Appendix 3
Comprehensive Analysis of BPD Arrest Data

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February 3, 2016

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1 Introduction

For this analysis of BPD's arrest data, we offer comprehensive results that are summarized in our main report. The basic analysis strategy is to first model the prevailing cyclical arrest trend from Monday, January 7, 2013 through Sunday August 10, 2014. Then, we use that estimated model to predict a counterfactual arrest trend, as if the protest events and any changes in police practice from August 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 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 poission regression, analogous figures are offered to demonstrate the near equivalence of Model 2 and its poisson regression alternative.

Some Methodological Conclusions

- Because of the shorter time series for the BPD arrest data, in comparison to the BPD crime data, the coefficient for the time counter is based on a comparatively short interval of time. We do not, therefore, have as much confidence in period effect estimates for arrest patterns that are strongly shaped by extrapolation from time trends that are postive or negative. A good example is the outcome for drug distribution, which has a strongly negative pretreatment time trend, thereby generating positive and increasing post-Ferguson effects even though the raw observed values for these arrests are comparatively stable around a basic cyclical pattern. For this reason, we do not foreground results for these types of arrests when developing interpretations.

- Some model divergence is present across Models 3 and 4, unlike for our models for crime trends. These differences may reflect the shorter time series for arrests, containing fewer observations to fit coefficients for weather, hours of darkness, and school days.

- When the outcome has a correlated lag strucuture, Model 2 reduces but often does not eliminate the autocorrelation pattern.

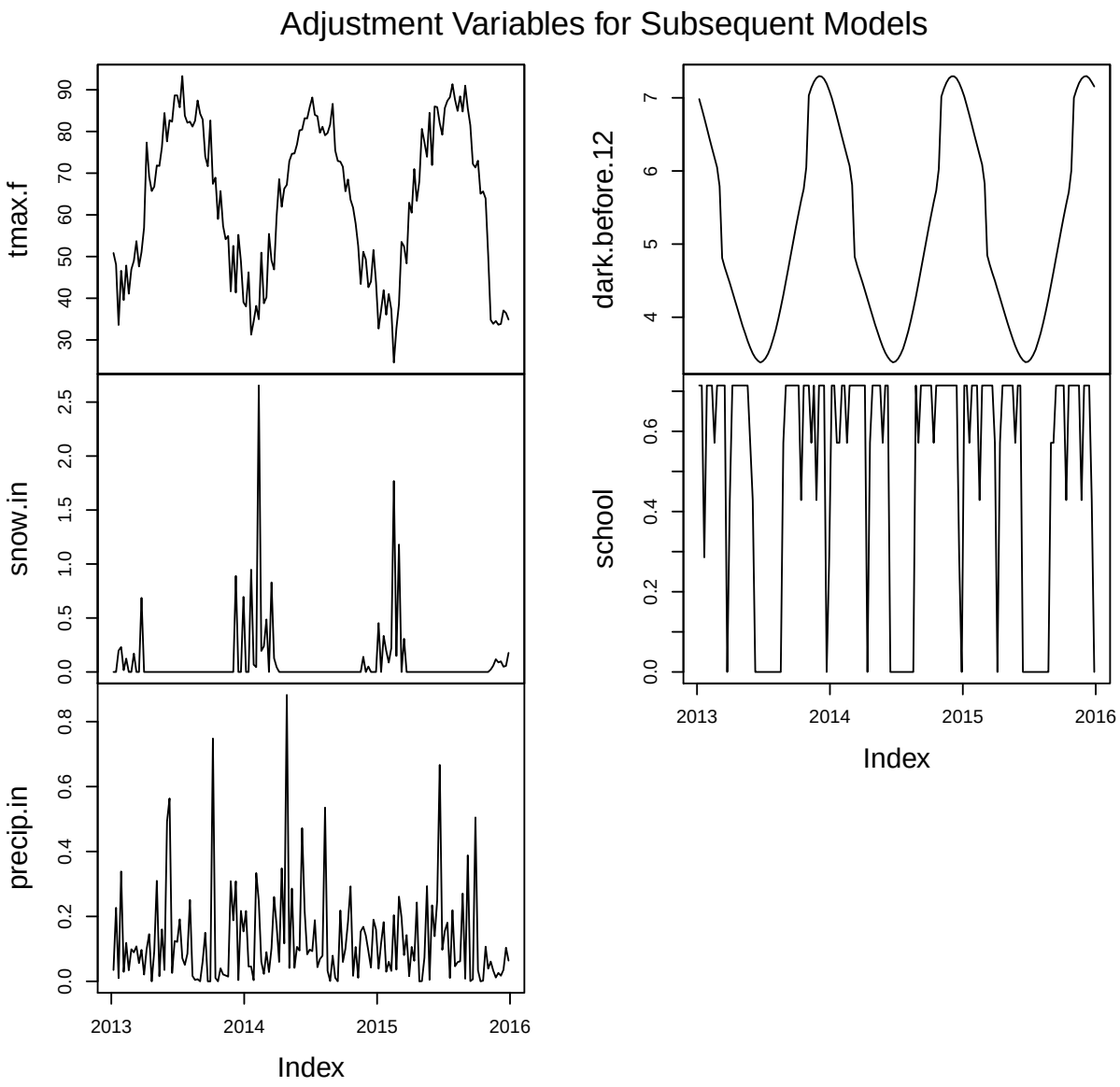
2 Data

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

Statistic	Min	Median	Max
murder.g	1	6	13
robbery	4	15	35
aggravated.assault	6	23	46
burglary	7	22	100
larceny	16	38	64
arson	0	1	5
common.assault	40	85.5	117
drug.distribution	4	61	116
deadly.weapon	3	16	37
non.deadly.weapon	0	1	19
property.destruction	1	6	14
police.non.compliance	0	10	27
court.non.compliance	55	106	200
drug.possession	11	191.5	340
driving.violation	1	12	25
prostitution	0	8	27
trespass	0	10	23
forgery.fraud.extortion	0	4	14
domestic	0	6	17
sex.offense.g	0	4	9
disorderly.conduct	3	17	185
loitering.vagabond	0	1	9
only.temp.detained	1	8	20
unknown	14	44	124
ungrouped	0	5	26
total	298	741	932

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

Statistic	Min	Median	Max
northwestern	9	37	95
northern	10	27	56
northeastern	15	46	96
western	11	56	114
central	10	46.5	92
eastern	11	58.5	116
southwestern	9	38	65
southern	14	64	109
southeastern	10	57	93
total	298	741	932



- 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	83	810.663	73.431	568	821	932

Table 3.2: Descriptives for Outcome After Ferguson Protests Begin

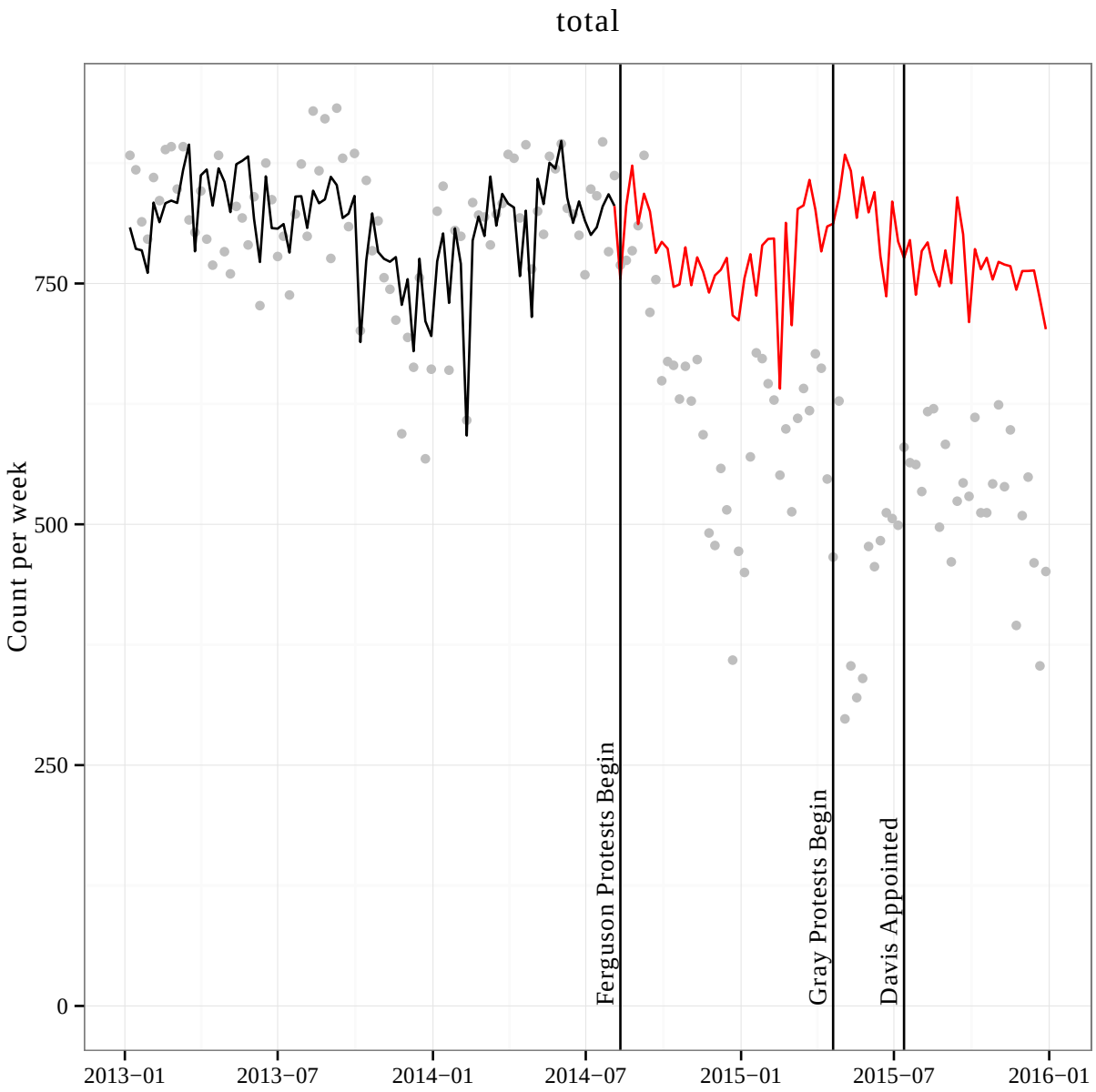
Statistic	N	Mean	St. Dev.	Min	Median	Max
total	73	564.466	116.805	298	558	883

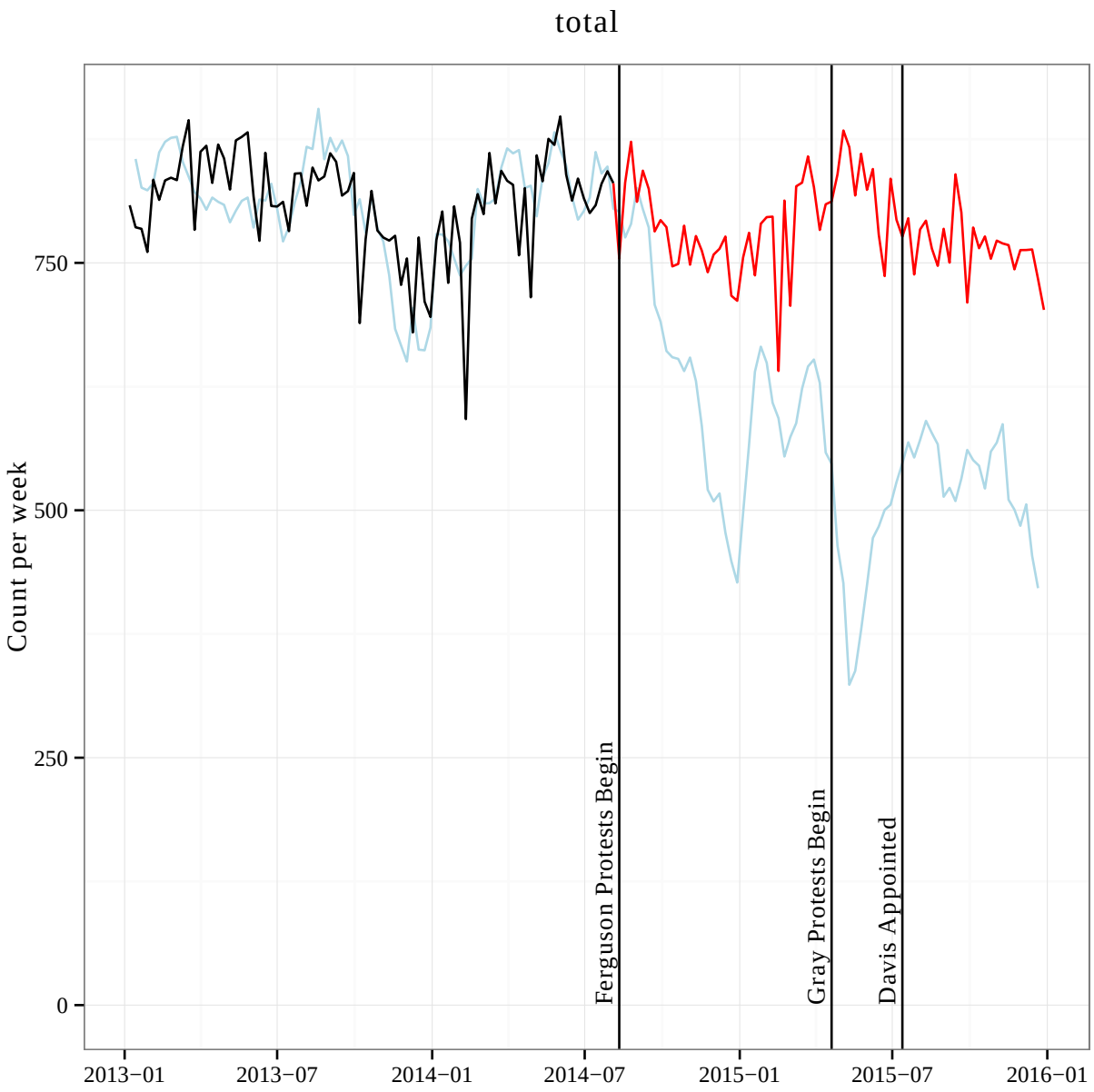
3.2 Four Models for total

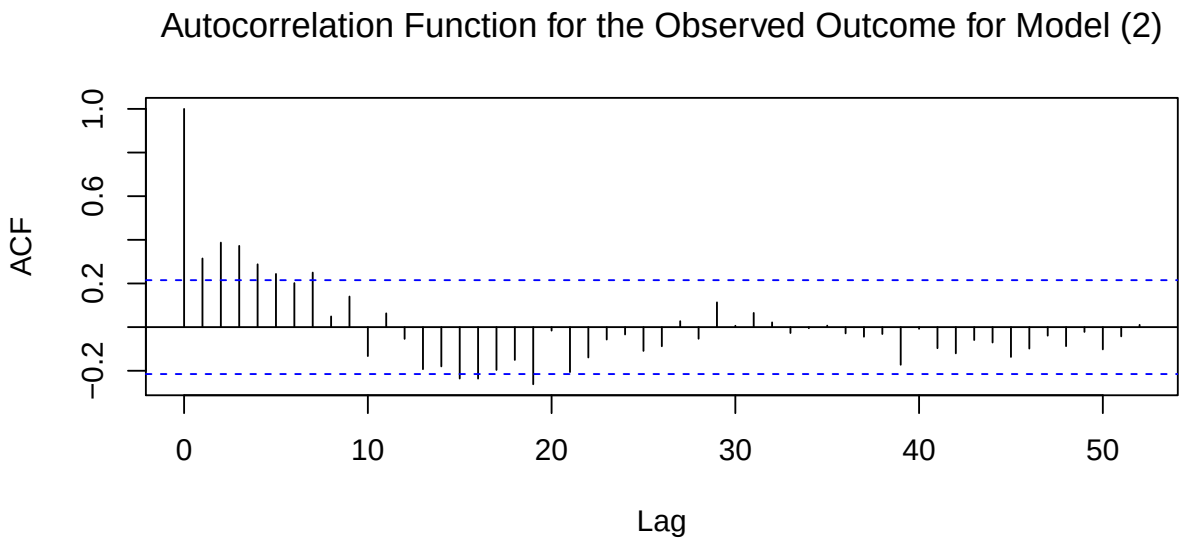
Table 3.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

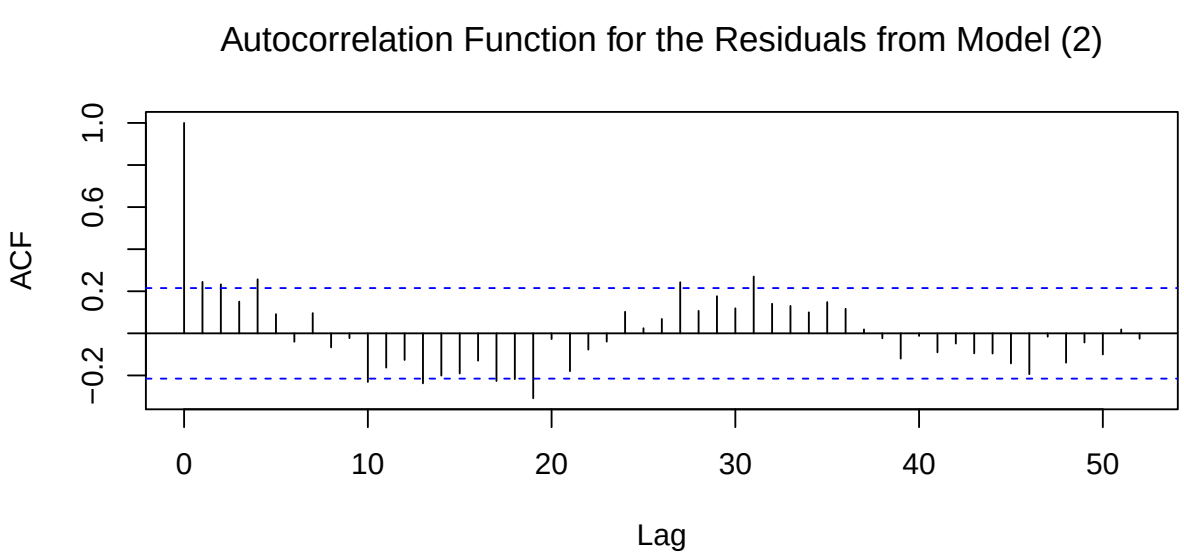
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.73	−0.24		−0.76
After Ferguson Protests Begin (week of 8/11/14 onward)	−139.39		−152.49	−113.98
After Gray Protests Begin (week of 4/20/15 onward)	−181.72		−242.37	−251.98
Unrest and National Guard (during week of 4/27/15)	196.23		183.46	196.15
After Commissioner Batts Fired (week of 7/13/15 onward)	115.81		159.89	183.32
Average Maximum Temperature to 50 Degrees		−0.35		−1.15
Plus Degrees in the 50s		−3.08		2.86
Plus Degrees in the 60s		0.14		−5.79
Plus Degrees in the 70s		8.35		8.96
Plus Degrees greater than 80		−11.20		−10.35
Snowfall (inches)		−75.92		−57.68
Precipitation (inches)		−158.94		−104.59
Darkness Before Midnight (hours)		−38.28		−37.28
School Days (proportion of week)		72.05		50.96
Observations	156	83	156	156
R^2	0.73	0.51	0.76	0.82

3.3 Least Squares Model (2) for total



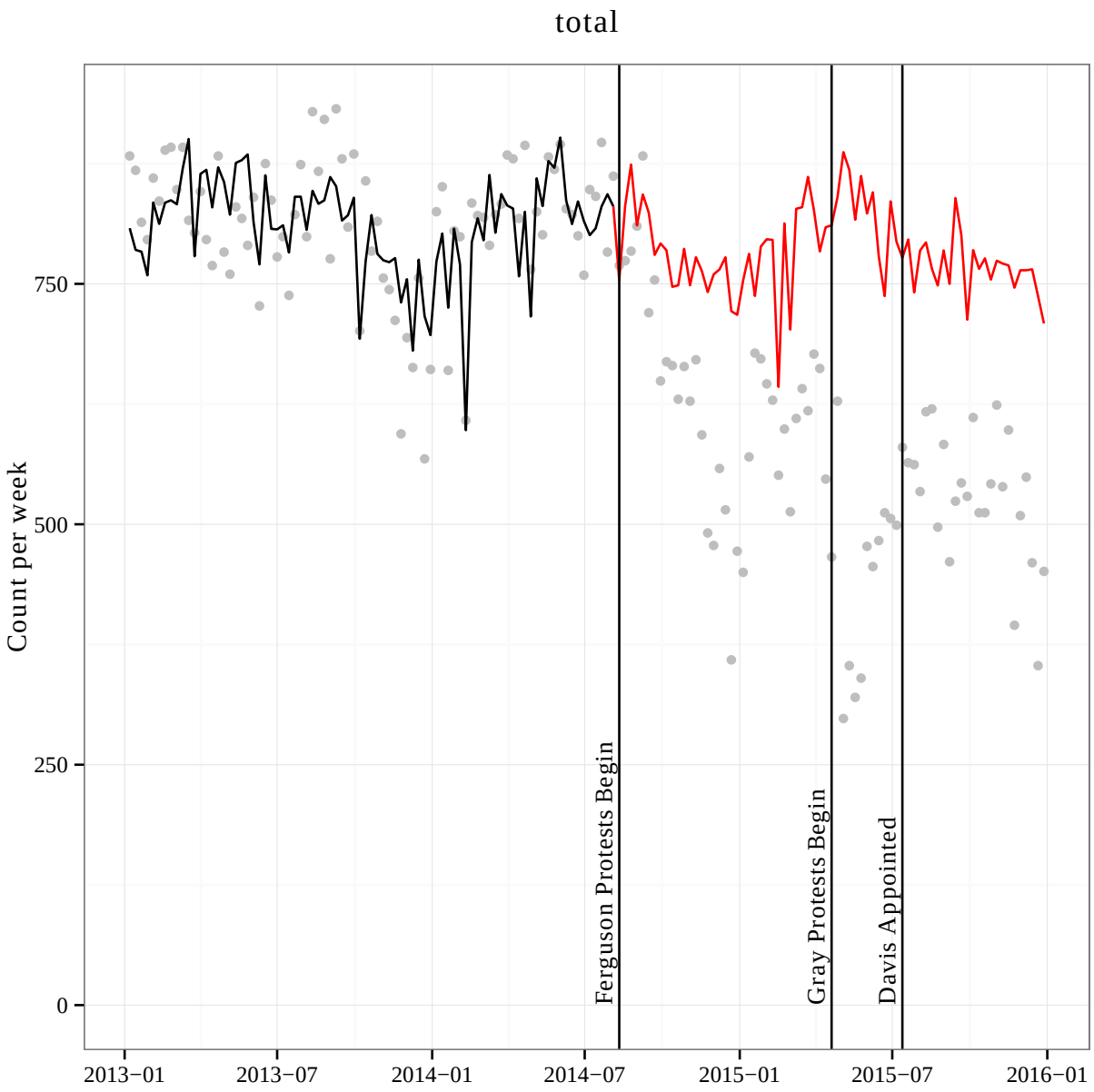

total
Count per week
750
500
250
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

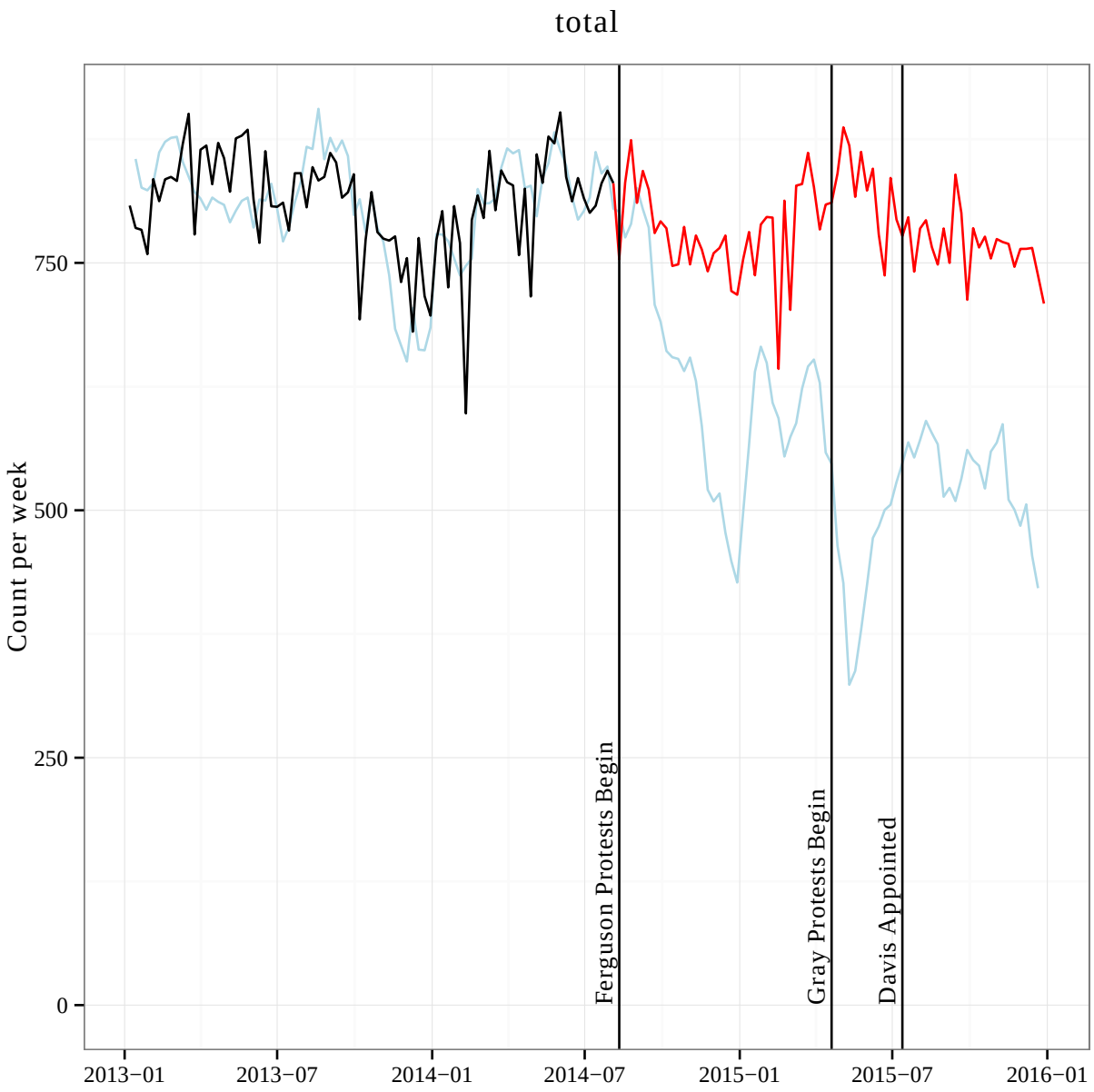

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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
-5.7534  -1.2820   0.3083   1.2723   2.9569

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     7.0018813  0.0757127  92.480  < 2e-16 ***
t              -0.0002929  0.0001728  -1.695  0.08998 .
tmax.f.spline1 -0.0004386  0.0013305  -0.330  0.74168
tmax.f.spline2 -0.0041680  0.0031186  -1.336  0.18139
tmax.f.spline3  0.0005143  0.0043693   0.118  0.90631
tmax.f.spline4  0.0102633  0.0039825   2.577  0.00996 **
tmax.f.spline5 -0.0137240  0.0035271  -3.891 9.98e-05 ***
snow.in        -0.1066660  0.0148035  -7.205 5.79e-13 ***
precip.in      -0.2031826  0.0256254  -7.929 2.21e-15 ***
dark.before.12 -0.0482672  0.0055300  -8.728  < 2e-16 ***
school          0.0879300  0.0172543   5.096 3.47e-07 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 567.65  on 82  degrees of freedom
Residual deviance: 280.99  on 72  degrees of freedom
AIC: 1011.1

Number of Fisher Scoring iterations: 3
```


total
Count per week
750
500
250
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01


total
Count per week
750
500
250
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

4 Results for b

4.1 Summary Values for b

Table 4.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
b	83	663.277	66.370	451	677	776

Table 4.2: Descriptives for Outcome After Ferguson Protests Begin

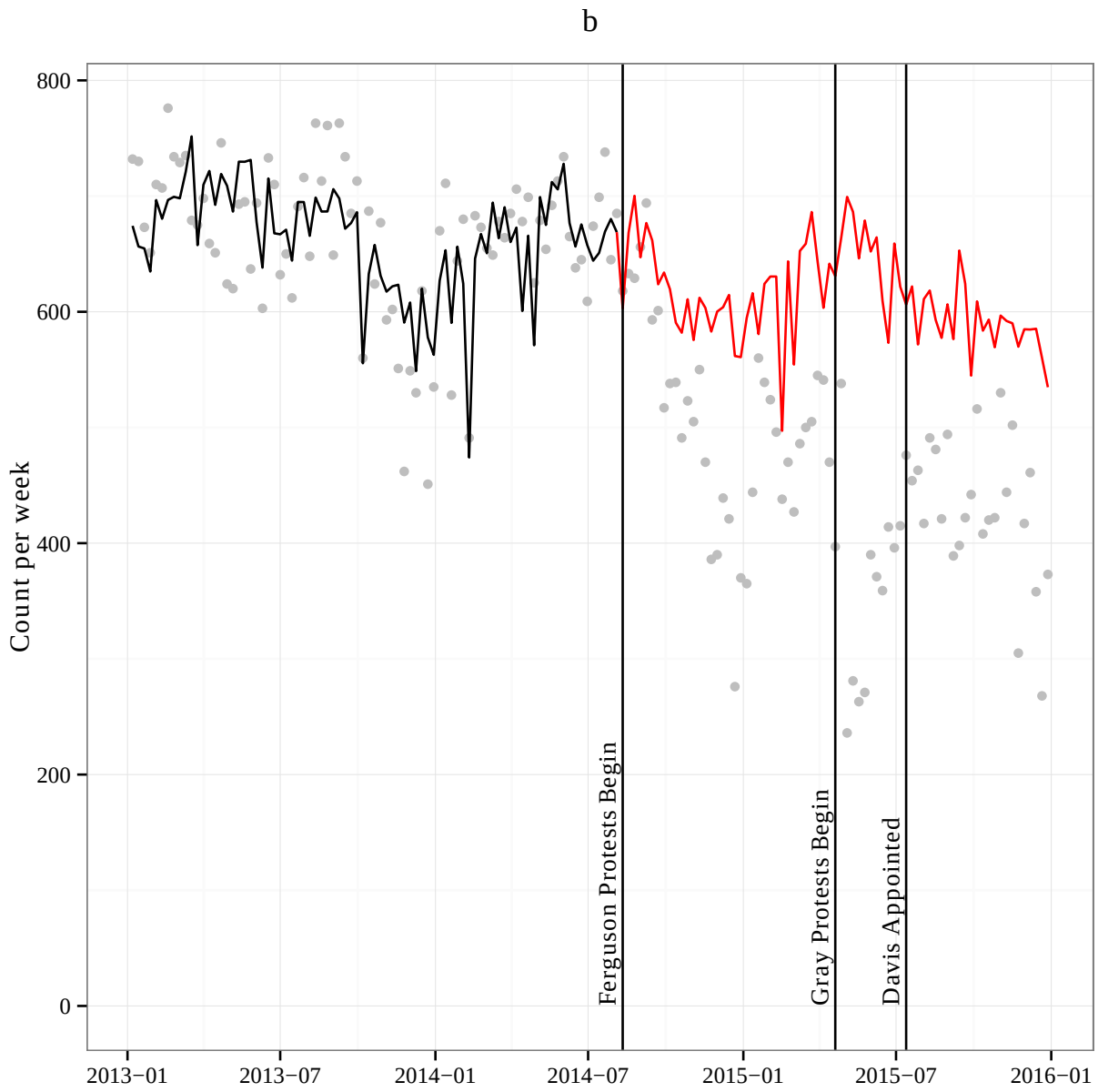
Statistic	N	Mean	St. Dev.	Min	Median	Max
b	73	455.507	95.741	236	454	694

4.2 Four Models for b

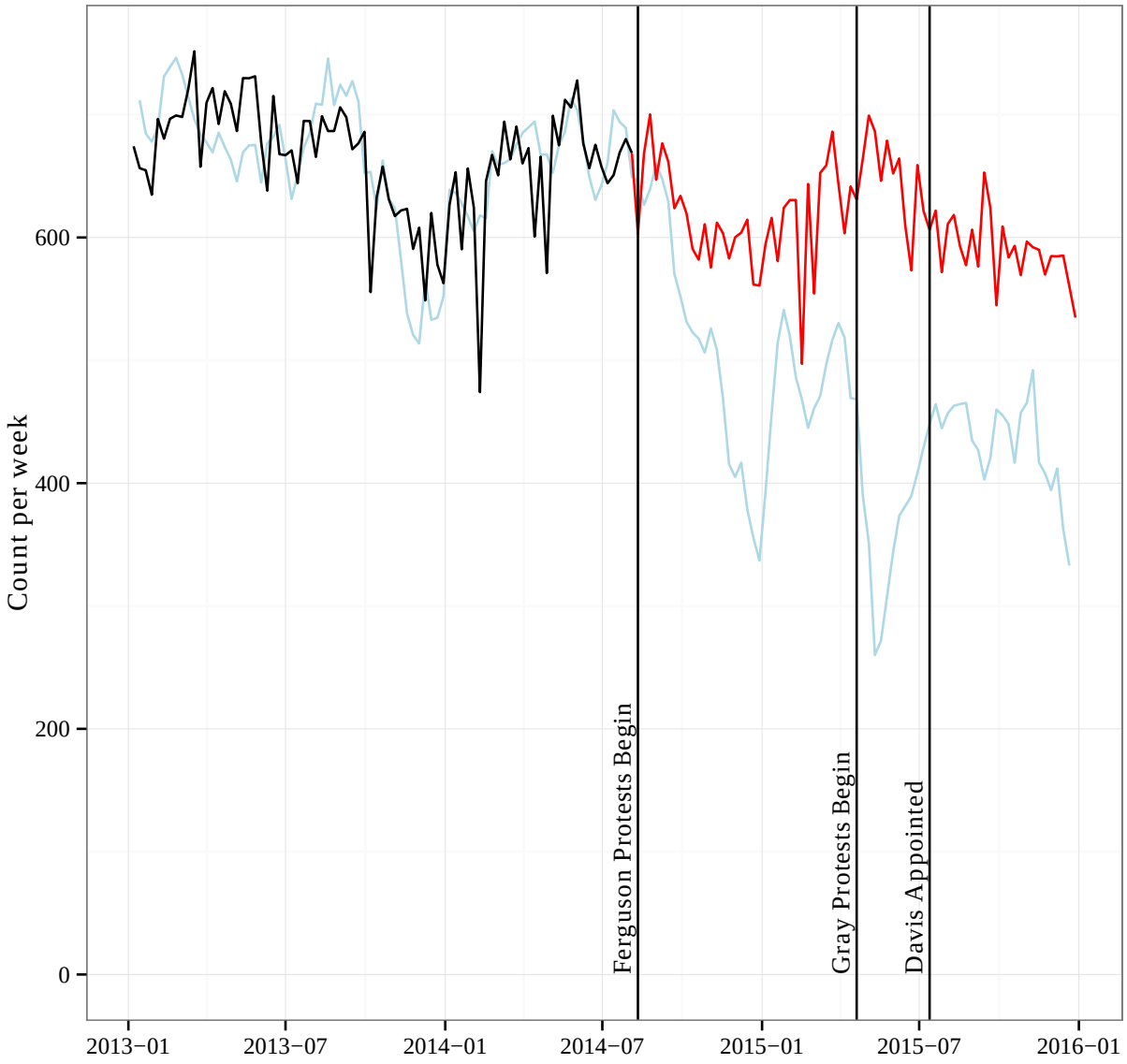
Table 4.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

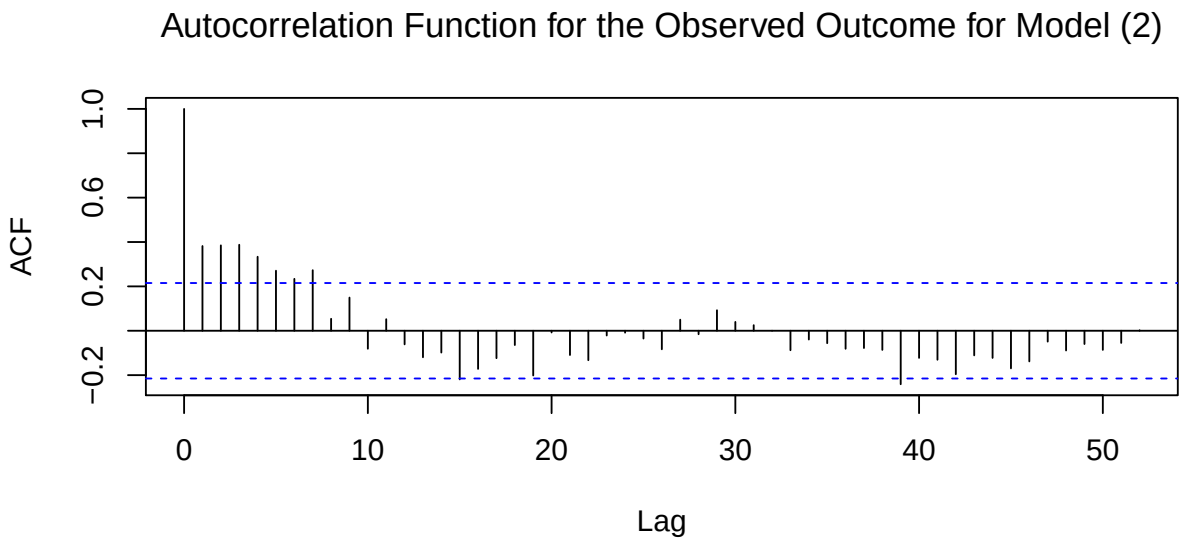
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.90	−0.53		−0.91
After Ferguson Protests Begin (week of 8/11/14 onward)	−105.60		−112.26	−84.36
After Gray Protests Begin (week of 4/20/15 onward)	−137.36		−190.30	−196.96
Unrest and National Guard (during week of 4/27/15)	188.76		176.75	184.75
After Commissioner Batts Fired (week of 7/13/15 onward)	102.34		143.12	160.09
Average Maximum Temperature to 50 Degrees		−0.14		−0.84
Plus Degrees in the 50s		−5.08		0.36
Plus Degrees in the 60s		4.34		−1.52
Plus Degrees in the 70s		4.59		5.07
Plus Degrees greater than 80		−9.13		−7.46
Snowfall (inches)		−63.94		−48.42
Precipitation (inches)		−138.12		−87.98
Darkness Before Midnight (hours)		−35.18		−34.34
School Days (proportion of week)		58.33		42.58
Observations	156	83	156	156
R^2	0.73	0.51	0.70	0.82

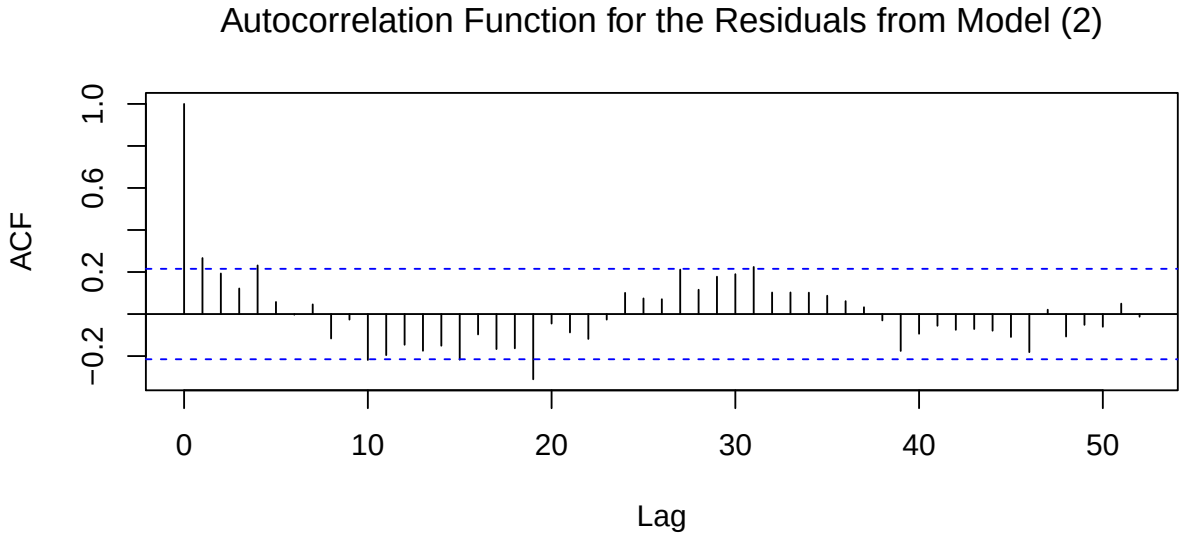
4.3 Least Squares Model (2) for b



b


Count per week
600
400
200
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

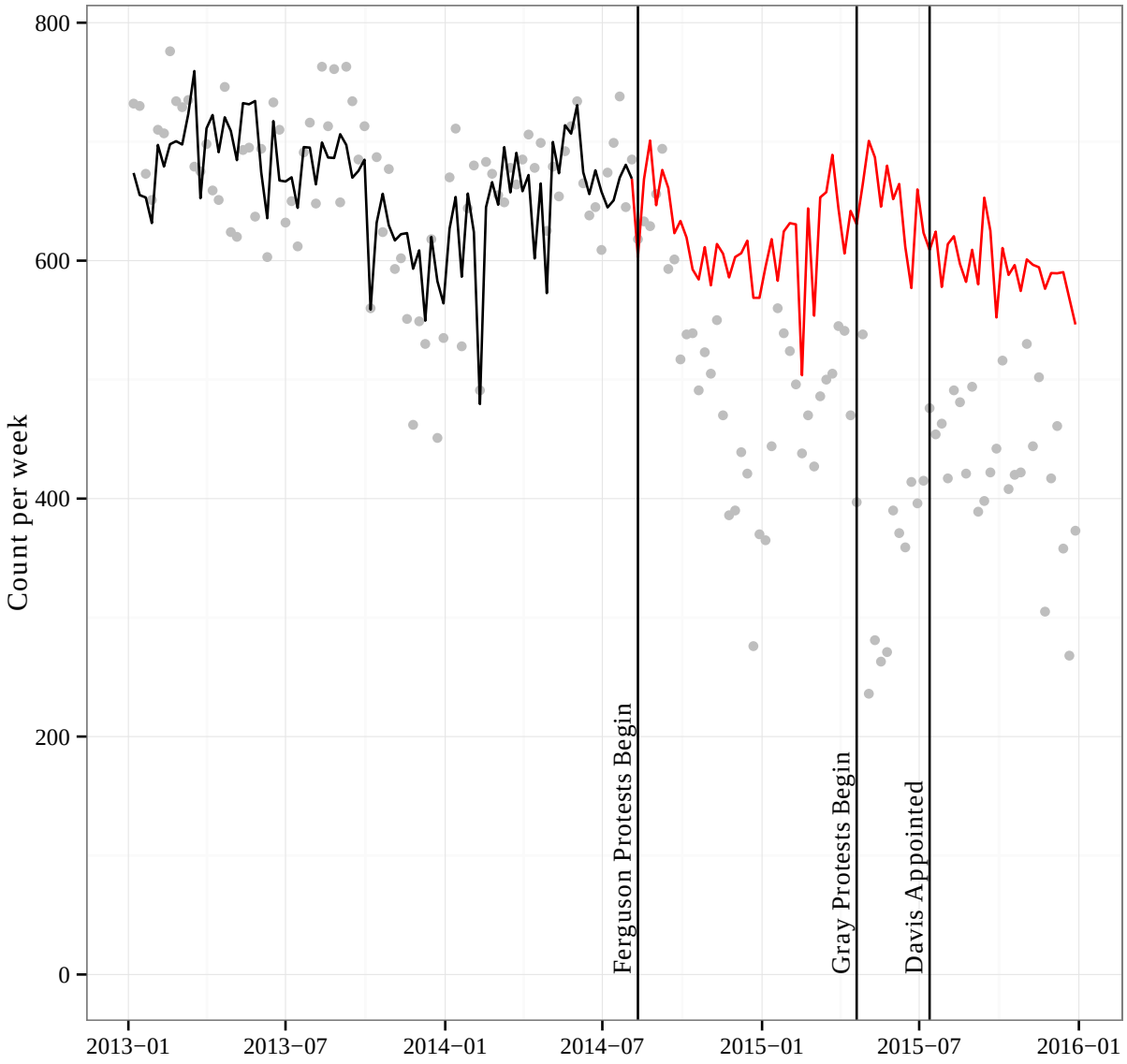

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

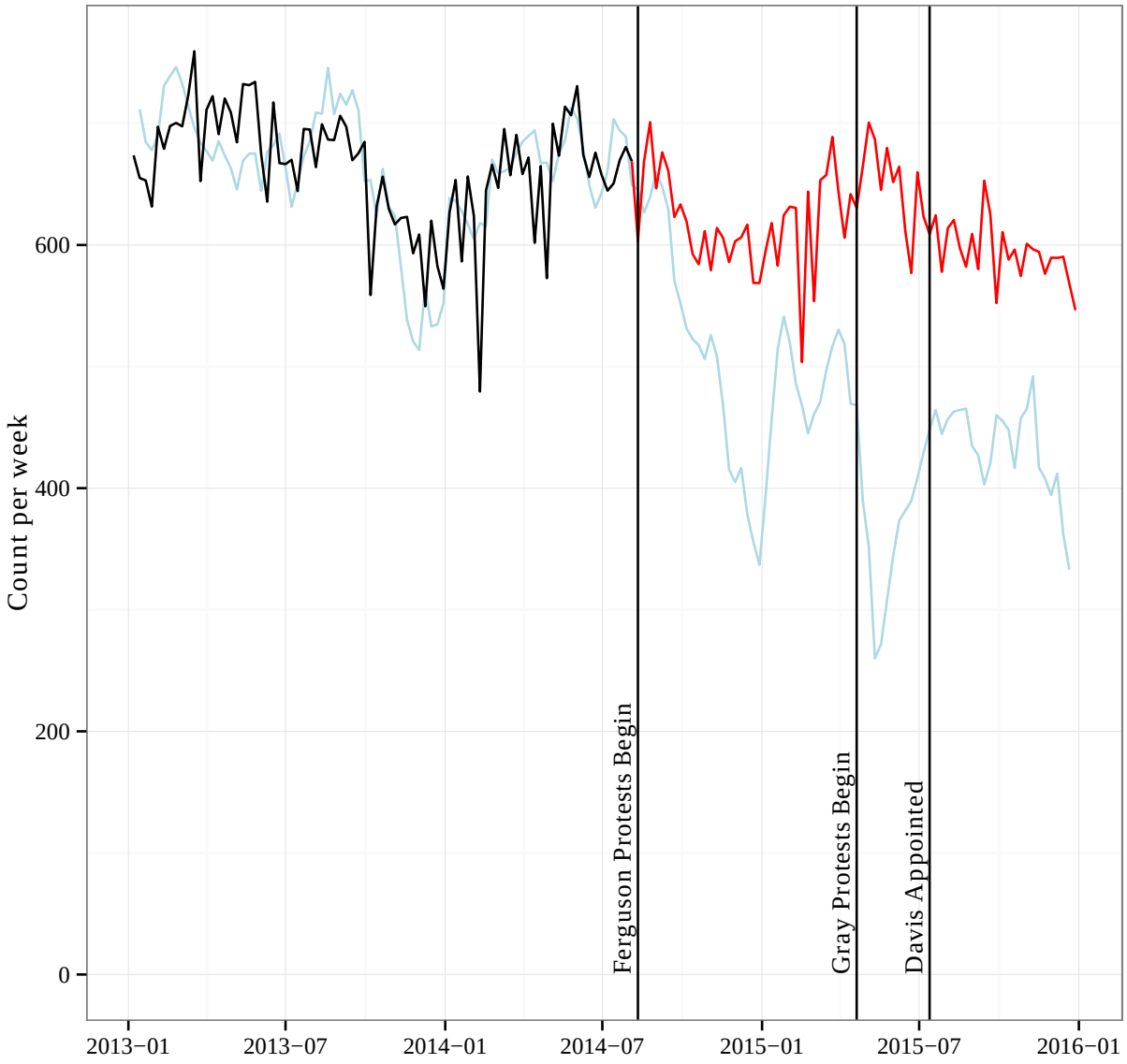
4.4 A Poisson Regression Model as an Alternative to Model (2) for b

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-5.6832  -1.2512   0.2712   1.2193   3.0428

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     6.8544891  0.0837214  81.873  < 2e-16 ***
t              -0.0007886  0.0001908  -4.132 3.59e-05 ***
tmax.f.spline1 -0.0001971  0.0014694  -0.134 0.893270
tmax.f.spline2 -0.0081474  0.0034535  -2.359 0.018316 *
tmax.f.spline3  0.0070253  0.0048588   1.446 0.148209
tmax.f.spline4  0.0068936  0.0044138   1.562 0.118330
tmax.f.spline5 -0.0137155  0.0038976  -3.519 0.000433 ***
snow.in        -0.1109063  0.0164531  -6.741 1.58e-11 ***
precip.in      -0.2167373  0.0284256  -7.625 2.45e-14 ***
dark.before.12 -0.0542031  0.0061225  -8.853  < 2e-16 ***
school          0.0869193  0.0190859   4.554 5.26e-06 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 568.82  on 82  degrees of freedom
Residual deviance: 281.94  on 72  degrees of freedom
AIC: 995.32

Number of Fisher Scoring iterations: 4
```

b


800
600
400
200
0
Count per week
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

b


Count per week
600
400
200
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

5 Results for w

5.1 Summary Values for w

Table 5.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
w	83	127.434	16.092	98	127	172

Table 5.2: Descriptives for Outcome After Ferguson Protests Begin

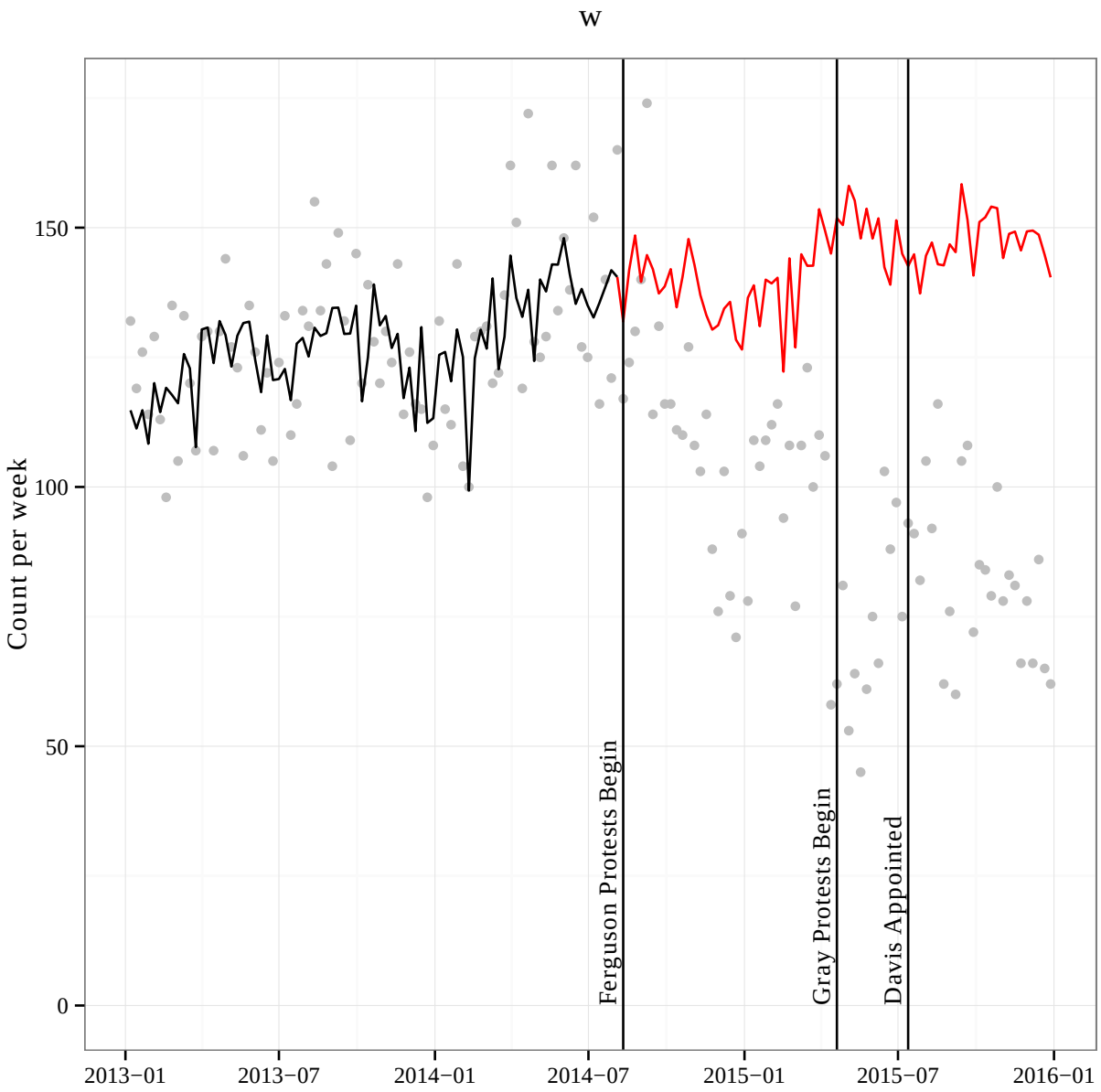
Statistic	N	Mean	St. Dev.	Min	Median	Max
w	73	93.151	23.574	45	92	174

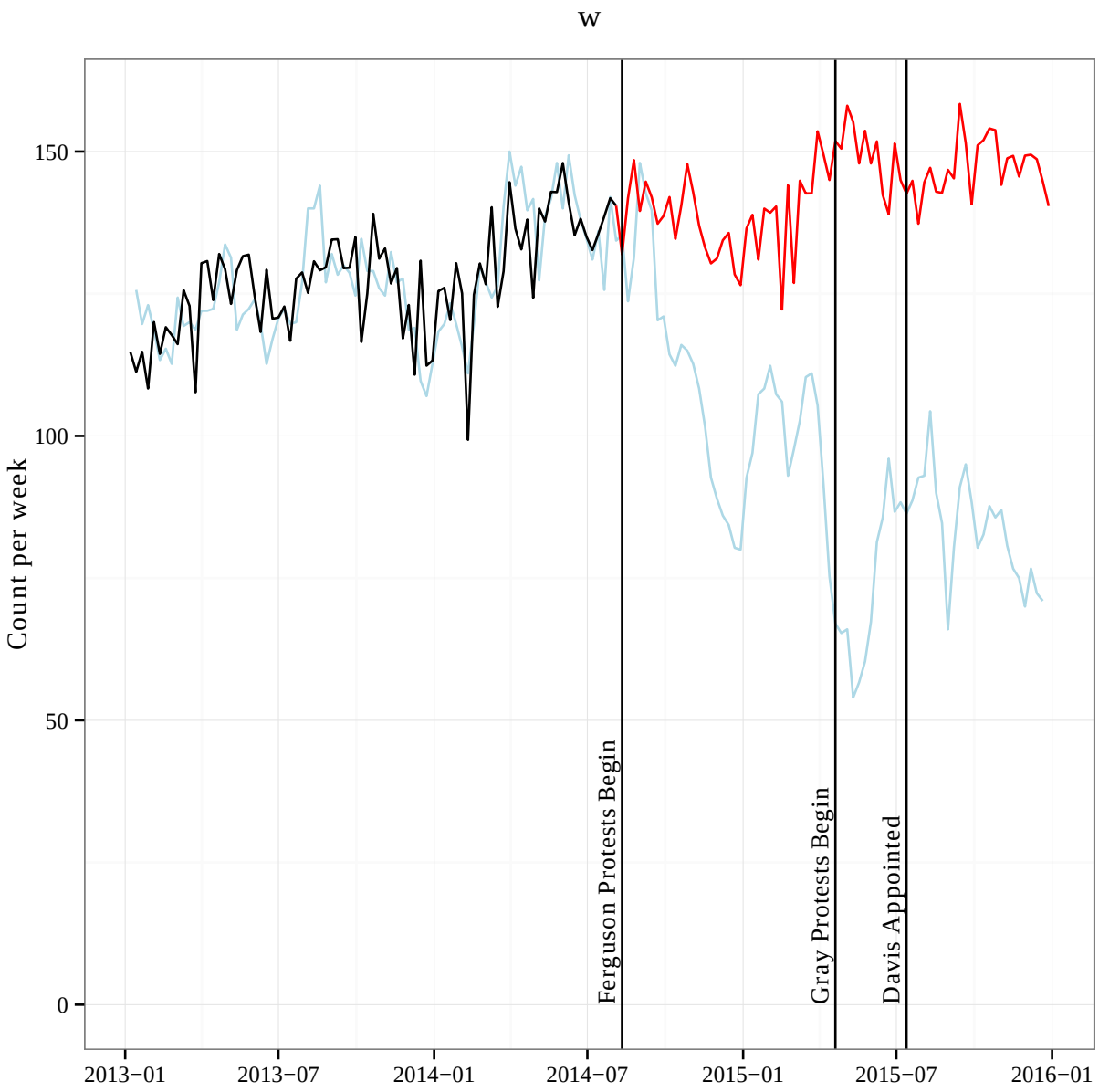
5.2 Four Models for w

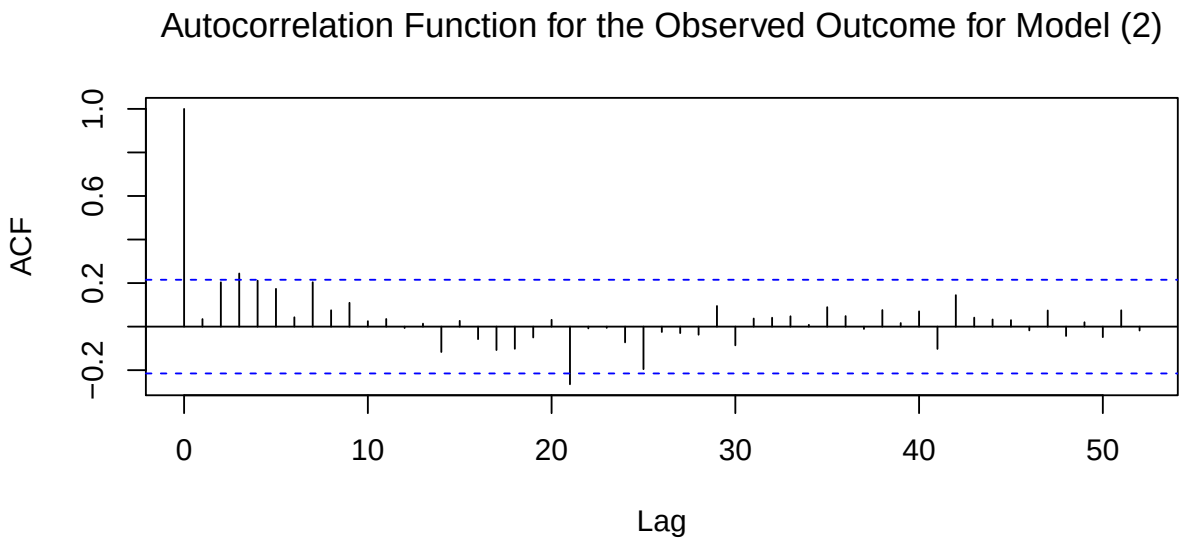
Table 5.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

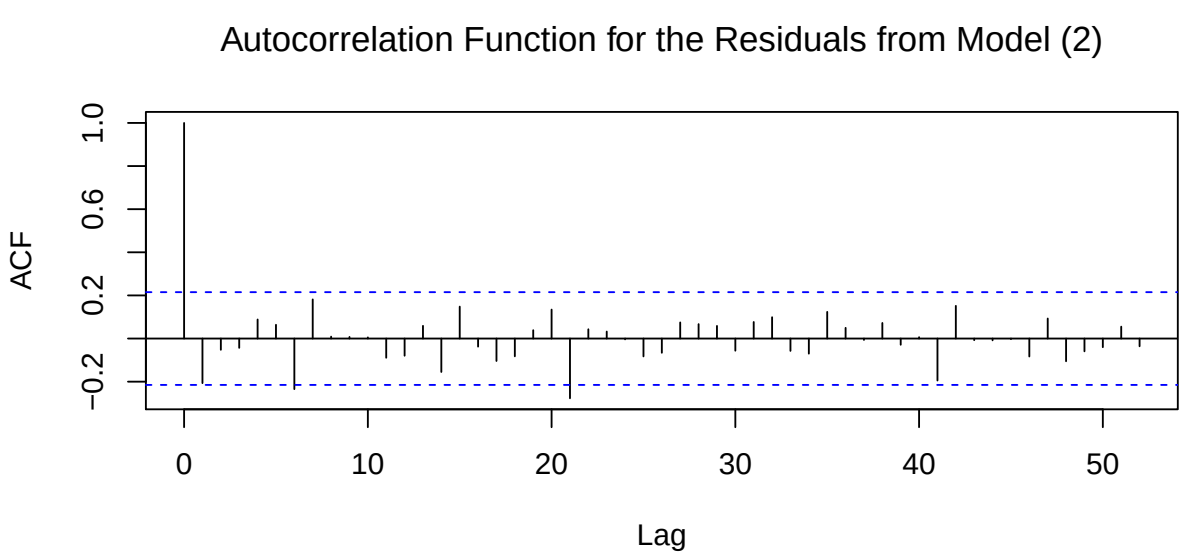
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.11	0.20		0.10
After Ferguson Protests Begin (week of 8/11/14 onward)	−26.96		−31.42	−23.15
After Gray Protests Begin (week of 4/20/15 onward)	−38.07		−46.32	−48.59
Unrest and National Guard (during week of 4/27/15)	9.82		8.23	12.10
After Commissioner Batts Fired (week of 7/13/15 onward)	9.26		13.70	18.47
Average Maximum Temperature to 50 Degrees		−0.40		−0.32
Plus Degrees in the 50s		1.82		2.03
Plus Degrees in the 60s		−2.81		−3.02
Plus Degrees in the 70s		2.42		2.75
Plus Degrees greater than 80		−2.15		−2.50
Snowfall (inches)		−11.21		−8.77
Precipitation (inches)		−19.02		−16.82
Darkness Before Midnight (hours)		−2.91		−2.81
School Days (proportion of week)		11.01		7.96
Observations	156	83	156	156
R^2	0.57	0.35	0.77	0.68

5.3 Least Squares Model (2) for w



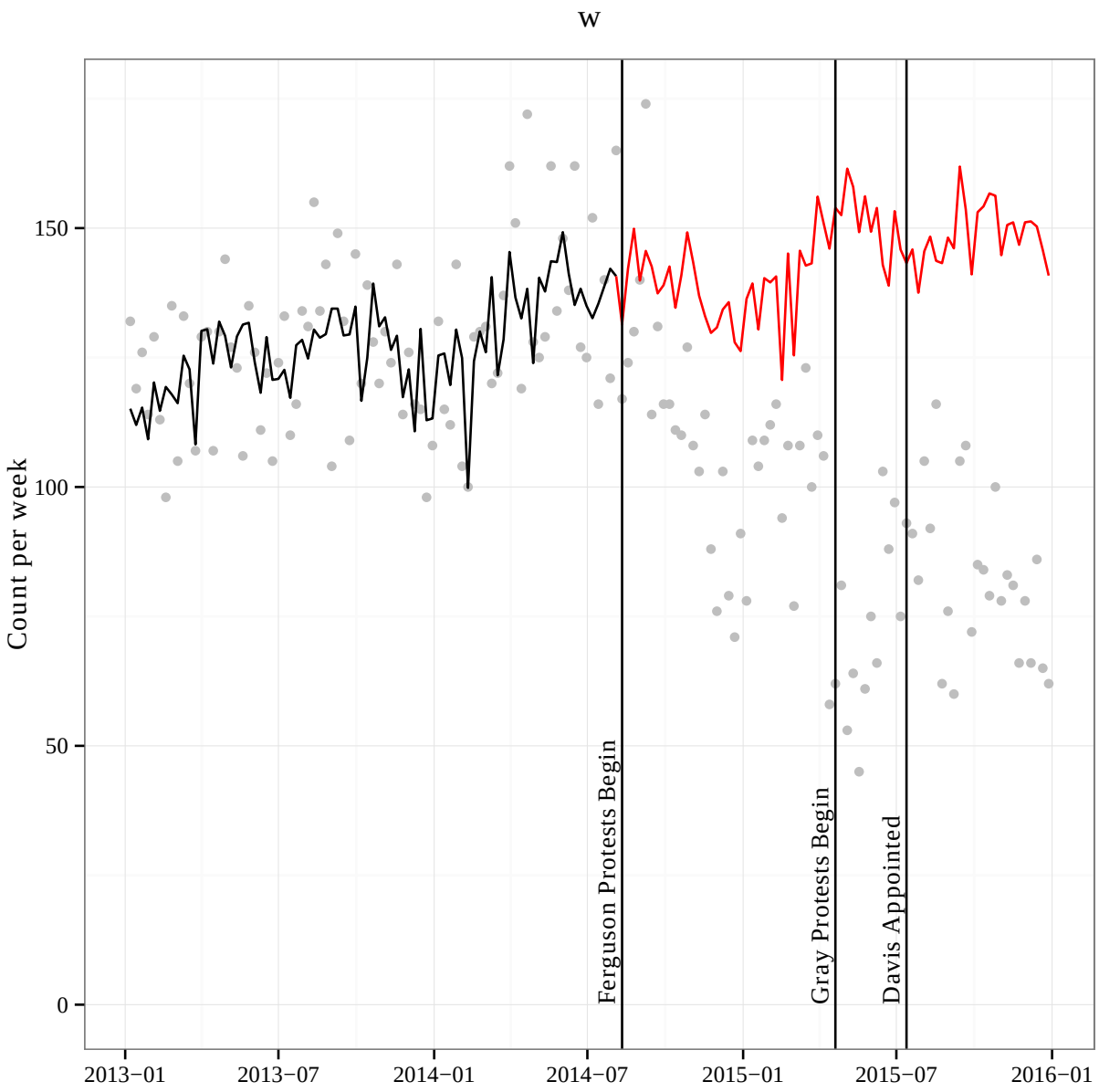

w
Count per week
150
100
50
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

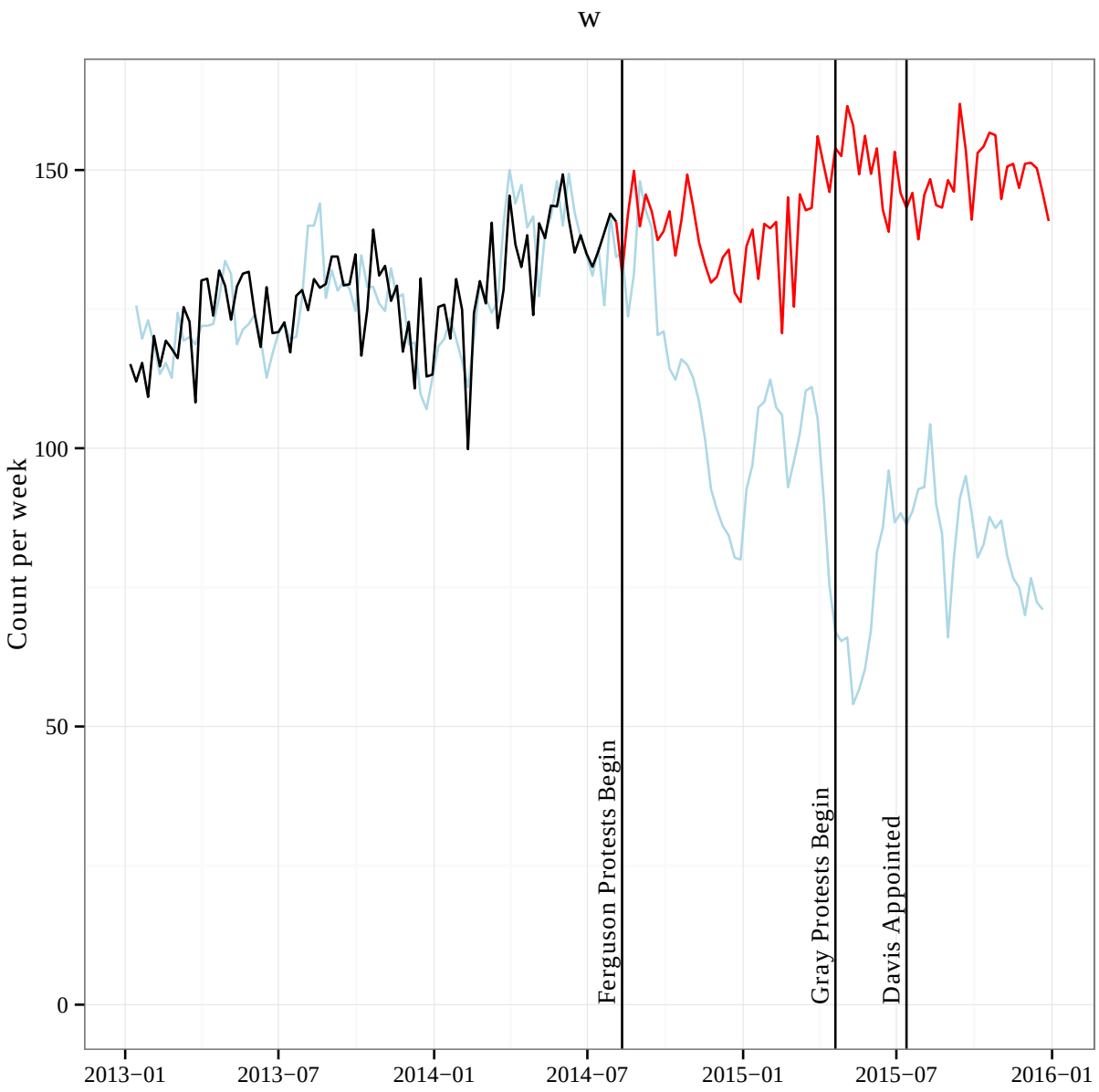

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-2.73633  -0.83414   0.01722   0.70817   2.76175

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     5.0051753  0.1913750  26.154  < 2e-16 ***
t               0.0015995  0.0004379   3.653 0.000259 ***
tmax.f.spline1 -0.0033264  0.0033846  -0.983 0.325716
tmax.f.spline2  0.0145393  0.0078752   1.846 0.064862 .
tmax.f.spline3 -0.0219168  0.0108278  -2.024 0.042959 *
tmax.f.spline4  0.0186103  0.0099273   1.875 0.060840 .
tmax.f.spline5 -0.0163755  0.0089021  -1.840 0.065841 .
snow.in        -0.0968136  0.0368410  -2.628 0.008592 **
precip.in      -0.1516376  0.0635401  -2.386 0.017010 *
dark.before.12 -0.0229542  0.0139438  -1.646 0.099725 .
school          0.0862364  0.0434040   1.987 0.046941 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 164.42  on 82  degrees of freedom
Residual deviance: 105.57  on 72  degrees of freedom
AIC: 681.93

Number of Fisher Scoring iterations: 4
```


w
Count per week
150
100
50
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01


w
Count per week
150
100
50
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

6 Results for u

6.1 Summary Values for u

Table 6.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
u	83	16.108	5.303	5	15	32

Table 6.2: Descriptives for Outcome After Ferguson Protests Begin

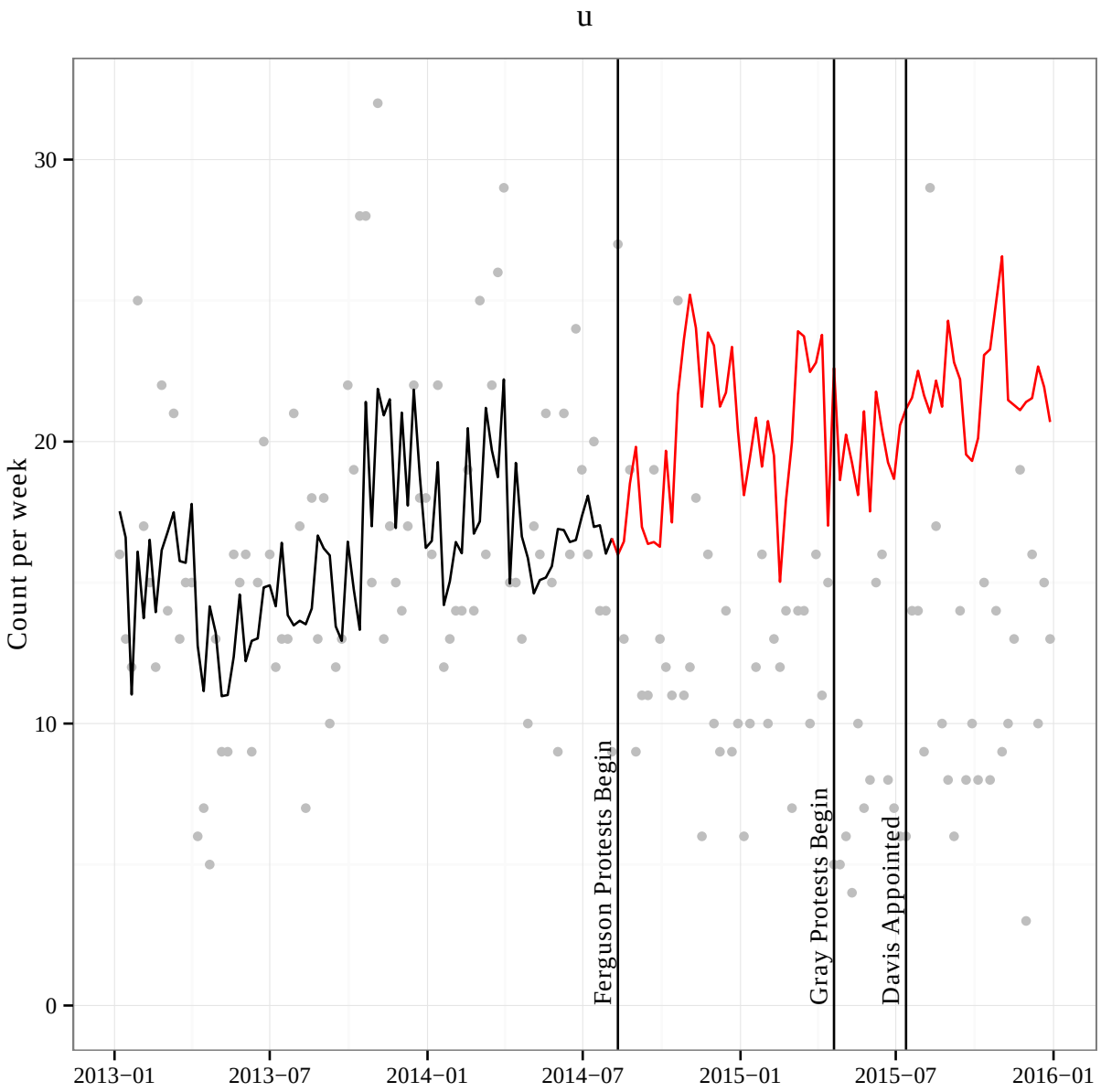
Statistic	N	Mean	St. Dev.	Min	Median	Max
u	73	11.781	4.945	3	11	29

6.2 Four Models for u

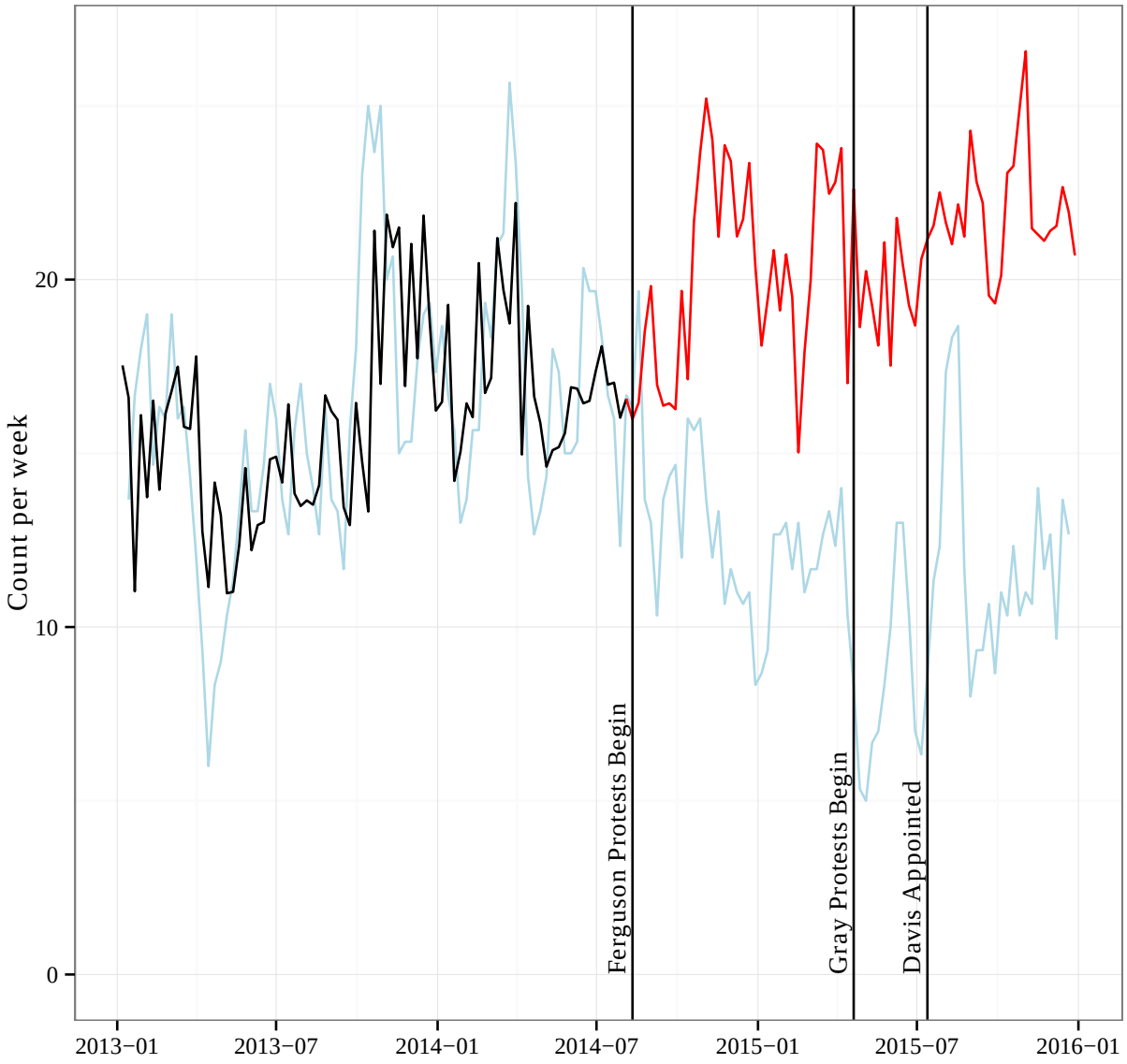
Table 6.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

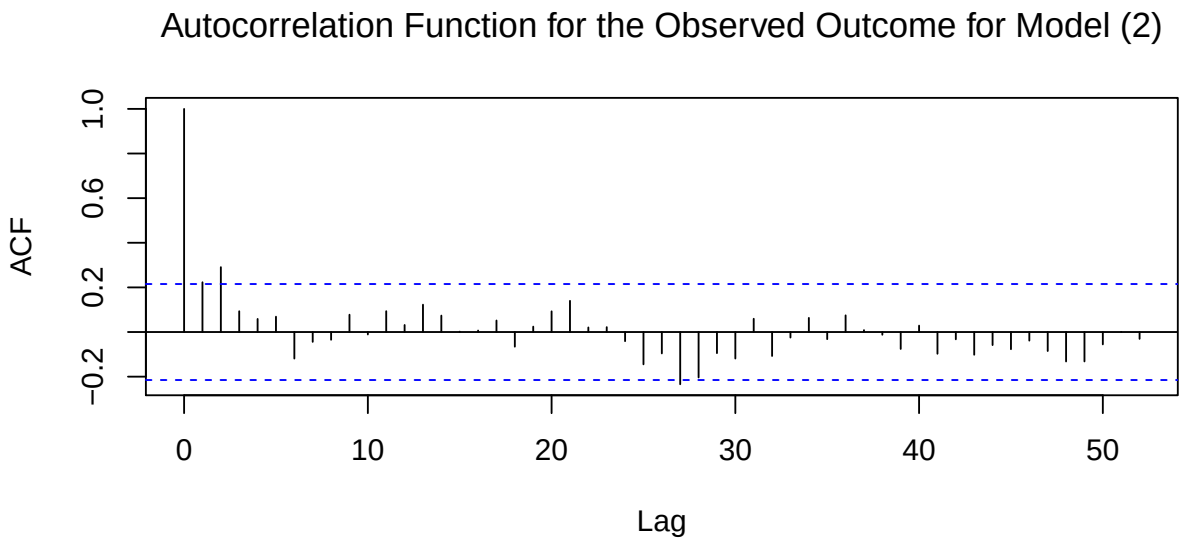
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.03	0.06		0.04
After Ferguson Protests Begin (week of 8/11/14 onward)	−5.15		−7.30	−5.36
After Gray Protests Begin (week of 4/20/15 onward)	−5.36		−4.29	−4.86
Unrest and National Guard (during week of 4/27/15)	−3.20		−2.04	−1.72
After Commissioner Batts Fired (week of 7/13/15 onward)	2.96		1.53	2.80
Average Maximum Temperature to 50 Degrees		0.34		0.17
Plus Degrees in the 50s		−0.09		0.16
Plus Degrees in the 60s		−1.11		−0.94
Plus Degrees in the 70s		1.17		0.90
Plus Degrees greater than 80		−0.03		−0.28
Snowfall (inches)		0.26		0.30
Precipitation (inches)		−0.28		0.96
Darkness Before Midnight (hours)		0.59		0.49
School Days (proportion of week)		1.83		−0.40
Observations	156	83	156	156
R^2	0.21	0.25	0.47	0.27

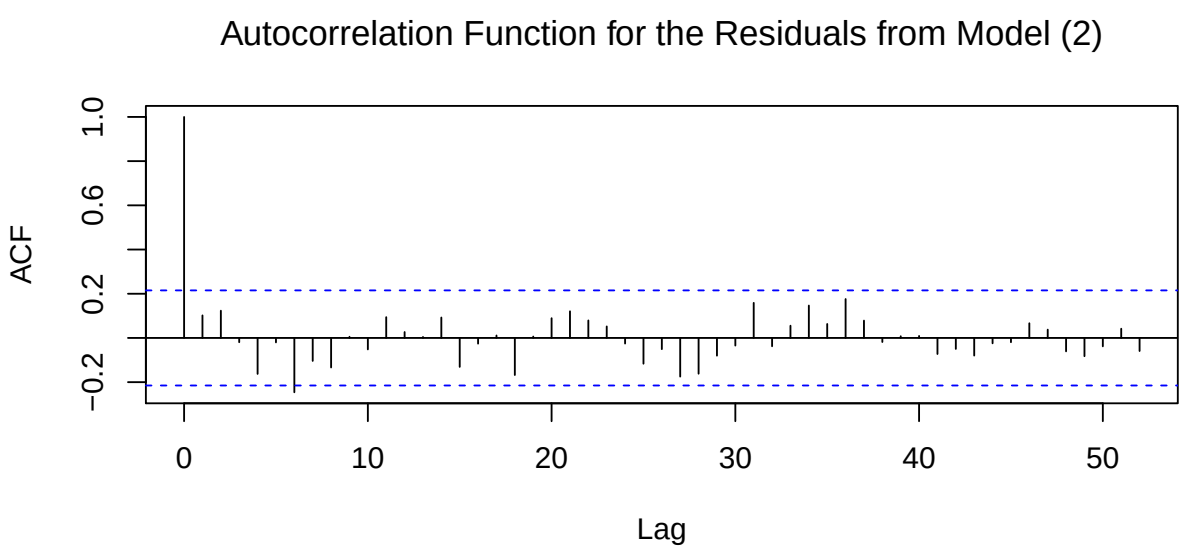
6.3 Least Squares Model (2) for u



u


Count per week
20
10
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

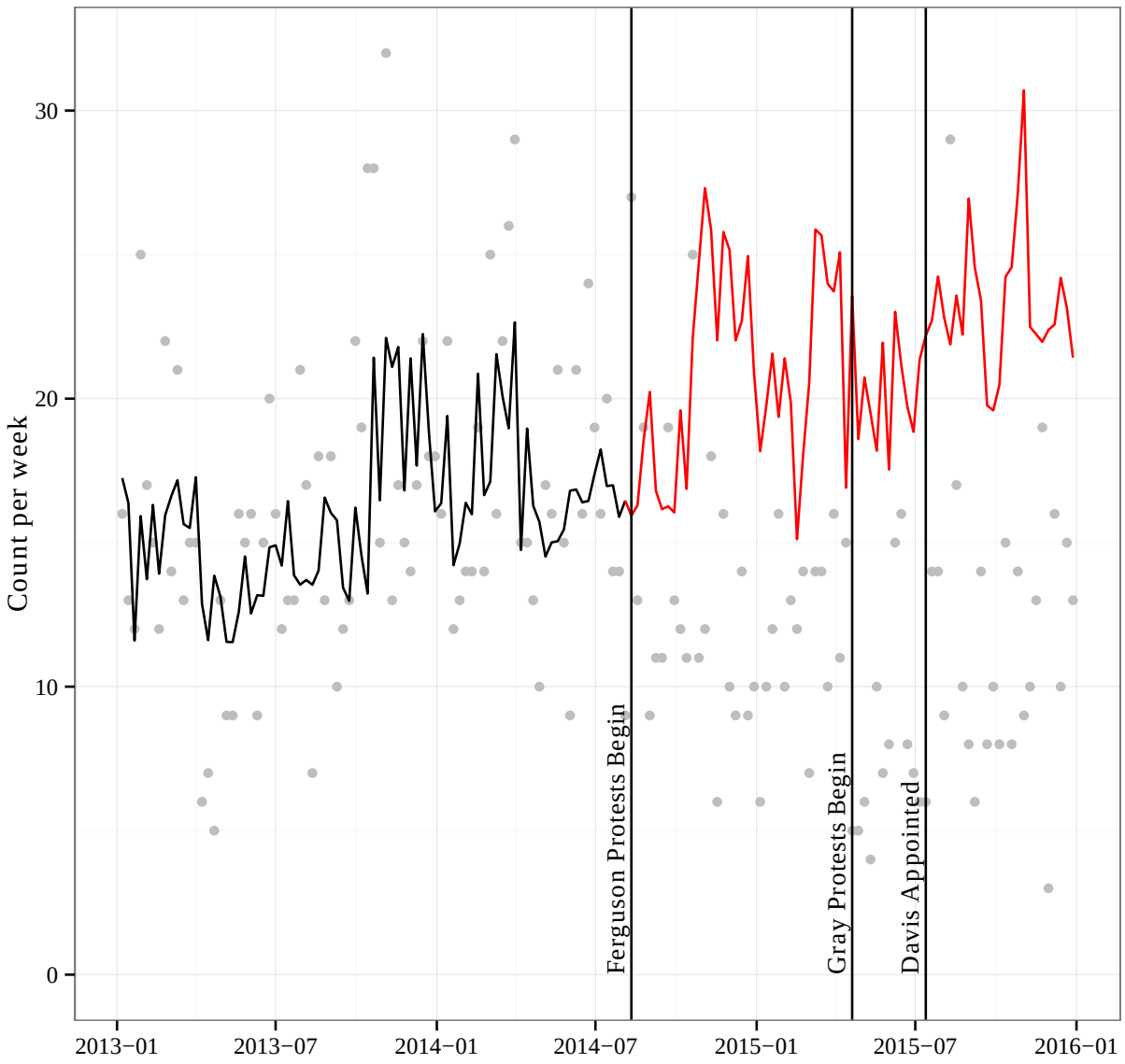

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

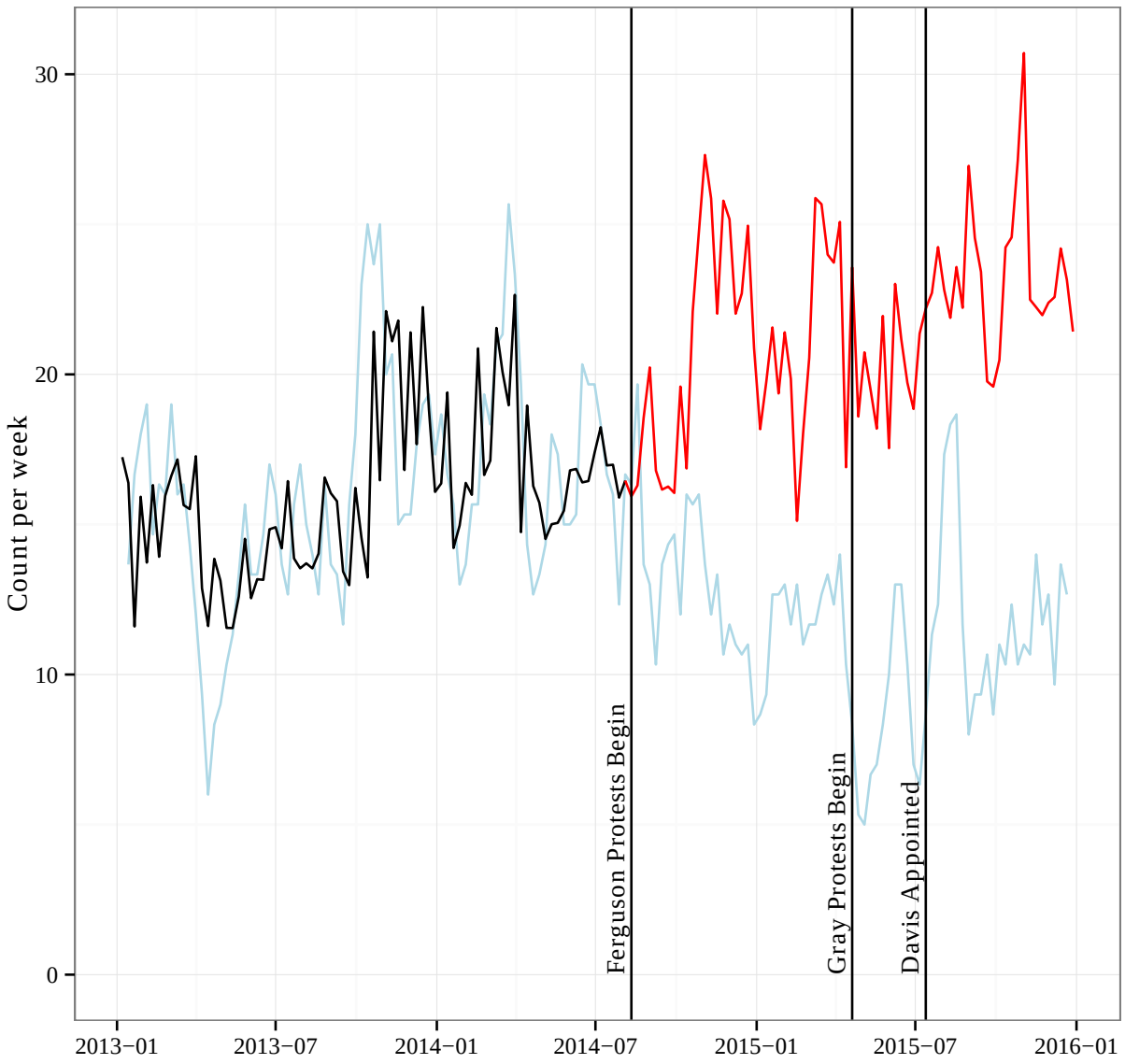
6.4 A Poisson Regression Model as an Alternative to Model (2) for u

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.7416  -0.7184  -0.1613   0.7835   3.5270

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)     1.482109   0.528100   2.806  0.00501 **
t               0.003957   0.001255   3.154  0.00161 **
tmax.f.spline1  0.020679   0.009321   2.219  0.02651 *
tmax.f.spline2 -0.008894   0.020907  -0.425  0.67055
tmax.f.spline3 -0.062363   0.028980  -2.152  0.03140 *
tmax.f.spline4  0.070082   0.028624   2.448  0.01435 *
tmax.f.spline5 -0.000830   0.025754  -0.032  0.97429
snow.in         0.016160   0.095398   0.169  0.86549
precip.in      -0.004839   0.182002  -0.027  0.97879
dark.before.12  0.033725   0.037159   0.908  0.36410
school          0.114770   0.122171   0.939  0.34751
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 142.09  on 82  degrees of freedom
Residual deviance: 106.43  on 72  degrees of freedom
AIC: 507.96

Number of Fisher Scoring iterations: 4
```

u


Count per week
30
20
10
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

u


30
20
10
0
Count per week
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

7 Results for a

7.1 Summary Values for a

Table 7.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
a	83	2.048	1.521	0	2	5

Table 7.2: Descriptives for Outcome After Ferguson Protests Begin

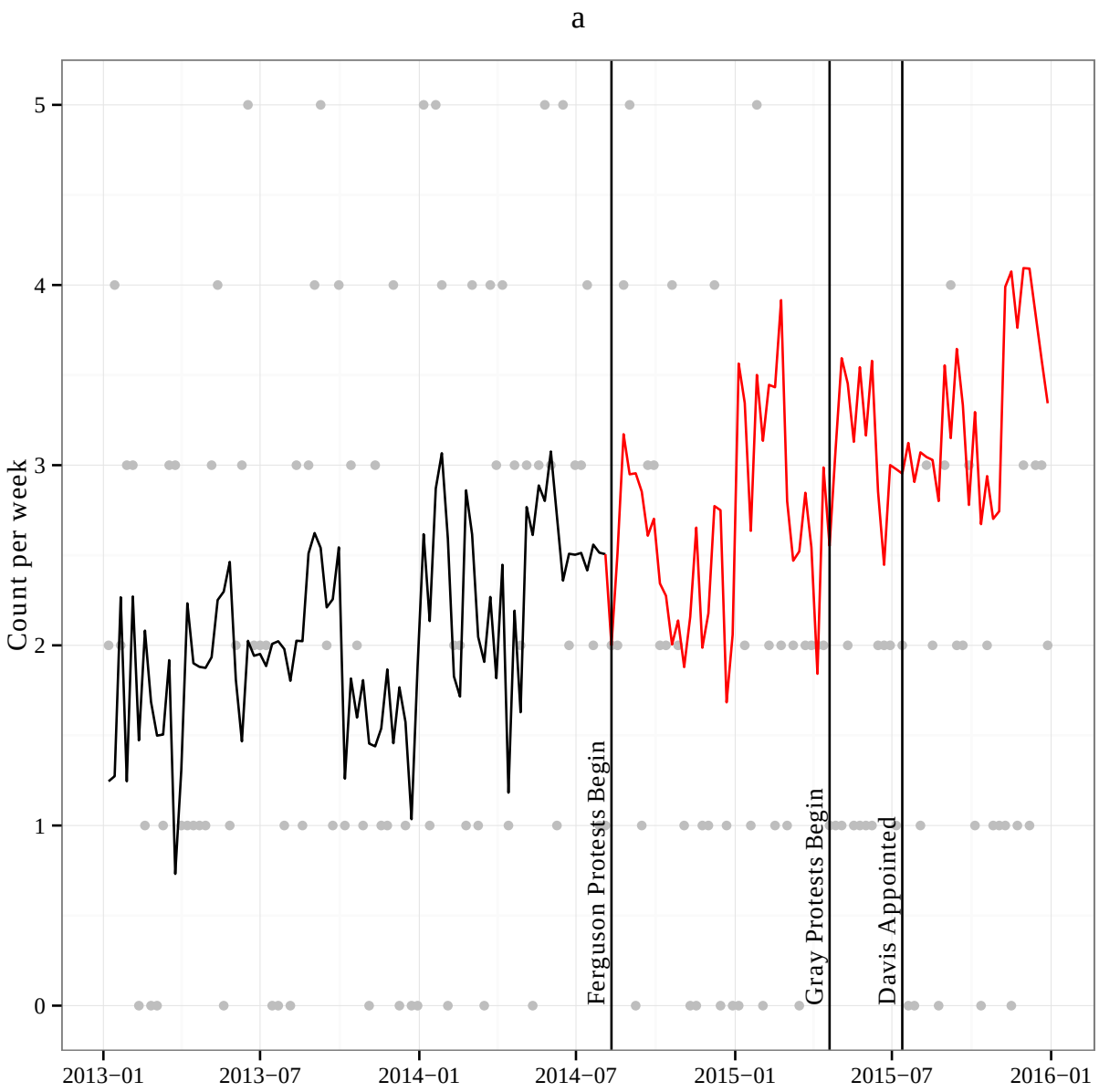
Statistic	N	Mean	St. Dev.	Min	Median	Max
a	73	1.630	1.219	0	2	5

7.2 Four Models for a

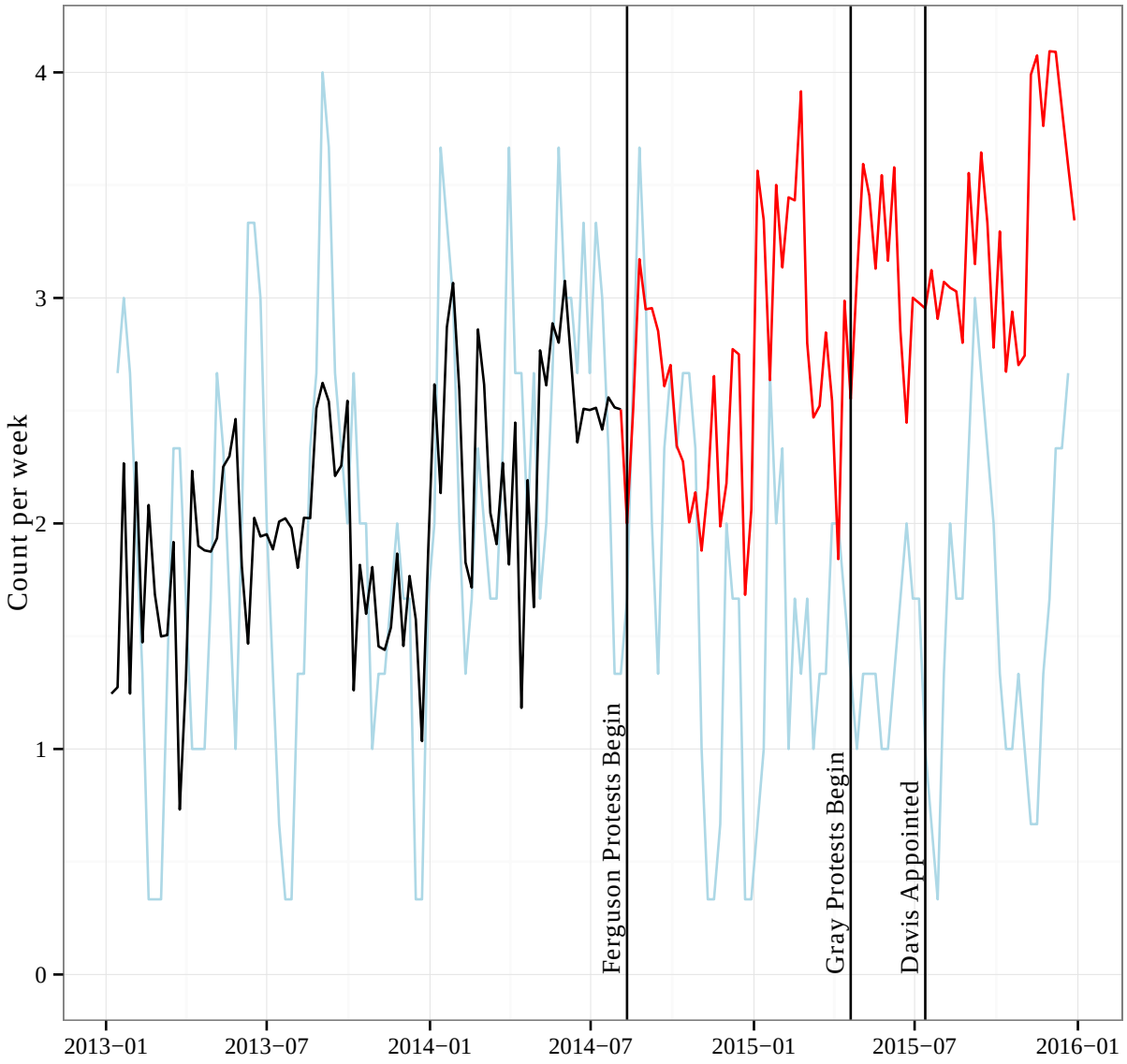
Table 7.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

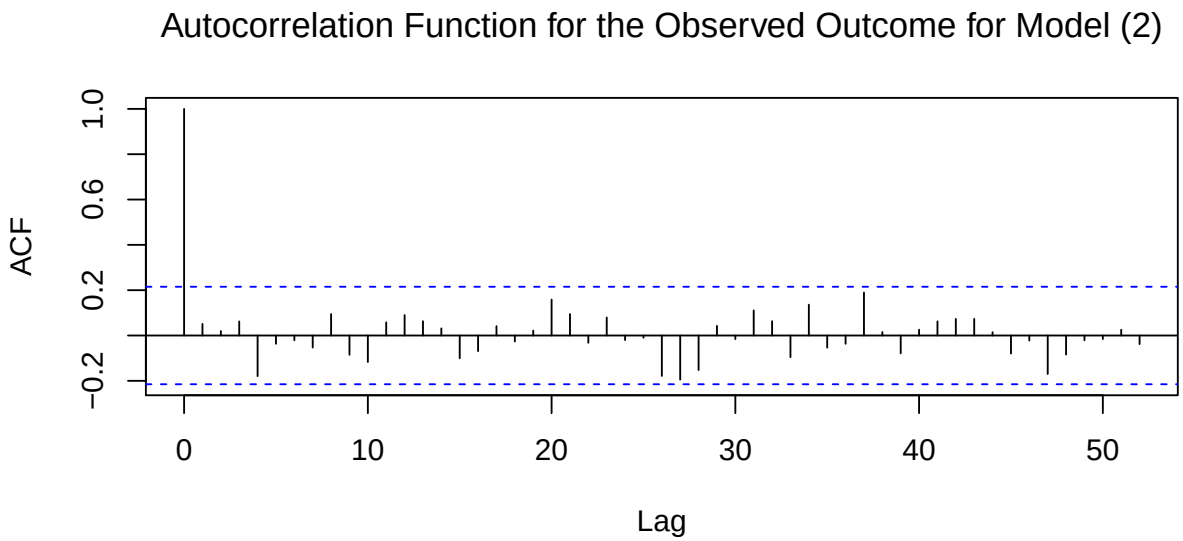
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.01	0.01		0.01
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.80		−0.93	−0.67
After Gray Protests Begin (week of 4/20/15 onward)	−0.55		−0.82	−1.00
Unrest and National Guard (during week of 4/27/15)	−0.32		−0.34	−0.04
After Commissioner Batts Fired (week of 7/13/15 onward)	0.13		0.09	0.37
Average Maximum Temperature to 50 Degrees		−0.08		−0.06
Plus Degrees in the 50s		0.05		0.10
Plus Degrees in the 60s		0.09		−0.01
Plus Degrees in the 70s		−0.02		0.04
Plus Degrees greater than 80		−0.04		−0.06
Snowfall (inches)		−0.44		−0.47
Precipitation (inches)		−1.01		0.06
Darkness Before Midnight (hours)		−0.16		−0.06
School Days (proportion of week)		0.88		0.93
Observations	156	83	156	156
R^2	0.04	0.11	0.22	0.12

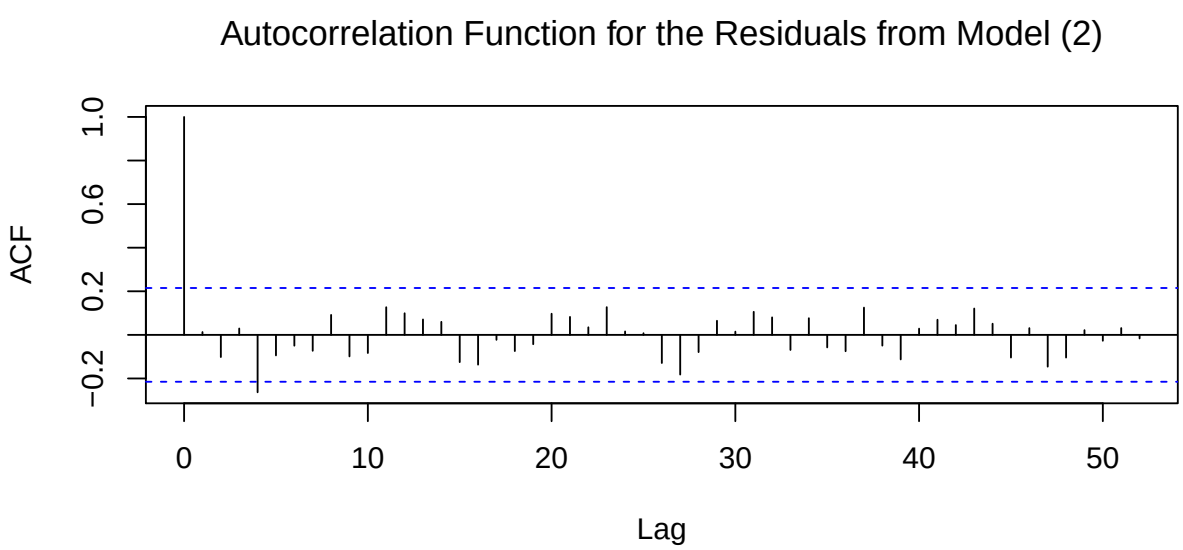
7.3 Least Squares Model (2) for a



a


Count per week
0
1
2
3
4
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

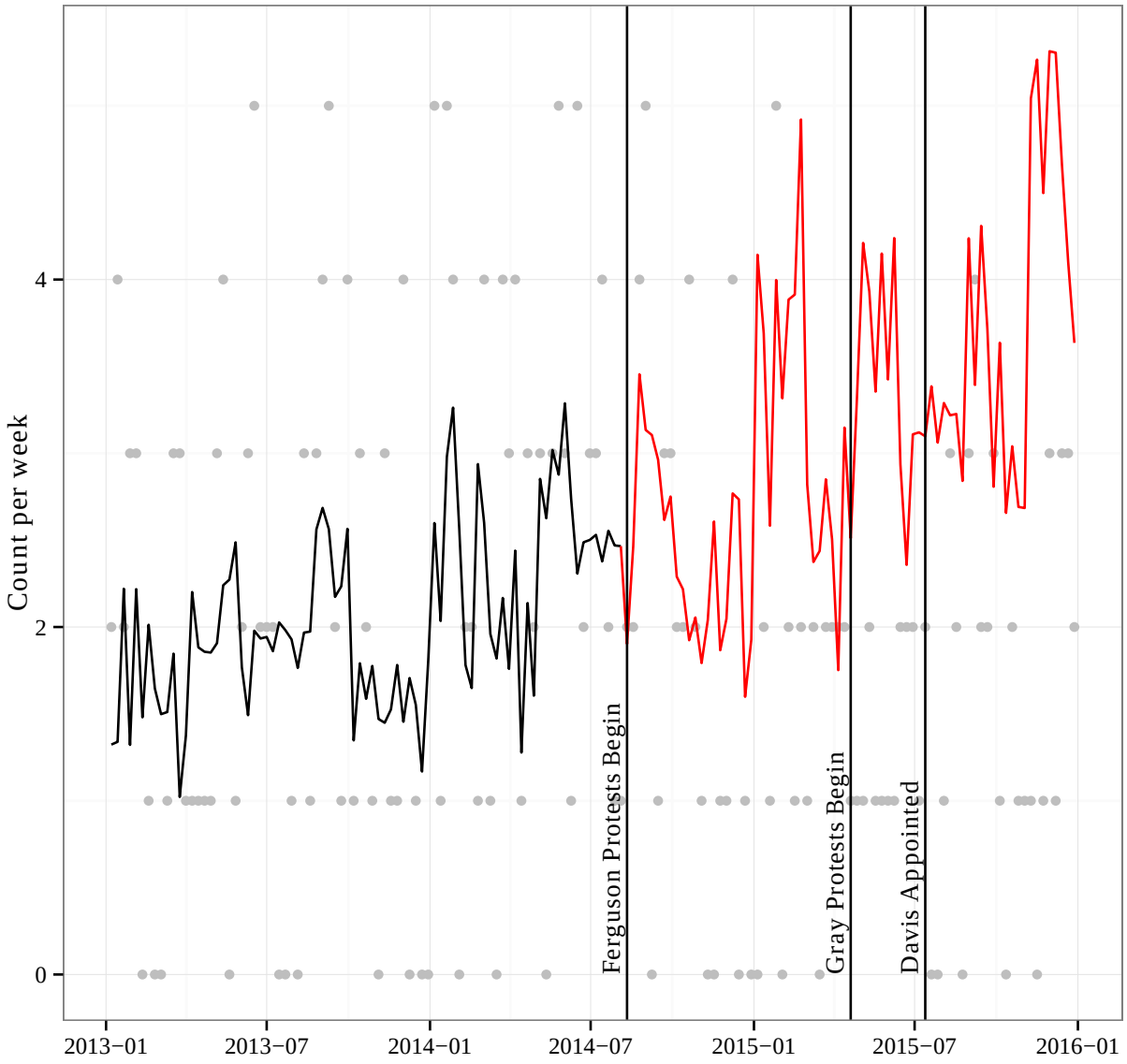

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

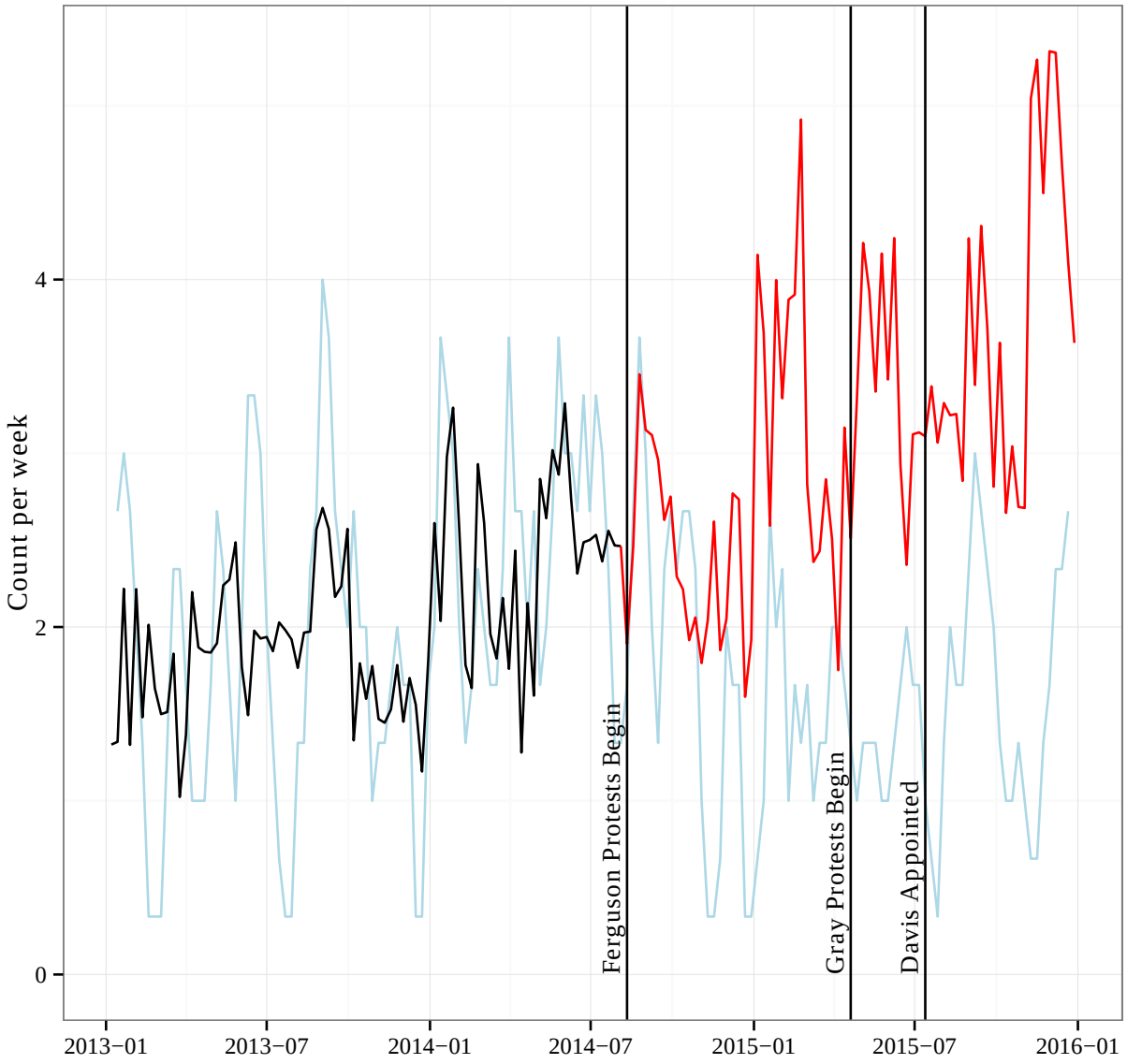
7.4 A Poisson Regression Model as an Alternative to Model (2) for a

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.2918  -0.8568  -0.1192   0.7624   1.8527

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)     2.656972   1.507557   1.762    0.078 .
t               0.004789   0.003451   1.388    0.165
tmax.f.spline1 -0.042325   0.026121  -1.620    0.105
tmax.f.spline2  0.026412   0.066733   0.396    0.692
tmax.f.spline3  0.045289   0.095222   0.476    0.634
tmax.f.spline4 -0.012620   0.081372  -0.155    0.877
tmax.f.spline5 -0.013517   0.068510  -0.197    0.844
snow.in        -0.214308   0.277944  -0.771    0.441
precip.in      -0.511917   0.530608  -0.965    0.335
dark.before.12 -0.079156   0.117763  -0.672    0.501
school          0.446326   0.346416   1.288    0.198
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 111.81  on 82  degrees of freedom
Residual deviance: 101.45  on 72  degrees of freedom
AIC: 307.83

Number of Fisher Scoring iterations: 5
```

a


Count per week
4
2
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

a


Count per week
4
2
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

8 Results for i

8.1 Summary Values for i

Table 8.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
i	83	1.795	1.386	0	2	7

Table 8.2: Descriptives for Outcome After Ferguson Protests Begin

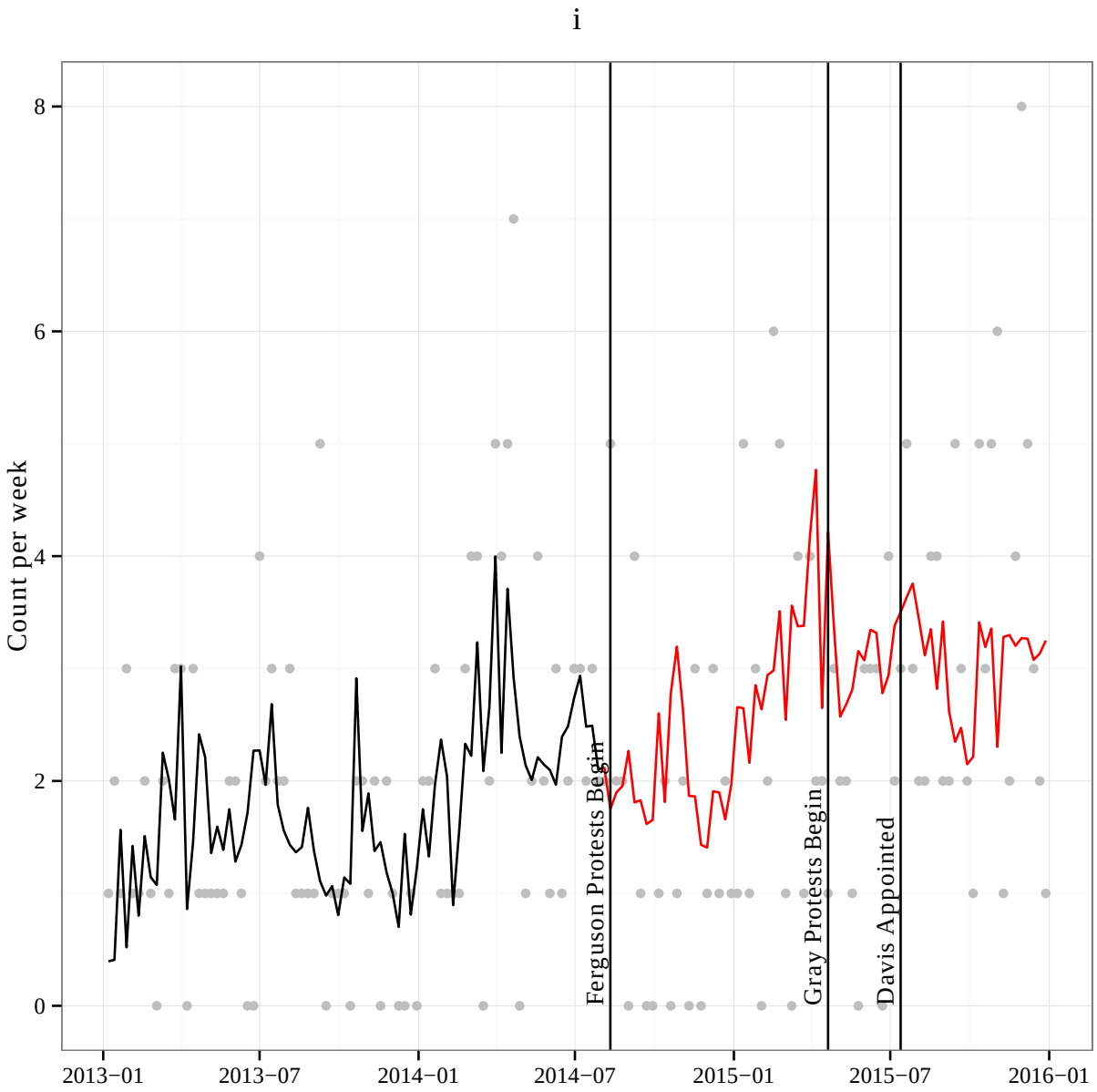
Statistic	N	Mean	St. Dev.	Min	Median	Max
i	73	2.397	1.762	0	2	8

8.2 Four Models for i

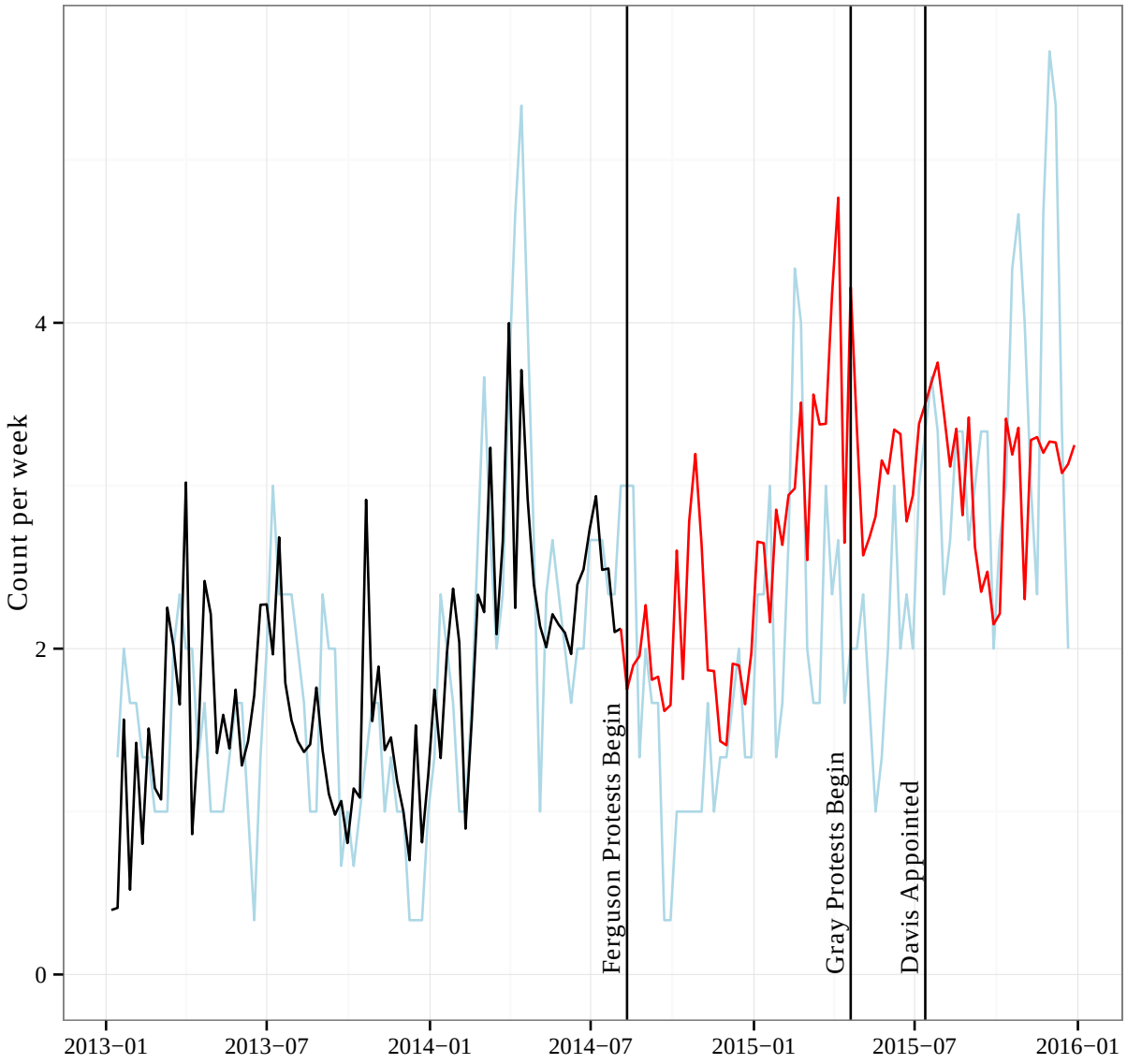
Table 8.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

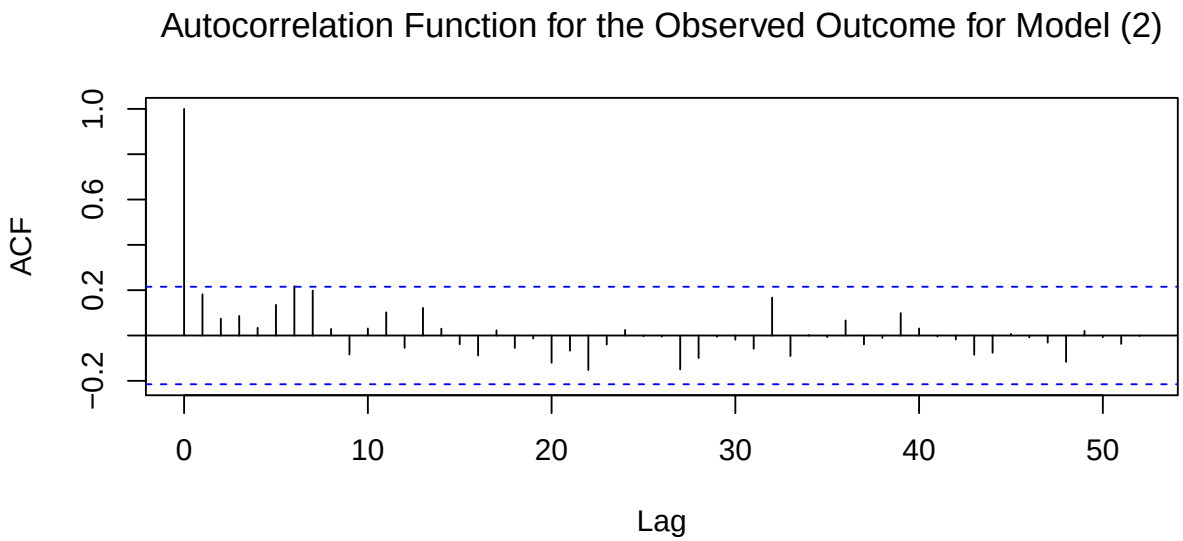
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.02	0.01		0.01
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.88		−0.57	−0.44
After Gray Protests Begin (week of 4/20/15 onward)	−0.38		−0.63	−0.57
Unrest and National Guard (during week of 4/27/15)	1.17		0.86	1.07
After Commissioner Batts Fired (week of 7/13/15 onward)	1.11		1.45	1.58
Average Maximum Temperature to 50 Degrees		−0.07		−0.09
Plus Degrees in the 50s		0.22		0.21
Plus Degrees in the 60s		−0.37		−0.30
Plus Degrees in the 70s		0.18		0.20
Plus Degrees greater than 80		0.14		−0.05
Snowfall (inches)		−0.58		−0.32
Precipitation (inches)		−0.52		−0.82
Darkness Before Midnight (hours)		−0.63		−0.55
School Days (proportion of week)		−0.001		−0.11
Observations	156	83	156	156
R^2	0.16	0.27	0.07	0.26

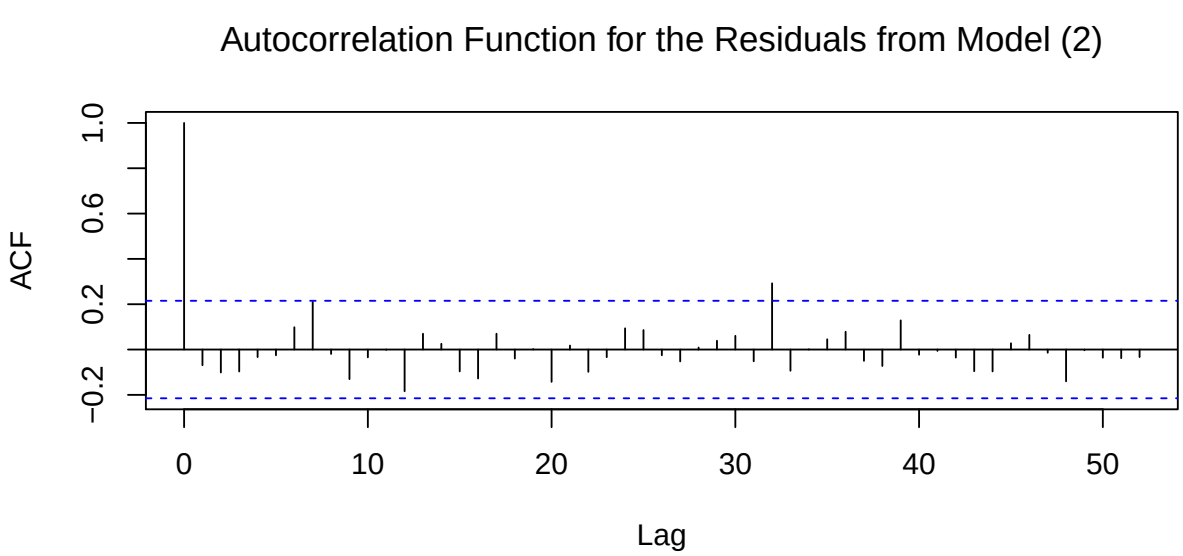
8.3 Least Squares Model (2) for i



i


Count per week
0
2
4
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

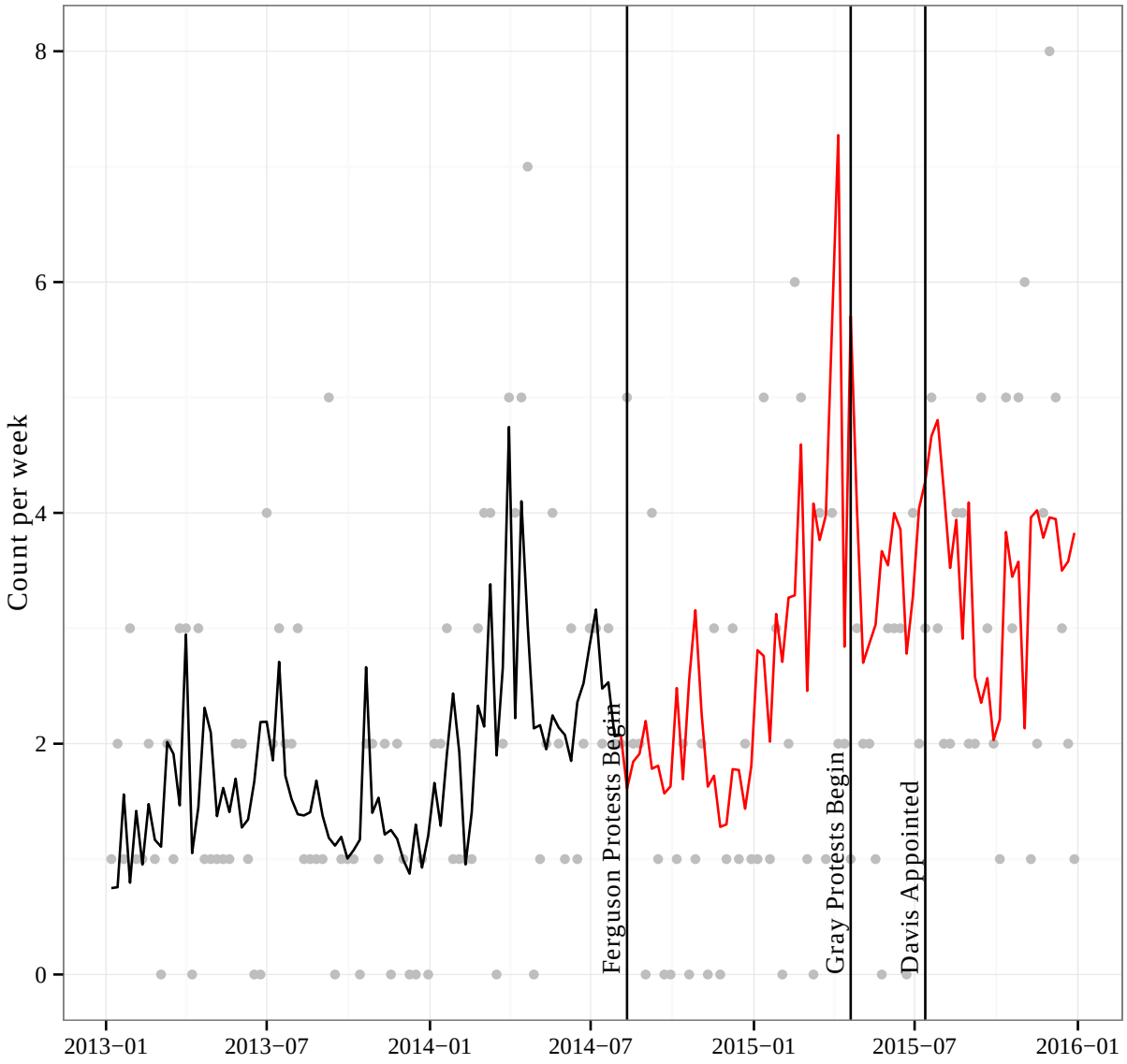

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

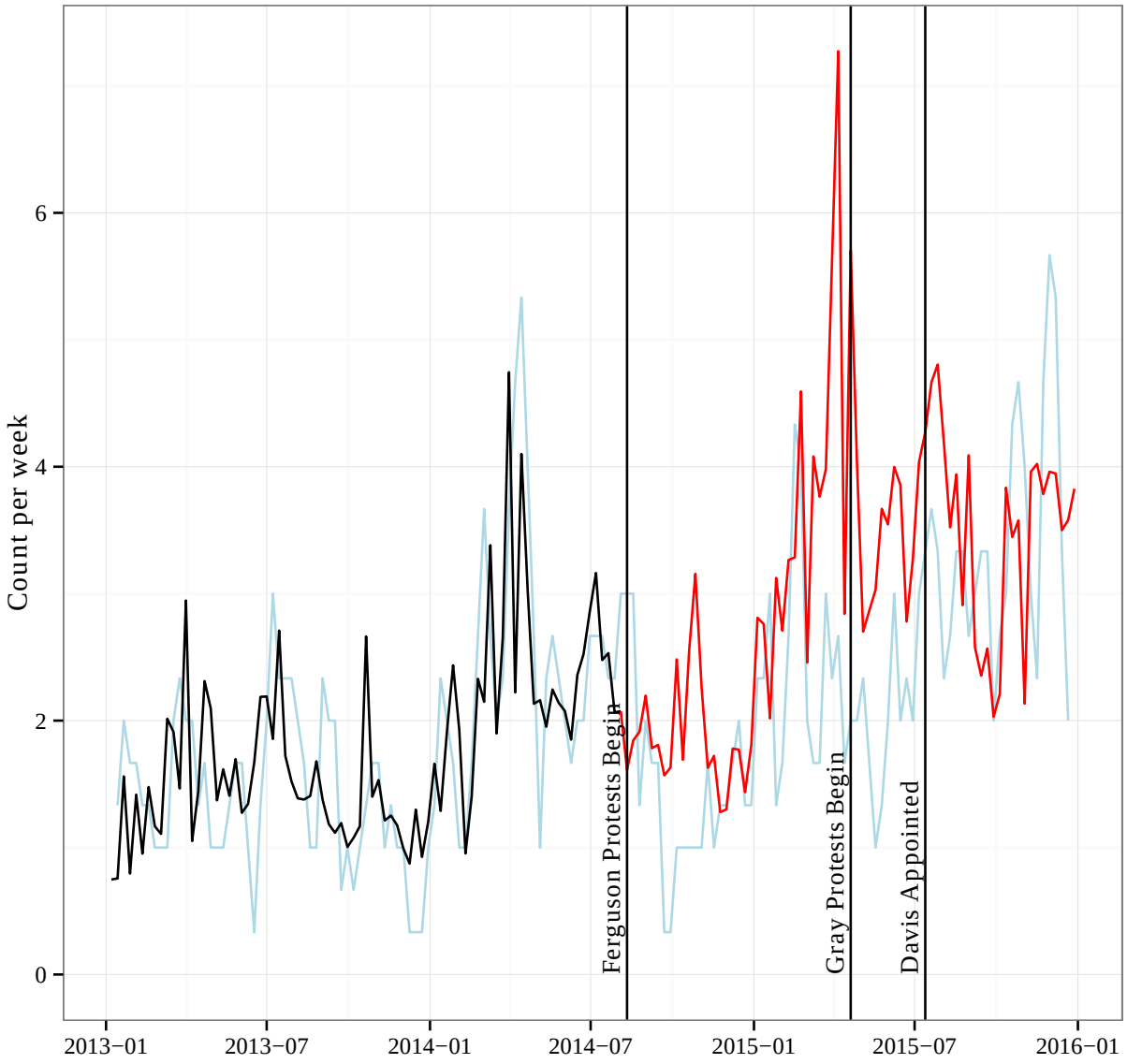
8.4 A Poisson Regression Model as an Alternative to Model (2) for i

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

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-2.09153  -0.54479  -0.05169   0.38965   2.60196

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)     4.414698   1.704740   2.590  0.00961 **
t               0.007366   0.003666   2.009  0.04451 *
tmax.f.spline1 -0.045575   0.029391  -1.551  0.12098
tmax.f.spline2  0.108845   0.063982   1.701  0.08891 .
tmax.f.spline3 -0.167129   0.081239  -2.057  0.03966 *
tmax.f.spline4  0.075810   0.081892   0.926  0.35459
tmax.f.spline5  0.074197   0.071677   1.035  0.30059
snow.in        -0.360374   0.348662  -1.034  0.30133
precip.in      -0.398170   0.550591  -0.723  0.46958
dark.before.12 -0.355386   0.125799  -2.825  0.00473 **
school          0.012638   0.371274   0.034  0.97285
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 93.941  on 82  degrees of freedom
Residual deviance: 71.120  on 72  degrees of freedom
AIC: 272.49

Number of Fisher Scoring iterations: 5
```

i


Count per week
8
6
4
2
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

i


Count per week
0
2
4
6
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

9 Results for murder.g

9.1 Summary Values for murder.g

Table 9.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
murder.g	83	6.265	2.623	1	6	13

Table 9.2: Descriptives for Outcome After Ferguson Protests Begin

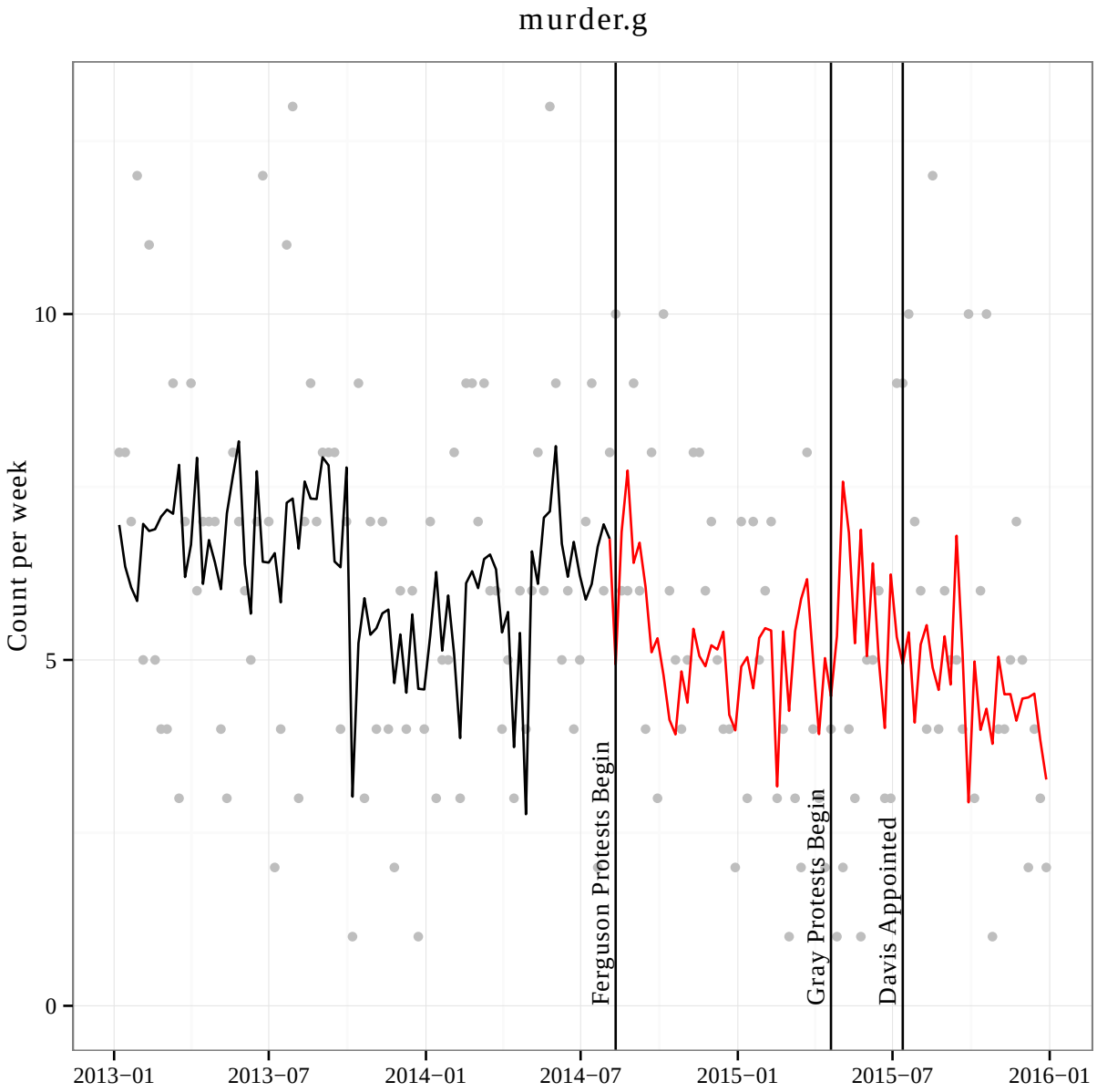
Statistic	N	Mean	St. Dev.	Min	Median	Max
murder.g	73	5.137	2.535	1	5	12

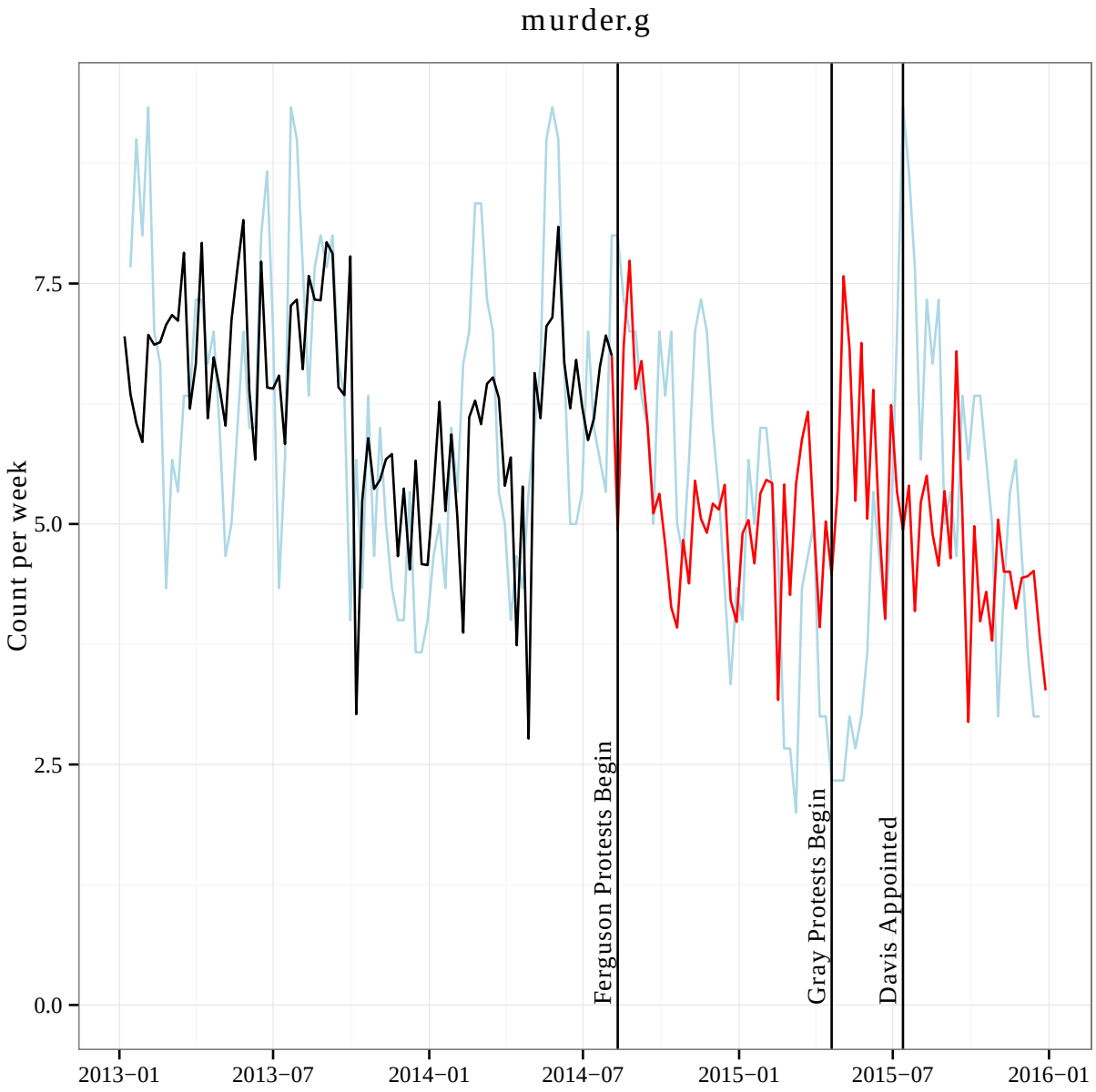
9.2 Four Models for murder.g

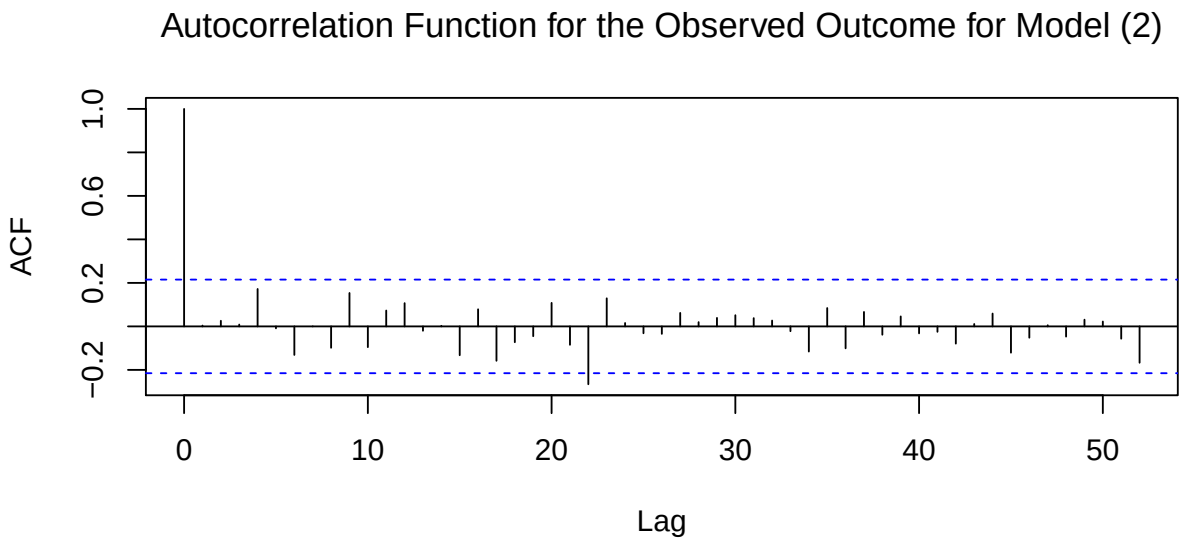
Table 9.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

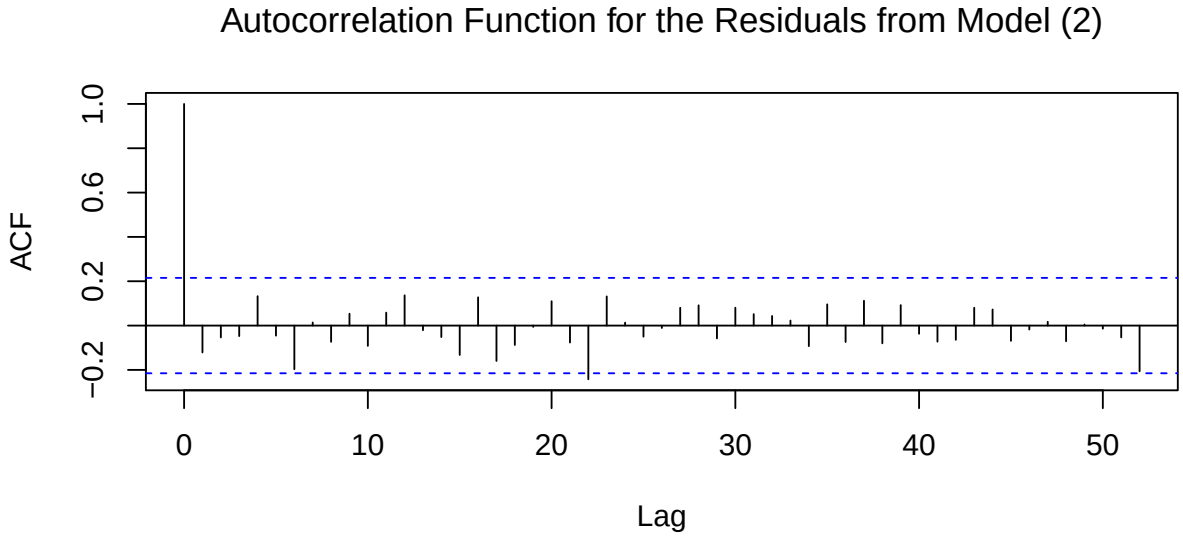
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.02	−0.01		−0.02
After Ferguson Protests Begin (week of 8/11/14 onward)	0.53		0.15	0.68
After Gray Protests Begin (week of 4/20/15 onward)	−0.61		−1.79	−1.75
Unrest and National Guard (during week of 4/27/15)	−3.21		−2.70	−2.51
After Commissioner Batts Fired (week of 7/13/15 onward)	1.88		2.55	2.41
Average Maximum Temperature to 50 Degrees		0.03		0.04
Plus Degrees in the 50s		−0.18		−0.17
Plus Degrees in the 60s		0.13		0.17
Plus Degrees in the 70s		0.25		0.06
Plus Degrees greater than 80		−0.38		−0.05
Snowfall (inches)		−0.57		−0.68
Precipitation (inches)		−3.72		−1.28
Darkness Before Midnight (hours)		−0.45		−0.24
School Days (proportion of week)		1.43		0.68
Observations	156	83	156	156
R^2	0.11	0.17	0.07	0.19

9.3 Least Squares Model (2) for murder.g



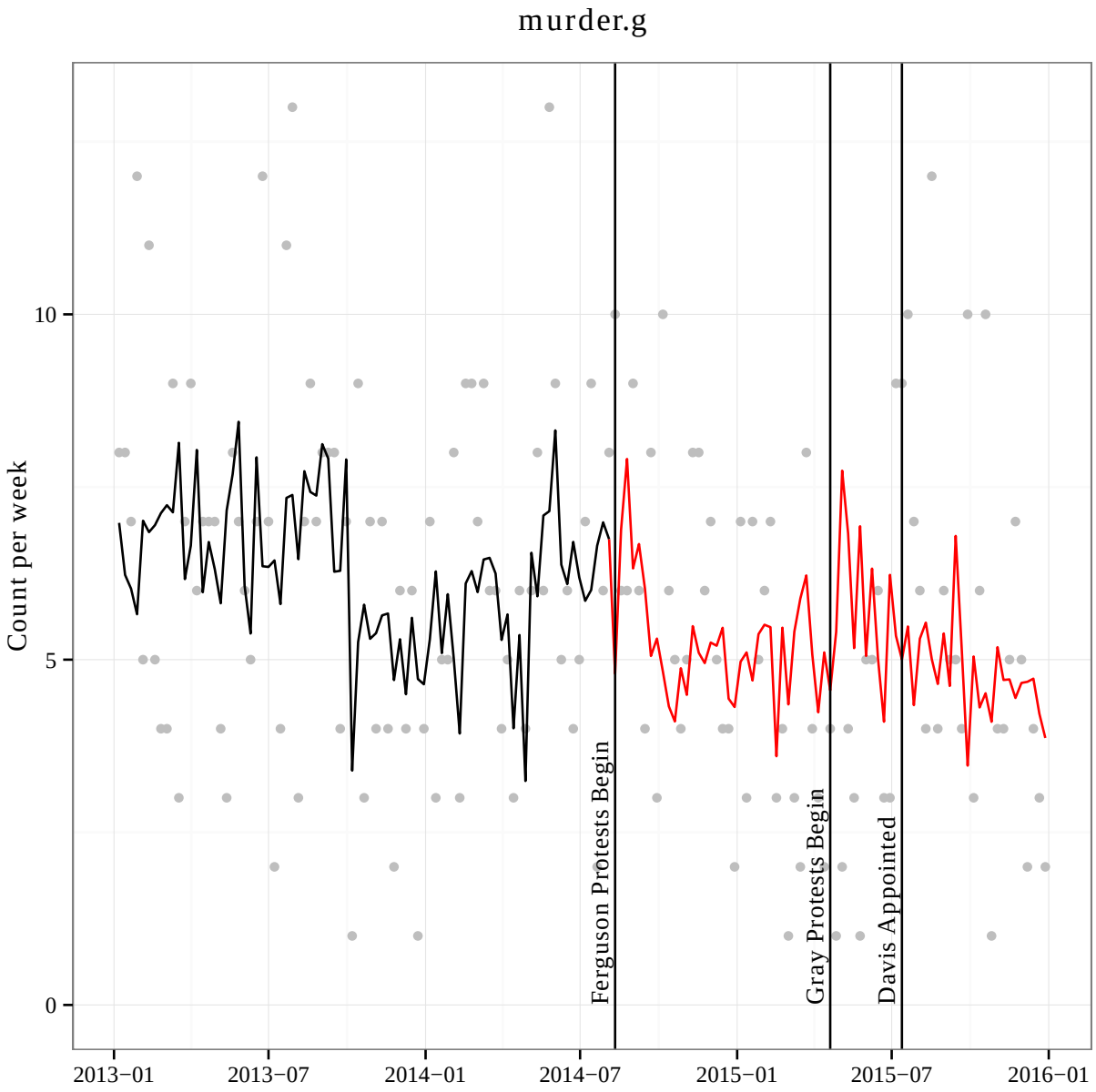

murder.g
Count per week
7.5
5.0
2.5
0.0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

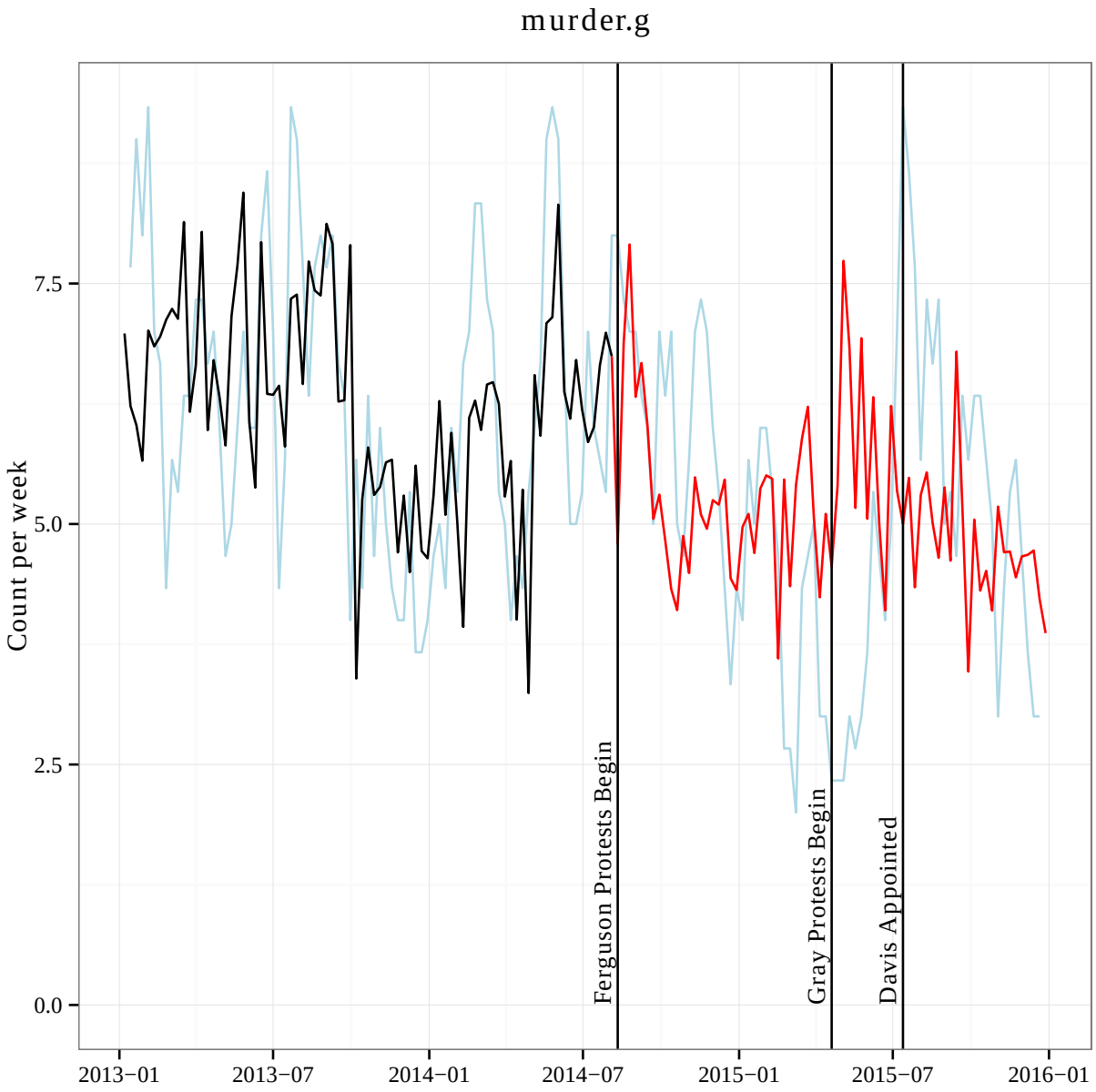

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-2.12011  -0.60476  -0.04247   0.51058   2.31538

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)     2.117918   0.874829   2.421   0.0155 *
t              -0.002079   0.001955  -1.063   0.2876
tmax.f.spline1  0.005165   0.015342   0.337   0.7364
tmax.f.spline2 -0.032208   0.036358  -0.886   0.3757
tmax.f.spline3  0.025441   0.051929   0.490   0.6242
tmax.f.spline4  0.038654   0.046555   0.830   0.4064
tmax.f.spline5 -0.061186   0.040030  -1.529   0.1264
snow.in        -0.113817   0.177650  -0.641   0.5217
precip.in      -0.704001   0.322657  -2.182   0.0291 *
dark.before.12 -0.077755   0.063835  -1.218   0.2232
school          0.223294   0.193818   1.152   0.2493
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 93.857  on 82  degrees of freedom
Residual deviance: 77.841  on 72  degrees of freedom
AIC: 398.74

Number of Fisher Scoring iterations: 4
```


murder.g
Count per week
10
5
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


murder.g
Count per week
7.5
5.0
2.5
0.0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

10 Results for robbery

10.1 Summary Values for robbery

Table 10.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
robbery	83	15.711	5.052	5	15	28

Table 10.2: Descriptives for Outcome After Ferguson Protests Begin

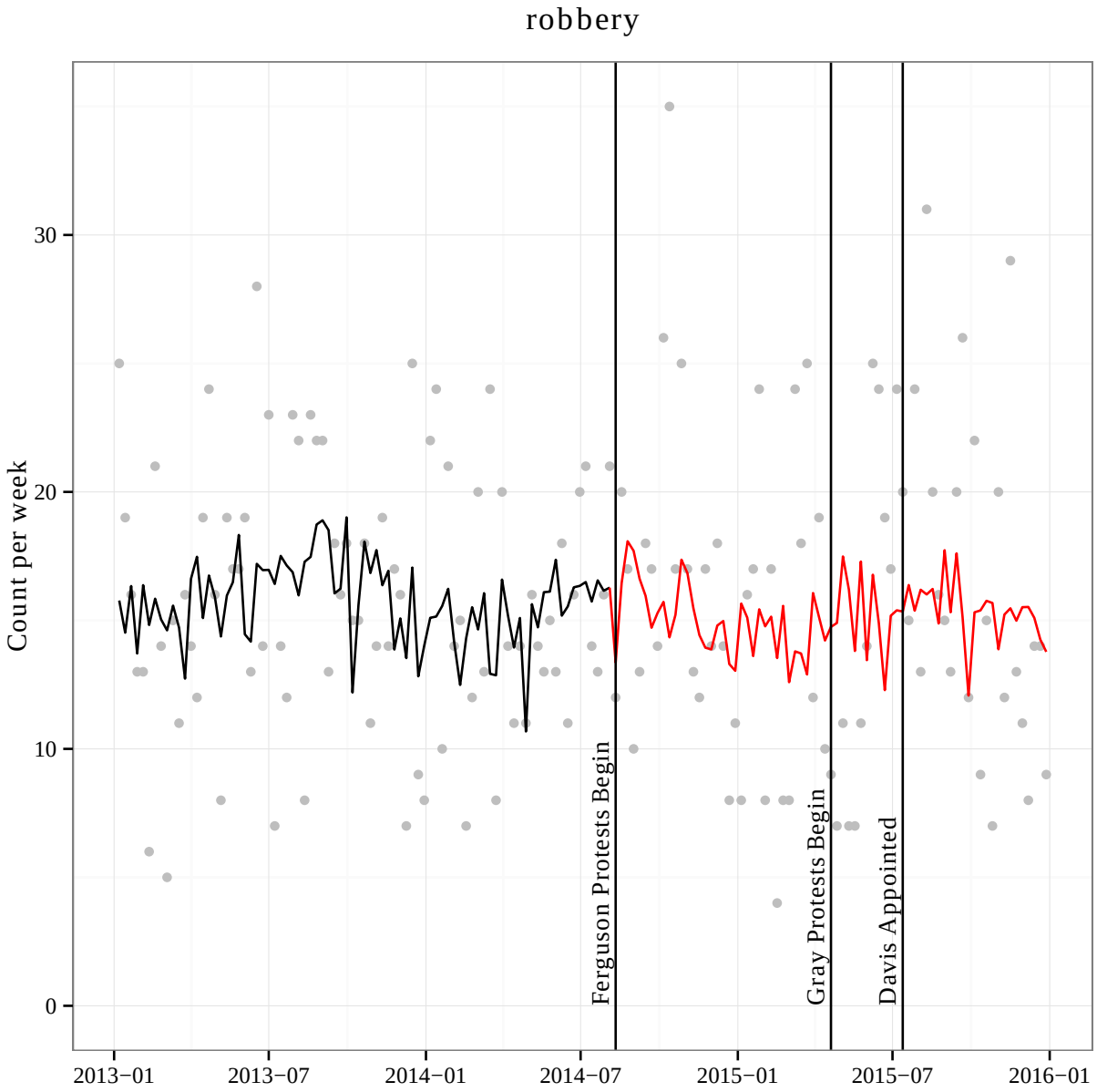
Statistic	N	Mean	St. Dev.	Min	Median	Max
robbery	73	15.740	6.444	4	15	35

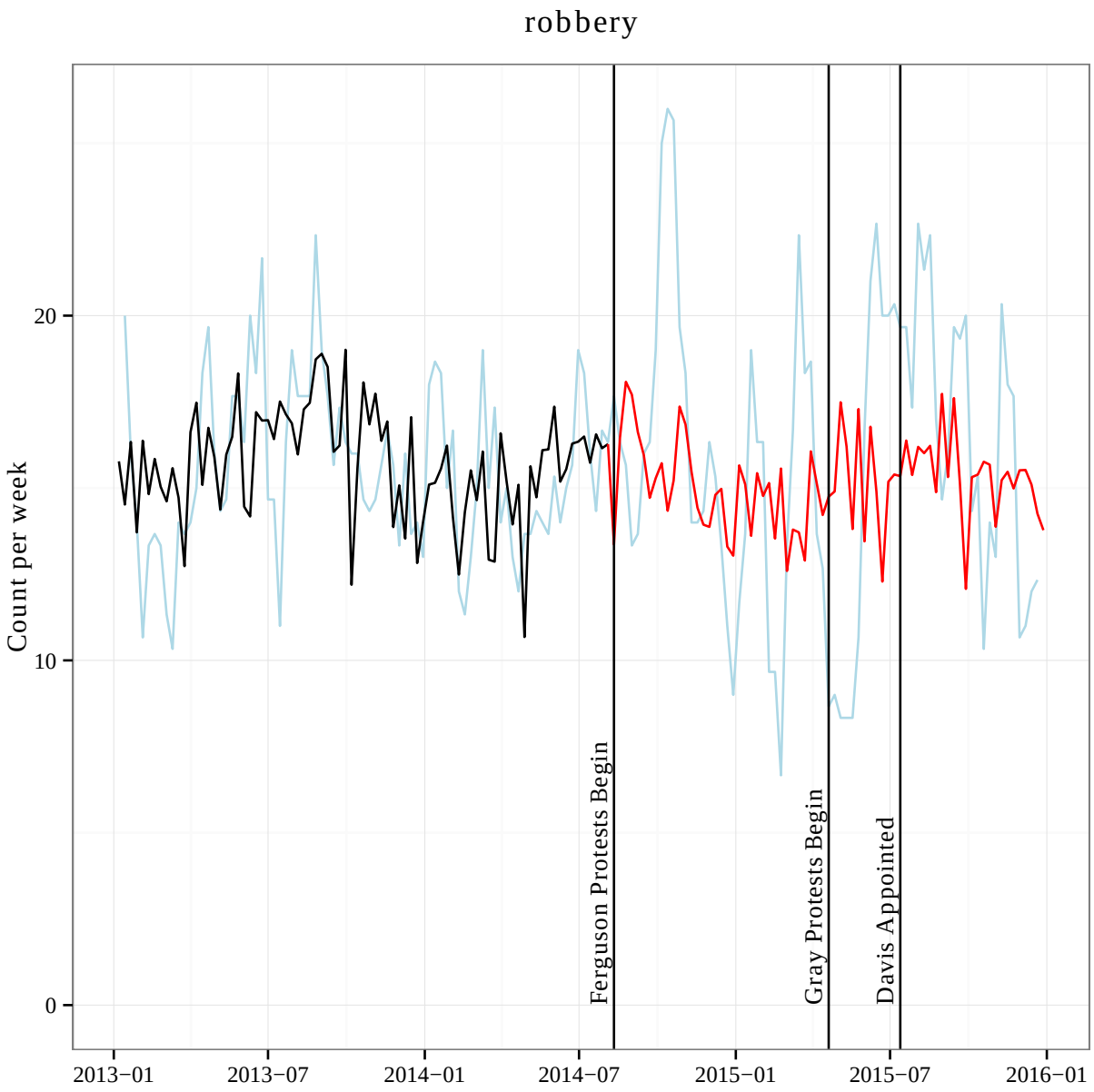
10.2 Four Models for robbery

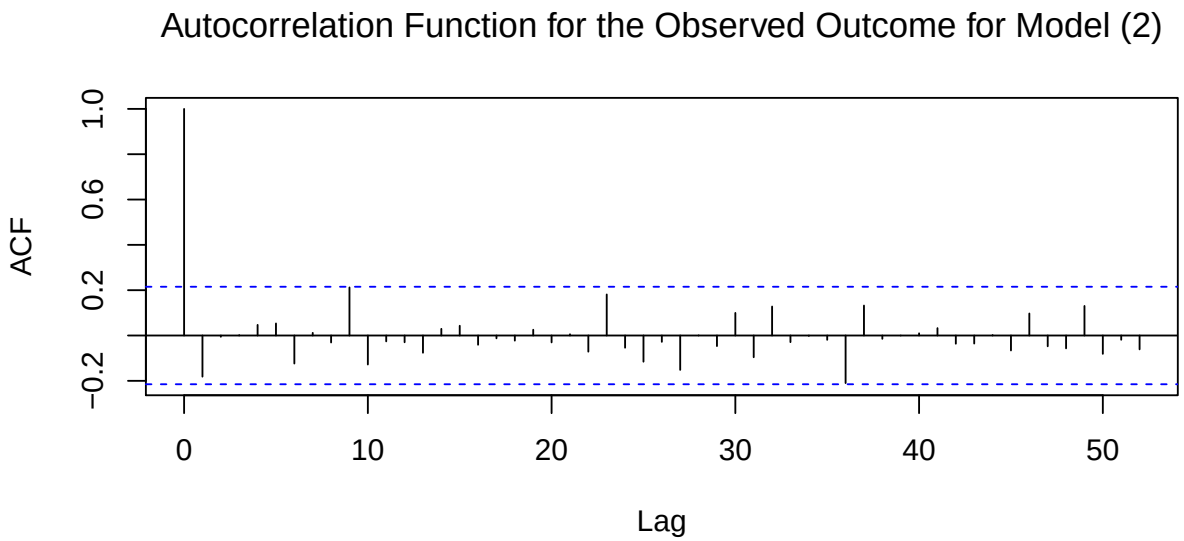
Table 10.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

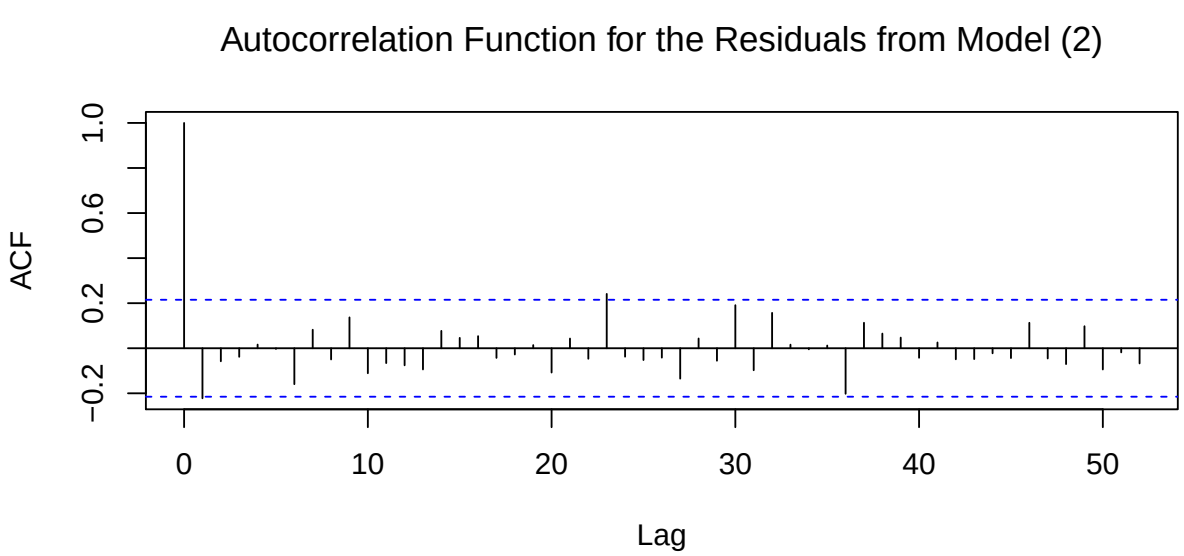
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.02	−0.01		−0.01
After Ferguson Protests Begin (week of 8/11/14 onward)	1.17		0.76	1.08
After Gray Protests Begin (week of 4/20/15 onward)	0.03		−0.71	−1.56
Unrest and National Guard (during week of 4/27/15)	−8.37		−7.94	−8.18
After Commissioner Batts Fired (week of 7/13/15 onward)	1.40		0.91	1.59
Average Maximum Temperature to 50 Degrees		−0.11		0.12
Plus Degrees in the 50s		0.47		−0.03
Plus Degrees in the 60s		−0.62		−0.18
Plus Degrees in the 70s		0.56		0.19
Plus Degrees greater than 80		−0.26		0.10
Snowfall (inches)		−0.94		−1.72
Precipitation (inches)		−5.71		−4.37
Darkness Before Midnight (hours)		0.33		−0.01
School Days (proportion of week)		1.70		0.22
Observations	156	83	156	156
R^2	0.02	0.10	0.02	0.10

10.3 Least Squares Model (2) for robbery



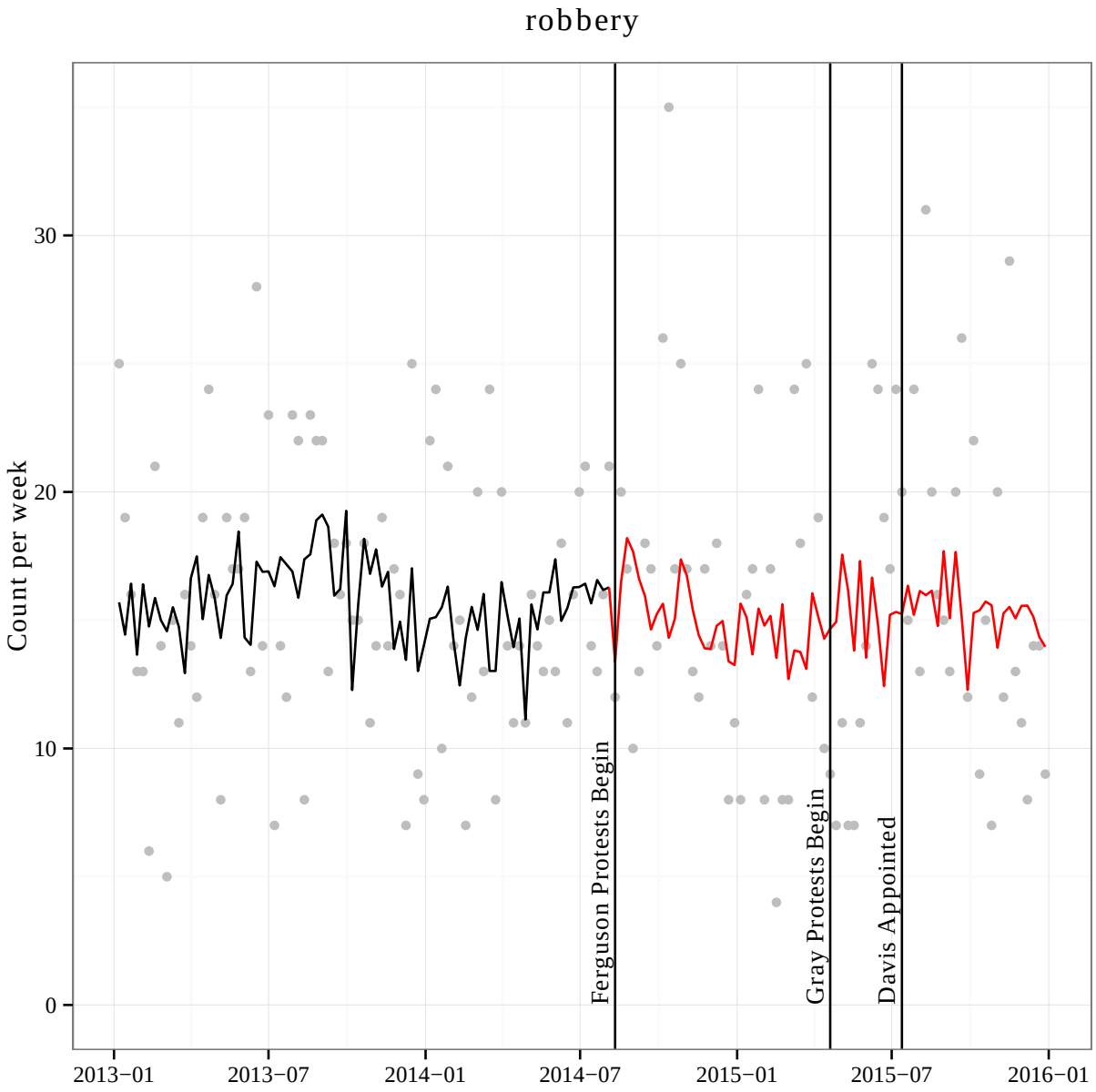

robbery
Count per week
20
10
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

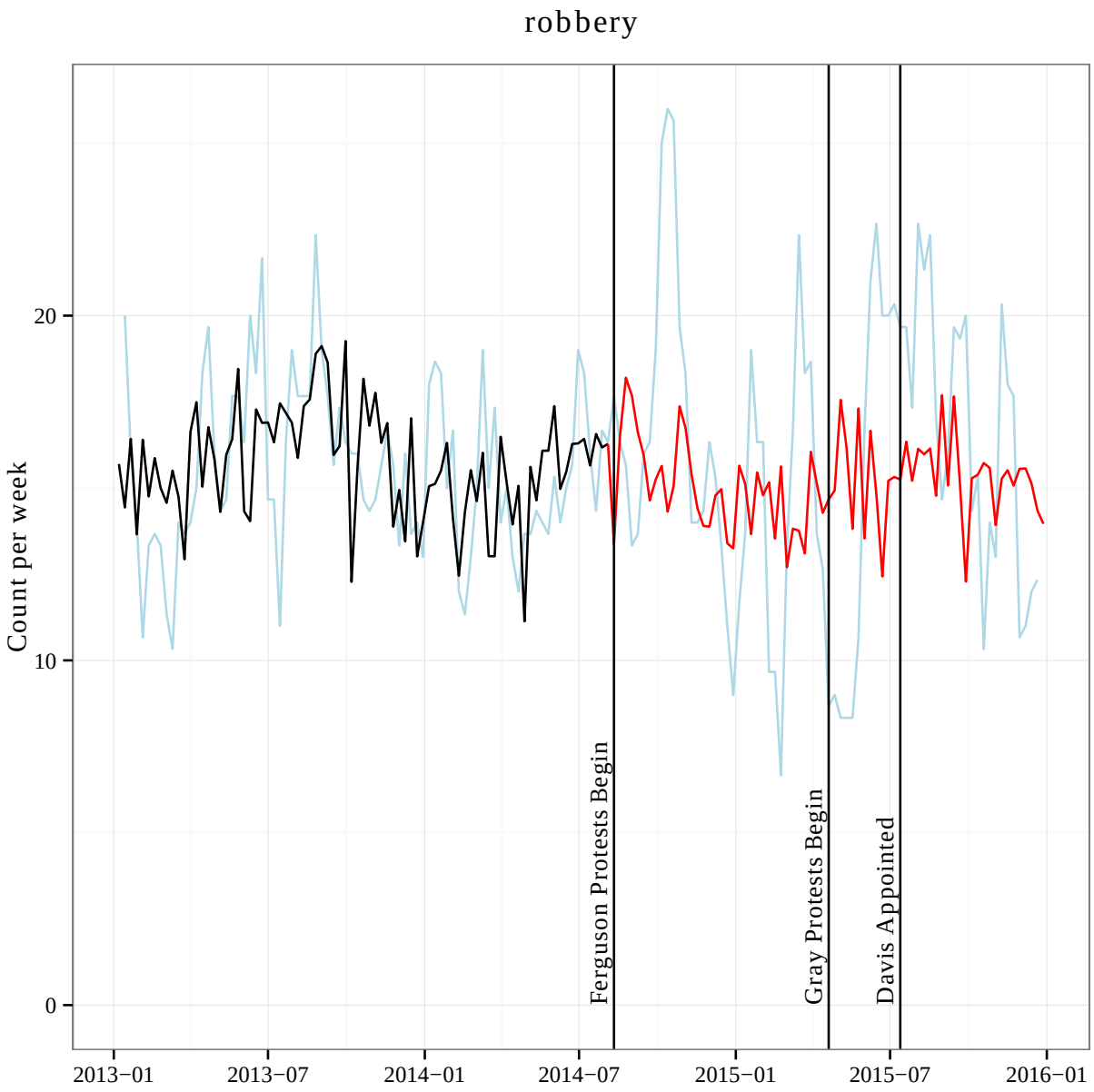

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.9061  -0.8910  -0.1051   0.8295   2.7181

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     2.9010477  0.5375965   5.396  6.8e-08 ***
t              -0.0007367  0.0012567  -0.586   0.5578
tmax.f.spline1 -0.0072386  0.0095771  -0.756   0.4498
tmax.f.spline2  0.0301288  0.0226432   1.331   0.1833
tmax.f.spline3 -0.0386537  0.0311946  -1.239   0.2153
tmax.f.spline4  0.0351742  0.0285361   1.233   0.2177
tmax.f.spline5 -0.0167530  0.0248645  -0.674   0.5005
snow.in        -0.0689513  0.1051148  -0.656   0.5118
precip.in      -0.3908231  0.1920396  -2.035   0.0418 *
dark.before.12  0.0195589  0.0399639   0.489   0.6245
school          0.1018338  0.1235196   0.824   0.4097
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 138.14  on 82  degrees of freedom
Residual deviance: 124.52  on 72  degrees of freedom
AIC: 523.86

Number of Fisher Scoring iterations: 4
```


robbery
Count per week
30
20
10
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01


robbery
Count per week
20
10
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

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	83	25.783	7.434	6	26	46

Table 11.2: Descriptives for Outcome After Ferguson Protests Begin

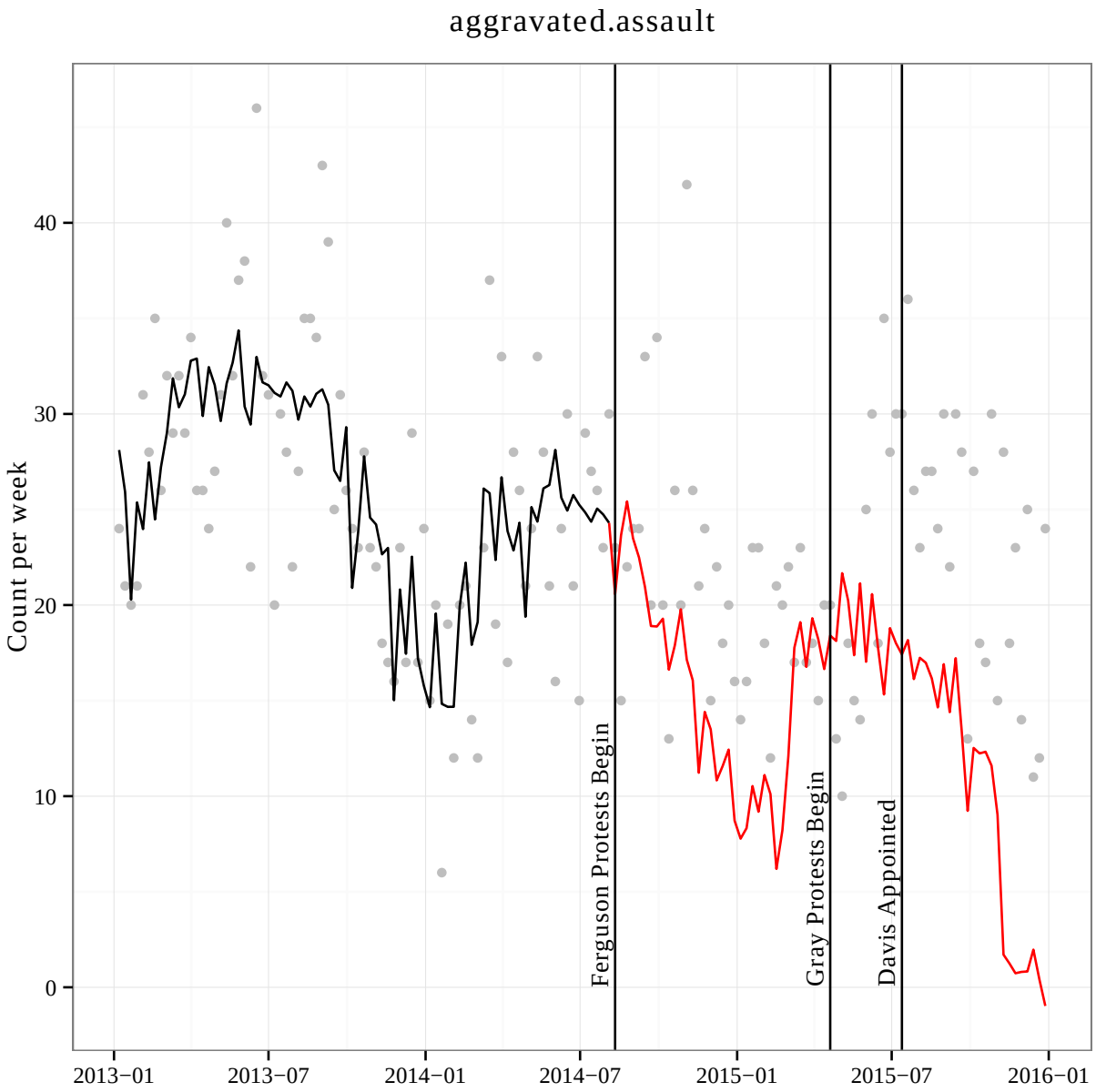
Statistic	N	Mean	St. Dev.	Min	Median	Max
aggravated.assault	73	21.795	6.583	10	22	42

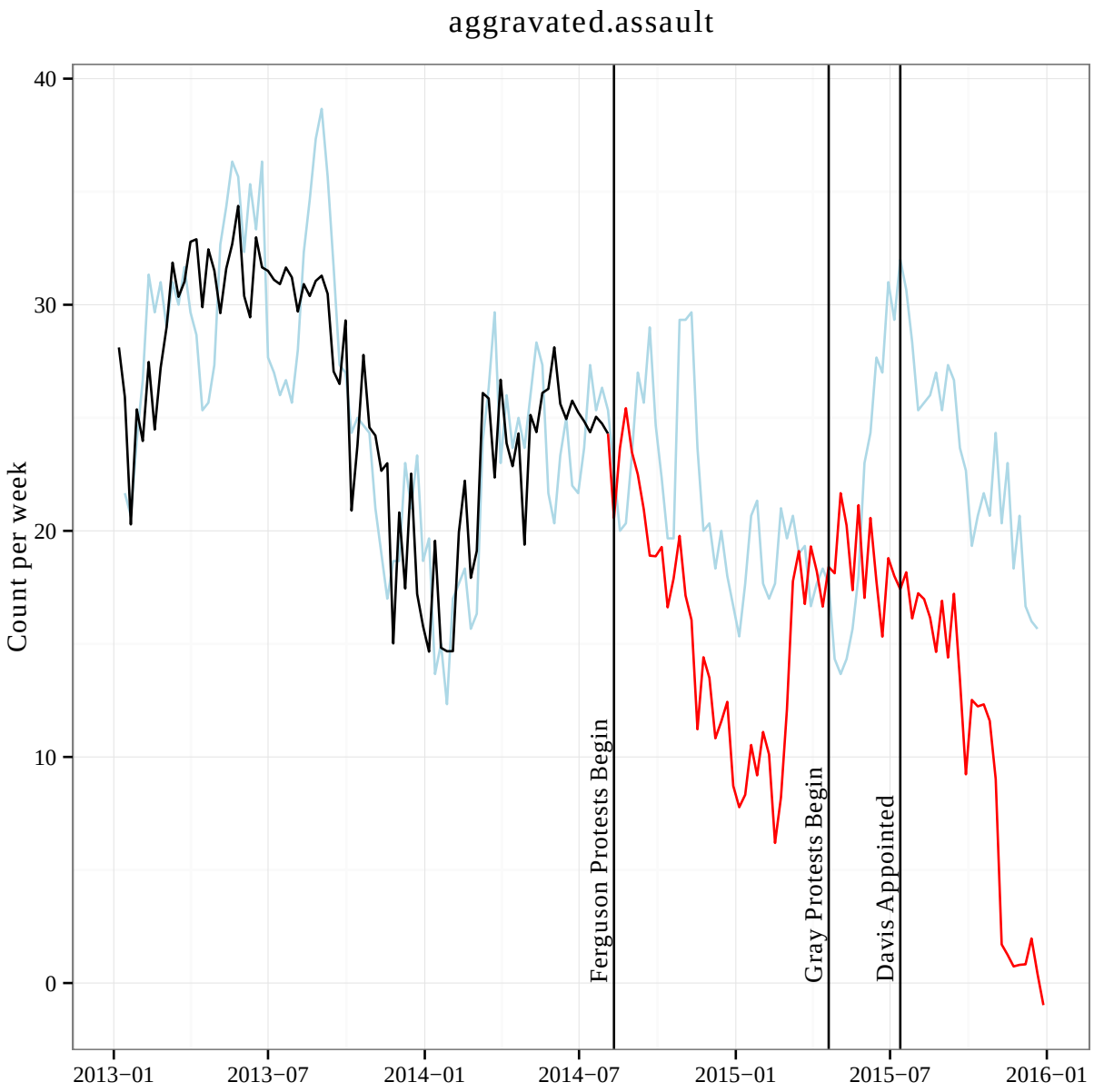
11.2 Four Models for aggravated.assault

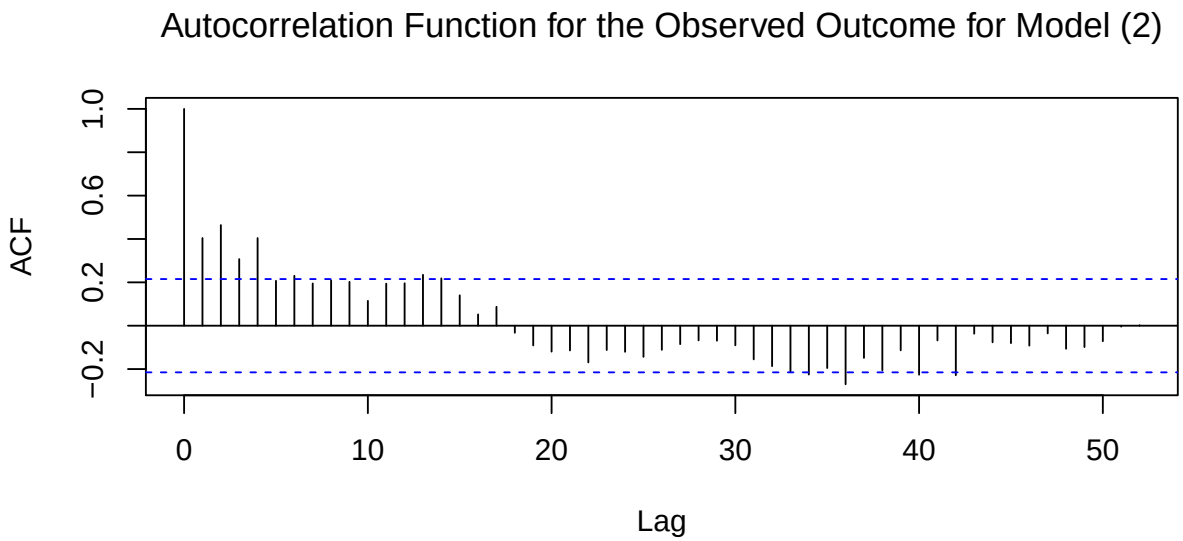
Table 11.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

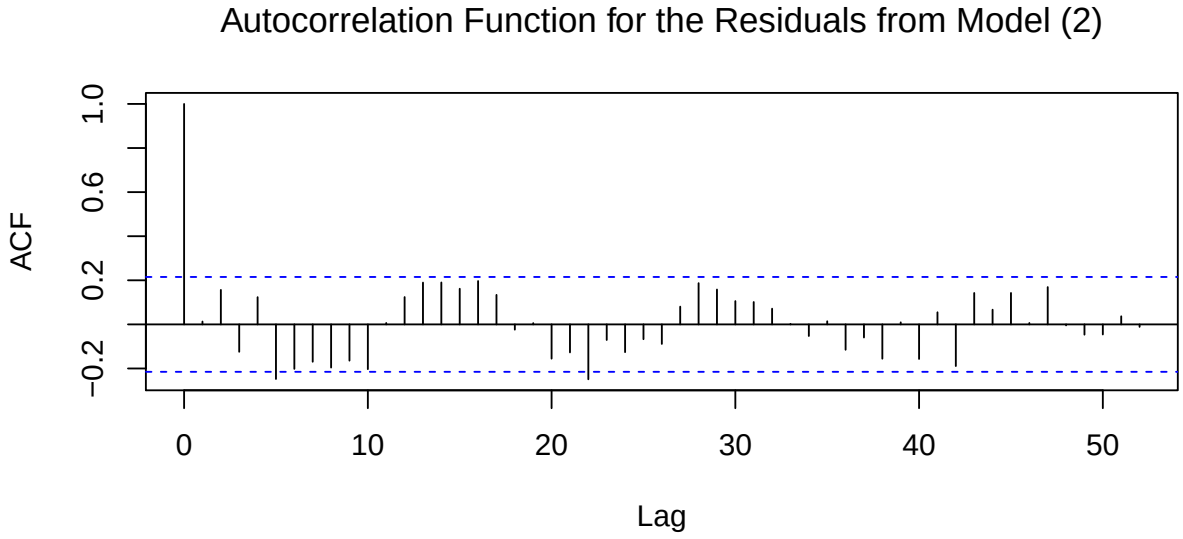
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.12	−0.13		−0.12
After Ferguson Protests Begin (week of 8/11/14 onward)	2.24		5.61	4.14
After Gray Protests Begin (week of 4/20/15 onward)	3.93		−2.27	−0.52
Unrest and National Guard (during week of 4/27/15)	−9.67		−8.46	−8.16
After Commissioner Batts Fired (week of 7/13/15 onward)	3.16		9.69	6.90
Average Maximum Temperature to 50 Degrees		0.44		0.15
Plus Degrees in the 50s		−0.19		0.19
Plus Degrees in the 60s		−0.68		−0.70
Plus Degrees in the 70s		0.86		0.68
Plus Degrees greater than 80		−0.53		−0.25
Snowfall (inches)		2.28		1.49
Precipitation (inches)		−6.60		−3.95
Darkness Before Midnight (hours)		−2.15		−1.32
School Days (proportion of week)		2.88		1.30
Observations	156	83	156	156
R^2	0.18	0.47	0.38	0.36

11.3 Least Squares Model (2) for aggravated.assault



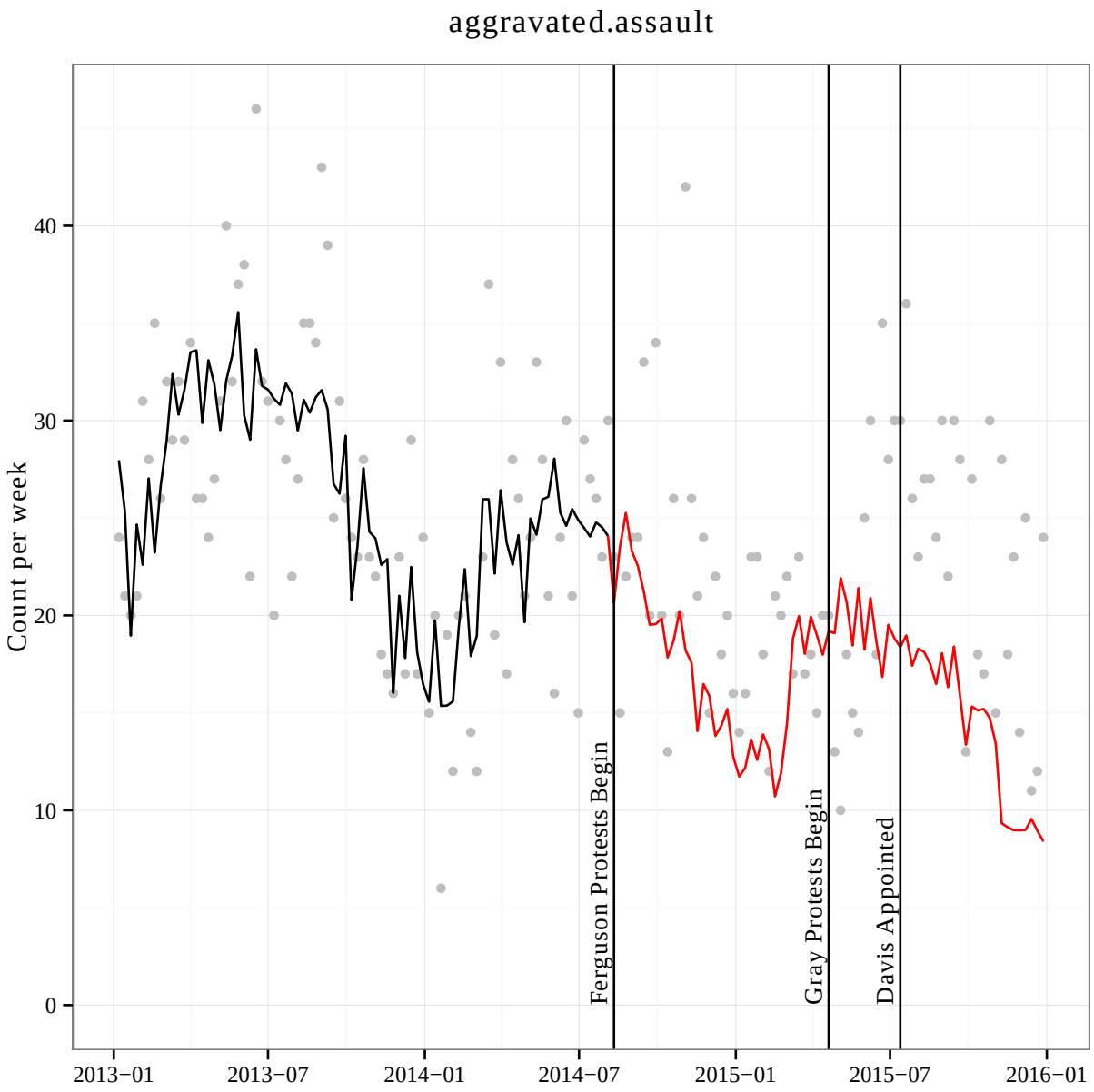

aggravated.assault
Count per week
40
30
20
10
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

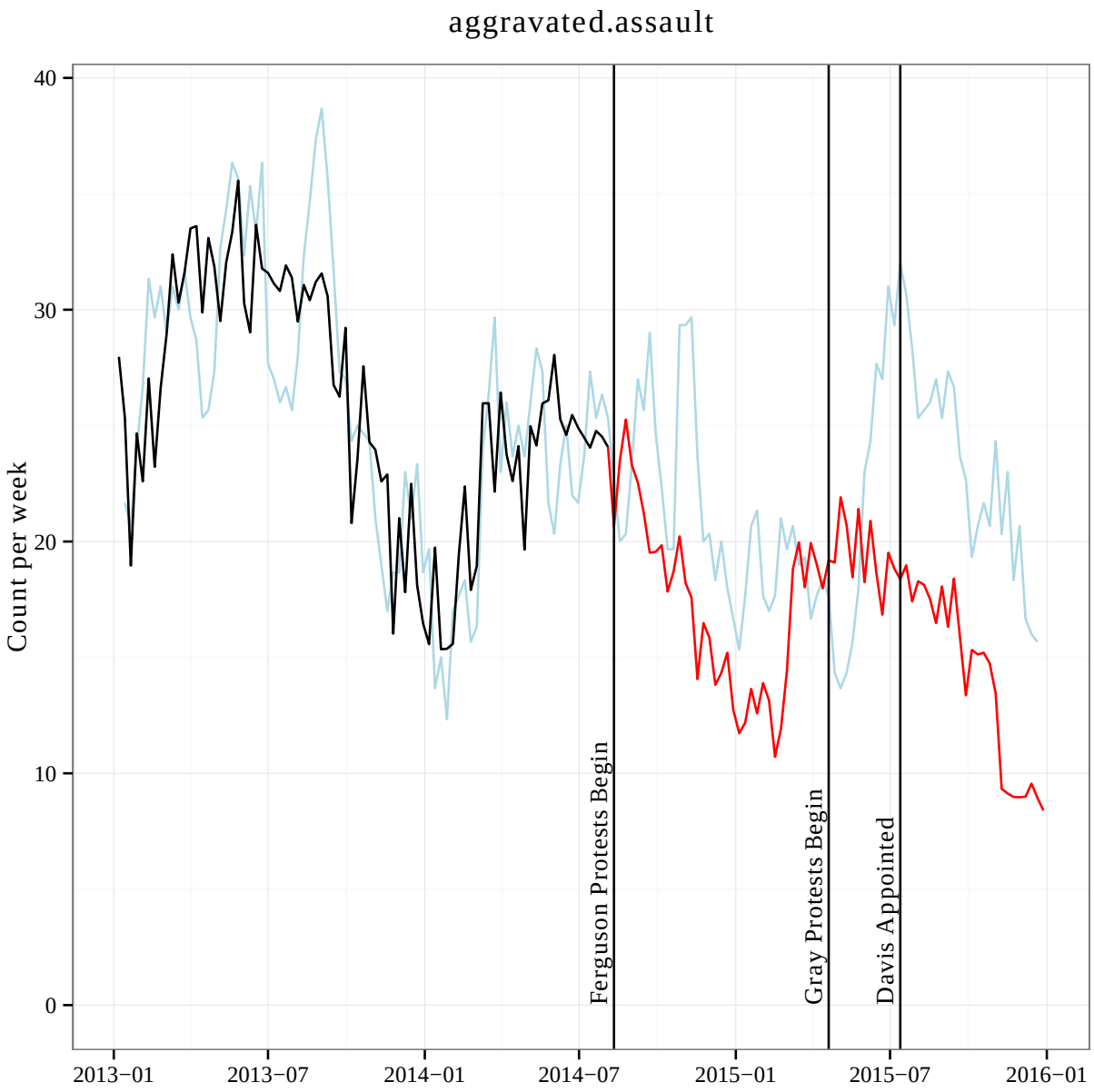

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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
-2.7265  -0.7166  -0.1172   0.6380   2.2721

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     2.7259681  0.4634707   5.882 4.06e-09 ***
t              -0.0049429  0.0009749  -5.070 3.97e-07 ***
tmax.f.spline1  0.0225056  0.0082742   2.720  0.00653 **
tmax.f.spline2 -0.0135286  0.0179966  -0.752  0.45221
tmax.f.spline3 -0.0254655  0.0244451  -1.042  0.29753
tmax.f.spline4  0.0332595  0.0220840   1.506  0.13206
tmax.f.spline5 -0.0211756  0.0188943  -1.121  0.26240
snow.in         0.1011347  0.0854223   1.184  0.23644
precip.in      -0.2757187  0.1462840  -1.885  0.05945 .
dark.before.12 -0.0855521  0.0315035  -2.716  0.00661 **
school          0.1177144  0.0957756   1.229  0.21905
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 181.825  on 82  degrees of freedom
Residual deviance:  94.813  on 72  degrees of freedom
AIC: 535.8

Number of Fisher Scoring iterations: 4
```


aggravated.assault
Count per week
40
30
20
10
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


aggravated.assault
Count per week
40
30
20
10
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

12 Results for burglary

12.1 Summary Values for burglary

Table 12.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
burglary	83	23.289	7.027	10	23	41

Table 12.2: Descriptives for Outcome After Ferguson Protests Begin

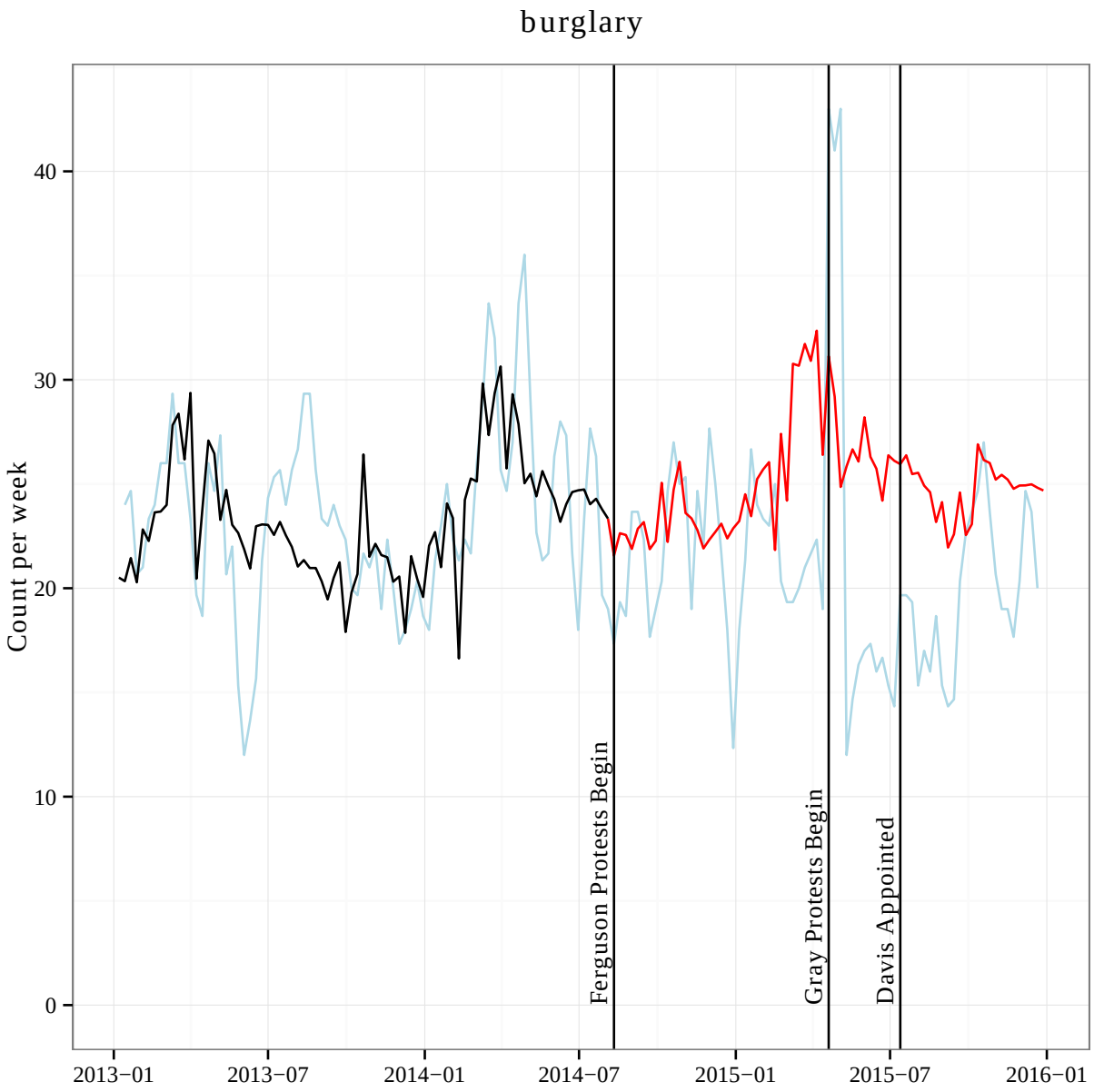
Statistic	N	Mean	St. Dev.	Min	Median	Max
burglary	73	21.123	11.350	7	20	100

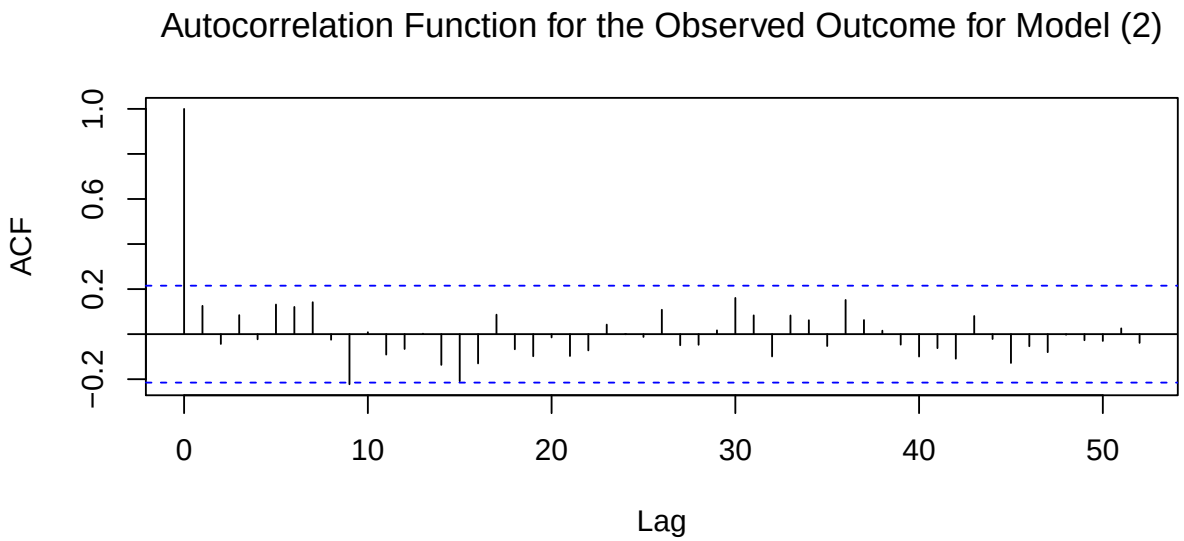
12.2 Four Models for burglary

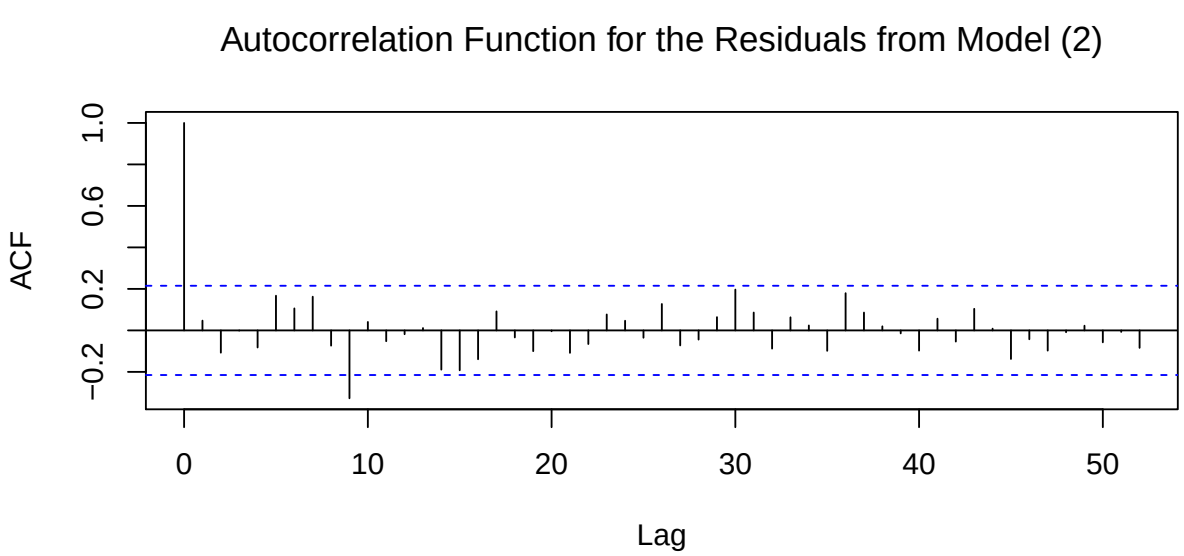
Table 12.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.03	0.03		0.02
After Ferguson Protests Begin (week of 8/11/14 onward)	−3.05		−2.87	−2.75
After Gray Protests Begin (week of 4/20/15 onward)	−7.37		−8.63	−7.47
Unrest and National Guard (during week of 4/27/15)	85.12		82.31	81.88
After Commissioner Batts Fired (week of 7/13/15 onward)	4.30		6.50	5.52
Average Maximum Temperature to 50 Degrees		−0.05		−0.08
Plus Degrees in the 50s		0.10		0.39
Plus Degrees in the 60s		−0.73		−0.87
Plus Degrees in the 70s		0.34		0.18
Plus Degrees greater than 80		0.40		0.44
Snowfall (inches)		−2.94		−2.79
Precipitation (inches)		−3.50		−2.19
Darkness Before Midnight (hours)		−3.28		−2.05
School Days (proportion of week)		0.51		0.67
Observations	156	83	156	156
R^2	0.51	0.16	0.53	0.56

12.3 Least Squares Model (2) for burglary


burglary
Count per week
40
30
20
10
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

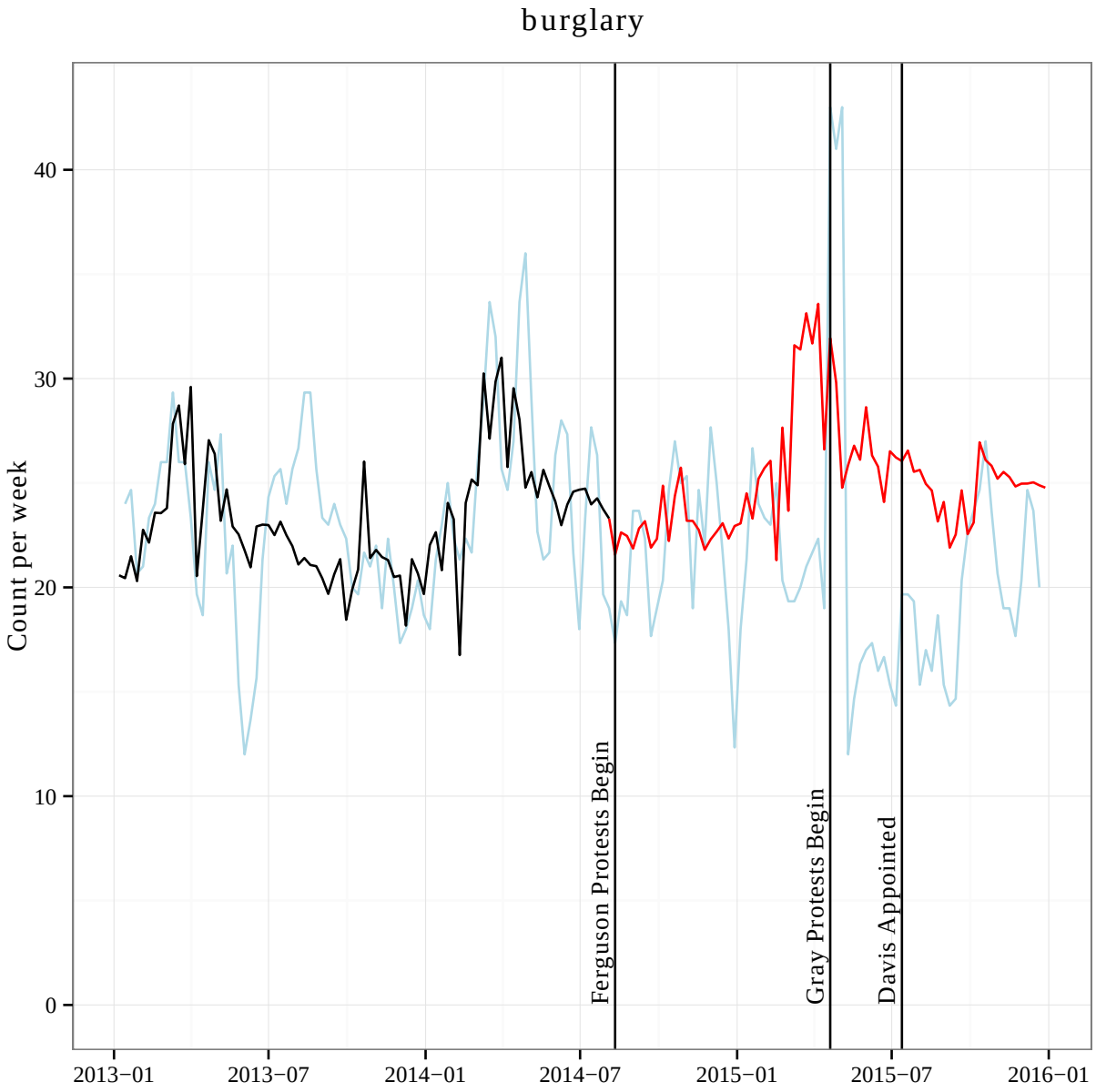

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

12.4 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
-3.09159  -1.06476  -0.00901   0.98627   2.62758

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)     4.090026   0.447346   9.143  < 2e-16 ***
t               0.001401   0.001013   1.382    0.167
tmax.f.spline1 -0.002189   0.007784  -0.281    0.779
tmax.f.spline2  0.002491   0.017714   0.141    0.888
tmax.f.spline3 -0.026712   0.024512  -1.090    0.276
tmax.f.spline4  0.011164   0.023194   0.481    0.630
tmax.f.spline5  0.017488   0.021010   0.832    0.405
snow.in        -0.141224   0.087119  -1.621    0.105
precip.in      -0.154623   0.148555  -1.041    0.298
dark.before.12 -0.138001   0.032287  -4.274 1.92e-05 ***
school          0.015559   0.102531   0.152    0.879
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 175.75  on 82  degrees of freedom
Residual deviance: 147.72  on 72  degrees of freedom
AIC: 580.24

Number of Fisher Scoring iterations: 4
```

burglary
Count per week
100
75
50
25
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


burglary
Count per week
40
30
20
10
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

13 Results for larceny

13.1 Summary Values for larceny

Table 13.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
larceny	83	42.133	8.716	18	41	64

Table 13.2: Descriptives for Outcome After Ferguson Protests Begin

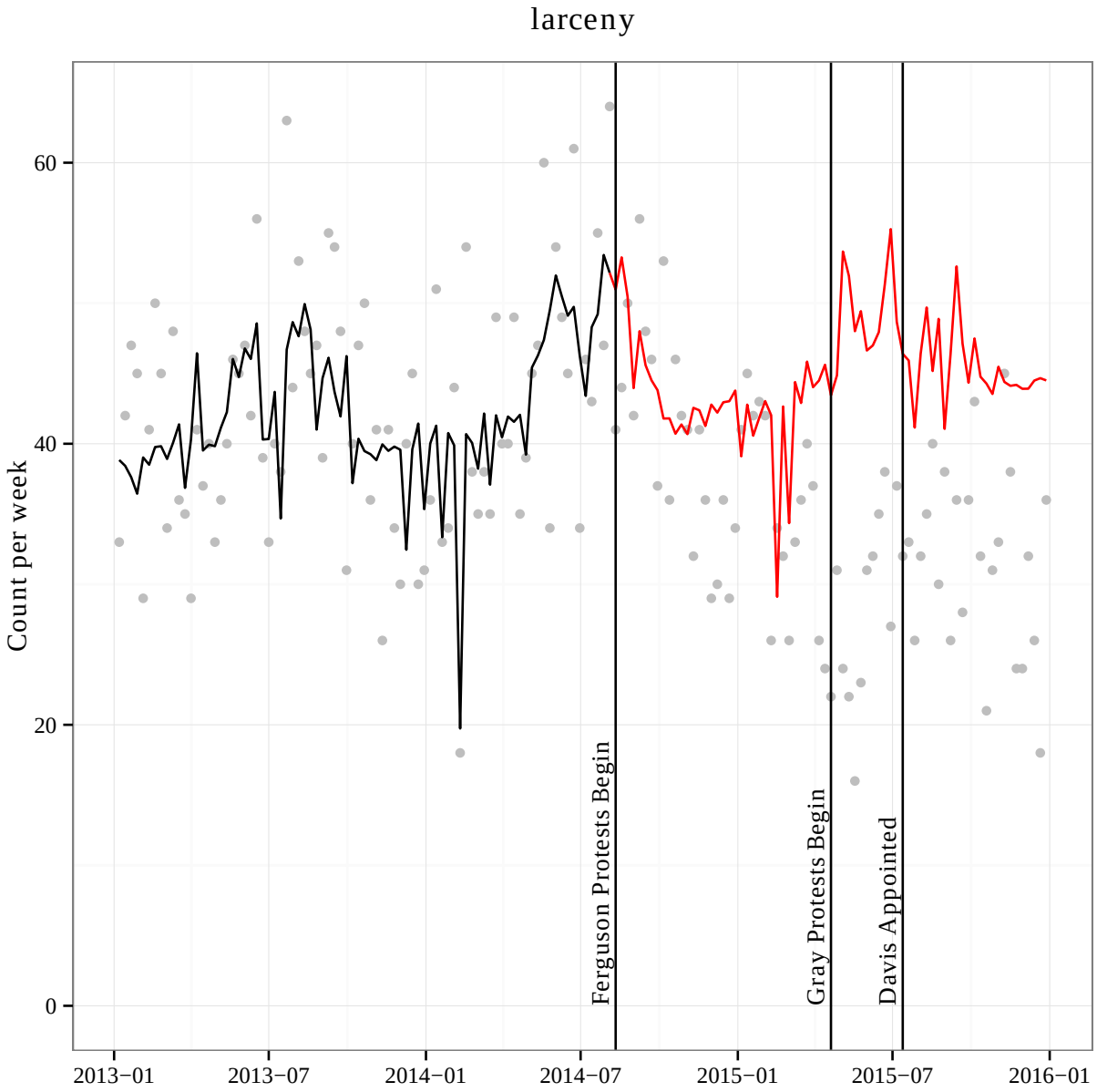
Statistic	N	Mean	St. Dev.	Min	Median	Max
larceny	73	34.370	8.229	16	34	56

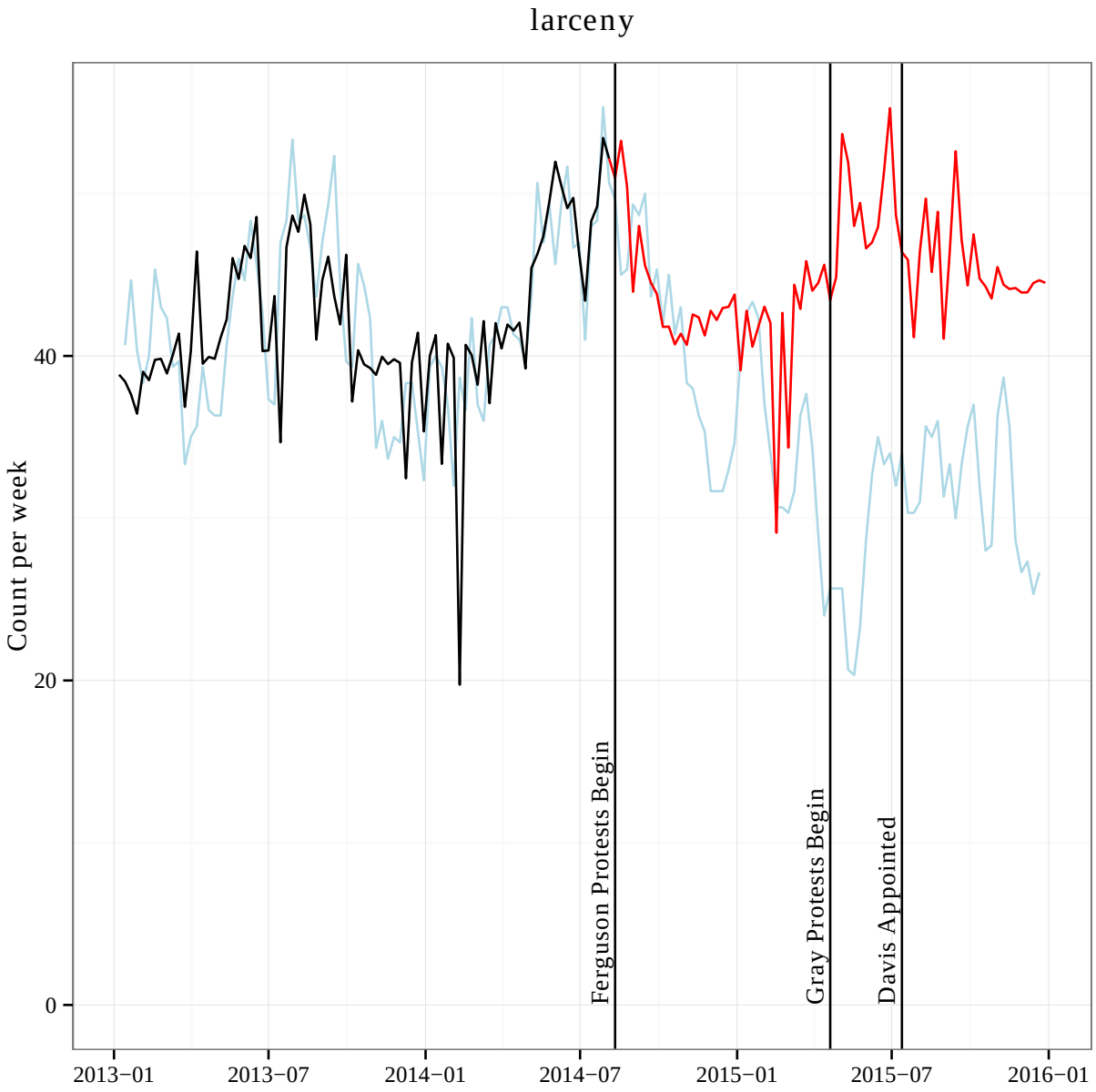
13.2 Four Models for larceny

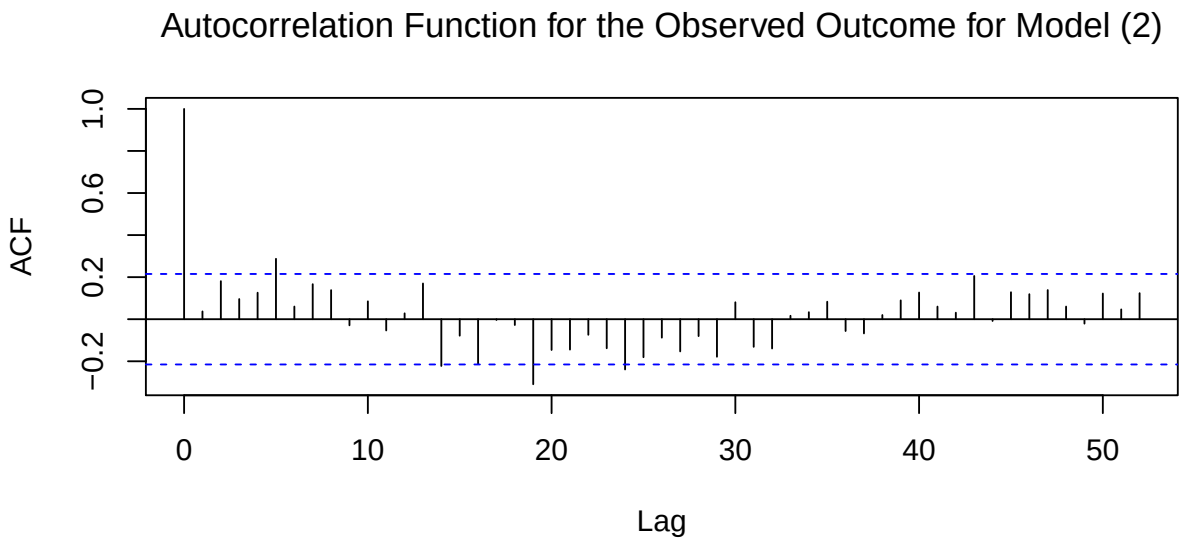
Table 13.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

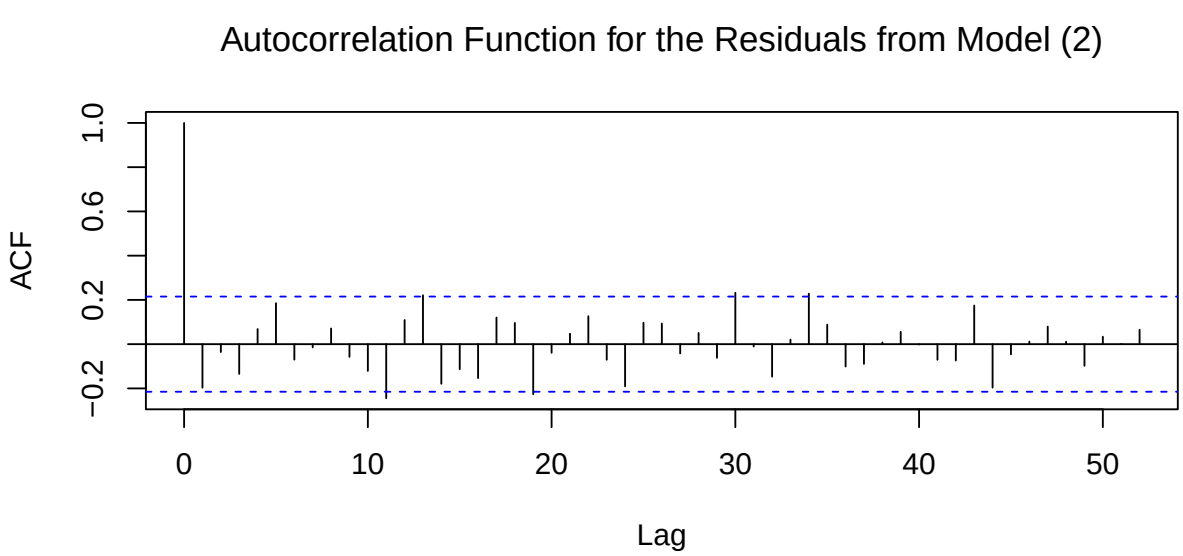
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.02	0.04		0.02
After Ferguson Protests Begin (week of 8/11/14 onward)	−5.24		−4.85	−3.62
After Gray Protests Begin (week of 4/20/15 onward)	−10.86		−16.64	−16.16
Unrest and National Guard (during week of 4/27/15)	3.20		7.62	7.84
After Commissioner Batts Fired (week of 7/13/15 onward)	3.49		7.89	7.29
Average Maximum Temperature to 50 Degrees		0.06		−0.15
Plus Degrees in the 50s		−0.35		0.23
Plus Degrees in the 60s		0.37		0.002
Plus Degrees in the 70s		0.85		0.81
Plus Degrees greater than 80		−2.19		−1.68
Snowfall (inches)		−7.84		−7.02
Precipitation (inches)		−3.71		−1.22
Darkness Before Midnight (hours)		−0.90		−0.30
School Days (proportion of week)		−1.48		0.81
Observations	156	83	156	156
R^2	0.26	0.35	0.47	0.45

13.3 Least Squares Model (2) for larceny



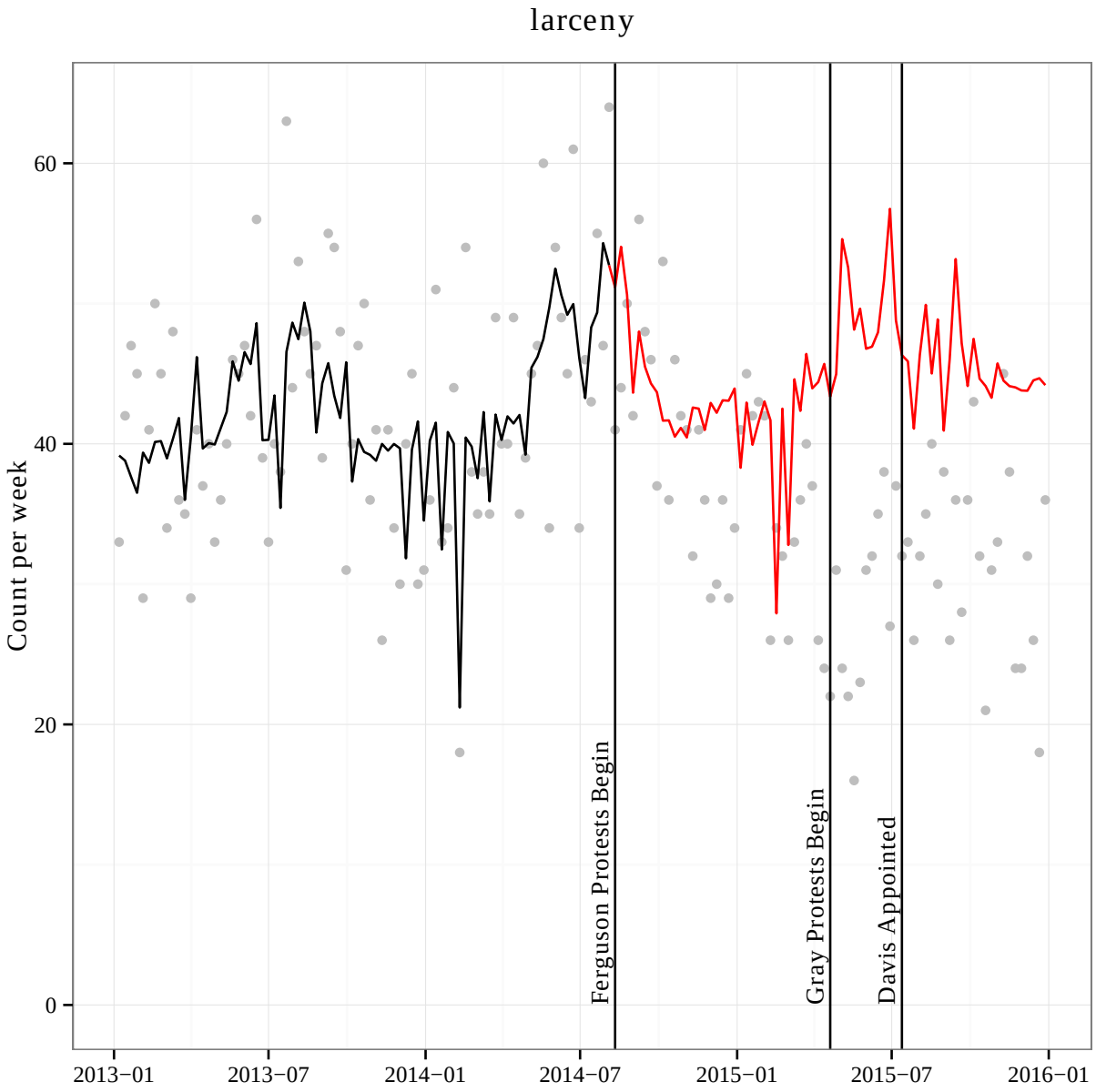

larceny
Count per week
40
20
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

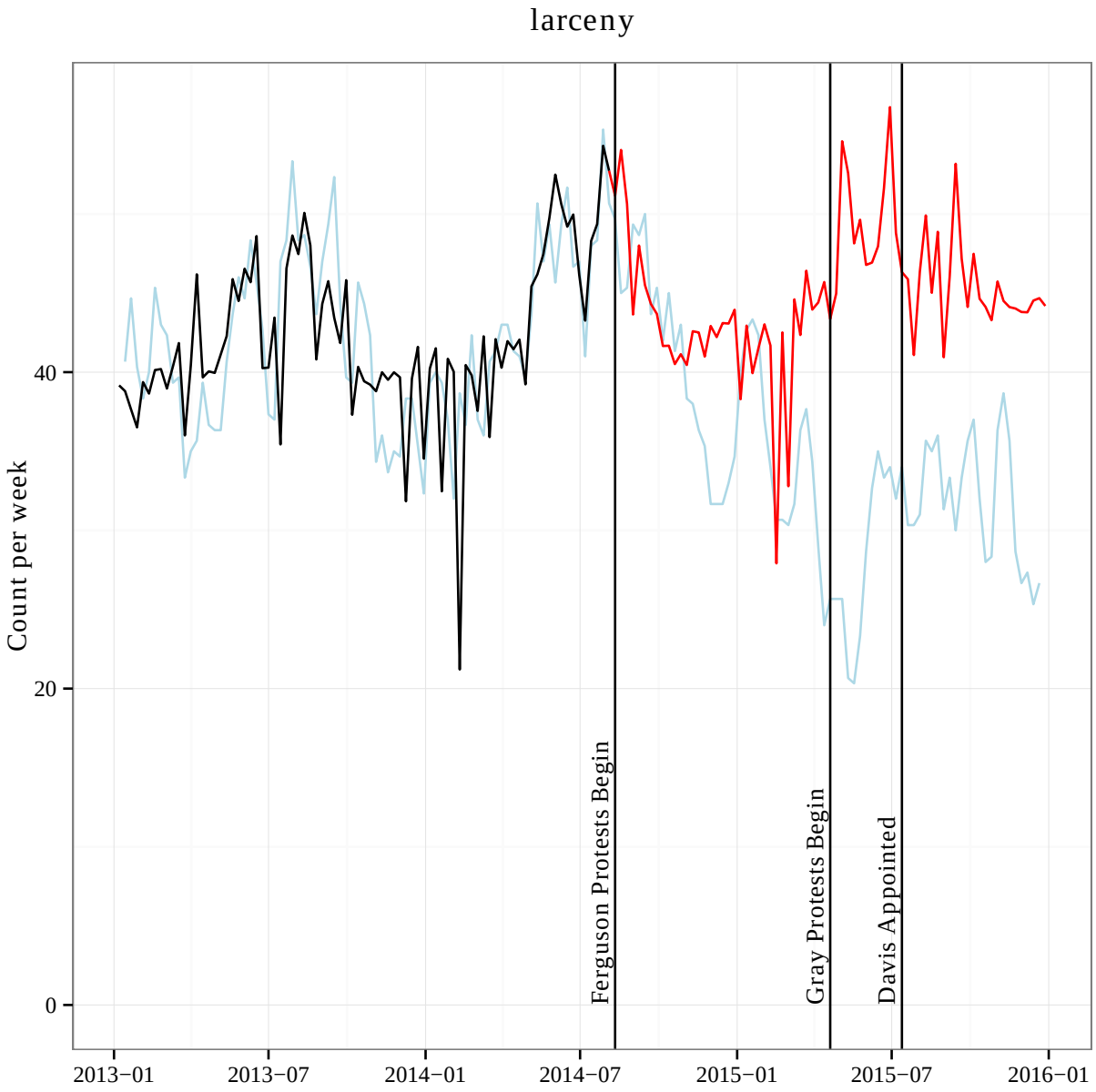

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-2.36895  -0.74612  -0.06316   0.81446   2.28585

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     3.7949558  0.3396473  11.173  < 2e-16 ***
t               0.0010356  0.0007526   1.376 0.168807
tmax.f.spline1  0.0014180  0.0060082   0.236 0.813425
tmax.f.spline2 -0.0097318  0.0140787  -0.691 0.489415
tmax.f.spline3  0.0104876  0.0195747   0.536 0.592117
tmax.f.spline4  0.0182250  0.0176121   1.035 0.300763
tmax.f.spline5 -0.0490677  0.0153940  -3.187 0.001435 **
snow.in        -0.2464260  0.0732153  -3.366 0.000763 ***
precip.in      -0.0920701  0.1099723  -0.837 0.402474
dark.before.12 -0.0234792  0.0246646  -0.952 0.341129
school         -0.0348513  0.0742191  -0.470 0.638660
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 149.075  on 82  degrees of freedom
Residual deviance:  95.259  on 72  degrees of freedom
AIC: 578.8

Number of Fisher Scoring iterations: 4
```


larceny
Count per week
60
40
20
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


larceny
Count per week
40
20
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

14 Results for arson

14.1 Summary Values for arson

Table 14.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
arson	83	1.205	1.056	0	1	5

Table 14.2: Descriptives for Outcome After Ferguson Protests Begin

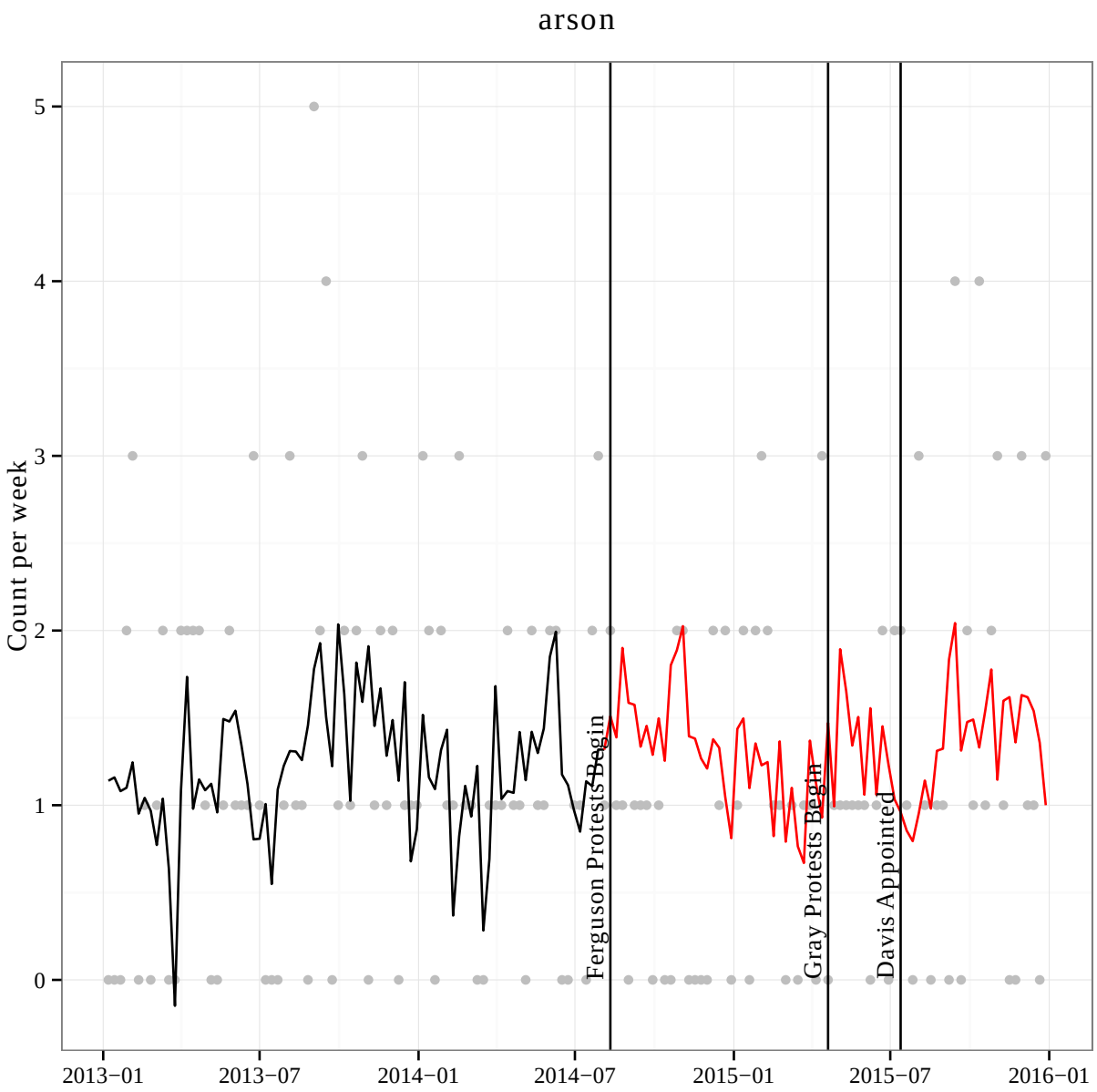
Statistic	N	Mean	St. Dev.	Min	Median	Max
arson	73	1.110	1.035	0	1	4

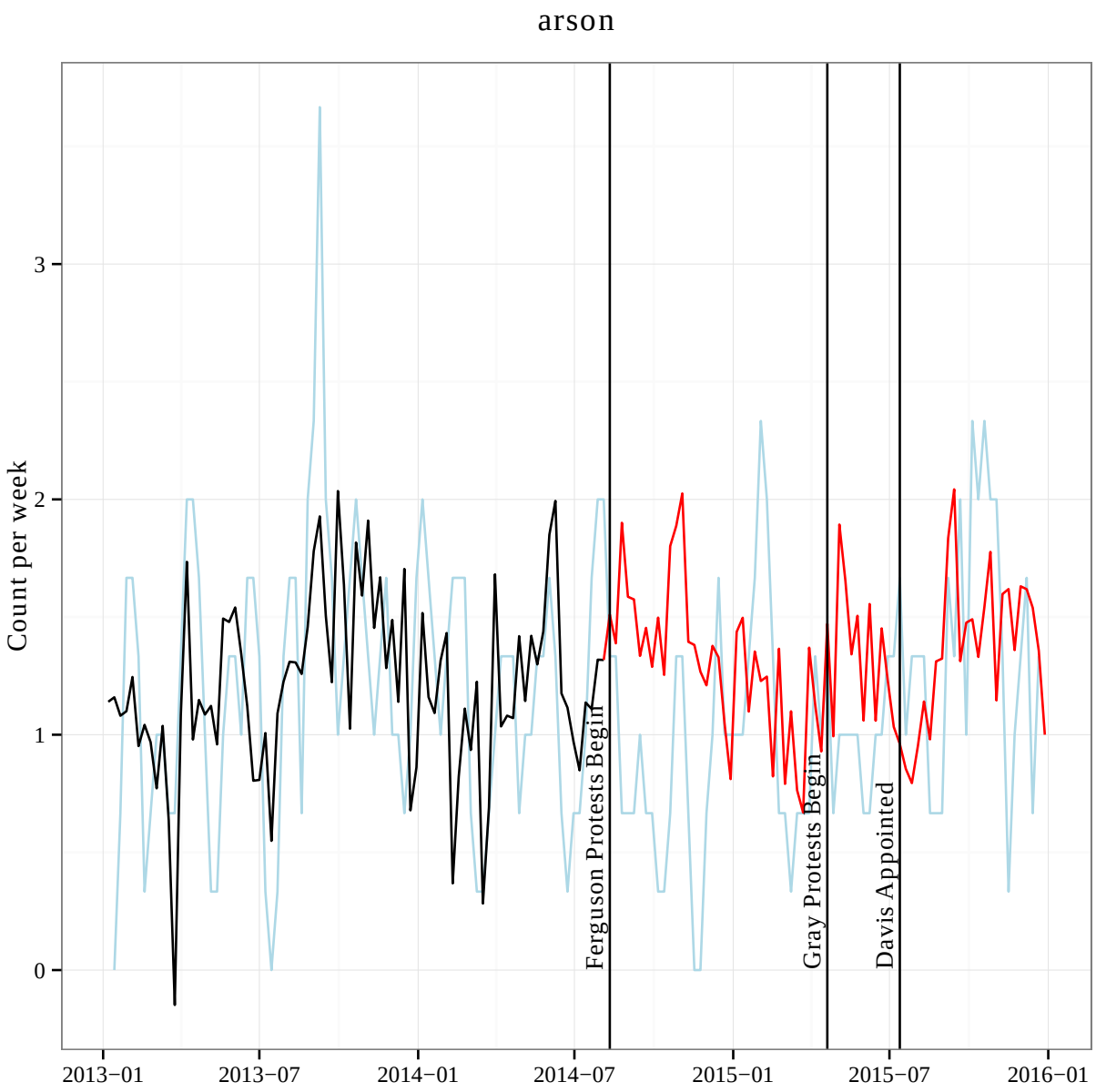
14.2 Four Models for arson

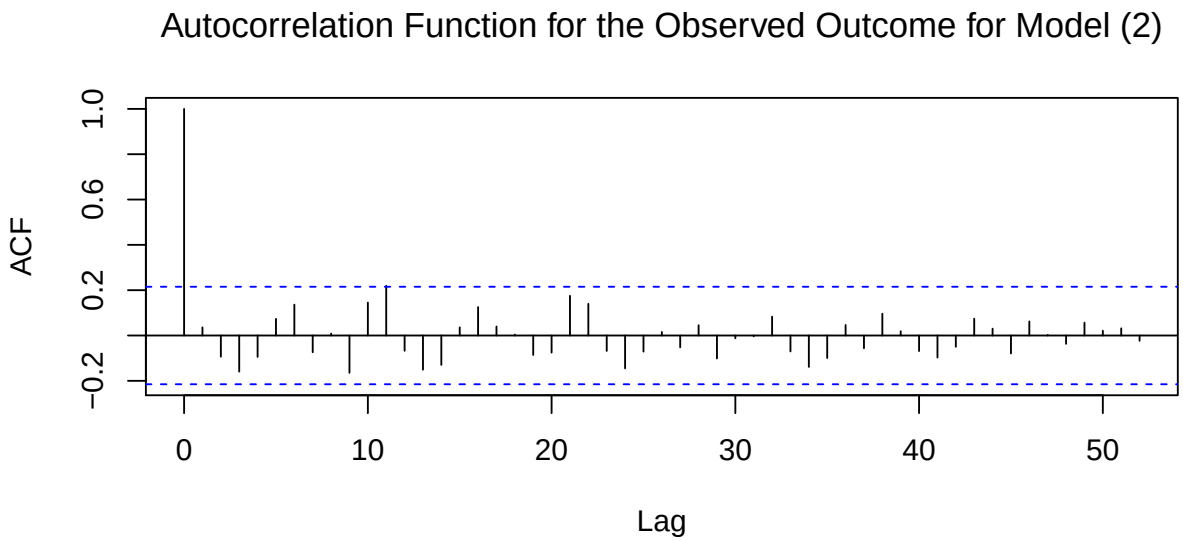
Table 14.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

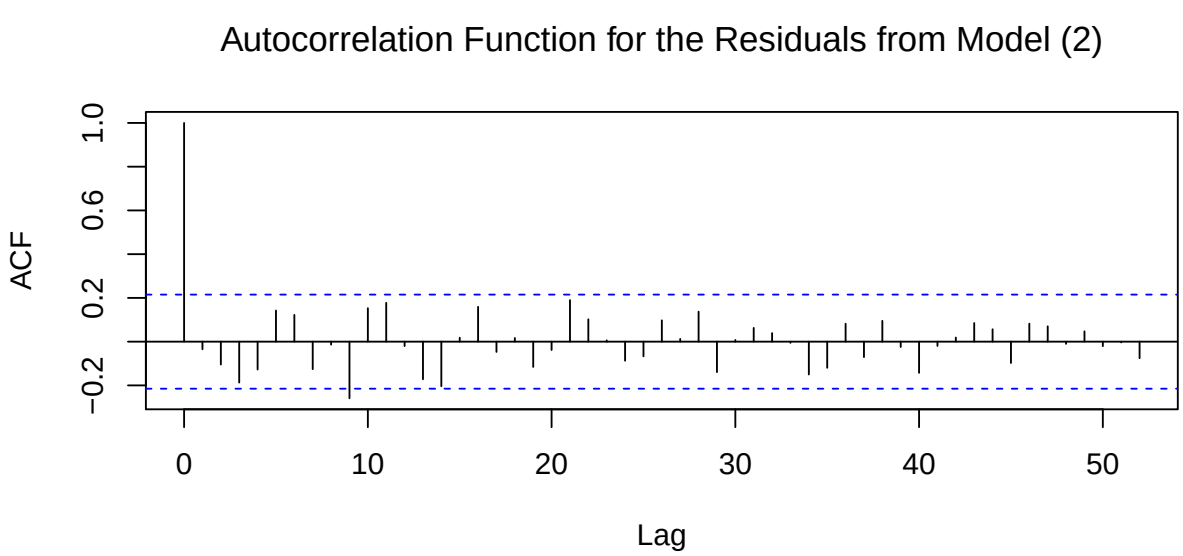
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.003	0.0003		0.002
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.42		−0.34	−0.42
After Gray Protests Begin (week of 4/20/15 onward)	−0.14		−0.14	−0.19
Unrest and National Guard (during week of 4/27/15)	0.11		0.48	0.40
After Commissioner Batts Fired (week of 7/13/15 onward)	0.43		0.52	0.53
Average Maximum Temperature to 50 Degrees		−0.03		−0.03
Plus Degrees in the 50s		0.15		0.11
Plus Degrees in the 60s		−0.19		−0.13
Plus Degrees in the 70s		0.18		0.14
Plus Degrees greater than 80		−0.17		−0.17
Snowfall (inches)		−0.42		−0.43
Precipitation (inches)		0.44		0.20
Darkness Before Midnight (hours)		0.21		0.14
School Days (proportion of week)		0.76		0.32
Observations	156	83	156	156
R^2	0.02	0.13	0.03	0.10

14.3 Least Squares Model (2) for arson



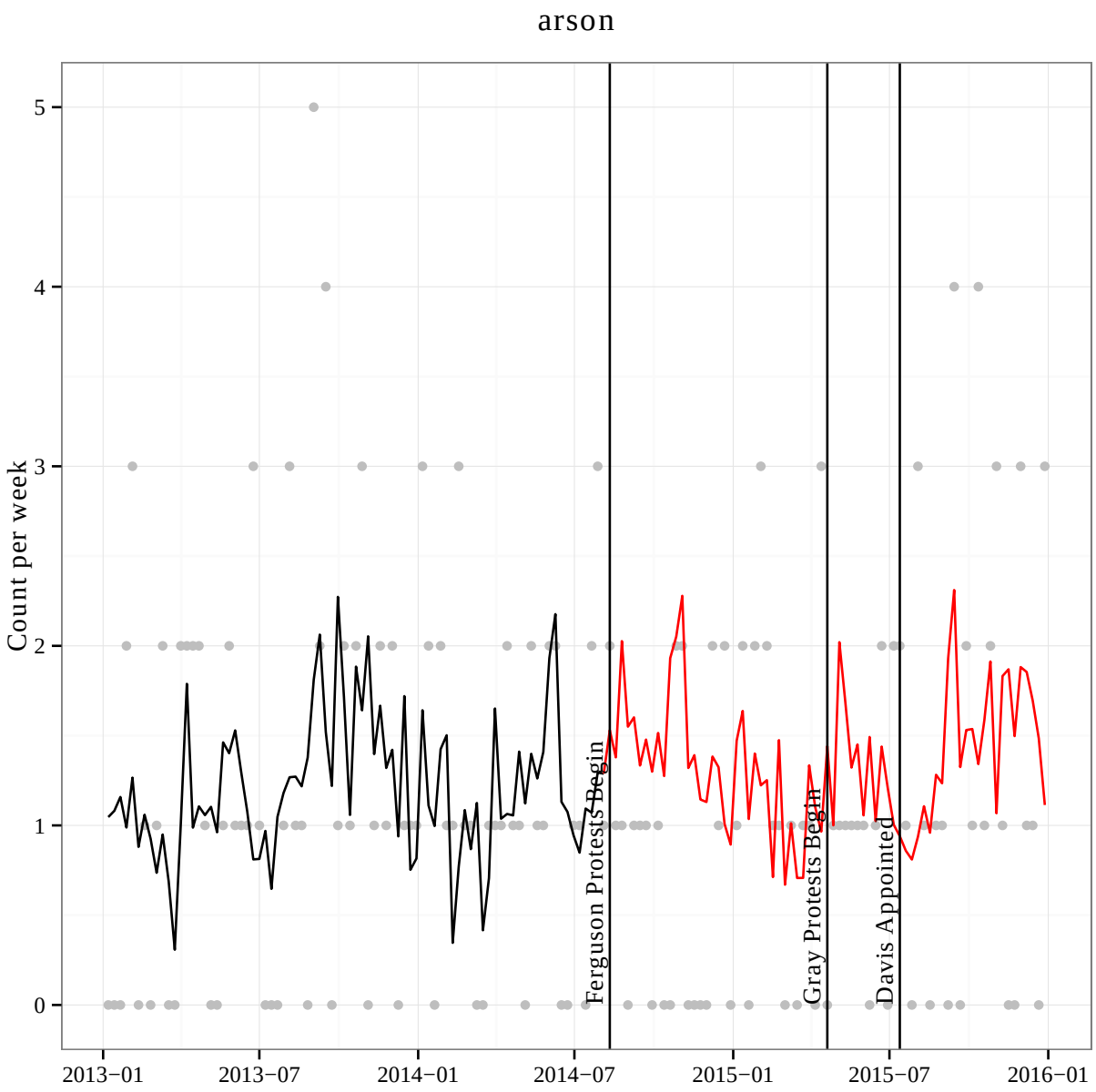

arson
Count per week
3
2
1
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

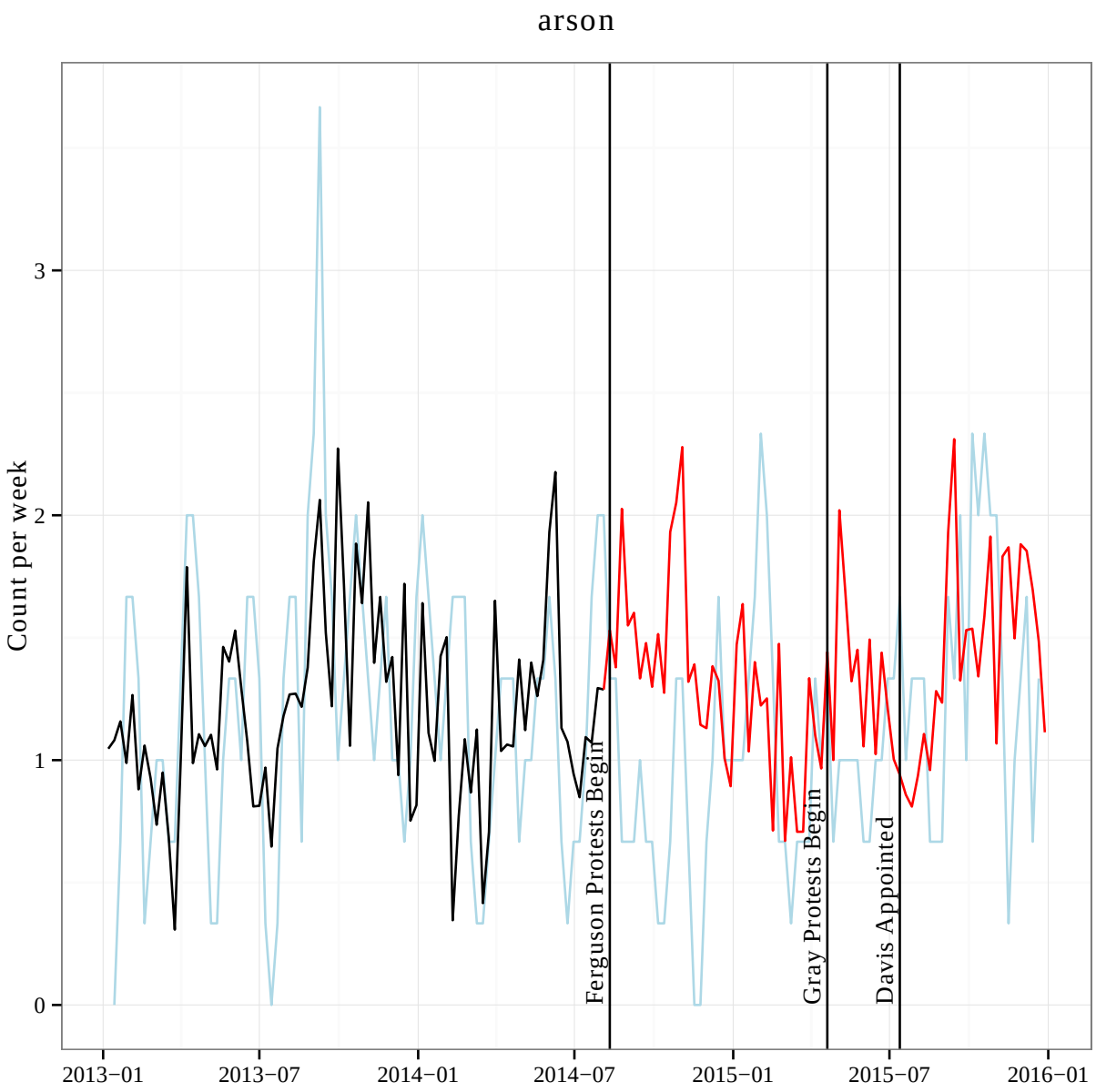

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-2.02631  -1.04390  -0.07459   0.45559   1.94335

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     0.0587599  1.9434131   0.030    0.976
t               0.0004029  0.0046756   0.086    0.931
tmax.f.spline1 -0.0371364  0.0367098  -1.012    0.312
tmax.f.spline2  0.1373510  0.0869756   1.579    0.114
tmax.f.spline3 -0.1542991  0.1102642  -1.399    0.162
tmax.f.spline4  0.1401009  0.1000296   1.401    0.161
tmax.f.spline5 -0.1358919  0.0959054  -1.417    0.157
snow.in        -0.5868241  0.5206395  -1.127    0.260
precip.in       0.3647584  0.6030901   0.605    0.545
dark.before.12  0.1903573  0.1457355   1.306    0.191
school          0.5824882  0.4459970   1.306    0.192

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 88.740  on 82  degrees of freedom
Residual deviance: 78.163  on 72  degrees of freedom
AIC: 241.51

Number of Fisher Scoring iterations: 5
```


arson
Count per week
0
1
2
3
4
5
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


arson
Count per week
0
1
2
3
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

15 Results for common.assault

15.1 Summary Values for common.assault

Table 15.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
common.assault	83	90.205	11.283	55	90	117

Table 15.2: Descriptives for Outcome After Ferguson Protests Begin

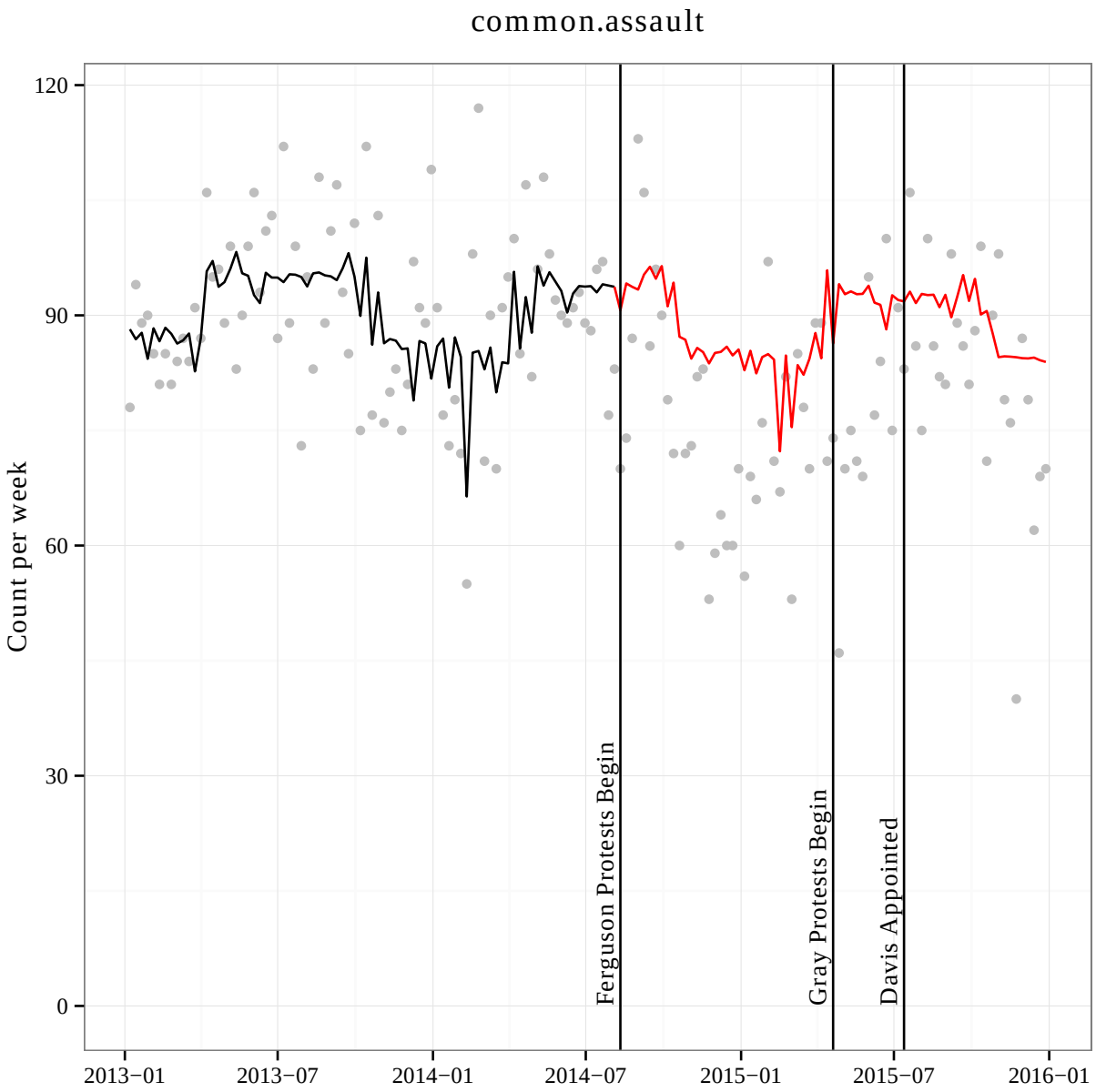
Statistic	N	Mean	St. Dev.	Min	Median	Max
common.assault	73	78.301	14.283	40	78	113

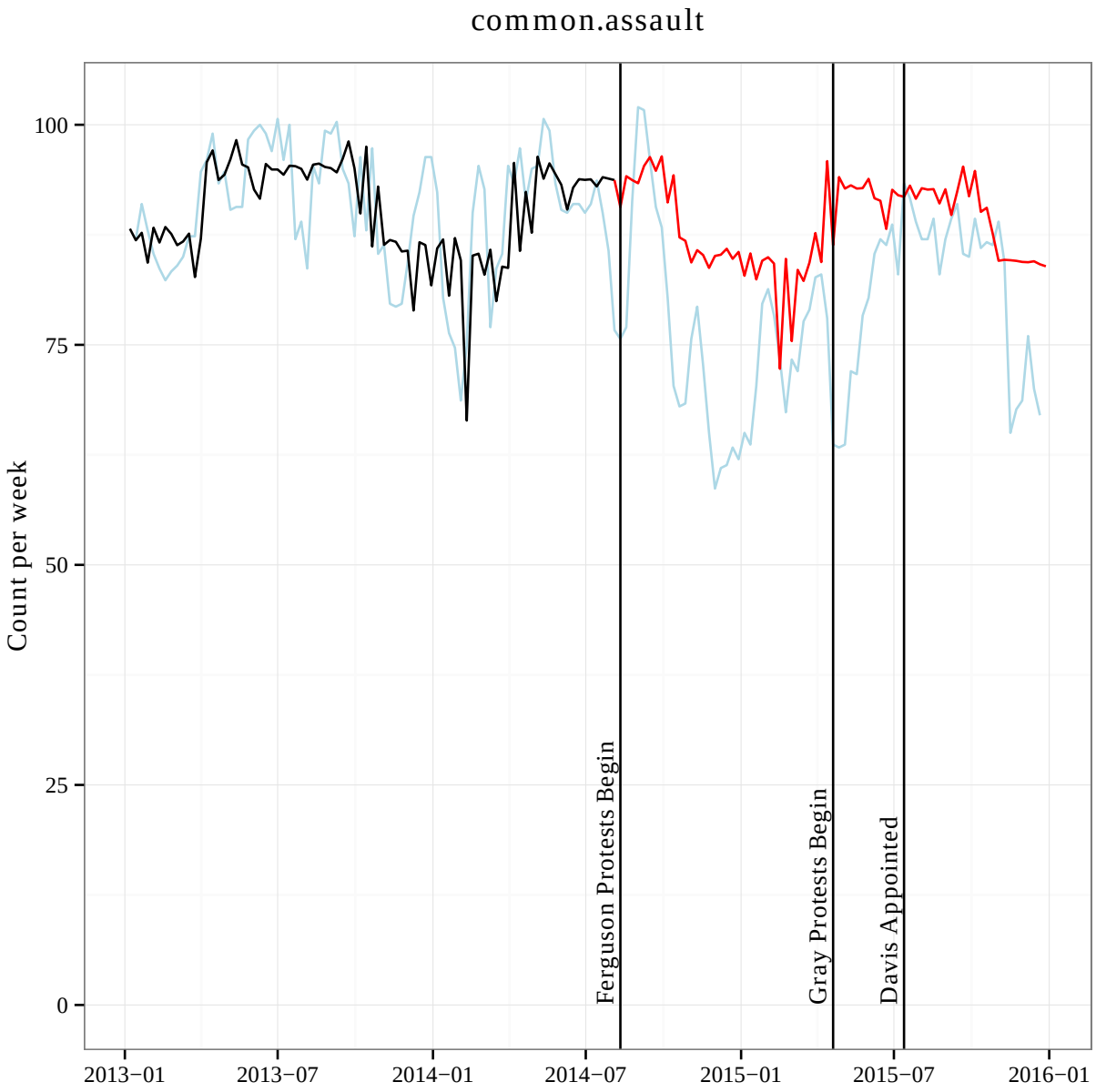
15.2 Four Models for common.assault

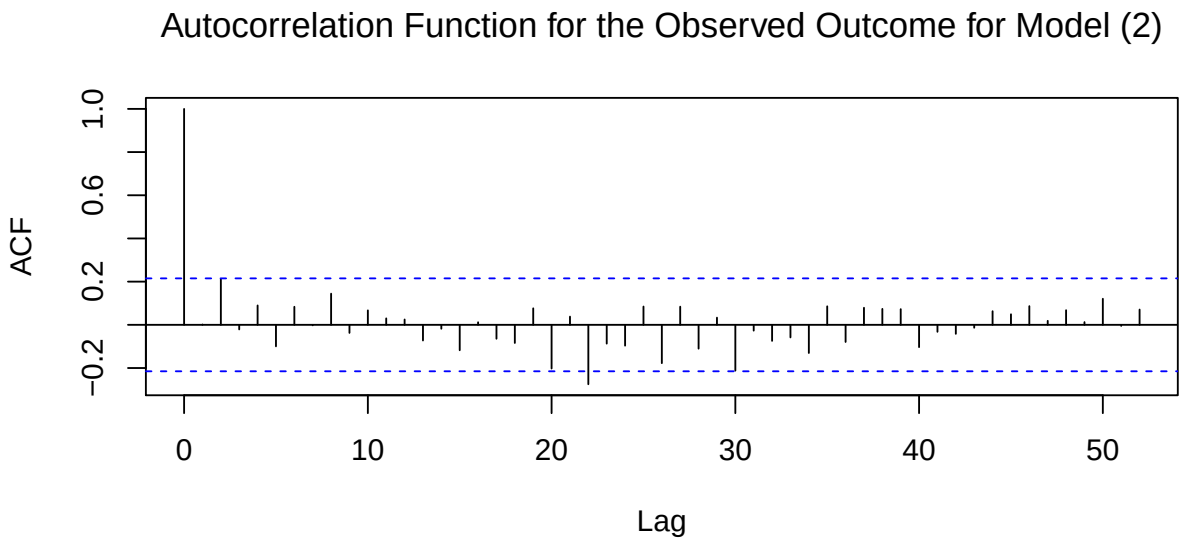
Table 15.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

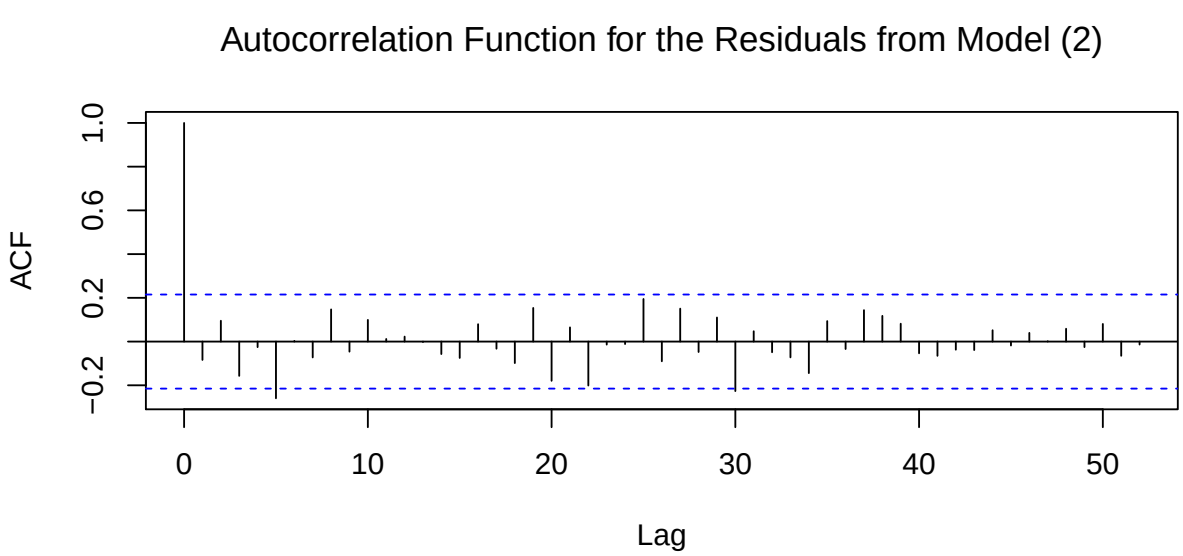
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.06	−0.02		−0.04
After Ferguson Protests Begin (week of 8/11/14 onward)	−11.07		−11.30	−9.43
After Gray Protests Begin (week of 4/20/15 onward)	5.69		−0.19	−2.81
Unrest and National Guard (during week of 4/27/15)	−34.37		−36.57	−35.34
After Commissioner Batts Fired (week of 7/13/15 onward)	3.37		4.71	7.82
Average Maximum Temperature to 50 Degrees		−0.03		0.02
Plus Degrees in the 50s		−0.11		0.12
Plus Degrees in the 60s		1.40		0.57
Plus Degrees in the 70s		−1.64		−0.92
Plus Degrees greater than 80		0.39		0.49
Snowfall (inches)		−7.23		−6.79
Precipitation (inches)		−7.42		−5.63
Darkness Before Midnight (hours)		0.14		−1.55
School Days (proportion of week)		−0.81		1.88
Observations	156	83	156	156
R^2	0.24	0.24	0.24	0.42

15.3 Least Squares Model (2) for common.assault



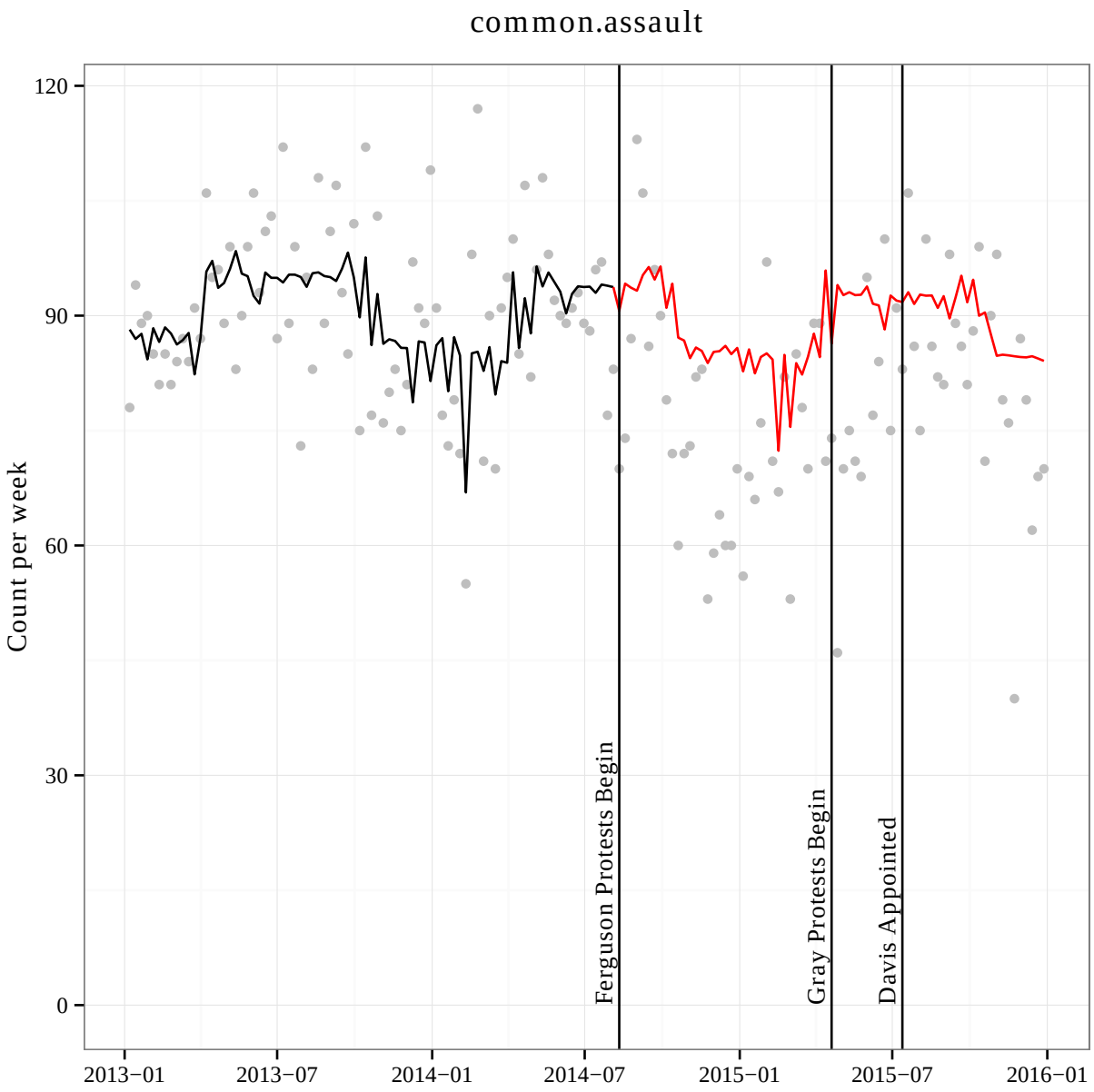

common.assault
Count per week
100
75
50
25
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

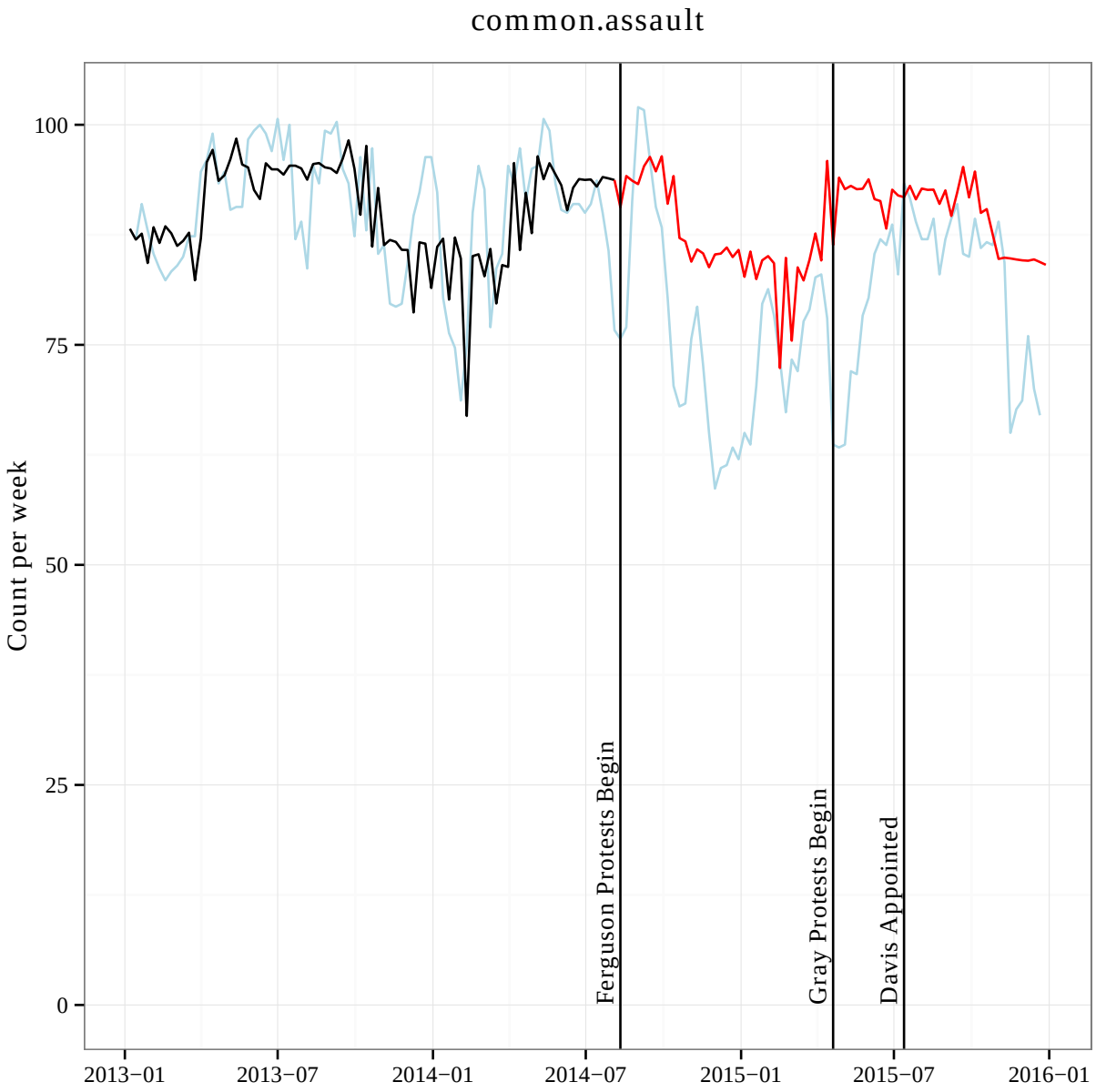

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.3581  -0.6901  -0.0858   0.5752   3.2486

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     4.4990679  0.2281350  19.721   <2e-16 ***
t              -0.0002721  0.0005202  -0.523   0.6010
tmax.f.spline1 -0.0003306  0.0040316  -0.082   0.9347
tmax.f.spline2 -0.0013225  0.0095223  -0.139   0.8895
tmax.f.spline3  0.0155853  0.0133017   1.172   0.2413
tmax.f.spline4 -0.0180048  0.0118984  -1.513   0.1302
tmax.f.spline5  0.0042415  0.0103882   0.408   0.6831
snow.in        -0.0936930  0.0445663  -2.102   0.0355 *
precip.in      -0.0814512  0.0747227  -1.090   0.2757
dark.before.12  0.0012066  0.0167086   0.072   0.9424
school         -0.0098413  0.0516197  -0.191   0.8488
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 117.289  on 82  degrees of freedom
Residual deviance:  88.242  on 72  degrees of freedom
AIC: 635.95

Number of Fisher Scoring iterations: 4
```


common.assault
Count per week
120
90
60
30
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01


common.assault
Count per week
100
75
50
25
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

16 Results for drug.distribution

16.1 Summary Values for drug.distribution

Table 16.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
drug.distribution	83	72.398	17.583	32	72	116

Table 16.2: Descriptives for Outcome After Ferguson Protests Begin

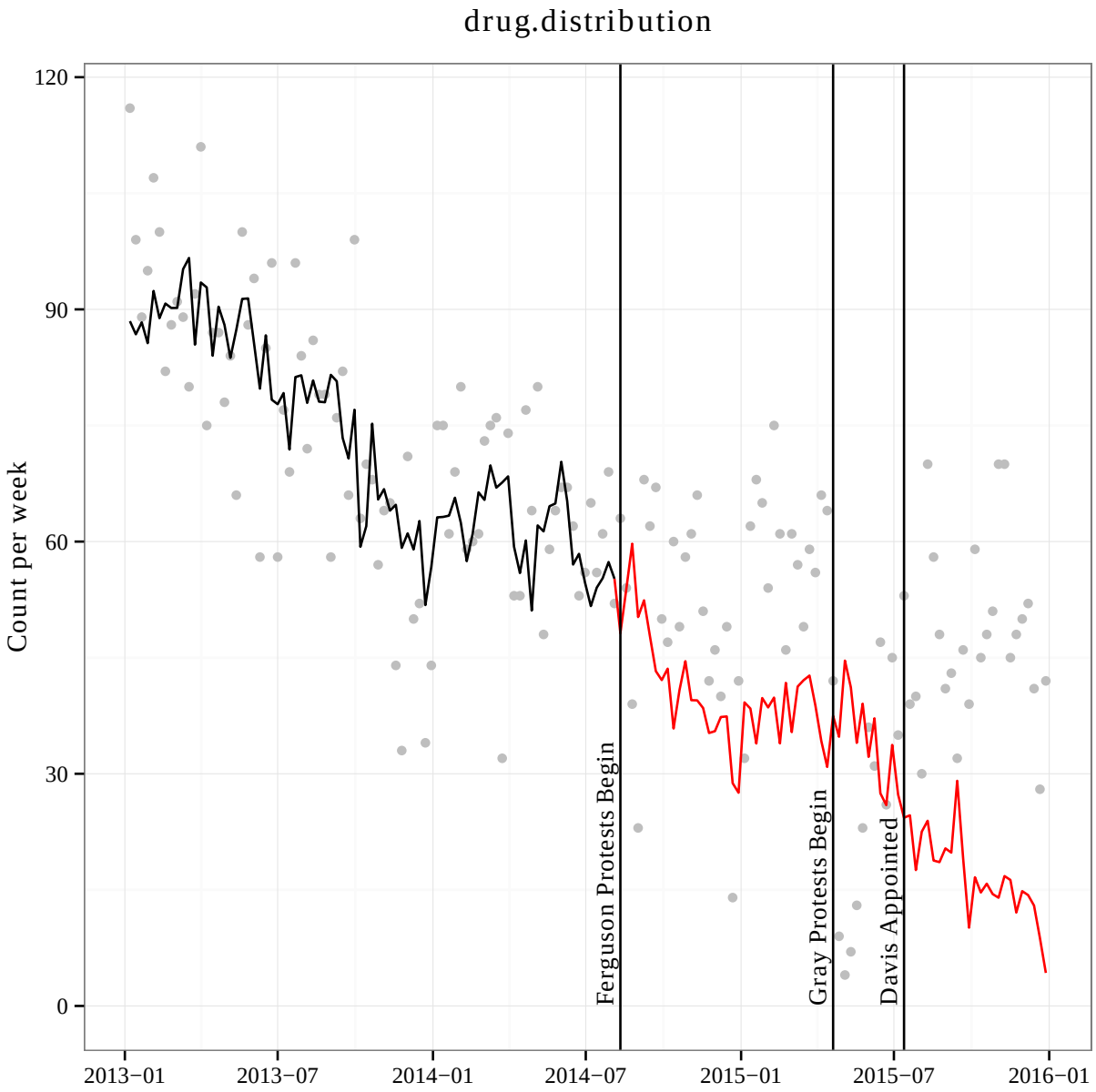
Statistic	N	Mean	St. Dev.	Min	Median	Max
drug.distribution	73	47.014	15.913	4	48	75

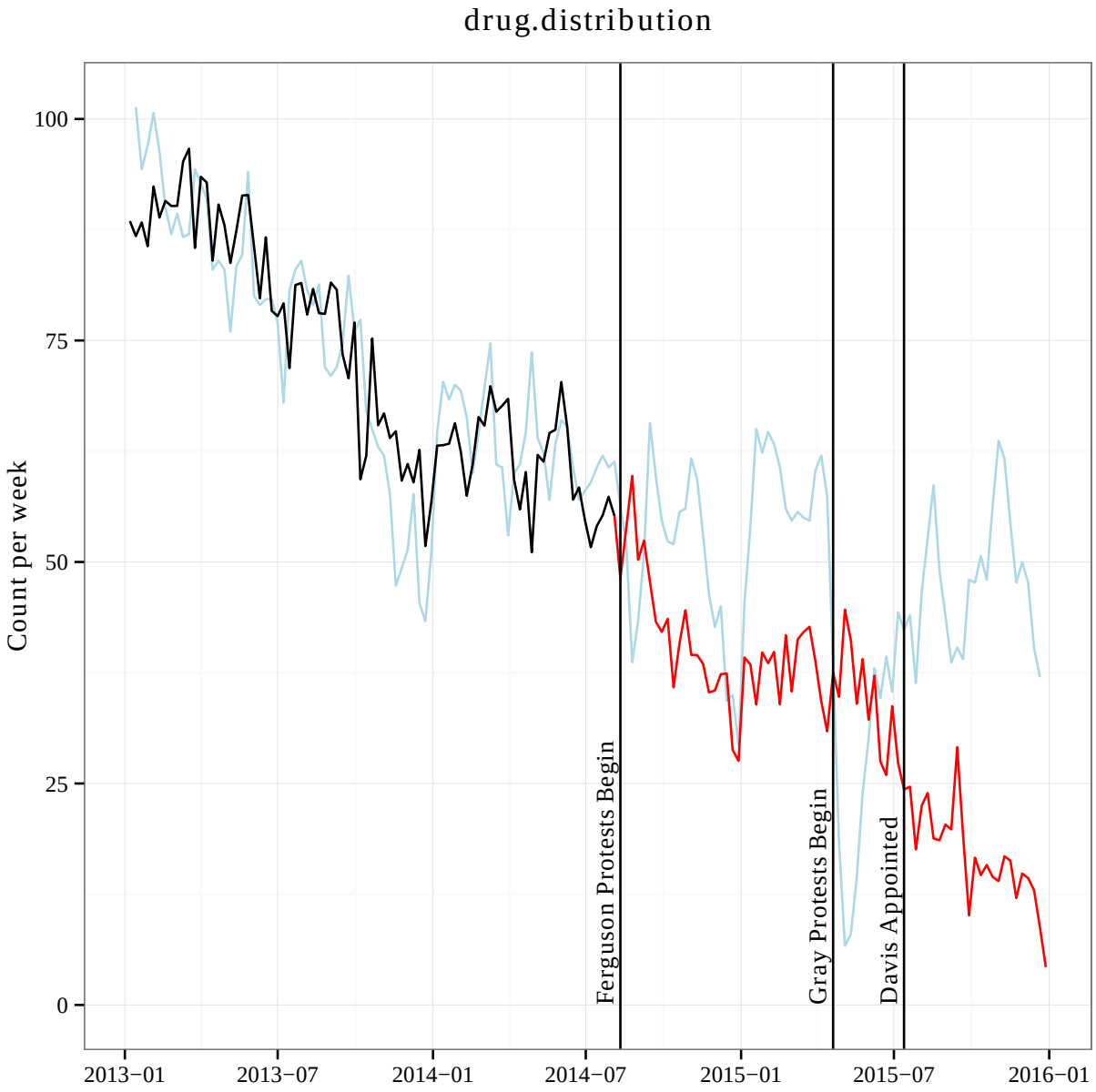
16.2 Four Models for drug.distribution

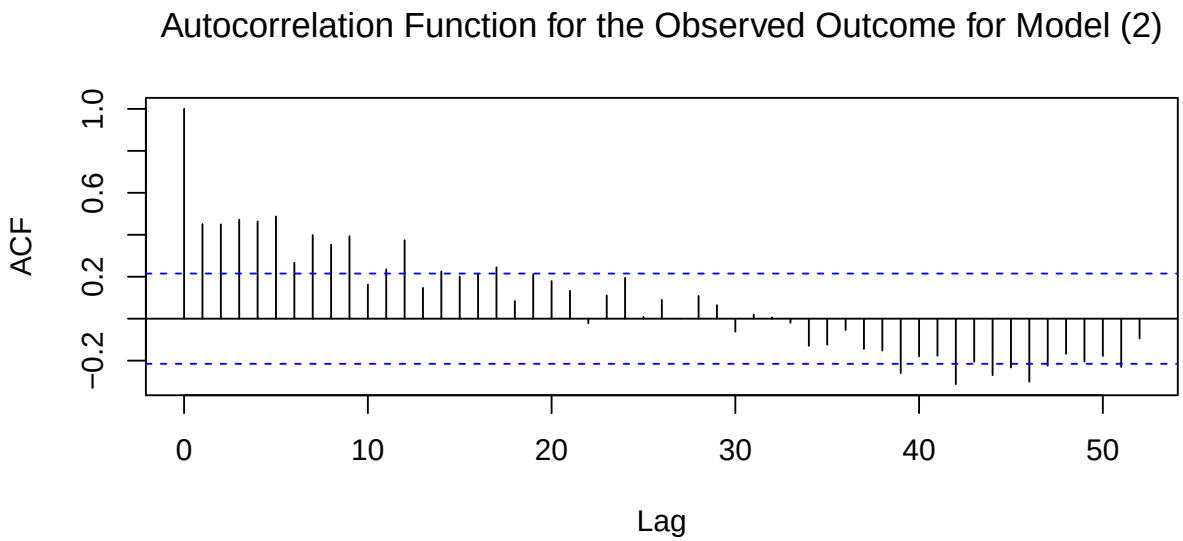
Table 16.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

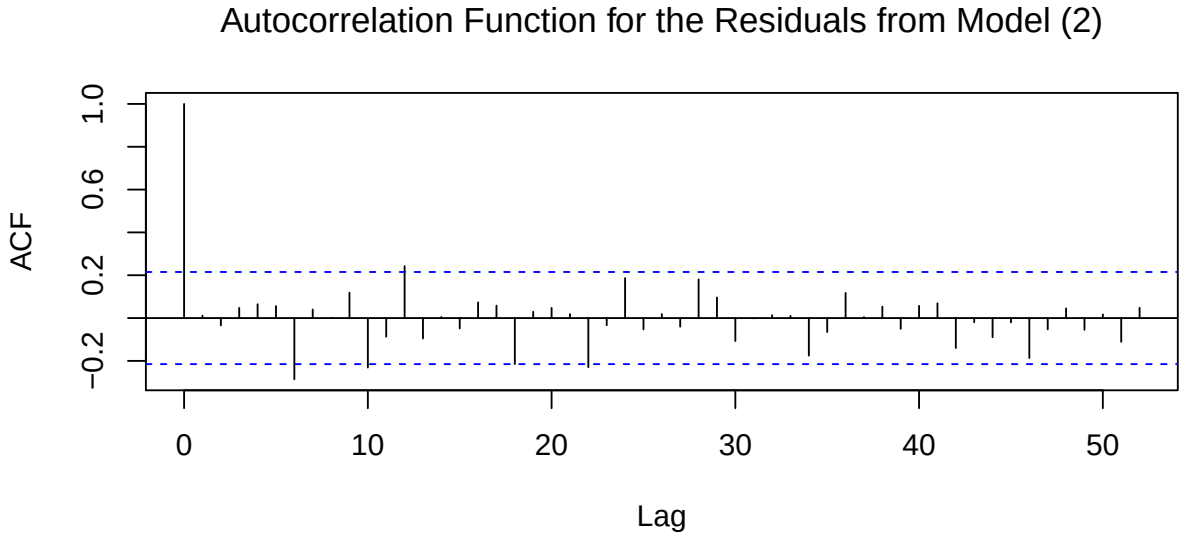
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.42	−0.51		−0.45
After Ferguson Protests Begin (week of 8/11/14 onward)	5.82		13.16	9.27
After Gray Protests Begin (week of 4/20/15 onward)	−15.27		−19.62	−17.70
Unrest and National Guard (during week of 4/27/15)	−21.13		−19.32	−24.41
After Commissioner Batts Fired (week of 7/13/15 onward)	26.95		37.00	33.95
Average Maximum Temperature to 50 Degrees		−0.28		−0.45
Plus Degrees in the 50s		0.30		0.45
Plus Degrees in the 60s		−1.28		−1.04
Plus Degrees in the 70s		2.54		1.11
Plus Degrees greater than 80		−2.34		−1.14
Snowfall (inches)		−2.76		−3.05
Precipitation (inches)		−12.63		−10.23
Darkness Before Midnight (hours)		−5.58		−6.43
School Days (proportion of week)		11.53		2.11
Observations	156	83	156	156
R^2	0.60	0.55	0.46	0.65

16.3 Least Squares Model (2) for drug.distribution



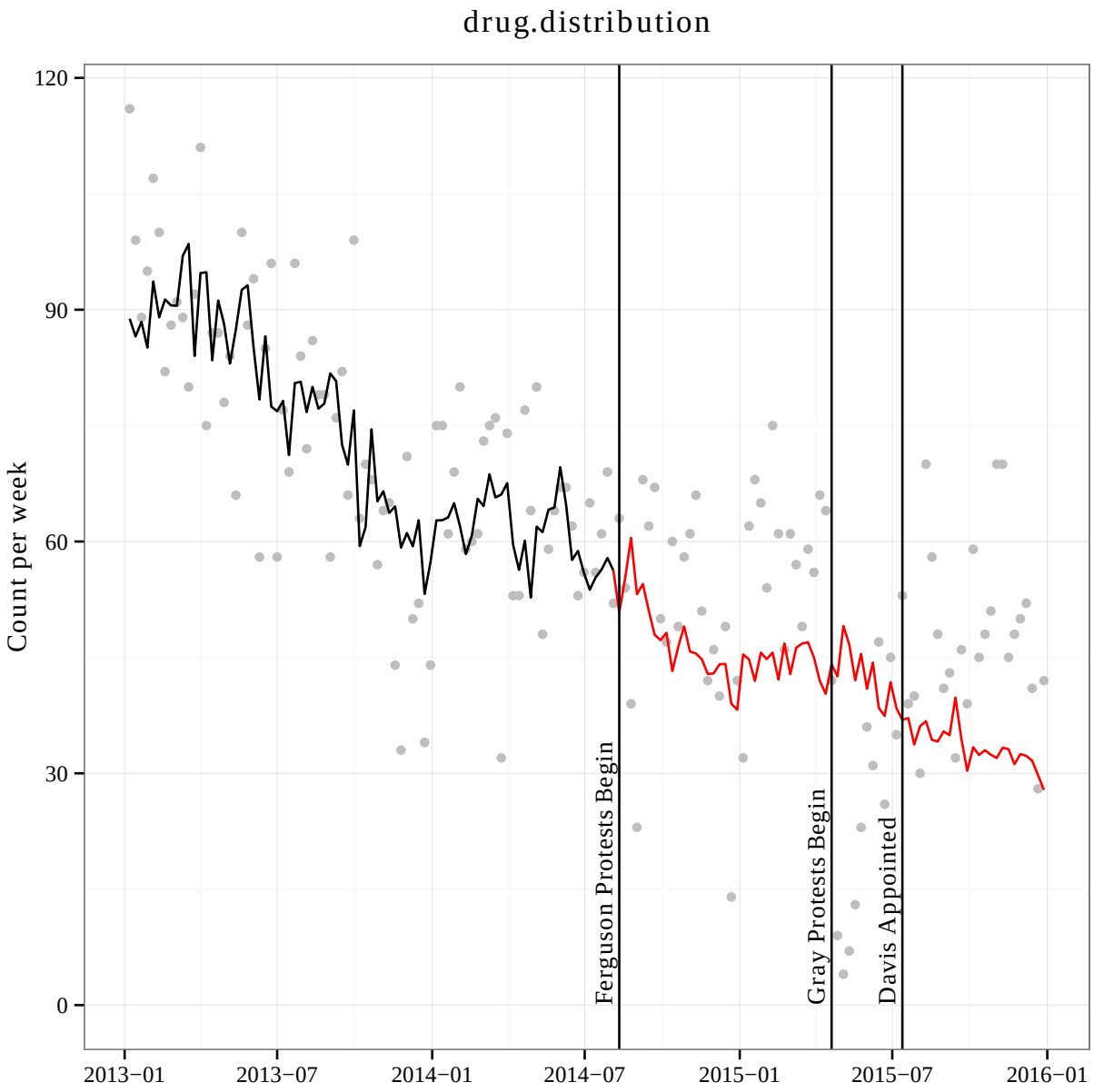

drug.distribution
Count per week
100
75
50
25
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

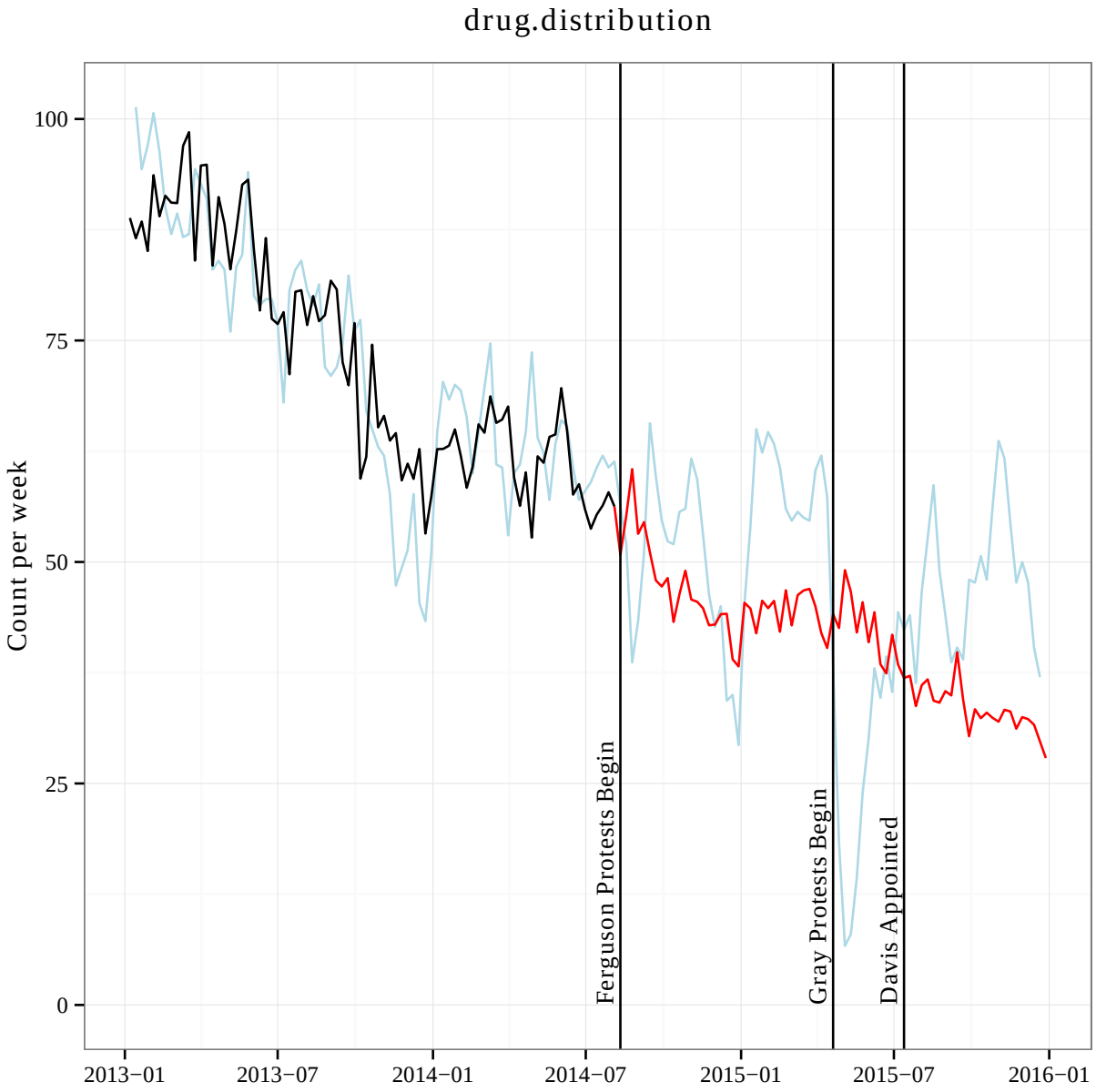

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

16.4 A Poisson Regression Model as an Alternative to Model (2) for drug.distribution

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-4.6640  -0.7076   0.0612   1.0178   2.7522

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     5.0918831  0.2501001  20.359  < 2e-16 ***
t              -0.0069317  0.0005862 -11.825  < 2e-16 ***
tmax.f.spline1 -0.0040486  0.0043864  -0.923  0.35602
tmax.f.spline2  0.0055556  0.0103800   0.535  0.59250
tmax.f.spline3 -0.0189441  0.0147907  -1.281  0.20026
tmax.f.spline4  0.0358377  0.0135243   2.650  0.00805 **
tmax.f.spline5 -0.0323450  0.0119271  -2.712  0.00669 **
snow.in        -0.0350593  0.0482634  -0.726  0.46758
precip.in      -0.1828001  0.0874079  -2.091  0.03650 *
dark.before.12 -0.0732327  0.0185897  -3.939 8.17e-05 ***
school          0.1688992  0.0583518   2.895  0.00380 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 358.99  on 82  degrees of freedom
Residual deviance: 167.94  on 72  degrees of freedom
AIC: 695.48

Number of Fisher Scoring iterations: 4
```


drug.distribution
Count per week
120
90
60
30
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


drug.distribution
Count per week
100
75
50
25
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

17 Results for deadly.weapon

17.1 Summary Values for deadly.weapon

Table 17.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
deadly.weapon	83	15.952	5.464	6	16	37

Table 17.2: Descriptives for Outcome After Ferguson Protests Begin

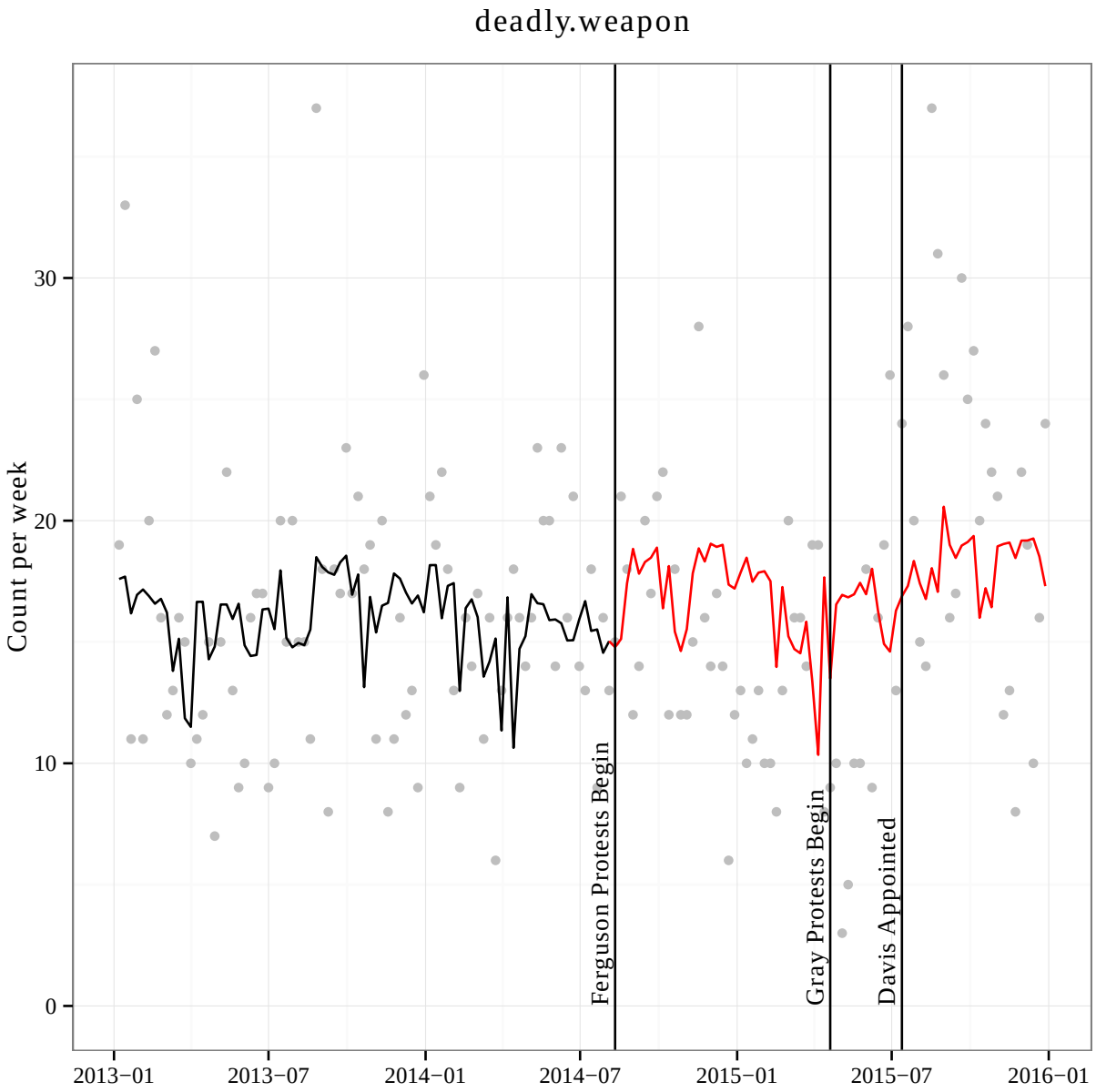
Statistic	N	Mean	St. Dev.	Min	Median	Max
deadly.weapon	73	16.507	6.608	3	16	37

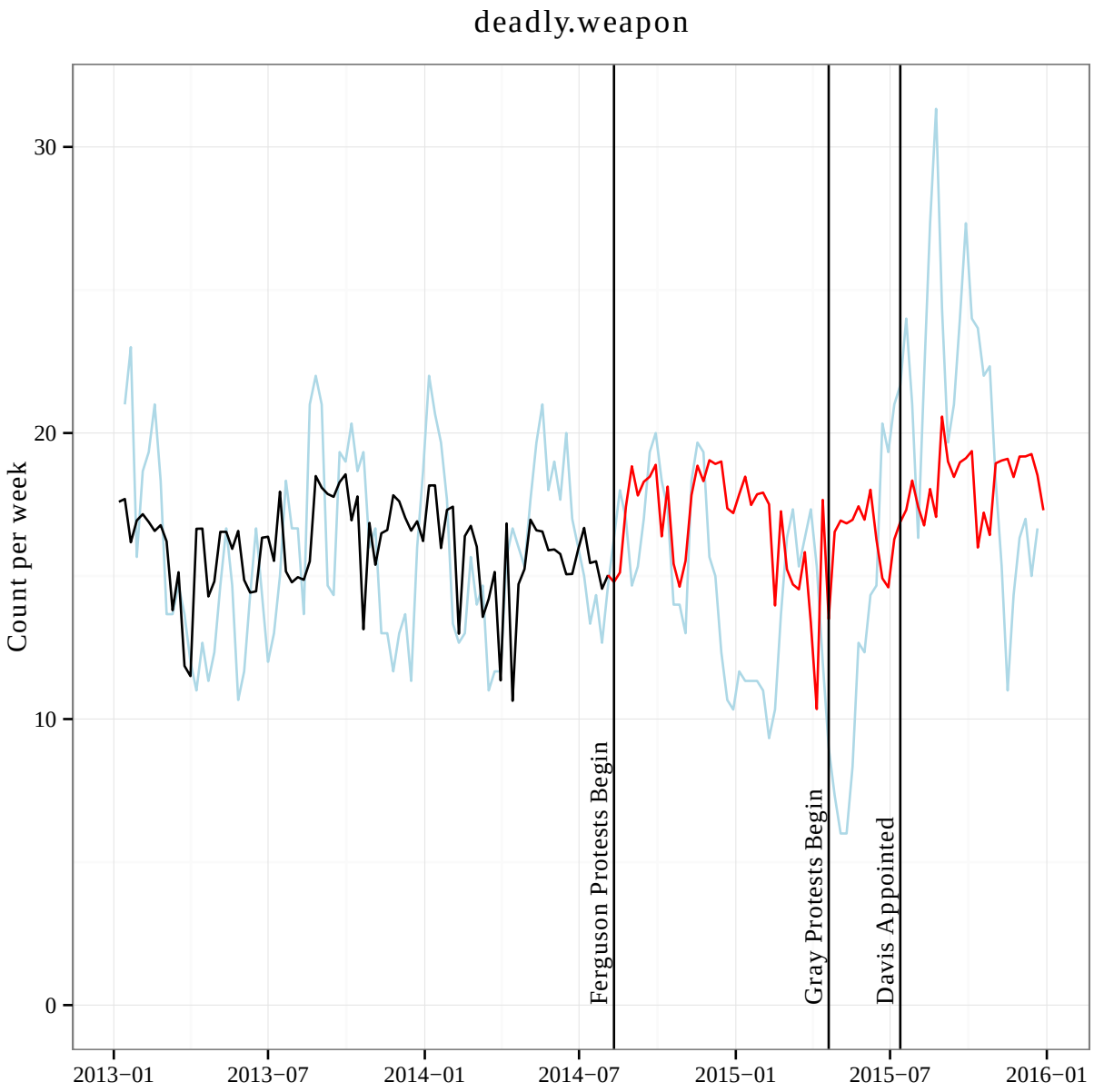
17.2 Four Models for deadly.weapon

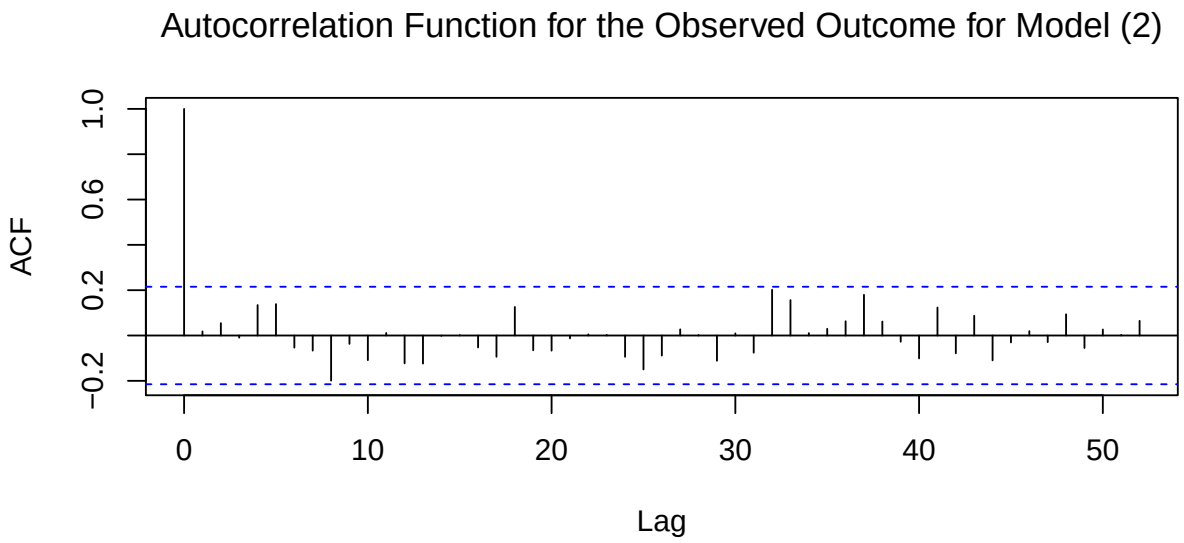
Table 17.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

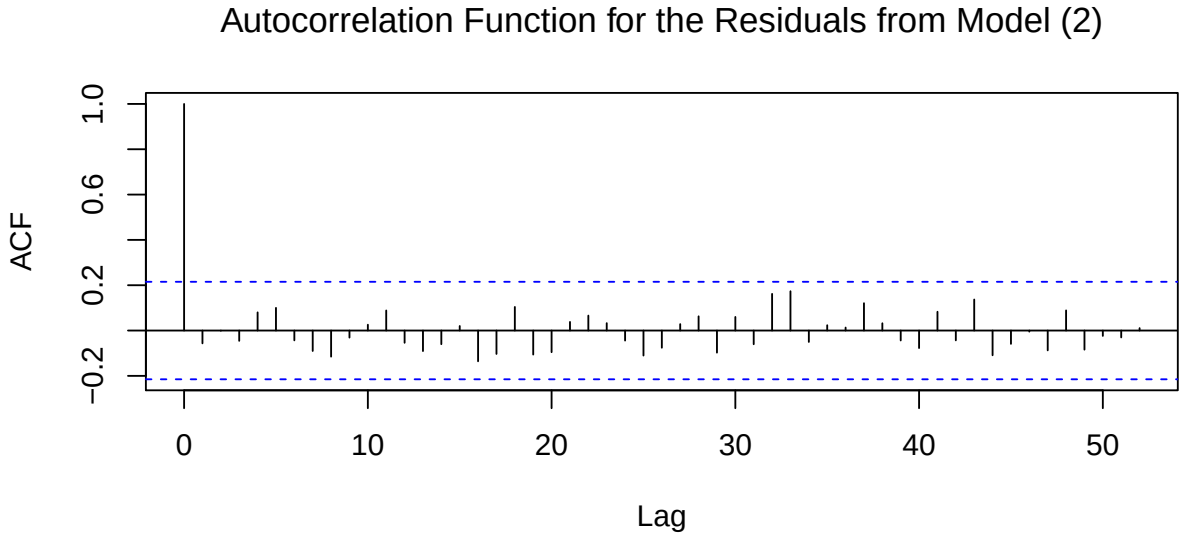
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.02	0.01		−0.01
After Ferguson Protests Begin (week of 8/11/14 onward)	0.23		−1.95	−0.24
After Gray Protests Begin (week of 4/20/15 onward)	−1.81		−1.75	−2.64
Unrest and National Guard (during week of 4/27/15)	−2.65		−2.84	−3.25
After Commissioner Batts Fired (week of 7/13/15 onward)	8.69		6.31	8.25
Average Maximum Temperature to 50 Degrees		0.01		0.22
Plus Degrees in the 50s		−0.41		−0.45
Plus Degrees in the 60s		1.06		0.78
Plus Degrees in the 70s		−0.75		−0.84
Plus Degrees greater than 80		0.40		0.51
Snowfall (inches)		−1.64		0.49
Precipitation (inches)		−0.36		0.81
Darkness Before Midnight (hours)		1.24		0.77
School Days (proportion of week)		2.23		−1.29
Observations	156	83	156	156
R^2	0.15	0.09	0.09	0.20

17.3 Least Squares Model (2) for deadly.weapon



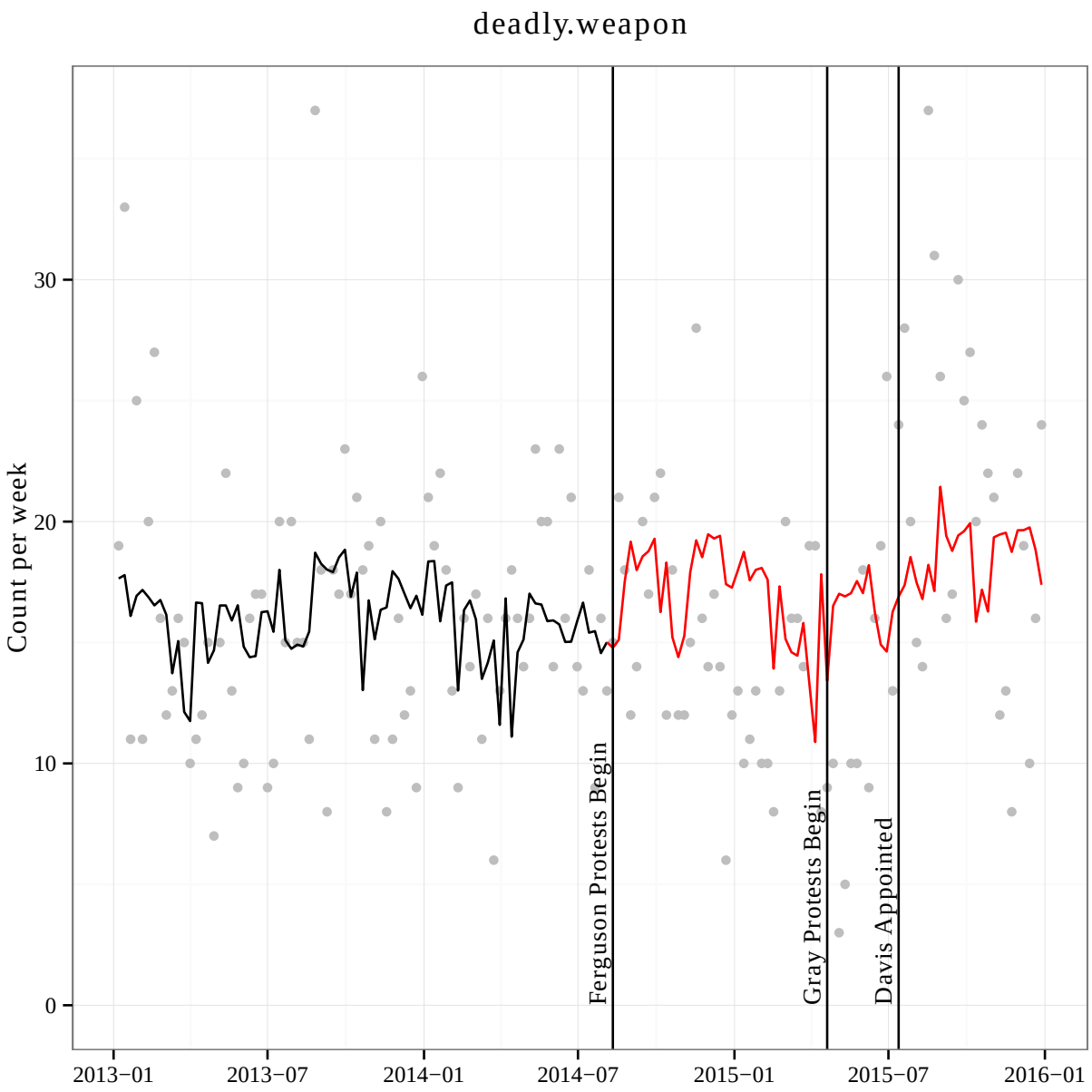

deadly.weapon
Count per week
30
20
10
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

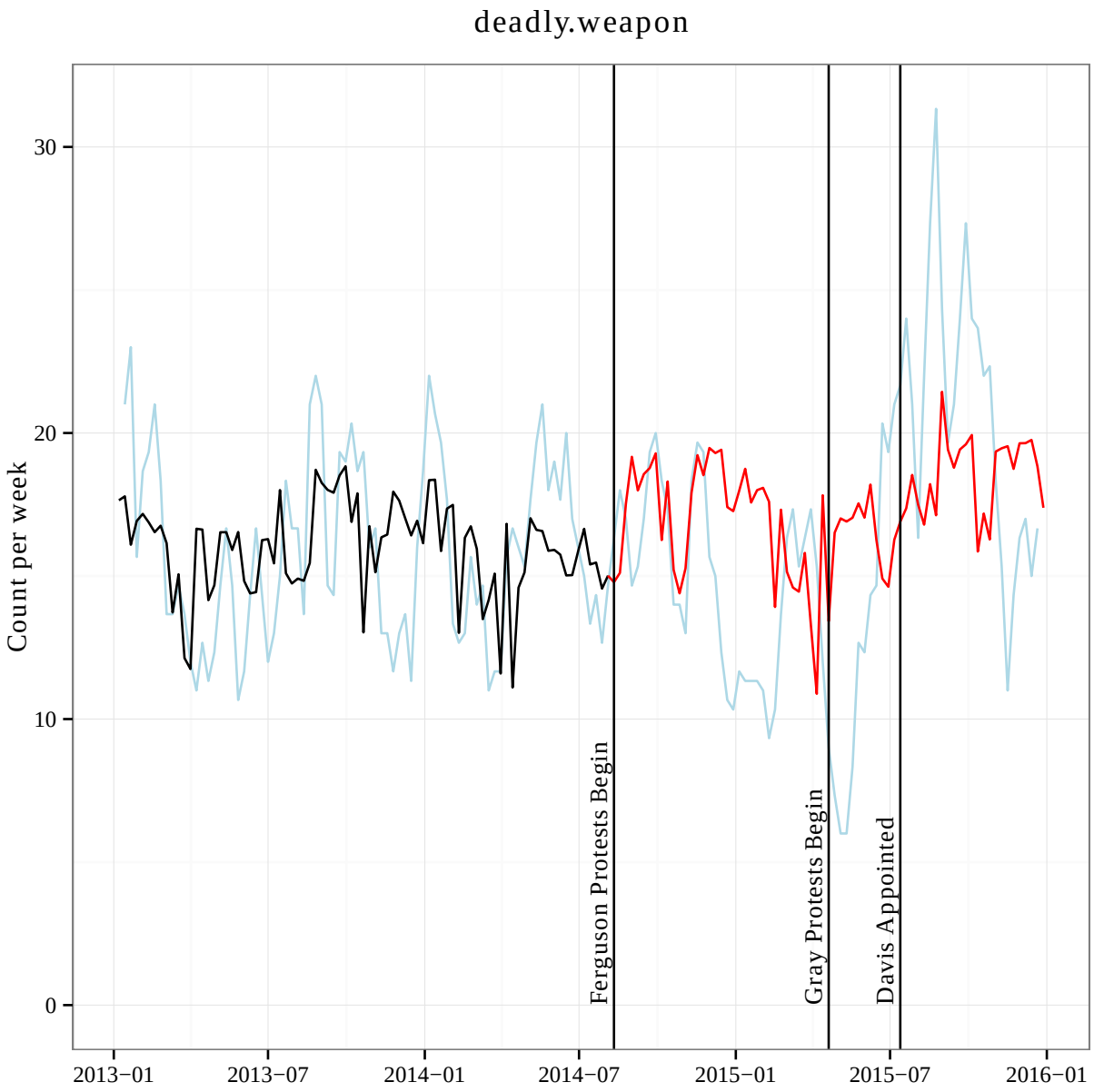

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.6657  -1.0062   0.0206   0.6498   3.7241

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     2.1899615  0.5267539   4.157 3.22e-05 ***
t               0.0005353  0.0012517   0.428   0.6689
tmax.f.spline1  0.0007832  0.0092571   0.085   0.9326
tmax.f.spline2 -0.0286157  0.0229207  -1.248   0.2119
tmax.f.spline3  0.0725730  0.0331453   2.190   0.0286 *
tmax.f.spline4 -0.0507635  0.0289650  -1.753   0.0797 .
tmax.f.spline5  0.0254149  0.0249122   1.020   0.3076
snow.in        -0.1091257  0.1015914  -1.074   0.2827
precip.in      -0.0237906  0.1781882  -0.134   0.8938
dark.before.12  0.0804679  0.0395297   2.036   0.0418 *
school          0.1448391  0.1241746   1.166   0.2434
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 146.59  on 82  degrees of freedom
Residual deviance: 132.39  on 72  degrees of freedom
AIC: 533.11

Number of Fisher Scoring iterations: 4
```


deadly.weapon
Count per week
30
20
10
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01


deadly.weapon
Count per week
30
20
10
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

18 Results for non.deadly.weapon

18.1 Summary Values for non.deadly.weapon

Table 18.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
non.deadly.weapon	83	1.506	1.953	0	1	14

Table 18.2: Descriptives for Outcome After Ferguson Protests Begin

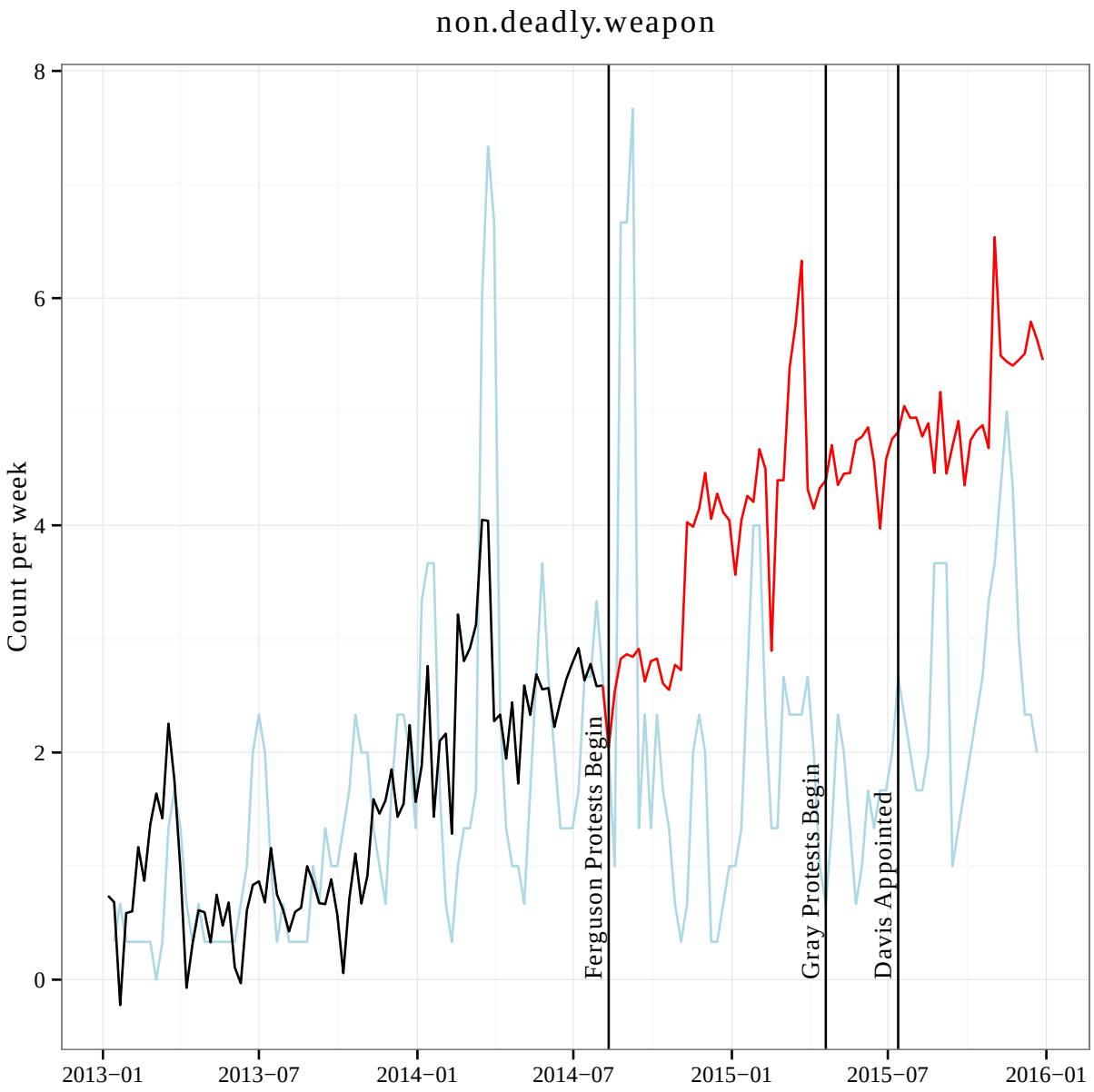
Statistic	N	Mean	St. Dev.	Min	Median	Max
non.deadly.weapon	73	2.205	2.576	0	2	19

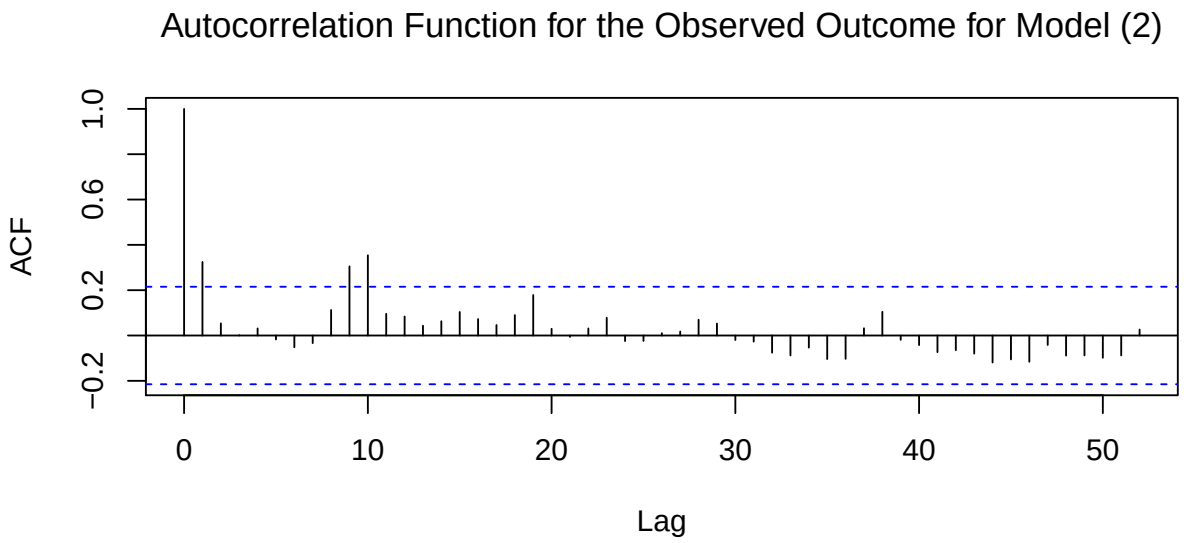
18.2 Four Models for non.deadly.weapon

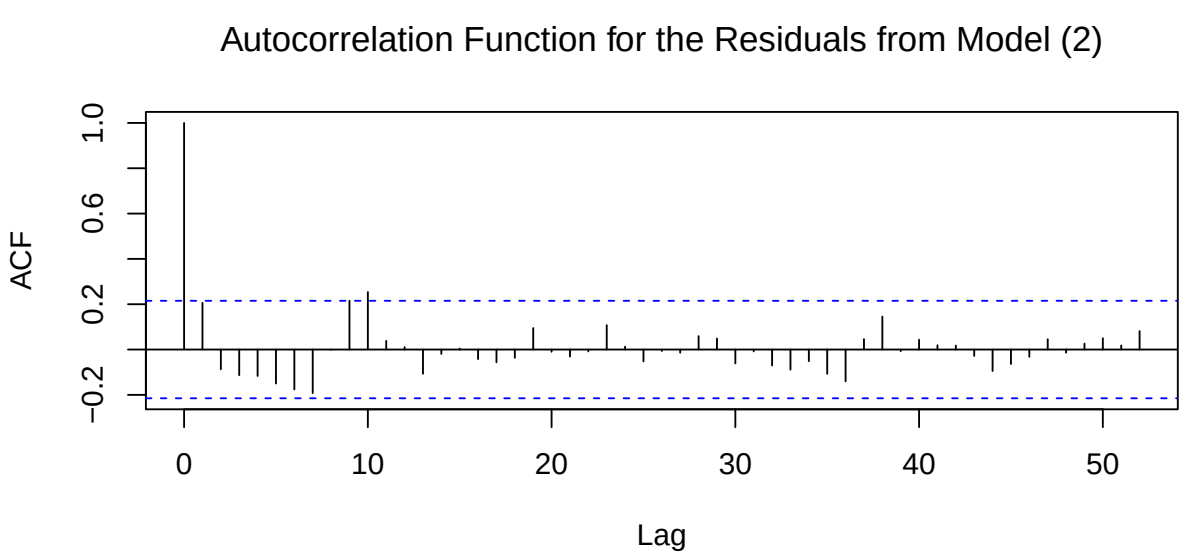
Table 18.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.03	0.04		0.03
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.94		−1.62	−1.13
After Gray Protests Begin (week of 4/20/15 onward)	−1.24		−1.37	−1.56
Unrest and National Guard (during week of 4/27/15)	−0.42		−0.71	−0.31
After Commissioner Batts Fired (week of 7/13/15 onward)	0.62		0.54	0.59
Average Maximum Temperature to 50 Degrees		0.07		0.03
Plus Degrees in the 50s		−0.30		−0.15
Plus Degrees in the 60s		0.22		0.08
Plus Degrees in the 70s		−0.03		0.06
Plus Degrees greater than 80		0.09		0.15
Snowfall (inches)		−0.33		−0.37
Precipitation (inches)		−1.11		−0.92
Darkness Before Midnight (hours)		−0.49		−0.30
School Days (proportion of week)		0.34		1.47
Observations	156	83	156	156
R^2	0.08	0.25	0.21	0.14

18.3 Least Squares Model (2) for non.deadly.weapon

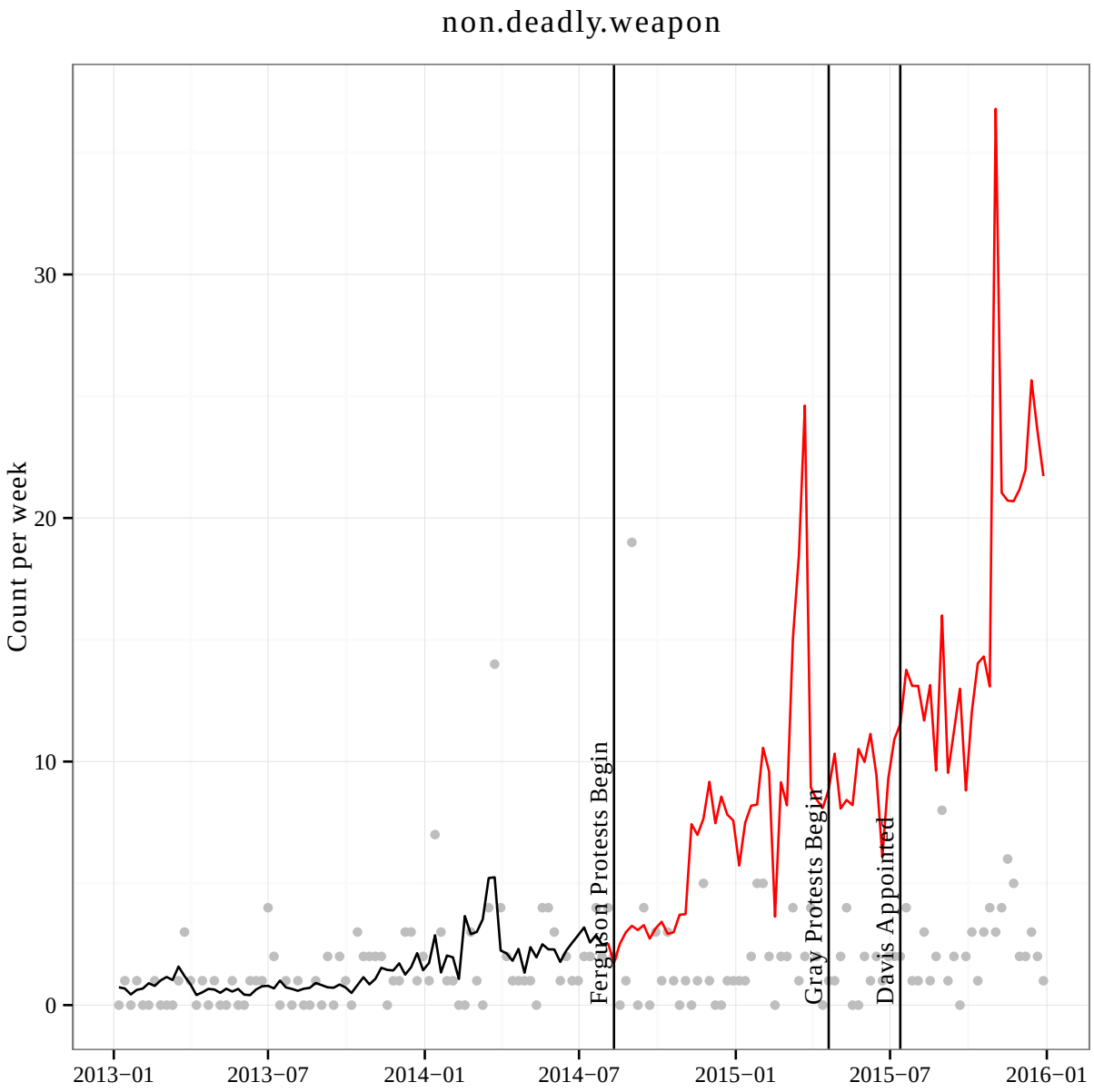

non.deadly.weapon
Count per week
8
6
4
2
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

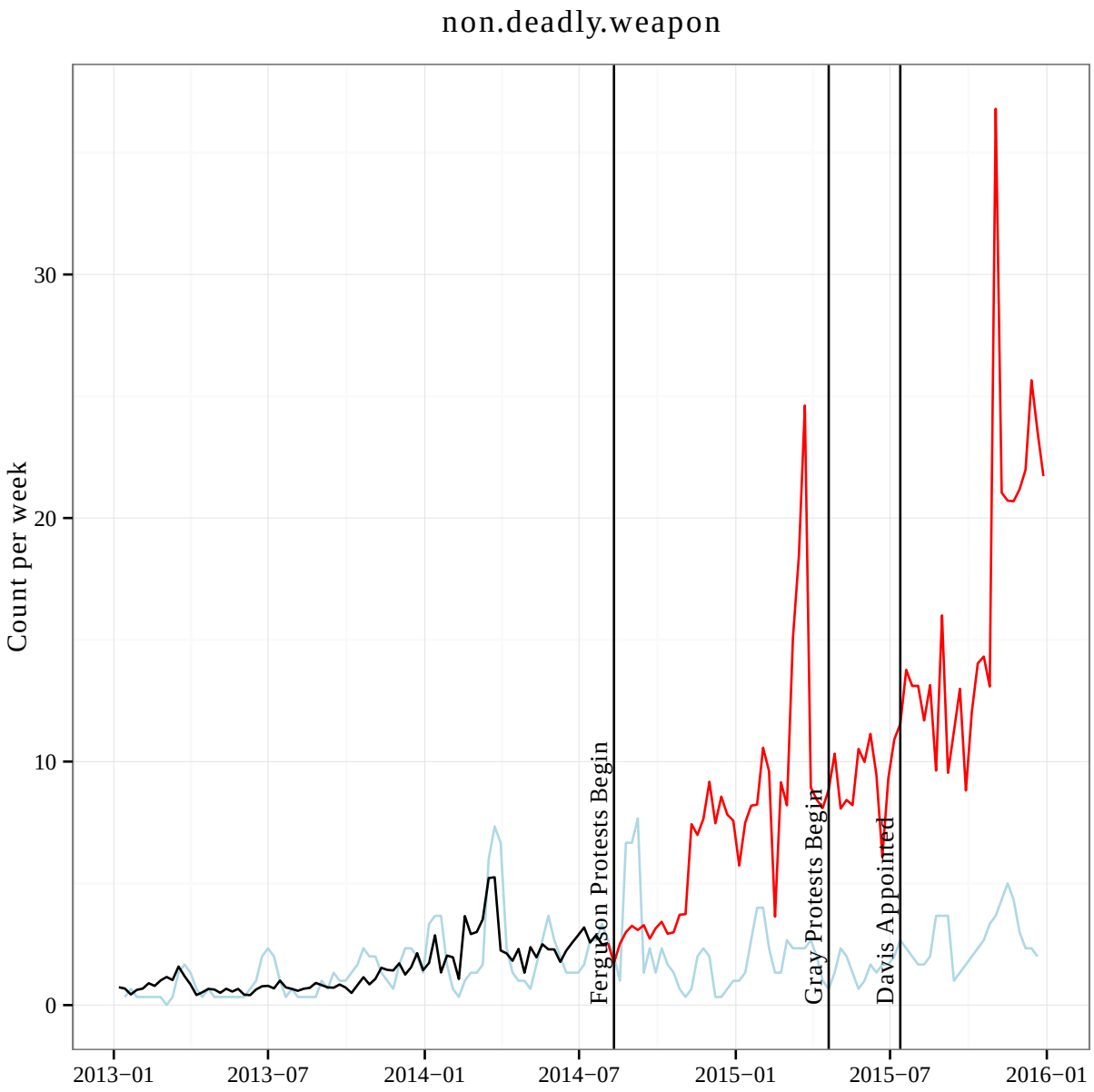

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.7043  -1.1539  -0.3707   0.5569   3.1575

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)    -0.671814   1.799246  -0.373   0.7089
t               0.026345   0.004536   5.807 6.34e-09 ***
tmax.f.spline1  0.038480   0.028893   1.332   0.1829
tmax.f.spline2 -0.153290   0.065400  -2.344   0.0191 *
tmax.f.spline3  0.095257   0.098266   0.969   0.3324
tmax.f.spline4 -0.008764   0.099227  -0.088   0.9296
tmax.f.spline5  0.065009   0.089183   0.729   0.4660
snow.in        -0.232795   0.322072  -0.723   0.4698
precip.in      -0.793900   0.669177  -1.186   0.2355
dark.before.12 -0.224996   0.124206  -1.811   0.0701 .
school          0.150699   0.415156   0.363   0.7166
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 158.59  on 82  degrees of freedom
Residual deviance: 107.78  on 72  degrees of freedom
AIC: 273.86

Number of Fisher Scoring iterations: 5
```


non.deadly.weapon
Count per week
30
20
10
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


non.deadly.weapon
Count per week
30
20
10
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

19 Results for property.destruction

19.1 Summary Values for property.destruction

Table 19.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
property.destruction	83	7.133	3.071	1	7	14

Table 19.2: Descriptives for Outcome After Ferguson Protests Begin

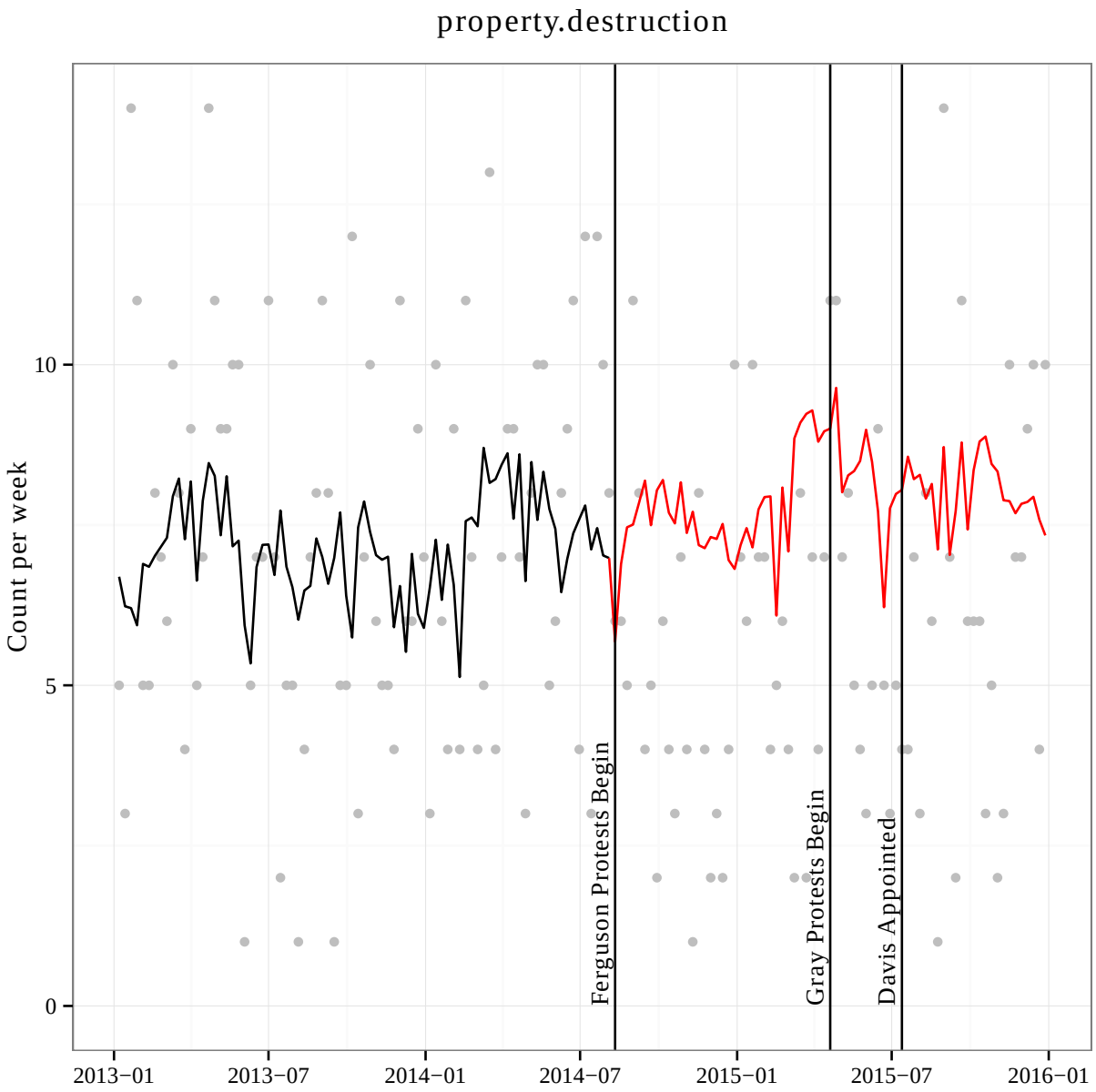
Statistic	N	Mean	St. Dev.	Min	Median	Max
property.destruction	73	5.781	2.815	1	6	14

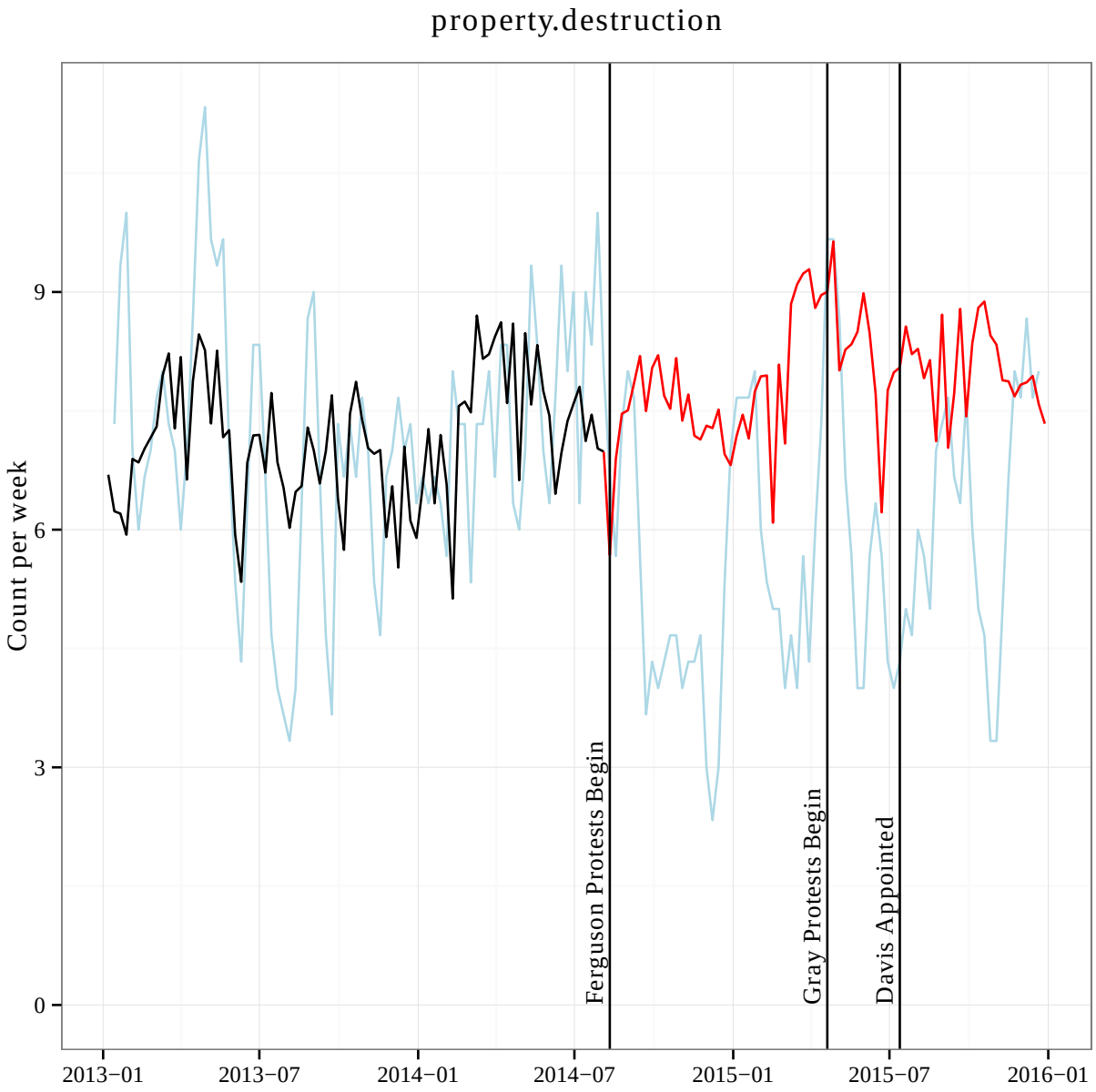
19.2 Four Models for property.destruction

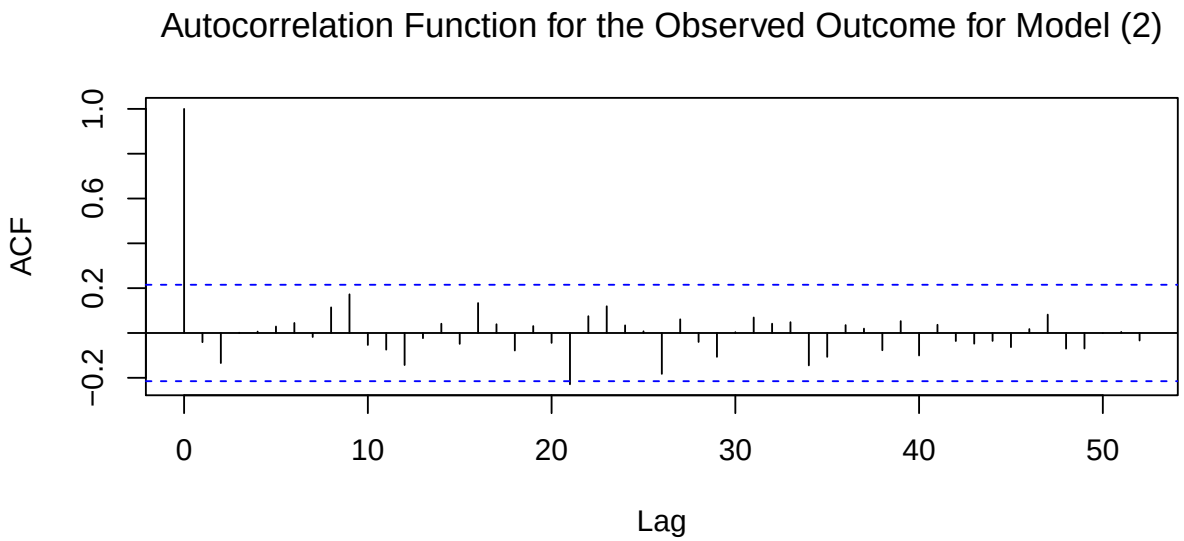
Table 19.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

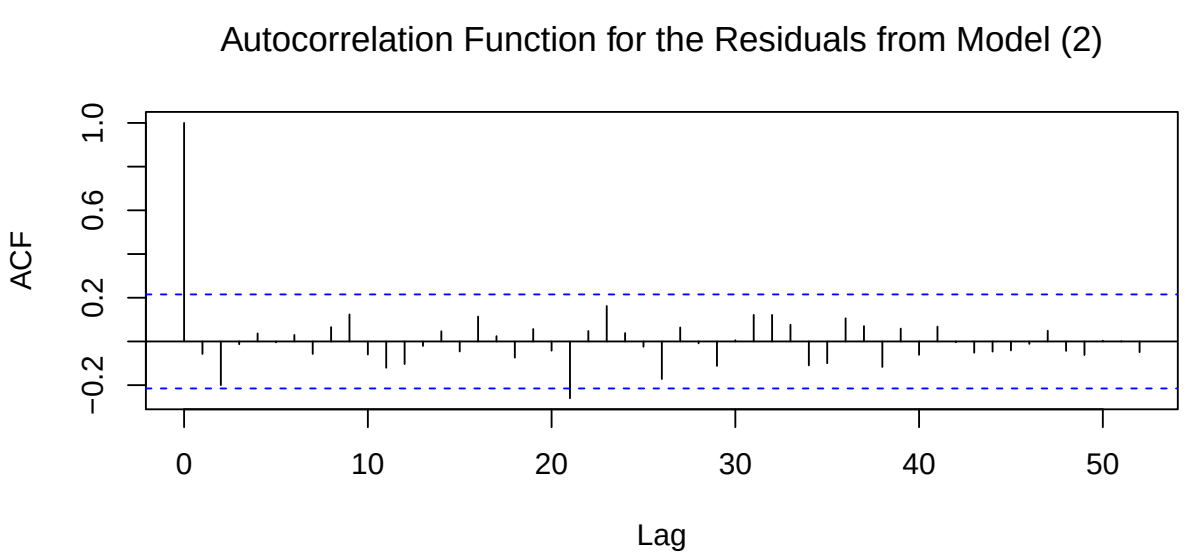
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.01	0.01		0.01
After Ferguson Protests Begin (week of 8/11/14 onward)	−2.22		−2.39	−2.25
After Gray Protests Begin (week of 4/20/15 onward)	0.44		0.18	0.40
Unrest and National Guard (during week of 4/27/15)	5.12		3.57	4.04
After Commissioner Batts Fired (week of 7/13/15 onward)	0.17		0.38	−0.13
Average Maximum Temperature to 50 Degrees		0.02		−0.12
Plus Degrees in the 50s		−0.04		0.18
Plus Degrees in the 60s		−0.004		−0.08
Plus Degrees in the 70s		−0.14		−0.12
Plus Degrees greater than 80		0.27		0.31
Snowfall (inches)		−0.66		−1.00
Precipitation (inches)		−2.79		−1.99
Darkness Before Midnight (hours)		−0.66		−0.44
School Days (proportion of week)		0.69		0.61
Observations	156	83	156	156
R^2	0.08	0.07	0.13	0.13

19.3 Least Squares Model (2) for property.destruction



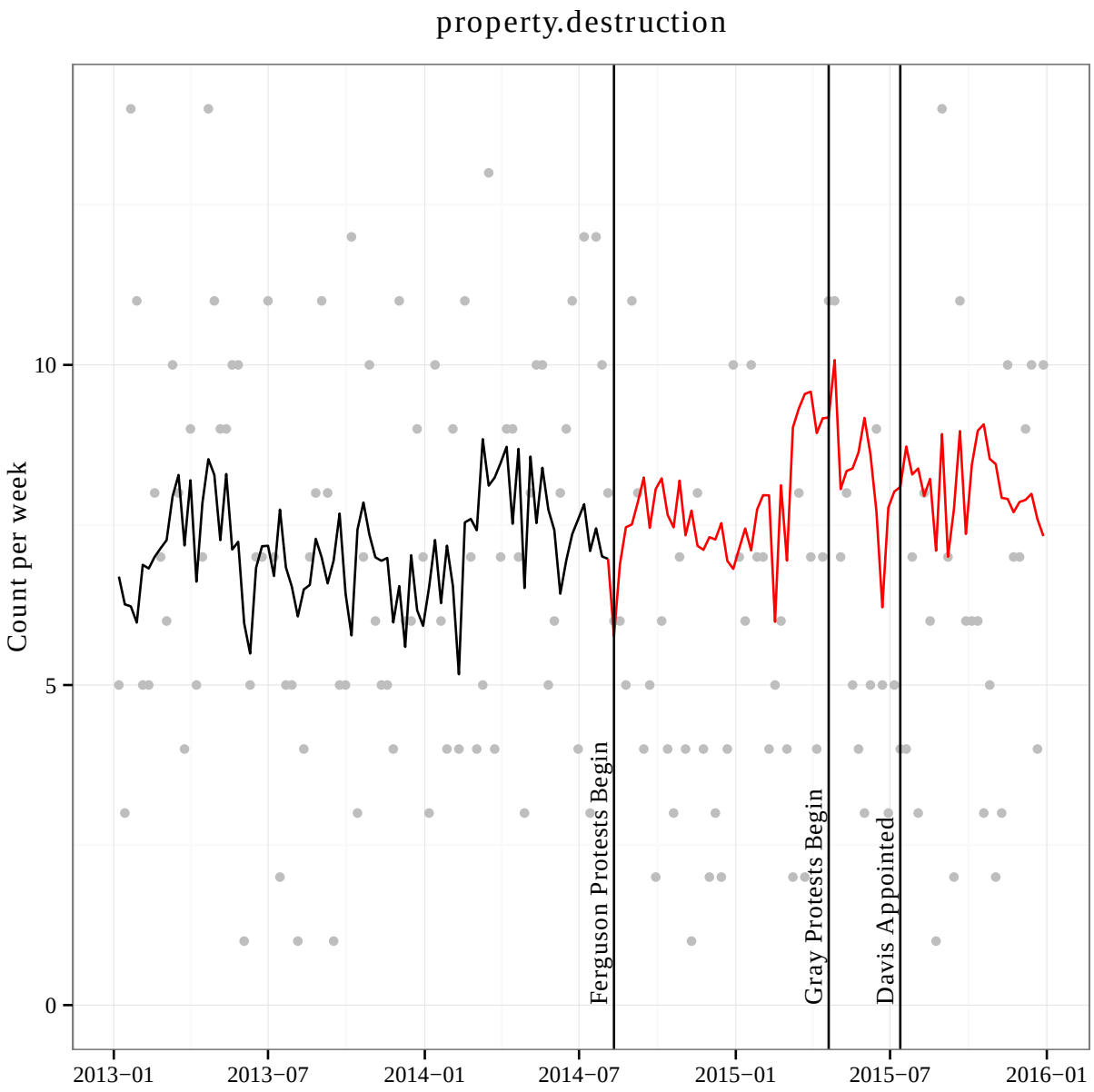

property.destruction
Count per week
0
3
6
9
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

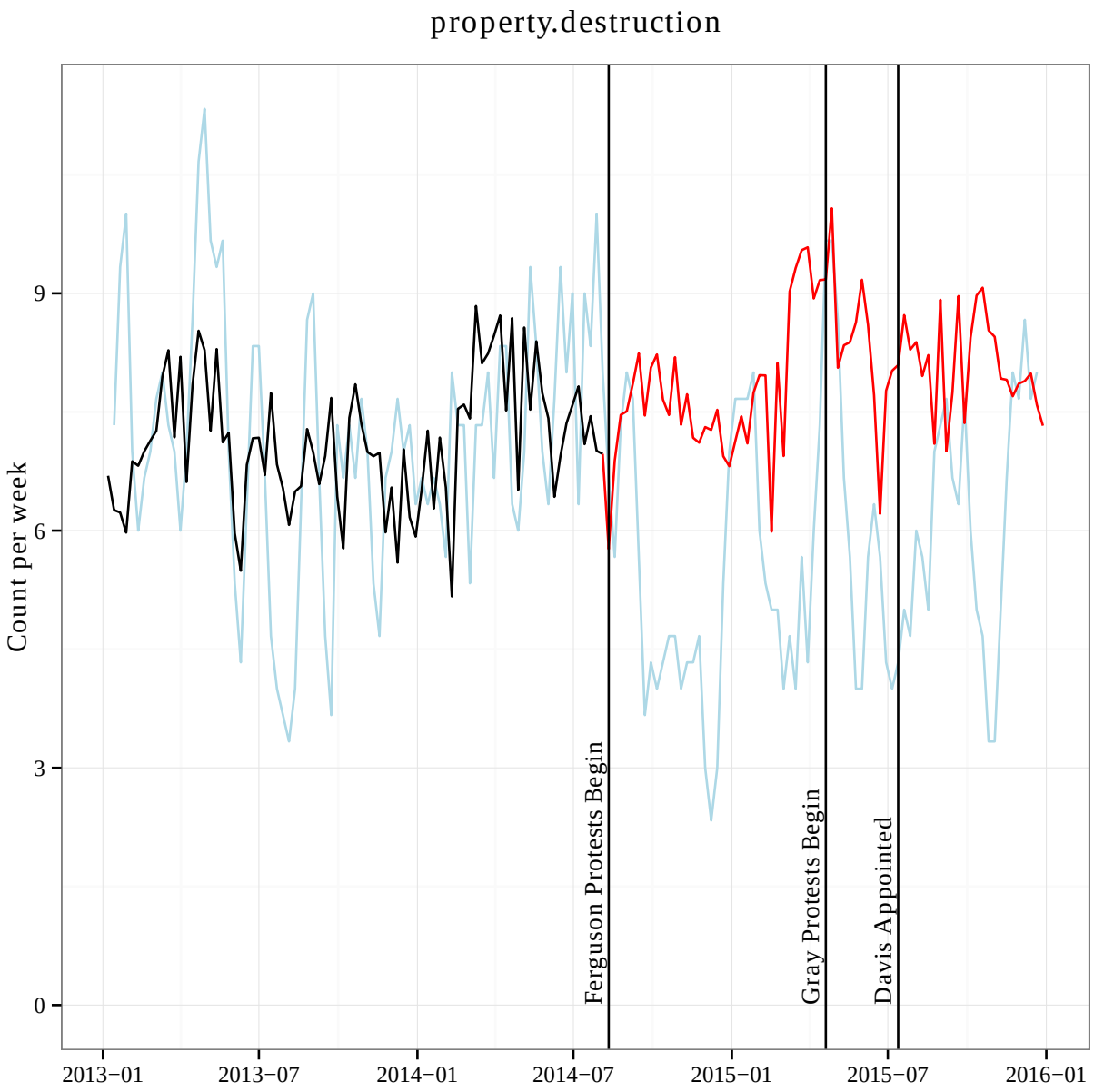

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-2.83052  -0.76415  -0.09817   0.80118   2.67094

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     2.3319990  0.8105080   2.877  0.00401 **
t               0.0015972  0.0018433   0.866  0.38623
tmax.f.spline1  0.0030594  0.0142219   0.215  0.82967
tmax.f.spline2 -0.0069876  0.0325667  -0.215  0.83011
tmax.f.spline3  0.0002613  0.0449020   0.006  0.99536
tmax.f.spline4 -0.0199687  0.0413835  -0.483  0.62943
tmax.f.spline5  0.0369444  0.0374904   0.985  0.32441
snow.in        -0.1055321  0.1583762  -0.666  0.50520
precip.in      -0.4050375  0.2778906  -1.458  0.14497
dark.before.12 -0.0910978  0.0581663  -1.566  0.11731
school          0.0953494  0.1867070   0.511  0.60957
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 116.57  on 82  degrees of freedom
Residual deviance: 109.13  on 72  degrees of freedom
AIC: 439.32

Number of Fisher Scoring iterations: 5
```


property.destruction
Count per week
10
5
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01


property.destruction
Count per week
0
3
6
9
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

20 Results for police.non.compliance

20.1 Summary Values for police.non.compliance

Table 20.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
police.non.compliance	83	12.434	4.082	5	12	27

Table 20.2: Descriptives for Outcome After Ferguson Protests Begin

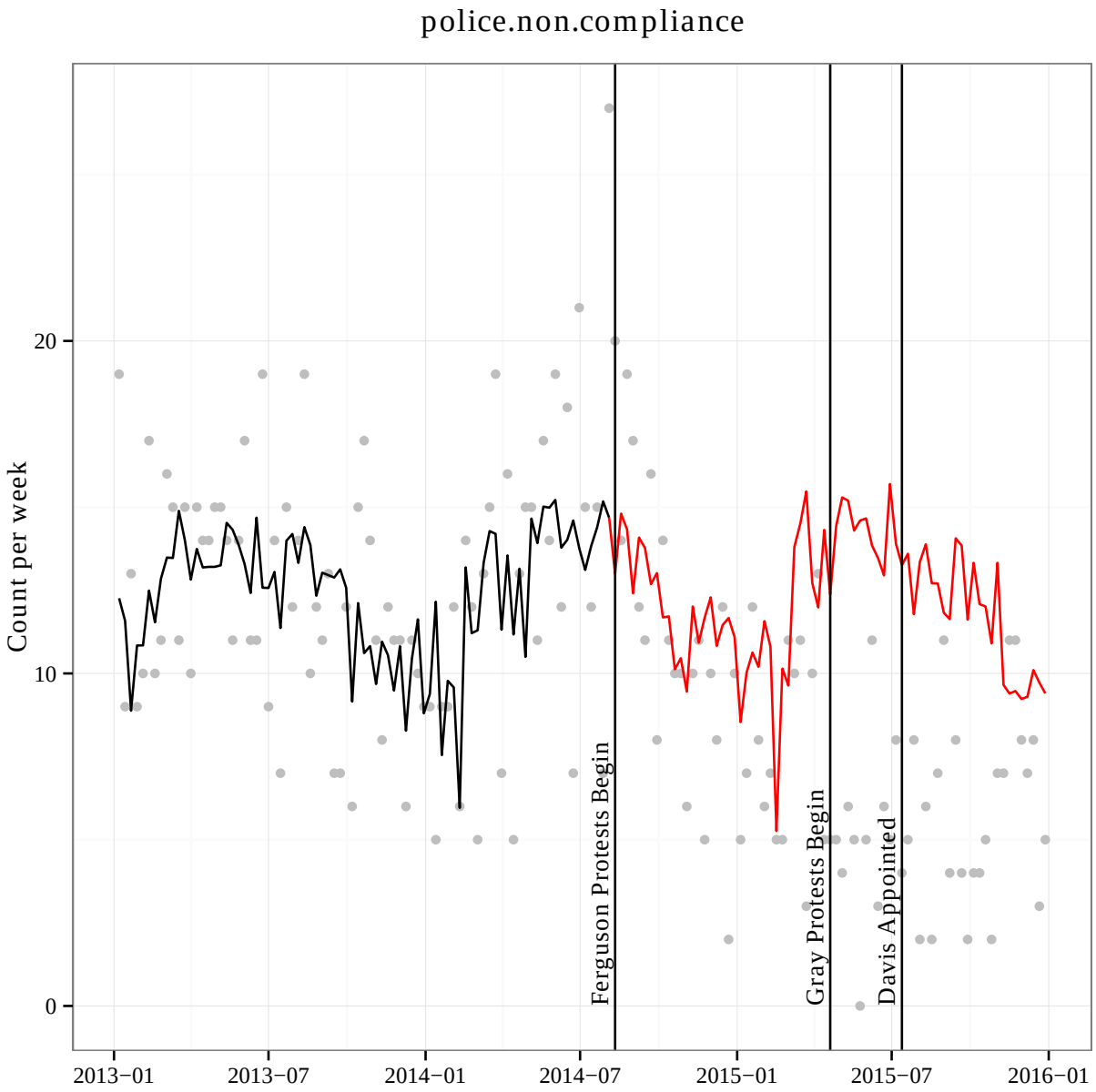
Statistic	N	Mean	St. Dev.	Min	Median	Max
police.non.compliance	73	7.699	4.109	0	7	20

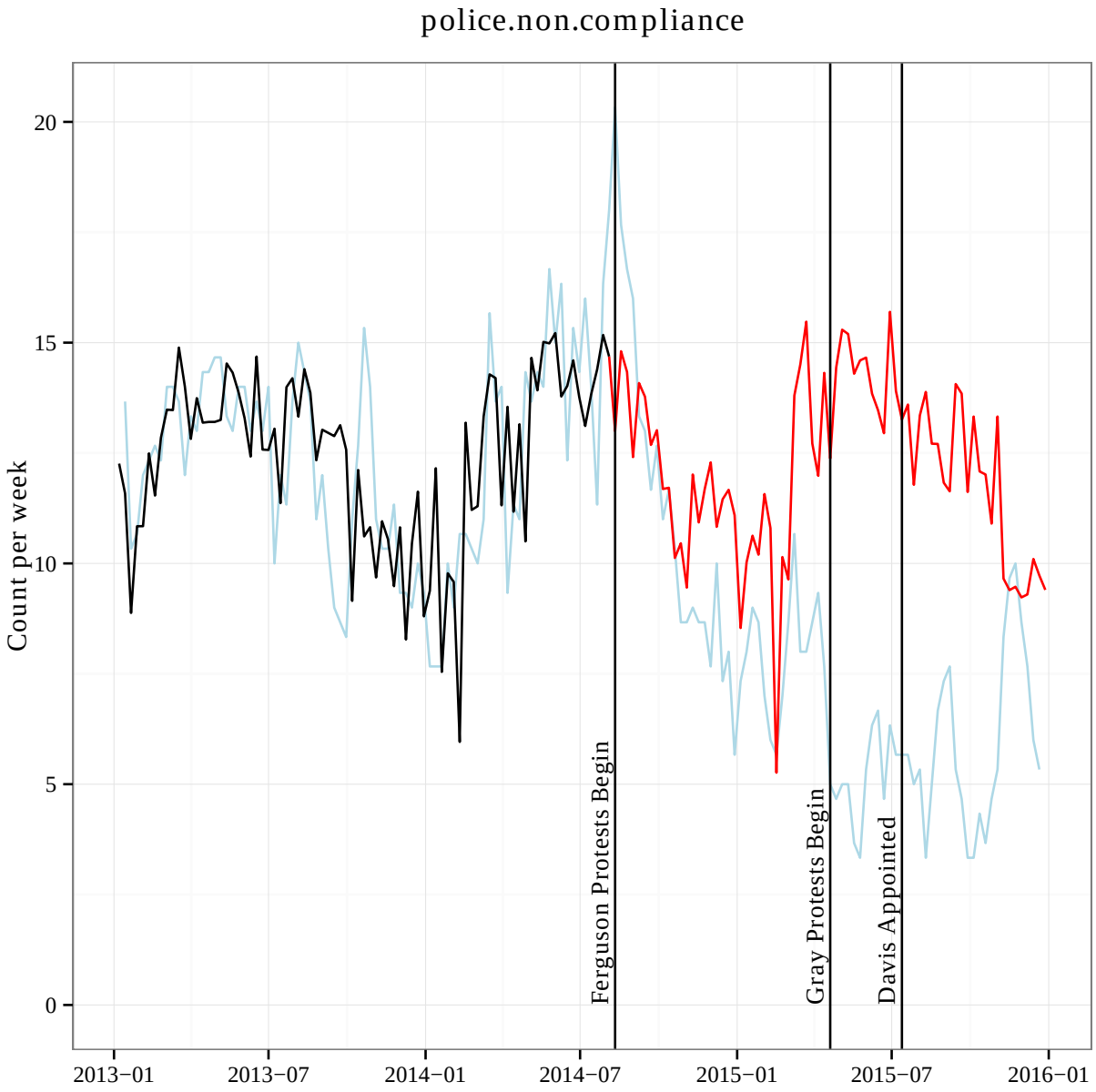
20.2 Four Models for police.non.compliance

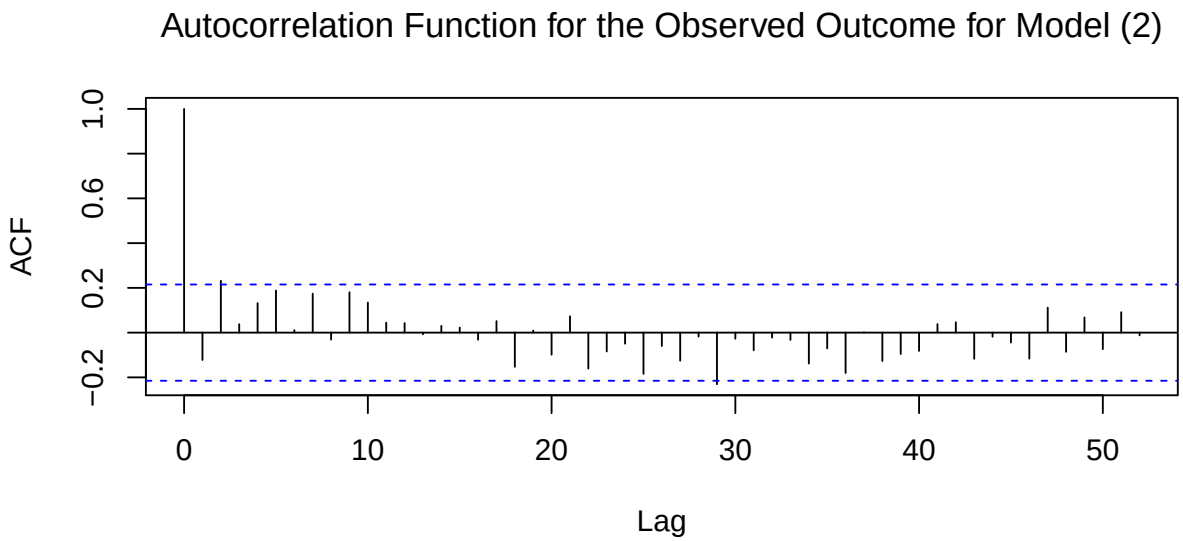
Table 20.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

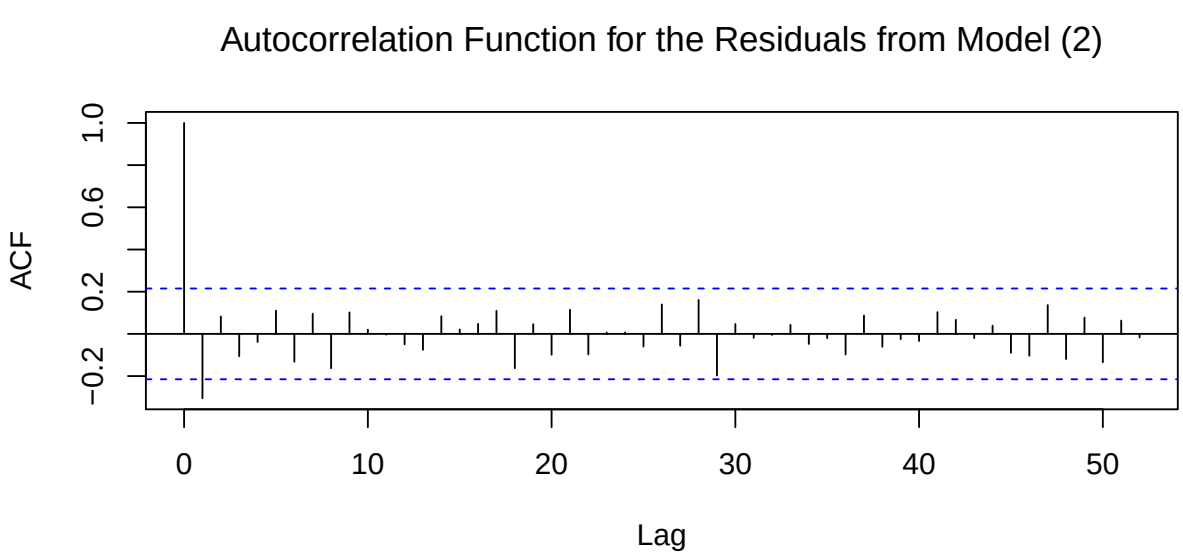
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.01	0.01		−0.01
After Ferguson Protests Begin (week of 8/11/14 onward)	−2.03		−1.92	−1.19
After Gray Protests Begin (week of 4/20/15 onward)	−4.33		−7.02	−6.63
Unrest and National Guard (during week of 4/27/15)	−0.32		−0.50	0.91
After Commissioner Batts Fired (week of 7/13/15 onward)	0.70		3.05	2.96
Average Maximum Temperature to 50 Degrees		0.24		0.03
Plus Degrees in the 50s		−0.67		−0.15
Plus Degrees in the 60s		0.64		0.10
Plus Degrees in the 70s		−0.15		0.31
Plus Degrees greater than 80		−0.33		−0.60
Snowfall (inches)		−1.29		−1.70
Precipitation (inches)		−3.92		−1.70
Darkness Before Midnight (hours)		−1.24		−0.88
School Days (proportion of week)		0.08		0.80
Observations	156	83	156	156
R^2	0.35	0.23	0.39	0.44

20.3 Least Squares Model (2) for police.non.compliance



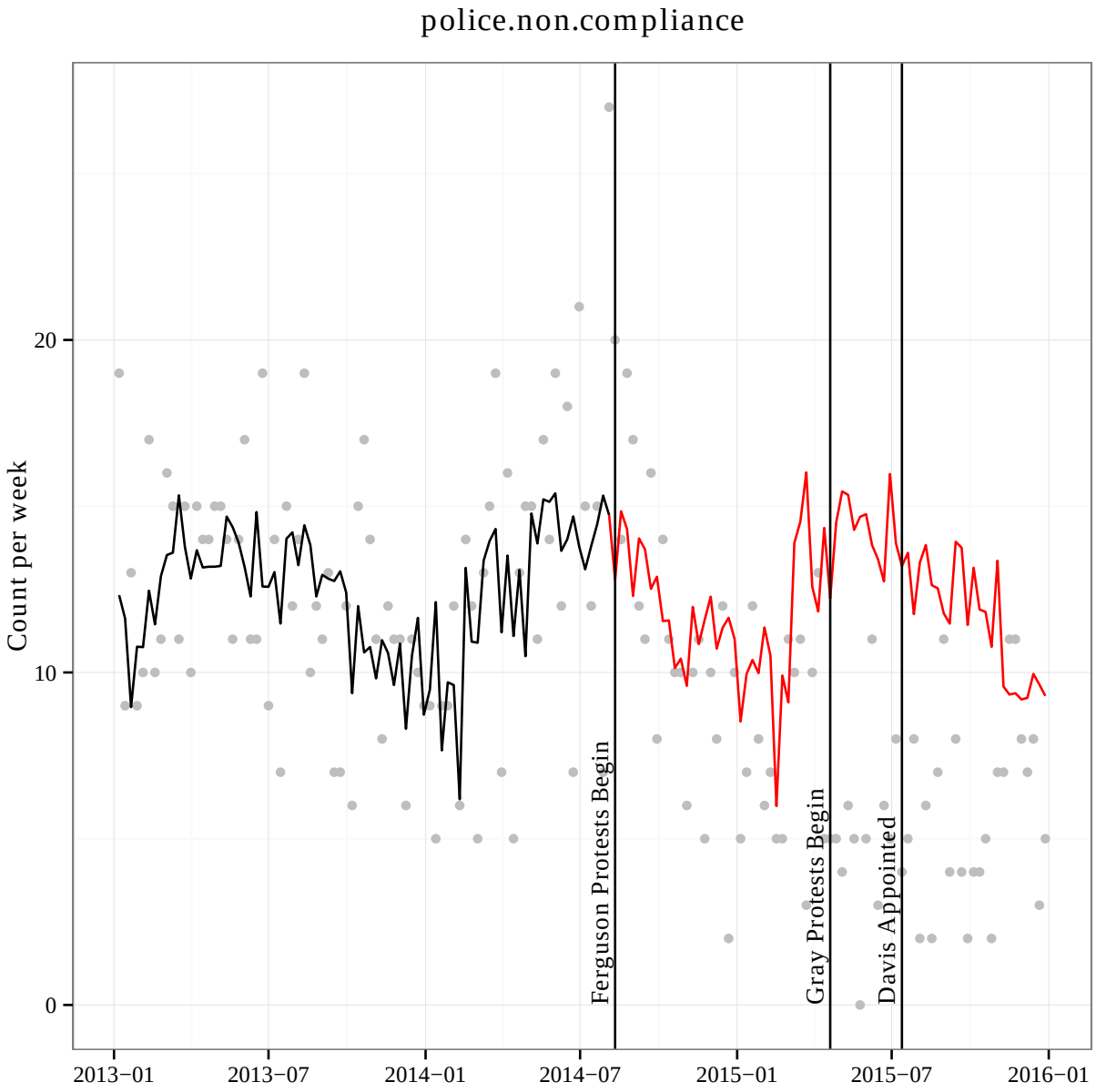

police.non.compliance
Count per week
20
15
10
5
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

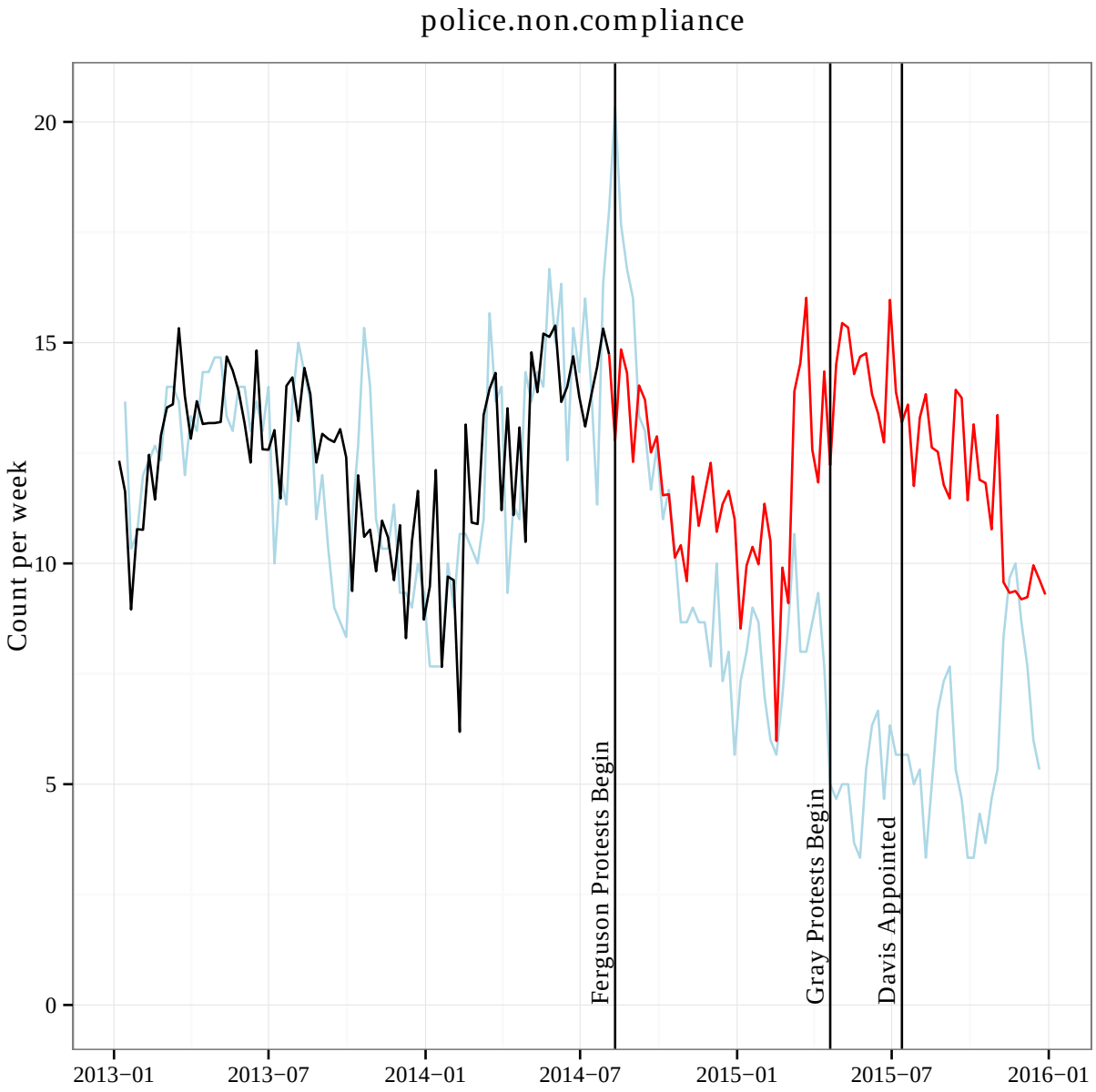

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-2.38192  -0.57992   0.05003   0.47822   2.85992

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     2.2024015  0.6515777   3.380 0.000725 ***
t               0.0004579  0.0013731   0.334 0.738754
tmax.f.spline1  0.0214974  0.0114554   1.877 0.060571 .
tmax.f.spline2 -0.0593059  0.0259092  -2.289 0.022080 *
tmax.f.spline3  0.0546342  0.0362541   1.507 0.131816
tmax.f.spline4 -0.0137317  0.0322544  -0.426 0.670305
tmax.f.spline5 -0.0244338  0.0280430  -0.871 0.383593
snow.in        -0.1591423  0.1353415  -1.176 0.239652
precip.in      -0.3265643  0.2094817  -1.559 0.119016
dark.before.12 -0.1041245  0.0451697  -2.305 0.021156 *
school          0.0062498  0.1372950   0.046 0.963692
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 110.682  on 82  degrees of freedom
Residual deviance:  84.321  on 72  degrees of freedom
AIC: 464.57

Number of Fisher Scoring iterations: 4
```


police.non.compliance
Count per week
20
10
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


police.non.compliance
Count per week
20
15
10
5
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

21 Results for court.non.compliance

21.1 Summary Values for court.non.compliance

Table 21.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
court.non.compliance	83	114.952	33.150	69	103	200

Table 21.2: Descriptives for Outcome After Ferguson Protests Begin

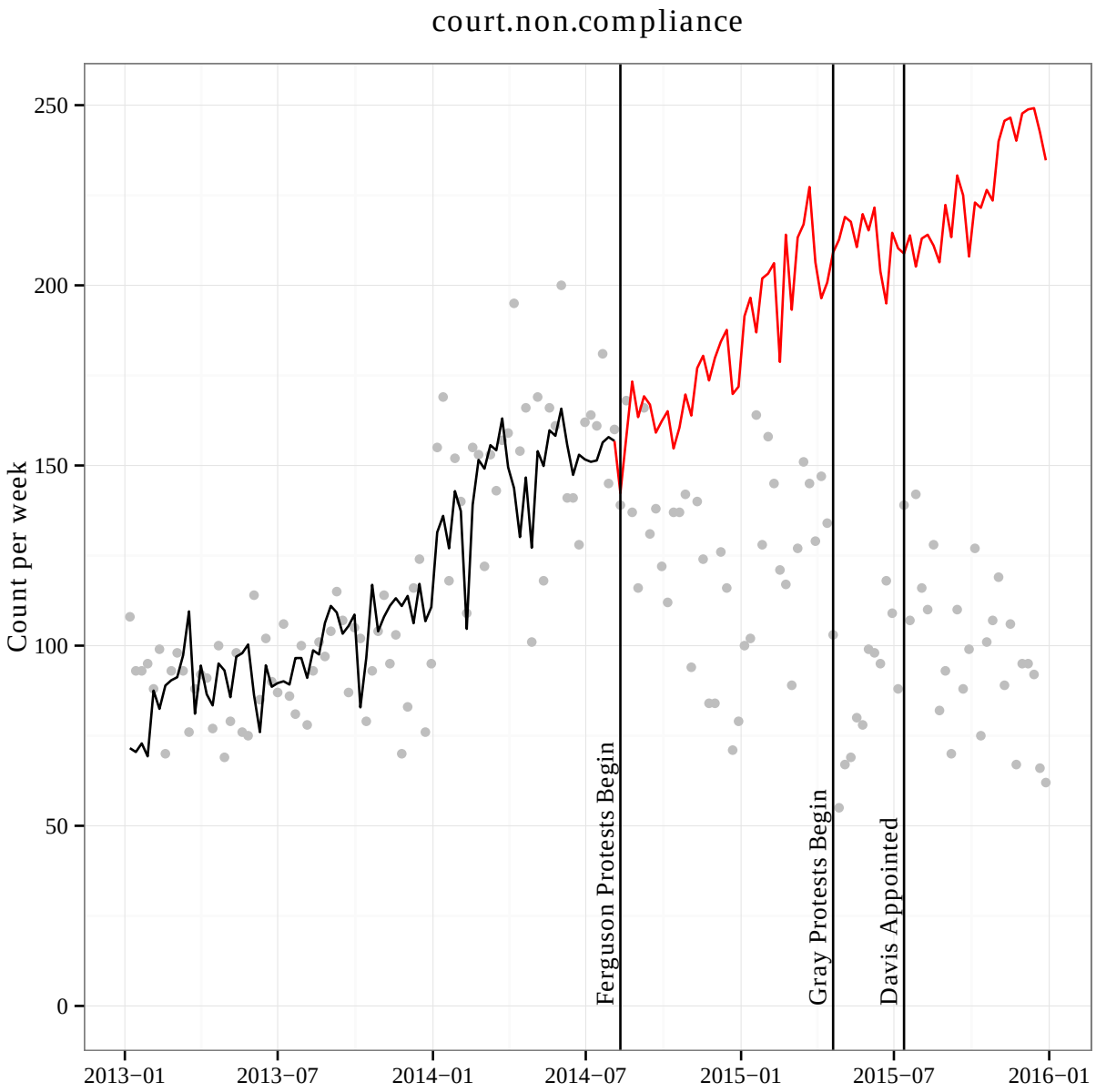
Statistic	N	Mean	St. Dev.	Min	Median	Max
court.non.compliance	73	110.466	27.526	55	110	168

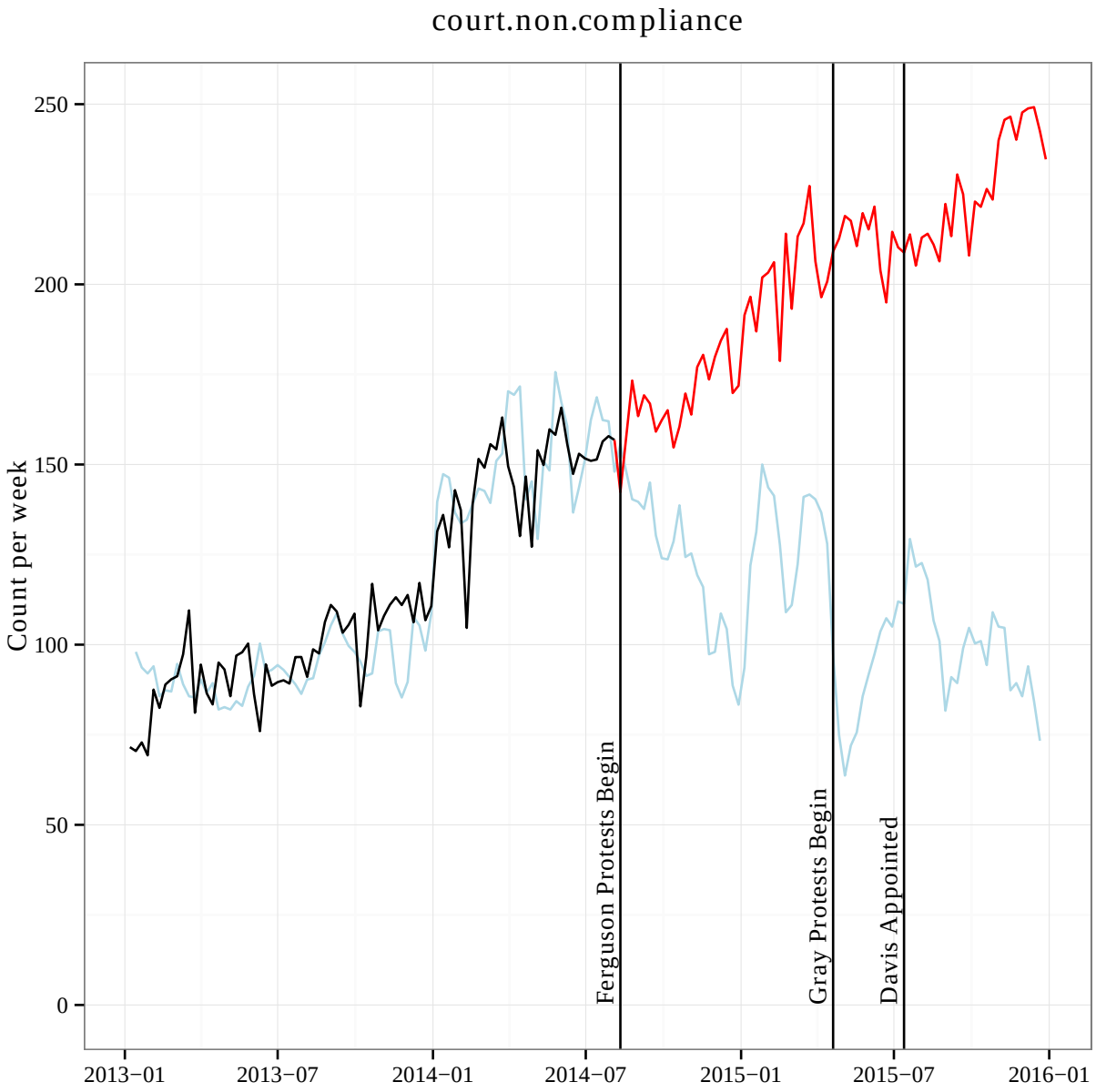
21.2 Four Models for court.non.compliance

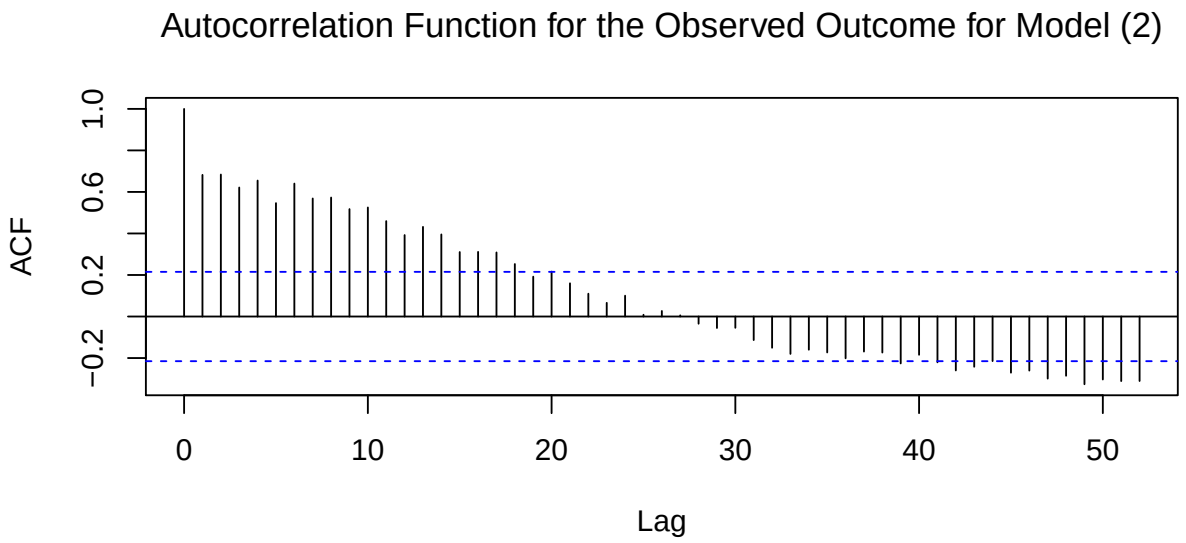
Table 21.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

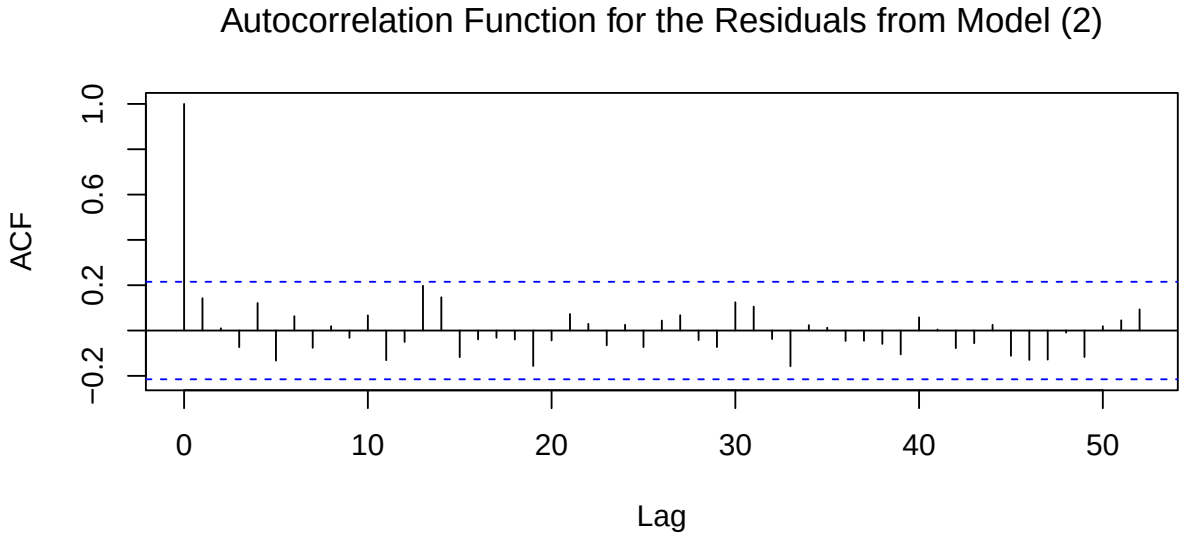
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.91	1.14		0.92
After Ferguson Protests Begin (week of 8/11/14 onward)	−43.42		−56.84	−38.82
After Gray Protests Begin (week of 4/20/15 onward)	−56.44		−64.31	−70.35
Unrest and National Guard (during week of 4/27/15)	−31.82		−36.52	−32.42
After Commissioner Batts Fired (week of 7/13/15 onward)	−8.30		−5.90	6.61
Average Maximum Temperature to 50 Degrees		−0.39		0.38
Plus Degrees in the 50s		−1.53		−1.21
Plus Degrees in the 60s		0.57		−0.05
Plus Degrees in the 70s		2.06		1.47
Plus Degrees greater than 80		−1.38		−0.97
Snowfall (inches)		−15.04		−5.77
Precipitation (inches)		−31.10		−16.95
Darkness Before Midnight (hours)		−10.71		−9.84
School Days (proportion of week)		22.46		14.34
Observations	156	83	156	156
R^2	0.43	0.71	0.83	0.52

21.3 Least Squares Model (2) for court.non.compliance



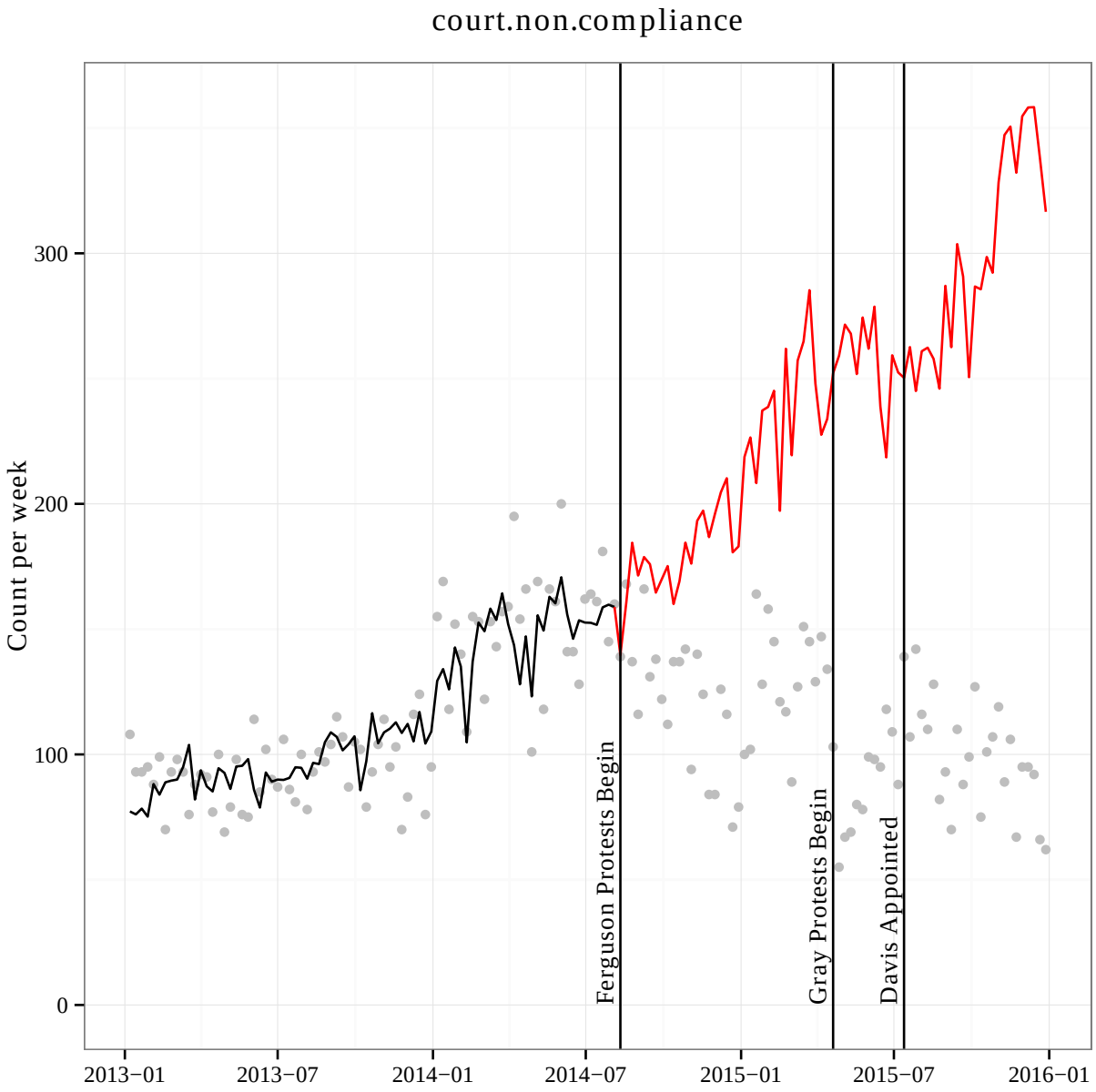

court.non.compliance
Count per week
250
200
150
100
50
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

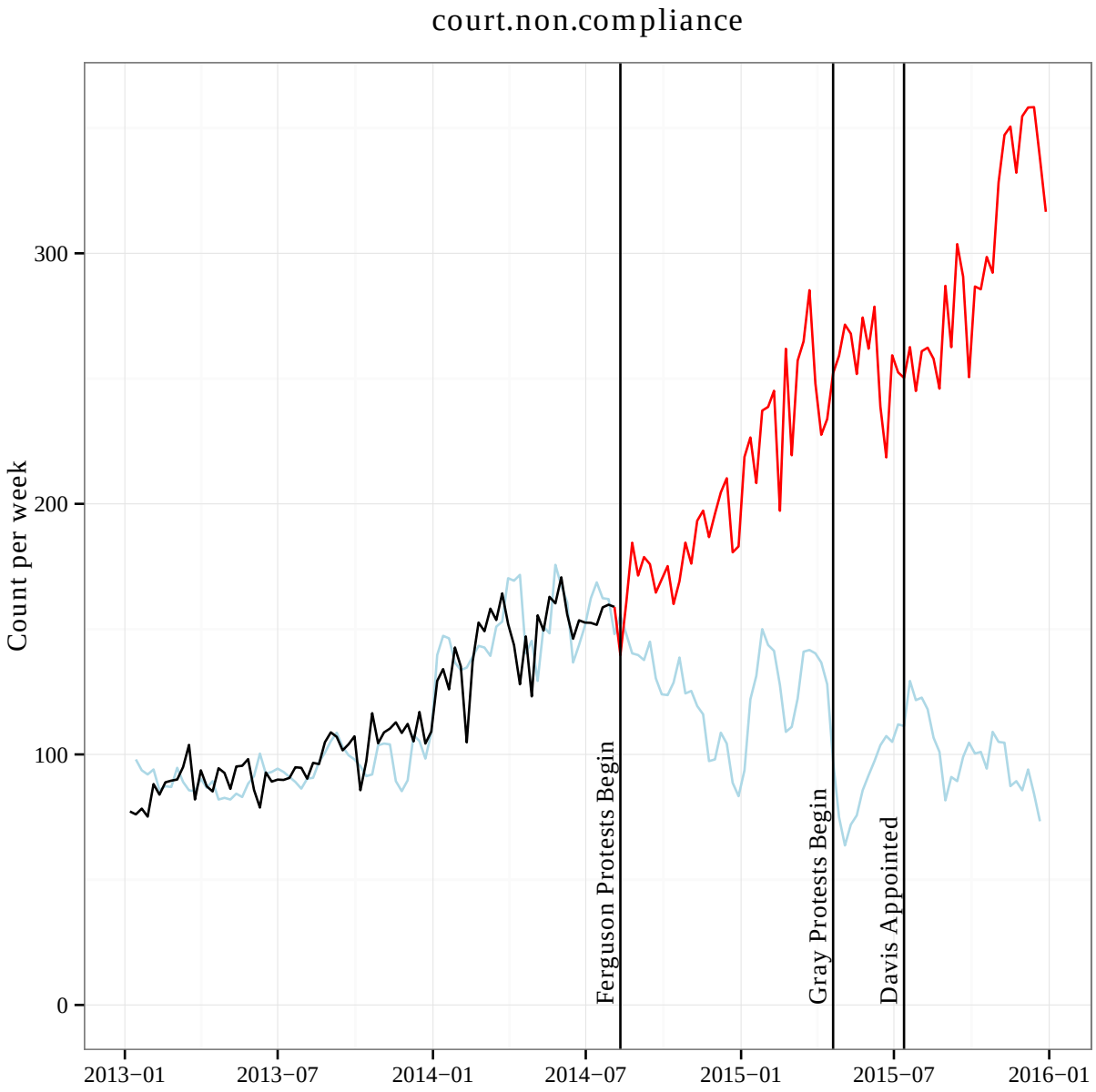

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.9608  -1.0621   0.0902   0.8026   4.0623

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     4.9698813  0.2025422  24.538  < 2e-16 ***
t               0.0098245  0.0004678  21.000  < 2e-16 ***
tmax.f.spline1 -0.0038665  0.0034966  -1.106  0.26883
tmax.f.spline2 -0.0083758  0.0081464  -1.028  0.30387
tmax.f.spline3 -0.0003726  0.0113241  -0.033  0.97375
tmax.f.spline4  0.0180979  0.0105500   1.715  0.08627 .
tmax.f.spline5 -0.0093819  0.0095351  -0.984  0.32515
snow.in        -0.1191585  0.0364650  -3.268  0.00108 **
precip.in      -0.2774773  0.0678183  -4.091 4.29e-05 ***
dark.before.12 -0.0798461  0.0147162  -5.426 5.77e-08 ***
school          0.1933272  0.0458274   4.219 2.46e-05 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 753.90  on 82  degrees of freedom
Residual deviance: 207.54  on 72  degrees of freedom
AIC: 772.78

Number of Fisher Scoring iterations: 4
```


court.non.compliance
Count per week
300
200
100
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


court.non.compliance
Count per week
300
200
100
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

22 Results for drug.possession

22.1 Summary Values for drug.possession

Table 22.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
drug.possession	83	238.036	42.058	148	234	340

Table 22.2: Descriptives for Outcome After Ferguson Protests Begin

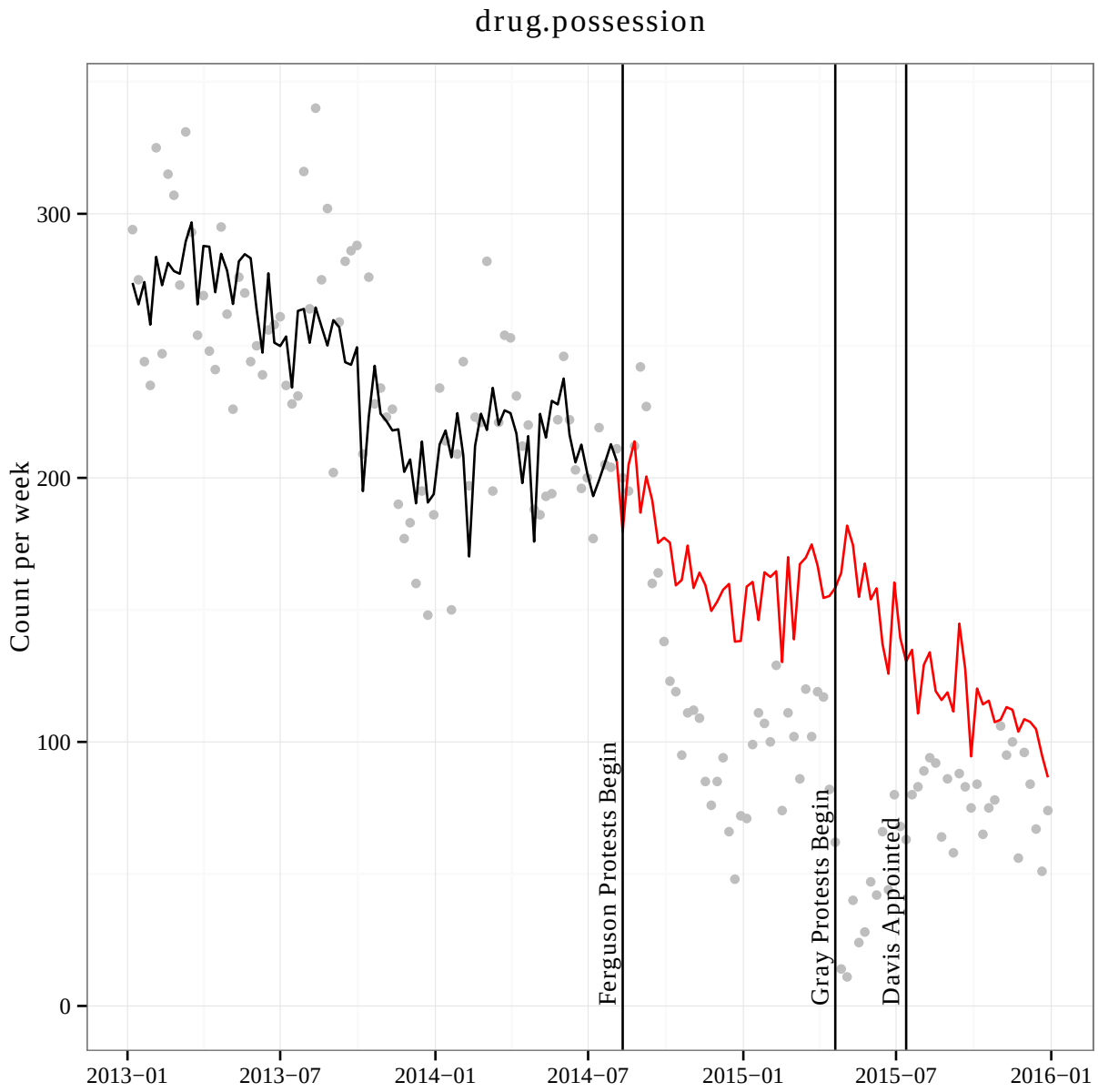
Statistic	N	Mean	St. Dev.	Min	Median	Max
drug.possession	73	92.808	44.605	11	85	242

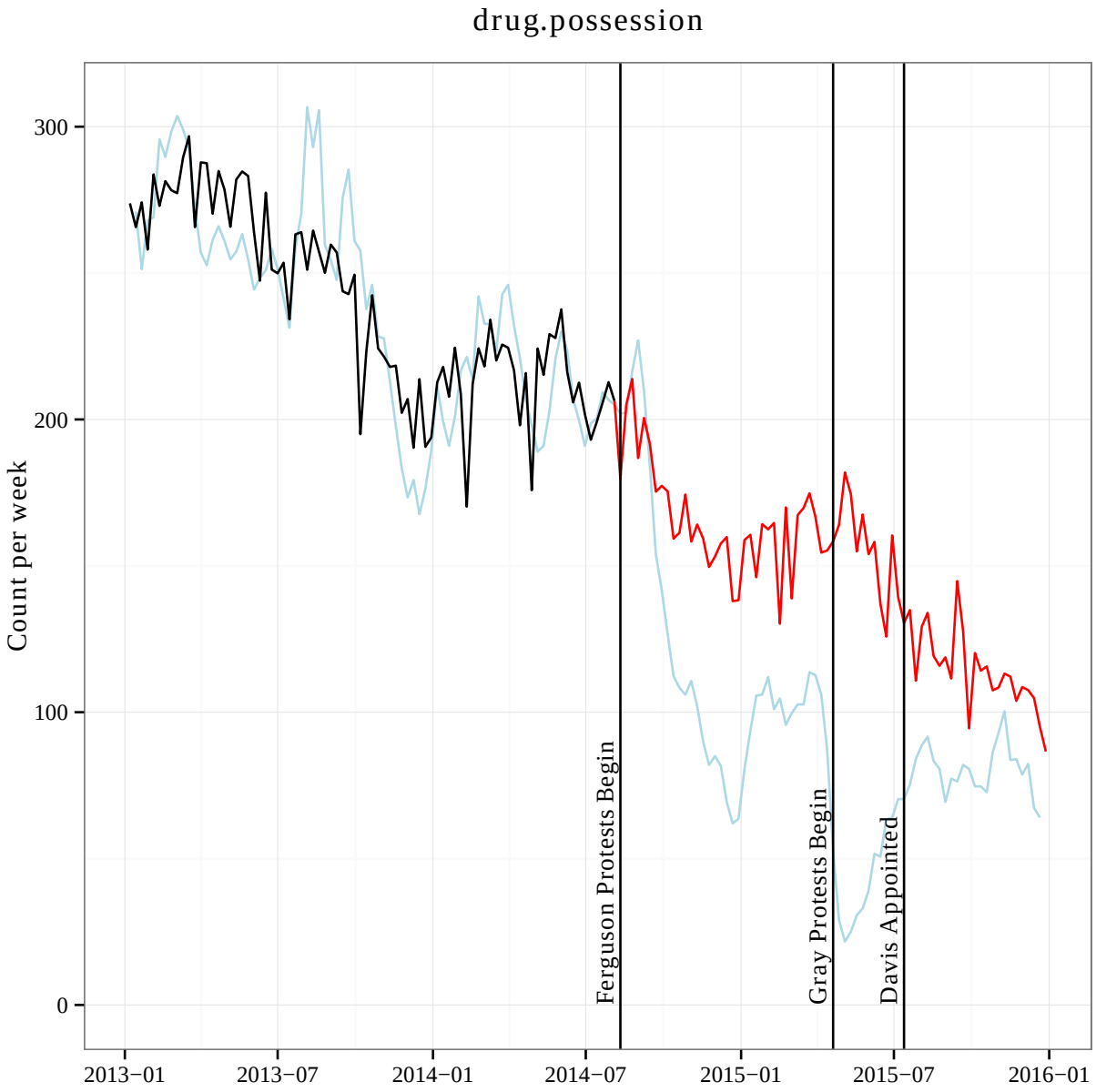
22.2 Four Models for drug.possession

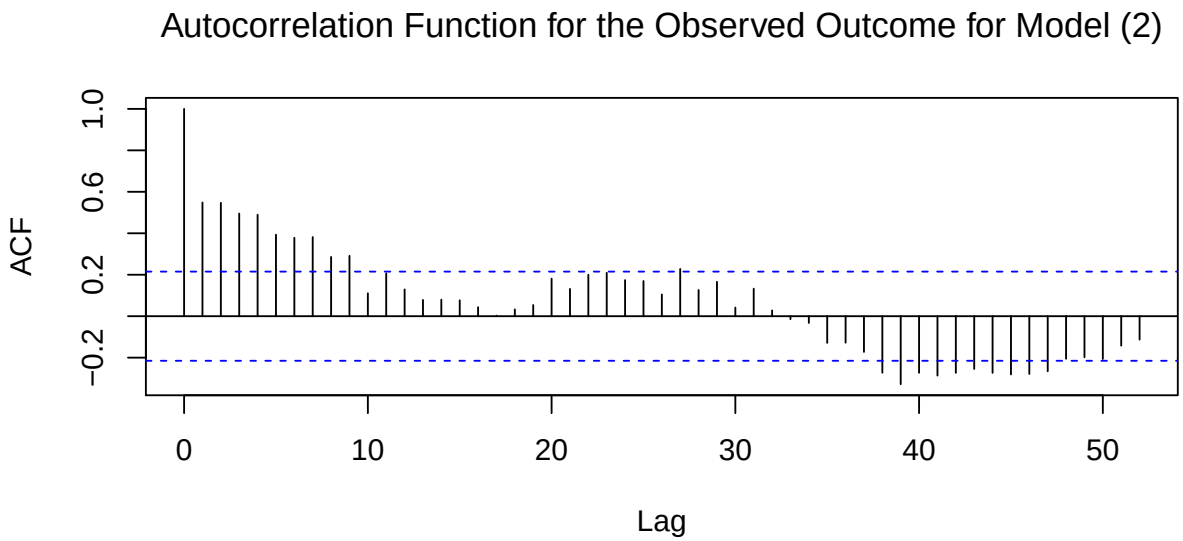
Table 22.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

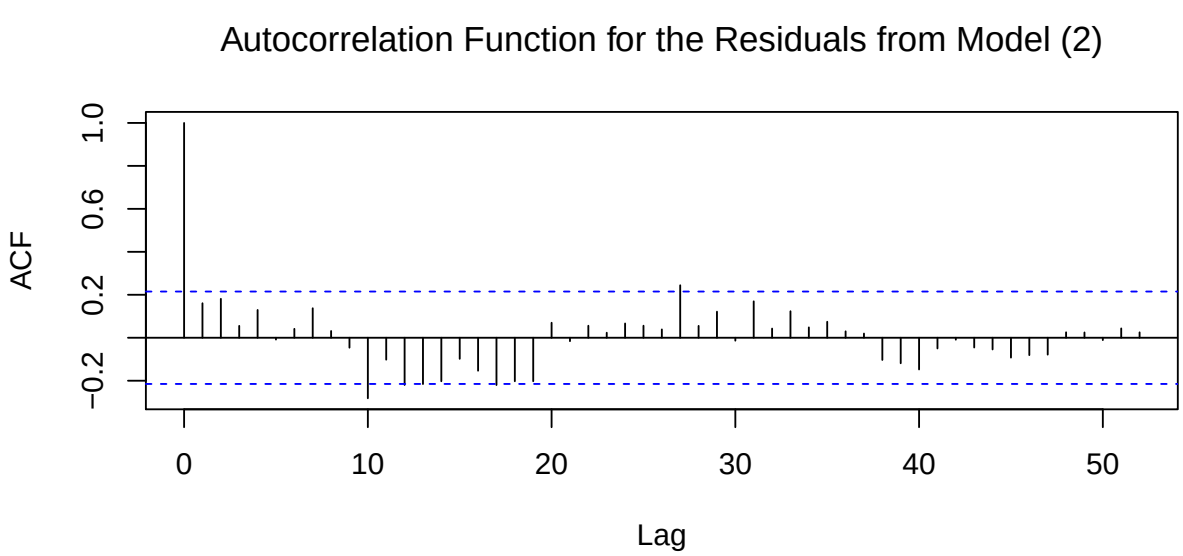
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−1.18	−1.12		−1.25
After Ferguson Protests Begin (week of 8/11/14 onward)	−49.17		−47.21	−38.24
After Gray Protests Begin (week of 4/20/15 onward)	−42.97		−61.88	−64.26
Unrest and National Guard (during week of 4/27/15)	−38.36		−40.92	−35.86
After Commissioner Batts Fired (week of 7/13/15 onward)	54.32		73.76	79.28
Average Maximum Temperature to 50 Degrees		−0.58		−1.07
Plus Degrees in the 50s		−0.04		1.22
Plus Degrees in the 60s		−1.12		−1.60
Plus Degrees in the 70s		4.02		4.20
Plus Degrees greater than 80		−5.47		−6.63
Snowfall (inches)		−17.56		−16.66
Precipitation (inches)		−54.75		−44.50
Darkness Before Midnight (hours)		−14.54		−13.91
School Days (proportion of week)		21.21		15.64
Observations	156	83	156	156
R^2	0.86	0.56	0.58	0.90

22.3 Least Squares Model (2) for drug.possession



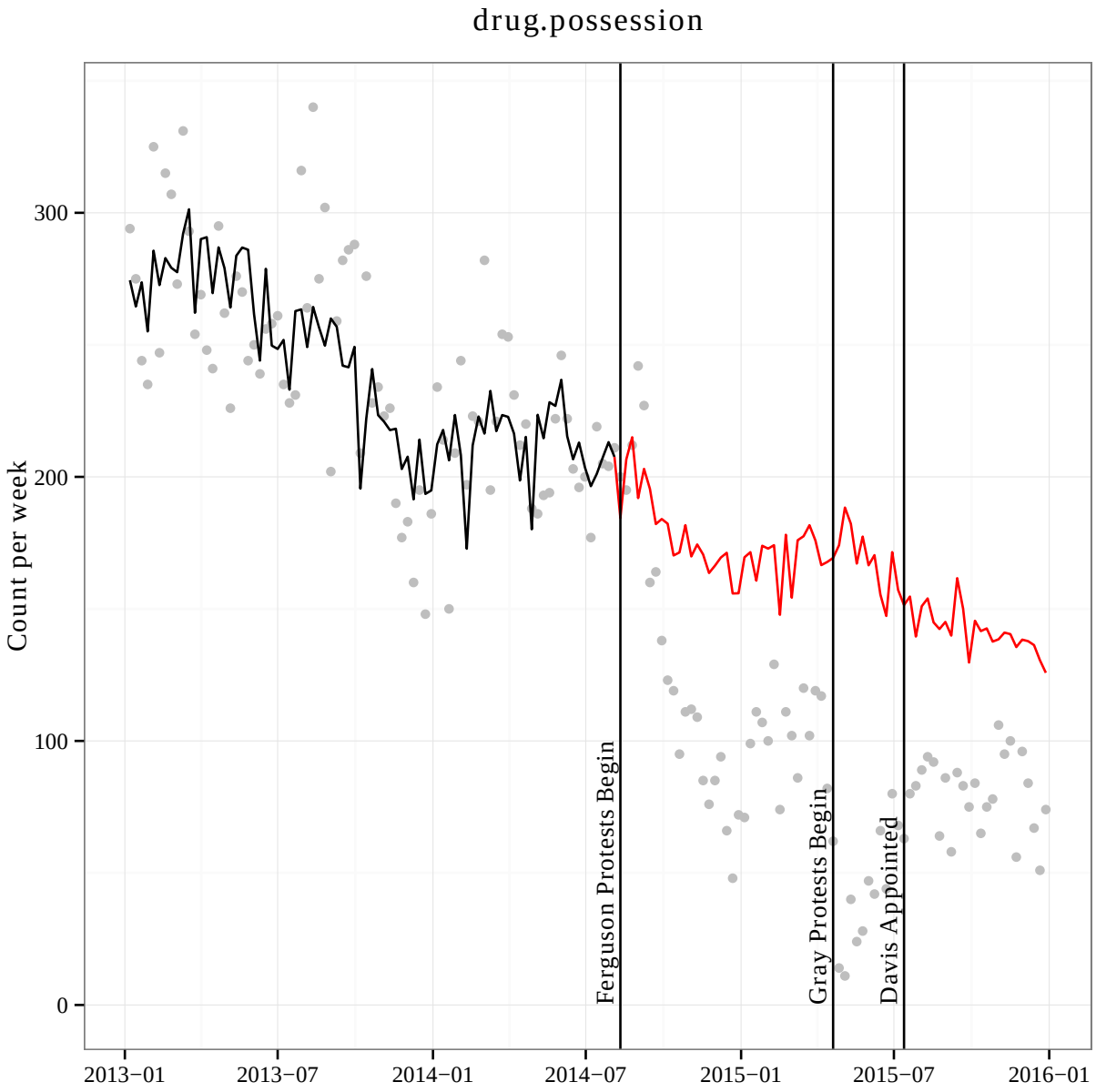

drug.possession
Count per week
300
200
100
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

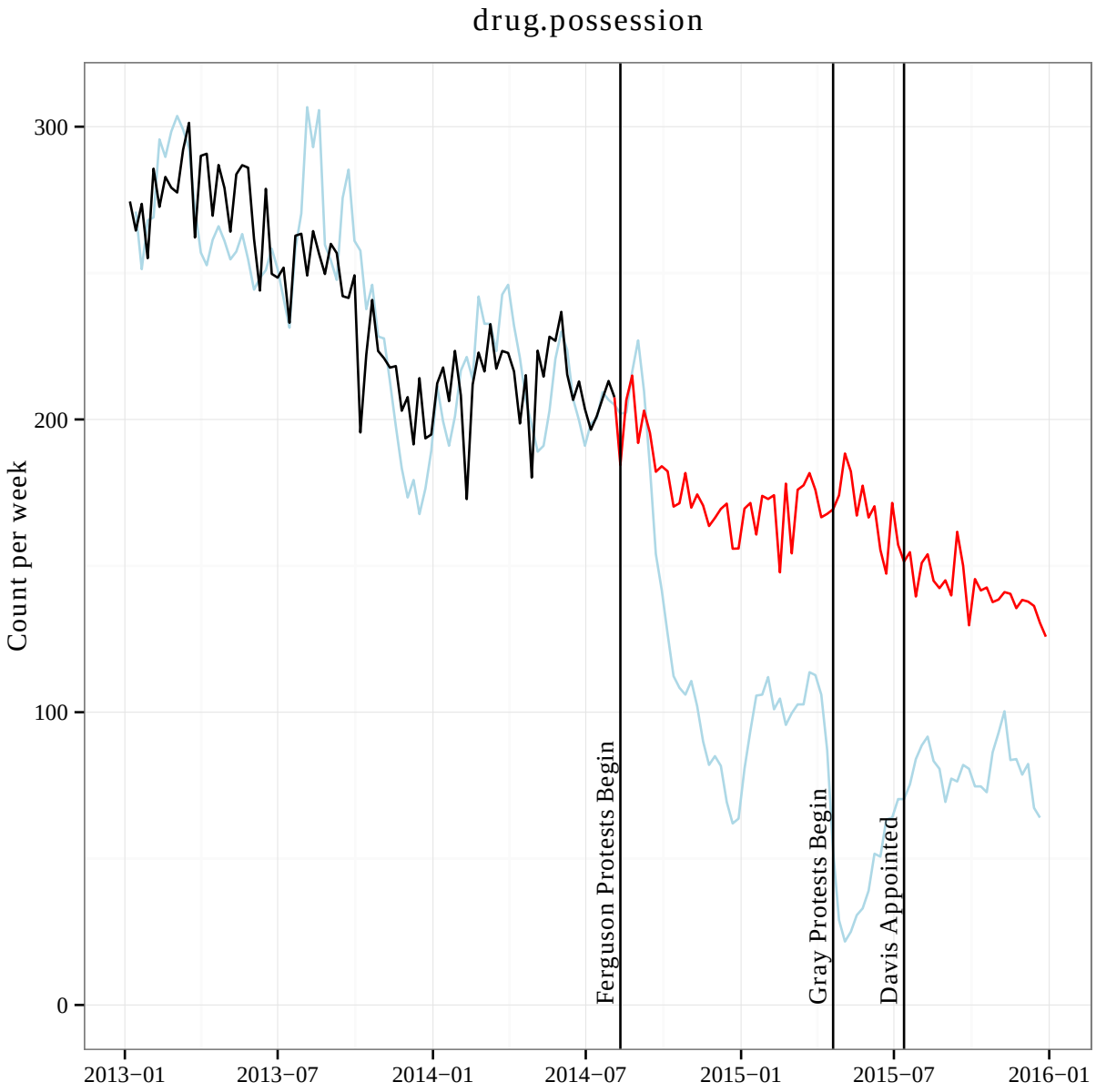

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

22.4 A Poisson Regression Model as an Alternative to Model (2) for drug.possession

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-4.1191  -1.3005  -0.2528   0.9668   4.4541

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     6.0984763  0.1383622  44.076  < 2e-16 ***
t              -0.0046472  0.0003208 -14.487  < 2e-16 ***
tmax.f.spline1 -0.0023346  0.0024300  -0.961 0.336675
tmax.f.spline2 -0.0003552  0.0057462  -0.062 0.950710
tmax.f.spline3 -0.0044345  0.0081389  -0.545 0.585854
tmax.f.spline4  0.0170029  0.0074016   2.297 0.021608 *
tmax.f.spline5 -0.0230361  0.0065450  -3.520 0.000432 ***
snow.in        -0.0837785  0.0274583  -3.051 0.002280 **
precip.in      -0.2429947  0.0481498  -5.047  4.5e-07 ***
dark.before.12 -0.0596773  0.0102342  -5.831  5.5e-09 ***
school          0.0912262  0.0320157   2.849 0.004380 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 608.73  on 82  degrees of freedom
Residual deviance: 266.26  on 72  degrees of freedom
AIC: 893.78

Number of Fisher Scoring iterations: 4
```


drug.possession
Count per week
300
200
100
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


drug.possession
Count per week
300
200
100
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

23 Results for driving.violation

23.1 Summary Values for driving.violation

Table 23.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
driving.violation	83	14.614	4.271	5	14	25

Table 23.2: Descriptives for Outcome After Ferguson Protests Begin

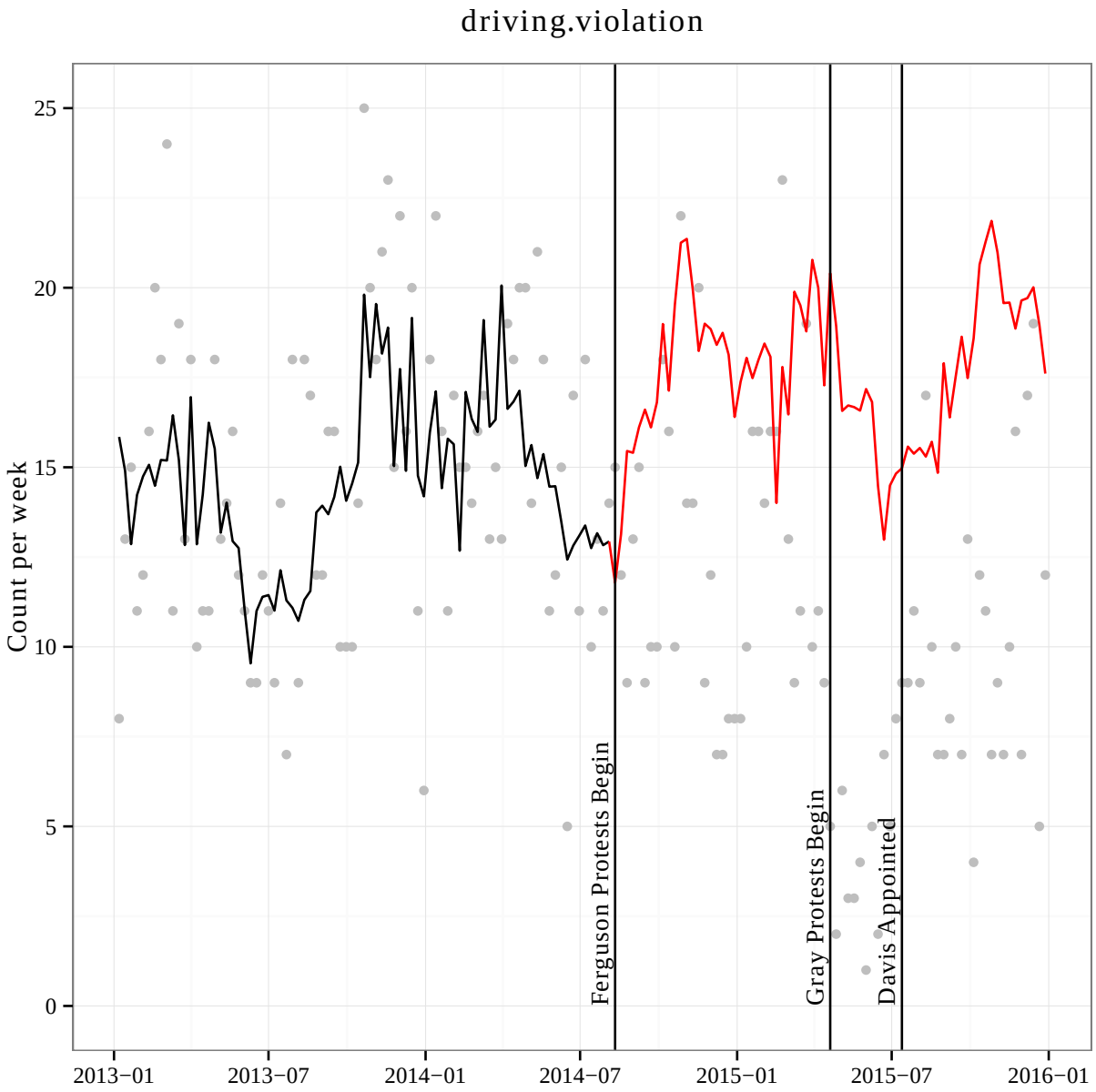
Statistic	N	Mean	St. Dev.	Min	Median	Max
driving.violation	73	10.452	4.842	1	10	23

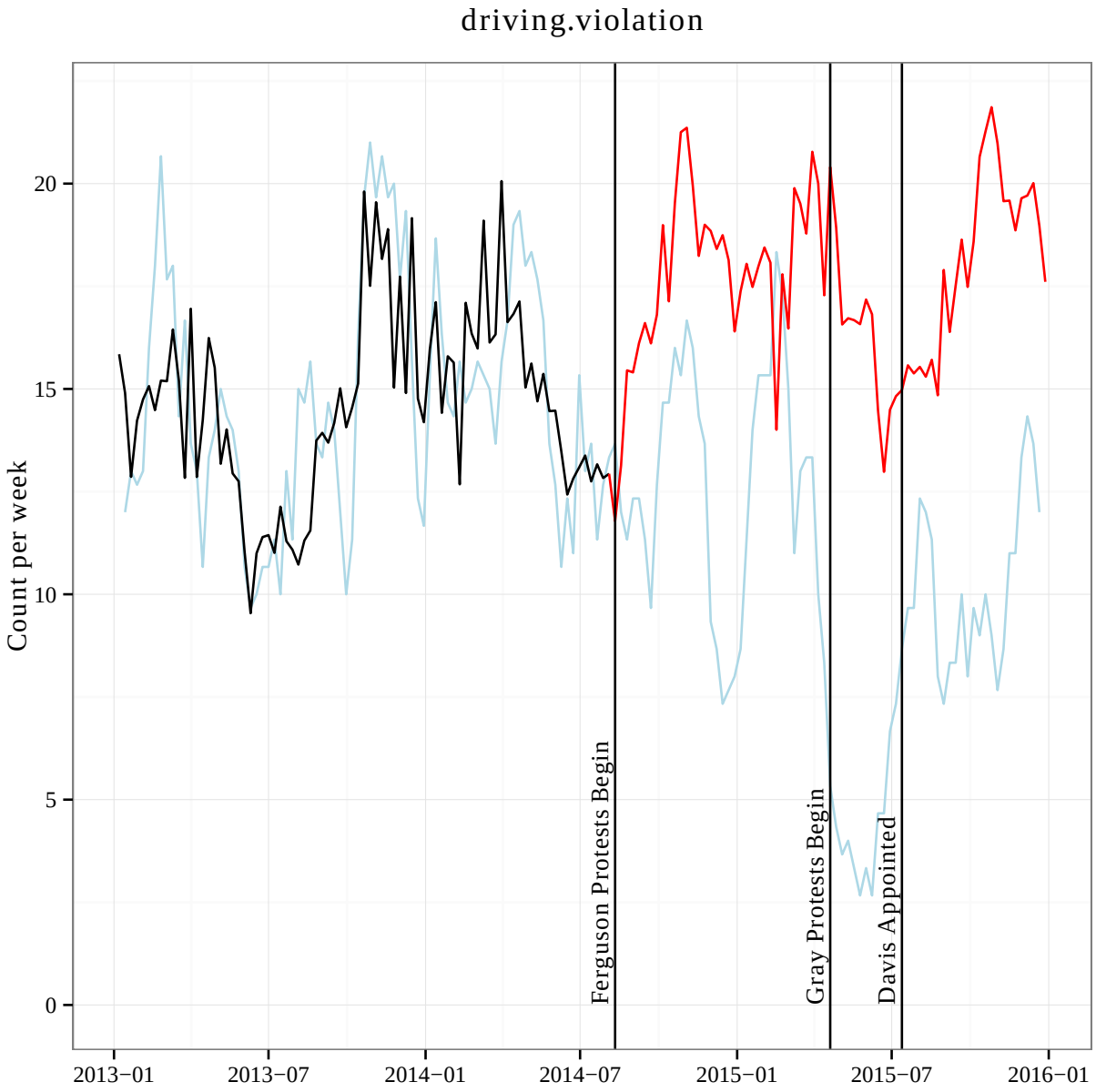
23.2 Four Models for driving.violation

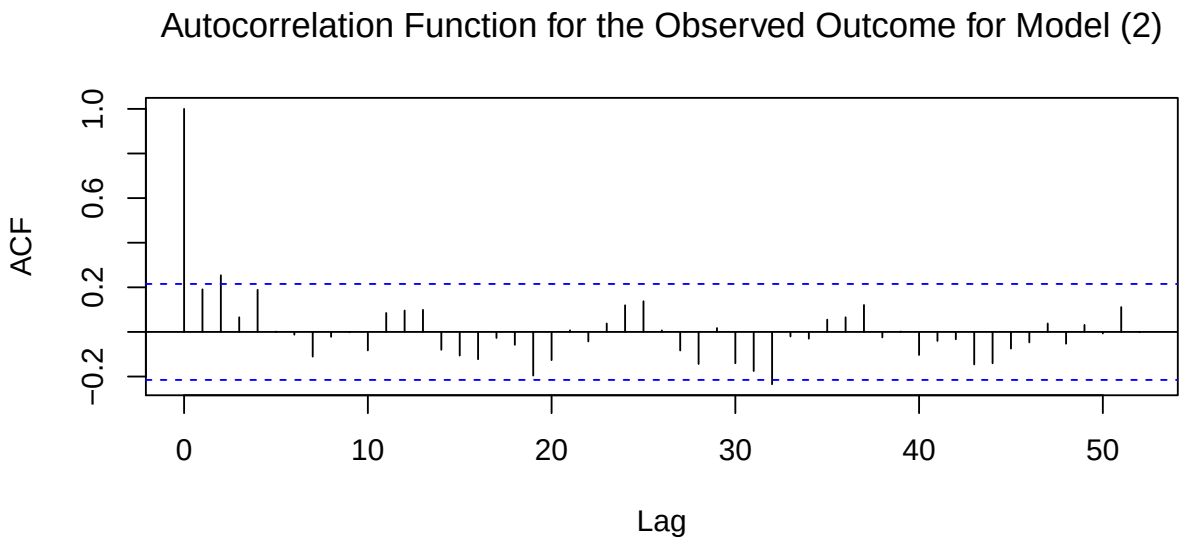
Table 23.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

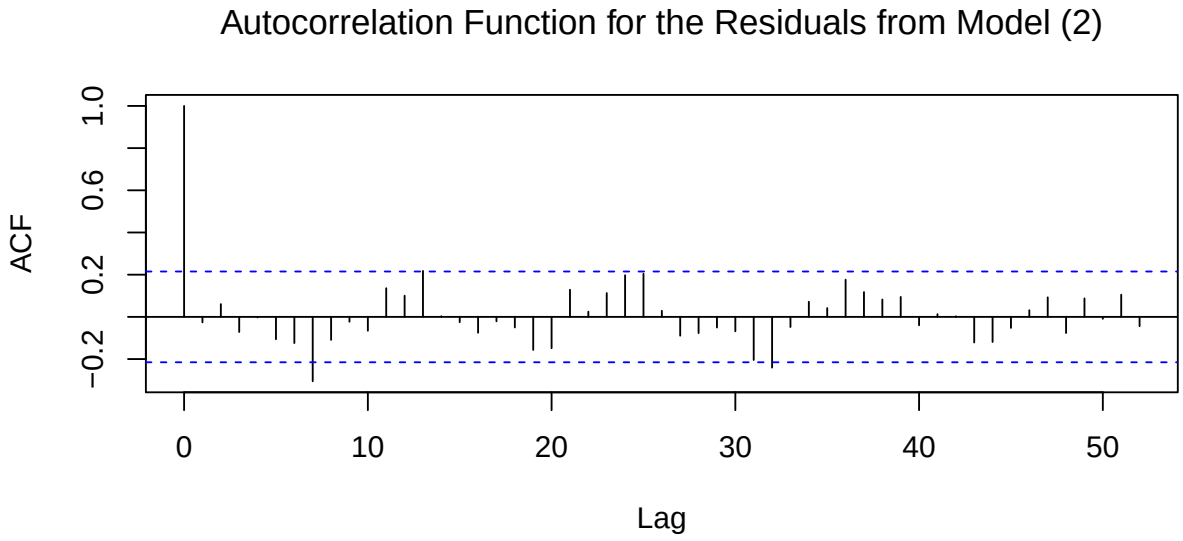
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.02	0.04		0.02
After Ferguson Protests Begin (week of 8/11/14 onward)	−2.98		−5.01	−3.55
After Gray Protests Begin (week of 4/20/15 onward)	−8.75		−6.69	−7.22
Unrest and National Guard (during week of 4/27/15)	−2.36		−5.23	−3.54
After Commissioner Batts Fired (week of 7/13/15 onward)	5.33		3.72	4.56
Average Maximum Temperature to 50 Degrees		0.08		−0.09
Plus Degrees in the 50s		0.24		0.44
Plus Degrees in the 60s		−0.78		−0.84
Plus Degrees in the 70s		0.30		0.49
Plus Degrees greater than 80		0.25		0.05
Snowfall (inches)		−1.13		−0.87
Precipitation (inches)		−2.73		−0.75
Darkness Before Midnight (hours)		0.21		−0.14
School Days (proportion of week)		2.87		1.86
Observations	156	83	156	156
R^2	0.35	0.29	0.51	0.43

23.3 Least Squares Model (2) for driving.violation



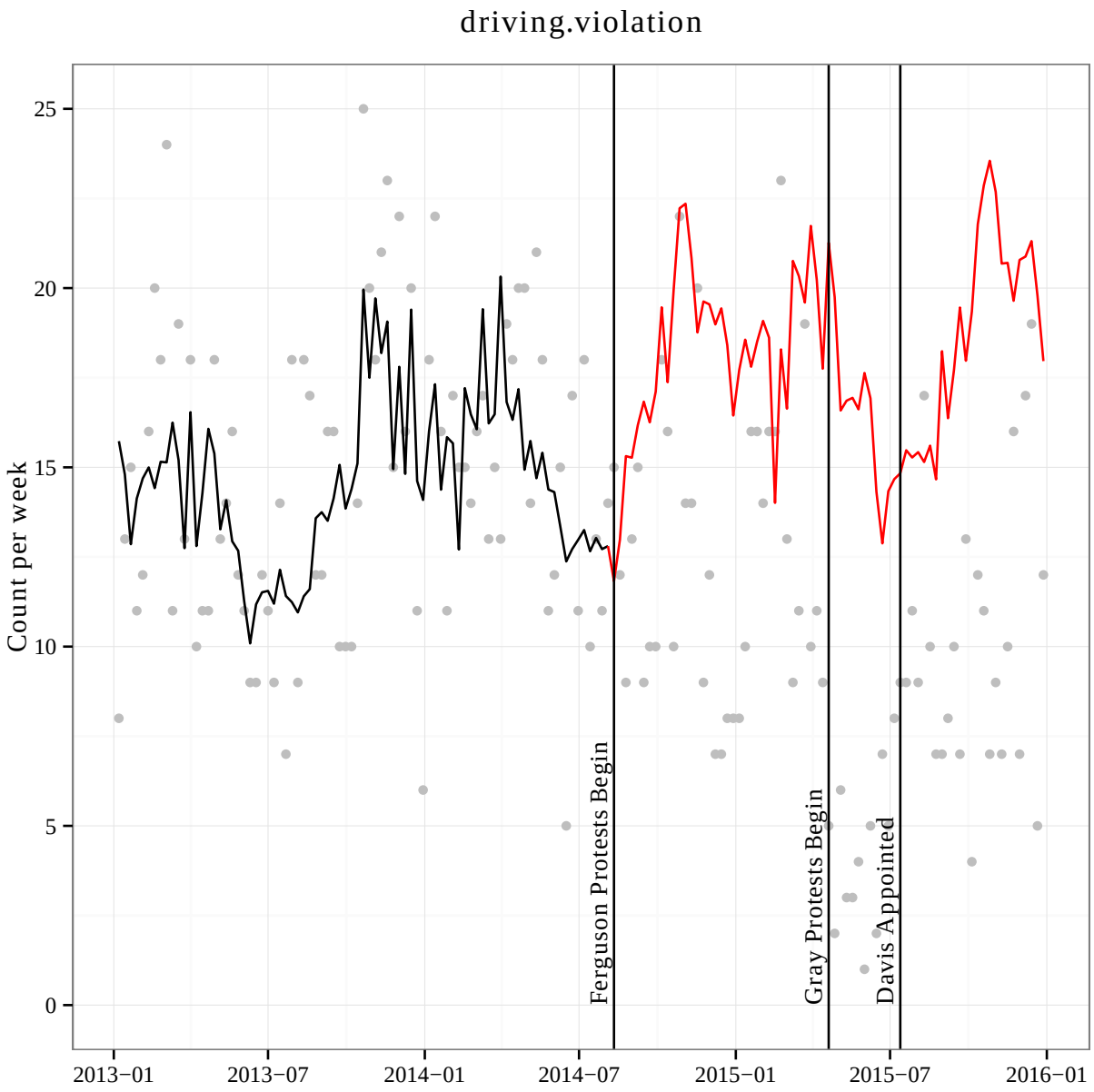

driving.violation
Count per week
20
15
10
5
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

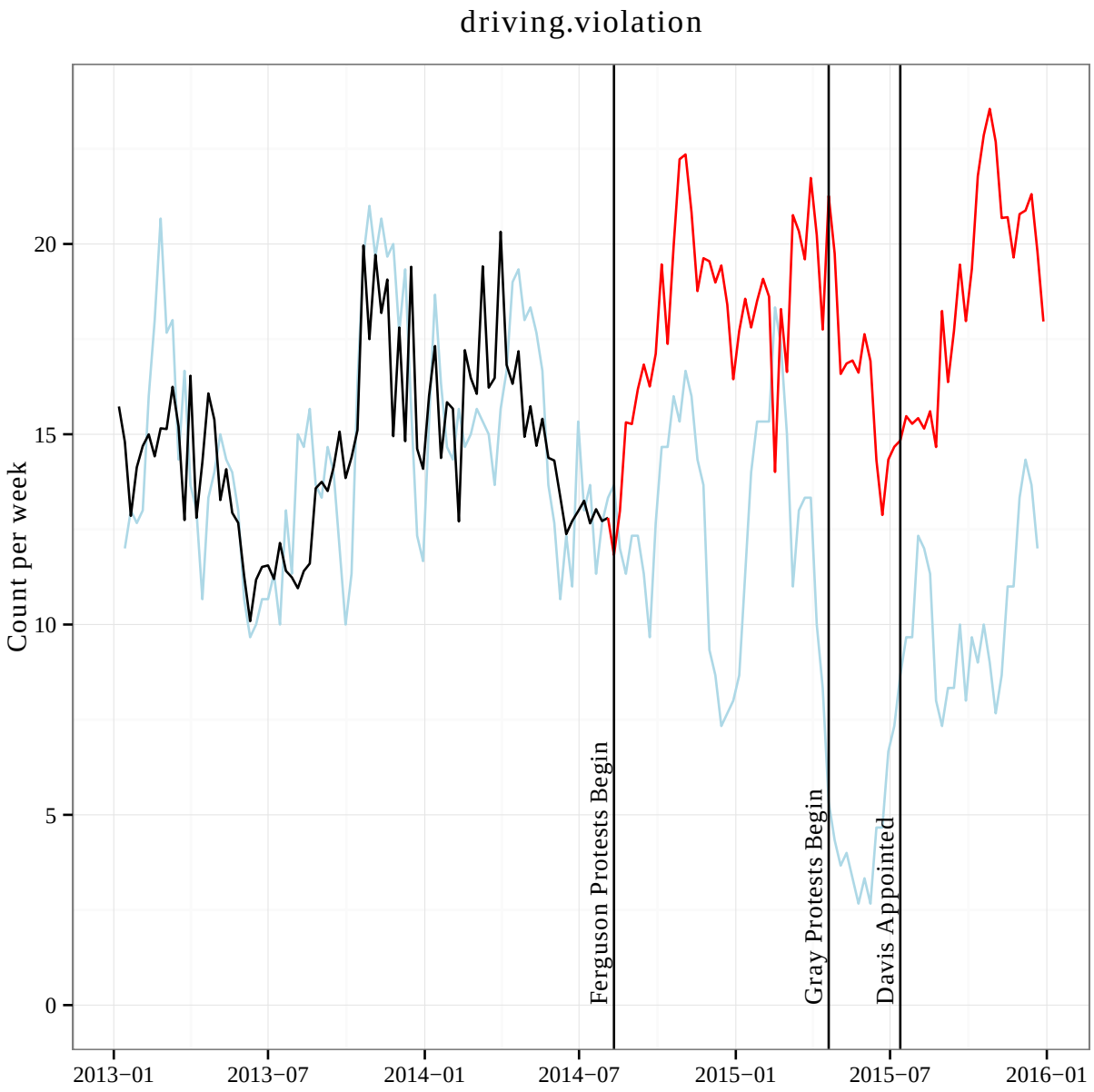

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-2.43645  -0.65111  -0.01539   0.63414   2.09691

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)     2.240741   0.539614   4.152 3.29e-05 ***
t               0.002546   0.001318   1.932   0.0533 .
tmax.f.spline1  0.005462   0.009560   0.571   0.5678
tmax.f.spline2  0.011915   0.021942   0.543   0.5871
tmax.f.spline3 -0.043179   0.030024  -1.438   0.1504
tmax.f.spline4  0.012771   0.028805   0.443   0.6575
tmax.f.spline5  0.020382   0.027964   0.729   0.4661
snow.in        -0.080252   0.103703  -0.774   0.4390
precip.in      -0.191393   0.188768  -1.014   0.3106
dark.before.12  0.012061   0.038929   0.310   0.7567
school          0.205612   0.132140   1.556   0.1197
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 104.378  on 82  degrees of freedom
Residual deviance:  75.165  on 72  degrees of freedom
AIC: 469.56

Number of Fisher Scoring iterations: 4
```


driving.violation
Count per week
25
20
15
10
5
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


driving.violation
Count per week
20
15
10
5
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

24 Results for prostitution

24.1 Summary Values for prostitution

Table 24.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
prostitution	83	12.229	6.011	1	11	27

Table 24.2: Descriptives for Outcome After Ferguson Protests Begin

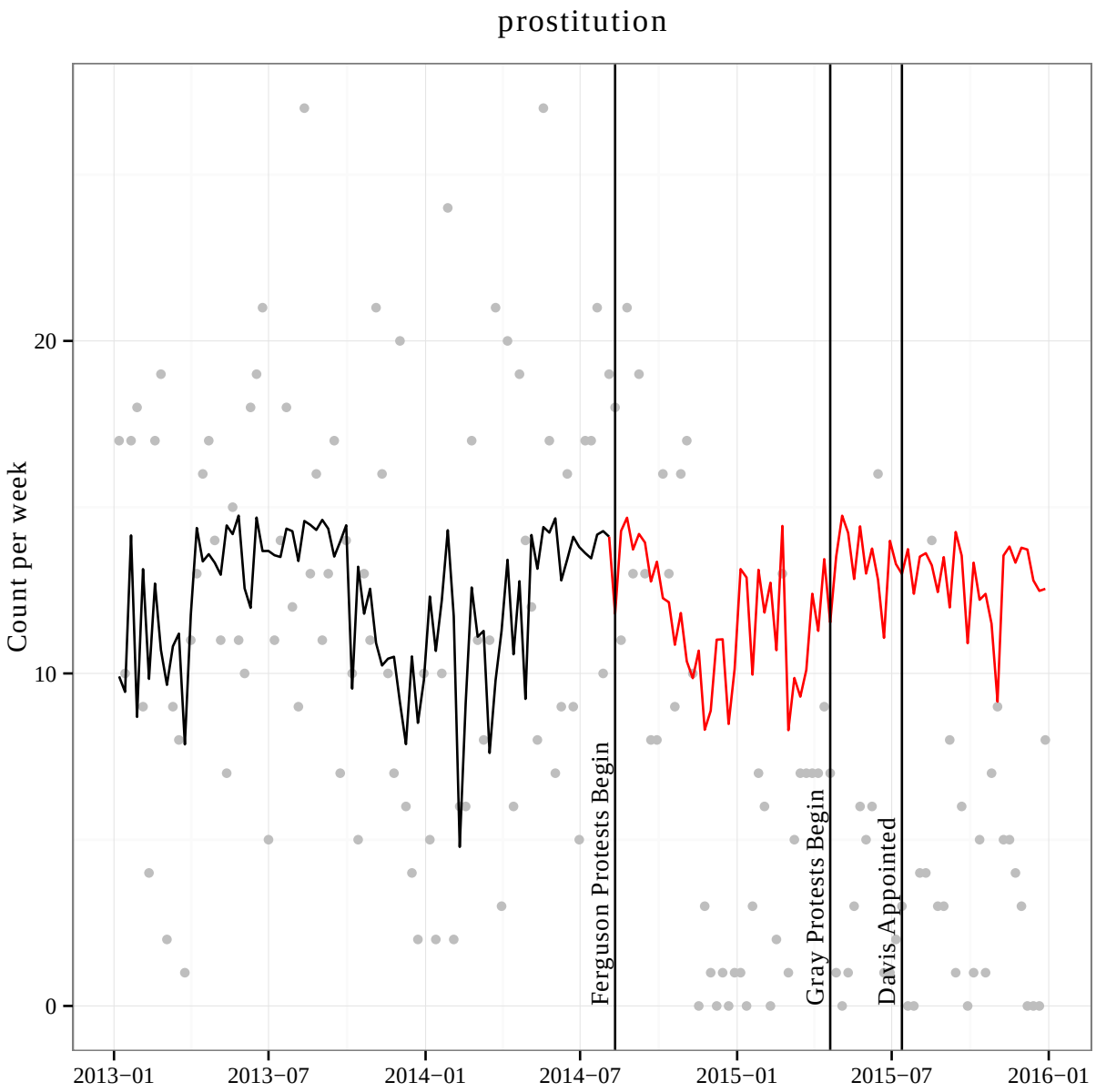
Statistic	N	Mean	St. Dev.	Min	Median	Max
prostitution	73	5.699	5.461	0	5	21

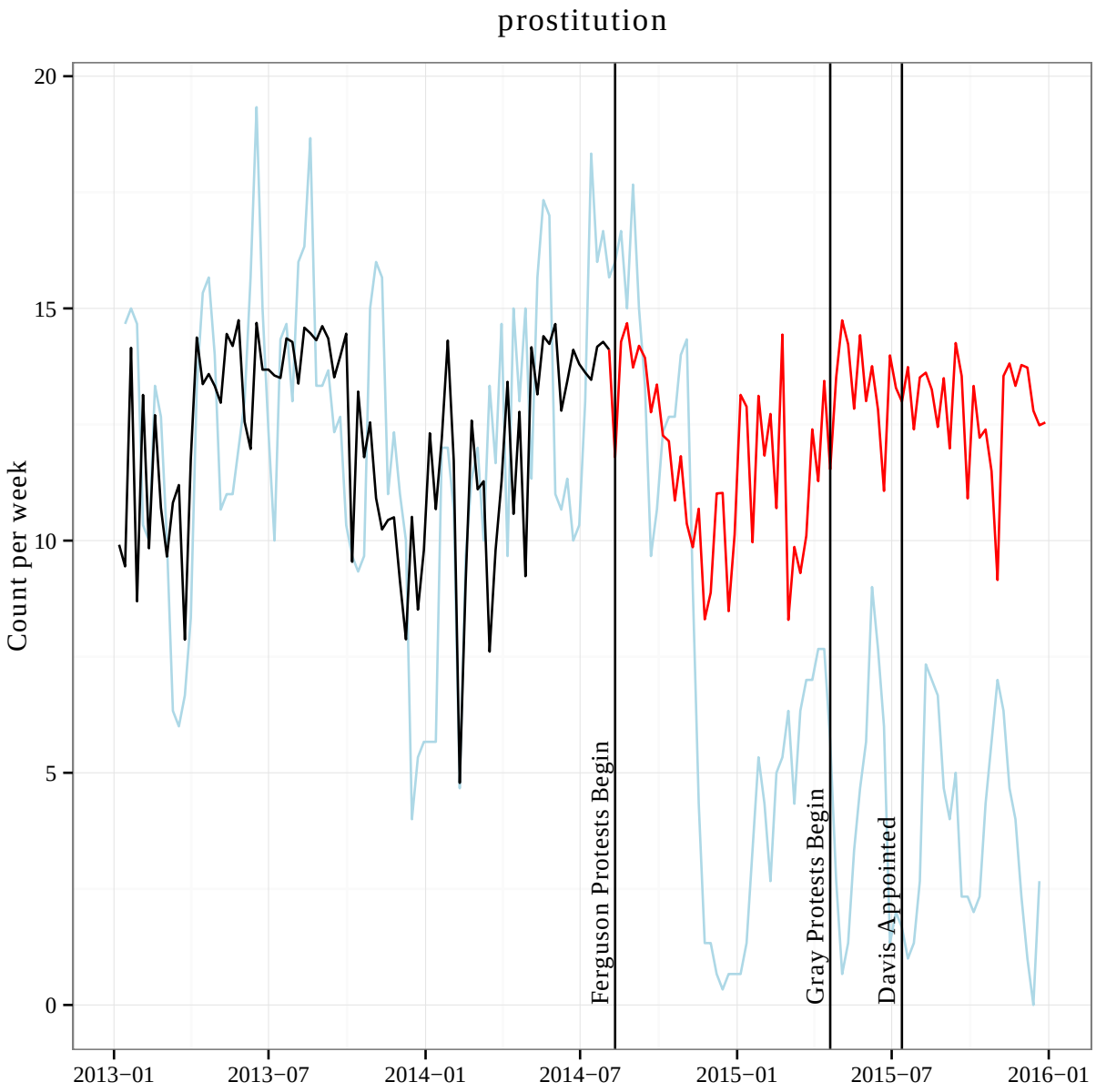
24.2 Four Models for prostitution

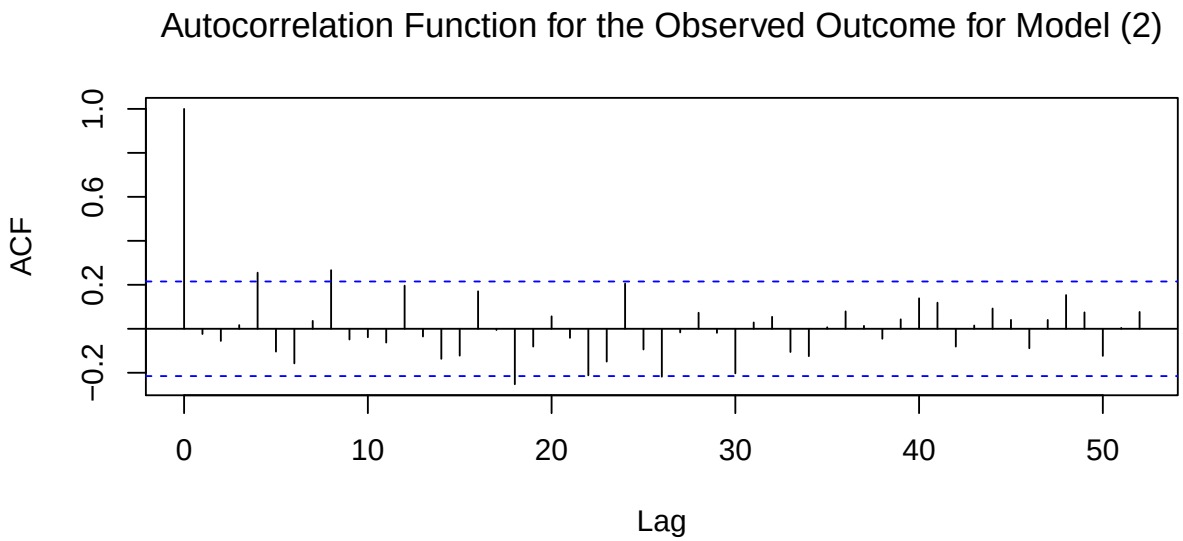
Table 24.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

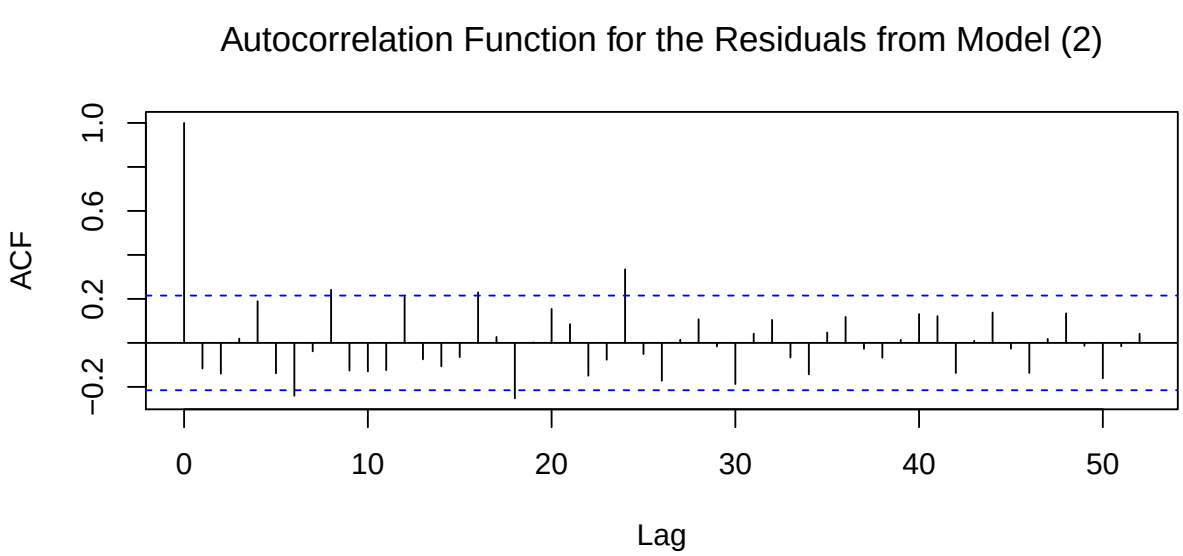
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.02	−0.004		−0.02
After Ferguson Protests Begin (week of 8/11/14 onward)	−3.48		−4.03	−2.55
After Gray Protests Begin (week of 4/20/15 onward)	−2.74		−4.85	−5.18
Unrest and National Guard (during week of 4/27/15)	−3.46		−3.64	−3.33
After Commissioner Batts Fired (week of 7/13/15 onward)	−0.25		−0.19	1.12
Average Maximum Temperature to 50 Degrees		−0.31		−0.21
Plus Degrees in the 50s		0.48		0.76
Plus Degrees in the 60s		−0.02		−0.67
Plus Degrees in the 70s		−0.06		0.31
Plus Degrees greater than 80		−0.18		−0.31
Snowfall (inches)		−3.22		−2.58
Precipitation (inches)		−4.97		−3.78
Darkness Before Midnight (hours)		−0.37		−0.20
School Days (proportion of week)		0.58		0.64
Observations	156	83	156	156
R^2	0.29	0.13	0.34	0.40

24.3 Least Squares Model (2) for prostitution



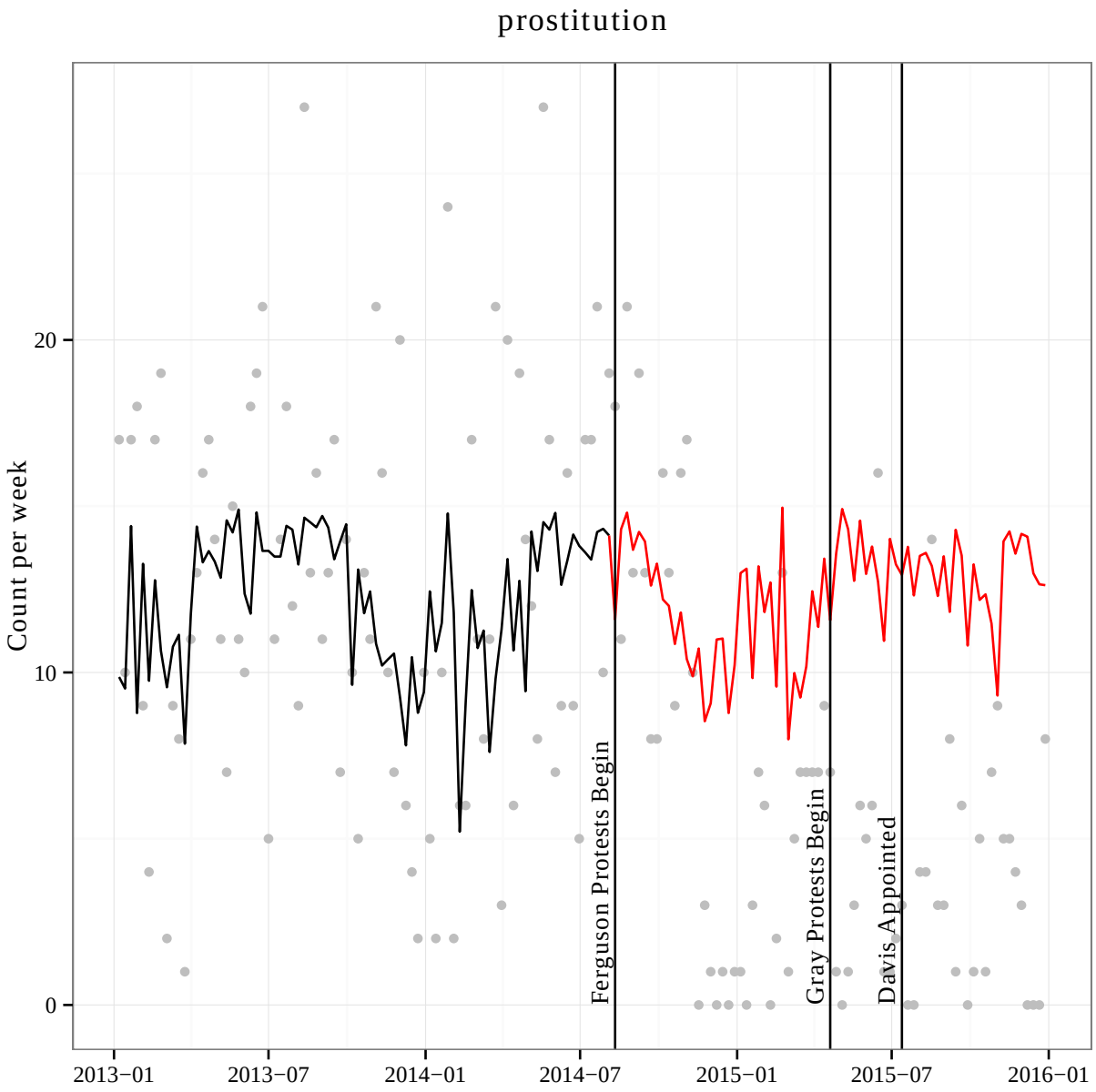

prostitution
Count per week
20
15
10
5
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

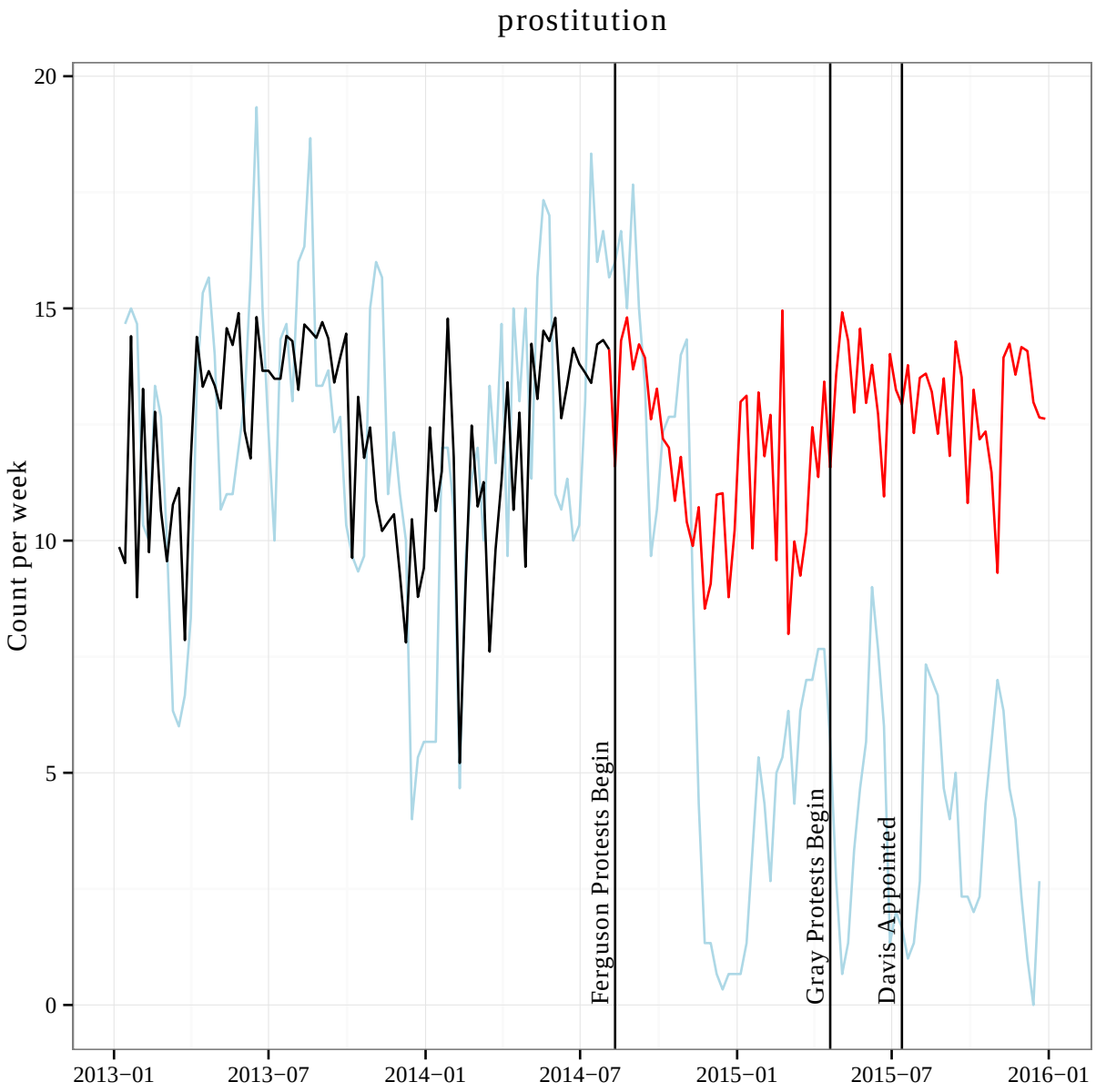

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.5358  -1.1888  -0.1235   0.9934   3.0951

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     3.9187500  0.6221845   6.298 3.01e-10 ***
t              -0.0003309  0.0014023  -0.236   0.8135
tmax.f.spline1 -0.0284433  0.0111103  -2.560   0.0105 *
tmax.f.spline2  0.0448500  0.0270213   1.660   0.0970 .
tmax.f.spline3 -0.0049218  0.0369462  -0.133   0.8940
tmax.f.spline4 -0.0042859  0.0322294  -0.133   0.8942
tmax.f.spline5 -0.0136034  0.0274743  -0.495   0.6205
snow.in        -0.3640381  0.1440140  -2.528   0.0115 *
precip.in      -0.4219575  0.2132359  -1.979   0.0478 *
dark.before.12 -0.0346577  0.0473366  -0.732   0.4641
school          0.0495216  0.1400007   0.354   0.7235
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 262.50  on 82  degrees of freedom
Residual deviance: 229.17  on 72  degrees of freedom
AIC: 599.51

Number of Fisher Scoring iterations: 5
```


prostitution
Count per week
20
10
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01


prostitution
Count per week
20
15
10
5
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

25 Results for trespass

25.1 Summary Values for trespass

Table 25.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
trespass	83	12.000	4.048	3	11	23

Table 25.2: Descriptives for Outcome After Ferguson Protests Begin

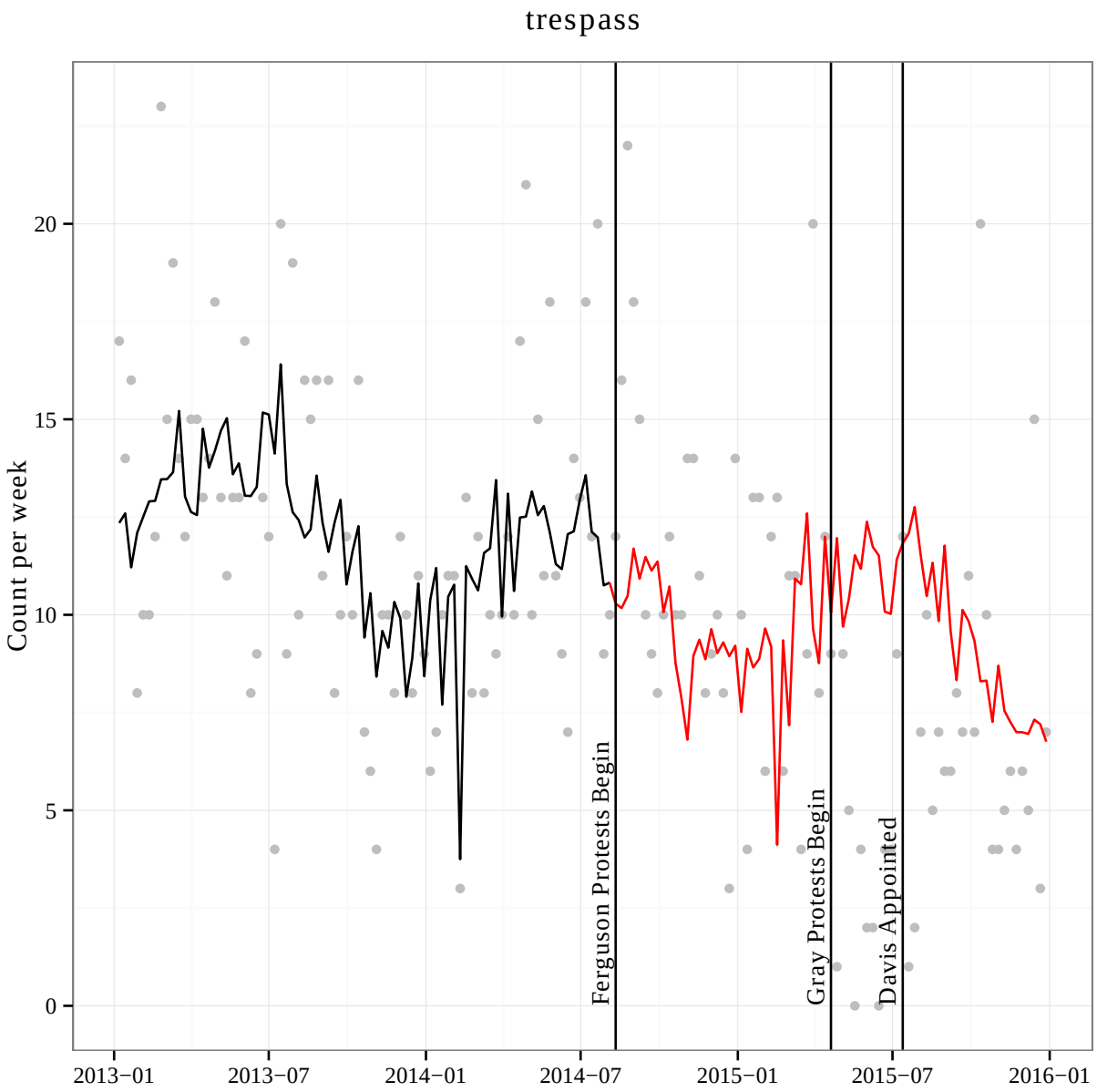
Statistic	N	Mean	St. Dev.	Min	Median	Max
trespass	73	8.521	4.773	0	8	22

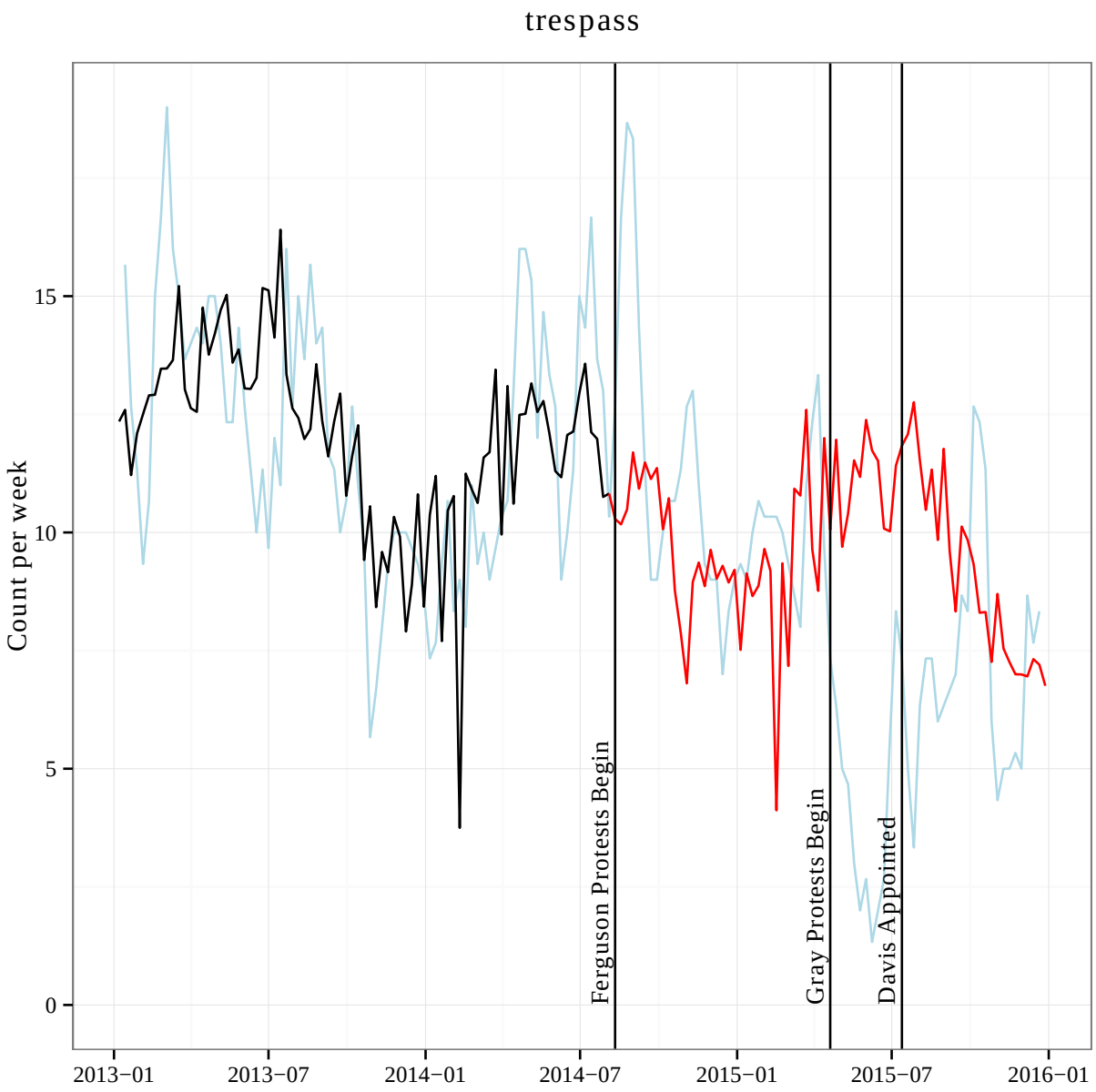
25.2 Four Models for trespass

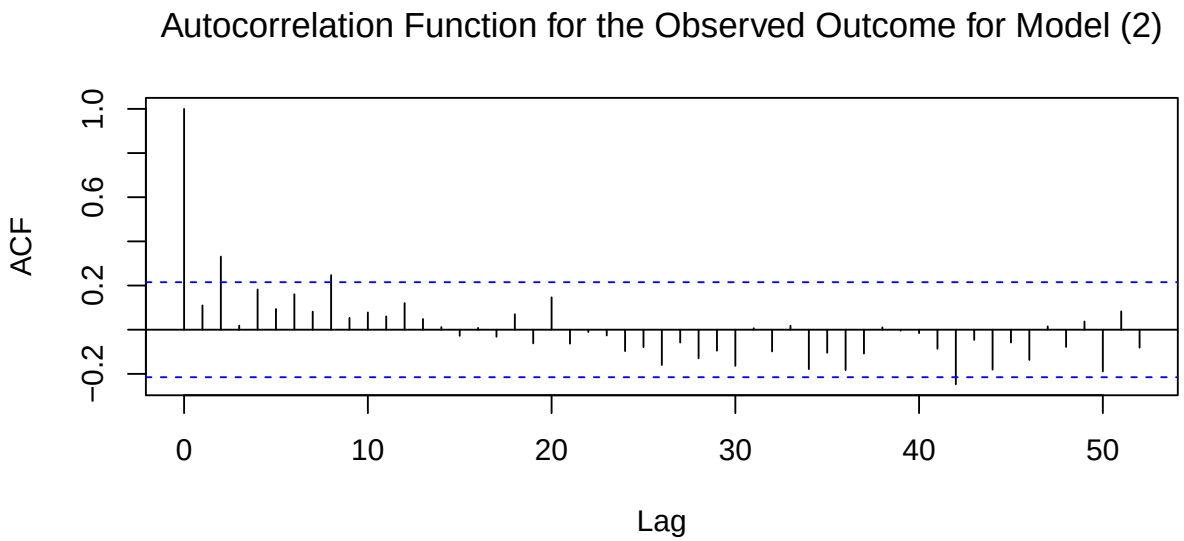
Table 25.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

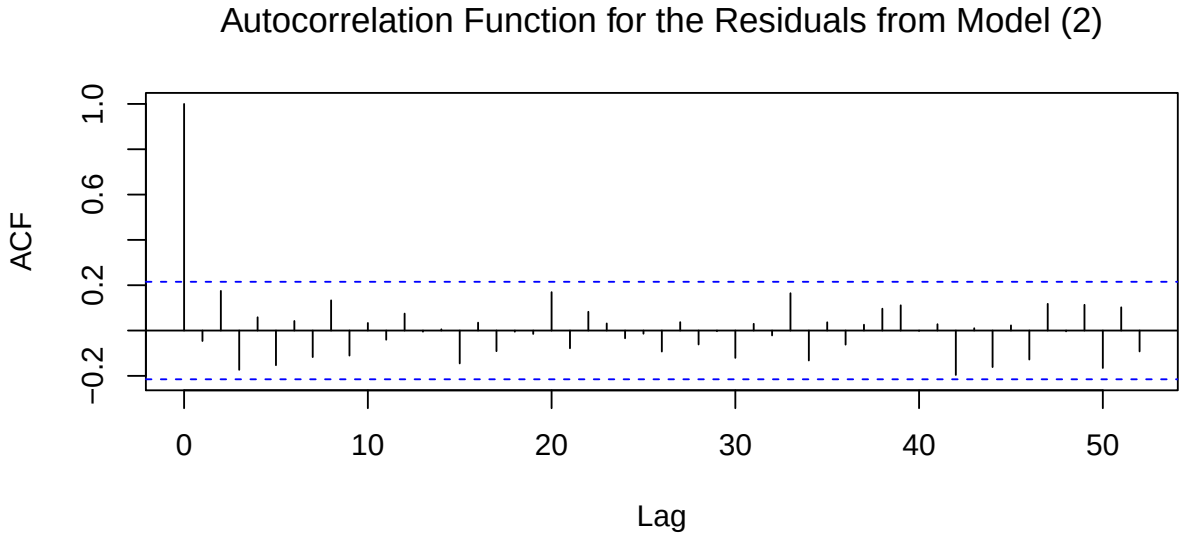
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.04	−0.03		−0.04
After Ferguson Protests Begin (week of 8/11/14 onward)	1.23		1.43	1.97
After Gray Protests Begin (week of 4/20/15 onward)	−5.68		−7.98	−7.34
Unrest and National Guard (during week of 4/27/15)	−3.55		−4.41	−3.99
After Commissioner Batts Fired (week of 7/13/15 onward)	3.44		4.53	5.00
Average Maximum Temperature to 50 Degrees		0.07		−0.05
Plus Degrees in the 50s		−0.50		0.11
Plus Degrees in the 60s		0.77		−0.05
Plus Degrees in the 70s		−0.67		−0.03
Plus Degrees greater than 80		0.64		−0.11
Snowfall (inches)		−2.68		−1.37
Precipitation (inches)		−0.59		−1.84
Darkness Before Midnight (hours)		−1.28		−0.86
School Days (proportion of week)		0.20		0.10
Observations	156	83	156	156
R^2	0.31	0.24	0.23	0.37

25.3 Least Squares Model (2) for trespass



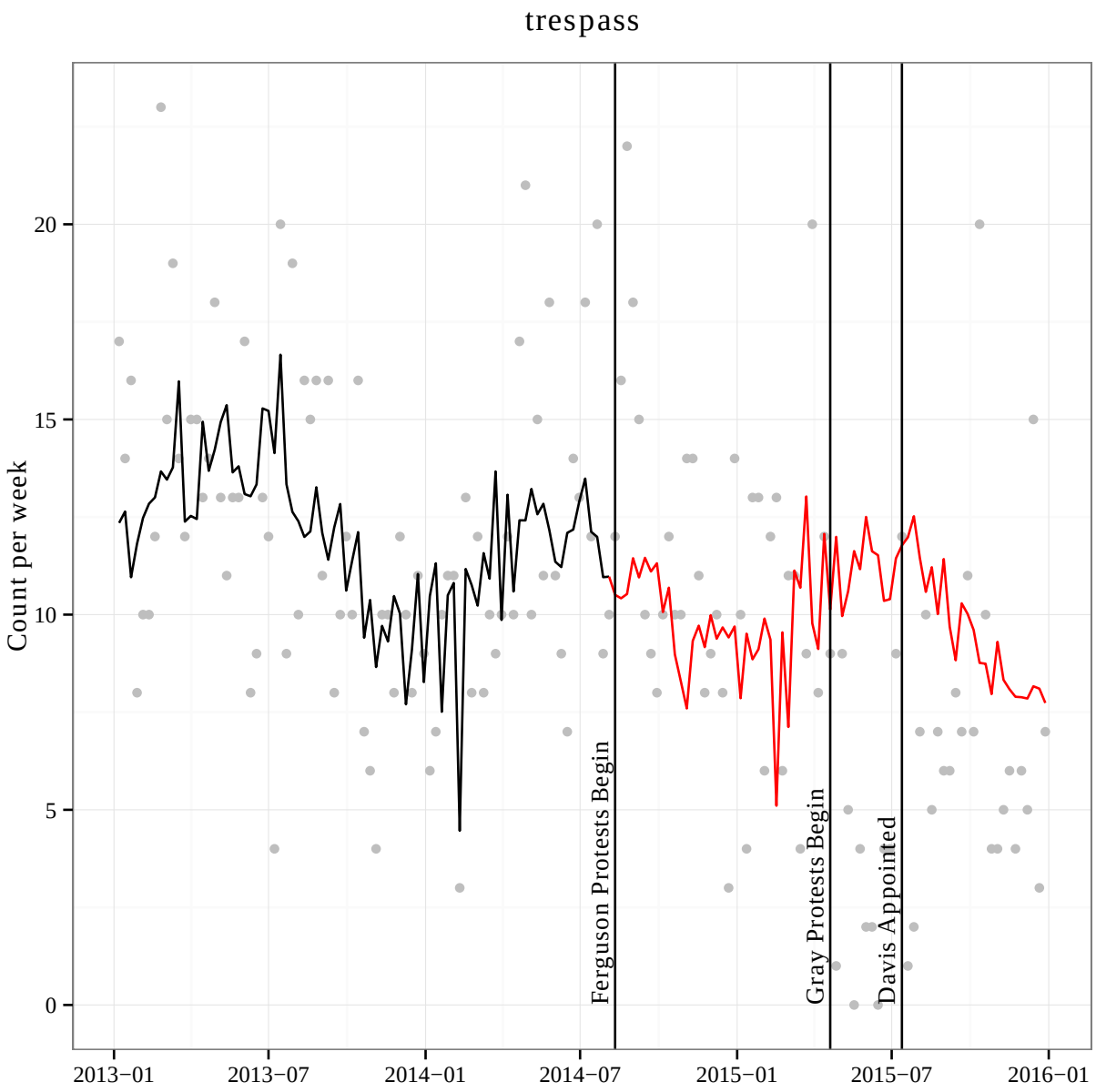

trespass
Count per week
15
10
5
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

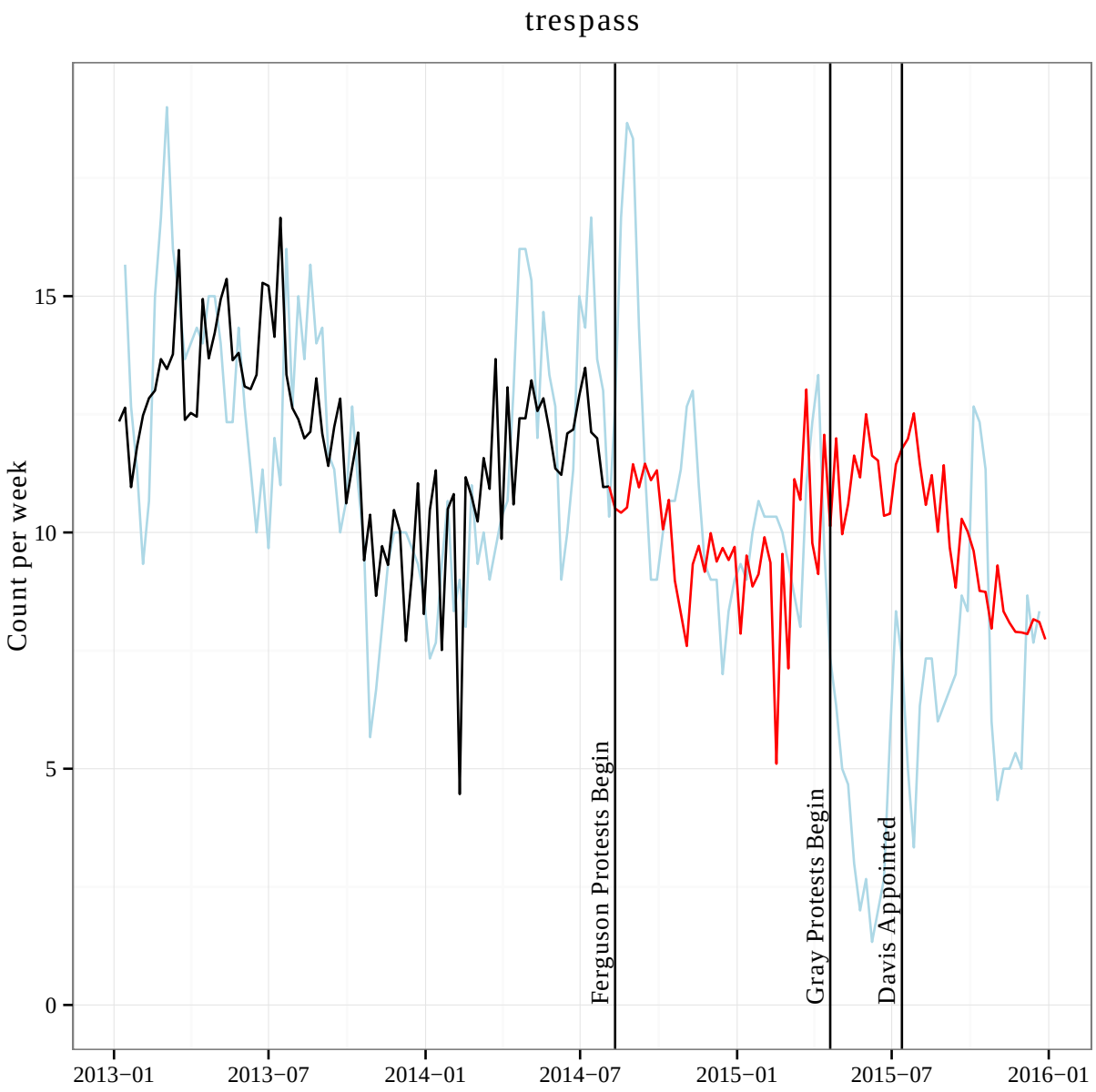

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.1900  -0.7676  -0.1092   0.6885   2.2967

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)     3.000067   0.646437   4.641 3.47e-06 ***
t              -0.002033   0.001408  -1.443   0.1489
tmax.f.spline1  0.006822   0.011349   0.601   0.5478
tmax.f.spline2 -0.047223   0.026548  -1.779   0.0753 .
tmax.f.spline3  0.071136   0.037606   1.892   0.0585 .
tmax.f.spline4 -0.057730   0.033018  -1.748   0.0804 .
tmax.f.spline5  0.049273   0.027543   1.789   0.0736 .
snow.in        -0.337649   0.148376  -2.276   0.0229 *
precip.in      -0.053058   0.204027  -0.260   0.7948
dark.before.12 -0.113427   0.046375  -2.446   0.0145 *
school          0.003718   0.143622   0.026   0.9793
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 113.772  on 82  degrees of freedom
Residual deviance:  85.357  on 72  degrees of freedom
AIC: 462.3

Number of Fisher Scoring iterations: 4
```


trespass
Count per week
0
5
10
15
20
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


trespass
Count per week
15
10
5
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

26 Results for forgery.fraud.extortion

26.1 Summary Values for forgery.fraud.extortion

Table 26.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
forgery.fraud.extortion	83	4.627	2.423	0	4	14

Table 26.2: Descriptives for Outcome After Ferguson Protests Begin

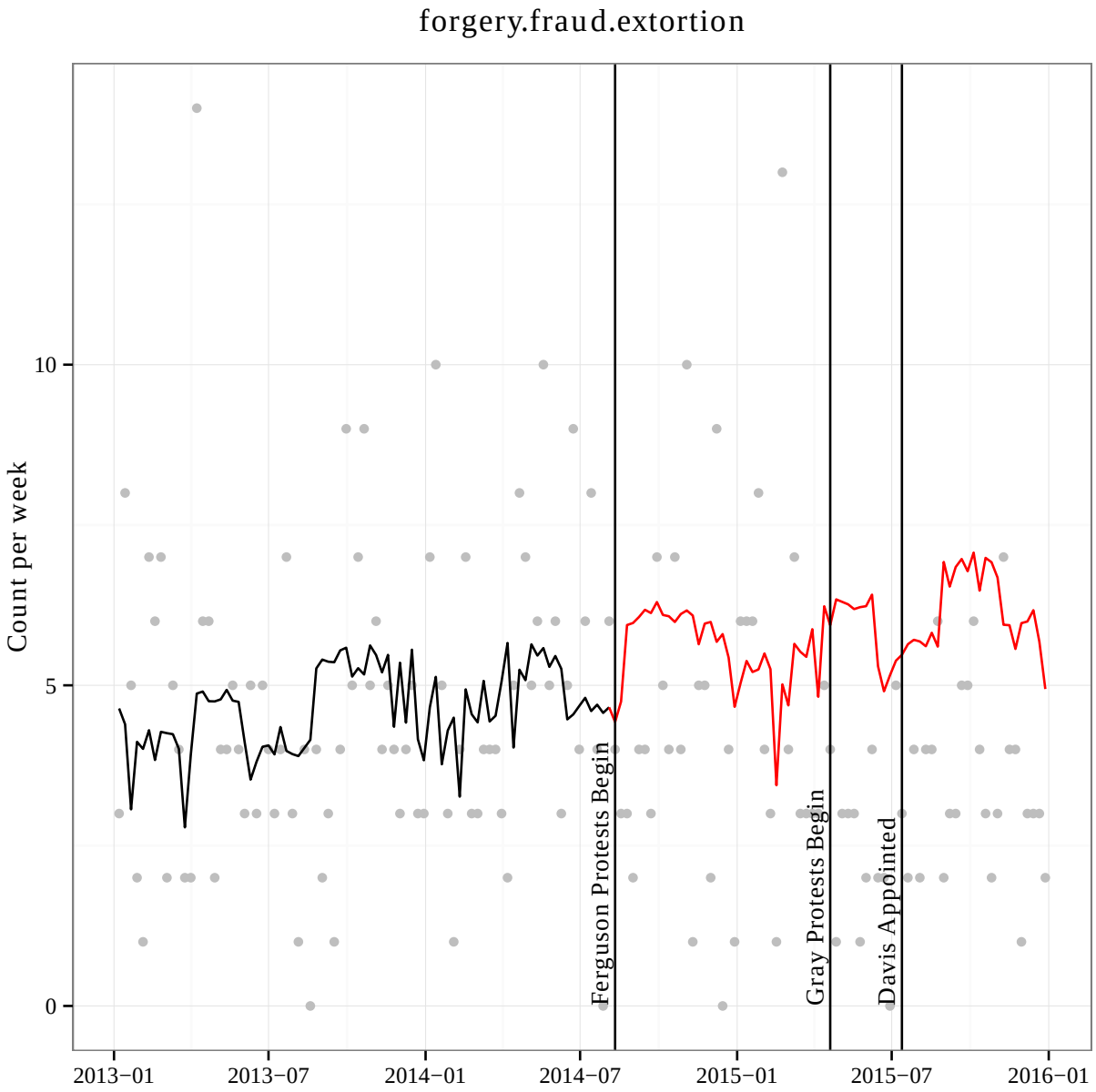
Statistic	N	Mean	St. Dev.	Min	Median	Max
forgery.fraud.extortion	73	3.836	2.249	0	3	13

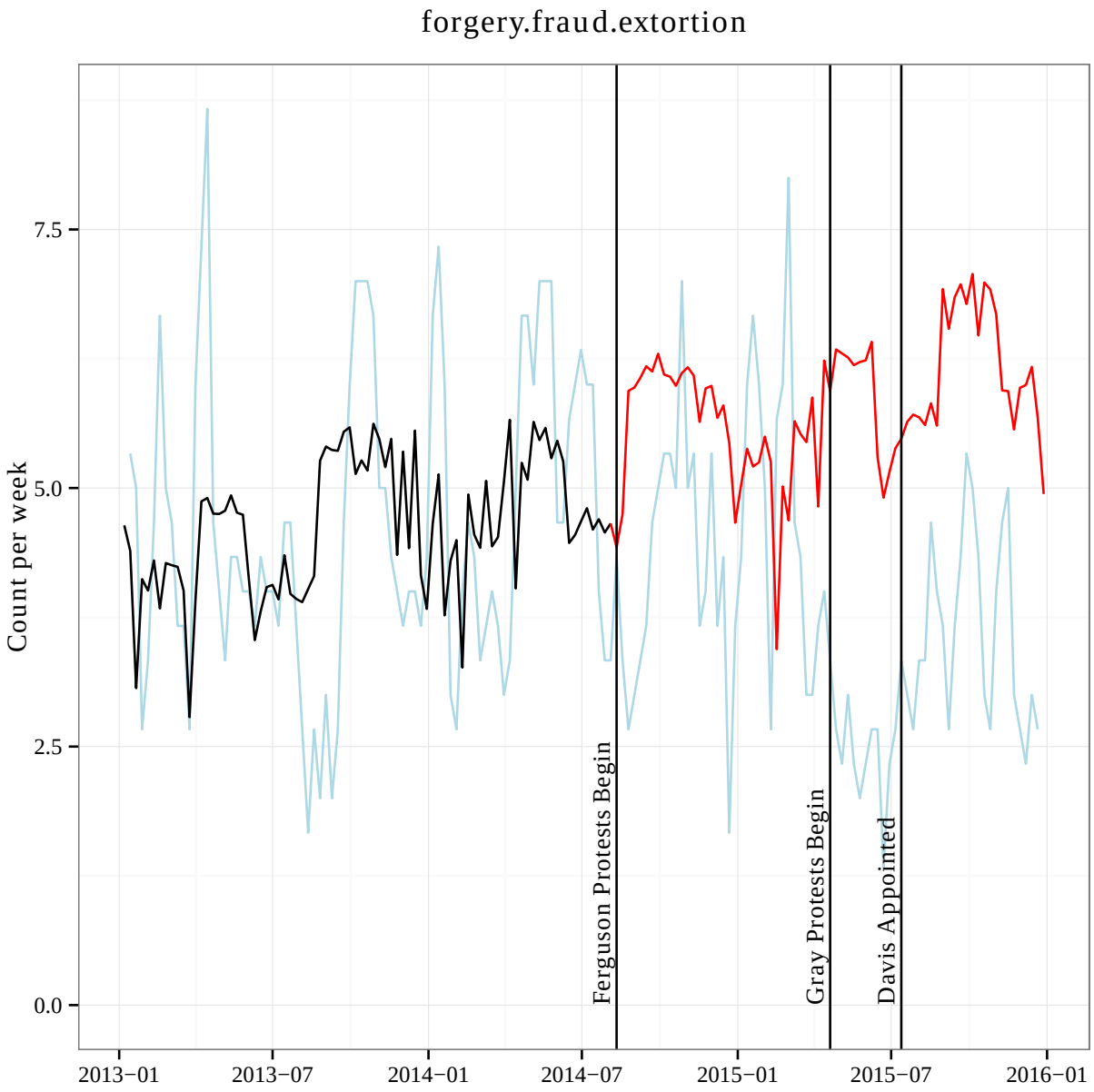
26.2 Four Models for forgery.fraud.extortion

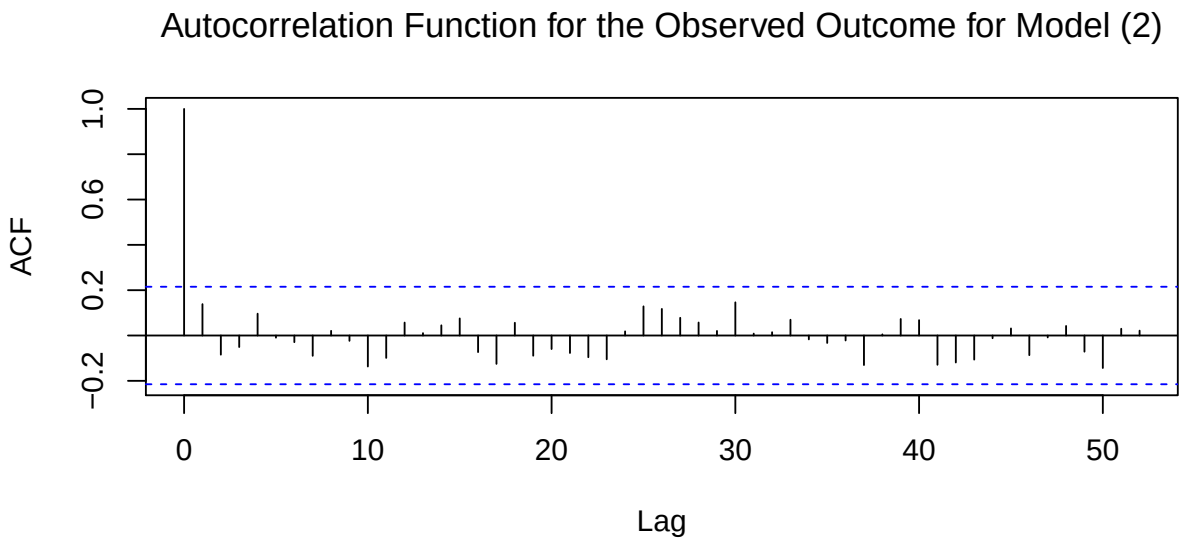
Table 26.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

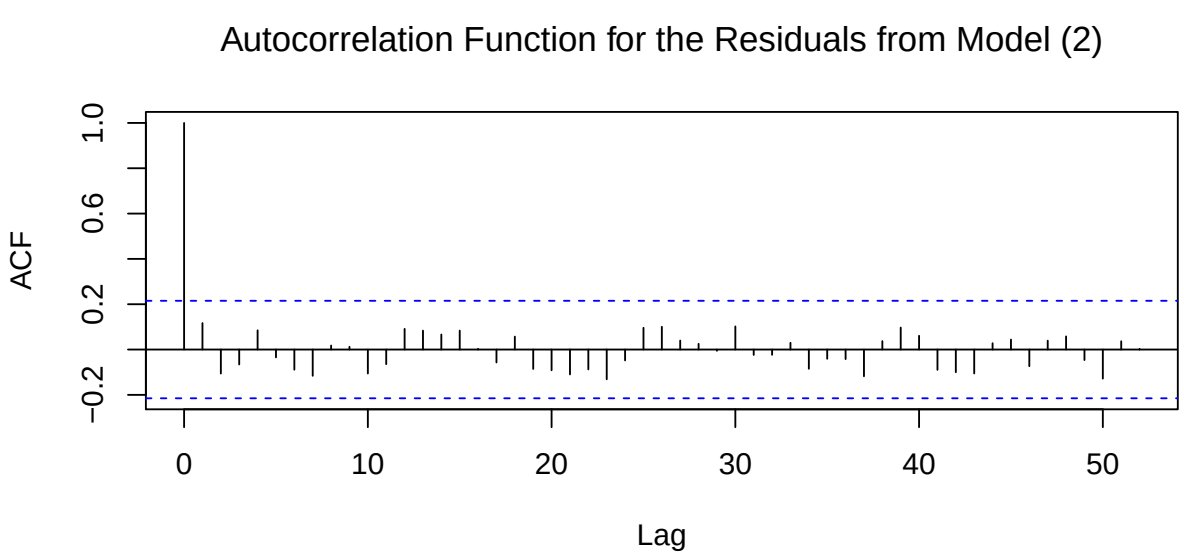
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.01	0.01		0.01
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.75		−1.05	−1.07
After Gray Protests Begin (week of 4/20/15 onward)	−2.12		−2.16	−2.12
Unrest and National Guard (during week of 4/27/15)	−1.58		−2.13	−1.98
After Commissioner Batts Fired (week of 7/13/15 onward)	0.69		0.57	0.46
Average Maximum Temperature to 50 Degrees		0.05		−0.06
Plus Degrees in the 50s		−0.02		0.17
Plus Degrees in the 60s		0.03		−0.11
Plus Degrees in the 70s		−0.08		−0.02
Plus Degrees greater than 80		0.06		0.08
Snowfall (inches)		−0.42		−1.14
Precipitation (inches)		−0.54		0.52
Darkness Before Midnight (hours)		0.27		0.14
School Days (proportion of week)		1.47		1.56
Observations	156	83	156	156
R^2	0.08	0.07	0.22	0.14

26.3 Least Squares Model (2) for forgery.fraud.extortion



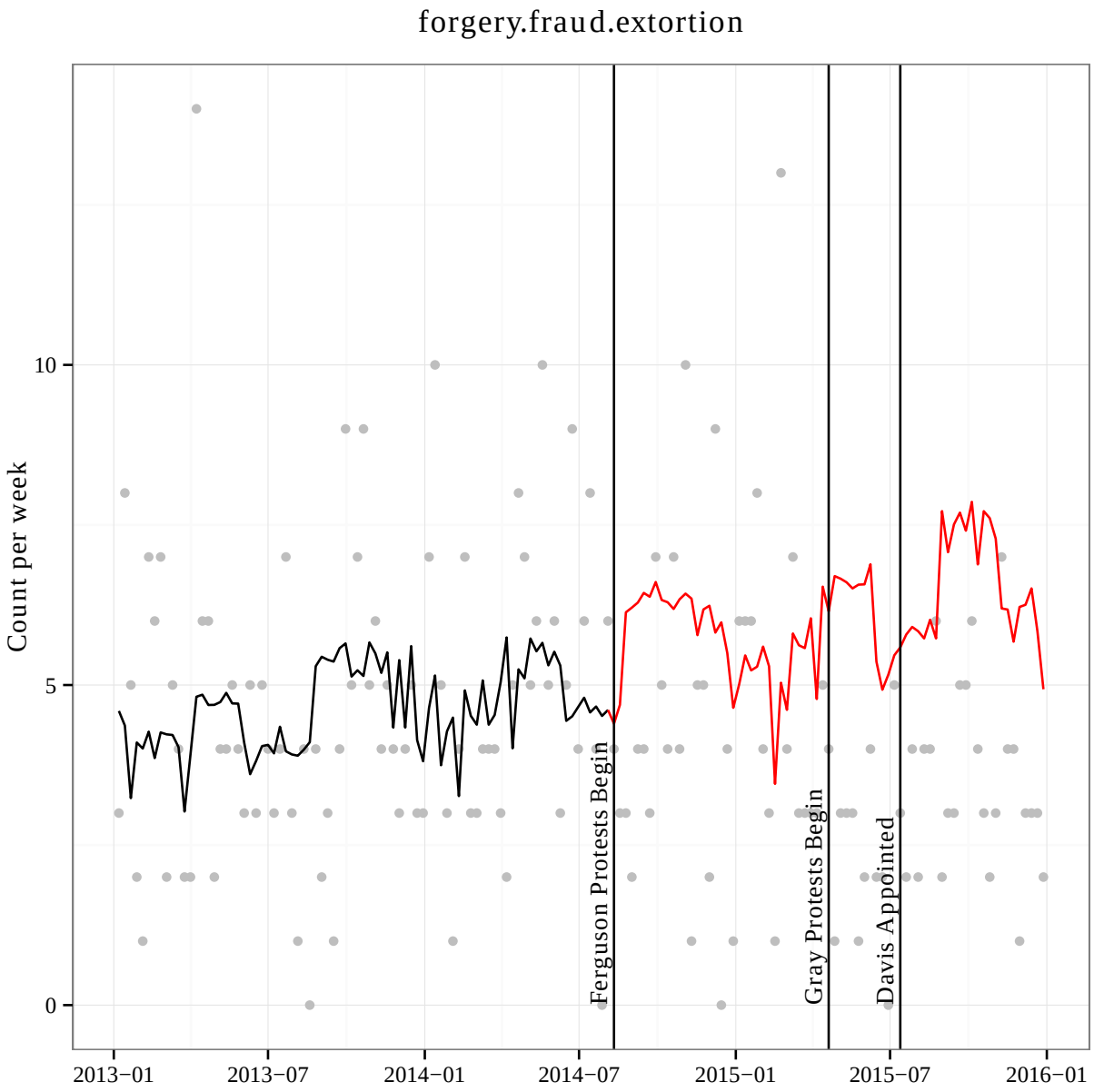

forgery.fraud.extortion
Count per week
7.5
5.0
2.5
0.0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

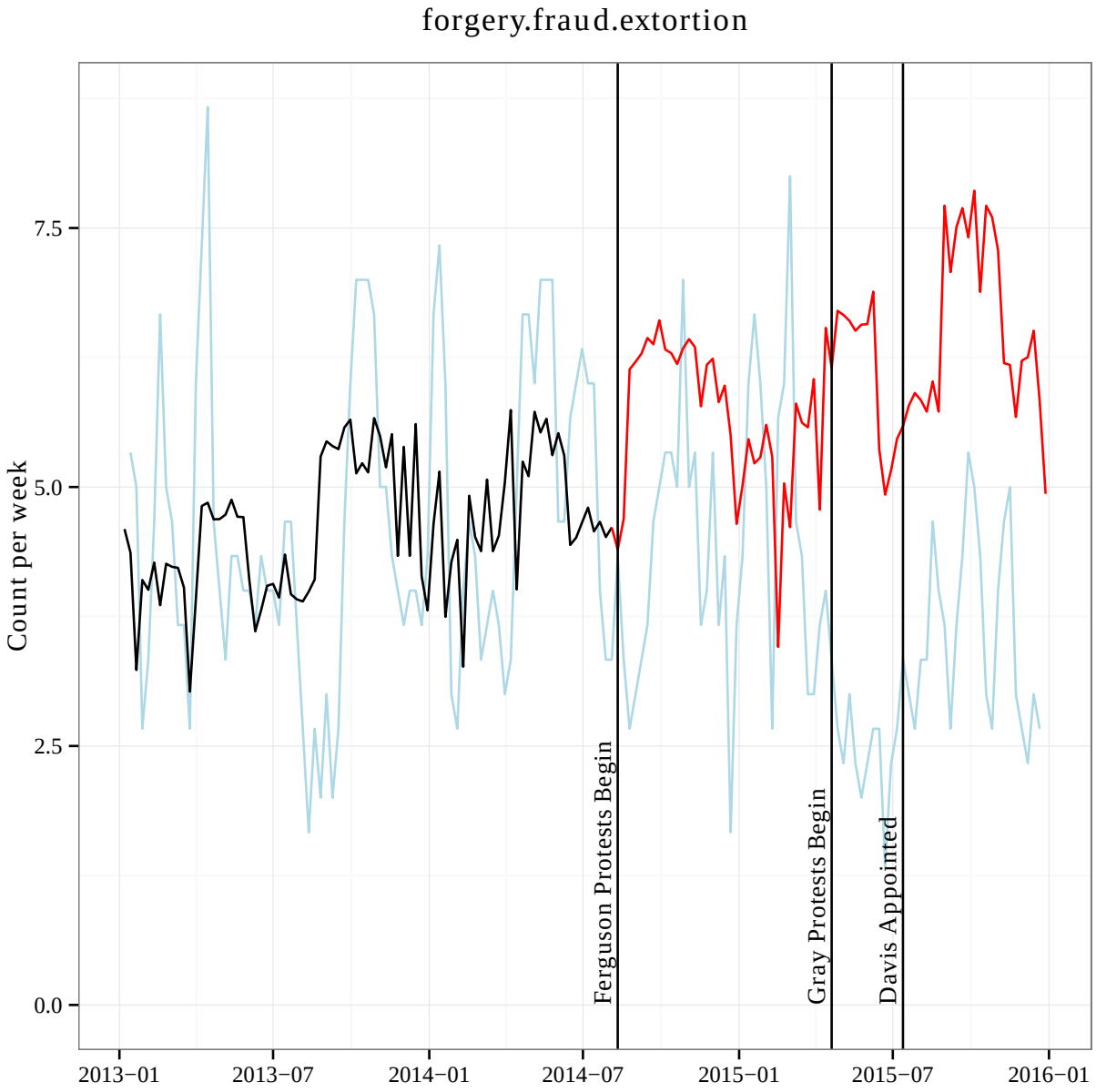

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.0057  -0.6401  -0.1844   0.5980   3.3925

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)     0.351126   1.018138   0.345    0.730
t               0.003151   0.002340   1.347    0.178
tmax.f.spline1  0.010790   0.018290   0.590    0.555
tmax.f.spline2 -0.004818   0.041945  -0.115    0.909
tmax.f.spline3  0.007327   0.056803   0.129    0.897
tmax.f.spline4 -0.016809   0.050869  -0.330    0.741
tmax.f.spline5  0.014325   0.046833   0.306    0.760
snow.in        -0.110779   0.201375  -0.550    0.582
precip.in      -0.109010   0.325244  -0.335    0.738
dark.before.12  0.056418   0.071816   0.786    0.432
school          0.330197   0.232234   1.422    0.155

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 107.384  on 82  degrees of freedom
Residual deviance:  99.905  on 72  degrees of freedom
AIC: 390.29

Number of Fisher Scoring iterations: 5
```


forgery.fraud.extortion
Count per week
10
5
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


forgery.fraud.extortion
Count per week
7.5
5.0
2.5
0.0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

27 Results for domestic

27.1 Summary Values for domestic

Table 27.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
domestic	83	6.639	2.699	2	7	15

Table 27.2: Descriptives for Outcome After Ferguson Protests Begin

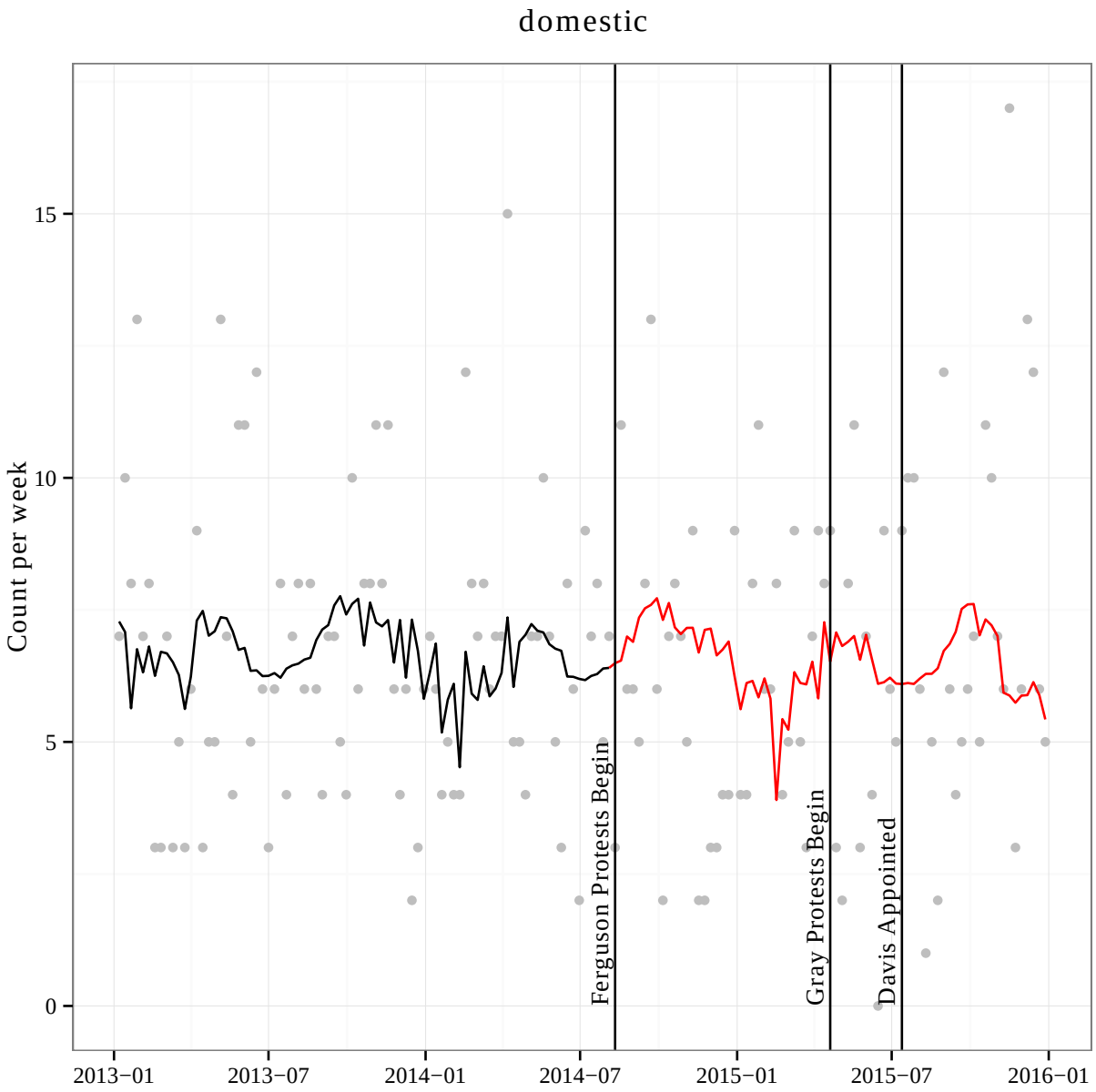
Statistic	N	Mean	St. Dev.	Min	Median	Max
domestic	73	6.452	3.245	0	6	17

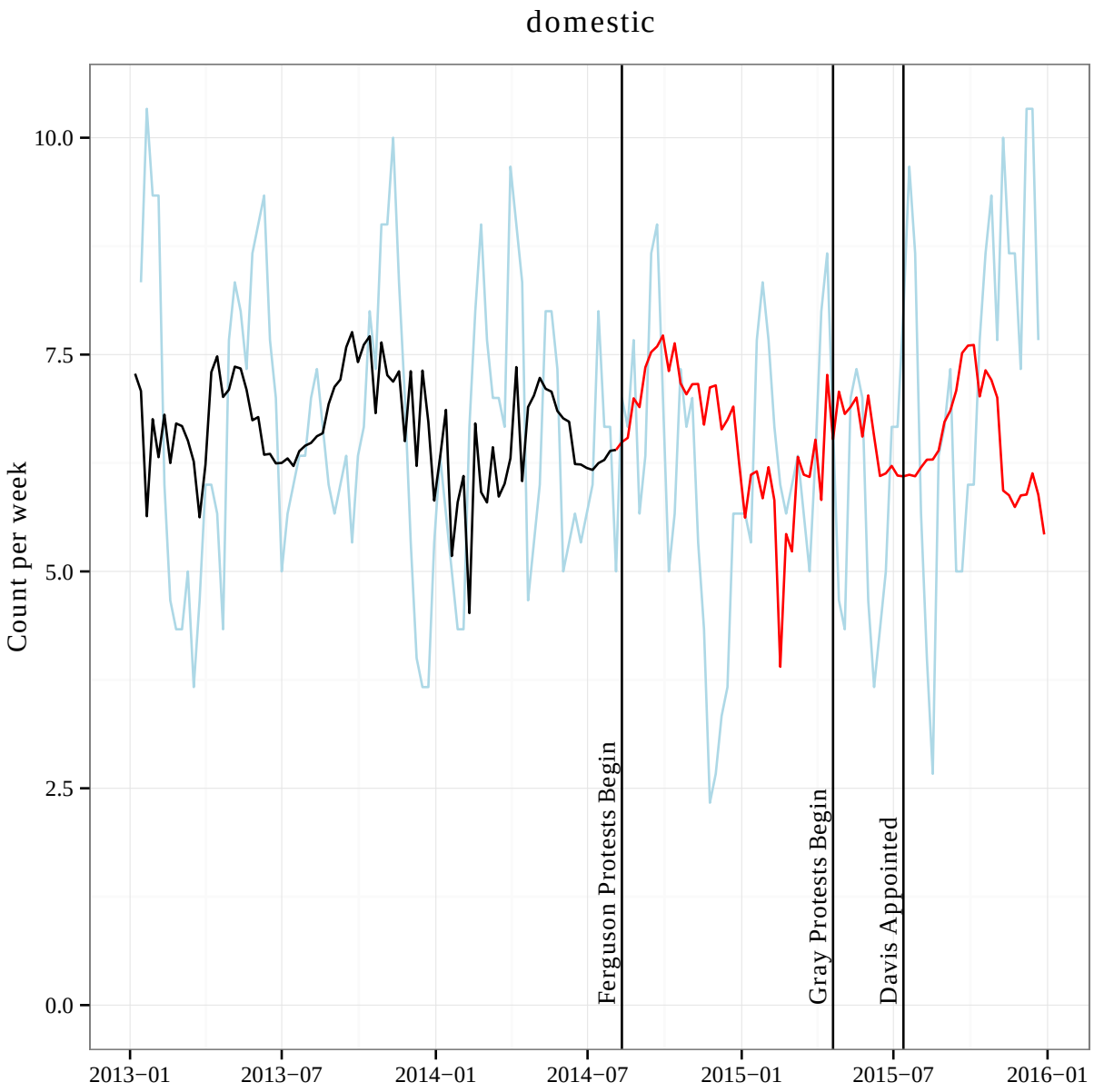
27.2 Four Models for domestic

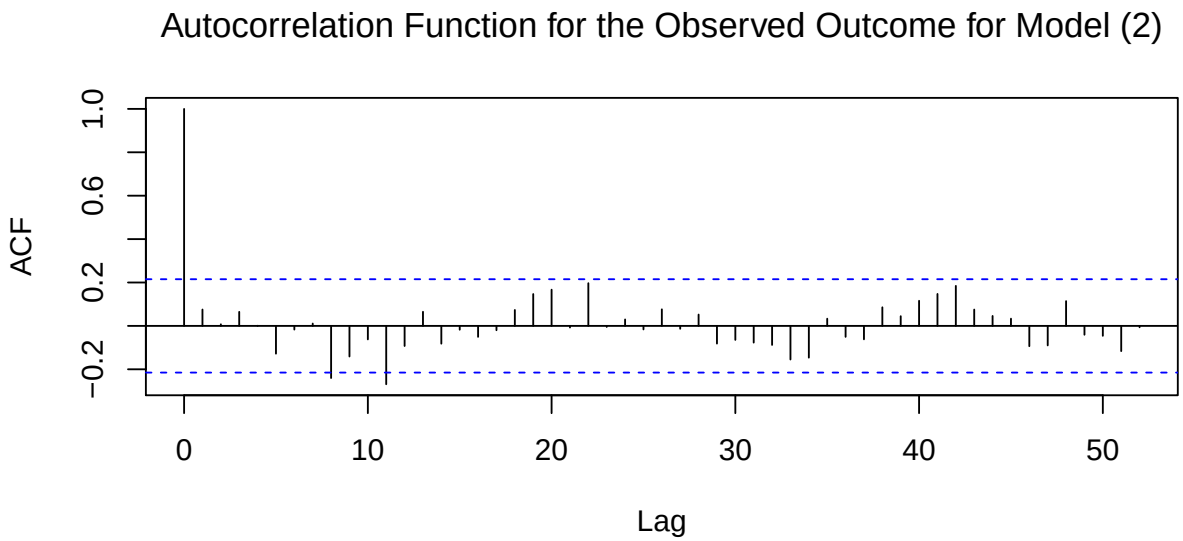
Table 27.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

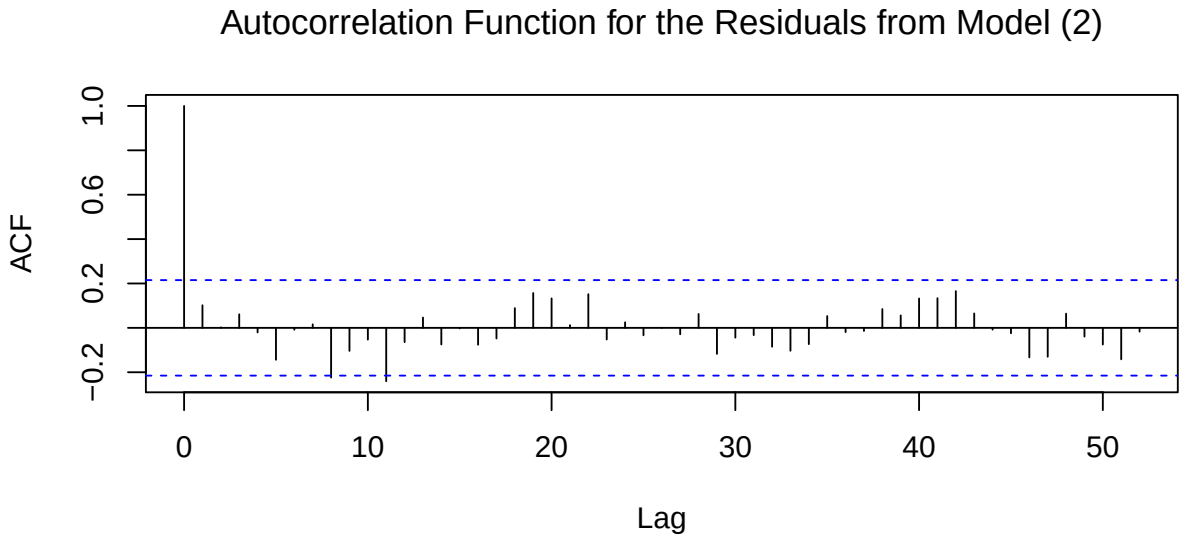
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.002	−0.002		−0.003
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.41		−0.46	−0.53
After Gray Protests Begin (week of 4/20/15 onward)	−0.24		−0.26	−0.15
Unrest and National Guard (during week of 4/27/15)	−2.83		−3.35	−3.93
After Commissioner Batts Fired (week of 7/13/15 onward)	1.58		1.59	1.44
Average Maximum Temperature to 50 Degrees		0.07		−0.08
Plus Degrees in the 50s		−0.06		0.23
Plus Degrees in the 60s		0.12		−0.14
Plus Degrees in the 70s		−0.17		−0.16
Plus Degrees greater than 80		0.03		0.19
Snowfall (inches)		−0.50		−0.74
Precipitation (inches)		−0.04		0.0004
Darkness Before Midnight (hours)		0.35		−0.04
School Days (proportion of week)		0.61		0.58
Observations	156	83	156	156
R^2	0.03	0.05	0.04	0.07

27.3 Least Squares Model (2) for domestic



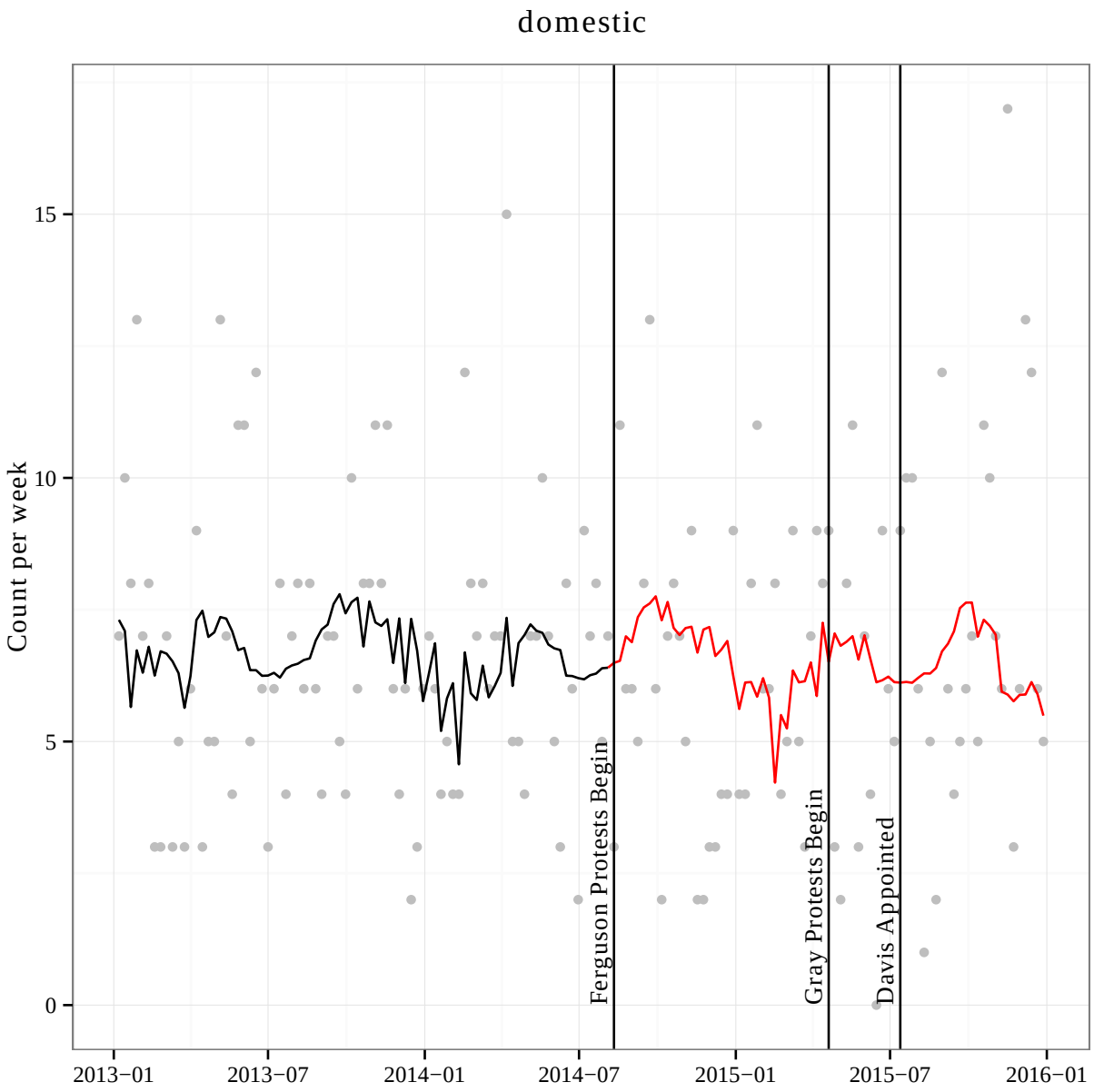

domestic
Count per week
10.0
7.5
5.0
2.5
0.0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

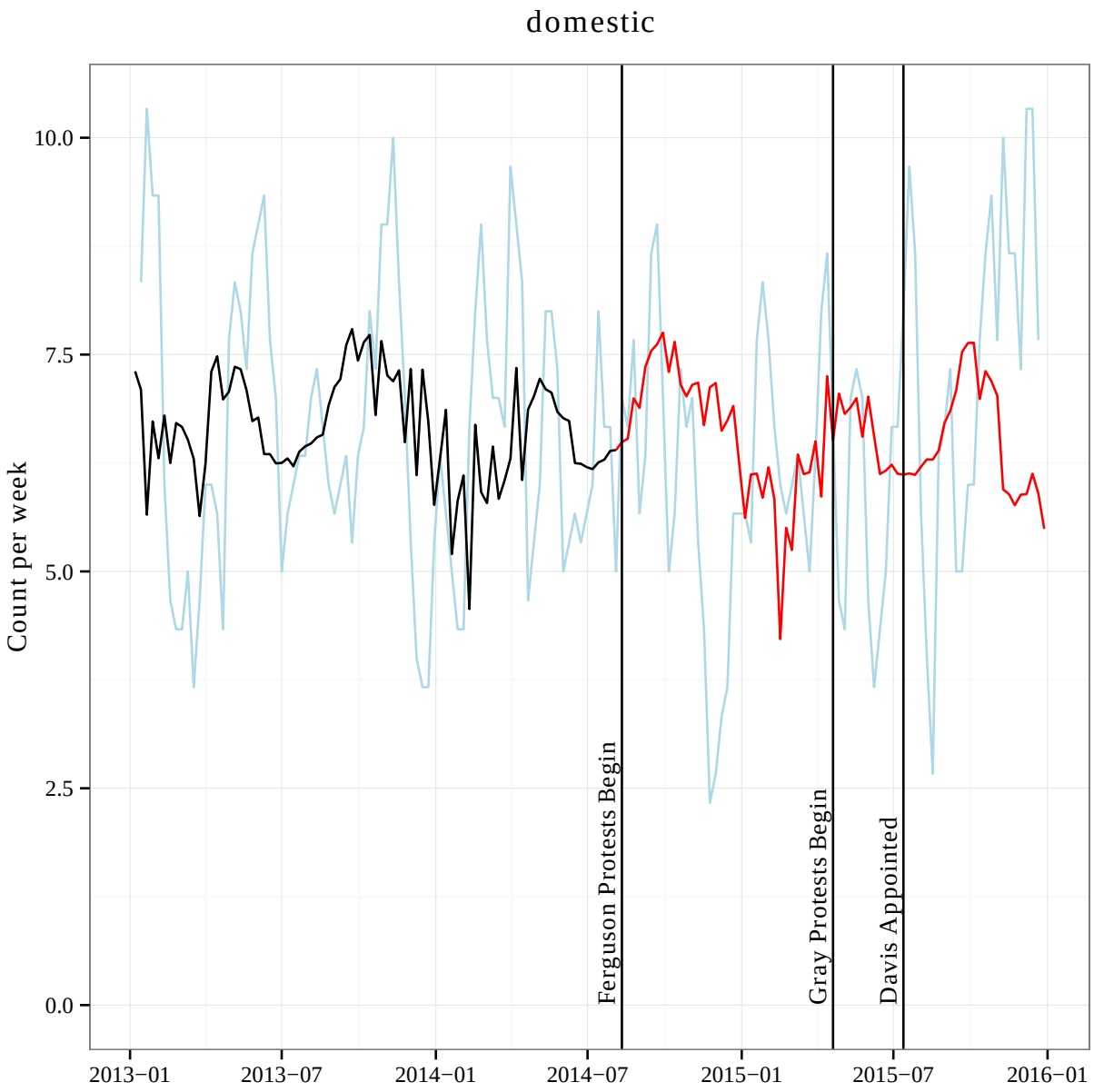

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-2.33646  -0.73061  -0.08304   0.55723   2.47157

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     1.0015885  0.8432796   1.188    0.235
t              -0.0002713  0.0019376  -0.140    0.889
tmax.f.spline1  0.0111823  0.0150700   0.742    0.458
tmax.f.spline2 -0.0108053  0.0349340  -0.309    0.757
tmax.f.spline3  0.0177291  0.0481988   0.368    0.713
tmax.f.spline4 -0.0242081  0.0431083  -0.562    0.574
tmax.f.spline5  0.0037247  0.0391566   0.095    0.924
snow.in        -0.0948618  0.1687234  -0.562    0.574
precip.in      -0.0025427  0.2694964  -0.009    0.992
dark.before.12  0.0517984  0.0602677   0.859    0.390
school          0.0930267  0.1917964   0.485    0.628

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 88.381  on 82  degrees of freedom
Residual deviance: 83.841  on 72  degrees of freedom
AIC: 410.91

Number of Fisher Scoring iterations: 4
```


domestic
Count per week
15
10
5
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


domestic
Count per week
10.0
7.5
5.0
2.5
0.0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

28 Results for sex.offense.g

28.1 Summary Values for sex.offense.g

Table 28.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
sex.offense.g	83	4.036	2.144	0	4	9

Table 28.2: Descriptives for Outcome After Ferguson Protests Begin

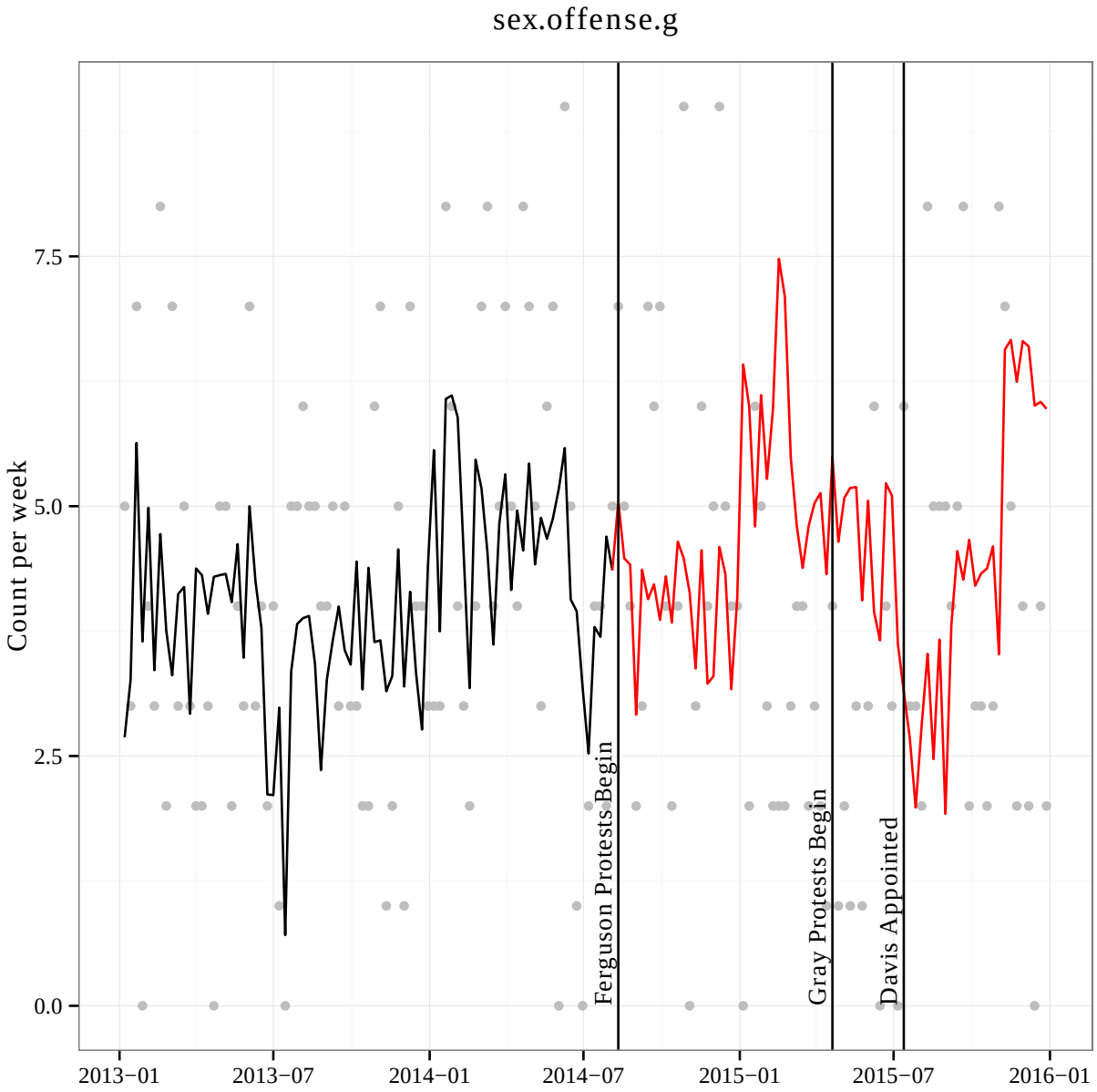
Statistic	N	Mean	St. Dev.	Min	Median	Max
sex.offense.g	73	3.699	2.190	0	3	9

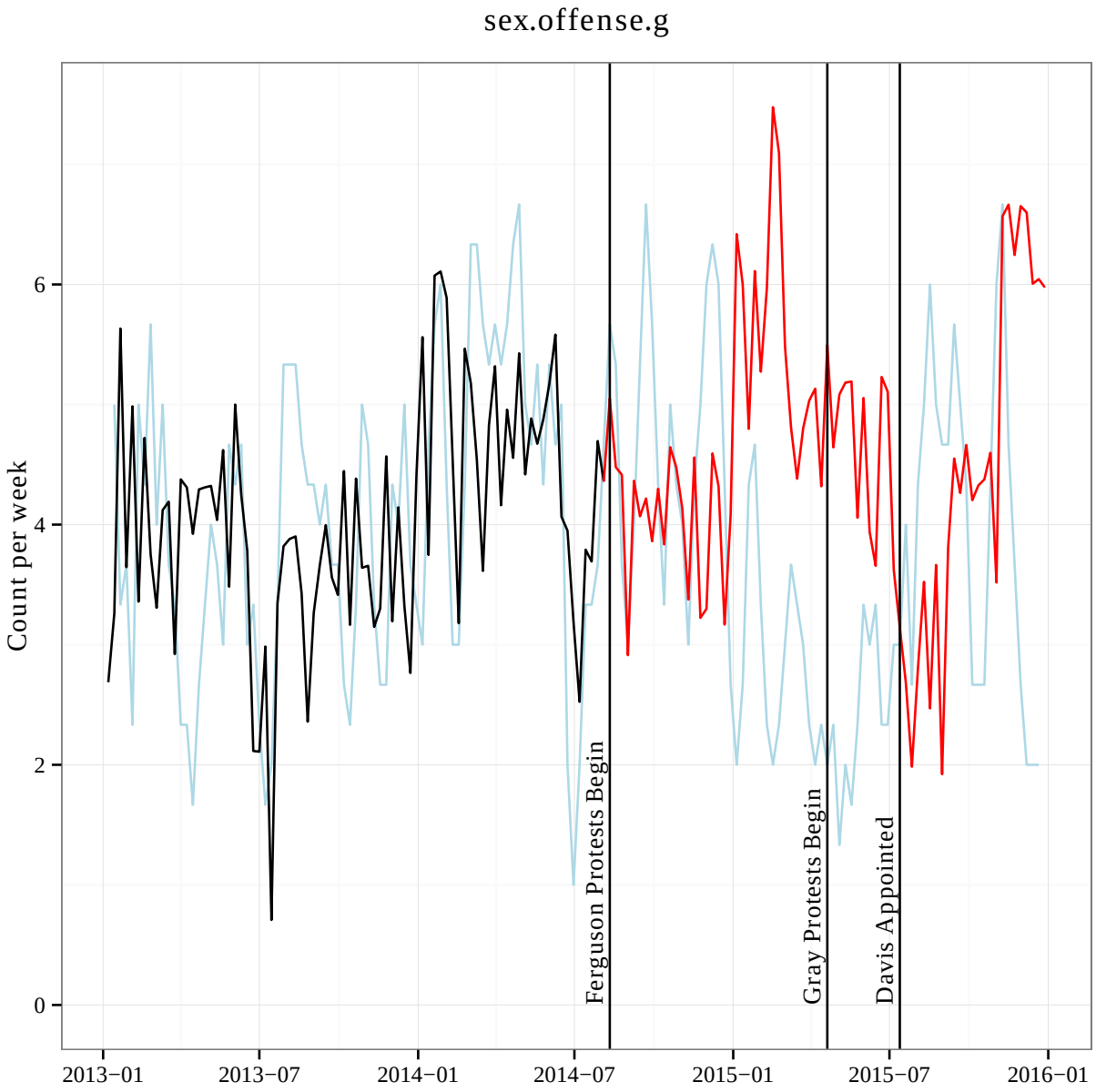
28.2 Four Models for sex.offense.g

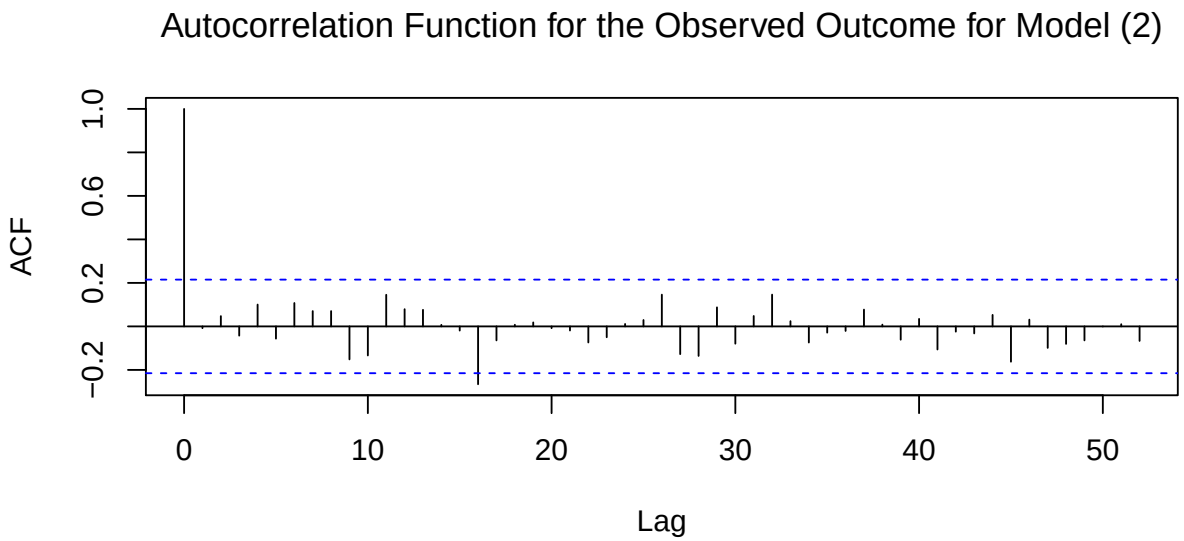
Table 28.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

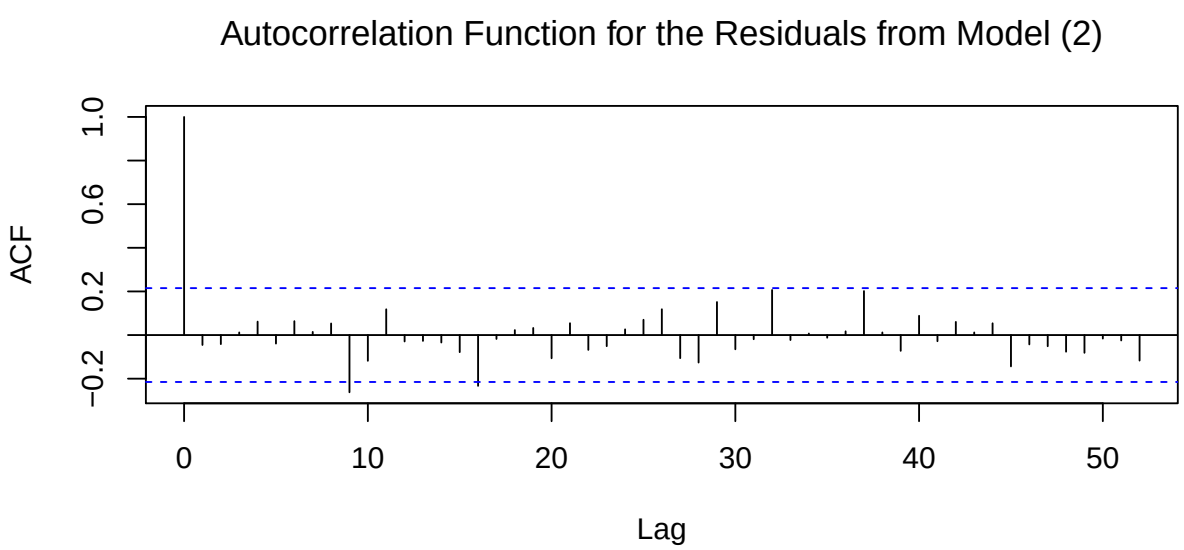
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.001	0.01		−0.001
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.19		−0.76	−0.05
After Gray Protests Begin (week of 4/20/15 onward)	−1.49		−1.47	−1.76
Unrest and National Guard (during week of 4/27/15)	−1.45		−1.41	−0.99
After Commissioner Batts Fired (week of 7/13/15 onward)	1.56		1.83	2.34
Average Maximum Temperature to 50 Degrees		−0.21		0.004
Plus Degrees in the 50s		0.32		−0.03
Plus Degrees in the 60s		−0.25		0.01
Plus Degrees in the 70s		0.22		0.13
Plus Degrees greater than 80		−0.37		−0.31
Snowfall (inches)		−0.76		−0.30
Precipitation (inches)		1.10		1.61
Darkness Before Midnight (hours)		−0.45		−0.14
School Days (proportion of week)		0.67		0.81
Observations	156	83	156	156
R^2	0.05	0.20	0.08	0.10

28.3 Least Squares Model (2) for sex.offense.g



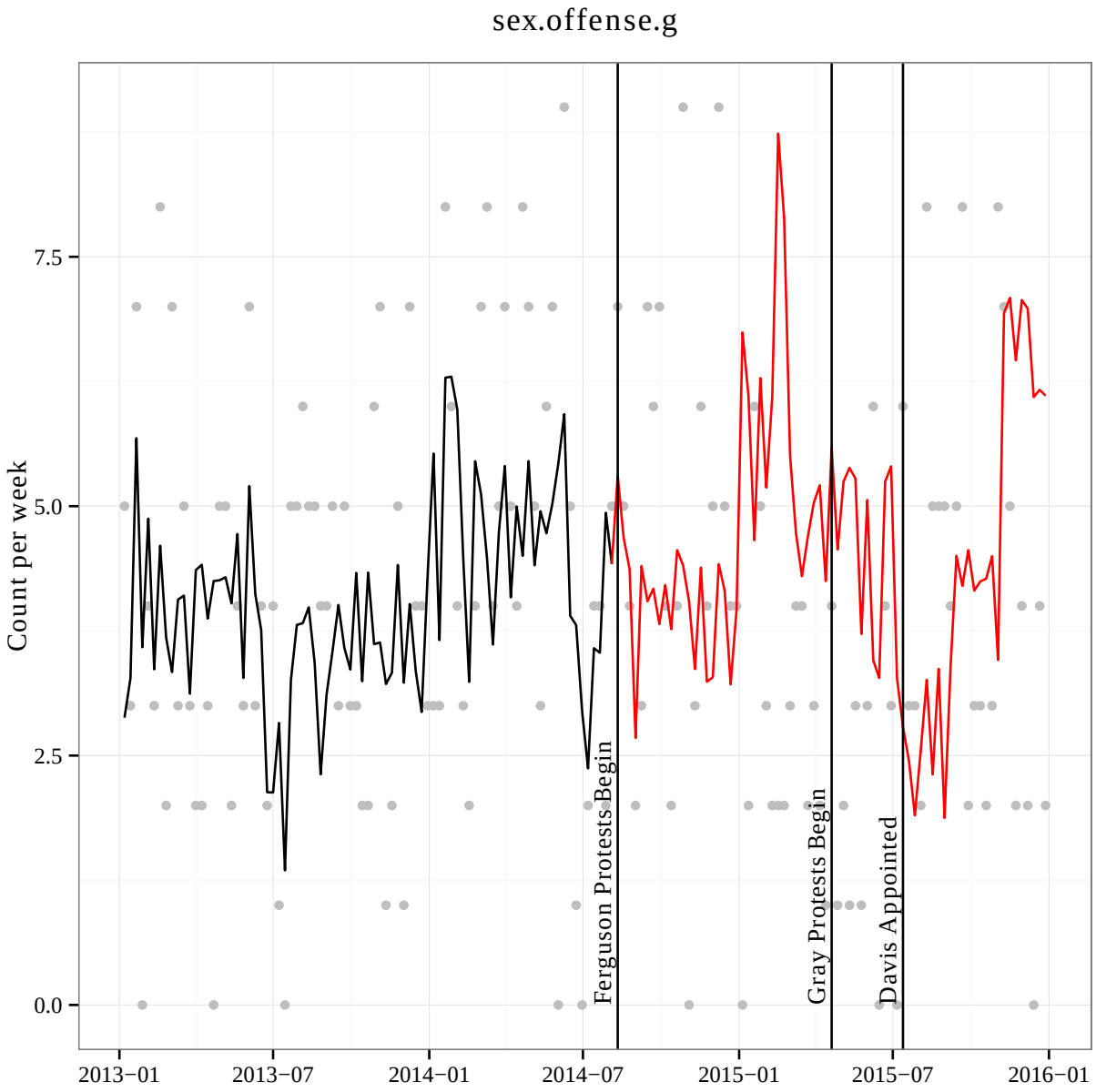

sex.offense.g
Count per week
0
2
4
6
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

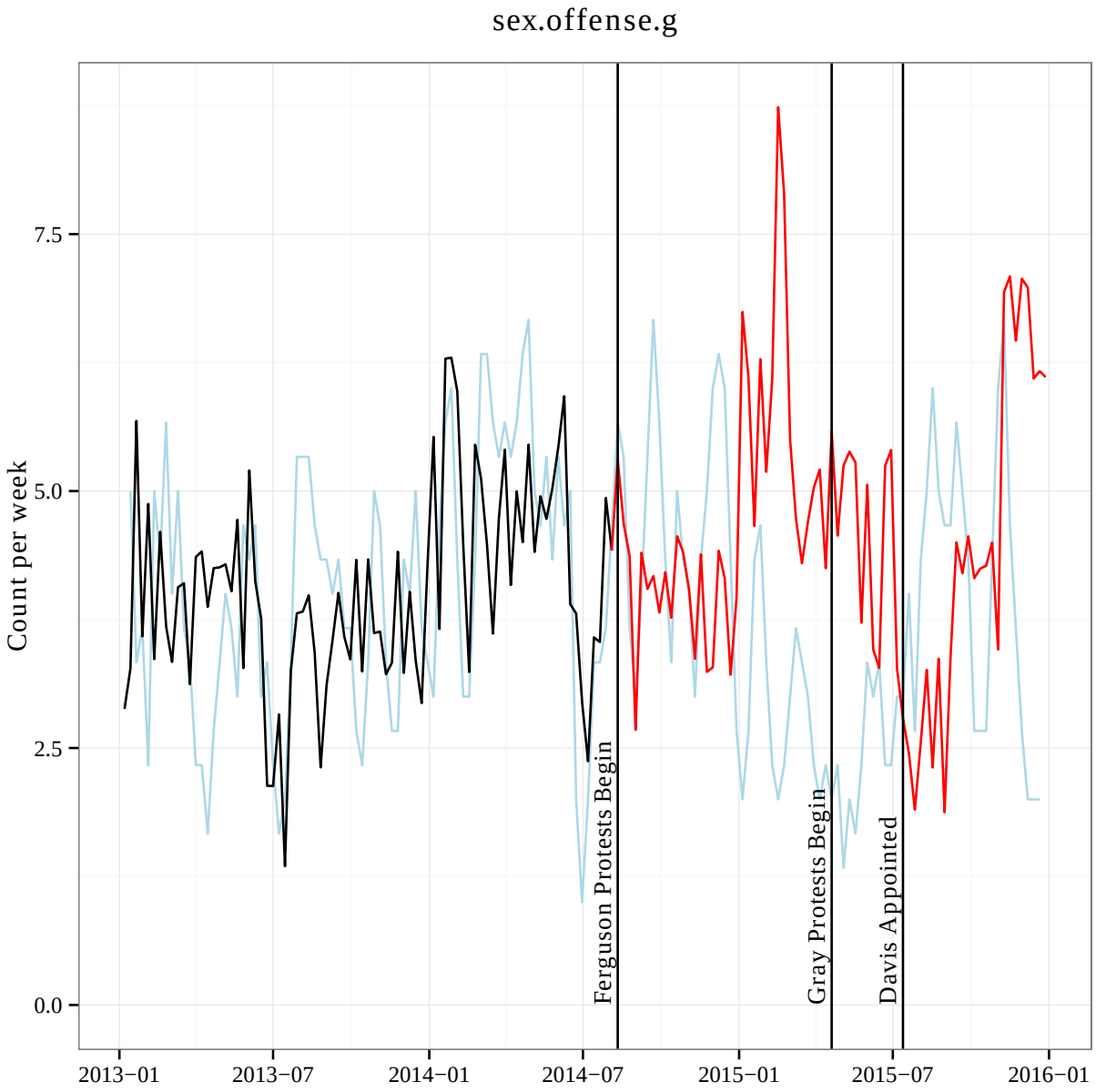

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.2950  -0.7430   0.1199   0.6449   1.7450

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)     4.026972   1.017799   3.957  7.6e-05 ***
t               0.001334   0.002445   0.546  0.58539
tmax.f.spline1 -0.047081   0.017540  -2.684  0.00727 **
tmax.f.spline2  0.075320   0.043141   1.746  0.08083 .
tmax.f.spline3 -0.061270   0.060360  -1.015  0.31007
tmax.f.spline4  0.057827   0.056410   1.025  0.30530
tmax.f.spline5 -0.118994   0.057347  -2.075  0.03799 *
snow.in        -0.165918   0.179776  -0.923  0.35605
precip.in       0.245756   0.329446   0.746  0.45569
dark.before.12 -0.107548   0.079863  -1.347  0.17809
school          0.142890   0.248194   0.576  0.56480
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 111.128  on 82  degrees of freedom
Residual deviance:  91.604  on 72  degrees of freedom
AIC: 365.35

Number of Fisher Scoring iterations: 5
```


sex.offense.g
Count per week
7.5
5.0
2.5
0.0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


sex.offense.g
Count per week
7.5
5.0
2.5
0.0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

29 Results for disorderly.conduct

29.1 Summary Values for disorderly.conduct

Table 29.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
disorderly.conduct	83	21.289	6.021	9	22	42

Table 29.2: Descriptives for Outcome After Ferguson Protests Begin

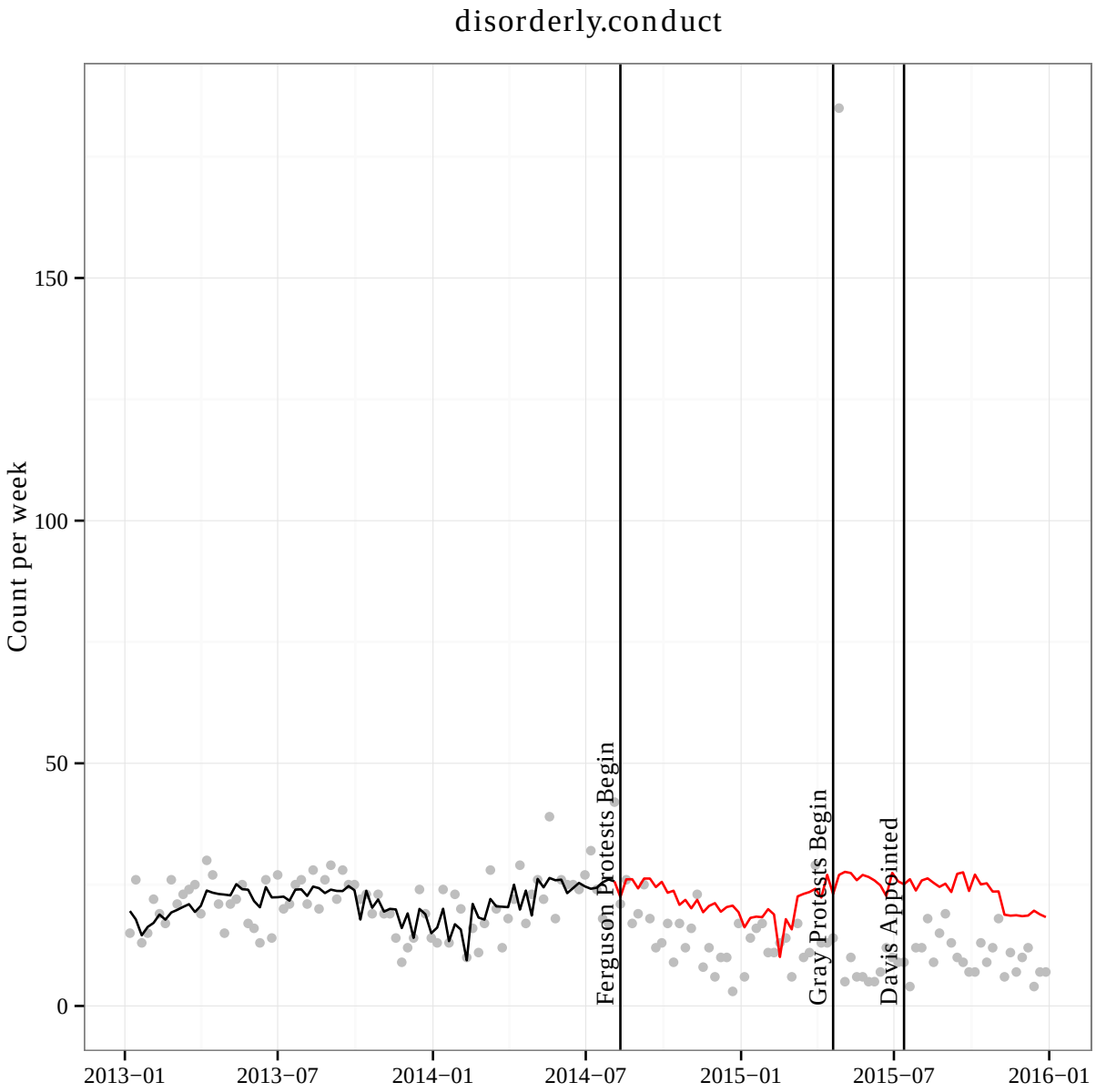
Statistic	N	Mean	St. Dev.	Min	Median	Max
disorderly.conduct	73	14.329	20.959	3	12	185

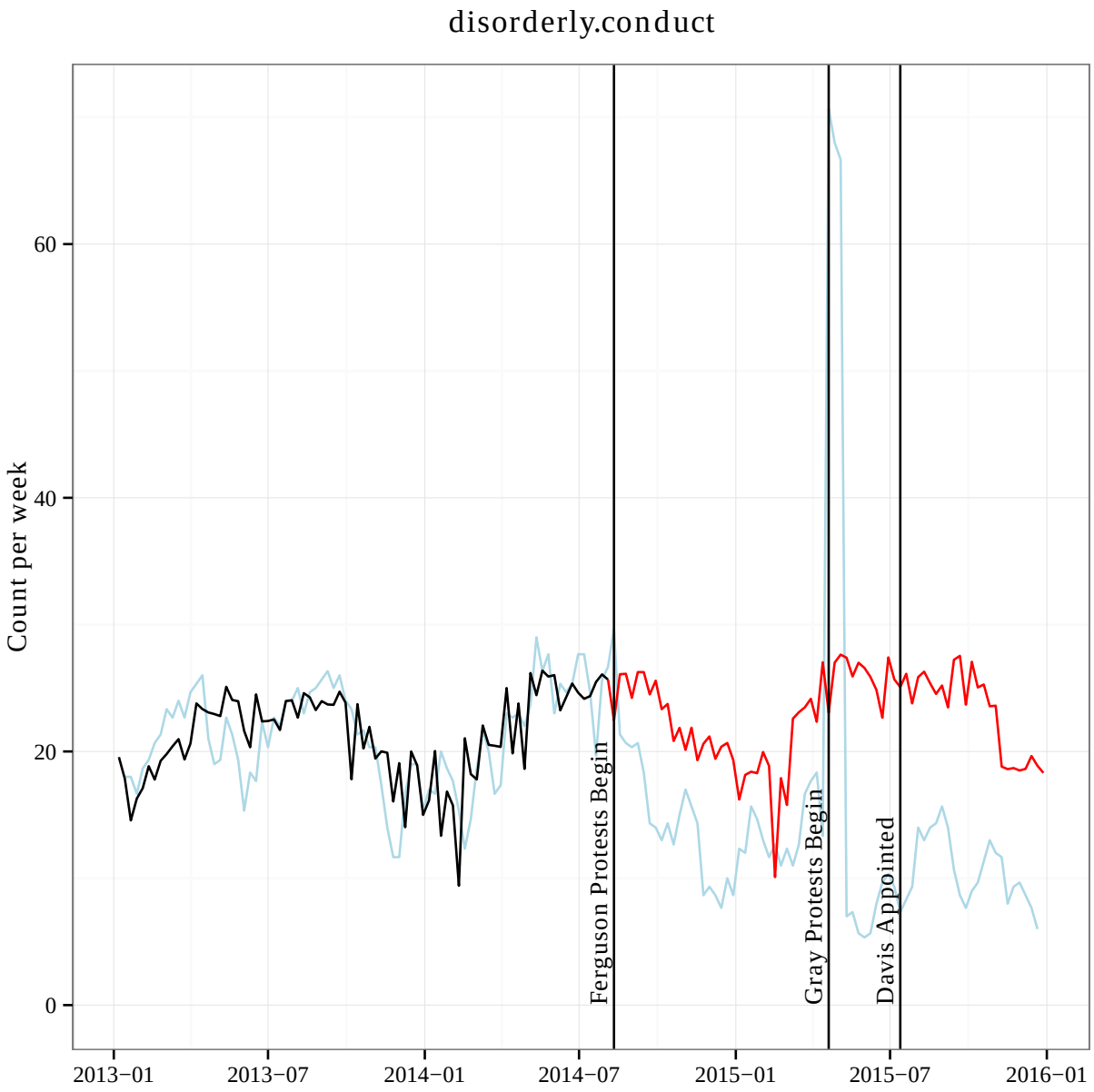
29.2 Four Models for disorderly.conduct

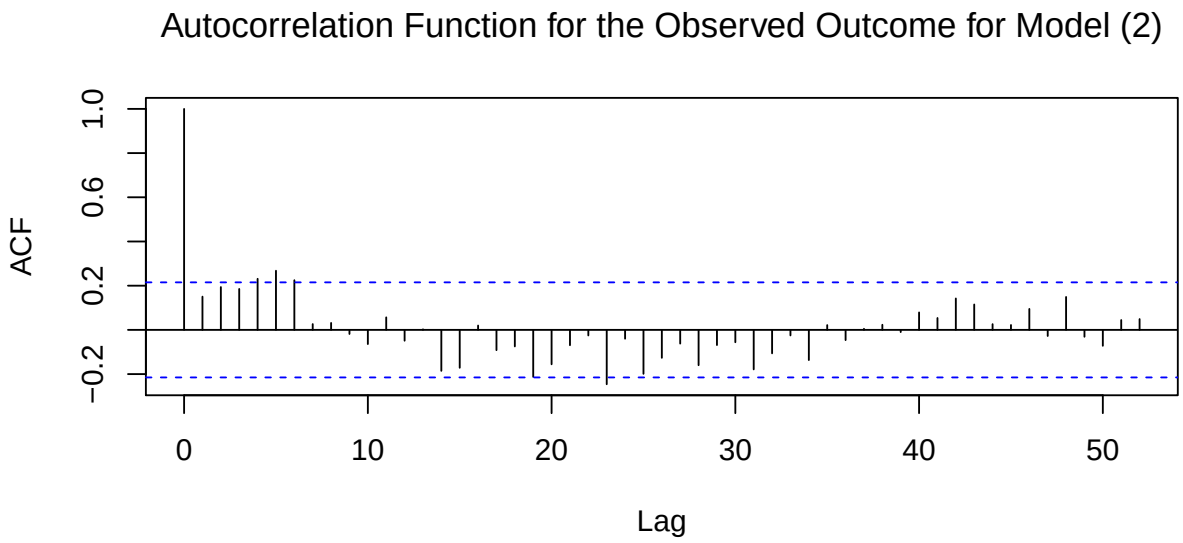
Table 29.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

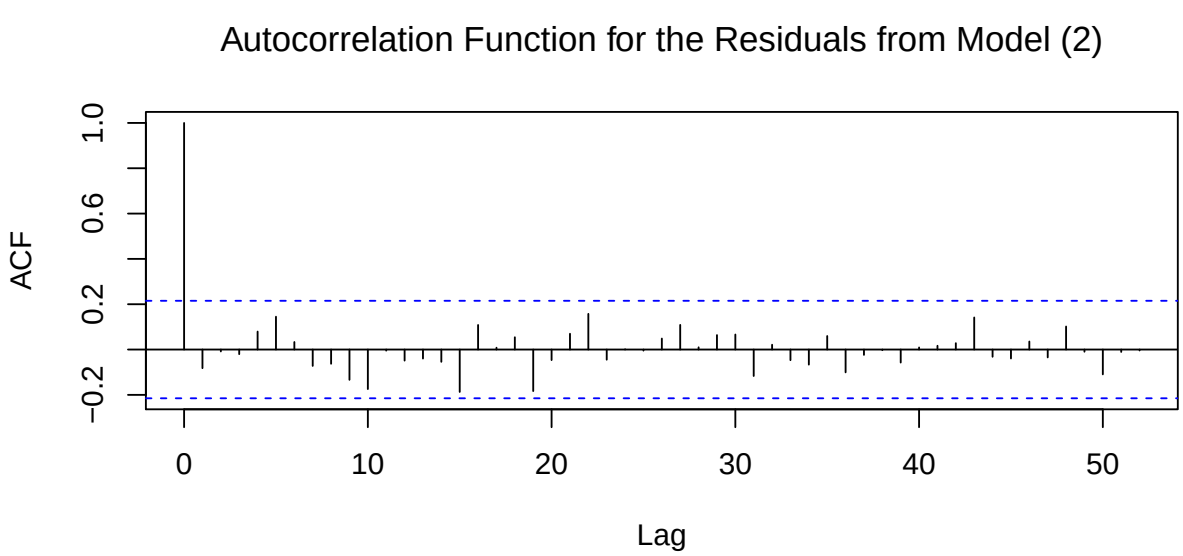
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.01	0.03		0.01
After Ferguson Protests Begin (week of 8/11/14 onward)	−7.82		−7.18	−6.50
After Gray Protests Begin (week of 4/20/15 onward)	−6.44		−10.55	−10.24
Unrest and National Guard (during week of 4/27/15)	176.97		175.73	177.61
After Commissioner Batts Fired (week of 7/13/15 onward)	2.08		4.98	5.23
Average Maximum Temperature to 50 Degrees		0.30		0.05
Plus Degrees in the 50s		−0.51		0.21
Plus Degrees in the 60s		0.63		−0.41
Plus Degrees in the 70s		−0.44		0.44
Plus Degrees greater than 80		−0.21		−0.64
Snowfall (inches)		−2.35		−2.62
Precipitation (inches)		−7.49		−5.06
Darkness Before Midnight (hours)		−0.81		−0.96
School Days (proportion of week)		0.41		0.03
Observations	156	83	156	156
R^2	0.87	0.33	0.90	0.91

29.3 Least Squares Model (2) for disorderly.conduct



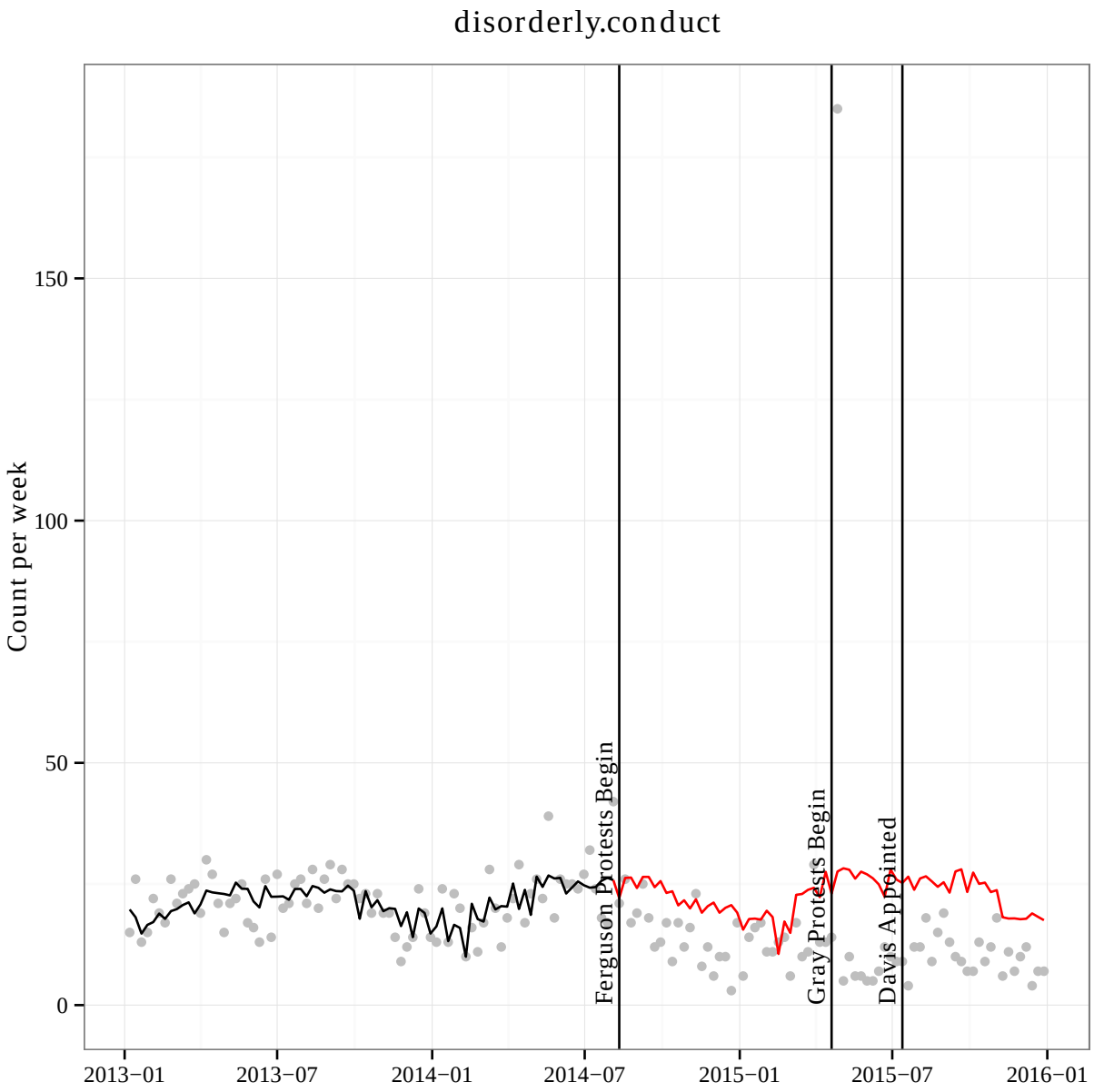

disorderly.conduct
Count per week
60
40
20
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

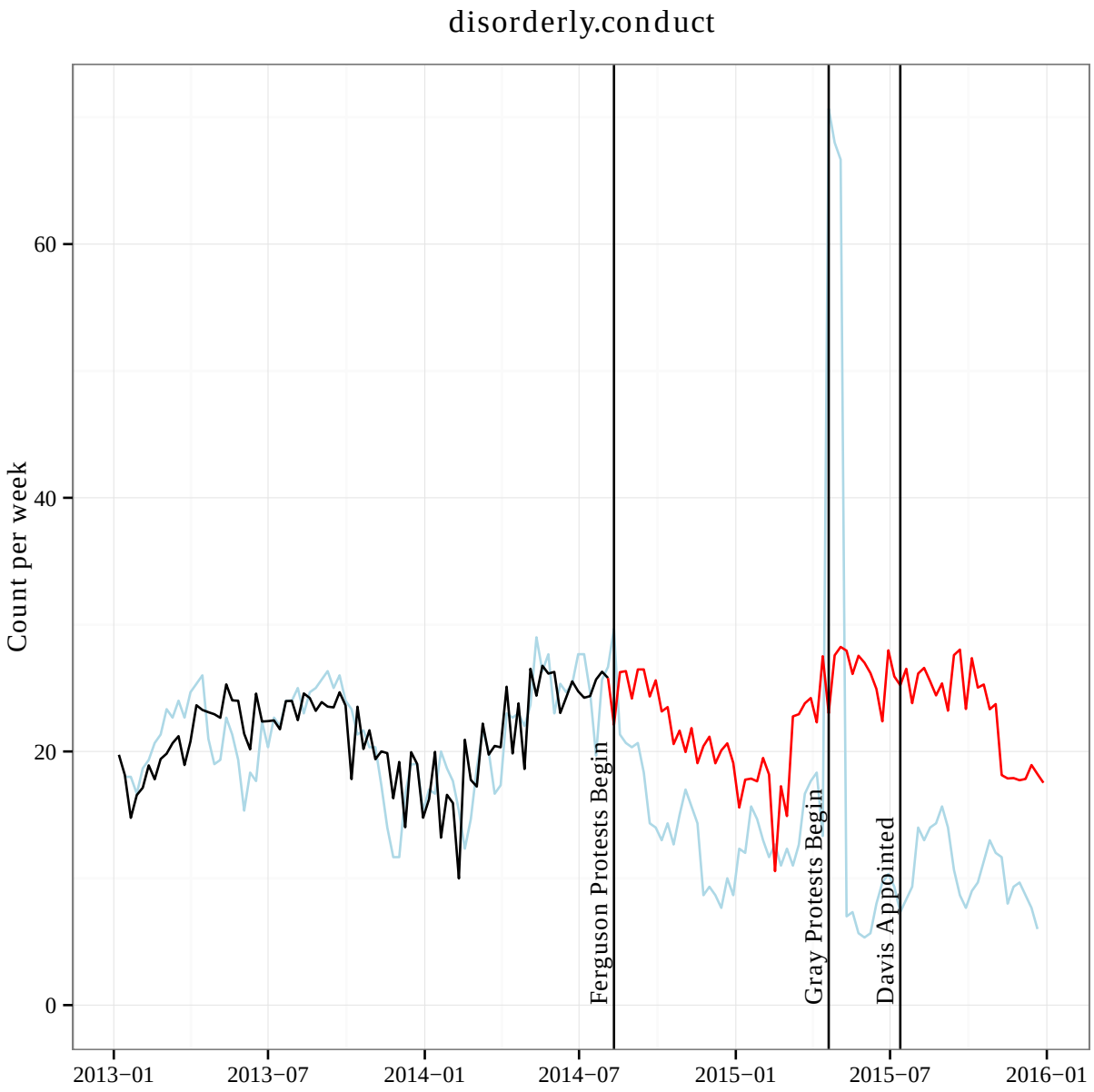

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-2.02339  -0.52677  -0.05555   0.63490   2.92338

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)     2.435879   0.501827   4.854 1.21e-06 ***
t               0.001237   0.001060   1.166   0.2435
tmax.f.spline1  0.017005   0.008973   1.895   0.0581 .
tmax.f.spline2 -0.028327   0.020169  -1.404   0.1602
tmax.f.spline3  0.030155   0.027348   1.103   0.2702
tmax.f.spline4 -0.020099   0.024079  -0.835   0.4039
tmax.f.spline5 -0.008455   0.020972  -0.403   0.6868
snow.in        -0.172459   0.107212  -1.609   0.1077
precip.in      -0.355088   0.158870  -2.235   0.0254 *
dark.before.12 -0.042594   0.034692  -1.228   0.2195
school          0.020304   0.105142   0.193   0.8469
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 139.69  on 82  degrees of freedom
Residual deviance:  90.46  on 72  degrees of freedom
AIC: 516.11

Number of Fisher Scoring iterations: 4
```


disorderly.conduct
Count per week
150
100
50
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


disorderly.conduct
Count per week
60
40
20
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

30 Results for loitering.vagabond

30.1 Summary Values for loitering.vagabond

Table 30.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
loitering.vagabond	83	2.313	2.101	0	2	9

Table 30.2: Descriptives for Outcome After Ferguson Protests Begin

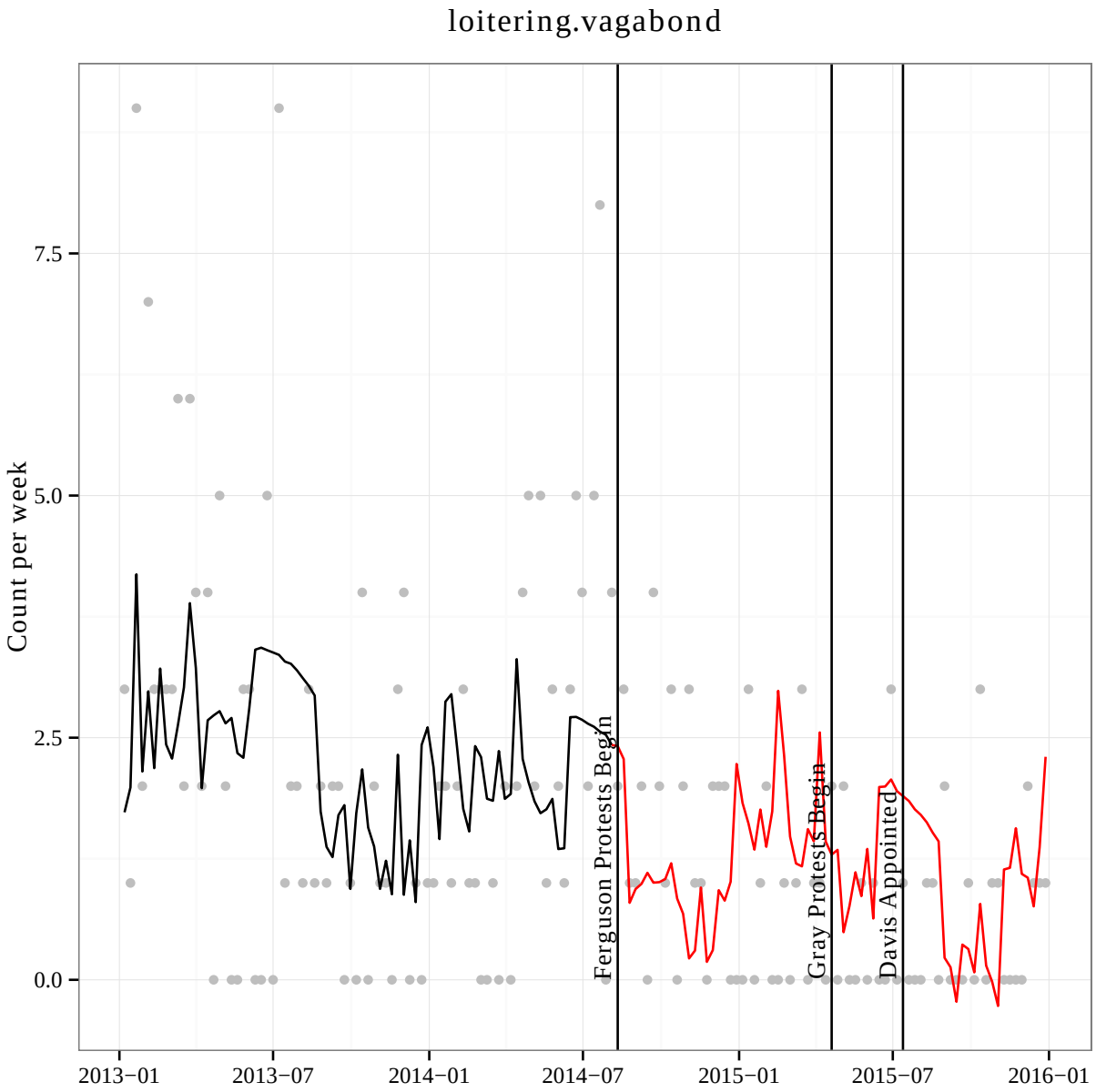
Statistic	N	Mean	St. Dev.	Min	Median	Max
loitering.vagabond	73	0.959	1.060	0	1	4

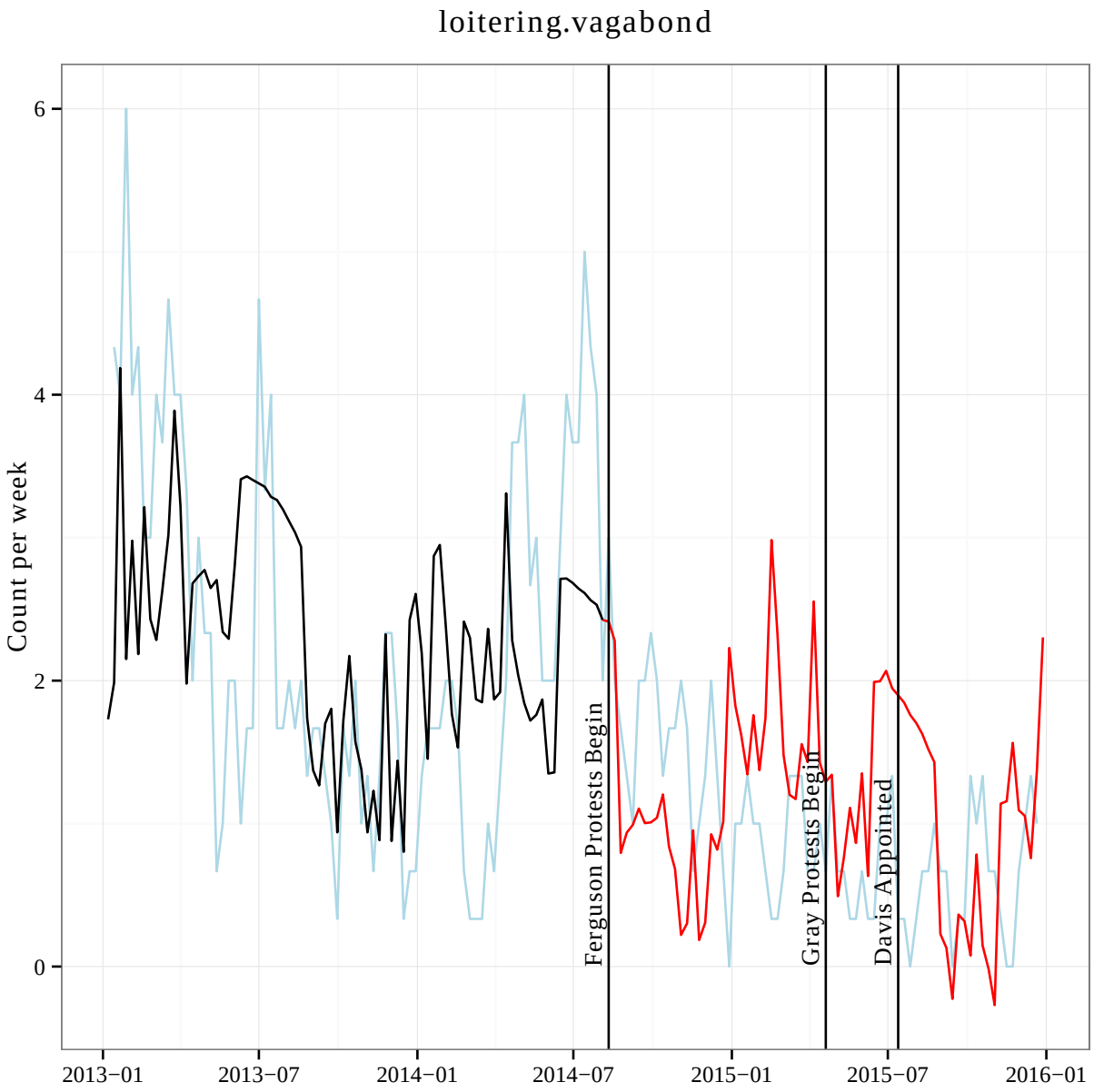
30.2 Four Models for loitering.vagabond

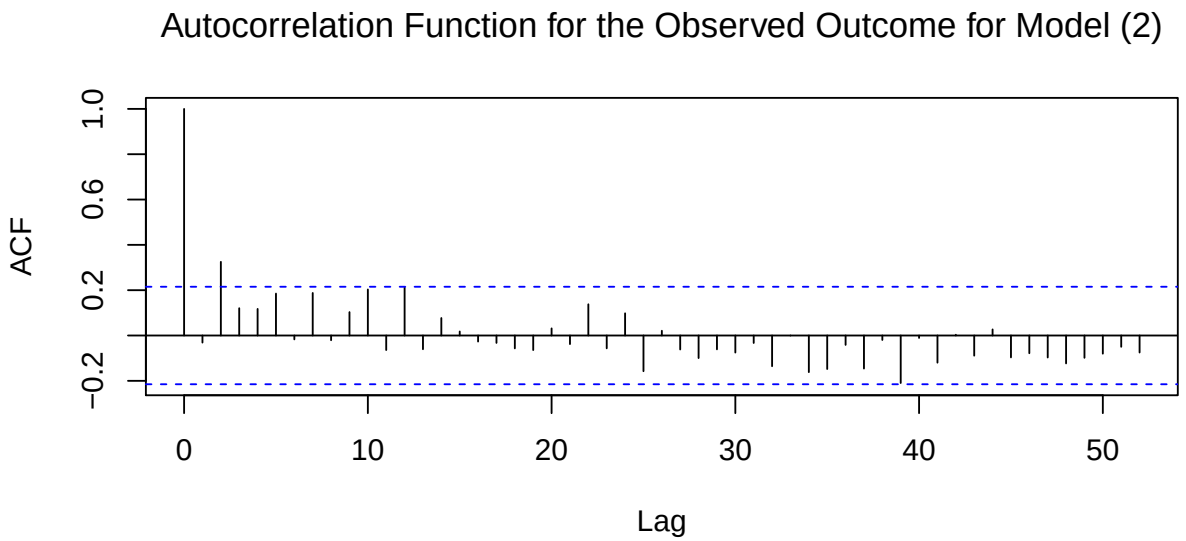
Table 30.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

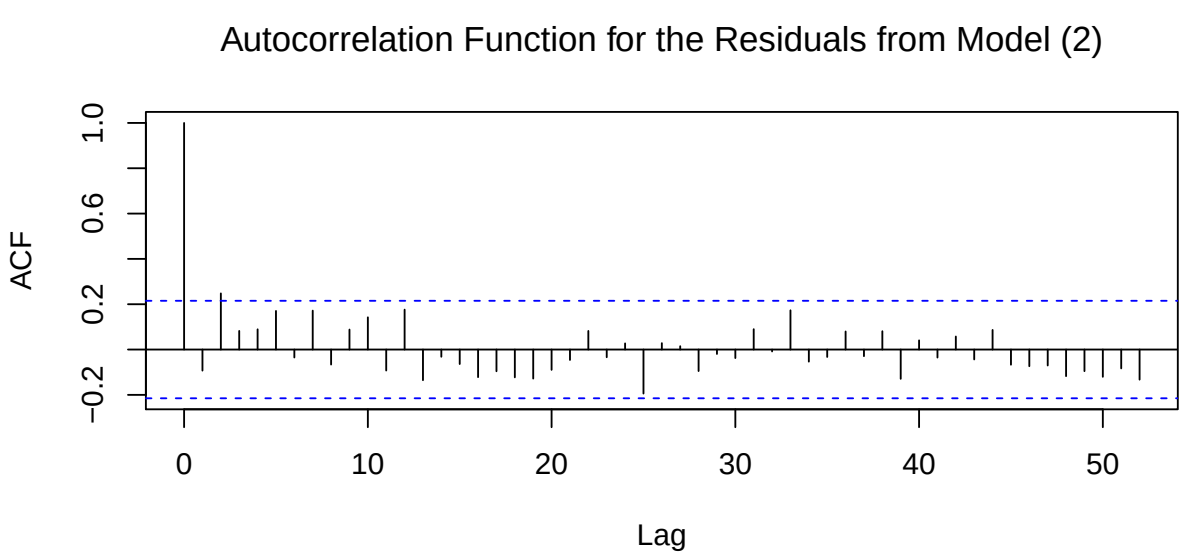
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.01	−0.01		−0.01
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.38		−0.06	−0.10
After Gray Protests Begin (week of 4/20/15 onward)	−0.15		−0.44	−0.34
Unrest and National Guard (during week of 4/27/15)	−0.87		−0.84	−0.97
After Commissioner Batts Fired (week of 7/13/15 onward)	0.03		0.19	0.24
Average Maximum Temperature to 50 Degrees		−0.10		−0.04
Plus Degrees in the 50s		0.07		0.04
Plus Degrees in the 60s		0.03		−0.02
Plus Degrees in the 70s		−0.09		−0.03
Plus Degrees greater than 80		0.09		−0.0004
Snowfall (inches)		−0.38		−0.43
Precipitation (inches)		−0.02		−0.51
Darkness Before Midnight (hours)		−0.51		−0.27
School Days (proportion of week)		−1.89		−1.06
Observations	156	83	156	156
R^2	0.17	0.12	0.01	0.20

30.3 Least Squares Model (2) for loitering.vagabond



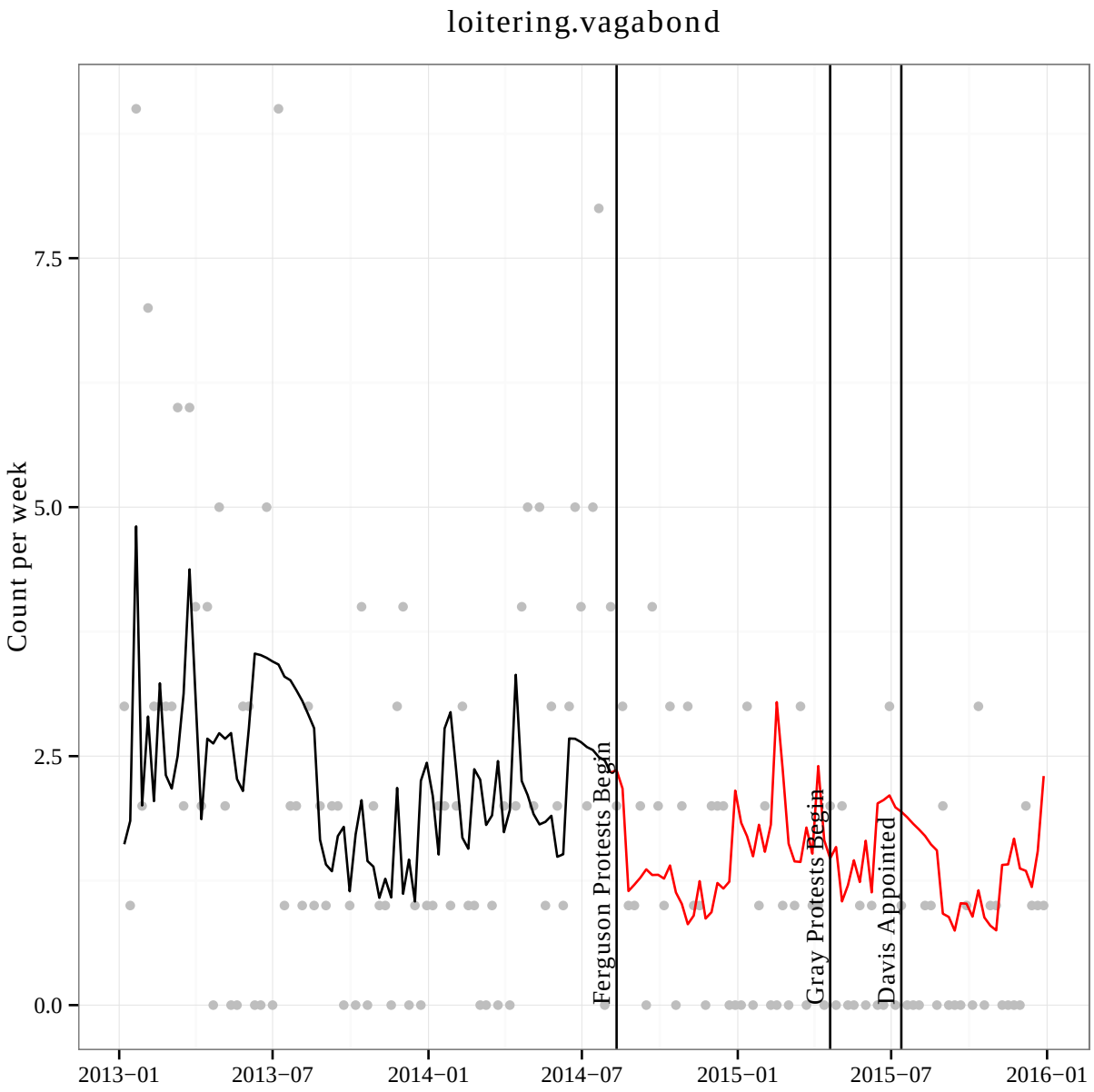

loitering.vagabond
Count per week
6
4
2
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

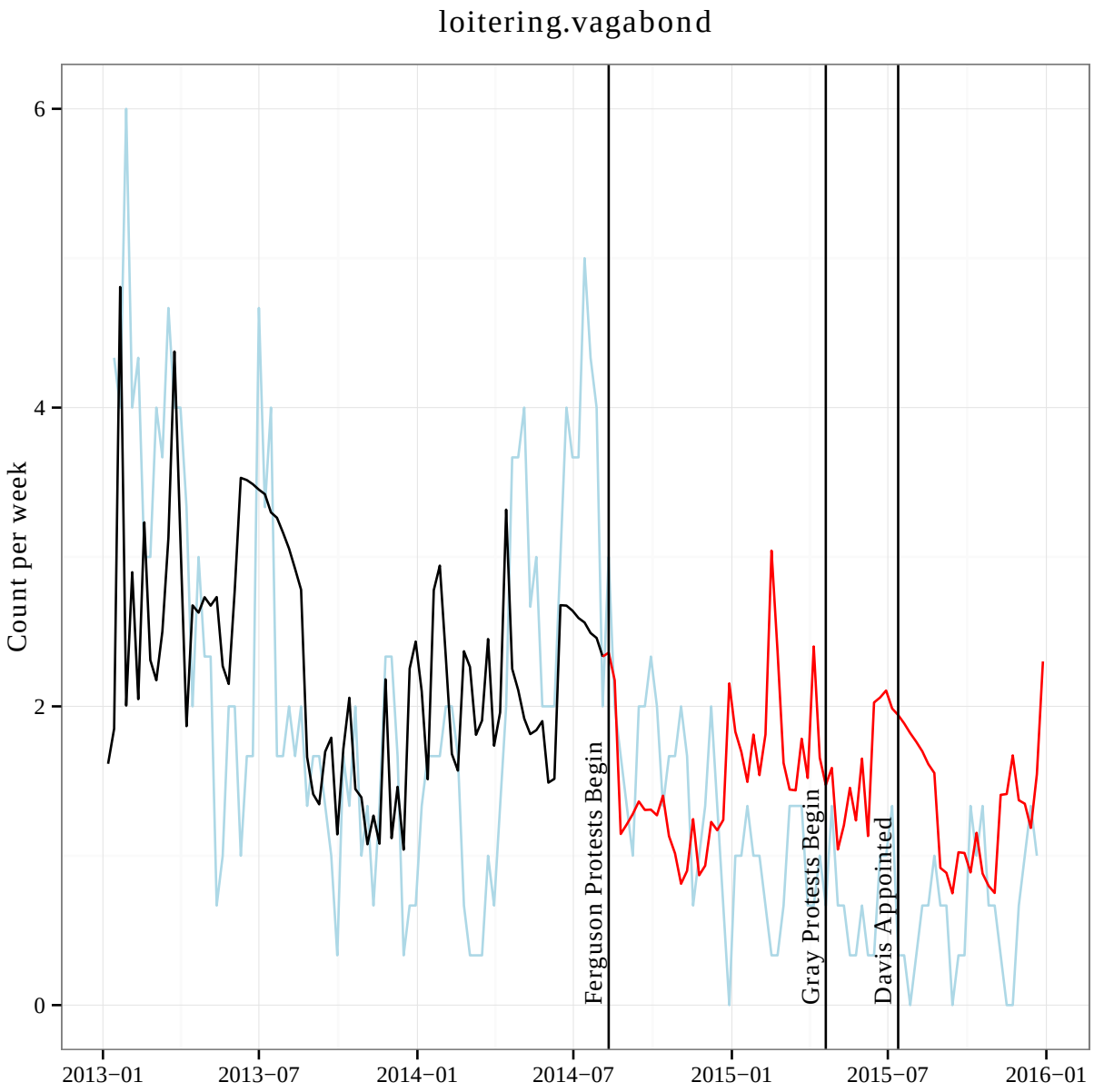

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-2.65694  -1.13726  -0.07495   0.67789   2.76586

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)     5.020367   1.417449   3.542 0.000397 ***
t              -0.005260   0.003149  -1.671 0.094819 .
tmax.f.spline1 -0.043075   0.023178  -1.858 0.063104 .
tmax.f.spline2  0.017489   0.058469   0.299 0.764859
tmax.f.spline3  0.037131   0.087978   0.422 0.672985
tmax.f.spline4 -0.058284   0.080403  -0.725 0.468514
tmax.f.spline5  0.044989   0.063645   0.707 0.479642
snow.in        -0.188565   0.269994  -0.698 0.484925
precip.in       0.018395   0.472360   0.039 0.968935
dark.before.12 -0.256056   0.113965  -2.247 0.024653 *
school         -0.801650   0.323478  -2.478 0.013204 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 163.78  on 82  degrees of freedom
Residual deviance: 143.91  on 72  degrees of freedom
AIC: 349.77

Number of Fisher Scoring iterations: 5
```


loitering.vagabond
Count per week
7.5
5.0
2.5
0.0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


loitering.vagabond
Count per week
6
4
2
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

31 Results for only.temp.detained

31.1 Summary Values for only.temp.detained

Table 31.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
only.temp.detained	83	8.952	3.290	2	9	20

Table 31.2: Descriptives for Outcome After Ferguson Protests Begin

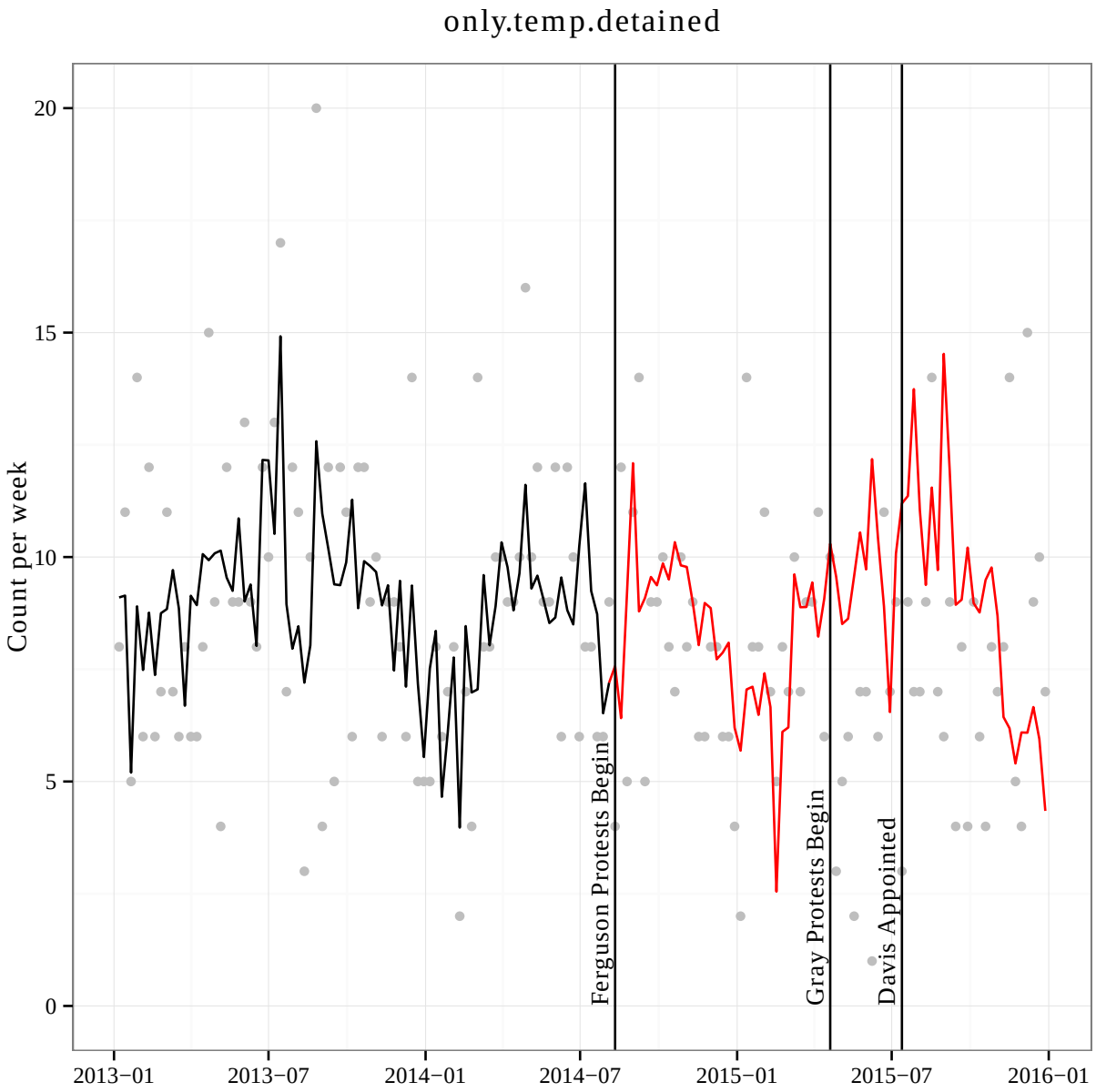
Statistic	N	Mean	St. Dev.	Min	Median	Max
only.temp.detained	73	7.589	2.943	1	7	15

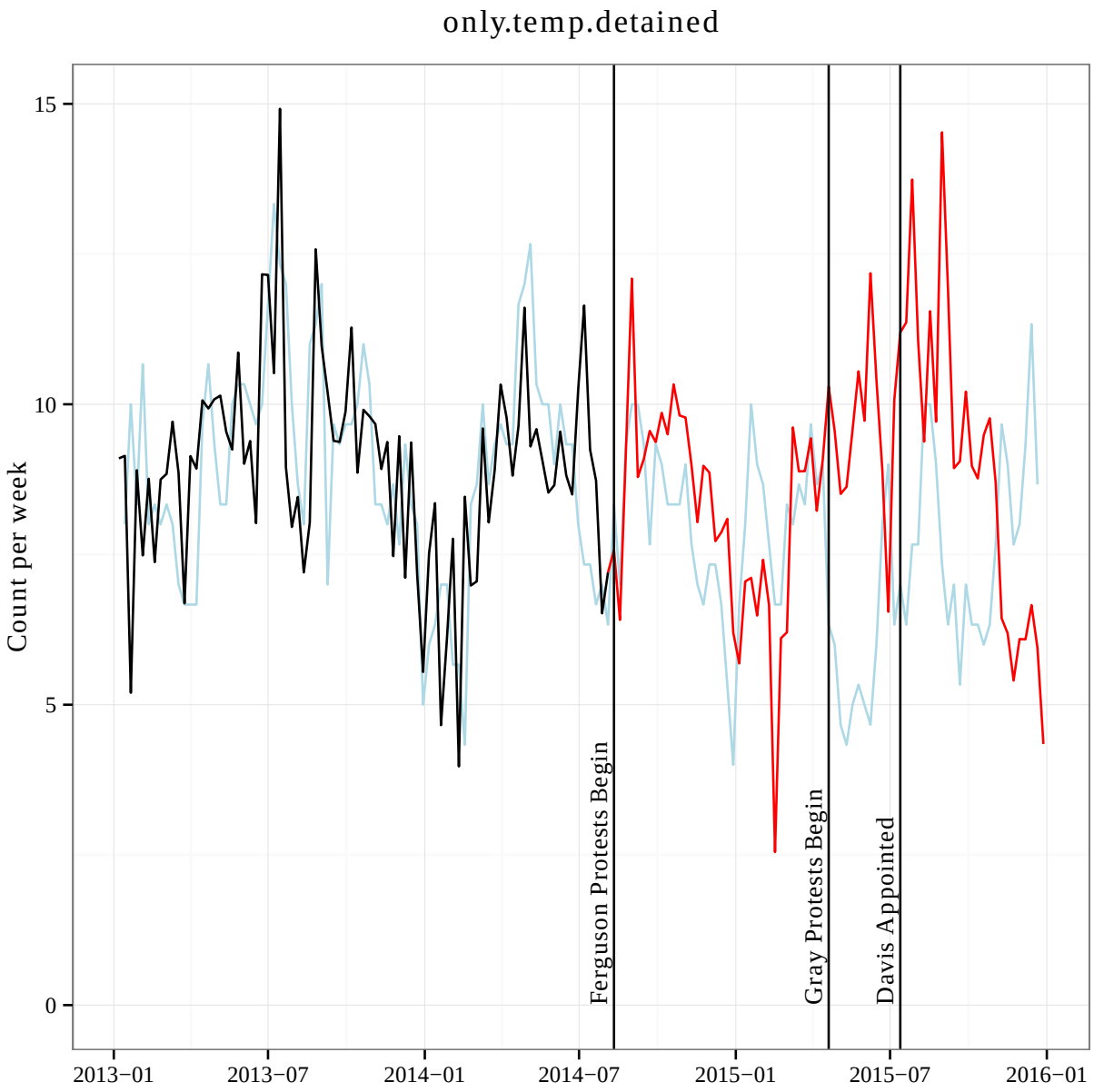
31.2 Four Models for only.temp.detained

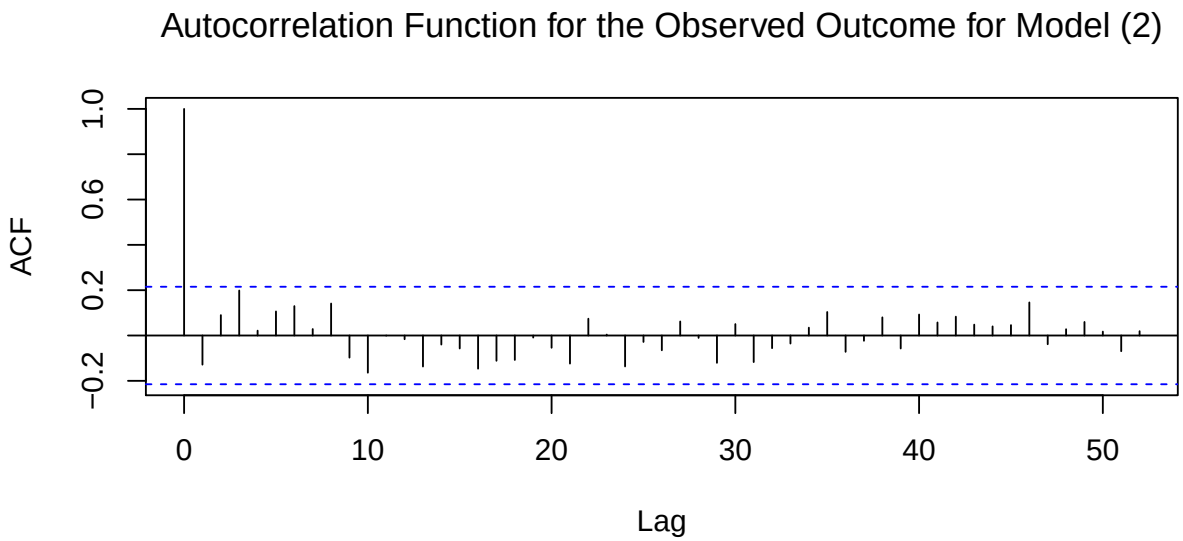
Table 31.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

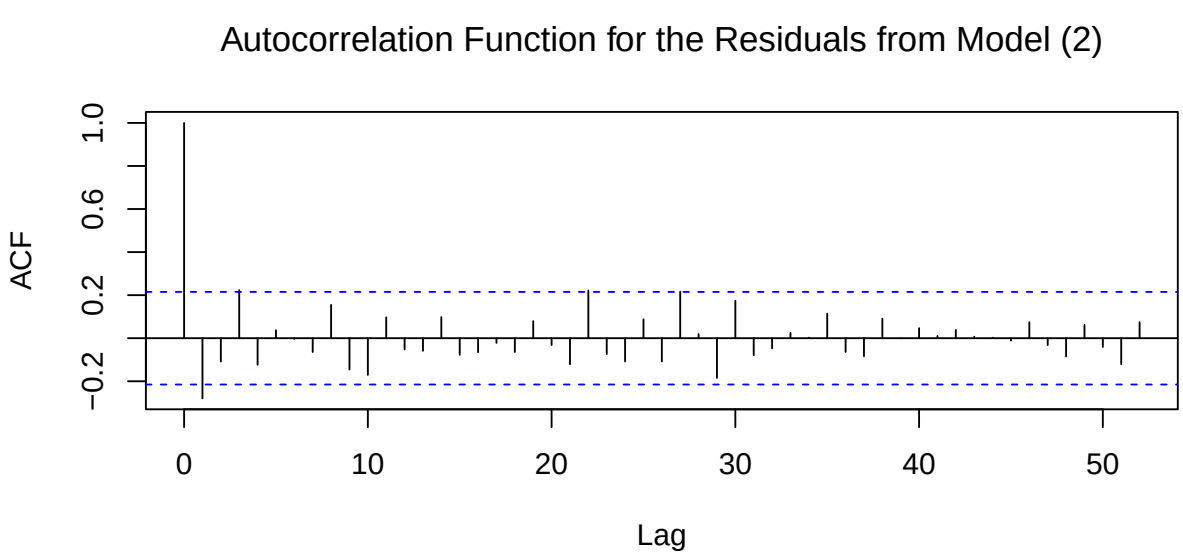
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.01	−0.003		−0.0002
After Ferguson Protests Begin (week of 8/11/14 onward)	−0.67		−0.24	−0.74
After Gray Protests Begin (week of 4/20/15 onward)	−1.39		−2.89	−2.28
Unrest and National Guard (during week of 4/27/15)	−3.48		−3.43	−3.48
After Commissioner Batts Fired (week of 7/13/15 onward)	1.36		1.83	1.38
Average Maximum Temperature to 50 Degrees		0.15		−0.05
Plus Degrees in the 50s		−0.04		0.22
Plus Degrees in the 60s		−0.16		−0.32
Plus Degrees in the 70s		−0.09		0.09
Plus Degrees greater than 80		0.76		0.37
Snowfall (inches)		−1.21		−2.45
Precipitation (inches)		2.13		0.92
Darkness Before Midnight (hours)		−0.08		−0.30
School Days (proportion of week)		2.66		1.13
Observations	156	83	156	156
R^2	0.07	0.27	0.09	0.17

31.3 Least Squares Model (2) for only.temp.detained



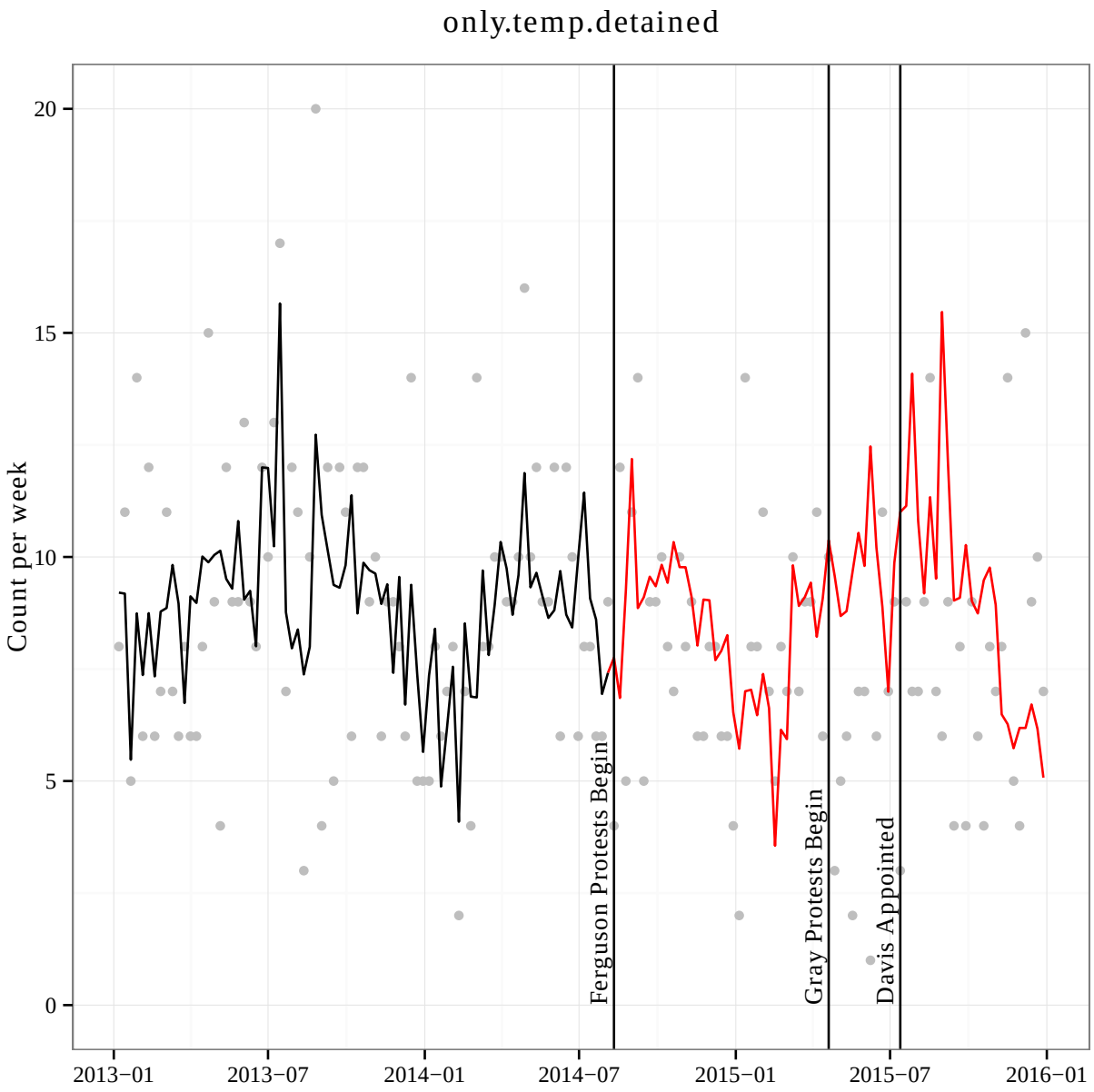

only.temp.detained
Count per week
15
10
5
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

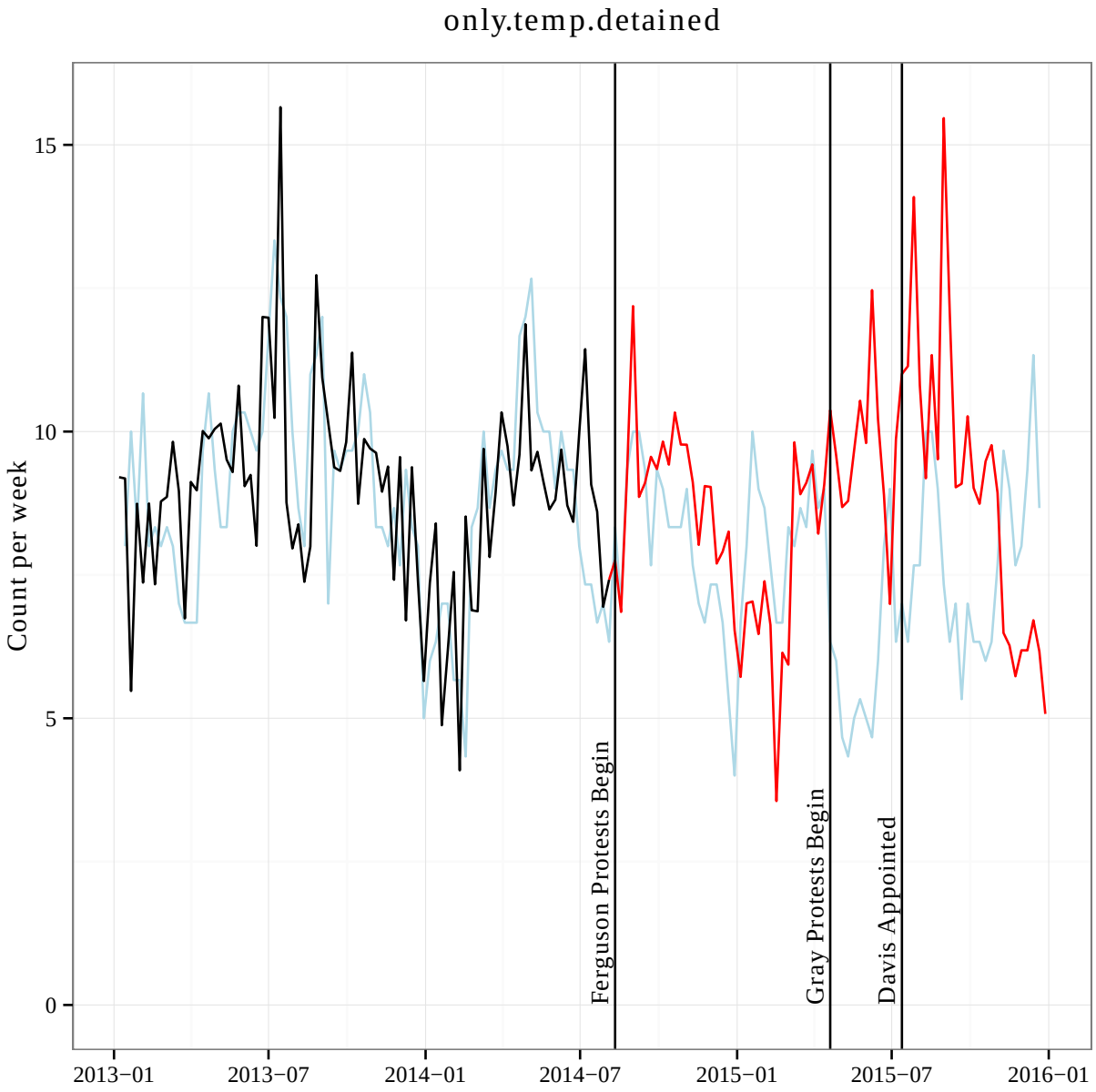

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-2.41426  -0.60464  -0.08053   0.57270   2.38372

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     1.0349978  0.7746995   1.336   0.1815
t              -0.0001843  0.0016745  -0.110   0.9123
tmax.f.spline1  0.0207123  0.0140497   1.474   0.1404
tmax.f.spline2 -0.0120021  0.0307887  -0.390   0.6967
tmax.f.spline3 -0.0141702  0.0409643  -0.346   0.7294
tmax.f.spline4 -0.0072192  0.0369258  -0.196   0.8450
tmax.f.spline5  0.0731793  0.0310151   2.359   0.0183 *
snow.in        -0.2023571  0.1672421  -1.210   0.2263
precip.in       0.2269722  0.2252373   1.008   0.3136
dark.before.12 -0.0115837  0.0524053  -0.221   0.8251
school          0.3007717  0.1675121   1.796   0.0726 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 98.945  on 82  degrees of freedom
Residual deviance: 71.533  on 72  degrees of freedom
AIC: 423.85

Number of Fisher Scoring iterations: 4
```


only.temp.detained
Count per week
20
15
10
5
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


only.temp.detained
Count per week
15
10
5
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

32 Results for unknown

32.1 Summary Values for unknown

Table 32.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
unknown	83	50.361	12.849	26	51	94

Table 32.2: Descriptives for Outcome After Ferguson Protests Begin

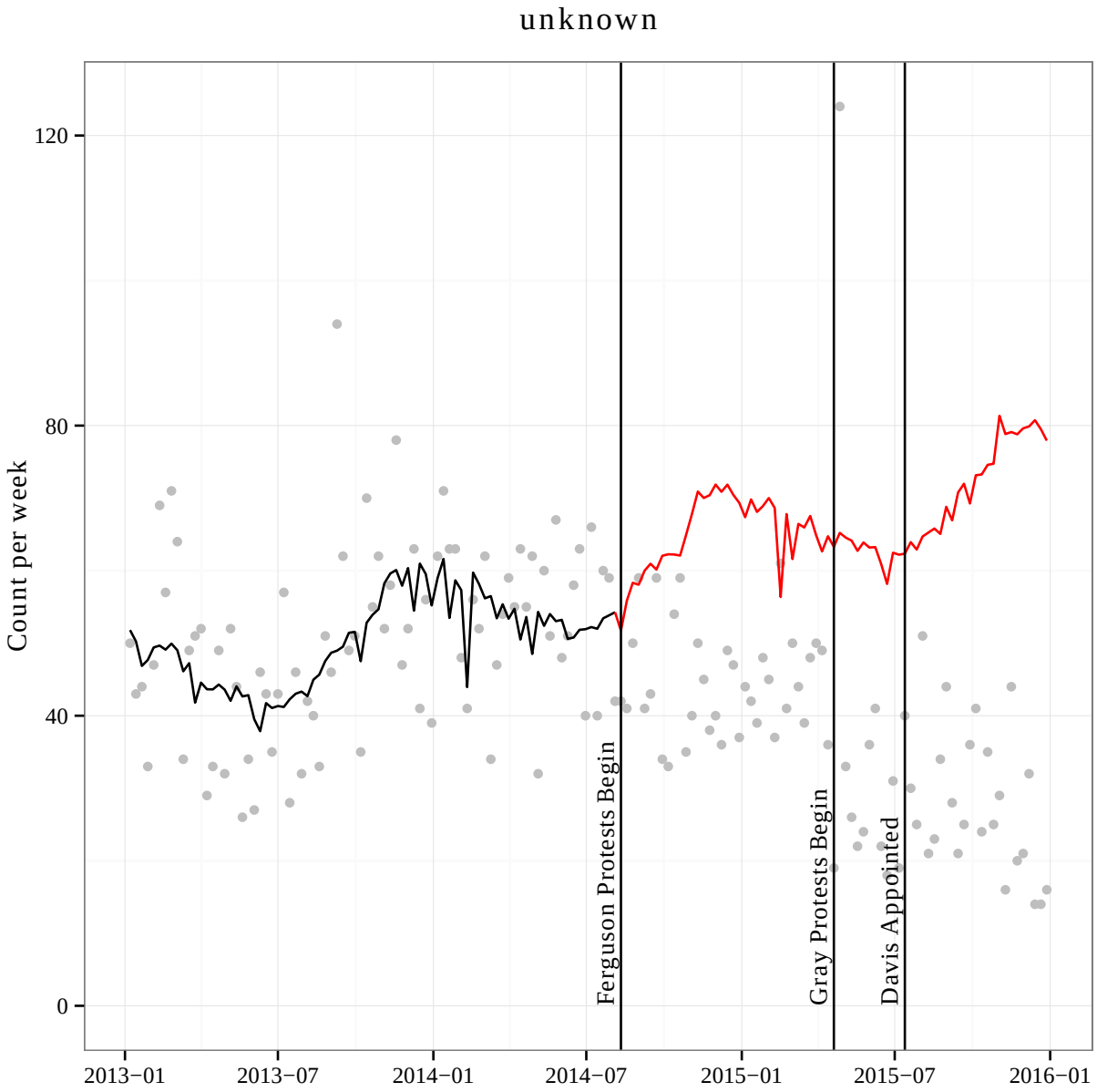
Statistic	N	Mean	St. Dev.	Min	Median	Max
unknown	73	37.384	15.707	14	37	124

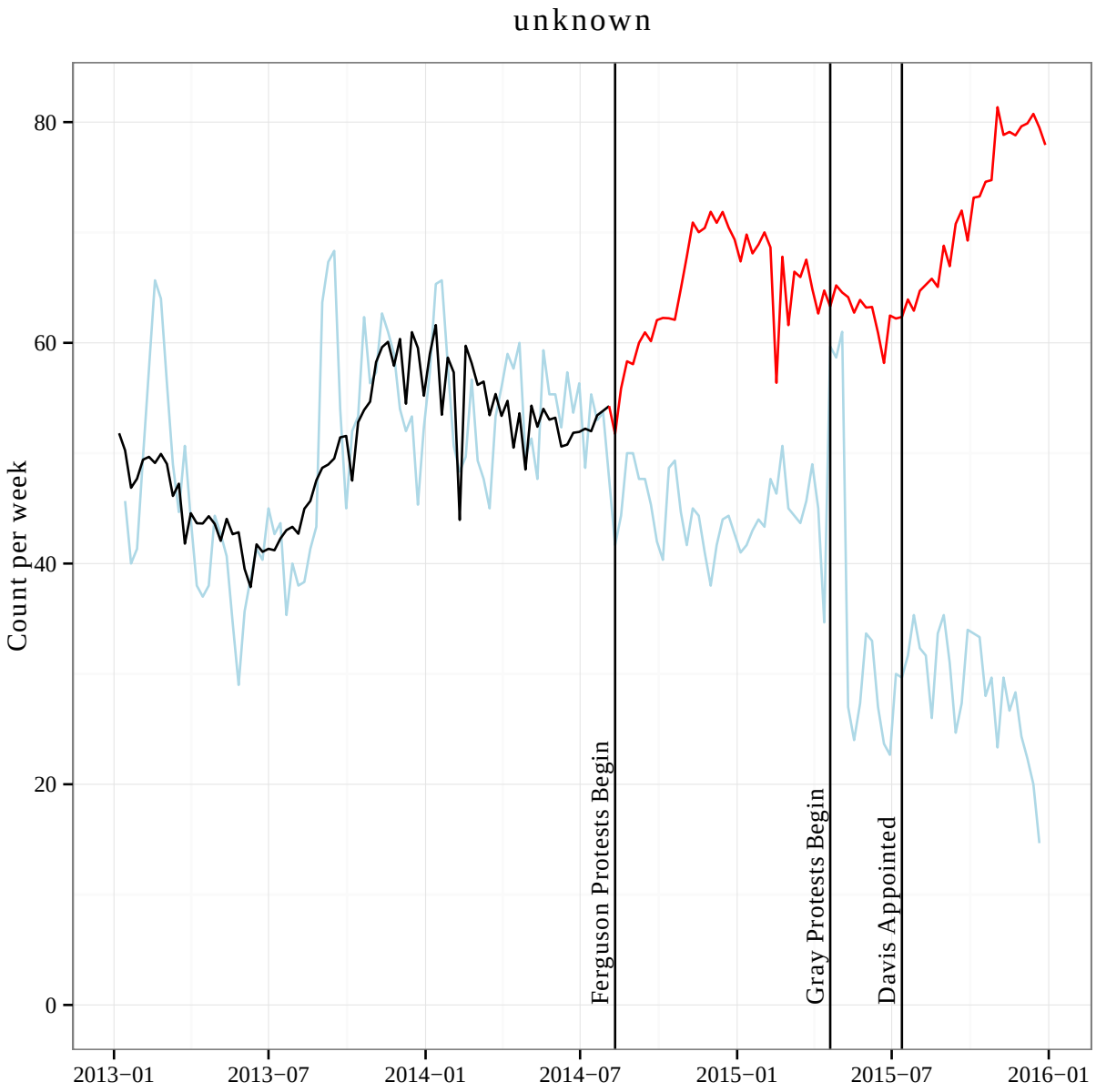
32.2 Four Models for unknown

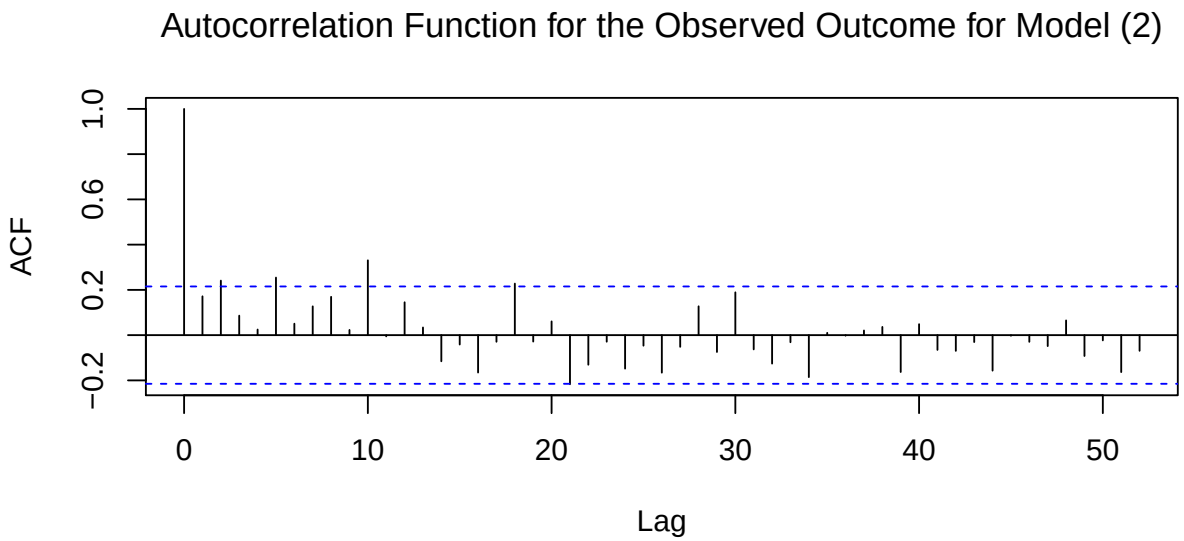
Table 32.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

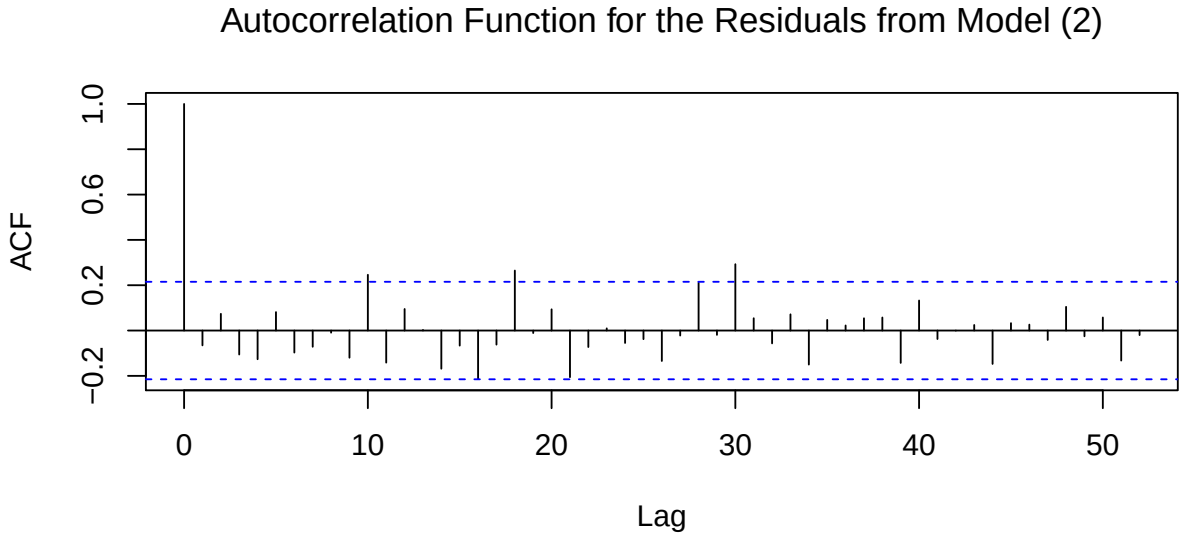
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.11	0.20		0.14
After Ferguson Protests Begin (week of 8/11/14 onward)	−12.38		−20.50	−14.74
After Gray Protests Begin (week of 4/20/15 onward)	−20.84		−15.66	−19.08
Unrest and National Guard (during week of 4/27/15)	98.09		94.96	97.02
After Commissioner Batts Fired (week of 7/13/15 onward)	−0.10		−7.85	−3.07
Average Maximum Temperature to 50 Degrees		0.19		0.27
Plus Degrees in the 50s		−0.56		−0.22
Plus Degrees in the 60s		0.43		−0.02
Plus Degrees in the 70s		−0.13		−0.04
Plus Degrees greater than 80		0.05		0.62
Snowfall (inches)		−5.06		1.92
Precipitation (inches)		−7.02		−2.21
Darkness Before Midnight (hours)		2.73		1.81
School Days (proportion of week)		2.29		4.98
Observations	156	83	156	156
R^2	0.53	0.21	0.72	0.55

32.3 Least Squares Model (2) for unknown



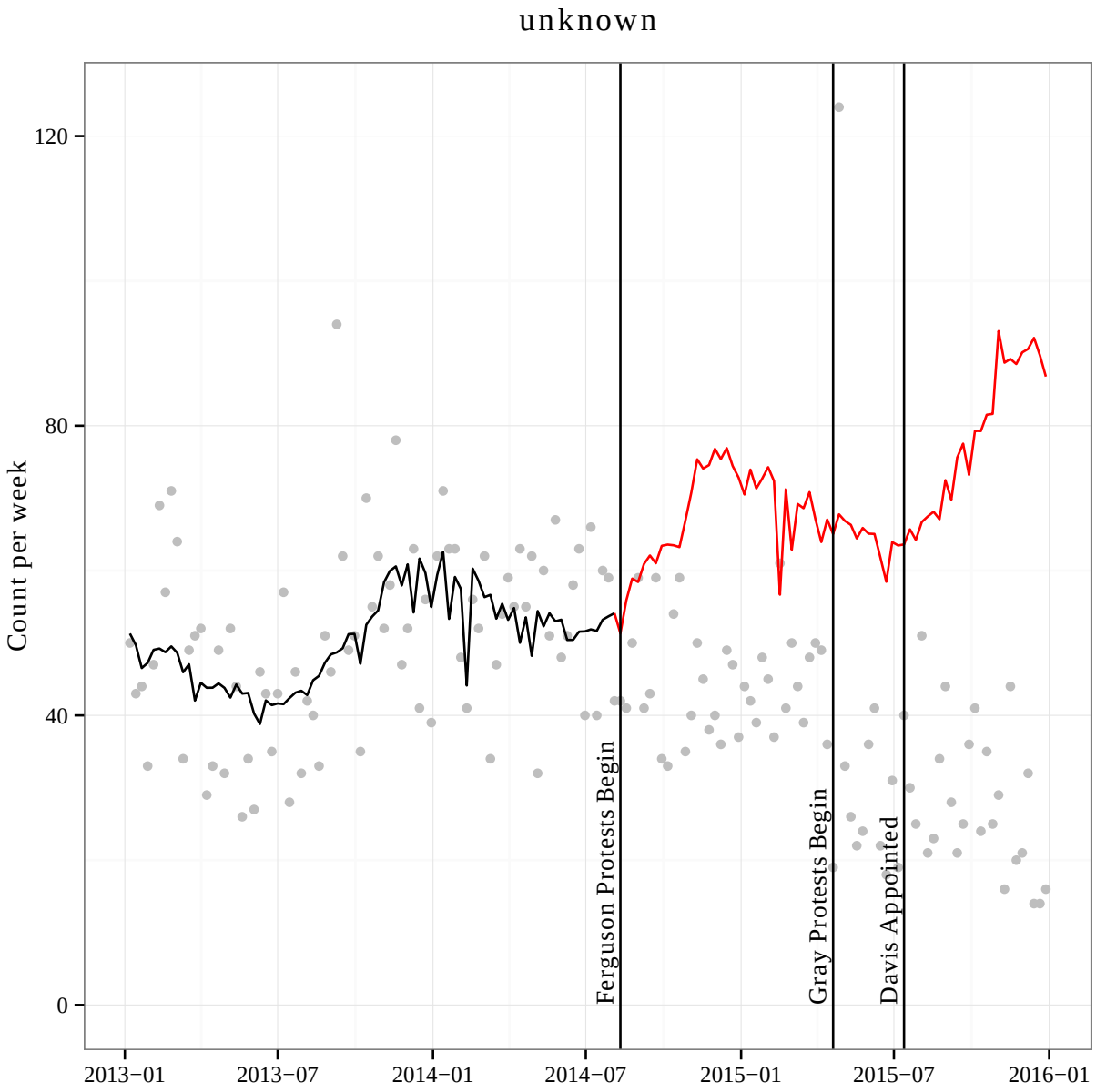

unknown
Count per week
80
60
40
20
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

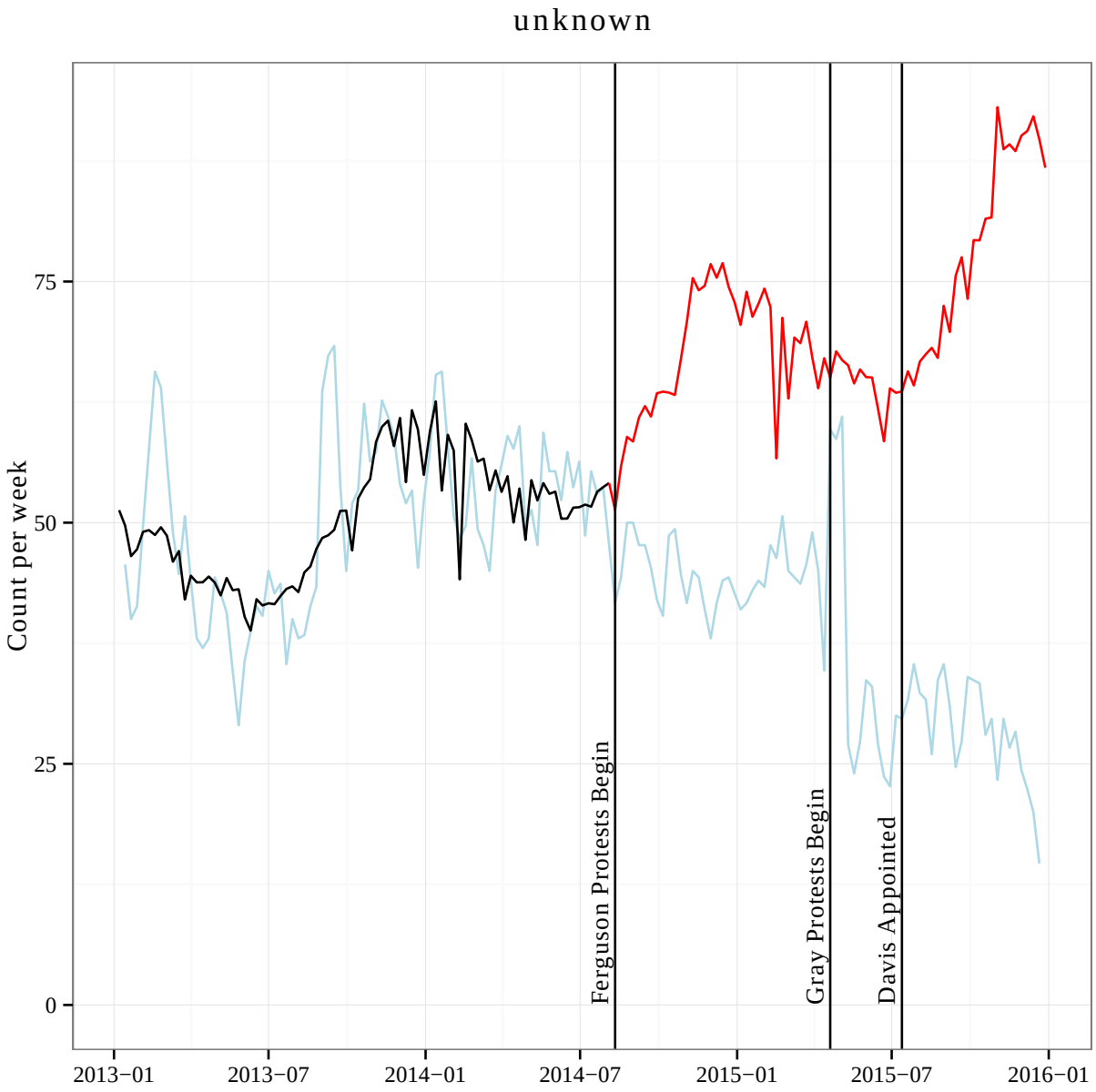

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.2936  -1.2251  -0.0399   1.0420   5.7482

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     3.3583049  0.2910328  11.539  < 2e-16 ***
t               0.0040292  0.0007060   5.707 1.15e-08 ***
tmax.f.spline1  0.0036485  0.0050979   0.716   0.4742
tmax.f.spline2 -0.0110853  0.0121800  -0.910   0.3628
tmax.f.spline3  0.0090641  0.0172115   0.527   0.5984
tmax.f.spline4 -0.0030355  0.0160187  -0.189   0.8497
tmax.f.spline5  0.0007885  0.0147519   0.053   0.9574
snow.in        -0.1004248  0.0554376  -1.811   0.0701 .
precip.in      -0.1457666  0.1021208  -1.427   0.1535
dark.before.12  0.0526243  0.0215324   2.444   0.0145 *
school          0.0514715  0.0695161   0.740   0.4590
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 269.84  on 82  degrees of freedom
Residual deviance: 212.08  on 72  degrees of freedom
AIC: 709.44

Number of Fisher Scoring iterations: 4
```


unknown
Count per week
120
80
40
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


unknown
Count per week
75
50
25
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

33 Results for ungrouped

33.1 Summary Values for ungrouped

Table 33.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
ungrouped	83	6.602	4.039	1	6	26

Table 33.2: Descriptives for Outcome After Ferguson Protests Begin

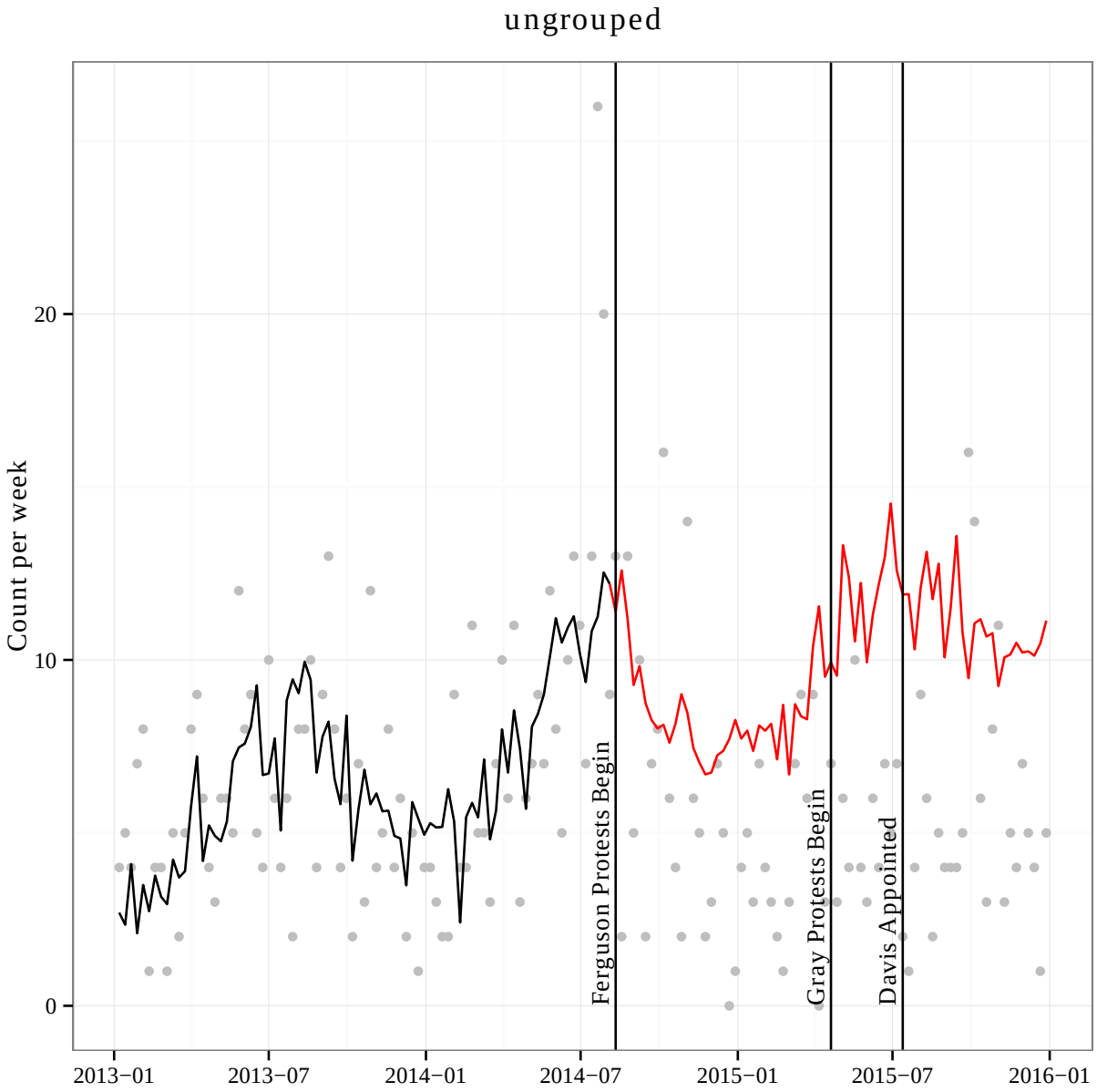
Statistic	N	Mean	St. Dev.	Min	Median	Max
ungrouped	73	5.493	3.594	0	5	16

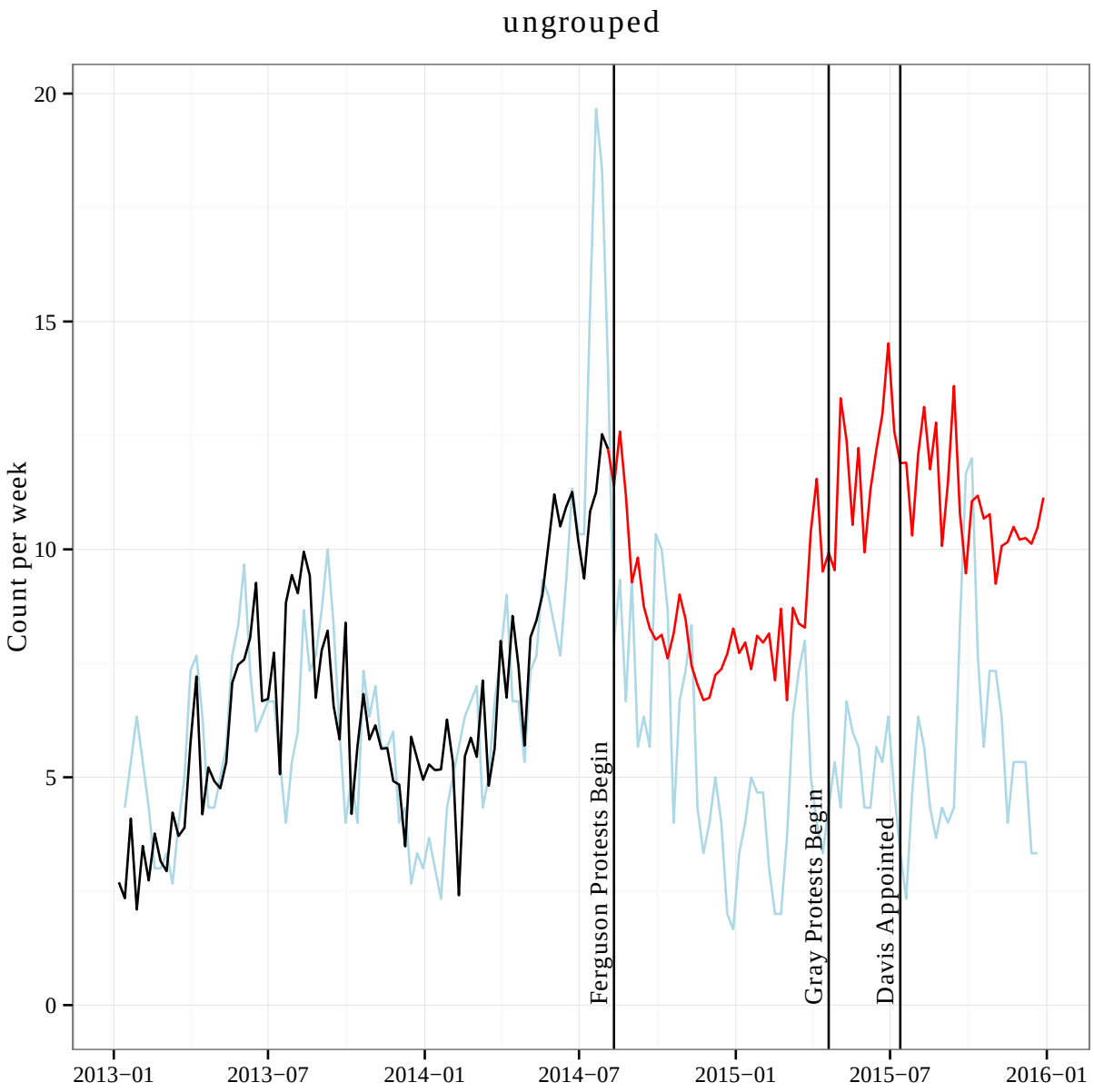
33.2 Four Models for ungrouped

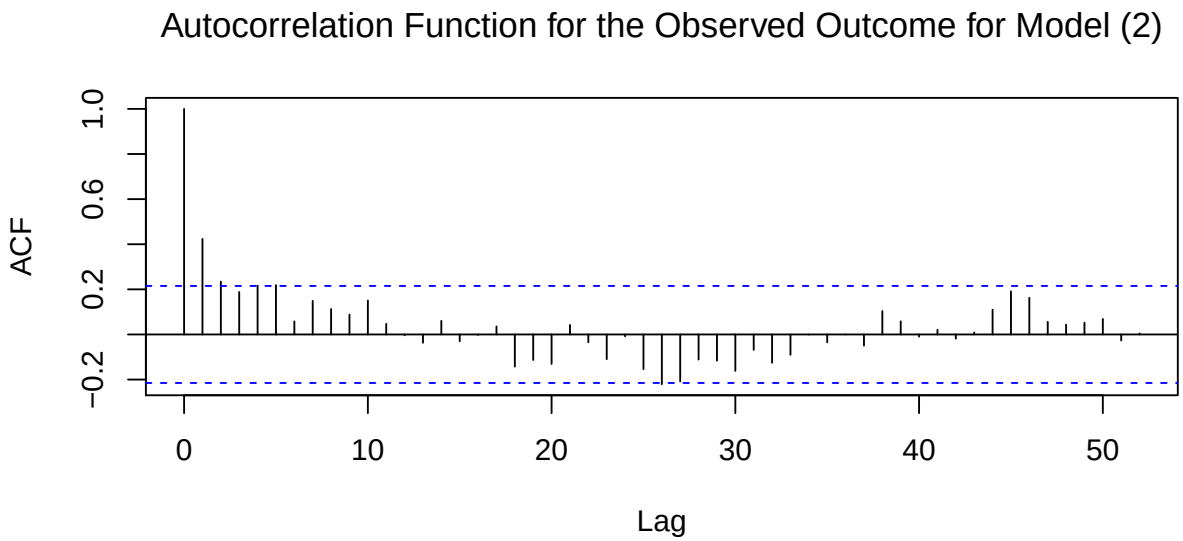
Table 33.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

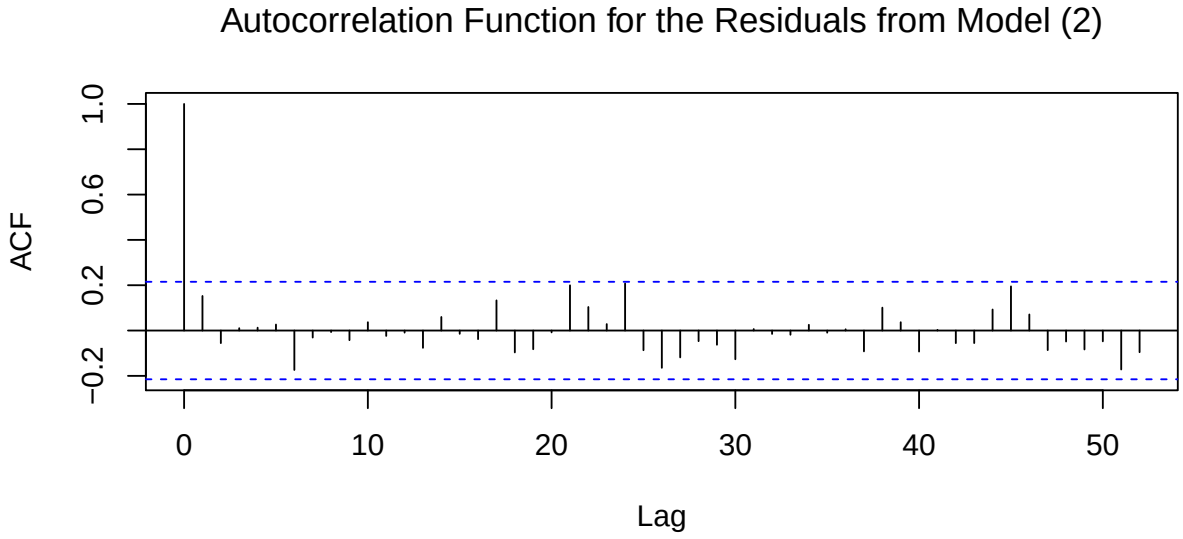
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.05	0.05		0.05
After Ferguson Protests Begin (week of 8/11/14 onward)	−3.98		−3.02	−3.20
After Gray Protests Begin (week of 4/20/15 onward)	−0.92		−3.24	−3.08
Unrest and National Guard (during week of 4/27/15)	−2.49		−0.28	−0.89
After Commissioner Batts Fired (week of 7/13/15 onward)	−1.08		0.78	1.06
Average Maximum Temperature to 50 Degrees		−0.06		0.02
Plus Degrees in the 50s		0.29		0.19
Plus Degrees in the 60s		−0.42		−0.27
Plus Degrees in the 70s		0.63		0.43
Plus Degrees greater than 80		−0.82		−0.77
Snowfall (inches)		−1.29		−1.12
Precipitation (inches)		−1.88		0.43
Darkness Before Midnight (hours)		−0.28		0.02
School Days (proportion of week)		−1.36		0.78
Observations	156	83	156	156
R^2	0.08	0.38	0.33	0.26

33.3 Least Squares Model (2) for ungrouped



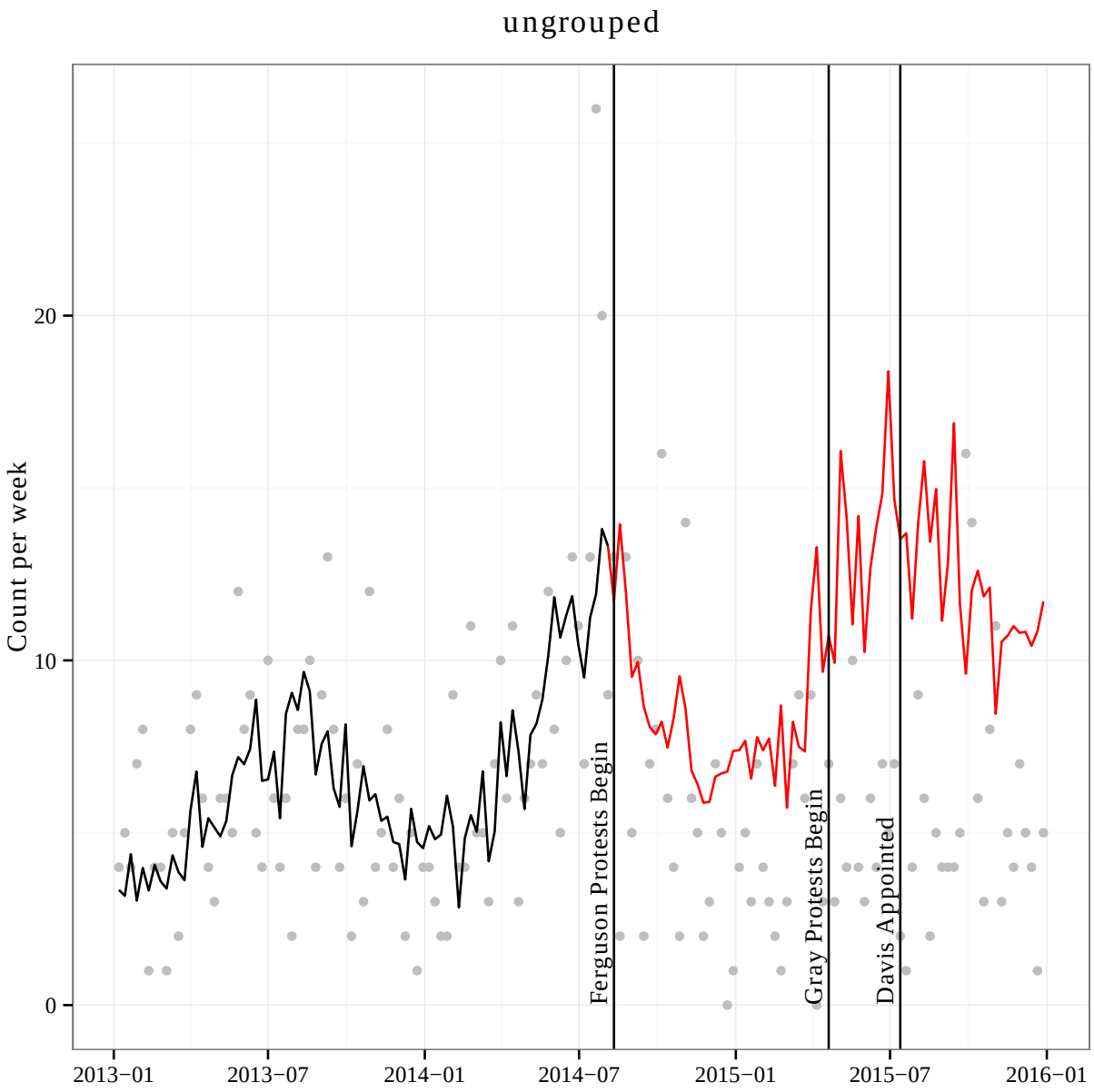

ungrouped
Count per week
20
15
10
5
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

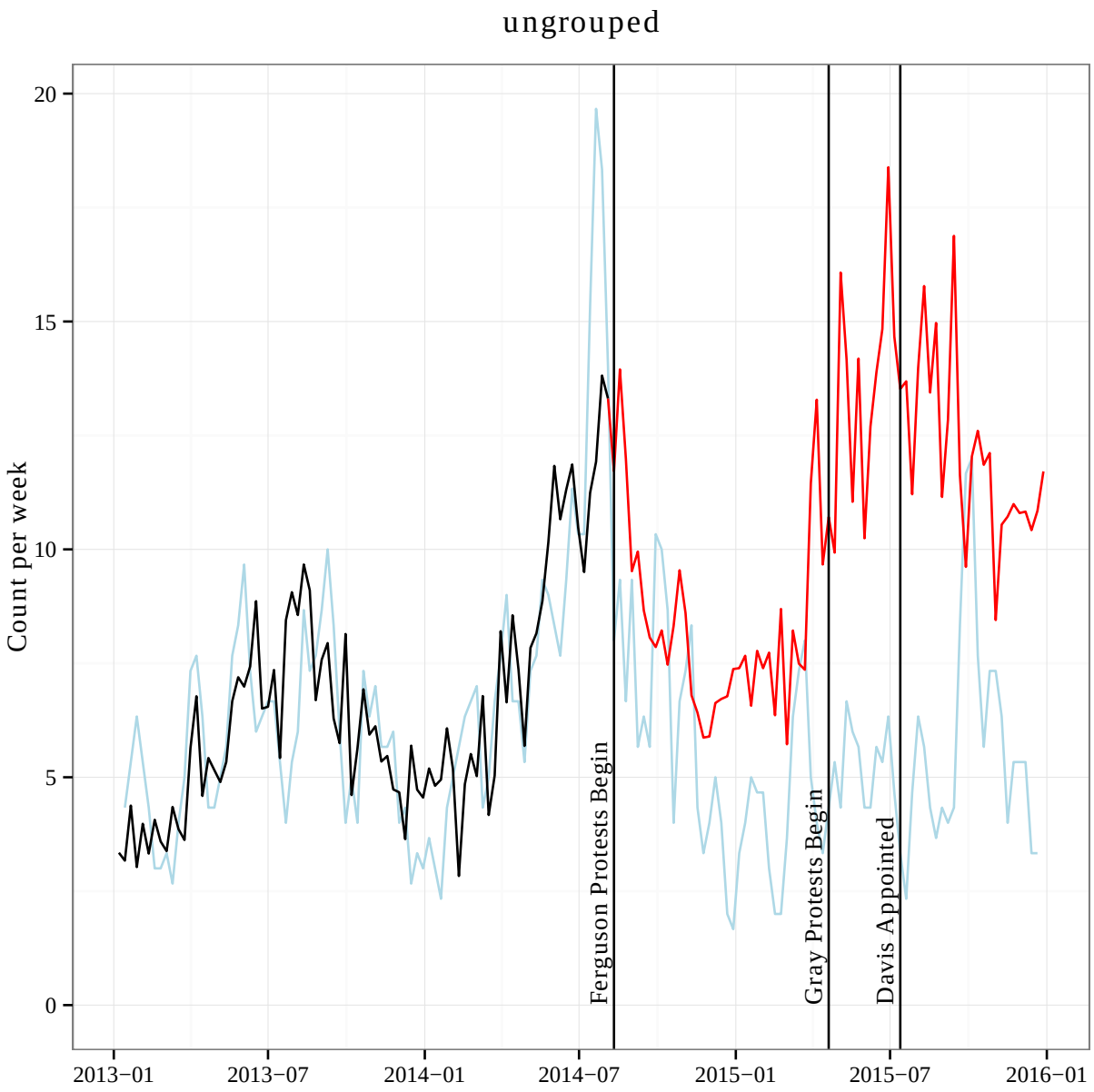

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.8421  -0.8703  -0.1836   0.5979   3.5192

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)     2.366674   0.943546   2.508 0.012132 *
t               0.006467   0.001899   3.405 0.000661 ***
tmax.f.spline1 -0.016554   0.017117  -0.967 0.333471
tmax.f.spline2  0.066399   0.038753   1.713 0.086644 .
tmax.f.spline3 -0.082834   0.049557  -1.671 0.094628 .
tmax.f.spline4  0.089354   0.044403   2.012 0.044183 *
tmax.f.spline5 -0.102132   0.036979  -2.762 0.005747 **
snow.in        -0.265945   0.204779  -1.299 0.194049
precip.in      -0.282613   0.285020  -0.992 0.321414
dark.before.12 -0.038068   0.067424  -0.565 0.572338
school         -0.146873   0.181030  -0.811 0.417182
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 179.40  on 82  degrees of freedom
Residual deviance: 103.47  on 72  degrees of freedom
AIC: 423.07

Number of Fisher Scoring iterations: 4
```


ungrouped
Count per week
20
10
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01


ungrouped
Count per week
20
15
10
5
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

34 Results for northwestern

34.1 Summary Values for northwestern

Table 34.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
northwestern	83	48.916	13.324	27	47	95

Table 34.2: Descriptives for Outcome After Ferguson Protests Begin

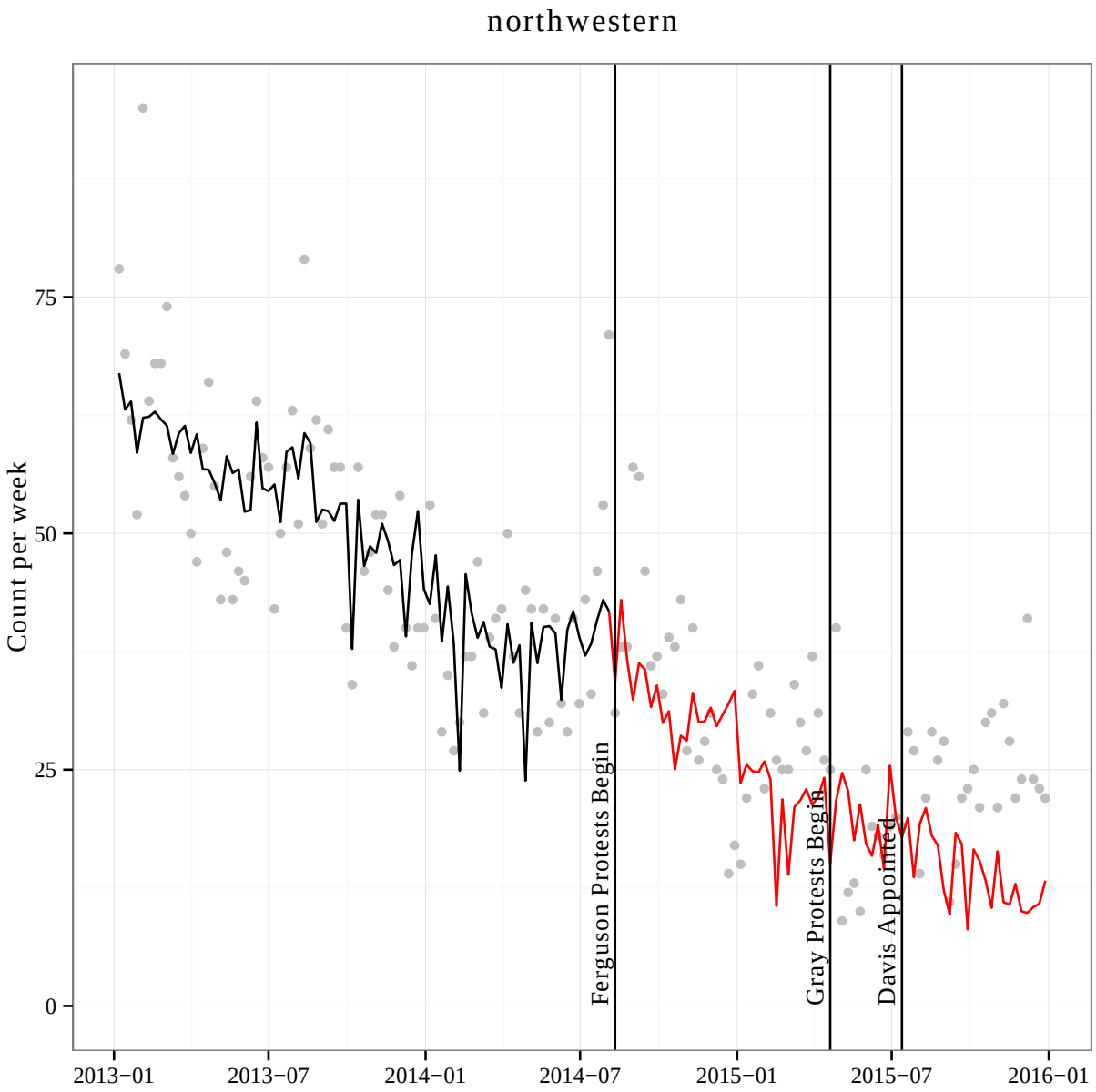
Statistic	N	Mean	St. Dev.	Min	Median	Max
northwestern	73	27.123	9.700	9	26	57

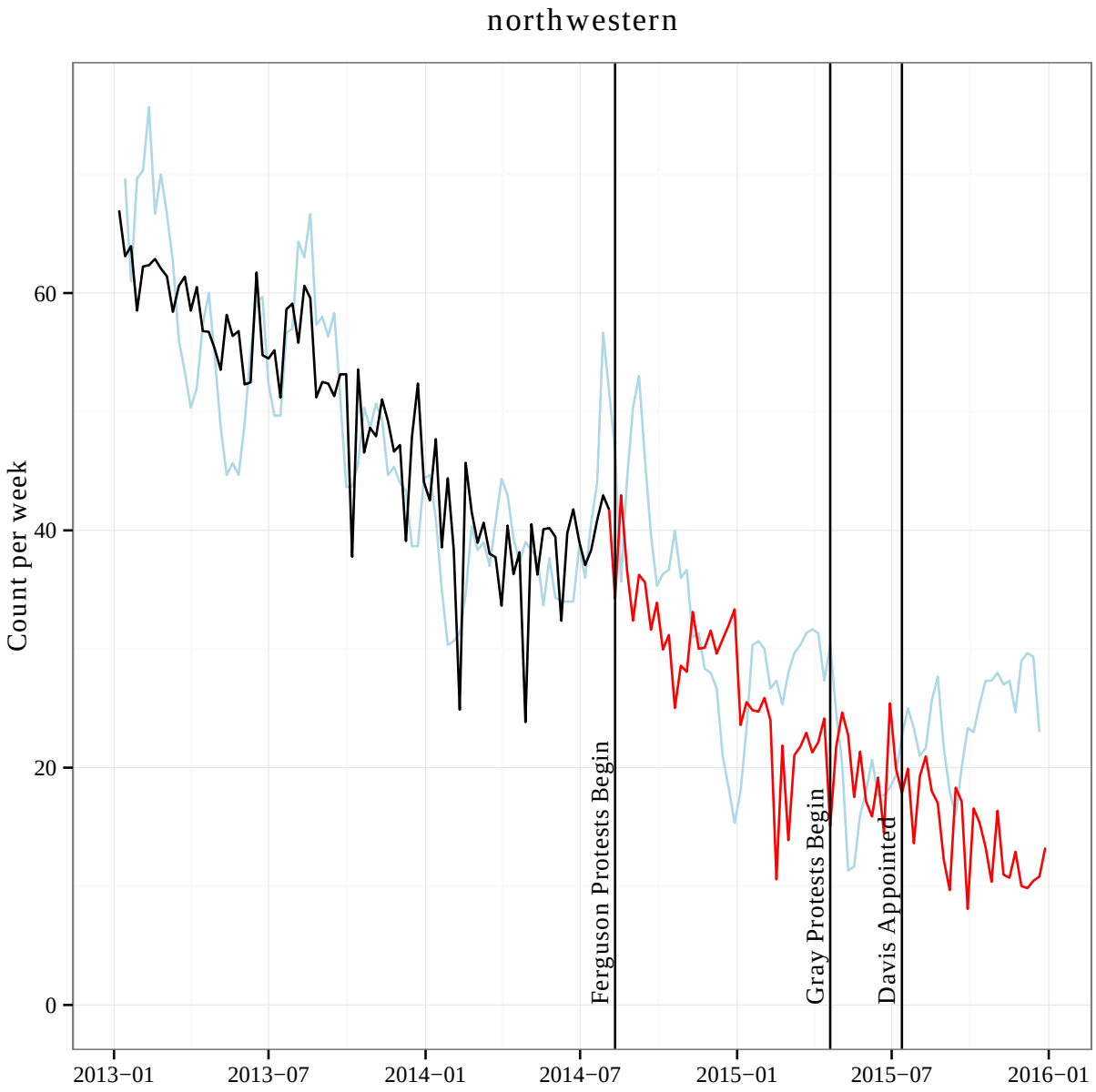
34.2 Four Models for northwestern

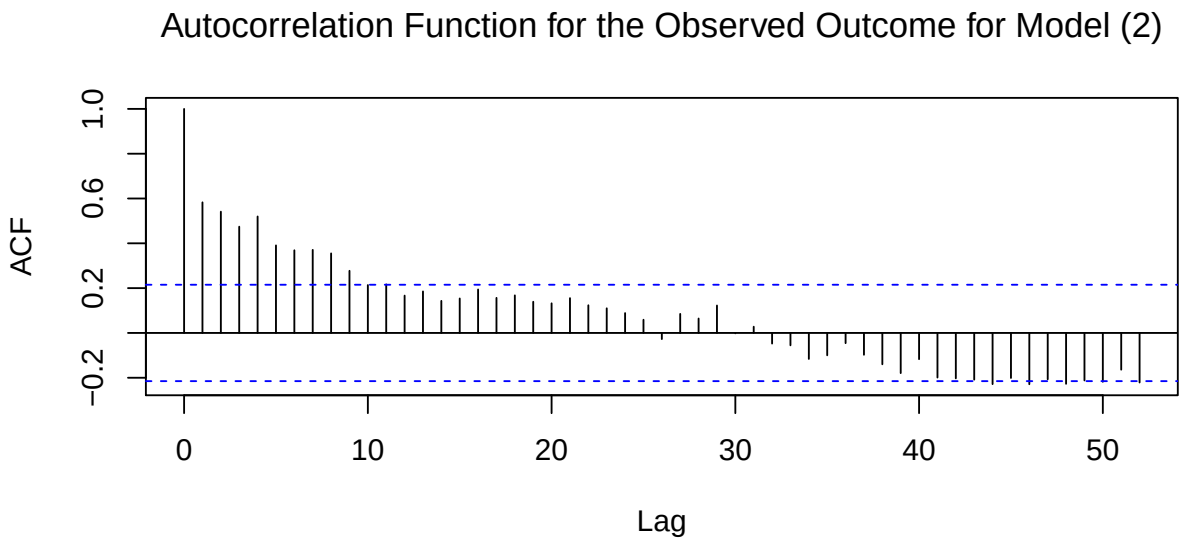
Table 34.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

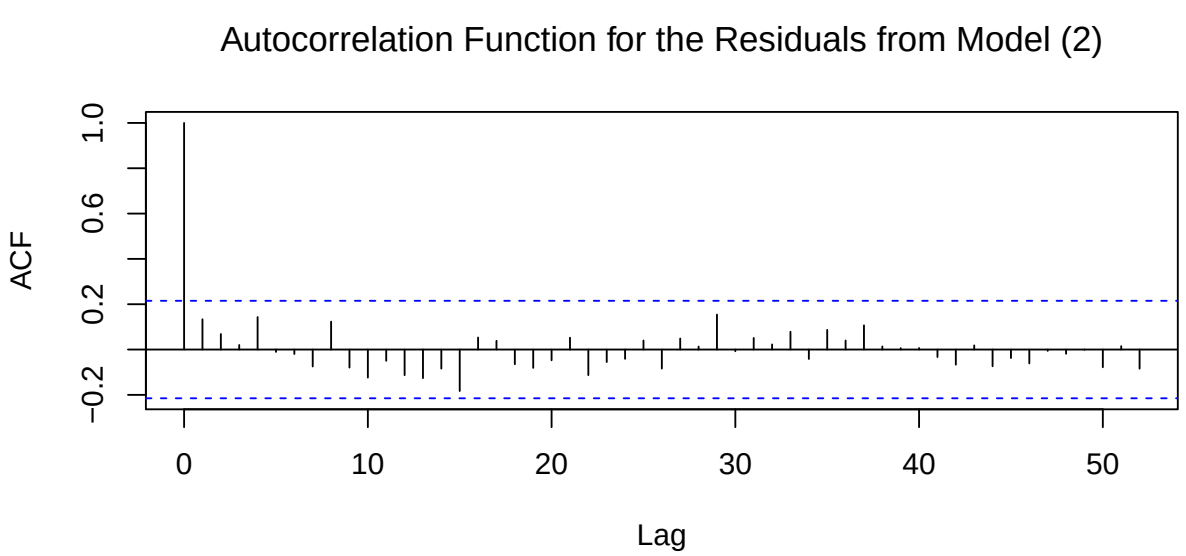
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.35	−0.35		−0.35
After Ferguson Protests Begin (week of 8/11/14 onward)	3.85		3.88	3.53
After Gray Protests Begin (week of 4/20/15 onward)	−6.30		−6.38	−6.59
Unrest and National Guard (during week of 4/27/15)	21.36		20.72	18.12
After Commissioner Batts Fired (week of 7/13/15 onward)	13.82		12.73	12.94
Average Maximum Temperature to 50 Degrees		0.32		−0.09
Plus Degrees in the 50s		−1.01		0.17
Plus Degrees in the 60s		1.30		0.03
Plus Degrees in the 70s		−0.35		−0.17
Plus Degrees greater than 80		−1.04		−0.26
Snowfall (inches)		−5.16		−4.68
Precipitation (inches)		−17.42		−16.07
Darkness Before Midnight (hours)		1.02		−0.32
School Days (proportion of week)		−7.66		−3.07
Observations	156	83	156	156
R^2	0.69	0.54	0.18	0.72

34.3 Least Squares Model (2) for northwestern



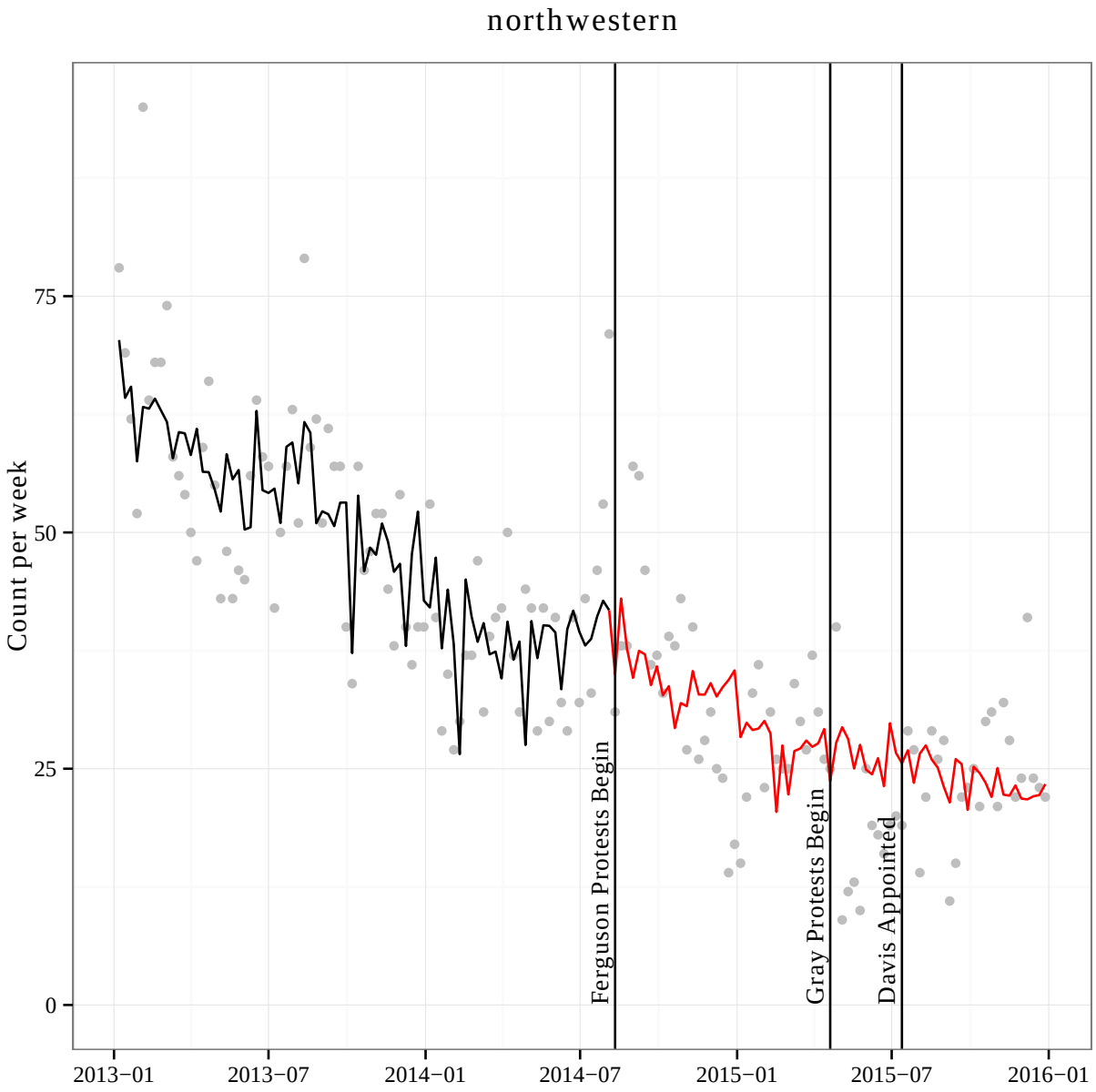

northwestern
Count per week
60
40
20
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

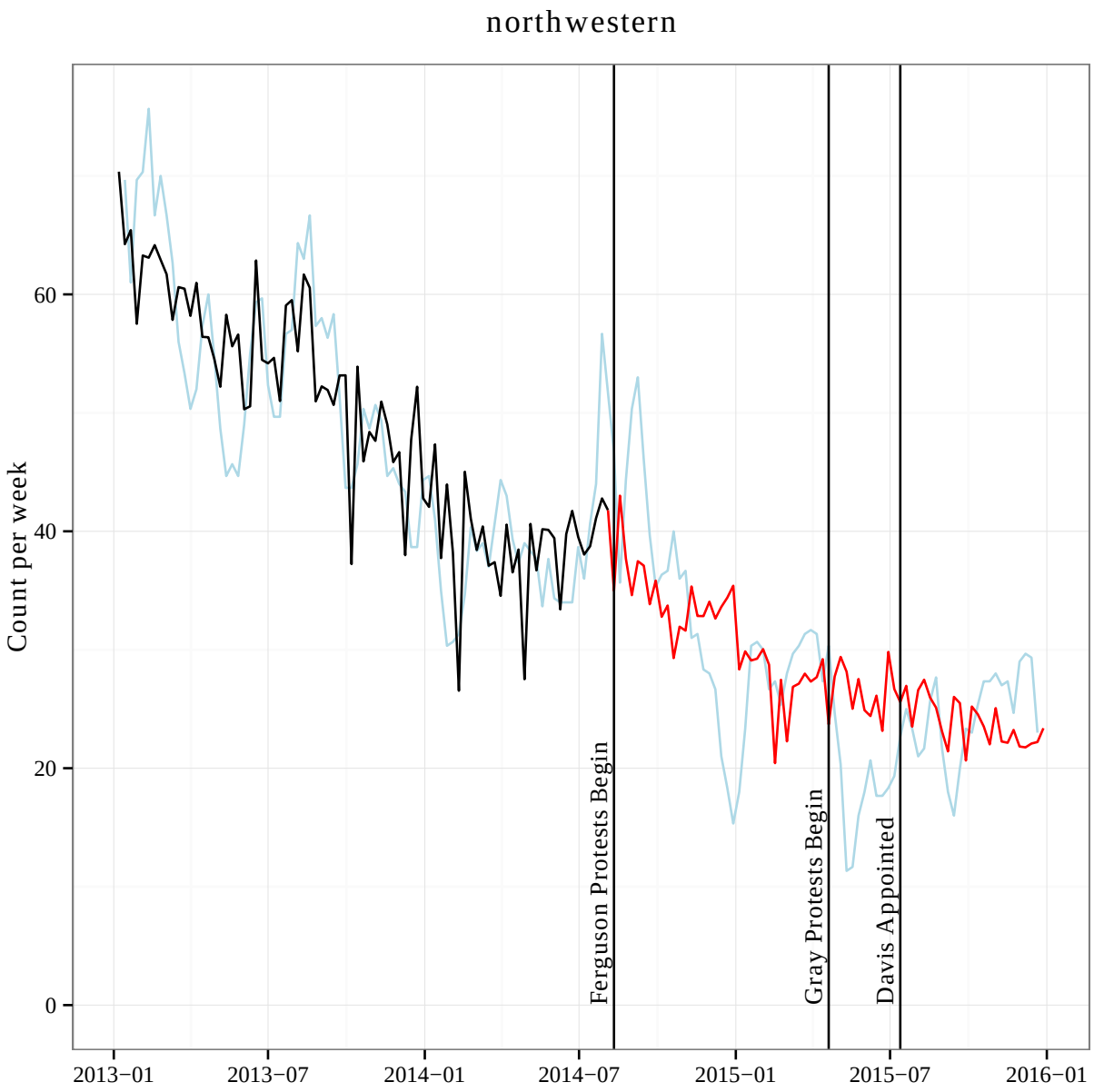

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

34.4 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
-1.9122  -1.0232   0.0203   0.6277   4.1059

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     3.8515342  0.2989610  12.883  < 2e-16 ***
t              -0.0070538  0.0007171  -9.837  < 2e-16 ***
tmax.f.spline1  0.0071644  0.0052621   1.362 0.173351
tmax.f.spline2 -0.0215594  0.0127691  -1.688 0.091333 .
tmax.f.spline3  0.0288149  0.0184159   1.565 0.117658
tmax.f.spline4 -0.0094032  0.0165519  -0.568 0.569963
tmax.f.spline5 -0.0200786  0.0144311  -1.391 0.164121
snow.in        -0.1400282  0.0657844  -2.129 0.033288 *
precip.in      -0.4104862  0.1107024  -3.708 0.000209 ***
dark.before.12  0.0282006  0.0225061   1.253 0.210197
school         -0.1673198  0.0699797  -2.391 0.016804 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 289.84  on 82  degrees of freedom
Residual deviance: 126.11  on 72  degrees of freedom
AIC: 620.86

Number of Fisher Scoring iterations: 4
```


northwestern
Count per week
75
50
25
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


northwestern
Count per week
60
40
20
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

35 Results for northern

35.1 Summary Values for northern

Table 35.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
northern	83	31.096	8.476	16	30	56

Table 35.2: Descriptives for Outcome After Ferguson Protests Begin

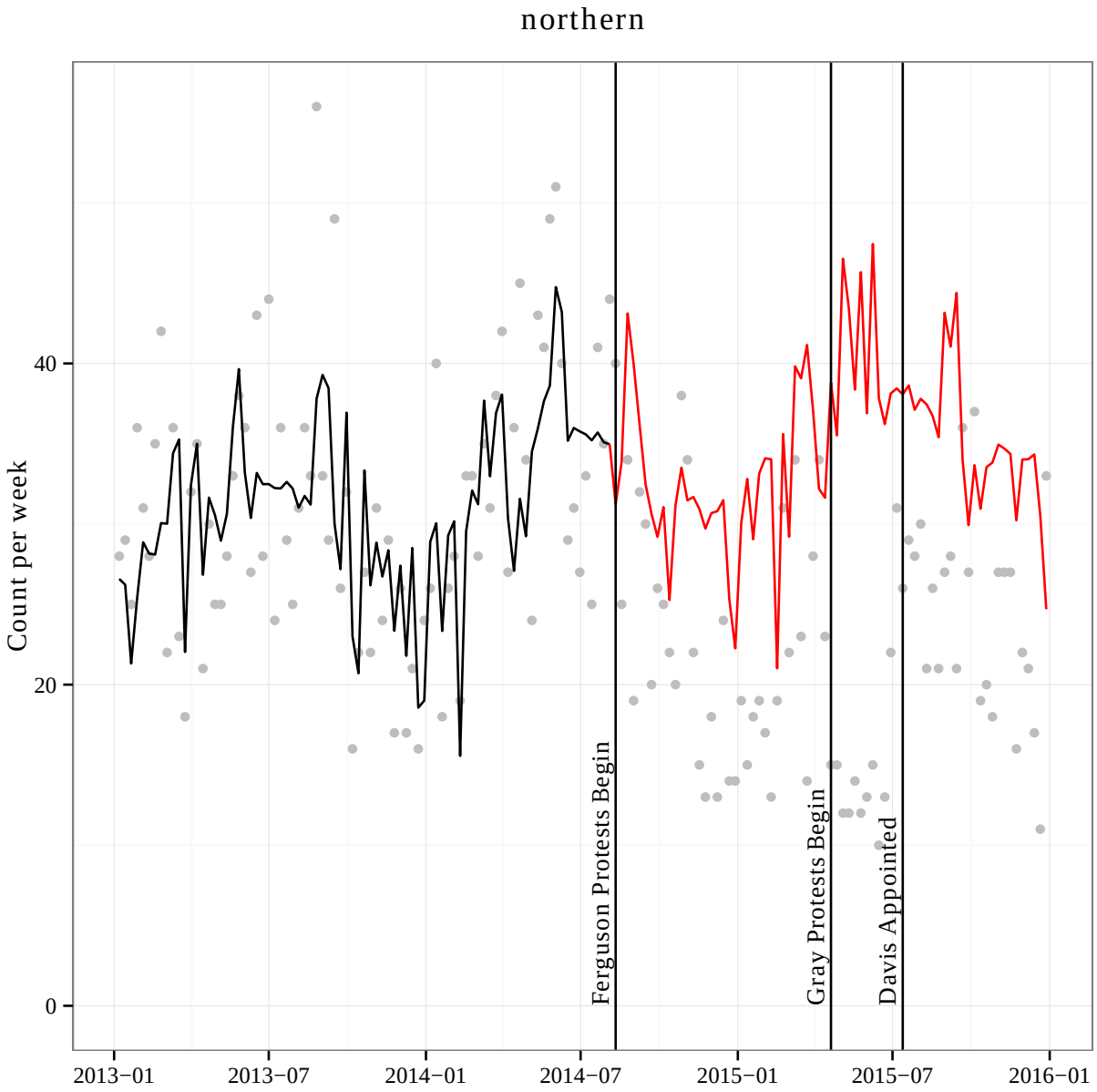
Statistic	N	Mean	St. Dev.	Min	Median	Max
northern	73	22.274	7.548	10	21	40

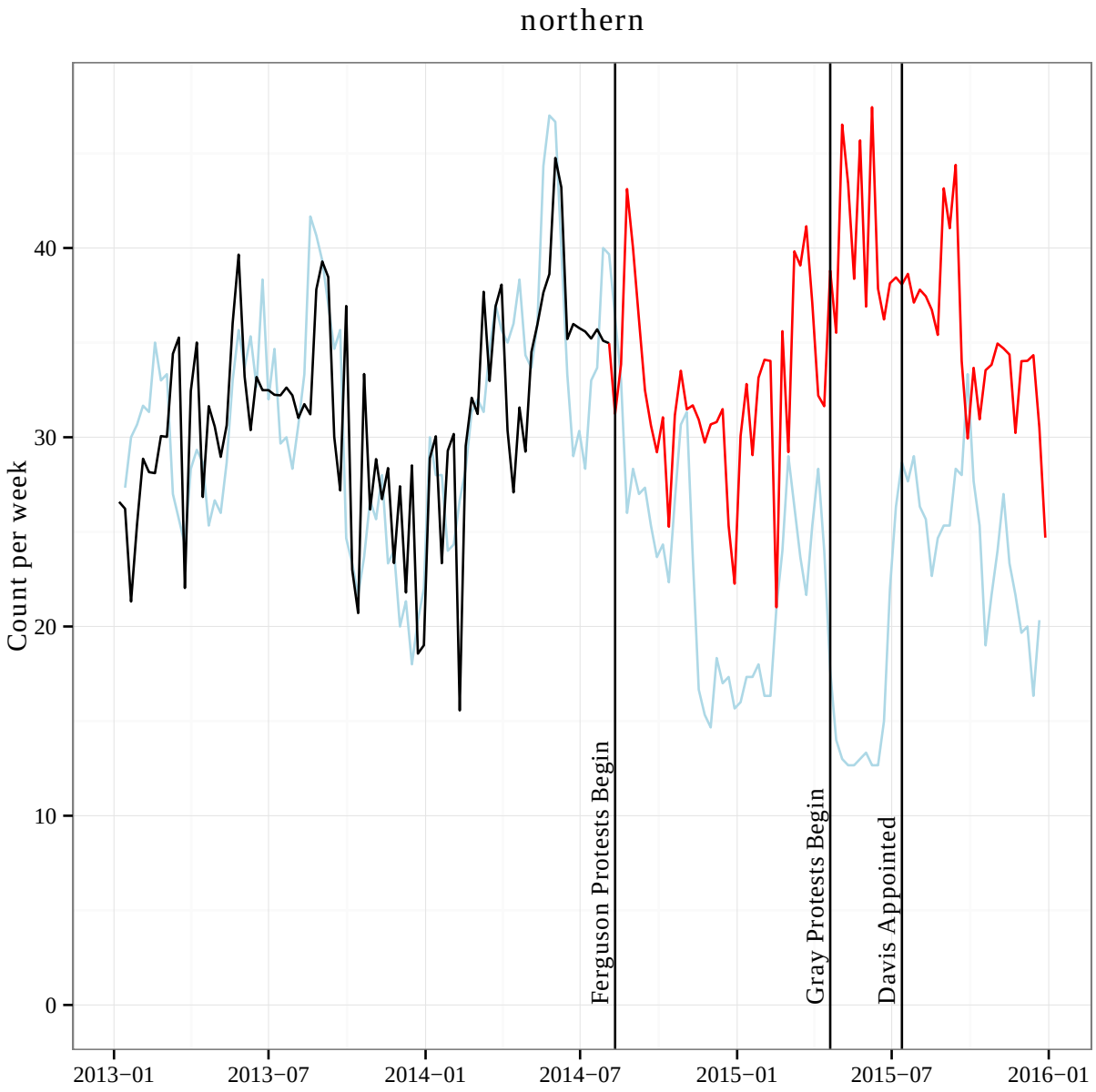
35.2 Four Models for northern

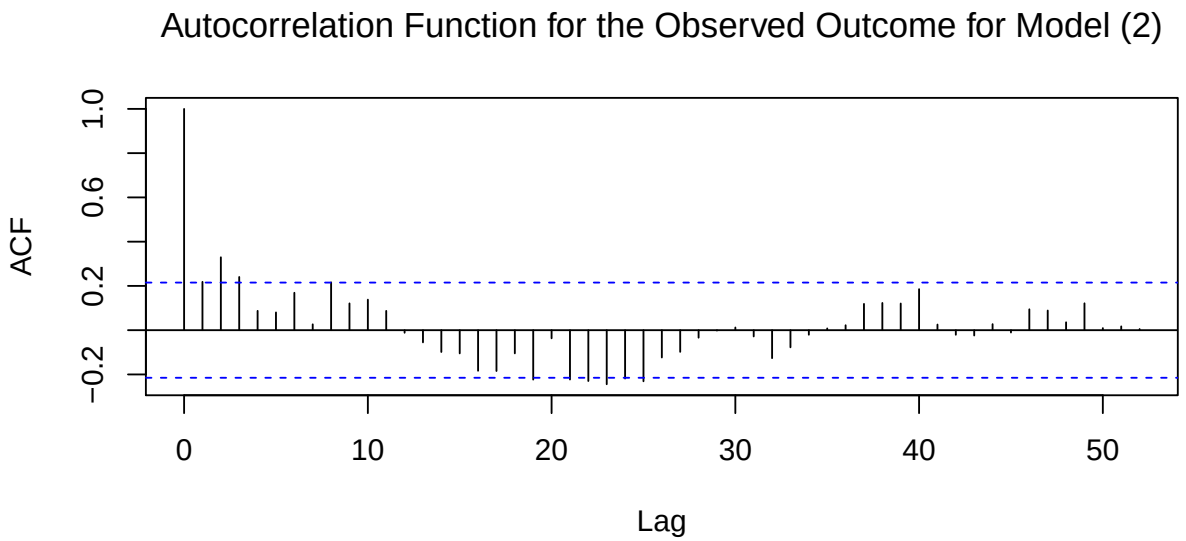
Table 35.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

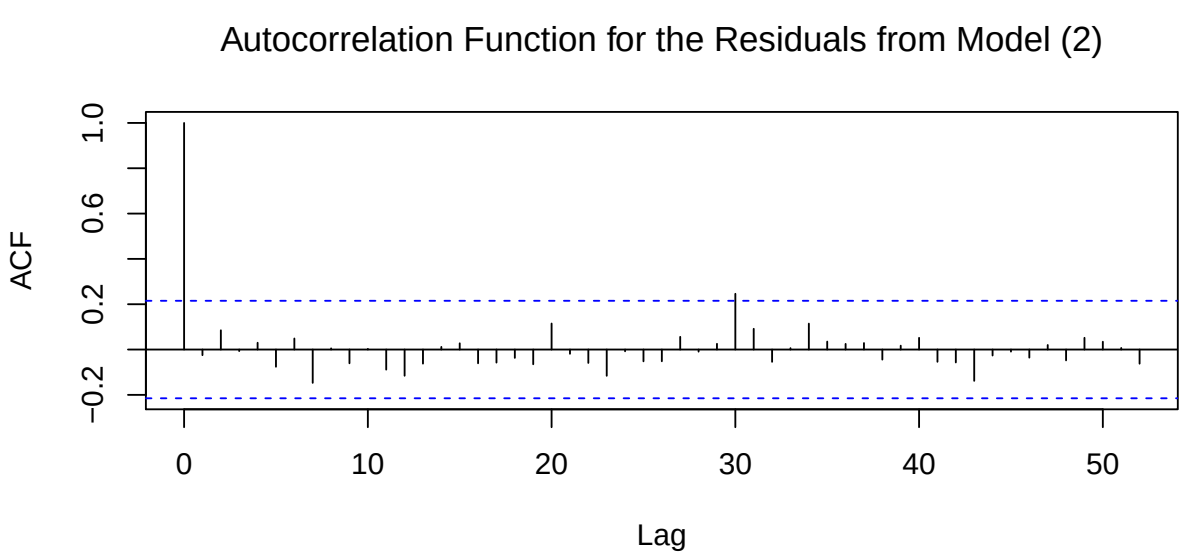
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.04	0.06		0.03
After Ferguson Protests Begin (week of 8/11/14 onward)	−10.50		−9.31	−7.85
After Gray Protests Begin (week of 4/20/15 onward)	−8.58		−16.04	−15.00
Unrest and National Guard (during week of 4/27/15)	−0.17		4.82	2.95
After Commissioner Batts Fired (week of 7/13/15 onward)	8.52		14.84	14.99
Average Maximum Temperature to 50 Degrees		−0.02		−0.11
Plus Degrees in the 50s		0.01		0.66
Plus Degrees in the 60s		−1.03		−1.46
Plus Degrees in the 70s		2.31		1.77
Plus Degrees greater than 80		−1.32		−1.27
Snowfall (inches)		−5.99		−4.12
Precipitation (inches)		−4.80		−3.33
Darkness Before Midnight (hours)		−3.54		−2.85
School Days (proportion of week)		13.02		6.07
Observations	156	83	156	156
R^2	0.29	0.42	0.53	0.50

35.3 Least Squares Model (2) for northern



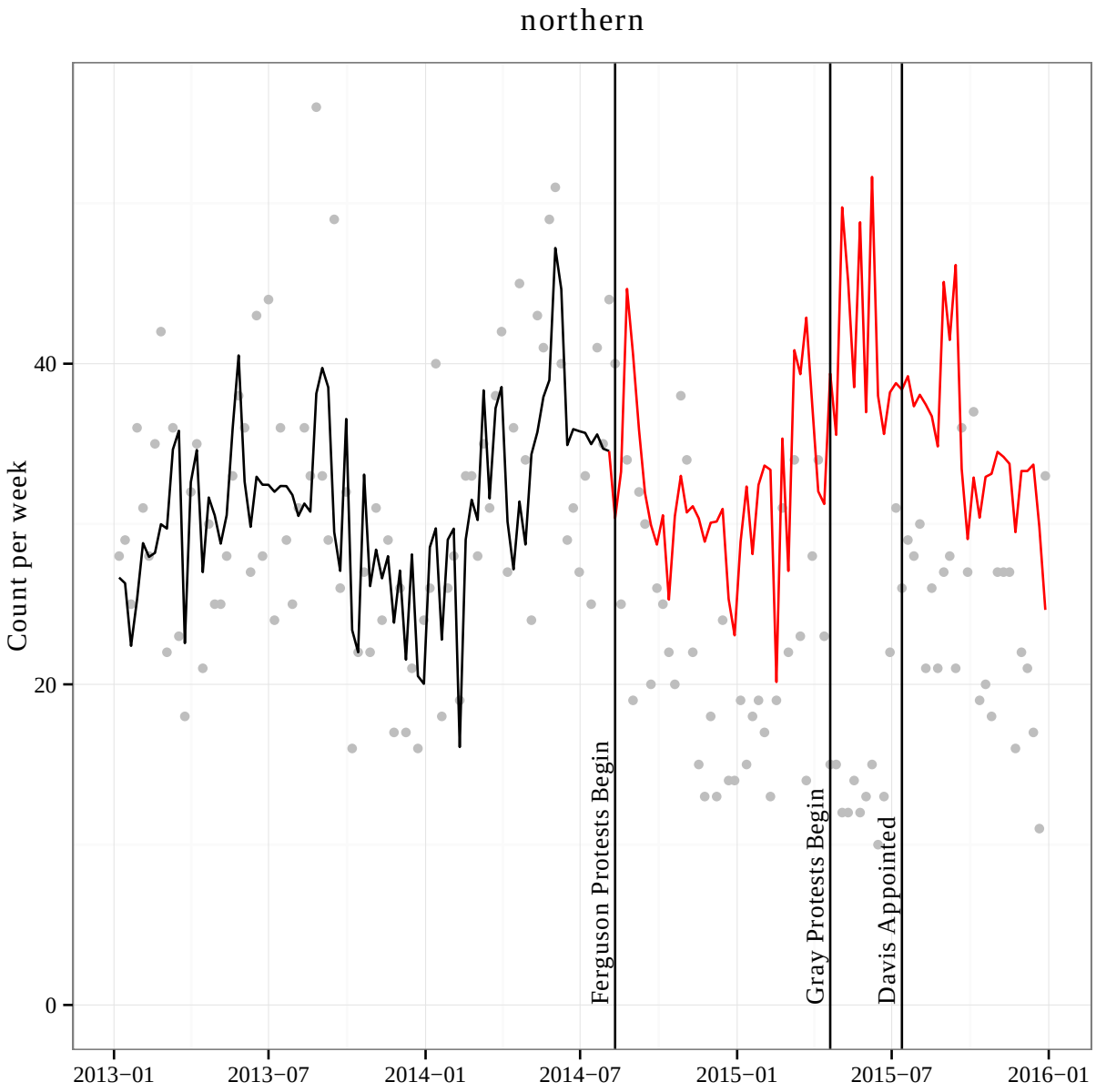

northern
Count per week
0
10
20
30
40
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

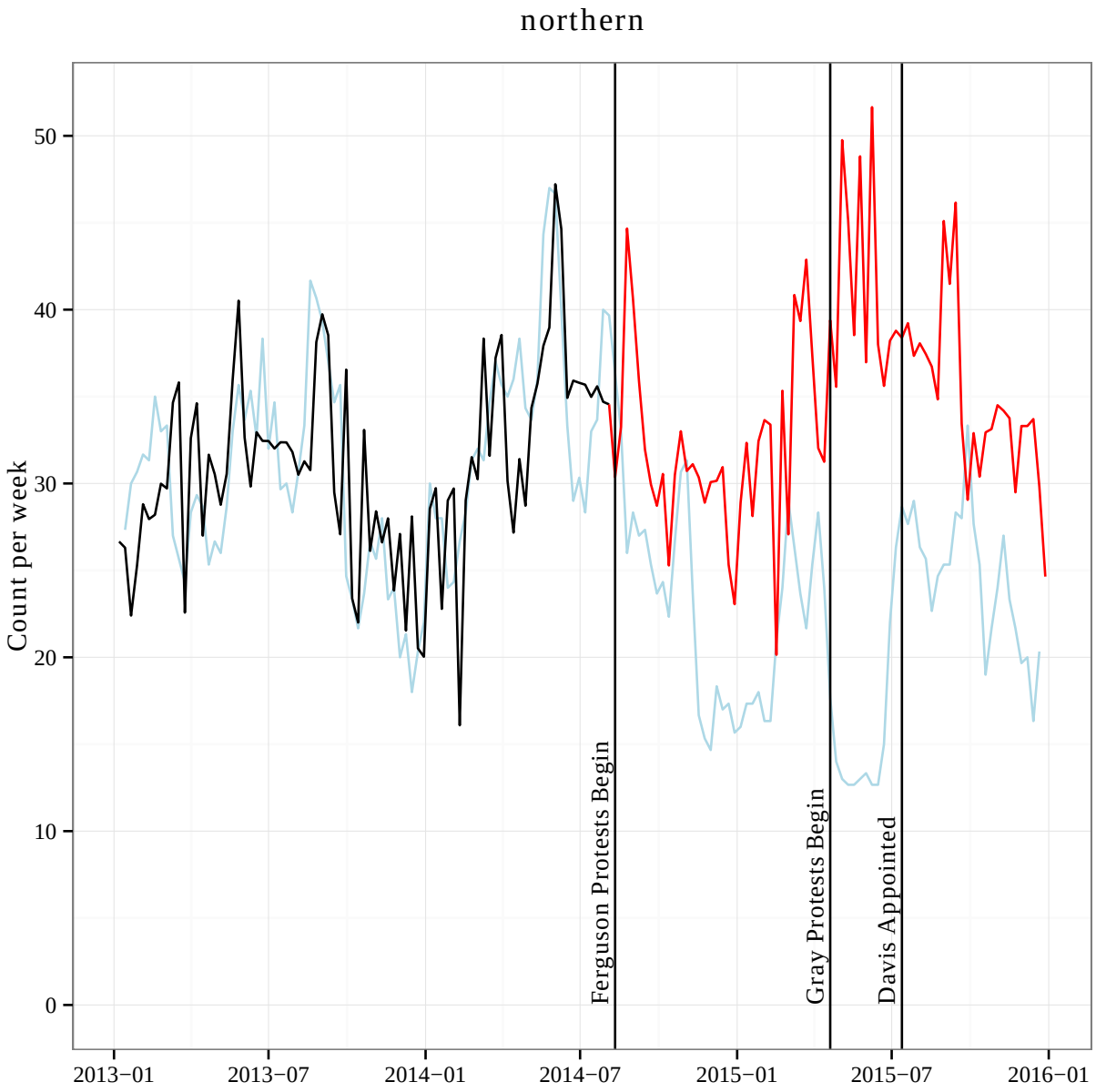

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.2928  -0.8350  -0.2084   0.5630   3.2771

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     3.8751900  0.4062343   9.539  < 2e-16 ***
t               0.0017697  0.0008779   2.016 0.043826 *
tmax.f.spline1 -0.0007407  0.0071974  -0.103 0.918034
tmax.f.spline2 -0.0006516  0.0163077  -0.040 0.968126
tmax.f.spline3 -0.0326394  0.0222529  -1.467 0.142445
tmax.f.spline4  0.0726652  0.0203929   3.563 0.000366 ***
tmax.f.spline5 -0.0391332  0.0174850  -2.238 0.025215 *
snow.in        -0.2487057  0.0851536  -2.921 0.003493 **
precip.in      -0.1726776  0.1309528  -1.319 0.187295
dark.before.12 -0.1210095  0.0287727  -4.206 2.60e-05 ***
school          0.4134793  0.0875396   4.723 2.32e-06 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 186.97  on 82  degrees of freedom
Residual deviance: 105.37  on 72  degrees of freedom
AIC: 562.6

Number of Fisher Scoring iterations: 4
```


northern
Count per week
40
20
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01


northern
Count per week
50
40
30
20
10
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

36 Results for northeastern

36.1 Summary Values for northeastern

Table 36.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
northeastern	83	60.602	14.325	33	60	96

Table 36.2: Descriptives for Outcome After Ferguson Protests Begin

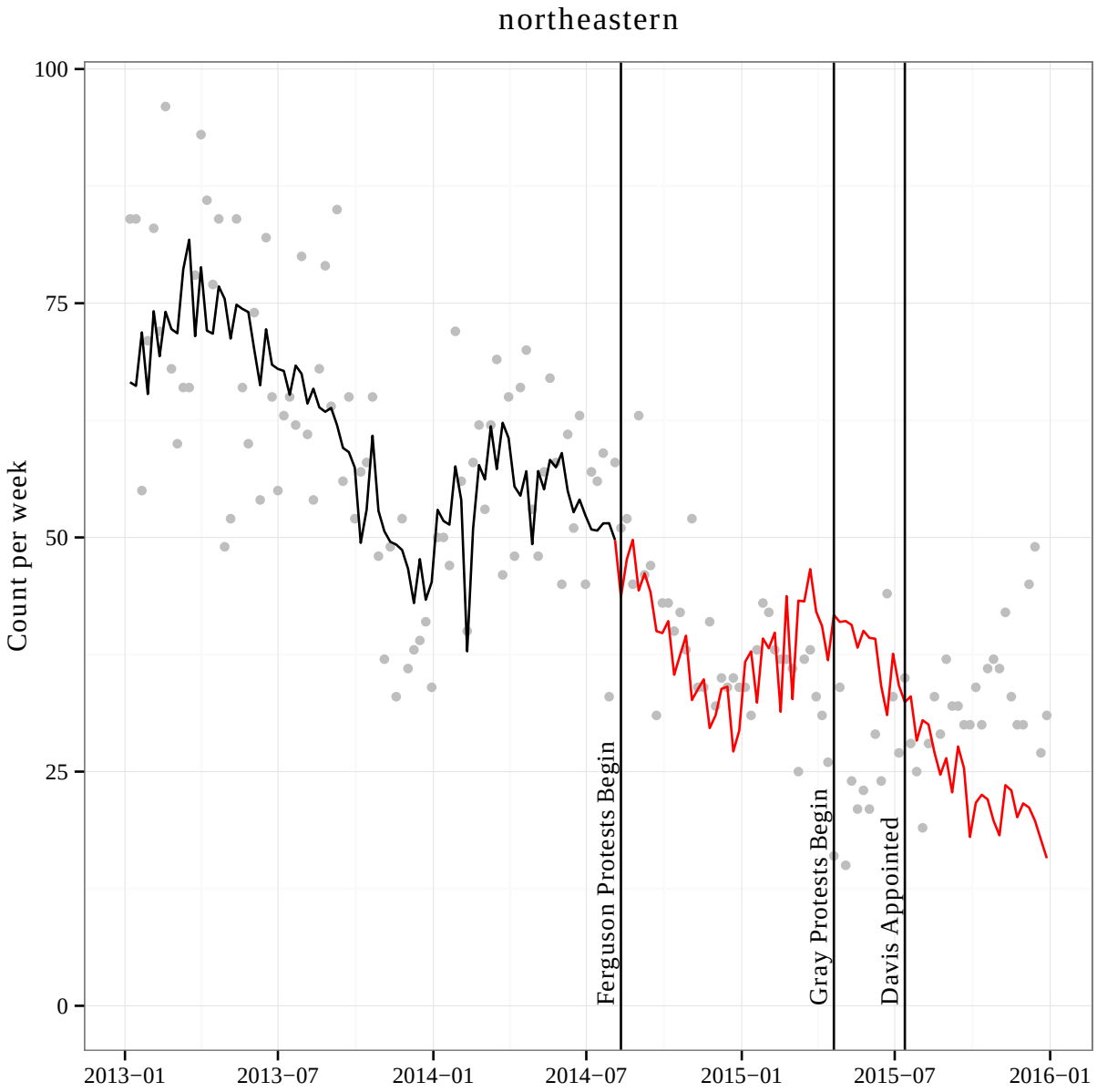
Statistic	N	Mean	St. Dev.	Min	Median	Max
northeastern	73	34.616	8.677	15	34	63

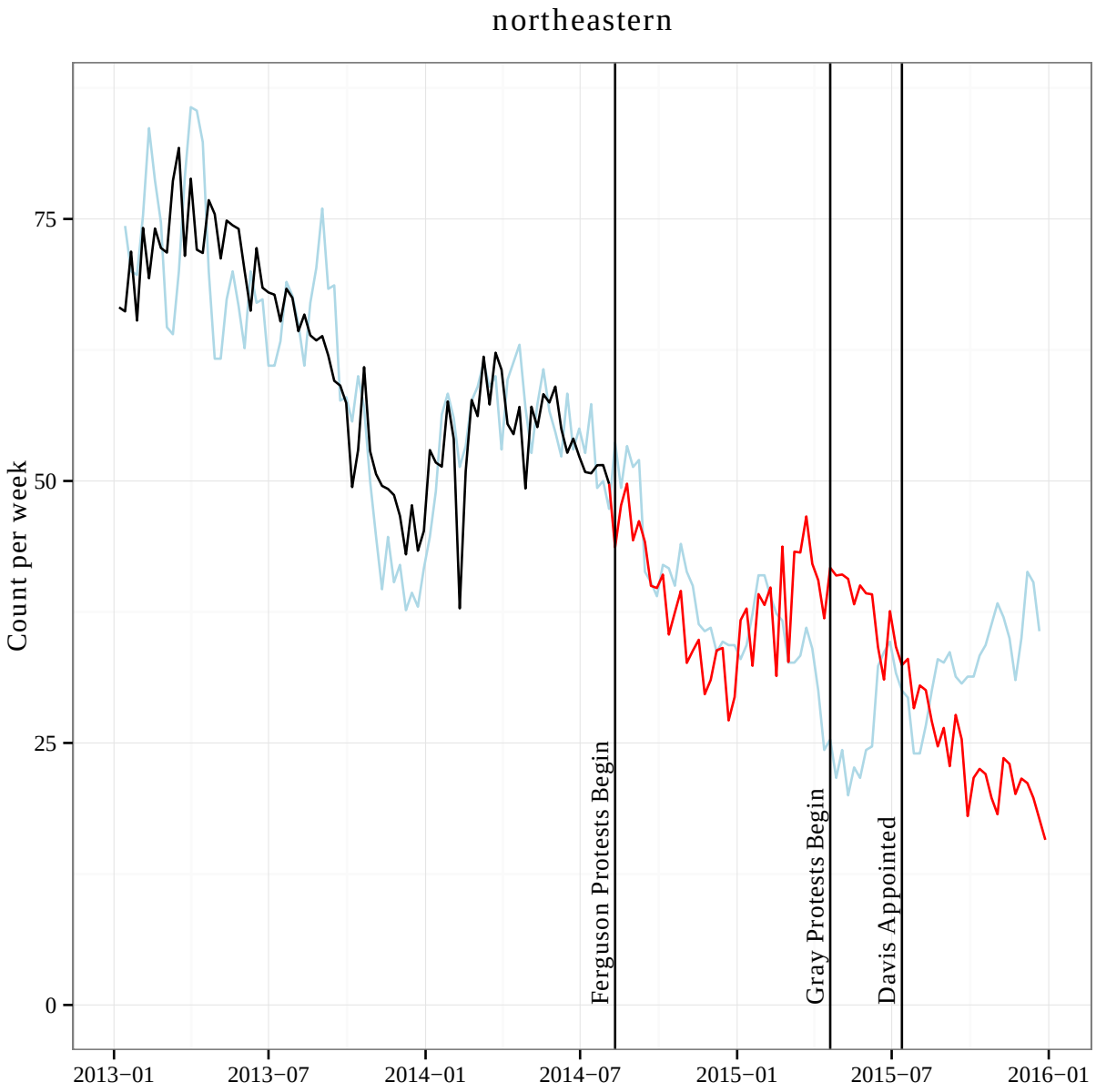
36.2 Four Models for northeastern

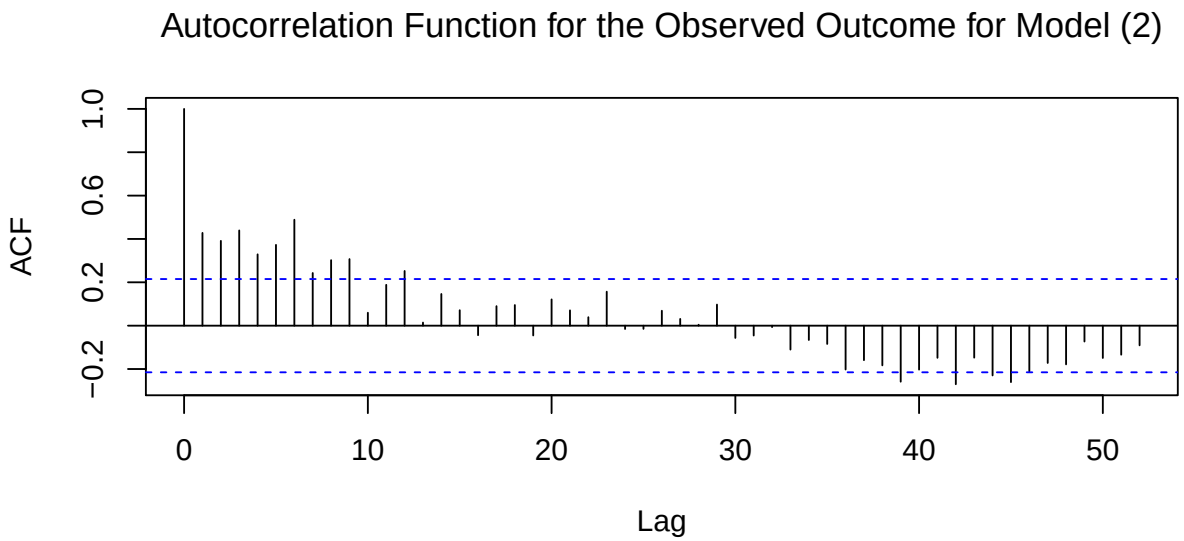
Table 36.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

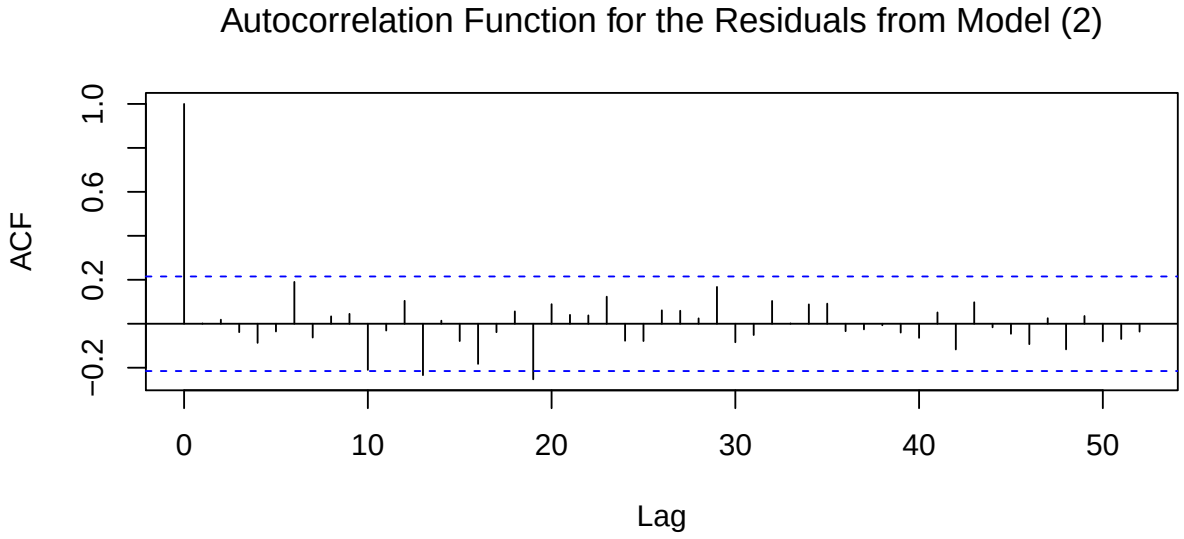
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.31	−0.33		−0.33
After Ferguson Protests Begin (week of 8/11/14 onward)	−3.61		0.51	−0.55
After Gray Protests Begin (week of 4/20/15 onward)	−6.20		−13.24	−10.89
Unrest and National Guard (during week of 4/27/15)	7.32		5.76	8.41
After Commissioner Batts Fired (week of 7/13/15 onward)	13.06		21.73	19.36
Average Maximum Temperature to 50 Degrees		−0.45		−0.51
Plus Degrees in the 50s		0.21		0.51
Plus Degrees in the 60s		−0.60		−0.73
Plus Degrees in the 70s		0.98		1.23
Plus Degrees greater than 80		−0.55		−1.25
Snowfall (inches)		−7.38		−7.13
Precipitation (inches)		−10.89		−4.25
Darkness Before Midnight (hours)		−7.59		−4.78
School Days (proportion of week)		5.53		3.96
Observations	156	83	156	156
R^2	0.68	0.48	0.21	0.73

36.3 Least Squares Model (2) for northeastern



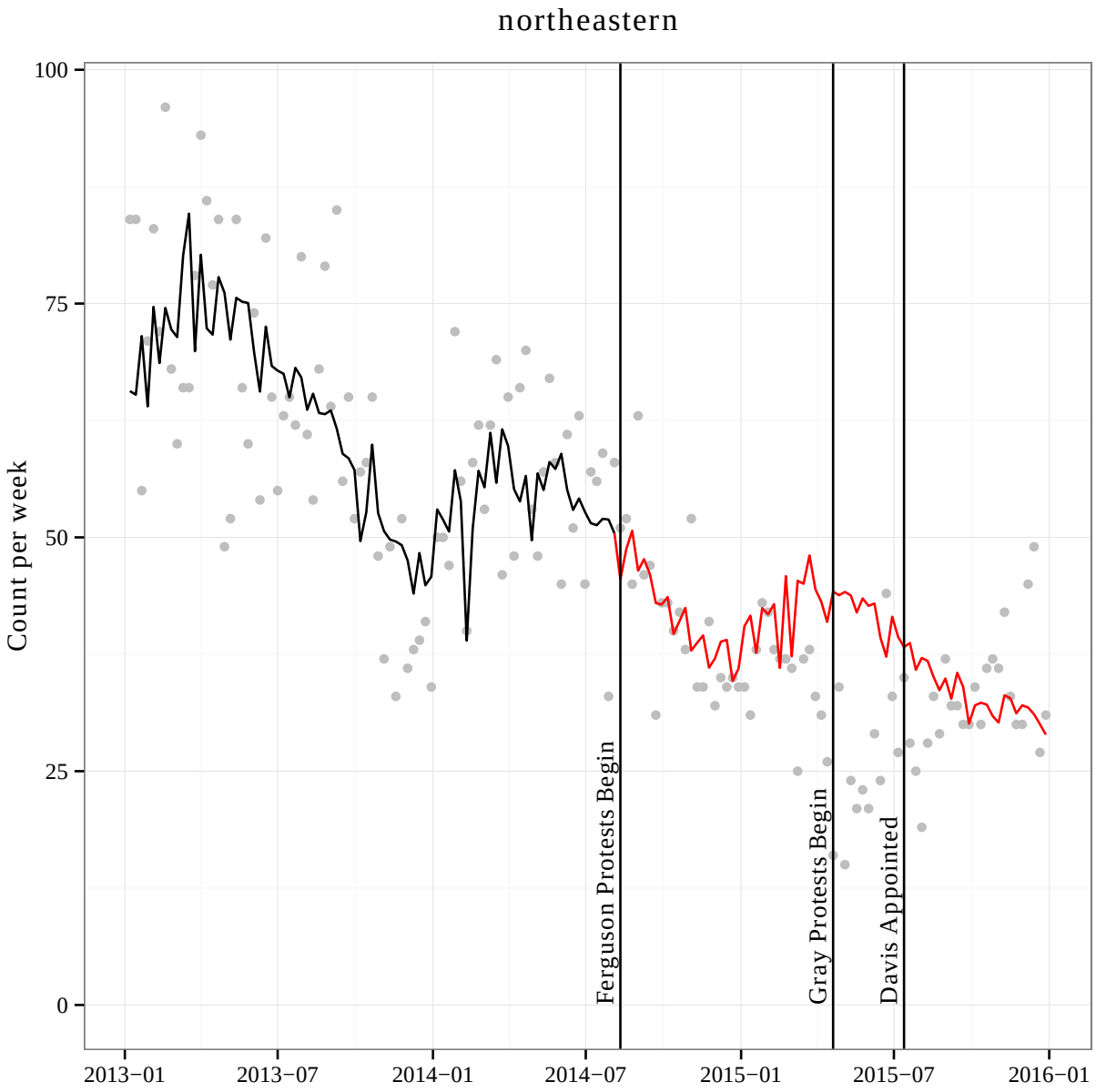

northeastern
Count per week
75
50
25
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

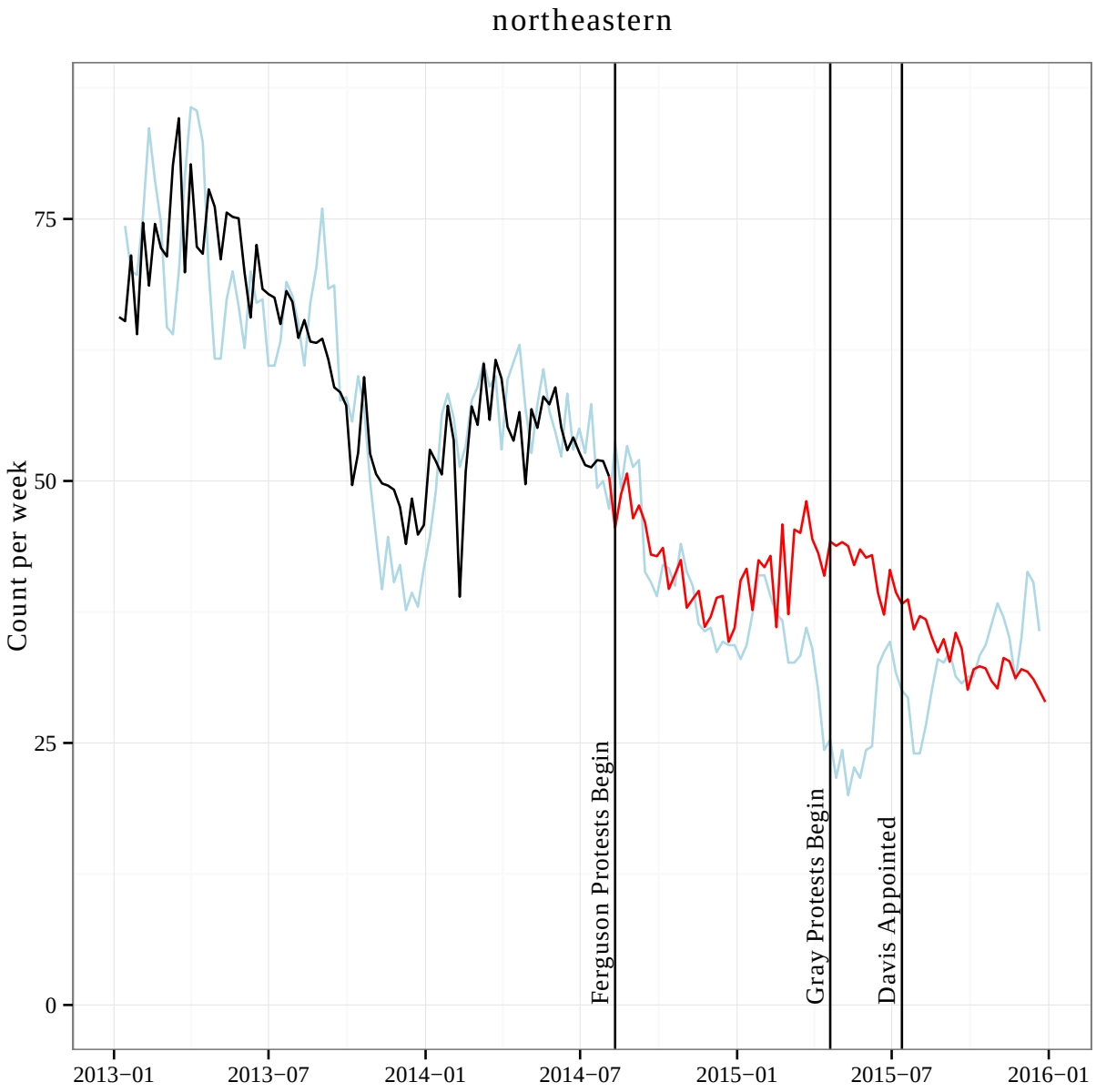

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

36.4 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
-3.3317  -1.0352   0.1038   0.9486   2.8143

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     5.3898378  0.2769620  19.461  < 2e-16 ***
t              -0.0052750  0.0006327  -8.337  < 2e-16 ***
tmax.f.spline1 -0.0076718  0.0048377  -1.586   0.1128
tmax.f.spline2  0.0033119  0.0113723   0.291   0.7709
tmax.f.spline3 -0.0090321  0.0160922  -0.561   0.5746
tmax.f.spline4  0.0162694  0.0146723   1.109   0.2675
tmax.f.spline5 -0.0091641  0.0128115  -0.715   0.4744
snow.in        -0.1442385  0.0563347  -2.560   0.0105 *
precip.in      -0.1833470  0.0943452  -1.943   0.0520 .
dark.before.12 -0.1254862  0.0205002  -6.121 9.29e-10 ***
school          0.0974345  0.0638229   1.527   0.1269
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 279.19  on 82  degrees of freedom
Residual deviance: 146.84  on 72  degrees of freedom
AIC: 659.91

Number of Fisher Scoring iterations: 4
```


northeastern
Count per week
100
75
50
25
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


northeastern
Count per week
75
50
25
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

37 Results for western

37.1 Summary Values for western

Table 37.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
western	83	66.663	16.511	29	66	114

Table 37.2: Descriptives for Outcome After Ferguson Protests Begin

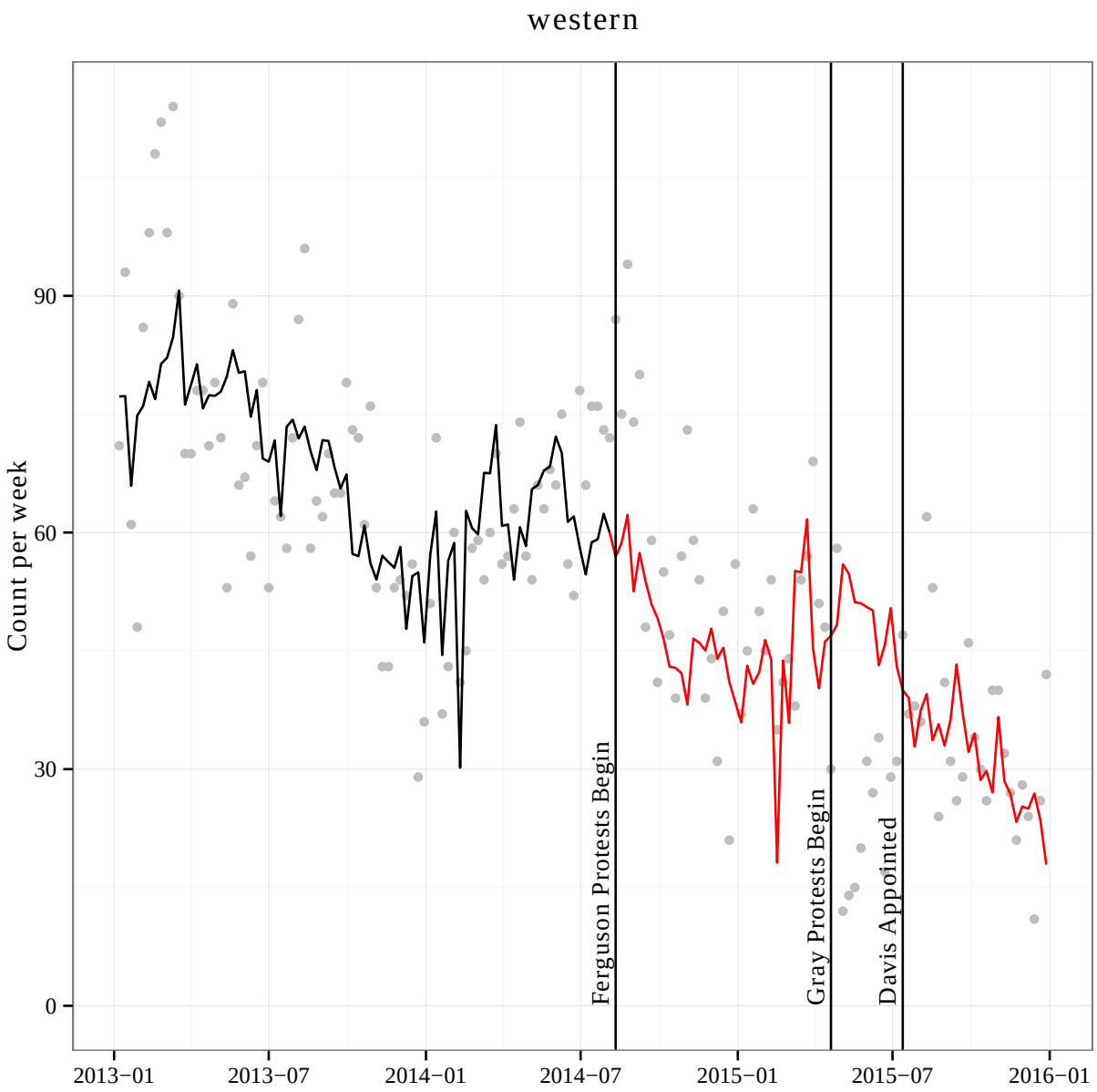
Statistic	N	Mean	St. Dev.	Min	Median	Max
western	73	42.233	17.618	11	40	94

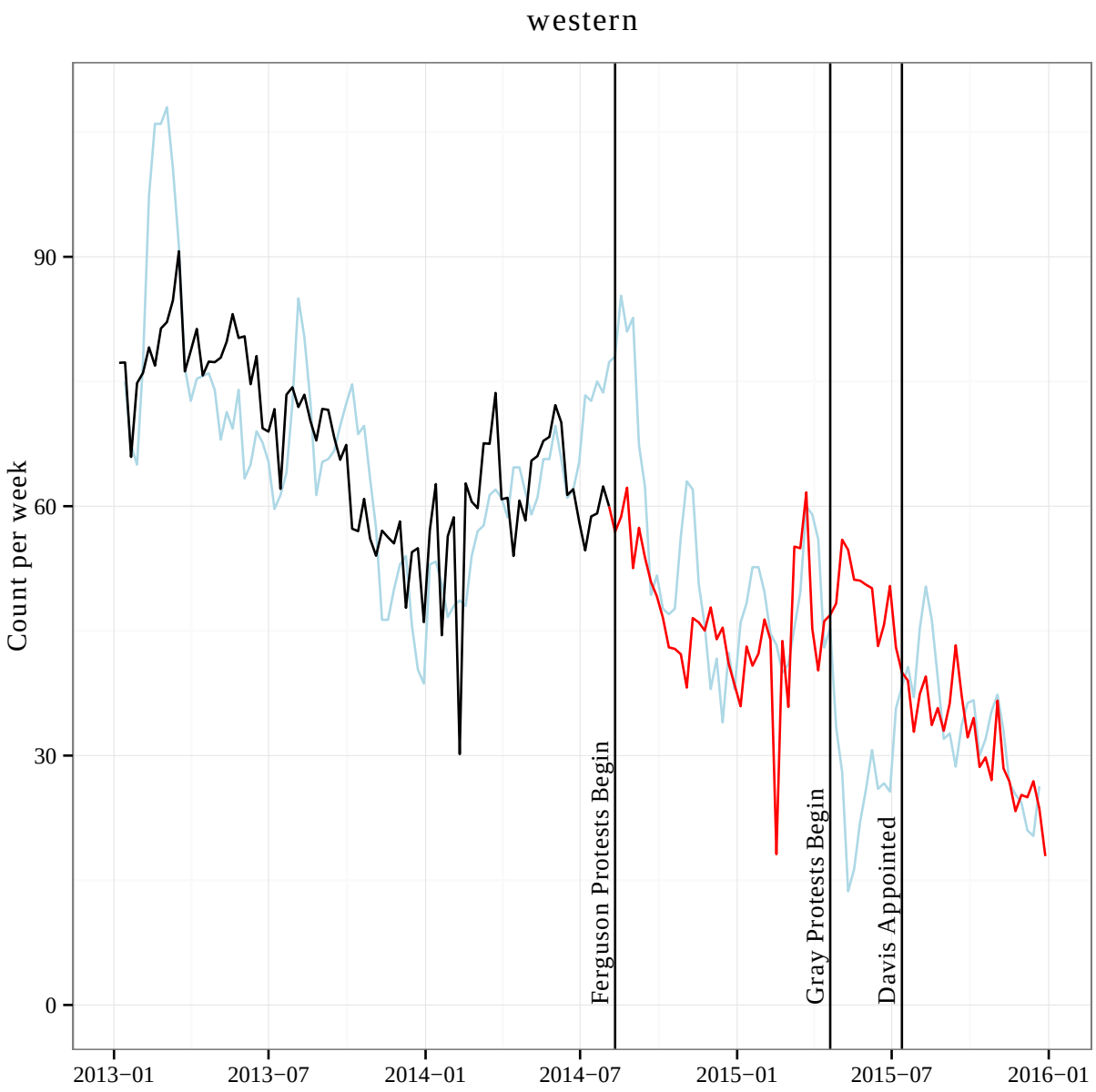
37.2 Four Models for western

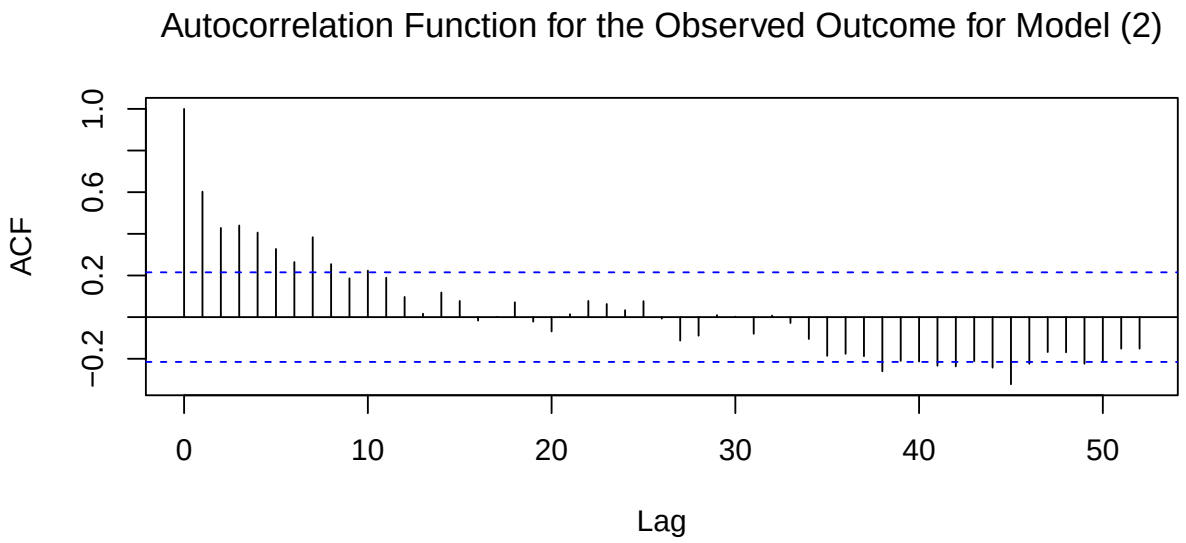
Table 37.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

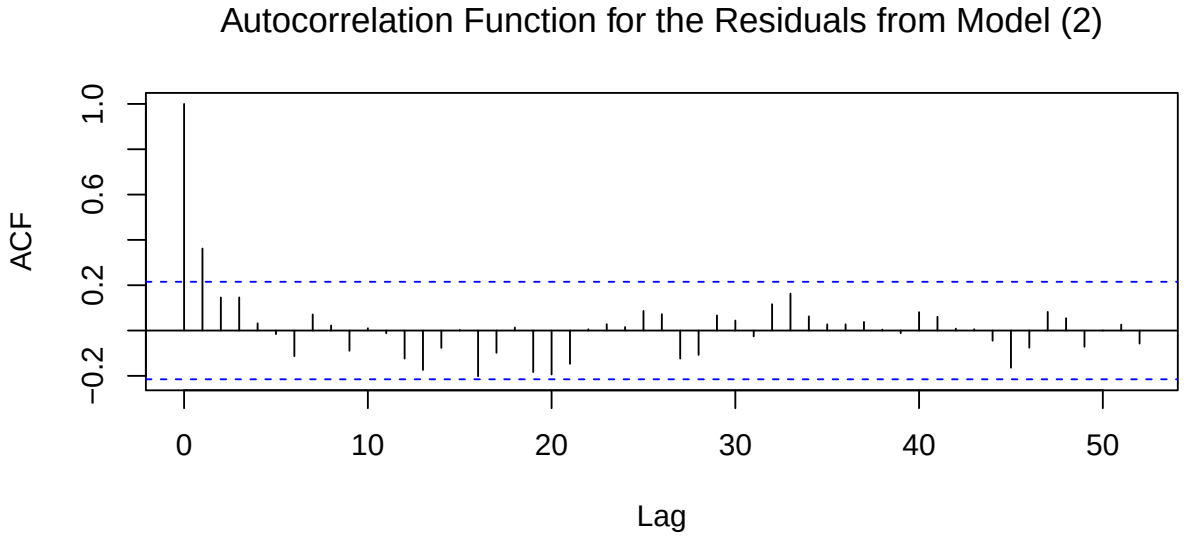
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.33	−0.28		−0.33
After Ferguson Protests Begin (week of 8/11/14 onward)	5.94		6.99	10.49
After Gray Protests Begin (week of 4/20/15 onward)	−21.56		−32.70	−32.38
Unrest and National Guard (during week of 4/27/15)	32.76		35.41	37.41
After Commissioner Batts Fired (week of 7/13/15 onward)	16.31		27.99	28.56
Average Maximum Temperature to 50 Degrees		0.49		0.19
Plus Degrees in the 50s		−2.16		−0.80
Plus Degrees in the 60s		1.57		−0.16
Plus Degrees in the 70s		0.91		1.71
Plus Degrees greater than 80		−2.09		−2.10
Snowfall (inches)		−10.76		−8.62
Precipitation (inches)		−5.45		−2.68
Darkness Before Midnight (hours)		−6.99		−6.47
School Days (proportion of week)		9.29		3.72
Observations	156	83	156	156
R^2	0.57	0.41	0.28	0.67

37.3 Least Squares Model (2) for western



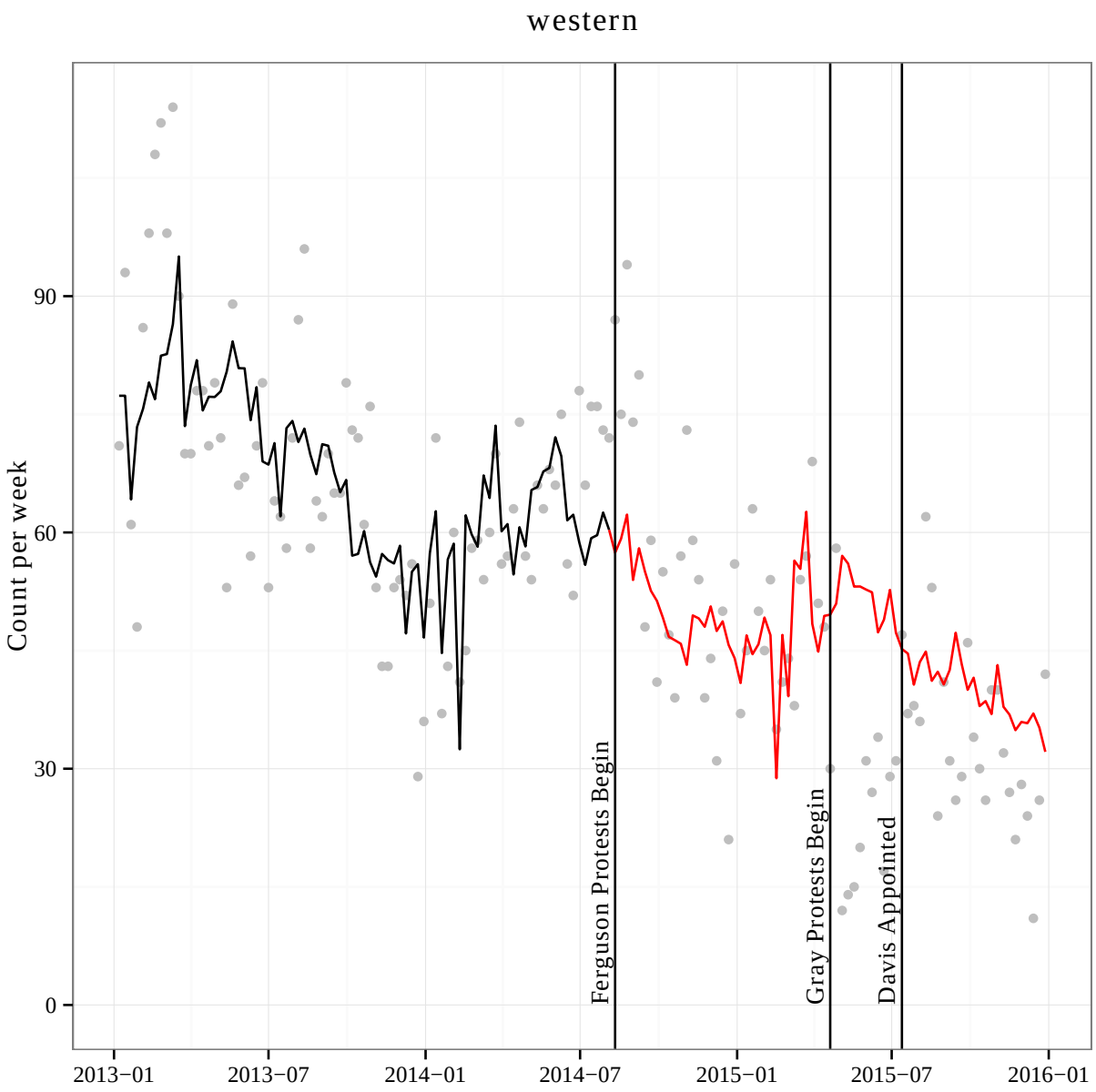

western
Count per week
90
60
30
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

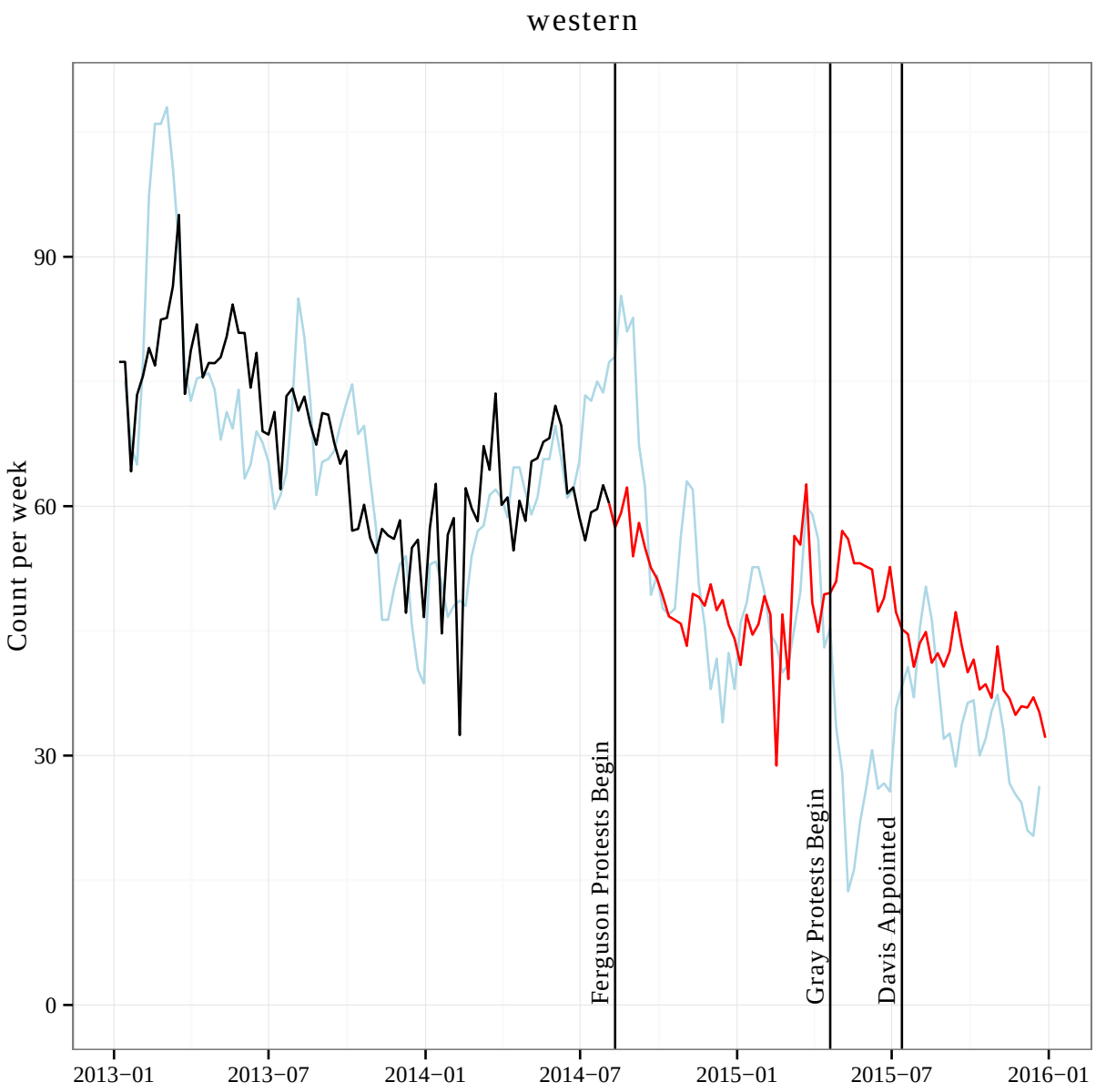

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

37.4 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
-3.9756  -0.8706  -0.2520   1.1667   3.3385

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     4.6304399  0.2695579  17.178  < 2e-16 ***
t              -0.0040344  0.0005998  -6.726 1.74e-11 ***
tmax.f.spline1  0.0078501  0.0047347   1.658 0.097315 .
tmax.f.spline2 -0.0346968  0.0110035  -3.153 0.001615 **
tmax.f.spline3  0.0263813  0.0156213   1.689 0.091258 .
tmax.f.spline4  0.0121654  0.0140758   0.864 0.387436
tmax.f.spline5 -0.0303802  0.0123377  -2.462 0.013802 *
snow.in        -0.2234232  0.0582649  -3.835 0.000126 ***
precip.in      -0.0890982  0.0884156  -1.008 0.313589
dark.before.12 -0.1061280  0.0193692  -5.479 4.27e-08 ***
school          0.1350389  0.0603927   2.236 0.025351 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 330.88  on 82  degrees of freedom
Residual deviance: 188.04  on 72  degrees of freedom
AIC: 708.84

Number of Fisher Scoring iterations: 4
```


western
Count per week
90
60
30
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01


western
Count per week
90
60
30
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

38 Results for central

38.1 Summary Values for central

Table 38.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
central	83	62.434	12.469	29	62	92

Table 38.2: Descriptives for Outcome After Ferguson Protests Begin

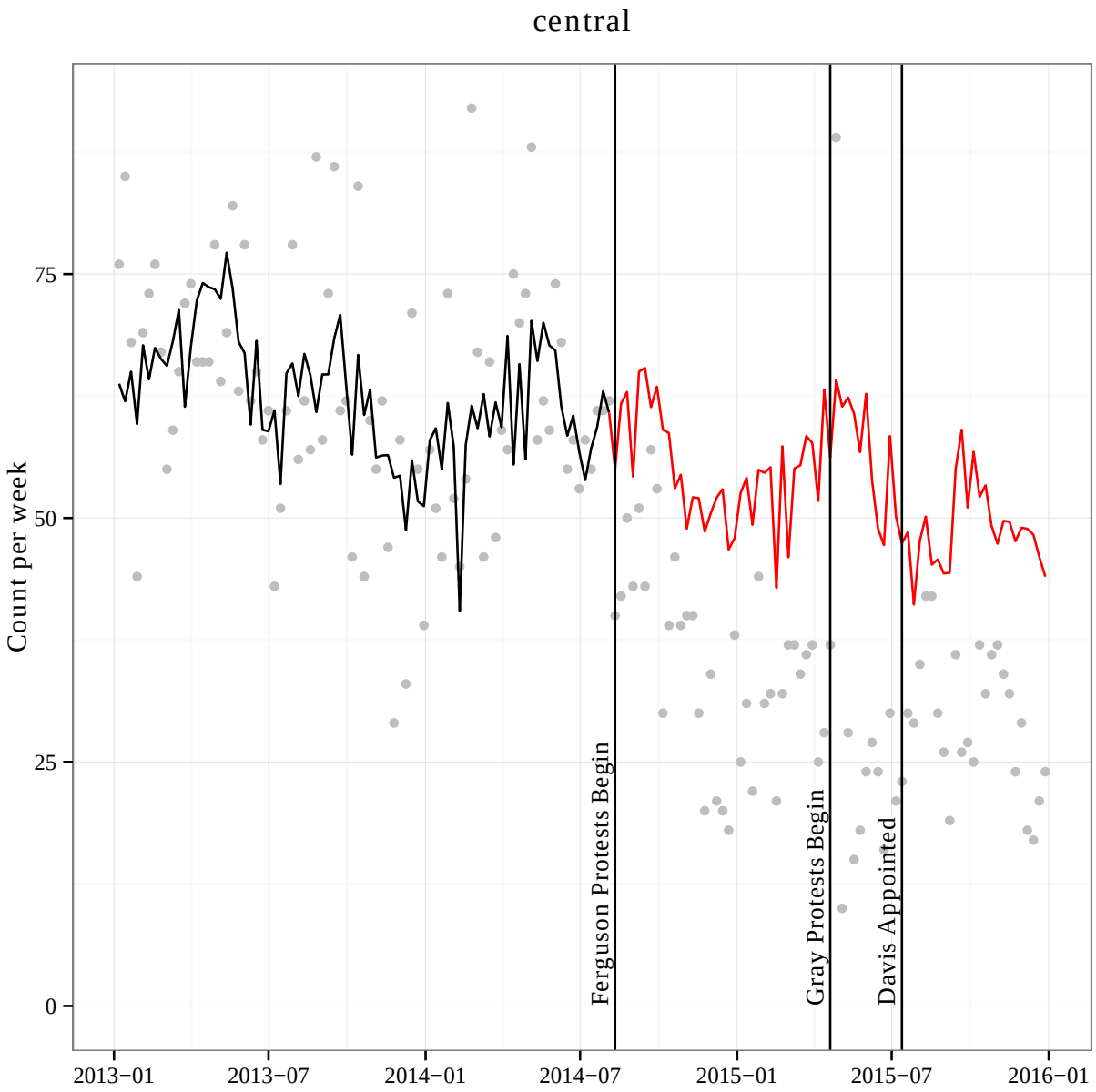
Statistic	N	Mean	St. Dev.	Min	Median	Max
central	73	32.000	11.778	10	31	89

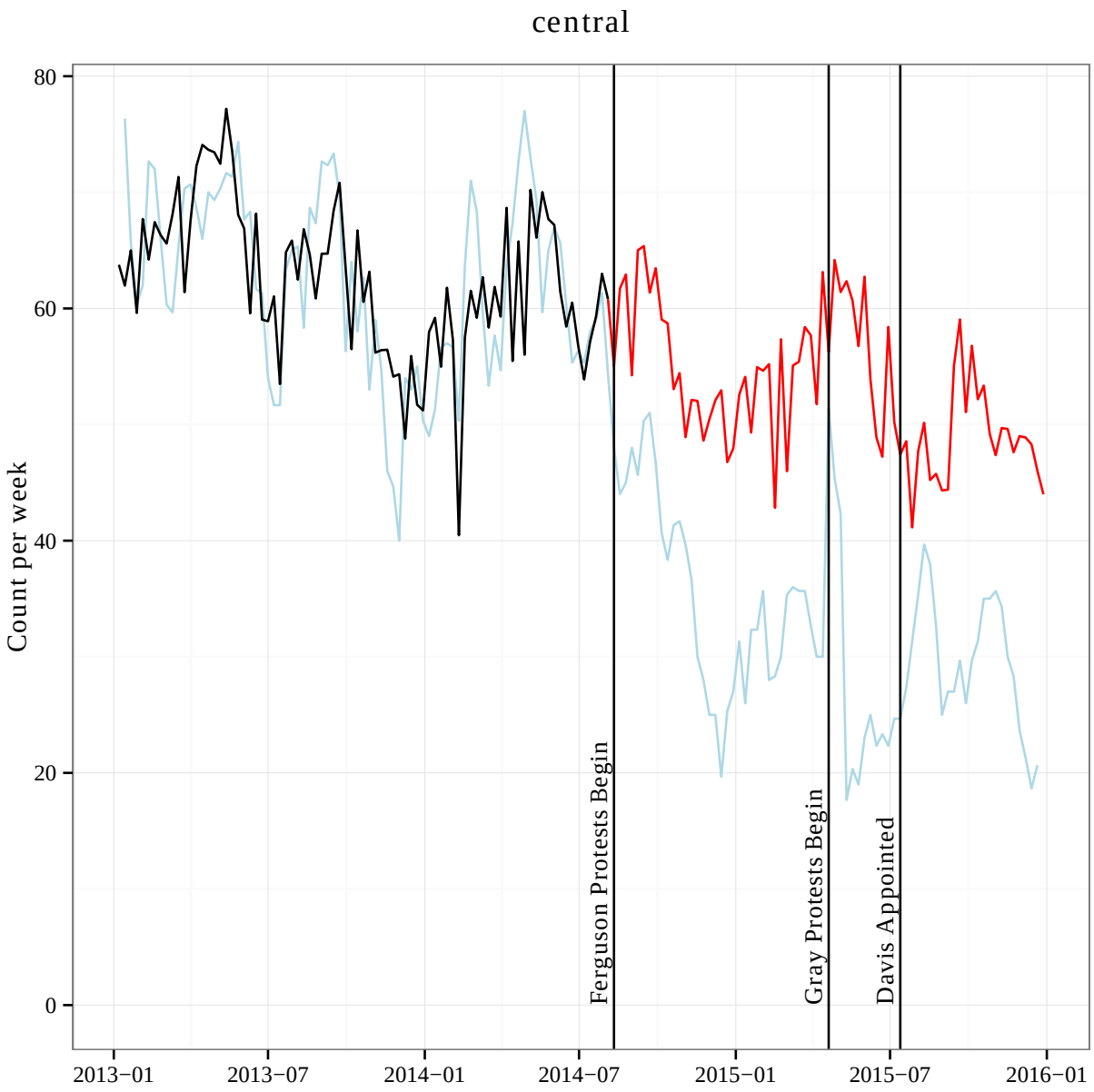
38.2 Four Models for central

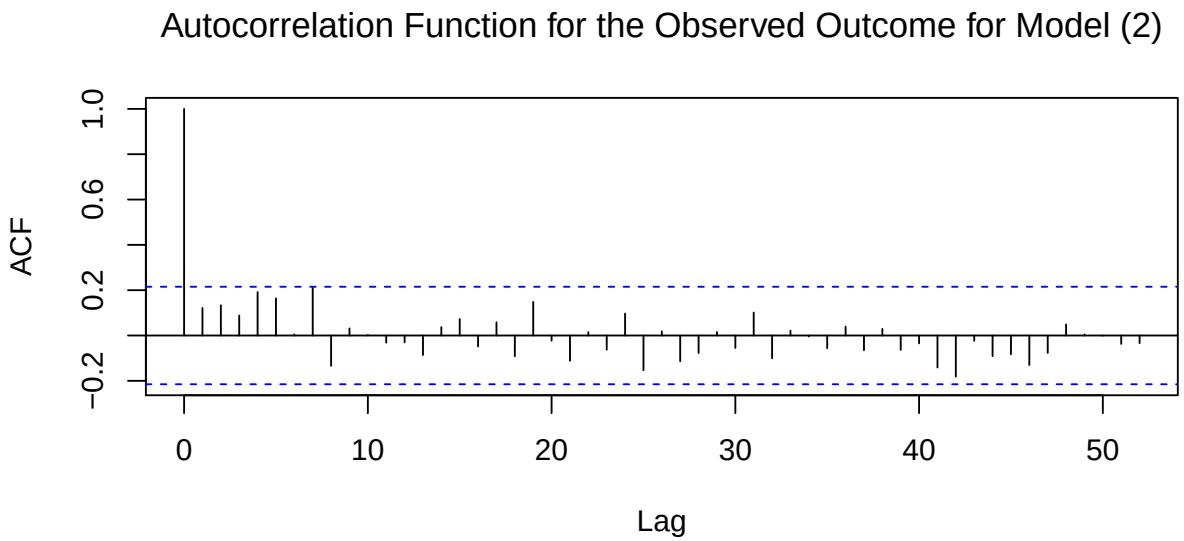
Table 38.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

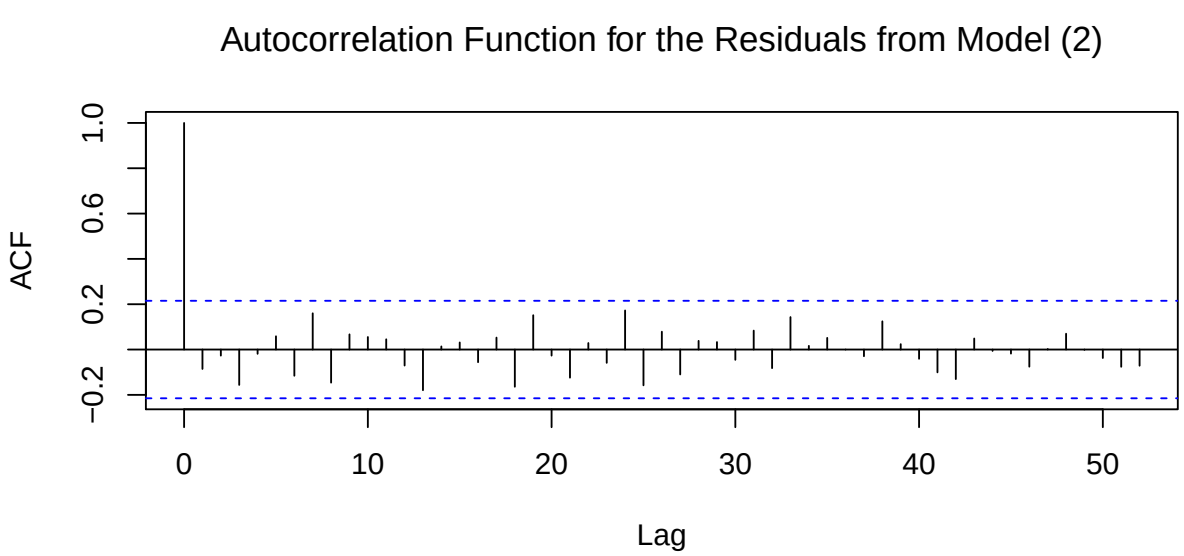
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.14	−0.11		−0.15
After Ferguson Protests Begin (week of 8/11/14 onward)	−18.66		−19.68	−17.11
After Gray Protests Begin (week of 4/20/15 onward)	−8.91		−13.84	−14.04
Unrest and National Guard (during week of 4/27/15)	65.56		58.35	60.47
After Commissioner Batts Fired (week of 7/13/15 onward)	9.13		13.89	14.97
Average Maximum Temperature to 50 Degrees		−0.21		−0.12
Plus Degrees in the 50s		−0.22		0.16
Plus Degrees in the 60s		1.27		0.28
Plus Degrees in the 70s		−1.23		−0.52
Plus Degrees greater than 80		−0.81		−0.69
Snowfall (inches)		−7.34		−5.59
Precipitation (inches)		−15.10		−11.80
Darkness Before Midnight (hours)		−3.54		−3.30
School Days (proportion of week)		5.00		3.88
Observations	156	83	156	156
R^2	0.71	0.27	0.61	0.77

38.3 Least Squares Model (2) for central



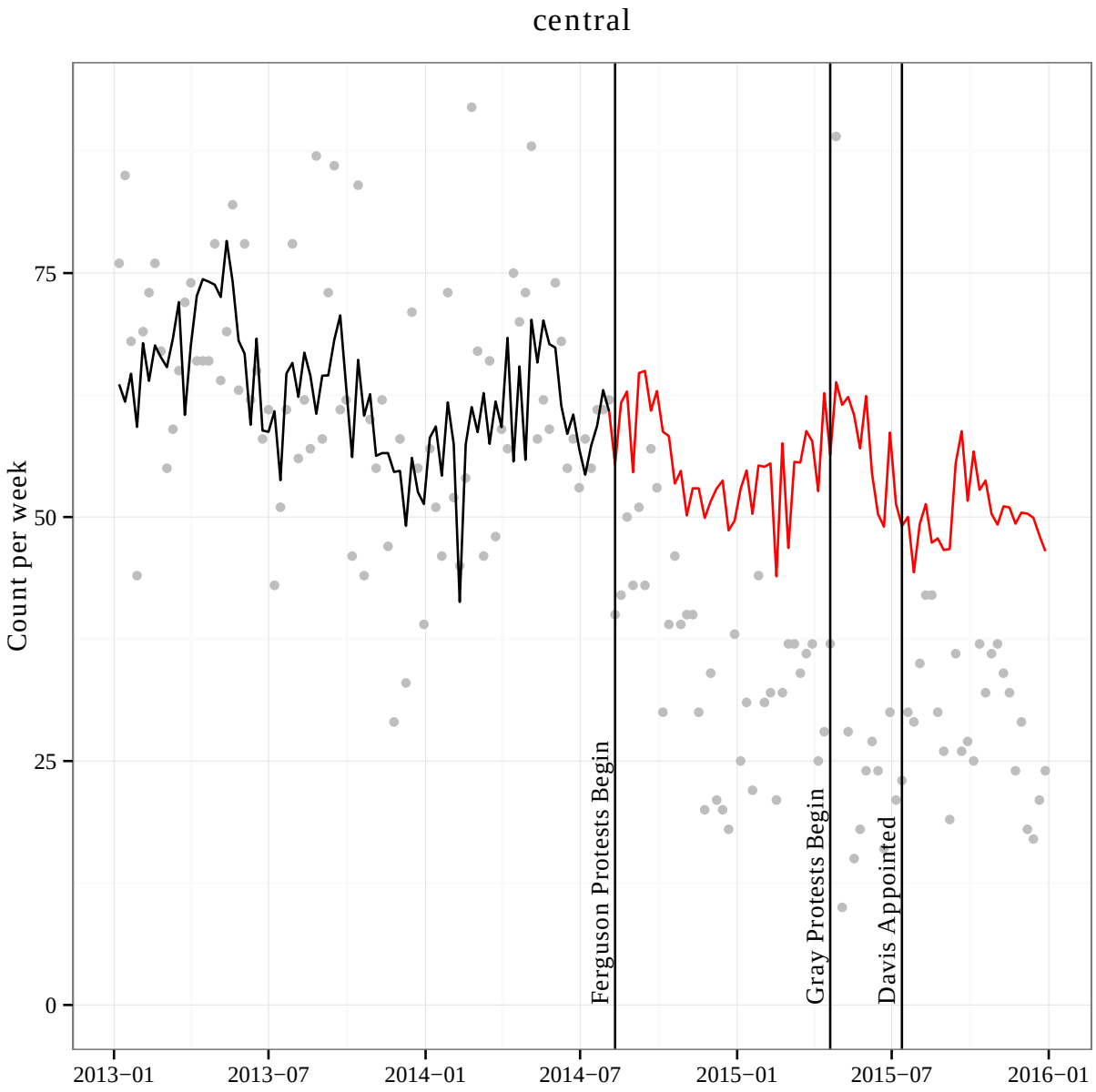

central
Count per week
80
60
40
20
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

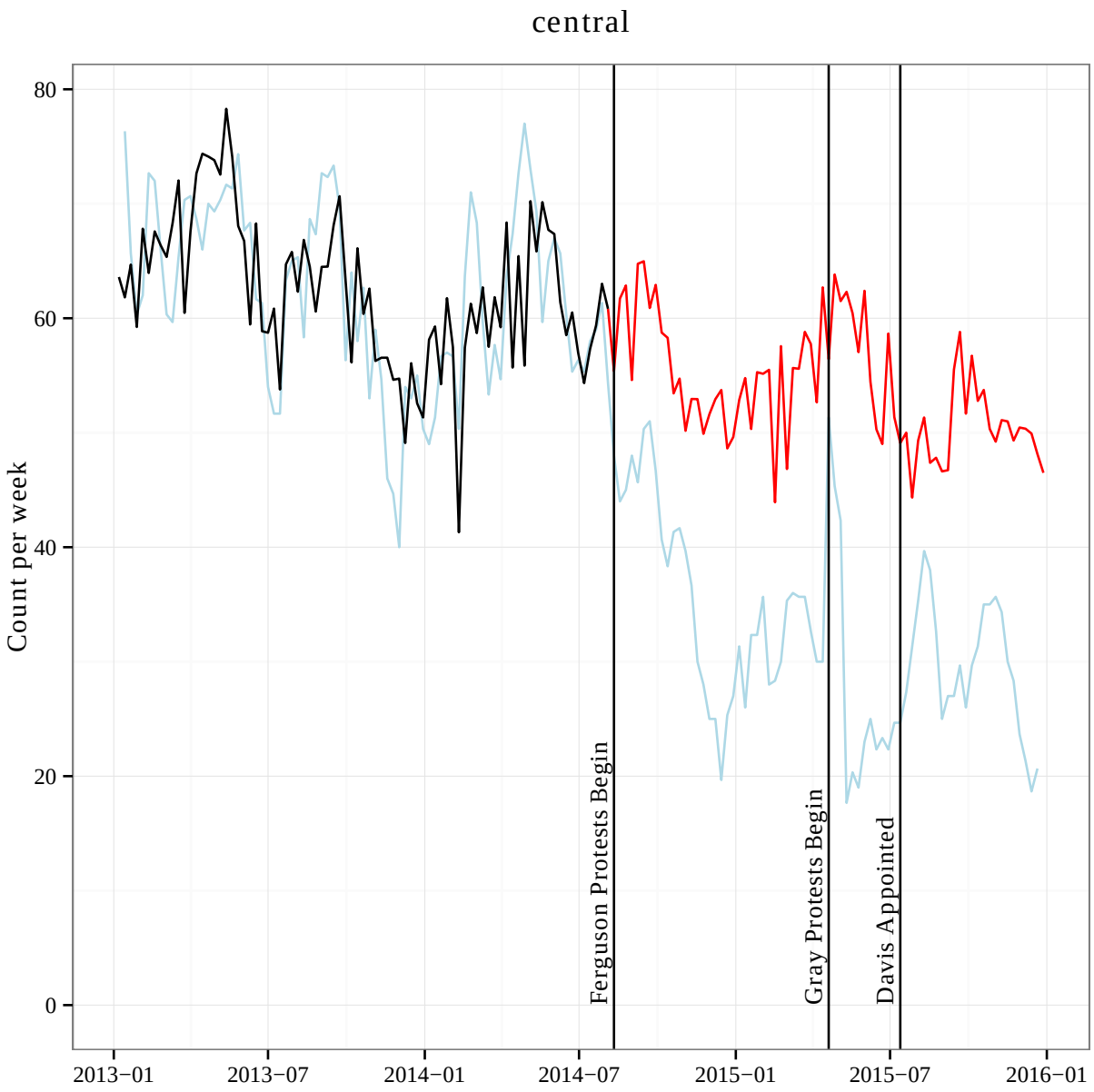

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

38.4 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
-3.8110  -0.9878  -0.1697   0.8124   3.6522

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     4.6842832  0.2730210  17.157  < 2e-16 ***
t              -0.0017517  0.0006219  -2.816  0.00486 **
tmax.f.spline1 -0.0033598  0.0048068  -0.699  0.48457
tmax.f.spline2 -0.0039479  0.0113428  -0.348  0.72780
tmax.f.spline3  0.0198871  0.0158737   1.253  0.21027
tmax.f.spline4 -0.0179687  0.0141785  -1.267  0.20504
tmax.f.spline5 -0.0142772  0.0128556  -1.111  0.26675
snow.in        -0.1411034  0.0552245  -2.555  0.01062 *
precip.in      -0.2431127  0.0914997  -2.657  0.00788 **
dark.before.12 -0.0578410  0.0200148  -2.890  0.00385 **
school          0.0792924  0.0626358   1.266  0.20554
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 208.89  on 82  degrees of freedom
Residual deviance: 153.11  on 72  degrees of freedom
AIC: 669.26

Number of Fisher Scoring iterations: 4
```


central
Count per week
75
50
25
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


central
Count per week
80
60
40
20
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

39 Results for eastern

39.1 Summary Values for eastern

Table 39.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
eastern	83	74.337	15.335	42	72	116

Table 39.2: Descriptives for Outcome After Ferguson Protests Begin

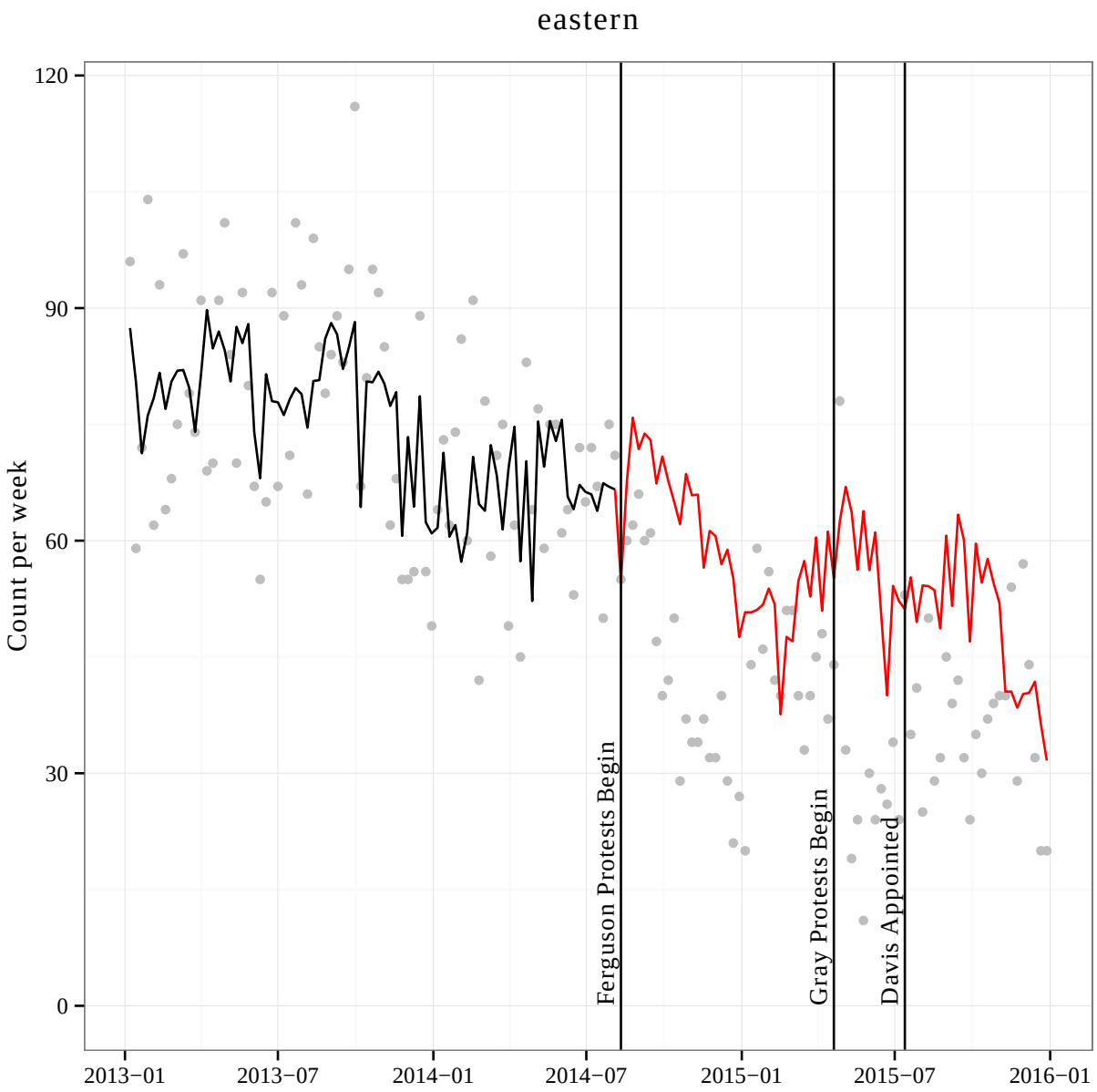
Statistic	N	Mean	St. Dev.	Min	Median	Max
eastern	73	38.986	12.838	11	39	78

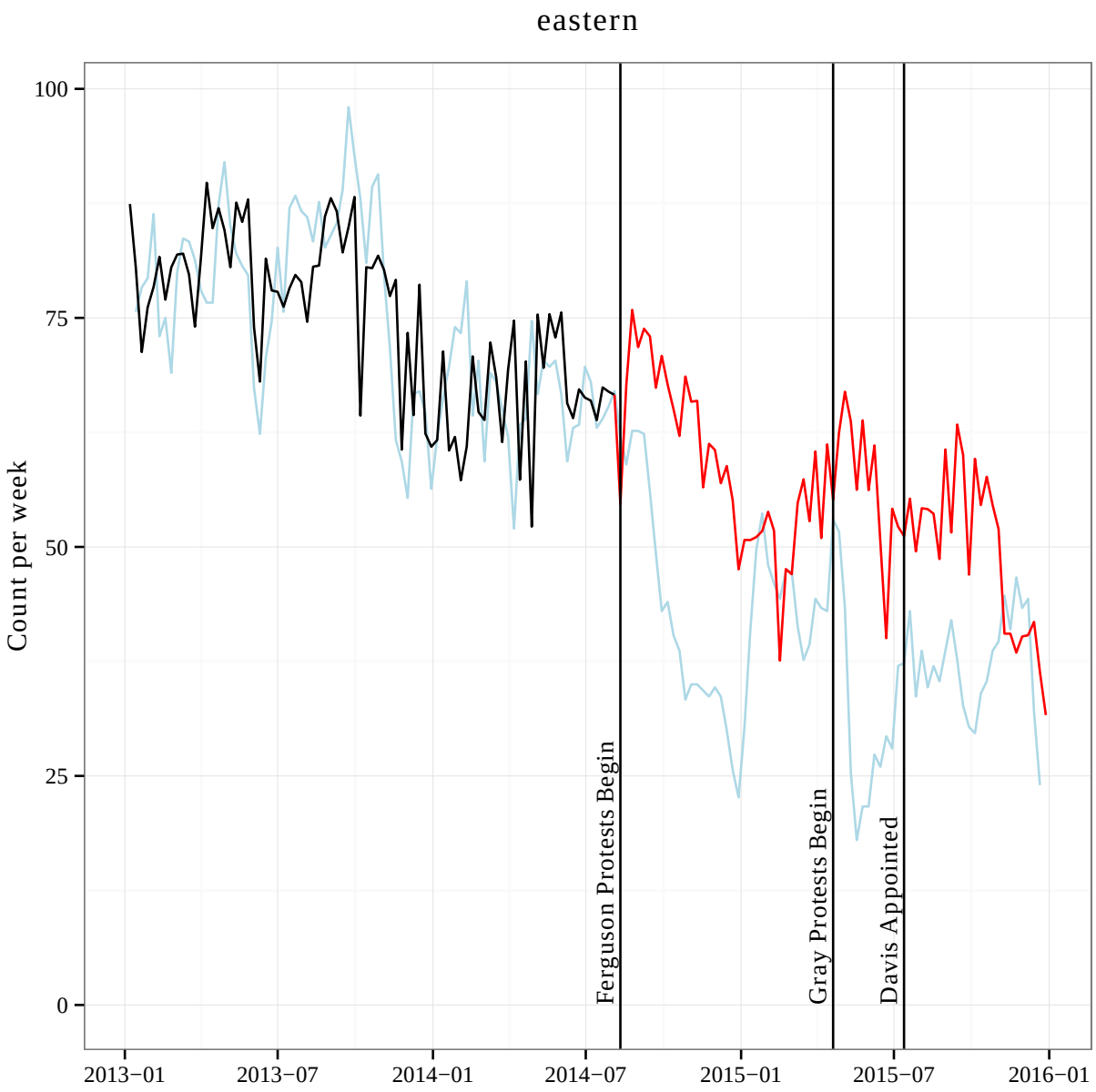
39.2 Four Models for eastern

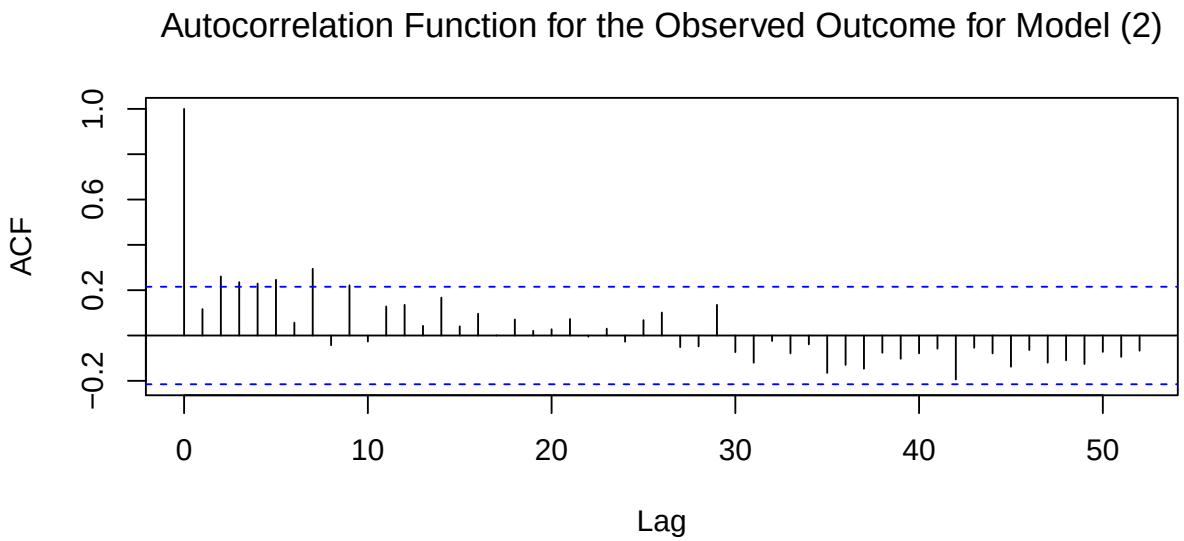
Table 39.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

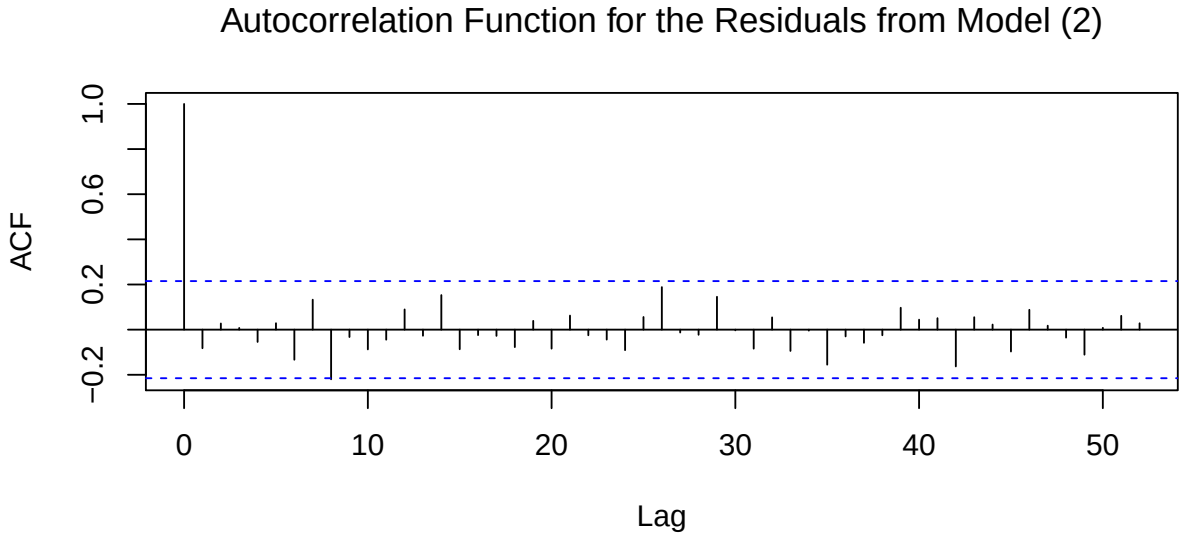
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.25	−0.24		−0.25
After Ferguson Protests Begin (week of 8/11/14 onward)	−16.30		−16.10	−15.15
After Gray Protests Begin (week of 4/20/15 onward)	−9.79		−13.26	−14.18
Unrest and National Guard (during week of 4/27/15)	49.76		44.88	48.50
After Commissioner Batts Fired (week of 7/13/15 onward)	14.54		16.83	18.30
Average Maximum Temperature to 50 Degrees		0.70		−0.22
Plus Degrees in the 50s		−0.28		0.74
Plus Degrees in the 60s		−0.09		−0.82
Plus Degrees in the 70s		0.10		1.05
Plus Degrees greater than 80		−0.54		−1.21
Snowfall (inches)		1.59		−1.22
Precipitation (inches)		−25.42		−18.13
Darkness Before Midnight (hours)		1.20		−1.66
School Days (proportion of week)		10.50		9.37
Observations	156	83	156	156
R^2	0.70	0.34	0.37	0.74

39.3 Least Squares Model (2) for eastern



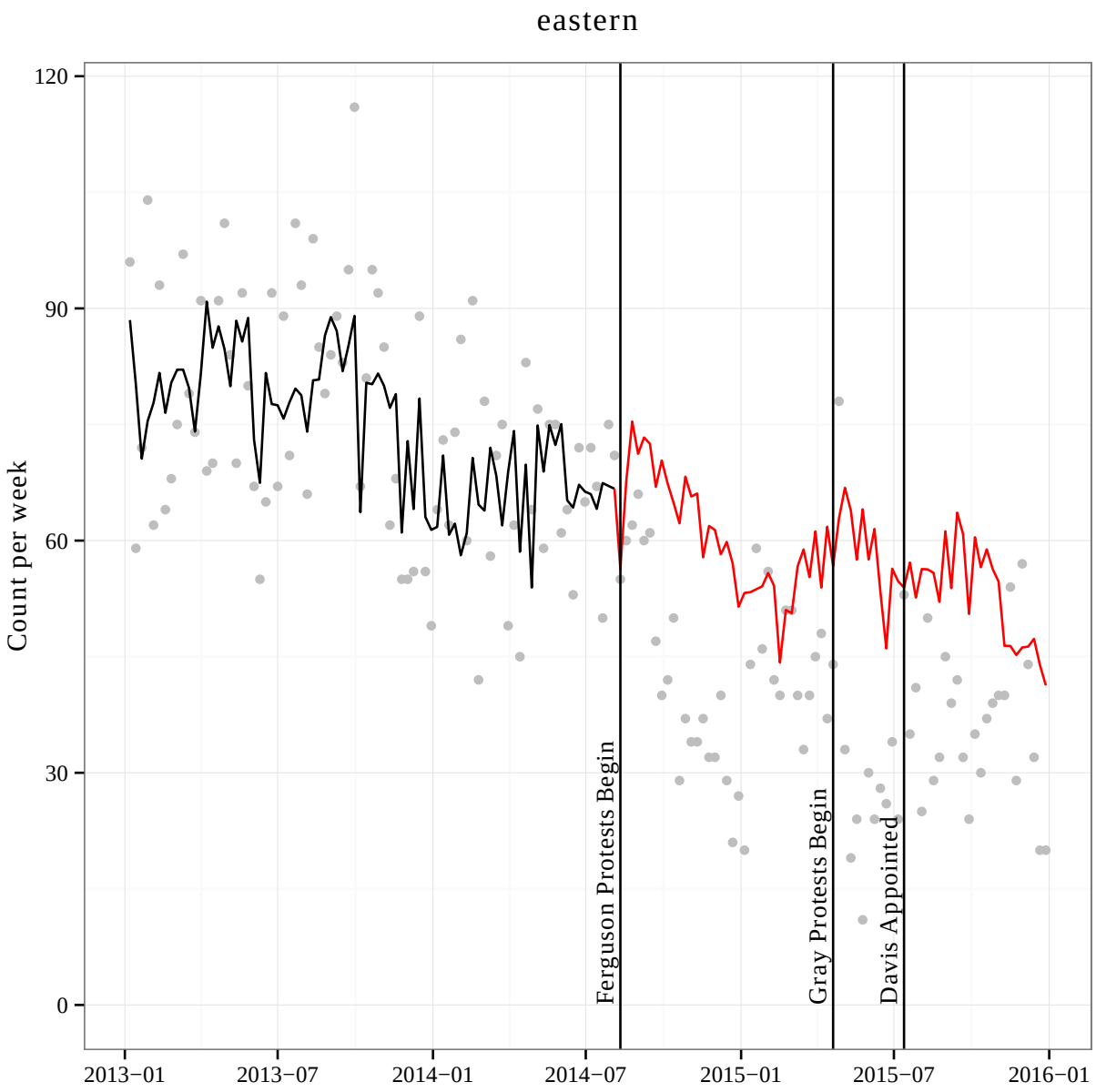

eastern
Count per week
100
75
50
25
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

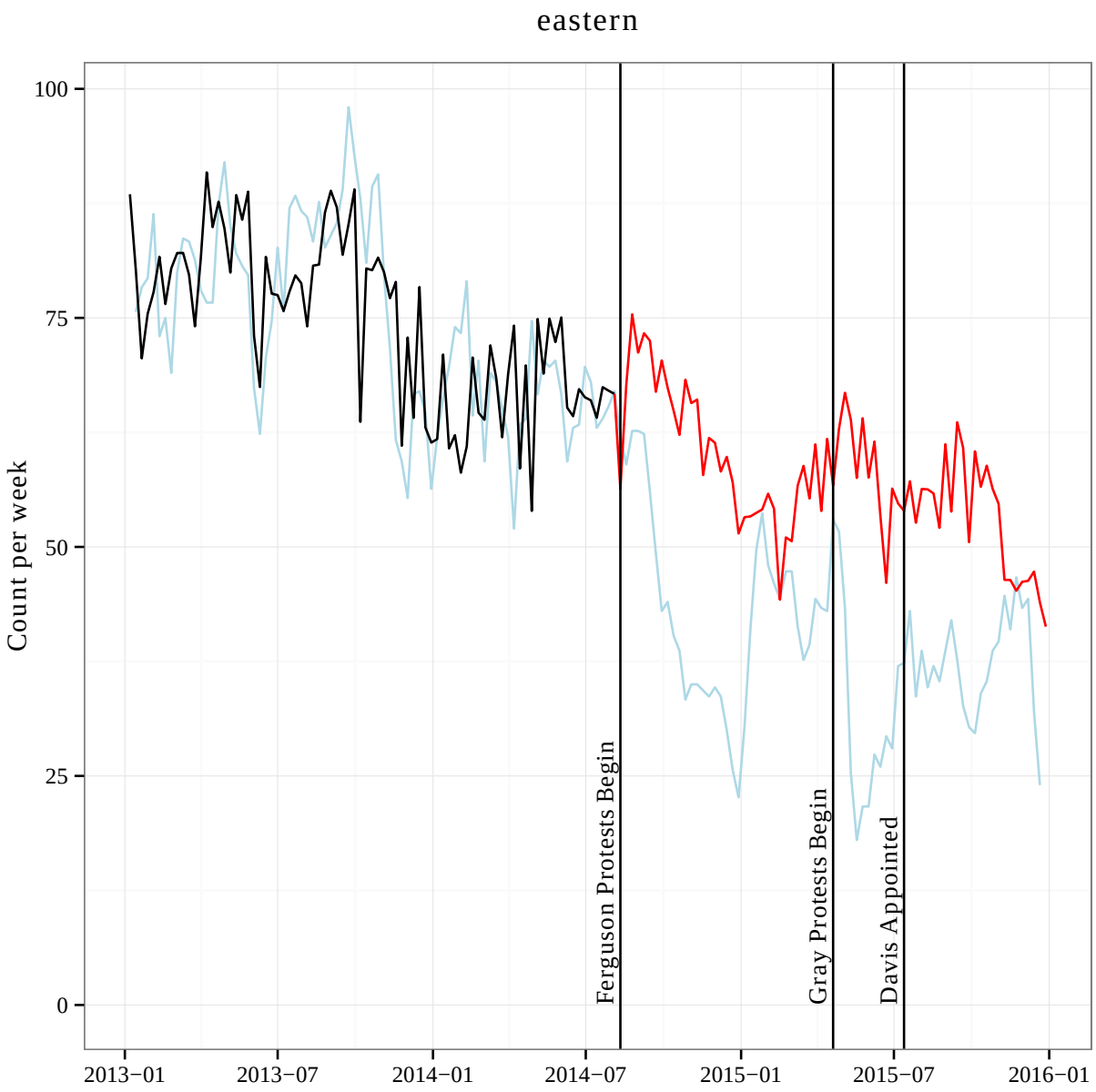

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.0106  -1.2424   0.1601   1.0315   3.4136

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     3.7825899  0.2518460  15.019  < 2e-16 ***
t              -0.0032476  0.0005799  -5.601 2.14e-08 ***
tmax.f.spline1  0.0101005  0.0044871   2.251   0.0244 *
tmax.f.spline2 -0.0050275  0.0103943  -0.484   0.6286
tmax.f.spline3 -0.0006517  0.0144389  -0.045   0.9640
tmax.f.spline4  0.0013953  0.0129888   0.107   0.9145
tmax.f.spline5 -0.0075975  0.0115647  -0.657   0.5112
snow.in         0.0209733  0.0480567   0.436   0.6625
precip.in      -0.3613794  0.0872323  -4.143 3.43e-05 ***
dark.before.12  0.0156464  0.0181217   0.863   0.3879
school          0.1366532  0.0572340   2.388   0.0170 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 259.78  on 82  degrees of freedom
Residual deviance: 169.90  on 72  degrees of freedom
AIC: 700.47

Number of Fisher Scoring iterations: 4
```


eastern
Count per week
120
90
60
30
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed


eastern
Count per week
100
75
50
25
0
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed

40 Results for southwestern

40.1 Summary Values for southwestern

Table 40.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
southwestern	83	43.506	8.363	23	43	65

Table 40.2: Descriptives for Outcome After Ferguson Protests Begin

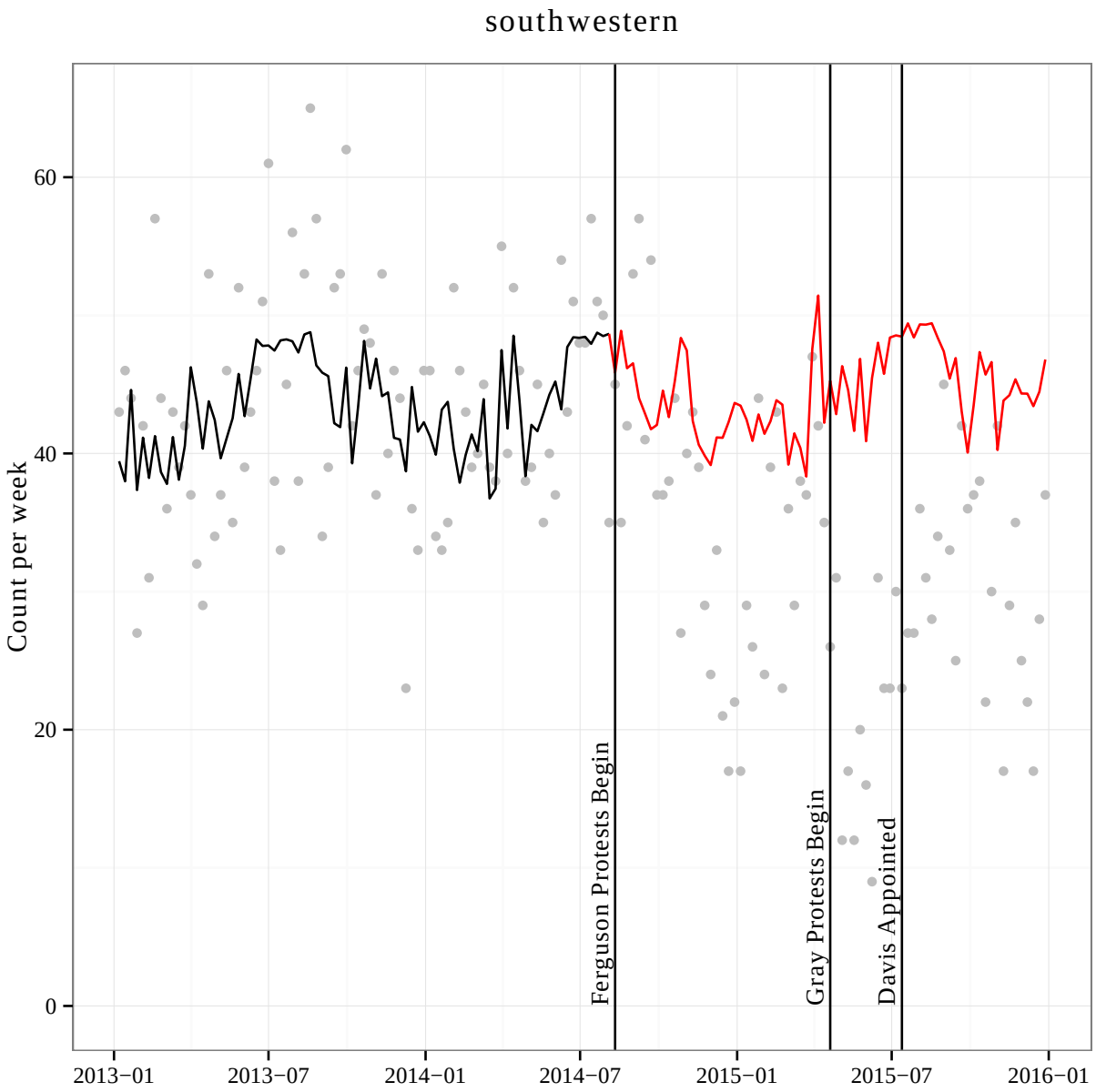
Statistic	N	Mean	St. Dev.	Min	Median	Max
southwestern	73	31.548	10.298	9	31	57

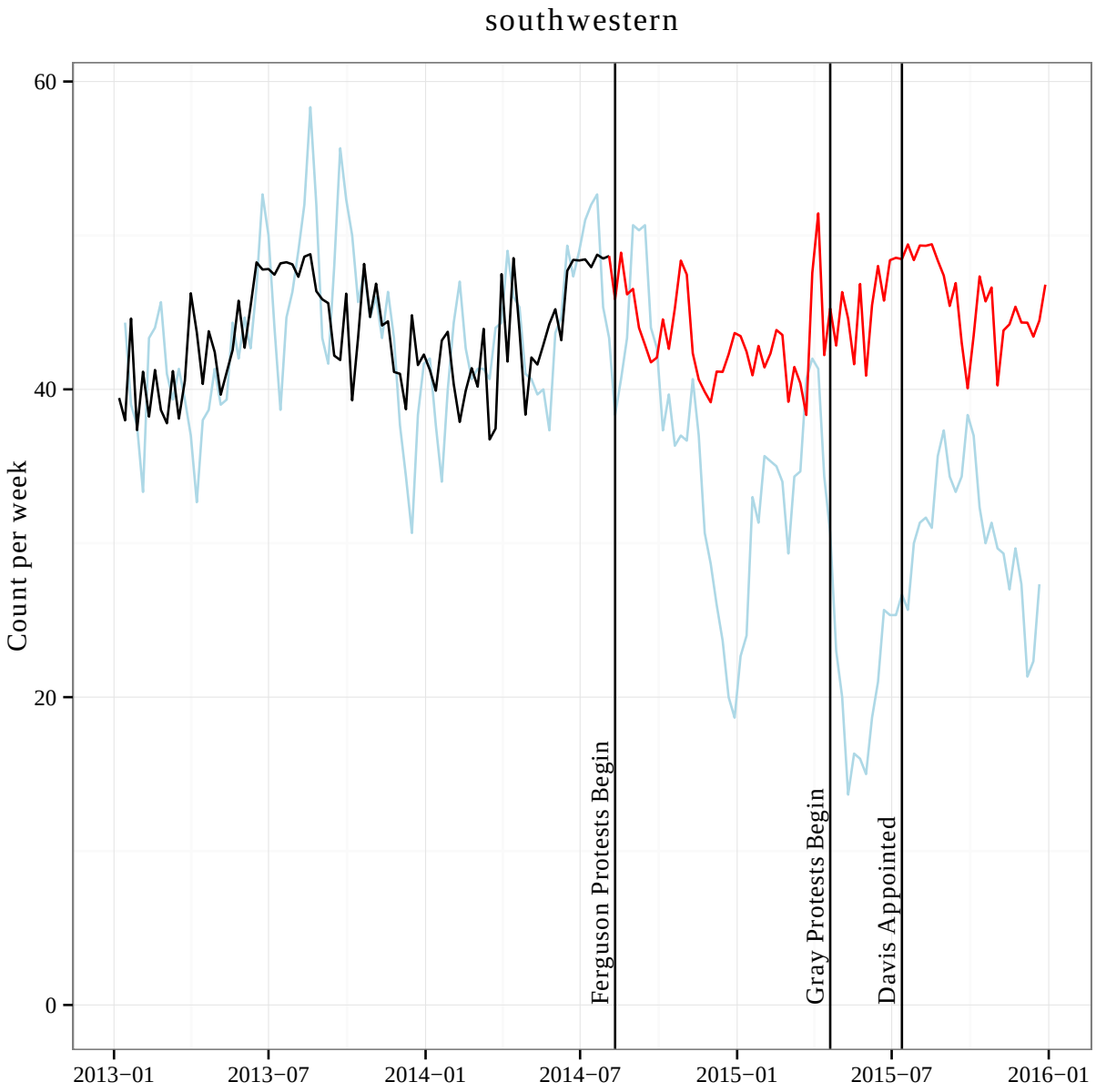
40.2 Four Models for southwestern

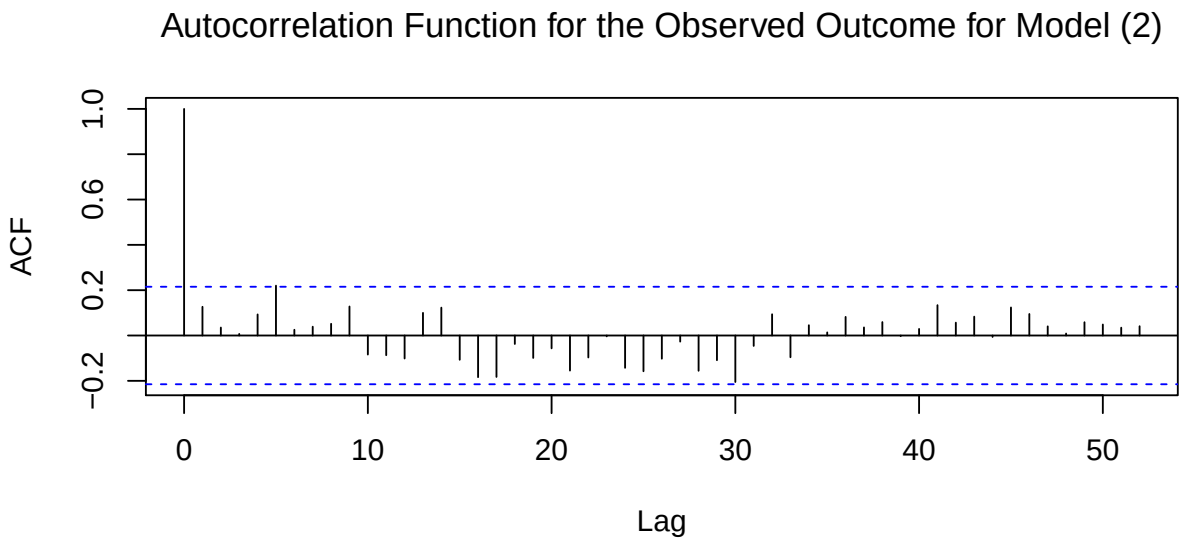
Table 40.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

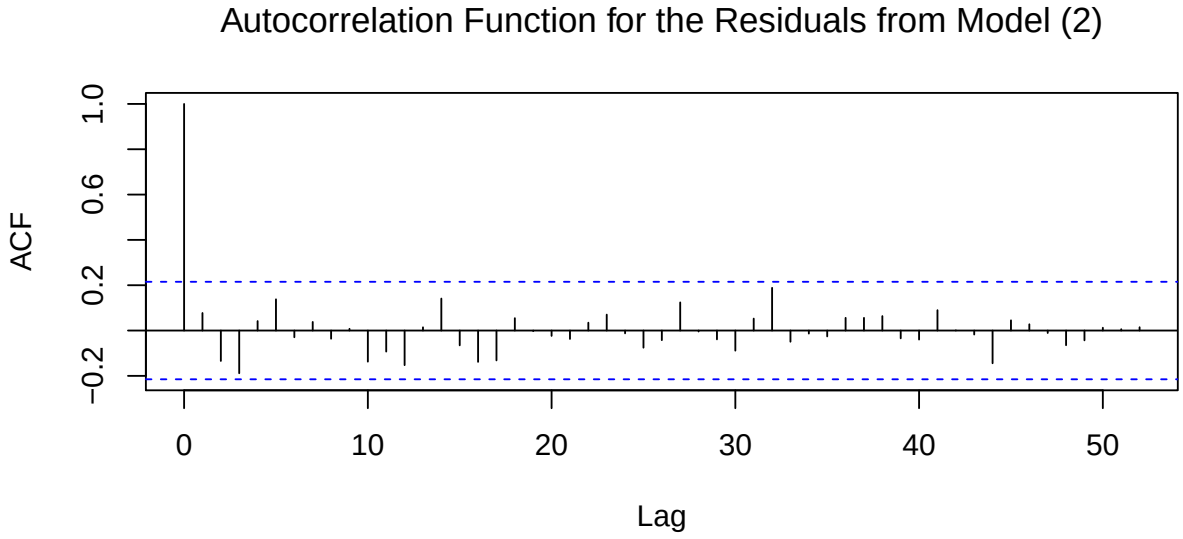
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	0.01	0.01		−0.002
After Ferguson Protests Begin (week of 8/11/14 onward)	−8.37		−7.53	−6.41
After Gray Protests Begin (week of 4/20/15 onward)	−16.09		−18.17	−19.19
Unrest and National Guard (during week of 4/27/15)	11.14		13.86	12.21
After Commissioner Batts Fired (week of 7/13/15 onward)	10.54		10.51	12.39
Average Maximum Temperature to 50 Degrees		−0.27		−0.07
Plus Degrees in the 50s		1.34		1.04
Plus Degrees in the 60s		−1.85		−1.27
Plus Degrees in the 70s		1.28		0.51
Plus Degrees greater than 80		−0.49		−0.21
Snowfall (inches)		−1.43		1.60
Precipitation (inches)		−5.31		−3.74
Darkness Before Midnight (hours)		0.46		0.33
School Days (proportion of week)		−4.41		−3.18
Observations	156	83	156	156
R^2	0.41	0.18	0.49	0.50

40.3 Least Squares Model (2) for southwestern



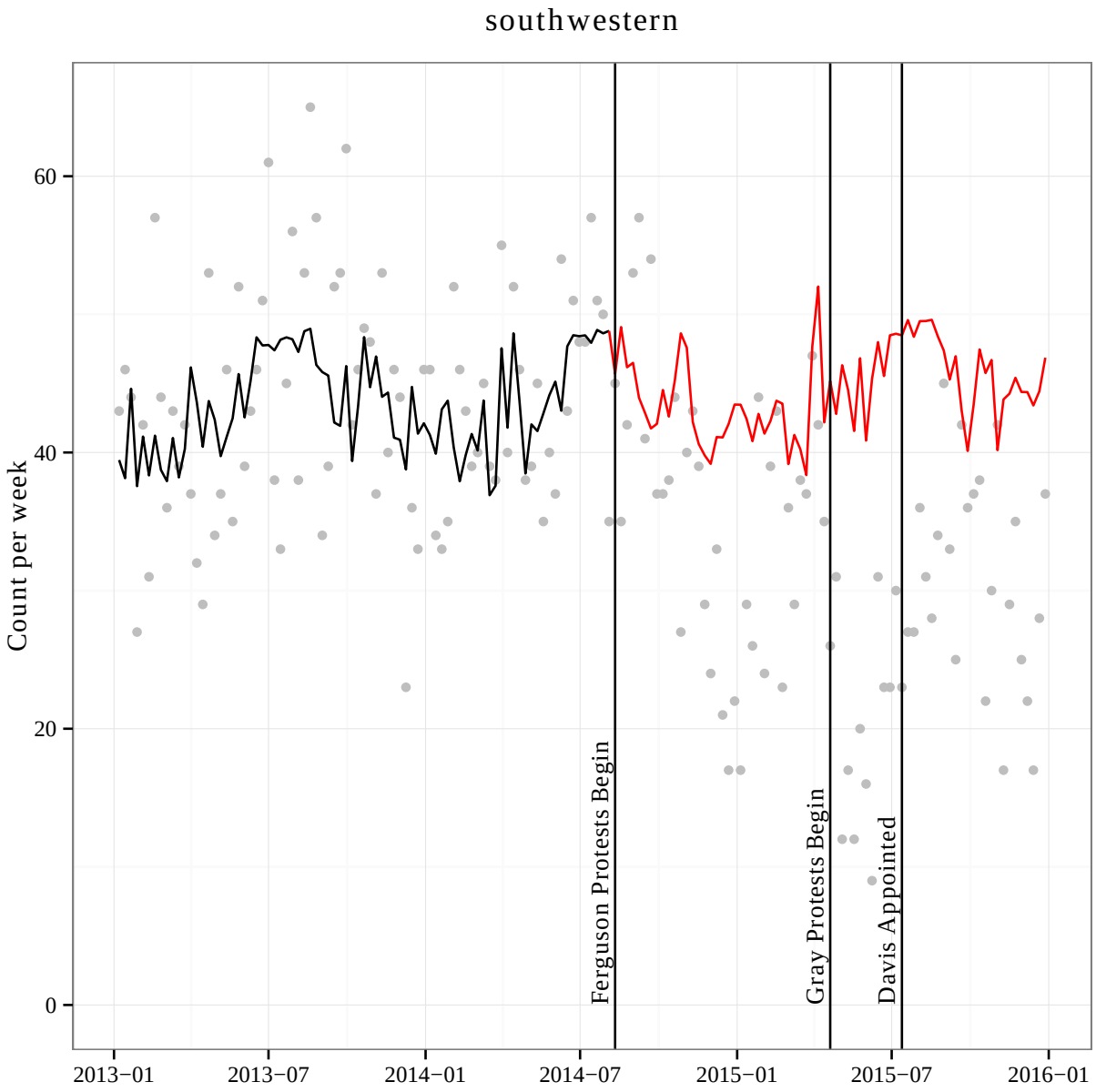

southwestern
Count per week
60
40
20
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

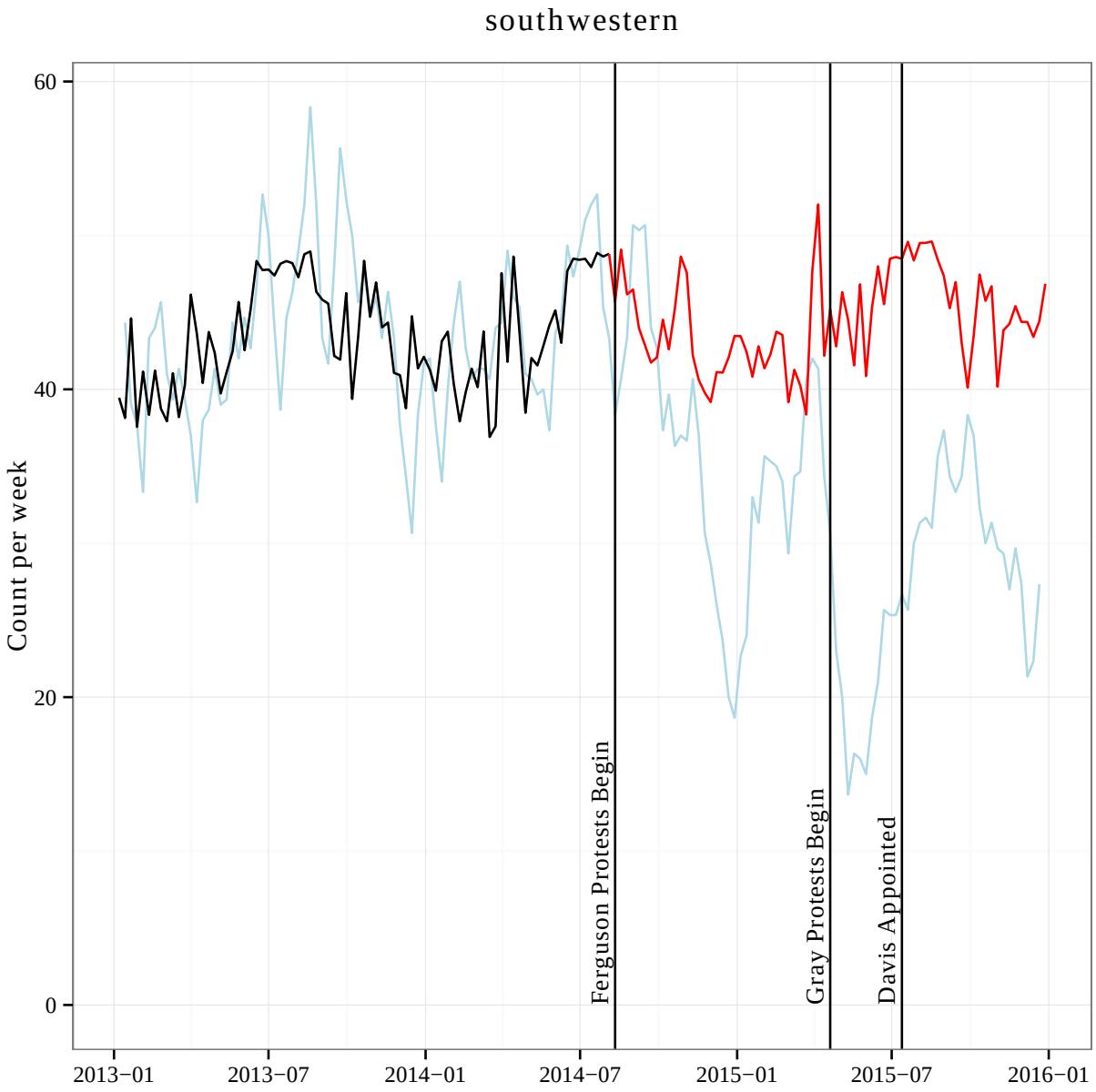

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

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

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

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.7424  -0.9792   0.1298   0.6590   2.3222

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     3.9786603  0.3256955  12.216   <2e-16 ***
t               0.0001991  0.0007511   0.265   0.7909
tmax.f.spline1 -0.0065719  0.0057692  -1.139   0.2546
tmax.f.spline2  0.0316519  0.0135354   2.338   0.0194 *
tmax.f.spline3 -0.0428308  0.0186420  -2.298   0.0216 *
tmax.f.spline4  0.0292186  0.0172192   1.697   0.0897 .
tmax.f.spline5 -0.0114434  0.0148929  -0.768   0.4423
snow.in        -0.0356494  0.0612596  -0.582   0.5606
precip.in      -0.1255070  0.1100164  -1.141   0.2540
dark.before.12  0.0113297  0.0241211   0.470   0.6386
school         -0.0996300  0.0735959  -1.354   0.1758
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 132.26  on 82  degrees of freedom
Residual deviance: 108.12  on 72  degrees of freedom
AIC: 594.59

Number of Fisher Scoring iterations: 4
```


southwestern
Count per week
60
40
20
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01


southwestern
Count per week
60
40
20
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

41 Results for southern

41.1 Summary Values for southern

Table 41.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
southern	83	73.795	12.065	40	73	109

Table 41.2: Descriptives for Outcome After Ferguson Protests Begin

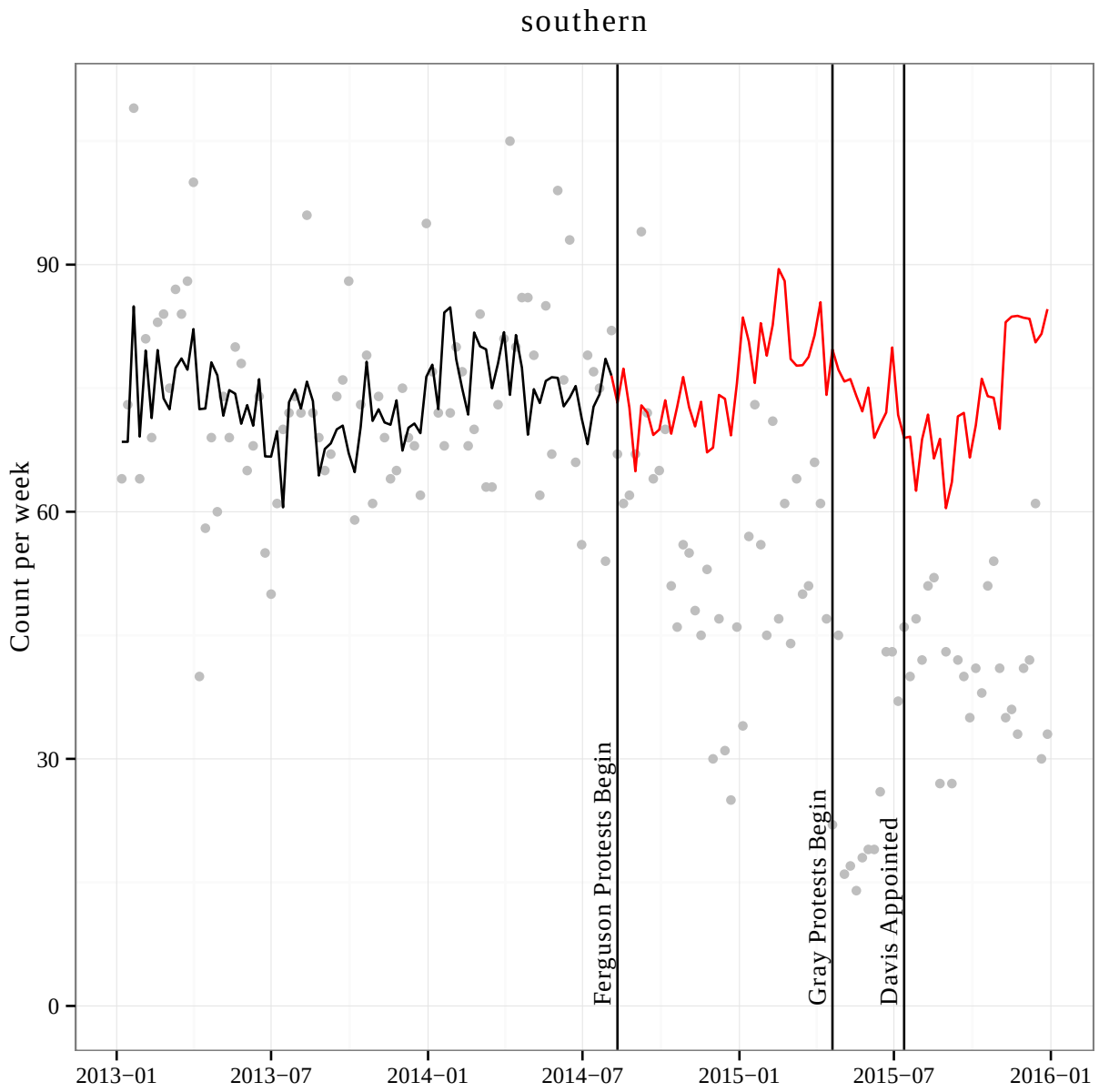
Statistic	N	Mean	St. Dev.	Min	Median	Max
southern	73	45.603	15.856	14	45	94

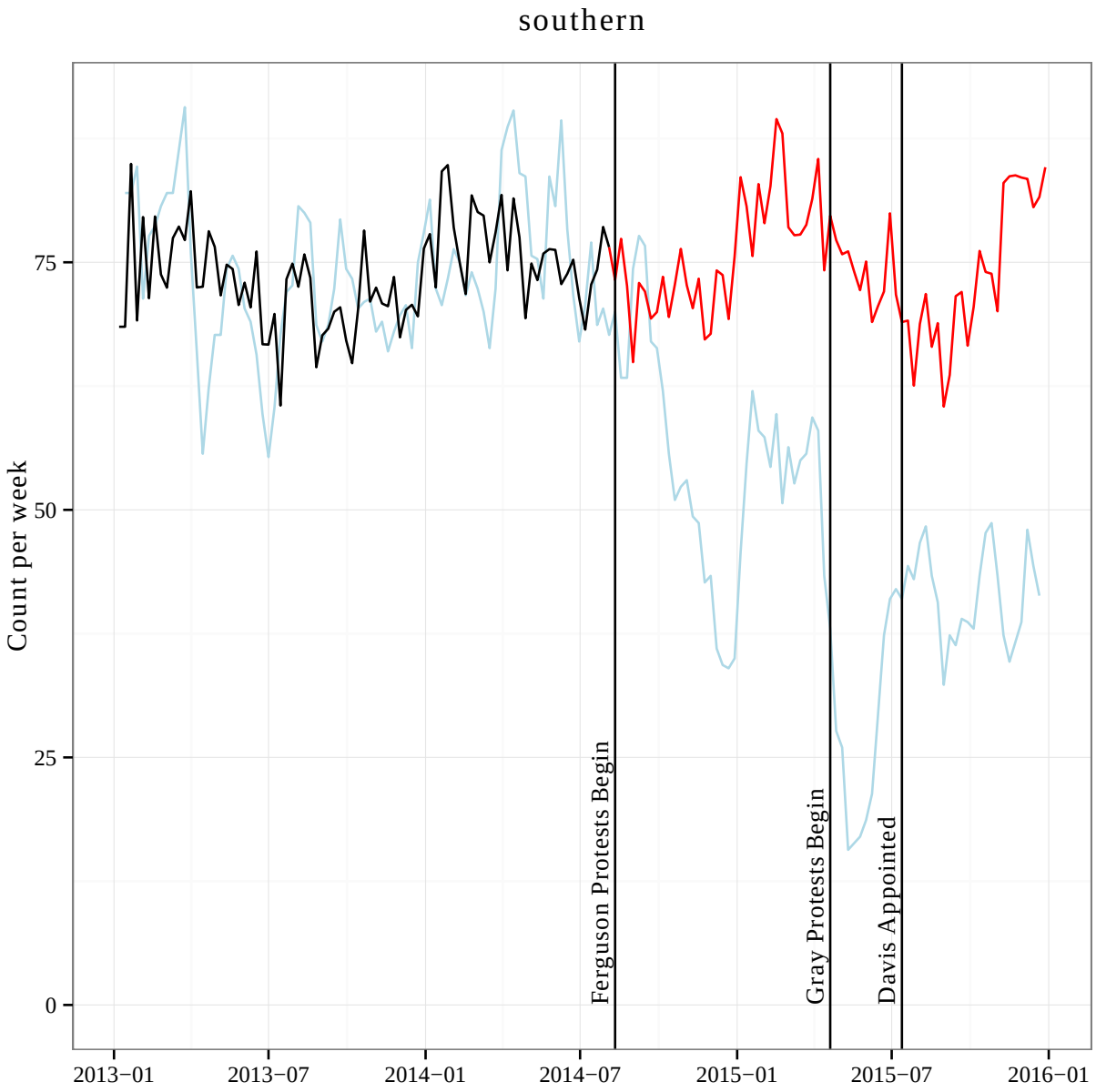
41.2 Four Models for southern

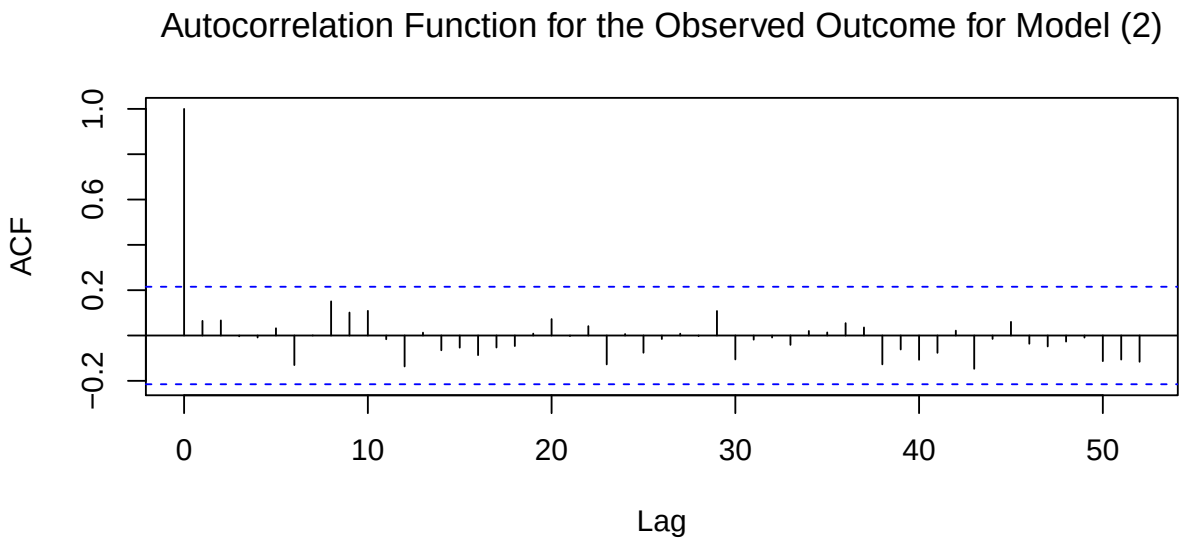
Table 41.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

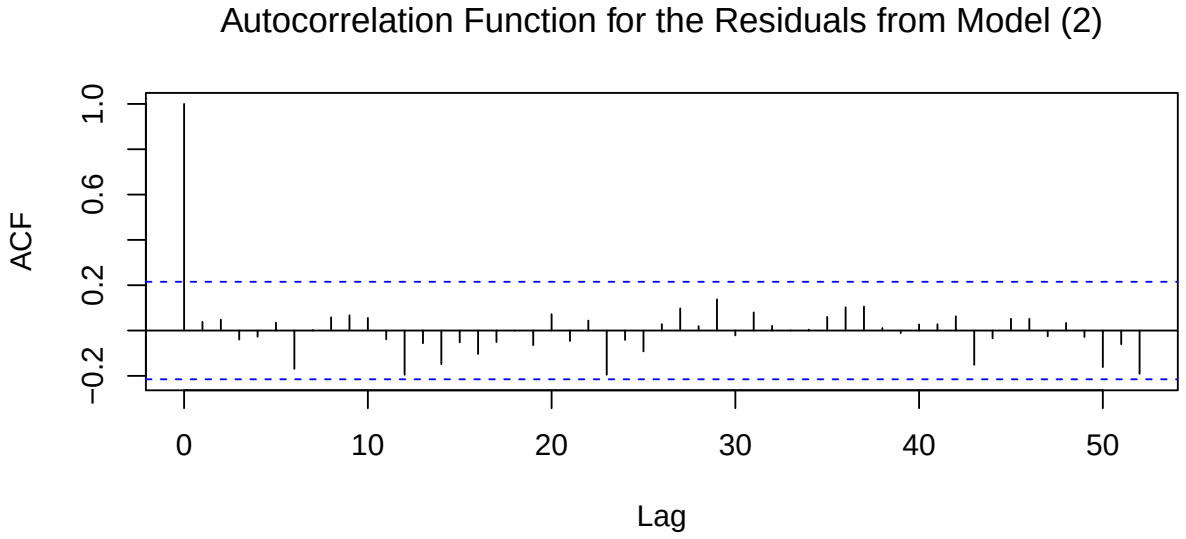
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.001	0.01		−0.04
After Ferguson Protests Begin (week of 8/11/14 onward)	−18.67		−20.62	−15.47
After Gray Protests Begin (week of 4/20/15 onward)	−30.12		−28.67	−32.08
Unrest and National Guard (during week of 4/27/15)	20.08		17.06	18.07
After Commissioner Batts Fired (week of 7/13/15 onward)	16.23		16.84	21.14
Average Maximum Temperature to 50 Degrees		−0.91		−0.45
Plus Degrees in the 50s		1.44		1.16
Plus Degrees in the 60s		−1.63		−1.55
Plus Degrees in the 70s		1.21		0.99
Plus Degrees greater than 80		−1.47		−1.12
Snowfall (inches)		−2.98		−1.15
Precipitation (inches)		−9.30		−8.11
Darkness Before Midnight (hours)		−3.69		−3.44
School Days (proportion of week)		−3.12		−1.70
Observations	156	83	156	156
R^2	0.65	0.16	0.64	0.68

41.3 Least Squares Model (2) for southern



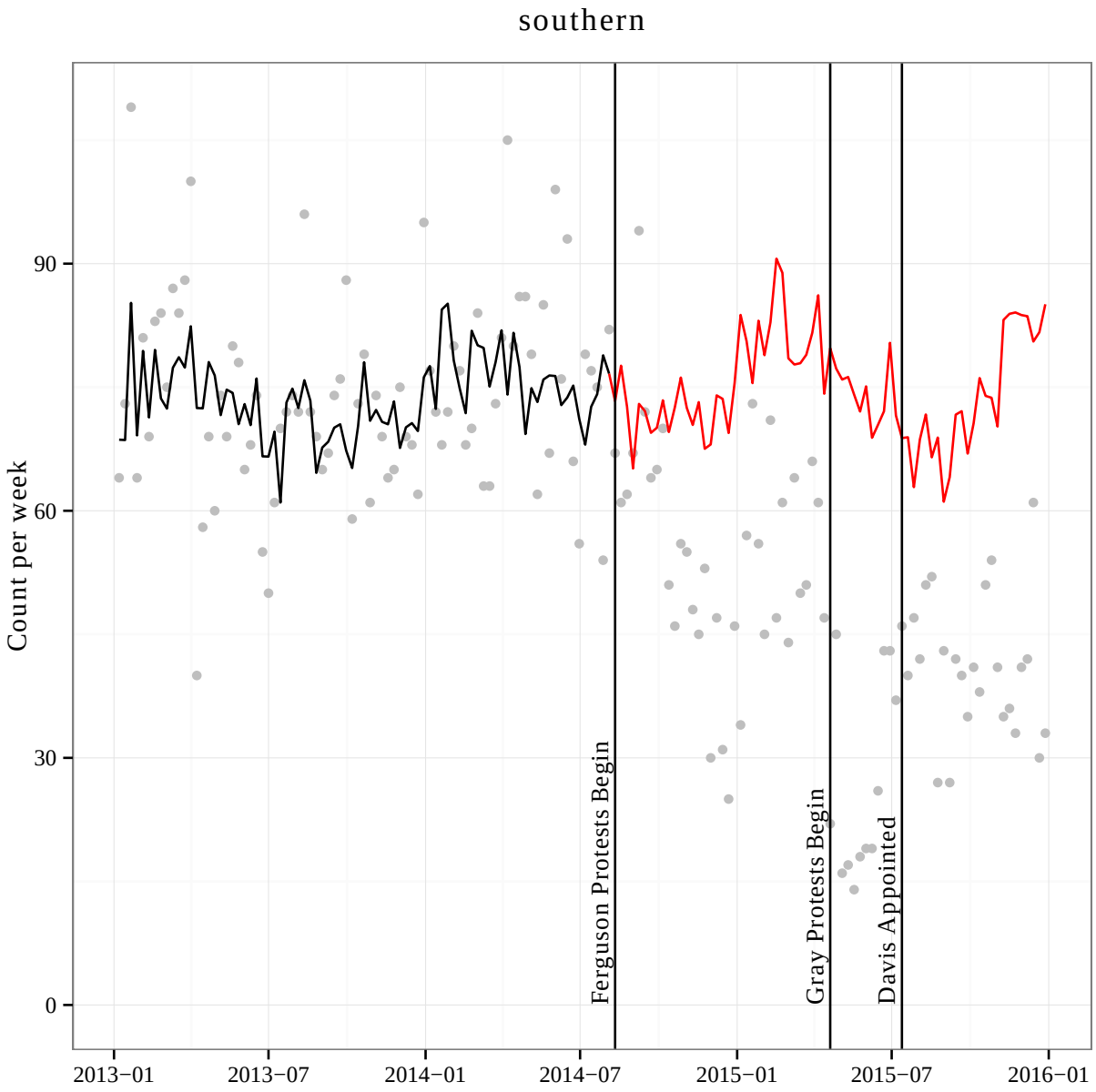

southern
Count per week
75
50
25
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

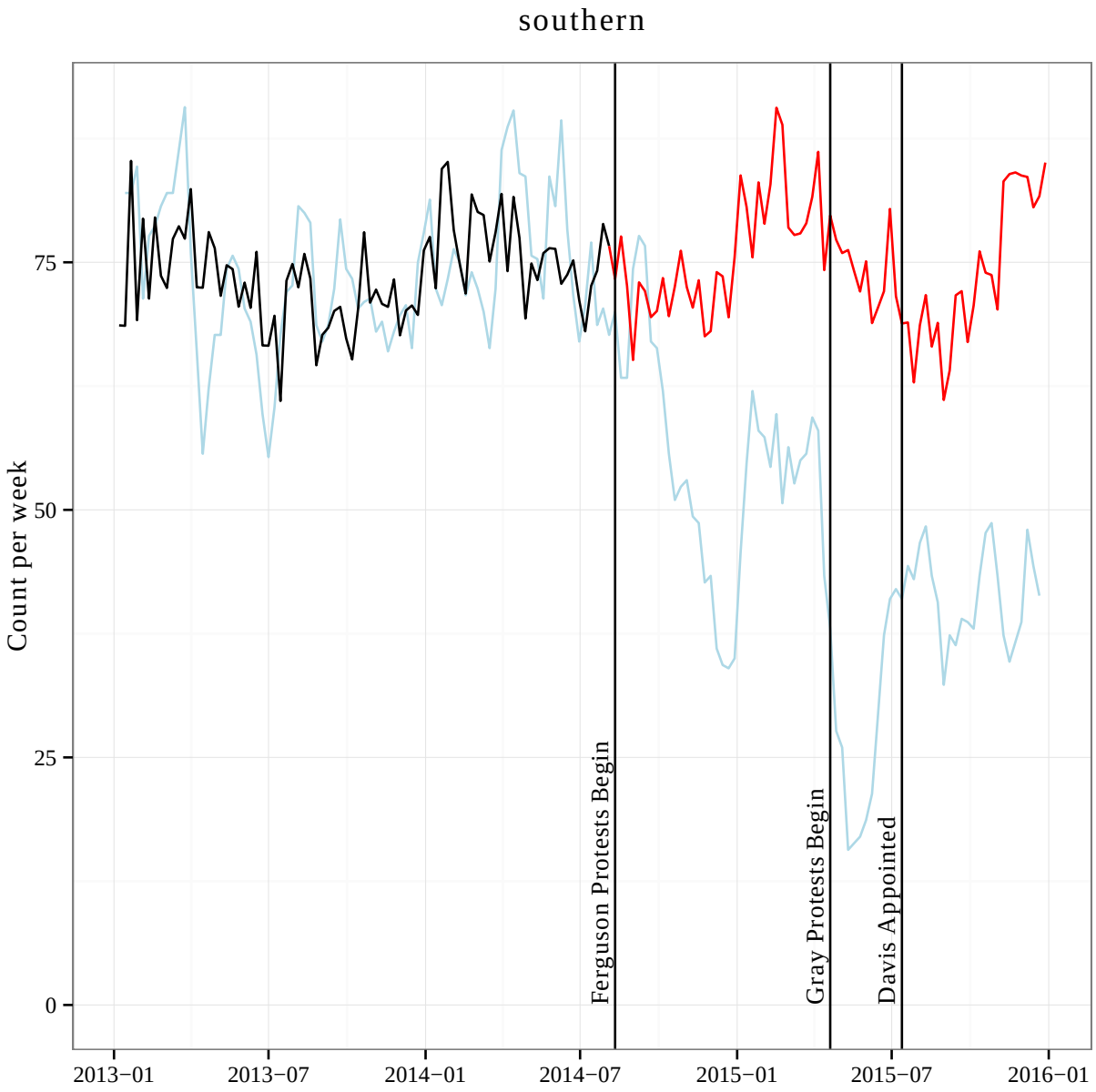

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

41.4 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
-4.1713  -0.8624  -0.0641   0.6015   3.3748

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     5.2000463  0.2427749  21.419  < 2e-16 ***
t               0.0001864  0.0005732   0.325  0.74500
tmax.f.spline1 -0.0118897  0.0042187  -2.818  0.00483 **
tmax.f.spline2  0.0186548  0.0100718   1.852  0.06400 .
tmax.f.spline3 -0.0212718  0.0142300  -1.495  0.13495
tmax.f.spline4  0.0161945  0.0132621   1.221  0.22204
tmax.f.spline5 -0.0209608  0.0120734  -1.736  0.08254 .
snow.in        -0.0386044  0.0439581  -0.878  0.37983
precip.in      -0.1267983  0.0839269  -1.511  0.13083
dark.before.12 -0.0497578  0.0182561  -2.726  0.00642 **
school         -0.0432169  0.0571852  -0.756  0.44981
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 160.99  on 82  degrees of freedom
Residual deviance: 135.35  on 72  degrees of freedom
AIC: 665.99

Number of Fisher Scoring iterations: 4
```


southern
Count per week
90
60
30
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01


southern
Count per week
75
50
25
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

42 Results for southeastern

42.1 Summary Values for southeastern

Table 42.1: Descriptives for Outcome Before Ferguson Protests Begin

Statistic	N	Mean	St. Dev.	Min	Median	Max
southeastern	83	66.807	11.235	43	65	93

Table 42.2: Descriptives for Outcome After Ferguson Protests Begin

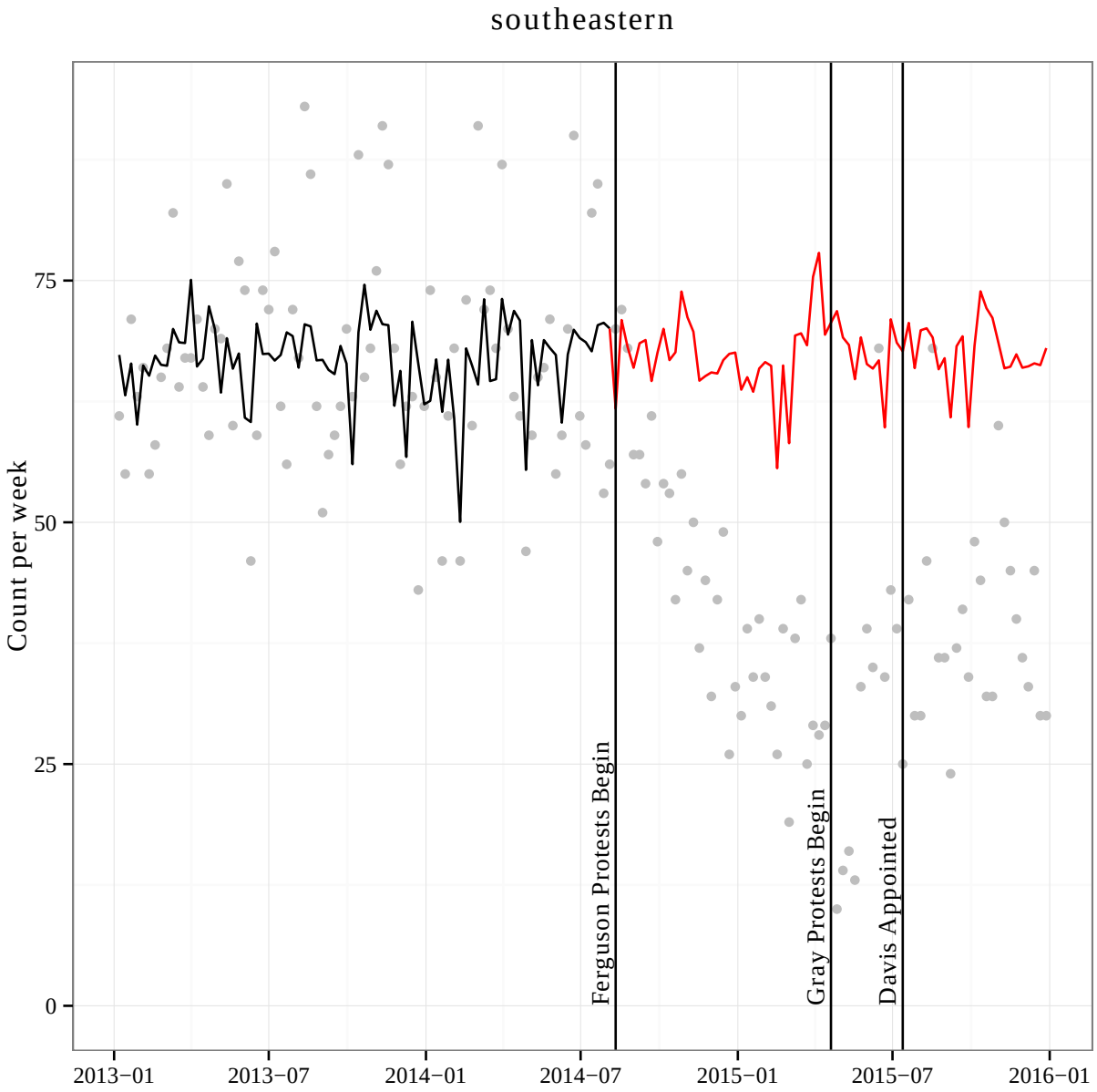
Statistic	N	Mean	St. Dev.	Min	Median	Max
southeastern	73	39.562	13.446	10	38	72

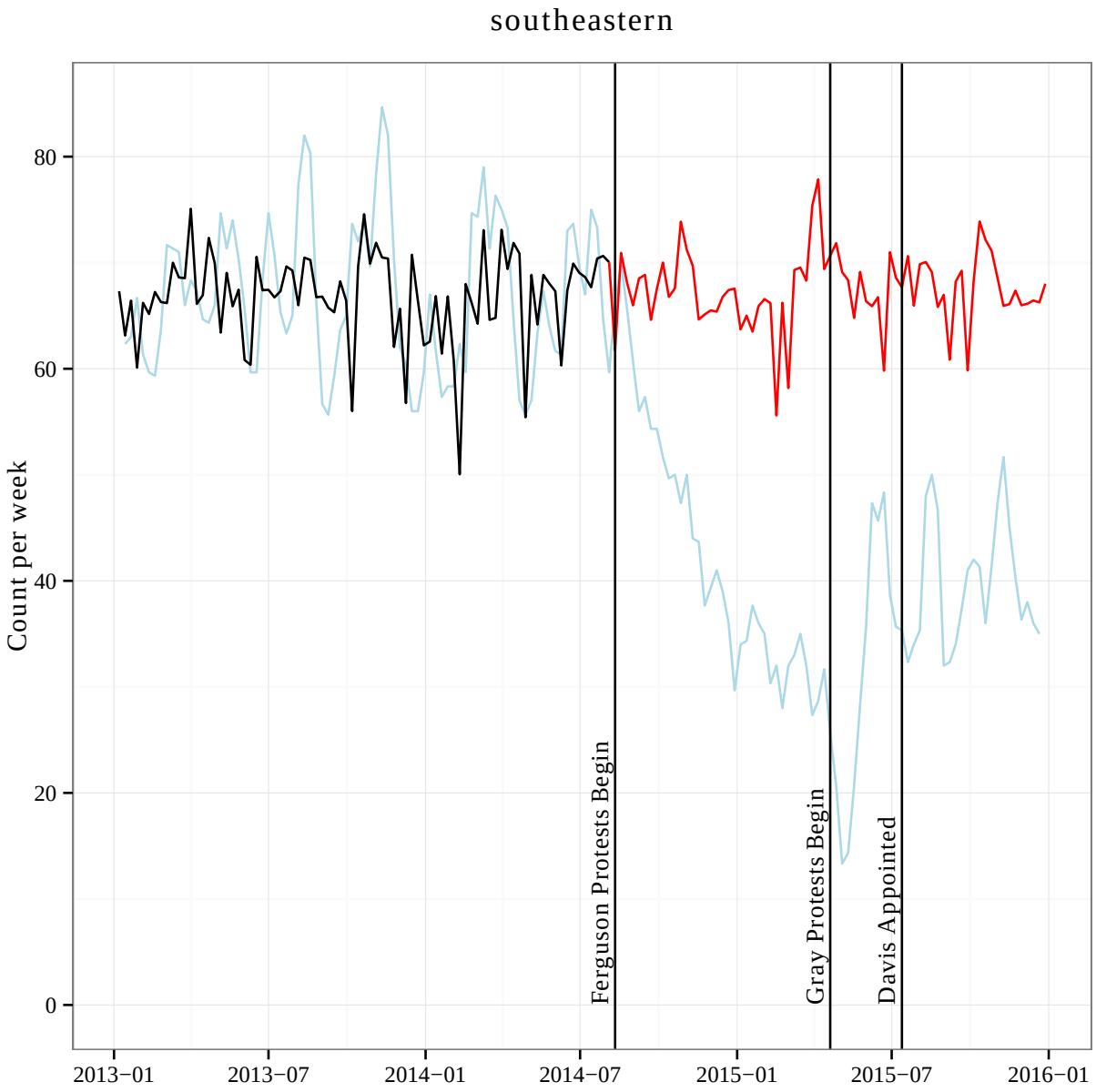
42.2 Four Models for southeastern

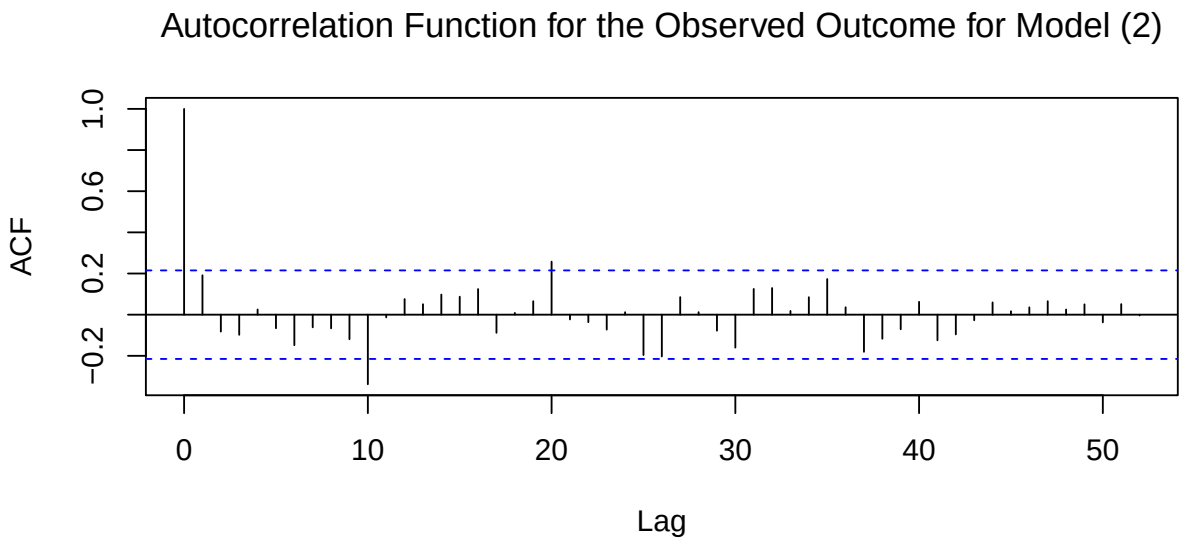
Table 42.3: Four Models that Differ on the Specification of Adjustment and Intervention Variables

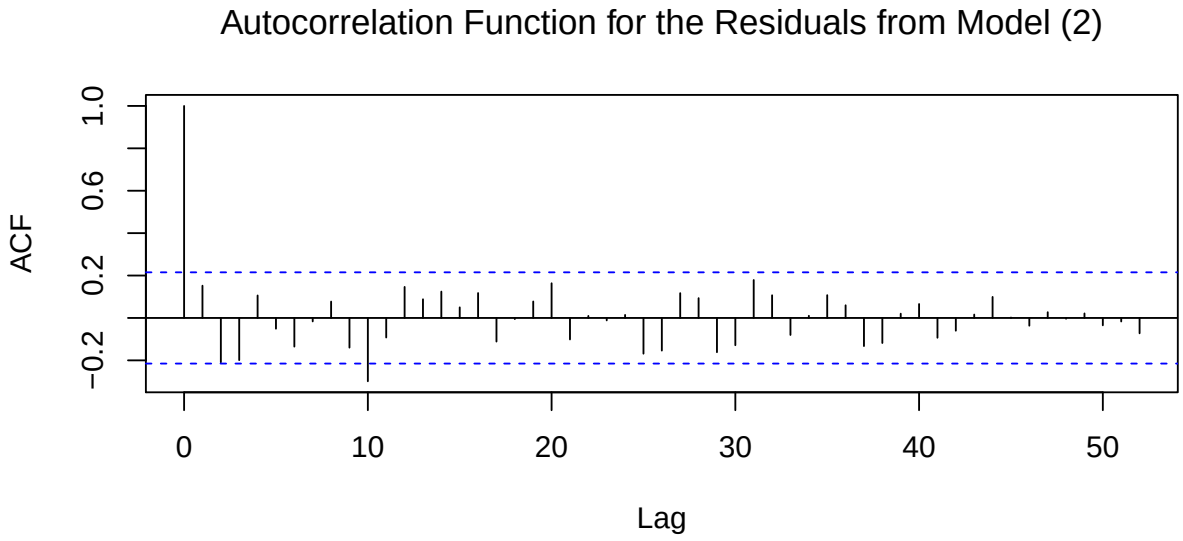
	Outcome: Count Per Week			
	(1)	(2)	(3)	(4)
Time (counter in weeks)	−0.07	0.01		−0.06
After Ferguson Protests Begin (week of 8/11/14 onward)	−19.99		−24.63	−20.14
After Gray Protests Begin (week of 4/20/15 onward)	−6.99		−8.87	−8.81
Unrest and National Guard (during week of 4/27/15)	−24.17		−28.35	−25.24
After Commissioner Batts Fired (week of 7/13/15 onward)	6.44		4.84	6.29
Average Maximum Temperature to 50 Degrees		0.12		0.17
Plus Degrees in the 50s		0.48		0.32
Plus Degrees in the 60s		−1.34		−0.54
Plus Degrees in the 70s		0.61		0.33
Plus Degrees greater than 80		−0.08		−0.77
Snowfall (inches)		−4.65		−4.96
Precipitation (inches)		−18.69		−14.77
Darkness Before Midnight (hours)		−1.03		1.03
School Days (proportion of week)		−3.95		−5.15
Observations	156	83	156	156
R^2	0.59	0.15	0.61	0.64

42.3 Least Squares Model (2) for southeastern



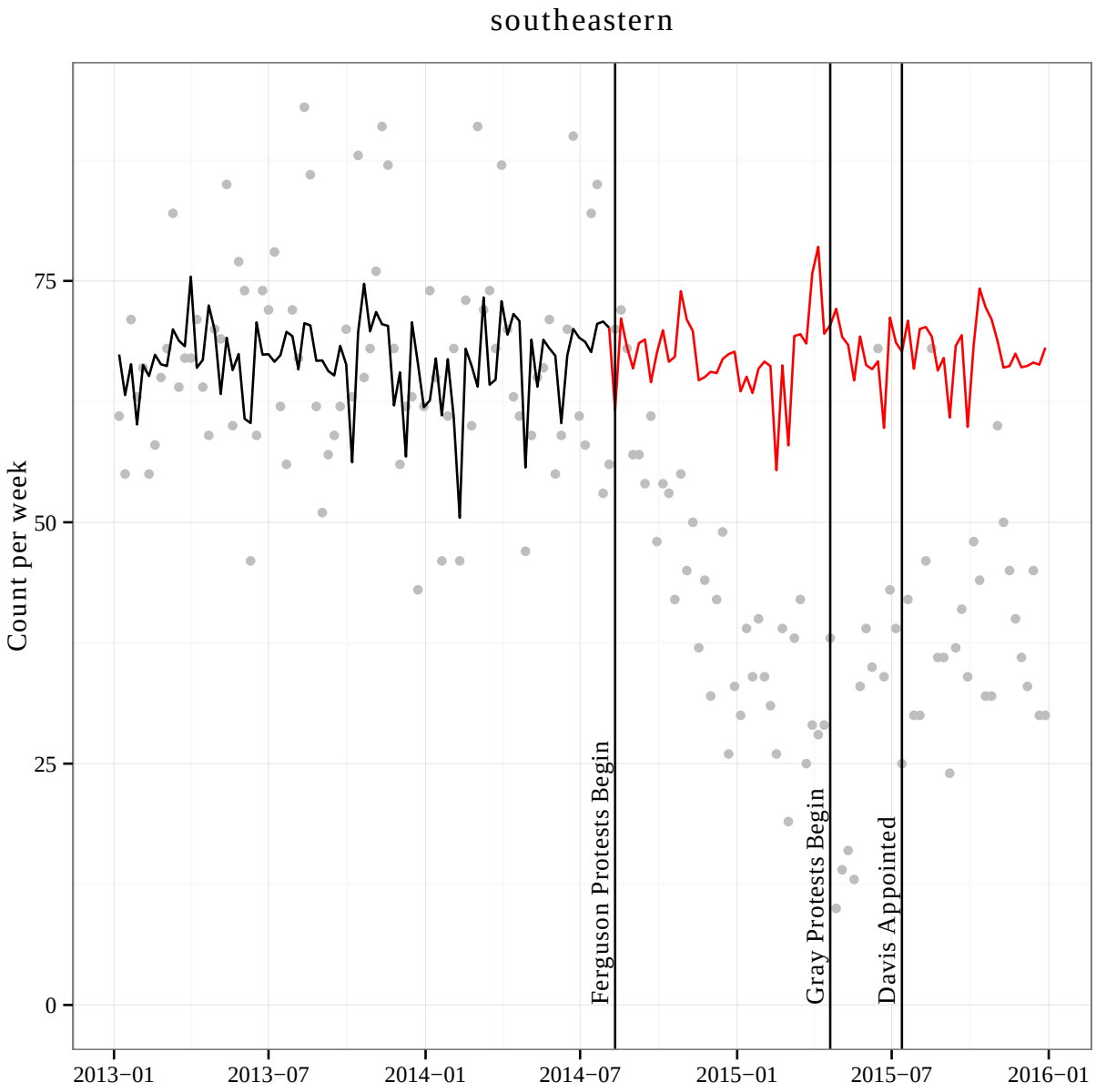

southeastern
Count per week
80
60
40
20
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01

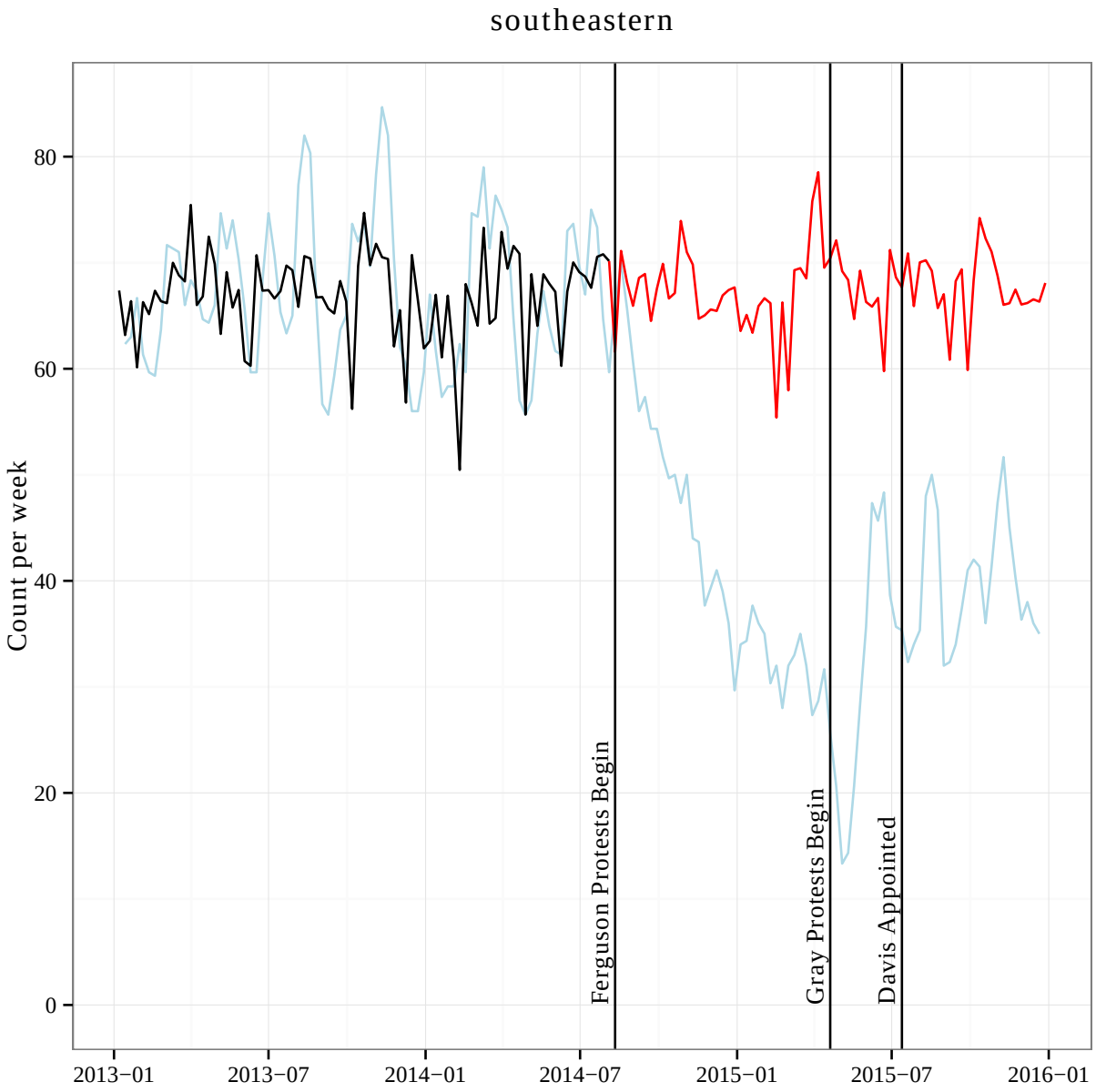

Autocorrelation Function for the Observed Outcome for Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag


Autocorrelation Function for the Residuals from Model (2)
ACF
1.0
0.6
0.2
−0.2
0
10
20
30
40
50
Lag

42.4 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
-3.0777  -1.0159  -0.1499   0.7227   3.1643

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)     4.2772841  0.2608069  16.400  < 2e-16 ***
t               0.0001751  0.0006048   0.289  0.77222
tmax.f.spline1  0.0018262  0.0045996   0.397  0.69135
tmax.f.spline2  0.0062720  0.0107054   0.586  0.55796
tmax.f.spline3 -0.0186015  0.0148414  -1.253  0.21008
tmax.f.spline4  0.0084428  0.0137516   0.614  0.53925
tmax.f.spline5 -0.0011317  0.0123071  -0.092  0.92673
snow.in        -0.0801774  0.0512079  -1.566  0.11741
precip.in      -0.2930543  0.0906813  -3.232  0.00123 **
dark.before.12 -0.0160098  0.0190583  -0.840  0.40088
school         -0.0606618  0.0599014  -1.013  0.31121
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 153.54  on 82  degrees of freedom
Residual deviance: 130.34  on 72  degrees of freedom
AIC: 652.69

Number of Fisher Scoring iterations: 4
```


southeastern
Count per week
75
50
25
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01


southeastern
Count per week
80
60
40
20
0
Ferguson Protests Begin
Gray Protests Begin
Davis Appointed
2013−01
2013−07
2014−01
2014−07
2015−01
2015−07
2016−01