Replication of the Appendix

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Compiling this file will take roughly 15 minute due to the convergence time needed for the `glmmTMB` package.

```r
# load libraries
library(here)
library(tidyverse)
library(fixest)
library(glmmTMB)
library(texreg)

utils:::print.sessionInfo(sessionInfo()[-8],locale = FALSE)
```

```
R version 4.4.1 (2024-06-14)
Platform: aarch64-apple-darwin20
Running under: macOS 15.6.1

Matrix products: default
BLAS:   /Library/Frameworks/R.framework/Versions/4.4-arm64/Resources/lib/libRblas.0.dylib
LAPACK: /Library/Frameworks/R.framework/Versions/4.4-arm64/Resources/lib/libRlapack.dylib;  LAPACK vers

attached base packages:
NULL

other attached packages:
 [1] texreg_1.39.4   glmmTMB_1.1.9   fixest_0.12.1   lubridate_1.9.3
 [5] forcats_1.0.0   stringr_1.5.1   dplyr_1.1.4     purrr_1.1.0
 [9] readr_2.1.5     tidyr_1.3.1     tibble_3.3.0    ggplot2_3.5.2
[13] tidyverse_2.0.0 here_1.0.1

loaded via a namespace (and not attached):
 [1] gtable_0.3.6        TMB_1.9.15          xfun_0.49
 [4] lattice_0.22-6      tzdb_0.4.0          numDeriv_2016.8-1.1
 [7] vctrs_0.6.5         tools_4.4.1         generics_0.1.4
[10] sandwich_3.1-1      pkgconfig_2.0.3     Matrix_1.7-0
[13] stringmagic_1.1.2   lifecycle_1.0.4     compiler_4.4.1
[16] munsell_0.5.1       codetools_0.2-20    htmltools_0.5.8.1
[19] yaml_2.3.10         Formula_1.2-5       nloptr_2.1.1
[22] pillar_1.11.0       MASS_7.3-60.2       boot_1.3-30
[25] multcomp_1.4-26     nlme_3.1-164        tidyselect_1.2.1
[28] digest_0.6.37       mvtnorm_1.3-3       stringi_1.8.7
[31] splines_4.4.1       rprojroot_2.0.4     fastmap_1.2.0
[34] grid_4.4.1          colorspace_2.1-1    cli_3.6.5
[37] magrittr_2.0.3      survival_3.6-4      TH.data_1.1-2
```

```
[40] withr_3.0.2          dreamerr_1.4.0        scales_1.3.0
[43] timechange_0.3.0     estimability_1.5.1   httr_1.4.7
[46] rmarkdown_2.29       emmeans_1.10.1       lme4_1.1-35.5
[49] zoo_1.8-14           hms_1.1.3            coda_0.19-4.1
[52] evaluate_1.0.1       knitr_1.49           mgcv_1.9-1
[55] rlang_1.1.6          Rcpp_1.1.0           xtable_1.8-4
[58] glue_1.8.0           rstudioapi_0.16.0    minqa_1.2.8
[61] jsonlite_1.8.9       R6_2.6.1
```

Load data

```
load(here("data","panel_dat.rda"))
```

Table A.1: First Stage Results for 2SLS

```
model_vio_feols_iv <- feols(policeUC_arrest_bin ~ policeUC_count_bin
                            + policeUni_car_count_bin + pArrest_count_sw
                            + violence_escalation
                            | CACODE |
                            cl_quarter + cl_quart_sw ~ weekend + day ,
                            data=panel_dat, panel.id = ~ CACODE)

model_vio_feols_iv.t <- feols(policeUC_arrest_bin ~ policeUC_count_bin
                            + policeUni_car_count_bin + pArrest_count_sw
                            + violence_escalation + time + time2 + time3
                            | CACODE |
                            cl_quarter + cl_quart_sw ~ weekend + day ,
                            data=panel_dat, panel.id = ~ CACODE)

result_vio_1stage = etable(model_vio_feols_iv, model_vio_feols_iv.t,
                            fitstat='ivf',
                            stage = 1,
                            digits = "r3",
                            fontsize = "tiny",
                            dict=c("cl_quarter" = "Protest zone",
                                    "cl_quart_sw" = "Close to protest zone" ,
                                    "policeUC_count_bin" = "Undercover Police",
                                    "policeUni_car_count_bin" ="Uniformed Police",
                                    "pArrest_count_sw" ="Arrests nearby",
                                    "t" = "time", "t2" = "time2", "t3" = "time3",
                                    "violence_escalation" = "Protest violence",
                                    "weekend" = "Weekend", "day" ="Day"),
                            group = list("_^TimePoly" = "time"),
                            tex = T
)
result_vio_1stage
```

\begingroup
\centering
```

```latex
\tiny
\begin{tabular}{lcccc}
   \tabularnewline \midrule \midrule
   Dependent Variables: & Protest zone  & Close to protest zone & Protest zone  & Close to protest zone`
   Model:              & (1)           & (2)                   & (3)           & (4)\\
   \midrule
   \emph{Variables}\\
   Weekend             & 0.003$^{***}$ & 0.004$^{***}$         & 0.003$^{***}$ & 0.004$^{***}$\\
                       & (0.000)       & (0.000)               & (0.000)       & (0.000)\\
   Day                 & 0.000         & 0.002$^{***}$         & 0.000         & 0.002$^{***}$\\
                       & (0.000)       & (0.000)               & (0.000)       & (0.000)\\
   Undercover Police   & 0.163$^{***}$ & 0.013$^{***}$         & 0.164$^{***}$ & 0.013$^{***}$\\
                       & (0.011)       & (0.002)               & (0.011)       & (0.002)\\
   Uniformed Police    & 0.032$^{***}$ & 0.011$^{***}$         & 0.032$^{***}$ & 0.011$^{***}$\\
                       & (0.002)       & (0.000)               & (0.002)       & (0.000)\\
   Arrests nearby      & 0.160$^{***}$ & 0.201$^{***}$         & 0.156$^{***}$ & 0.196$^{***}$\\
                       & (0.016)       & (0.006)               & (0.016)       & (0.006)\\
   Protest violence    & 0.038$^{*}$   & 0.010$^{***}$         & 0.038$^{*}$   & 0.010$^{***}$\\
                       & (0.022)       & (0.001)               & (0.022)       & (0.001)\\
   \midrule
   \emph{Fixed-effects}\\
   CACODE              & Yes           & Yes                   & Yes           & Yes\\
   \midrule
   \emph{Fit statistics}\\
   TimePoly            &               &                       & Yes           & Yes\\
   F-test (1st stage)  & 43.899        & 1,854.6               & 44.661        & 1,936.7\\
   \midrule \midrule
   \multicolumn{5}{l}{\emph{Clustered (CACODE) standard-errors in parentheses}}\\
   \multicolumn{5}{l}{\emph{Signif. Codes: ***: 0.01, **: 0.05, *: 0.1}}\\
\end{tabular}
\par\endgroup
```

Table A.2 Effects of Indoor Spaces (Logit)

```r
re.mod.logit <- glmmTMB(policeUC_arrest_bin ~
                      cl_quart_sw + cl_quarter + policeUC_count_bin
                  + policeUni_car_count_bin + pArrest_count_sw
                  + violence_escalation + indoorSp_protests
                  + legCo  + (1 | CACODE), data = panel_dat,
                  family=binomial(link="logit")) # 20 sec

re.mod.logit.t <- glmmTMB(policeUC_arrest_bin ~
                       cl_quart_sw + cl_quarter + policeUC_count_bin
                  + policeUni_car_count_bin + pArrest_count_sw
                  + violence_escalation + indoorSp_protests
                  + legCo + time + time2 + time3 +
                    (1 | CACODE), data = panel_dat,
                  family=binomial(link="logit")) # 1 min

idvs2 = c("Intercept",
        "Close to protest zone", "Protest zone",
        "Undercover Police", "Uniformed Police",
```

```
            "Arrests nearby", "Protest violence",
            "Indoor spaces", "LegCo",
            "time", "time2", "time3")

screenreg(list(re.mod.logit, re.mod.logit.t),
            include.variance=F, include.intercept = F,
            include.rsquared = F, include.loglik = F,
            include.aic = F, include.adjr = F,
            digits = 3,
            custom.model.names = c(
              "Logit", "Logit"),
            custom.coef.names = idvs2,
            stars = c(0.01, 0.05, 0.10),
            custom.gof.rows =
              list(Model = c("RE", "RE"), TimePoly = c("N", "Y")),
            omit.coef = "(time|time2|time3|(Intercept))"
            )
```

```
========================================================
                         Logit            Logit
--------------------------------------------------------
Close to protest zone    -1.898 **        -2.829 ***
                          (0.906)          (0.961)
Protest zone              1.765 ***        1.775 ***
                          (0.131)          (0.132)
Undercover Police        25.872           26.203 ***
                       (2794.259)          (0.525)
Uniformed Police          0.674 ***        0.697 ***
                          (0.254)          (0.256)
Arrests nearby            2.243 ***        2.303 ***
                          (0.360)          (0.360)
Protest violence          0.516            0.473
                          (0.349)          (0.353)
Indoor spaces             0.346 **         0.335 **
                          (0.146)          (0.150)
LegCo                    -0.254           -0.225
                          (0.512)          (0.535)
--------------------------------------------------------
Model                        RE               RE
TimePoly                      N                Y
Num. obs.                327248           327248
Num. groups: CACODE         452              452
========================================================
*** p < 0.01; ** p < 0.05; * p < 0.1
```

Table A.3. Effects on Undercover Policing During Covid Lockdown

```
load(here("data","panel_covid.rda"))

model_feols <- feols(policeUC_arrest_bin
                      ~ cl_quart_sw + cl_quarter + policeUC_count_bin
```

4

```
                         + policeUni_car_count_bin + pArrest_count_sw
                              | CACODE,
                            data=panel_covid, panel.id = ~ CACODE)


model_feols.t <- feols(policeUC_arrest_bin
                        ~ cl_quart_sw + cl_quarter +  policeUC_count_bin
                        + policeUni_car_count_bin + pArrest_count_sw
                        + time+ time2 + time3
                        | CACODE,
                        data=panel_covid, panel.id = ~ CACODE)

model_feols_iv <- feols(policeUC_arrest_bin ~ policeUC_count_bin
                         + policeUni_car_count_bin + pArrest_count_sw
                         | CACODE |
                         cl_quart_sw + cl_quarter ~ weekend + day,
                         data=panel_covid, panel.id = ~ CACODE)

model_feols_iv.t <- feols(policeUC_arrest_bin ~ policeUC_count_bin
                           + policeUni_car_count_bin + pArrest_count_sw
                           + time +time2 + time3
                           | CACODE |
                           cl_quart_sw + cl_quarter ~ weekend + day ,
                           data=panel_covid, panel.id = ~ CACODE)


idvs2 = c( "Closeness to protest zone", "Protest zone",
           "Undercover Police", "Uniformed Police",
           "Arrests nearby",
          "time", "time2", "time3",
          "Predicted closeness to protest zone",
          "Predicted protest zone")

screenreg(list(model_feols, model_feols.t,
            model_feols_iv, model_feols_iv.t),
        include.variance=F, include.intercept = F,
        include.rsquared = F, include.loglik = F,
        include.aic = F, include.adjr = F,
        digits = 4,
        stars = c(0.01, 0.05, 0.10),
        custom.model.names = c(
          "OLS", "OLS",
          "2SLS","2SLS"),
        custom.coef.names = idvs2,
        custom.gof.rows = list(Model = c("FE", "FE", "FE", "FE"), TimePoly = c("N", "Y", "N", "Y")),
        omit.coef = "(time|time2|time3|(Intercept))"
        )
```

	OLS	OLS	2SLS	2SLS
Closeness to protest zone	0.1343	0.1417		
	(0.1227)	(0.1250)		
Protest zone	0.1329 ***	0.1328 ***		
	(0.0480)	(0.0480)		
Undercover Police	0.0835 ***	0.0835 ***	0.0100	0.0095
	(0.0185)	(0.0184)	(0.0326)	(0.0317)
Uniformed Police	-0.0014 **	-0.0014 **	-0.0064 **	-0.0065 **
	(0.0007)	(0.0007)	(0.0031)	(0.0031)
Arrests nearby	0.2409 ***	0.2457 ***	0.0795	0.0805
	(0.0907)	(0.0922)	(0.2956)	(0.2252)
Predicted closeness to protest zone			-1.0871	-1.0962
			(2.1229)	(1.5801)
Predicted protest zone			1.5161 **	1.5250 **
			(0.7702)	(0.7285)

```
Model                           FE           FE           FE           FE
TimePoly                         N            Y            N            Y
Num. obs.                     86784        86784        86784        86784
Num. groups: CACODE             452          452          452          452
=================================================================================
```
*** p < 0.01; ** p < 0.05; * p < 0.1

Table A.4. Effects of Indoor Spaces on Arrests by Undercover Police (with radius)

```r
# 300m
re_300m.mod.indoorSp <- glmmTMB(
  indoorSp_UCArrests300m
  ~ cl_quart_sw + cl_quarter + policeUC_count_bin
  + policeUni_car_count_bin + pArrest_count_sw
  + violence_escalation  + indoorSp_protests +
    legCo + (1 | CACODE), data = panel_dat, family="gaussian")


re_300m.mod.t.indoorSp <- glmmTMB(
  indoorSp_UCArrests300m
  ~ cl_quart_sw + cl_quarter + policeUC_count_bin
  + policeUni_car_count_bin + pArrest_count_sw
  + violence_escalation  + indoorSp_protests +
    legCo + time + time2 + time3 + (1 | CACODE)
  , data = panel_dat, family="gaussian")


# 200m
re_200m.mod.indoorSp <- glmmTMB(
  indoorSp_UCArrests200m
  ~ cl_quart_sw + cl_quarter +  policeUC_count_bin
  + policeUni_car_count_bin + pArrest_count_sw
  + violence_escalation  + indoorSp_protests +
    legCo + (1 | CACODE), data = panel_dat, family="gaussian")


re_200m.mod.t.indoorSp <- glmmTMB(
  indoorSp_UCArrests200m
  ~ cl_quart_sw + cl_quarter + policeUC_count_bin +
    policeUni_car_count_bin + pArrest_count_sw +
    violence_escalation  + indoorSp_protests +
    legCo + time + time2 + time3 + (1 | CACODE),
  data = panel_dat, family="gaussian")


# 100m
re_100m.mod.indoorSp <- glmmTMB(
  indoorSp_UCArrests100m
  ~ cl_quart_sw + cl_quarter +  policeUC_count_bin +
    policeUni_car_count_bin + pArrest_count_sw +
    violence_escalation  + indoorSp_protests +
    legCo + (1 | CACODE), data = panel_dat, family="gaussian")

set.seed(123)
nt <- parallel::detectCores() # 20 cores
ctrl <- glmmTMBControl(optCtrl = list(iter.max = 1e3, eval.max = 1e3),
                       optimizer = "nlminb", parallel = nt)

re_100m.mod.t.indoorSp <- glmmTMB(
  indoorSp_UCArrests100m
  ~ cl_quart_sw + cl_quarter + policeUC_count_bin +
    policeUni_car_count_bin + pArrest_count_sw +
    violence_escalation + indoorSp_protests +
    legCo + time + time2 + time3 + (1 | CACODE),
  data = panel_dat,
```

```
  control = ctrl,
  family="gaussian")


idvs = c( "Intercept", "Close to protest zone",
          "Protest zone",
          "Undercover Police", "Uniformed Police",
          "Arrests nearby", "Protest violence",
          "Indoor spaces", "LegCo",
          "time", "time2", "time3")

screenreg(list(re_300m.mod.indoorSp, re_300m.mod.t.indoorSp,
               re_200m.mod.indoorSp, re_200m.mod.t.indoorSp,
               re_100m.mod.indoorSp, re_100m.mod.t.indoorSp),
             include.variance=F, include.intercept = F,
             custom.coef.names = idvs,
             digits = 4,
             include.loglik = FALSE,
             include.aic = FALSE,
             include.rsquared = FALSE,
             include.adjrs = FALSE,
             custom.model.names = c(
               "300m", "300m",
               "200m","200m",
               "100m", "100m"),
             stars = c(0.01, 0.05, 0.10),
             custom.gof.rows =
               list(Model = c("RE", "RE","RE", "RE", "RE",  "RE"),
               TimePoly = c("N", "Y", "N", "Y", "N", "Y")),
             caption = "Effects of Indoor Spaces on Arrests by Undercover Police (with radius)",
             omit.coef = "(time|time2|time3|(Intercept))"
)
```

```
=======================================================================================================================
                            300m            300m            200m            200m            100m            100m
-----------------------------------------------------------------------------------------------------------------------
Close to protest zone     -0.0421 ***     -0.0426 ***     -0.0253 ***     -0.0256 ***     -0.0089 ***     -0.0089 ***
                          (0.0023)        (0.0023)        (0.0019)        (0.0019)        (0.0013)        (0.0013)
Protest zone               0.0315 ***      0.0315 ***      0.0232 ***      0.0232 ***      0.0116 ***      0.0116 ***
                          (0.0005)        (0.0005)        (0.0005)        (0.0005)        (0.0003)        (0.0003)
Undercover Police          0.0941 ***      0.0942 ***      0.0658 ***      0.0658 ***      0.0280 ***      0.0280 ***
                          (0.0006)        (0.0006)        (0.0005)        (0.0005)        (0.0003)        (0.0003)
Uniformed Police          -0.0012 ***     -0.0012 ***     -0.0008 ***     -0.0007 ***     -0.0002 **      -0.0002 **
                          (0.0002)        (0.0002)        (0.0001)        (0.0001)        (0.0001)        (0.0001)
Arrests nearby             0.0318 ***      0.0319 ***      0.0163 ***      0.0164 ***      0.0014 **       0.0014 **
                          (0.0012)        (0.0012)        (0.0010)        (0.0010)        (0.0007)        (0.0007)
Protest violence           0.0051 ***      0.0051 ***      0.0043 ***      0.0043 ***      0.0035 ***      0.0035 ***
                          (0.0010)        (0.0010)        (0.0008)        (0.0008)        (0.0005)        (0.0005)
Indoor spaces              0.0005 ***      0.0005 ***      0.0005 ***      0.0005 ***      0.0003 ***      0.0003 ***
                          (0.0002)        (0.0002)        (0.0001)        (0.0001)        (0.0001)        (0.0001)
LegCo                      0.0032 **       0.0032 **       0.0025 **       0.0025 **       0.0010          0.0010
                          (0.0014)        (0.0014)        (0.0012)        (0.0012)        (0.0008)        (0.0008)
-----------------------------------------------------------------------------------------------------------------------
Model                         RE              RE              RE              RE              RE              RE
TimePoly                       N               Y               N               Y               N               Y
Num. obs.                  327248          327248          327248          327248          327248          327248
Num. groups: CACODE           452             452             452             452             452             452
=======================================================================================================================
*** p < 0.01; ** p < 0.05; * p < 0.1
```

Table A.5. Effects of Outdoor Parks on Arrests by Undercover Police (with radius)

```r
# 1. 1000m
re_park1000m <- glmmTMB(
  policeUC_arrest_bin_park1000m
  ~  cl_quart_sw + cl_quarter +
    policeUC_count_bin +  policeUni_car_count_bin +
    pArrest_count_sw + bldg_park_bin + legCo +
    (1 | CACODE), data = panel_dat, family="gaussian")

re_t_park1000m <- glmmTMB(
  policeUC_arrest_bin_park1000m
  ~  cl_quart_sw + cl_quarter + policeUC_count_bin +
    policeUni_car_count_bin + pArrest_count_sw +
    bldg_park_bin + legCo + time + time2 + time3 + (1 | CACODE),
  data = panel_dat, family="gaussian")


# 2. 500m
re_park500m <- glmmTMB(
  policeUC_arrest_bin_park500m
  ~  cl_quart_sw + cl_quarter +  policeUC_count_bin +
    policeUni_car_count_bin + pArrest_count_sw +
    bldg_park_bin + legCo + (1 | CACODE),
  data = panel_dat, family="gaussian")

re_t_park500m <- glmmTMB(
  policeUC_arrest_bin_park500m
  ~  cl_quart_sw + cl_quarter +  policeUC_count_bin +
    policeUni_car_count_bin + pArrest_count_sw + bldg_park_bin
  + legCo + time + time2 + time3 + (1 | CACODE),
  data = panel_dat, family="gaussian")

# 3. 100m
re_park100m <- glmmTMB(
  policeUC_arrest_bin_park100m
  ~  cl_quart_sw + cl_quarter +  policeUC_count_bin +  policeUni_car_count_bin + pArrest_count_sw + bldg

idvs = c("Intercept",
        "Protest zone", "Close to protest zone",
        "Undercover Police", "Uniformed Police",
        "Arrests nearby",
        "Outdoor parks", "LegCo",
        "time", "time2", "time3")

screenreg(list(re_park1000m, re_t_park1000m,
              re_park500m,  re_t_park500m,
              re_park100m ),
        include.loglik = FALSE,
        include.aic = FALSE,
        include.rsquared = FALSE,
        include.adjrs = FALSE,
        custom.coef.names = idvs,
```

```
          custom.model.names = c(
            "1000m", "1000m",
            "500m", "500m",
            "100m"),
          stars = c(0.01, 0.05, 0.10),
          include.variance=F, include.intercept = F,
          custom.gof.rows =
            list(Model = c("RE", "RE", "RE", "RE", "RE"),
                 TimePoly = c("N", "Y", "N", "Y","N")),
          caption = "Effects of Outdoor Parks on Arrests by Undercover Police (with radius)",
          omit.coef = "(time|time2|time3|(Intercept))",
          digits = 3)
```

	1000m	1000m	500m	500m	100m
Protest zone	-0.036 ***	-0.037 ***	-0.018 ***	-0.018 ***	-0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.000)
Close to protest zone	0.037 ***	0.037 ***	0.019 ***	0.019 ***	0.000 **
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Undercover Police	0.112 ***	0.112 ***	0.046 ***	0.046 ***	0.001 ***
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Uniformed Police	-0.002 ***	-0.002 ***	-0.001 ***	-0.001 ***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Arrests nearby	0.033 ***	0.034 ***	0.015 ***	0.015 ***	-0.000 *
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Outdoor parks	0.000	0.000	0.000 ***	0.000 ***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LegCo	0.014 ***	0.014 ***	0.023 ***	0.023 ***	0.001 ***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.000)
Model	RE	RE	RE	RE	RE
TimePoly	N	Y	N	Y	N
Num. obs.	327248	327248	327248	327248	327248
Num. groups: CACODE	452	452	452	452	452

*** p < 0.01; ** p < 0.05; * p < 0.1

Table A.6. Effects on Undercover Policing (3 hour window)

```
load(here("data","panel_dat3hr.rda"))

model_vio_feols <-
  feols(policeUC_arrest_bin ~ cl_miniquart_sw + cl_miniquarter
                  + policeUC_count_bin + policeUni_car_count_bin
                  + pArrest_count_sw + violence_escalation
                  | CACODE,
                  data=panel_dat3hr, panel.id = ~ CACODE)

model_vio_feols.t <-
  feols(policeUC_arrest_bin ~ cl_miniquart_sw + cl_miniquarter
        + policeUC_count_bin + policeUni_car_count_bin +
          pArrest_count_sw + violence_escalation + time + time2 + time3
            | CACODE,
                  data=panel_dat3hr, panel.id = ~ CACODE)

model_vio_feols_iv <-
  feols(policeUC_arrest_bin ~ policeUC_count_bin +
```

```
                               policeUni_car_count_bin + pArrest_count_sw +
                               violence_escalation
                               | CACODE |
             cl_miniquart_sw + cl_miniquarter ~ weekend + day ,
                           data=panel_dat3hr, panel.id = ~ CACODE)

model_vio_feols_iv.t <-
  feols(policeUC_arrest_bin ~ policeUC_count_bin + policeUni_car_count_bin
        + pArrest_count_sw + violence_escalation + time + time2 + time3
                           | CACODE |
             cl_miniquart_sw + cl_miniquarter ~ weekend + day ,
                           data=panel_dat3hr, panel.id = ~ CACODE)

set.seed(123)
nt <- parallel::detectCores()
ctrl <- glmmTMBControl(optCtrl = list(iter.max = 1e3, eval.max = 1e3),
                       optimizer = "nlminb", parallel = nt)

re_vio.mod <- glmmTMB(policeUC_arrest_bin ~ cl_miniquart_sw + cl_miniquarter +
                        policeUC_count_bin + policeUni_car_count_bin + pArrest_count_sw +
                        violence_escalation + indoorSp_protests + legCo +
                        (1 | CACODE), data = panel_dat3hr,
                      control = ctrl,
                      family="gaussian")

re_vio.mod.t <- glmmTMB(policeUC_arrest_bin ~ cl_miniquart_sw + cl_miniquarter +
                          policeUC_count_bin + policeUni_car_count_bin + pArrest_count_sw
                        + violence_escalation + indoorSp_protests + legCo + time + time2 + time3
                        + (1 | CACODE), data = panel_dat3hr,
                        control = ctrl,
                        family="gaussian")

idvs = c("Closeness to protest zone",  "Protest zone",
         "Undercover Police", "Uniformed Police",
         "Arrests nearby", "Protest violence",
         "time", "time2", "time3",
         "Predicted closeness to protest zone",
         "Predicted protest zone",
         "Intercept",
         "Indoor spaces", "LegCo"
)

screenreg(list(model_vio_feols, model_vio_feols.t,
               model_vio_feols_iv,model_vio_feols_iv.t,
               re_vio.mod, re_vio.mod.t),
          include.variance=F, include.intercept = F,
          include.rsquared = F, include.loglik = F,
          include.aic = F, include.adjr = F,
          digits = 4,
          stars = c(0.01, 0.05, 0.10),
          custom.model.names = c(
            "OLS", "OLS",
            "2SLS","2SLS",
            "OLS", "OLS"),
          custom.coef.names = idvs,
          custom.gof.rows = list(Model = c("FE", "FE", "FE", "FE", "RE", "RE"),
                        TimePoly = c("N", "Y", "N", "Y","N", "Y")),
          omit.coef = "(time|time2|time3|(Intercept))"
)
```

	OLS	OLS	2SLS	2SLS	OLS	OLS
Closeness to protest zone	-0.0462 ***	-0.0467 ***			-0.0467 ***	-0.0471 ***
	(0.0103)	(0.0103)			(0.0021)	(0.0021)
Protest zone	0.0459 ***	0.0458 ***			0.0461 ***	0.0461 ***
	(0.0065)	(0.0065)			(0.0005)	(0.0005)
Undercover Police	0.1572 ***	0.1572 ***	0.1222 ***	0.1219 ***	0.1575 ***	0.1575 ***
	(0.0103)	(0.0103)	(0.0145)	(0.0146)	(0.0005)	(0.0005)
Uniformed Police	-0.0014 ***	-0.0014 ***	-0.0079 ***	-0.0079 ***	-0.0013 ***	-0.0013 ***
	(0.0004)	(0.0004)	(0.0023)	(0.0023)	(0.0001)	(0.0001)
Arrests nearby	0.0251 ***	0.0253 ***	0.0206 ***	0.0209 ***	0.0251 ***	0.0252 ***
	(0.0067)	(0.0067)	(0.0068)	(0.0068)	(0.0008)	(0.0008)
Protest violence	0.0071	0.0071	0.0004	0.0004	0.0069 ***	0.0069 ***
	(0.0058)	(0.0058)	(0.0032)	(0.0032)	(0.0006)	(0.0006)
Predicted closeness to protest zone			-0.2039 ***	-0.2057 ***		
			(0.0559)	(0.0560)		
Predicted protest zone			0.3034 ***	0.3054 ***		
			(0.0847)	(0.0850)		
Indoor spaces					0.0003 ***	0.0003 ***
					(0.0001)	(0.0001)
LegCo					0.0022 ***	0.0022 ***
					(0.0008)	(0.0008)
Model	FE	FE	FE	FE	RE	RE
TimePoly	N	Y	N	Y	N	Y
Num. obs.	654496	654496	654496	654496	654496	654496
Num. groups: CACODE	452	452	452	452	452	452

*** p < 0.01; ** p < 0.05; * p < 0.1

Table A.7. Effects on Undercover Policing (1km grid, quarter-day level)

```
load(here("data","panel_dat6hr_grid.rda"))
```

```r
model_vio_feols <-
  feols(policeUC_arrest_bin ~ cl_quart_sw + cl_quarter + policeUC_count_bin +
                        policeUni_car_count_bin + pArrest_count_sw +
                        violence_escalation
                    | grid_id,
                    data=panel_dat6hr_grid, panel.id = ~ grid_id)

model_vio_feols.t <-
  feols(policeUC_arrest_bin ~ cl_quart_sw + cl_quarter + policeUC_count_bin +
                        policeUni_car_count_bin + pArrest_count_sw +
                        violence_escalation +
                        time + time2 + time3
                    | grid_id,
                    data=panel_dat6hr_grid, panel.id = ~ grid_id)

model_vio_feols_iv <- feols(policeUC_arrest_bin ~ policeUC_count_bin +
                        policeUni_car_count_bin + pArrest_count_sw +
                        violence_escalation
                    | grid_id |  cl_quart_sw + cl_quarter ~ weekend + day,
                    data=panel_dat6hr_grid, panel.id = ~ grid_id)

model_vio_feols_iv.t <-
  feols(policeUC_arrest_bin ~ policeUC_count_bin +
                          policeUni_car_count_bin + pArrest_count_sw +
                          violence_escalation +
                          time + time2 + time3
                      | grid_id | cl_quart_sw + cl_quarter ~ weekend + day,
                      data=panel_dat6hr_grid, panel.id = ~ grid_id)


idvs = c( "Closeness to protest zone",  "Protest zone","Undercover Police",
          "Uniformed Police", "Arrests nearby", "Protest violence",
          "time", "time2", "time3",
          "Predicted closeness to protest zone", "Predicted protest zone"
)

screenreg(list(model_vio_feols, model_vio_feols.t,
            model_vio_feols_iv,model_vio_feols_iv.t),
        include.variance=F, include.intercept = F,
        include.rsquared = F, include.loglik = F,
        include.aic = F, include.adjr = F,
        digits = 4,
        stars = c(0.01, 0.05, 0.10),
        omit.coef = "(time|time2|time3|(Intercept))",
        custom.model.names = c(
          "OLS", "OLS",
          "2SLS","2SLS"),
        custom.coef.names = idvs,
        custom.gof.rows = list(Model = c("FE", "FE", "FE", "FE"),
                            TimePoly = c("N", "Y", "N", "Y")))
```

	OLS	OLS	2SLS	2SLS
Closeness to protest zone	-0.0865 **	-0.0862 **		
	(0.0344)	(0.0345)		
Protest zone	0.0670 ***	0.0669 ***		
	(0.0107)	(0.0107)		
Undercover Police	0.2062 ***	0.2061 ***	0.1362 ***	0.1361 ***
	(0.0156)	(0.0156)	(0.0224)	(0.0225)
Uniformed Police	-0.0035 ***	-0.0035 ***	-0.0162 ***	-0.0162 ***
	(0.0008)	(0.0008)	(0.0033)	(0.0034)
Arrests nearby	0.0883 ***	0.0886 ***	0.0375 **	0.0379 **
	(0.0212)	(0.0213)	(0.0169)	(0.0167)
Protest violence	0.0354 ***	0.0354 ***	-0.0219	-0.0220
	(0.0076)	(0.0076)	(0.0169)	(0.0169)

```
Predicted closeness to protest zone                          -0.2847 ***    -0.2864 ***
                                                             (0.0686)       (0.0684)
Predicted protest zone                                        0.5119 ***     0.5130 ***
                                                             (0.1014)       (0.1017)
------------------------------------------------------------------------------------------------
Model                                      FE          FE          FE          FE
TimePoly                                    N           Y           N           Y
Num. obs.                              1225008     1225008     1225008     1225008
Num. groups: grid_id                      1692        1692        1692        1692
================================================================================================
```
*** p < 0.01; ** p < 0.05; * p < 0.1

Table A.8. Effects of Indoor Spaces (1km grid, quarter-day level)

```r
re.mod.logit <- glmmTMB(policeUC_arrest_bin ~ cl_quart_sw + cl_quarter +
                        policeUC_count_bin + policeUni_car_count_bin +
                        pArrest_count_sw + violence_escalation +
                        indoorSp_protests + legCo + (1 | grid_id),
                    data = panel_dat6hr_grid, family=binomial(link="logit"))

set.seed(123)
nt <- parallel::detectCores()
ctrl <- glmmTMBControl(optCtrl = list(iter.max = 1e3, eval.max = 1e3),
                    optimizer = "optim")

re.mod.logit.t <-
  glmmTMB(policeUC_arrest_bin ~ cl_quart_sw + cl_quarter +
          policeUC_count_bin + policeUni_car_count_bin +
          pArrest_count_sw + violence_escalation + indoorSp_protests +
          legCo + time + time2 + time3 + (1 | grid_id),
        data = panel_dat6hr_grid,
        control = ctrl,
        family=binomial(link="logit"))


idvs2 = c("Intercept",
        "Closeness to protest zone",
        "Protest zone","Undercover Police",
        "Uniformed Police", "Arrests nearby",
        "Protest violence",
        "Indoor spaces", "LegCo",
        "time", "time2", "time3")

screenreg(list(re.mod.logit, re.mod.logit.t),
        include.variance=F, include.intercept = F,
        include.rsquared = F, include.loglik = F,
        include.aic = F, include.adjr = F,
        digits = 3,
        omit.coef = "(time|time2|time3|(Intercept))",
        custom.model.names = c(
          "Logit", "Logit"),
        stars = c(0.01, 0.05, 0.10),
        custom.coef.names = idvs2,
        custom.gof.rows = list(Model = c("RE", "RE"), TimePoly = c("N", "Y")))
```

```
==========================================================
                           Logit          Logit
----------------------------------------------------------
Closeness to protest zone      2.269          0.068
                              (3.206)        (4.848)
Protest zone                   1.448 ***      0.508 **
                              (0.145)        (0.256)
Undercover Police             27.428          0.183
```

```
                            (3402.450)              (0.274)
Uniformed Police                0.566 **           -1.220 ***
                              (0.286)              (0.139)
Arrests nearby                  5.294 ***            0.233
                              (0.974)              (1.632)
Protest violence                0.797 ***            0.347
                              (0.200)              (0.289)
Indoor spaces                   0.398 *              1.342 ***
                              (0.208)              (0.333)
LegCo                          -0.336                0.752
                              (0.753)              (5.823)
-----------------------------------------------------------
Model                              RE                   RE
TimePoly                            N                    Y
Num. obs.                     1225008              1225008
Num. groups: grid_id             1692                 1692
===========================================================
*** p < 0.01; ** p < 0.05; * p < 0.1
```

Figure A.1. Distribution of Police Arrests During the Day of Week

```r
load(here("data","police_vio.rda"))

# Arrest day
police_arrest = police_vio %>% dplyr::select("date_formatted","day","arrested")
police_arrest_dat = police_arrest %>% filter(arrested >0)
arrest_counts = police_arrest_dat$day %>% table %>% as.data.frame()
colnames(arrest_counts) = c("Day", "Frequency")

ord <- c("Monday","Tuesday","Wednesday","Thursday", "Friday", "Saturday", "Sunday")

arrest_counts$Day <- factor(arrest_counts$Day,levels=ord)

g1 = ggplot(arrest_counts, aes(x=Day, y=Frequency)) +
  geom_bar(stat = "identity") + theme_bw() + ylab("Police Arrest Days") +
  theme(text = element_text(size = 10))
g1
```