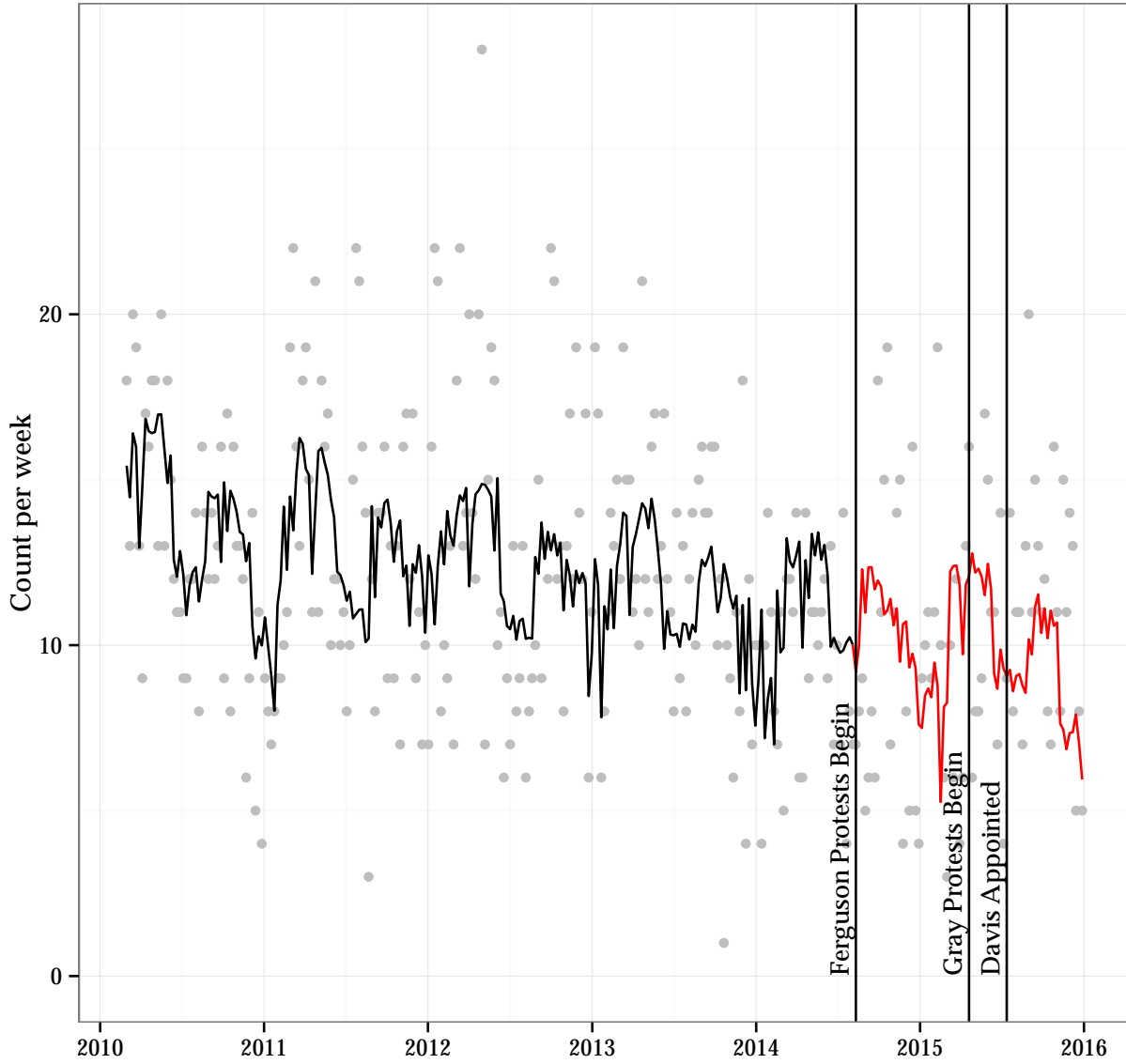
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

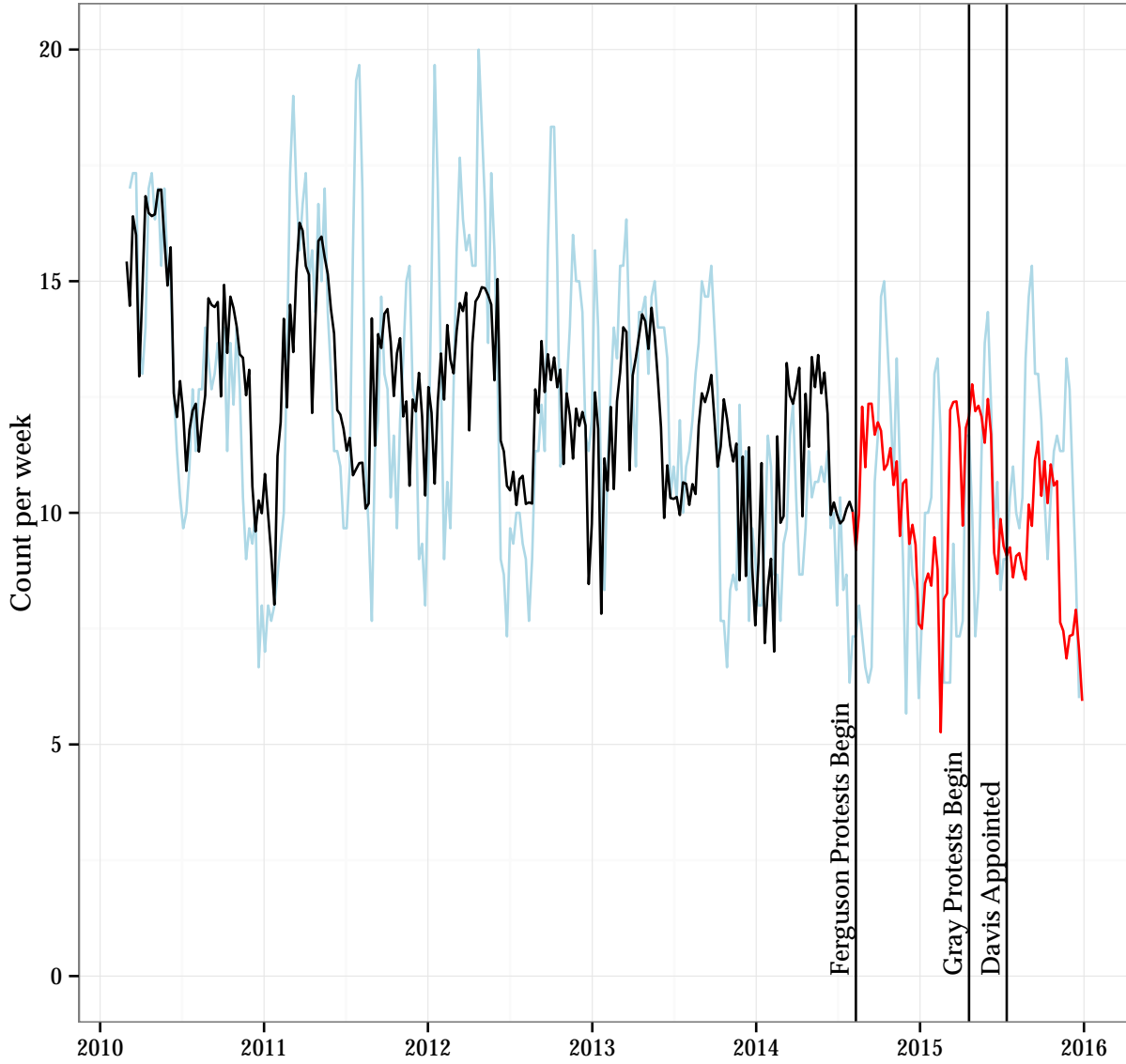
Null deviance: 361.75 on 231 degrees of freedom  
Residual deviance: 285.46 on 221 degrees of freedom  
AIC: 1304.6

Number of Fisher Scoring iterations: 4

# assault.by.threat



assault.by.threat



## 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	Median	Max
common.assault	232	170.198	25.481	100	170.5	241

Table 13.2: Descriptives for Outcome After Ferguson Protests Begin

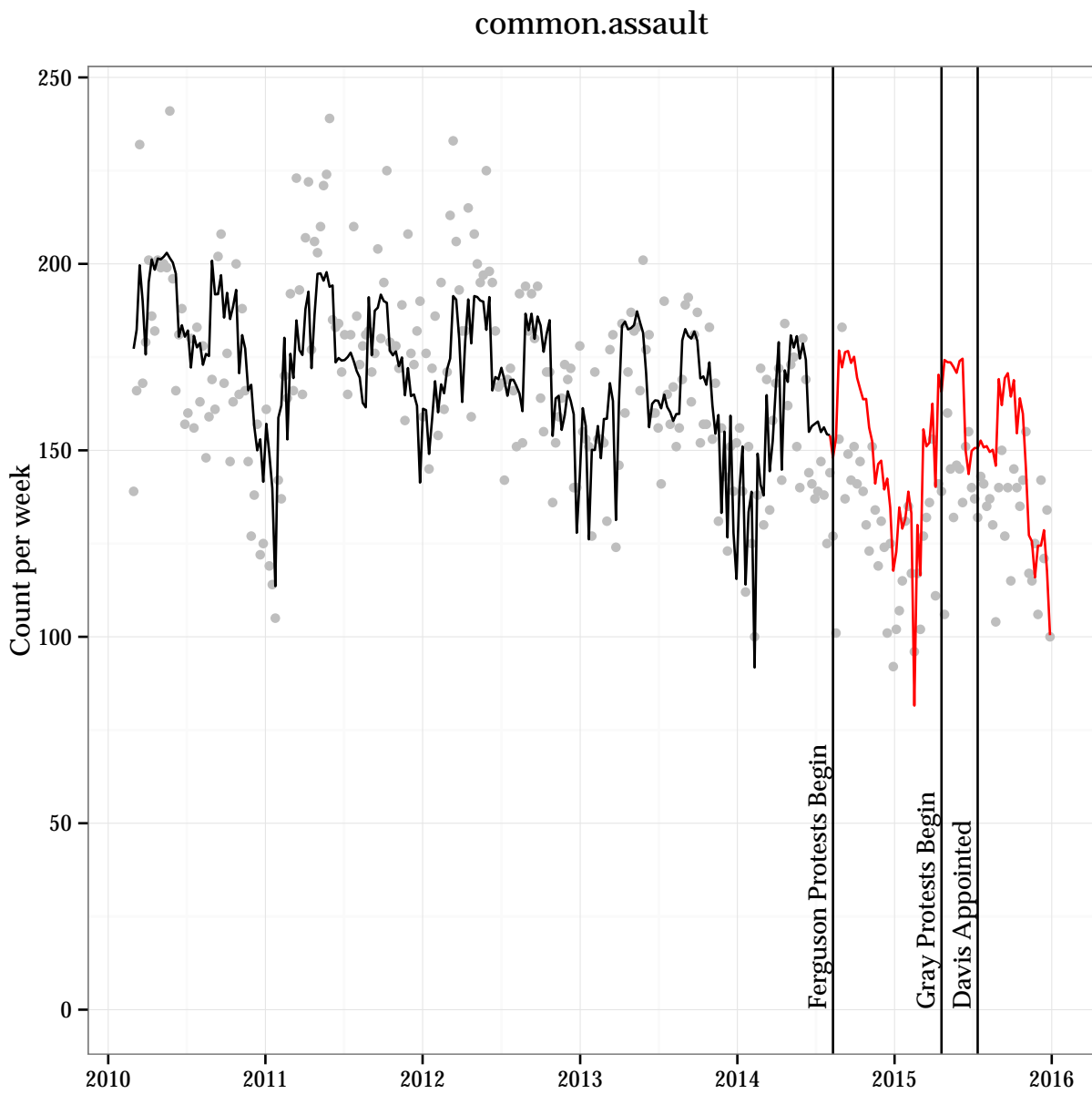
Statistic	N	Mean	St. Dev.	Min	Median	Max
common.assault	73	131.301	17.511	92	135	183

## 13.2 Four Models for common.assault

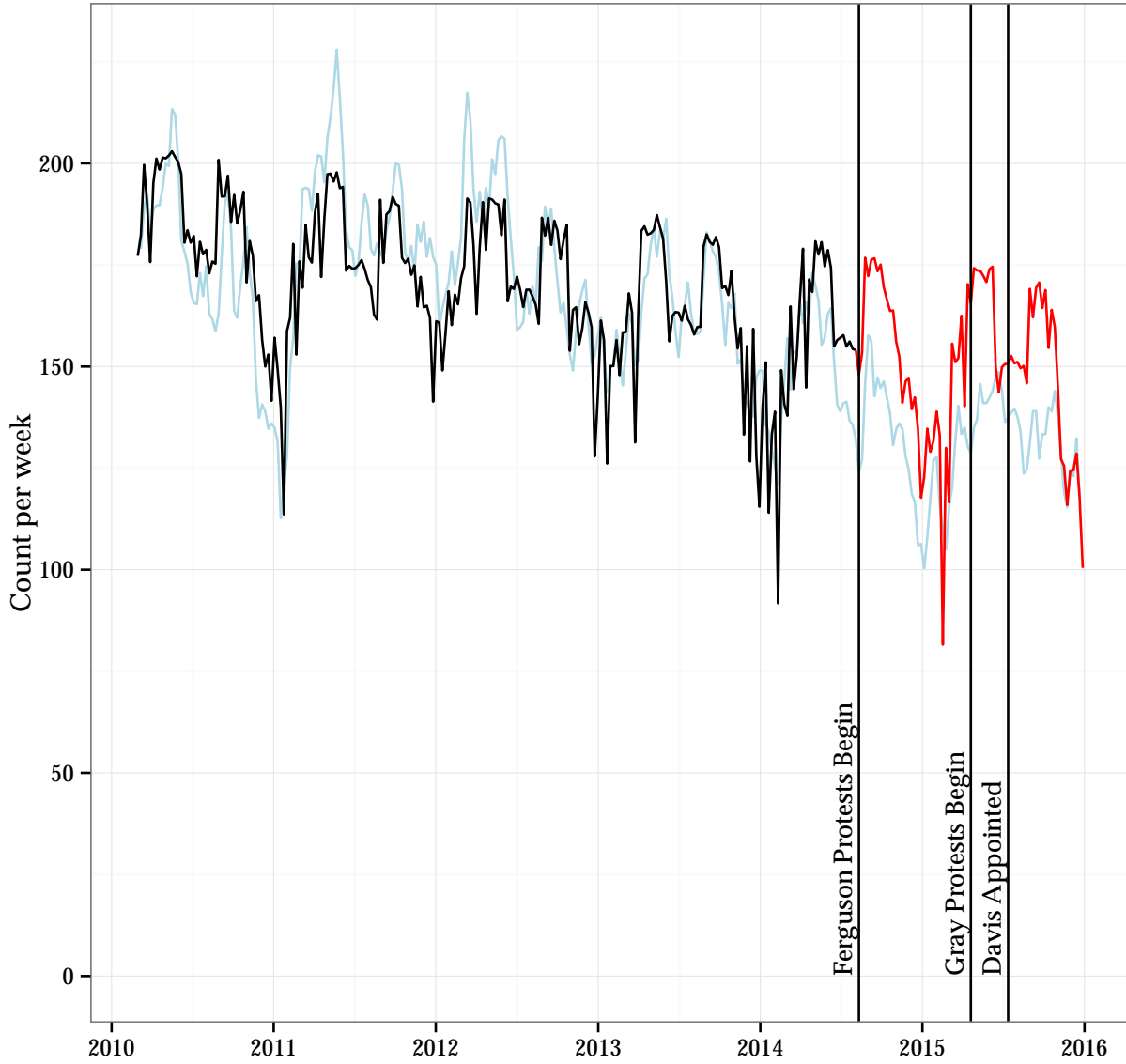
Table 13.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.14	−0.11		−0.11
After Ferguson Protests Begin (week of 8/11/14 onward)	−23.50		−20.02	−21.13
After Gray Protests Begin (week of 4/20/15 onward)	19.13		0.70	2.73
Unrest and National Guard (during week of 4/27/15)	−38.85		−48.90	−47.45
After Commissioner Batts Fired (week of 7/13/15 onward)	−10.87		4.44	2.10
Average Maximum Temperature to 50 Degrees		1.09		0.64
Plus Degrees in the 50s		−0.27		0.14
Plus Degrees in the 60s		0.33		0.11
Plus Degrees in the 70s		−1.48		−1.12
Plus Degrees greater than 80		0.66		0.63
Snowfall (inches)		−17.23		−17.63
Precipitation (inches)		−11.86		−10.78
Darkness Before Midnight (hours)		−2.84		−3.12
School Days (proportion of week)		32.65		30.51
Observations	305	232	305	305
R <sup>2</sup>	0.42	0.52	0.20	0.67

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

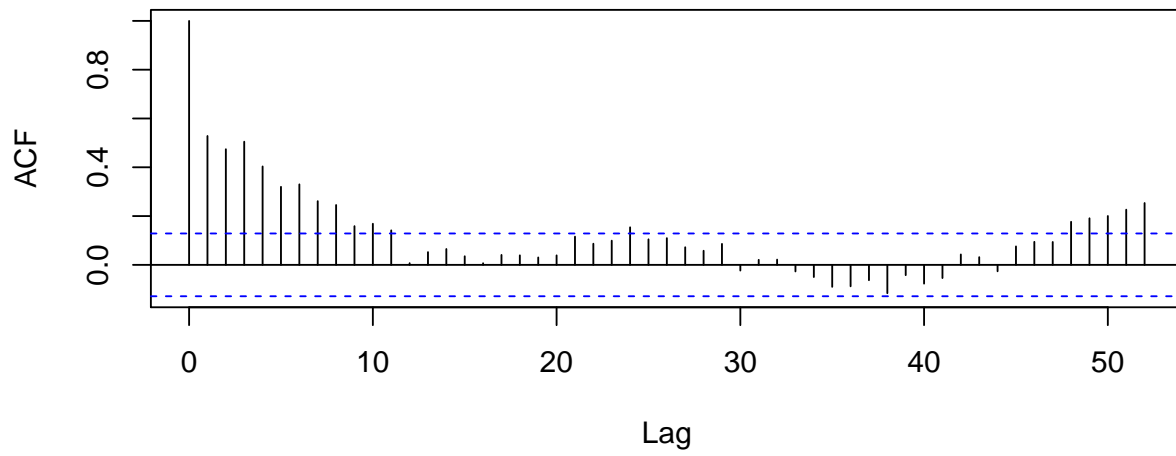


# common.assault

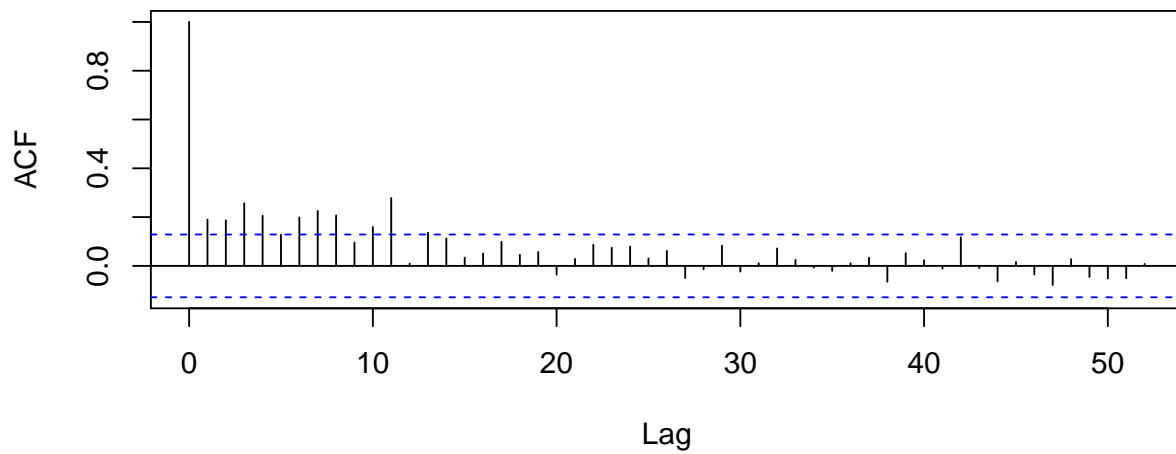




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from 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)

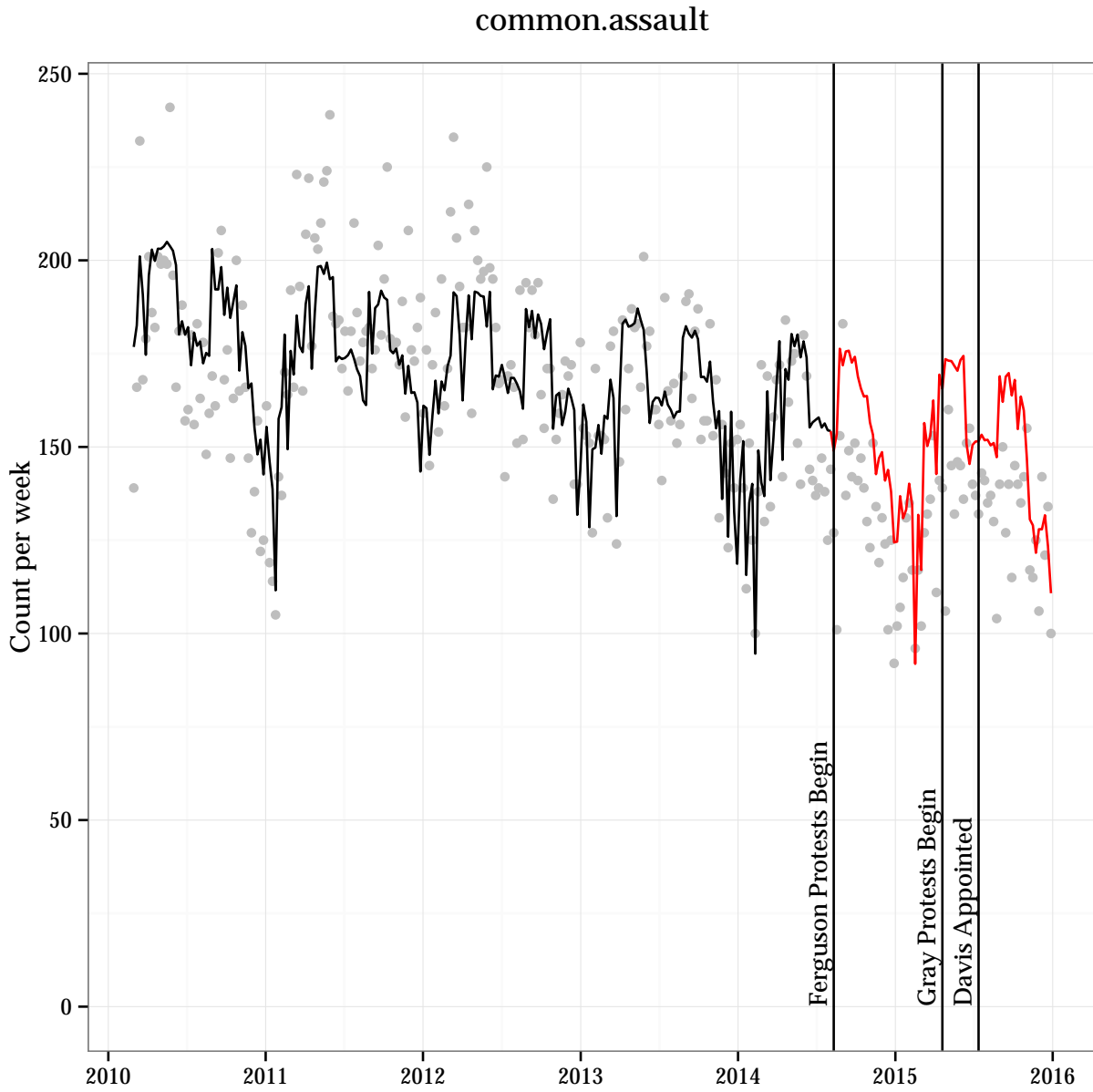
Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.2339  -0.8775  -0.1134   0.7335   3.7049

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)  4.7983191  0.1102559  43.520 < 2e-16 ***
t            -0.0006170  0.0000775  -7.961 1.71e-15 ***
tmax.f.spline1  0.0071750  0.0020416   3.514 0.000441 ***
tmax.f.spline2 -0.0024000  0.0040371  -0.594 0.552189
tmax.f.spline3  0.0014303  0.0047532   0.301 0.763475
tmax.f.spline4 -0.0079149  0.0043671  -1.812 0.069926 .
tmax.f.spline5  0.0039139  0.0038650   1.013 0.311226
snow.in       -0.1446074  0.0296088  -4.884 1.04e-06 ***
precip.in     -0.0674244  0.0284086  -2.373 0.017626 *
dark.before.12 -0.0171620  0.0072945  -2.353 0.018636 *
school        0.1922177  0.0227221   8.460 < 2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

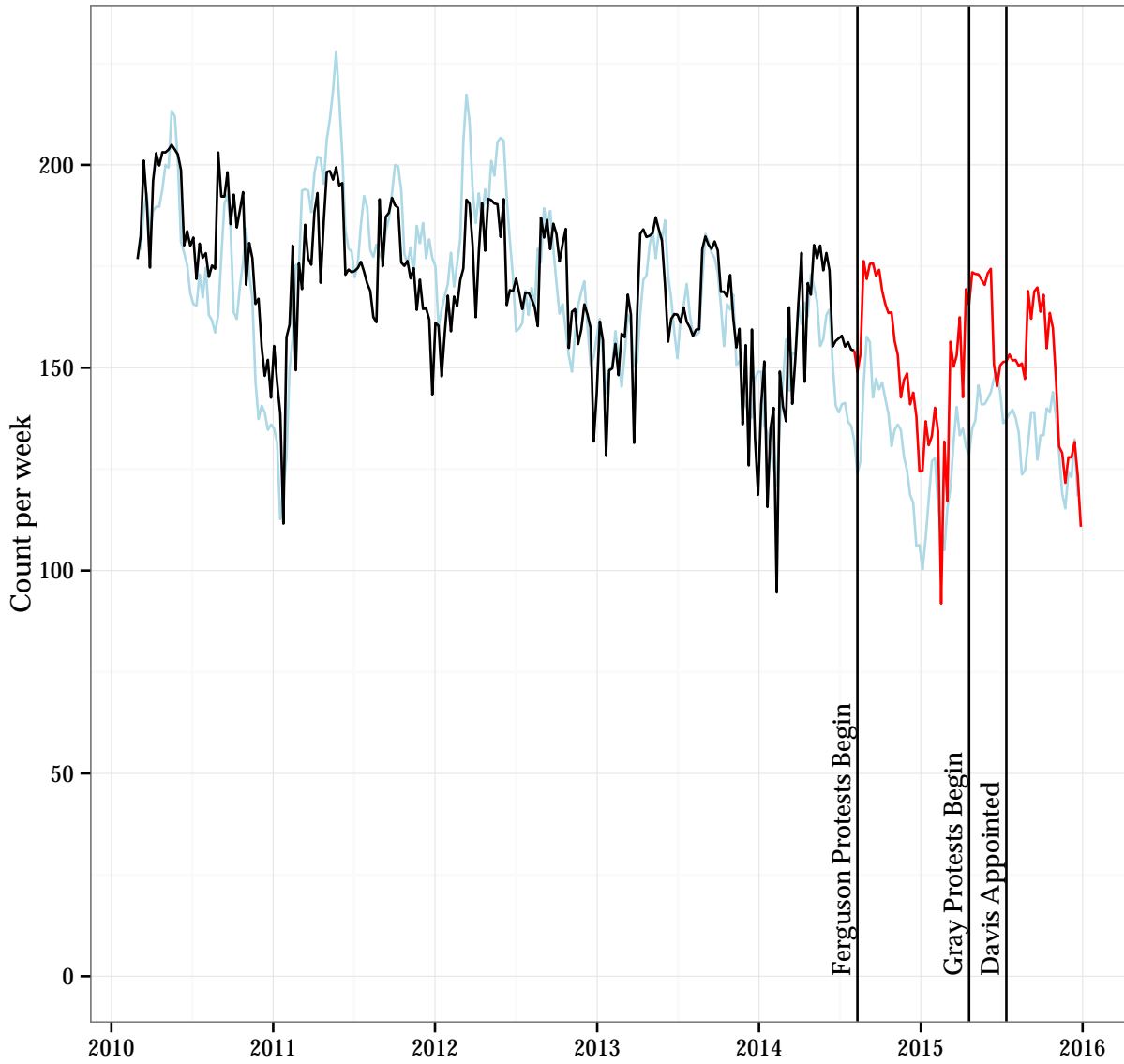
(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 887.38  on 231  degrees of freedom
Residual deviance: 408.18  on 221  degrees of freedom
AIC: 2045.9

Number of Fisher Scoring iterations: 4
```



# common.assault



## 14 Results for burglary

### 14.1 Summary Values for burglary

Table 14.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
burglary	232	149.711	25.754	85	149	241

Table 14.2: Descriptives for Outcome After Ferguson Protests Begin

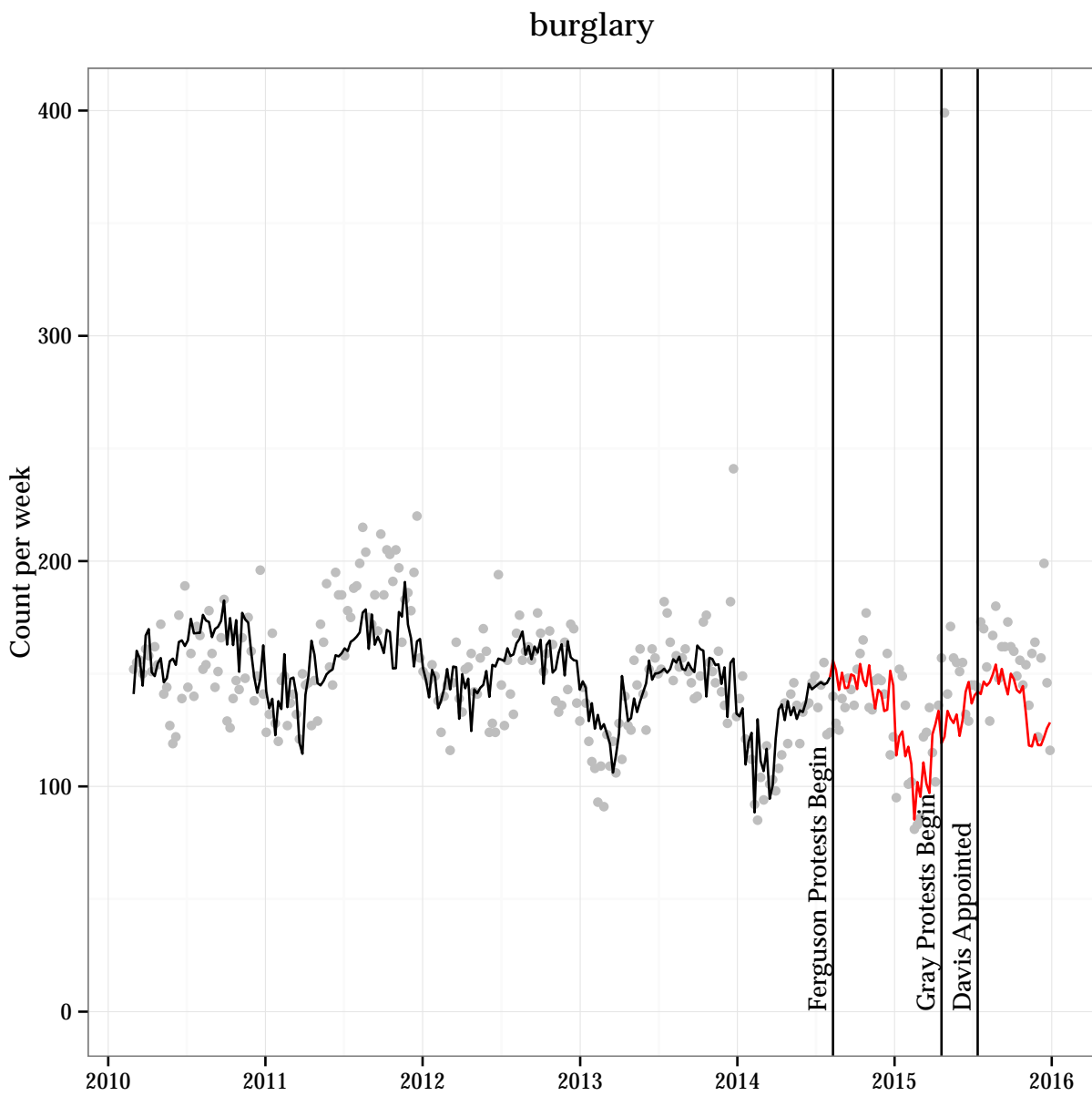
Statistic	N	Mean	St. Dev.	Min	Median	Max
burglary	73	145.699	37.830	81	146	399

## 14.2 Four Models for burglary

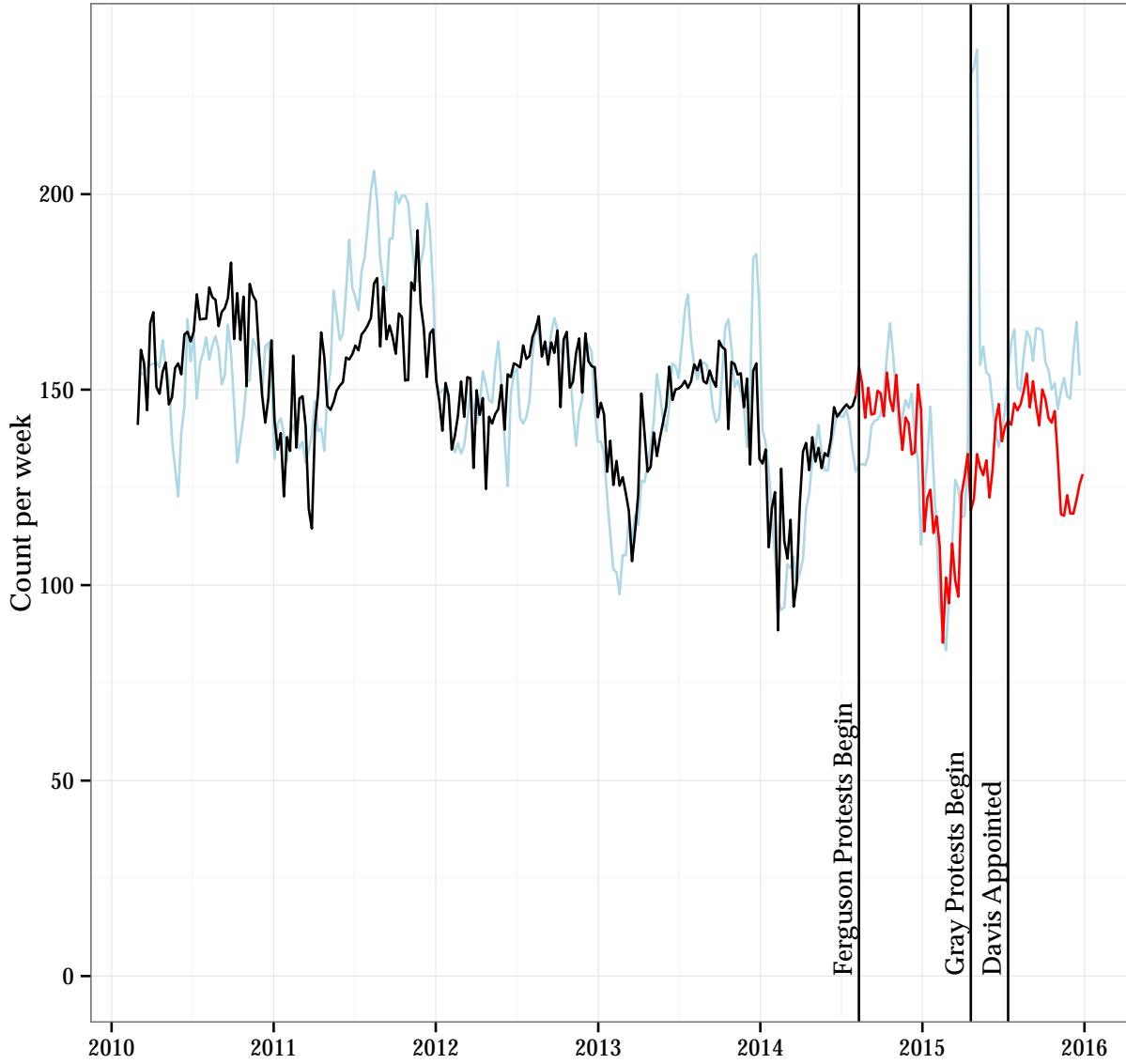
Table 14.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.12	−0.09		−0.09
After Ferguson Protests Begin (week of 8/11/14 onward)	−2.04		−0.56	−1.82
After Gray Protests Begin (week of 4/20/15 onward)	21.04		16.72	18.03
Unrest and National Guard (during week of 4/27/15)	249.48		260.81	257.95
After Commissioner Batts Fired (week of 7/13/15 onward)	8.79		1.72	0.93
Average Maximum Temperature to 50 Degrees		0.99		0.82
Plus Degrees in the 50s		1.06		0.89
Plus Degrees in the 60s		−0.27		0.09
Plus Degrees in the 70s		−0.80		−1.09
Plus Degrees greater than 80		−0.69		−0.07
Snowfall (inches)		−11.01		−14.46
Precipitation (inches)		14.40		13.51
Darkness Before Midnight (hours)		15.57		14.44
School Days (proportion of week)		−16.47		−8.78
Observations	305	232	305	305
R <sup>2</sup>	0.36	0.42	0.43	0.56

### 14.3 Least Squares Model (2) for burglary

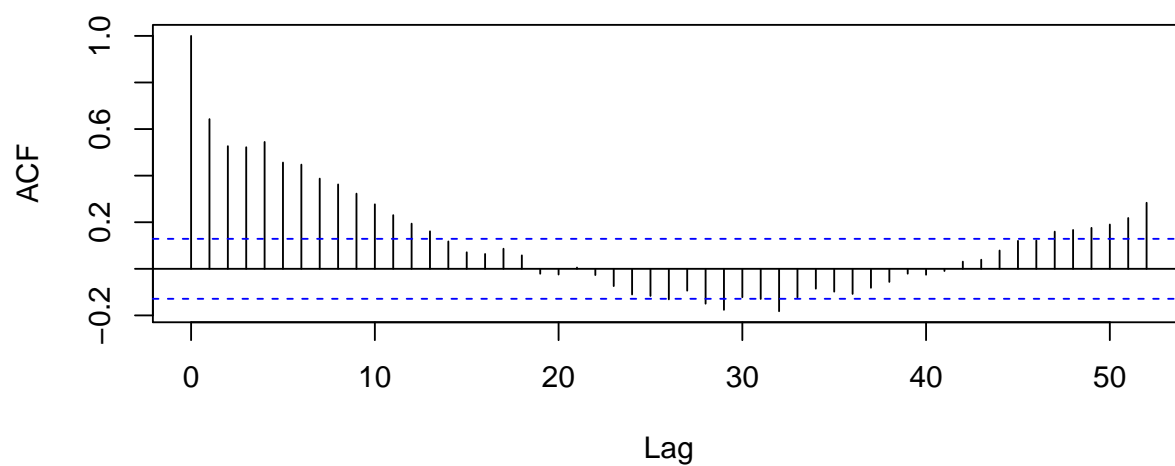


## burglary

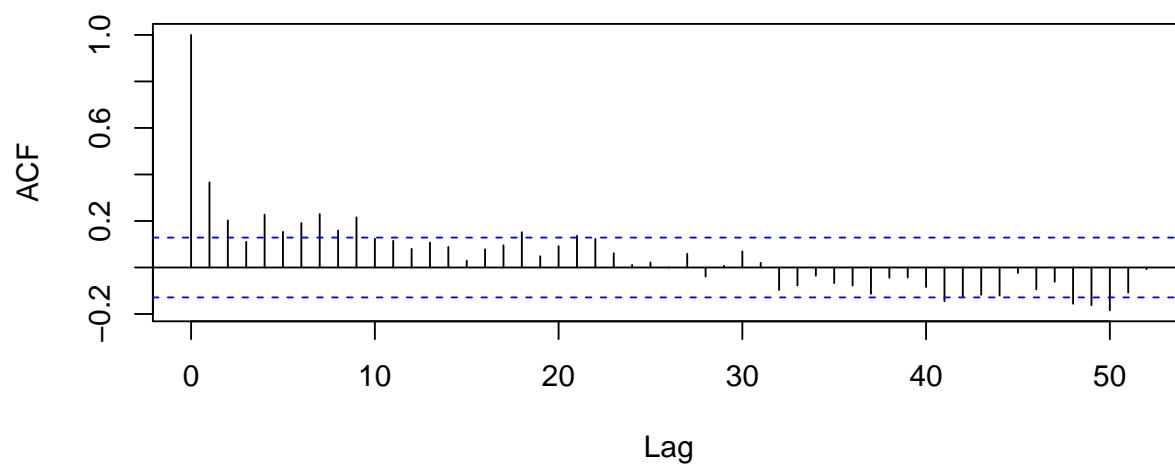




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 14.4 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
-4.1592	-0.9996	-0.0564	0.9012	6.2777

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	4.072e+00	1.156e-01	35.223	< 2e-16	***
t	-6.302e-04	8.318e-05	-7.576	3.56e-14	***
tmax.f.spline1	6.490e-03	2.136e-03	3.039	0.00238	**
tmax.f.spline2	7.289e-03	4.302e-03	1.694	0.09025	.
tmax.f.spline3	-1.166e-03	5.148e-03	-0.226	0.82082	
tmax.f.spline4	-5.974e-03	4.761e-03	-1.255	0.20955	
tmax.f.spline5	-4.643e-03	4.120e-03	-1.127	0.25983	
snow.in	-1.038e-01	3.037e-02	-3.419	0.00063	***
precip.in	8.988e-02	2.919e-02	3.079	0.00208	**
dark.before.12	1.069e-01	7.928e-03	13.481	< 2e-16	***
school	-1.122e-01	2.372e-02	-4.730	2.24e-06	***

---

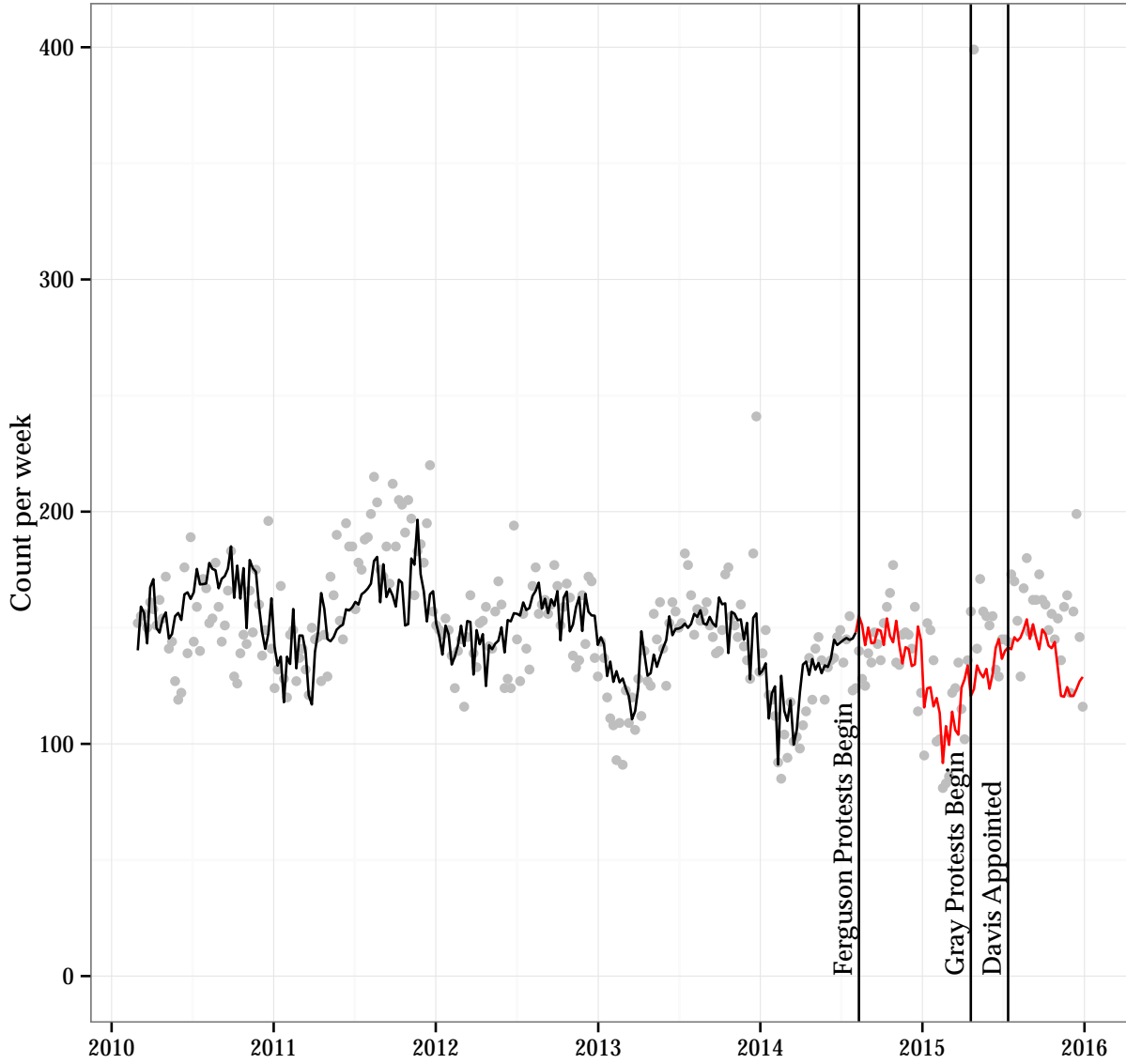
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

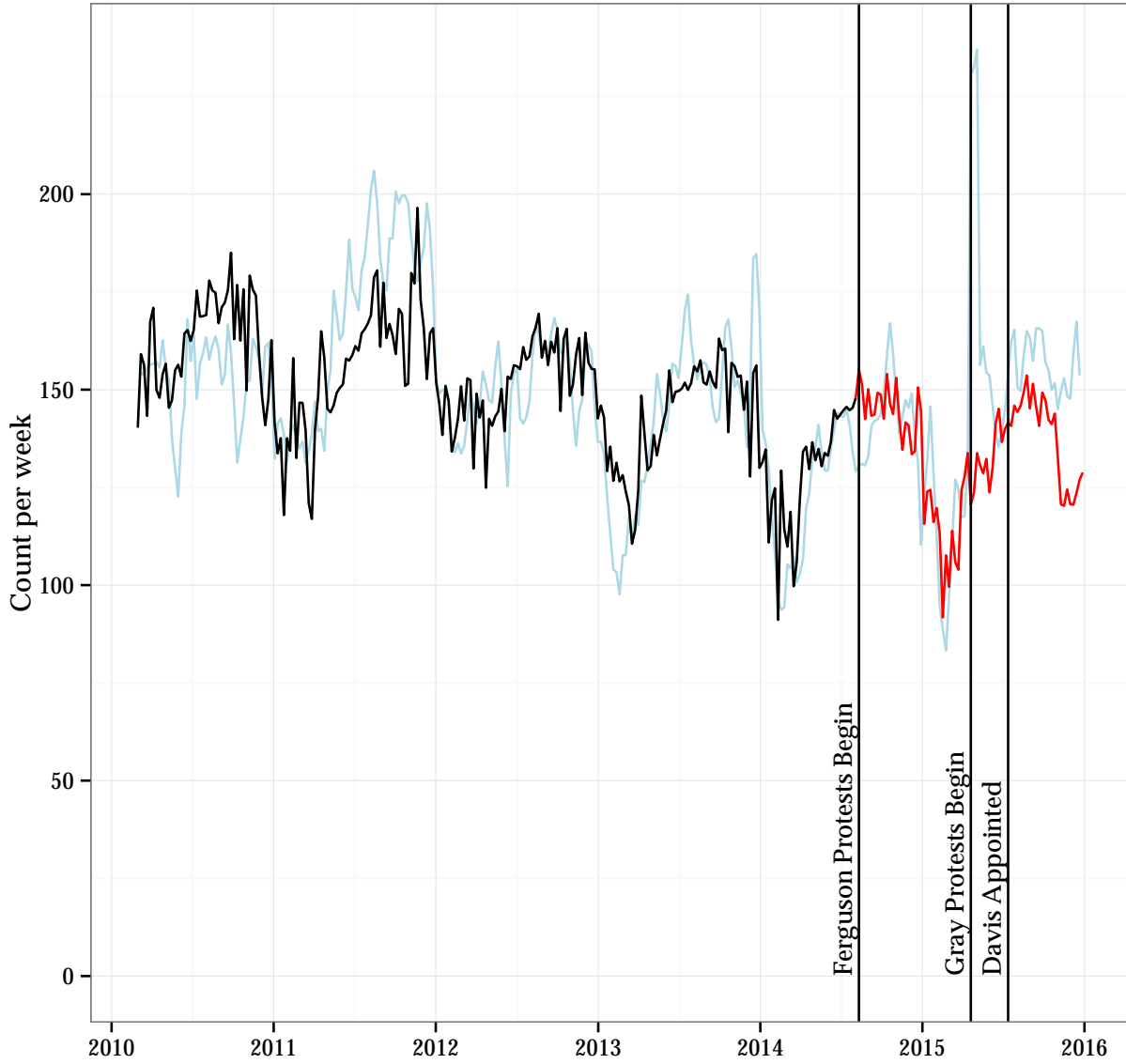
Null deviance: 1022.54 on 231 degrees of freedom  
Residual deviance: 583.23 on 221 degrees of freedom  
AIC: 2190.4

Number of Fisher Scoring iterations: 4

## burglary



## burglary



## 15 Results for larceny.from.auto

### 15.1 Summary Values for larceny.from.auto

Table 15.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
larceny.from.auto	232	132.961	26.707	71	131	207

Table 15.2: Descriptives for Outcome After Ferguson Protests Begin

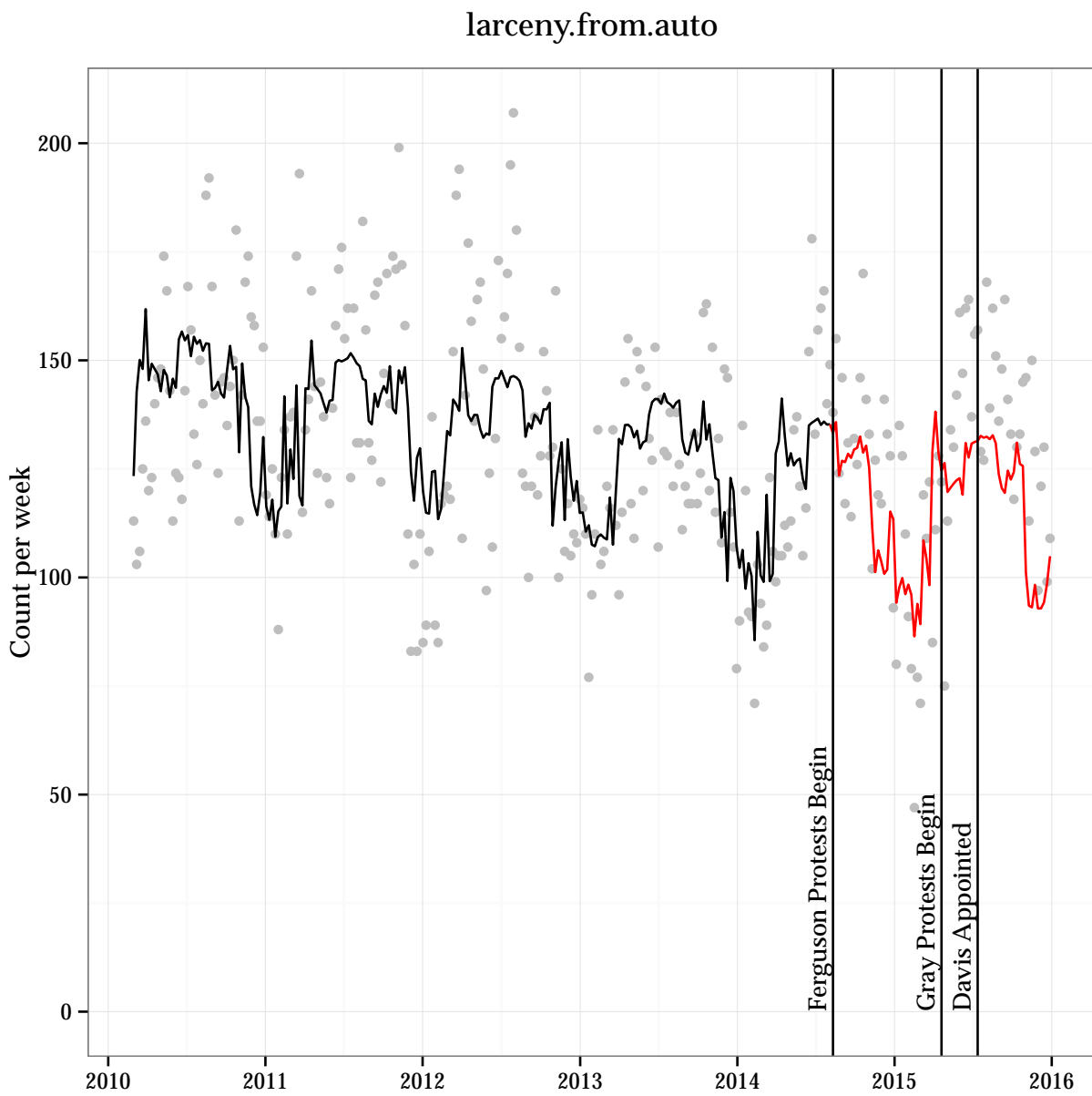
Statistic	N	Mean	St. Dev.	Min	Median	Max
larceny.from.auto	73	126.616	25.103	47	130	170

## 15.2 Four Models for larceny.from.auto

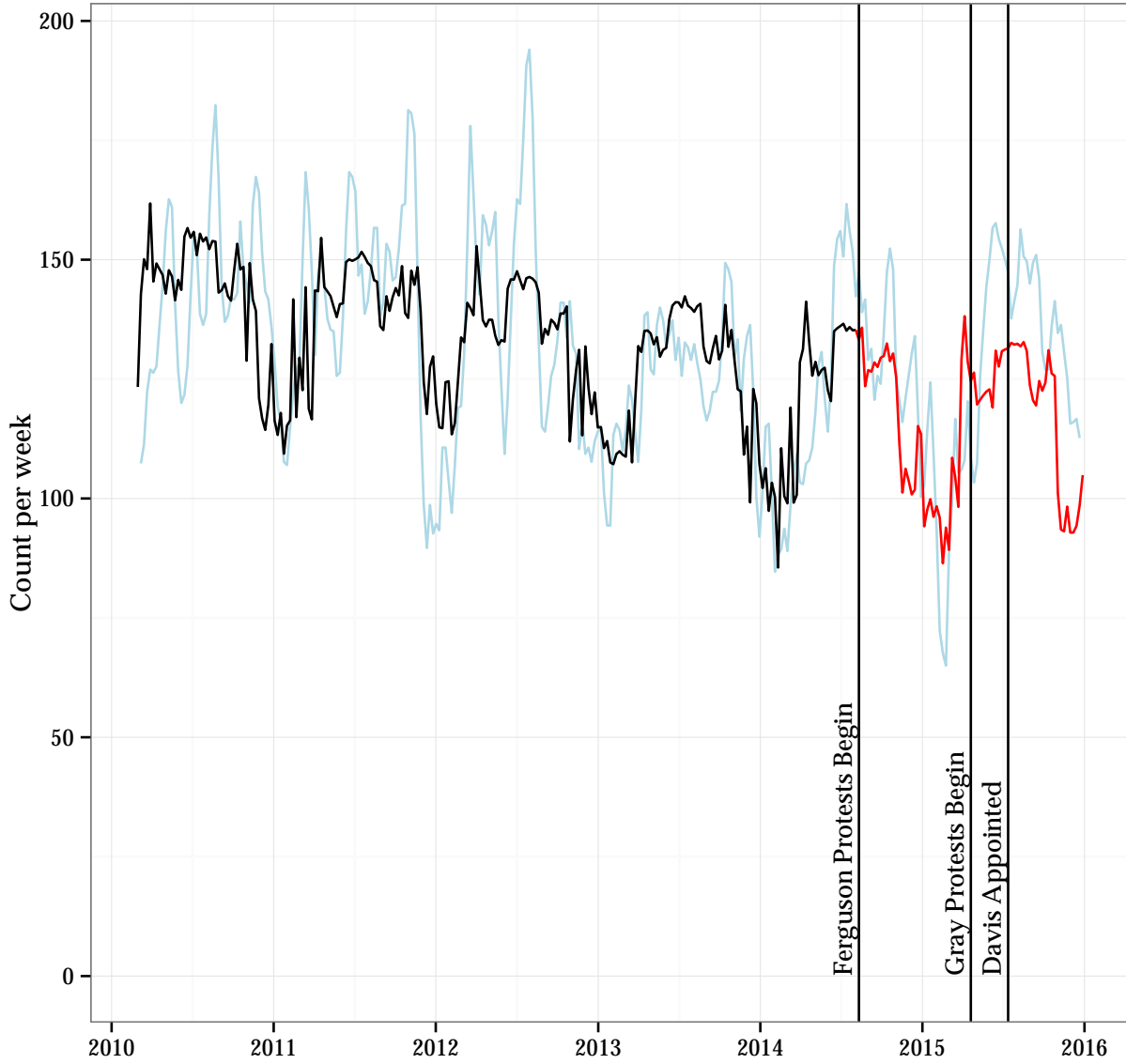
Table 15.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.11	−0.09		−0.09
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.40		3.72	3.85
After Gray Protests Begin (week of 4/20/15 onward)	27.95		14.15	14.32
Unrest and National Guard (during week of 4/27/15)	−68.10		−69.24	−66.64
After Commissioner Batts Fired (week of 7/13/15 onward)	−5.49		0.66	0.02
Average Maximum Temperature to 50 Degrees		0.42		0.67
Plus Degrees in the 50s		2.25		1.35
Plus Degrees in the 60s		−2.53		−1.63
Plus Degrees in the 70s		−0.82		−0.71
Plus Degrees greater than 80		0.91		0.66
Snowfall (inches)		−5.22		−11.34
Precipitation (inches)		−5.65		−2.03
Darkness Before Midnight (hours)		1.38		2.47
School Days (proportion of week)		−17.81		−14.13
Observations	305	232	305	305
R <sup>2</sup>	0.12	0.30	0.09	0.35

### 15.3 Least Squares Model (2) for larceny.from.auto

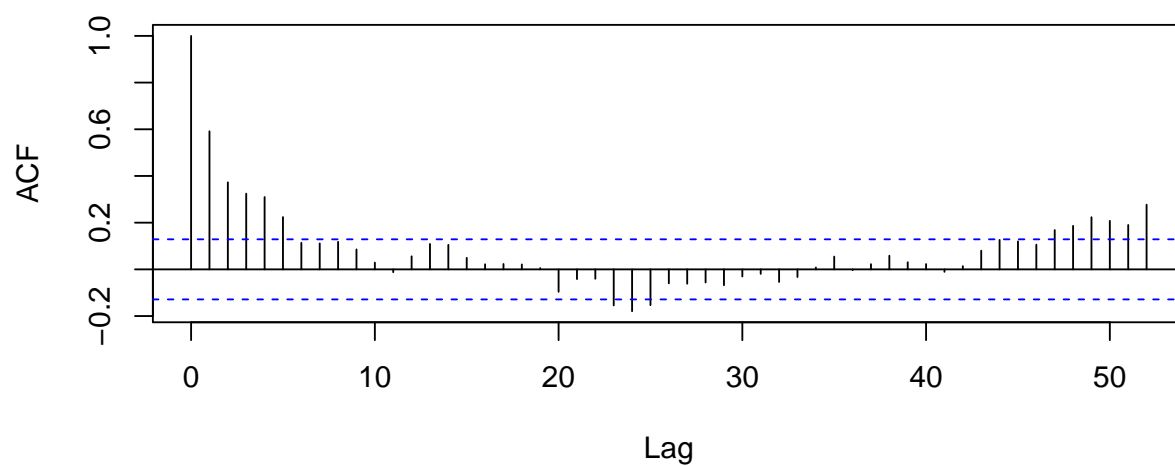


# larceny.from.auto

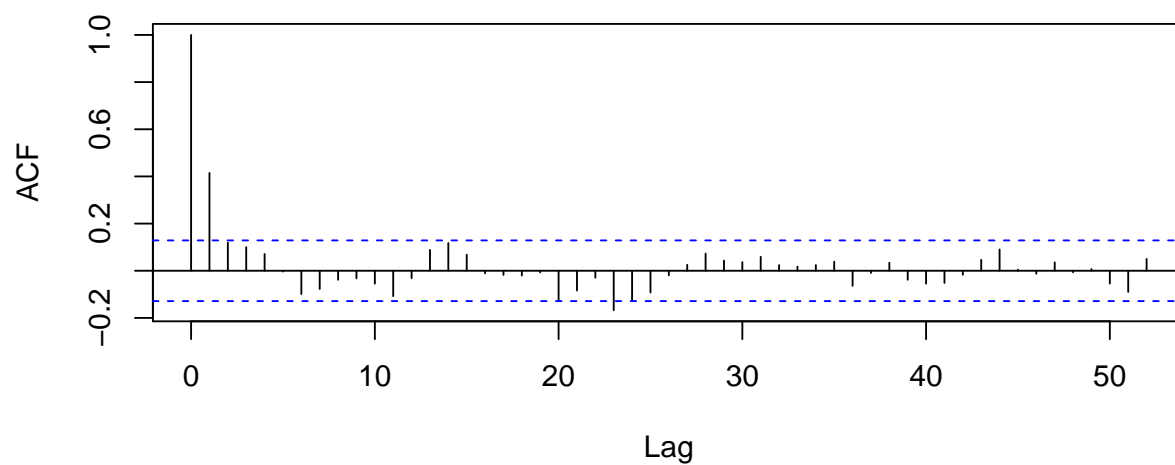




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 15.4 A Poisson Regression Model as an Alternative to Model (2) for larceny.from.auto

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

Deviance Residuals:

Min	1Q	Median	3Q	Max
-4.1742	-1.3336	-0.2194	1.2304	6.2812

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	4.659e+00	1.254e-01	37.162	< 2e-16 ***
t	-6.436e-04	8.768e-05	-7.340	2.14e-13 ***
tmax.f.spline1	3.692e-03	2.325e-03	1.588	0.112297
tmax.f.spline2	1.716e-02	4.611e-03	3.723	0.000197 ***
tmax.f.spline3	-1.994e-02	5.389e-03	-3.700	0.000215 ***
tmax.f.spline4	-5.684e-03	4.975e-03	-1.143	0.253210
tmax.f.spline5	6.005e-03	4.326e-03	1.388	0.165110
snow.in	-5.728e-02	3.180e-02	-1.801	0.071702 .
precip.in	-4.394e-02	3.206e-02	-1.371	0.170427
dark.before.12	1.147e-02	8.350e-03	1.374	0.169390
school	-1.332e-01	2.513e-02	-5.299	1.16e-07 ***

---

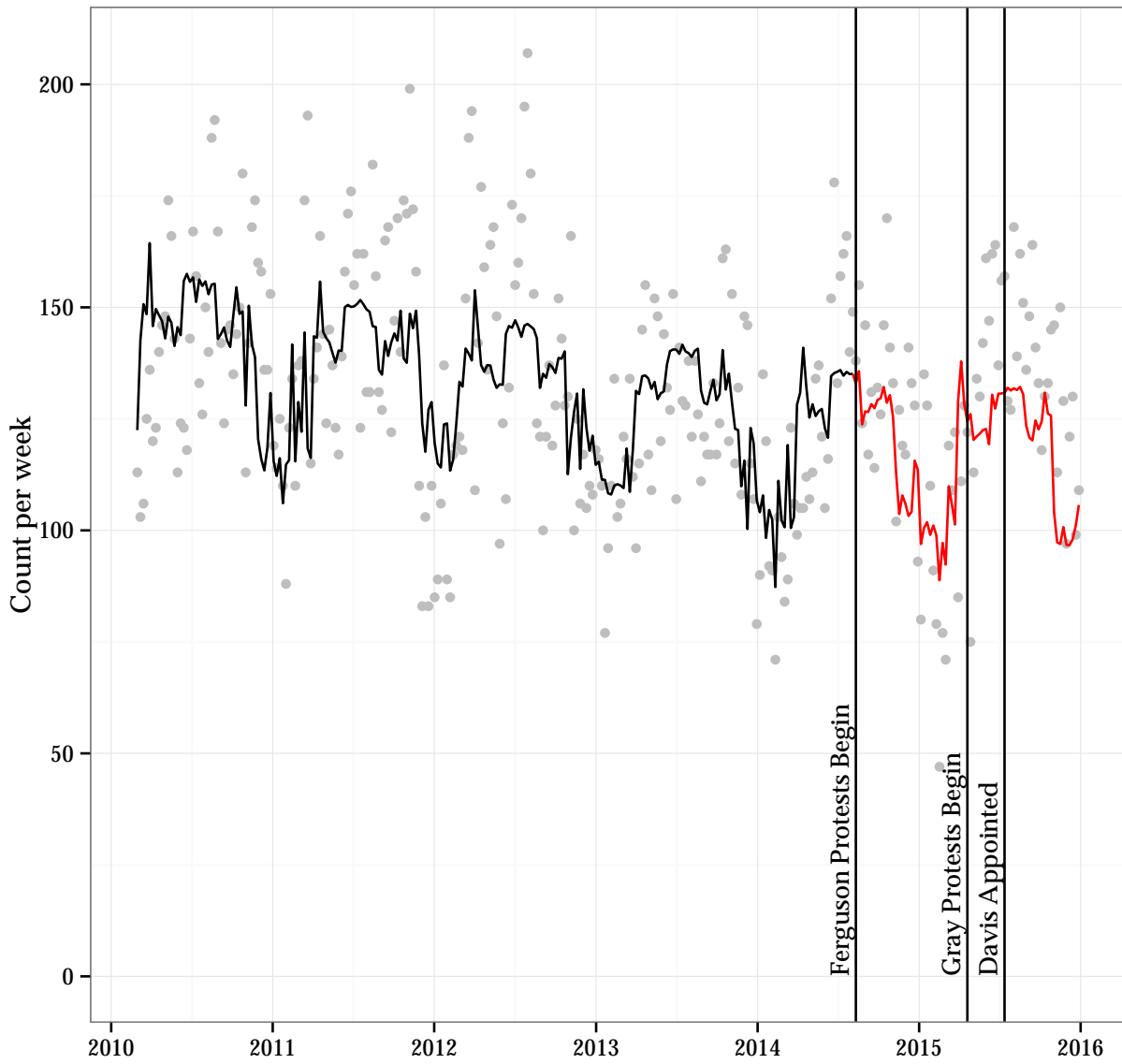
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

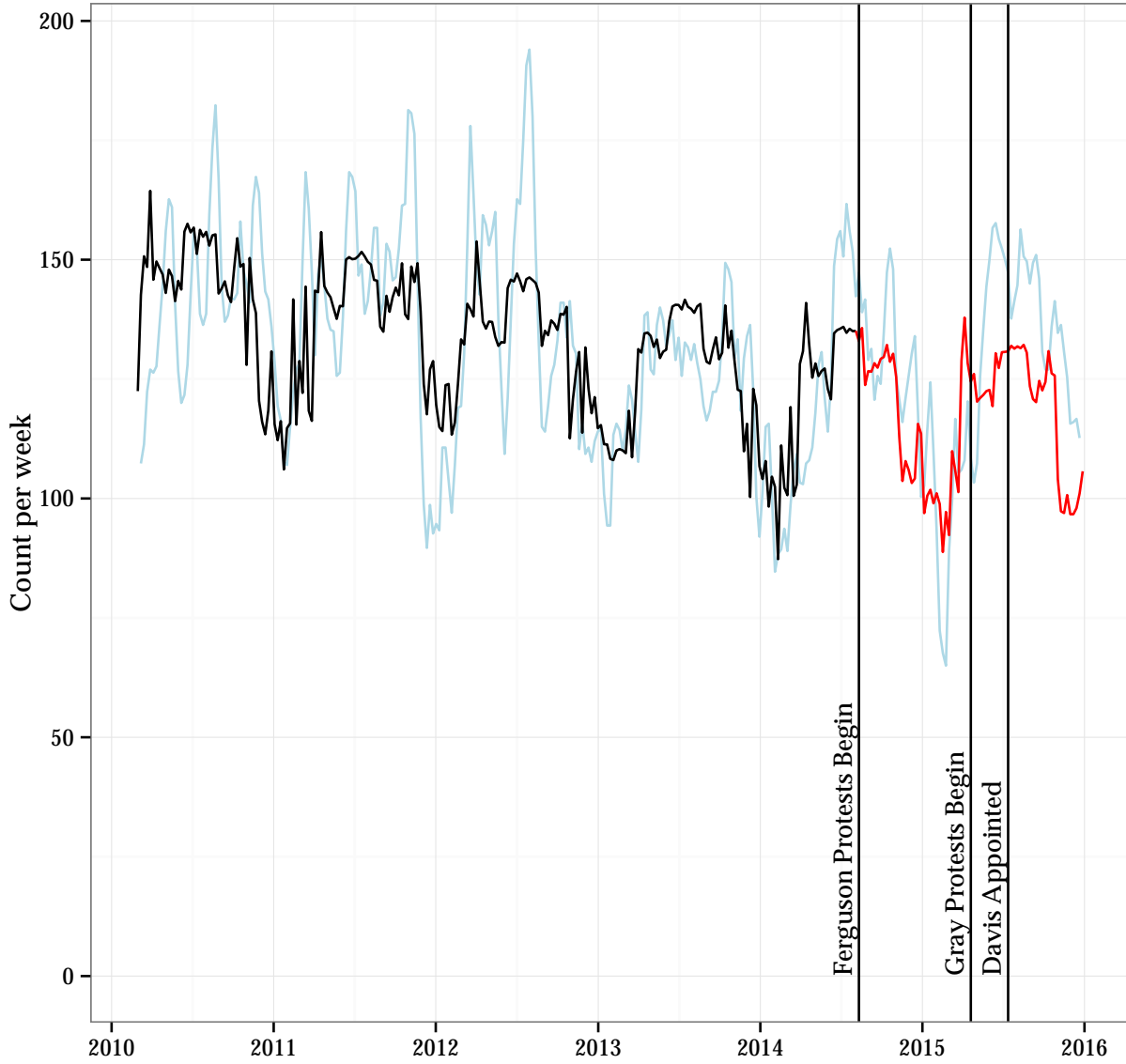
Null deviance: 1238.05 on 231 degrees of freedom  
Residual deviance: 860.22 on 221 degrees of freedom  
AIC: 2438.7

Number of Fisher Scoring iterations: 4

# larceny.from.auto



# larceny.from.auto



## 16 Results for larceny

### 16.1 Summary Values for larceny

Table 16.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
larceny	232	206.086	32.555	115	205	302

Table 16.2: Descriptives for Outcome After Ferguson Protests Begin

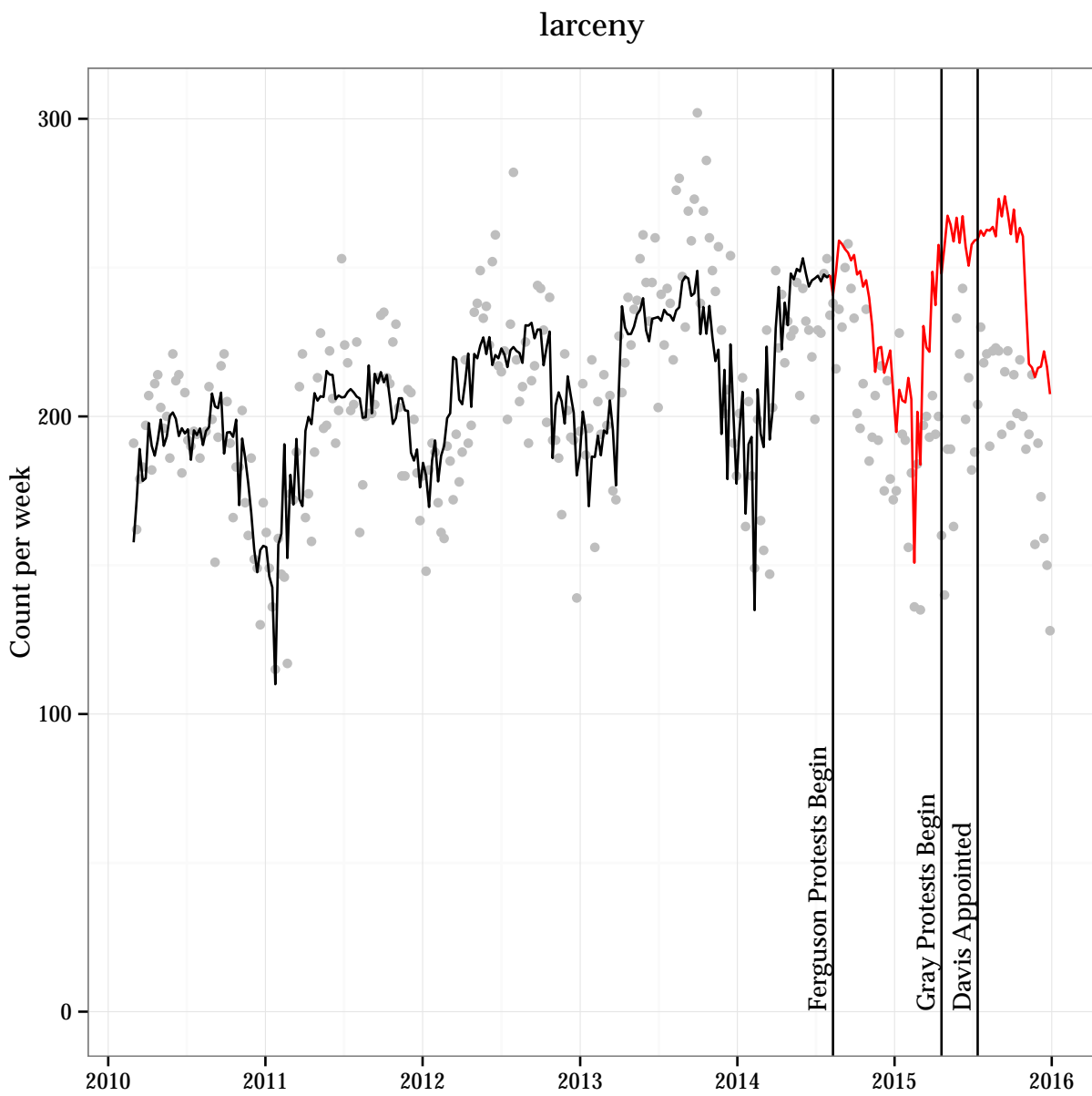
Statistic	N	Mean	St. Dev.	Min	Median	Max
larceny	73	198.890	28.145	128	199	258

## 16.2 Four Models for larceny

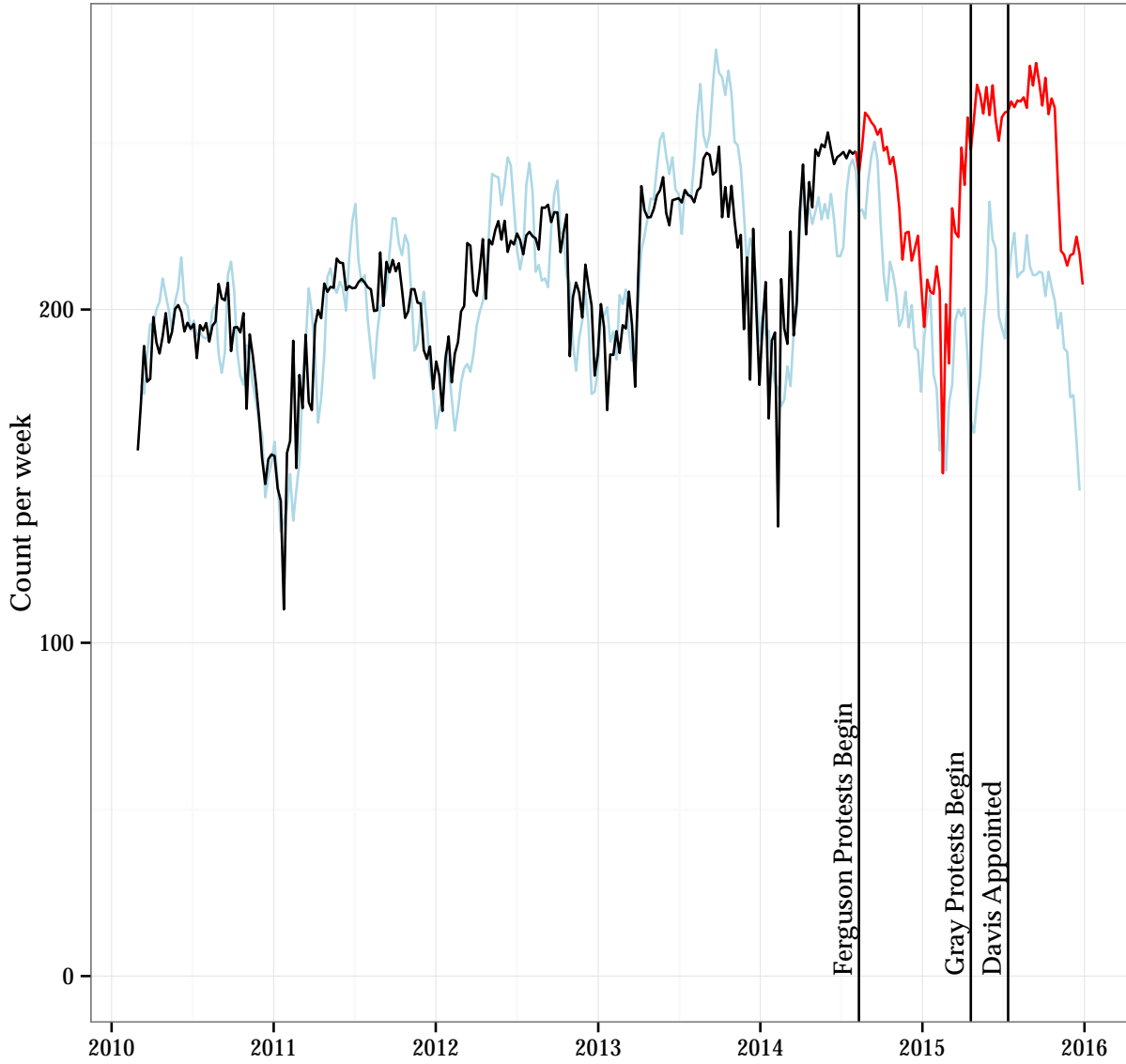
Table 16.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.21	0.26		0.26
After Ferguson Protests Begin (week of 8/11/14 onward)	−32.47		−26.12	−26.51
After Gray Protests Begin (week of 4/20/15 onward)	−8.33		−35.29	−35.20
Unrest and National Guard (during week of 4/27/15)	−57.16		−55.81	−54.20
After Commissioner Batts Fired (week of 7/13/15 onward)	−4.06		11.61	10.34
Average Maximum Temperature to 50 Degrees		1.28		0.88
Plus Degrees in the 50s		0.83		1.03
Plus Degrees in the 60s		−0.87		−0.53
Plus Degrees in the 70s		−0.48		−0.36
Plus Degrees greater than 80		−0.54		−0.61
Snowfall (inches)		−21.21		−24.65
Precipitation (inches)		−13.86		−13.11
Darkness Before Midnight (hours)		1.65		1.71
School Days (proportion of week)		12.32		16.30
Observations	305	232	305	305
R <sup>2</sup>	0.17	0.59	0.47	0.59

### 16.3 Least Squares Model (2) for larceny

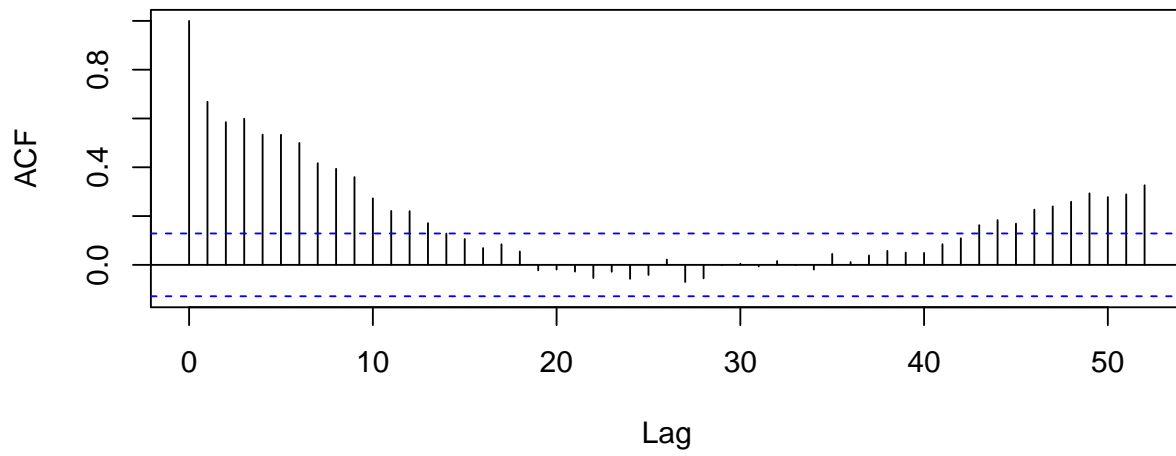


# larceny

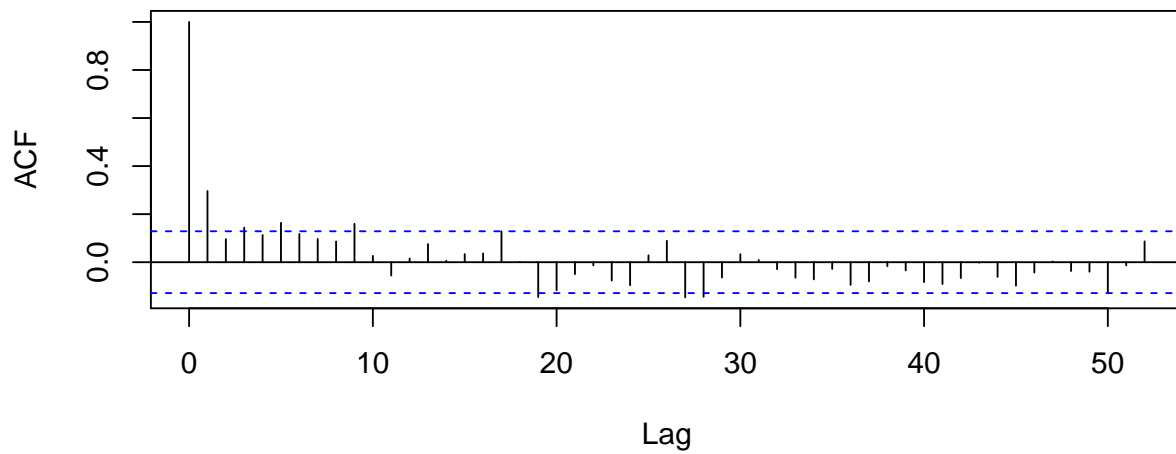




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



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

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

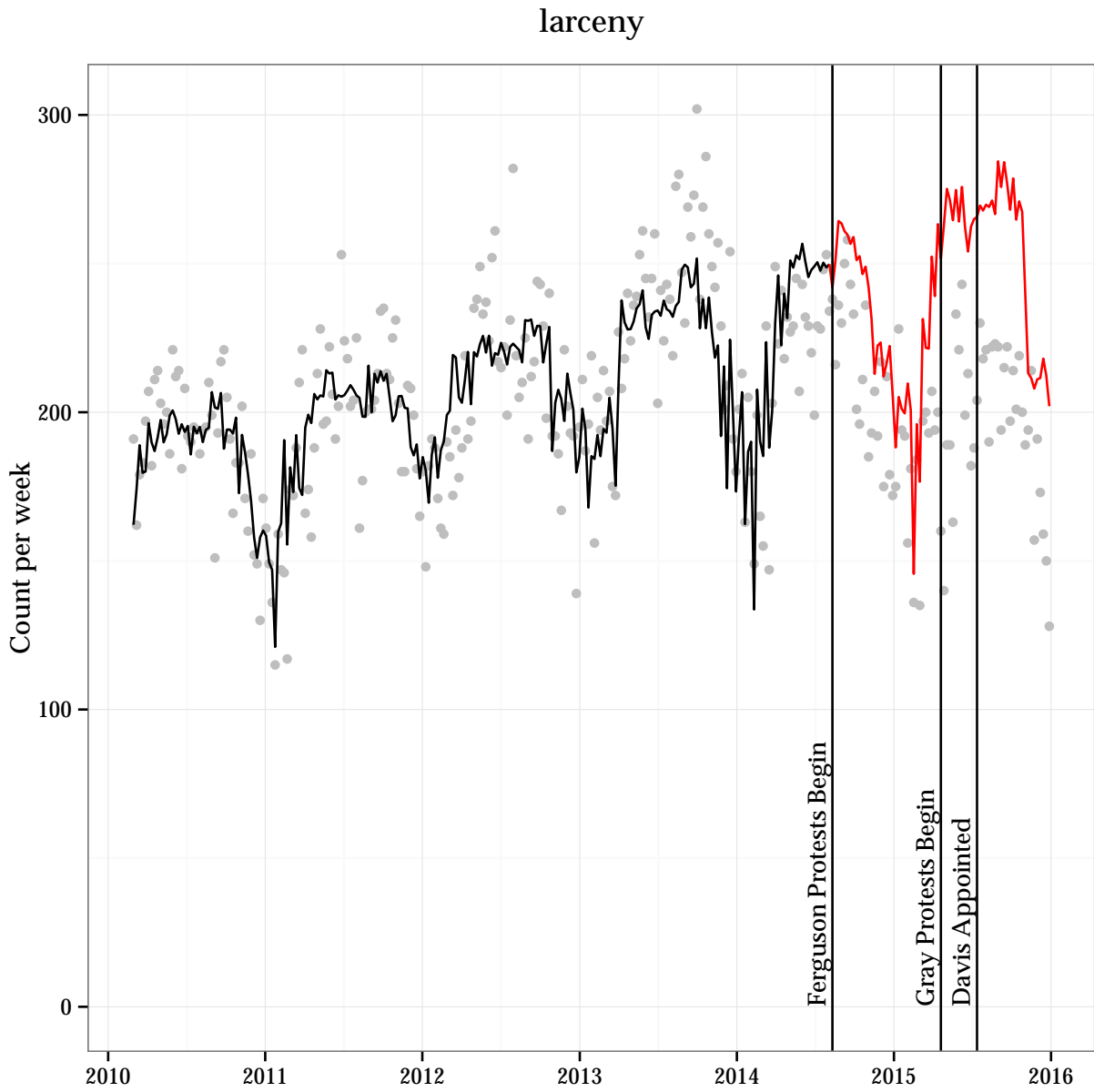
Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.7274  -0.9724  -0.0026   0.9779   3.7896

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)  4.639e+00  1.008e-01  46.039  < 2e-16 ***
t             1.240e-03  7.076e-05  17.519  < 2e-16 ***
tmax.f.spline1 7.484e-03  1.870e-03   4.003 6.27e-05 ***
tmax.f.spline2 2.663e-03  3.716e-03   0.717  0.47358
tmax.f.spline3 -4.293e-03  4.395e-03  -0.977  0.32863
tmax.f.spline4 -2.581e-03  4.034e-03  -0.640  0.52233
tmax.f.spline5 -1.631e-03  3.494e-03  -0.467  0.64070
snow.in       -1.280e-01  2.607e-02  -4.909 9.15e-07 ***
precip.in     -6.479e-02  2.592e-02  -2.499  0.01244 *
dark.before.12 7.990e-03  6.664e-03   1.199  0.23051
school        6.039e-02  2.034e-02   2.969  0.00298 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

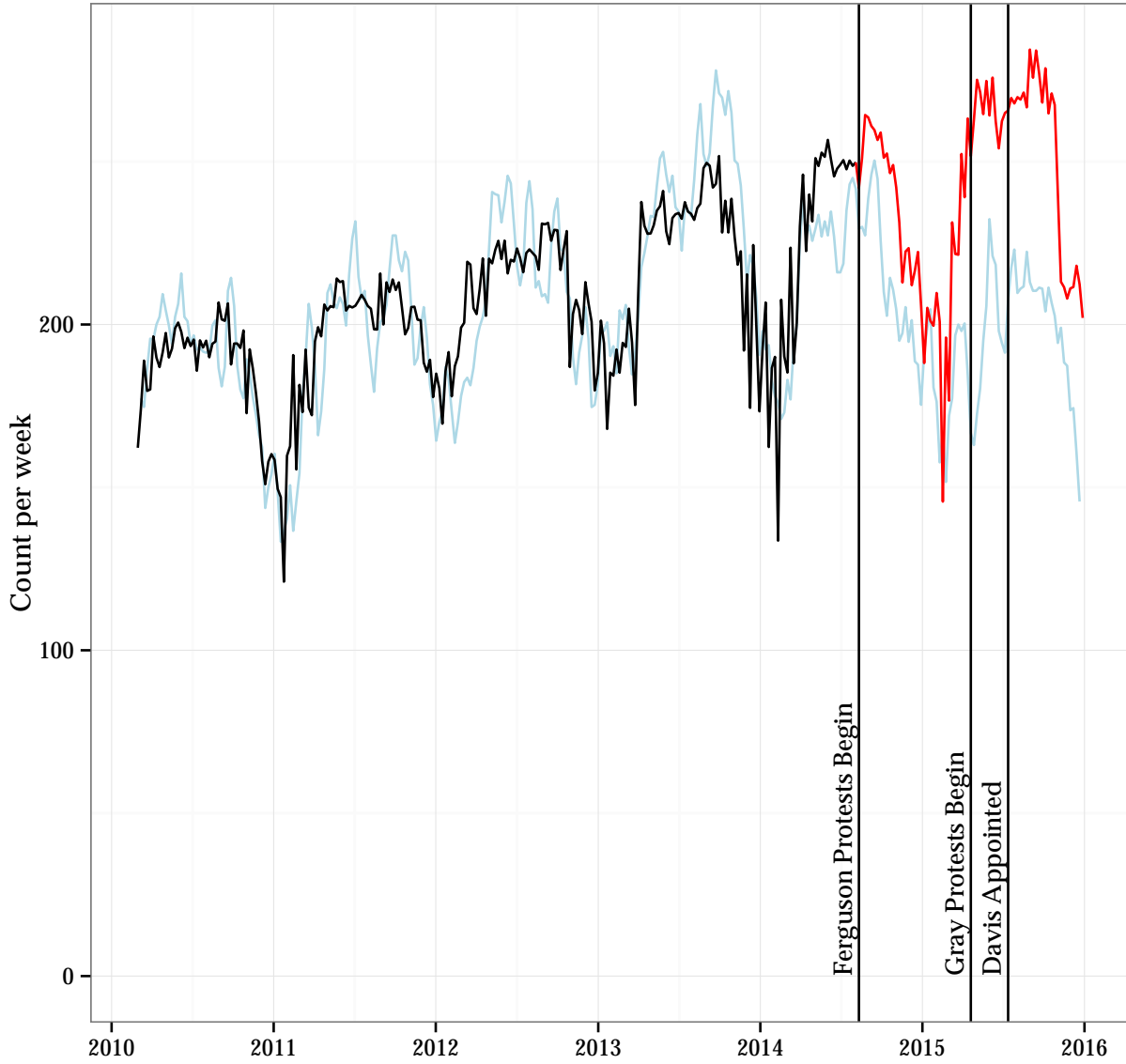
(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 1204.1  on 231  degrees of freedom
Residual deviance:  491.3  on 221  degrees of freedom
AIC: 2173

Number of Fisher Scoring iterations: 4
```



# larceny



## 17 Results for auto.theft

### 17.1 Summary Values for auto.theft

Table 17.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
auto.theft	232	83.052	18.133	47	81	146

Table 17.2: Descriptives for Outcome After Ferguson Protests Begin

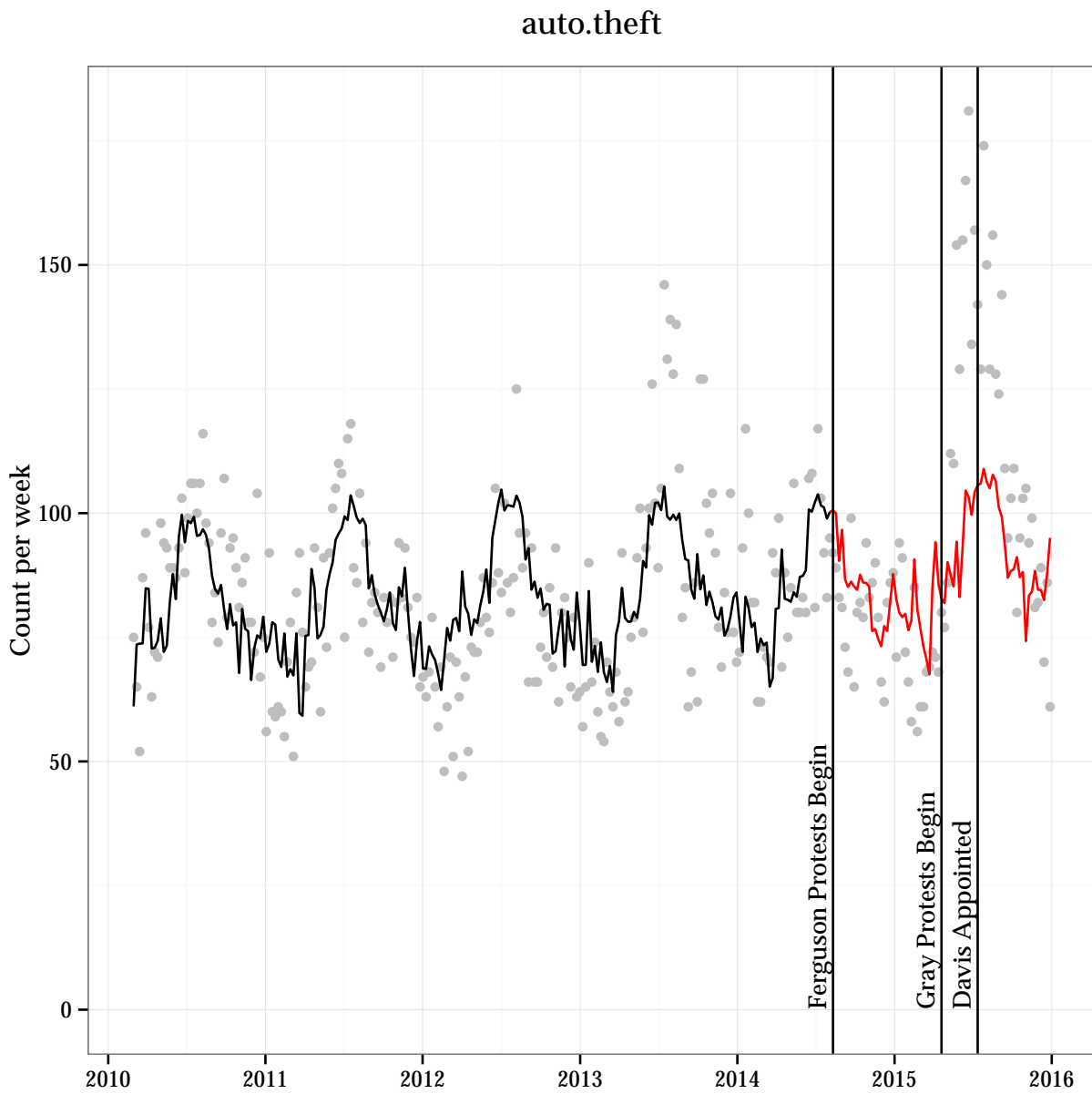
Statistic	N	Mean	St. Dev.	Min	Median	Max
auto.theft	73	96.562	30.848	56	86	181

## 17.2 Four Models for auto.theft

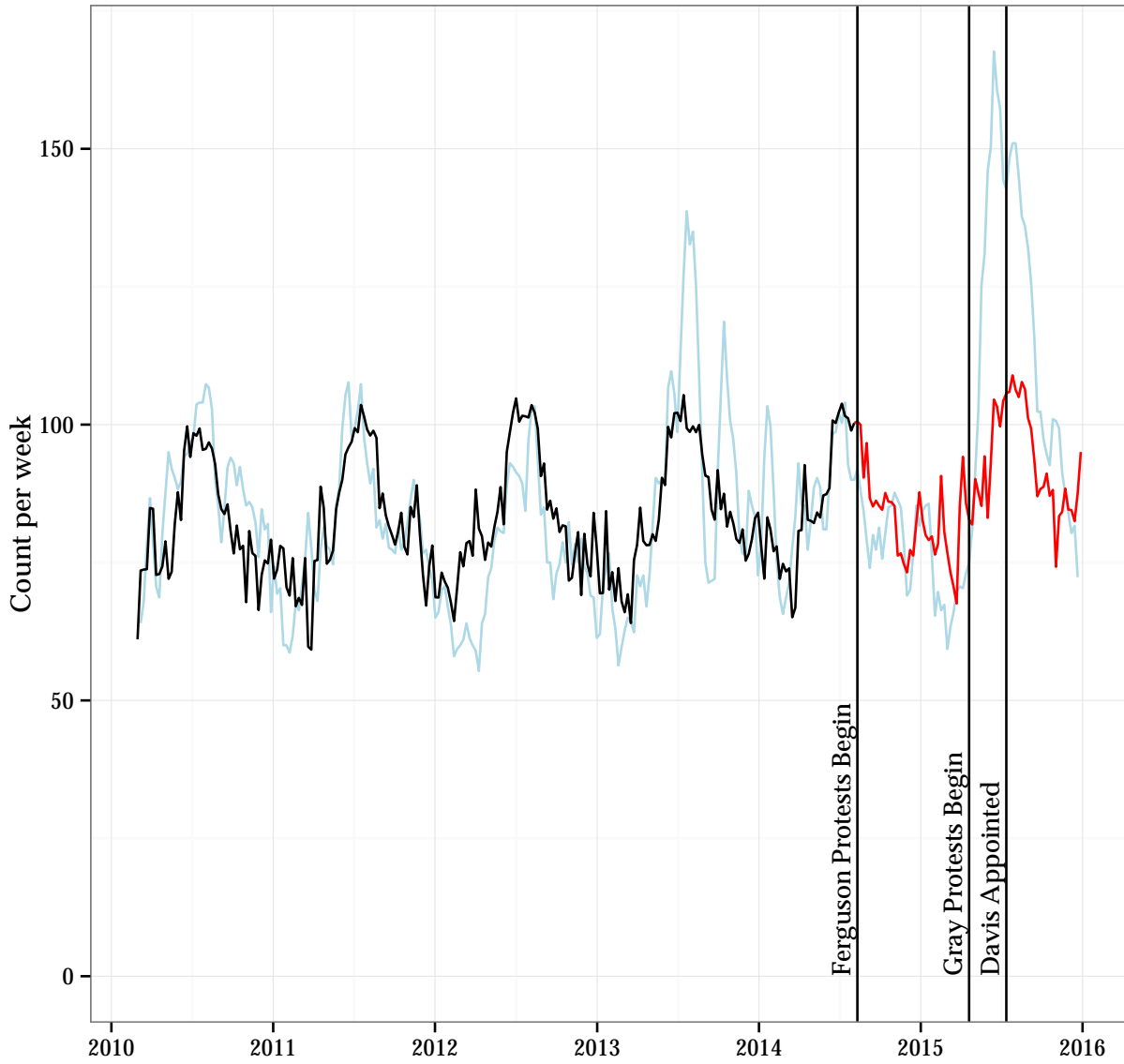
Table 17.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.02	0.04		0.04
After Ferguson Protests Begin (week of 8/11/14 onward)	-8.69		-5.98	-4.38
After Gray Protests Begin (week of 4/20/15 onward)	55.77		45.70	43.96
Unrest and National Guard (during week of 4/27/15)	-56.09		-44.62	-41.33
After Commissioner Batts Fired (week of 7/13/15 onward)	-24.05		-23.64	-22.32
Average Maximum Temperature to 50 Degrees		-0.63		0.02
Plus Degrees in the 50s		2.32		1.22
Plus Degrees in the 60s		-1.67		-1.08
Plus Degrees in the 70s		0.79		0.82
Plus Degrees greater than 80		-0.15		0.22
Snowfall (inches)		-0.21		2.64
Precipitation (inches)		3.01		8.43
Darkness Before Midnight (hours)		2.56		3.28
School Days (proportion of week)		-15.84		-15.05
Observations	305	232	305	305
R <sup>2</sup>	0.28	0.36	0.25	0.55

### 17.3 Least Squares Model (2) for auto.theft

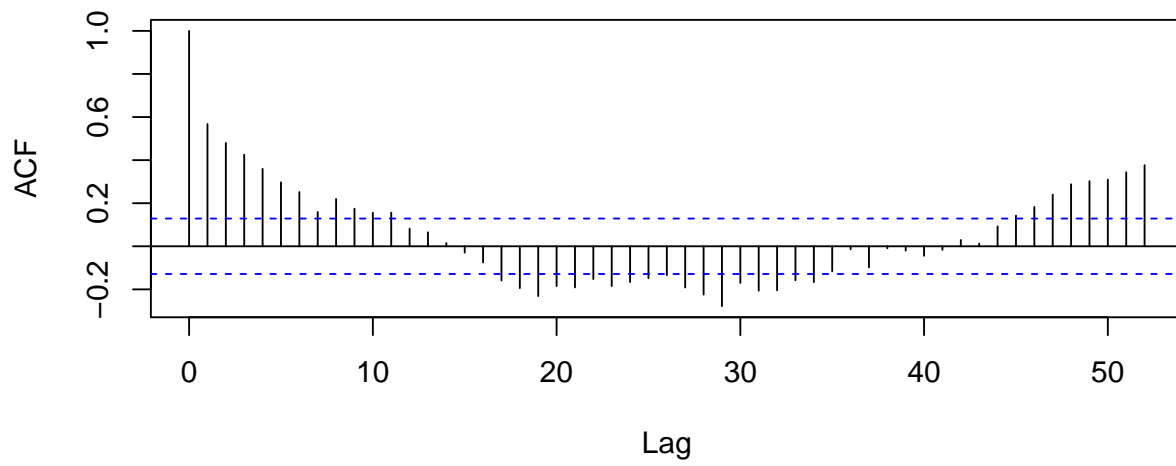


# auto.theft

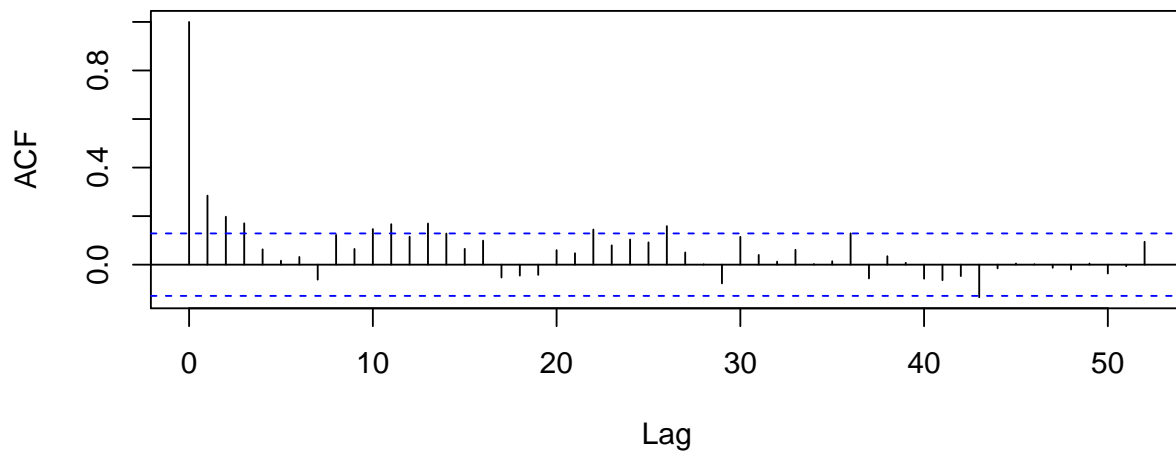




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 17.4 A Poisson Regression Model as an Alternative to Model (2) for auto.theft

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

Deviance Residuals:

Min	1Q	Median	3Q	Max
-4.7760	-1.1803	-0.0881	0.9015	4.2761

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	4.4657261	0.1555129	28.716	< 2e-16	***
t	0.0004502	0.0001110	4.055	5.02e-05	***
tmax.f.spline1	-0.0084241	0.0028631	-2.942	0.00326	**
tmax.f.spline2	0.0308555	0.0059046	5.226	1.74e-07	***
tmax.f.spline3	-0.0219224	0.0070949	-3.090	0.00200	**
tmax.f.spline4	0.0092107	0.0065155	1.414	0.15746	
tmax.f.spline5	-0.0027980	0.0054122	-0.517	0.60517	
snow.in	-0.0001381	0.0361079	-0.004	0.99695	
precip.in	0.0349621	0.0402467	0.869	0.38501	
dark.before.12	0.0344781	0.0108225	3.186	0.00144	**
school	-0.1843260	0.0315233	-5.847	5.00e-09	***

---

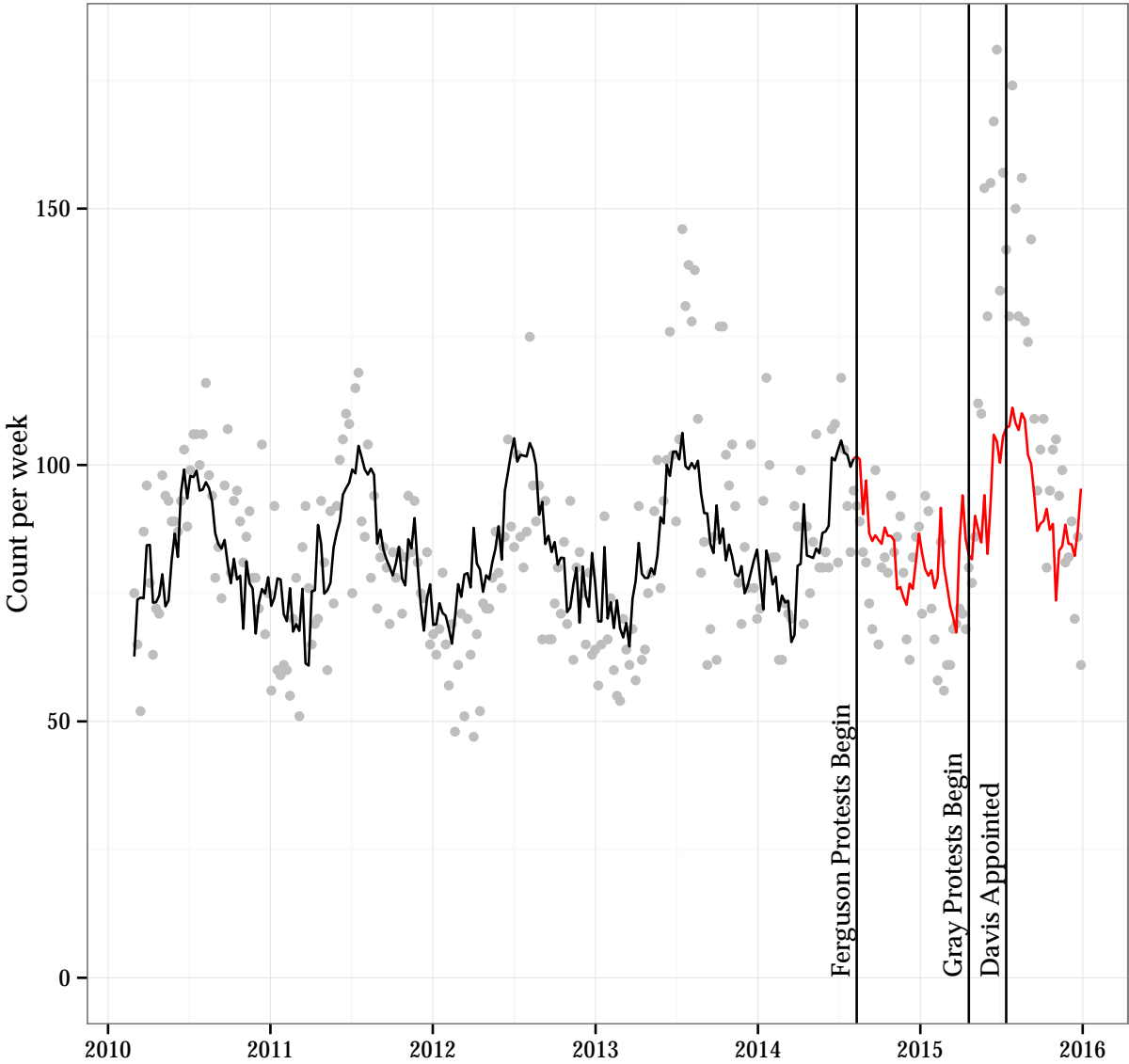
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

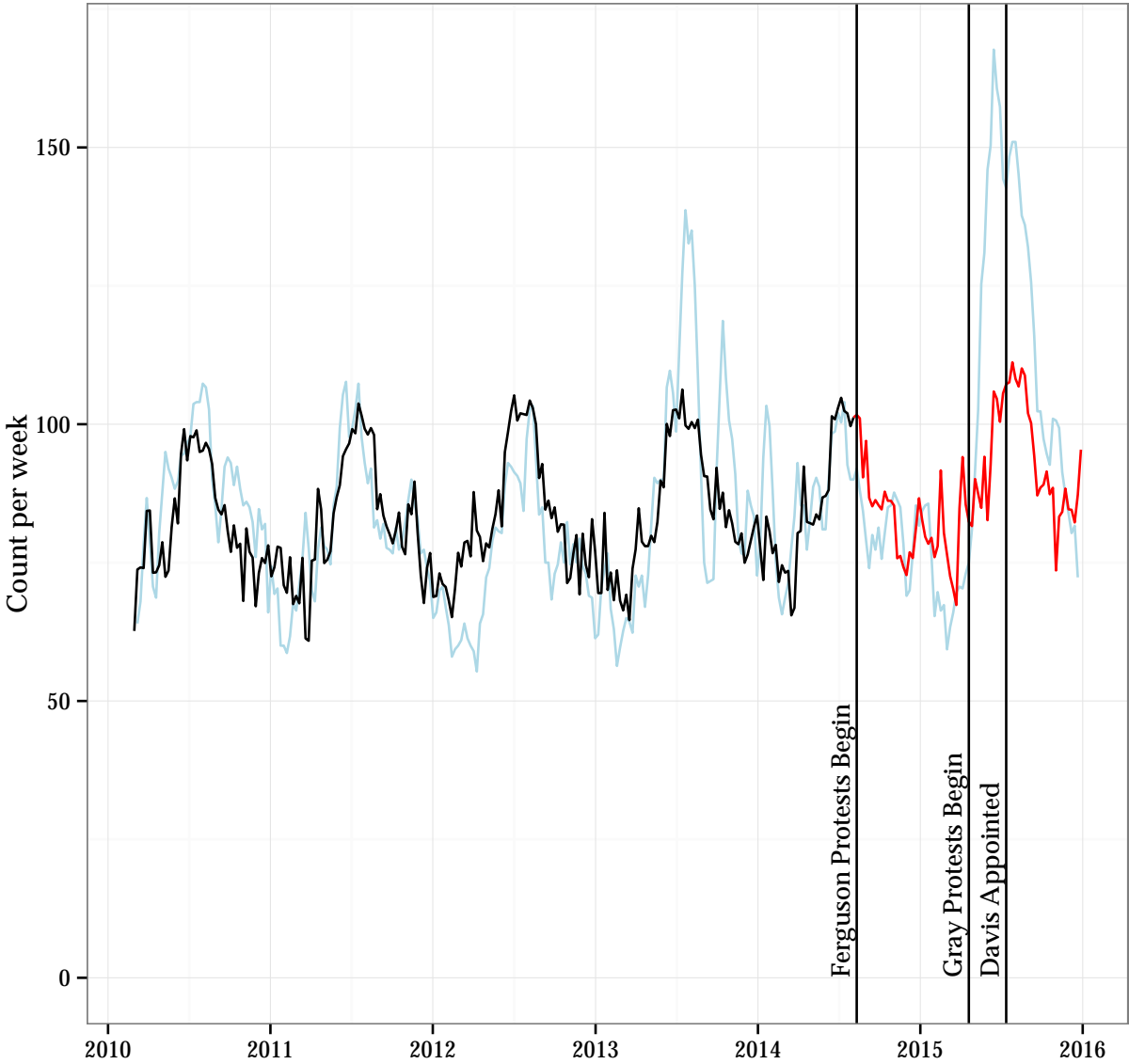
Null deviance: 891.40 on 231 degrees of freedom  
Residual deviance: 568.36 on 221 degrees of freedom  
AIC: 2037.2

Number of Fisher Scoring iterations: 4

auto.theft



auto.theft



## 18 Results for arson

### 18.1 Summary Values for arson

Table 18.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
arson	232	5.280	2.896	0	5	15

Table 18.2: Descriptives for Outcome After Ferguson Protests Begin

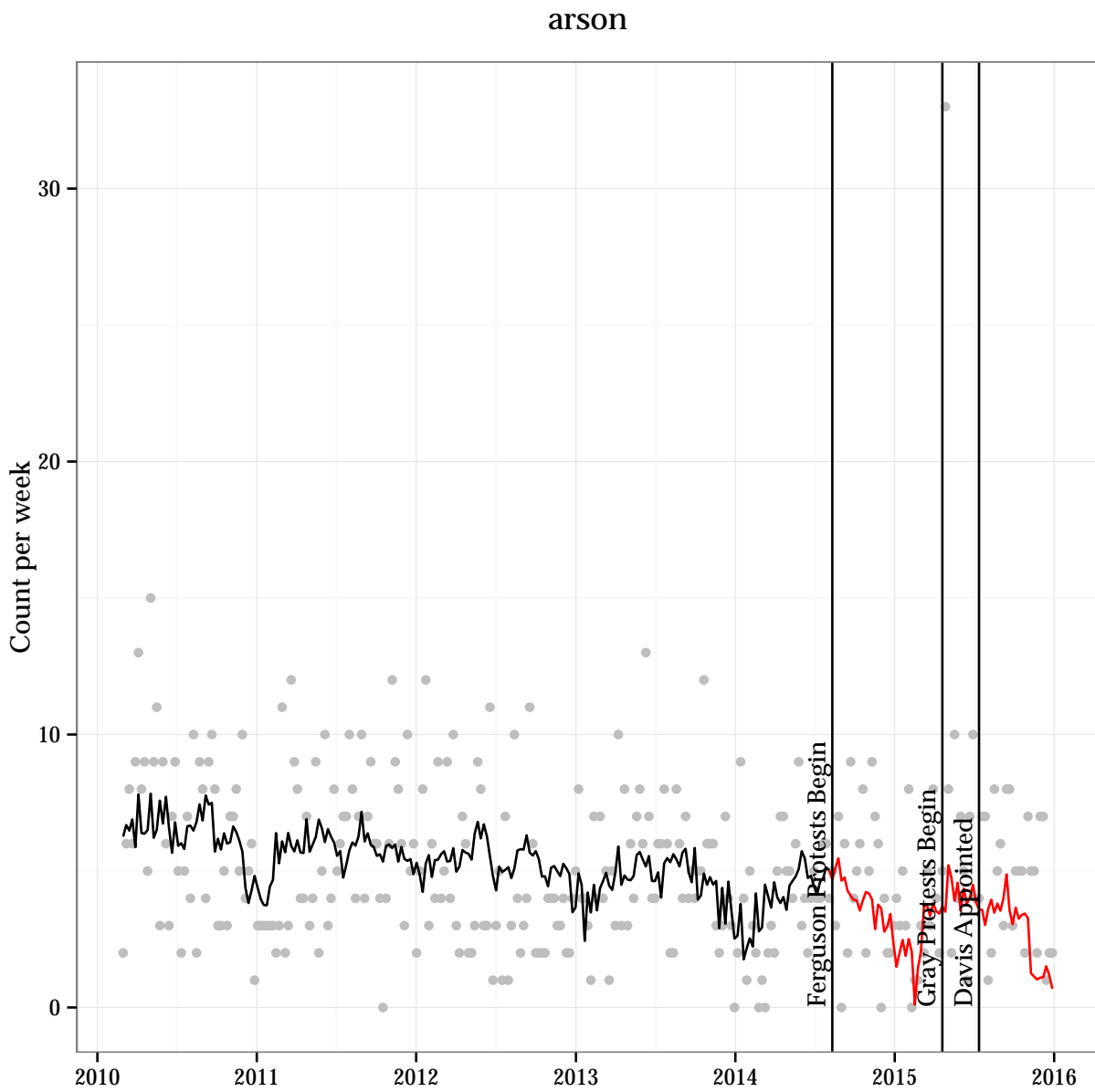
Statistic	N	Mean	St. Dev.	Min	Median	Max
arson	73	4.932	4.201	0	5	33

## 18.2 Four Models for arson

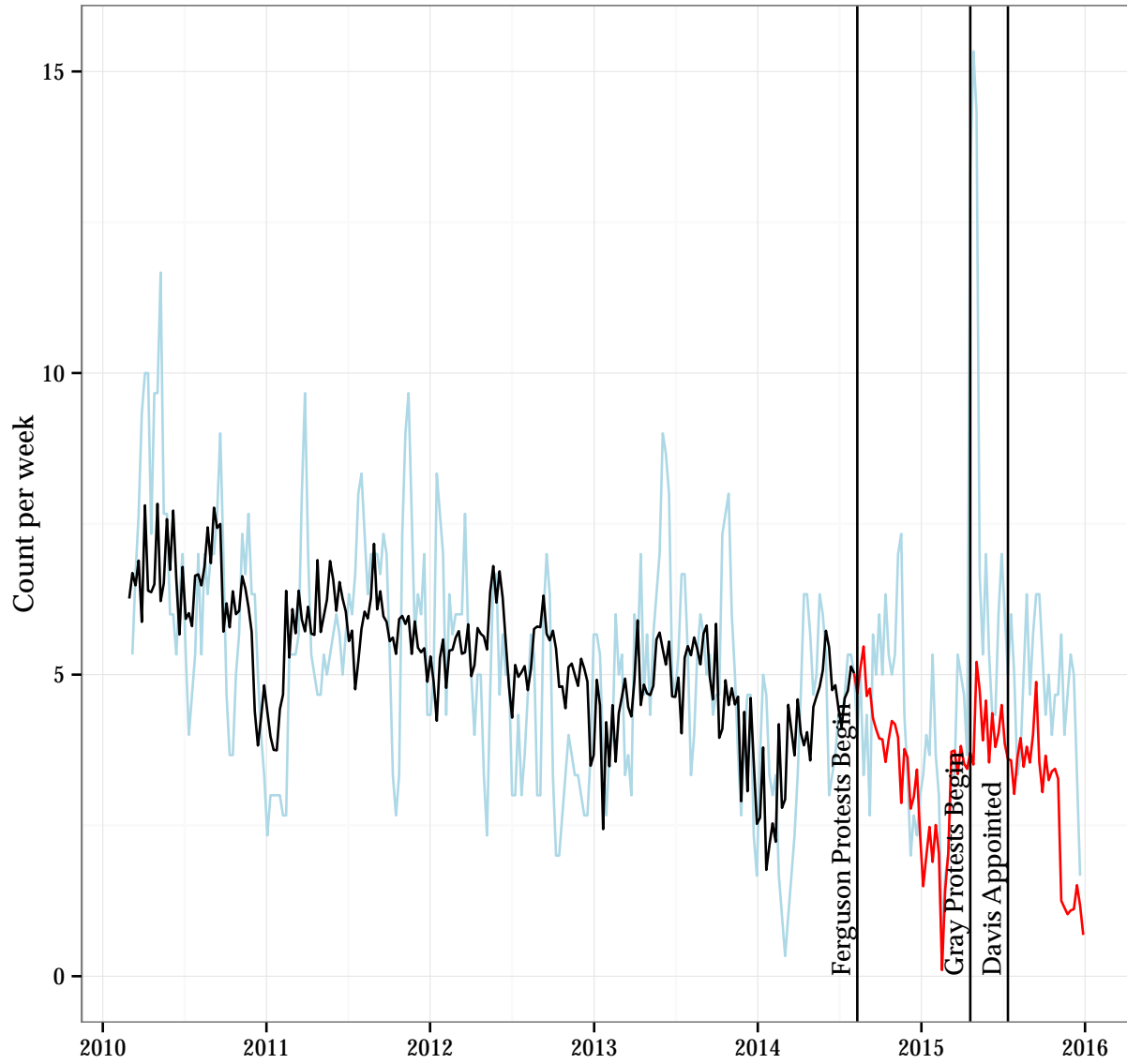
Table 18.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.01	−0.01		−0.01
After Ferguson Protests Begin (week of 8/11/14 onward)	0.30		0.75	0.63
After Gray Protests Begin (week of 4/20/15 onward)	1.92		0.78	0.95
Unrest and National Guard (during week of 4/27/15)	27.22		27.97	27.77
After Commissioner Batts Fired (week of 7/13/15 onward)	−0.84		0.35	0.19
Average Maximum Temperature to 50 Degrees		0.13		0.10
Plus Degrees in the 50s		−0.08		−0.04
Plus Degrees in the 60s		−0.12		−0.11
Plus Degrees in the 70s		0.27		0.23
Plus Degrees greater than 80		−0.33		−0.30
Snowfall (inches)		0.03		−0.17
Precipitation (inches)		−0.64		−0.54
Darkness Before Midnight (hours)		−0.01		−0.02
School Days (proportion of week)		0.70		0.84
Observations	305	232	305	305
R <sup>2</sup>	0.30	0.14	0.31	0.35

### 18.3 Least Squares Model (2) for arson

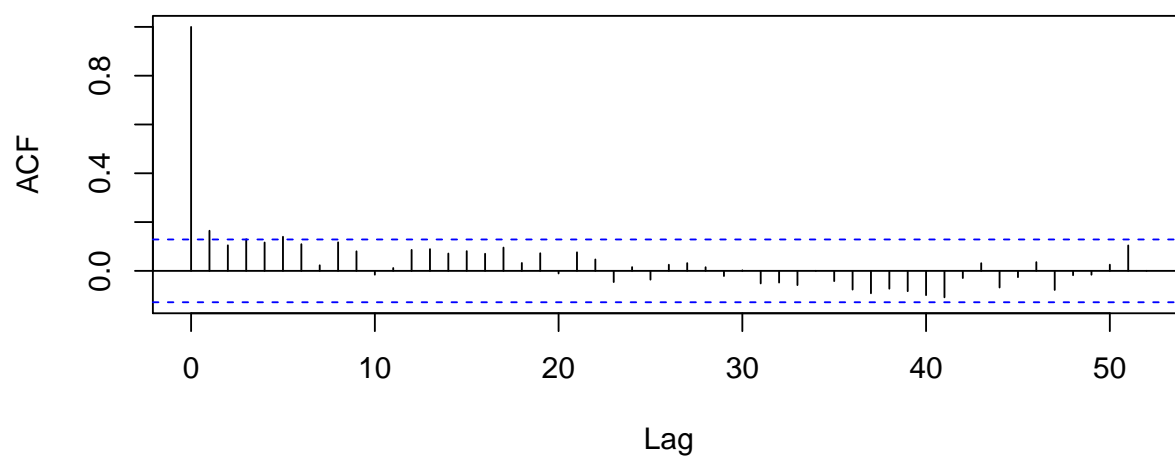


# arson

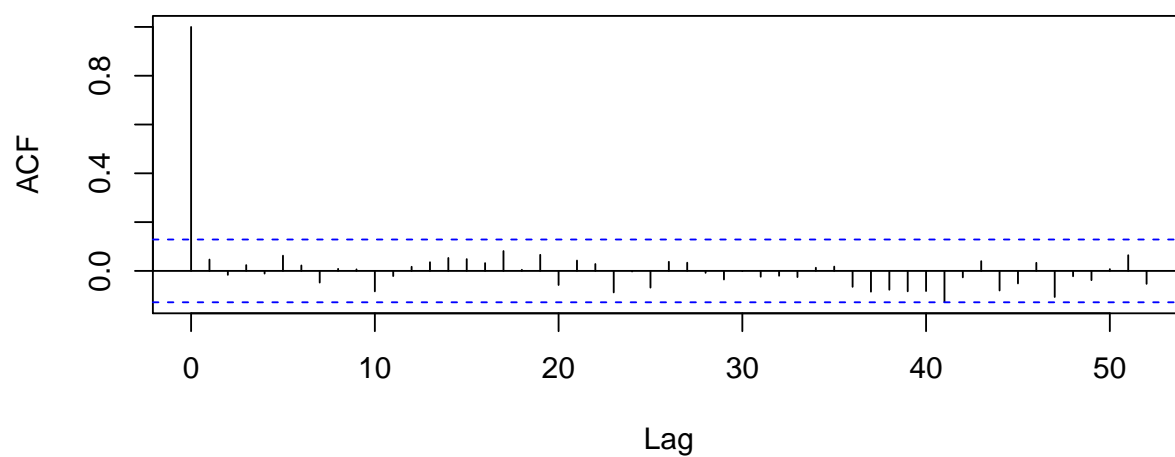




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 18.4 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
-3.2601  -0.8967  -0.1703   0.7349   2.9372

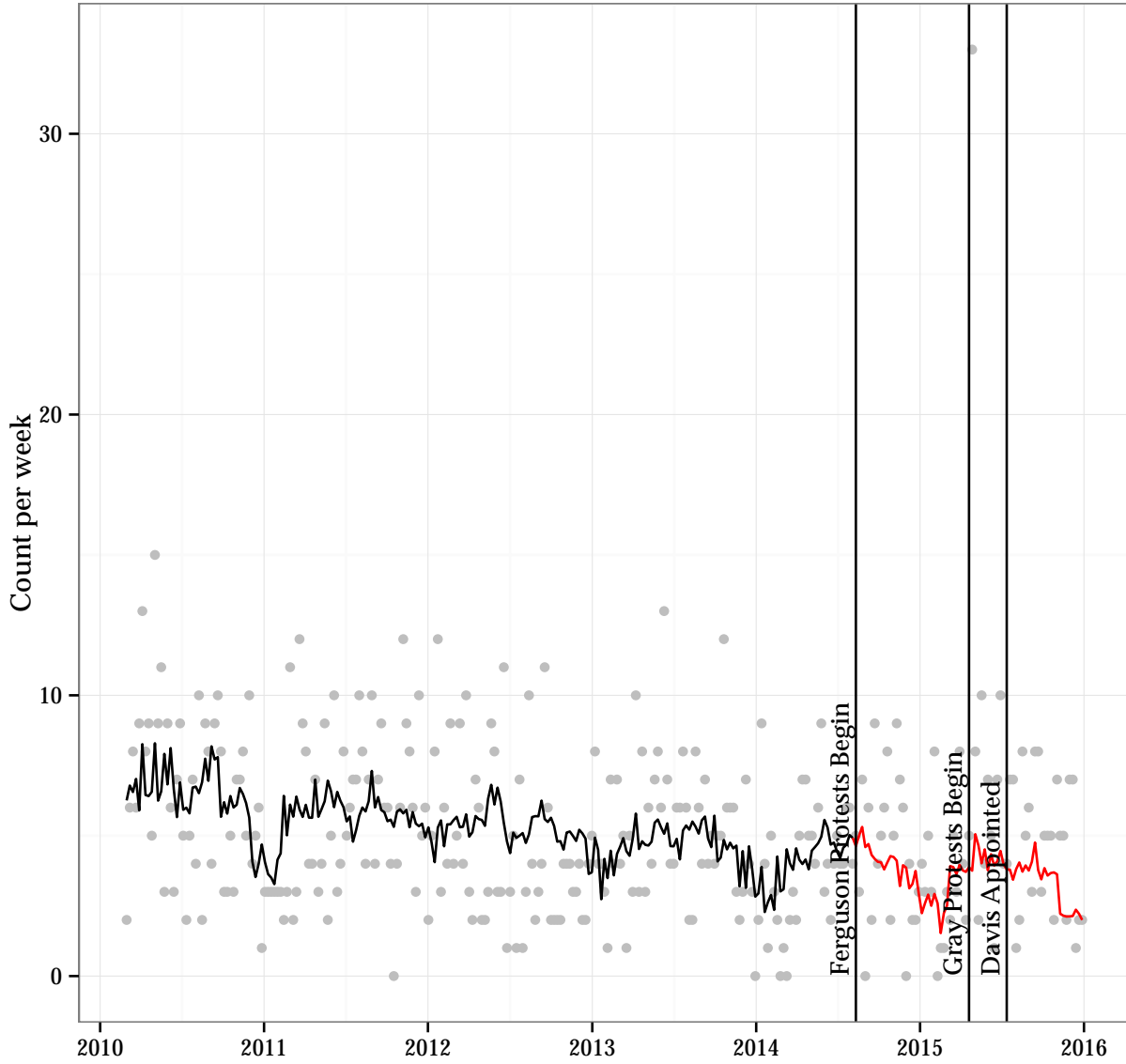
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   0.2359263   0.6747123   0.350  0.72659
t             -0.0020639   0.0004407  -4.683 2.82e-06 ***
tmax.f.spline1  0.0317595   0.0126478   2.511  0.01204 *
tmax.f.spline2 -0.0241184   0.0235420  -1.024  0.30561
tmax.f.spline3 -0.0203199   0.0267905  -0.758  0.44817
tmax.f.spline4  0.0465393   0.0248831   1.870  0.06144 .
tmax.f.spline5 -0.0572206   0.0216150  -2.647  0.00811 **
snow.in        -0.0421399   0.1821776  -0.231  0.81707
precip.in      -0.1195236   0.1609906  -0.742  0.45783
dark.before.12 -0.0010126   0.0415942  -0.024  0.98058
school         0.1202741   0.1261464   0.953  0.34036
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

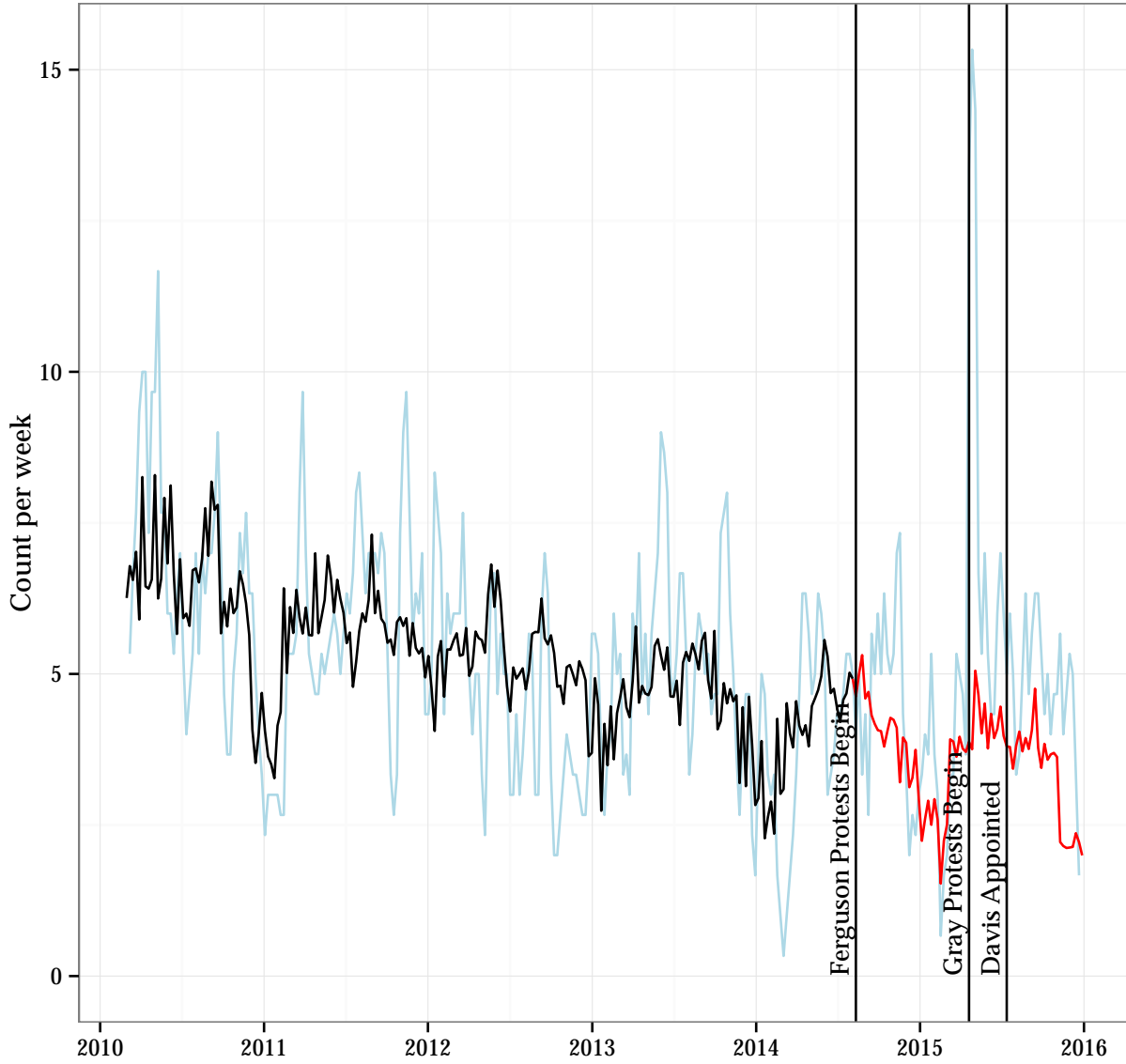
    Null deviance: 377.59  on 231  degrees of freedom
Residual deviance: 322.50  on 221  degrees of freedom
AIC: 1121.9

Number of Fisher Scoring iterations: 4
```

# arson



# arson



## 19 Results for northwestern

### 19.1 Summary Values for northwestern

Table 19.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
northwestern	232	95.659	15.079	57	94	152

Table 19.2: Descriptives for Outcome After Ferguson Protests Begin

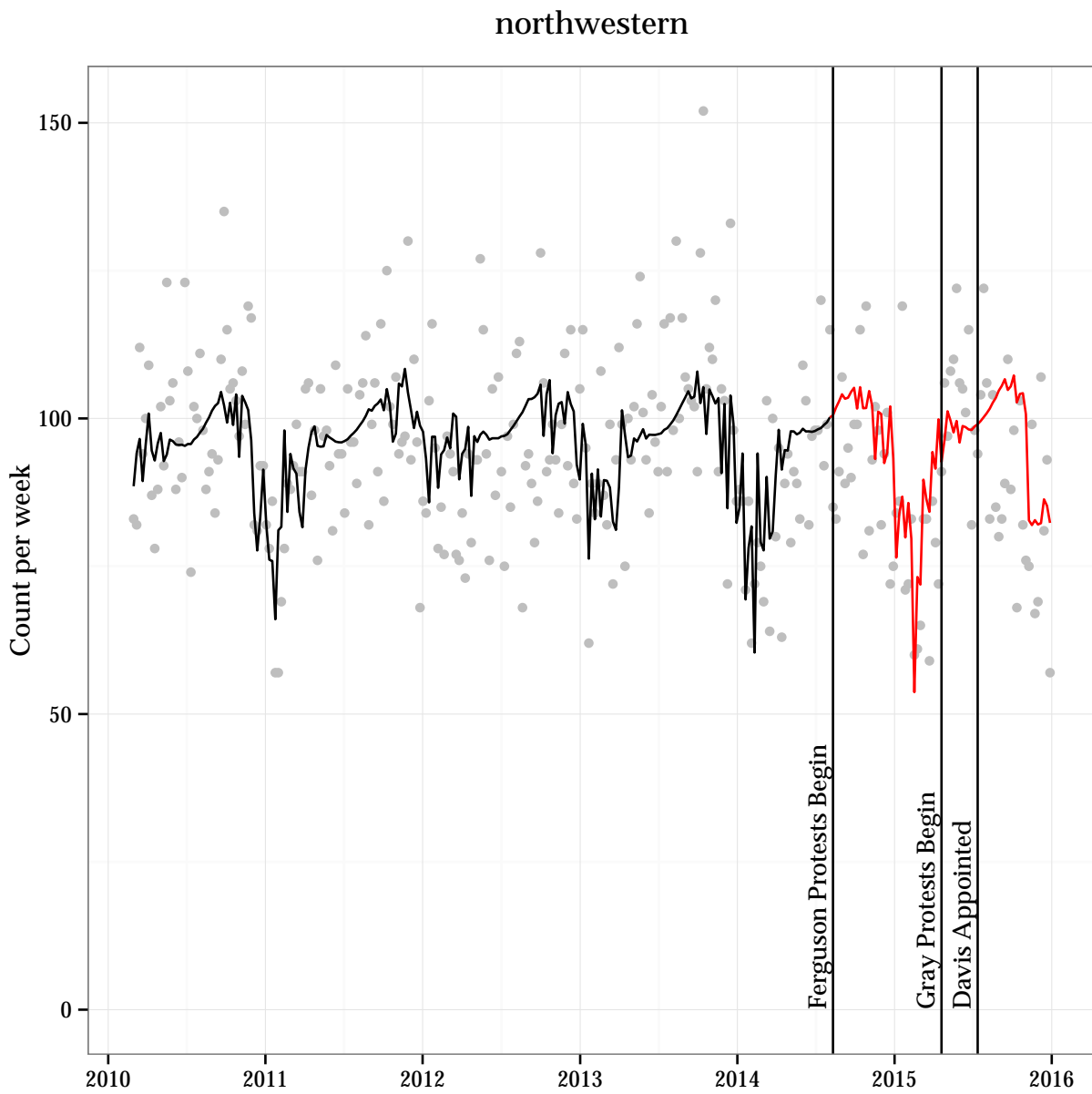
Statistic	N	Mean	St. Dev.	Min	Median	Max
northwestern	73	90.055	15.896	57	89	122

## 19.2 Four Models for northwestern

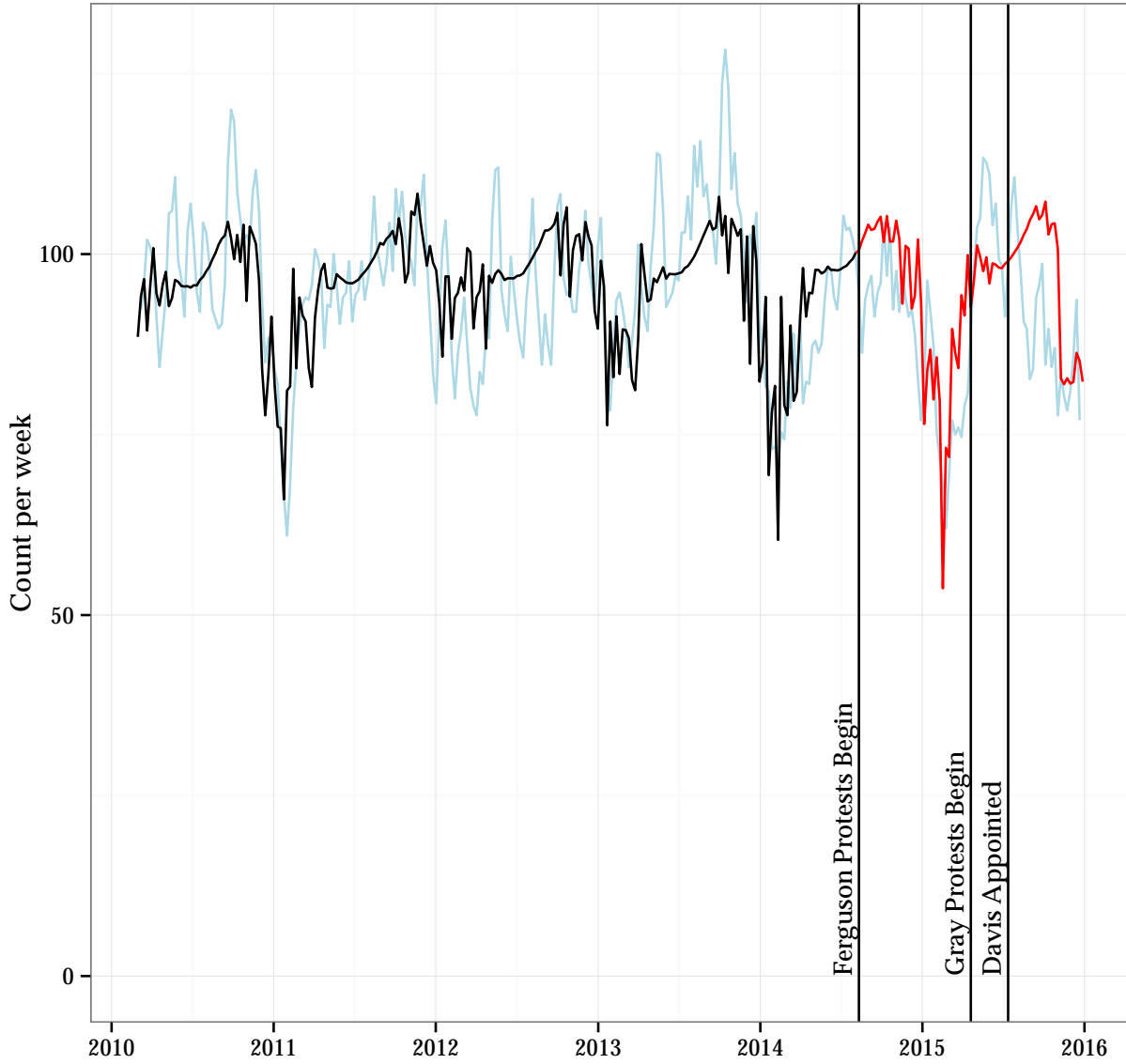
Table 19.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.01	0.01		0.01
After Ferguson Protests Begin (week of 8/11/14 onward)	−8.43		−6.86	−7.61
After Gray Protests Begin (week of 4/20/15 onward)	16.95		11.98	12.94
Unrest and National Guard (during week of 4/27/15)	2.79		4.51	4.24
After Commissioner Batts Fired (week of 7/13/15 onward)	−14.15		−12.98	−14.75
Average Maximum Temperature to 50 Degrees		1.20		0.82
Plus Degrees in the 50s		−0.60		−0.15
Plus Degrees in the 60s		0.32		0.29
Plus Degrees in the 70s		−0.55		−0.66
Plus Degrees greater than 80		−0.35		0.08
Snowfall (inches)		−6.42		−6.76
Precipitation (inches)		−0.35		0.16
Darkness Before Midnight (hours)		5.78		5.77
School Days (proportion of week)		−0.16		2.36
Observations	305	232	305	305
R <sup>2</sup>	0.06	0.25	0.06	0.28

### 19.3 Least Squares Model (2) for northwestern

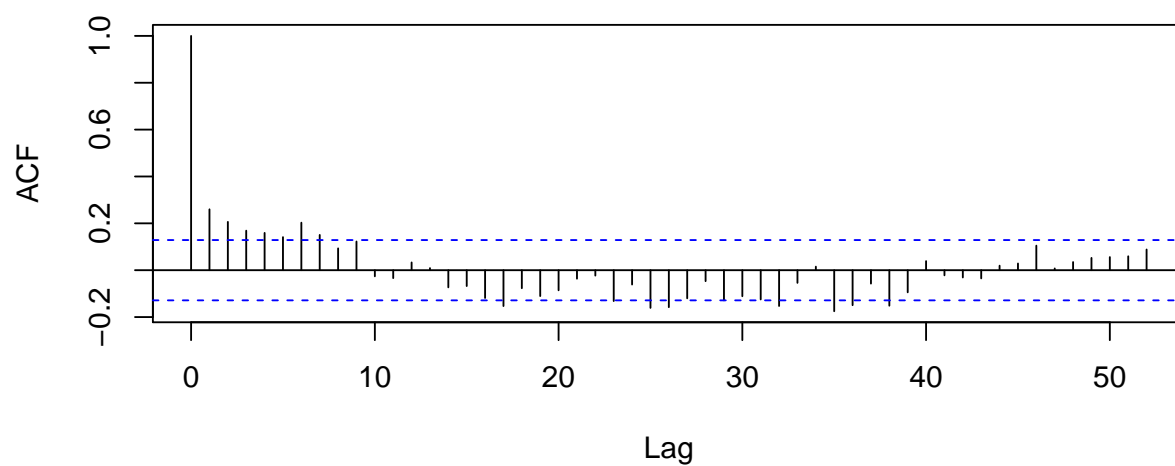


# northwestern

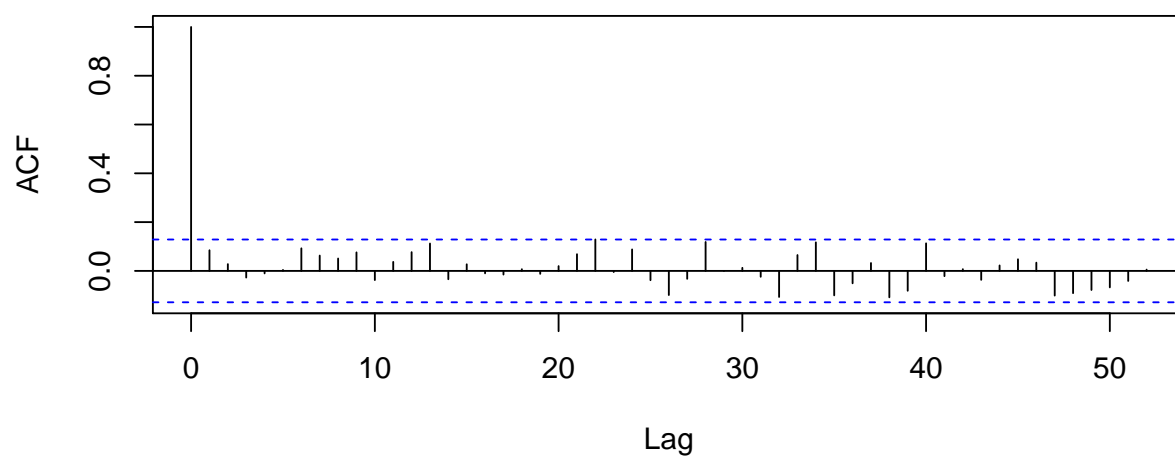




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 19.4 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
-3.5078  -0.9509  -0.0604   0.8602   4.2317

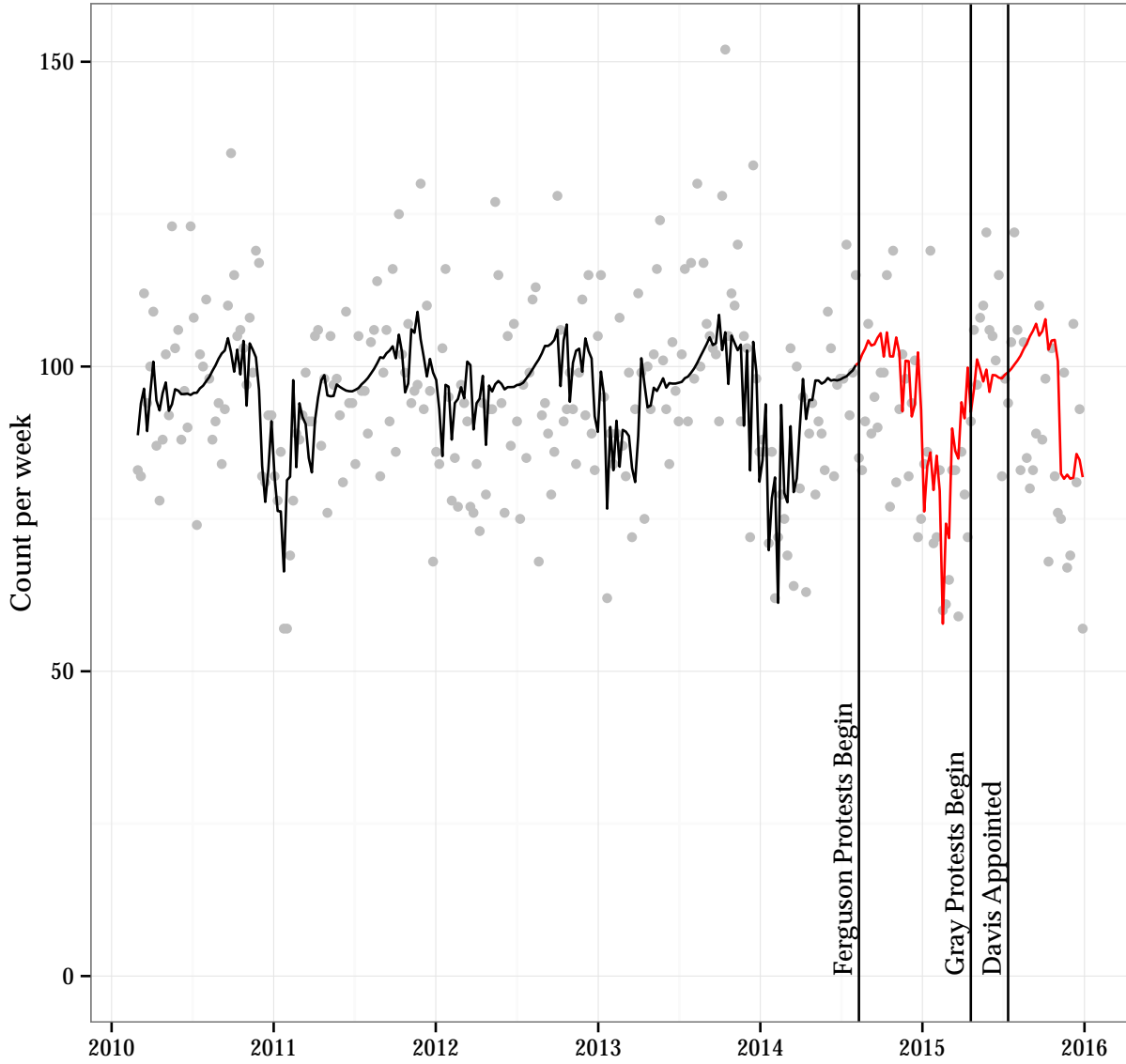
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   3.4856431   0.1460699   23.863  < 2e-16 ***
t              0.0001254   0.0001040    1.207   0.2276
tmax.f.spline1 0.0134275   0.0027007    4.972 6.63e-07 ***
tmax.f.spline2 -0.0076036   0.0053558   -1.420   0.1557
tmax.f.spline3 0.0038854   0.0063931    0.608   0.5434
tmax.f.spline4 -0.0059207   0.0059301   -0.998   0.3181
tmax.f.spline5 -0.0035052   0.0051896   -0.675   0.4994
snow.in       -0.0915173   0.0378544   -2.418   0.0156 *
precip.in     -0.0028141   0.0373783   -0.075   0.9400
dark.before.12 0.0599581   0.0097638    6.141 8.21e-10 ***
school        -0.0034668   0.0298621   -0.116   0.9076
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

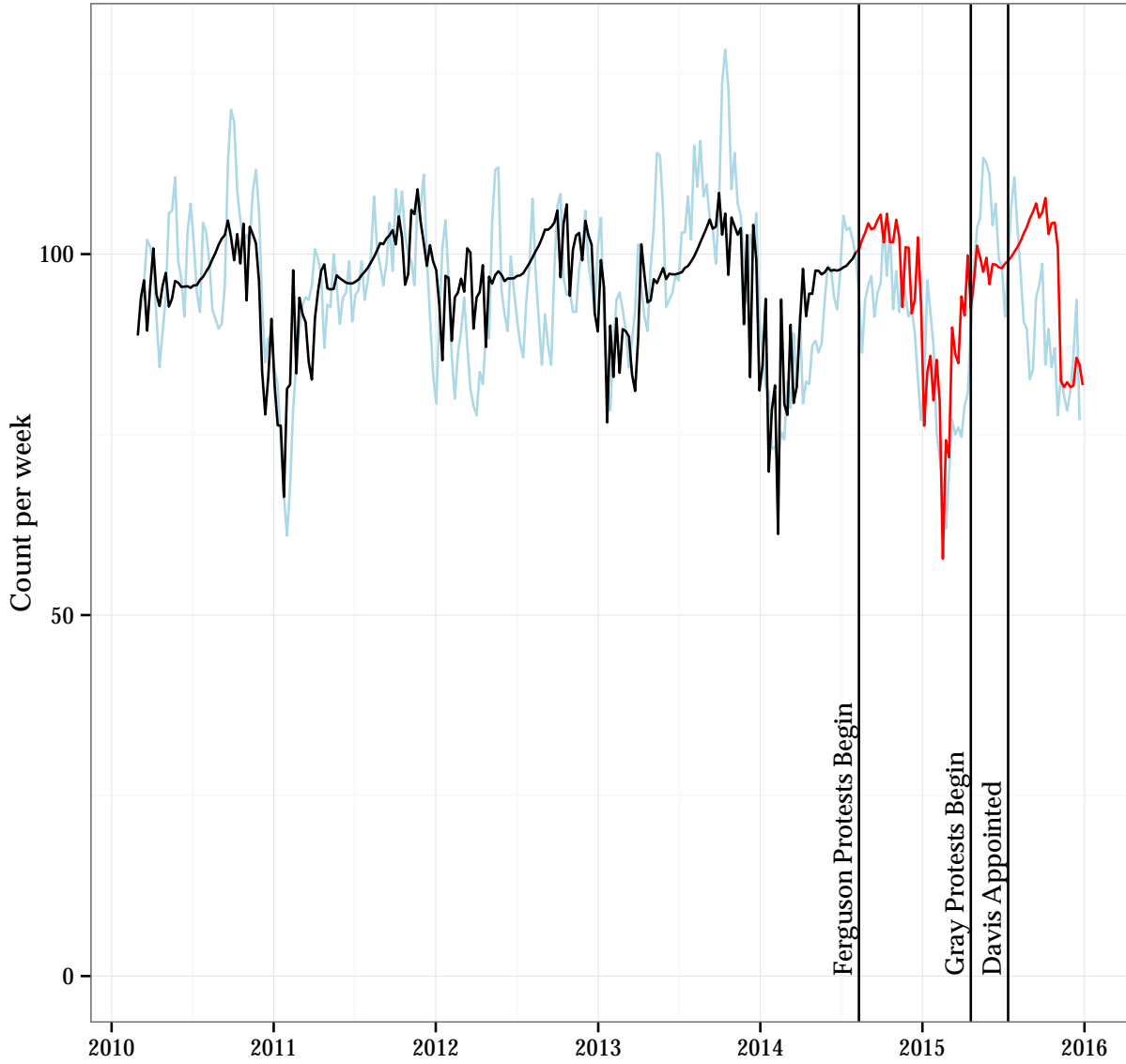
    Null deviance: 549.51  on 231  degrees of freedom
Residual deviance: 406.50  on 221  degrees of freedom
AIC: 1910.5

Number of Fisher Scoring iterations: 4
```

# northwestern



# northwestern



## 20 Results for northern

### 20.1 Summary Values for northern

Table 20.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
northern	232	104.177	17.727	56	104	150

Table 20.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
northern	73	109.041	22.574	57	108	171

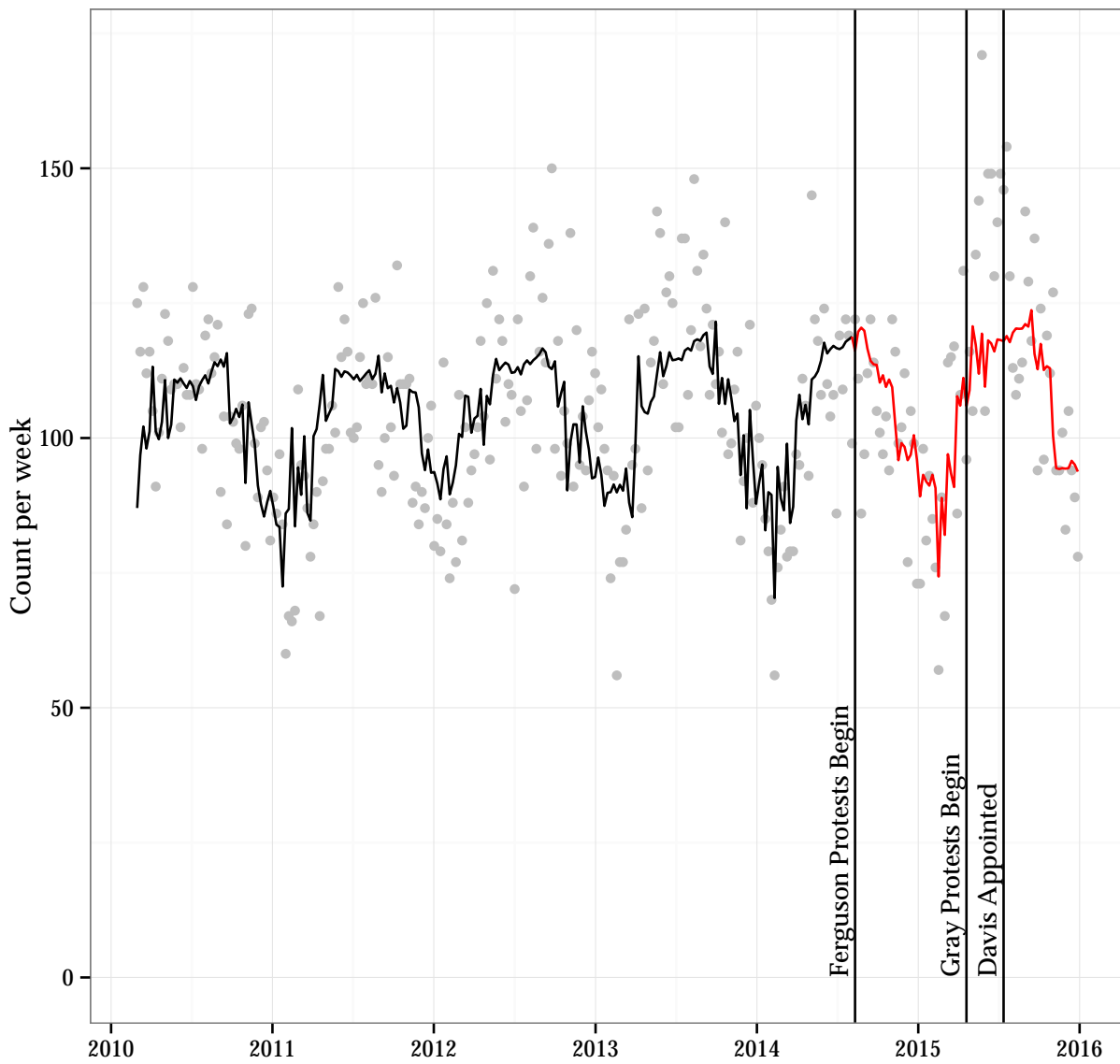
## 20.2 Four Models for northern

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

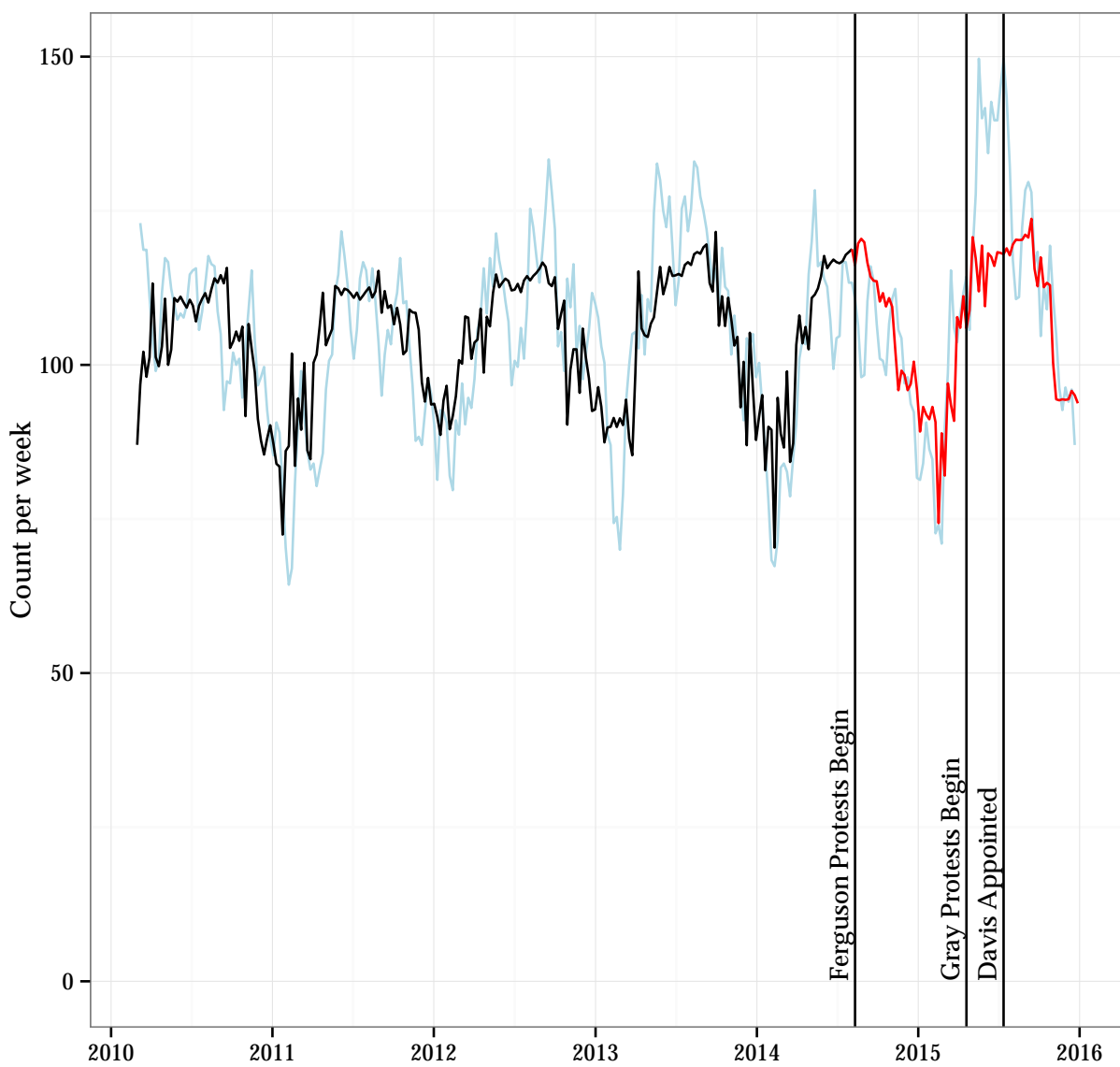
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.01	0.03		0.03
After Ferguson Protests Begin (week of 8/11/14 onward)	-6.79		-3.11	-2.59
After Gray Protests Begin (week of 4/20/15 onward)	34.66		21.22	20.50
Unrest and National Guard (during week of 4/27/15)	-17.76		-10.97	-11.20
After Commissioner Batts Fired (week of 7/13/15 onward)	-21.54		-15.31	-14.14
Average Maximum Temperature to 50 Degrees		0.36		0.80
Plus Degrees in the 50s		1.10		0.03
Plus Degrees in the 60s		-1.03		-0.32
Plus Degrees in the 70s		0.70		0.52
Plus Degrees greater than 80		-1.29		-0.90
Snowfall (inches)		-6.91		-7.73
Precipitation (inches)		-4.87		-5.50
Darkness Before Midnight (hours)		2.82		2.02
School Days (proportion of week)		-0.08		1.46
Observations	305	232	305	305
R <sup>2</sup>	0.11	0.34	0.06	0.42

### 20.3 Least Squares Model (2) for northern

northern

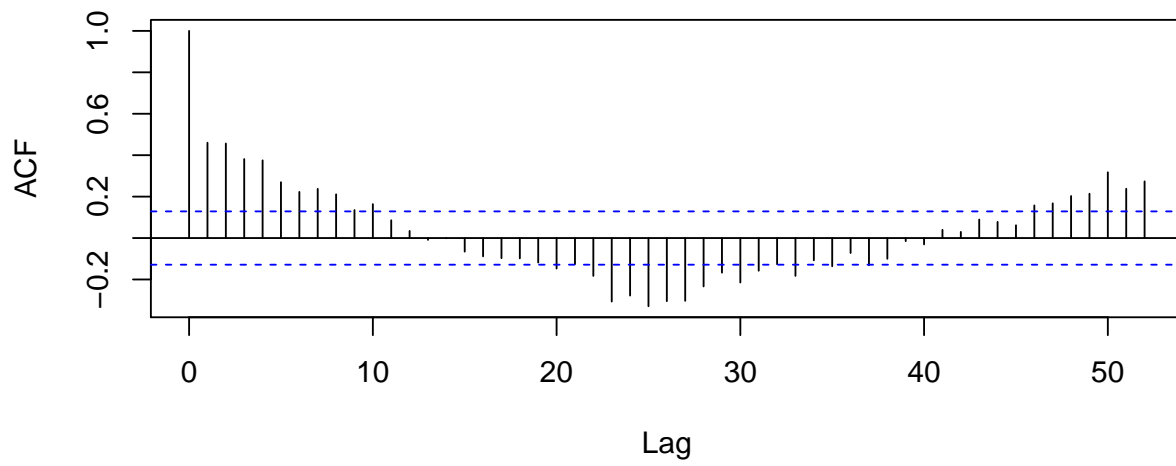


# northern

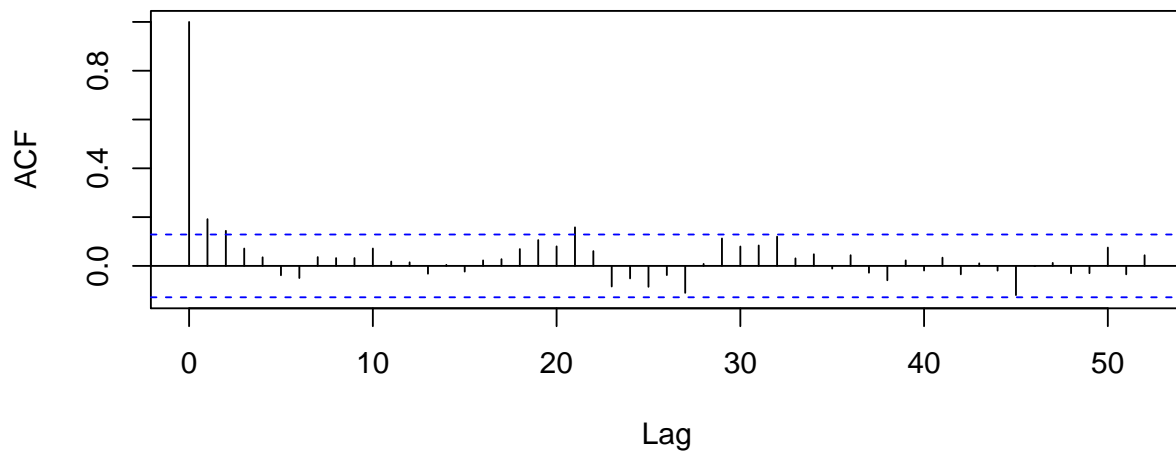




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 20.4 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
-4.0844	-1.0027	-0.0272	0.9112	3.7411

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	4.124e+00	1.412e-01	29.201	< 2e-16 ***
t	2.988e-04	9.915e-05	3.014	0.00258 **
tmax.f.spline1	3.853e-03	2.619e-03	1.471	0.14129
tmax.f.spline2	1.089e-02	5.245e-03	2.075	0.03795 *
tmax.f.spline3	-1.052e-02	6.209e-03	-1.694	0.09020 .
tmax.f.spline4	6.169e-03	5.694e-03	1.083	0.27863
tmax.f.spline5	-1.158e-02	4.880e-03	-2.373	0.01763 *
snow.in	-8.564e-02	3.594e-02	-2.383	0.01718 *
precip.in	-4.554e-02	3.624e-02	-1.256	0.20898
dark.before.12	2.788e-02	9.475e-03	2.942	0.00326 **
school	-1.918e-03	2.843e-02	-0.067	0.94621

---

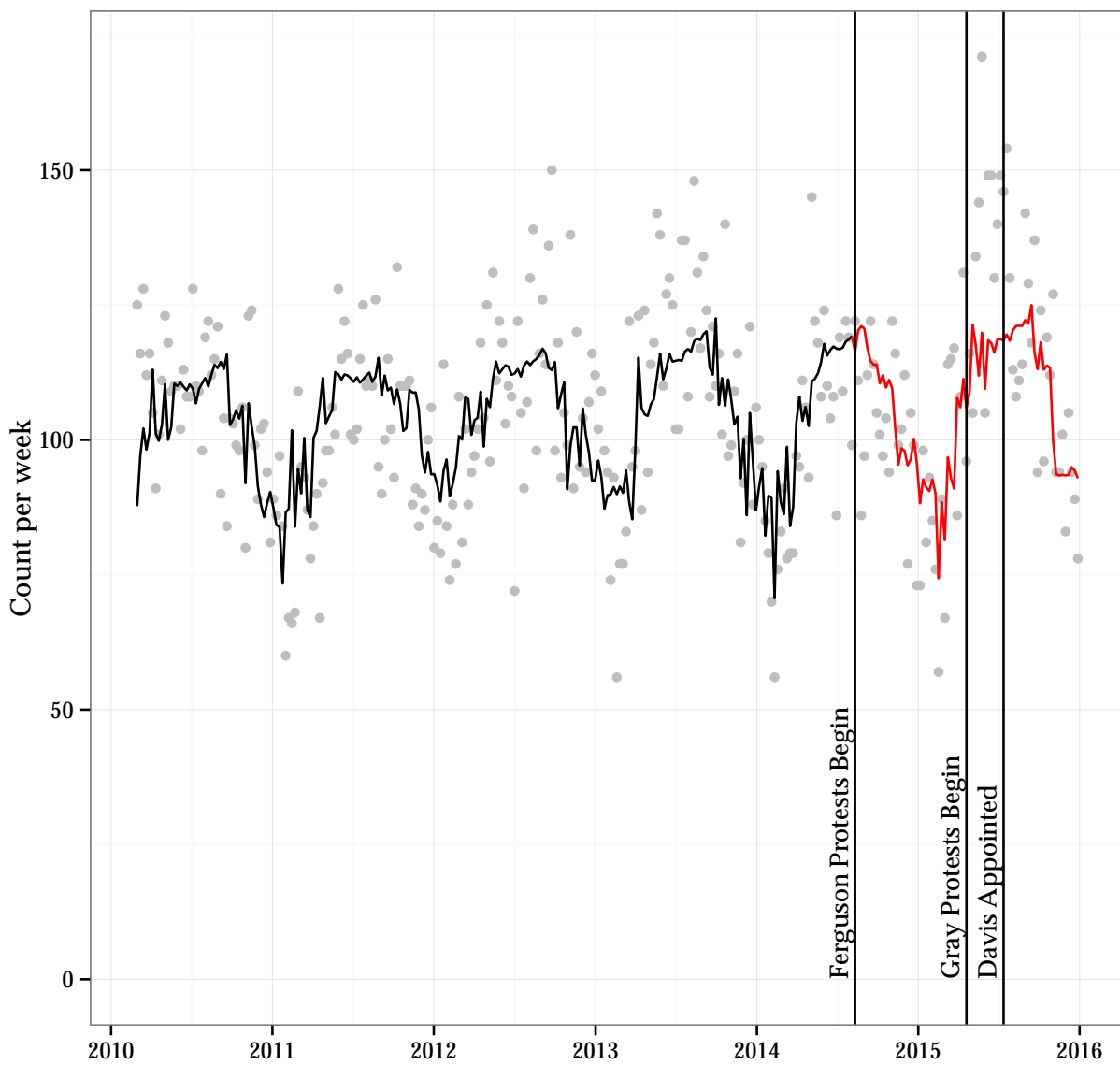
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

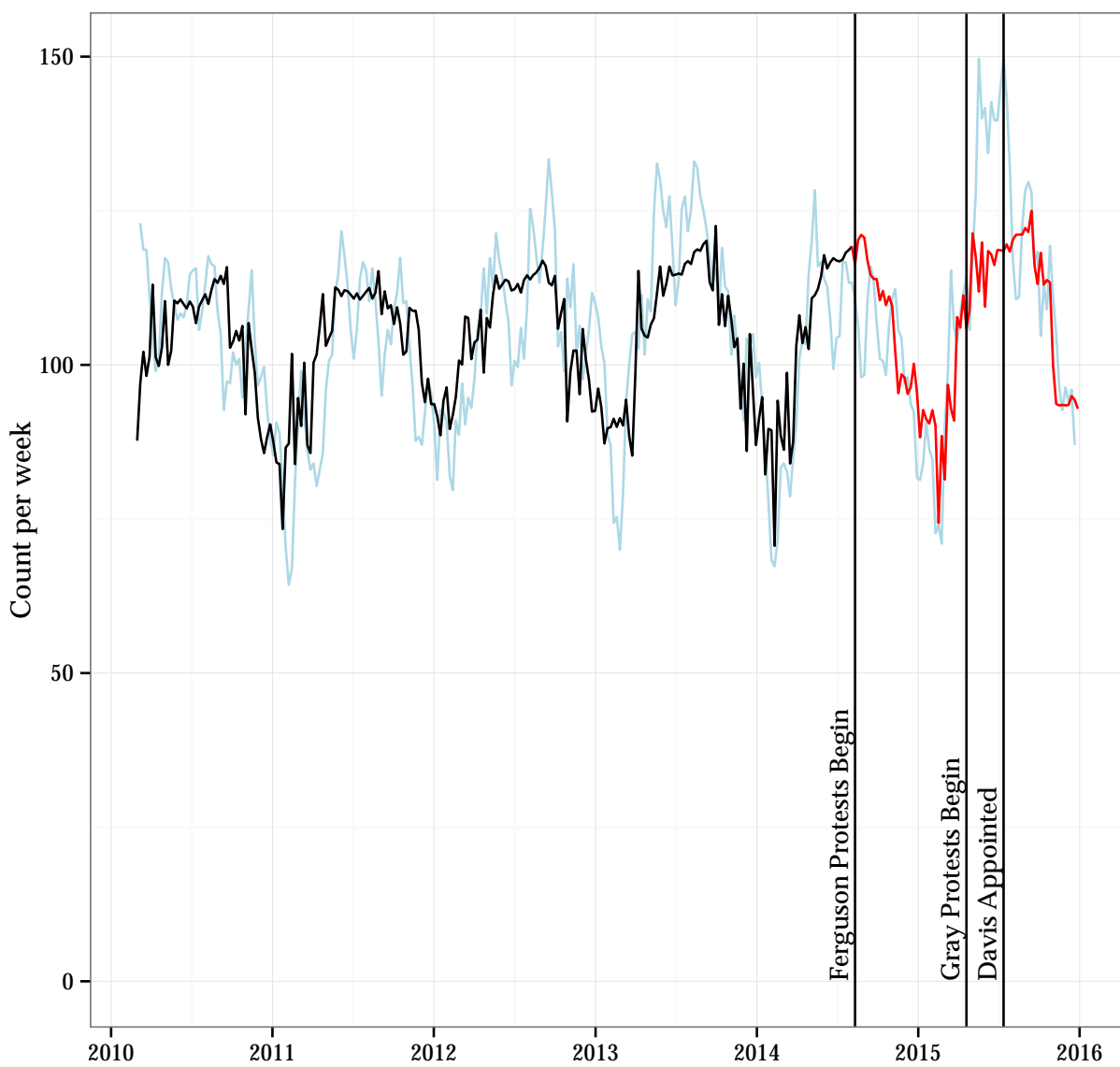
Null deviance: 710.32 on 231 degrees of freedom  
Residual deviance: 469.34 on 221 degrees of freedom  
AIC: 1992.5

Number of Fisher Scoring iterations: 4

# northern



# northern



## 21 Results for northeastern

### 21.1 Summary Values for northeastern

Table 21.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
northeastern	232	149.841	20.140	91	149	207

Table 21.2: Descriptives for Outcome After Ferguson Protests Begin

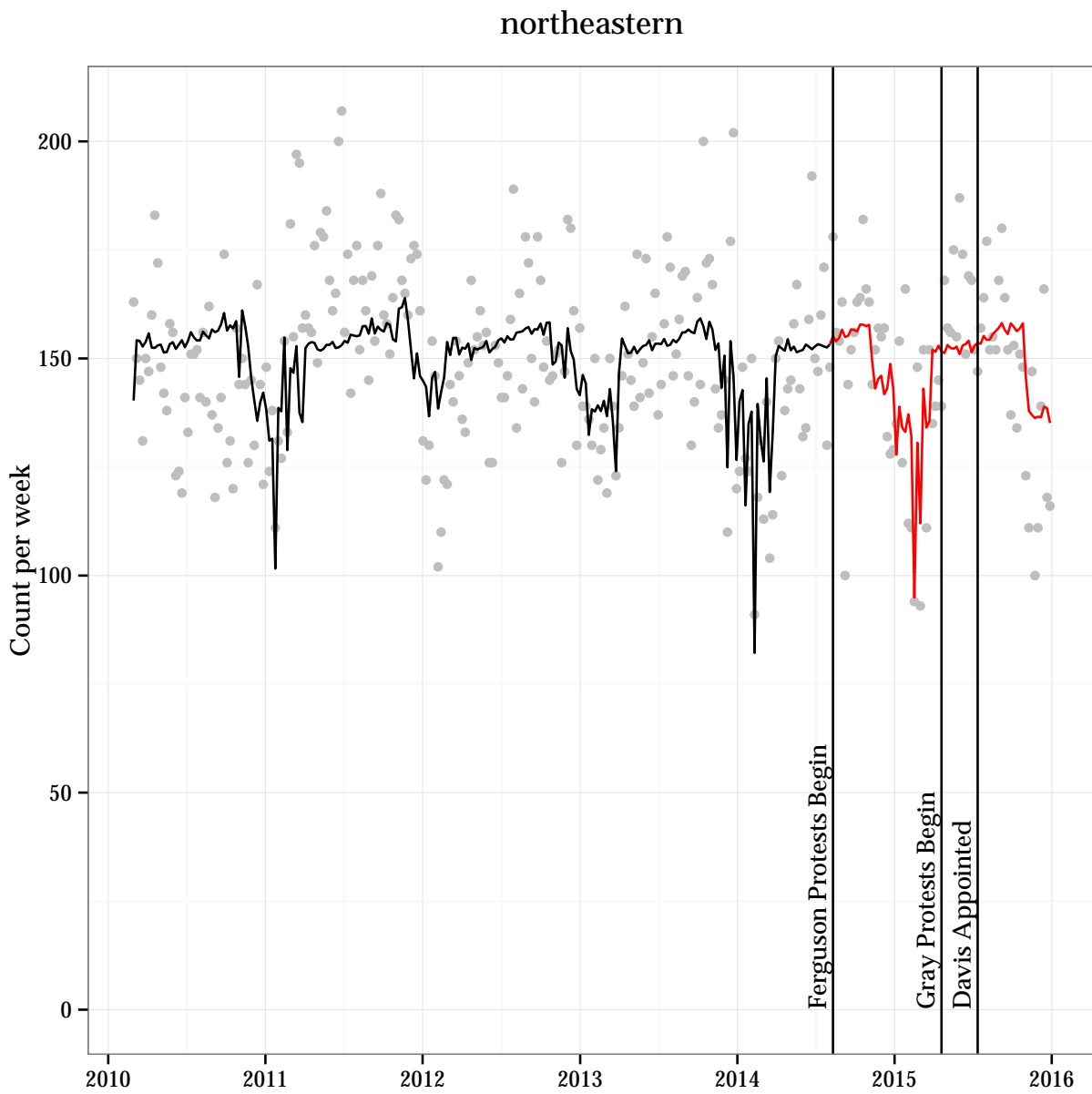
Statistic	N	Mean	St. Dev.	Min	Median	Max
northeastern	73	147.137	21.752	93	152	187

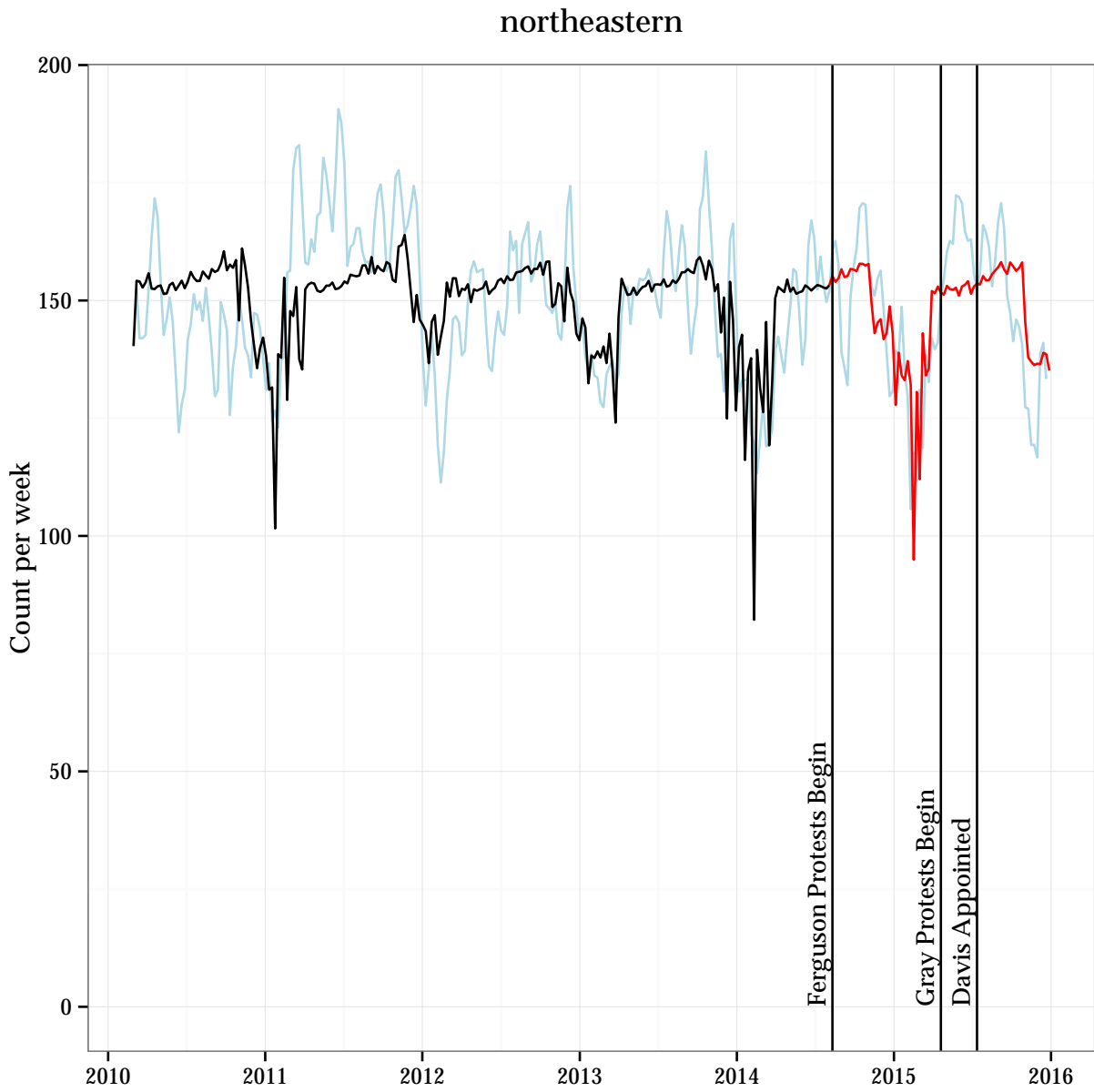
## 21.2 Four Models for northeastern

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

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.03	−0.001		−0.0002
After Ferguson Protests Begin (week of 8/11/14 onward)	−2.35		−0.92	−0.57
After Gray Protests Begin (week of 4/20/15 onward)	19.25		10.47	9.37
Unrest and National Guard (during week of 4/27/15)	5.76		7.20	9.09
After Commissioner Batts Fired (week of 7/13/15 onward)	−16.68		−14.23	−13.87
Average Maximum Temperature to 50 Degrees		0.45		0.41
Plus Degrees in the 50s		1.14		1.21
Plus Degrees in the 60s		−1.39		−1.48
Plus Degrees in the 70s		−0.03		0.25
Plus Degrees greater than 80		0.01		0.06
Snowfall (inches)		−20.42		−21.96
Precipitation (inches)		3.83		7.57
Darkness Before Midnight (hours)		3.71		3.83
School Days (proportion of week)		−0.21		3.08
Observations	305	232	305	305
R <sup>2</sup>	0.04	0.23	0.02	0.29

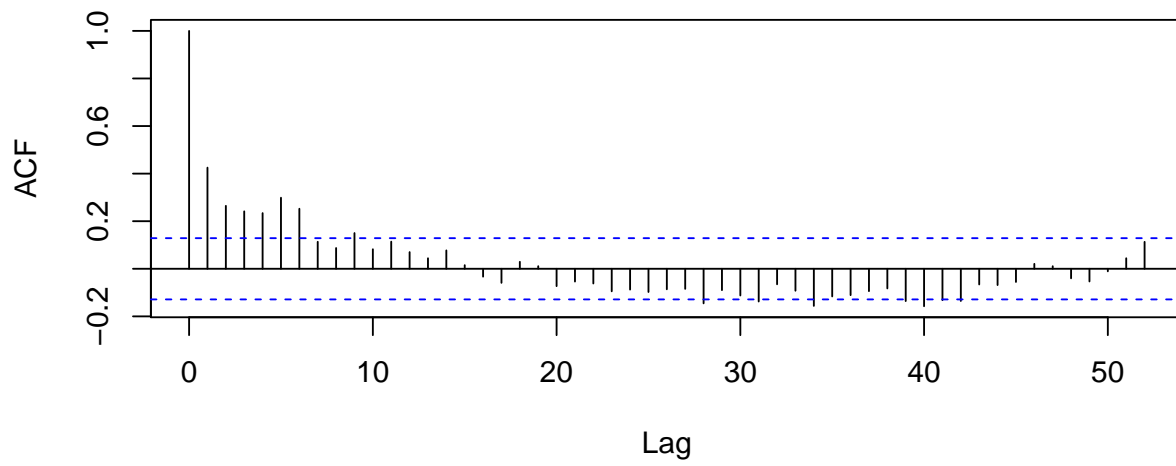
### 21.3 Least Squares Model (2) for northeastern



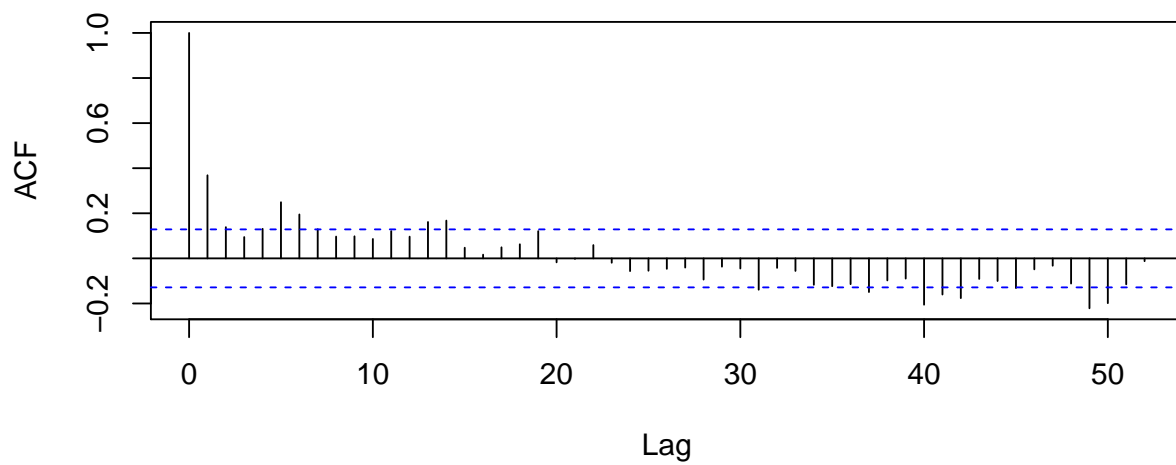




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 21.4 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
-3.2439	-1.0071	-0.1330	0.8137	4.5474

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	4.656e+00	1.149e-01	40.515	< 2e-16	***
t	-5.119e-06	8.285e-05	-0.062	0.95073	
tmax.f.spline1	3.054e-03	2.119e-03	1.441	0.14951	
tmax.f.spline2	7.368e-03	4.256e-03	1.731	0.08342	.
tmax.f.spline3	-9.049e-03	5.076e-03	-1.783	0.07465	.
tmax.f.spline4	-2.279e-04	4.731e-03	-0.048	0.96158	
tmax.f.spline5	7.727e-05	4.148e-03	0.019	0.98514	
snow.in	-1.773e-01	3.098e-02	-5.724	1.04e-08	***
precip.in	2.501e-02	2.977e-02	0.840	0.40080	
dark.before.12	2.437e-02	7.797e-03	3.126	0.00177	**
school	-2.454e-03	2.391e-02	-0.103	0.91828	

---

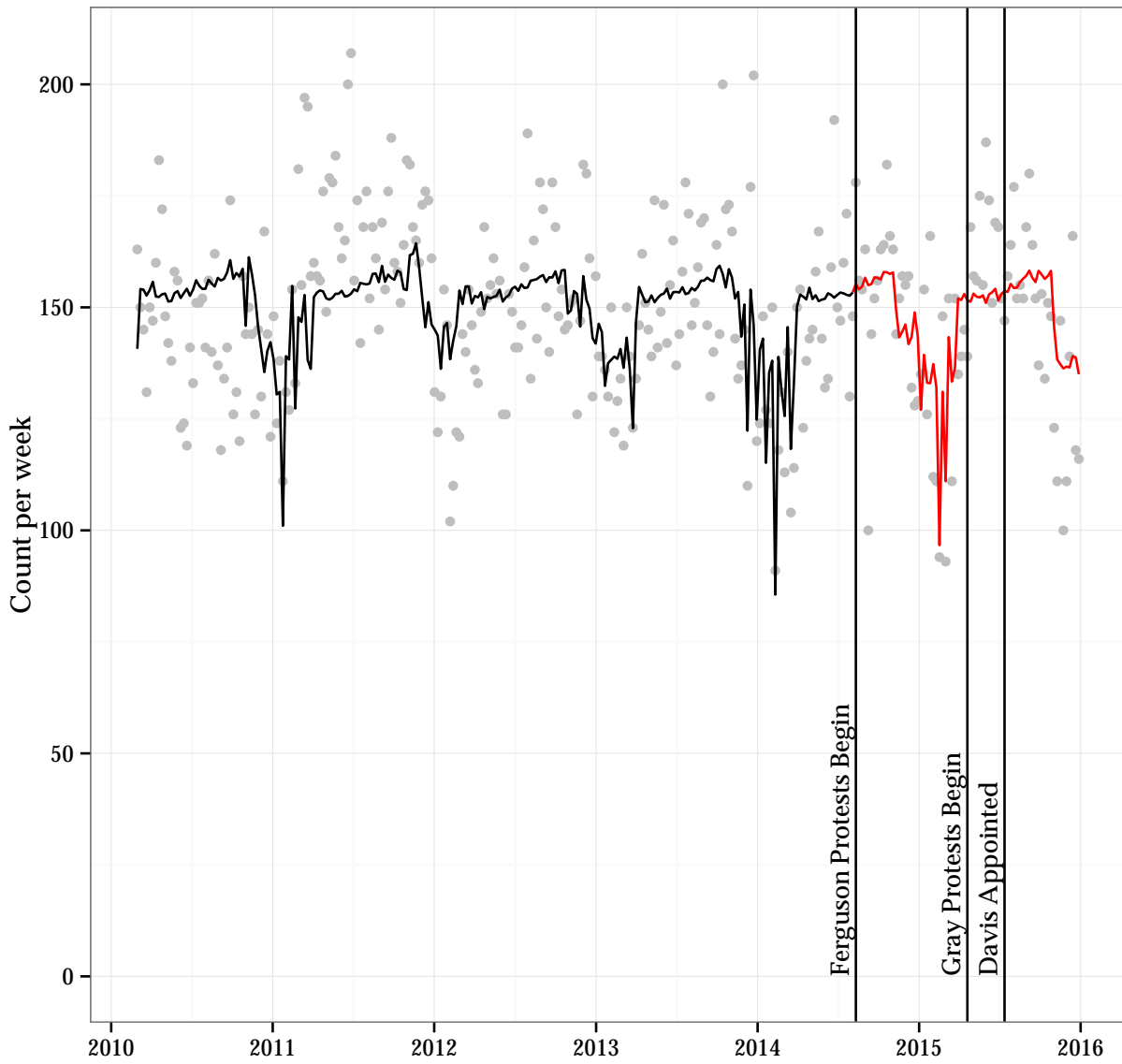
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

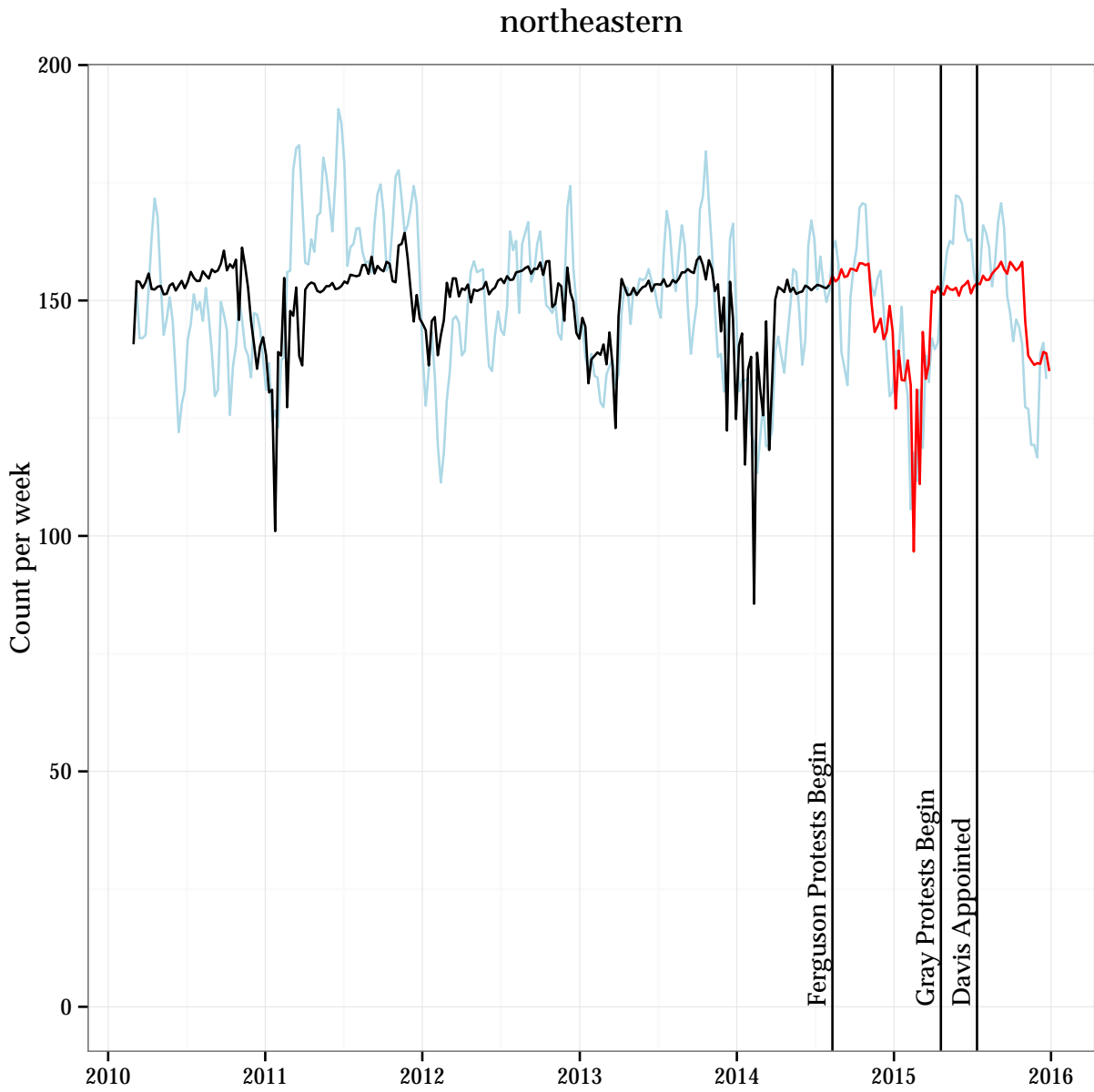
(Dispersion parameter for poisson family taken to be 1)

Null deviance: 626.49 on 231 degrees of freedom  
Residual deviance: 470.69 on 221 degrees of freedom  
AIC: 2079.4

Number of Fisher Scoring iterations: 4

# northeastern





## 22 Results for western

### 22.1 Summary Values for western

Table 22.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
western	232	77.784	13.274	45	77	113

Table 22.2: Descriptives for Outcome After Ferguson Protests Begin

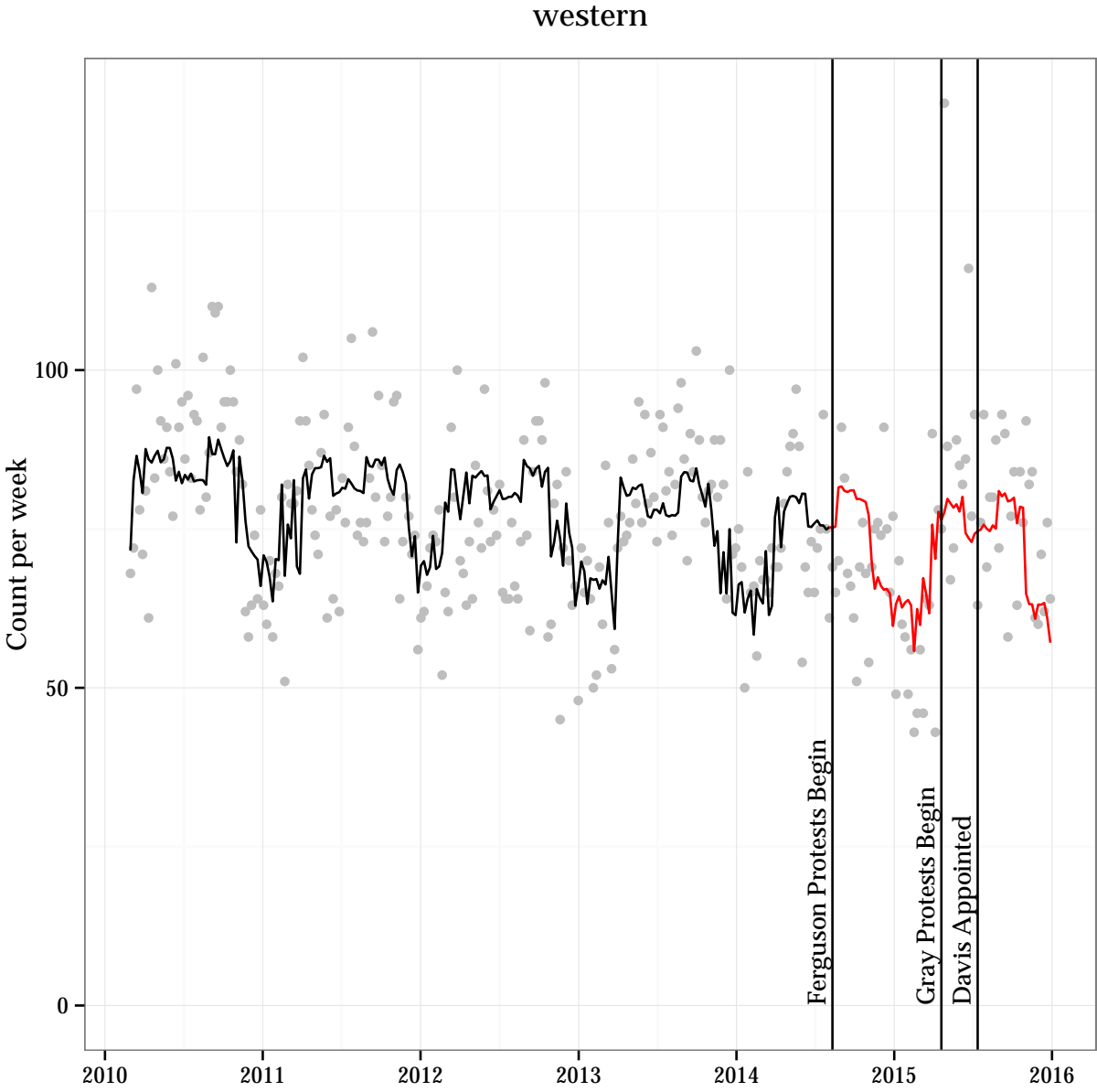
Statistic	N	Mean	St. Dev.	Min	Median	Max
western	73	73.082	16.306	43	72	142

## 22.2 Four Models for western

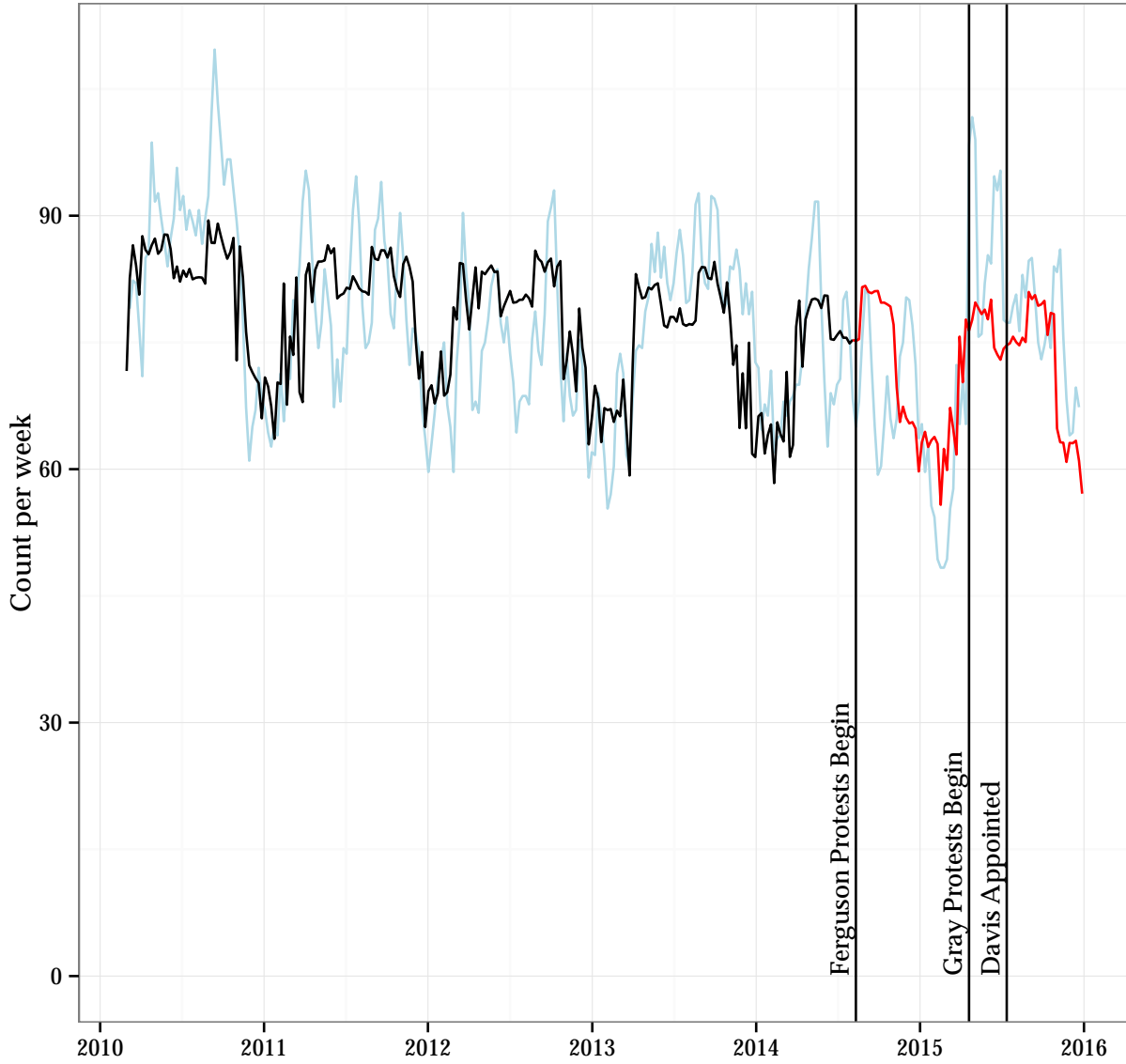
Table 22.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.05	−0.03		−0.03
After Ferguson Protests Begin (week of 8/11/14 onward)	−5.97		−4.70	−4.79
After Gray Protests Begin (week of 4/20/15 onward)	20.00		12.39	13.06
Unrest and National Guard (during week of 4/27/15)	57.23		56.65	59.14
After Commissioner Batts Fired (week of 7/13/15 onward)	−7.76		−3.67	−4.48
Average Maximum Temperature to 50 Degrees		0.07		0.18
Plus Degrees in the 50s		1.35		0.76
Plus Degrees in the 60s		−1.10		−0.52
Plus Degrees in the 70s		−0.17		−0.03
Plus Degrees greater than 80		0.05		−0.19
Snowfall (inches)		−2.48		−4.60
Precipitation (inches)		0.11		3.14
Darkness Before Midnight (hours)		1.41		1.97
School Days (proportion of week)		7.79		6.97
Observations	305	232	305	305
R <sup>2</sup>	0.19	0.30	0.13	0.37

22.3 Least Squares Model (2) for western

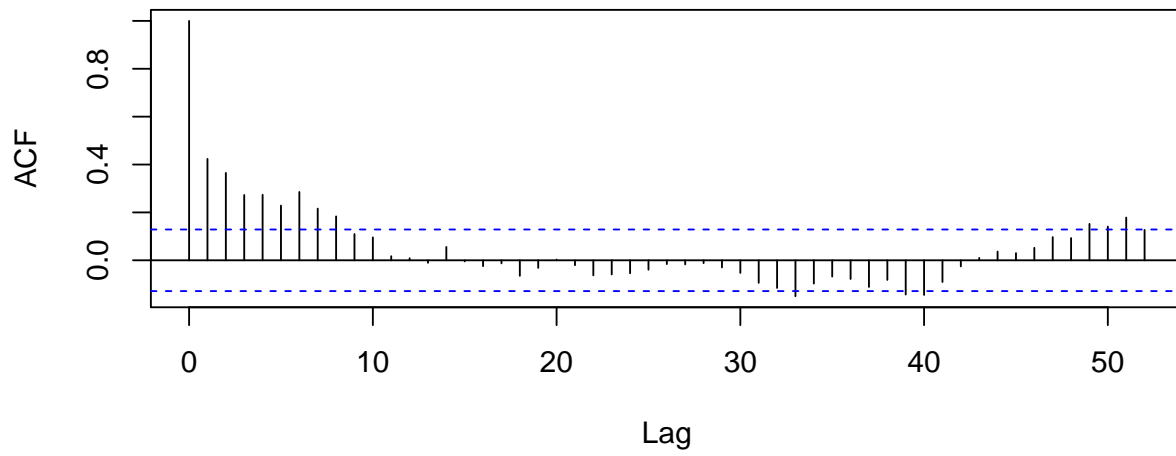


# western

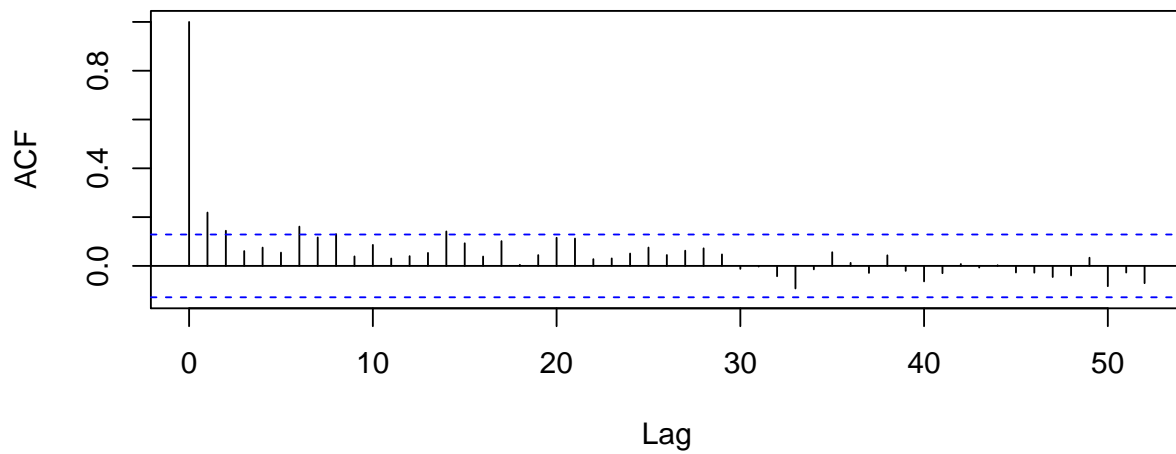




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 22.4 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
-3.5665	-0.8469	-0.0308	0.7972	2.8249

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	4.0352999	0.1619924	24.910	< 2e-16 ***
t	-0.0003859	0.0001147	-3.366	0.000764 ***
tmax.f.spline1	0.0010356	0.0030062	0.344	0.730487
tmax.f.spline2	0.0181385	0.0060137	3.016	0.002560 **
tmax.f.spline3	-0.0154583	0.0070570	-2.190	0.028489 *
tmax.f.spline4	-0.0016375	0.0064876	-0.252	0.800730
tmax.f.spline5	0.0006028	0.0056904	0.106	0.915637
snow.in	-0.0434249	0.0401981	-1.080	0.280021
precip.in	0.0022379	0.0414262	0.054	0.956919
dark.before.12	0.0183966	0.0108745	1.692	0.090700 .
school	0.0992117	0.0333658	2.973	0.002945 **

---

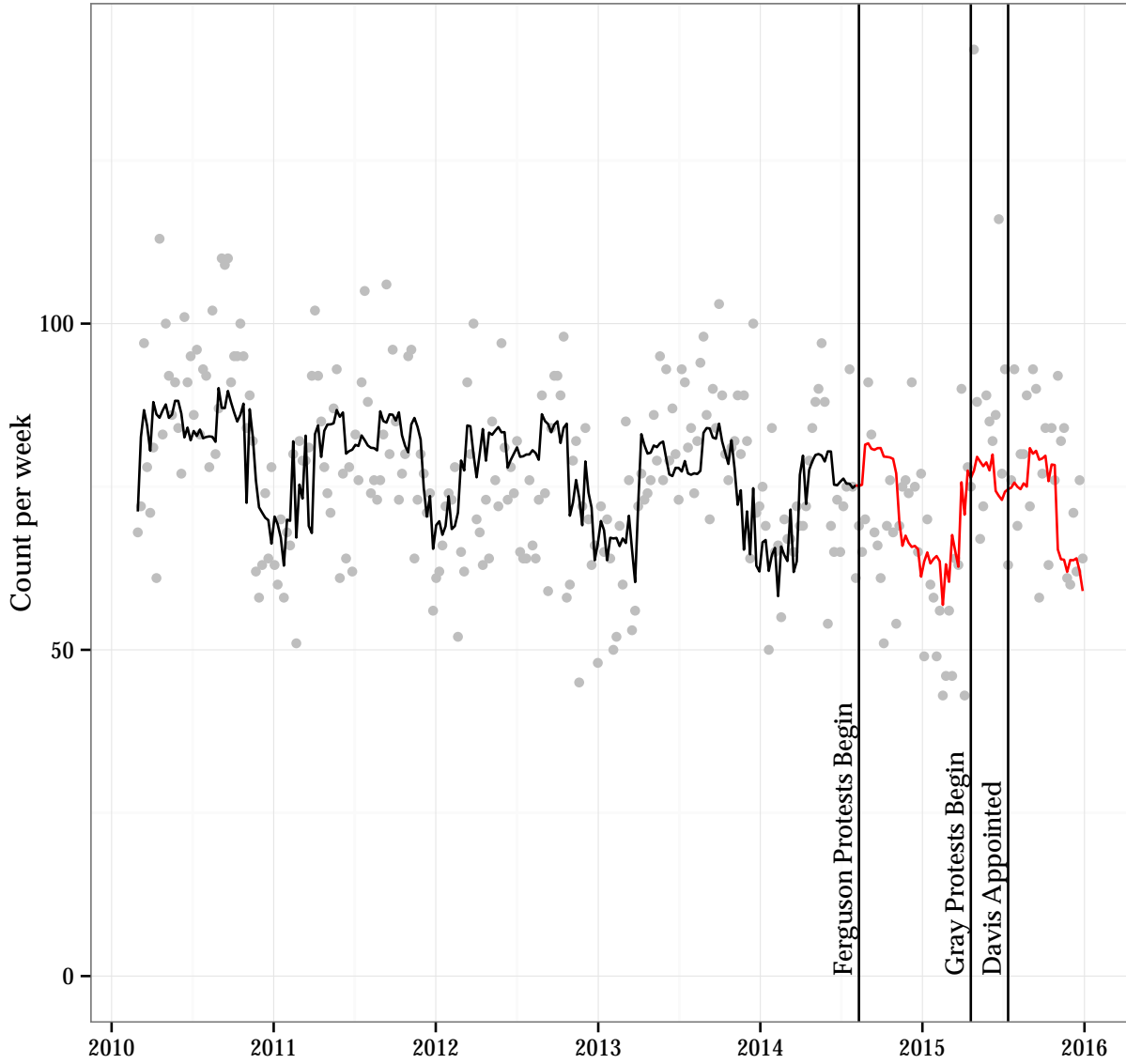
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

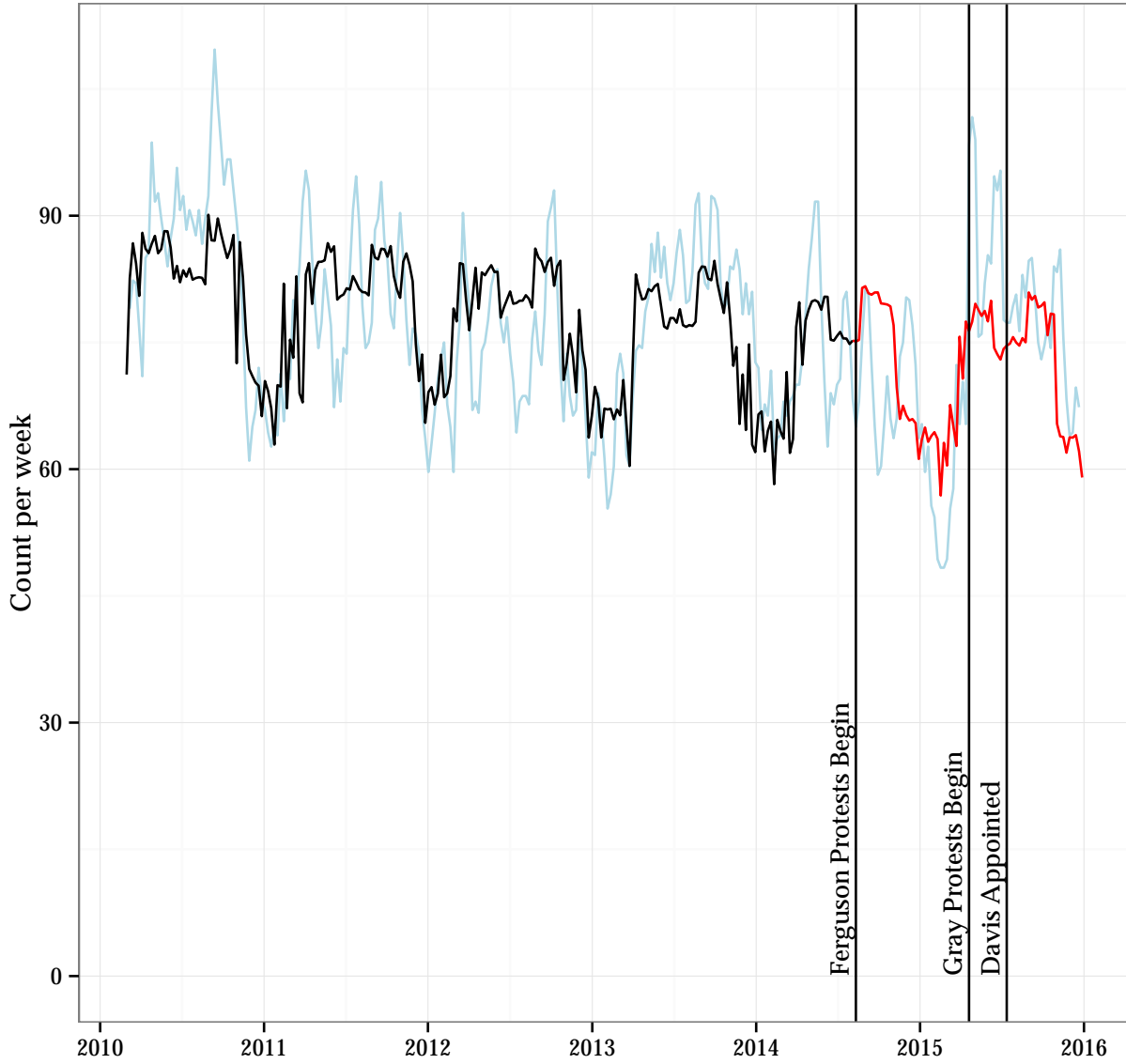
Null deviance: 526.11 on 231 degrees of freedom  
Residual deviance: 366.53 on 221 degrees of freedom  
AIC: 1822.1

Number of Fisher Scoring iterations: 4

# western



# western



## 23 Results for central

### 23.1 Summary Values for central

Table 23.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
central	232	116.177	23.894	52	115	193

Table 23.2: Descriptives for Outcome After Ferguson Protests Begin

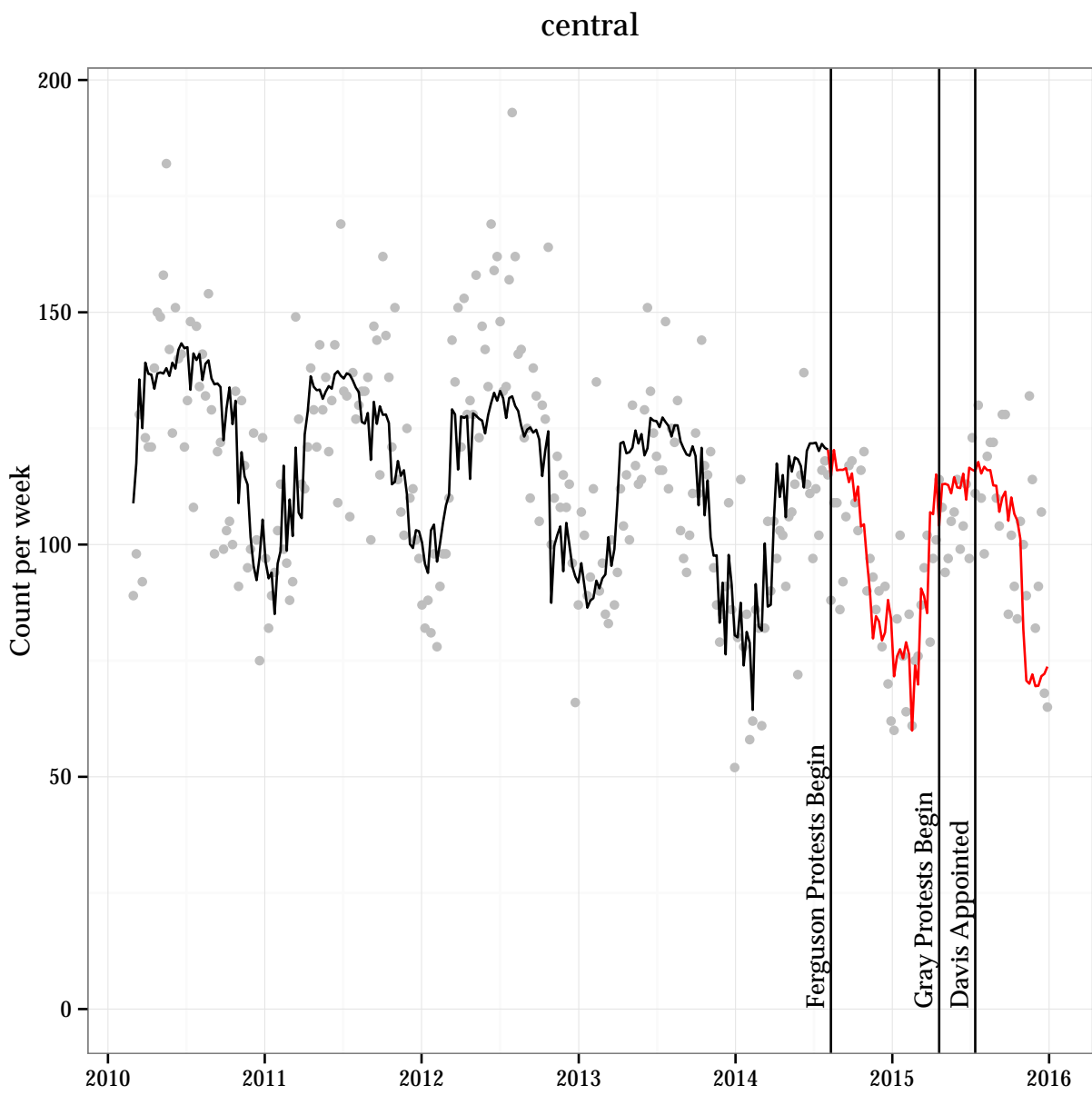
Statistic	N	Mean	St. Dev.	Min	Median	Max
central	73	97.890	17.638	60	99	132

## 23.2 Four Models for central

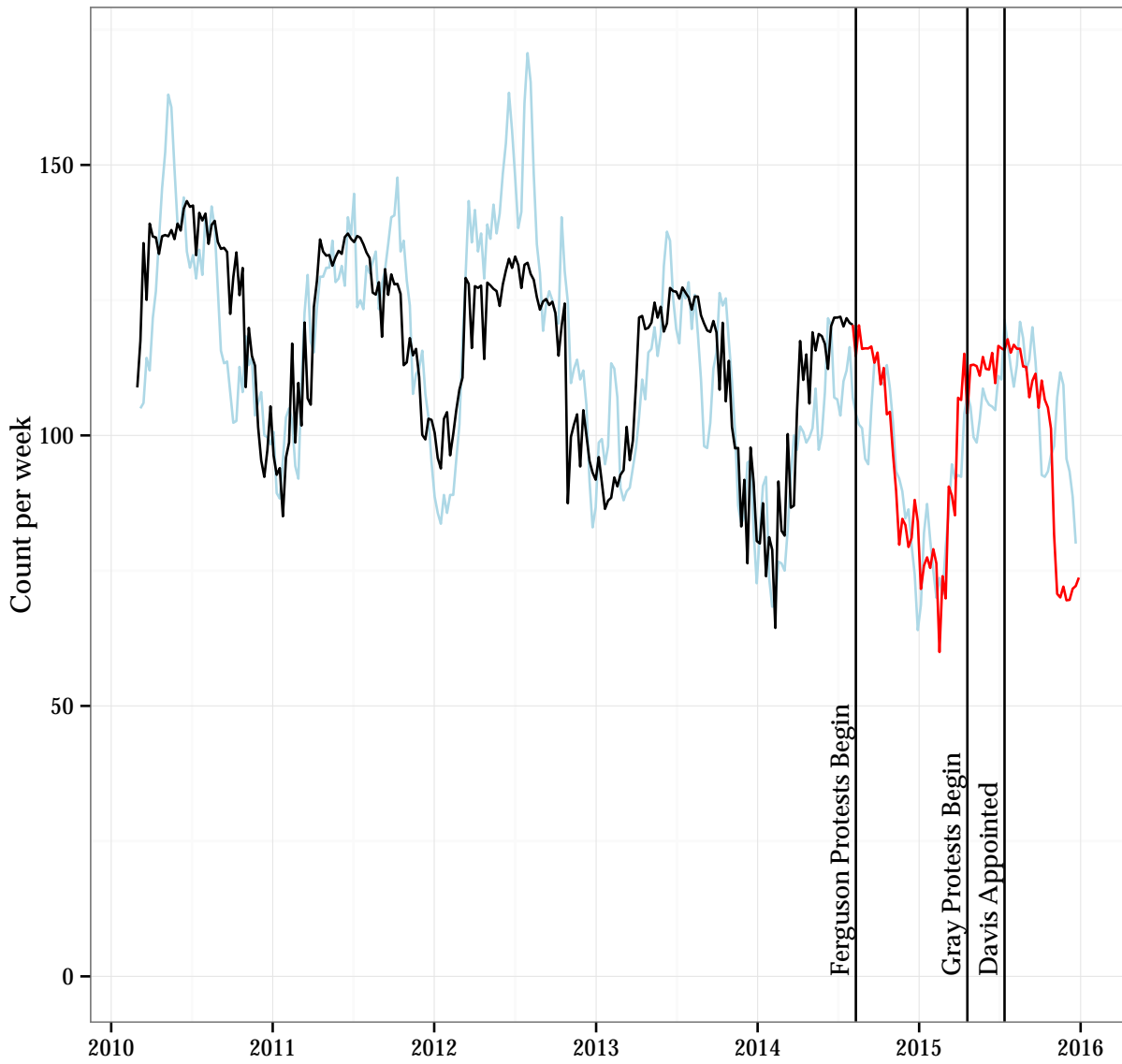
Table 23.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.12	−0.09		−0.09
After Ferguson Protests Begin (week of 8/11/14 onward)	−9.54		−2.89	−4.28
After Gray Protests Begin (week of 4/20/15 onward)	18.00		−3.52	−1.45
Unrest and National Guard (during week of 4/27/15)	1.33		1.44	1.28
After Commissioner Batts Fired (week of 7/13/15 onward)	−0.09		13.05	11.18
Average Maximum Temperature to 50 Degrees		0.64		0.26
Plus Degrees in the 50s		0.81		1.05
Plus Degrees in the 60s		−0.21		−0.27
Plus Degrees in the 70s		−1.49		−1.22
Plus Degrees greater than 80		0.35		0.40
Snowfall (inches)		−5.19		−8.11
Precipitation (inches)		−12.30		−11.56
Darkness Before Midnight (hours)		−1.46		−1.96
School Days (proportion of week)		−6.30		−2.89
Observations	305	232	305	305
R <sup>2</sup>	0.21	0.51	0.02	0.54

23.3 Least Squares Model (2) for central

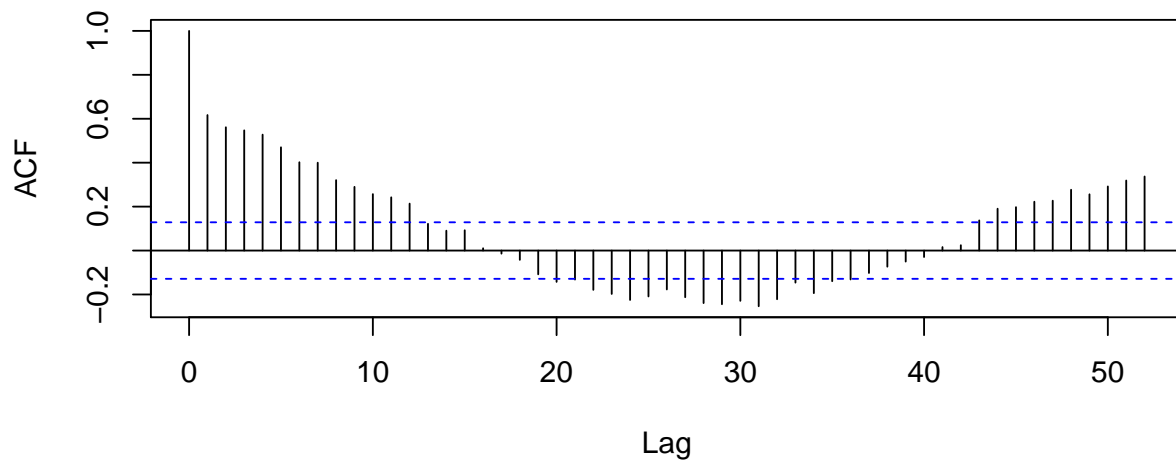


# central

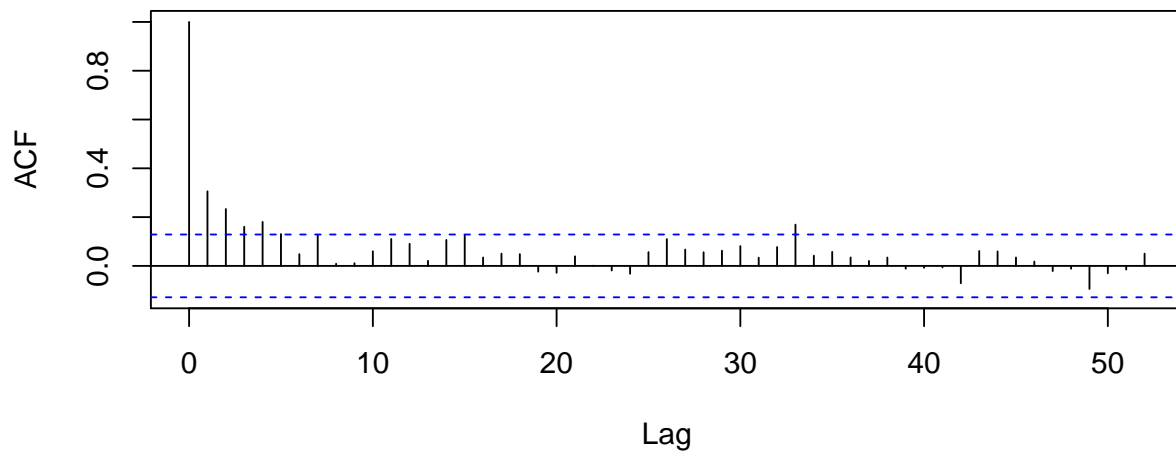




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 23.4 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
-4.5580	-1.0428	-0.1761	0.9951	4.9924

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	4.465e+00	1.384e-01	32.251	< 2e-16	***
t	-7.876e-04	9.352e-05	-8.422	< 2e-16	***
tmax.f.spline1	6.802e-03	2.579e-03	2.637	0.00836	**
tmax.f.spline2	7.095e-03	5.074e-03	1.398	0.16203	
tmax.f.spline3	-3.805e-03	5.892e-03	-0.646	0.51838	
tmax.f.spline4	-1.198e-02	5.310e-03	-2.256	0.02410	*
tmax.f.spline5	2.116e-03	4.543e-03	0.466	0.64140	
snow.in	-7.520e-02	3.593e-02	-2.093	0.03635	*
precip.in	-1.067e-01	3.460e-02	-3.084	0.00204	**
dark.before.12	-1.241e-02	9.039e-03	-1.373	0.16960	
school	-5.495e-02	2.682e-02	-2.049	0.04050	*

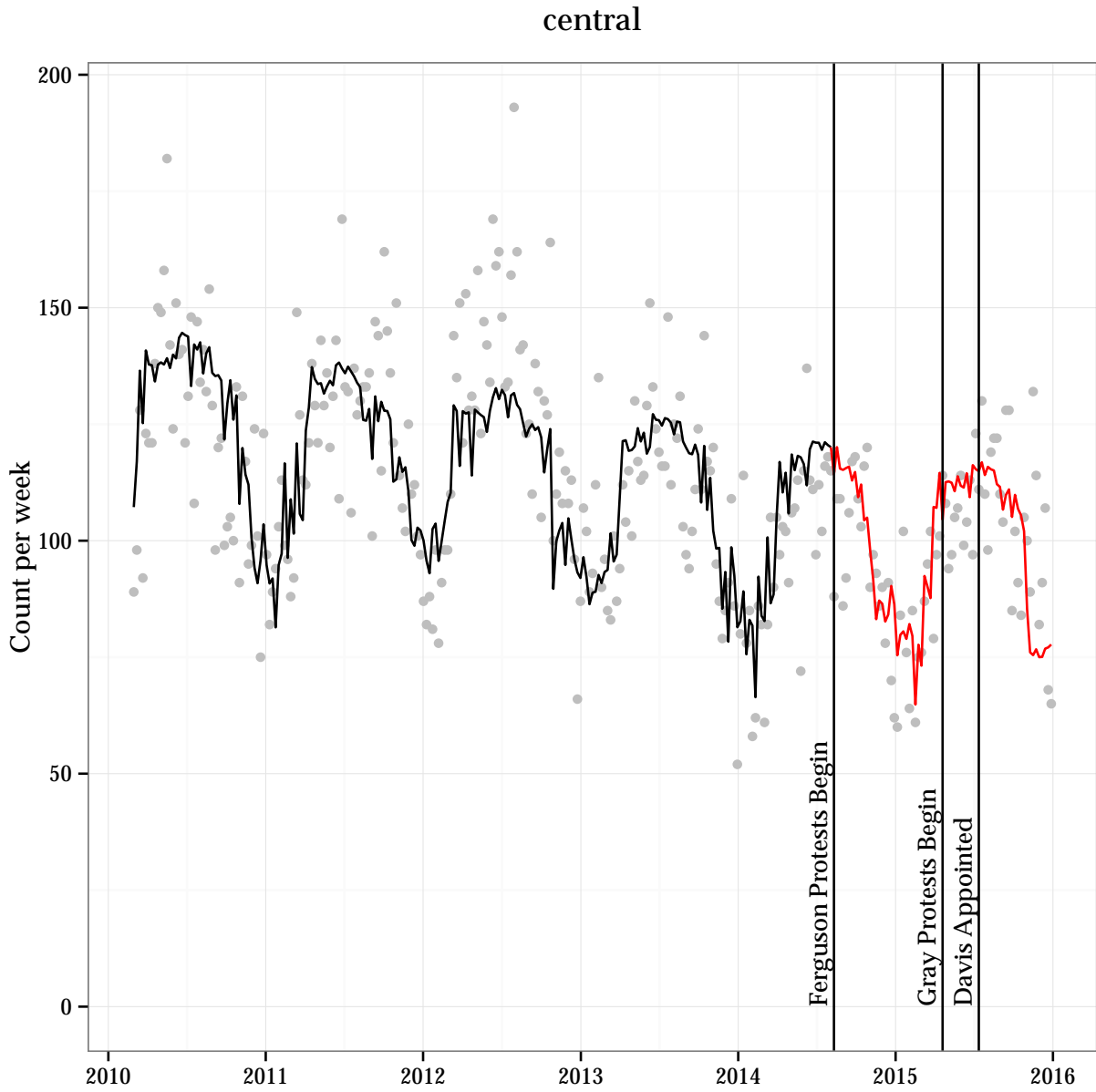
---

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

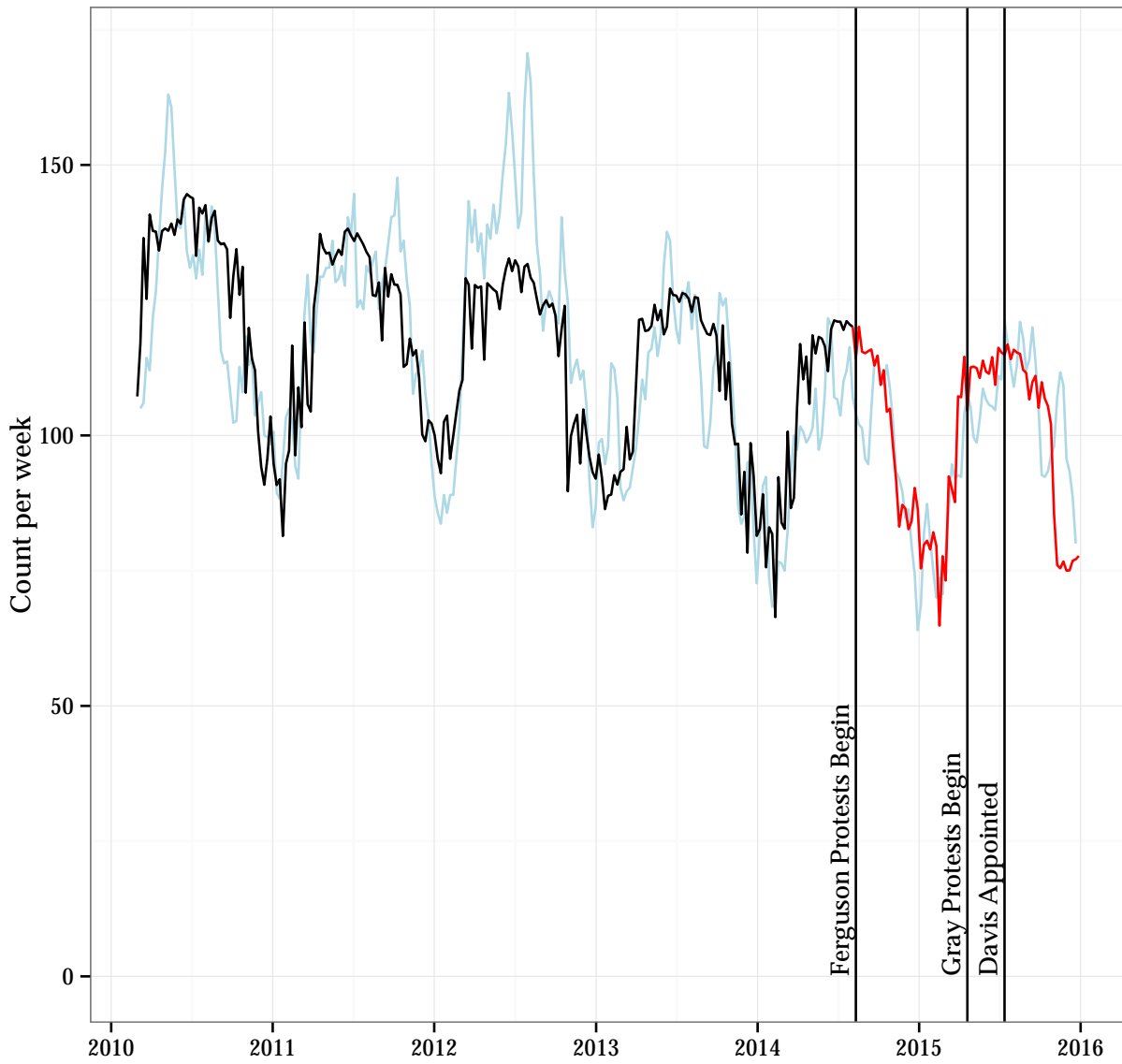
(Dispersion parameter for poisson family taken to be 1)

Null deviance: 1147.30 on 231 degrees of freedom  
Residual deviance: 545.82 on 221 degrees of freedom  
AIC: 2092.6

Number of Fisher Scoring iterations: 4



# central



## 24 Results for eastern

### 24.1 Summary Values for eastern

Table 24.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
eastern	232	79.052	13.911	41	78	116

Table 24.2: Descriptives for Outcome After Ferguson Protests Begin

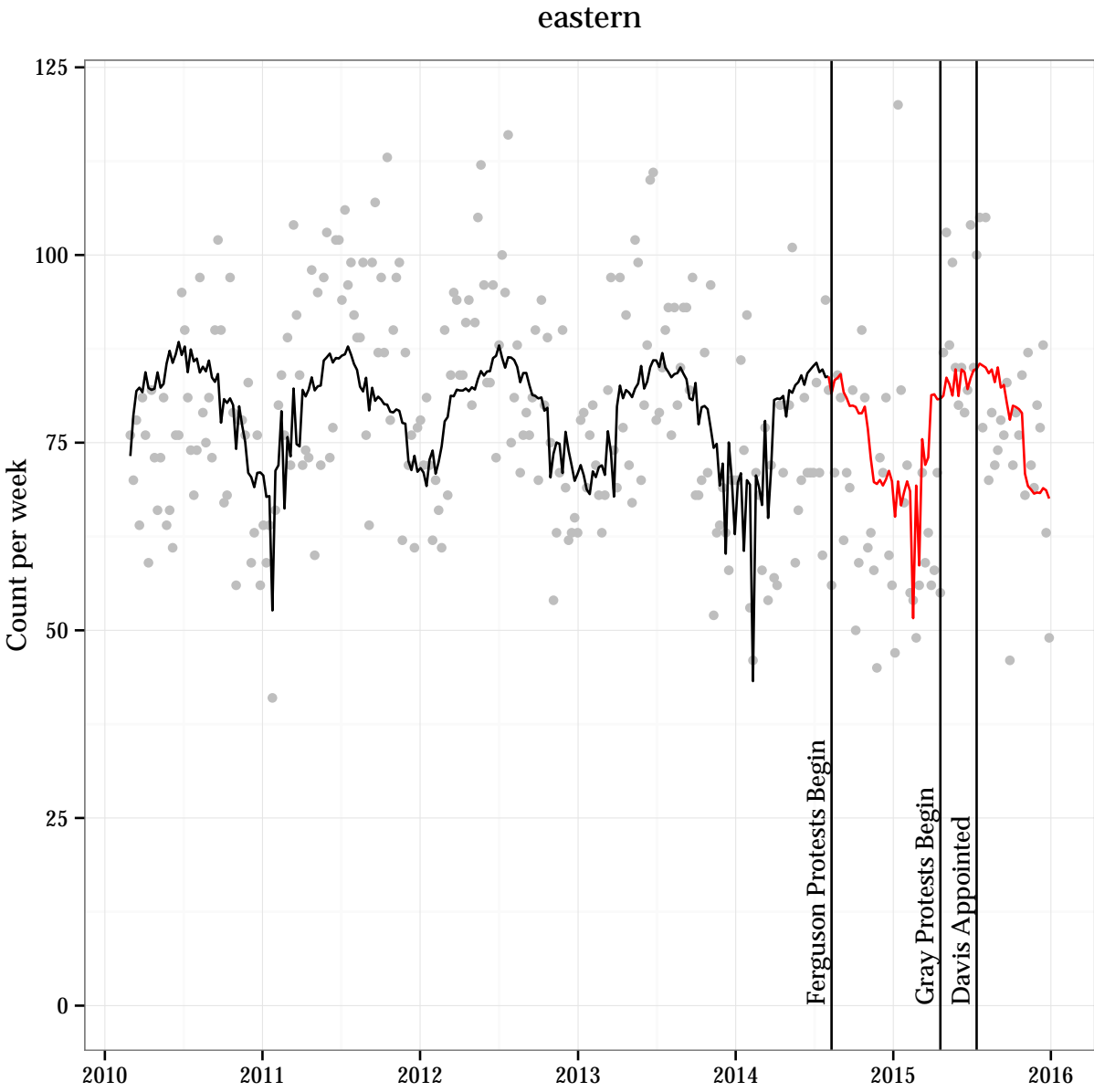
Statistic	N	Mean	St. Dev.	Min	Median	Max
eastern	73	73.493	15.752	45	72	120

## 24.2 Four Models for eastern

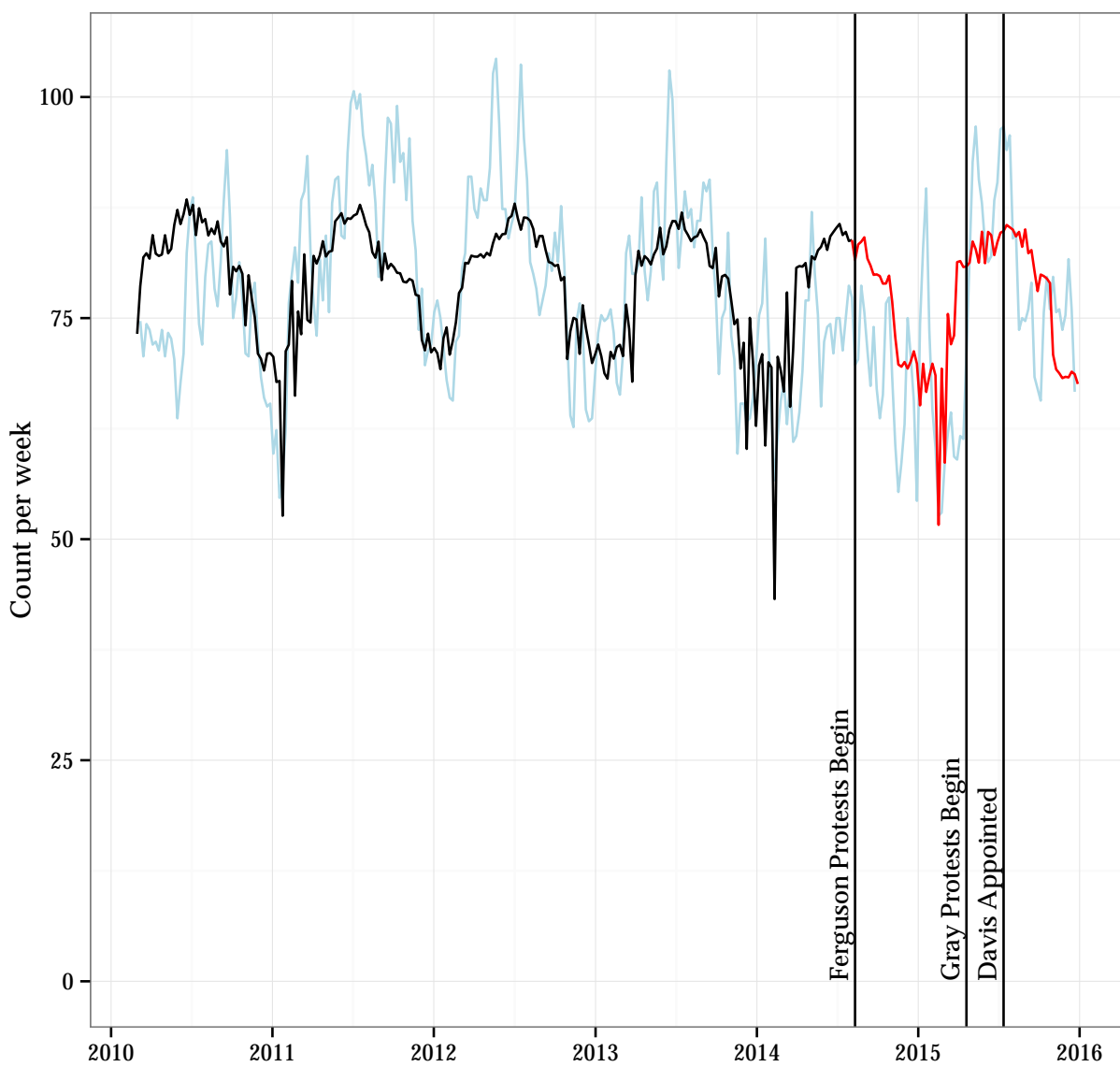
Table 24.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.02	−0.01		−0.01
After Ferguson Protests Begin (week of 8/11/14 onward)	−9.74		−7.22	−7.83
After Gray Protests Begin (week of 4/20/15 onward)	19.59		10.04	10.88
Unrest and National Guard (during week of 4/27/15)	1.00		2.92	3.74
After Commissioner Batts Fired (week of 7/13/15 onward)	−8.41		−3.18	−4.49
Average Maximum Temperature to 50 Degrees		0.06		−0.19
Plus Degrees in the 50s		0.74		0.83
Plus Degrees in the 60s		−0.92		−0.76
Plus Degrees in the 70s		0.36		0.59
Plus Degrees greater than 80		−0.04		−0.24
Snowfall (inches)		−10.14		−11.67
Precipitation (inches)		−3.62		−5.67
Darkness Before Midnight (hours)		−1.17		−1.06
School Days (proportion of week)		−0.02		2.31
Observations	305	232	305	305
R <sup>2</sup>	0.09	0.24	0.04	0.27

24.3 Least Squares Model (2) for eastern

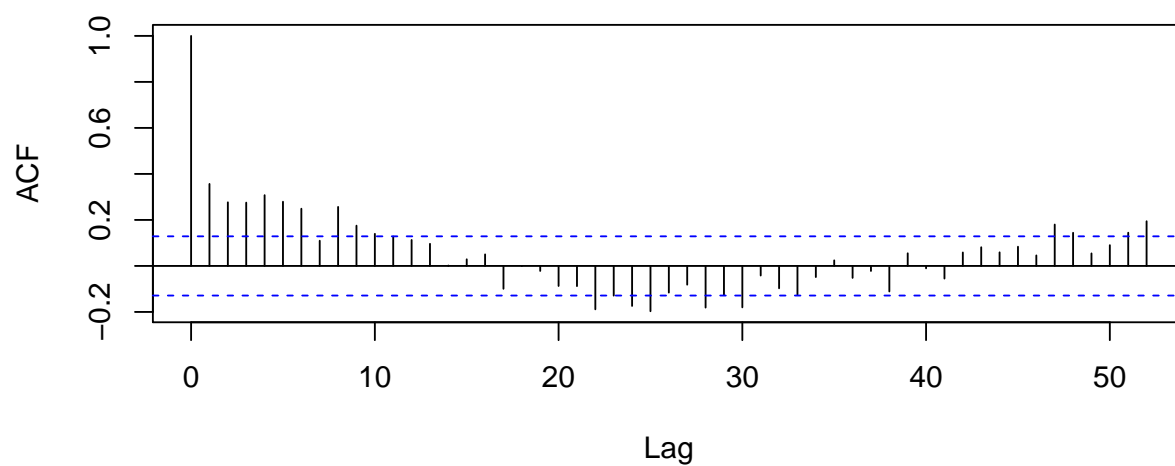


# eastern

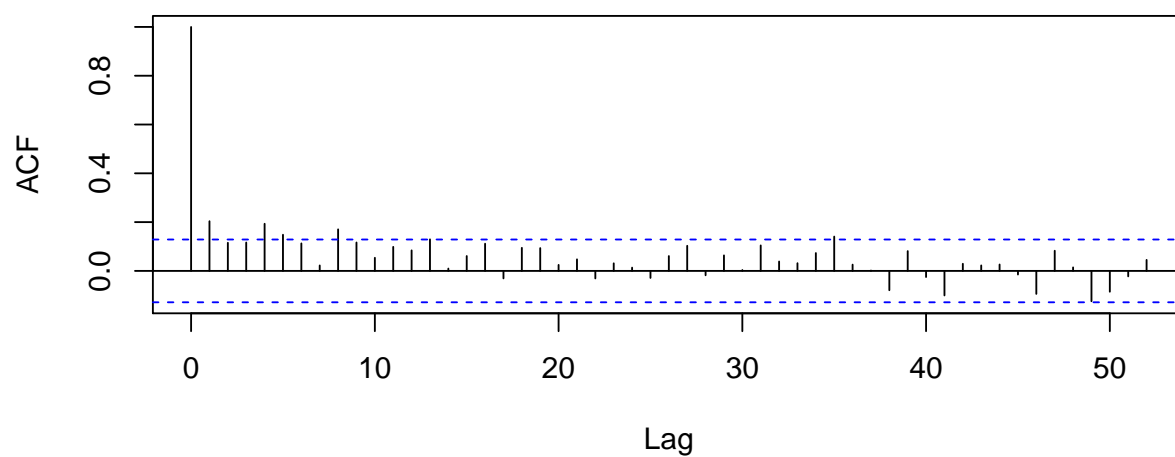




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 24.4 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
-2.9342	-1.1000	-0.0963	0.9766	3.4683

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	4.3484708	0.1606399	27.070	< 2e-16 ***
t	-0.0000641	0.0001137	-0.564	0.5729
tmax.f.spline1	0.0008261	0.0029645	0.279	0.7805
tmax.f.spline2	0.0094439	0.0059440	1.589	0.1121
tmax.f.spline3	-0.0119717	0.0070560	-1.697	0.0898 .
tmax.f.spline4	0.0045582	0.0065232	0.699	0.4847
tmax.f.spline5	-0.0006189	0.0056234	-0.110	0.9124
snow.in	-0.1694617	0.0429548	-3.945	7.98e-05 ***
precip.in	-0.0459754	0.0417294	-1.102	0.2706
dark.before.12	-0.0154569	0.0108203	-1.429	0.1531
school	-0.0006325	0.0327677	-0.019	0.9846

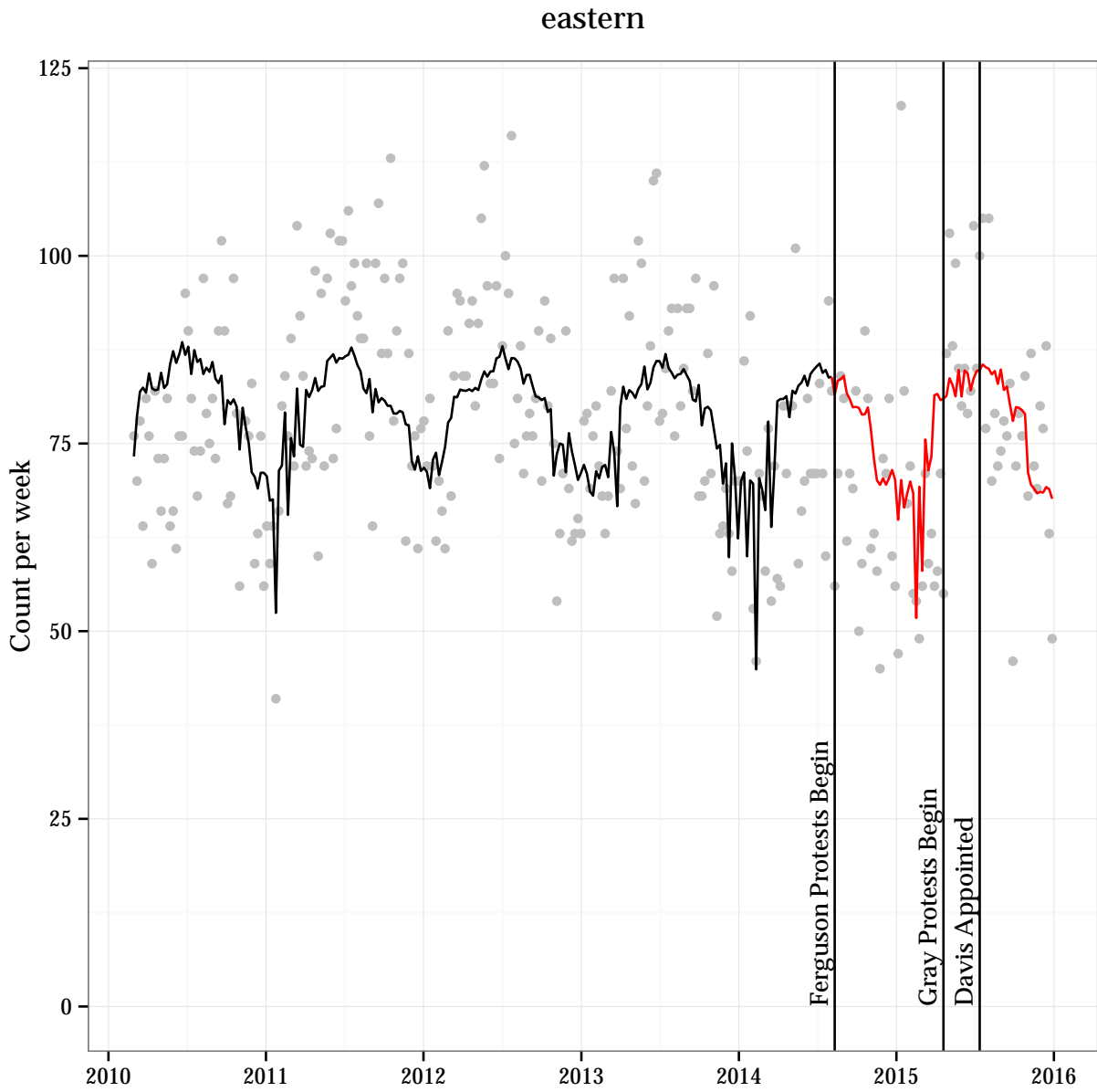
---

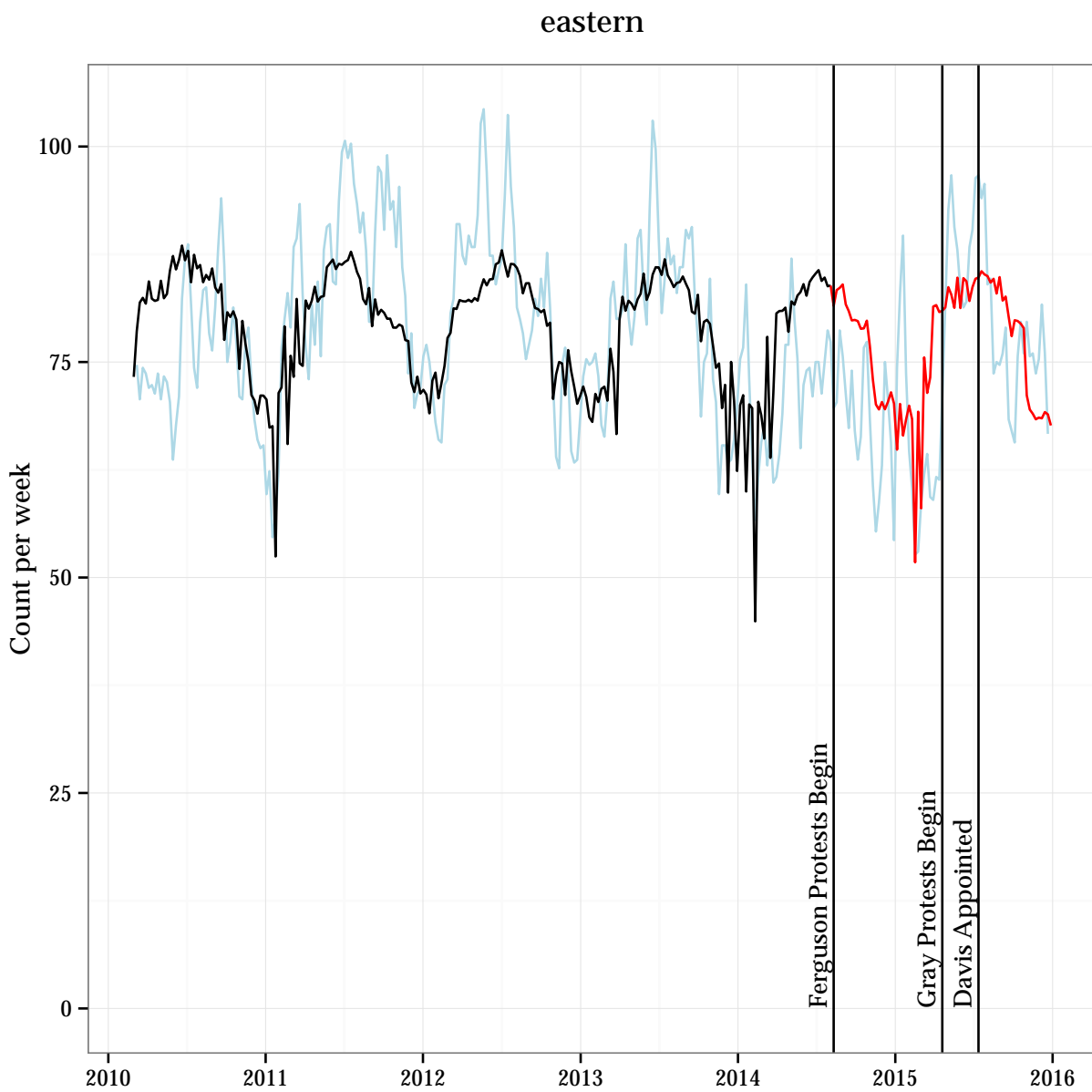
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 566.37 on 231 degrees of freedom  
Residual deviance: 425.72 on 221 degrees of freedom  
AIC: 1884.8

Number of Fisher Scoring iterations: 4





## 25 Results for southwestern

### 25.1 Summary Values for southwestern

Table 25.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
southwestern	232	83.836	13.488	51	83	121

Table 25.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
southwestern	73	86.945	16.196	42	87	119

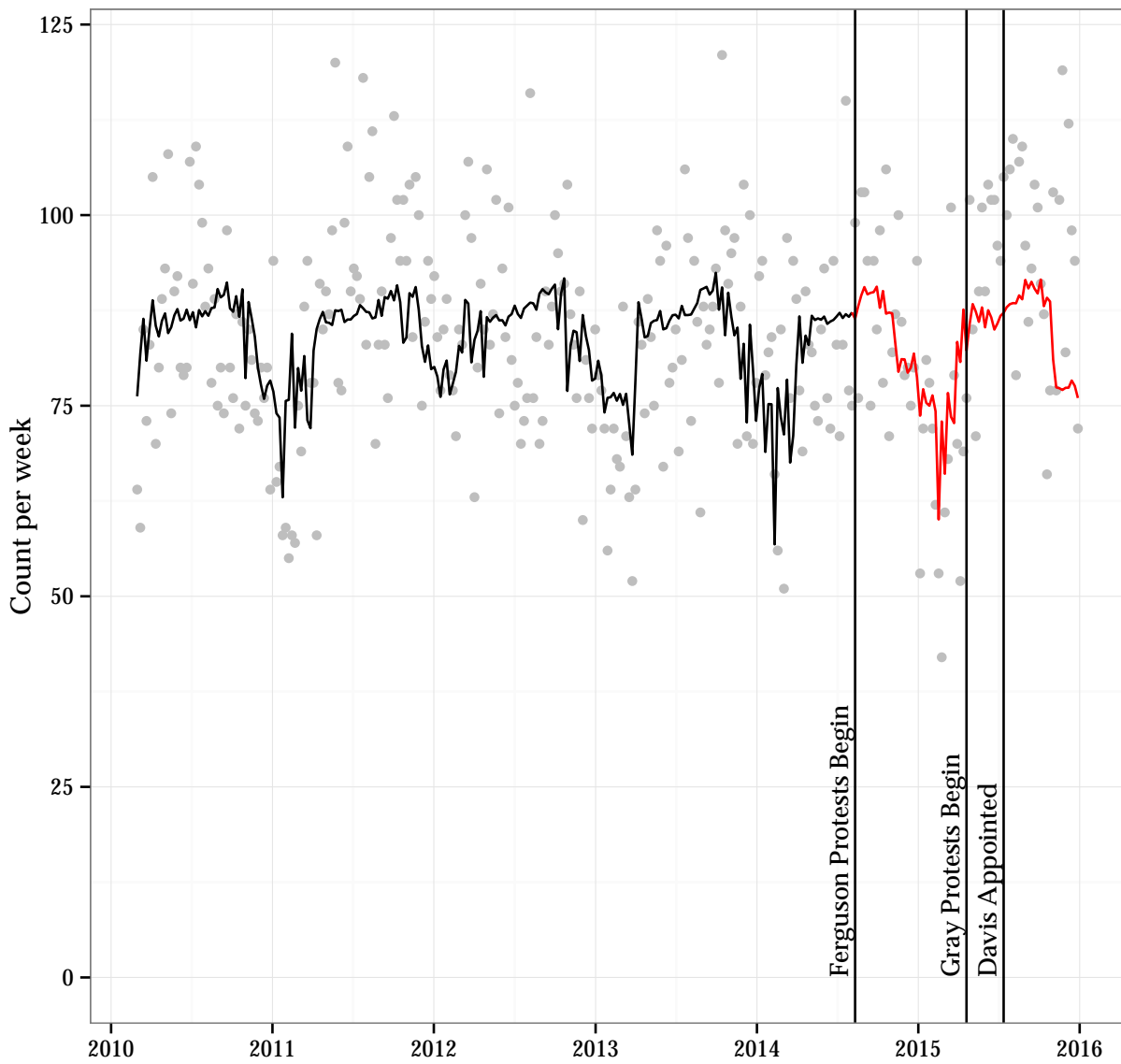
## 25.2 Four Models for southwestern

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

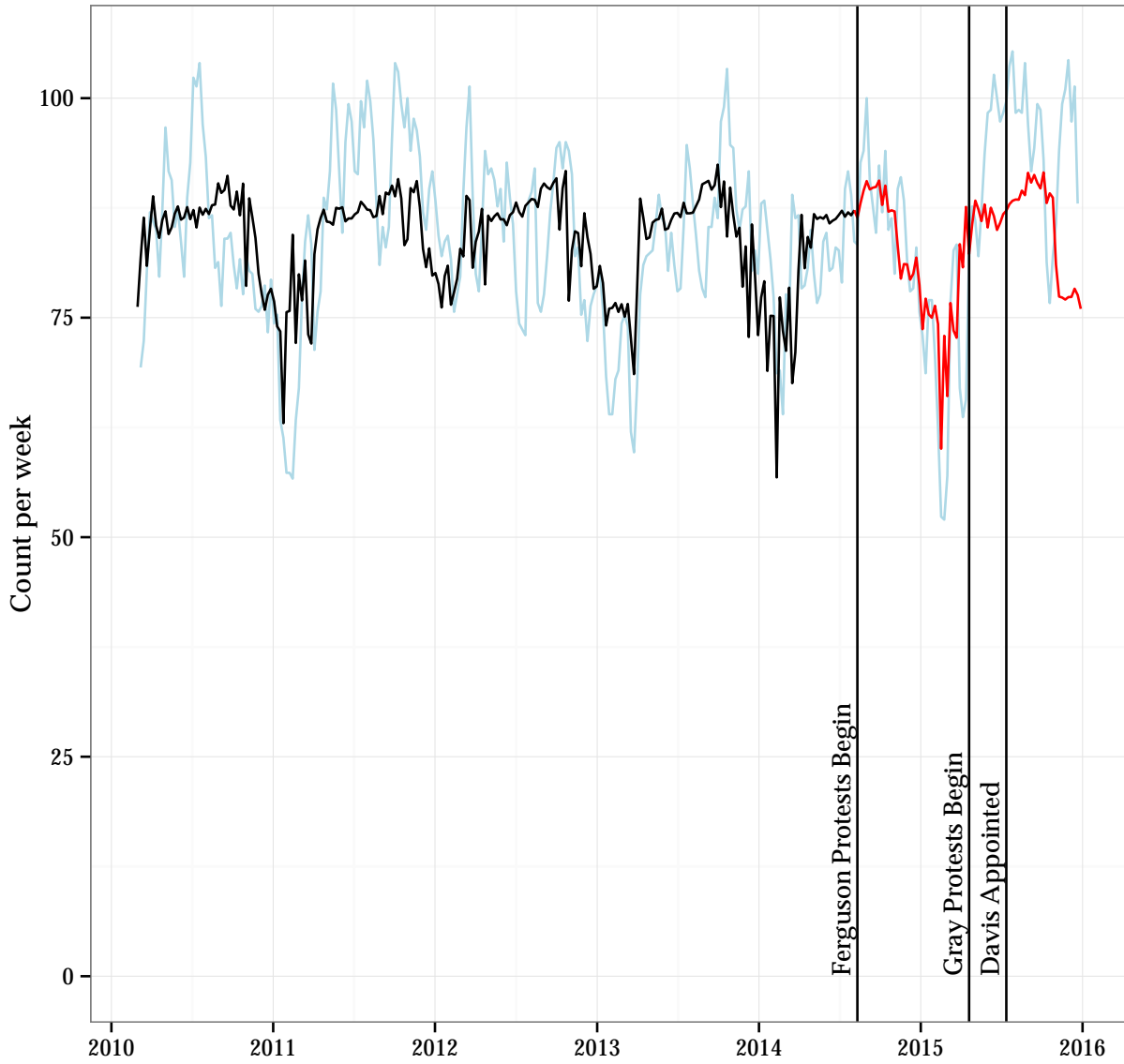
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.01	0.003		0.001
After Ferguson Protests Begin (week of 8/11/14 onward)	−2.63		−1.83	−1.44
After Gray Protests Begin (week of 4/20/15 onward)	12.85		7.49	7.54
Unrest and National Guard (during week of 4/27/15)	10.02		10.69	12.89
After Commissioner Batts Fired (week of 7/13/15 onward)	3.38		4.23	4.12
Average Maximum Temperature to 50 Degrees		0.23		0.38
Plus Degrees in the 50s		0.62		−0.05
Plus Degrees in the 60s		−0.15		0.52
Plus Degrees in the 70s		−0.53		−0.50
Plus Degrees greater than 80		0.001		−0.10
Snowfall (inches)		−6.68		−7.70
Precipitation (inches)		−2.14		0.75
Darkness Before Midnight (hours)		3.04		3.31
School Days (proportion of week)		0.76		0.97
Observations	305	232	305	305
R <sup>2</sup>	0.08	0.18	0.06	0.24

### 25.3 Least Squares Model (2) for southwestern

southwestern

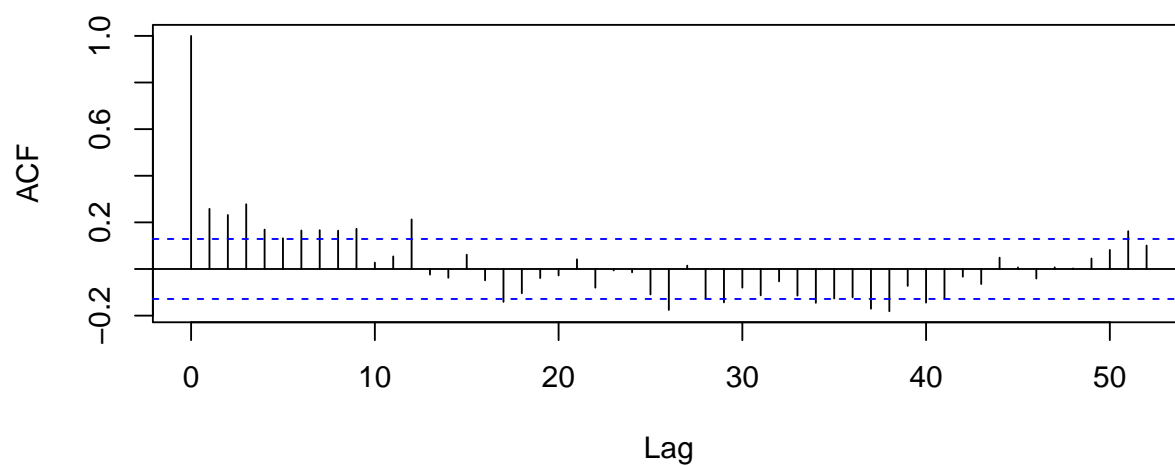


# southwestern

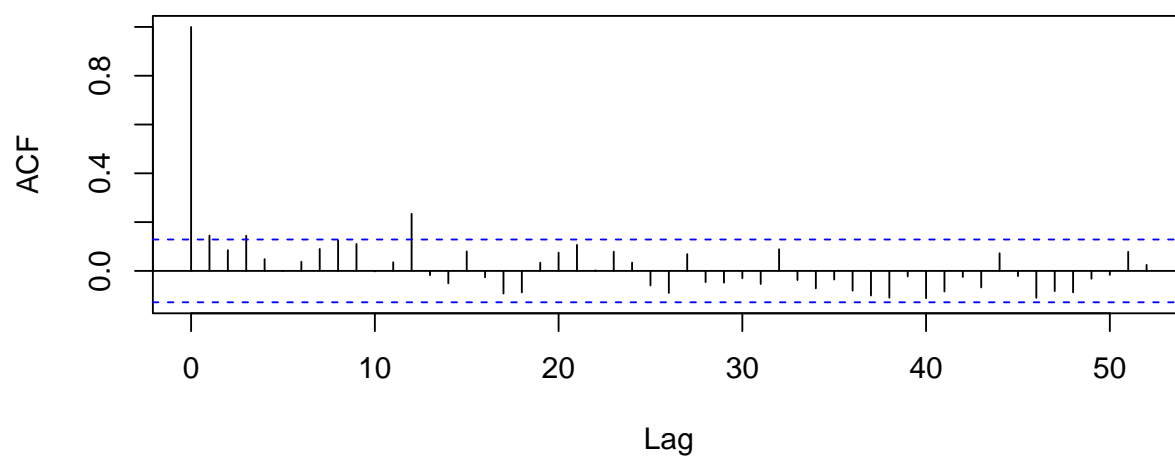




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 25.4 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
-3.2784  -0.9879  -0.1746   0.9101   3.2947

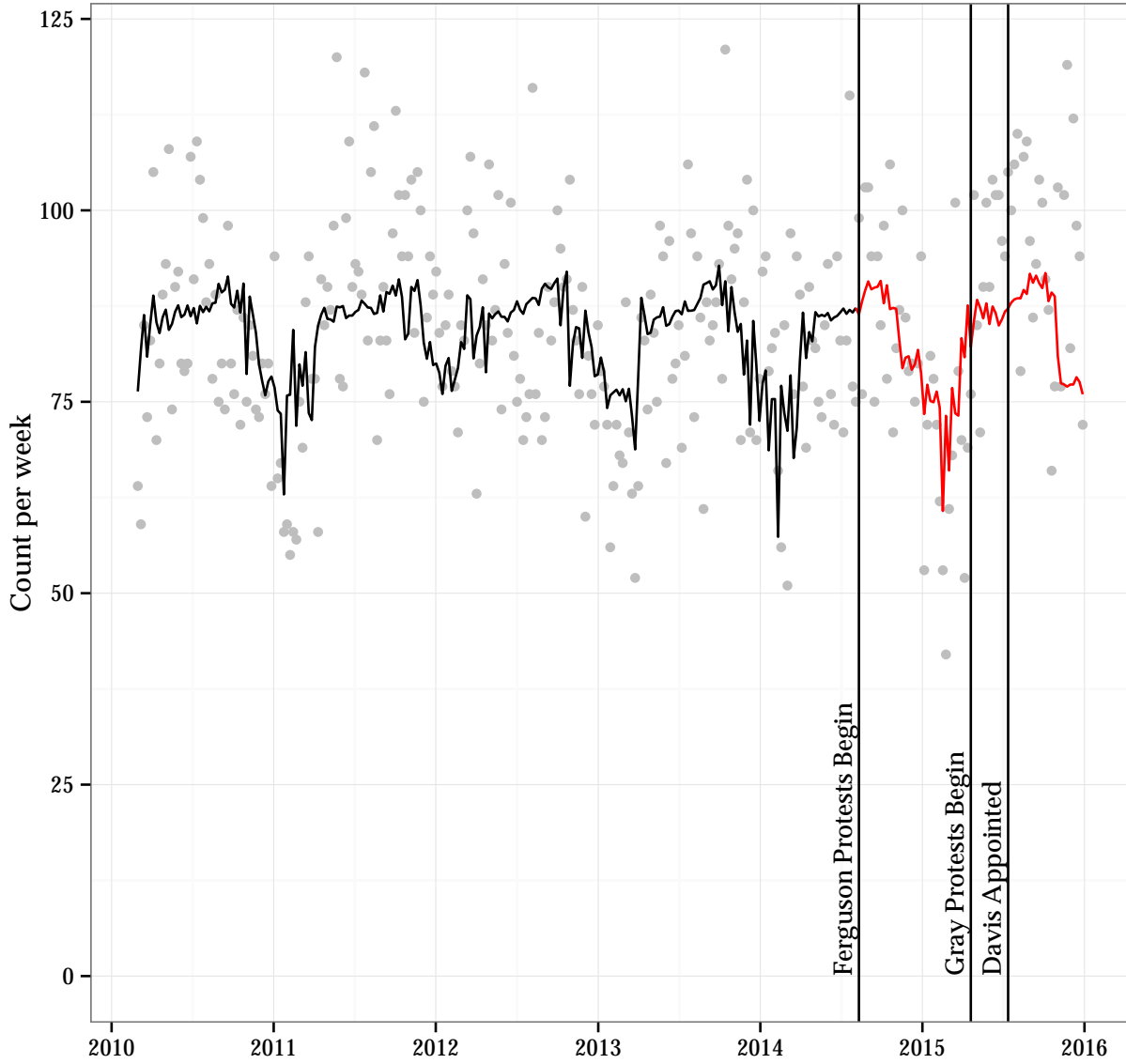
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)  3.981e+00  1.540e-01  25.846 < 2e-16 ***
t             3.860e-05  1.107e-04   0.349 0.727330
tmax.f.spline1 2.715e-03  2.841e-03   0.955 0.339358
tmax.f.spline2 7.570e-03  5.737e-03   1.320 0.186996
tmax.f.spline3 -2.113e-03  6.860e-03  -0.308 0.758097
tmax.f.spline4 -6.268e-03  6.329e-03  -0.990 0.322031
tmax.f.spline5 -2.761e-05  5.512e-03  -0.005 0.996004
snow.in       -1.001e-01  3.945e-02  -2.538 0.011147 *
precip.in     -2.505e-02  4.026e-02  -0.622 0.533775
dark.before.12 3.667e-02  1.049e-02   3.495 0.000473 ***
school        7.474e-03  3.193e-02   0.234 0.814911
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

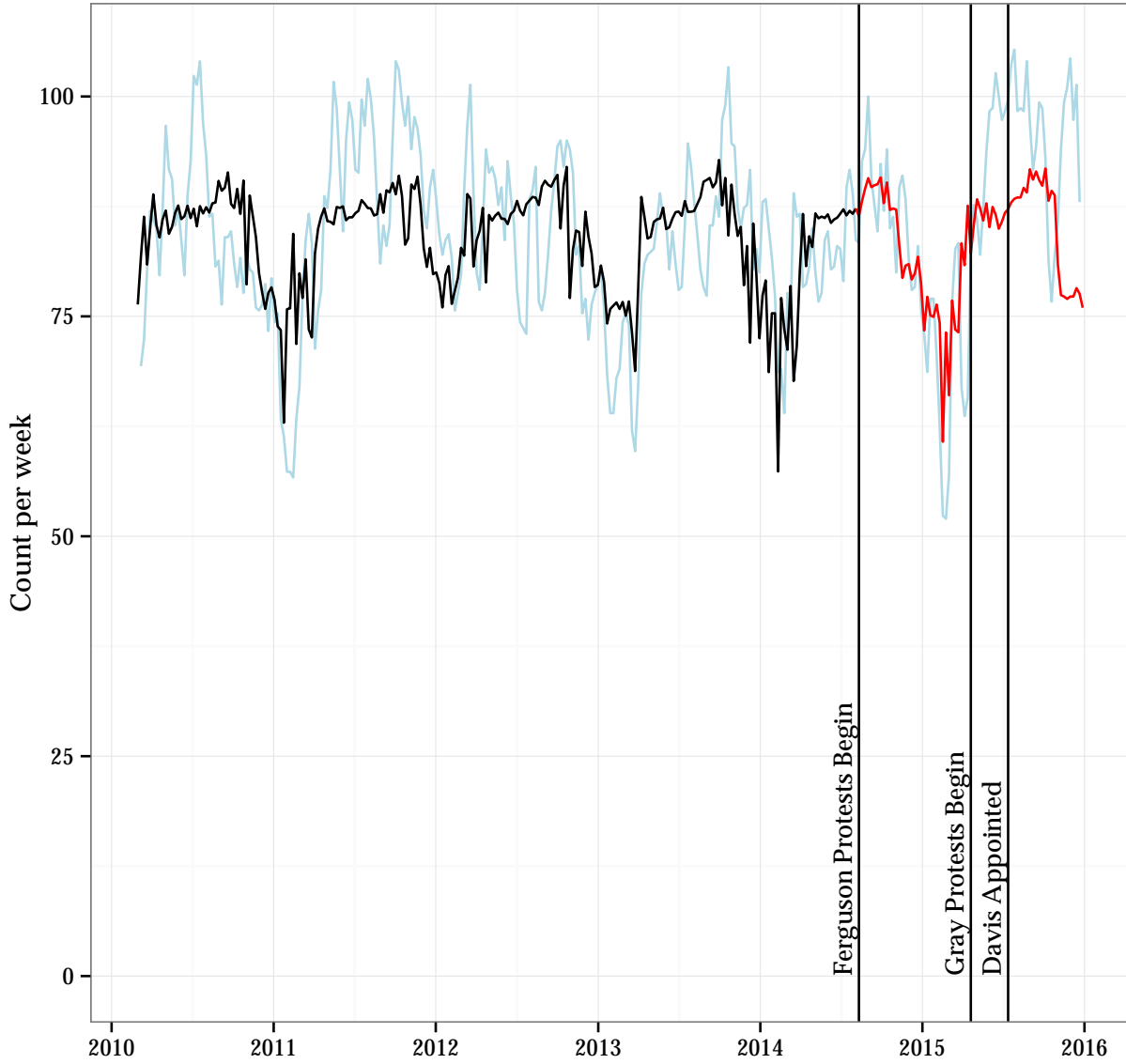
    Null deviance: 503.60  on 231  degrees of freedom
Residual deviance: 411.67  on 221  degrees of freedom
AIC: 1885

Number of Fisher Scoring iterations: 4
```

# southwestern



# southwestern



## 26 Results for southern

### 26.1 Summary Values for southern

Table 26.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
southern	232	113.500	20.552	56	112	185

Table 26.2: Descriptives for Outcome After Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
southern	73	99.219	20.485	51	100	147

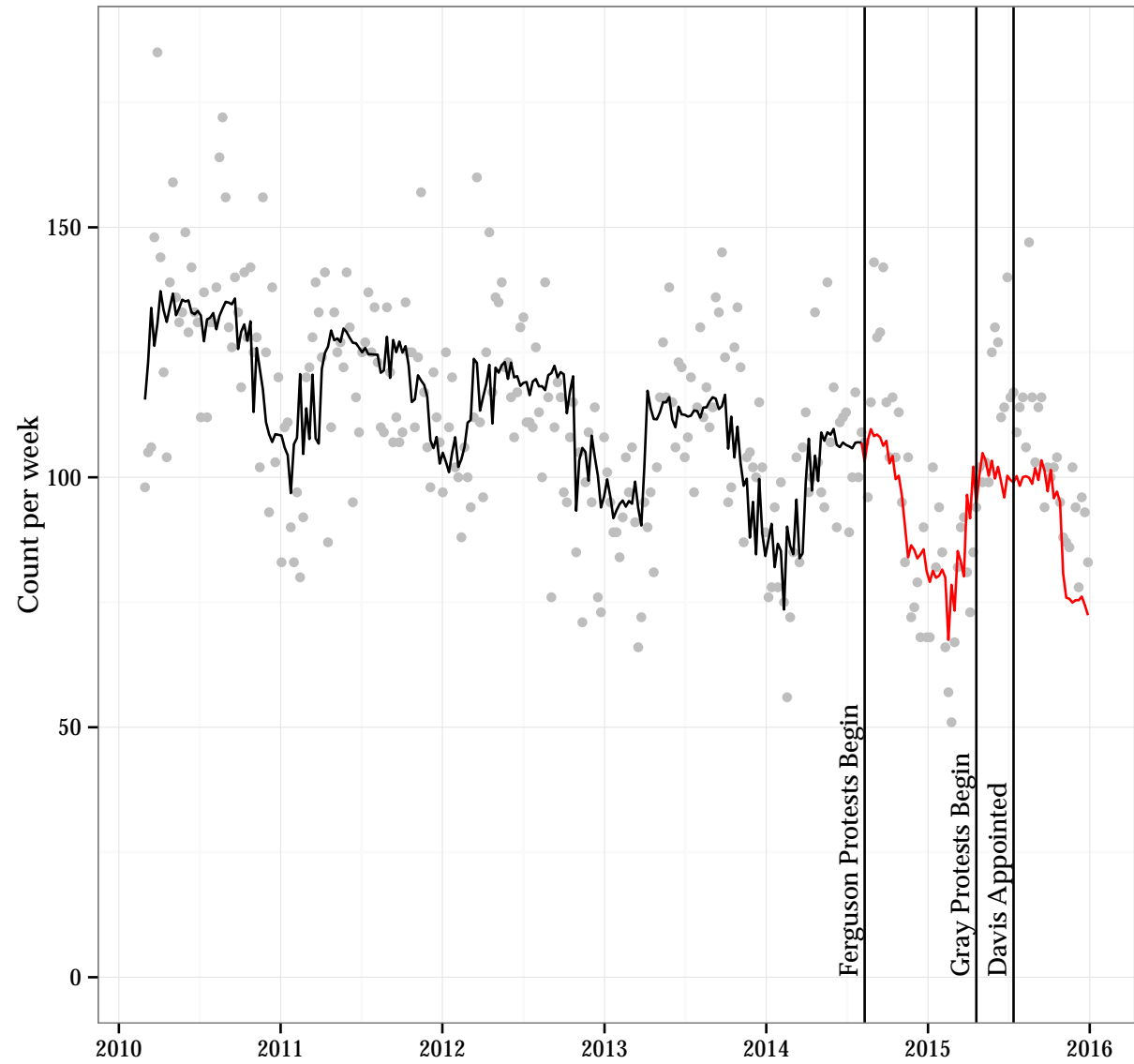
## 26.2 Four Models for southern

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

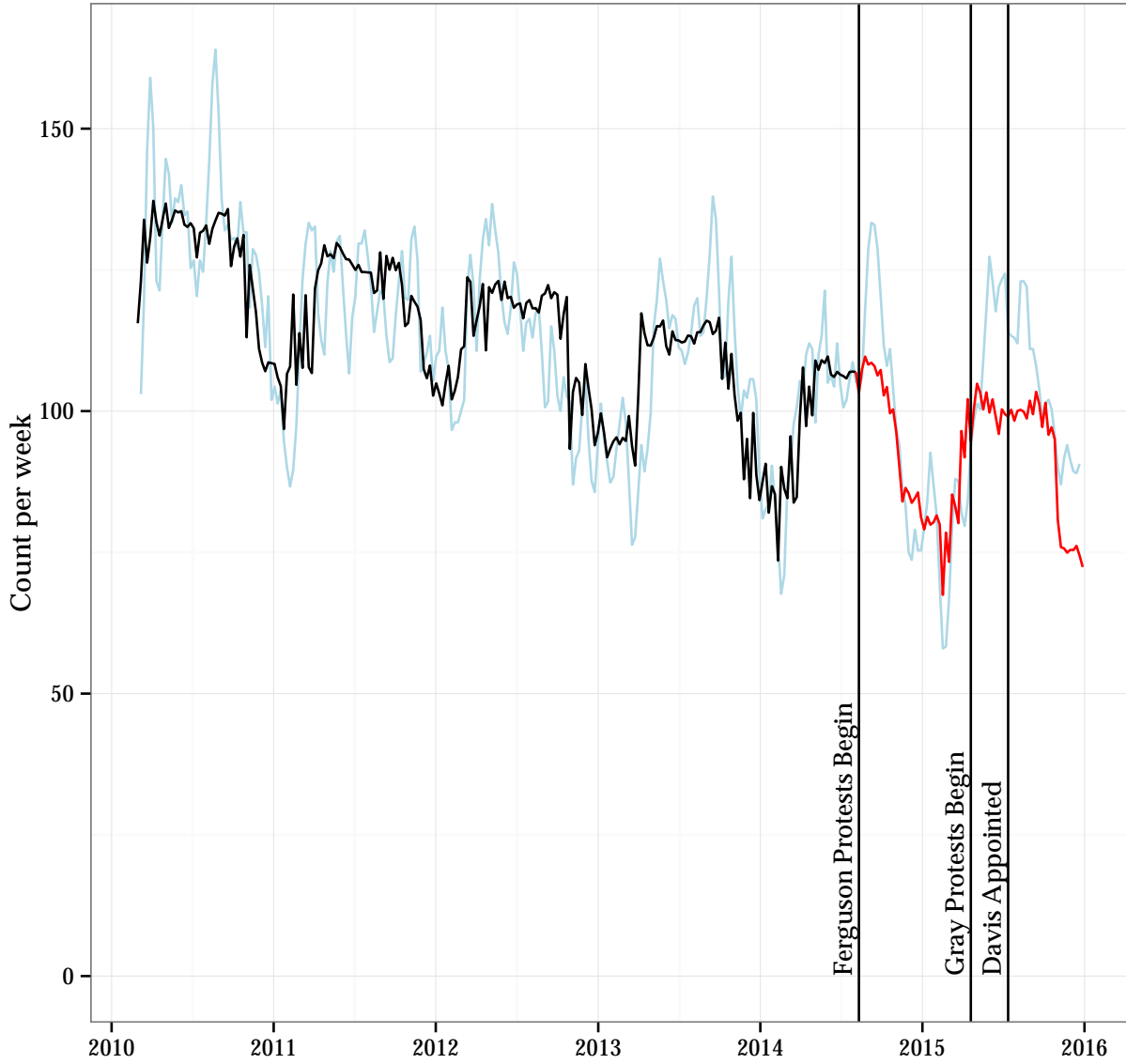
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.15	−0.12		−0.13
After Ferguson Protests Begin (week of 8/11/14 onward)	−1.61		1.01	1.53
After Gray Protests Begin (week of 4/20/15 onward)	25.81		13.16	12.37
Unrest and National Guard (during week of 4/27/15)	−13.18		−12.69	−11.68
After Commissioner Batts Fired (week of 7/13/15 onward)	−9.32		−2.49	−2.52
Average Maximum Temperature to 50 Degrees		0.26		0.30
Plus Degrees in the 50s		1.04		0.85
Plus Degrees in the 60s		−0.42		−0.03
Plus Degrees in the 70s		−0.58		−0.75
Plus Degrees greater than 80		−0.39		−0.35
Snowfall (inches)		−4.34		−5.83
Precipitation (inches)		−7.92		−7.01
Darkness Before Midnight (hours)		1.13		1.59
School Days (proportion of week)		2.81		3.39
Observations	305	232	305	305
R <sup>2</sup>	0.28	0.43	0.07	0.51

26.3 Least Squares Model (2) for southern

southern

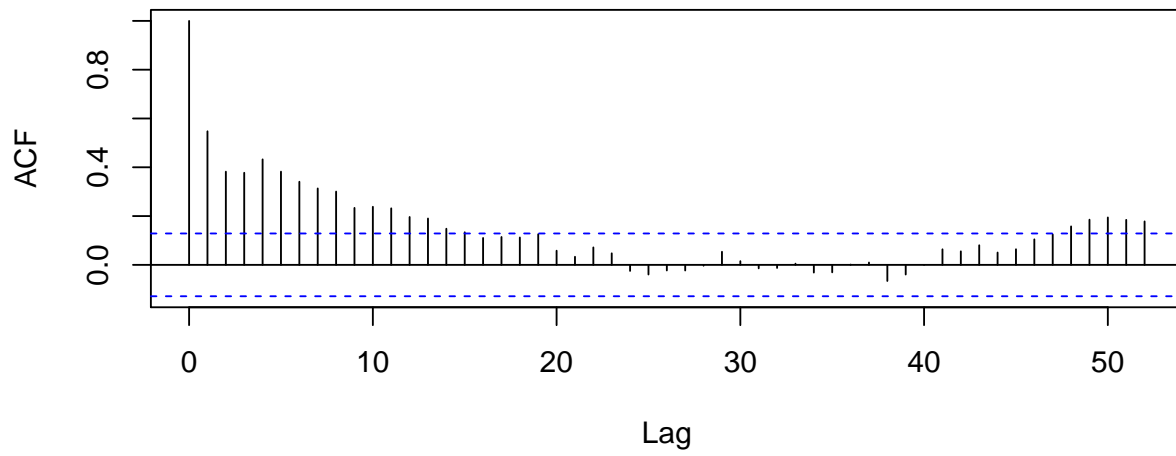


## southern

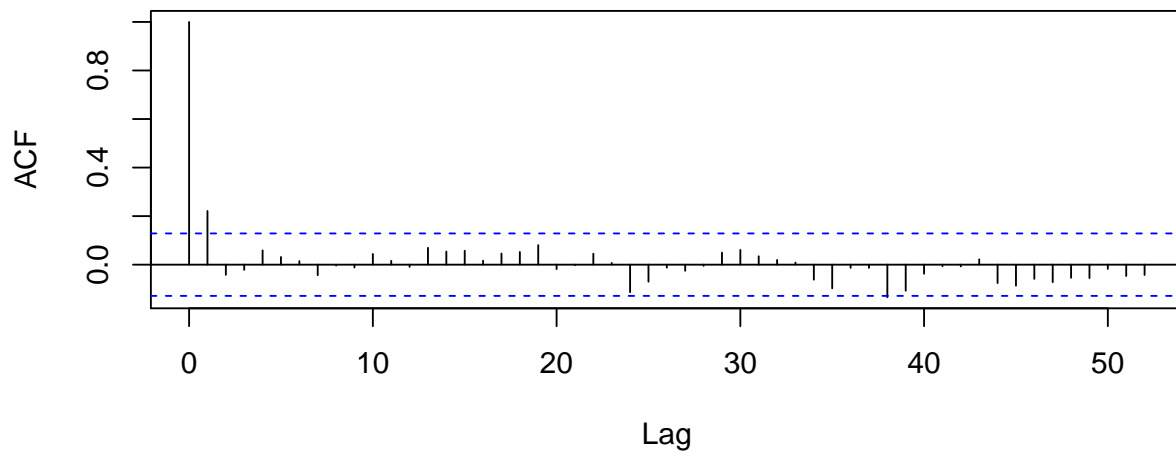




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 26.4 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
-4.3460	-0.9934	0.0031	0.8831	4.3850

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	4.539e+00	1.349e-01	33.650	<2e-16 ***
t	-1.093e-03	9.486e-05	-11.517	<2e-16 ***
tmax.f.spline1	2.504e-03	2.495e-03	1.004	0.3156
tmax.f.spline2	9.743e-03	4.996e-03	1.950	0.0512 .
tmax.f.spline3	-4.730e-03	5.896e-03	-0.802	0.4224
tmax.f.spline4	-4.884e-03	5.387e-03	-0.907	0.3645
tmax.f.spline5	-3.550e-03	4.676e-03	-0.759	0.4478
snow.in	-5.907e-02	3.432e-02	-1.721	0.0852 .
precip.in	-6.980e-02	3.480e-02	-2.006	0.0449 *
dark.before.12	1.111e-02	9.078e-03	1.224	0.2208
school	2.221e-02	2.739e-02	0.811	0.4173

---

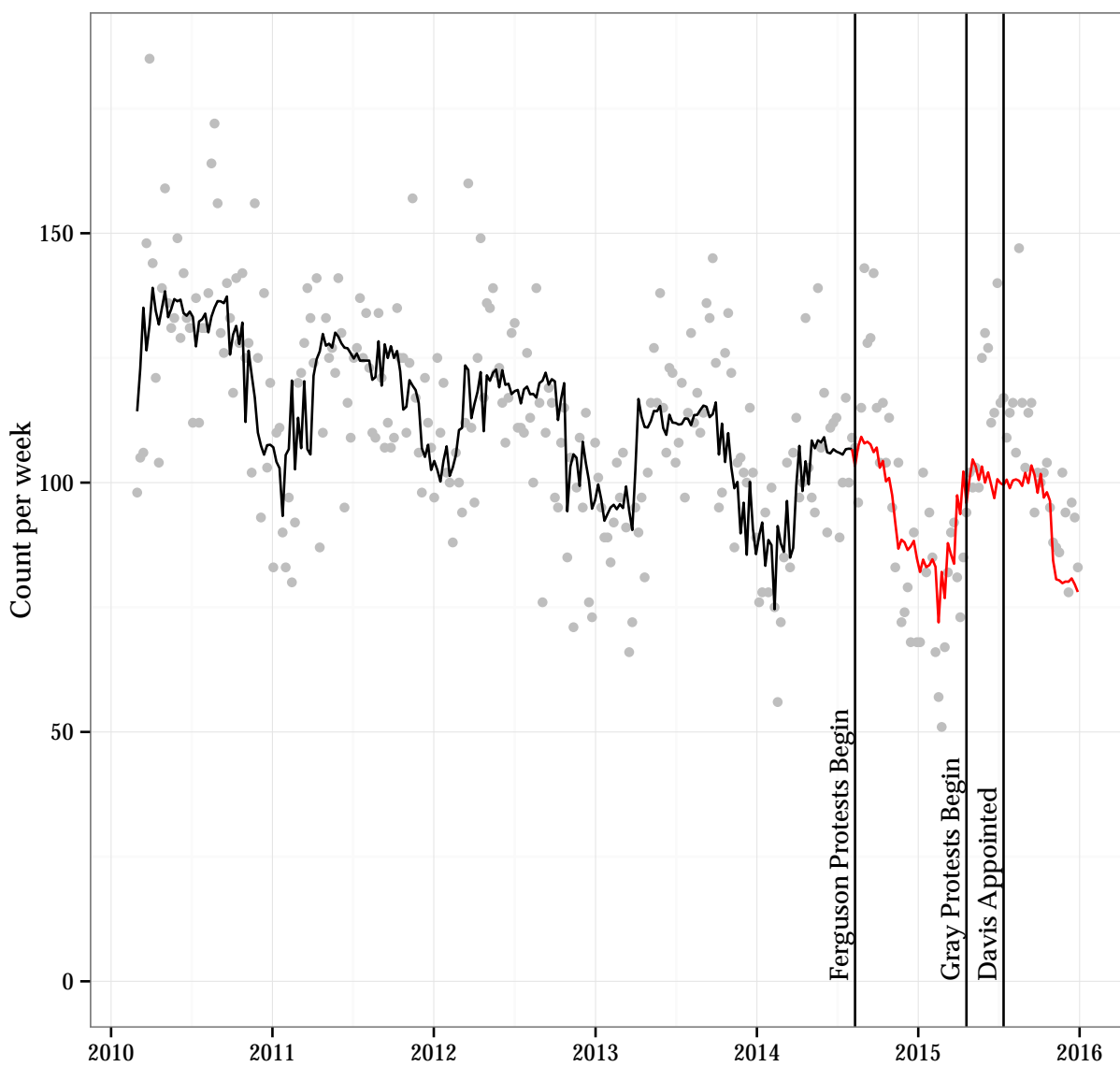
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

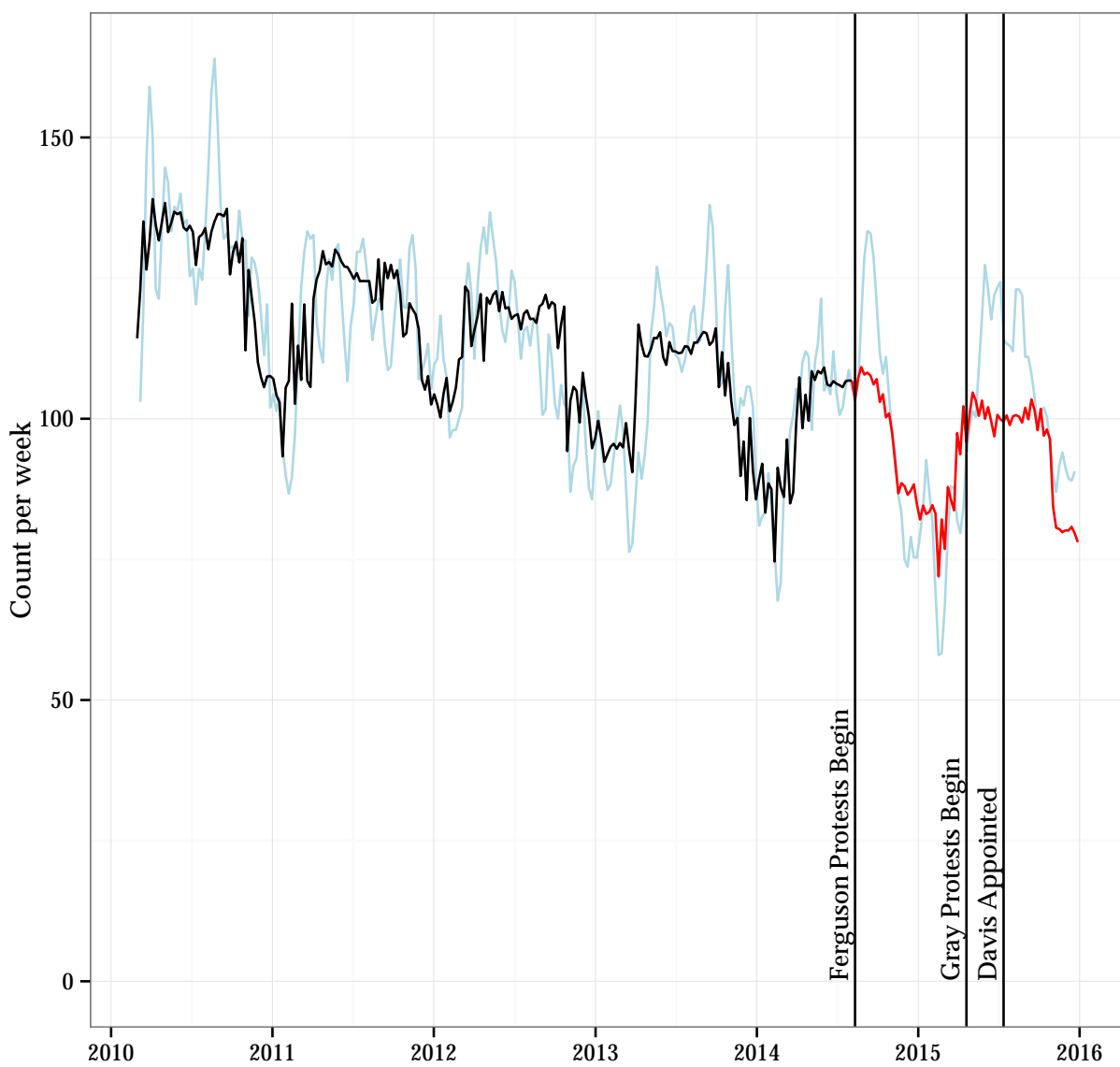
Null deviance: 865.63 on 231 degrees of freedom  
Residual deviance: 492.60 on 221 degrees of freedom  
AIC: 2035.2

Number of Fisher Scoring iterations: 4

# southern



## southern



## 27 Results for southeastern

### 27.1 Summary Values for southeastern

Table 27.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
southeastern	232	126.612	20.120	82	126	181

Table 27.2: Descriptives for Outcome After Ferguson Protests Begin

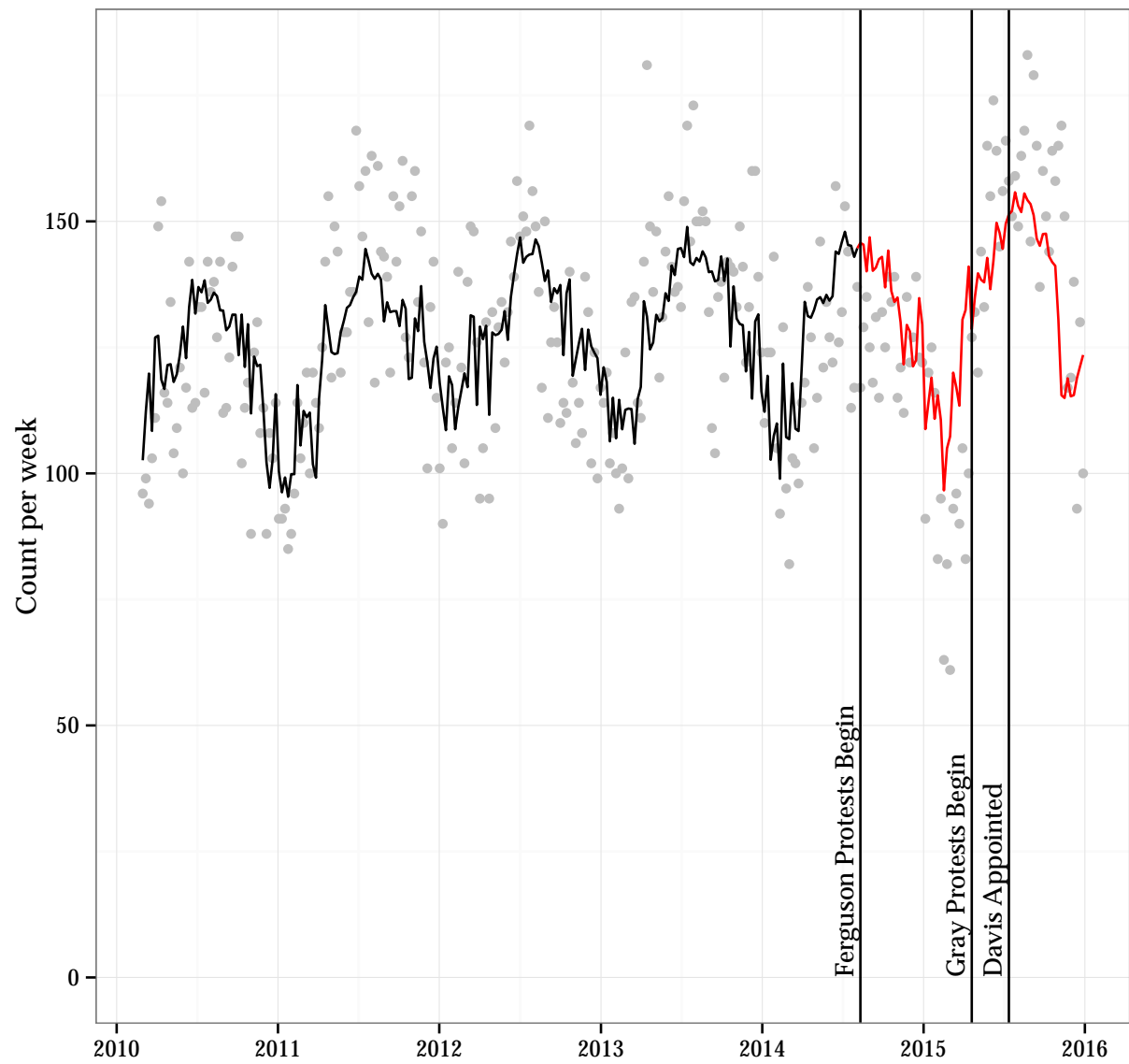
Statistic	N	Mean	St. Dev.	Min	Median	Max
southeastern	73	130.904	27.586	61	132	183

## 27.2 Four Models for southeastern

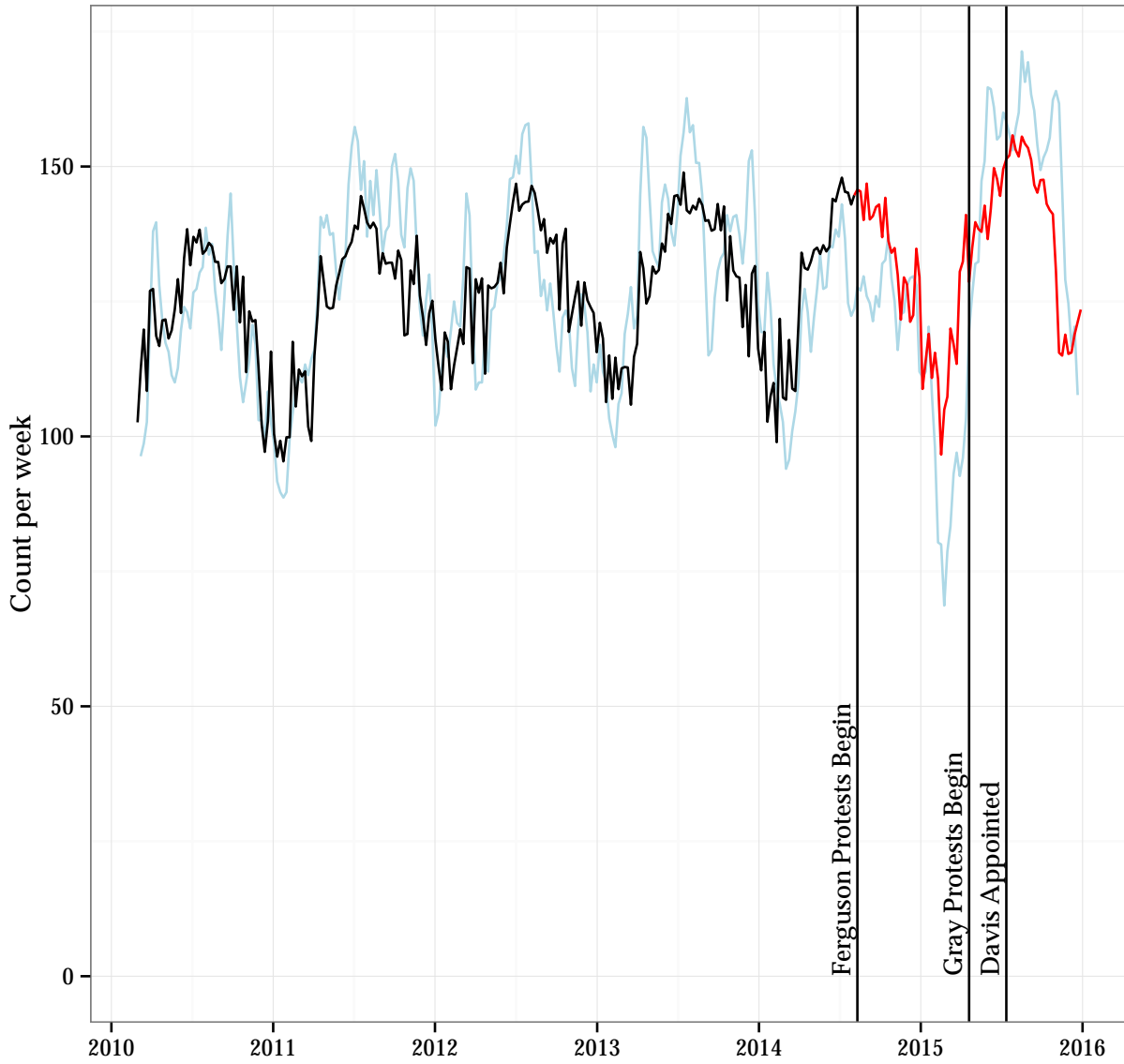
Table 27.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.04	0.07		0.07
After Ferguson Protests Begin (week of 8/11/14 onward)	-18.96		-14.78	-15.14
After Gray Protests Begin (week of 4/20/15 onward)	36.26		23.09	24.16
Unrest and National Guard (during week of 4/27/15)	-17.72		-11.22	-10.12
After Commissioner Batts Fired (week of 7/13/15 onward)	-1.91		1.74	-0.08
Average Maximum Temperature to 50 Degrees		1.01		1.09
Plus Degrees in the 50s		0.003		-0.32
Plus Degrees in the 60s		0.60		1.03
Plus Degrees in the 70s		-1.43		-1.38
Plus Degrees greater than 80		0.61		0.57
Snowfall (inches)		-2.62		-6.78
Precipitation (inches)		2.73		3.67
Darkness Before Midnight (hours)		5.50		7.06
School Days (proportion of week)		-10.61		-6.93
Observations	305	232	305	305
R <sup>2</sup>	0.18	0.39	0.13	0.50

27.3 Least Squares Model (2) for southeastern  
southeastern

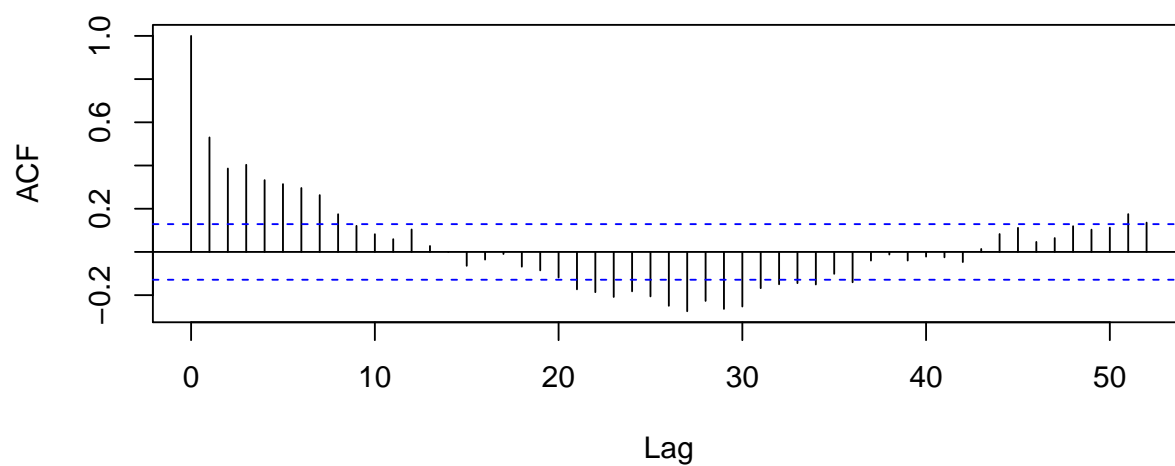


# southeastern

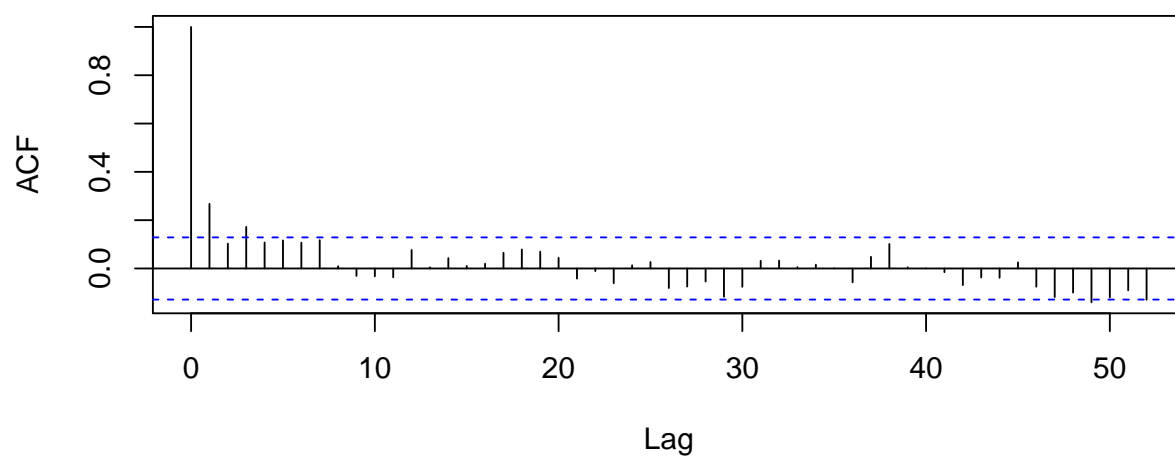




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 27.4 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
-3.1198	-0.9873	-0.0567	0.8470	4.1290

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )	
(Intercept)	4.000e+00	1.285e-01	31.139	< 2e-16	***
t	5.292e-04	9.022e-05	5.865	4.49e-09	***
tmax.f.spline1	9.033e-03	2.374e-03	3.804	0.000142	***
tmax.f.spline2	-8.370e-04	4.751e-03	-0.176	0.860142	
tmax.f.spline3	4.821e-03	5.682e-03	0.848	0.396176	
tmax.f.spline4	-1.171e-02	5.197e-03	-2.253	0.024277	*
tmax.f.spline5	4.657e-03	4.429e-03	1.052	0.292965	
snow.in	-2.345e-02	3.123e-02	-0.751	0.452713	
precip.in	2.177e-02	3.240e-02	0.672	0.501555	
dark.before.12	4.521e-02	8.611e-03	5.250	1.52e-07	***
school	-8.353e-02	2.573e-02	-3.247	0.001168	**

---

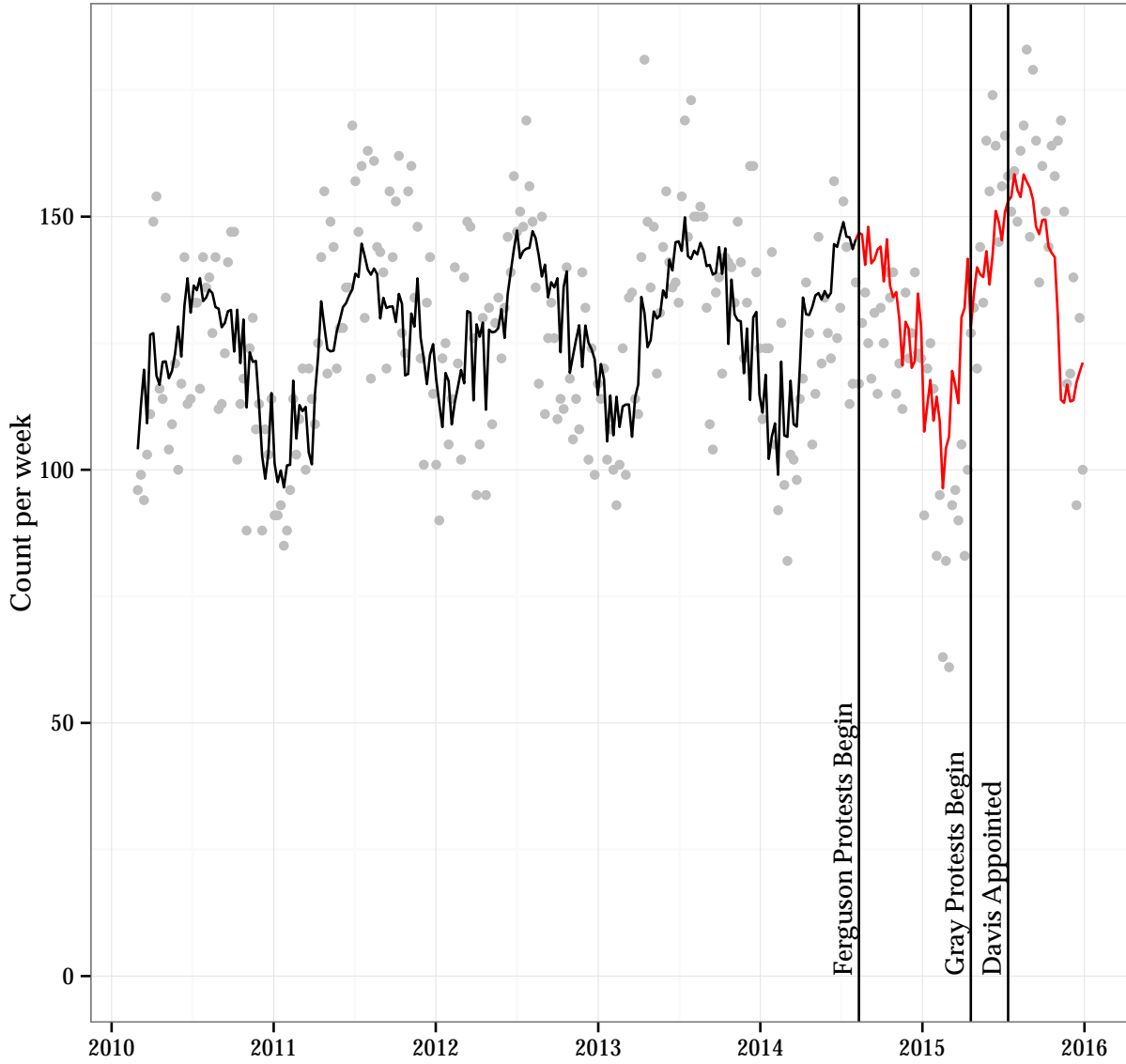
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

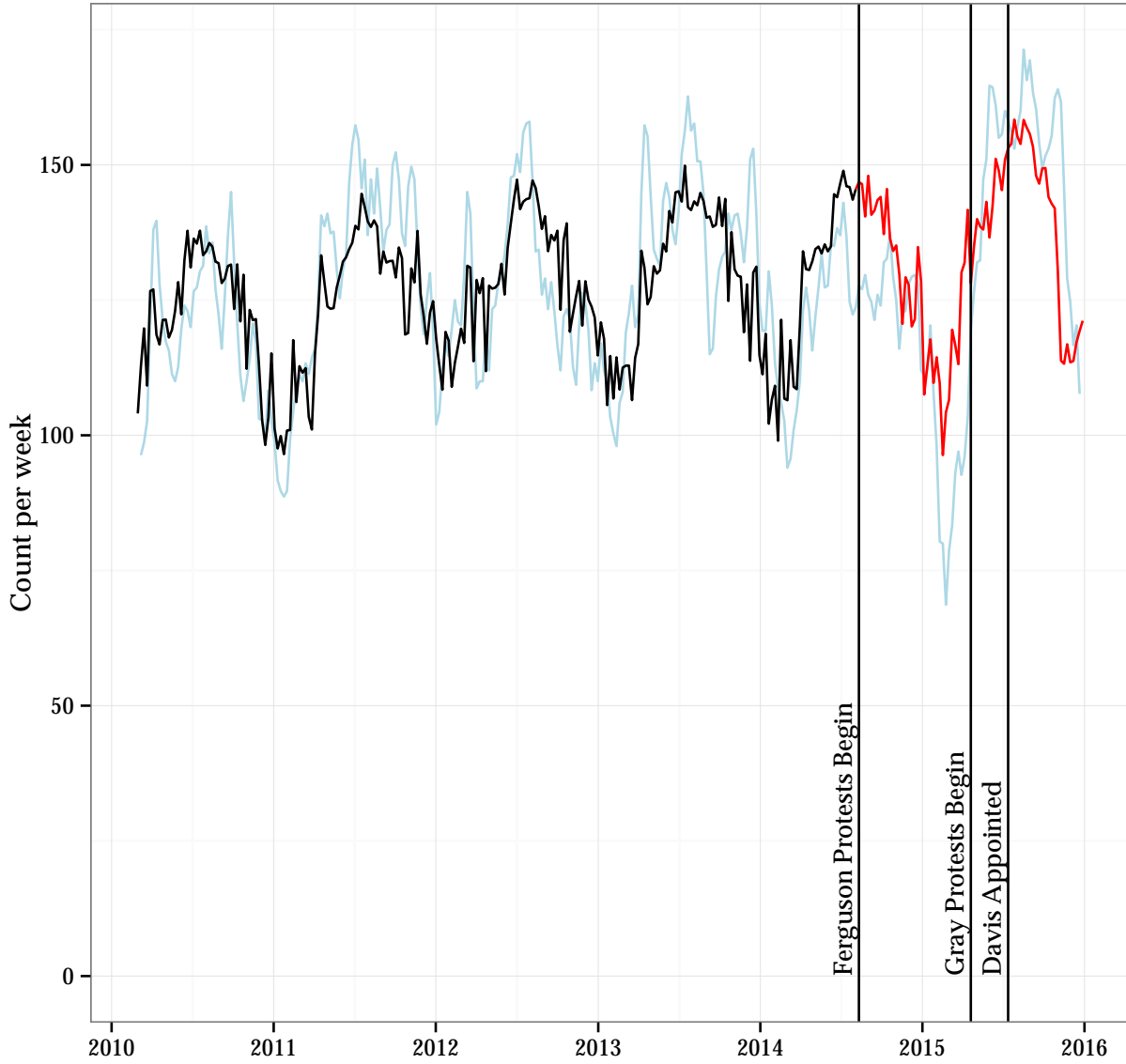
Null deviance: 743.67 on 231 degrees of freedom  
Residual deviance: 452.24 on 221 degrees of freedom  
AIC: 2021.1

Number of Fisher Scoring iterations: 4

# southeastern



# southeastern



## 28 Results for homicide.northwestern

### 28.1 Summary Values for homicide.northwestern

Table 28.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.northwestern	232	0.539	0.749	0	0	4

Table 28.2: Descriptives for Outcome After Ferguson Protests Begin

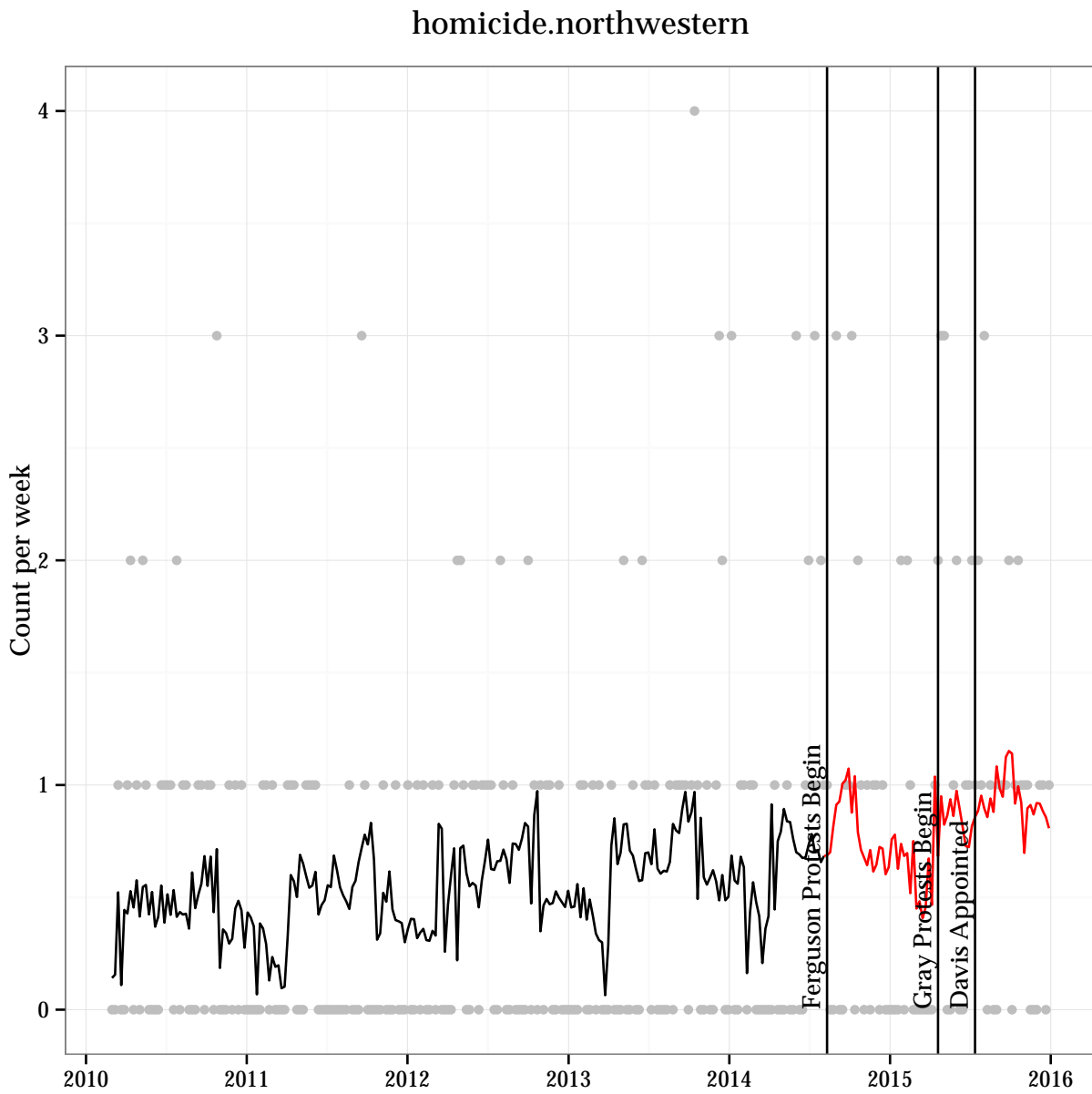
Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.northwestern	73	0.808	0.908	0	1	3

## 28.2 Four Models for homicide.northwestern

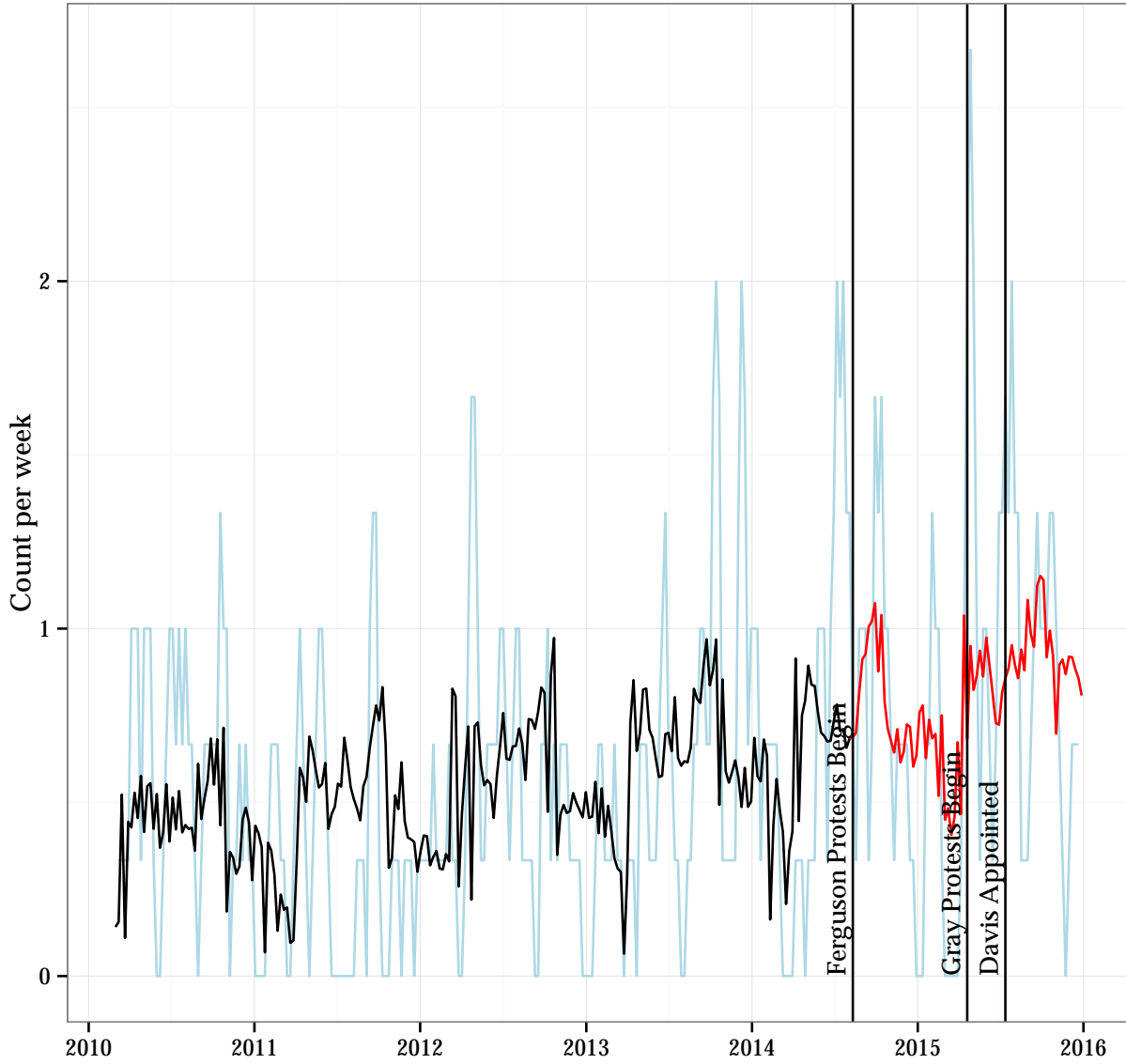
Table 28.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.001	0.002		0.002
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.08		−0.11	−0.09
After Gray Protests Begin (week of 4/20/15 onward)	0.45		0.37	0.36
Unrest and National Guard (during week of 4/27/15)	1.91		1.79	1.78
After Commissioner Batts Fired (week of 7/13/15 onward)	−0.23		−0.31	−0.29
Average Maximum Temperature to 50 Degrees		−0.01		−0.01
Plus Degrees in the 50s		0.02		0.03
Plus Degrees in the 60s		0.05		0.03
Plus Degrees in the 70s		−0.08		−0.08
Plus Degrees greater than 80		0.04		0.05
Snowfall (inches)		−0.19		−0.08
Precipitation (inches)		−0.02		0.001
Darkness Before Midnight (hours)		0.08		0.09
School Days (proportion of week)		0.10		0.13
Observations	305	232	305	305
R <sup>2</sup>	0.06	0.06	0.03	0.11

### 28.3 Least Squares Model (2) for homicide.northwestern

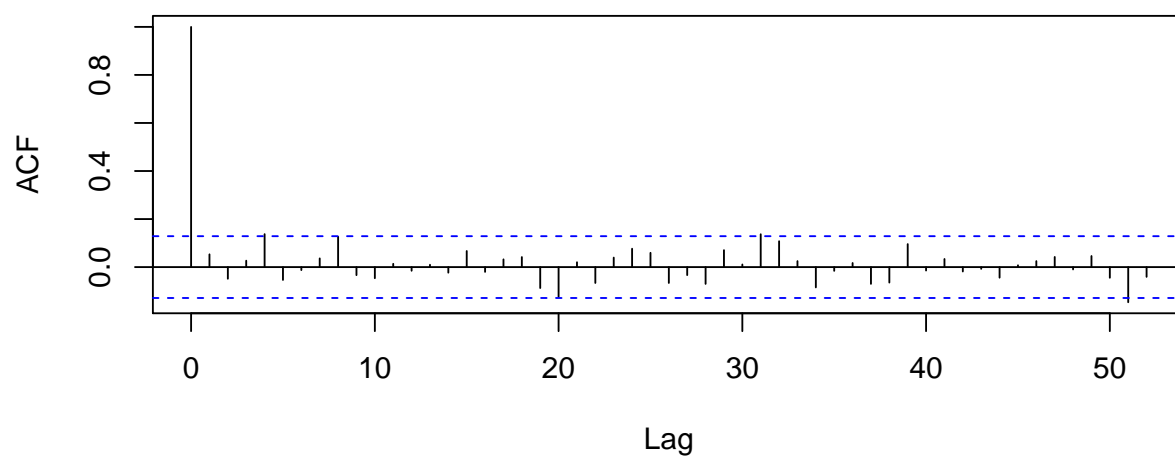


# homicide.northwestern

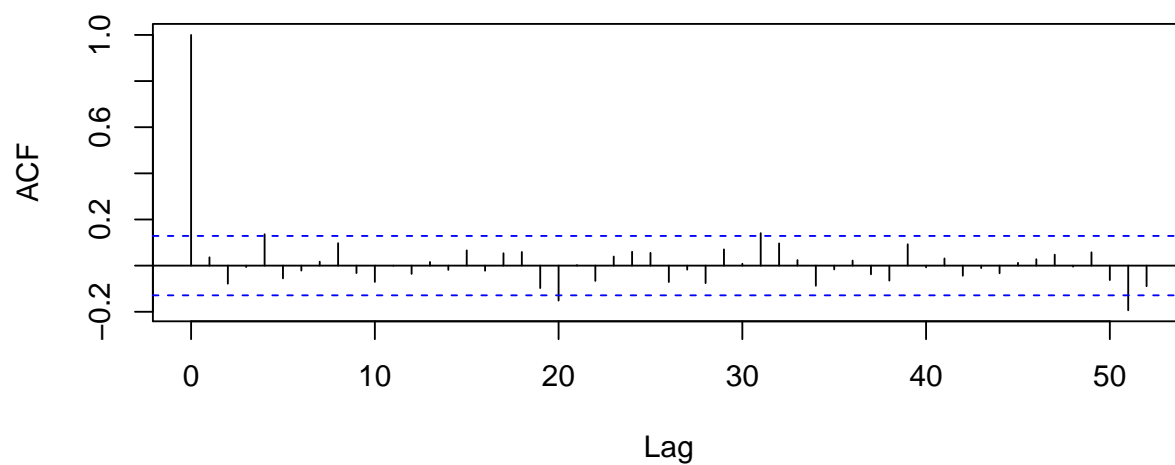




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 28.4 A Poisson Regression Model as an Alternative to Model (2) for homicide.northwestern

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.4972  -1.0164  -0.7957   0.5764   2.6333

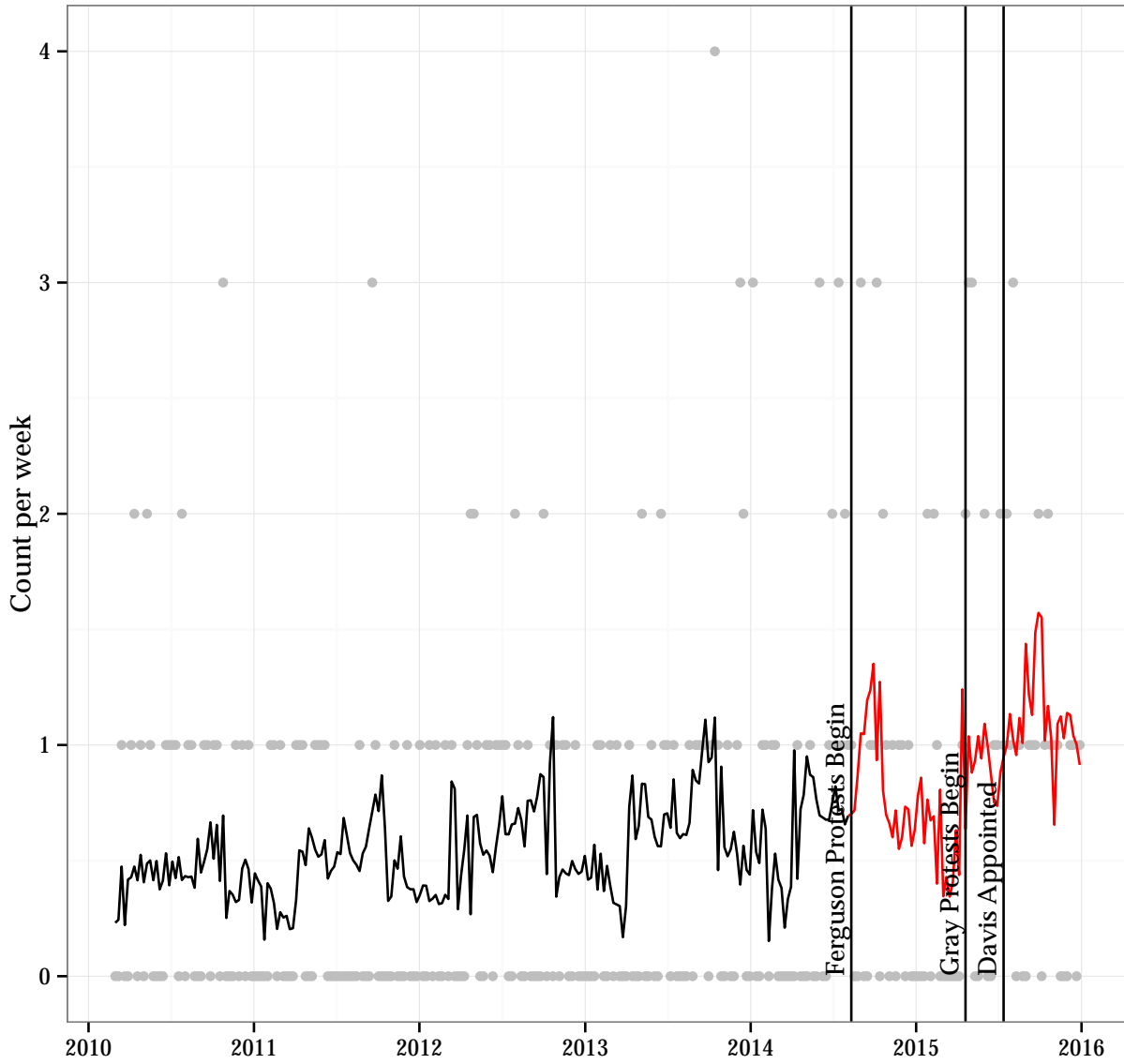
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)  -1.038094   1.978068  -0.525   0.5997
t              0.003112   0.001399   2.224   0.0261 *
tmax.f.spline1 -0.033564   0.037763  -0.889   0.3741
tmax.f.spline2  0.056222   0.082418   0.682   0.4951
tmax.f.spline3  0.083252   0.097507   0.854   0.3932
tmax.f.spline4 -0.143303   0.078460  -1.826   0.0678 .
tmax.f.spline5  0.072846   0.065490   1.112   0.2660
snow.in       -0.583546   0.662272  -0.881   0.3782
precip.in     -0.027867   0.495786  -0.056   0.9552
dark.before.12  0.178181   0.138977   1.282   0.1998
school         0.159087   0.405348   0.392   0.6947
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

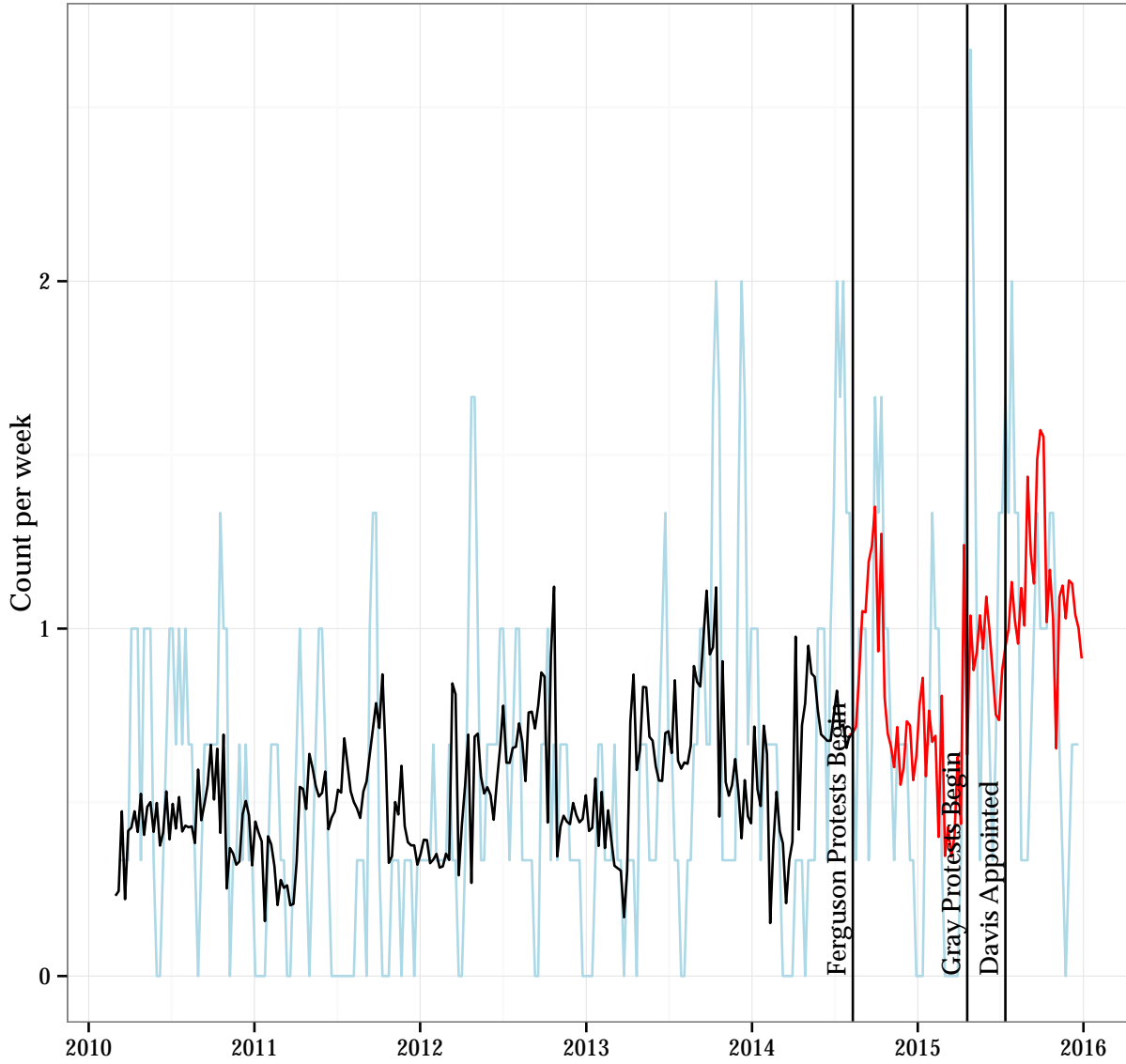
    Null deviance: 238.52  on 231  degrees of freedom
Residual deviance: 222.84  on 221  degrees of freedom
AIC: 455.43

Number of Fisher Scoring iterations: 6
```

# homicide.northwestern



# homicide.northwestern



## 29 Results for homicide.northern

### 29.1 Summary Values for homicide.northern

Table 29.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.northern	232	0.345	0.612	0	0	3

Table 29.2: Descriptives for Outcome After Ferguson Protests Begin

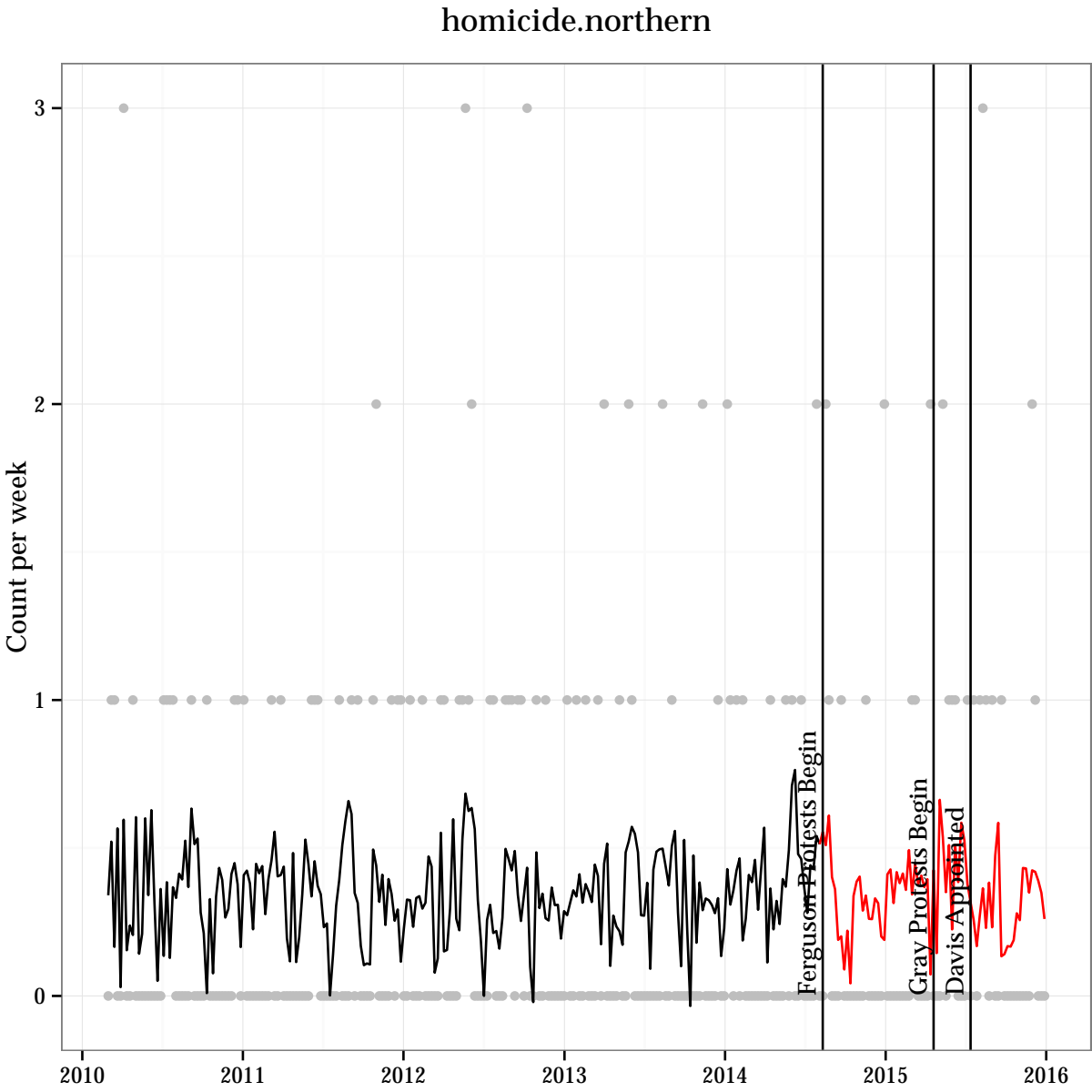
Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.northern	73	0.384	0.680	0	0	3

## 29.2 Four Models for homicide.northern

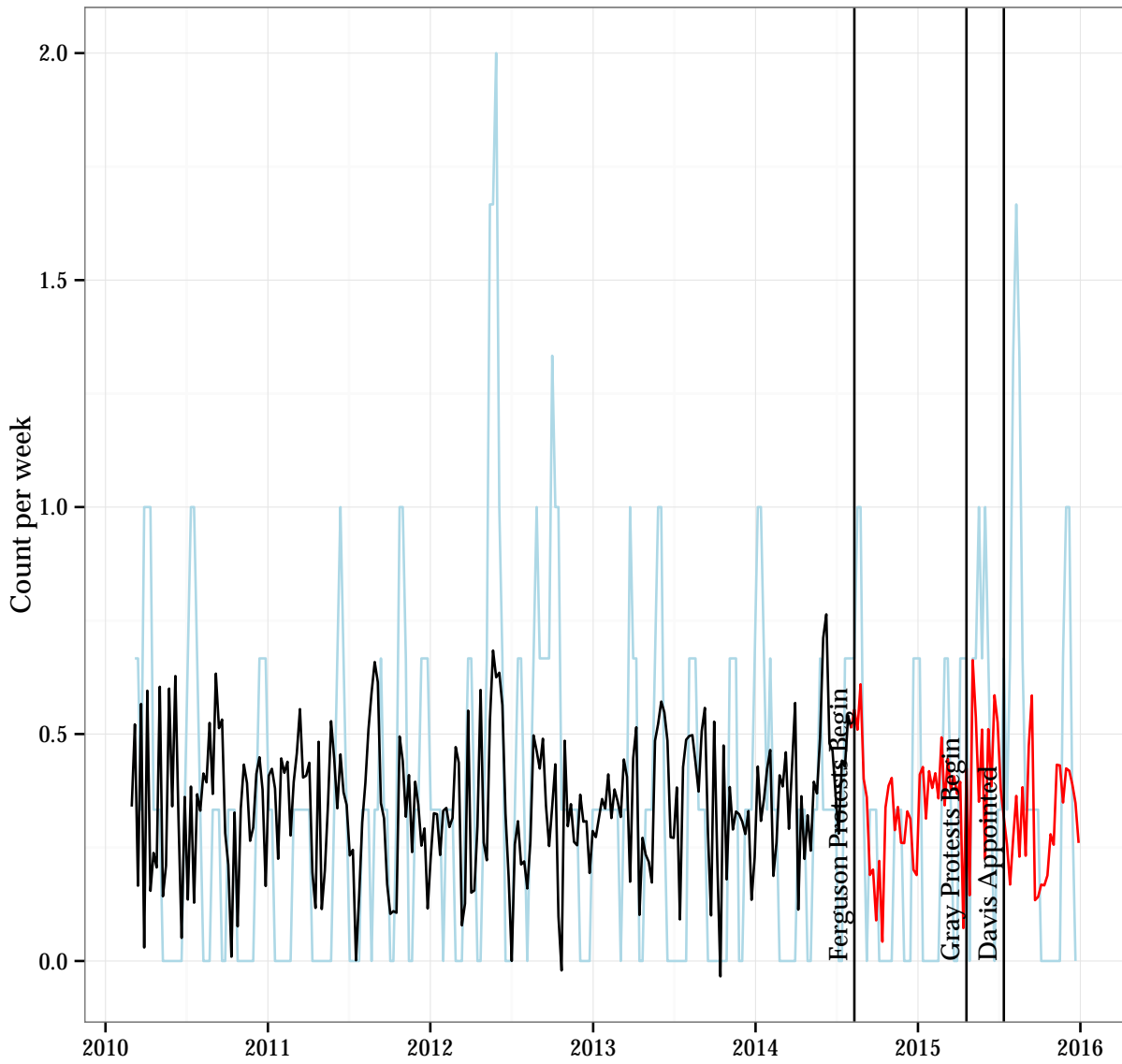
Table 29.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.0001	−0.0001		−0.0001
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.06		−0.03	−0.004
After Gray Protests Begin (week of 4/20/15 onward)	0.24		0.11	0.08
Unrest and National Guard (during week of 4/27/15)	−0.54		−0.23	−0.27
After Commissioner Batts Fired (week of 7/13/15 onward)	−0.11		0.05	0.07
Average Maximum Temperature to 50 Degrees		−0.01		−0.003
Plus Degrees in the 50s		0.03		0.01
Plus Degrees in the 60s		−0.07		−0.04
Plus Degrees in the 70s		0.12		0.09
Plus Degrees greater than 80		−0.10		−0.09
Snowfall (inches)		−0.12		−0.07
Precipitation (inches)		0.14		−0.03
Darkness Before Midnight (hours)		−0.05		−0.05
School Days (proportion of week)		0.21		0.11
Observations	305	232	305	305
R <sup>2</sup>	0.01	0.06	0.005	0.05

29.3 Least Squares Model (2) for homicide.northern

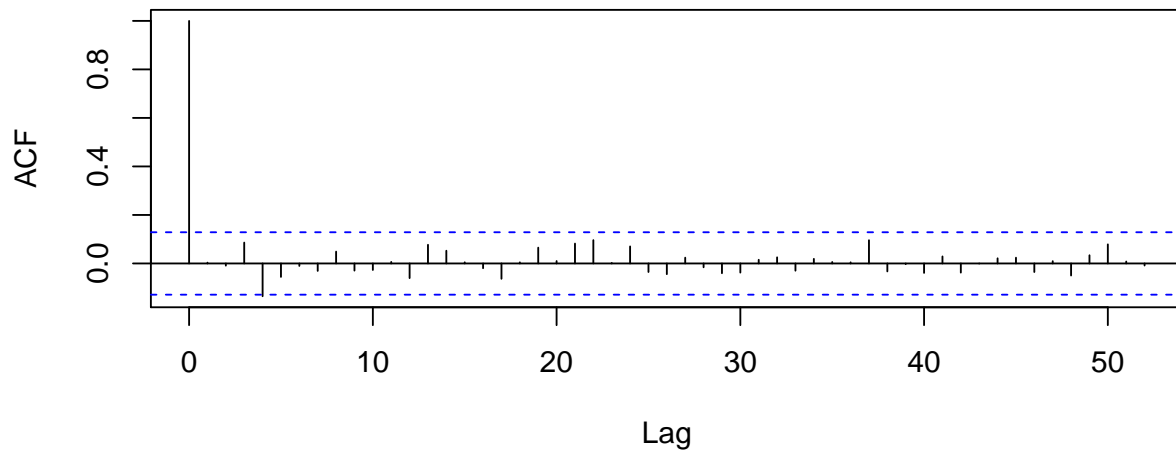


# homicide.northern

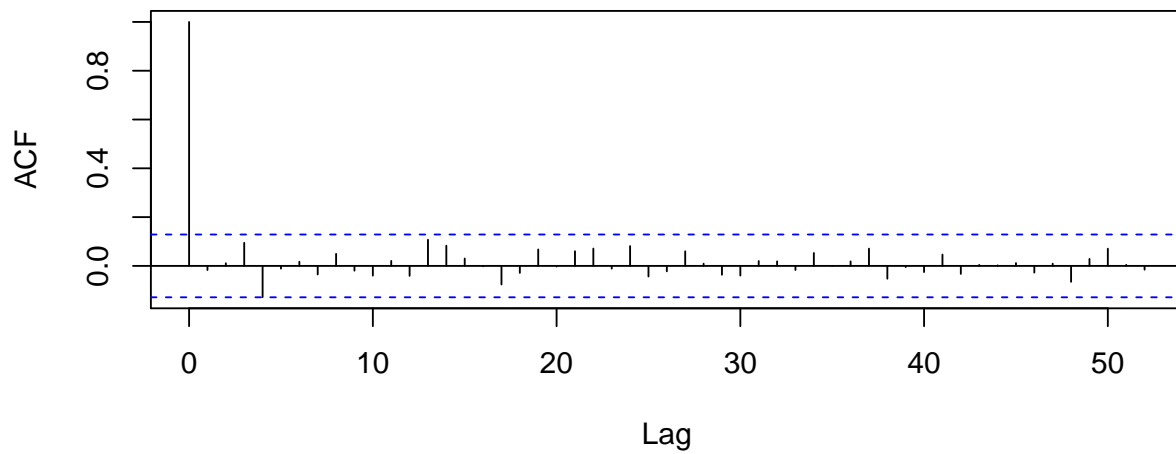




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 29.4 A Poisson Regression Model as an Alternative to Model (2) for homicide.northern

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

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.4449	-0.8598	-0.6893	0.6147	2.6069

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	1.0757712	2.2807201	0.472	0.63715
t	-0.0001053	0.0016927	-0.062	0.95042
tmax.f.spline1	-0.0367121	0.0416187	-0.882	0.37772
tmax.f.spline2	0.0856844	0.0858127	0.999	0.31803
tmax.f.spline3	-0.2221884	0.1047891	-2.120	0.03398 *
tmax.f.spline4	0.3724860	0.1151671	3.234	0.00122 **
tmax.f.spline5	-0.3060270	0.0946508	-3.233	0.00122 **
snow.in	-0.3848080	0.6396308	-0.602	0.54743
precip.in	0.4171826	0.5772092	0.723	0.46983
dark.before.12	-0.1431828	0.1617992	-0.885	0.37619
school	0.5881040	0.4898292	1.201	0.22989

---

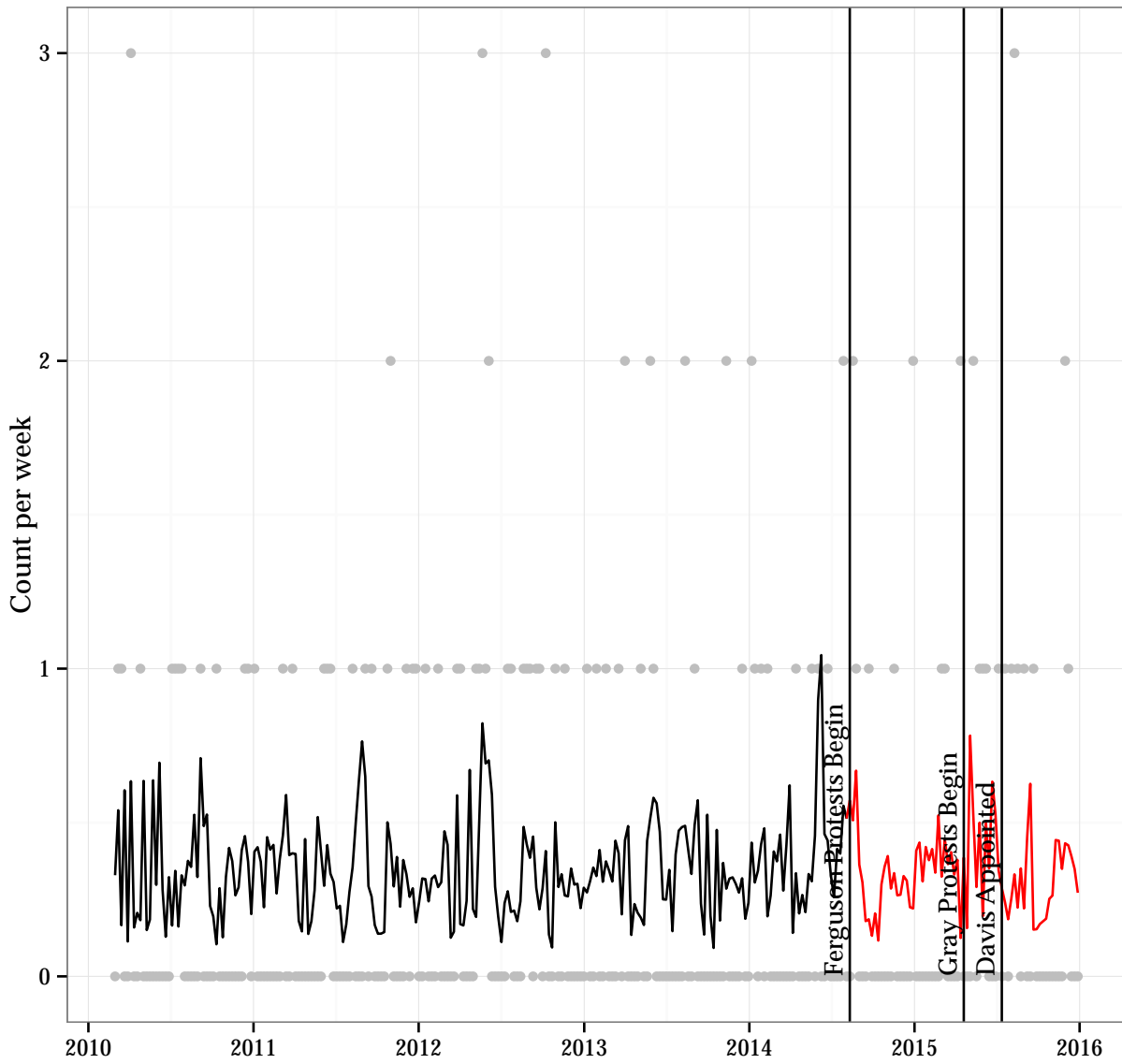
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

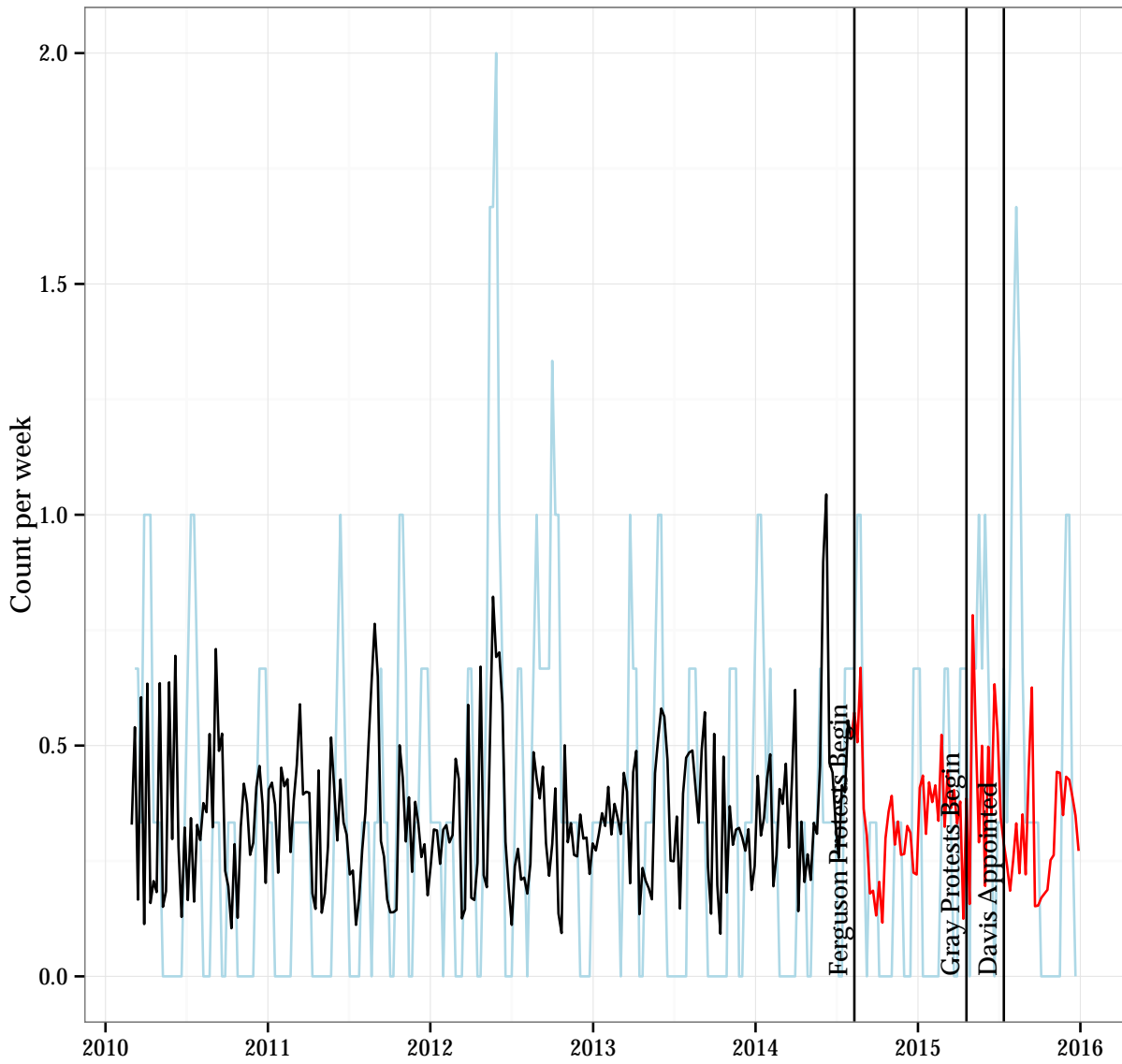
Null deviance: 212.31 on 231 degrees of freedom  
Residual deviance: 196.45 on 221 degrees of freedom  
AIC: 358.33

Number of Fisher Scoring iterations: 6

# homicide.northern



# homicide.northern



## 30 Results for homicide.northeastern

### 30.1 Summary Values for homicide.northeastern

Table 30.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.northeastern	232	0.625	0.849	0	0	5

Table 30.2: Descriptives for Outcome After Ferguson Protests Begin

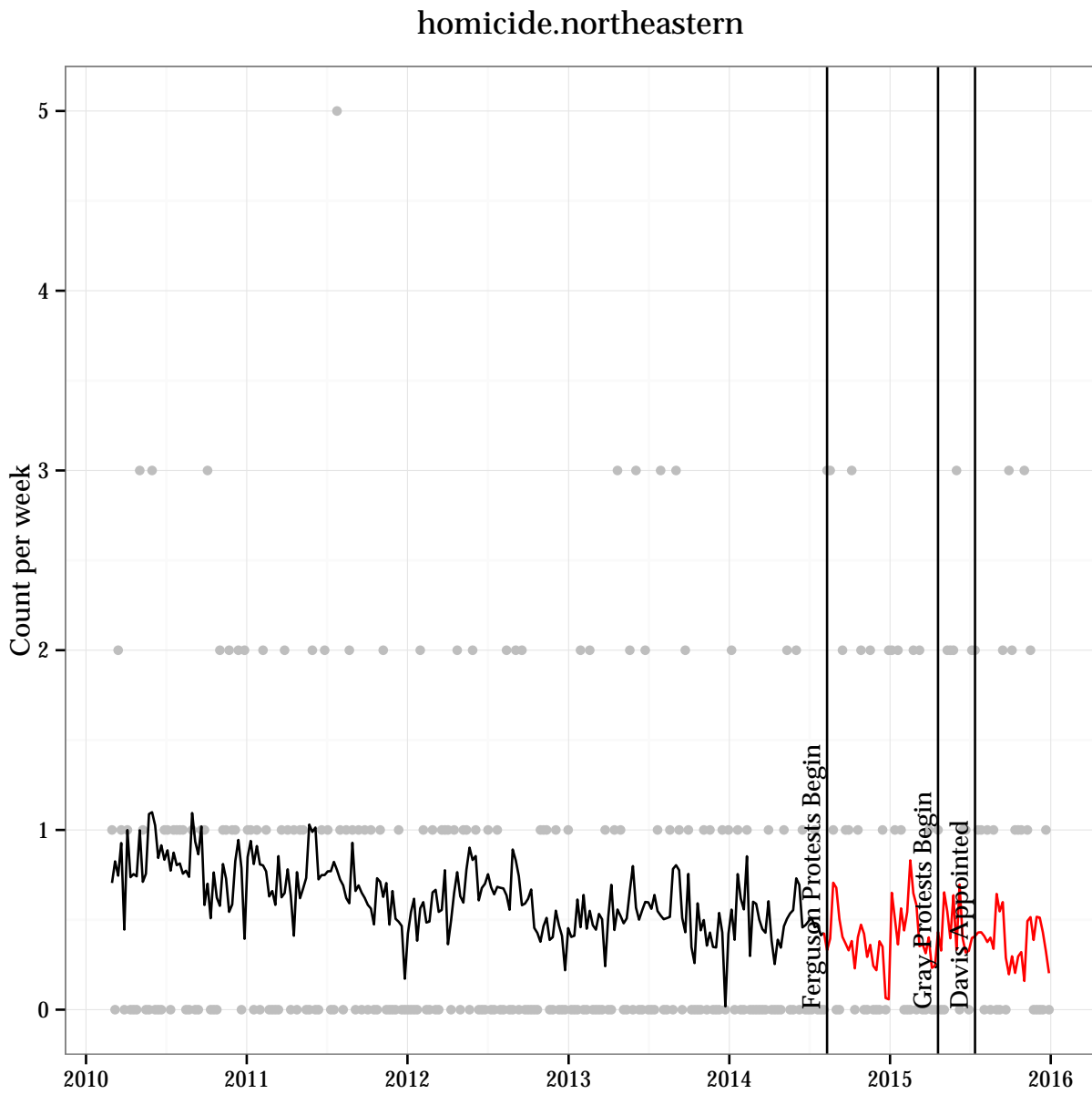
Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.northeastern	73	0.959	0.992	0	1	3

## 30.2 Four Models for homicide.northeastern

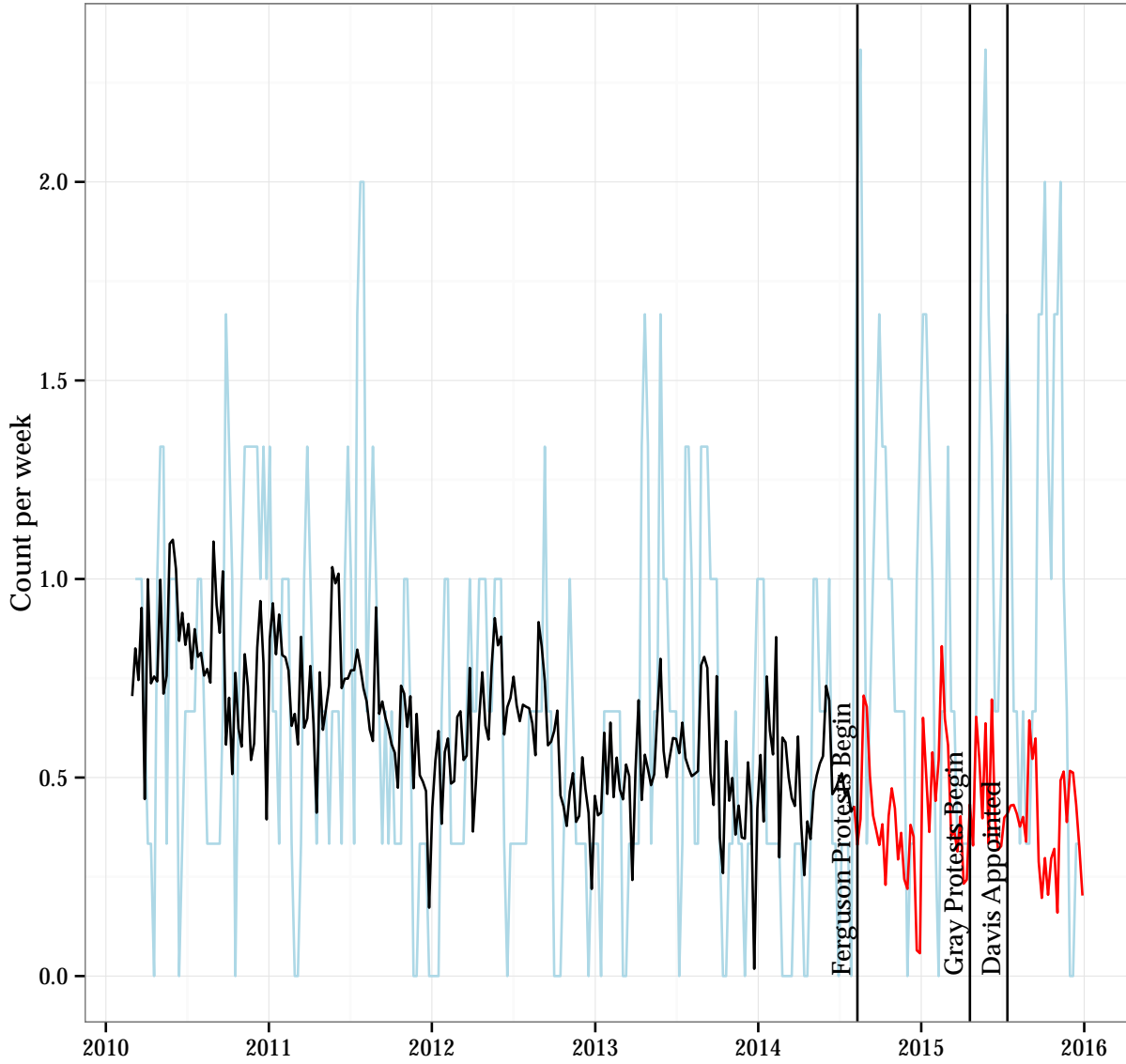
Table 30.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.002	−0.002		−0.002
After Ferguson Protests Begin (week of 8/11/14 onward)	0.53		0.51	0.55
After Gray Protests Begin (week of 4/20/15 onward)	0.40		0.30	0.25
Unrest and National Guard (during week of 4/27/15)	−1.28		−1.13	−1.18
After Commissioner Batts Fired (week of 7/13/15 onward)	−0.32		−0.27	−0.20
Average Maximum Temperature to 50 Degrees		−0.02		−0.01
Plus Degrees in the 50s		0.05		0.03
Plus Degrees in the 60s		−0.05		−0.03
Plus Degrees in the 70s		0.06		0.03
Plus Degrees greater than 80		−0.03		−0.03
Snowfall (inches)		0.08		−0.06
Precipitation (inches)		−0.10		0.06
Darkness Before Midnight (hours)		−0.04		−0.03
School Days (proportion of week)		0.40		0.23
Observations	305	232	305	305
R <sup>2</sup>	0.05	0.05	0.07	0.06

### 30.3 Least Squares Model (2) for homicide.northeastern

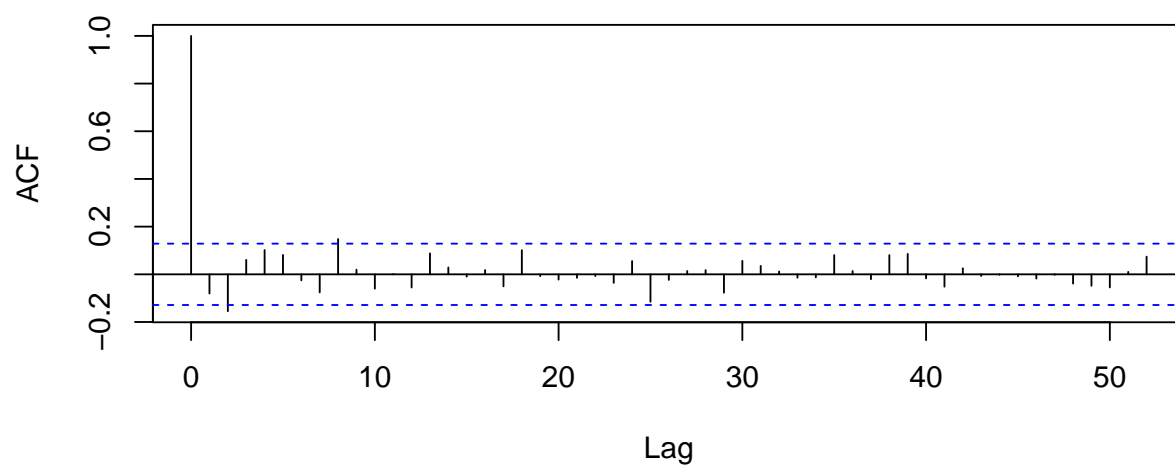


# homicide.northeastern

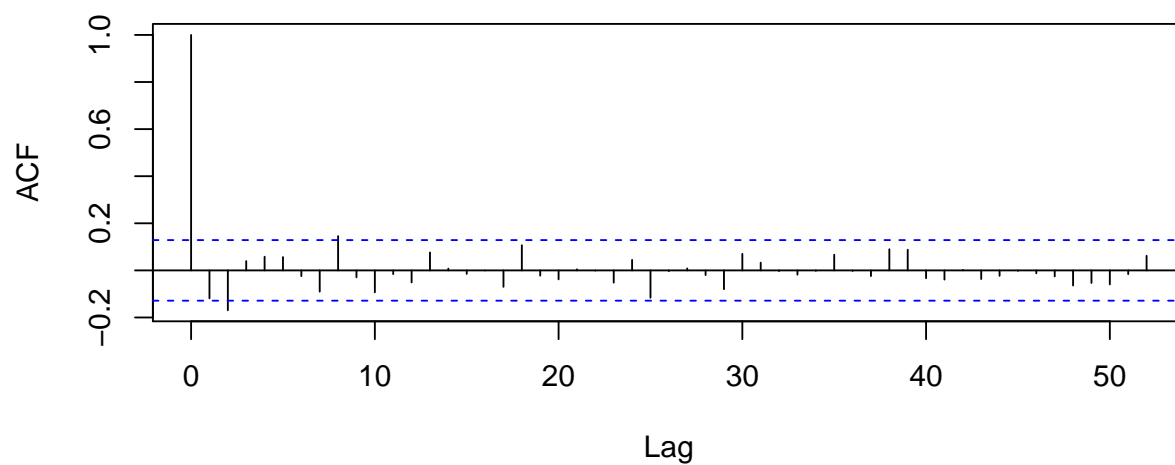




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



### 30.4 A Poisson Regression Model as an Alternative to Model (2) for homicide.northeastern

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.5714  -1.0809  -0.9011   0.5003   3.2222

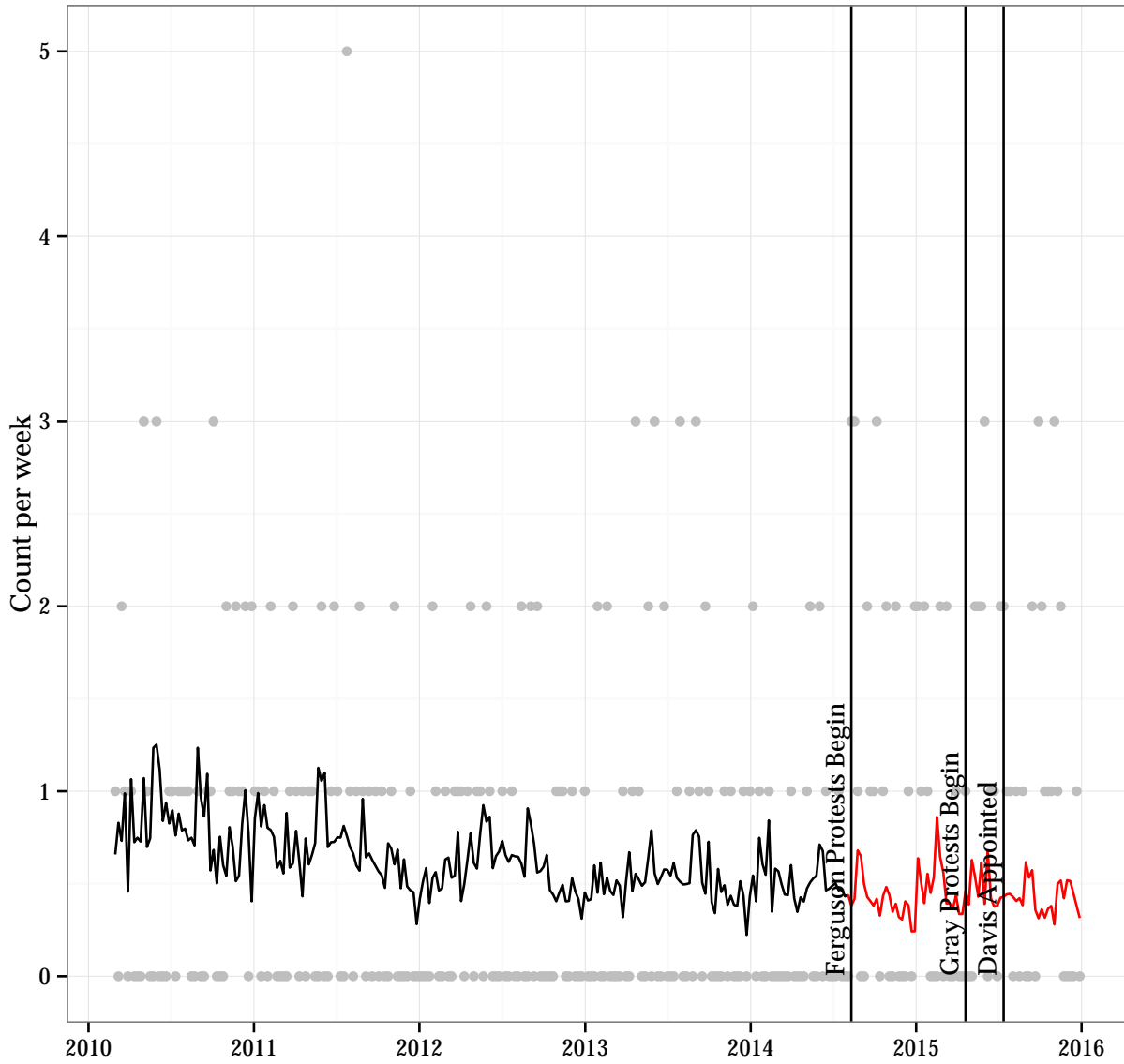
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)    1.431214   1.731788   0.826   0.4086
t              -0.002438   0.001275  -1.911   0.0559 .
tmax.f.spline1 -0.039863   0.031831  -1.252   0.2104
tmax.f.spline2  0.084400   0.067760   1.246   0.2129
tmax.f.spline3 -0.089887   0.079676  -1.128   0.2593
tmax.f.spline4  0.101110   0.074758   1.352   0.1762
tmax.f.spline5 -0.041492   0.062202  -0.667   0.5047
snow.in         0.108144   0.365552   0.296   0.7674
precip.in       -0.141884   0.494568  -0.287   0.7742
dark.before.12 -0.064731   0.125674  -0.515   0.6065
school          0.635050   0.378974   1.676   0.0938 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

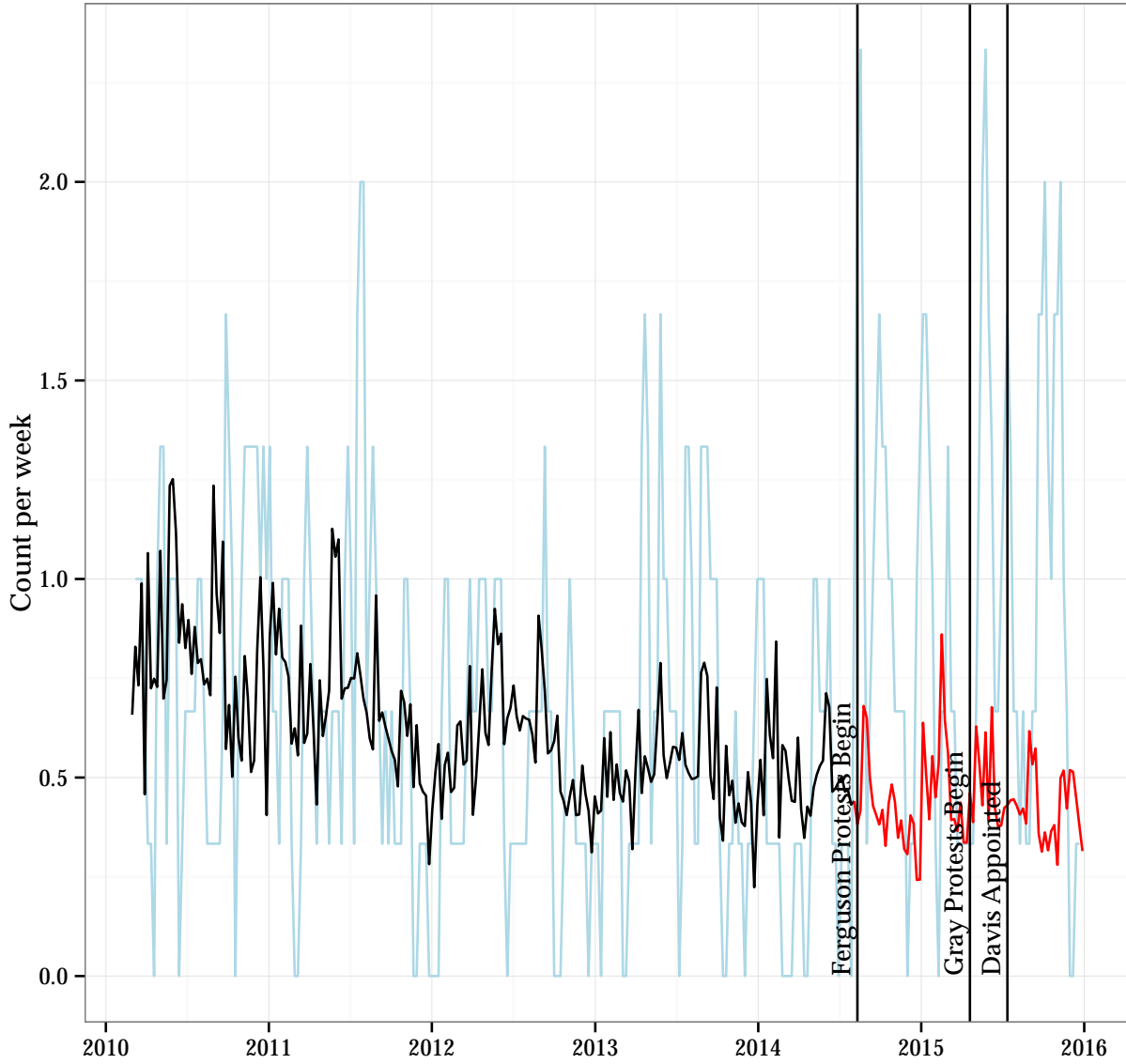
    Null deviance: 267.85  on 231  degrees of freedom
Residual deviance: 255.39  on 221  degrees of freedom
AIC: 505.15

Number of Fisher Scoring iterations: 6
```

# homicide.northeastern



## homicide.northeastern



## 31 Results for homicide.western

### 31.1 Summary Values for homicide.western

Table 31.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.western	232	0.621	0.813	0	0	3

Table 31.2: Descriptives for Outcome After Ferguson Protests Begin

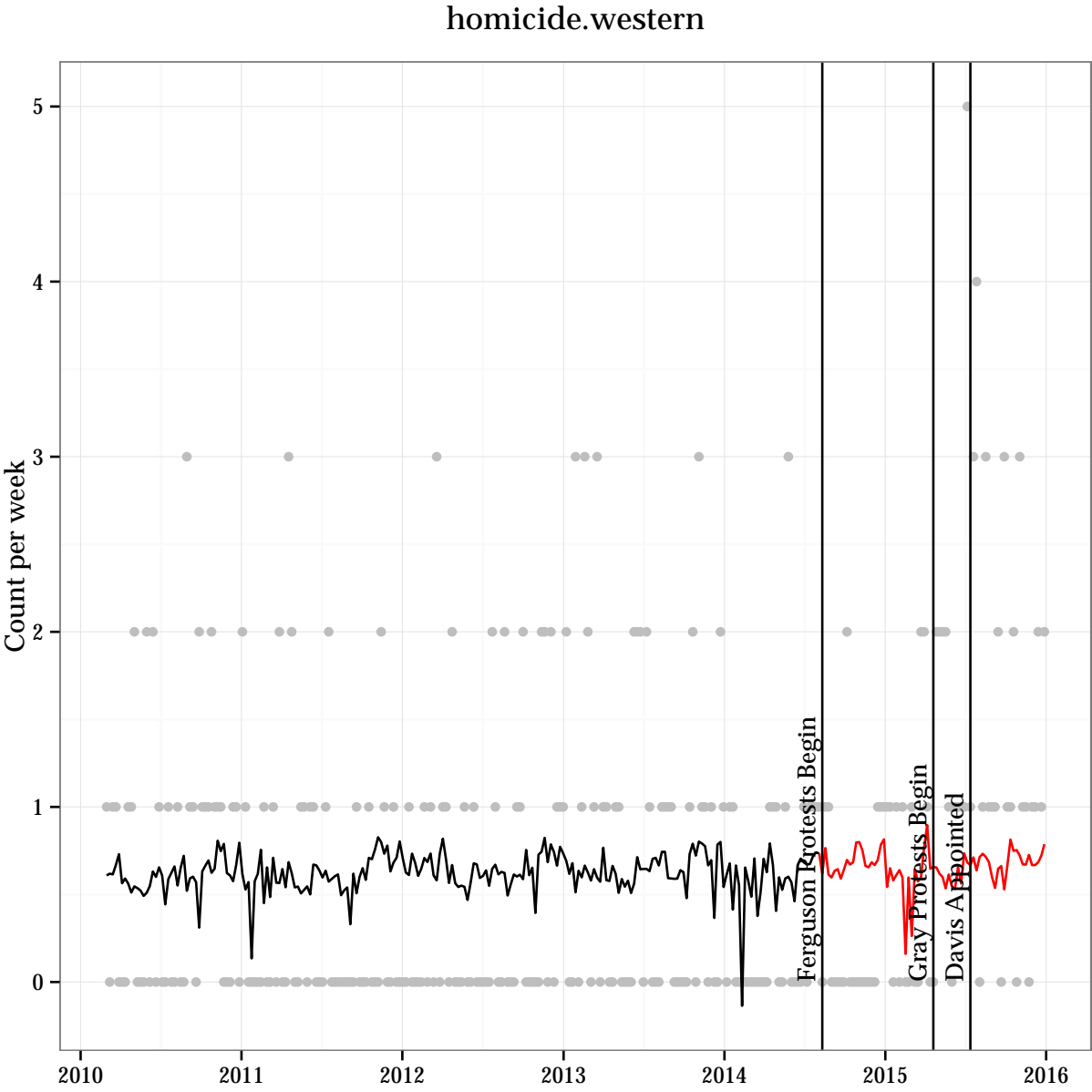
Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.western	73	0.973	1.054	0	1	5

## 31.2 Four Models for homicide.western

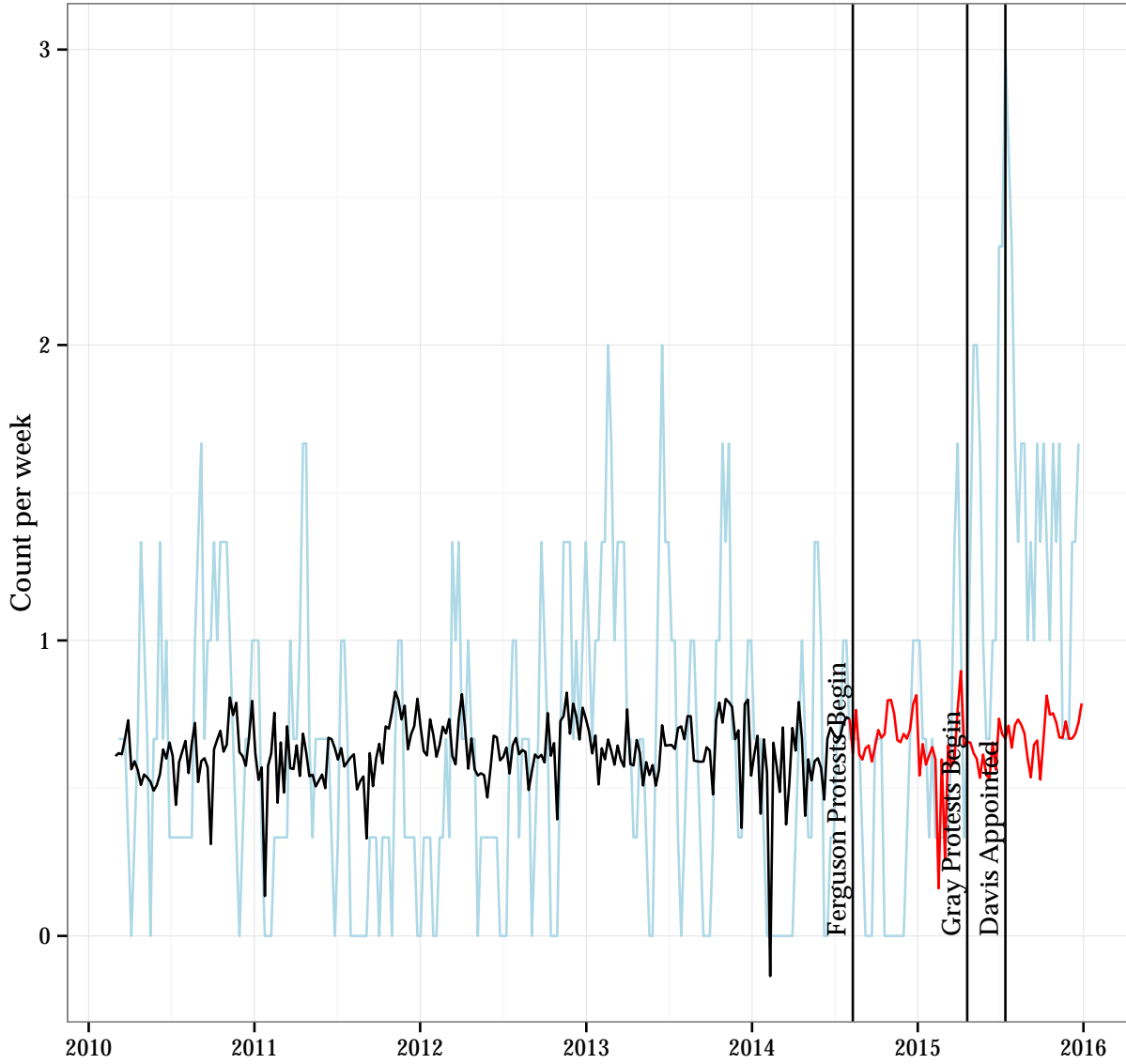
Table 31.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.0002	0.0003		0.0002
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.17		−0.17	−0.15
After Gray Protests Begin (week of 4/20/15 onward)	0.98		1.02	0.98
Unrest and National Guard (during week of 4/27/15)	0.55		0.50	0.56
After Commissioner Batts Fired (week of 7/13/15 onward)	−0.02		−0.09	−0.05
Average Maximum Temperature to 50 Degrees		0.002		0.01
Plus Degrees in the 50s		0.01		−0.01
Plus Degrees in the 60s		−0.03		−0.02
Plus Degrees in the 70s		0.01		0.02
Plus Degrees greater than 80		−0.01		−0.002
Snowfall (inches)		−0.27		−0.19
Precipitation (inches)		−0.28		−0.28
Darkness Before Midnight (hours)		0.03		−0.003
School Days (proportion of week)		−0.22		−0.27
Observations	305	232	305	305
R <sup>2</sup>	0.10	0.02	0.10	0.12

31.3 Least Squares Model (2) for homicide.western

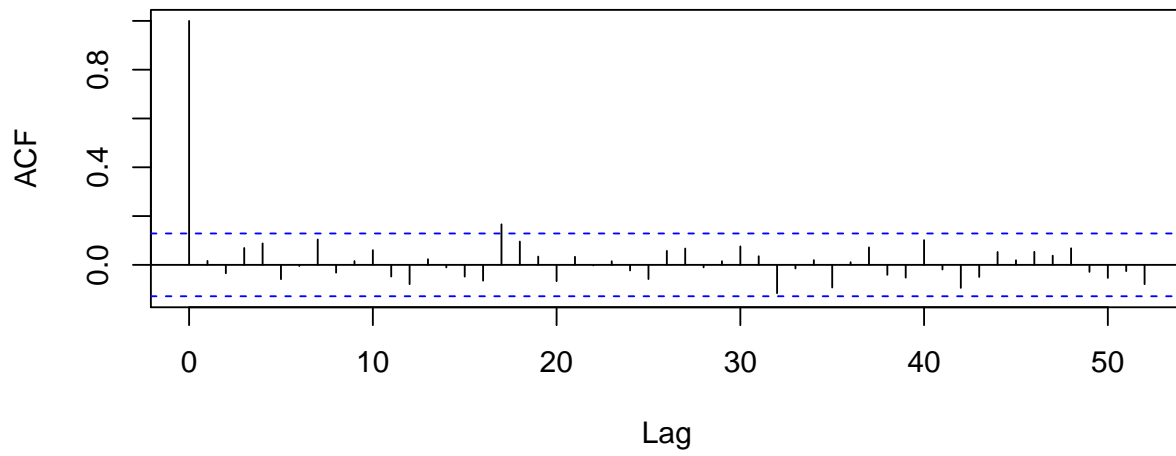


# homicide.western

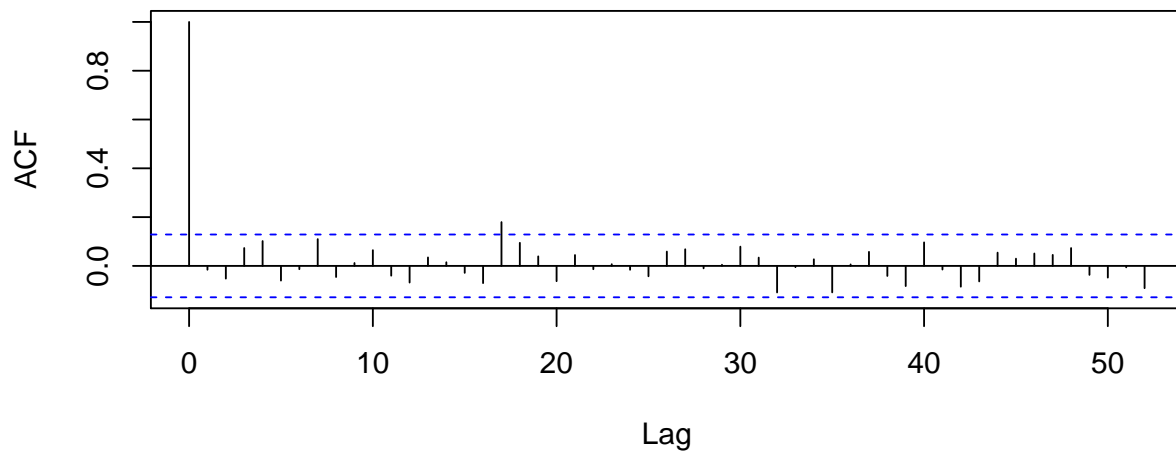




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



### 31.4 A Poisson Regression Model as an Alternative to Model (2) for homicide.western

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.2954  -1.1095  -0.9860   0.4669   2.4493

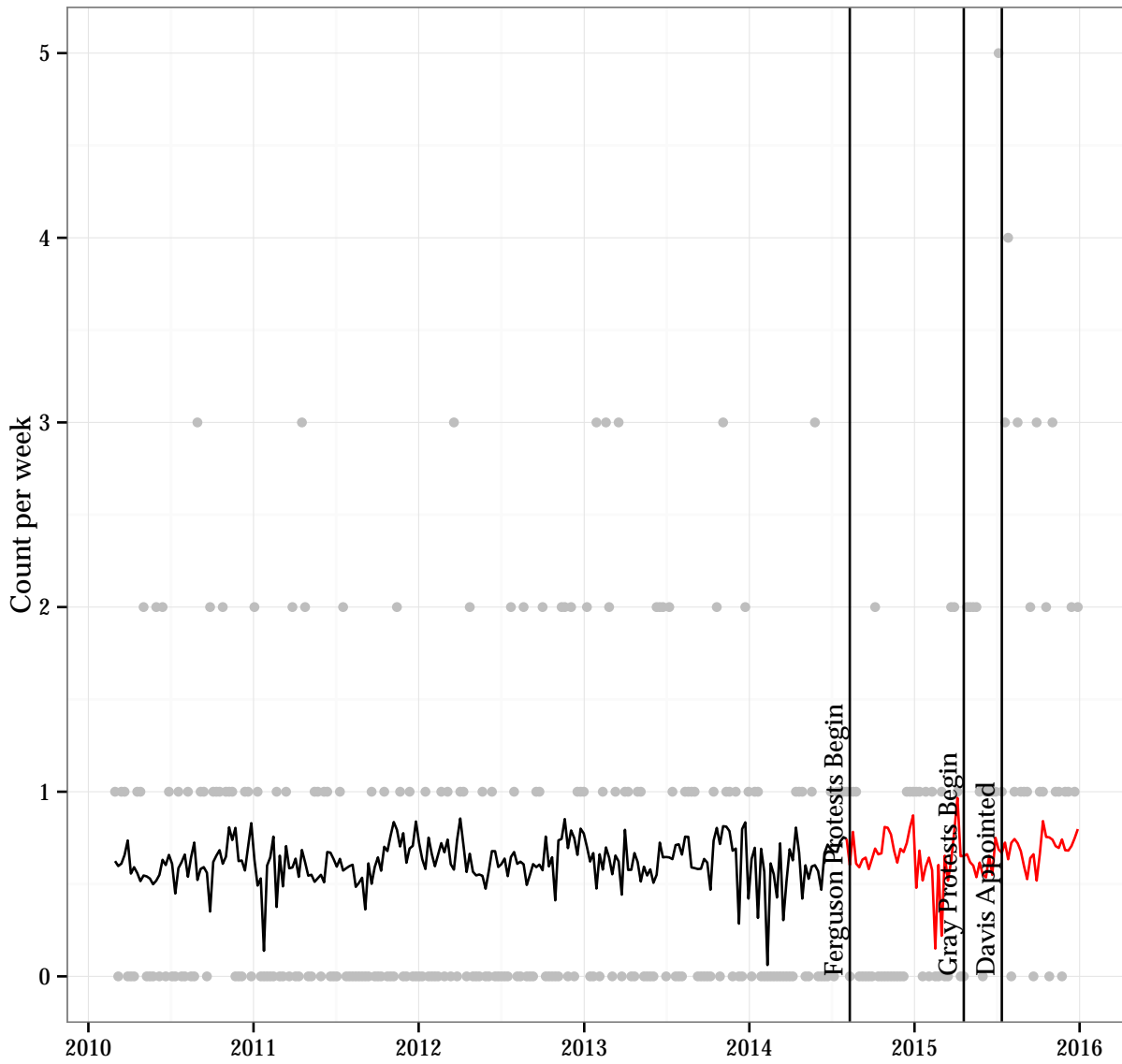
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)  -0.4999862   1.7400417  -0.287   0.774
t              0.0004386   0.0012956   0.339   0.735
tmax.f.spline1 0.0009881   0.0321594   0.031   0.975
tmax.f.spline2 0.0176279   0.0640151   0.275   0.783
tmax.f.spline3 -0.0406510   0.0756130  -0.538   0.591
tmax.f.spline4 0.0205913   0.0739672   0.278   0.781
tmax.f.spline5 -0.0090111   0.0662484  -0.136   0.892
snow.in       -0.8644289   0.7273238  -1.189   0.235
precip.in     -0.5067264   0.5295839  -0.957   0.339
dark.before.12 0.0406984   0.1191185   0.342   0.733
school        -0.3542349   0.3653737  -0.970   0.332

(Dispersion parameter for poisson family taken to be 1)

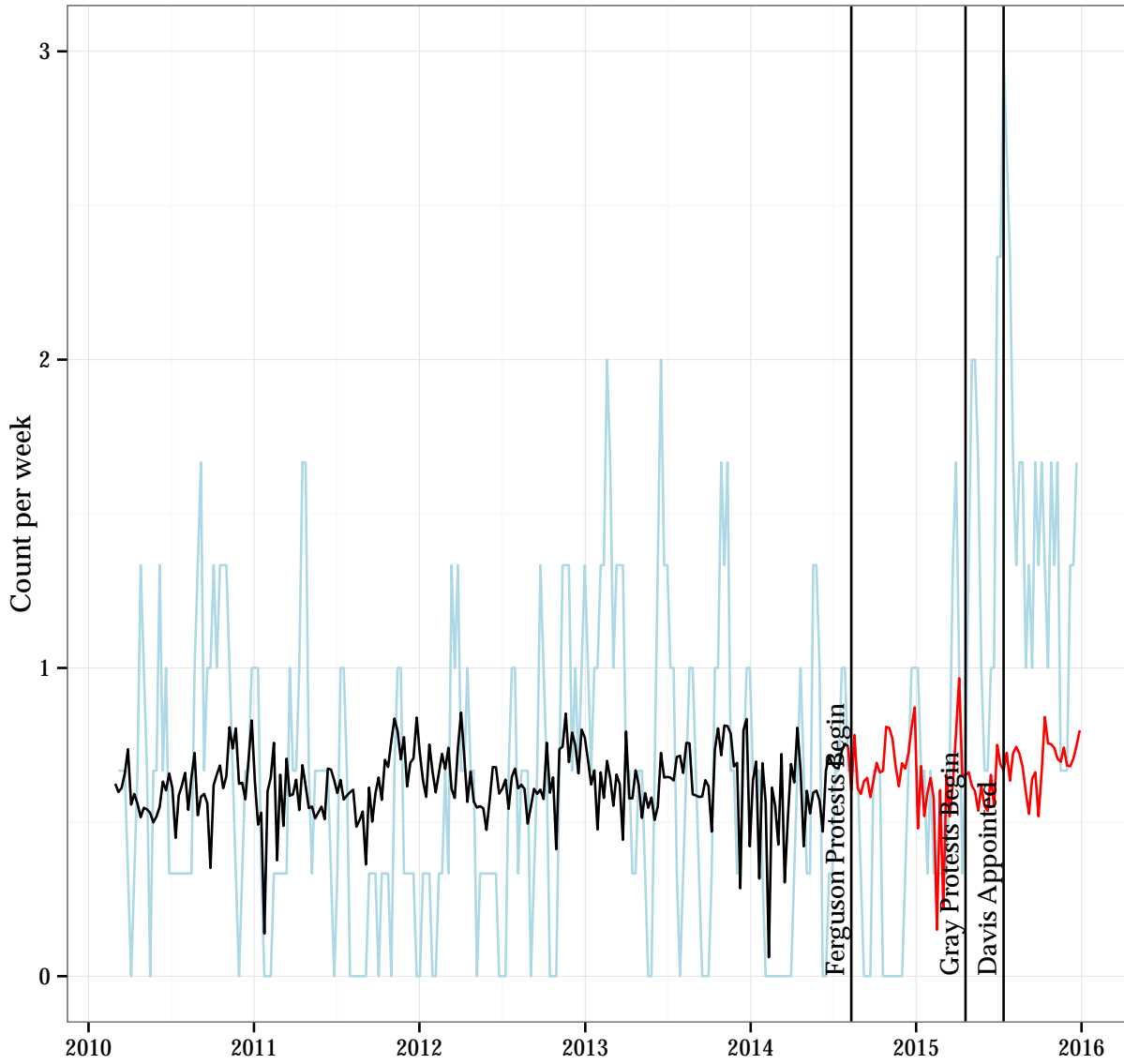
    Null deviance: 259.40  on 231  degrees of freedom
Residual deviance: 253.93  on 221  degrees of freedom
AIC: 505.2

Number of Fisher Scoring iterations: 6
```

# homicide.western



# homicide.western



## 32 Results for homicide.central

### 32.1 Summary Values for homicide.central

Table 32.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.central	232	0.289	0.595	0	0	3

Table 32.2: Descriptives for Outcome After Ferguson Protests Begin

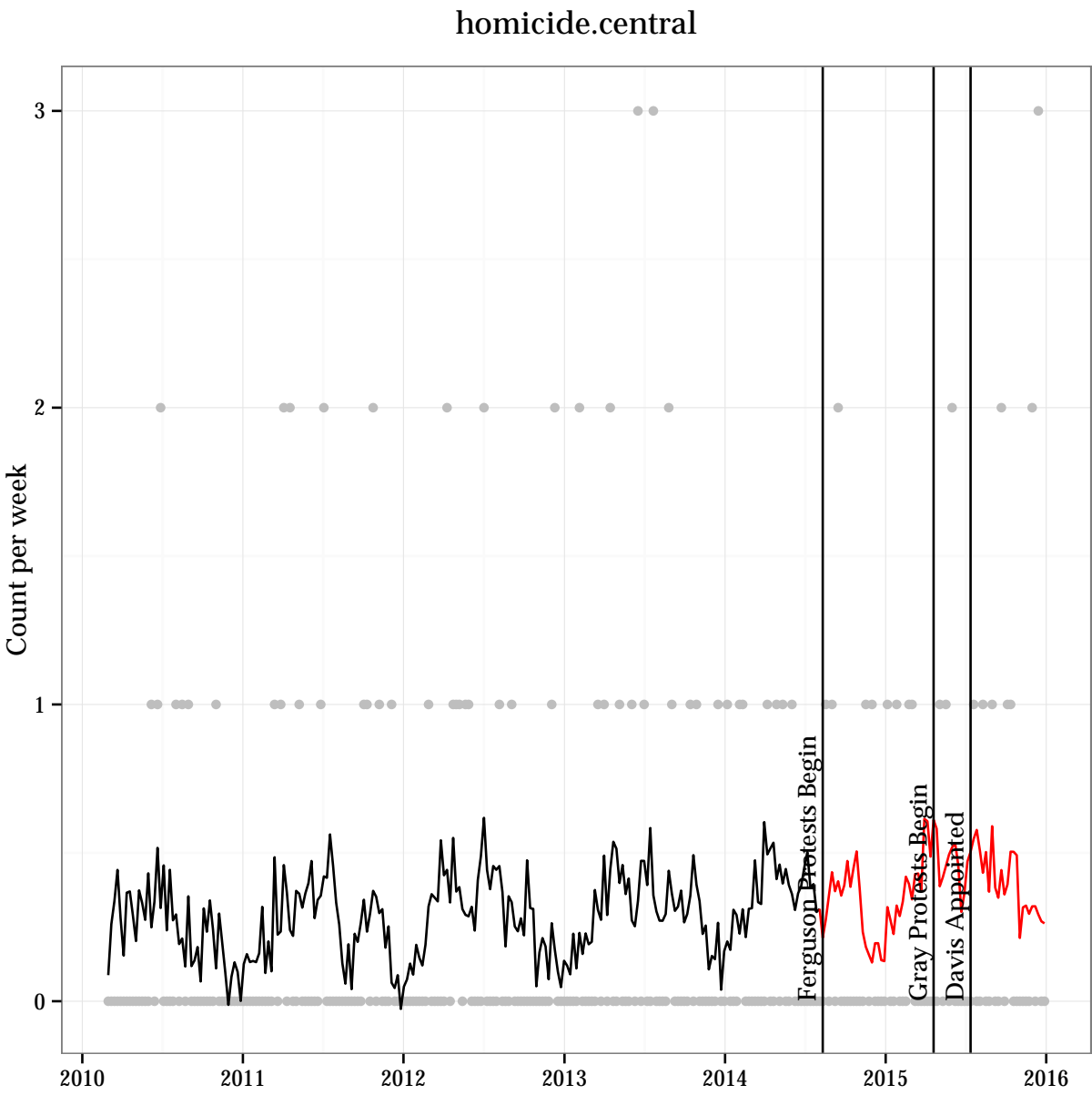
Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.central	73	0.356	0.653	0	0	3

## 32.2 Four Models for homicide.central

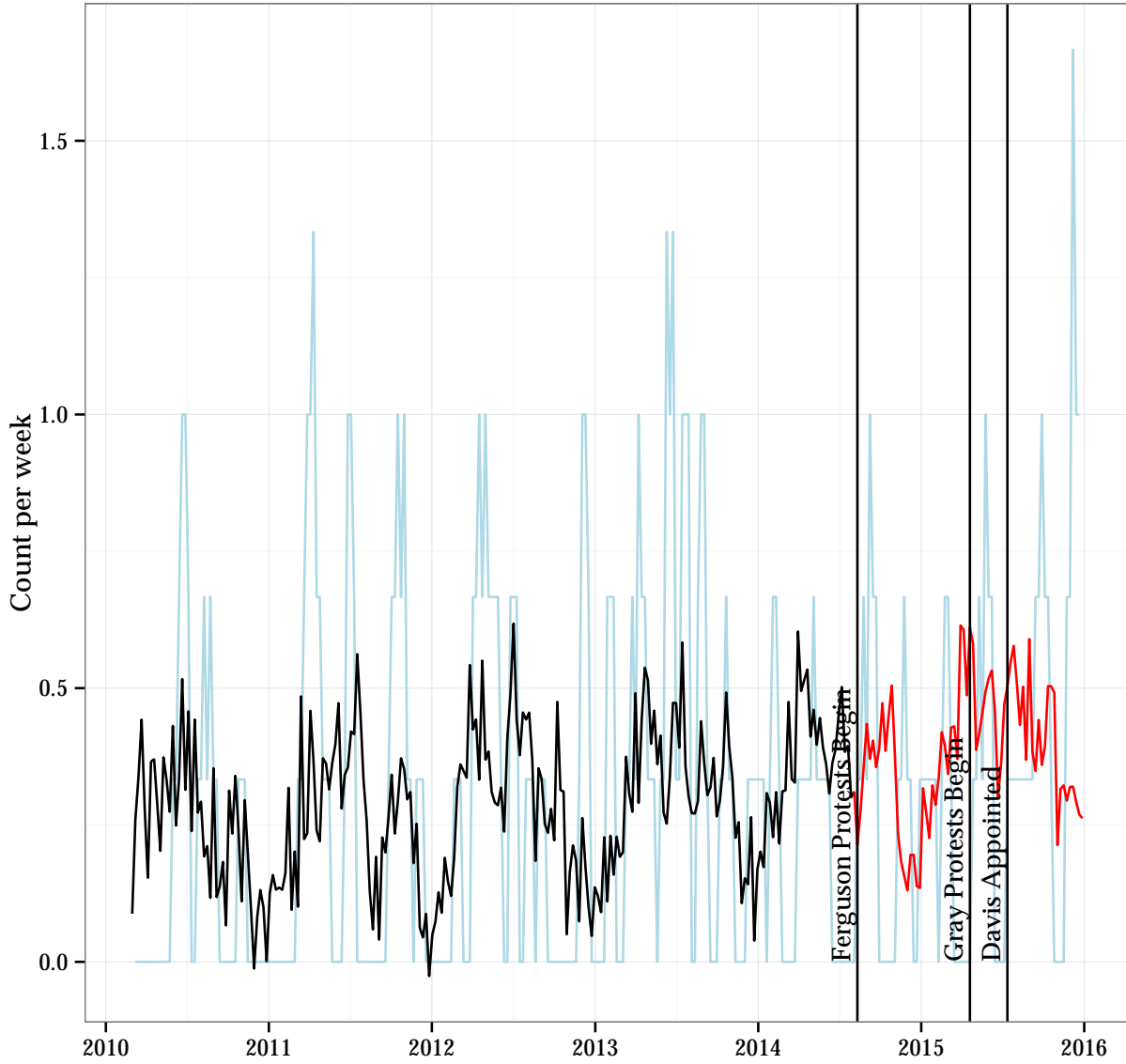
Table 32.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.0005	0.001		0.001
After Ferguson Protests Begin (week of 8/11/14 onward)	-0.07		-0.06	-0.09
After Gray Protests Begin (week of 4/20/15 onward)	0.07		-0.03	0.01
Unrest and National Guard (during week of 4/27/15)	-0.36		-0.49	-0.54
After Commissioner Batts Fired (week of 7/13/15 onward)	0.11		0.17	0.12
Average Maximum Temperature to 50 Degrees		-0.01		-0.02
Plus Degrees in the 50s		0.04		0.03
Plus Degrees in the 60s		-0.05		-0.01
Plus Degrees in the 70s		-0.001		-0.03
Plus Degrees greater than 80		0.04		0.04
Snowfall (inches)		0.01		-0.03
Precipitation (inches)		-0.17		-0.27
Darkness Before Midnight (hours)		-0.08		-0.07
School Days (proportion of week)		0.08		0.17
Observations	305	232	305	305
R <sup>2</sup>	0.01	0.05	0.01	0.05

32.3 Least Squares Model (2) for homicide.central

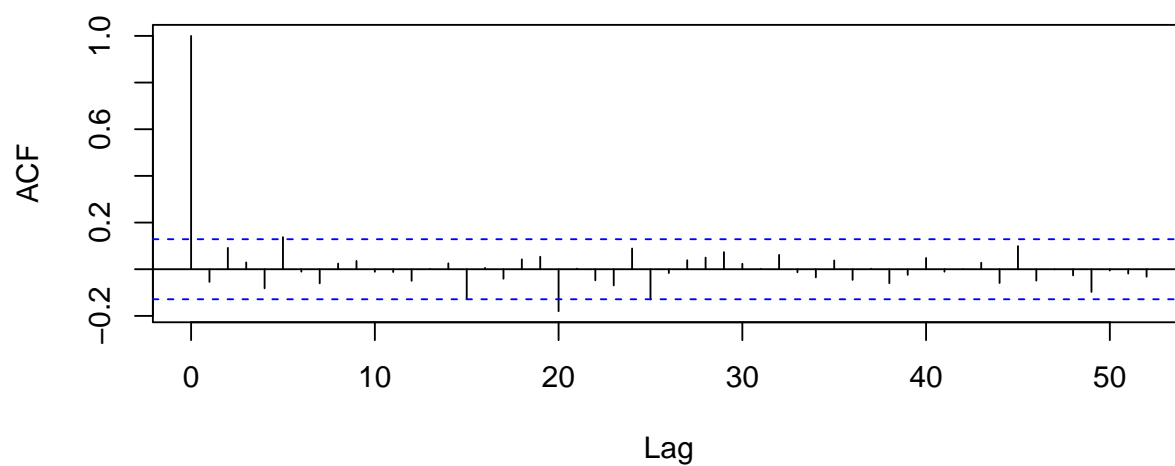


# homicide.central

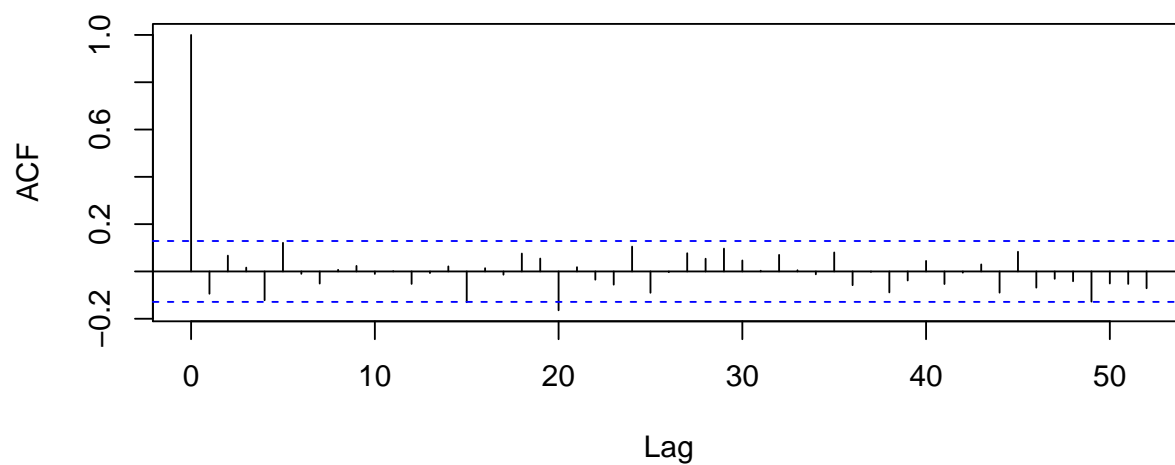




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 32.4 A Poisson Regression Model as an Alternative to Model (2) for homicide.central

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.2393  -0.7984  -0.6267  -0.4412   2.8046

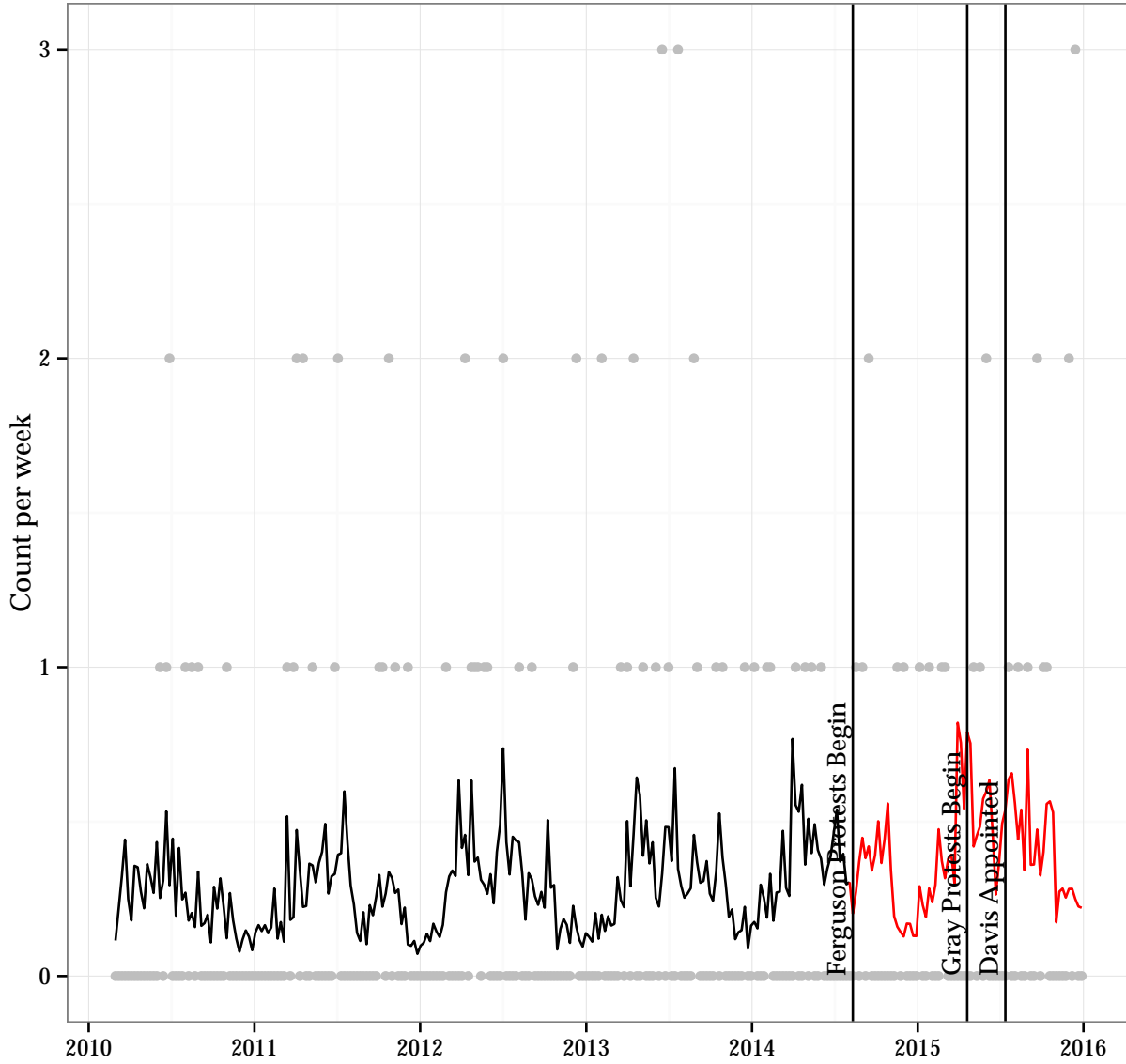
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   1.052760   3.035040   0.347   0.729
t              0.002532   0.001881   1.346   0.178
tmax.f.spline1 -0.035634   0.058452  -0.610   0.542
tmax.f.spline2  0.150291   0.111797   1.344   0.179
tmax.f.spline3 -0.170666   0.111247  -1.534   0.125
tmax.f.spline4  0.000357   0.100549   0.004   0.997
tmax.f.spline5  0.124806   0.088377   1.412   0.158
snow.in        0.129490   0.636054   0.204   0.839
precip.in      -0.744702   0.839514  -0.887   0.375
dark.before.12 -0.288842   0.182742  -1.581   0.114
school         0.325906   0.562800   0.579   0.563

(Dispersion parameter for poisson family taken to be 1)

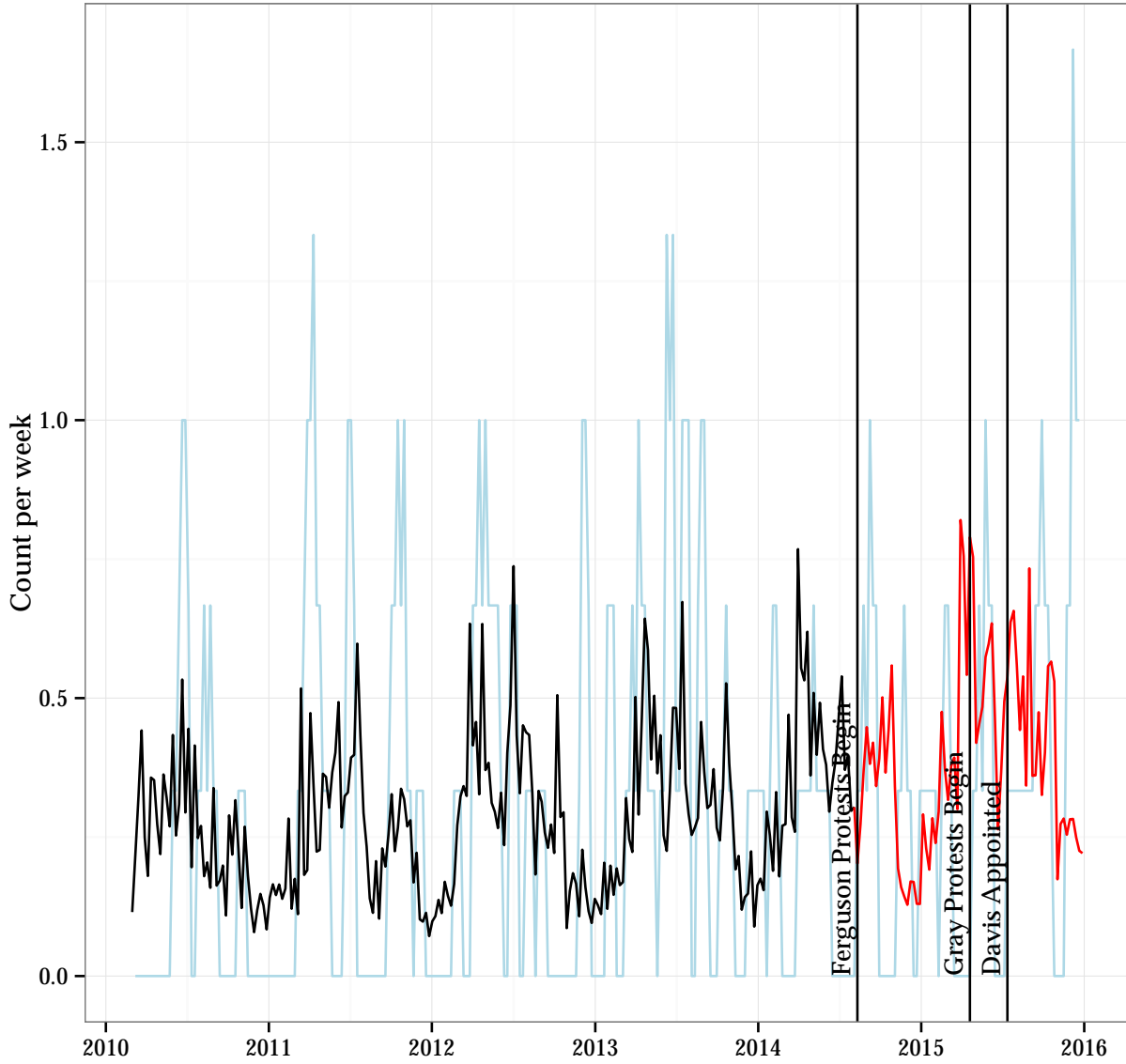
    Null deviance: 210.12  on 231  degrees of freedom
Residual deviance: 195.33  on 221  degrees of freedom
AIC: 330.06

Number of Fisher Scoring iterations: 6
```

# homicide.central



# homicide.central



## 33 Results for homicide.eastern

### 33.1 Summary Values for homicide.eastern

Table 33.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.eastern	232	0.634	0.805	0	0	3

Table 33.2: Descriptives for Outcome After Ferguson Protests Begin

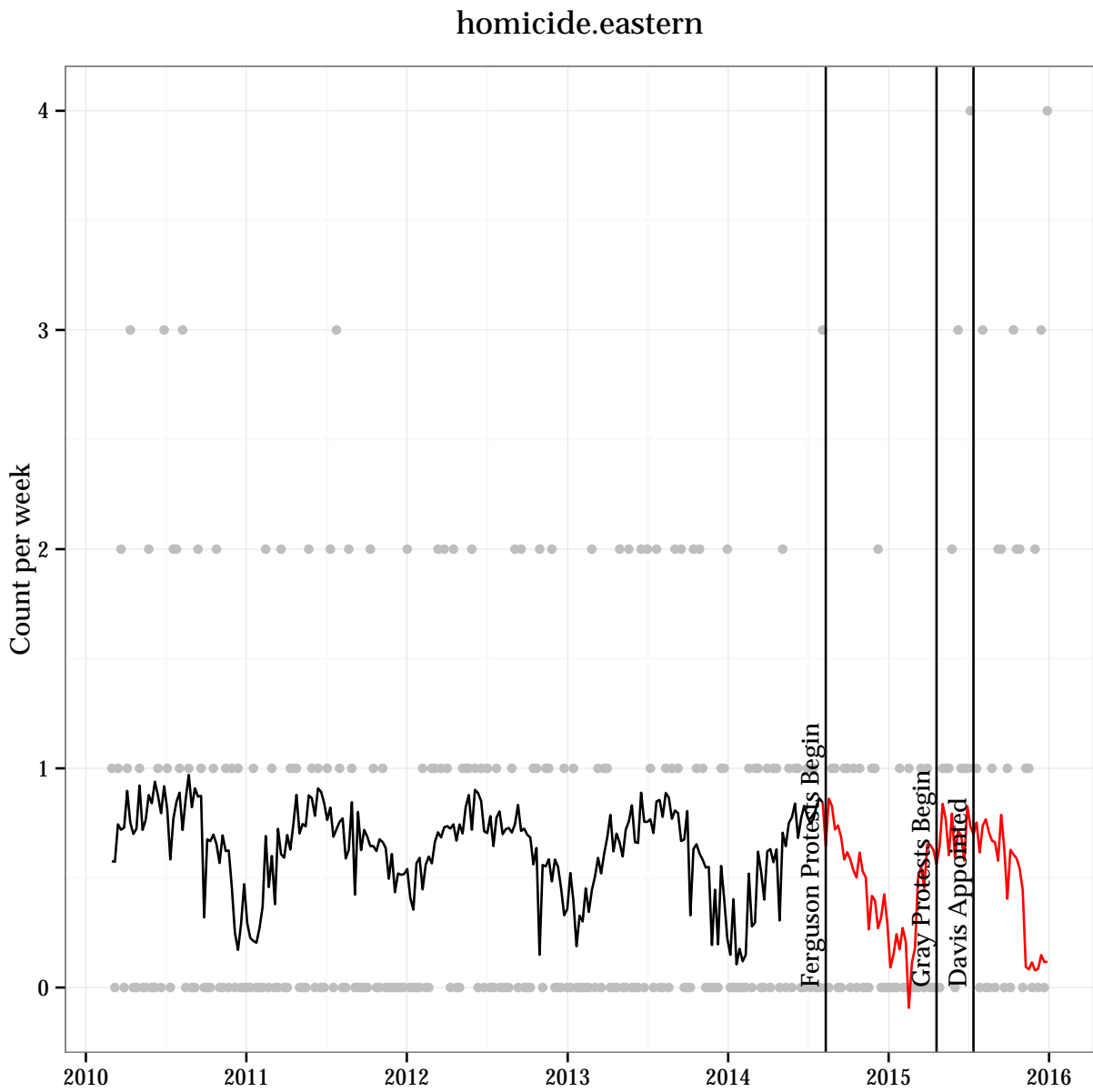
Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.eastern	73	0.795	1.013	0	1	4

### 33.2 Four Models for homicide.eastern

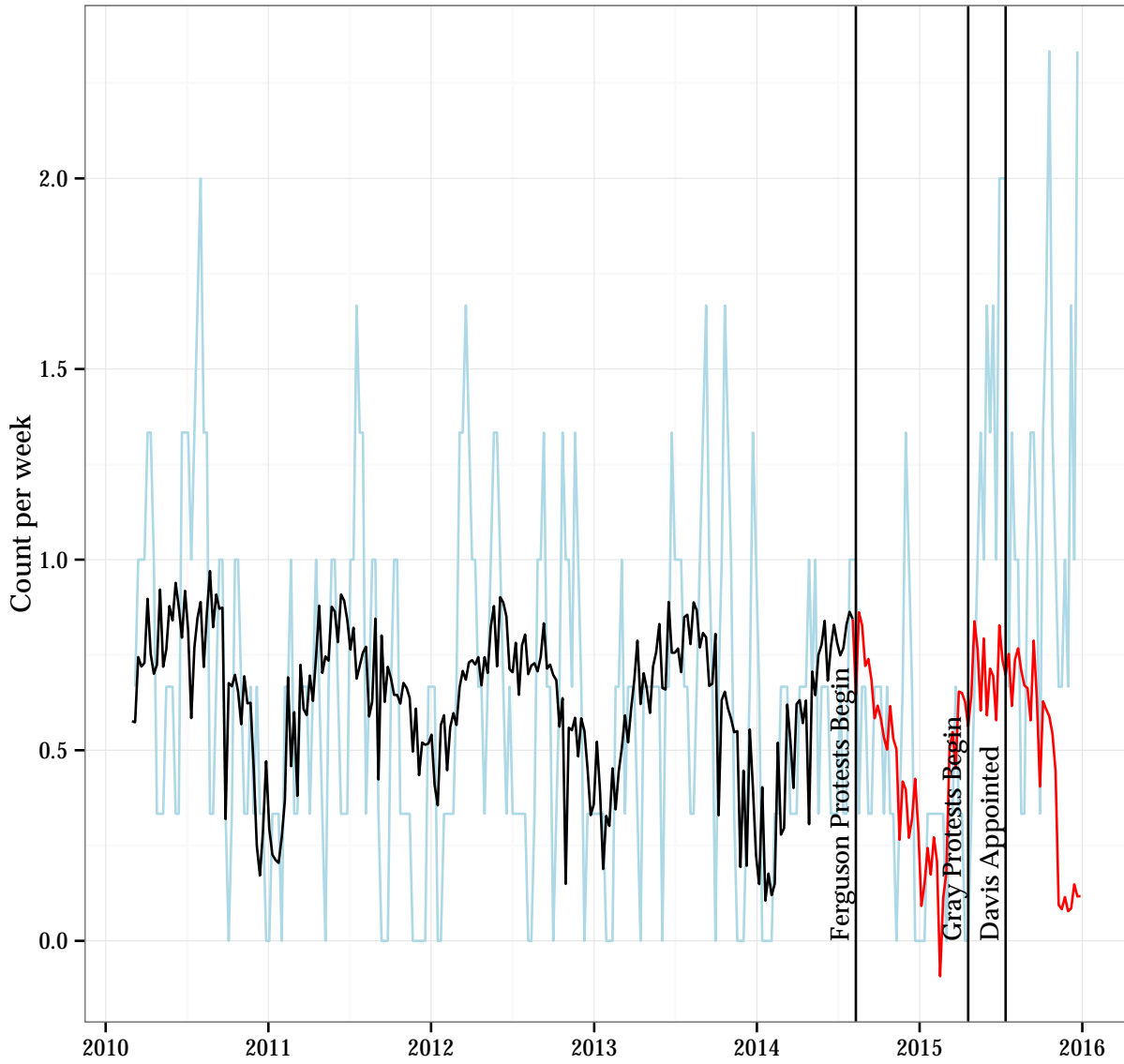
Table 33.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.001	−0.0005		−0.0004
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.18		−0.06	−0.12
After Gray Protests Begin (week of 4/20/15 onward)	0.99		0.72	0.81
Unrest and National Guard (during week of 4/27/15)	−1.37		−1.31	−1.28
After Commissioner Batts Fired (week of 7/13/15 onward)	−0.19		0.03	−0.09
Average Maximum Temperature to 50 Degrees		0.02		0.003
Plus Degrees in the 50s		−0.01		0.02
Plus Degrees in the 60s		−0.02		−0.04
Plus Degrees in the 70s		0.03		0.04
Plus Degrees greater than 80		−0.04		−0.04
Snowfall (inches)		0.02		0.03
Precipitation (inches)		−0.42		−0.44
Darkness Before Midnight (hours)		−0.03		0.001
School Days (proportion of week)		−0.03		−0.04
Observations	305	232	305	305
R <sup>2</sup>	0.07	0.06	0.07	0.10

### 33.3 Least Squares Model (2) for homicide.eastern

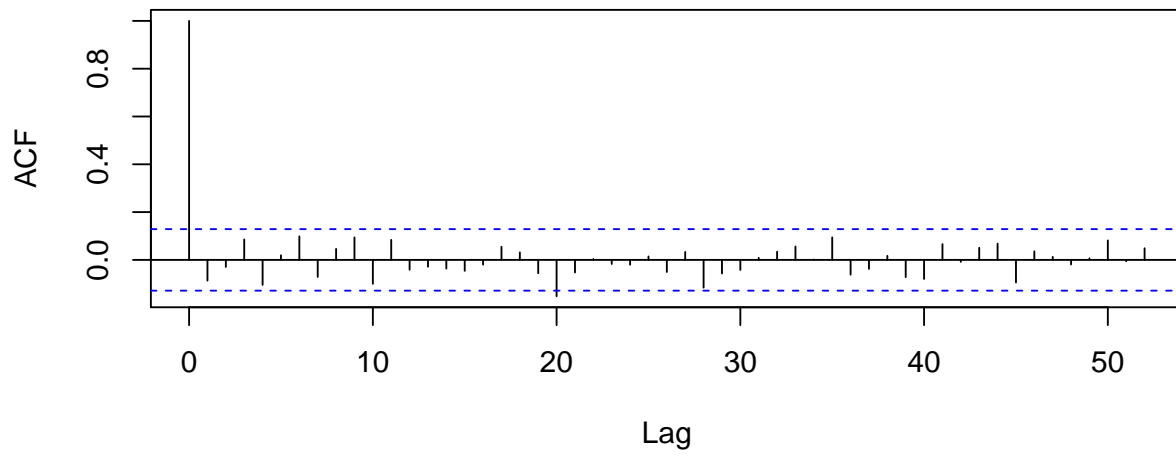


# homicide.eastern

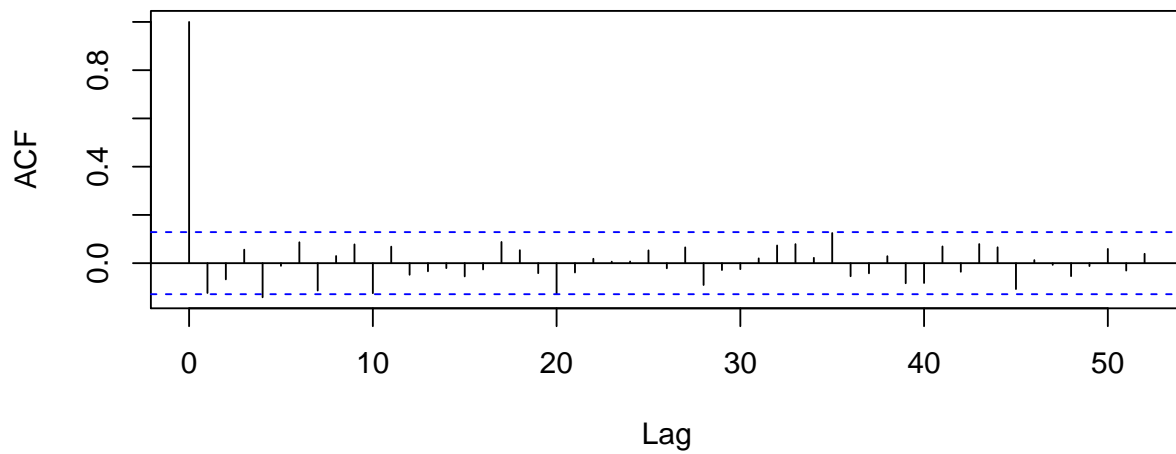




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



### 33.4 A Poisson Regression Model as an Alternative to Model (2) for homicide.eastern

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.4030  -1.1522  -0.7191   0.4584   2.2497

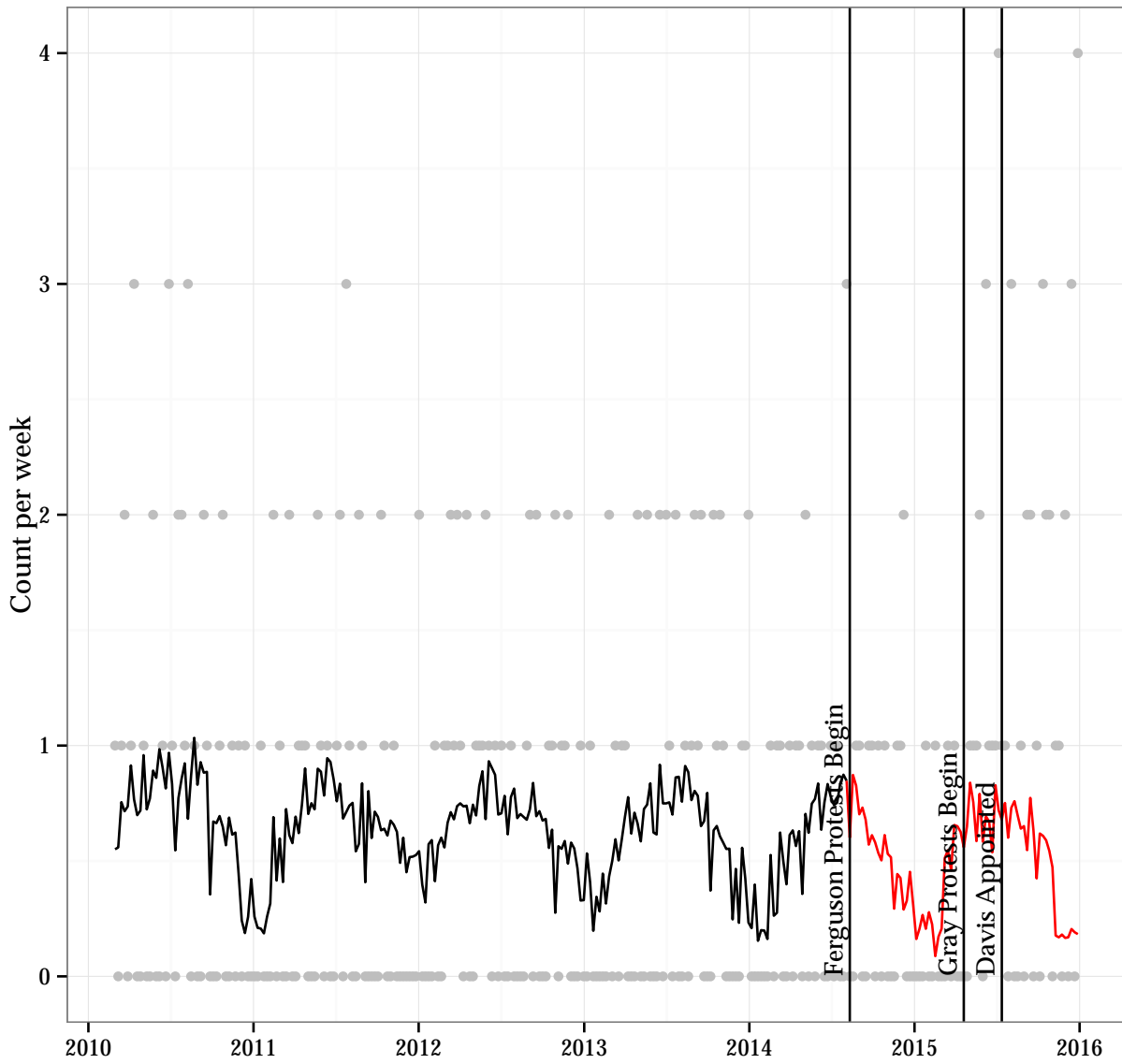
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)  -3.2112514  2.3413416  -1.372   0.170
t             -0.0007359  0.0012585  -0.585   0.559
tmax.f.spline1  0.0626526  0.0450315   1.391   0.164
tmax.f.spline2 -0.0457722  0.0766653  -0.597   0.550
tmax.f.spline3 -0.0241338  0.0799323  -0.302   0.763
tmax.f.spline4  0.0352102  0.0712679   0.494   0.621
tmax.f.spline5 -0.0487448  0.0592457  -0.823   0.411
snow.in       -0.0278785  0.6585658  -0.042   0.966
precip.in     -0.7270515  0.5339169  -1.362   0.173
dark.before.12 -0.0554156  0.1229702  -0.451   0.652
school        -0.0596150  0.3540679  -0.168   0.866

(Dispersion parameter for poisson family taken to be 1)

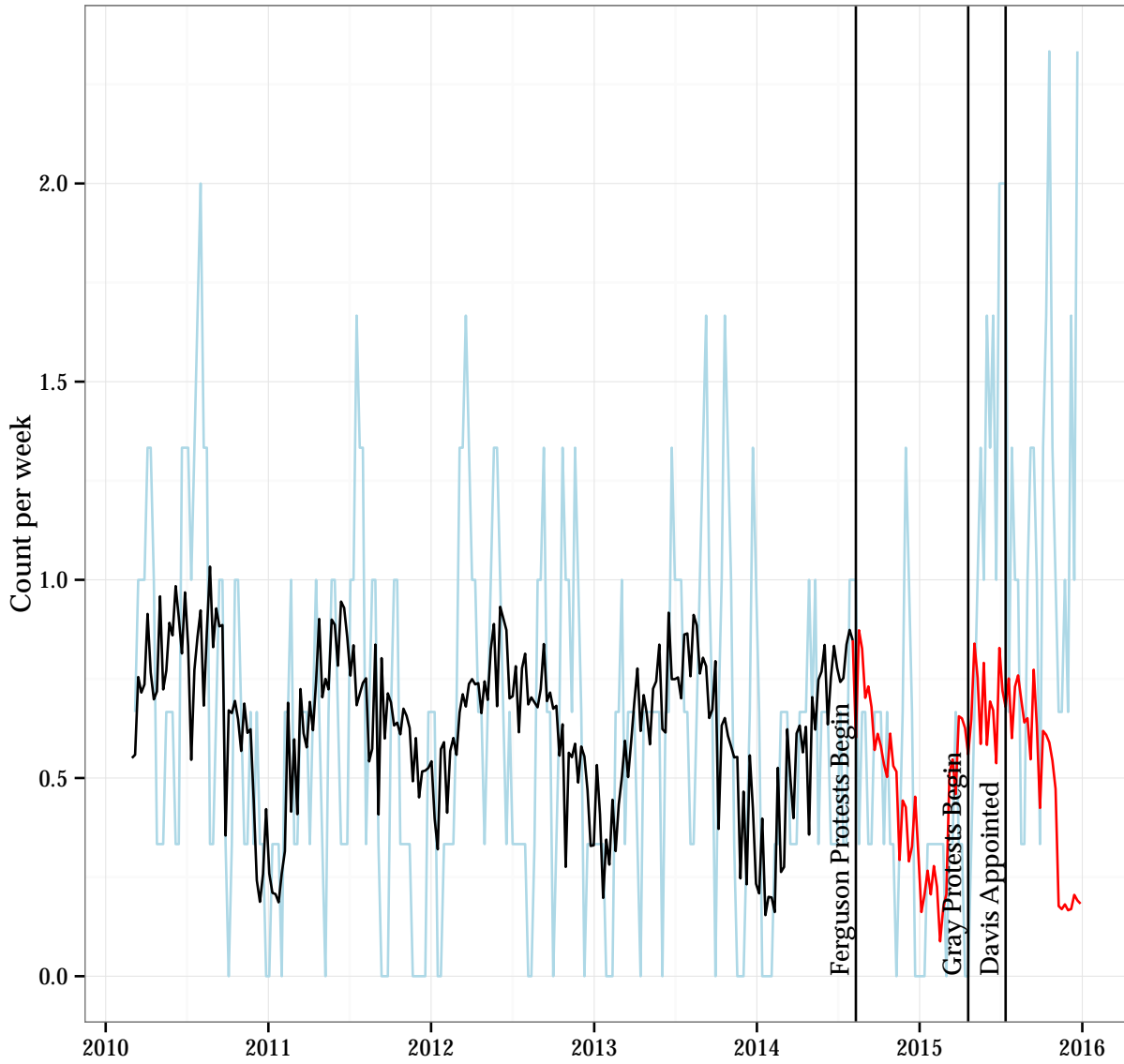
    Null deviance: 258.61  on 231  degrees of freedom
Residual deviance: 242.86  on 221  degrees of freedom
AIC: 498.07

Number of Fisher Scoring iterations: 6
```

# homicide.eastern



# homicide.eastern



## 34 Results for homicide.southwestern

### 34.1 Summary Values for homicide.southwestern

Table 34.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.southwestern	232	0.526	0.720	0	0	4

Table 34.2: Descriptives for Outcome After Ferguson Protests Begin

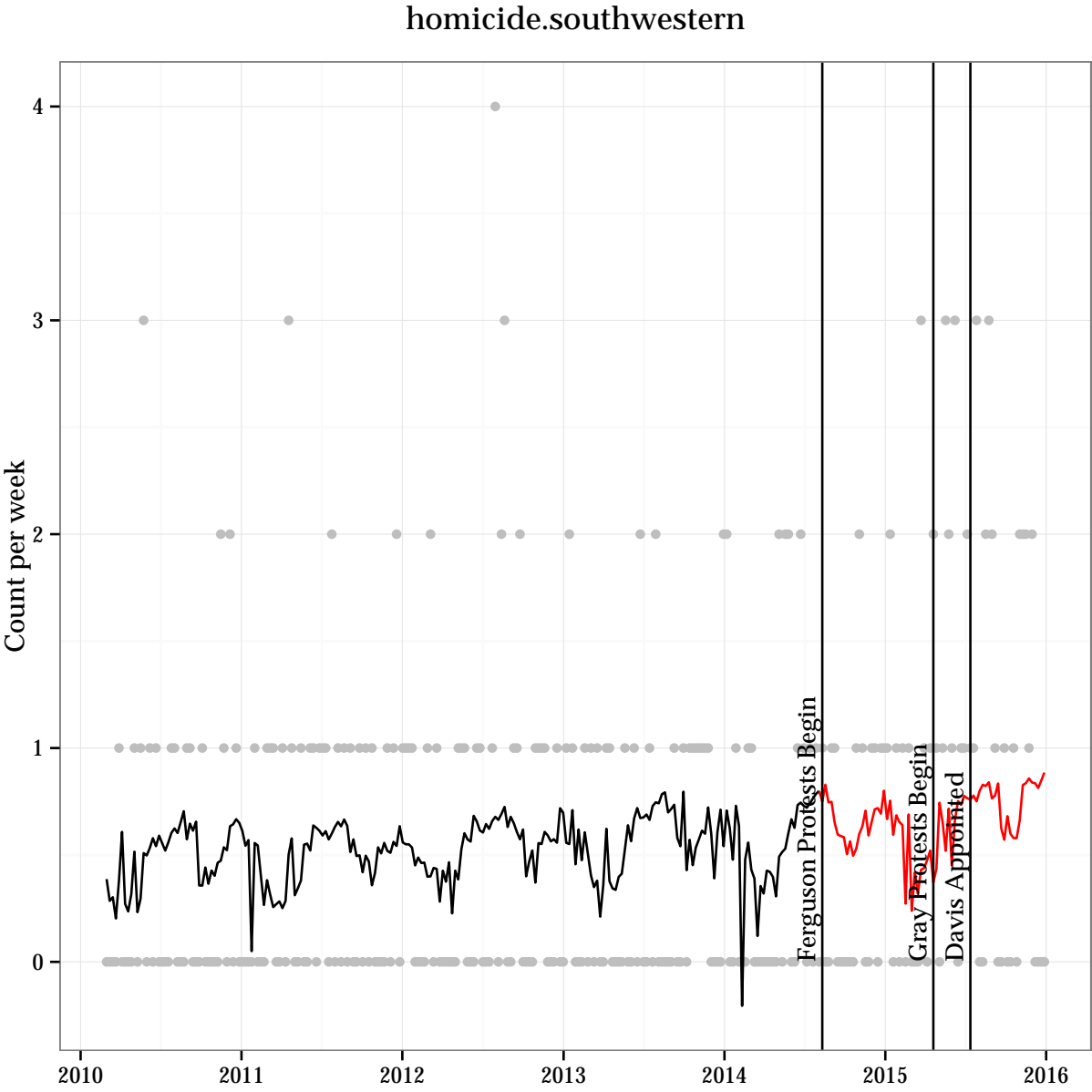
Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.southwestern	73	0.863	0.918	0	1	3

## 34.2 Four Models for homicide.southwestern

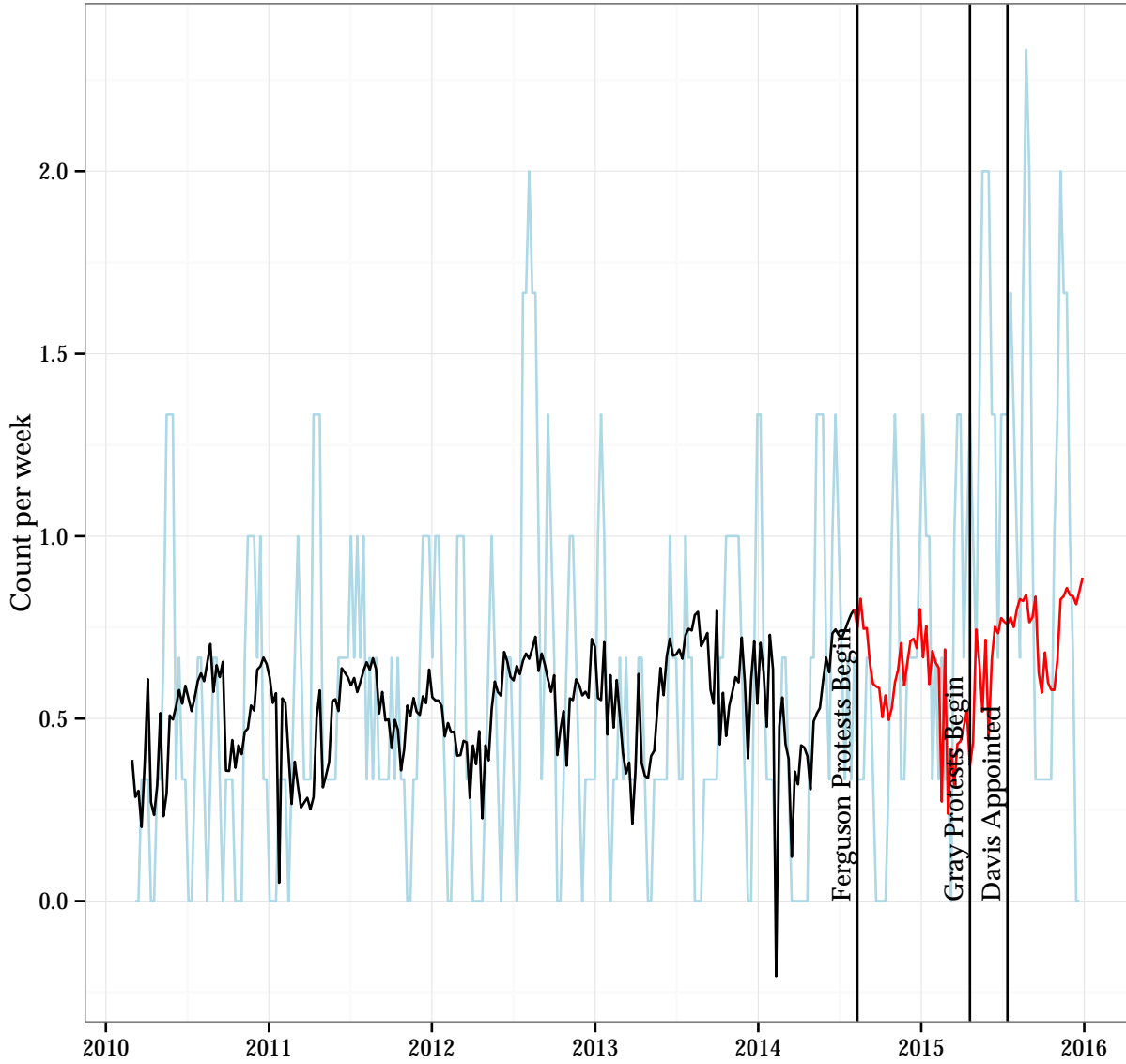
Table 34.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.001	0.001		0.001
After Ferguson Protests Begin (week of 8/11/14 onward)	0.01		0.01	0.01
After Gray Protests Begin (week of 4/20/15 onward)	0.83		0.79	0.78
Unrest and National Guard (during week of 4/27/15)	−0.45		−0.24	−0.24
After Commissioner Batts Fired (week of 7/13/15 onward)	−0.51		−0.60	−0.60
Average Maximum Temperature to 50 Degrees		−0.01		−0.01
Plus Degrees in the 50s		0.01		0.0004
Plus Degrees in the 60s		0.01		0.01
Plus Degrees in the 70s		0.02		0.03
Plus Degrees greater than 80		−0.04		−0.0000
Snowfall (inches)		−0.33		−0.46
Precipitation (inches)		−0.09		0.07
Darkness Before Midnight (hours)		0.09		0.04
School Days (proportion of week)		−0.14		0.05
Observations	305	232	305	305
R <sup>2</sup>	0.07	0.04	0.04	0.11

34.3 Least Squares Model (2) for homicide.southwestern

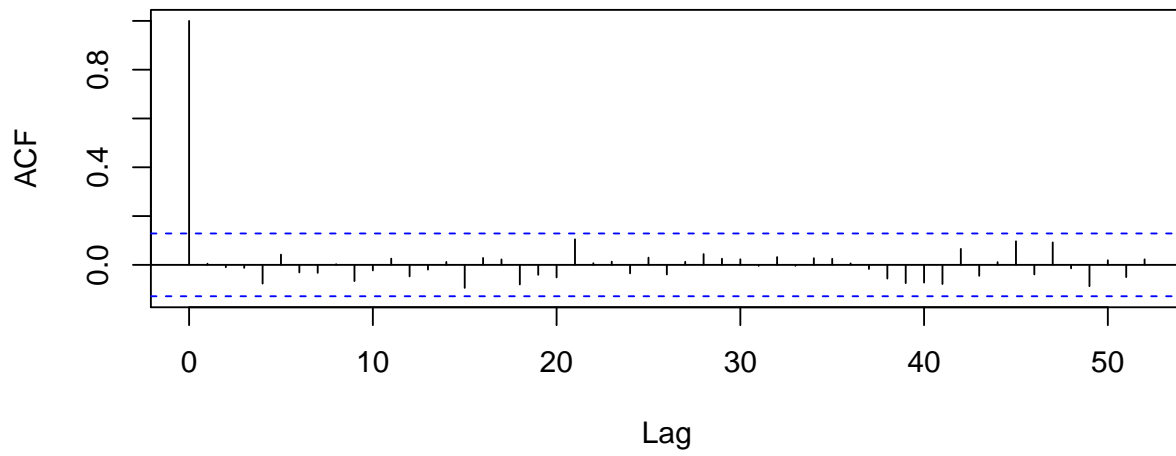


# homicide.southwestern

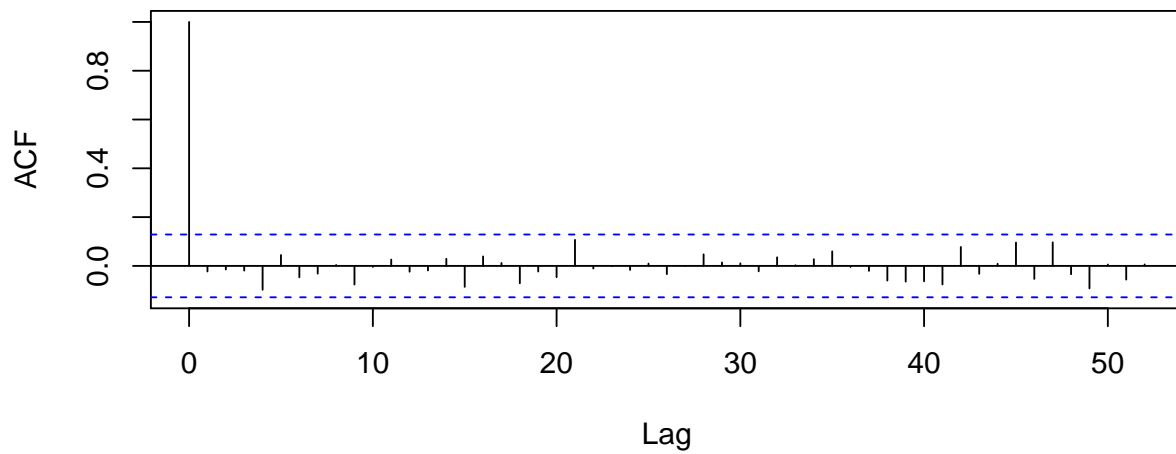




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



### 34.4 A Poisson Regression Model as an Alternative to Model (2) for homicide.southwestern

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.3038  -1.0381  -0.8071   0.5263   2.7290

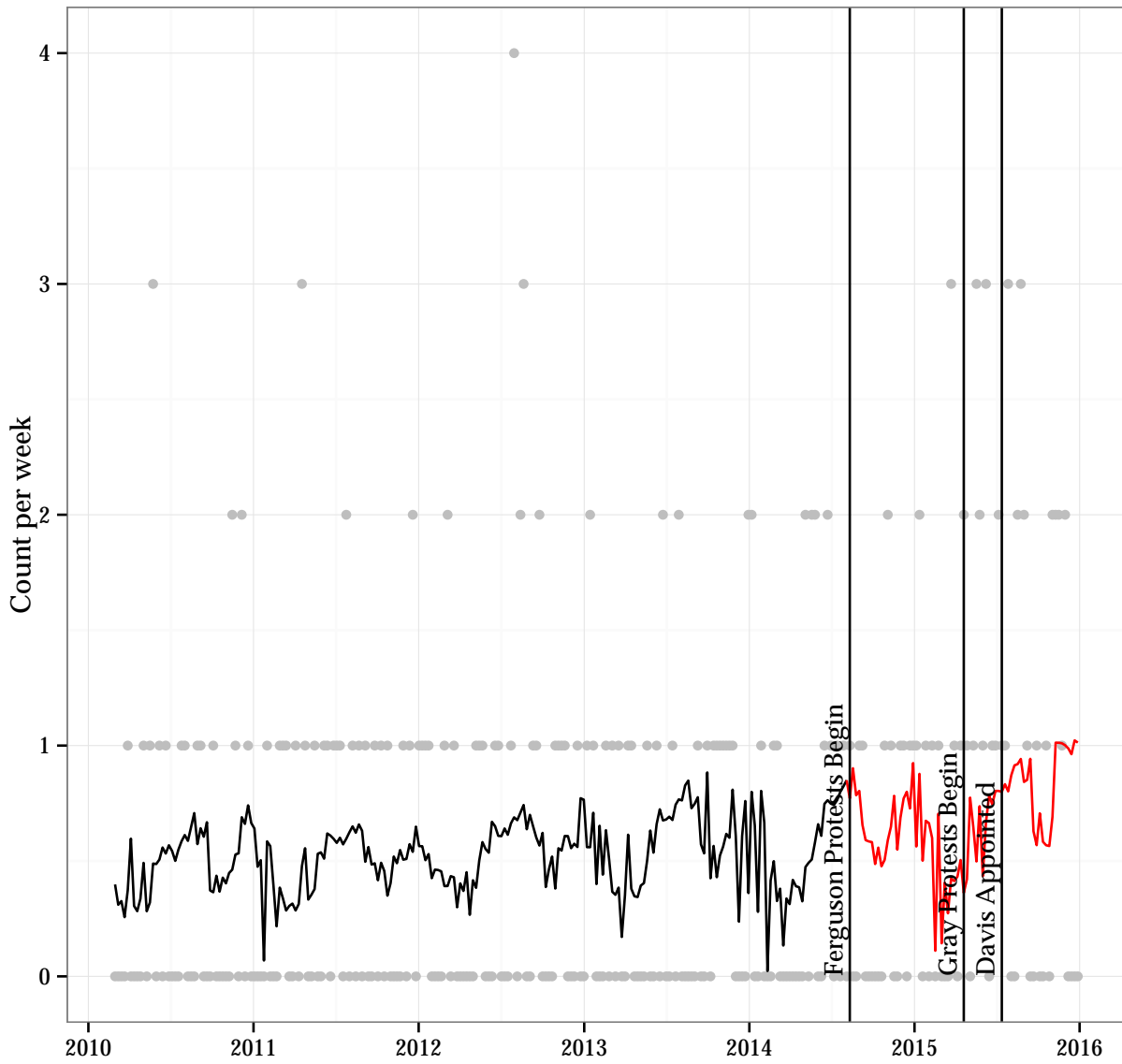
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)  -0.693519   1.882881  -0.368   0.713
t              0.001390   0.001407   0.988   0.323
tmax.f.spline1 -0.025453   0.034285  -0.742   0.458
tmax.f.spline2  0.014999   0.076031   0.197   0.844
tmax.f.spline3  0.037807   0.097304   0.389   0.698
tmax.f.spline4  0.030932   0.087951   0.352   0.725
tmax.f.spline5 -0.065811   0.068428  -0.962   0.336
snow.in       -1.311825   0.923256  -1.421   0.155
precip.in     -0.180713   0.532376  -0.339   0.734
dark.before.12 0.197635   0.144390   1.369   0.171
school        -0.262352   0.386418  -0.679   0.497

(Dispersion parameter for poisson family taken to be 1)

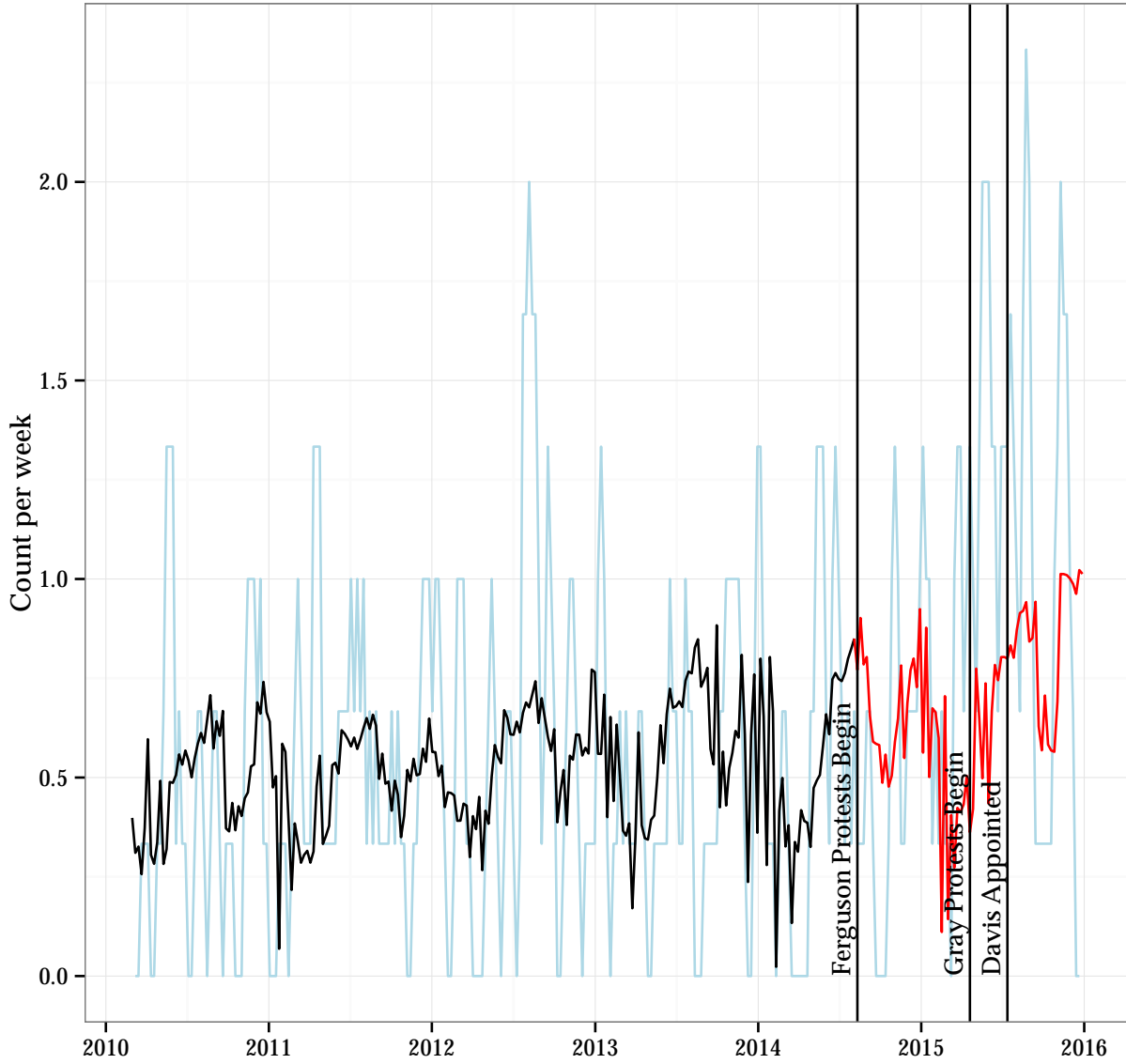
    Null deviance: 232.05  on 231  degrees of freedom
Residual deviance: 220.71  on 221  degrees of freedom
AIC: 450.77

Number of Fisher Scoring iterations: 5
```

# homicide.southwestern



# homicide.southwestern



## 35 Results for homicide.southern

### 35.1 Summary Values for homicide.southern

Table 35.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.southern	232	0.379	0.598	0	0	3

Table 35.2: Descriptives for Outcome After Ferguson Protests Begin

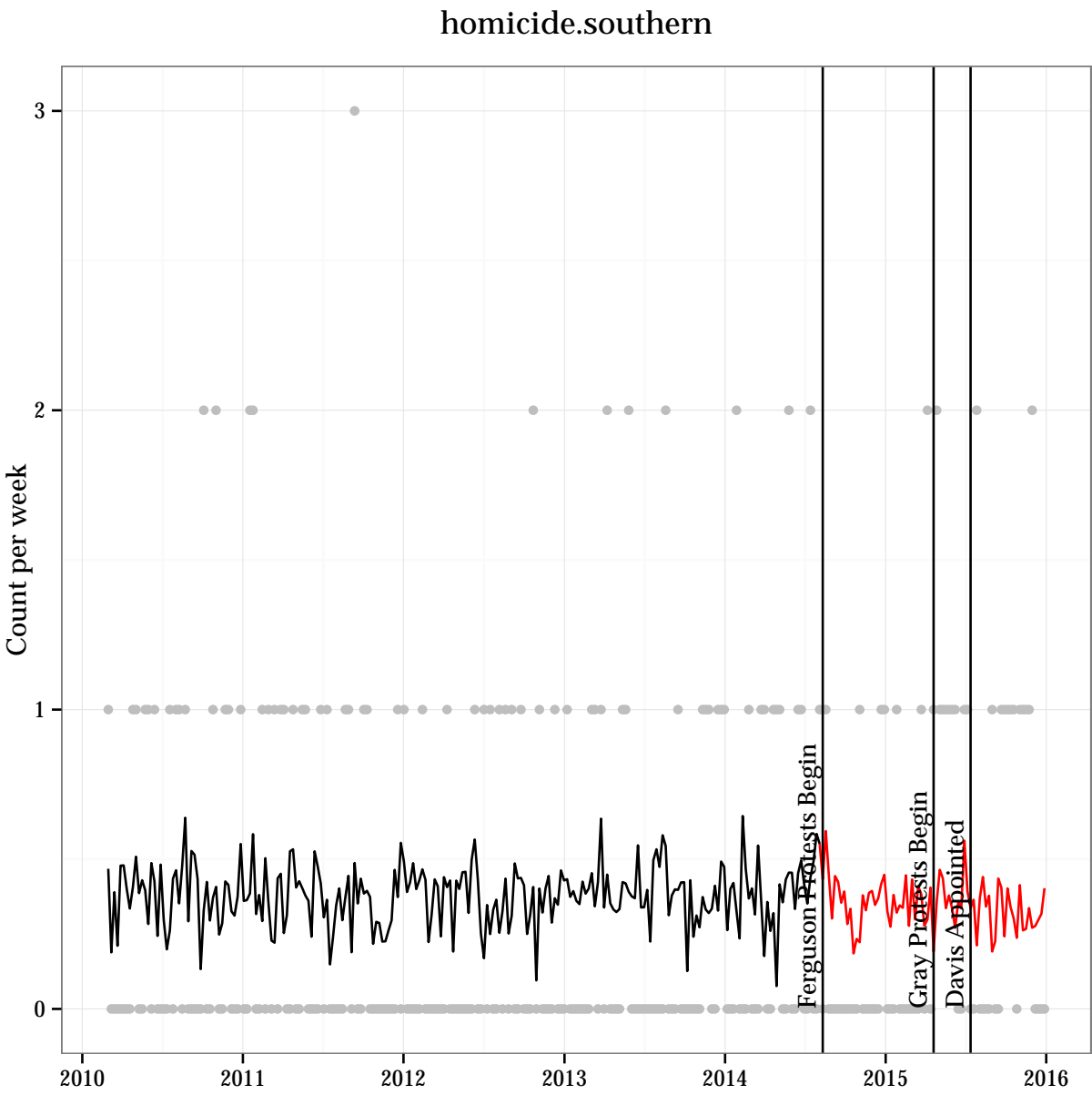
Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.southern	73	0.452	0.602	0	0	2

## 35.2 Four Models for homicide.southern

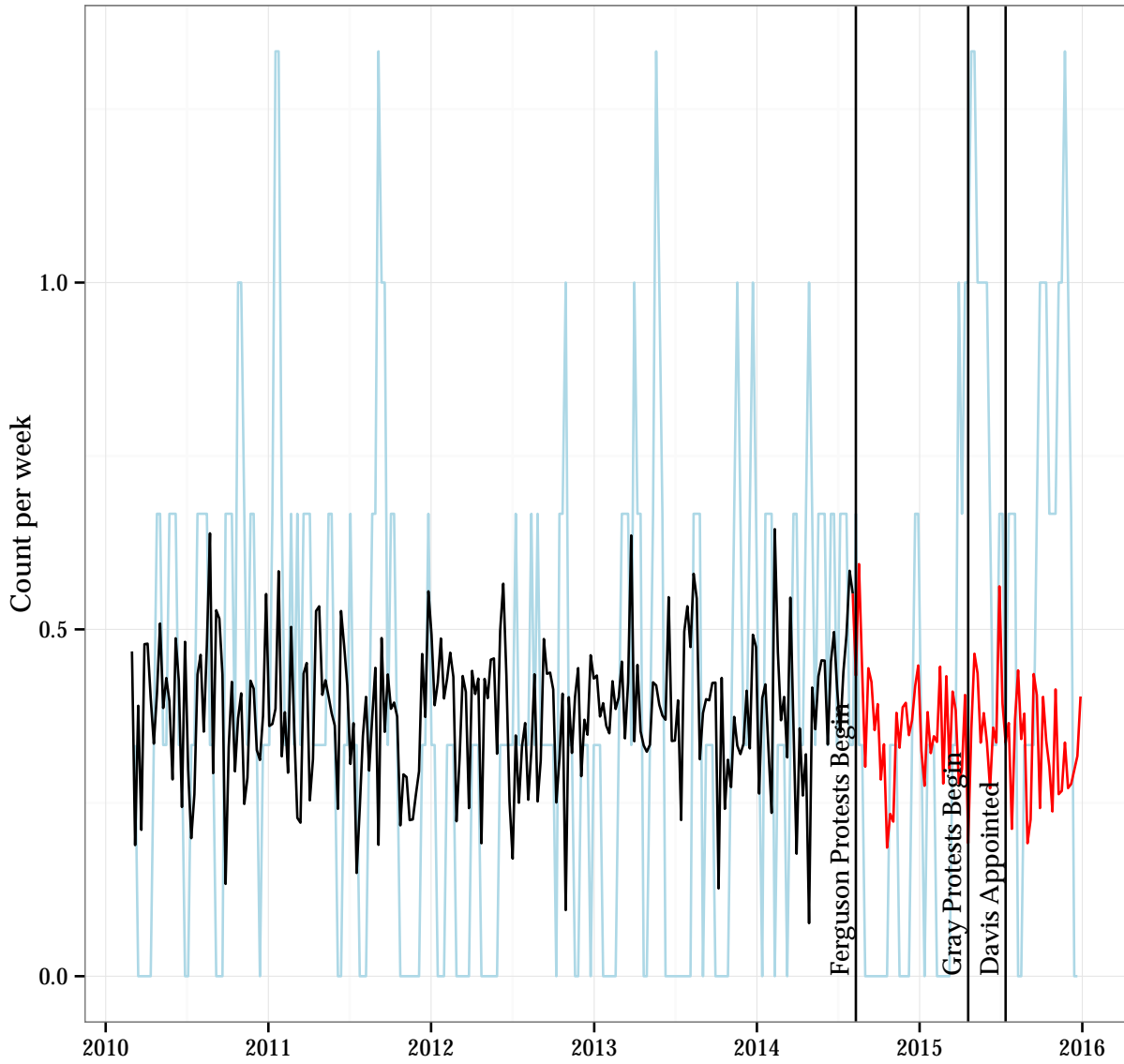
Table 35.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.0001	−0.0002		−0.0001
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.17		−0.14	−0.16
After Gray Protests Begin (week of 4/20/15 onward)	0.59		0.59	0.61
Unrest and National Guard (during week of 4/27/15)	1.18		1.20	1.12
After Commissioner Batts Fired (week of 7/13/15 onward)	−0.26		−0.21	−0.24
Average Maximum Temperature to 50 Degrees		0.01		0.01
Plus Degrees in the 50s		−0.03		−0.02
Plus Degrees in the 60s		0.04		0.03
Plus Degrees in the 70s		−0.01		−0.01
Plus Degrees greater than 80		−0.04		−0.02
Snowfall (inches)		0.16		0.06
Precipitation (inches)		−0.31		−0.34
Darkness Before Midnight (hours)		−0.001		−0.02
School Days (proportion of week)		−0.16		−0.18
Observations	305	232	305	305
R <sup>2</sup>	0.06	0.03	0.06	0.08

35.3 Least Squares Model (2) for homicide.southern

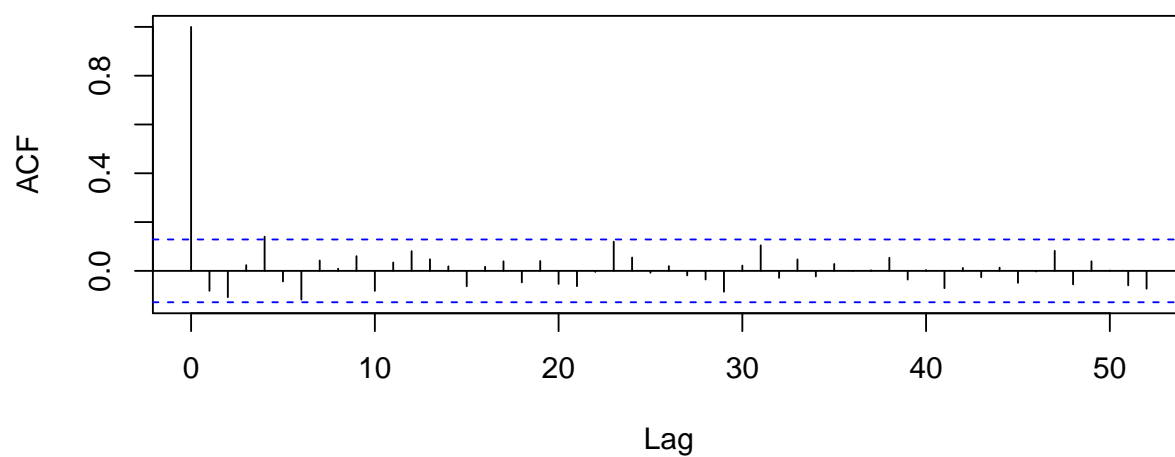


# homicide.southern

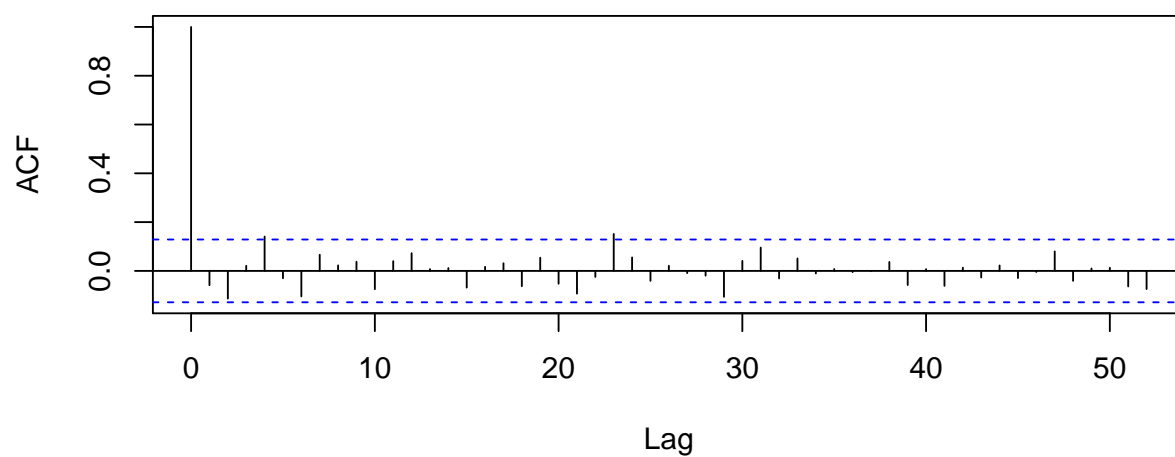




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



### 35.4 A Poisson Regression Model as an Alternative to Model (2) for homicide.southern

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.1447  -0.8969  -0.7805   0.7202   2.3987

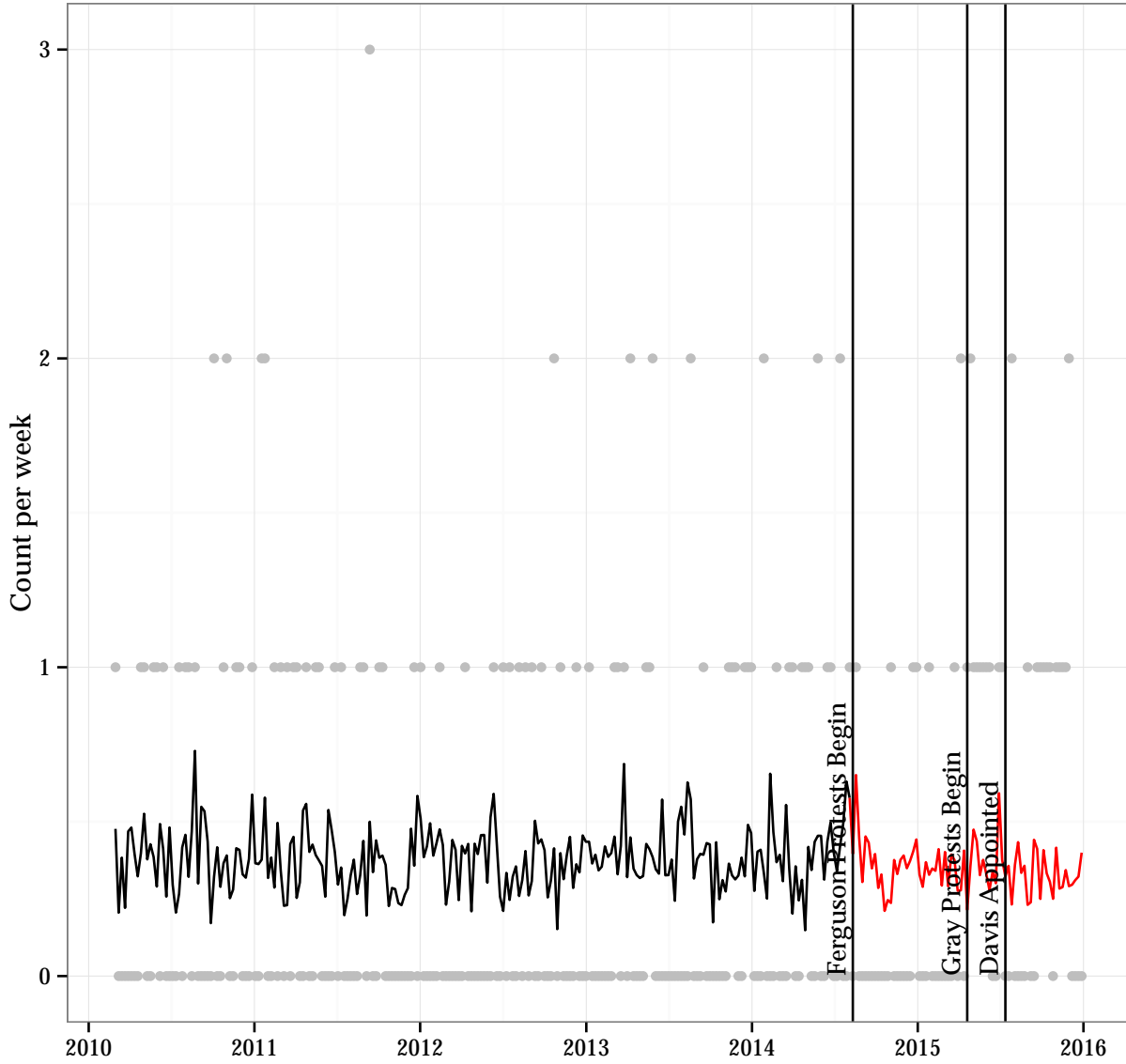
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)  -1.6977776  2.2664110  -0.749   0.454
t             -0.0004878  0.0016279  -0.300   0.764
tmax.f.spline1  0.0262211  0.0399375   0.657   0.511
tmax.f.spline2 -0.0960852  0.0846112  -1.136   0.256
tmax.f.spline3  0.1278668  0.1134690   1.127   0.260
tmax.f.spline4 -0.0357173  0.0994998  -0.359   0.720
tmax.f.spline5 -0.0959368  0.0841903  -1.140   0.254
snow.in        0.3687542  0.4337809   0.850   0.395
precip.in      -0.9634936  0.7367953  -1.308   0.191
dark.before.12  0.0015383  0.1588080   0.010   0.992
school         -0.4067924  0.4473669  -0.909   0.363

(Dispersion parameter for poisson family taken to be 1)

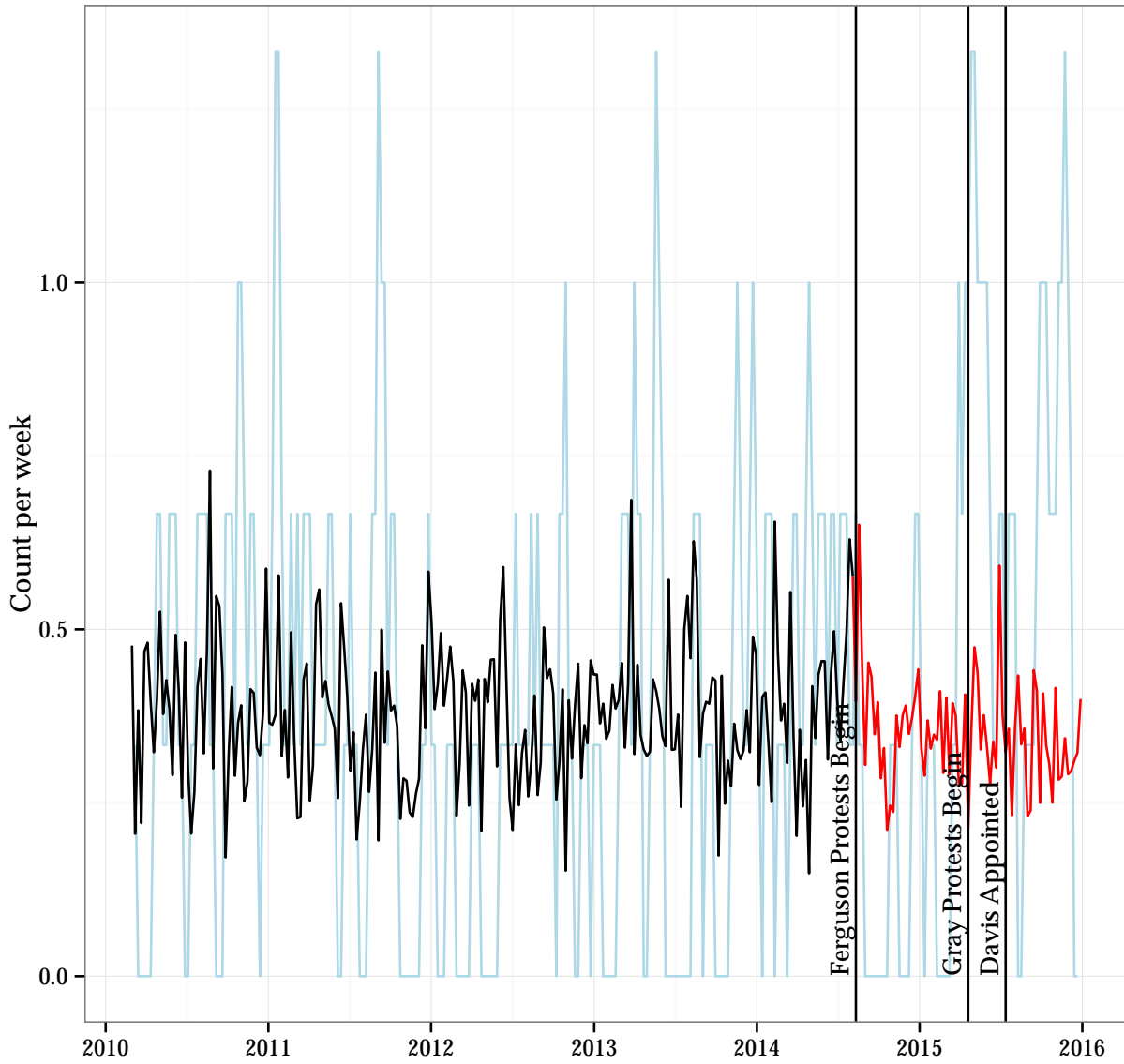
    Null deviance: 207.70  on 231  degrees of freedom
Residual deviance: 201.31  on 221  degrees of freedom
AIC: 381.05

Number of Fisher Scoring iterations: 6
```

# homicide.southern



# homicide.southern



## 36 Results for homicide.southeastern

### 36.1 Summary Values for homicide.southeastern

Table 36.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.southeastern	232	0.246	0.505	0	0	2

Table 36.2: Descriptives for Outcome After Ferguson Protests Begin

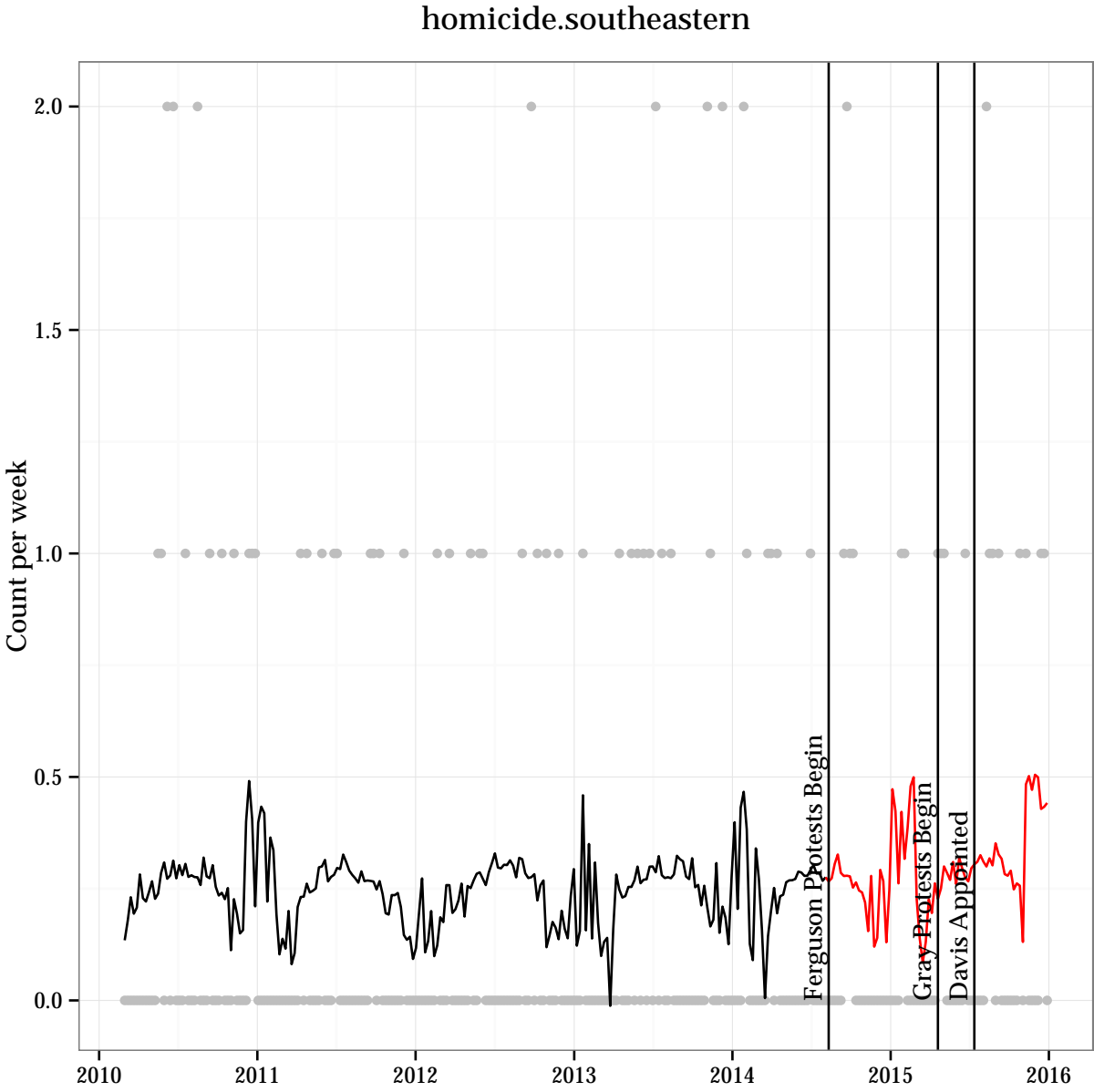
Statistic	N	Mean	St. Dev.	Min	Median	Max
homicide.southeastern	73	0.274	0.507	0	0	2

## 36.2 Four Models for homicide.southeastern

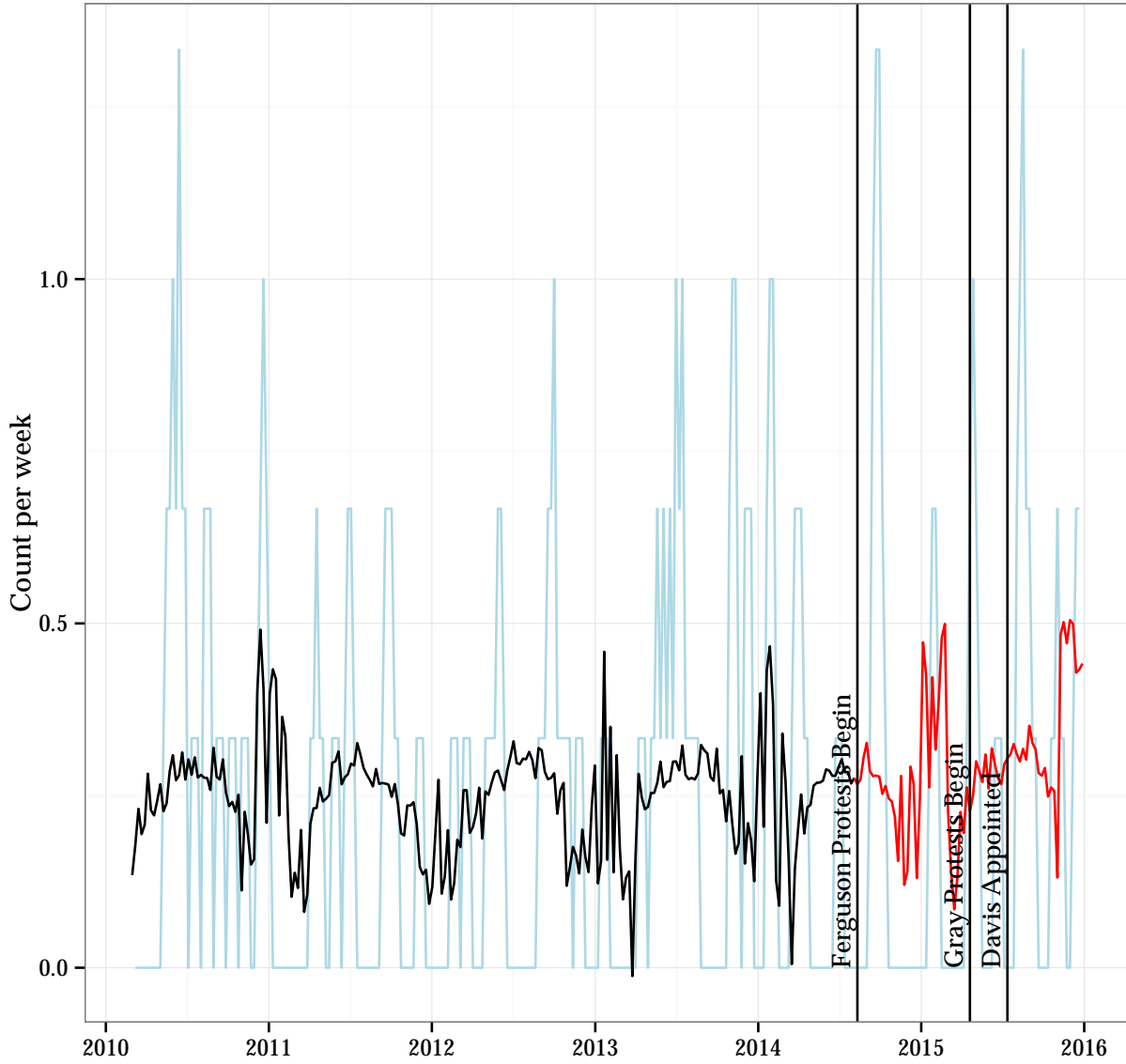
Table 36.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.0001	0.0001		0.0001
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.04		−0.07	−0.05
After Gray Protests Begin (week of 4/20/15 onward)	0.08		0.06	0.04
Unrest and National Guard (during week of 4/27/15)	0.73		0.76	0.76
After Commissioner Batts Fired (week of 7/13/15 onward)	0.09		0.02	0.06
Average Maximum Temperature to 50 Degrees		−0.02		−0.02
Plus Degrees in the 50s		0.04		0.03
Plus Degrees in the 60s		−0.01		−0.004
Plus Degrees in the 70s		−0.001		−0.01
Plus Degrees greater than 80		0.001		−0.001
Snowfall (inches)		−0.13		−0.13
Precipitation (inches)		−0.01		0.05
Darkness Before Midnight (hours)		0.01		0.02
School Days (proportion of week)		0.03		0.03
Observations	305	232	305	305
R <sup>2</sup>	0.01	0.02	0.01	0.03

36.3 Least Squares Model (2) for homicide.southeastern

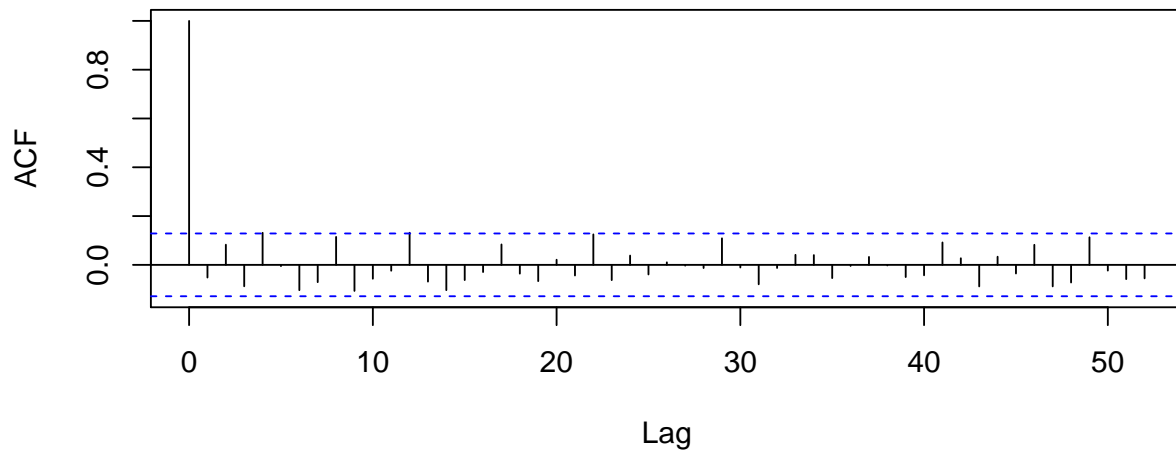


## homicide.southeastern

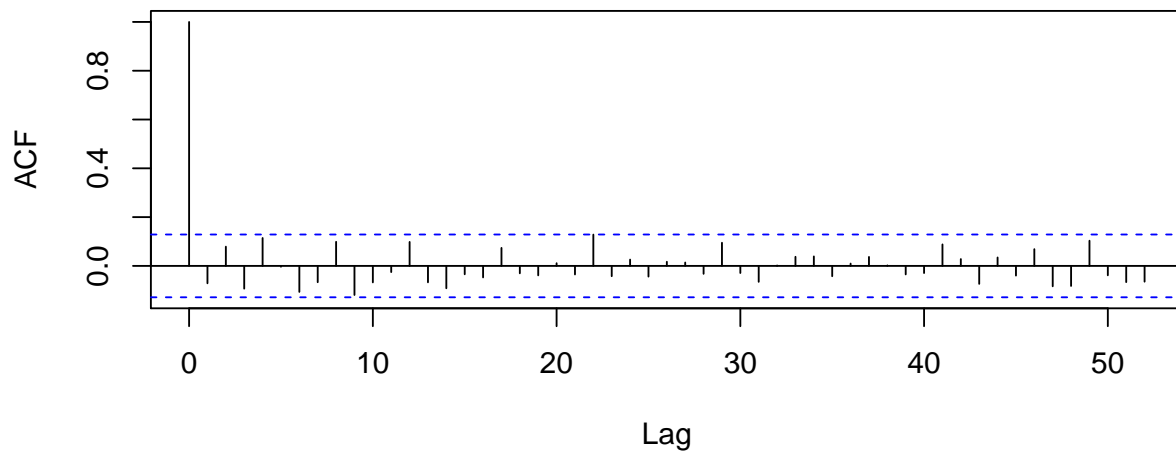




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



### 36.4 A Poisson Regression Model as an Alternative to Model (2) for homicide.southeastern

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-0.9578  -0.7431  -0.6739  -0.4858   2.4441

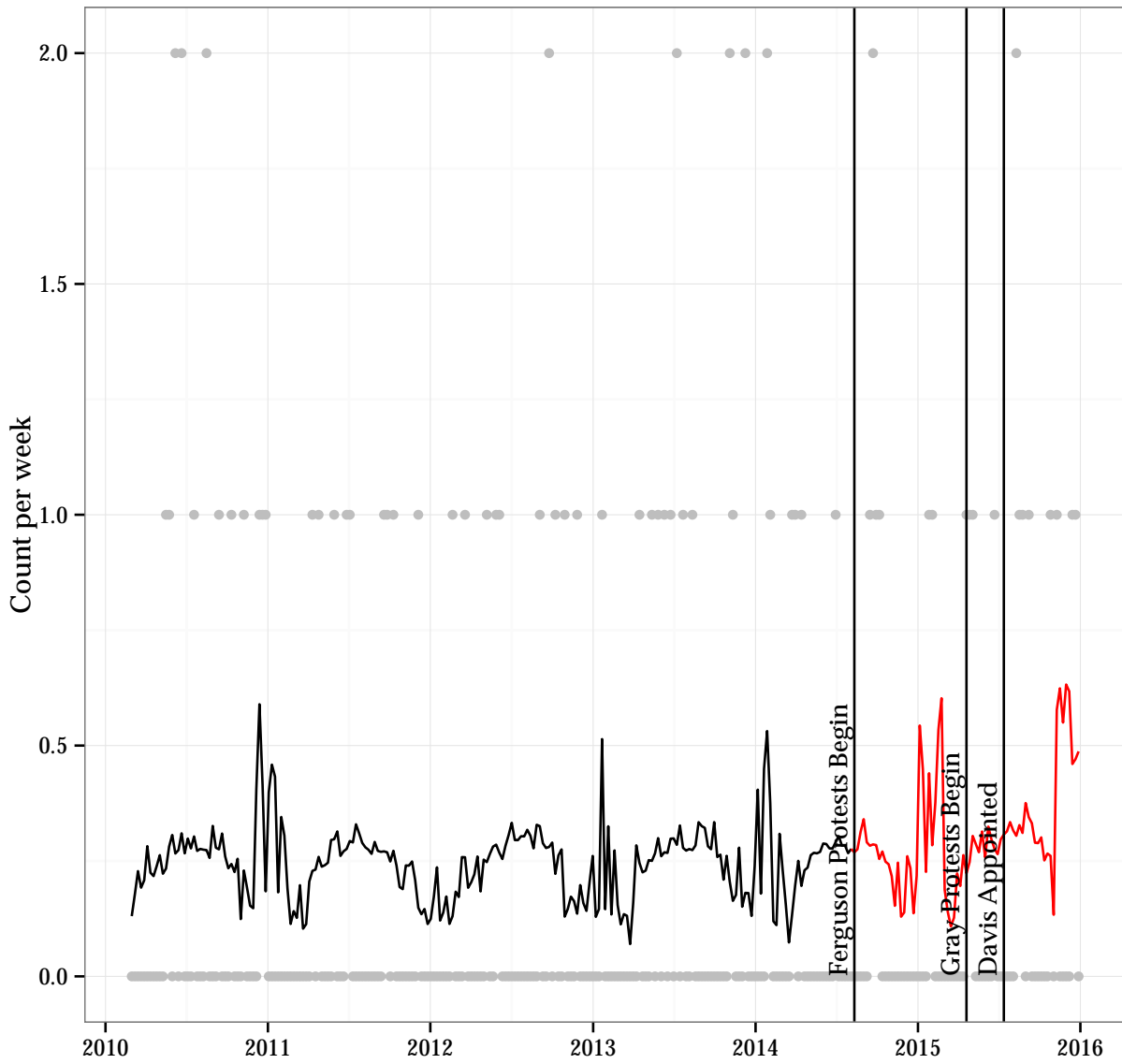
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   2.1786569   2.6542579   0.821   0.4118
t              0.0004279   0.0020195   0.212   0.8322
tmax.f.spline1 -0.0984309   0.0494061  -1.992   0.0463 *
tmax.f.spline2  0.1662606   0.1182218   1.406   0.1596
tmax.f.spline3 -0.0446095   0.1410146  -0.316   0.7517
tmax.f.spline4 -0.0073945   0.1207483  -0.061   0.9512
tmax.f.spline5  0.0018003   0.0977082   0.018   0.9853
snow.in        -0.5564586   0.7684238  -0.724   0.4690
precip.in      -0.0063860   0.7589311  -0.008   0.9933
dark.before.12  0.0704739   0.2130103   0.331   0.7408
school         0.1134848   0.5927294   0.191   0.8482
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

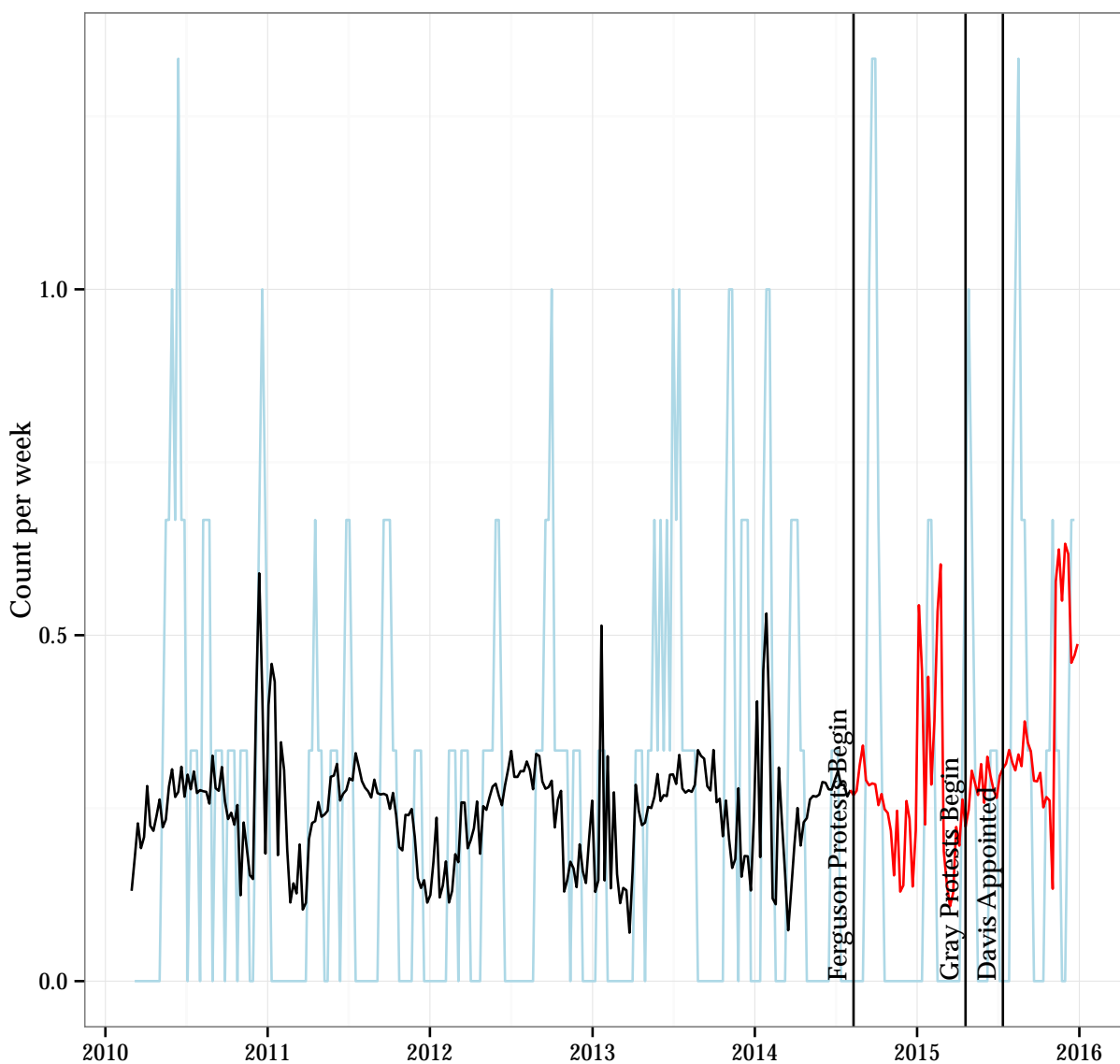
    Null deviance: 182.20  on 231  degrees of freedom
Residual deviance: 176.47  on 221  degrees of freedom
AIC: 301.38

Number of Fisher Scoring iterations: 6
```

# homicide.southeastern



# homicide.southeastern



## 37 Results for shooting.northwestern

### 37.1 Summary Values for shooting.northwestern

Table 37.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.northwestern	232	0.806	1.101	0	0	6

Table 37.2: Descriptives for Outcome After Ferguson Protests Begin

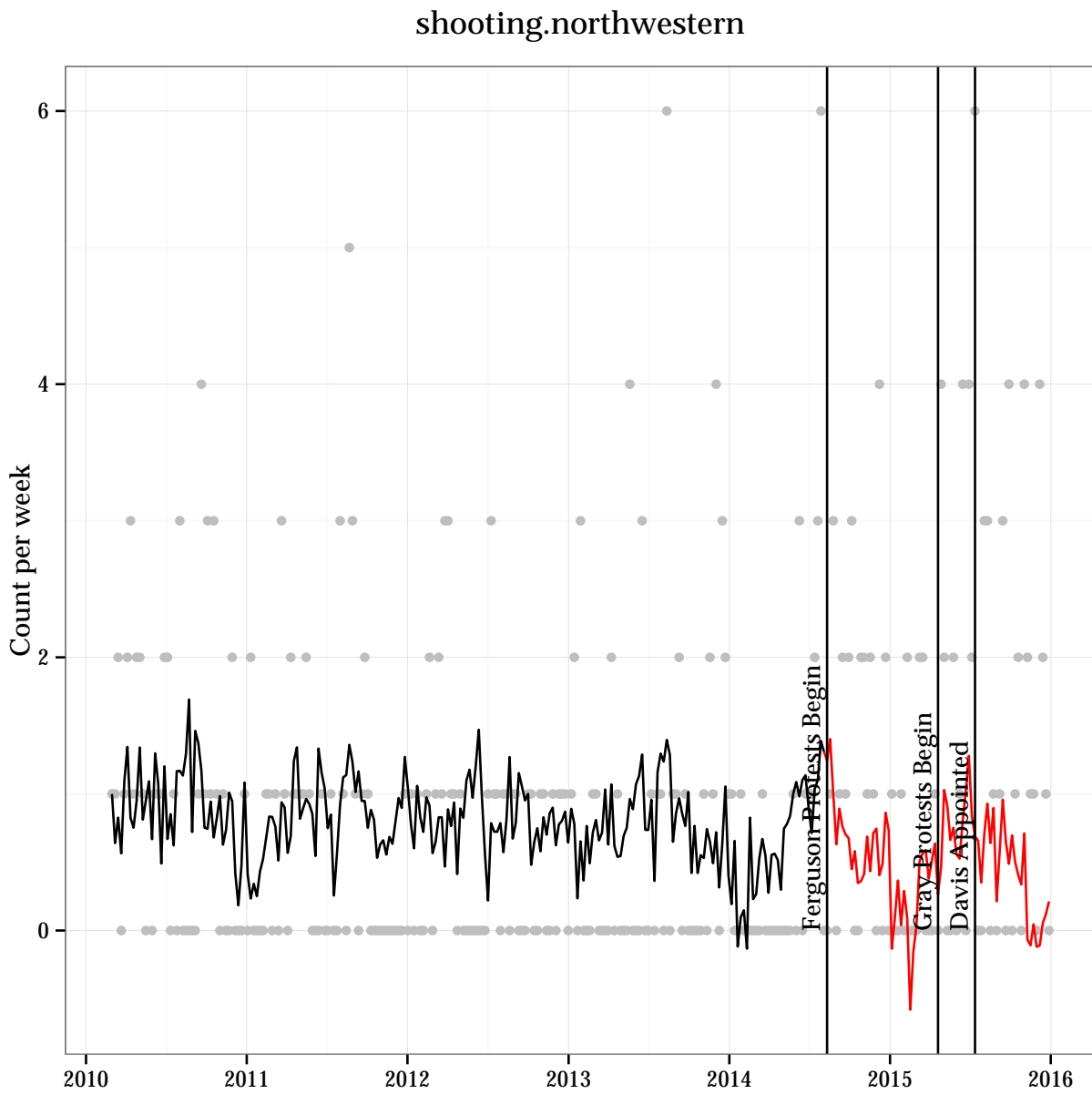
Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.northwestern	73	1.288	1.429	0	1	6

## 37.2 Four Models for shooting.northwestern

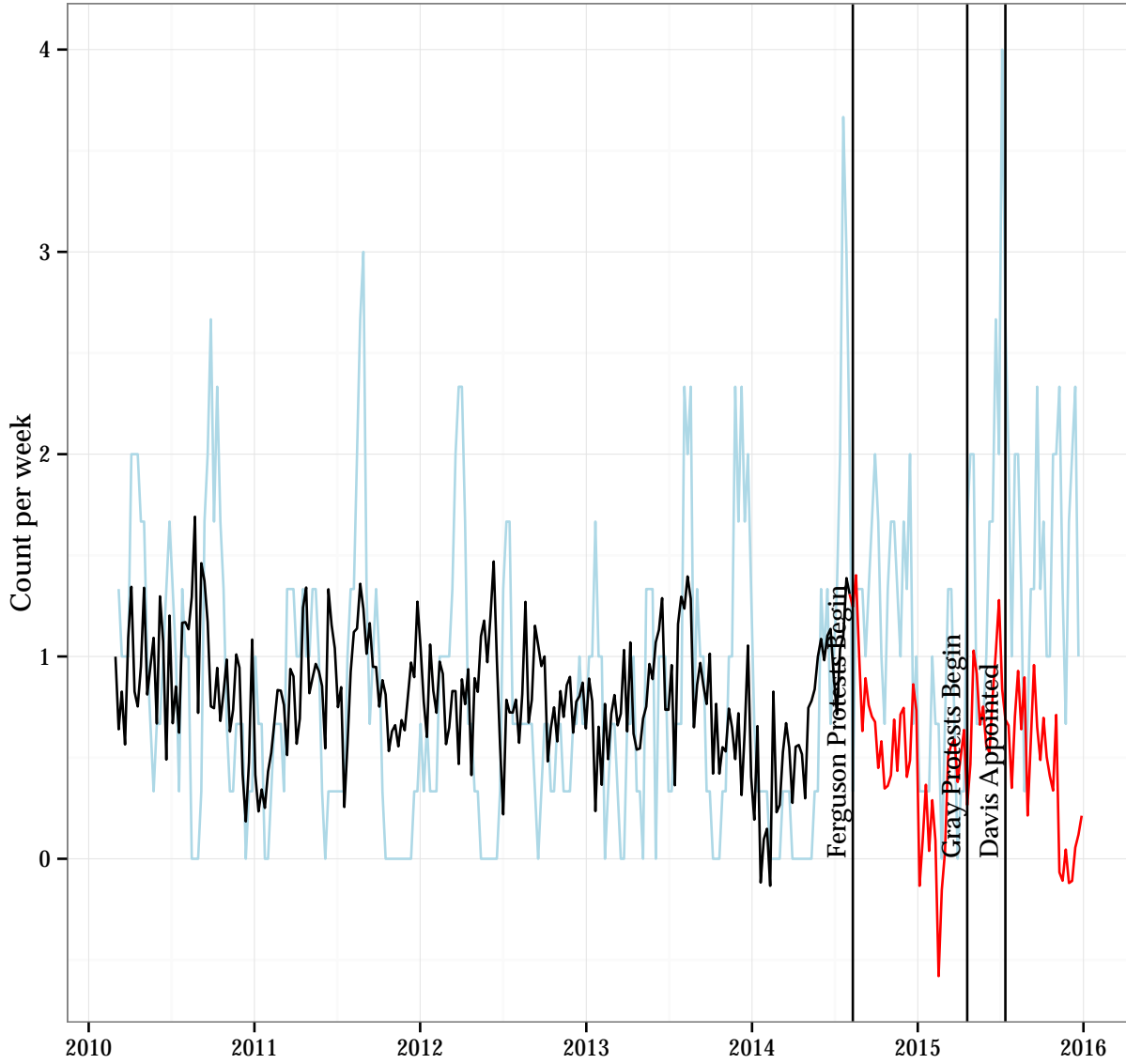
Table 37.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.001	−0.001		−0.001
After Ferguson Protests Begin (week of 8/11/14 onward)	0.33		0.51	0.49
After Gray Protests Begin (week of 4/20/15 onward)	0.39		0.07	0.11
Unrest and National Guard (during week of 4/27/15)	2.63		2.96	3.00
After Commissioner Batts Fired (week of 7/13/15 onward)	0.21		0.56	0.53
Average Maximum Temperature to 50 Degrees		0.05		0.05
Plus Degrees in the 50s		−0.10		−0.10
Plus Degrees in the 60s		0.08		0.07
Plus Degrees in the 70s		0.02		0.05
Plus Degrees greater than 80		−0.14		−0.16
Snowfall (inches)		−0.05		−0.11
Precipitation (inches)		−0.24		−0.38
Darkness Before Midnight (hours)		0.03		0.04
School Days (proportion of week)		−0.41		−0.28
Observations	305	232	305	305
R <sup>2</sup>	0.06	0.08	0.11	0.12

### 37.3 Least Squares Model (2) for shooting.northwestern

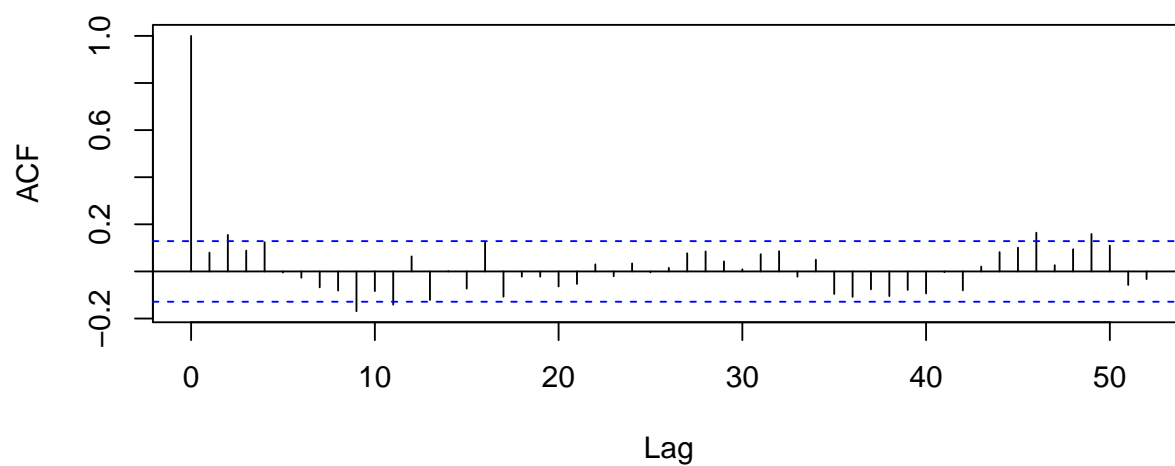


# shooting.northwestern

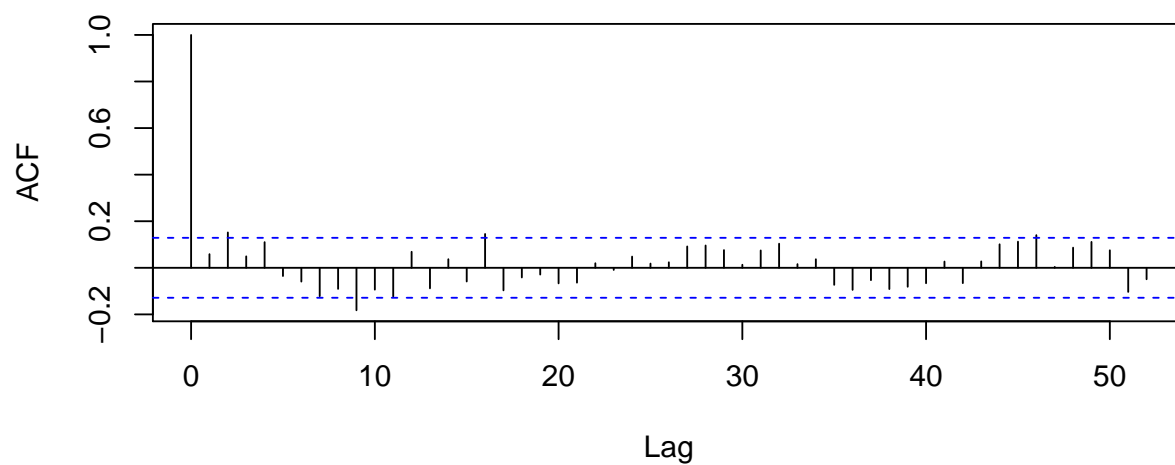




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



### 37.4 A Poisson Regression Model as an Alternative to Model (2) for shooting.northwestern

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

Deviance Residuals:

Min	1Q	Median	3Q	Max
-2.0423	-1.1853	-0.4428	0.4121	2.8142

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	-4.349390	2.038178	-2.134	0.03285 *
t	-0.001629	0.001118	-1.457	0.14502
tmax.f.spline1	0.093880	0.038491	2.439	0.01473 *
tmax.f.spline2	-0.169327	0.067246	-2.518	0.01180 *
tmax.f.spline3	0.125170	0.078198	1.601	0.10945
tmax.f.spline4	0.007095	0.067284	0.105	0.91603
tmax.f.spline5	-0.150322	0.054931	-2.737	0.00621 **
snow.in	-0.446257	0.708220	-0.630	0.52862
precip.in	-0.283026	0.409020	-0.692	0.48896
dark.before.12	0.035454	0.111522	0.318	0.75055
school	-0.458288	0.300316	-1.526	0.12700

---

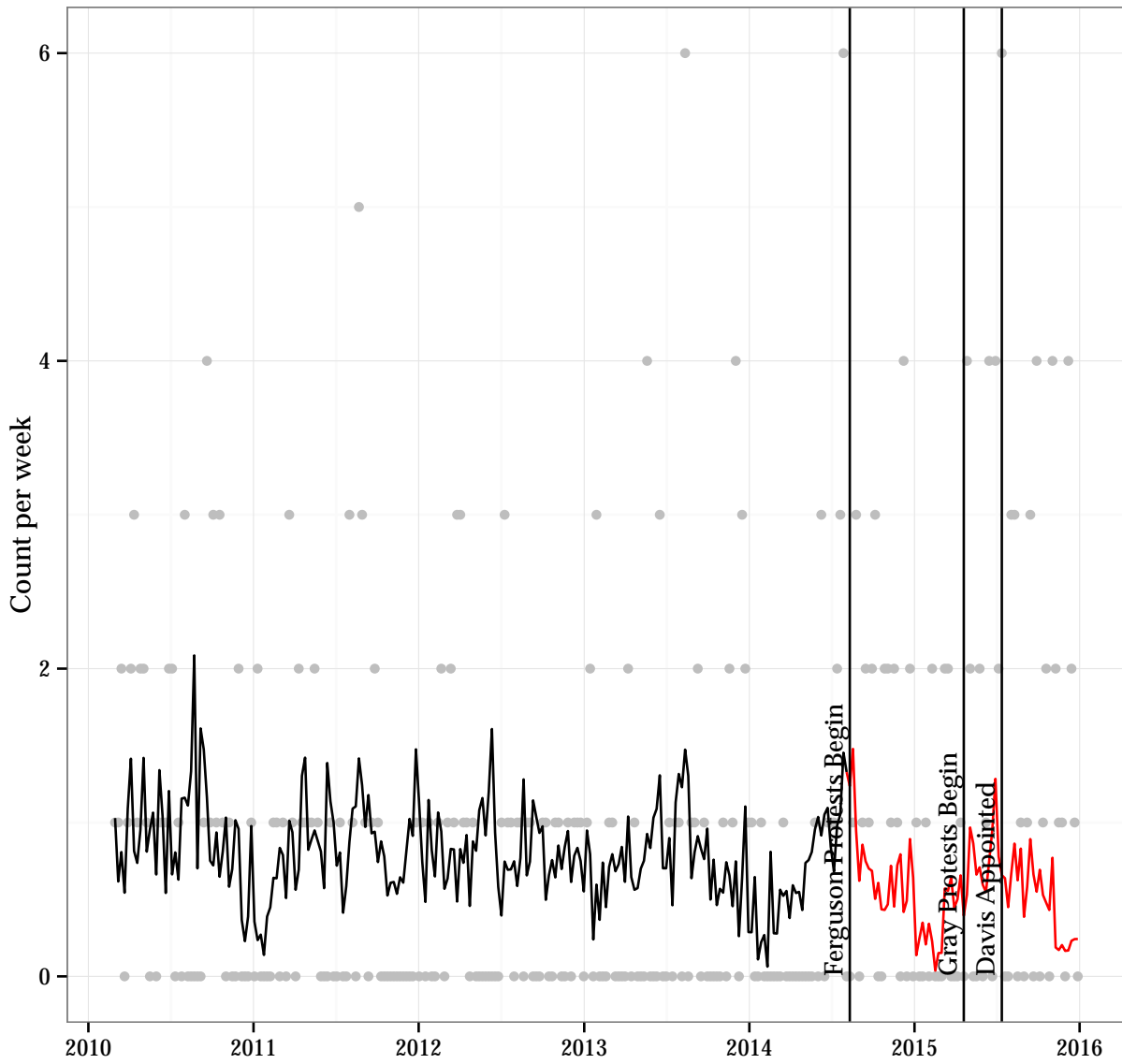
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

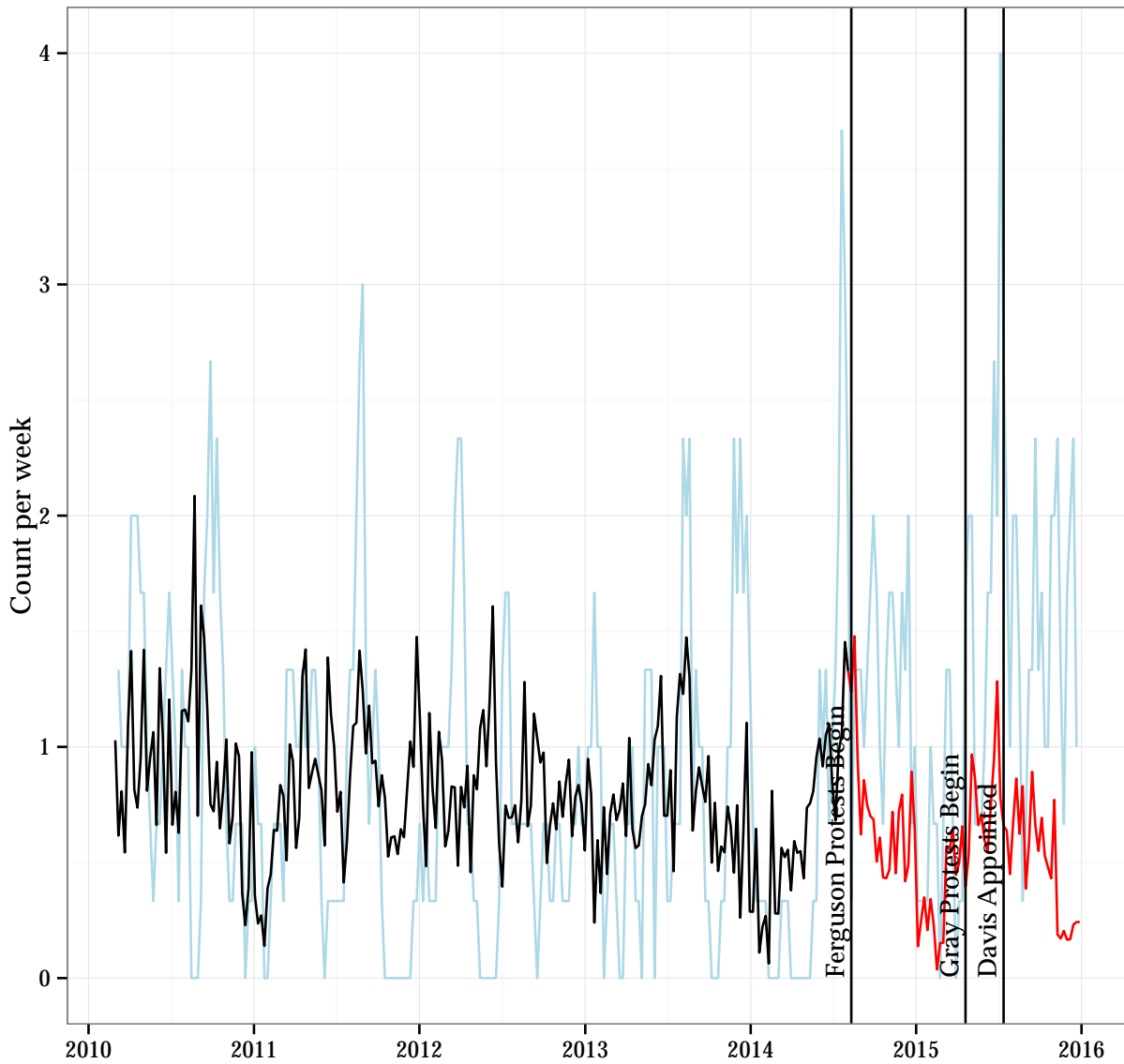
Null deviance: 324.57 on 231 degrees of freedom  
Residual deviance: 296.03 on 221 degrees of freedom  
AIC: 583.16

Number of Fisher Scoring iterations: 6

# shooting.northwestern



# shooting.northwestern



## 38 Results for shooting.northern

### 38.1 Summary Values for shooting.northern

Table 38.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.northern	232	0.517	0.800	0	0	4

Table 38.2: Descriptives for Outcome After Ferguson Protests Begin

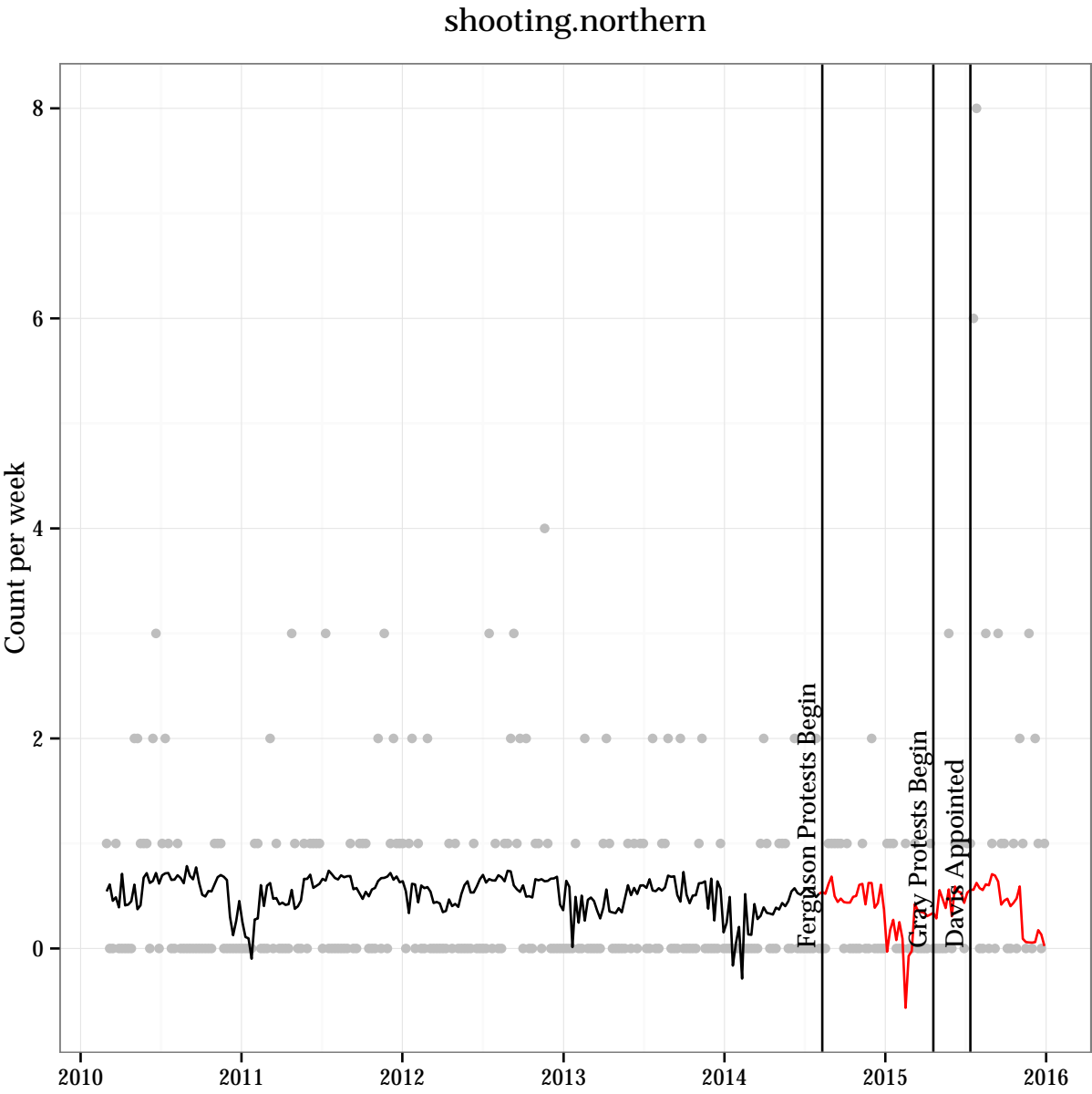
Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.northern	73	0.781	1.336	0	0	8

## 38.2 Four Models for shooting.northern

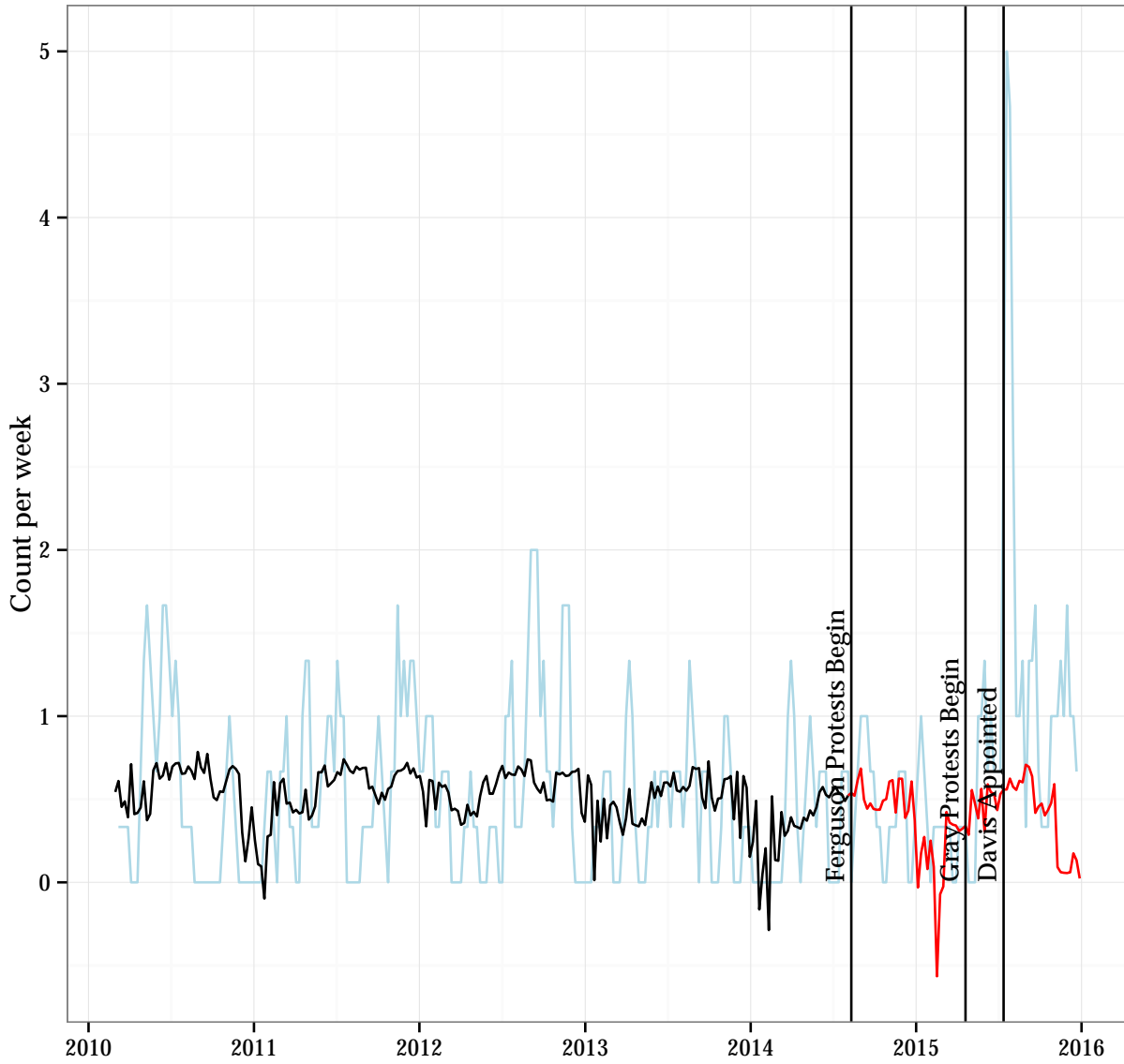
Table 38.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.001	−0.0004		−0.0004
After Ferguson Protests Begin (week of 8/11/14 onward)	0.001		0.05	0.07
After Gray Protests Begin (week of 4/20/15 onward)	0.24		0.10	0.09
Unrest and National Guard (during week of 4/27/15)	−0.64		−0.44	−0.41
After Commissioner Batts Fired (week of 7/13/15 onward)	0.78		0.84	0.79
Average Maximum Temperature to 50 Degrees		0.03		0.03
Plus Degrees in the 50s		−0.03		−0.04
Plus Degrees in the 60s		−0.003		0.01
Plus Degrees in the 70s		0.03		0.03
Plus Degrees greater than 80		−0.02		0.02
Snowfall (inches)		−0.14		−0.02
Precipitation (inches)		0.09		0.02
Darkness Before Midnight (hours)		0.09		0.06
School Days (proportion of week)		0.07		0.13
Observations	305	232	305	305
R <sup>2</sup>	0.07	0.05	0.08	0.11

38.3 Least Squares Model (2) for shooting.northern

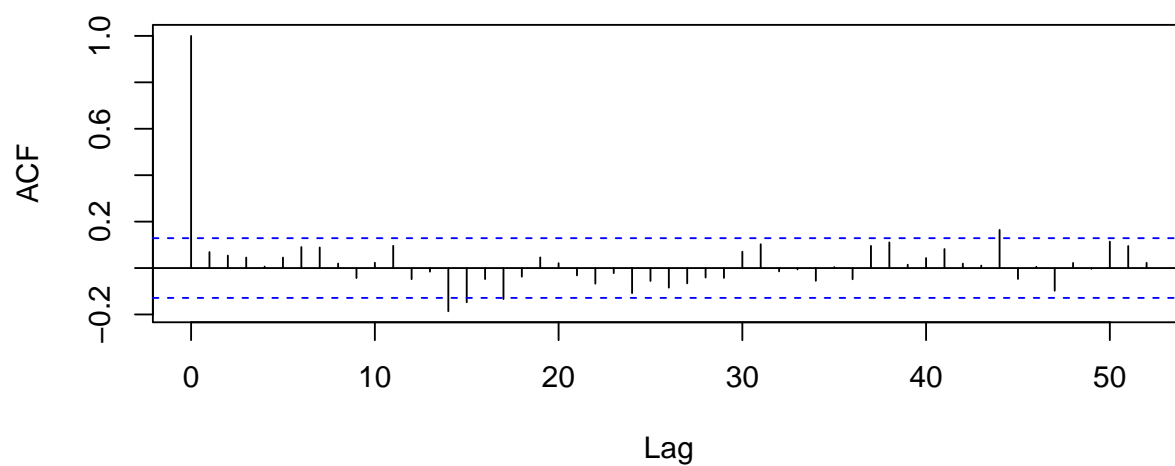


# shooting.northern

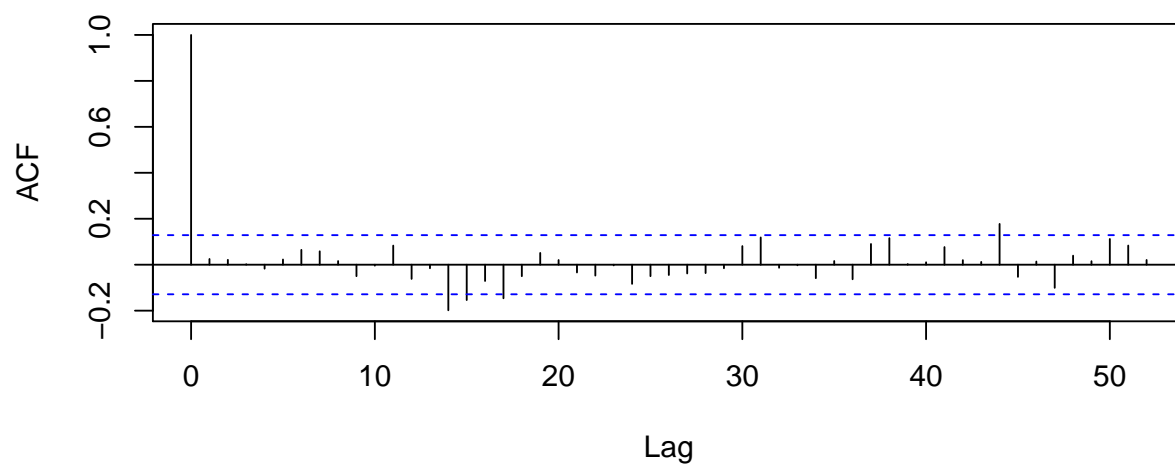




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



### 38.4 A Poisson Regression Model as an Alternative to Model (2) for shooting.northern

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.2640  -1.0537  -0.8729   0.4751   2.7584

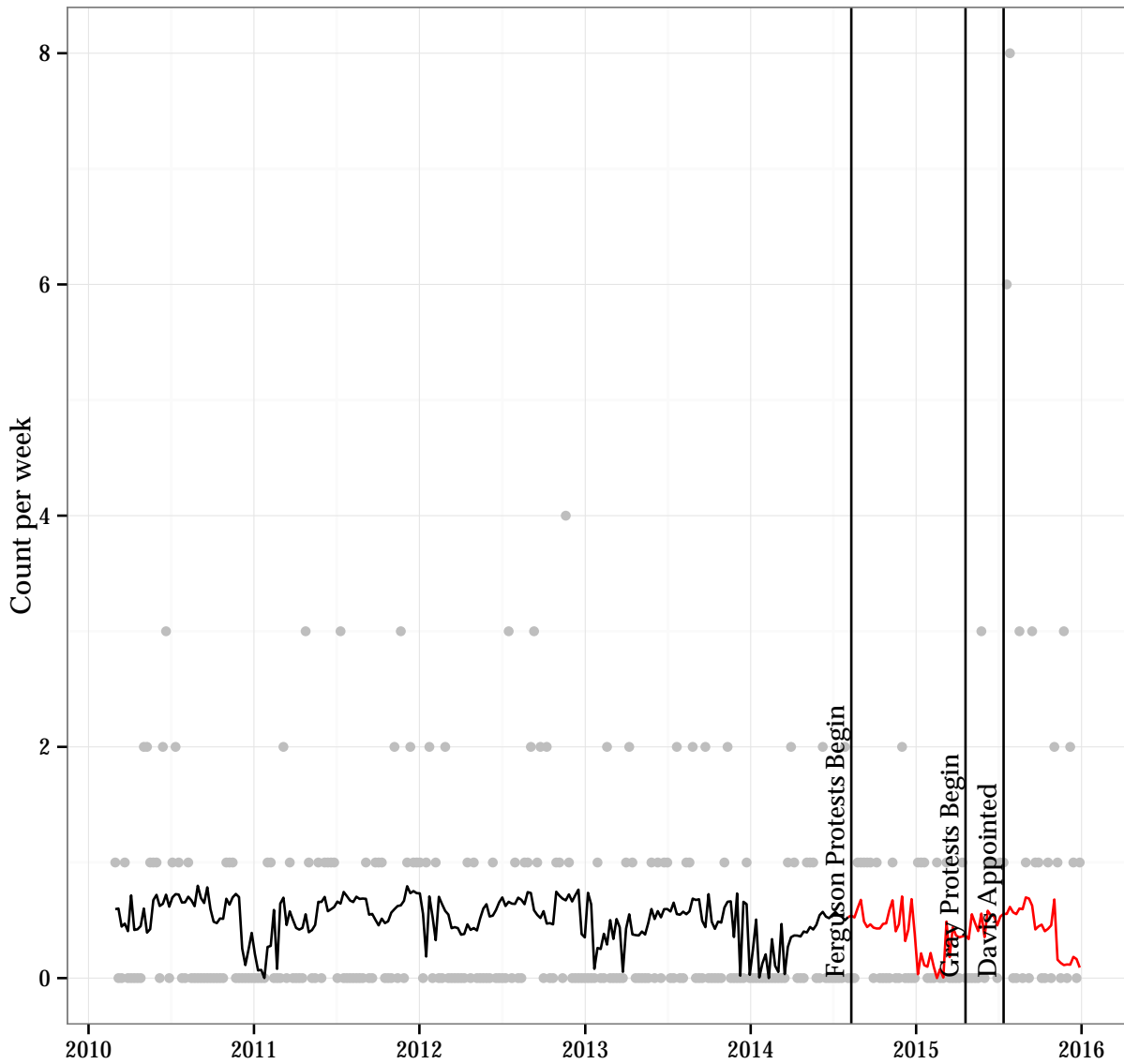
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)  -5.8560906  2.7169193  -2.155  0.0311 *
t             -0.0006513  0.0014364  -0.453  0.6503
tmax.f.spline1  0.0925196  0.0531616   1.740  0.0818 .
tmax.f.spline2 -0.1182202  0.0860533  -1.374  0.1695
tmax.f.spline3  0.0187853  0.0888580   0.211  0.8326
tmax.f.spline4  0.0579274  0.0835744   0.693  0.4882
tmax.f.spline5 -0.0328720  0.0677319  -0.485  0.6274
snow.in       -3.1980041  2.3543762  -1.358  0.1744
precip.in      0.1575665  0.4788122   0.329  0.7421
dark.before.12  0.1377660  0.1364534   1.010  0.3127
school         0.1087925  0.4014369   0.271  0.7864
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

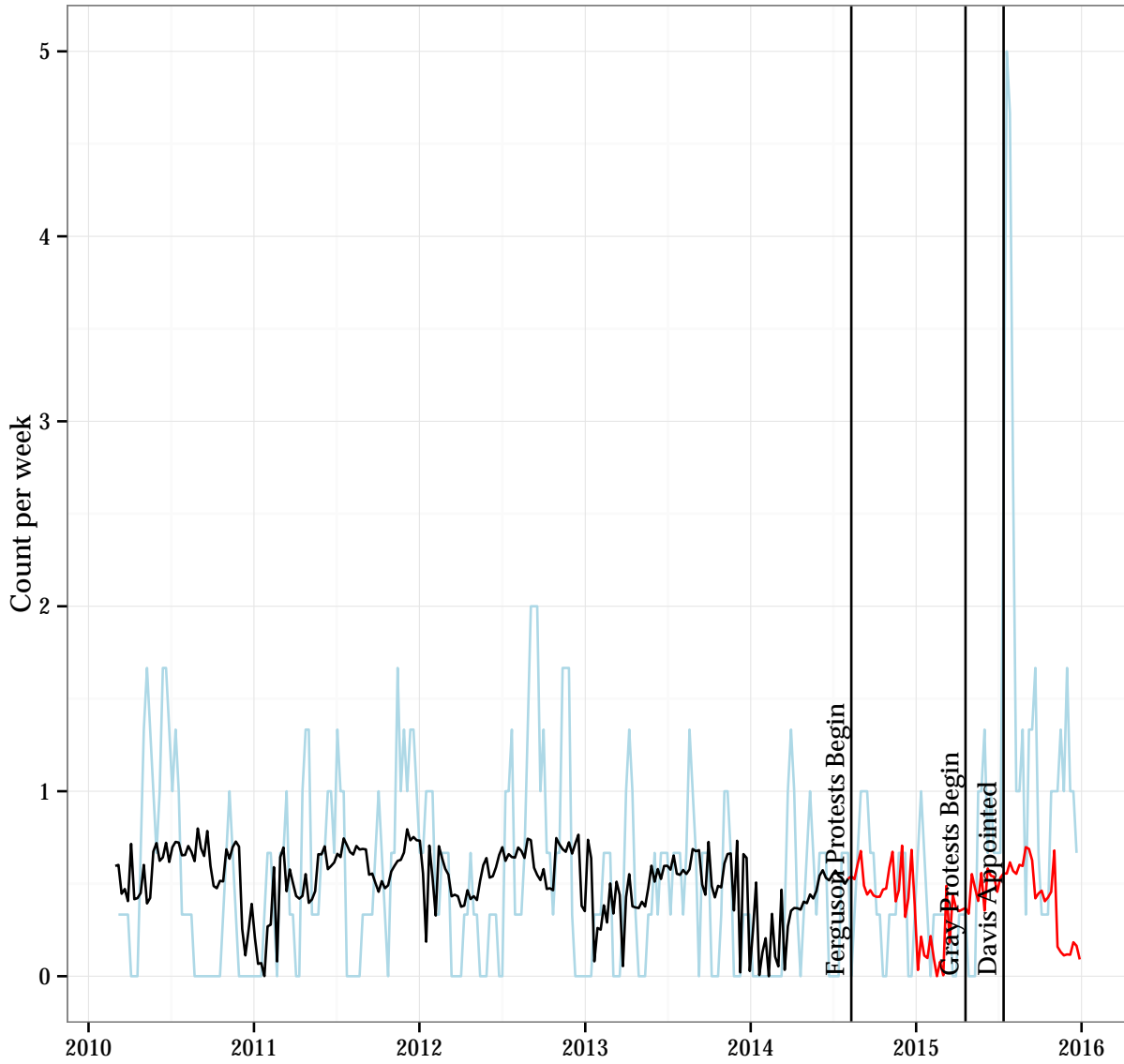
    Null deviance: 267.08  on 231  degrees of freedom
Residual deviance: 248.19  on 221  degrees of freedom
AIC: 458.29

Number of Fisher Scoring iterations: 6
```

# shooting.northern



# shooting.northern



## 39 Results for shooting.northeastern

### 39.1 Summary Values for shooting.northeastern

Table 39.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.northeastern	232	0.974	1.158	0	1	6

Table 39.2: Descriptives for Outcome After Ferguson Protests Begin

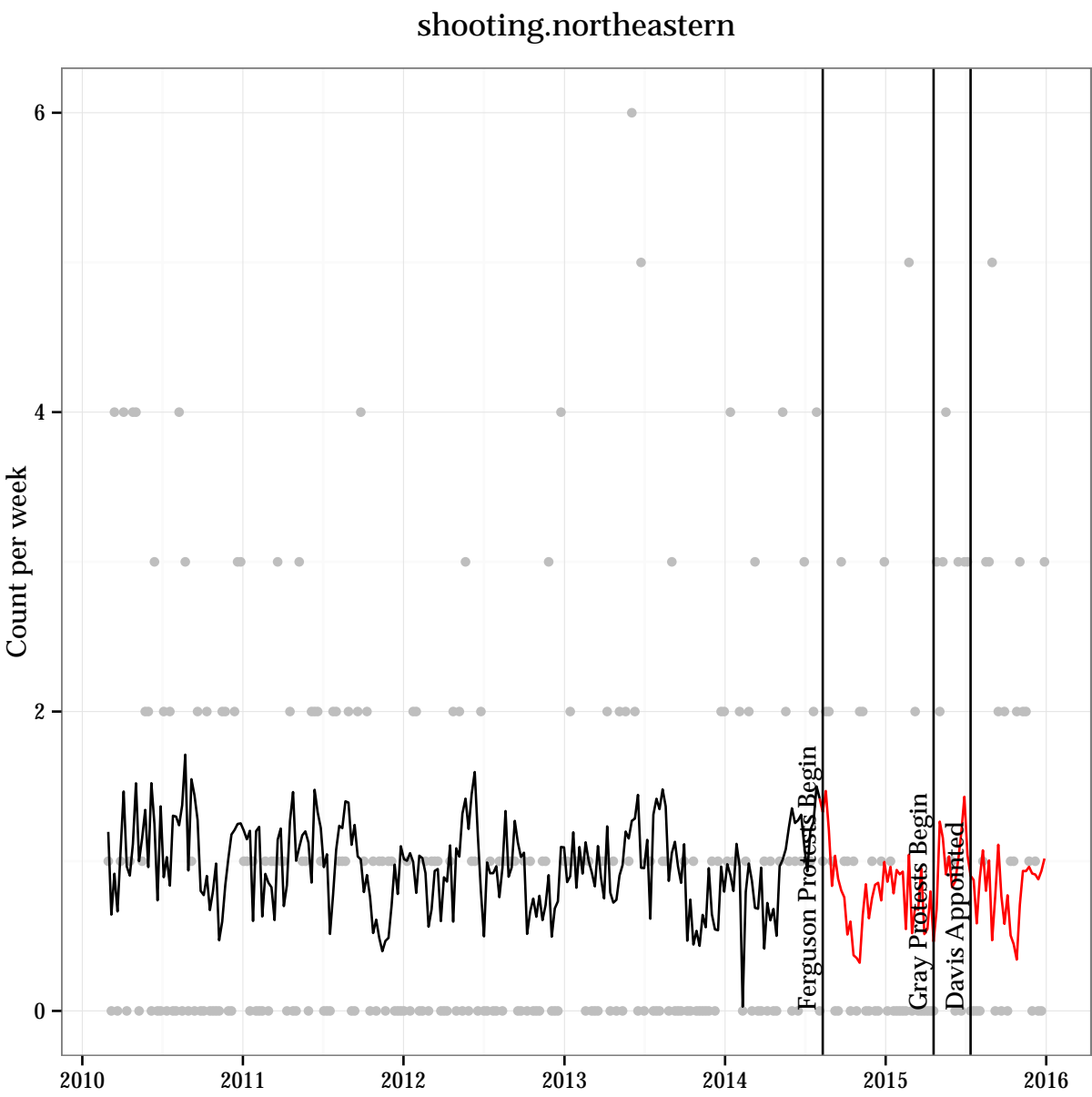
Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.northeastern	73	1.151	1.330	0	1	5

## 39.2 Four Models for shooting.northeastern

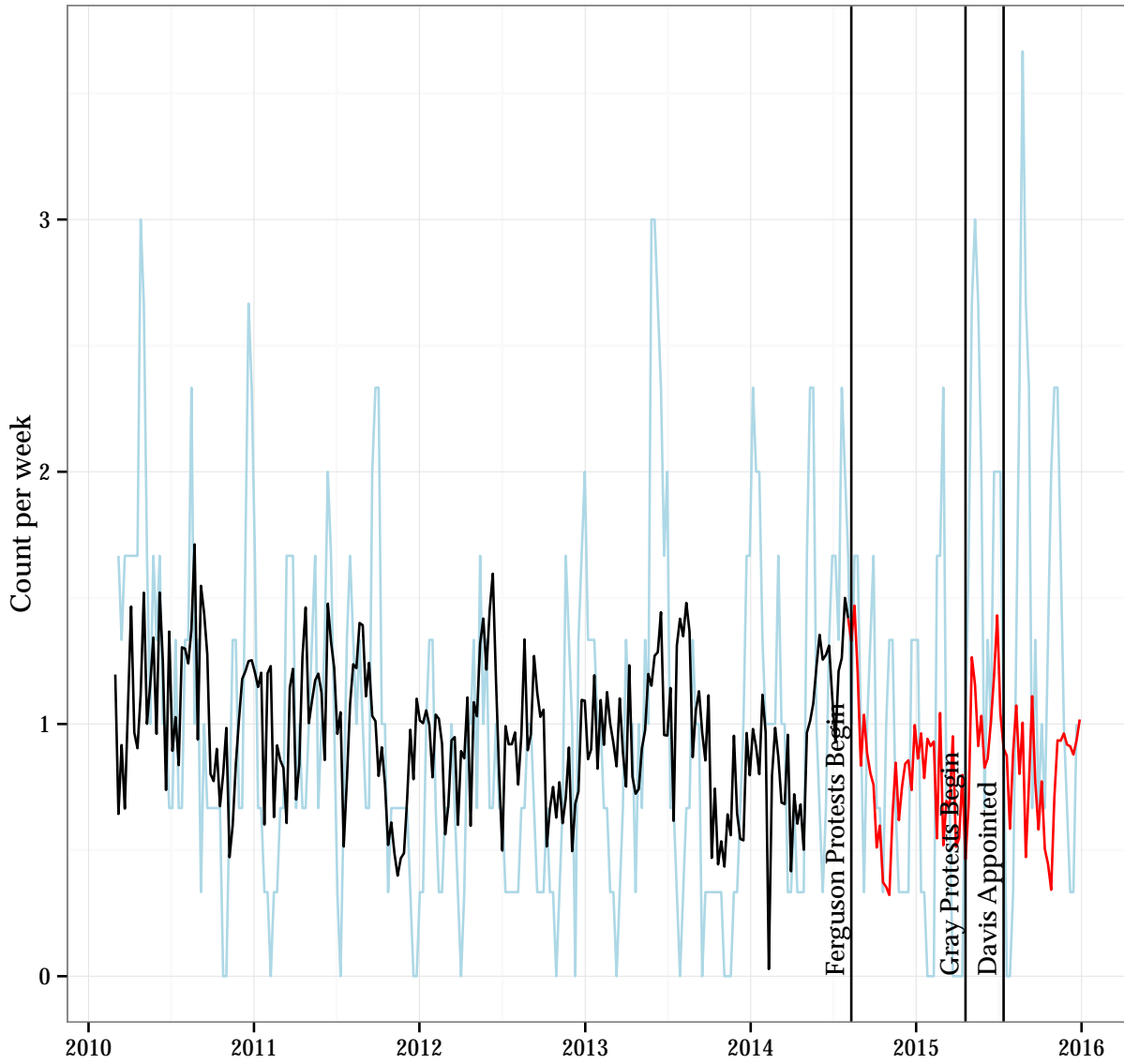
Table 39.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.001	−0.001		−0.001
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.07		0.02	0.02
After Gray Protests Begin (week of 4/20/15 onward)	1.03		0.79	0.80
Unrest and National Guard (during week of 4/27/15)	1.18		1.52	1.53
After Commissioner Batts Fired (week of 7/13/15 onward)	−0.52		−0.32	−0.37
Average Maximum Temperature to 50 Degrees		−0.01		−0.01
Plus Degrees in the 50s		−0.04		−0.04
Plus Degrees in the 60s		0.09		0.09
Plus Degrees in the 70s		0.02		0.03
Plus Degrees greater than 80		−0.13		−0.13
Snowfall (inches)		−0.39		−0.46
Precipitation (inches)		−0.24		−0.29
Darkness Before Midnight (hours)		−0.08		−0.02
School Days (proportion of week)		−0.22		−0.25
Observations	305	232	305	305
R <sup>2</sup>	0.04	0.06	0.04	0.08

39.3 Least Squares Model (2) for shooting.northeastern

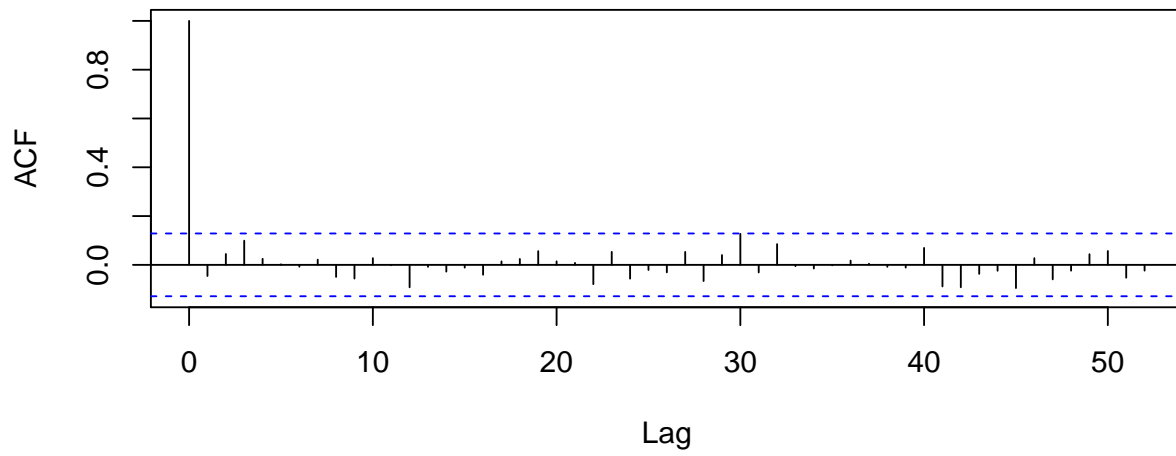


# shooting.northeastern

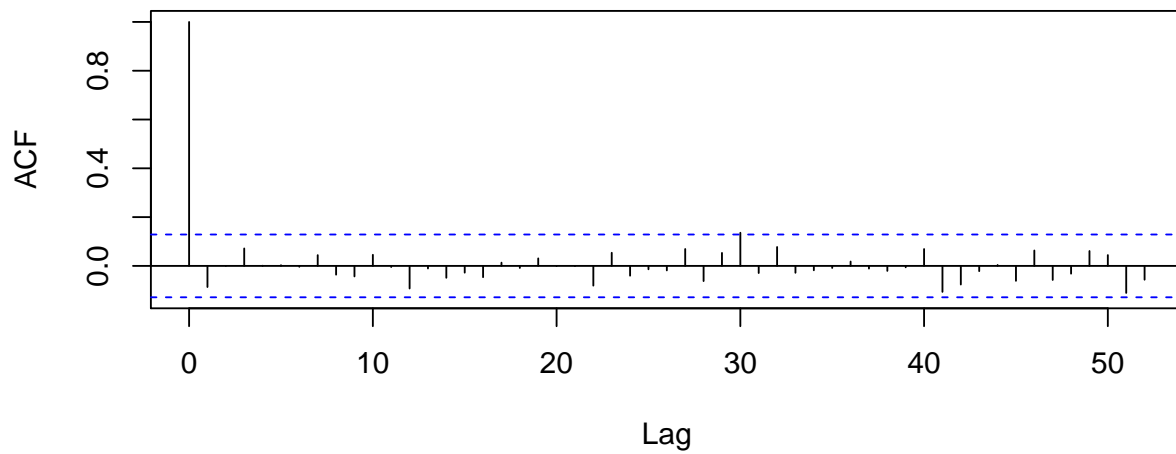




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



### 39.4 A Poisson Regression Model as an Alternative to Model (2) for shooting.northeastern

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.7907  -1.2914  -0.1981   0.5847   3.0391

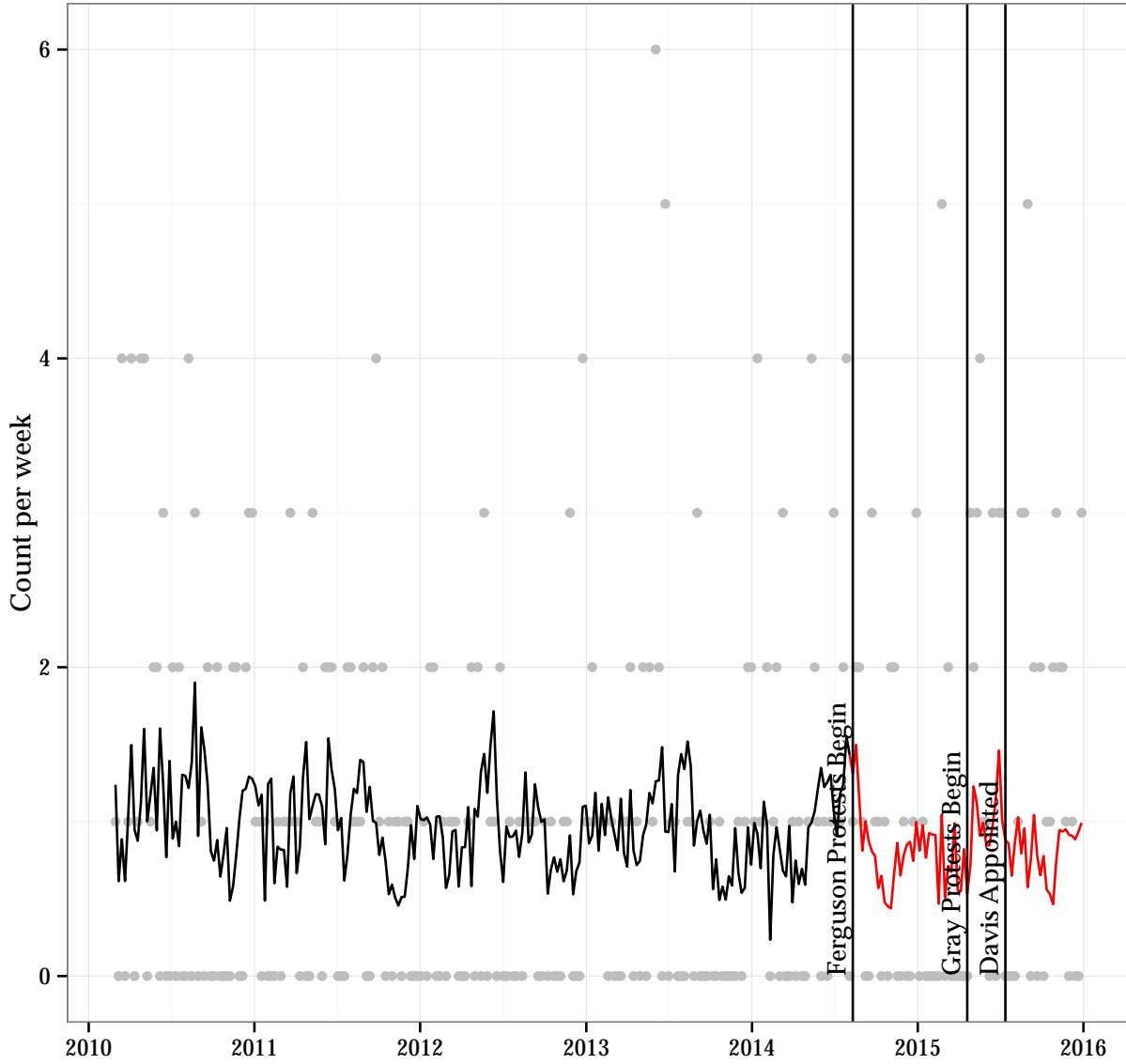
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   1.6489230   1.4147087   1.166   0.2438
t             -0.0011790   0.0010074  -1.170   0.2419
tmax.f.spline1 -0.0154753   0.0249069  -0.621   0.5344
tmax.f.spline2 -0.0612765   0.0560502  -1.093   0.2743
tmax.f.spline3  0.1250767   0.0754519   1.658   0.0974 .
tmax.f.spline4 -0.0002567   0.0640875  -0.004   0.9968
tmax.f.spline5 -0.1174980   0.0504580  -2.329   0.0199 *
snow.in        -0.5780122   0.4592981  -1.258   0.2082
precip.in      -0.2413657   0.3846311  -0.628   0.5303
dark.before.12 -0.0893774   0.1041559  -0.858   0.3908
school         -0.2137453   0.2806538  -0.762   0.4463
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

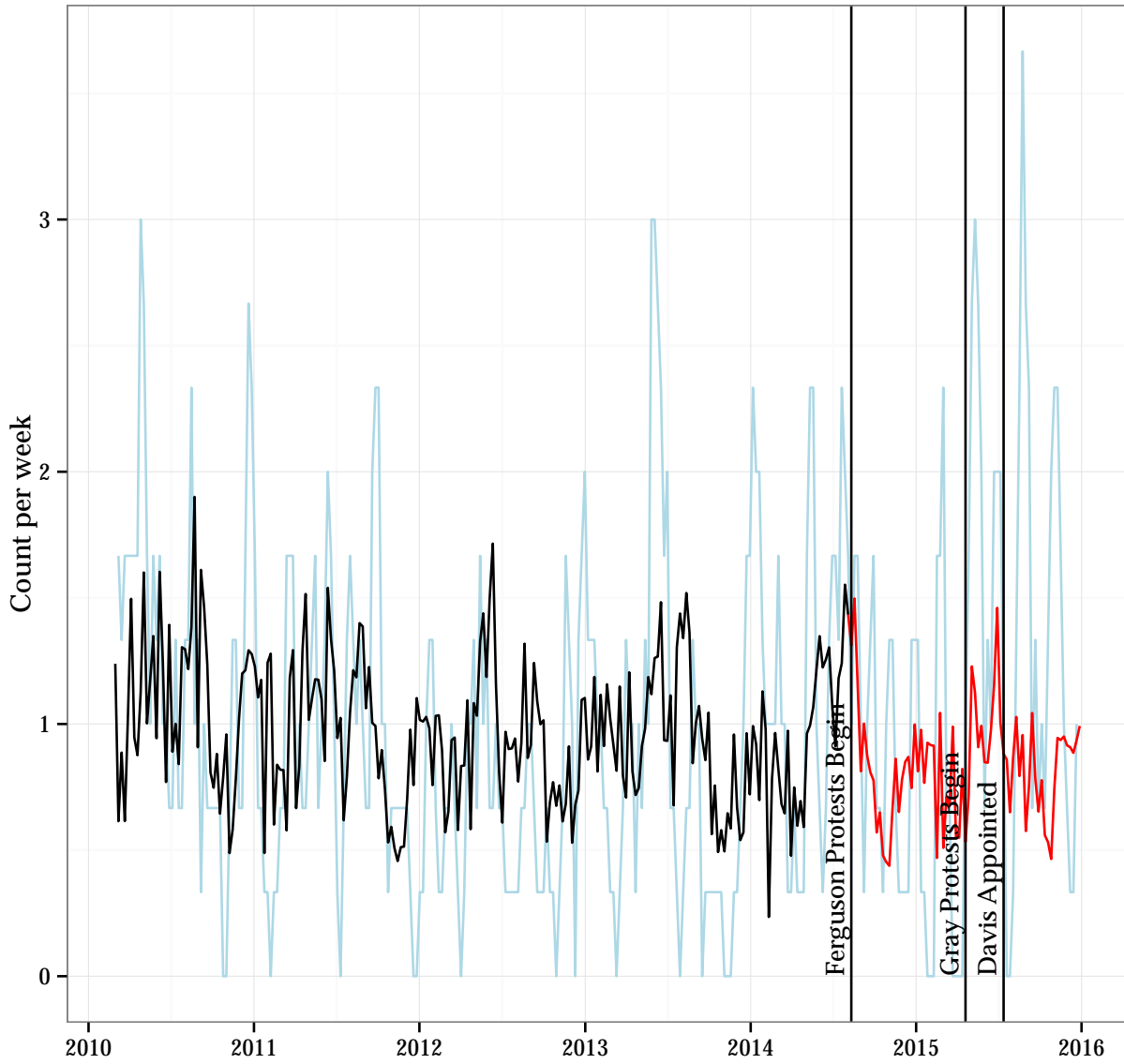
    Null deviance: 327.12  on 231  degrees of freedom
Residual deviance: 307.28  on 221  degrees of freedom
AIC: 638.85

Number of Fisher Scoring iterations: 5
```

## shooting.northeastern



# shooting.northeastern



## 40 Results for shooting.western

### 40.1 Summary Values for shooting.western

Table 40.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.western	232	1.250	1.382	0	1	7

Table 40.2: Descriptives for Outcome After Ferguson Protests Begin

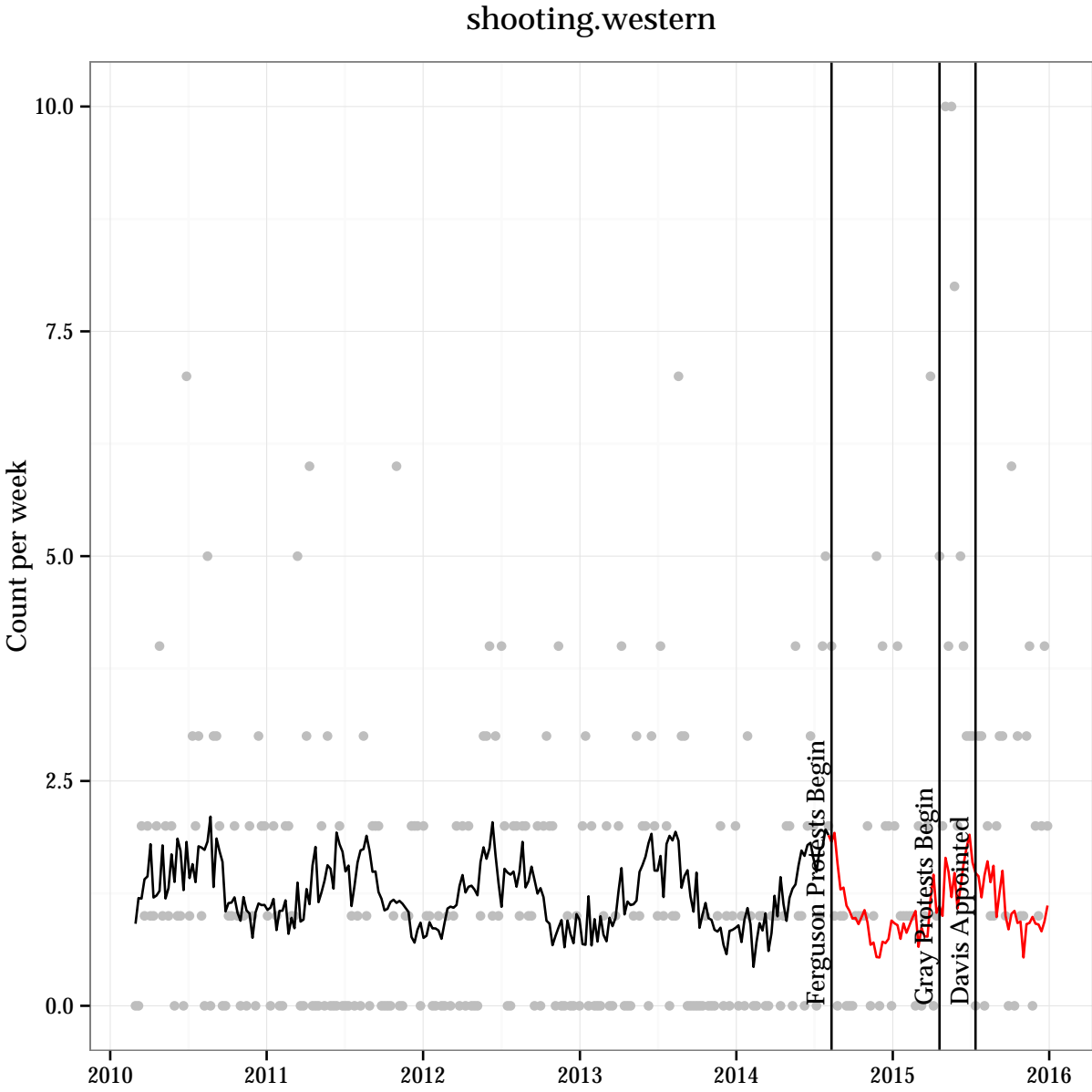
Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.western	73	2.164	2.199	0	2	10

## 40.2 Four Models for shooting.western

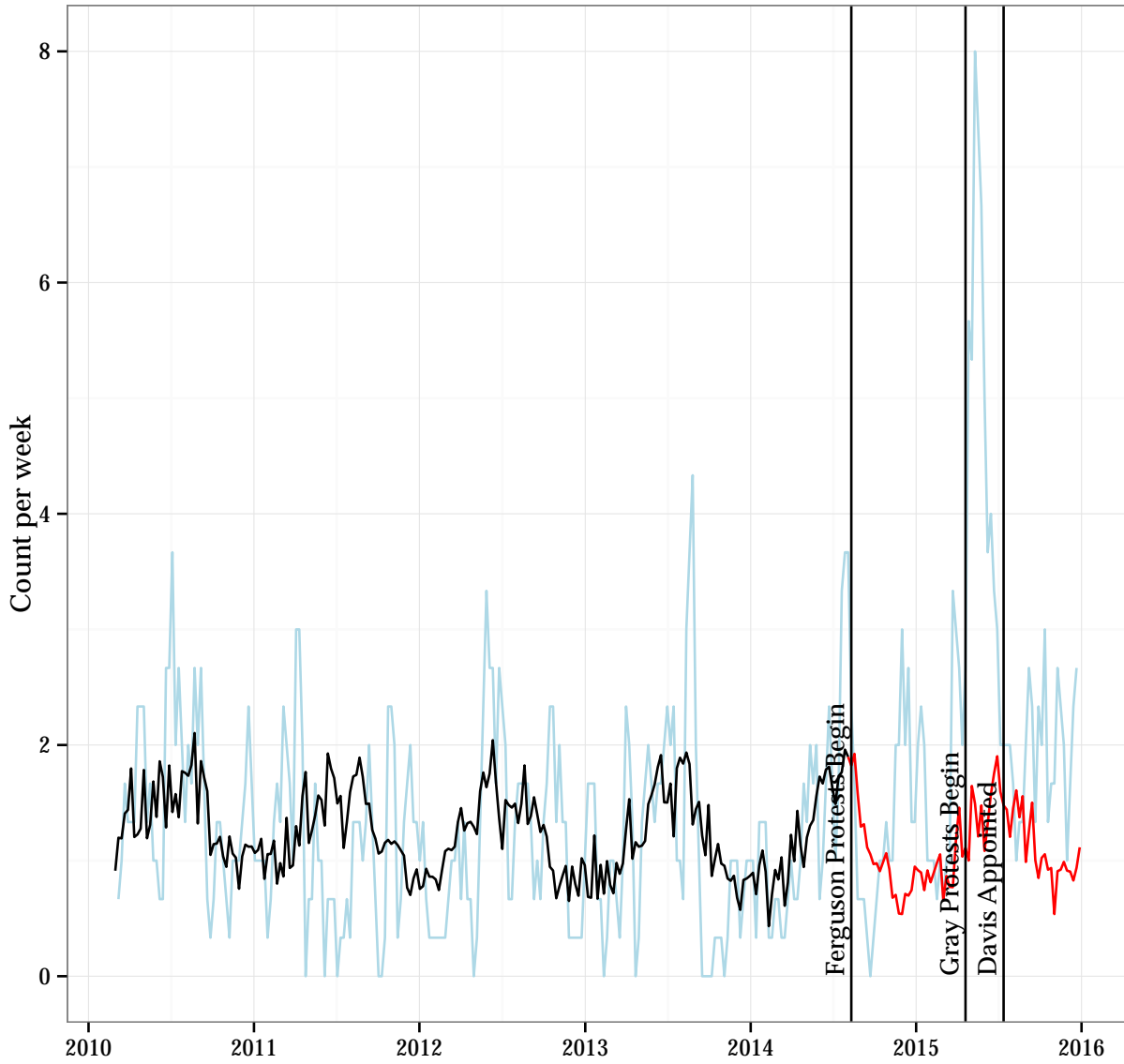
Table 40.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.001	−0.001		−0.001
After Ferguson Protests Begin (week of 8/11/14 onward)	0.26		0.43	0.35
After Gray Protests Begin (week of 4/20/15 onward)	3.78		3.28	3.38
Unrest and National Guard (during week of 4/27/15)	−3.19		−2.71	−2.71
After Commissioner Batts Fired (week of 7/13/15 onward)	−3.25		−2.90	−2.98
Average Maximum Temperature to 50 Degrees		−0.03		−0.03
Plus Degrees in the 50s		0.07		0.08
Plus Degrees in the 60s		−0.08		−0.09
Plus Degrees in the 70s		0.11		0.14
Plus Degrees greater than 80		−0.14		−0.14
Snowfall (inches)		−0.22		−0.30
Precipitation (inches)		−0.15		−0.18
Darkness Before Midnight (hours)		−0.08		−0.06
School Days (proportion of week)		−0.35		0.19
Observations	305	232	305	305
R <sup>2</sup>	0.20	0.07	0.19	0.23

40.3 Least Squares Model (2) for shooting.western

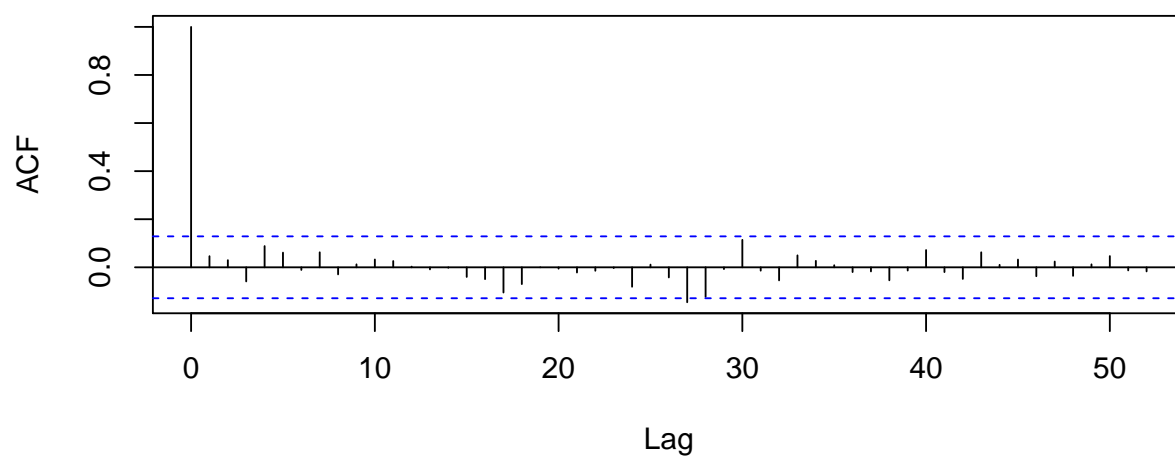


# shooting.western

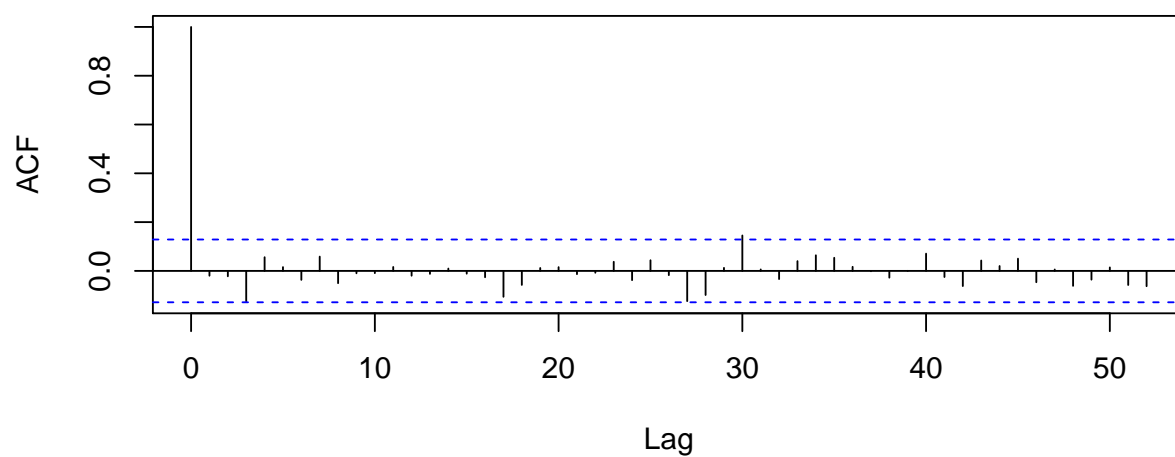




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 40.4 A Poisson Regression Model as an Alternative to Model (2) for shooting.western

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.1205  -1.4079  -0.1516   0.6521   3.2119

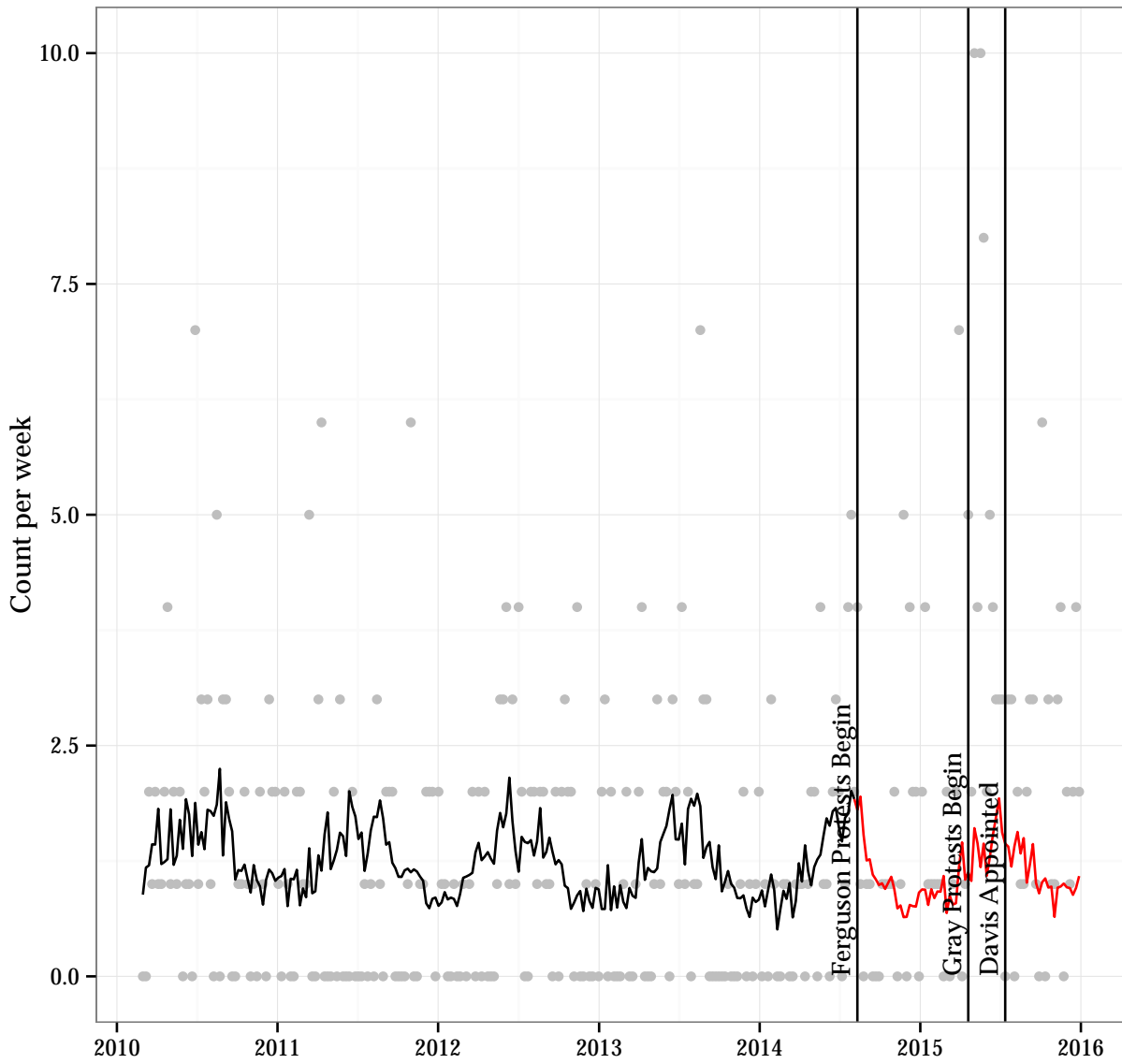
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   1.8507349   1.3484770    1.372   0.170
t             -0.0006874   0.0008879   -0.774   0.439
tmax.f.spline1 -0.0286364   0.0252855   -1.133   0.257
tmax.f.spline2  0.0758020   0.0519052    1.460   0.144
tmax.f.spline3 -0.0734952   0.0591251   -1.243   0.214
tmax.f.spline4  0.0773976   0.0528430    1.465   0.143
tmax.f.spline5 -0.0938882   0.0427333   -2.197   0.028 *
snow.in        -0.2760159   0.3829545   -0.721   0.471
precip.in      -0.1203303   0.3322252   -0.362   0.717
dark.before.12 -0.0702924   0.0913678   -0.769   0.442
school         -0.2466107   0.2492104   -0.990   0.322
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

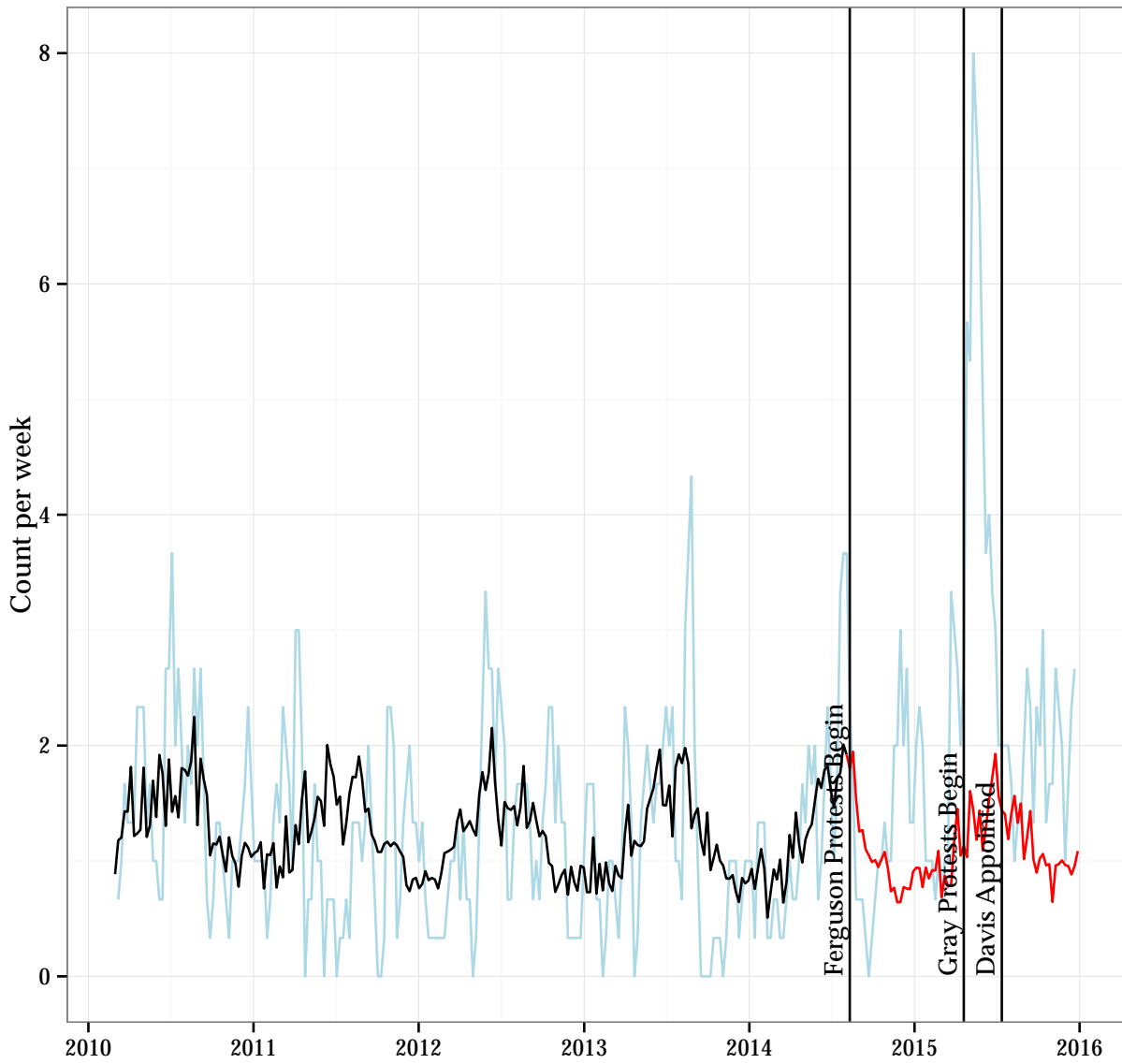
    Null deviance: 368.94  on 231  degrees of freedom
Residual deviance: 345.18  on 221  degrees of freedom
AIC: 726.21

Number of Fisher Scoring iterations: 5
```

# shooting.western



# shooting.western



## 41 Results for shooting.central

### 41.1 Summary Values for shooting.central

Table 41.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.central	232	0.552	0.910	0	0	5

Table 41.2: Descriptives for Outcome After Ferguson Protests Begin

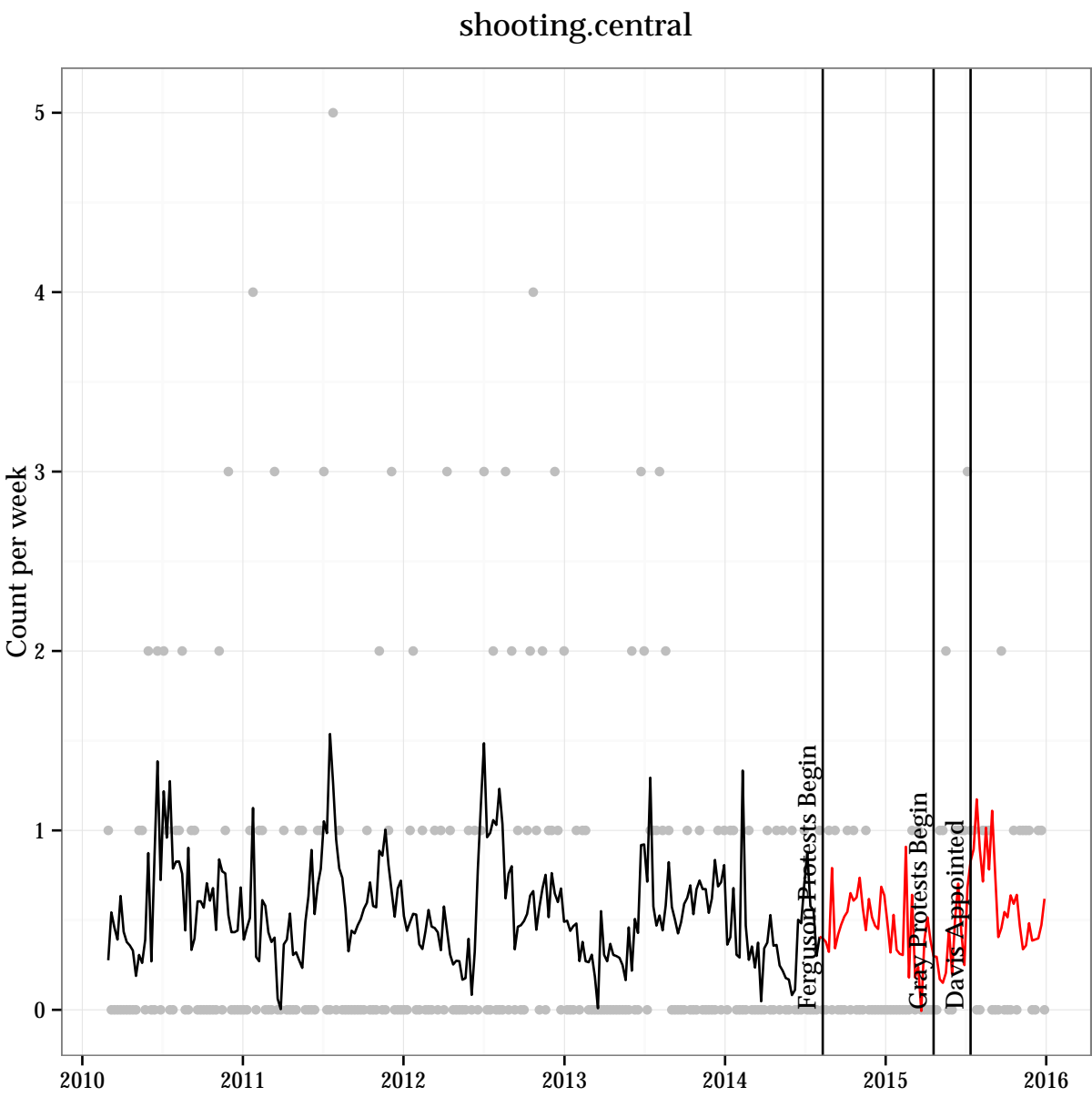
Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.central	73	0.438	0.623	0	0	3

## 41.2 Four Models for shooting.central

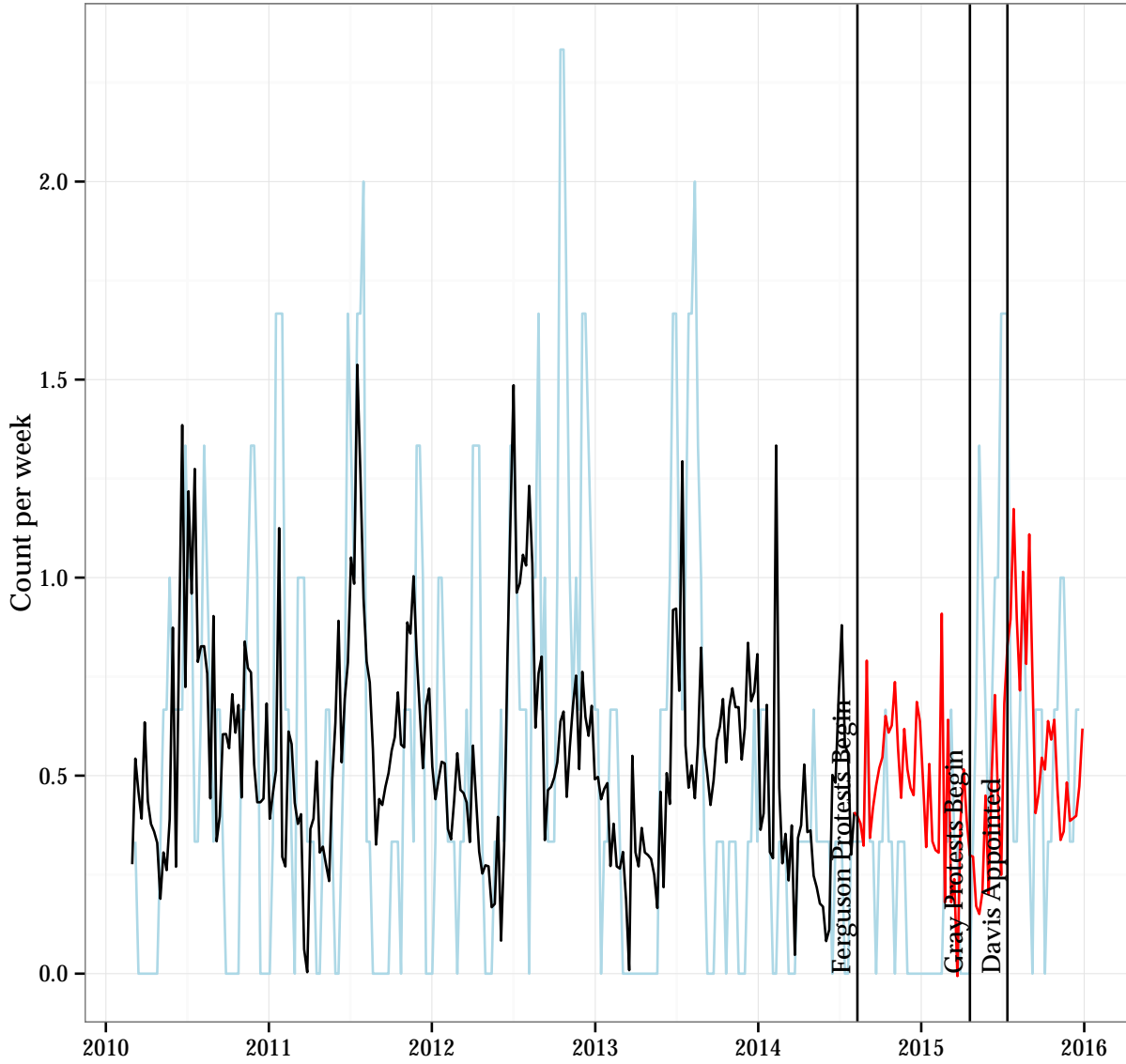
Table 41.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.001	−0.0001		−0.0002
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.27		−0.28	−0.28
After Gray Protests Begin (week of 4/20/15 onward)	0.82		0.91	0.90
Unrest and National Guard (during week of 4/27/15)	−1.00		−0.93	−0.93
After Commissioner Batts Fired (week of 7/13/15 onward)	−0.43		−0.71	−0.67
Average Maximum Temperature to 50 Degrees		0.01		0.01
Plus Degrees in the 50s		0.02		0.01
Plus Degrees in the 60s		−0.03		−0.01
Plus Degrees in the 70s		−0.02		−0.02
Plus Degrees greater than 80		0.09		0.08
Snowfall (inches)		0.42		0.37
Precipitation (inches)		0.08		0.01
Darkness Before Midnight (hours)		0.19		0.16
School Days (proportion of week)		−0.29		−0.27
Observations	305	232	305	305
R <sup>2</sup>	0.03	0.09	0.04	0.10

41.3 Least Squares Model (2) for shooting.central

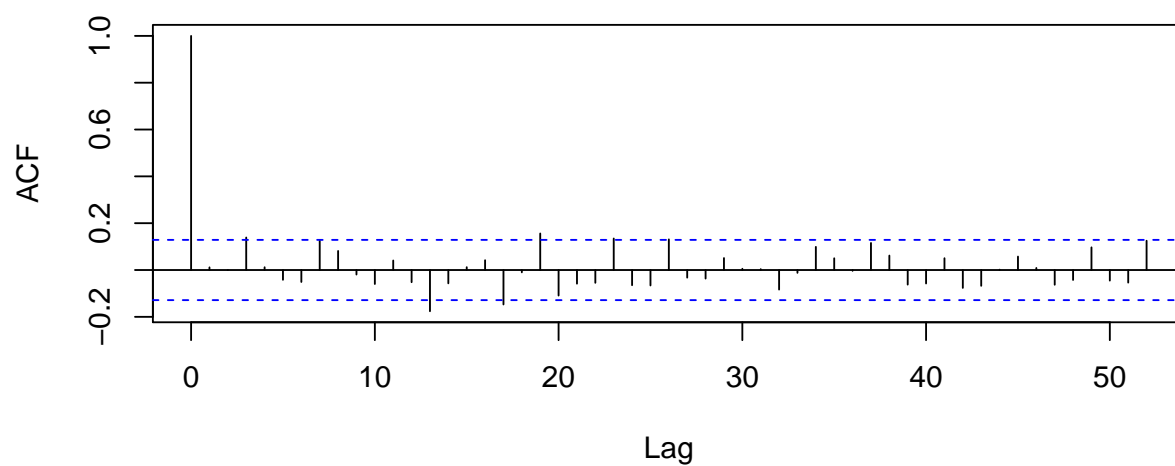


# shooting.central

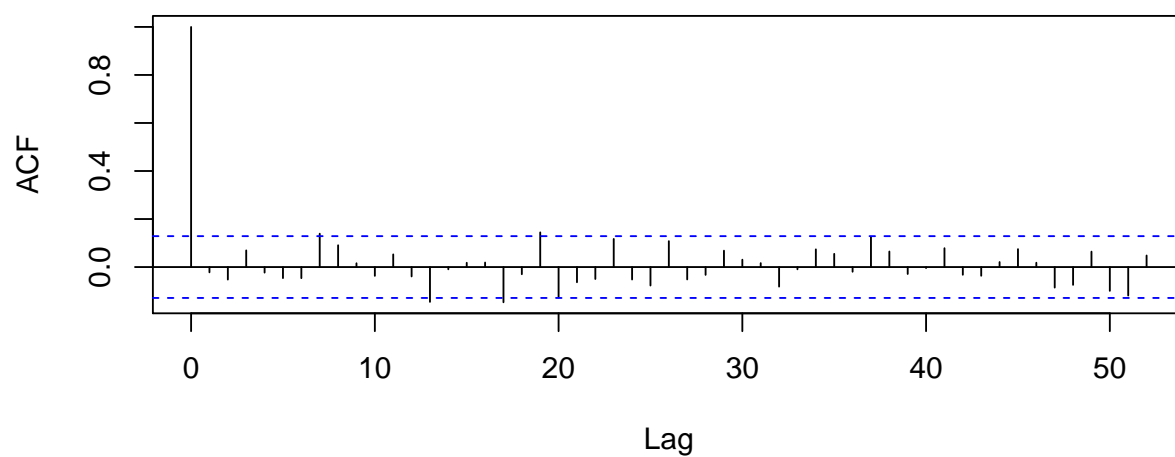




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 41.4 A Poisson Regression Model as an Alternative to Model (2) for shooting.central

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

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.9737	-1.0017	-0.8041	0.6382	2.8181

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	-3.9459485	2.0204712	-1.953	0.05082 .
t	-0.0003056	0.0014131	-0.216	0.82878
tmax.f.spline1	0.0169081	0.0375386	0.450	0.65241
tmax.f.spline2	0.0499367	0.0747085	0.668	0.50387
tmax.f.spline3	-0.0489516	0.0889956	-0.550	0.58229
tmax.f.spline4	-0.0321788	0.0844111	-0.381	0.70304
tmax.f.spline5	0.1171709	0.0662430	1.769	0.07693 .
snow.in	0.6362256	0.3386618	1.879	0.06029 .
precip.in	0.1337845	0.5117930	0.261	0.79378
dark.before.12	0.3984747	0.1423608	2.799	0.00513 **
school	-0.6402602	0.3977184	-1.610	0.10743

---

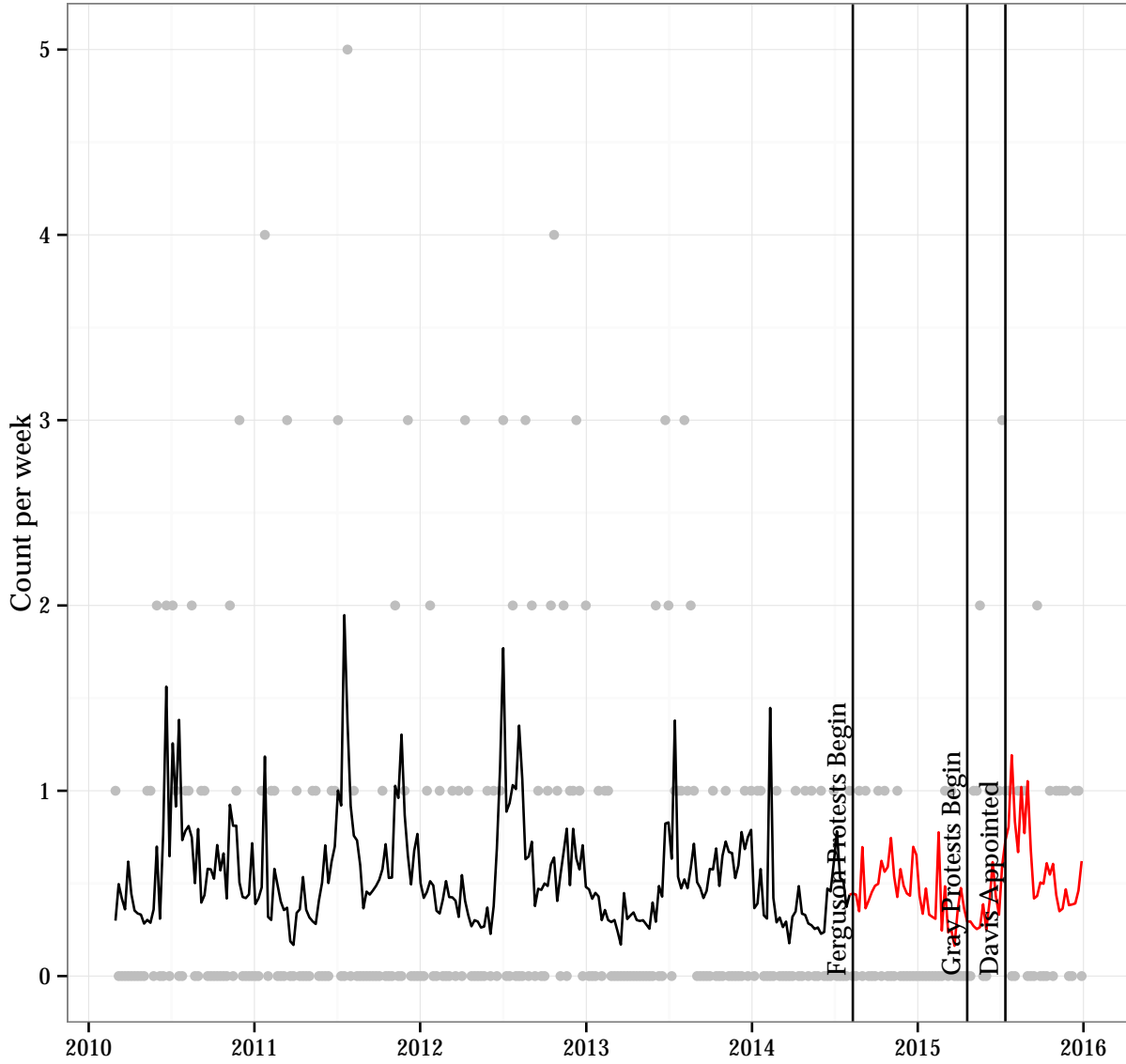
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

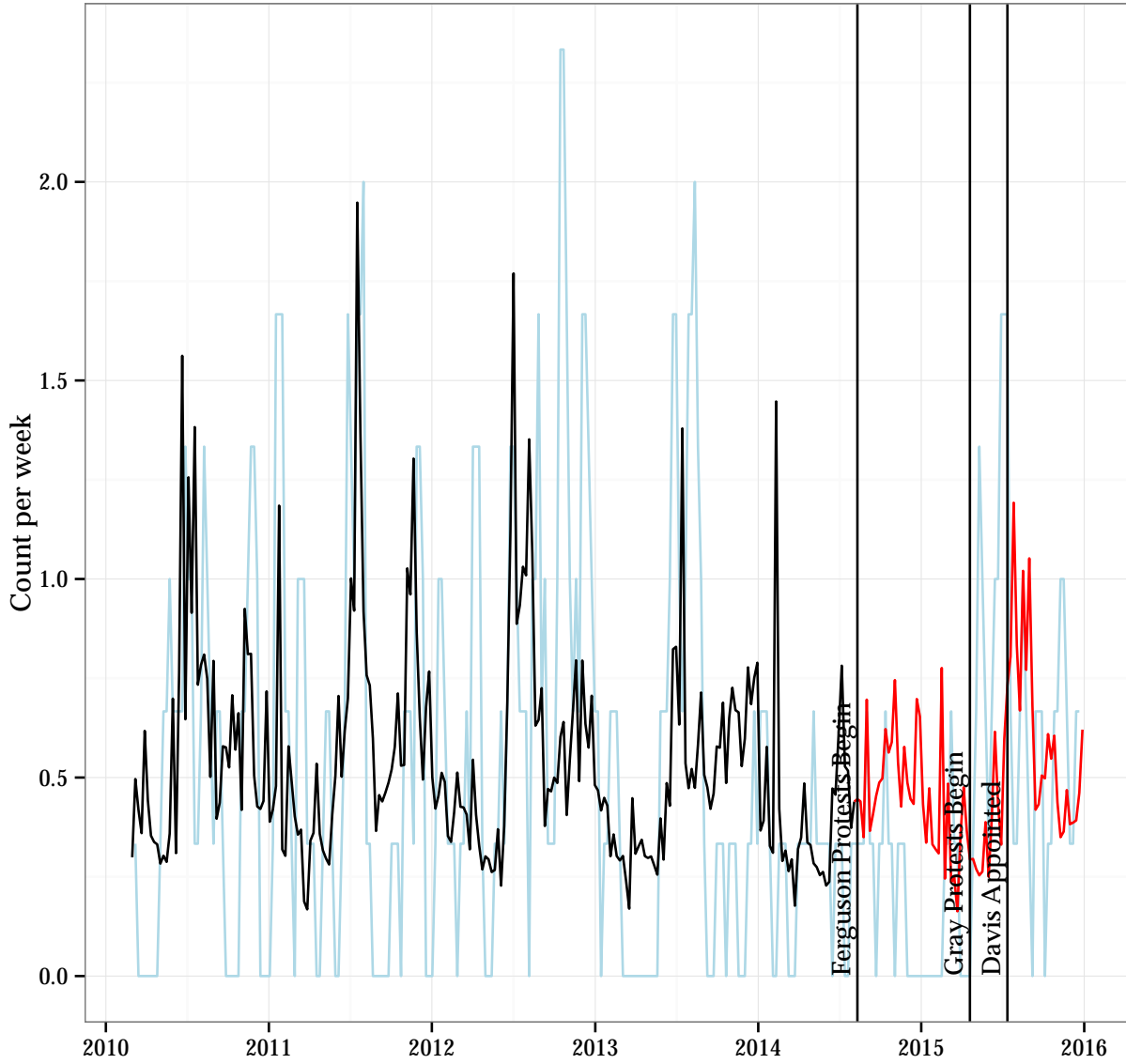
Null deviance: 298.03 on 231 degrees of freedom  
Residual deviance: 269.12 on 221 degrees of freedom  
AIC: 480.26

Number of Fisher Scoring iterations: 6

# shooting.central



# shooting.central



## 42 Results for shooting.eastern

### 42.1 Summary Values for shooting.eastern

Table 42.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.eastern	232	1.185	1.394	0	1	8

Table 42.2: Descriptives for Outcome After Ferguson Protests Begin

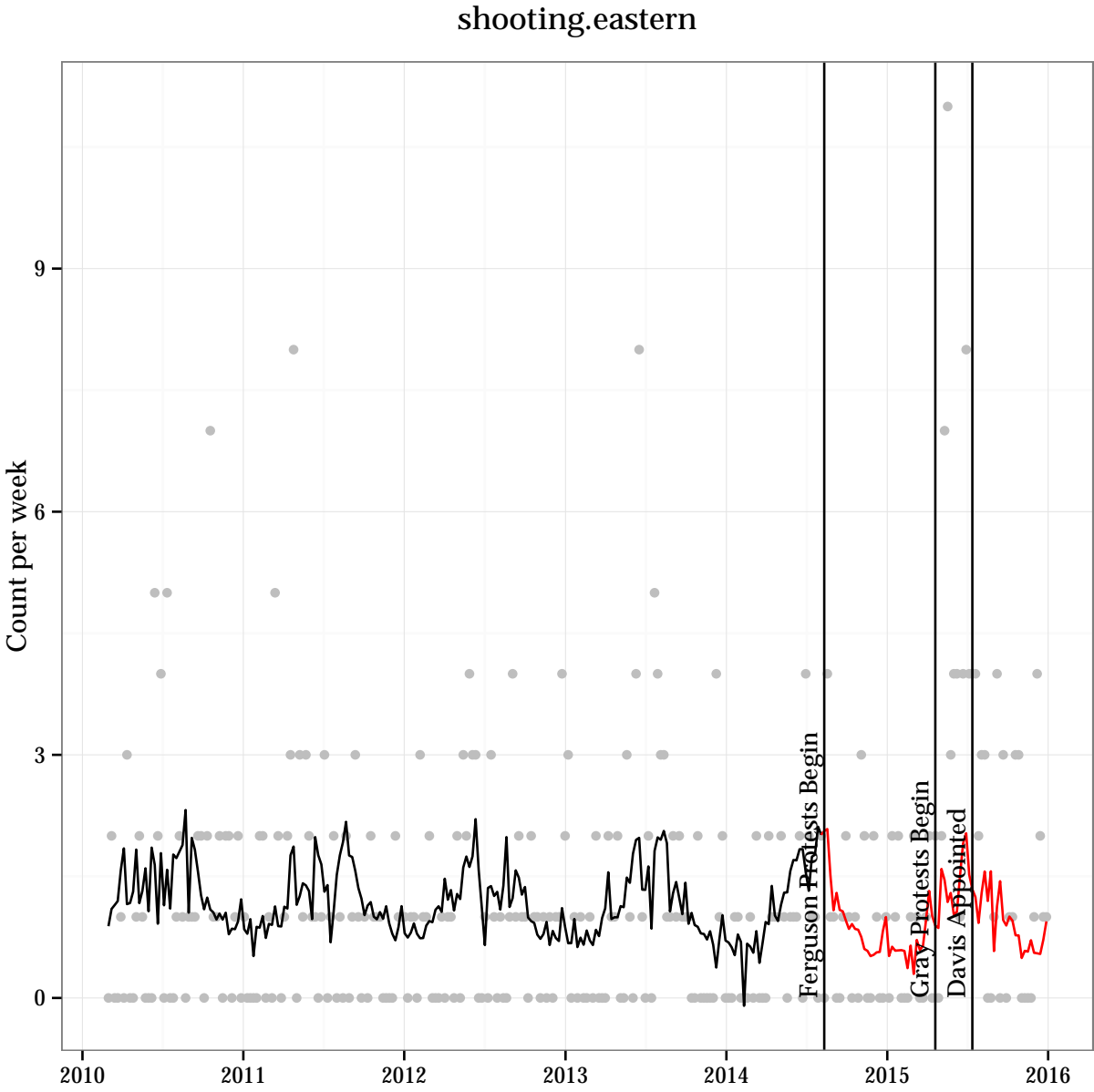
Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.eastern	73	1.685	2.027	0	1	11

## 42.2 Four Models for shooting.eastern

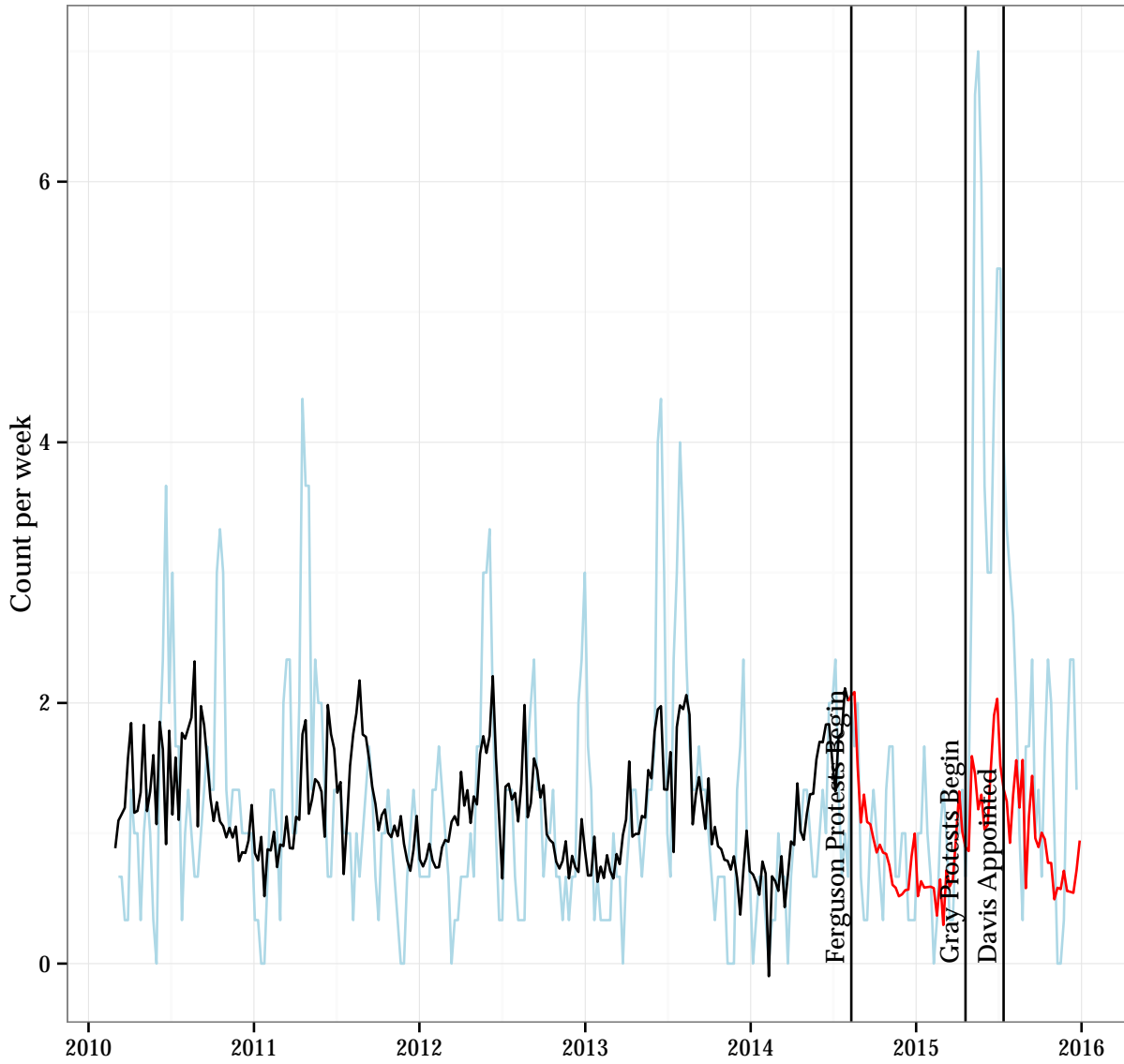
Table 42.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.001	−0.001		−0.001
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.16		0.04	0.03
After Gray Protests Begin (week of 4/20/15 onward)	3.68		3.10	3.12
Unrest and National Guard (during week of 4/27/15)	−4.55		−4.00	−4.09
After Commissioner Batts Fired (week of 7/13/15 onward)	−2.89		−2.43	−2.42
Average Maximum Temperature to 50 Degrees		−0.01		−0.01
Plus Degrees in the 50s		0.03		0.04
Plus Degrees in the 60s		−0.03		−0.04
Plus Degrees in the 70s		0.09		0.08
Plus Degrees greater than 80		−0.18		−0.17
Snowfall (inches)		−0.31		−0.24
Precipitation (inches)		0.02		−0.06
Darkness Before Midnight (hours)		−0.05		−0.07
School Days (proportion of week)		−0.59		−0.54
Observations	305	232	305	305
R <sup>2</sup>	0.17	0.09	0.16	0.23

42.3 Least Squares Model (2) for shooting.eastern

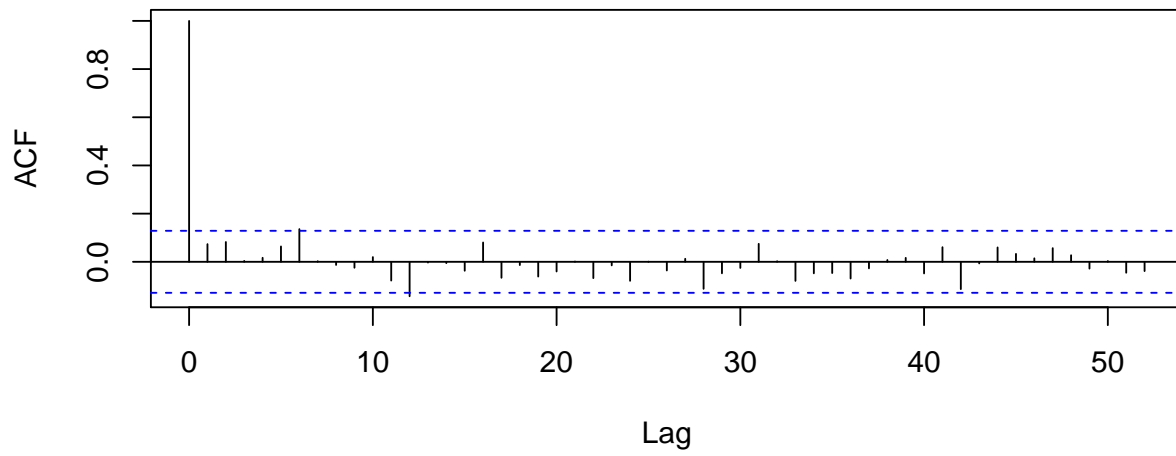


# shooting.eastern

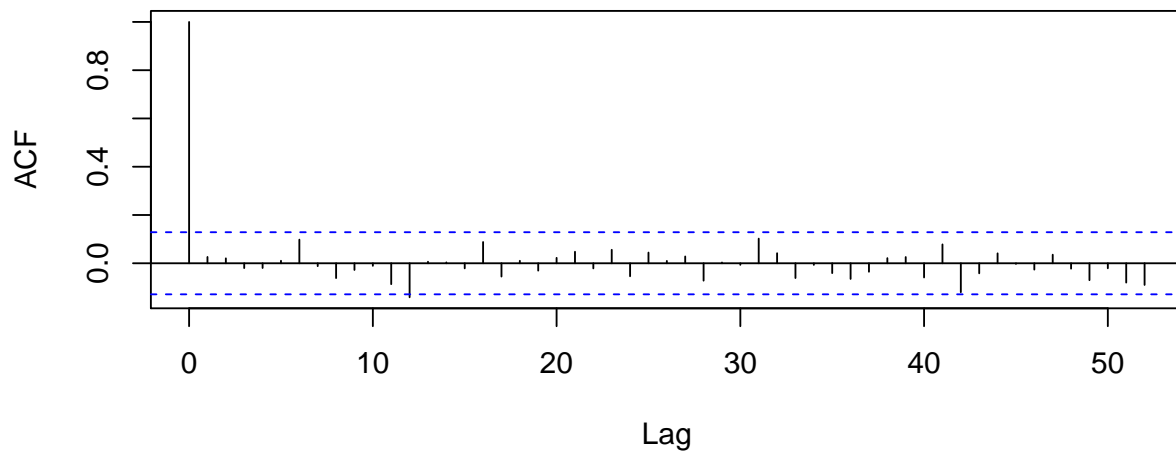




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 42.4 A Poisson Regression Model as an Alternative to Model (2) for shooting.eastern

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

Deviance Residuals:

Min	1Q	Median	3Q	Max
-2.2949	-1.3101	-0.2219	0.6029	3.7703

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	0.9231270	1.4703996	0.628	0.53013
t	-0.0009646	0.0009101	-1.060	0.28922
tmax.f.spline1	-0.0100957	0.0277896	-0.363	0.71639
tmax.f.spline2	0.0366303	0.0551946	0.664	0.50691
tmax.f.spline3	-0.0288123	0.0624558	-0.461	0.64457
tmax.f.spline4	0.0557630	0.0541425	1.030	0.30304
tmax.f.spline5	-0.1262618	0.0438624	-2.879	0.00399 **
snow.in	-0.6294054	0.5391745	-1.167	0.24307
precip.in	0.0061126	0.3219691	0.019	0.98485
dark.before.12	-0.0431109	0.0947489	-0.455	0.64911
school	-0.4364704	0.2512135	-1.737	0.08231 .

---

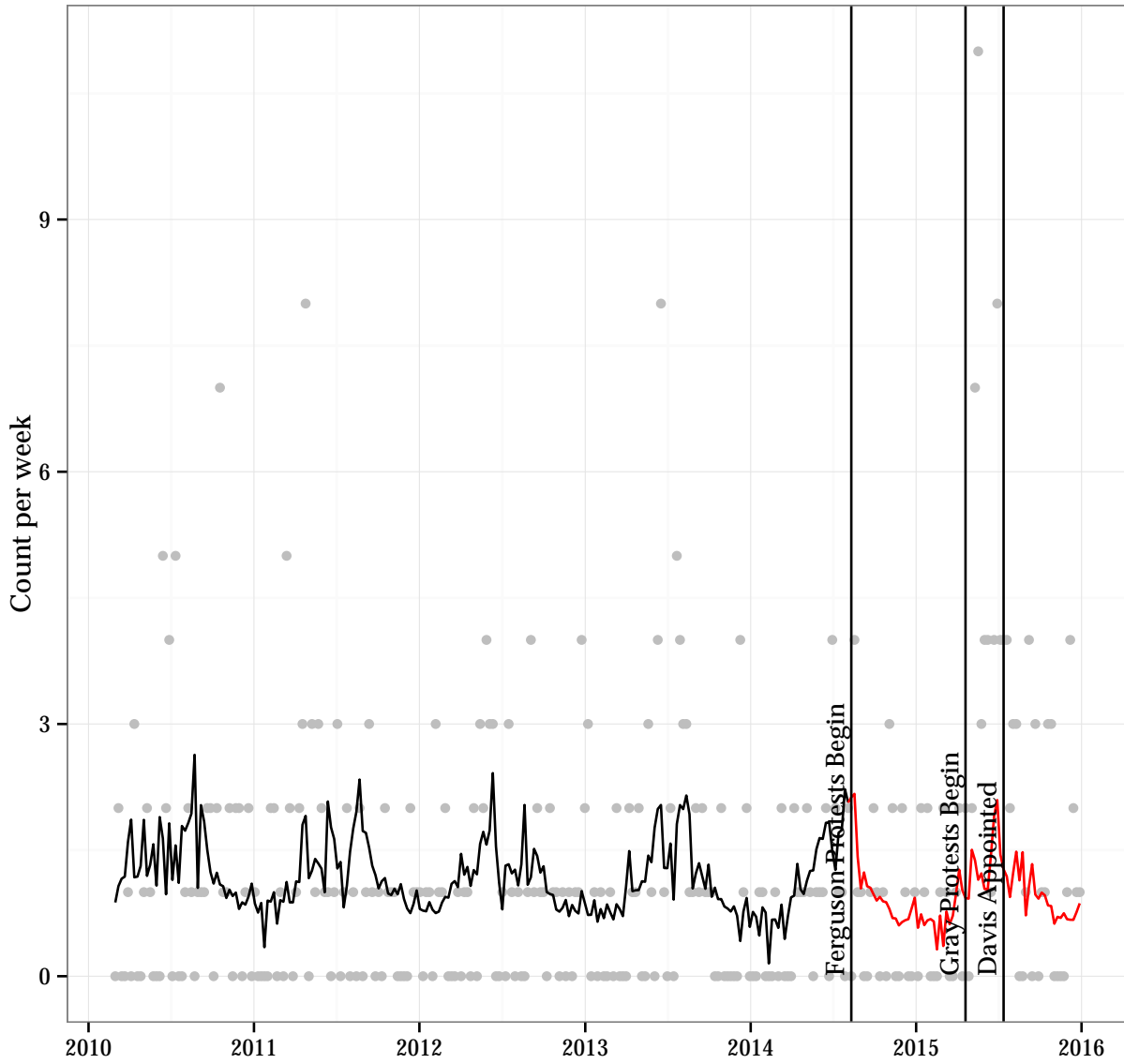
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

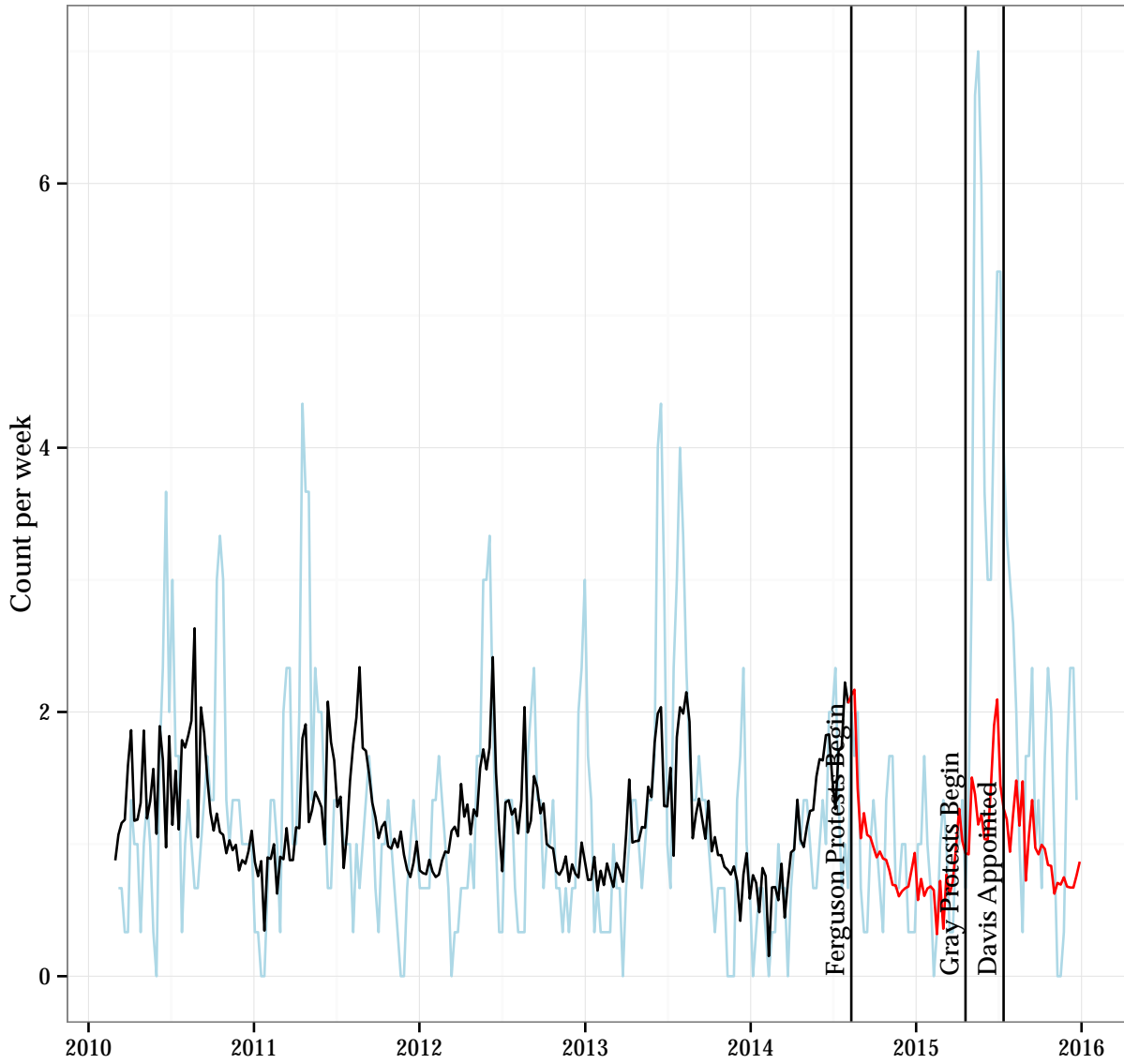
Null deviance: 363.15 on 231 degrees of freedom  
Residual deviance: 329.30 on 221 degrees of freedom  
AIC: 702.46

Number of Fisher Scoring iterations: 7

# shooting.eastern



# shooting.eastern



## 43 Results for shooting.southwestern

### 43.1 Summary Values for shooting.southwestern

Table 43.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.southwestern	232	0.948	1.123	0	1	6

Table 43.2: Descriptives for Outcome After Ferguson Protests Begin

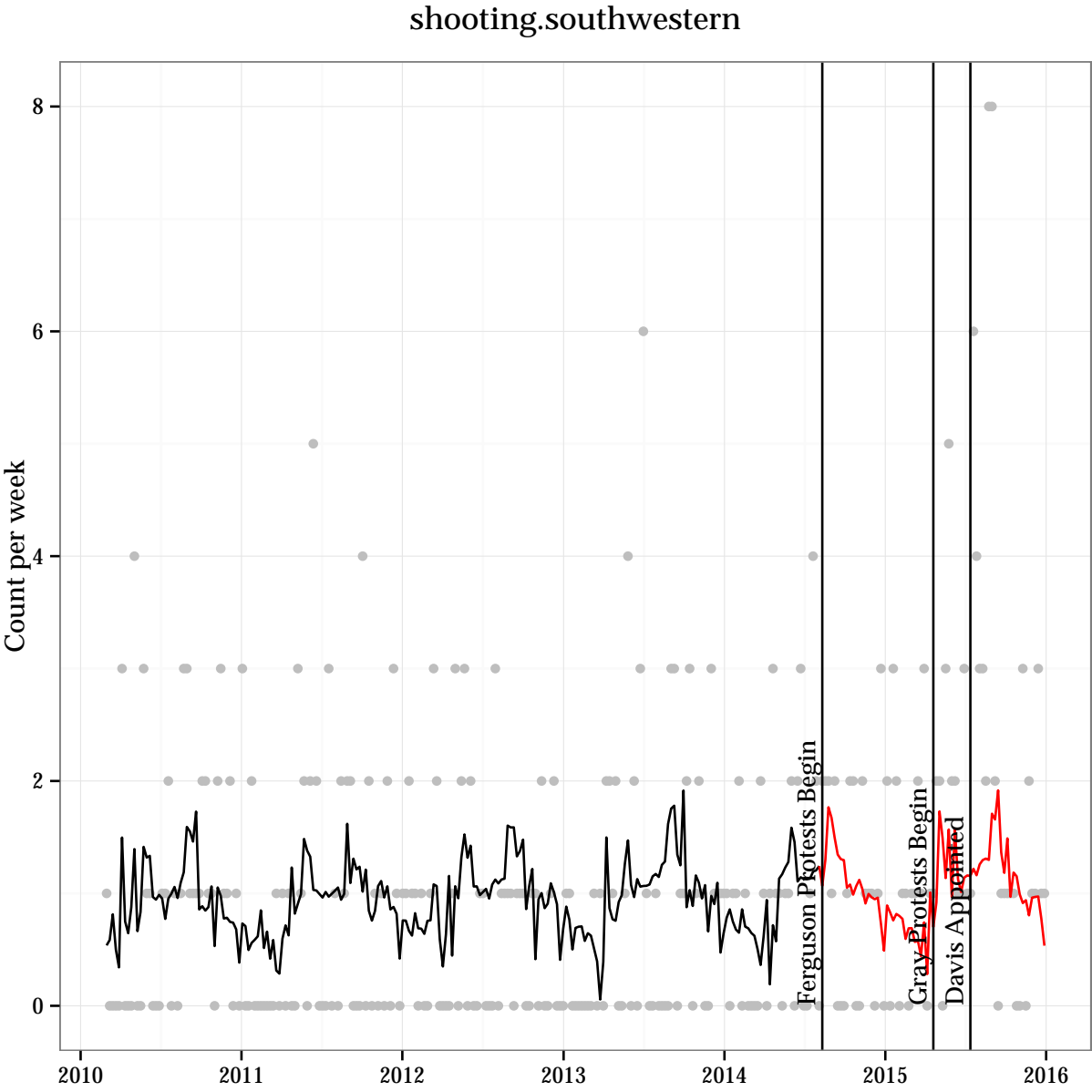
Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.southwestern	73	1.616	1.621	0	1	8

## 43.2 Four Models for shooting.southwestern

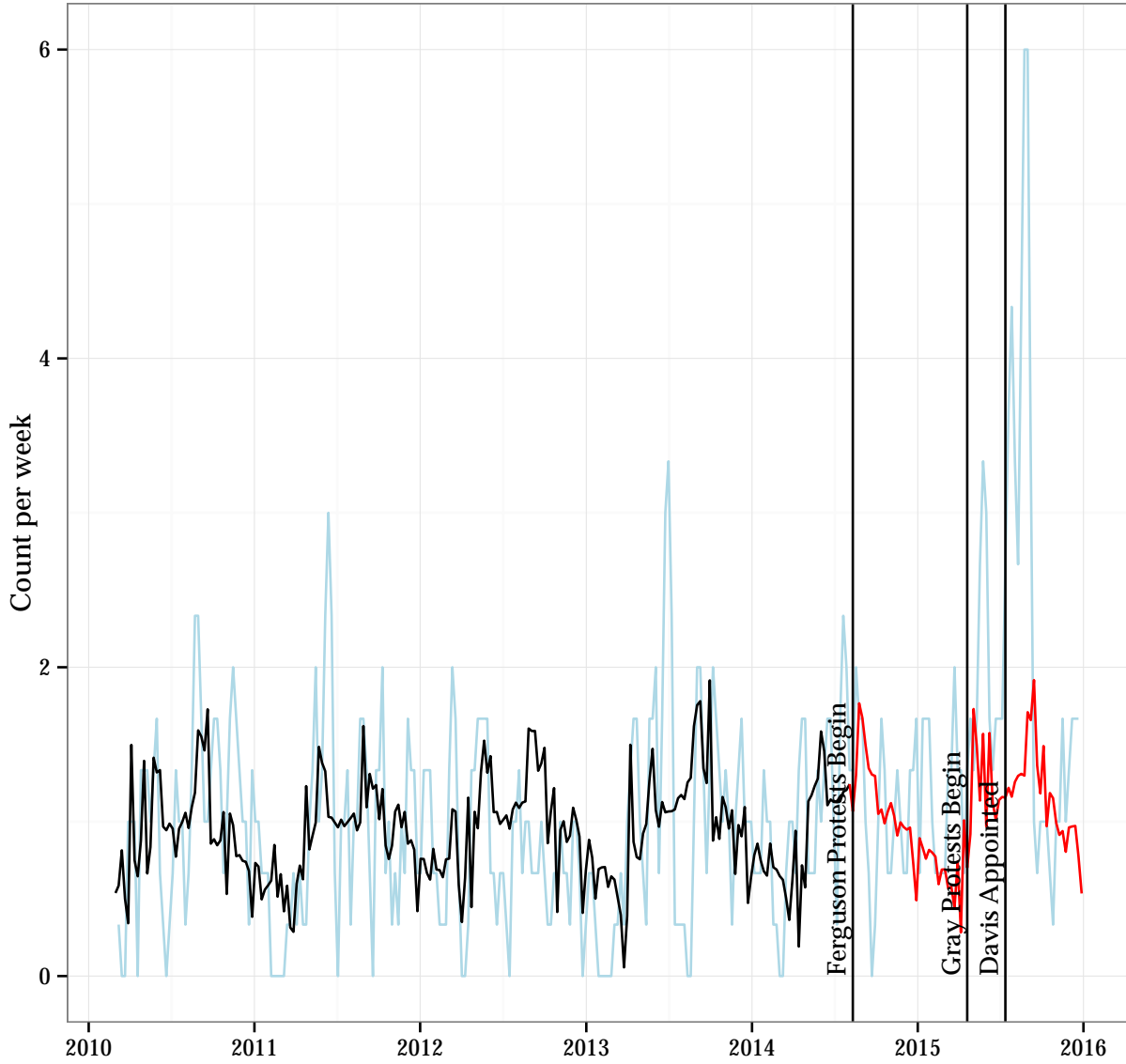
Table 43.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.0002	0.001		0.001
After Ferguson Protests Begin (week of 8/11/14 onward)	0.16		0.19	0.27
After Gray Protests Begin (week of 4/20/15 onward)	0.76		0.48	0.38
Unrest and National Guard (during week of 4/27/15)	0.09		0.41	0.55
After Commissioner Batts Fired (week of 7/13/15 onward)	0.25		0.32	0.40
Average Maximum Temperature to 50 Degrees		0.01		0.02
Plus Degrees in the 50s		0.02		-0.01
Plus Degrees in the 60s		0.01		0.01
Plus Degrees in the 70s		0.04		0.07
Plus Degrees greater than 80		-0.08		-0.06
Snowfall (inches)		0.09		0.25
Precipitation (inches)		-0.31		-0.26
Darkness Before Midnight (hours)		0.20		0.13
School Days (proportion of week)		0.57		0.45
Observations	305	232	305	305
R <sup>2</sup>	0.08	0.08	0.06	0.15

43.3 Least Squares Model (2) for shooting.southwestern

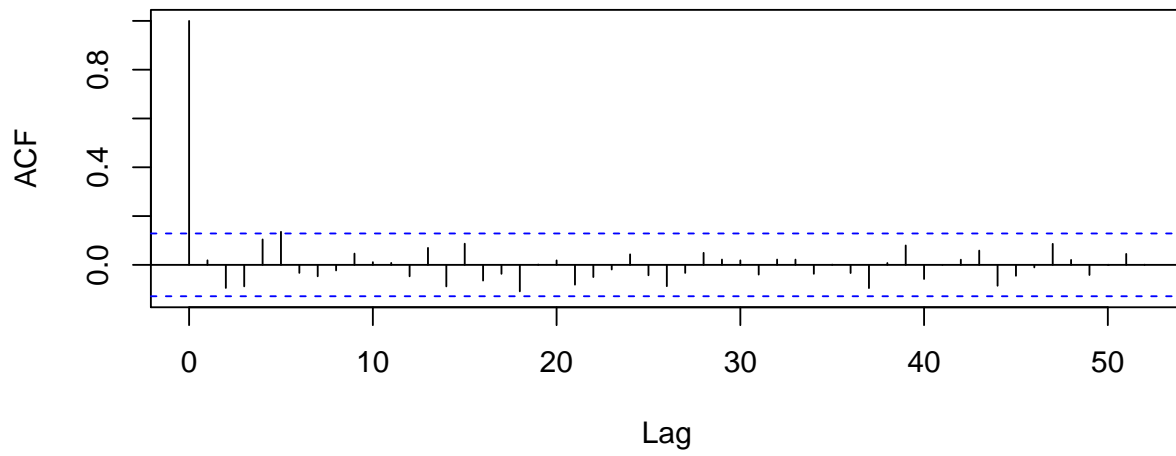


# shooting.southwestern

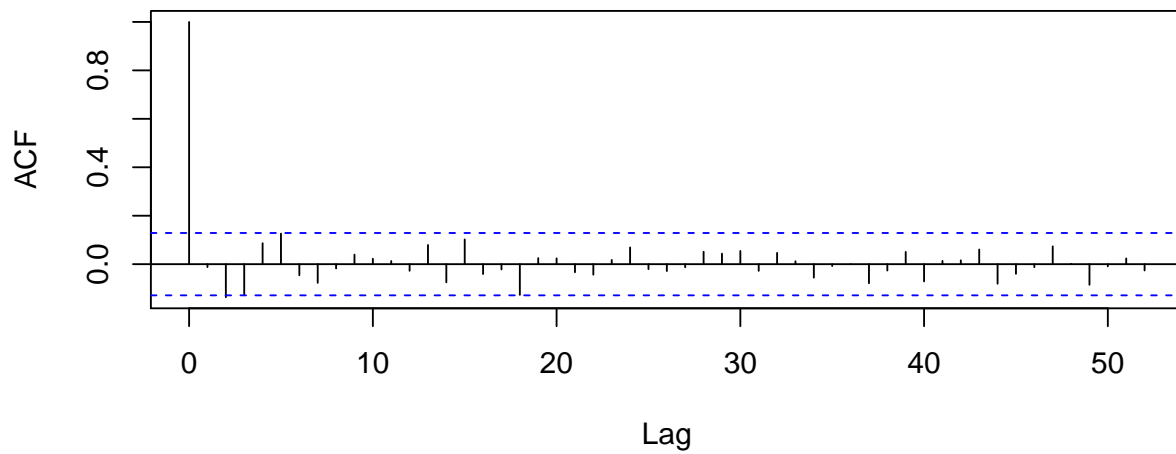




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



### 43.4 A Poisson Regression Model as an Alternative to Model (2) for shooting.southwestern

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.8873  -1.2624  -0.2431   0.5480   3.3340

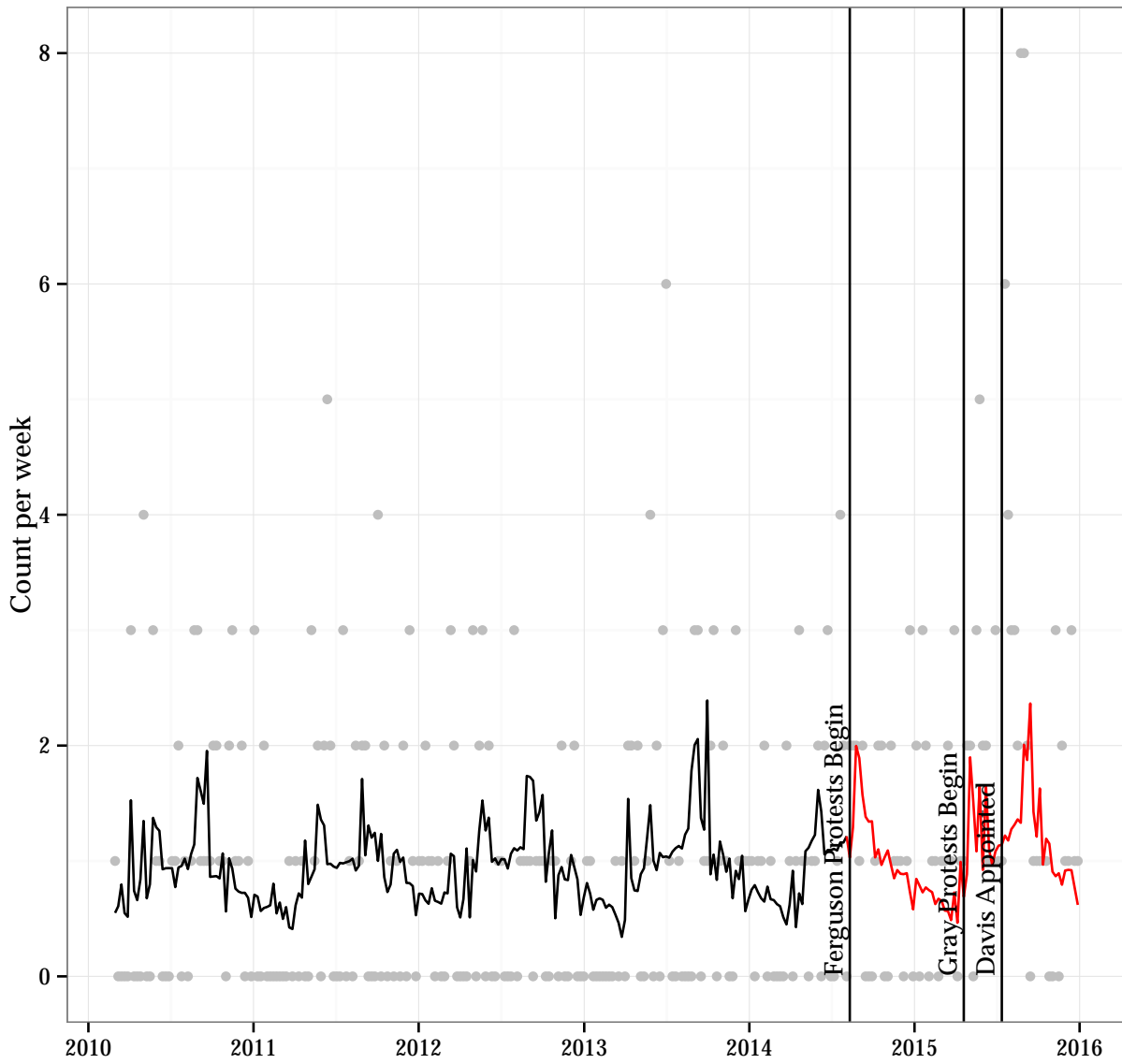
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)  -2.4846650  1.5895182  -1.563   0.1180
t              0.0008598  0.0010391   0.827   0.4080
tmax.f.spline1 0.0034260  0.0304573   0.112   0.9104
tmax.f.spline2 0.0292817  0.0618965   0.473   0.6362
tmax.f.spline3 0.0106026  0.0716745   0.148   0.8824
tmax.f.spline4 0.0271372  0.0607517   0.447   0.6551
tmax.f.spline5 -0.0706131  0.0487878  -1.447   0.1478
snow.in       0.0760651  0.3800588   0.200   0.8414
precip.in     -0.2954561  0.3999845  -0.739   0.4601
dark.before.12 0.2277239  0.1054484   2.160   0.0308 *
school        0.5107844  0.2964317   1.723   0.0849 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

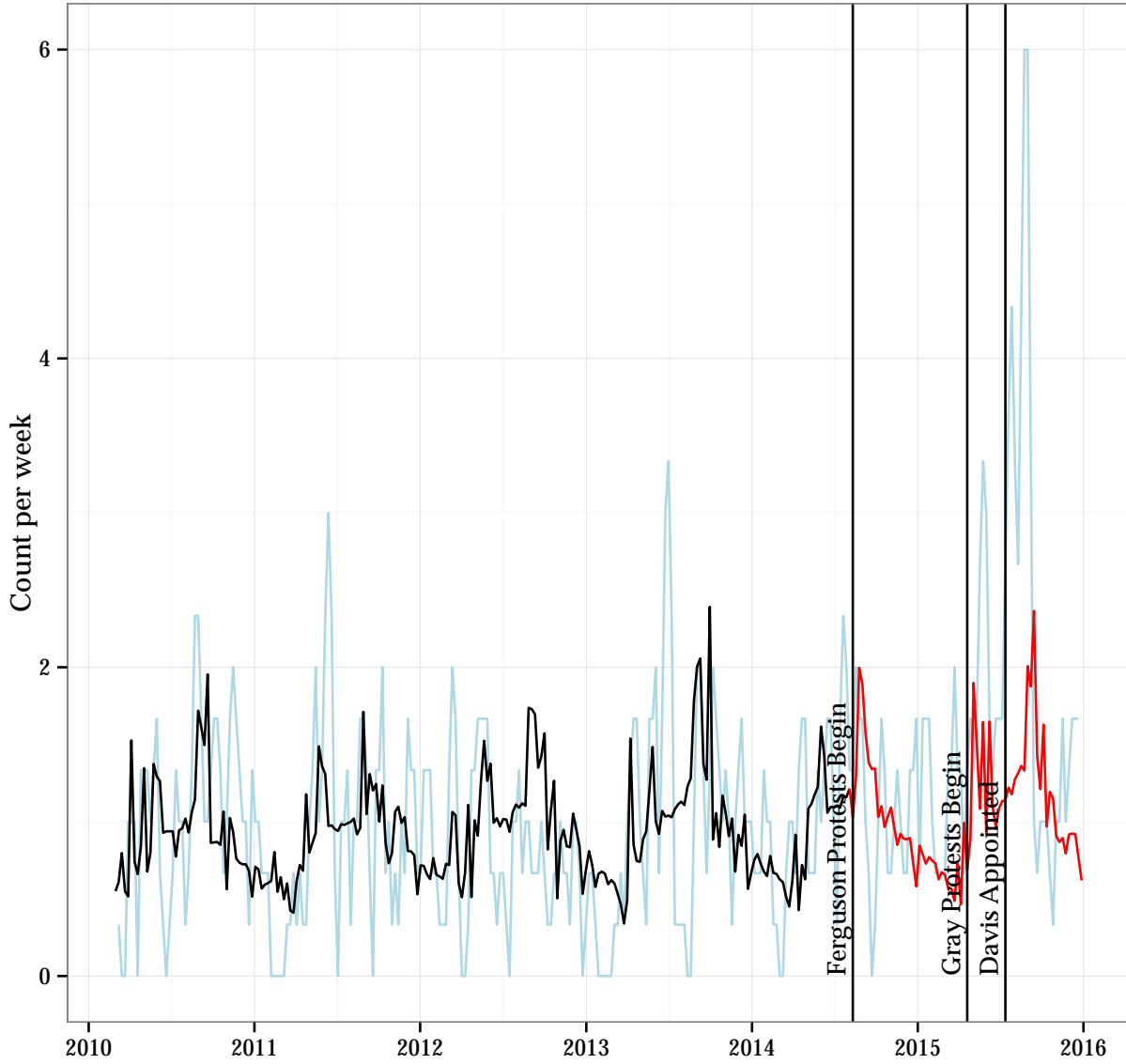
    Null deviance: 323.11  on 231  degrees of freedom
Residual deviance: 297.47  on 221  degrees of freedom
AIC: 622.54

Number of Fisher Scoring iterations: 5
```

# shooting.southwestern



# shooting.southwestern



## 44 Results for shooting.southern

### 44.1 Summary Values for shooting.southern

Table 44.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.southern	232	0.776	1.058	0	0	5

Table 44.2: Descriptives for Outcome After Ferguson Protests Begin

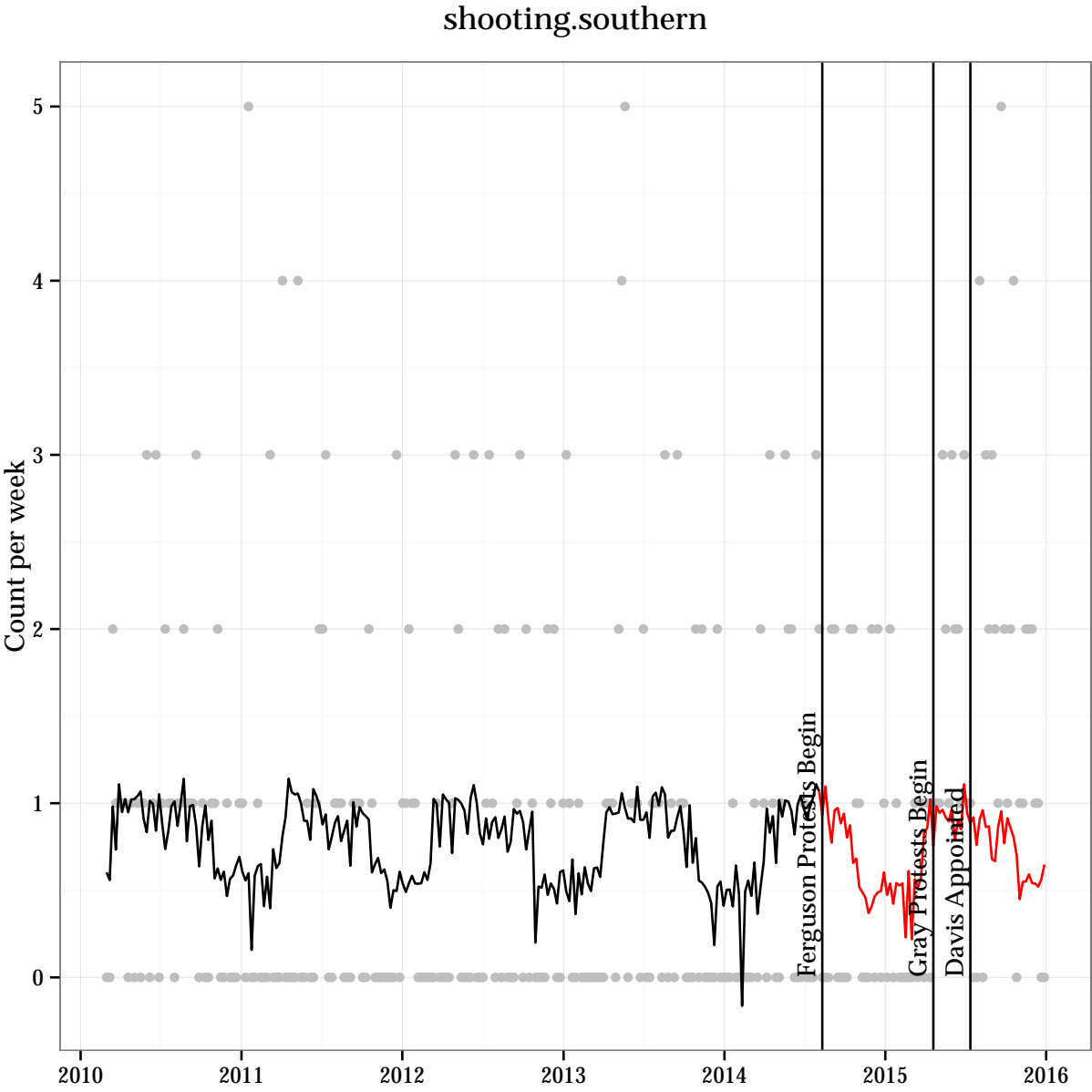
Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.southern	73	1.123	1.166	0	1	5

## 44.2 Four Models for shooting.southern

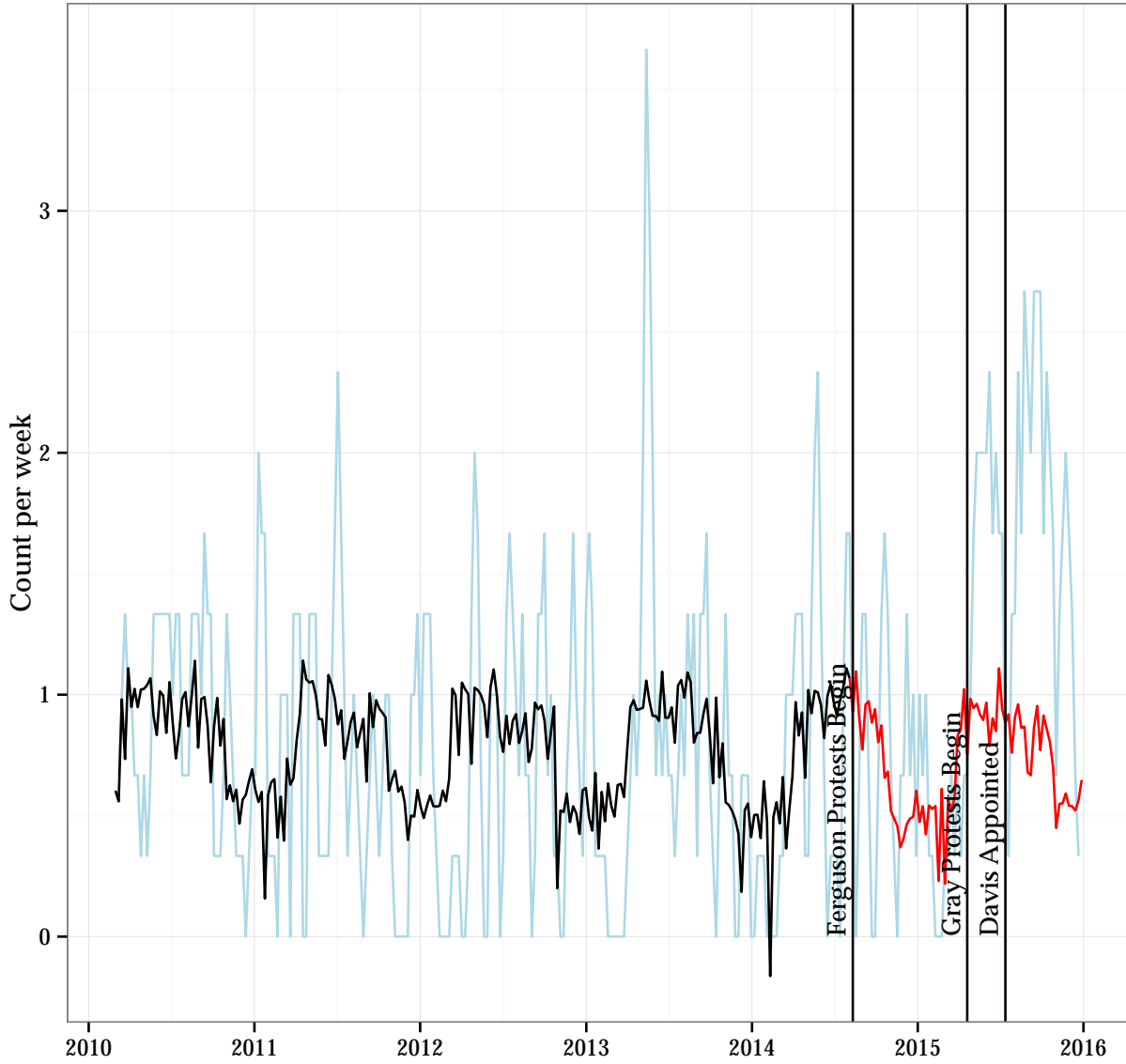
Table 44.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.0005	−0.0002		−0.0001
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.13		−0.06	−0.08
After Gray Protests Begin (week of 4/20/15 onward)	1.25		0.97	1.00
Unrest and National Guard (during week of 4/27/15)	−0.82		−0.89	−0.98
After Commissioner Batts Fired (week of 7/13/15 onward)	−0.21		−0.04	−0.08
Average Maximum Temperature to 50 Degrees		−0.01		−0.001
Plus Degrees in the 50s		0.02		0.01
Plus Degrees in the 60s		0.02		0.03
Plus Degrees in the 70s		−0.04		−0.06
Plus Degrees greater than 80		−0.02		0.01
Snowfall (inches)		−0.27		−0.29
Precipitation (inches)		−0.36		−0.38
Darkness Before Midnight (hours)		−0.06		−0.03
School Days (proportion of week)		−0.21		−0.02
Observations	305	232	305	305
R <sup>2</sup>	0.08	0.05	0.07	0.12

44.3 Least Squares Model (2) for shooting.southern

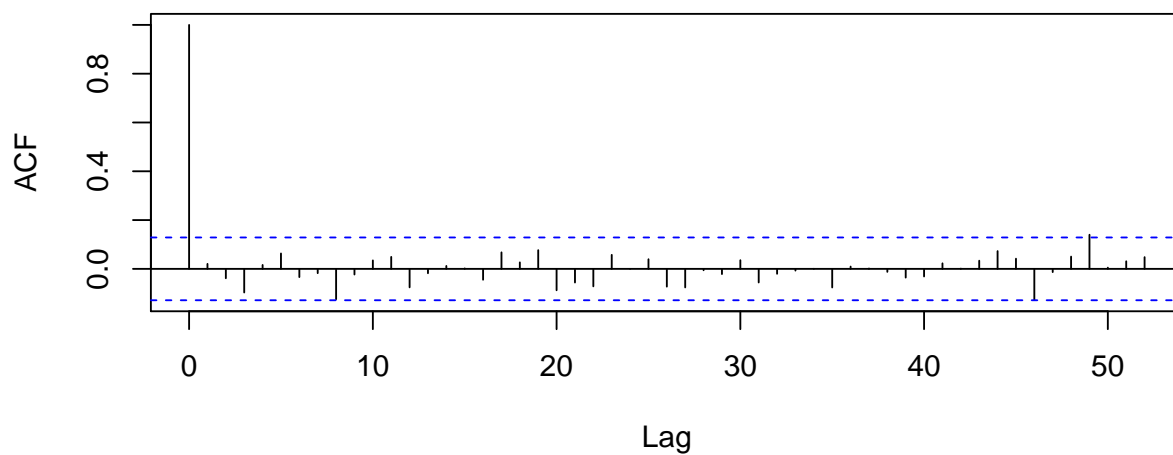


# shooting.southern

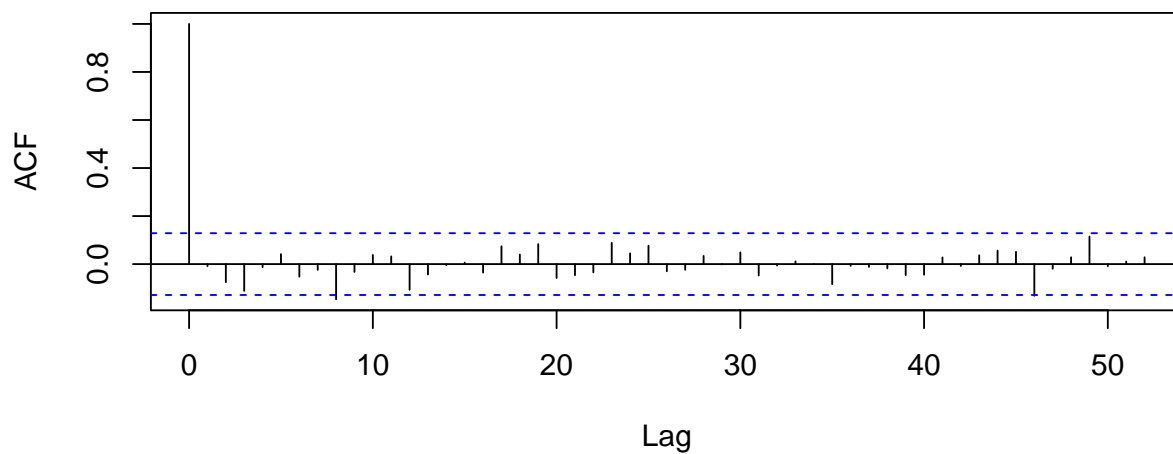




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 44.4 A Poisson Regression Model as an Alternative to Model (2) for shooting.southern

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.5456  -1.2129  -0.8733   0.3950   3.6515

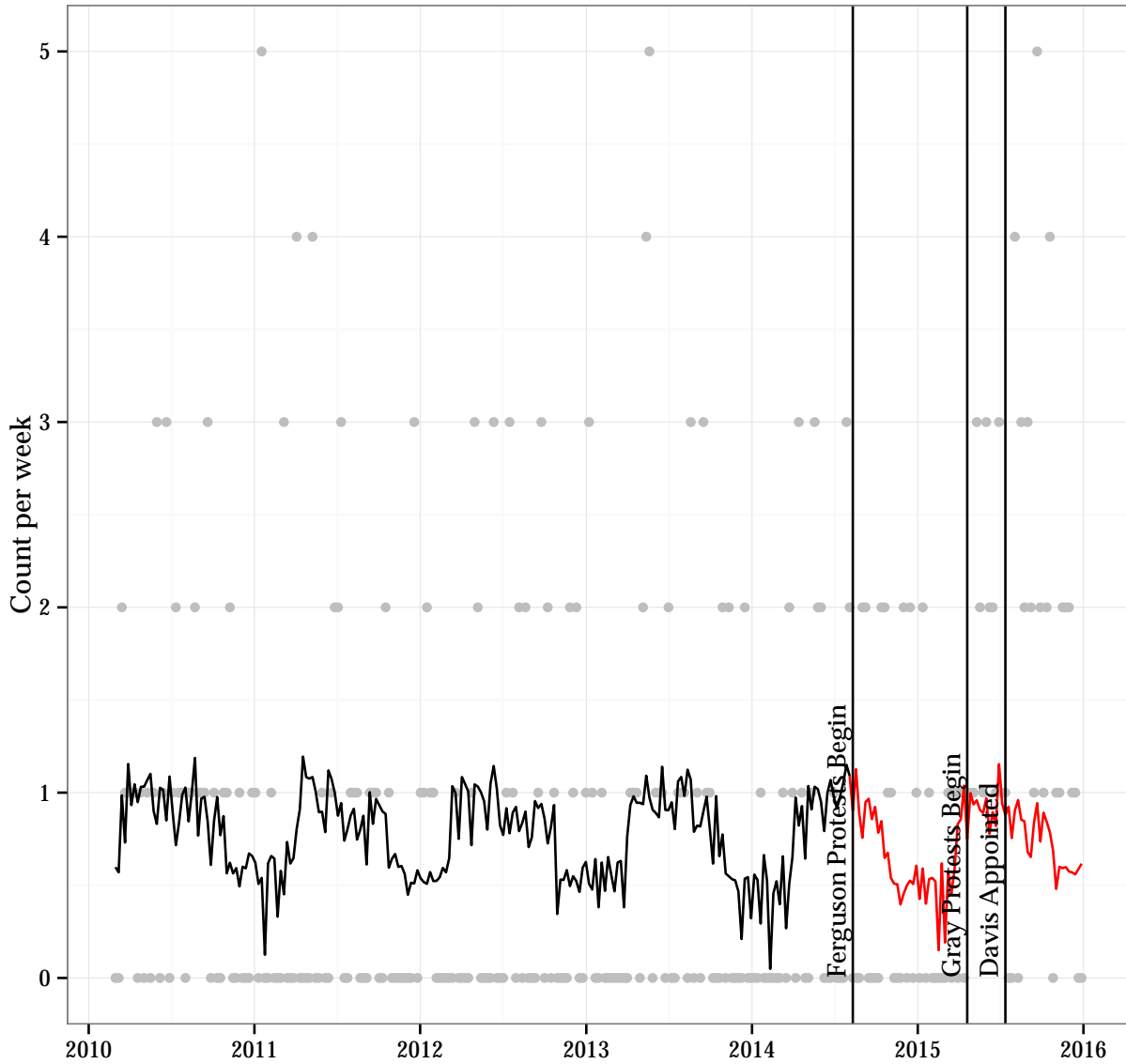
Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   1.0625795   1.7828679   0.596   0.551
t             -0.0003024   0.0011283  -0.268   0.789
tmax.f.spline1 -0.0178392   0.0338275  -0.527   0.598
tmax.f.spline2  0.0355620   0.0677686   0.525   0.600
tmax.f.spline3  0.0159517   0.0759825   0.210   0.834
tmax.f.spline4 -0.0456745   0.0639763  -0.714   0.475
tmax.f.spline5 -0.0170603   0.0539800  -0.316   0.752
snow.in        -0.9540123   0.7831554  -1.218   0.223
precip.in      -0.4830540   0.4543875  -1.063   0.288
dark.before.12 -0.0883399   0.1147494  -0.770   0.441
school         -0.2571850   0.3205947  -0.802   0.422

(Dispersion parameter for poisson family taken to be 1)

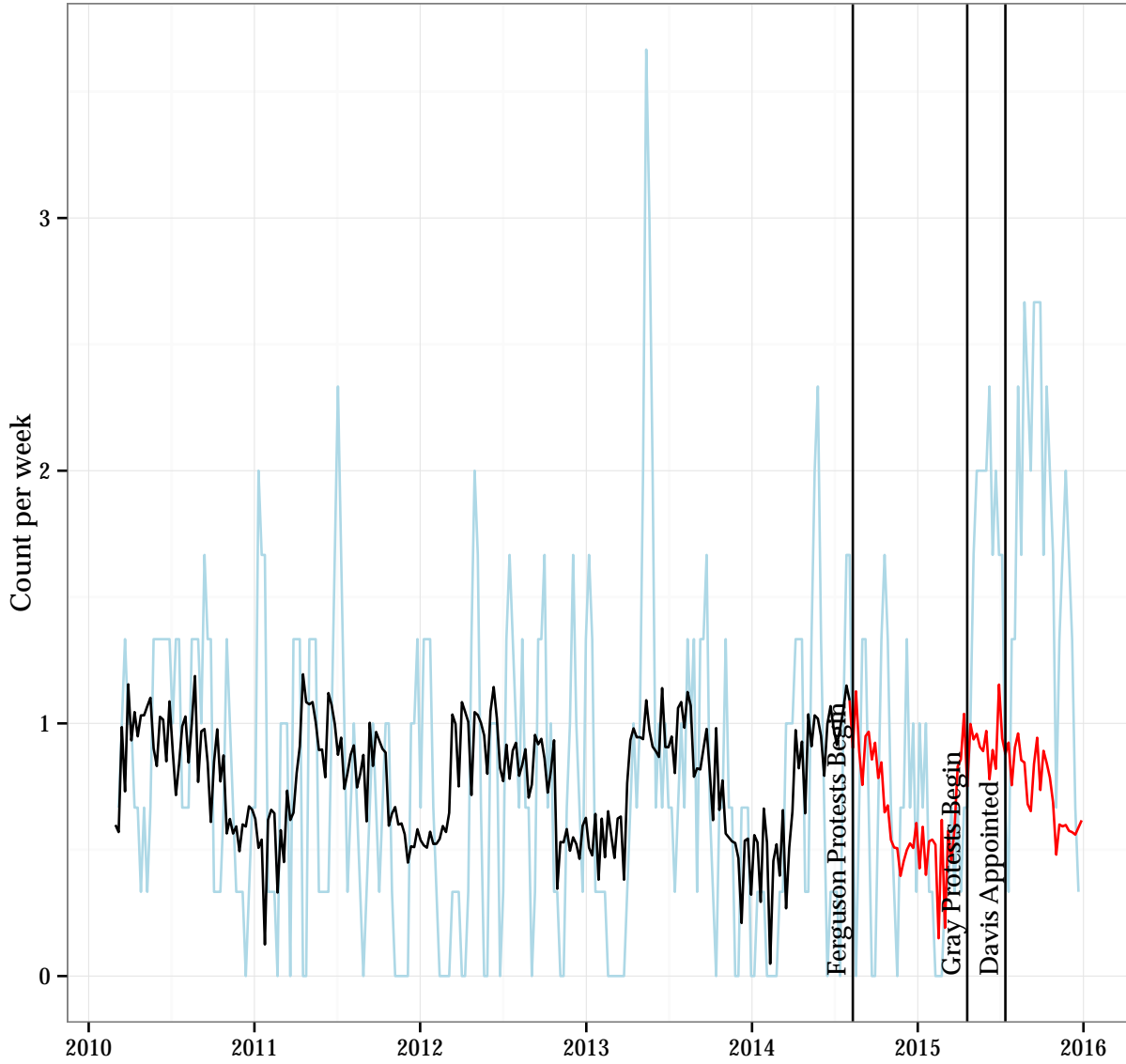
    Null deviance: 326.06  on 231  degrees of freedom
Residual deviance: 309.28  on 221  degrees of freedom
AIC: 584.02

Number of Fisher Scoring iterations: 6
```

# shooting.southern



# shooting.southern



## 45 Results for shooting.southeastern

### 45.1 Summary Values for shooting.southeastern

Table 45.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.southeastern	232	0.526	0.863	0	0	5

Table 45.2: Descriptives for Outcome After Ferguson Protests Begin

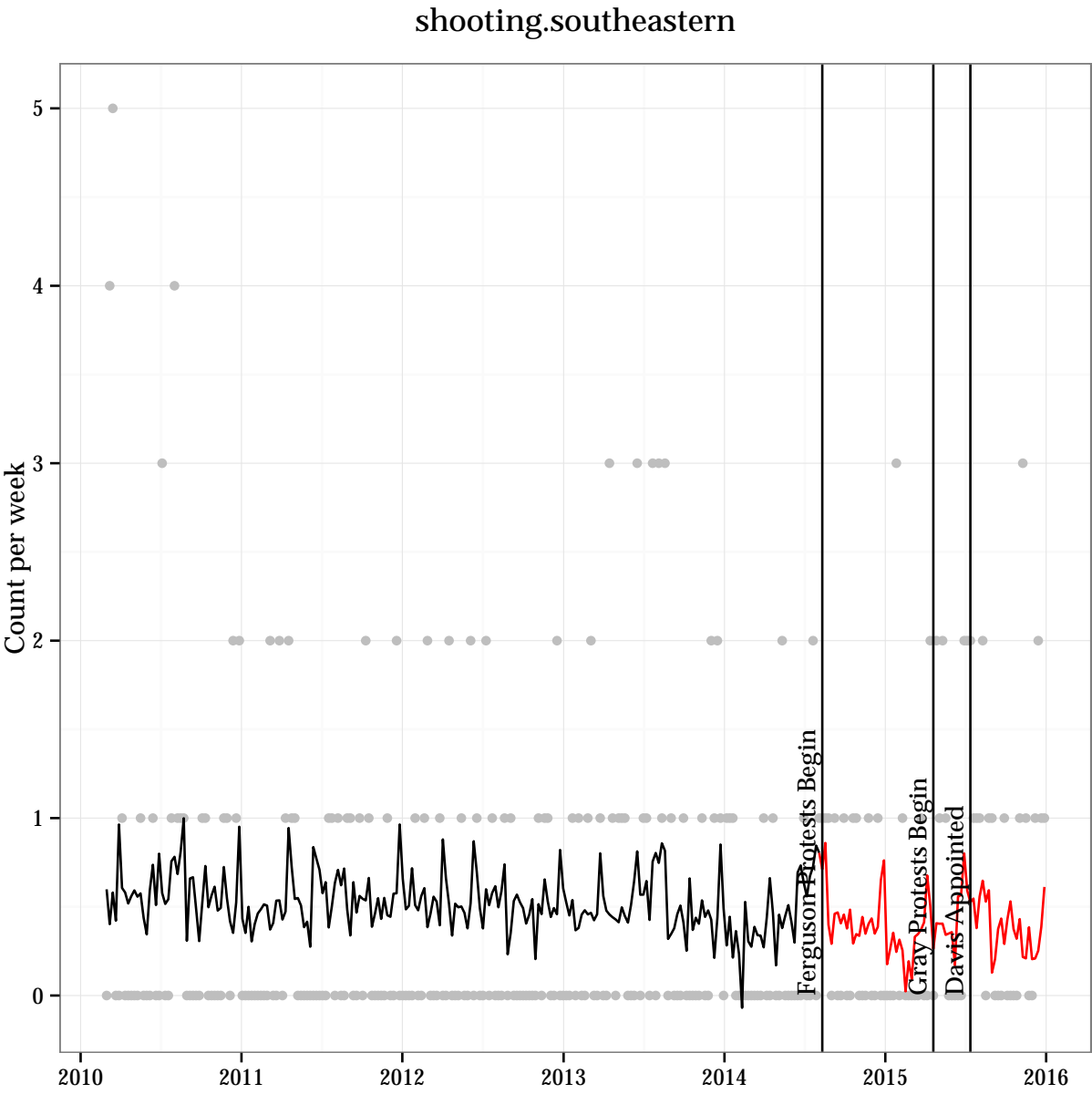
Statistic	N	Mean	St. Dev.	Min	Median	Max
shooting.southeastern	73	0.630	0.791	0	0	3

## 45.2 Four Models for shooting.southeastern

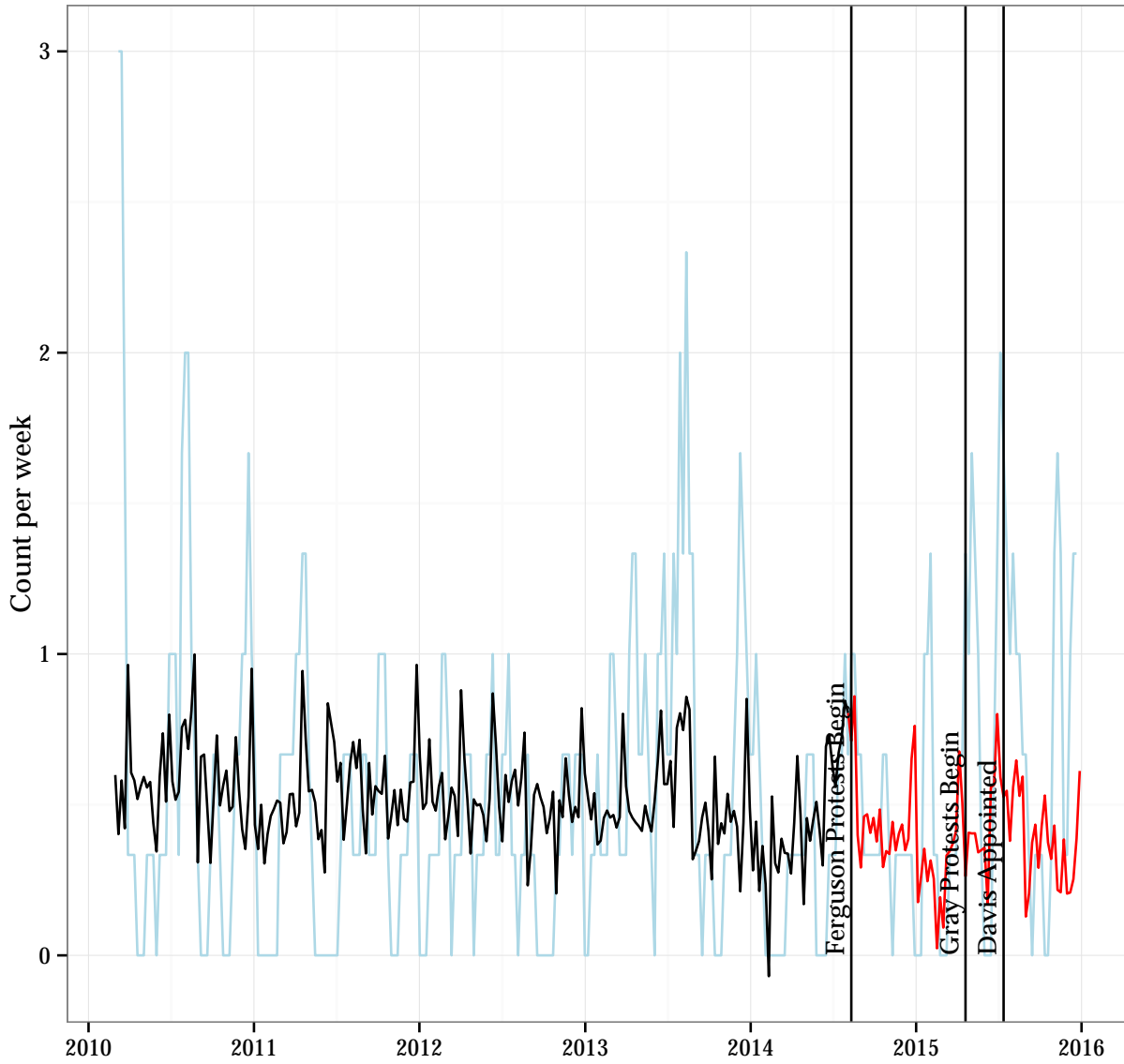
Table 45.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.001	−0.001		−0.001
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.01		0.05	0.03
After Gray Protests Begin (week of 4/20/15 onward)	0.30		0.24	0.23
Unrest and National Guard (during week of 4/27/15)	1.27		1.30	1.33
After Commissioner Batts Fired (week of 7/13/15 onward)	0.08		0.12	0.10
Average Maximum Temperature to 50 Degrees		0.01		−0.001
Plus Degrees in the 50s		−0.03		−0.02
Plus Degrees in the 60s		0.03		0.04
Plus Degrees in the 70s		−0.02		−0.01
Plus Degrees greater than 80		−0.03		−0.04
Snowfall (inches)		−0.11		−0.24
Precipitation (inches)		−0.29		−0.36
Darkness Before Midnight (hours)		0.01		−0.01
School Days (proportion of week)		−0.58		−0.51
Observations	305	232	305	305
R <sup>2</sup>	0.02	0.03	0.03	0.06

45.3 Least Squares Model (2) for shooting.southeastern

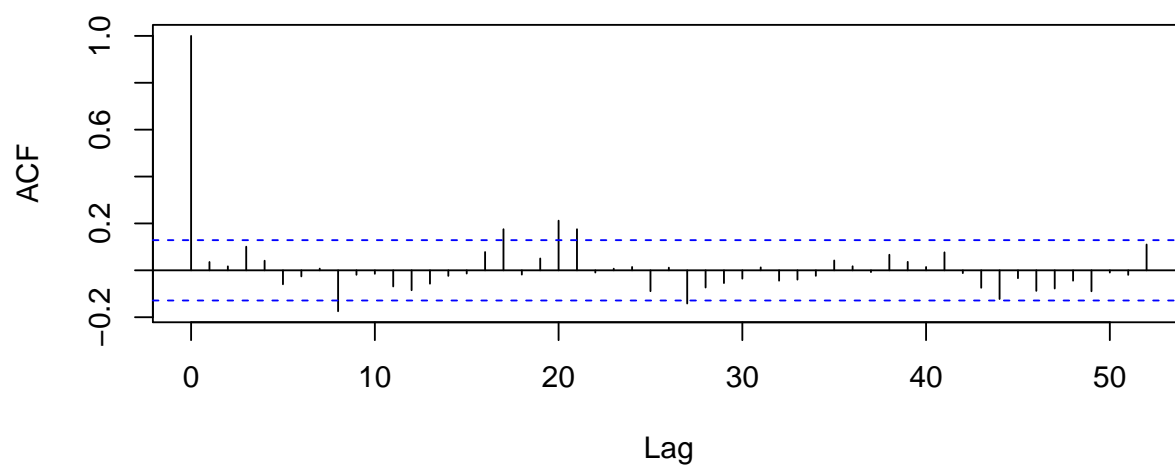


# shooting.southeastern

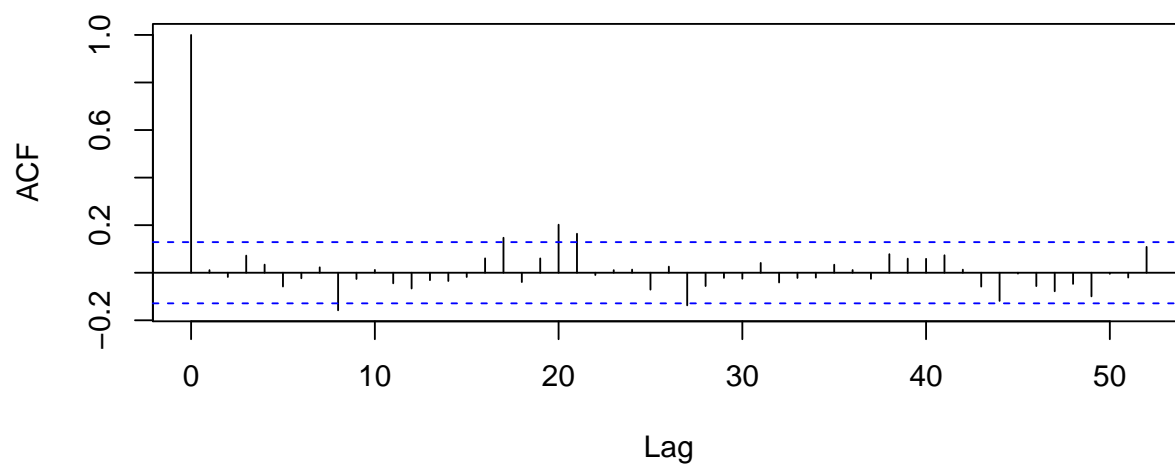




Autocorrelation Function for the Observed Outcome for Model (2)



Autocorrelation Function for the Residuals from Model (2)



## 45.4 A Poisson Regression Model as an Alternative to Model (2) for shooting.southeastern

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

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.488	-1.009	-0.910	0.551	3.580

Coefficients:

	Estimate	Std. Error	z value	Pr(> z )
(Intercept)	-1.189255	2.050397	-0.580	0.56191
t	-0.001241	0.001389	-0.893	0.37160
tmax.f.spline1	0.026488	0.037341	0.709	0.47810
tmax.f.spline2	-0.056520	0.073754	-0.766	0.44348
tmax.f.spline3	0.060736	0.090813	0.669	0.50362
tmax.f.spline4	-0.034381	0.081918	-0.420	0.67471
tmax.f.spline5	-0.053555	0.069132	-0.775	0.43854
snow.in	-0.466368	0.696879	-0.669	0.50335
precip.in	-0.592531	0.567576	-1.044	0.29650
dark.before.12	0.022340	0.136719	0.163	0.87020
school	-0.995801	0.370165	-2.690	0.00714 **

---

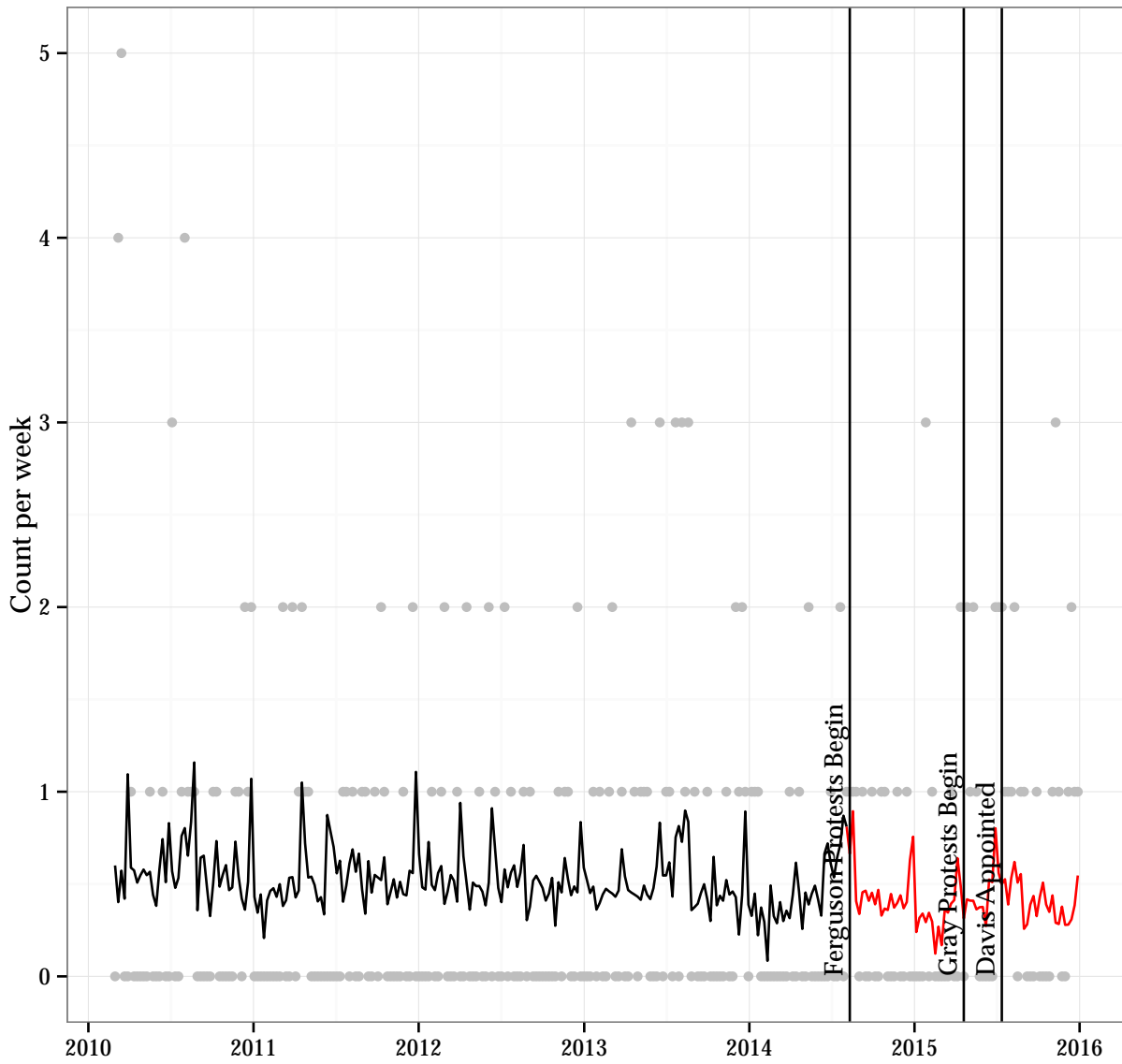
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

Null deviance: 281.78 on 231 degrees of freedom  
Residual deviance: 270.53 on 221 degrees of freedom  
AIC: 478.92

Number of Fisher Scoring iterations: 6

# shooting.southeastern



# shooting.southeastern

