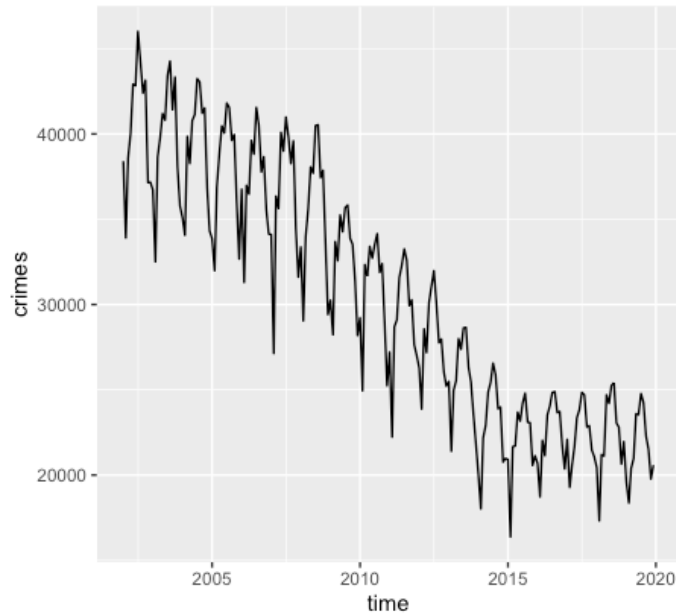


A3

Exercise 2

1.



3.

Exercise 3.

Call:

```
lm(formula = arrest ~ tenure + p50_inc + white.share + hisp.share +  
    black.share + tot.crime - 1, data = office.crime)
```

Residuals:

Min	1Q	Median	3Q	Max
-0.5527	-0.5089	-0.4678	0.4938	5.5270

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
tenure	4.023e-05	8.268e-06	4.866	1.14e-06 ***
p50_inc	2.831e-07	9.514e-08	2.975	0.00293 **
white.share	5.384e-01	9.791e-03	54.986	< 2e-16 ***
hisp.share	5.011e-01	3.716e-03	134.872	< 2e-16 ***
black.share	4.761e-01	3.422e-03	139.109	< 2e-16 ***
tot.crime	8.478e-01	1.248e-01	6.796	1.08e-11 ***

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

Residual standard error: 0.7073 on 1077899 degrees of freedom
Multiple R-squared: 0.3317, Adjusted R-squared: 0.3317
F-statistic: 8.917e+04 on 6 and 1077899 DF, p-value: < 2.2e-16

Exercise 4

Call:

```
lm(formula = arrest ~ tenure + p50_inc + white.share + hisp.share +  
    black.share + tot.crime + factor(district) + factor(year) +  
    factor(month1) - 1, data = office.crime)
```

Residuals:

Min	1Q	Median	3Q	Max
-0.5186	-0.4996	-0.4955	0.5010	5.5104

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
tenure	-3.771e-06	8.524e-06	-0.442	0.658231
p50_inc	-4.799e-08	6.518e-07	-0.074	0.941308
white.share	-1.635e-01	1.841e-01	-0.888	0.374383
hisp.share	-1.324e-01	2.020e-01	-0.655	0.512289
black.share	-7.350e-02	1.041e-01	-0.706	0.479973
tot.crime	-5.543e-01	3.811e-01	-1.455	0.145798
factor(district)1	6.330e-01	1.057e-01	5.988	2.12e-09 ***
factor(district)2	5.871e-01	9.650e-02	6.084	1.17e-09 ***
factor(district)3	5.864e-01	9.852e-02	5.952	2.65e-09 ***
factor(district)4	6.033e-01	1.224e-01	4.930	8.21e-07 ***
factor(district)5	5.863e-01	9.876e-02	5.936	2.91e-09 ***
factor(district)6	5.850e-01	9.644e-02	6.066	1.31e-09 ***
factor(district)7	5.851e-01	9.874e-02	5.926	3.11e-09 ***
factor(district)8	6.310e-01	1.553e-01	4.062	4.87e-05 ***
factor(district)9	6.183e-01	1.465e-01	4.220	2.45e-05 ***
factor(district)10	6.165e-01	1.552e-01	3.971	7.15e-05 ***
factor(district)11	5.968e-01	1.074e-01	5.559	2.71e-08 ***
factor(district)12	6.247e-01	1.382e-01	4.521	6.15e-06 ***
factor(district)13	6.303e-01	1.392e-01	4.528	5.95e-06 ***
factor(district)14	6.486e-01	1.528e-01	4.246	2.18e-05 ***
factor(district)15	5.871e-01	1.002e-01	5.860	4.62e-09 ***
factor(district)16	6.487e-01	1.481e-01	4.379	1.19e-05 ***
factor(district)17	6.271e-01	1.398e-01	4.485	7.29e-06 ***
factor(district)18	6.403e-01	1.273e-01	5.029	4.93e-07 ***
factor(district)19	6.476e-01	1.366e-01	4.742	2.12e-06 ***
factor(district)20	6.239e-01	1.260e-01	4.952	7.36e-07 ***

```

factor(district)21 5.823e-01 8.584e-02 6.784 1.17e-11 ***
factor(district)22 6.118e-01 1.122e-01 5.454 4.93e-08 ***
factor(district)23 6.359e-01 1.345e-01 4.728 2.26e-06 ***
factor(district)24 6.168e-01 1.212e-01 5.088 3.62e-07 ***
factor(district)25 6.316e-01 1.624e-01 3.889 0.000101 ***
factor(year)2008 1.991e-03 3.124e-03 0.637 0.523946
factor(year)2009 -2.854e-03 3.207e-03 -0.890 0.373471
factor(year)2010 -1.126e-03 3.335e-03 -0.338 0.735682
factor(year)2011 -1.109e-03 3.451e-03 -0.321 0.747974
factor(year)2012 -1.520e-03 3.591e-03 -0.423 0.672184
factor(year)2013 1.949e-03 3.881e-03 0.502 0.615409
factor(year)2014 -3.412e-03 4.129e-03 -0.826 0.408596
factor(year)2015 -3.468e-03 4.232e-03 -0.820 0.412498
factor(year)2016 -4.504e-03 4.205e-03 -1.071 0.284166
factor(year)2017 -3.956e-03 4.216e-03 -0.938 0.348045
factor(month1)2 2.159e-03 3.400e-03 0.635 0.525566
factor(month1)3 1.226e-03 3.350e-03 0.366 0.714338
factor(month1)4 5.057e-03 3.349e-03 1.510 0.131092
factor(month1)5 9.770e-03 3.409e-03 2.866 0.004161 **
factor(month1)6 2.113e-03 3.402e-03 0.621 0.534642
factor(month1)7 4.689e-03 3.461e-03 1.355 0.175469
factor(month1)8 1.848e-03 3.447e-03 0.536 0.591898
factor(month1)9 4.921e-03 3.362e-03 1.464 0.143280
factor(month1)10 2.695e-03 3.365e-03 0.801 0.423208
factor(month1)11 2.403e-04 3.329e-03 0.072 0.942458
factor(month1)12 6.589e-07 3.344e-03 0.000 0.999843

```

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

Residual standard error: 0.7068 on 1077853 degrees of freedom

Multiple R-squared: 0.3327, Adjusted R-squared: 0.3327

F-statistic: 1.033e+04 on 52 and 1077853 DF, p-value: < 2.2e-16

Exercise 5

	tenure	income	white.share	hispanic.share	black.share	crime
Between	3.719645e-05	3.414555e-07	0.53069319	0.507359597	0.48091779	0.68165904
Within	-6.485280e-06	-7.263206e-07	-0.07728667	-0.077177411	-0.09331066	-0.18626350
First difference	-9.054202e-05	-1.538825e-06	1.13754276	0.008653448	0.49511578	-0.03980153

(2) gmm
Dependent Var.: arrest

tenure	-0.0003 (0.0022)
p50_inc	-3.42e-7 (7.56e-7)
white.share	-0.1466 (0.1814)
hisp.share	-0.1038 (0.1964)
black.share	-0.0927 (0.1083)

tot.crime -0.6403 (0.4491)
Fixed-Effects: -----
month Yes
district Yes
NUID Yes

S.E.: Clustered by: month
Observations 1,077,905
R2 0.01240
Within R2 4.78e-6

Fixed_effects coefficients

	month	district	NUID
Number of fixed-effects	132	25	13028
Number of references	0	1	1
Mean	0.728	-0.0391	-0.0167
Standard-deviation	0.0117	0.0188	0.151

COEFFICIENTS:

month: 2007-01-01 2007-02-01 2007-03-01 2007-04-01 2007-05-01
0.7113 0.715 0.718 0.7077 0.7228 ... 127 remaining

district: 1 2 3 4 5
0 -0.06257 -0.05086 -0.04017 -0.06282 ... 20 remaining

NUID: 1 2 6 7 16
-0.05788 -0.05361 -0.1783 -0.0252 -0.08859 ... 13,023 remaining