Replication document

Francesco Bailo

30/09/2019

Contents

How to cite the replication materials **2**

R Packages **2**

Variables: computational abbreviations and labels **3**

Introduction **4**

Data **5**

Spatial analysis . . . 5
Meetup.com . . . 22
Figure 2 . . . 35
Election data . . . 37
Figure 1 (Supplemental online material) . . . 39
Opinion survey data . . . 42
Summary statistics of Istat surveys . . . 60
Table 7 (Supplemental online material) . . . 65
Figure 11 (Supplemental online material) . . . 69
Models . . . 72
Table 1 . . . 79
Table 2 (Supplemental online material) . . . 81
Figure 4 . . . 83
Figure 10 (Supplemental online material) . . . 84
Table 5 (Supplemental online material) . . . 86
Table 3 . . . 90
Table 4 (Supplemental online material) . . . 92
Figure 9 (Supplemental online material) . . . 93
Figure 3 . . . 94
Matching . . . 105
Individual level models . . . 110
Table 4 . . . 120
Figure 5 . . . 128
Table 5 . . . 130
Table 6 (Supplemental online material) . . . 132
Table 2 . . . 135
Table 8 (Supplemental online material) . . . 136
Table 3 (Supplemental online material) . . . 138
Table 1 (Supplemental online material) . . . 148

```
sg_param_appendix <-
  list(omit.stat = "f",
       report = "vc*",
       model.numbers = TRUE,
       model.names = TRUE,
       float = FALSE,
       style = 'ajps',
```

```
       star.cutoffs = c(0.05, 0.01, 0.001))
sg_param_intext <-
  list(omit.stat = c('adj.rsq', 'f', 'ser'),
       report = "vc*",
       model.numbers = FALSE,
       model.names = FALSE,
       float = FALSE,
       style = 'ajps',
       star.cutoffs = c(0.05, 0.01, 0.001))
```

How to cite the replication materials

```
@data{DVN/OL3EVW_2019,
author = {Bailo, Francesco},
publisher = {Harvard Dataverse},
title = "{Replication Data for: Connecting through the void: Distress, participation and the electoral
year = {2019},
version = {V1},
doi = {10.7910/DVN/OL3EVW},
url = {https://doi.org/10.7910/DVN/OL3EVW}
}
```

R Packages

```
library(ggplot2)
library(gridExtra)
library(scales)
library(dplyr)
library(knitr)
library(zoo)
library(cowplot)
library(sf)
library(ggsn)
library(eurostat)
library(ggExtra)
library(scales)
library(stringr)
library(stargazer)
library(scales)
library(reshape2)
library(RColorBrewer)
library(readxl)
library(rgeos)
library(sp)
library(plm)
library(viridis)
library(MatchIt)
library(haven)
library(lm.beta)
library(kableExtra)
```

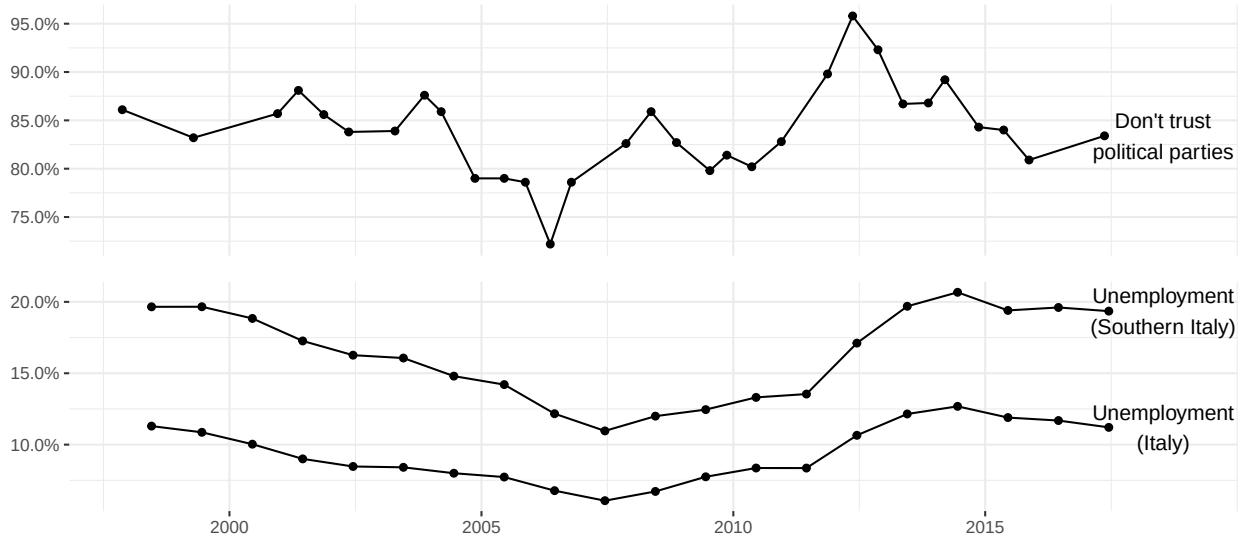
Variables: computational abbreviations and labels

	var_dict_labels
pop_density	Population density
log(pop_density)	Population density (log)
dist_10k_ppl	Distance to first +10,000 pple. city
log(dist_10k_ppl)	Distance to first +10,000 pple. city (log)
north	North (bin)
unemployment	Unemployment (pct)
employment	Employment (pct)
partwf_perc	Workforce participation (pct)
foreignpop_perc	Foreign population (pct)
foreignpop_africa_perc	Foreign African population (pct)
over65_perc	Population over 65 (pct)
housewive_perc	Housewive among population (pct)
degree_perc	With university degree (pct)
degree	With university degree (bin)
meetup_treated_2018	+2 weeks with +1 event (2018)
meetup_treated_2013	+2 weeks with +1 event (2013)
meetup2013_5km_buff_freq_7days	Weeks with +1 event before 2013 election
meetup2018_5km_buff_freq_7days	Weeks with +1 event before 2018 election
treated	+2 weeks with event before election (bin)
M5S_2013	M5S vote 2013 election (pct)
M5S_2018	M5S vote 2018 election (pct)
M5S_2013_neigh_avg	M5S vote in neigh. 2013 election (pct)
M5S_2018_neigh_avg	M5S vote in neigh. 2018 election (pct)
M5S_diff	M5S vote diff. between 2018 and 2013 (pct points)
nat_pol_trust	Trust in national institutions
loc_pol_trust	Trust in local institutions
pol_trust	Overall trust in institutions
income	Income (procapite, 10K €)
donor_perc	Blood donors (pct)
vol_perc	Volunteers (pct)
ANPIV_perc	Volunteers (pct)
ref16_turnout	Turnout 2016 referendum (pct)
male	Male (bin)
edu	Education level
age	Age
unemployed	Unemployed (bin)
volon	Volunteer of non profit org. (bin)
atgra	Volunteer of profit org. (bin)
trust	General trust in people (bin)
trust2	Turst in security services
trust3	Trust in strangers
type_comunePeriphery of metropolitan area	Comune type: Periphery of metropolitan area
type_comuneComune up to 2000	Comune type: up to 2000
type_comuneComune between 2001 and 10,000	Comune type: between 2001 and 10,000
type_comuneComune between 10.001 and 50,000	Comune type: between 10.001 and 50,000
type_comuneComune over 50,000	Comune type: over 50,000
unemployment:north	Unemployment X North
unemployedTRUE:north	Unemployed X North
meetup_treated_2013TRUE:nat_pol_trust	+2 w. +1 e. X trust nat. inst.
meetup_treated_2013TRUE:eco_stress	+2 w. +1 e. X HH eco. distress
meetup_treated_2013TRUE:eco_stress_inv	+2 w. +1 e. X HH eco. comfort
meetup_treated_2013TRUE:internet_mediated_part	+2 w. +1 e. X Internet-med. part.
nat_pol_trust:internet_mediated_part	Trust nat. inst. X Internet-med. part.
meetup_treated_2013TRUE:nat_pol_trust:internet_mediated_part	+2 w. +1 e. X trust nat. inst. X Internet-med. part.
internet_access	Internet access (pct of HHs)
eco_stress	Household perceived economic distress
eco_stress_inv	Household perceived economic comfort
eco_perception	National economy perception
poltalk_freq	Frequency political talks
online_pol_discussion	Frequency online political talks
info_internet	Internet primary info. source
info_internet_news	News websites primary info. source (bin.)
info_social_media	Soc. media primary info. source (bin.)
info_personal	Family/Friends primary info. source (bin.)
info_written	Newspapers/Magazines primary info. source (bin.)
info_tv	TV primary info. source (bin.)
internet_mediated_part	Internet-mediated participation (bin.)
interpers_trust	Interpersonal trust
member	Member of an association (bin.)
pol_interest	Political interest
use_facebook	Facebook use (bin.)
female	Female
age	Age
AmpQ	Size of comune
income_norm	Income (procapite/family, norm.)

Introduction

```
load("replication_file_01_ita_trust_unemployment.RData")
```

```
grid.arrange(

  ggplot(ita_trust, aes(x=date, y=dont_trust_pp_perc)) +
    scale_y_continuous(labels = percent) +
    geom_line() +
    geom_point() +
    geom_text(data = data.frame(x = as.Date("2018-07-15"), y=0.834,
                                text = "Don't trust\npolitical parties"),
              aes(x, y, label = text)) +
    scale_x_date(limits = c(min(ita_trust$date), as.Date("2018-12-15")),
                 breaks = as.Date(c("2000-01-01", "2005-01-01",
                                    "2010-01-01", "2015-01-01")),
                 date_labels = "%Y") +
    theme_bw() +
    theme(axis.title.x=element_blank(),
          axis.text.x=element_blank(),
          axis.ticks.x=element_blank(),
          panel.border = element_blank()) +
    labs(x=NULL, y=NULL),

  ggplot(ita_unemployment) +
    geom_line(aes(x=TIME, y=Value,group=Territorio)) +
    geom_point(aes(x=TIME, y=Value,group=Territorio)) +
    scale_y_continuous(labels = percent) +
    geom_text(data = data.frame(x = as.Date("2018-07-15"),
                                y = c(0.11210570, 0.19350577),
                                text = c("Unemployment\n(Italy)",
                                         "Unemployment\n(Southern Italy)")),
              aes(x,y,label=text)) +
    scale_x_date(limits = c(min(ita_trust$date), as.Date("2018-12-15")),
                 breaks = as.Date(c("2000-01-01", "2005-01-01",
                                    "2010-01-01", "2015-01-01")),
                 date_labels = "%Y") +
    theme_bw() +
    theme(legend.position = 'bottom',
          panel.border = element_blank()) +
    labs(x=NULL, y=NULL),

  nrow = 2)
```



Data

Spatial analysis

Note: The following script is provided only to document the spatial analysis: **it is not replicable** given the data provided in this replication package. The output saved in the `replication_file_03_spatial_analysis.RData`.

```
read_chunk('replication_code_01_spatial_analysis.R')
```

```
# Lev 1 (comune level)

library(sp)
library(rgdal)
library(sf)
library(rgeos)
library(DBI)
library(RPostgreSQL)
library(rpostgis)
library(reshape2)
library(dplyr)
library(raster)

options(scipen=999)

# Connect to local database
conn <- dbConnect(
  drv = PostgreSQL(),
  dbname = "istat_sez2011",
  host = "localhost",
  port = "5432",
  user = "francesco",
  password = "")

comuni_sp <-
  readOGR('istat_comuni_2018_modified/', layer = 'istat_comuni_2018')
```

```
comuni2018_candidate_votes <-
  dbReadTable(conn, c("ita_ge18", "comuni2018_camera_candidate_votes"))
comuni2018_party_votes <-
  dbReadTable(conn, c("ita_ge18", "comuni2018_camera_party_votes"))
comuni2018_place_stats <-
  dbReadTable(conn, c("ita_ge18", "comuni2018_camera_place_stats"))

comuni_to_merge <- c("001130", "001265", "001063", "001028", "001316")

comuni2018_candidate_votes$istat_cod[
  comuni2018_candidate_votes$istat_cod %in% comuni_to_merge] <-
  "000000"
comuni2018_party_votes$istat_cod[
  comuni2018_party_votes$istat_cod %in% comuni_to_merge] <-
  "000000"
comuni2018_place_stats$istat_cod[
  comuni2018_place_stats$istat_cod %in% comuni_to_merge] <-
  "000000"

comuni2018_candidate_votes <-
  comuni2018_candidate_votes[,c("istat_cod","coalition","candidate_votes")] %>%
  dplyr::group_by(istat_cod, coalition) %>%
  dplyr::summarise (votes = sum(candidate_votes)) %>%
  dplyr::mutate(perc = votes / sum(votes))

require(dplyr)
comuni2018_party_votes <-
  comuni2018_party_votes[,c("istat_cod","party","party_votes")] %>%
  dplyr::group_by(istat_cod, party) %>%
  dplyr::summarise (votes = sum(party_votes)) %>%
  dplyr::mutate(perc = votes / sum(votes))

comuni2018_place_stats <-
  comuni2018_place_stats[,c('istat_cod', "registered_voters", "effective_voters")] %>%
  dplyr::group_by(istat_cod) %>%
  dplyr::summarise(registered_voters = sum(registered_voters),
                   effective_voters = sum(effective_voters))

comuni2018_camera2013 <- dbReadTable(conn, c("ita_ge18", "comuni2018_camera2013"))

comuni_2013 <-
  dbGetQuery(conn, "SELECT \"PRO_COM\", \"IL POPOLO DELLA LIBERTA'\",
\"LEGA NORD\",\"MOVIMENTO 5 STELLE BEPPEGRILLO.IT\",\"PARTITO DEMOCRATICO\",
\"FRATELLI D'ITALIA\", \"ppdt_nRegisteredVoters\",
\"ppdt_nAssignedVotes\", \"ppdt_nEffectiveVoters\" FROM elections.comuni_2013_camera
             WHERE \"PRO_COM\" = '1130' OR \"PRO_COM\" = '1265' OR \"PRO_COM\" = '1063'
             OR \"PRO_COM\" = '1028' OR \"PRO_COM\" = '1316';")
comuni_2013$PRO_COM <- NULL
names(comuni_2013)[1:5] <- c('PDL','LN','M5S','PD',"FdI")
comuni_2013$PRO_COM_T_2018 <- "000000"

comuni_2013 <-
  comuni_2013 %>%
```

```
  dplyr::group_by(PRO_COM_T_2018) %>%
  dplyr::summarise_all(sum)
comuni2018_camera2013 <-
  rbind(comuni2018_camera2013, comuni_2013)

comuni_sp <-
  merge(comuni_sp,
        comuni2018_camera2013[,
                              c('PRO_COM_T_2018','PDL','LN','M5S','PD',
                                'ppdt_nRegisteredVoters', 'ppdt_nEffectiveVoters',
                                'ppdt_nAssignedVotes')],
        by.x='PRO_COM_T', by.y='PRO_COM_T_2018')
names(comuni_sp)[9:15] <-
  paste0(names(comuni_sp)[9:15], "_2013")

comuni_sp$PDL_2013 <- comuni_sp$PDL_2013 / comuni_sp$ppdt_nAssignedVotes_2013
comuni_sp$M5S_2013 <- comuni_sp$M5S_2013 / comuni_sp$ppdt_nAssignedVotes_2013
comuni_sp$LN_2013 <- comuni_sp$LN_2013 / comuni_sp$ppdt_nAssignedVotes_2013
comuni_sp$PD_2013 <- comuni_sp$PD_2013 / comuni_sp$ppdt_nAssignedVotes_2013

comuni2018_candidate_votes <-
  subset(comuni2018_candidate_votes, coalition == 'MOVIMENTO 5 STELLE')
comuni2018_candidate_votes <-
  comuni2018_candidate_votes[,c('istat_cod','perc')]
names(comuni2018_candidate_votes) <-
  c("PRO_COM_T","M5S_2018")

comuni2018_party_votes <-
  subset(comuni2018_party_votes, party %in% c('FORZA ITALIA','LEGA','PARTITO DEMOCRATICO'))
comuni2018_party_votes <-
  dcast(comuni2018_party_votes, istat_cod ~ party, value.var = 'perc')
names(comuni2018_party_votes) <-
  c('PRO_COM_T','FI_2018','Lega_2018','PD_2018')

comuni2018_votes <-
  merge(comuni2018_party_votes, comuni2018_candidate_votes, by = 'PRO_COM_T')
comuni_sp <-
  merge(comuni_sp, comuni2018_votes, by = 'PRO_COM_T')

comuni_sp$turnout_2013 <-
  comuni_sp$ppdt_nEffectiveVoters_2013 / comuni_sp$ppdt_nRegisteredVoters_2013

comuni_sp$ppdt_nRegisteredVoters_2013 <- NULL
comuni_sp$ppdt_nAssignedVotes_2013 <- NULL
comuni_sp$ppdt_nEffectiveVoters_2013 <- NULL

comuni2018_place_stats$turnout_2018 <-
  comuni2018_place_stats$effective_voters / comuni2018_place_stats$registered_voters
comuni_sp <-
  merge(comuni_sp,
        comuni2018_place_stats[,c('istat_cod','turnout_2018')],
        by.x = 'PRO_COM_T', by.y = 'istat_cod')
```

```r
comuni_sp$M5S_diff <- (comuni_sp$M5S_2018 - comuni_sp$M5S_2013) * 100
comuni_sp$PD_diff <- (comuni_sp$PD_2018 - comuni_sp$PD_2013) * 100
comuni_sp$Lega_diff <- (comuni_sp$Lega_2018 - comuni_sp$LN_2013) * 100
comuni_sp$FI_diff <- (comuni_sp$FI_2018 - comuni_sp$PDL_2013) * 100

breaks <- c(-100, -50, -20, -10, -5, -2, 2, 5, 10, 20, 50)

for (var  in c("M5S_diff","PD_diff", "Lega_diff", "FI_diff")) {
  comuni_sp[[paste0(var, "_brk")]] <-
    cut(comuni_sp[[var]],
        breaks = c(breaks, max(comuni_sp[[var]], na.rm = T)),
        labels = c("-50%", "-20%" ,
                   "-10%", "-5%",
                   "-2%", "0%",
                   "+2%", "+5%", "+10%",
                   "+20%", "+50%"))
}

assignMacroRegion <- function(x) {
  if (x %in% c('1','3',
               '7',"2")) {
    return('North-west')
  }
  if(x %in% c('5','6',
              "4",
              "8")) {
    return('North-east')
  }
  if (x %in% c("9", "10", "11", "12")) {
    return('Centre')
  }
  if (x %in% c("13", "16", "17",
               "15", "18", "14")) {
    return('South')
  }
  if (x %in% c("19", "20")) {
    return("Islands")
  }
}

comuni_sp$macro_region <-
  sapply(as.character(comuni_sp$COD_REG), assignMacroRegion)
comuni_sp$macro_region <-
  factor(comuni_sp$macro_region,
         levels = c("North-west", "North-east",
                    "Centre", "South", "Islands" ))

res_geo_details <-
  dbGetQuery(conn, 'SELECT "PRO_COM_T",
             ST_Area(geom) AS area
             FROM ita_ge18.comuni2018_geo;')

res_geo_details$PRO_COM_T[res_geo_details$PRO_COM_T%in% comuni_to_merge] <- "000000"
```

```r
res_geo_details <-
  res_geo_details %>%
  dplyr::group_by(PRO_COM_T) %>%
  dplyr::summarise_all(sum)

res_demographics <-
  dbGetQuery(conn, "SELECT * FROM ita_ge18.comuni2018_census2011_demographics;")

res_demographics$PRO_COM_T[
  res_demographics$PRO_COM_T %in% comuni_to_merge] <- "000000"
res_demographics$COMUNE <- NULL
res_demographics <-
  res_demographics %>%
  dplyr::group_by(PRO_COM_T) %>%
  dplyr::summarise_all(sum)

comuni_sp <- merge(comuni_sp, res_geo_details, by = 'PRO_COM_T')
comuni_sp <- merge(comuni_sp, res_demographics, by = 'PRO_COM_T')

comuni_sp$pop_density <- comuni_sp$pop2011/comuni_sp$area
comuni_sp$unemployment <- comuni_sp$popunemployed2011/comuni_sp$popworkforce2011

comuni_sp$partwf_perc <-
  comuni_sp$popworkforce2011 /
  (comuni_sp$popworkforce2011 + comuni_sp$popnotworkforce2011)

comuni_sp$housewive_perc <- comuni_sp$pophousewife2011/comuni_sp$popworkforce2011
comuni_sp$over65_perc <- comuni_sp$pop65over2011/comuni_sp$pop2011
comuni_sp$degree_perc <- comuni_sp$popdegree2011/comuni_sp$pop2011

comuni_sp$foreignpop_perc <- comuni_sp$foreignpop2011/comuni_sp$pop2011
comuni_sp$foreignpop_africa_perc <- comuni_sp$foreignpopafrica2011/comuni_sp$pop2011

redditi2016 <- dbReadTable(conn, c("ita_ge18","comuni2018_redditi2016"))
comuni_sp <- merge(comuni_sp, redditi2016, by = 'PRO_COM_T', all.x = T)
comuni_sp$income2016_procapite <- comuni_sp$redditoAmmontare/comuni_sp$nContribuenti

comuni_sp$lon <- coordinates(comuni_sp)[,1]
comuni_sp$lat <- coordinates(comuni_sp)[,2]

# Lev 2 (comune level or lower)

camera_sp <-
  readOGR('scrape_2018_ita_ge_results/output_shapefiles/', layer = 'minint_camera')

res_camera_other_candidate <-
  dbGetQuery(conn, "SELECT * FROM ita_ge18.minint_camera_candidate_votes;")
res_camera_other_party <-
  dbGetQuery(conn, "SELECT * FROM ita_ge18.minint_camera_party_votes;")

res_camera_other_candidate <-
  res_camera_other_candidate %>%
  dplyr::group_by(minint_cod) %>%
```

```
  dplyr::mutate(tot_votes = sum(candidate_votes))

res_camera_other_candidate$perc <-
  res_camera_other_candidate$candidate_votes /
  res_camera_other_candidate$tot_votes
res_camera_other_candidate <-
  subset(res_camera_other_candidate,
         coalition == 'MOVIMENTO 5 STELLE',
         select = c("minint_cod", "perc"))
names(res_camera_other_candidate)[2] <-
  'M5S_2018'

res_camera_other_party <-
  res_camera_other_party %>%
  dplyr::group_by(minint_cod) %>%
  dplyr::mutate(tot_votes = sum(party_votes))
res_camera_other_party$perc <-
  res_camera_other_party$party_votes / res_camera_other_party$tot_votes

require(reshape2)
res_camera_other_party <-
  dcast(data = subset(res_camera_other_party,
                      party %in% c("LEGA", "PARTITO DEMOCRATICO", "FORZA ITALIA")),
        formula = minint_cod ~ party, value.var = 'perc')
names(res_camera_other_party)[2:4] <-
  c("FI_2018","Lega_2018","PD_2018")

res_place_stats <-
  dbGetQuery(conn, "SELECT * FROM ita_ge18.minint_camera_place_stats;")
res_place_stats$turnout_2018 <-
  res_place_stats$effective_voters / res_place_stats$registered_voters

res_camera <- merge(res_camera_other_candidate, res_camera_other_party,
                    by = 'minint_cod')
res_camera <- merge(res_camera,
                    res_place_stats[,c('turnout_2018','minint_cod')],
                    by = 'minint_cod')

camera_sp <- merge(camera_sp, res_camera, by = 'minint_cod')

assignMacroRegion <- function(x) {
  if (x %in% c('Piemonte','Lombardia',
               'Liguria',"Valle d'Aosta/Vallée d'Aoste")) {
    return('North-west')
  }
  if(x %in% c('Veneto','Friuli-Venezia Giulia',
              "Trentino-Alto Adige/Südtirol",
              "Emilia-Romagna")) {
    return('North-east')
  }
  if (x %in% c("Toscana", "Umbria", "Marche", "Lazio")) {
    return('Centre')
  }
```

```
  if (x %in% c("Abruzzo", "Puglia", "Basilicata",
               "Campania", "Calabria", "Molise")) {
    return('South')
  }
  if (x %in% c("Sicilia", "Sardegna")) {
    return("Islands")
  }
}

res_geo_details <-
  dbGetQuery(conn, "SELECT minint_geopol_cod AS minint_cod,
             ST_Area(ST_Transform(geom, 32632)) AS area
             FROM ita_ge18.subcomuni2018_camera_geo;")

res_demographics <-
  dbGetQuery(conn, "SELECT * FROM ita_ge18.subcomuni2018_census2011_demographics;")

camera_sp$macro_region <-
  sapply(camera_sp$regione, assignMacroRegion)
camera_sp$macro_region <-
  factor(camera_sp$macro_region,
         levels = c("North-west", "North-east",
                    "Centre", "South", "Islands" ))

camera_sp <-
  merge(camera_sp, res_geo_details, by = 'minint_cod')
camera_sp <-
  merge(camera_sp, res_demographics, by.x = 'minint_cod', by.y = 'minint_geopol_cod')

camera_sp$pop_density <-
  camera_sp$pop2011/camera_sp$area
camera_sp$unemployment <-
  camera_sp$popunemployed2011/camera_sp$popworkforce2011

camera_sp$partwf_perc <-
  camera_sp$popworkforce2011 /
  (camera_sp$popworkforce2011 + camera_sp$popnotworkforce2011)

camera_sp$housewive_perc <-
  camera_sp$pophousewife2011/camera_sp$popworkforce2011
camera_sp$over65_perc <-
  camera_sp$pop65over2011/camera_sp$pop2011
camera_sp$degree_perc <-
  camera_sp$popdegree2011/camera_sp$pop2011

camera_sp$foreignpop_perc <-
  camera_sp$foreignpop2011/camera_sp$pop2011
camera_sp$foreignpop_africa_perc <-
  camera_sp$foreignpopafrica2011/camera_sp$pop2011

camera_sp$lon <- coordinates(camera_sp)[,1]
camera_sp$lat <- coordinates(camera_sp)[,2]
```

```
# Meetup

## Density

ita_sp <-
  readOGR('/Users/francesco/Desktop/GIS_Data/Administrative units/Italy/ITA_adm/',
          'ITA_adm0_simp')
ita_rast <- raster(ita_sp)
res(ita_rast) <- 0.2
ita_rast <- rasterize(ita_sp, ita_rast)
quads <- as(ita_rast, 'SpatialPolygons')

# Mean size of square -> mean(sqrt(area(ita_rast)@data@values))
# 19.22603 km

## 2018
meetup2018_event <-
  dbReadTable(conn, c('ita_ge18','meetup2018_event'))
meetup2018_event_all <-
  meetup2018_event
meetup2018_comuni2018 <-
  dbReadTable(conn, c('ita_ge18','meetup2018_comuni2018'))
meetup2018_venue <-
  dbGetQuery(conn, "SELECT venue_id, lon, lat FROM ita_ge18.meetup2018_venue")

meetup2018_event <-
  merge(meetup2018_event, meetup2018_comuni2018, by.x = 'venue', by.y='venue_id', all = FALSE)

# Double counting
meetup2018_event <-
  meetup2018_event[!duplicated(meetup2018_event[,c("venue","time")]),]

# Remove zero rsvp
meetup2018_event <-
  meetup2018_event[meetup2018_event$yes_rsvp_count>0,]

meetup2018_event$time <-
  as.Date(meetup2018_event$time)
meetup2018_event <-
  subset(meetup2018_event,
         time >= as.Date('2018-03-04')-90 &
           time <= as.Date('2018-03-04'))

meetup2018_event <-
  merge(meetup2018_event, meetup2018_venue, by.x = 'venue', by.y = 'venue_id')

meetup2018_event <-
  SpatialPointsDataFrame(meetup2018_event[c('lon','lat')],
                         data = meetup2018_event,
                         proj4string = CRS('+proj=longlat +datum=WGS84 +no_defs'))

## 2014
meetup2014_event <-
```

```
  dbReadTable(conn, c('ita_ge18','meetup2014_event'))
meetup2014_event_all <-
  meetup2014_event
meetup2014_comuni2018 <-
  dbReadTable(conn, c('ita_ge18','meetup2014_comuni2018'))
meetup2014_venue <-
  dbGetQuery(conn, "SELECT venue_id, lon, lat FROM ita_ge18.meetup2014_venue")

meetup2014_event <-
  merge(meetup2014_event, meetup2014_comuni2018, by.x = 'venue', by.y='venue_id', all = FALSE)

# Double counting
meetup2014_event <-
  meetup2014_event[!duplicated(meetup2014_event[,c("venue","time")]),]

# Remove zero rsvp
meetup2014_event <-
  meetup2014_event[meetup2014_event$yes_rsvp_count>0,]

meetup2014_event$time <-
  as.Date(meetup2014_event$time)
meetup2014_event <-
  subset(meetup2014_event,
                          time >= as.Date('2013-02-24')-90 &
                            time <= as.Date('2013-02-24'))
meetup2014_event <-
  merge(meetup2014_event, meetup2014_venue,
        by.x = 'venue', by.y = 'venue_id')

meetup2014_event <-
  SpatialPointsDataFrame(meetup2014_event[
    c('lon','lat')], data = meetup2014_event,
    proj4string = CRS('+proj=longlat +datum=WGS84 +no_defs'))

## Number of recurrent events
utm_crs <- '+proj=utm +zone=32 +datum=WGS84 +units=m +no_defs'
lonlat_crs <- '+proj=longlat +datum=WGS84 +no_defs +ellps=WGS84 +towgs84=0,0,0'

### 2018
meetup2018_event_utm <-
  spTransform(meetup2018_event, utm_crs)
meetup2018_event_utm <-
  meetup2018_event_utm[meetup2018_event_utm$yes_rsvp_count>0,]
meetup2018_event_utm <-
  meetup2018_event_utm[meetup2018_event_utm$time > as.Date('2018-01-06'),]
meetup2018_event_utm <-
  meetup2018_event_utm[order(meetup2018_event_utm$time),]

week_seq <- seq(from = as.Date('2018-01-06'),
                to = as.Date('2018-03-04'),
                by = 7)

month_seq <- seq(from = as.Date('2018-01-06'),
```

```
                to = as.Date('2018-03-04'),
                by = 30)

### Camera
camera_sp_utm <- spTransform(camera_sp, utm_crs)

camera_sp$meetup2018_0km_buff_freq_7days <- 0
camera_sp$meetup2018_0km_buff_freq_30days <- 0

camera_sp$meetup2018_5km_buff_freq_7days <- 0
camera_sp$meetup2018_5km_buff_freq_30days <- 0

camera_sp$meetup2018_10km_buff_freq_7days <- 0
camera_sp$meetup2018_10km_buff_freq_30days <- 0

camera_sp$meetup2018_19km_buff_freq_7days <- 0
camera_sp$meetup2018_19km_buff_freq_30days <- 0

for (i in 1:nrow(camera_sp)) {
  print(i)
  this_poly <- camera_sp_utm[i,]
  this_poly_buff_5k <- gBuffer(this_poly, width = 5000)
  this_poly_buff_10k <- gBuffer(this_poly, width = 10000)
  this_poly_buff_19k <- gBuffer(this_poly, width = 19226)

  these_events_0 <- meetup2018_event_utm[this_poly,]
  these_events_5 <- meetup2018_event_utm[this_poly_buff_5k,]
  these_events_10 <- meetup2018_event_utm[this_poly_buff_10k,]
  these_events_19 <- meetup2018_event_utm[this_poly_buff_19k,]

  if (nrow(these_events_0) > 0) {
    camera_sp$meetup2018_0km_buff_freq_7days[i] <-
      length(unique(cut(these_events_0$time, breaks = week_seq)))
    camera_sp$meetup2018_0km_buff_freq_30days[i] <-
      length(unique(cut(these_events_0$time, breaks = month_seq)))
  }

  if (nrow(these_events_5) > 0) {
    camera_sp$meetup2018_5km_buff_freq_7days[i] <-
      length(unique(cut(these_events_5$time, breaks = week_seq)))
    camera_sp$meetup2018_5km_buff_freq_30days[i] <-
      length(unique(cut(these_events_5$time, breaks = month_seq)))
  }

  if (nrow(these_events_10) > 0) {
    camera_sp$meetup2018_10km_buff_freq_7days[i] <-
      length(unique(cut(these_events_10$time, breaks = week_seq)))
    camera_sp$meetup2018_10km_buff_freq_30days[i] <-
      length(unique(cut(these_events_10$time, breaks = month_seq)))
  }

  if (nrow(these_events_19) > 0) {
    camera_sp$meetup2018_19km_buff_freq_7days[i] <-
```

```
      length(unique(cut(these_events_19$time, breaks = week_seq)))
    camera_sp$meetup2018_19km_buff_freq_30days[i] <-
      length(unique(cut(these_events_19$time, breaks = month_seq)))
  }

}

### Comuni
comuni_sp_utm <- spTransform(comuni_sp, utm_crs)

comuni_sp$meetup2018_0km_buff_freq_7days <- 0
comuni_sp$meetup2018_0km_buff_freq_30days <- 0

comuni_sp$meetup2018_5km_buff_freq_7days <- 0
comuni_sp$meetup2018_5km_buff_freq_30days <- 0

comuni_sp$meetup2018_10km_buff_freq_7days <- 0
comuni_sp$meetup2018_10km_buff_freq_30days <- 0

comuni_sp$meetup2018_19km_buff_freq_7days <- 0
comuni_sp$meetup2018_19km_buff_freq_30days <- 0

for (i in 1:nrow(comuni_sp)) {
  print(i)
  this_poly <- comuni_sp_utm[i,]
  this_poly_buff_5k <- gBuffer(this_poly, width = 5000)
  this_poly_buff_10k <- gBuffer(this_poly, width = 10000)
  this_poly_buff_19k <- gBuffer(this_poly, width = 19226)

  these_events_0 <- meetup2018_event_utm[this_poly,]
  these_events_5 <- meetup2018_event_utm[this_poly_buff_5k,]
  these_events_10 <- meetup2018_event_utm[this_poly_buff_10k,]
  these_events_19 <- meetup2018_event_utm[this_poly_buff_19k,]

  if (nrow(these_events_0) > 0) {
    comuni_sp$meetup2018_0km_buff_freq_7days[i] <-
      length(unique(cut(these_events_0$time, breaks = week_seq)))
    comuni_sp$meetup2018_0km_buff_freq_30days[i] <-
      length(unique(cut(these_events_0$time, breaks = month_seq)))
  }

  if (nrow(these_events_5) > 0) {
    comuni_sp$meetup2018_5km_buff_freq_7days[i] <-
      length(unique(cut(these_events_5$time, breaks = week_seq)))
    comuni_sp$meetup2018_5km_buff_freq_30days[i] <-
      length(unique(cut(these_events_5$time, breaks = month_seq)))
  }

  if (nrow(these_events_10) > 0) {
    comuni_sp$meetup2018_10km_buff_freq_7days[i] <-
      length(unique(cut(these_events_10$time, breaks = week_seq)))
    comuni_sp$meetup2018_10km_buff_freq_30days[i] <-
      length(unique(cut(these_events_10$time, breaks = month_seq)))
```

```
  }

  if (nrow(these_events_19) > 0) {
    comuni_sp$meetup2018_19km_buff_freq_7days[i] <-
      length(unique(cut(these_events_19$time, breaks = week_seq)))
    comuni_sp$meetup2018_19km_buff_freq_30days[i] <-
      length(unique(cut(these_events_19$time, breaks = month_seq)))
  }

}

### 2014
meetup2014_event_utm <-
  spTransform(meetup2014_event, utm_crs)
meetup2014_event_utm <-
  meetup2014_event_utm[meetup2014_event_utm$yes_rsvp_count>0,]
meetup2014_event_utm <-
  meetup2014_event_utm[meetup2014_event_utm$time > as.Date('2013-01-06'),]
meetup2014_event_utm <-
  meetup2014_event_utm[order(meetup2014_event_utm$time),]

week_seq <- seq(from = as.Date('2013-01-06'),
                to = as.Date('2013-02-24'),
                by = 7)

month_seq <- seq(from = as.Date('2013-01-06'),
                 to = as.Date('2013-02-24'),
                 by = 30)

### Camera
camera_sp_utm <- spTransform(camera_sp, utm_crs)

camera_sp$meetup2014_0km_buff_freq_7days <- 0
camera_sp$meetup2014_0km_buff_freq_30days <- 0

camera_sp$meetup2014_5km_buff_freq_7days <- 0
camera_sp$meetup2014_5km_buff_freq_30days <- 0

camera_sp$meetup2014_10km_buff_freq_7days <- 0
camera_sp$meetup2014_10km_buff_freq_30days <- 0

camera_sp$meetup2014_19km_buff_freq_7days <- 0
camera_sp$meetup2014_19km_buff_freq_30days <- 0

for (i in 1:nrow(camera_sp)) {
  print(i)
  this_poly <- camera_sp_utm[i,]
  this_poly_buff_5k <- gBuffer(this_poly, width = 5000)
  this_poly_buff_10k <- gBuffer(this_poly, width = 10000)
  this_poly_buff_19k <- gBuffer(this_poly, width = 19226)

  these_events_0 <- meetup2014_event_utm[this_poly,]
  these_events_5 <- meetup2014_event_utm[this_poly_buff_5k,]
```

```
  these_events_10 <- meetup2014_event_utm[this_poly_buff_10k,]
  these_events_19 <- meetup2014_event_utm[this_poly_buff_19k,]

  if (nrow(these_events_0) > 0) {
    camera_sp$meetup2014_0km_buff_freq_7days[i] <-
      length(unique(cut(these_events_0$time, breaks = week_seq)))
    camera_sp$meetup2014_0km_buff_freq_30days[i] <-
      length(unique(cut(these_events_0$time, breaks = month_seq)))
  }

  if (nrow(these_events_5) > 0) {
    camera_sp$meetup2014_5km_buff_freq_7days[i] <-
      length(unique(cut(these_events_5$time, breaks = week_seq)))
    camera_sp$meetup2014_5km_buff_freq_30days[i] <-
      length(unique(cut(these_events_5$time, breaks = month_seq)))
  }

  if (nrow(these_events_10) > 0) {
    camera_sp$meetup2014_10km_buff_freq_7days[i] <-
      length(unique(cut(these_events_10$time, breaks = week_seq)))
    camera_sp$meetup2014_10km_buff_freq_30days[i] <-
      length(unique(cut(these_events_10$time, breaks = month_seq)))
  }

  if (nrow(these_events_19) > 0) {
    camera_sp$meetup2014_19km_buff_freq_7days[i] <-
      length(unique(cut(these_events_19$time, breaks = week_seq)))
    camera_sp$meetup2014_19km_buff_freq_30days[i] <-
      length(unique(cut(these_events_19$time, breaks = month_seq)))
  }

}

### Comuni
comuni_sp_utm <- spTransform(comuni_sp, utm_crs)

comuni_sp$meetup2014_0km_buff_freq_7days <- 0
comuni_sp$meetup2014_0km_buff_freq_30days <- 0

comuni_sp$meetup2014_5km_buff_freq_7days <- 0
comuni_sp$meetup2014_5km_buff_freq_30days <- 0

comuni_sp$meetup2014_10km_buff_freq_7days <- 0
comuni_sp$meetup2014_10km_buff_freq_30days <- 0

comuni_sp$meetup2014_19km_buff_freq_7days <- 0
comuni_sp$meetup2014_19km_buff_freq_30days <- 0

for (i in 1:nrow(comuni_sp)) {
  print(i)
  this_poly <- comuni_sp_utm[i,]
  this_poly_buff_5k <- gBuffer(this_poly, width = 5000)
  this_poly_buff_10k <- gBuffer(this_poly, width = 10000)
```

```
  this_poly_buff_19k <- gBuffer(this_poly, width = 19226)

  these_events_0 <- meetup2014_event_utm[this_poly,]
  these_events_5 <- meetup2014_event_utm[this_poly_buff_5k,]
  these_events_10 <- meetup2014_event_utm[this_poly_buff_10k,]
  these_events_19 <- meetup2014_event_utm[this_poly_buff_19k,]

  if (nrow(these_events_0) > 0) {
    comuni_sp$meetup2014_0km_buff_freq_7days[i] <-
      length(unique(cut(these_events_0$time, breaks = week_seq)))
    comuni_sp$meetup2014_0km_buff_freq_30days[i] <-
      length(unique(cut(these_events_0$time, breaks = month_seq)))
  }

  if (nrow(these_events_5) > 0) {
    comuni_sp$meetup2014_5km_buff_freq_7days[i] <-
      length(unique(cut(these_events_5$time, breaks = week_seq)))
    comuni_sp$meetup2014_5km_buff_freq_30days[i] <-
      length(unique(cut(these_events_5$time, breaks = month_seq)))
  }

  if (nrow(these_events_10) > 0) {
    comuni_sp$meetup2014_10km_buff_freq_7days[i] <-
      length(unique(cut(these_events_10$time, breaks = week_seq)))
    comuni_sp$meetup2014_10km_buff_freq_30days[i] <-
      length(unique(cut(these_events_10$time, breaks = month_seq)))
  }

  if (nrow(these_events_19) > 0) {
    comuni_sp$meetup2014_19km_buff_freq_7days[i] <-
      length(unique(cut(these_events_19$time, breaks = week_seq)))
    comuni_sp$meetup2014_19km_buff_freq_30days[i] <-
      length(unique(cut(these_events_19$time, breaks = month_seq)))
  }

}


## Actual density

### 2018
meetup2018_event_r <-
  rasterize(coordinates(meetup2018_event), ita_rast, fun='count', background=0)
meetup2018_event_spdf <- as(meetup2018_event_r, "SpatialPixelsDataFrame")
meetup2018_event_df <- as.data.frame(meetup2018_event_spdf)
colnames(meetup2018_event_df) <- c("value", "x", "y")

v2018 <- extract(meetup2018_event_r, comuni_sp, fun = mean)
comuni_meetup2018_density <- data.frame(v2018)
comuni_meetup2018_density$v2018[is.na(comuni_meetup2018_density$v2018)] <- 0
comuni_sp$meetup2018_19km_quad_density <- comuni_meetup2018_density$v2018

v2018 <- extract(meetup2018_event_r, camera_sp, fun = mean)
```

```
camera_meetup2018_density <- data.frame(v2018)
camera_meetup2018_density$v2018[is.na(camera_meetup2018_density$v2018)] <- 0
camera_sp$meetup2018_19km_quad_density <- camera_meetup2018_density$v2018

### 2014
meetup2014_event_r <-
  rasterize(coordinates(meetup2014_event), ita_rast, fun='count', background=0)
meetup2014_event_spdf <- as(meetup2014_event_r, "SpatialPixelsDataFrame")
meetup2014_event_df <- as.data.frame(meetup2014_event_spdf)
colnames(meetup2014_event_df) <- c("value", "x", "y")

v2014 <- extract(meetup2014_event_r, comuni_sp, fun = mean)
comuni_meetup2014_density <- data.frame(v2014)
comuni_meetup2014_density$v2014[is.na(comuni_meetup2014_density$v2014)] <- 0
comuni_sp$meetup2014_19km_quad_density <- comuni_meetup2014_density$v2014

v2014 <- extract(meetup2014_event_r, camera_sp, fun = mean)
camera_meetup2014_density <- data.frame(v2014)
camera_meetup2014_density$v2014[is.na(camera_meetup2014_density$v2014)] <- 0
camera_sp$meetup2014_19km_quad_density <- camera_meetup2014_density$v2014

## Density (Hexagon)

library(raster)
library(rgdal)
ita_sp <-
  readOGR('/Users/francesco/Desktop/GIS_Data/Administrative units/Italy/ITA_adm/',
          'ITA_adm0_simp')
ita_sp <- spTransform(ita_sp, CRS("+proj=utm +zone=32 +datum=WGS84 +units=m +no_defs"))

ita_sp_buff_10km <- rgeos::gBuffer(ita_sp, width = 10000)
ita_sp_buff_30km <- rgeos::gBuffer(ita_sp, width = 30000)

size <- 10000
hex_points_10km <- spsample(ita_sp_buff_10km, type = "hexagonal", cellsize = size)
hex_grid_10km <- HexPoints2SpatialPolygons(hex_points_10km, dx = size)

size <- 25000
hex_points_25km <- spsample(ita_sp_buff_10km, type = "hexagonal", cellsize = size)
hex_grid_25km <- HexPoints2SpatialPolygons(hex_points_25km, dx = size)

size <- 50000
hex_points_50km <- spsample(ita_sp_buff_30km, type = "hexagonal", cellsize = size)
hex_grid_50km <- HexPoints2SpatialPolygons(hex_points_50km, dx = size)

require(rgeos)
hex_grid_10km <-
  gIntersection(hex_grid_10km, ita_sp, byid = TRUE)
hex_grid_25km <-
  gIntersection(hex_grid_25km, ita_sp, byid = TRUE)
hex_grid_50km <-
  gIntersection(hex_grid_50km, ita_sp, byid = TRUE)
```

```
hex_grid_10km <-
  spTransform(hex_grid_10km, CRS("+proj=longlat +datum=WGS84 +no_defs"))
hex_grid_25km <-
  spTransform(hex_grid_25km, CRS("+proj=longlat +datum=WGS84 +no_defs"))
hex_grid_50km <-
  spTransform(hex_grid_50km, CRS("+proj=longlat +datum=WGS84 +no_defs"))

proj4string(meetup2018_event) <-
  CRS("+proj=longlat +datum=WGS84 +no_defs +ellps=WGS84 +towgs84=0,0,0")
proj4string(meetup2014_event) <-
  CRS("+proj=longlat +datum=WGS84 +no_defs +ellps=WGS84 +towgs84=0,0,0")

hex_grid_10km <-
  SpatialPolygonsDataFrame(hex_grid_10km,
                           data.frame(id = 1:length(hex_grid_10km)),
                           match.ID = FALSE)

hex_grid_25km <-
  SpatialPolygonsDataFrame(hex_grid_25km,
                           data.frame(id = 1:length(hex_grid_25km)),
                           match.ID = FALSE)

hex_grid_50km <-
  SpatialPolygonsDataFrame(hex_grid_50km,
                           data.frame(id = 1:length(hex_grid_50km)),
                           match.ID = FALSE)

hex_grid_10km_density <-
  as.data.frame(table(over(meetup2018_event, hex_grid_10km)$id))
hex_grid_25km_density <-
  as.data.frame(table(over(meetup2018_event, hex_grid_25km)$id))
hex_grid_50km_density <-
  as.data.frame(table(over(meetup2018_event, hex_grid_50km)$id))

hex_grid_10km_meetup2018 <-
  merge(hex_grid_10km, hex_grid_10km_density, by.x = 'id', by.y = 'Var1')
hex_grid_10km_meetup2018$Freq[
  is.na(hex_grid_10km$Freq_meetup2018)] <- 0

hex_grid_25km_meetup2018 <-
  merge(hex_grid_25km, hex_grid_25km_density, by.x = 'id', by.y = 'Var1')
hex_grid_25km_meetup2018$Freq[
  is.na(hex_grid_25km_meetup2018$Freq)] <- 0

hex_grid_50km_meetup2018 <-
  merge(hex_grid_50km, hex_grid_50km_density, by.x = 'id', by.y = 'Var1')
hex_grid_50km_meetup2018$Freq[is.na(hex_grid_50km_meetup2018$Freq)] <- 0

hex_grid_10km_density <-
  as.data.frame(table(over(meetup2014_event, hex_grid_10km)$id))
hex_grid_25km_density <-
  as.data.frame(table(over(meetup2014_event, hex_grid_25km)$id))
hex_grid_50km_density <-
```

```
  as.data.frame(table(over(meetup2014_event, hex_grid_50km)$id))

hex_grid_10km_meetup2014 <- merge(hex_grid_10km, hex_grid_10km_density, by.x = 'id', by.y = 'Var1')
hex_grid_10km_meetup2014$Freq[is.na(hex_grid_10km_meetup2014$Freq)] <- 0

hex_grid_25km_meetup2014 <- merge(hex_grid_25km, hex_grid_25km_density, by.x = 'id', by.y = 'Var1')
hex_grid_25km_meetup2014$Freq[is.na(hex_grid_25km_meetup2014$Freq)] <- 0

hex_grid_50km_meetup2014 <- merge(hex_grid_50km, hex_grid_50km_density, by.x = 'id', by.y = 'Var1')
hex_grid_50km_meetup2014$Freq[is.na(hex_grid_50km_meetup2014$Freq)] <- 0


## Load simplified geom and add data to postgis

comuni_sp_keep005 <-
  readOGR("scrape_2018_ita_ge_results/output_shapefiles/",
          'istat_comuni_2018_005')
comuni_sp_keep005 <- st_as_sf(comuni_sp_keep005)
comuni_to_merge <- c("001130", "001265", "001063", "001028", "001316")
comuni_sp_keep005$PRO_COM_T <- as.character(comuni_sp_keep005$PRO_COM_T)
comuni_sp_keep005$PRO_COM_T[comuni_sp_keep005$PRO_COM_T %in% comuni_to_merge] <- "000000"
comuni_sp_keep005 <- comuni_sp_keep005[,c('PRO_COM_T')]
comuni_sp_keep005 <-
  comuni_sp_keep005 %>%
  dplyr::group_by(PRO_COM_T) %>%
  dplyr::summarise(STATUS = 'dissolved')
comuni_sp_keep005$STATUS <- NULL
comuni_sp_keep005 <- as(comuni_sp_keep005, 'Spatial')

camera_sp_keep005 <-
  readOGR("scrape_2018_ita_ge_results/output_shapefiles/",
          'minint_camera_005')

# # Neighborhood
library(spdep)
camera_nb <- list()
comuni_nb <- list()

for(this_km in c(10, 25, 50)) {
  camera_nb[[as.character(this_km)]] <-
    dnearneigh(coordinates(camera_sp),
               d1=0, d2=this_km, longlat=T, row.names=camera_sp$minint_cod)
  comuni_nb[[as.character(this_km)]] <-
    dnearneigh(coordinates(comuni_sp),
               d1=0, d2=this_km, longlat=T, row.names=comuni_sp$PRO_COM_T)
}

# Remoteness
IT <- read.delim("~/Downloads/IT (2)/IT.txt", header=FALSE)
IT <- subset(IT, grepl("^PPL", V8) & V15 > 9999)

IT_point <-
  SpatialPointsDataFrame(coords = IT[,c('V6','V5')],
```

```
                        data = IT,
                        proj4string =
                          CRS('+proj=longlat +datum=WGS84 +no_defs'))

utmStr <- "+proj=utm +zone=32 +datum=WGS84 +units=m +no_defs"
comuni_sp_utm <- spTransform(comuni_sp, utmStr)
camera_sp_utm <- spTransform(camera_sp, utmStr)
IT_point <- spTransform(IT_point, utmStr)

comuni_sp$dist_10k_ppl <- NA
for (i in 1:nrow(comuni_sp)) {
  print(i)
  res <- gDistance(comuni_sp_utm[i,], IT_point, byid = TRUE)
  comuni_sp$dist_10k_ppl[i] <-  min(res[,1])
}
camera_sp$dist_10k_ppl <- NA
for (i in 1:nrow(camera_sp)) {
  print(i)
  res <- gDistance(camera_sp_utm[i,], IT_point, byid = TRUE)
  camera_sp$dist_10k_ppl[i] <-  min(res[,1])
}

save(camera_sp, comuni_sp,
     camera_sp_keep005, comuni_sp_keep005,
     camera_nb, comuni_nb,
     meetup2014_event, meetup2018_event,
     hex_grid_10km_meetup2018, hex_grid_25km_meetup2018, hex_grid_50km_meetup2018,
     hex_grid_10km_meetup2014, hex_grid_25km_meetup2014, hex_grid_50km_meetup2014,
     file = '00_prepare_data.RData')
```

```
load('replication_file_03_spatial_analysis.RData')
```

Meetup.com

```
load('replication_file_02_meetup_event_venue.RData')

meetup_event$date <-
  as.Date(meetup_event$time, "%Y-%m-%d %H:%M:%S")

# Unique number of groups
length(unique(meetup_group$group_id))
```

```
## [1] 2876
```

```
# Unique number of public groups
length(unique(meetup_group$group_id[meetup_group$visibility == 'public']))
```

```
## [1] 2438
```

```
# Unique number of members
length(unique(meetup_group_member$member_id))
```

```
## [1] 144035
```

```r
# Unique number of events
nrow(meetup_event)
```

```
## [1] 234064
```

```r
# Unique number of venues
nrow(meetup_venue)
```

```
## [1] 46070
```

```r
# Date of first event
min(meetup_event$date)
```

```
## [1] "2005-07-28"
```

```r
# Date of last event
max(meetup_event$date)
```

```
## [1] "2018-07-02"
```

```r
kable(meetup_group %>%
        dplyr::group_by(collected_on) %>%
        dplyr::summarize(n = n(),
                         `is public (%)` = sum(visibility == 'public') / n() * 100,
                         `n members (median)` = median(members),
                         `+50 members (%)` = sum(members >= 50) / n() * 100),
      digit = 2)
```

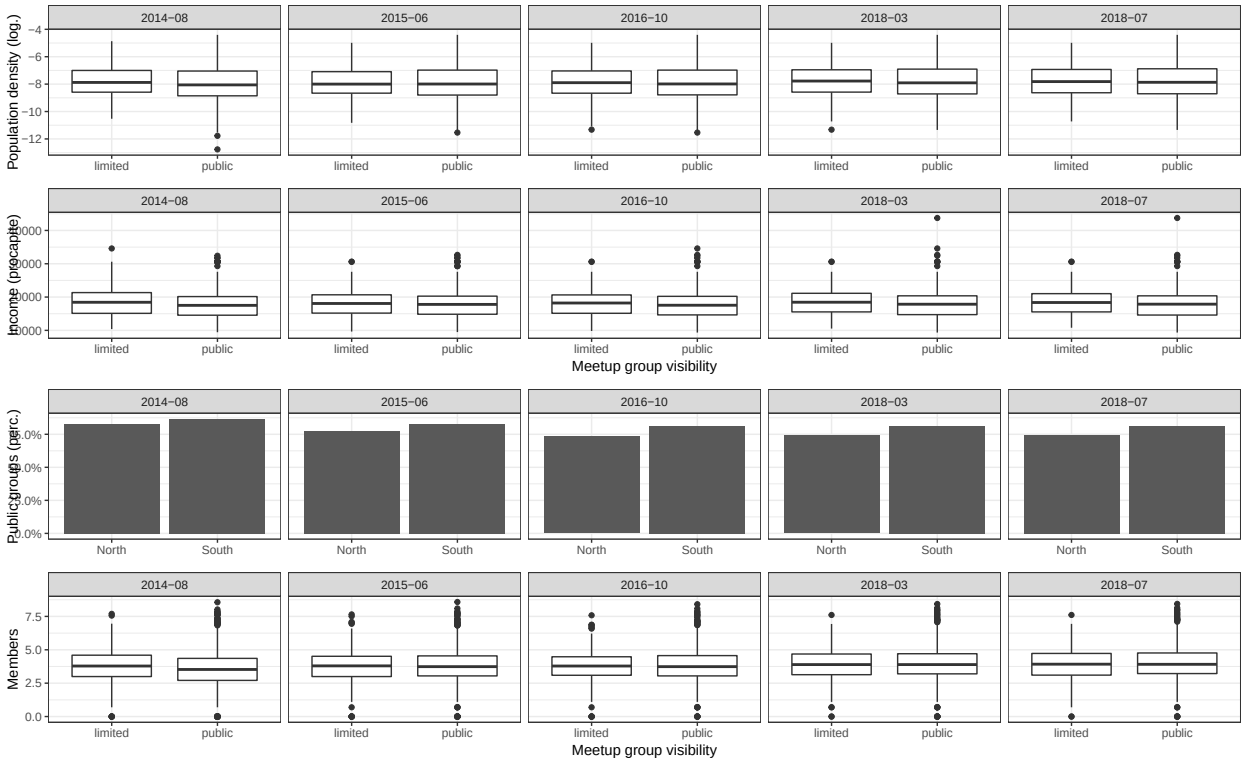
collected_on	n	is public (%)	n members (median)	+50 members (%)
2014-08	1883	85.13	35	39.51
2015-06	1621	79.77	42	44.54
2016-10	1602	77.03	43	44.26
2018-03	1403	77.48	49	49.61
2018-07	1302	77.73	50	50.31

```r
# 2014 groups missing in 2018
sum(!meetup_group$group_id[meetup_group$collected_on == '2014-08']
    %in% meetup_group$group_id[meetup_group$collected_on == '2018-07']) /
  sum(meetup_group$collected_on == '2014-08') * 100
```

```
## [1] 61.12586
```

```r
meetup_group_pnt.sp <-
  SpatialPointsDataFrame(meetup_group[,c("lon","lat")],
                         data = meetup_group[,c("lon","lat", "visibility", "collected_on",
                                                "members", "timestamp")],
                         proj4string = CRS(proj4string(comuni_sp)))
res <-
  over(meetup_group_pnt.sp, comuni_sp)

res <-
  cbind(res, meetup_group[,c("visibility","collected_on", "timestamp","members")])

res$visibility <- as.factor(res$visibility)
levels(res$visibility)[levels(res$visibility)=="members"] <- "limited"
levels(res$visibility)[levels(res$visibility)=="public_limited"] <- "limited"

res$is_public <- res$visibility == "public"
```

```r
res$north_south <- ifelse(as.numeric(as.character(res$COD_REG))<13, "North", "South")
res$north <- as.numeric(as.character(res$COD_REG))<13

res$dist_10k_ppl <- res$dist_10k_ppl + 1

res$days_from_origin <- as.numeric(as.Date(res$timestamp))

require(grid)
require(scales)

p1 <-
  ggplot(res, aes(x = visibility, y = log(pop_density))) +
  geom_boxplot() +
  facet_grid(.~collected_on) + theme_bw() +
  labs(y = "Population density (log.)", x = "Meetup group visibility") +
  theme(axis.title.x = element_blank())
p2 <-
  ggplot(res, aes(x = visibility, y = income2016_procapite)) +
  geom_boxplot() +
  facet_grid(.~collected_on) + theme_bw() +
  labs(y = "Income (procapite)", x = "Meetup group visibility")
p3 <-
  res %>%
  dplyr::filter(!is.na(north_south)) %>%
  dplyr::group_by(north_south, collected_on) %>%
  dplyr::summarise(public_perc= sum(visibility == "public")/ n()) %>%
  ggplot(aes(x = north_south, y = public_perc)) +
  geom_bar(stat='identity') +
  facet_grid(.~collected_on) + theme_bw() +
  labs(y = "Public groups (perc.)", x = NULL) +
  scale_y_continuous(labels = percent)
p4 <-
  ggplot(res, aes(x = visibility, y = log(members))) +
  geom_boxplot() +
  facet_grid(.~collected_on) + theme_bw() +
  labs(y = "Members", x = "Meetup group visibility")

grid.newpage()
grid.draw(rbind(ggplotGrob(p1), ggplotGrob(p2), ggplotGrob(p3), ggplotGrob(p4),
                size = "last"))
```




```
dat <- res[!is.na(res$north),]
summary(dat$unemployment)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.02000 0.05688 0.07973 0.08506 0.10596 0.27863
```

```
dat$dist_10k_ppl_log <- log(dat$dist_10k_ppl)
dat$members_log <- log(dat$members)

meetup_visibility_mod <-
  glm(is_public~members_log+
        dist_10k_ppl_log +
        unemployment+north+
        income2016_procapite+
        days_from_origin,
      data = dat,
      family = 'binomial', na.action="na.exclude")

newdata_north <-
  data.frame(members_log = median(dat$members_log),
             dist_10k_ppl_log = median(dat$dist_10k_ppl_log),
             unemployment = median(dat$unemployment),
             north = c(TRUE, FALSE),
             income2016_procapite = median(dat$income2016_procapite),
             days_from_origin = min(dat$days_from_origin))

newdata_unempl <-
  data.frame(members_log = median(dat$members_log),
             dist_10k_ppl_log = median(dat$dist_10k_ppl_log),
             unemployment = c(.05, .05, .2, .2),
```

```
            north = c(TRUE, FALSE, TRUE, FALSE),
            income2016_procapite = median(dat$income2016_procapite),
            days_from_origin = median(dat$days_from_origin))

newdata_dist_ppl <-
  data.frame(members_log = median(dat$members_log),
            dist_10k_ppl_log = c(0.6931, 0.6931, 8.4502, 8.4502),
            unemployment = median(dat$unemployment),
            north = c(TRUE, FALSE, TRUE, FALSE),
            income2016_procapite = median(dat$income2016_procapite),
            days_from_origin = median(dat$days_from_origin))

newdata_early <-
  data.frame(members_log = median(dat$members_log),
            dist_10k_ppl_log = median(dat$dist_10k_ppl_log),
            unemployment = c(.05, .05, .1, .1, .20, .20),
            north = c(TRUE, FALSE, TRUE, FALSE, TRUE, FALSE),
            income2016_procapite = median(dat$income2016_procapite),
            days_from_origin = min(dat$days_from_origin))

newdata_late <-
  data.frame(members_log = median(dat$members_log),
            dist_10k_ppl_log = median(dat$dist_10k_ppl_log),
            unemployment = c(.05, .05, .1, .1, .20, .20),
            north = c(TRUE, FALSE, TRUE, FALSE, TRUE, FALSE),
            income2016_procapite = median(dat$income2016_procapite),
            days_from_origin = max(dat$days_from_origin))

predict(meetup_visibility_mod, newdata_north, type="response")
```

```
##         1         2
## 0.7892677 0.8240020
```

```
predict(meetup_visibility_mod, newdata_unempl, type="response")
```

```
##         1         2         3         4
## 0.7120325 0.7555545 0.8552307 0.8807354
```

```
predict(meetup_visibility_mod, newdata_dist_ppl, type="response")
```

```
##         1         2         3         4
## 0.7508794 0.7902597 0.8002053 0.8335171
```

```
predict(meetup_visibility_mod, newdata_early, type="response")
```

```
##         1         2         3         4         5         6
## 0.7591243 0.7975527 0.8081761 0.8404240 0.8827608 0.9039601
```

```
predict(meetup_visibility_mod, newdata_late, type="response")
```

```
##         1         2         3         4         5         6
## 0.6728457 0.7199609 0.7332944 0.7746202 0.8309026 0.8599917
```

```
do.call(
  stargazer,
  c(list(meetup_visibility_mod,
         type = 'latex', out = "table/meetup_visibility.tex",
```

```
          dep.var.labels = "Meetup group is public",
          covariate.labels = c("Members (log.)",
                               'Distance to first +10,000 pple. city (log.)',
                               'Unemployment rate (perc.)',
                               'North (binary)', 'Income (procapite)', 'Time (days)')),
    sg_param_appendix))
```

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Thu, Oct 10, 2019 - 15:11:21

	Meetup group is public
	logistic
Members (log.)	0.047
Distance to first +10,000 pple. city (log.)	0.037***
Unemployment rate (perc.)	5.806***
North (binary)	−0.223*
Income (procapite)	0.00002*
Time (days)	−0.0003***
Constant	5.359***
N	7442
Log Likelihood	−3728.438
AIC	7470.876

***p < .001; **p < .01; *p < .05

```
read_chunk('replication_code_02_geocode_venue_italy.R')
```

```
library(sp)
library(rgeos)

load('replication_file_02_meetup_event_venue.RData')
load('replication_file_03_spatial_analysis.RData')

utm_crs <- '+proj=utm +zone=32 +datum=WGS84 +units=m +no_defs'
camera_sp_utm <- spTransform(camera_sp, utm_crs)

meetup_venue <- meetup_venue[!duplicated(meetup_venue$venue_id),]
meetup_venue_it <- subset(meetup_venue, country %in% c("IT",'it'))

meetup_venue_it <-
  SpatialPointsDataFrame(meetup_venue_it[,c('lon','lat')],
                         data = meetup_venue_it,
                         proj4string = CRS('+proj=longlat +datum=WGS84 +no_defs'))
utm_crs <- '+proj=utm +zone=32 +datum=WGS84 +units=m +no_defs'
meetup_venue_it <- spTransform(meetup_venue_it, utm_crs)

library(parallel)
```

```
cl <- makeCluster(detectCores())
clusterExport(cl=cl, varlist=c("meetup_venue_it", "camera_sp_utm"))

res <- parLapply(cl, 1:nrow(meetup_venue_it), function(i)
  which.min(rgeos::gDistance(meetup_venue_it[i,], camera_sp_utm, byid=TRUE))
)

stopCluster(cl)

res_int <- unlist(res)
meetup_venue_it$minint_cod <- camera_sp_utm$minint_cod[res_int]
meetup_venue_it$istat_cod <- camera_sp_utm$istat_cod[res_int]
meetup_venue_it$istat_nom <- camera_sp_utm$istat_nom[res_int]

meetup_venue_it$uninom_cod <- camera_sp_utm$uninom_cod[res_int]
meetup_venue_it$uninom_nom <- camera_sp_utm$uninom_nom[res_int]

meetup_venue_it$regione <- camera_sp_utm$regione[res_int]

save(meetup_venue_it,
     file = 'replication_file_04_geocode_event_venue.RData')
```

```
load('replication_file_04_geocode_venue_italy.RData')

kable(table(meetup_venue_it$regione))
```

Var1	Freq
Abruzzo	632
Basilicata	158
Calabria	1295
Campania	3772
Emilia-Romagna	3311
Friuli-Venezia Giulia	1586
Lazio	5023
Liguria	1722
Lombardia	7165
Marche	457
Molise	167
Piemonte	1322
Puglia	1666
Sardegna	896
Sicilia	6285
Toscana	4248
Trentino-Alto Adige/Südtirol	361
Umbria	1967
Valle d'Aosta/Vallée d'Aoste	130
Veneto	3357

```
# Members

meetup_member_by_data_collection <- data.frame()

for (d in unique(meetup_group_member$collected_on)) {
  this_meetup_member <- meetup_member[meetup_member$collected_on == d,]
```

```
  meetup_member_by_data_collection <-
    rbind(meetup_member_by_data_collection,
          data.frame(timestamp = d,
                     n = length(unique(this_meetup_member$member_id)),
                     missing = ifelse(exists('previous_meetup_member'),
                                      sum(!unique(this_meetup_member$member_id) %in%
                                            unique(previous_meetup_member$member_id)),
                                      NA)))
  previous_meetup_member <- this_meetup_member
}


meetup_group_member$joined <- as.Date(meetup_group_member$joined)

firstJoined <- function(x) {
  if (all(is.na(x))) {
    return(NA)
  } else {
    return(min(x))
  }
}

meetup_member_first_joined <-
  meetup_group_member %>%
  dplyr::group_by(member_id) %>%
  dplyr::summarise(first_joined = firstJoined(joined))

meetup_member_first_joined$first_joined[
  is.na(meetup_member_first_joined$first_joined)
  ] <-
  meetup_member$joined[
    match(meetup_member_first_joined$member_id[
      is.na(meetup_member_first_joined$first_joined)
      ] , meetup_member$member_id)]

meetup_member_by_month  <-
  meetup_member_first_joined %>%
  dplyr::group_by(month = as.Date(cut(first_joined,  breaks = 'month'))) %>%
  dplyr::summarise(n = n())

meetup_member_by_month$n_cumsum <- cumsum(meetup_member_by_month$n)

meetup_member_by_data_collection$remaining <-
  c(meetup_member_by_data_collection$n[1:4] -
      meetup_member_by_data_collection$missing[2:5], NA)

meetup_member_by_month$type <- 'by first joining date available (cumulative)'
meetup_member_by_month <-
  rbind(meetup_member_by_month,
        data.frame(month = as.Date(paste0(meetup_member_by_data_collection$timestamp, "-15")),
                   n = NA,
                   n_cumsum = meetup_member_by_data_collection$n,
                   type = 'registered to existing groups\nat the time of data collection'))
```

```r
meetup_event$time <- as.Date(meetup_event$time)
meetup_event_by_month <-
  subset(meetup_event, yes_rsvp_count>0) %>%
  dplyr::group_by(month = as.Date(cut(time,  breaks = 'month'))) %>%
  dplyr::summarise(n = n())

plot_date_limits <- c(min(meetup_event_by_month$month)-90,
                      max(meetup_event_by_month$month)-90)

# Events

meetup_event_by_month$n_ma12 <-
  rollmean(meetup_event_by_month$n, k=12, fill=NA)

# Events/comune

meetup_venue_by_comune <-
  merge(meetup_event[meetup_event$yes_rsvp_count>0,c('venue','time')],
        meetup_venue_it[,c('venue_id','istat_cod','regione')],
        by.x = 'venue', by.y = 'venue_id')

meetup_venue_by_comune <-
  meetup_venue_by_comune %>%
  dplyr::group_by(month = cut(time, breaks = 'month'),
                  istat_cod,
                  regione) %>%
  dplyr::summarise(n = n())

meetup_venue_by_comune$pop2011 <- NA
meetup_venue_by_comune$pop2011 <-
  comuni_sp$pop2011[match(meetup_venue_by_comune$istat_cod,
                          comuni_sp$PRO_COM_T)]

meetup_venue_by_month <-
  meetup_venue_by_comune %>%
  dplyr::group_by(month) %>%
  dplyr::summarize(perc_pop =
                     (sum(pop2011,na.rm=T)/sum(comuni_sp$pop2011)))
meetup_venue_by_month$month <-
  as.Date(as.character(meetup_venue_by_month$month))

meetup_venue_by_month$perc_pop_ma12 <-
  rollmean(meetup_venue_by_month$perc_pop, k=12,fill=NA)



p1 <-
  ggplot(meetup_event_by_month,
         aes(x=month,y=n)) +
  geom_line() +
  geom_line(aes(y=n_ma12), linetype = 2, color = 'gray') +
  theme_bw() + labs(y=NULL, x='Meetup monthly events') +
  scale_x_date(limits = plot_date_limits, date_breaks = 'year') +
```

```
  theme(axis.ticks.x = element_blank(),
        axis.text.x = element_blank())

p2 <-
  ggplot(meetup_member_by_month, aes(x=month, y=n_cumsum)) +
  geom_line(aes(linetype = type)) + scale_y_continuous(labels = comma) +
  geom_point(data = meetup_member_by_data_collection,
             aes(x=as.Date(paste0(timestamp, "-15")), y=n), stat ='identity') +
  theme_bw() + labs(y=NULL, x='Meetup users') +
  scale_x_date(limits = plot_date_limits, date_breaks = 'year', date_labels = "%Y") +
  theme(legend.title=element_blank(),
        legend.position = c(0.2, 0.8),
        legend.background = element_blank())

p3 <-
  ggplot(subset(meetup_venue_by_month, month < plot_date_limits[2] - 30),
         aes(x=month, y=perc_pop)) +
  geom_line() +
  geom_line(aes(y=perc_pop_ma12), linetype = 2, color = 'gray') +
  theme_bw() +
  labs(y=NULL,
       x='Population in comune with one monthly event or more (over total population)') +
  scale_x_date(limits = plot_date_limits, date_breaks = 'year') +
  scale_y_continuous(labels = percent) +
  theme(axis.ticks.x = element_blank(),
        legend.title=element_blank(),
        legend.position = c(0.1, 0.7),
        axis.text.x = element_blank(),
        legend.background = element_blank())
```

```
read_chunk('replication_code_05_meetup_frequency.R')
```

```
library(sp)
library(sf)
library(dplyr)

load('replication_file_02_meetup_event_venue.RData')
load('replication_file_03_spatial_analysis.RData')
load('replication_file_04_geocode_venue_italy.RData')

comuni_2018_sf <-
  st_as_sf(comuni_sp)
comuni_2018_sf_buff_5k <-
  st_buffer(st_transform(comuni_2018_sf, 32632), dist = 5000)
meetup_event$time <-
  as.Date(meetup_event$time)
meetup_event_it_sf <-
  meetup_event
meetup_event_it_sf$lon <-
  meetup_venue_it@data$lon[
    match(meetup_event_it_sf$venue, meetup_venue_it$venue_id)]
meetup_event_it_sf$lat <-
  meetup_venue_it@data$lat[
    match(meetup_event_it_sf$venue, meetup_venue_it$venue_id)]
```

```
meetup_event_it_sf <-
  meetup_event_it_sf[!is.na(meetup_event_it_sf$lon),]
meetup_event_it_sf <-
  st_as_sf(meetup_event_it_sf, coords = c("lon", "lat"),
           crs = 4326)
meetup_event_it_sf <-
  st_transform(meetup_event_it_sf, 32632)

week_seq <-
  as.character(seq(from = min(as.Date(meetup_event_it_sf$time)),
                   to = max(as.Date(meetup_event_it_sf$time)),
                   by = "1 weeks"))

meetup_7days_comune_8w_win <- data.frame()
for (this_date in week_seq[9:length(week_seq)]) {
  print(this_date)
  this_date <- as.Date(this_date)
  this_meetup_event_sf <-
    meetup_event_it_sf %>%
    dplyr::filter(yes_rsvp_count > 0 &
                    time > this_date - 8 * 7 &
                    time <= this_date)

  res <- st_join(this_meetup_event_sf,
                 comuni_2018_sf_buff_5k, left = F) %>%
    as.data.frame() %>%
    select(event_id, PRO_COM_T, time)
  res$week <- cut(res$time,
                  breaks = seq(from = this_date - 8 * 7,
                               to = this_date + 7, "1 week"))
  res_sum <-
    res %>% dplyr::group_by(PRO_COM_T) %>%
    dplyr::summarize(meetup_7days = length(unique(week)))
  res_sum <-
    merge(res_sum,
          data.frame(PRO_COM_T = comuni_2018_sf_buff_5k$PRO_COM_T,
                     COD_PROV = comuni_2018_sf_buff_5k$COD_PROV,
                     COD_REG = comuni_2018_sf_buff_5k$COD_REG,
                     macro_region = comuni_2018_sf_buff_5k$macro_region,
                     stringsAsFactors = F),
          all.y = T,
          by = 'PRO_COM_T')
  res_sum$meetup_7days[is.na(res_sum$meetup_7days)] <- 0
  res_sum$date <- this_date
  meetup_7days_comune_8w_win <- rbind(meetup_7days_comune_8w_win, res_sum)
}


meetup_7days_comune_8w_win$north_south <-
  ifelse(meetup_7days_comune_8w_win$macro_region %in%
           c('North-west', 'North-east',
             'Centre'),
         'North',
```

```
         'South')

meetup_7days_comune_8w_win_sum <-
  meetup_7days_comune_8w_win %>%
  filter(PRO_COM_T %in% sample_comuni) %>%
  group_by(date, north_south) %>%
  summarize(mean = mean(meetup_7days),
            lower = t.test(meetup_7days)$conf.int[1],
            upper = t.test(meetup_7days)$conf.int[2])

meetup_7days_comune_8w_win$pop2011 <-
  comuni_sp$pop2011[match(meetup_7days_comune_8w_win$PRO_COM_T, comuni_sp$PRO_COM_T)]

meetup_7days_treated_pop <-
  meetup_7days_comune_8w_win %>%
  group_by(north_south, date) %>%
  summarize(pop_treated = sum(pop2011[meetup_7days>1])/sum(pop2011))

meetup_7days_treated_pop_sample <-
  meetup_7days_comune_8w_win %>%
  group_by(north_south, date) %>%
  summarize(pop_treated = sum(pop2011[meetup_7days>1])/sum(pop2011))

meetup_7days_coeff <- data.frame()
for (this_date in as.character(unique(meetup_7days_comune_8w_win$date))) {
  print(this_date)
  this_date <- as.Date(this_date)
  this_df <- subset(meetup_7days_comune_8w_win, date == this_date)
  this_df <- merge(this_df, comuni_sp@data, by = 'PRO_COM_T')
  this_df$meetup_7days <- this_df$meetup_7days>1
  if (this_date <= as.Date('2013-02-24')) {
    lmmod_north <-
      lm(M5S_2013~meetup_7days+log(pop_density)+log(dist_10k_ppl)+
           unemployment+housewive_perc+partwf_perc+over65_perc+
           degree_perc+foreignpop_perc+foreignpop_africa_perc+
           M5S_2013_neigh_avg+income2016_procapite+ANPIV_perc+ref16_turnout,
         data = this_df[this_df$north==T,])
    lmmod_south <-
      lm(M5S_2013~meetup_7days+log(pop_density)+log(dist_10k_ppl)+
           unemployment+housewive_perc+partwf_perc+over65_perc+
           degree_perc+foreignpop_perc+foreignpop_africa_perc+
           M5S_2013_neigh_avg+income2016_procapite+ANPIV_perc+ref16_turnout,
         data = this_df[this_df$north==F,])
  } else {
    lmmod_north <-
      lm(M5S_2018~meetup_7days+log(pop_density)+log(dist_10k_ppl)+
           unemployment+housewive_perc+partwf_perc+over65_perc+
           degree_perc+foreignpop_perc+foreignpop_africa_perc+
           M5S_2018_neigh_avg+income2016_procapite+M5S_2013+ANPIV_perc+ref16_turnout,
         data = this_df[this_df$north==T,])
    lmmod_south <-
      lm(M5S_2018~meetup_7days+log(pop_density)+log(dist_10k_ppl)+
           unemployment+housewive_perc+partwf_perc+over65_perc+degree_perc+
```

```
          foreignpop_perc+foreignpop_africa_perc+M5S_2018_neigh_avg+
          income2016_procapite+M5S_2013+ANPIV_perc+ref16_turnout,
        data = this_df[this_df$north==F,])
  }
  coeff_mat_north <- summary(lmmod_north)$coefficients
  coeff_mat_south <- summary(lmmod_south)$coefficients

  meetup_7days_coeff <-
    rbind(meetup_7days_coeff,
          data.frame(date = this_date,
                     north_south = c('North','South'),
                     meetup_7days_estimate =
                       c(coeff_mat_north['meetup_7daysTRUE',1],
                         coeff_mat_south['meetup_7daysTRUE',1]),
                     meetup_7days_stderr =
                       c(coeff_mat_north['meetup_7daysTRUE',2],
                         coeff_mat_south['meetup_7daysTRUE',2]),
                     meetup_7days_pvalue =
                       c(coeff_mat_north['meetup_7daysTRUE',4],
                         coeff_mat_south['meetup_7daysTRUE',4]),
                     stringsAsFactors = F))
}
meetup_7days_coeff$lower <-
  meetup_7days_coeff$meetup_7days_estimate -
  meetup_7days_coeff$meetup_7days_stderr
meetup_7days_coeff$upper <-
  meetup_7days_coeff$meetup_7days_estimate +
  meetup_7days_coeff$meetup_7days_stderr

save(meetup_7days_comune_8w_win,
     meetup_7days_coeff,
     file = "replication_file_11_meetup_7days_comune_8w_win.RData")
```

```
load("06_meetup_7days_comune_8w_win.RData")
meetup_7days_coeff$p.value <-
  as.numeric(cut(meetup_7days_coeff$meetup_7days_pvalue,
                 breaks = c(0,.01,.02,.03,.04,.05,.1,1), labels = 1:7))

ggplot(meetup_7days_coeff, aes(x=date)) +
  geom_line(aes(y=4.8, color=p.value), size=8) +
  scale_color_gradientn(colours = viridis(12, direction=-1)[c(1:7,12)],
                        labels = c('0', '.01', '.02',
                                   '.03', '.04', '.05','.1')) +
  geom_line(aes(y=meetup_7days_estimate*100)) +
  geom_ribbon(aes(ymin=lower*100,ymax=upper*100), alpha=.3) +
  geom_vline(xintercept = as.Date(c("2013-02-24","2018-03-04"))) +
  geom_vline(xintercept = as.Date(
    c("2012-05-07", "2012-10-28", "2014-05-25")),
    linetype = 2, alpha = .3) +
  labs(y=NULL, x="Effect on M5S vote in the following election") +
  facet_grid(north_south ~ .) +
  theme_bw() + theme(legend.position = 'bottom')
```

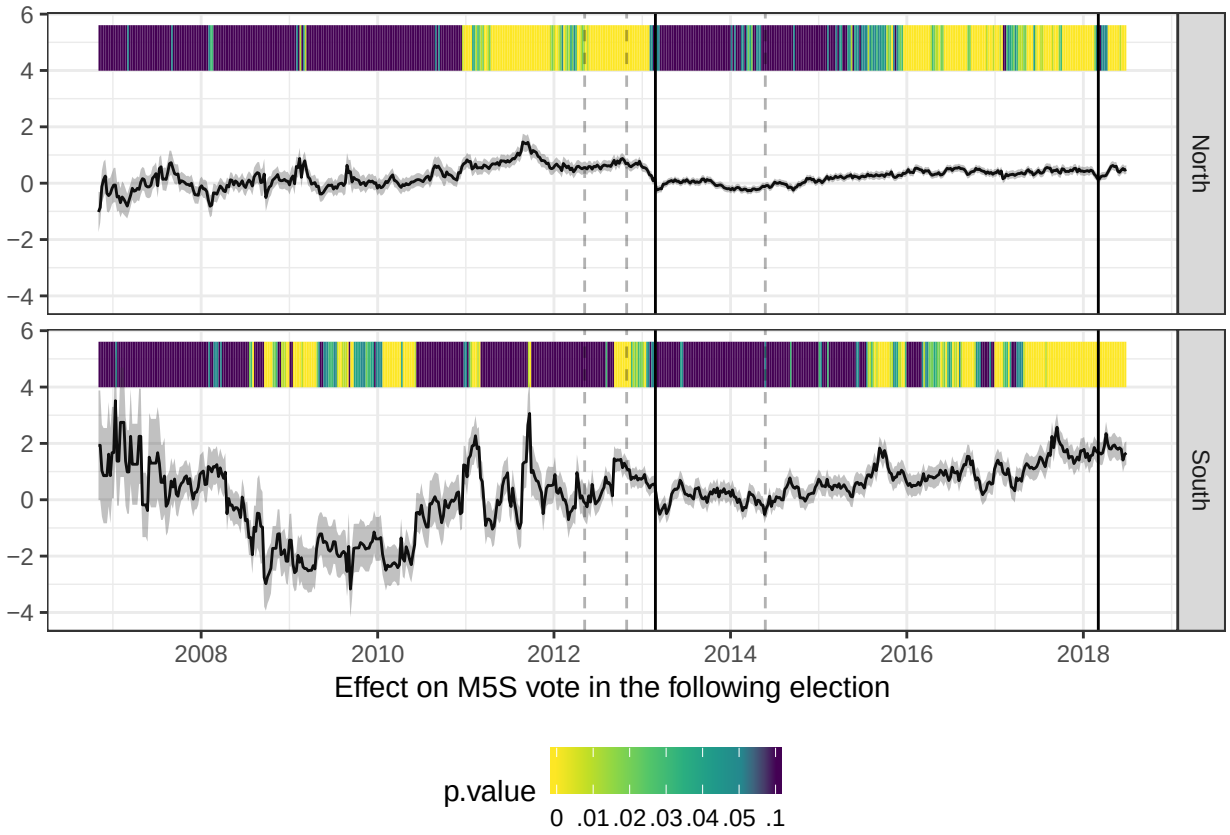
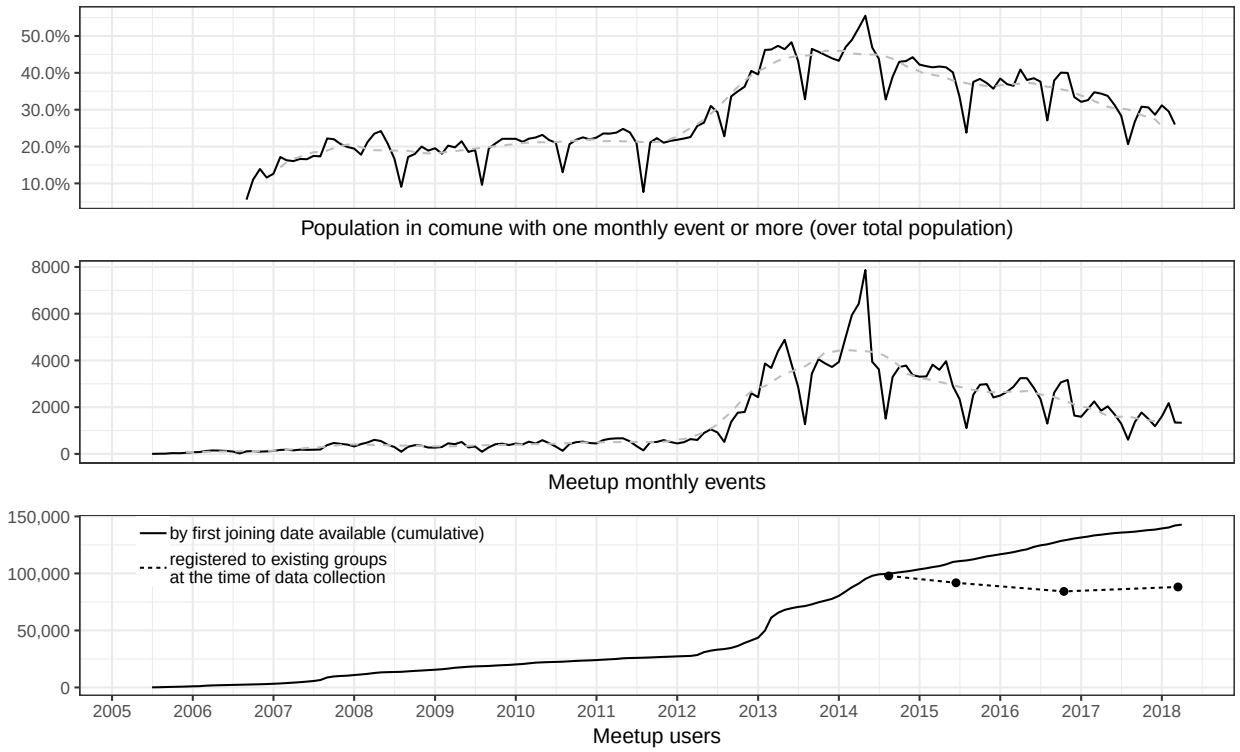


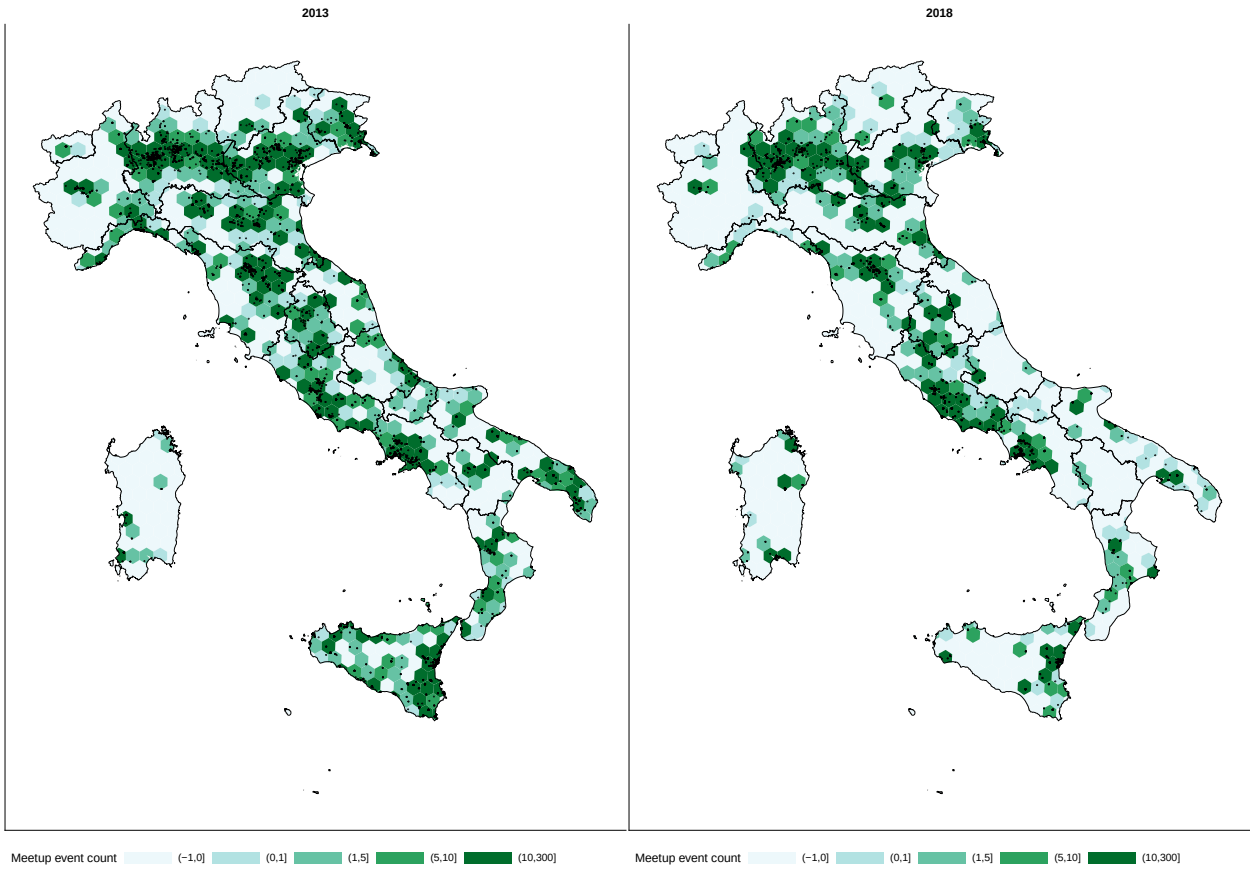
Figure 2

```
plot_grid(p3, p1, p2, align = "v", nrow = 3, rel_heights = c(1/3, 1/3, 1/3))
```




```
load('replication_file_05_regione2018_sp_sf.RData')

hex_grid_25km_meetup2014$Freq[is.na(hex_grid_25km_meetup2014$Freq)] <- 0
hex_grid_25km_meetup2018$Freq[is.na(hex_grid_25km_meetup2018$Freq)] <- 0

hex_grid_25km_meetup2014$brks2014 <-
  cut(hex_grid_25km_meetup2014$Freq,
      breaks = c(-1, 0, 1, 5, 10, 300))
hex_grid_25km_meetup2018$brks2018 <-
  cut(hex_grid_25km_meetup2018$Freq,
      breaks = c(-1, 0, 1, 5, 10, 300))

hex_grid_25km_meetup2014_sf <- st_as_sf(hex_grid_25km_meetup2014)
hex_grid_25km_meetup2018_sf <- st_as_sf(hex_grid_25km_meetup2018)

grid.arrange(
  ggplot() +
    geom_sf(data=hex_grid_25km_meetup2014_sf, aes(fill=brks2014), color = NA) +
    scale_fill_brewer(palette='BuGn') +
    geom_sf(data = regione2018_sf, colour = 'black', fill = NA, alpha = .7) +
    geom_point(data=as.data.frame(meetup2014_event), aes(lon,lat), size = .2, alpha = .8) +
    coord_sf() +
    blank() +
    guides(fill=guide_legend(title="Meetup event count")) +
    labs(title = '2013') +
    theme(legend.position="bottom") +
    theme(legend.key.width=unit(2, "cm")),
  ggplot() +
    geom_sf(data=hex_grid_25km_meetup2018_sf, aes(fill=brks2018), color = NA) +
```

```
    scale_fill_brewer(palette='BuGn') +
    geom_sf(data = regione2018_sf, colour = 'black', fill = NA, alpha = .7) +
    geom_point(data=as.data.frame(meetup2018_event), aes(lon,lat), size = .2, alpha = .8) +
    coord_sf() +
    blank() +
    guides(fill=guide_legend(title="Meetup event count")) +
    labs(title = '2018') +
    theme(legend.position="bottom") +
    theme(legend.key.width=unit(2, "cm")),
  ncol = 2
)
```



Election data

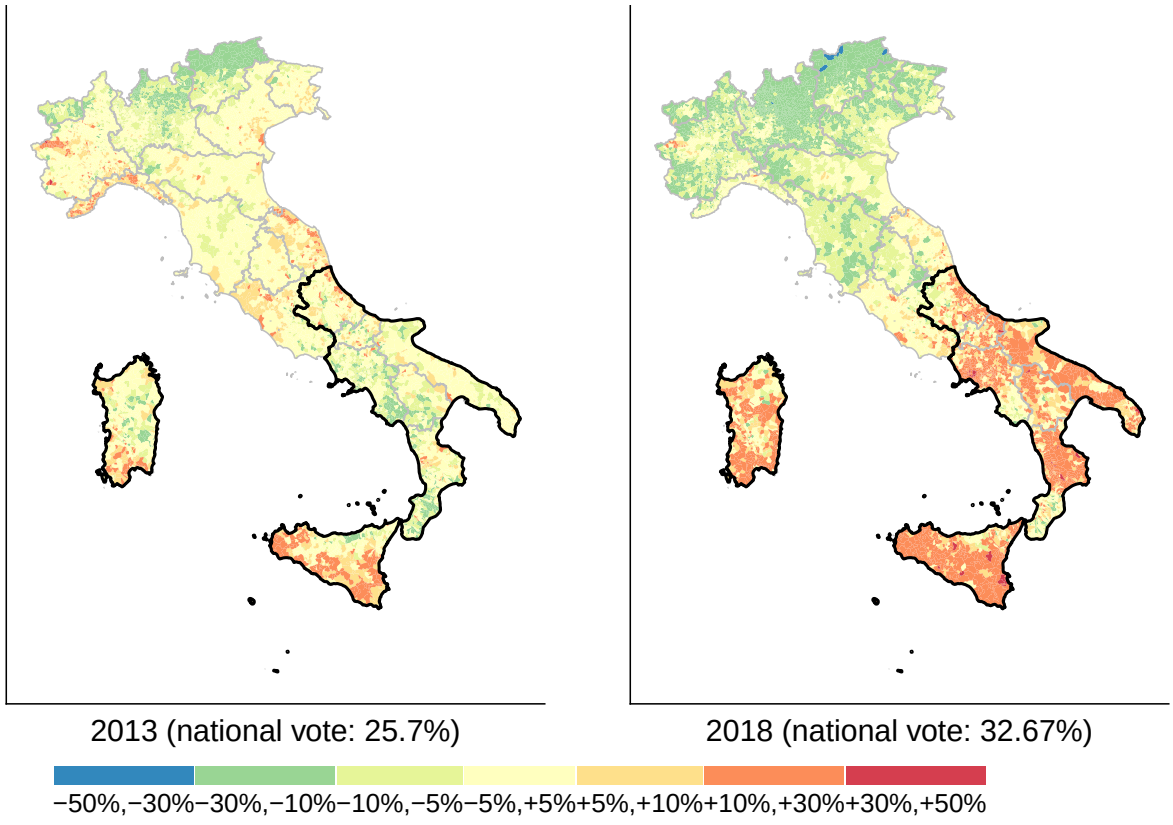
```
load("replication_file_06_regione2018_south_sp.RData")
istat_rip_geo_2018_sf <- st_as_sf(istat_rip_geo_2018)
st_crs(istat_rip_geo_2018_sf) <- 32632

comuni_sf_keep005 <- st_as_sf(comuni_sp_keep005)

comuni_sf_keep005 <- merge(comuni_sf_keep005, comuni_sp, by = 'PRO_COM_T')

comuni_sp$M5S_diff <- comuni_sp$M5S_diff / 100
```

```
## Compare 2013 and 2018
### Difference from national mean

cut_breaks <-
  c(-0.5, -0.3, -0.1, -0.05, 0.05, 0.1, 0.3, 0.5)
cut_labels <-
  c("-50%,-30%", "-30%,-10%", "-10%,-5%","-5%,+5%",
    "+5%,+10%","+10%,+30%","+30%,+50%")
nat_vote_2013 <-
  0.2566
nat_vote_2018 <-
  0.3267

plot2013 <-
  ggplot() +
  geom_sf(data=comuni_sf_keep005,
          aes(fill =
                cut(
                  M5S_2013 -
                    nat_vote_2013,
                  breaks = cut_breaks,
                  labels = cut_labels)),
          col = NA) +
  geom_sf(data = regione2018_sf,
          colour = 'gray', fill = NA,alpha=.5) +
  geom_sf(data = istat_rip_geo_2018_sf[istat_rip_geo_2018_sf$FID>2,],
          colour = 'black', fill = NA, size=1) +
  scale_fill_brewer(palette = 'Spectral', drop = FALSE, direction=-1) +
  coord_sf() +
  blank() +
  guides(fill=FALSE) +
  theme(plot.caption = element_text(hjust=0.5, size=21)) +
  labs(caption = paste0('2013 (national vote: ',
                        round(nat_vote_2013*100,1),'%)'))

plot2018 <-
  ggplot() +
  geom_sf(data=comuni_sf_keep005,
          aes(fill =
                cut(
                  M5S_2018 -
                    nat_vote_2018,
                  breaks = cut_breaks,
                  labels = cut_labels)),
          col = NA) +
  geom_sf(data = regione2018_sf, colour = 'gray', fill = NA,alpha=.5) +
  scale_fill_brewer(palette = 'Spectral', drop = FALSE, direction=-1) +
  coord_sf() +
  blank() +
  guides(fill=guide_legend(nrow=1,byrow=TRUE,title="Difference from national vote",
                           label.position = "bottom",
                           label.hjust = 5)) +
  theme(legend.position="bottom",legend.direction="horizontal",
```

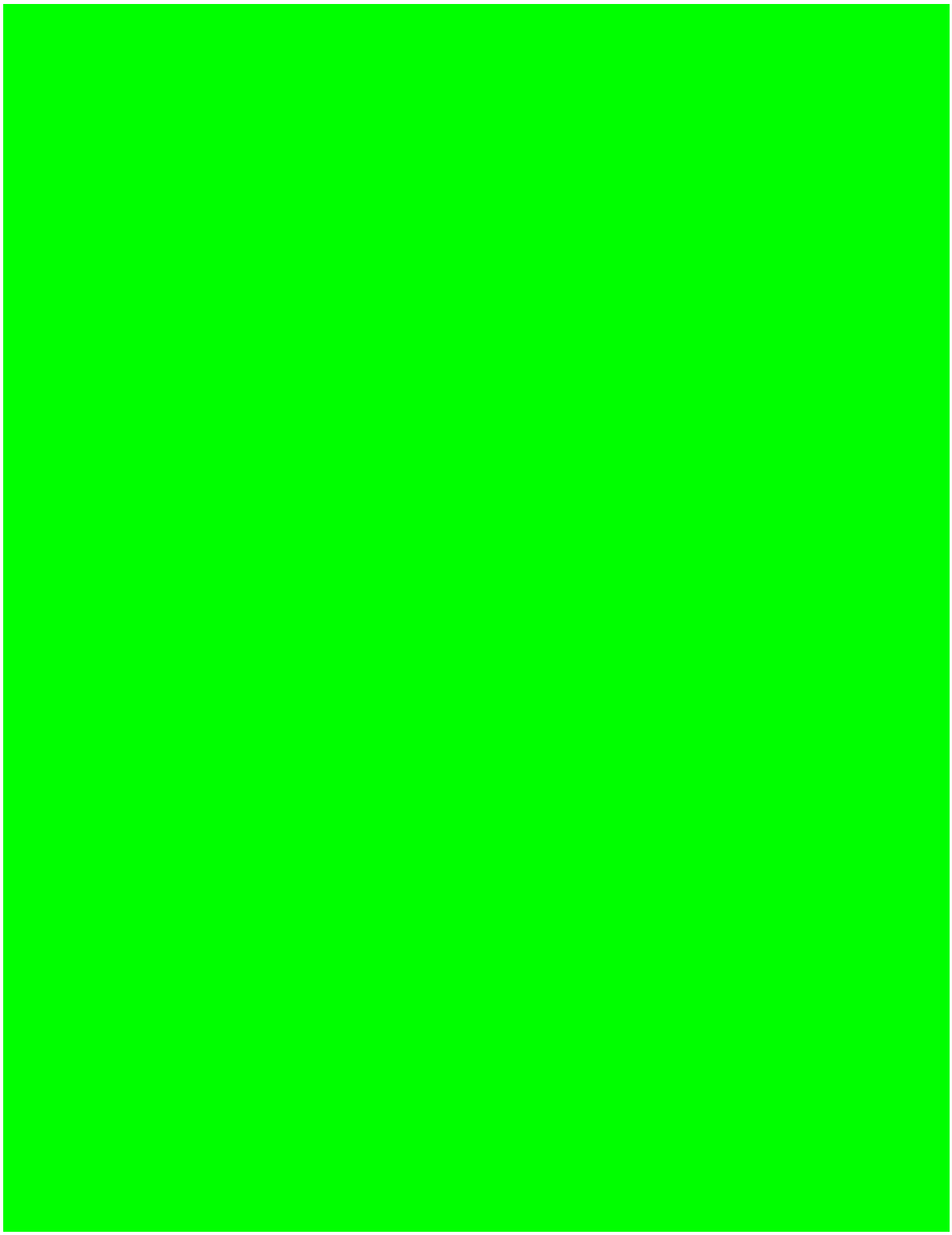
```
        legend.title=element_blank(),
        legend.text = element_text(size = 18, margin = margin(t = 5)),
        plot.title = element_text(size = 30),
        legend.spacing.x = unit(2, 'cm'),
        legend.key = element_rect(colour = 'black', fill = NA, size = 0.5)) +
  labs(title = paste0('2018 (national vote: ', round(nat_vote_2018*100,2),'%)'))

extractLegend <- function(a.gplot) {
  tmp <- ggplot_gtable(ggplot_build(a.gplot))
  leg <- which(sapply(tmp$grobs, function(x) x$name) == "guide-box")
  legend <- tmp$grobs[[leg]]
  return(legend)}
plot_legend <- extractLegend(plot2018)

plot2018 <-
  ggplot() +
  geom_sf(data=comuni_sf_keep005,
          aes(fill =
                cut(
                  M5S_2018 -
                    nat_vote_2018,
                  breaks = cut_breaks,
                  labels = cut_labels)),
          col = NA) +
  geom_sf(data = regione2018_sf, colour = 'gray', fill = NA, alpha=.5) +
  geom_sf(data = istat_rip_geo_2018_sf[istat_rip_geo_2018_sf$FID>2,],
          colour = 'black', fill = NA, size=1) +
  scale_fill_brewer(palette = 'Spectral', drop = FALSE, direction=-1) +
  coord_sf() +
  blank() +
  guides(fill=FALSE) +
  theme(plot.caption = element_text(hjust=0.5, size=21)) +
  labs(caption = paste0('2018 (national vote: ', round(nat_vote_2018*100,2),'%)'))
```

Figure 1 (Supplemental online material)

```
grid.arrange(
  plot2013,
  plot2018,
  plot_legend,
  heights = c(8, 1),
  layout_matrix = rbind(c(1,2),c(3))
)
```




```
ggplot() +
  geom_sf(data=comuni_sf_keep005,
          aes(fill = cut(M5S_2018-M5S_2013,
                         breaks = c(-.5, -.1, -.05, .05, 1, .5),
                         labels = c("-50%,-10%", "-10%,-5%", "-5%,+5%", "+5%,+10%", "+10%,+50%"),
                         include.lowest = T)),
          col = NA) +
  scale_fill_brewer(type="seq", palette = "PuOr", drop = FALSE) +
  geom_sf(data = regione2018_sf, fill = NA, alpha=.7) +
  geom_sf(data = istat_rip_geo_2018_sf[istat_rip_geo_2018_sf$FID>2,],
          colour = 'black', fill = NA, size=1) +
  coord_sf() +
  blank() +
  guides(fill = guide_legend(label.position = "bottom")) +
  theme(legend.position="bottom",
        legend.direction="horizontal",
        legend.title=element_blank(),
        legend.text = element_text(size = 18, margin = margin(t = 5)),
        legend.spacing.x = unit(.5, 'cm'),
        legend.key = element_rect(colour = 'black', fill = NA, size = 0.5))
```



-

Opinion survey data

```
read_chunk('replication_code_03_prov_demographics.R')
```

```
library(stringr)
library(readr)
library(readr)
library(dplyr)
library(dataverse)
library(SPARQL)
library(dataverse)
library(rgdal)
library(sp)

load('replication_file_02_meetup_event_venue.RData')
load('replication_file_03_spatial_analysis.RData')
load('replication_file_04_geocode_venue_italy.RData')

# Meetup @ provincial level (participation and unemployment)
unemployment_prov <-
  read.csv("secondary_data/DCCV_TAXDISOCCU1_06072018063709606.csv")

unemployment_prov <-
  unemployment_prov[unemployment_prov$Sesso == 'totale' &
                      unemployment_prov$ETA1 == 'Y_GE15',]

pro_listed <- list()
for (y in 2005:2017) {
  this_names <-
    as.character(unemployment_prov$Territorio[unemployment_prov$TIME == y])
  this_names <- gsub(" / (.*)$", "", this_names)
  pro_listed[[as.character(y)]] <- str_trim(this_names)
  names(pro_listed[[as.character(y)]]) <-
    unemployment_prov$ITTER107[unemployment_prov$TIME == y]
}

shp_files <-
  list.files('secondary_data/istat_prov_shapefiles',
             recursive = T, pattern = 'shp',
             full.names = T)

prepareName <- function(str) {
  return(gsub("/(.*)$", "", str))
}

province_sp_list <- list()
for (y in 2005:2017) {
  print(y)
  if (y %in% c(2006, 2007)) {
    province_sp_list[[as.character(y)]] <-
      province_sp_list[['2005']]
    next
  }
  this_file <- shp_files[grepl(y, shp_files)]
```

```
  this_dns <- gsub("/Prov[A-Za-z0-9_]+.shp$", "", this_file)
  this_layer <-
    gsub("\\.shp", "", gsub("^(.*)Prov[A-Za-z0-9_]+/", "", this_file))
  province_sp_list[[as.character(y)]] <-
    readOGR(this_dns, this_layer)
  if (!y %in% 2015:2017) {
    province_sp_list[[as.character(y)]]$str_name <-
      prepareName(province_sp_list[[as.character(y)]]$DEN_PROV)
  } else {
    province_sp_list[[as.character(y)]]$str_name <-
      prepareName(province_sp_list[[as.character(y)]]$DEN_PCM)
  }
}


for (y in 2005:2017) {
  province_sp_list[[as.character(y)]]$str_name[
    province_sp_list[[as.character(y)]]$str_name == 'Bolzano'] <-
    "Provincia Autonoma Bolzano"
  province_sp_list[[as.character(y)]]$str_name[
    province_sp_list[[as.character(y)]]$str_name == 'Trento'] <-
    "Provincia Autonoma Trento"

  province_sp_list[[as.character(y)]]$str_name[
    province_sp_list[[as.character(y)]]$str_name == "Forli'-Cesena"] <-
    "Forlì-Cesena"
  province_sp_list[[as.character(y)]]$str_name[
    province_sp_list[[as.character(y)]]$str_name == "Massa Carrara"] <-
    "Massa-Carrara"

  if (y > 2014) {
    province_sp_list[[as.character(y)]]$str_name[
      province_sp_list[[as.character(y)]]$str_name == 'Aosta'] <-
      "Valle d'Aosta"
  }

  province_sp_list[[as.character(y)]]$ITTER107 <-
    names(pro_listed[[as.character(y)]])[
      match(province_sp_list[[as.character(y)]]$str_name,
            pro_listed[[as.character(y)]])]

  this_dat <- unemployment_prov[unemployment_prov$TIME == y,]

  province_sp_list[[as.character(y)]]$unemployment <-
    this_dat$Value[
      match(province_sp_list[[as.character(y)]]$ITTER107, this_dat$ITTER107)]
}

## Add employment
istat_prov_employment <-
  read_csv("secondary_data/DCCV_TAXOCCU1_09072018060529303.csv")
istat_prov_employment <-
  istat_prov_employment[istat_prov_employment$Sesso=='totale' &
```

```
                          istat_prov_employment$ETA1 == 'Y_GE15',]

for (y in 2005:2017) {
  this_dat <- istat_prov_employment[istat_prov_employment$TIME == y,]
  province_sp_list[[as.character(y)]]$employment <-
    this_dat$Value[
      match(province_sp_list[[as.character(y)]]$ITTER107,this_dat$ITTER107)]
}


## Add population
for (y in 2005:2017) {
  print(y)
  this_pop_data <-
    read_csv(sprintf("secondary_data/istat_prov_pop/province%s.zip", y),
             locale = locale(encoding = "WINDOWS-1252"),
             skip = 1)
  names(this_pop_data)[3] <- 'age'
  this_pop_data <-
    this_pop_data %>%
    dplyr::group_by(`Codice Provincia`, `Descrizione Provincia`) %>%
    dplyr::summarize(pop = sum(`Totale Maschi`) + sum(`Totale Femmine`),
                     pop_over_65 = sum(`Totale Maschi`[age>=65]) +
                       sum(`Totale Femmine`[age>=65]))
  this_pop_data$`Codice Provincia` <- as.numeric(this_pop_data$`Codice Provincia`)
  province_sp_list[[as.character(y)]]$population <-
    this_pop_data$pop[match(province_sp_list[[as.character(y)]]$COD_PROV,
                            this_pop_data$`Codice Provincia`)]
  province_sp_list[[as.character(y)]]$population_over_65 <-
    this_pop_data$pop_over_65[match(province_sp_list[[as.character(y)]]$COD_PROV,
                                    this_pop_data$`Codice Provincia`)]
}

province_sp_list[['2017']]$population[
  province_sp_list[['2017']]$DEN_PROV == 'Sud Sardegna'] <-
  98623 + 126324


## Add foreign population
f <- get_file("istat_provincial_foreign_residents.csv",
              "doi:10.7910/DVN/YM7IWP")
istat_provincial_foreign_residents <-
  read_csv(f, locale = locale(encoding = "WINDOWS-1252"))
istat_provincial_foreign_residents <-
  istat_provincial_foreign_residents[istat_provincial_foreign_residents$Sesso == 'totale', ]

library(SPARQL)
query <- 'SELECT ?country ?countryLabel WHERE {
?country wdt:P31 wd:Q6256.
?country wdt:P30 wd:Q15
SERVICE wikibase:label {
bd:serviceParam wikibase:language "it" .
}
```

```
}'
res <- SPARQL('https://query.wikidata.org/sparql', query)
african_country_labels <- res$results$countryLabel
african_country_labels <- gsub("\"|@it", "", african_country_labels)
istat_provincial_foreign_residents$africa <-
  istat_provincial_foreign_residents$`Paese di cittadinanza` %in% african_country_labels

istat_provincial_foreign_residents$africa[
  istat_provincial_foreign_residents$`Paese di cittadinanza` %in%
    c("Benin (ex Dahomey)", "Burkina Faso (ex Alto Volta)",
      "Centrafricana, Repubblica", "Congo (Repubblica del)",
      "Congo, Repubblica democratica del (ex Zaire)",
      "Guinea equatoriale", "São Tomé e Principe",
      "Sud Africa", "Sud Sudan, Repubblica del",
      "Zimbabwe (ex Rhodesia)")] <-
  TRUE

istat_provincial_foreign_residents <-
  istat_provincial_foreign_residents %>%
  group_by(Anno, Territorio) %>%
  summarize(foreignpop = sum(`0`),
            foreignpop_africa = sum(`0`[africa == TRUE]))

### Add 2017
istat_foreign_pop_2017 <-
  read_csv("secondary_data/DCIS_POPSTRCIT1_09072018042403842.csv")
istat_foreign_pop_2017 <-
  istat_foreign_pop_2017[istat_foreign_pop_2017$Sesso == 'totale',]
istat_foreign_pop_2017 <-
  istat_foreign_pop_2017[istat_foreign_pop_2017$`Paese di cittadinanza` != 'Mondo',]

istat_foreign_pop_2017$africa <-
  grepl("Africa", istat_foreign_pop_2017$`Paese di cittadinanza`)

istat_foreign_pop_2017 <-
  istat_foreign_pop_2017 %>%
  group_by(Territorio, Anno = TIME) %>%
  summarize(foreignpop = sum(Value),
            foreignpop_africa = sum(Value[africa==TRUE]))

istat_provincial_foreign_residents <-
  rbind(istat_provincial_foreign_residents,
        istat_foreign_pop_2017)


all_str_names <- character()
for (y in 2005:2017) {
  print(y)
  all_str_names <- unique(c(all_str_names, province_sp_list[[as.character(y)]]$str_name))
}
all_str_names[!all_str_names %in%
                unique(istat_provincial_foreign_residents$Territorio)]
istat_provincial_foreign_residents$Territorio[
```

```
  istat_provincial_foreign_residents$Territorio ==
    "Valle d'Aosta / Vallée d'Aoste"] <-
  "Valle d'Aosta"
istat_provincial_foreign_residents$Territorio[
  istat_provincial_foreign_residents$Territorio ==
    "Bolzano / Bozen"] <-
  "Provincia Autonoma Bolzano"
istat_provincial_foreign_residents$Territorio[
  istat_provincial_foreign_residents$Territorio %in%
    c("Carbonia-Iglesias", "Medio Campidano") &
    istat_provincial_foreign_residents$Anno == 2017] <- "Sud Sardegna"

for (y in 2005:2017) {
  print(y)
  this_dat <- istat_provincial_foreign_residents[
    istat_provincial_foreign_residents$Anno == y,]
  province_sp_list[[as.character(y)]]$foreignpop <-
    this_dat$foreignpop[
      match(province_sp_list[[as.character(y)]]$str_name,
            this_dat$Territorio)]
  province_sp_list[[as.character(y)]]$foreignpop_africa <-
    this_dat$foreignpop_africa[
      match(province_sp_list[[as.character(y)]]$str_name,
            this_dat$Territorio)]
}

### 2010
#### Milano / Monza e della Brianza
value1 <- province_sp_list[['2012']]$foreignpop[
  province_sp_list[['2012']]$str_name=="Milano"]
value2 <- province_sp_list[['2012']]$foreignpop[
  province_sp_list[['2012']]$str_name=="Monza e della Brianza"]
prop1 <- value1 / (value1 + value2)
prop2 <- value2 / (value1 + value2)

province_sp_list[['2010']]$foreignpop[
  province_sp_list[['2010']]$str_name=="Monza e della Brianza"] <-
  round(province_sp_list[['2010']]$foreignpop[
    province_sp_list[['2010']]$str_name=="Milano"]*prop2 , 0)
province_sp_list[['2010']]$foreignpop[
  province_sp_list[['2010']]$str_name=="Milano"] <-
  round(province_sp_list[['2010']]$foreignpop[
    province_sp_list[['2010']]$str_name=="Milano"]*prop1 , 0)

value1 <- province_sp_list[['2012']]$foreignpop_africa[
  province_sp_list[['2012']]$str_name=="Milano"]
value2 <- province_sp_list[['2012']]$foreignpop_africa[
  province_sp_list[['2012']]$str_name=="Monza e della Brianza"]
prop1 <- value1 / (value1 + value2)
prop2 <- value2 / (value1 + value2)

province_sp_list[['2010']]$foreignpop_africa[
  province_sp_list[['2010']]$str_name=="Monza e della Brianza"] <-
```

```
  round(province_sp_list[['2010']]$foreignpop_africa[
    province_sp_list[['2010']]$str_name=="Milano"]*prop2 , 0)
province_sp_list[['2010']]$foreignpop_africa[
  province_sp_list[['2010']]$str_name=="Milano"] <-
  round(province_sp_list[['2010']]$foreignpop_africa[
    province_sp_list[['2010']]$str_name=="Milano"]*prop1 , 0)

#### Ascoli Piceno / Fermo
value1 <- province_sp_list[['2011']]$foreignpop[
  province_sp_list[['2011']]$str_name=="Ascoli Piceno"]
value2 <- province_sp_list[['2011']]$foreignpop[
  province_sp_list[['2011']]$str_name=="Fermo"]
prop1 <- value1 / (value1 + value2)
prop2 <- value2 / (value1 + value2)

province_sp_list[['2010']]$foreignpop[
  province_sp_list[['2010']]$str_name=="Fermo"] <-
  round(province_sp_list[['2010']]$foreignpop[
    province_sp_list[['2010']]$str_name=="Ascoli Piceno"]*prop2 , 0)
province_sp_list[['2010']]$foreignpop[
  province_sp_list[['2010']]$str_name=="Ascoli Piceno"] <-
  round(province_sp_list[['2010']]$foreignpop[
    province_sp_list[['2010']]$str_name=="Ascoli Piceno"]*prop1 , 0)

value1 <- province_sp_list[['2011']]$foreignpop_africa[
  province_sp_list[['2011']]$str_name=="Ascoli Piceno"]
value2 <- province_sp_list[['2011']]$foreignpop_africa[
  province_sp_list[['2011']]$str_name=="Fermo"]
prop1 <- value1 / (value1 + value2)
prop2 <- value2 / (value1 + value2)

province_sp_list[['2010']]$foreignpop_africa[
  province_sp_list[['2010']]$str_name=="Fermo"] <-
  round(province_sp_list[['2010']]$foreignpop_africa[
    province_sp_list[['2010']]$str_name=="Ascoli Piceno"]*prop2 , 0)
province_sp_list[['2010']]$foreignpop_africa[
  province_sp_list[['2010']]$str_name=="Ascoli Piceno"] <-
  round(province_sp_list[['2010']]$foreignpop_africa[
    province_sp_list[['2010']]$str_name=="Ascoli Piceno"]*prop1 , 0)

#### Bari + Foggia / Barletta-Andria-Trani
value1 <- province_sp_list[['2011']]$foreignpop[
  province_sp_list[['2011']]$str_name=="Bari"]
value2 <- province_sp_list[['2011']]$foreignpop[
  province_sp_list[['2011']]$str_name=="Foggia"]
value3 <- province_sp_list[['2011']]$foreignpop[
  province_sp_list[['2011']]$str_name=="Barletta-Andria-Trani"]
prop1 <- value1 / (value1 + value2 + value3)
prop2 <- value2 / (value1 + value2 + value3)
prop3 <- value3 / (value1 + value2 + value3)

value2010 <-
  province_sp_list[['2010']]$foreignpop[
```

```
    province_sp_list[['2010']]$str_name=="Bari"] +
  province_sp_list[['2010']]$foreignpop[
    province_sp_list[['2010']]$str_name=="Foggia"]

province_sp_list[['2010']]$foreignpop[
  province_sp_list[['2010']]$str_name=="Bari"] <-
  round(value2010*prop1,0)
province_sp_list[['2010']]$foreignpop[
  province_sp_list[['2010']]$str_name=="Foggia"] <-
  round(value2010*prop2,0)
province_sp_list[['2010']]$foreignpop[
  province_sp_list[['2010']]$str_name=="Barletta-Andria-Trani"] <-
  round(value2010*prop3,0)

value1 <- province_sp_list[['2011']]$foreignpop_africa[
  province_sp_list[['2011']]$str_name=="Bari"]
value2 <- province_sp_list[['2011']]$foreignpop_africa[
  province_sp_list[['2011']]$str_name=="Foggia"]
value3 <- province_sp_list[['2011']]$foreignpop_africa[
  province_sp_list[['2011']]$str_name=="Barletta-Andria-Trani"]
prop1 <- value1 / (value1 + value2 + value3)
prop2 <- value2 / (value1 + value2 + value3)
prop3 <- value3 / (value1 + value2 + value3)

value2010 <-
  province_sp_list[['2010']]$foreignpop_africa[
    province_sp_list[['2010']]$str_name=="Bari"] +
  province_sp_list[['2010']]$foreignpop_africa[
    province_sp_list[['2010']]$str_name=="Foggia"]

province_sp_list[['2010']]$foreignpop_africa[
  province_sp_list[['2010']]$str_name=="Bari"] <- round(value2010*prop1,0)
province_sp_list[['2010']]$foreignpop_africa[
  province_sp_list[['2010']]$str_name=="Foggia"] <- round(value2010*prop2,0)
province_sp_list[['2010']]$foreignpop_africa[
  province_sp_list[['2010']]$str_name=="Barletta-Andria-Trani"] <-
  round(value2010*prop3,0)


### Check
for (y in 2005:2017) {
  print(y)
  print(any(is.na(province_sp_list[[as.character(y)]]$foreignpop_africa)))
}

## Measure meetup density
meetup_event_it <-
  meetup_event[meetup_event$venue %in% meetup_venue_it$venue_id,]
for (y in 2006:2017) {
  print(y)
  week_seq <- seq(from = as.Date(sprintf("%s-01-01",y)),
                  to = as.Date(sprintf("%s-01-01",y+1))-1,
                  by = "1 week")
```

```
  these_events <- subset(meetup_event_it, yes_rsvp_count > 0 & grepl(y, time))
  these_venues <- meetup_venue_it[meetup_venue_it$venue_id %in% these_events$venue,]
  these_events$week <- cut(as.Date(these_events$time), breaks = week_seq)
  res <- over(these_venues, province_sp_list[[as.character(y)]])
  these_venues$ITTER107 <- res$ITTER107
  if(any(is.na(these_venues$ITTER107))) stop
  these_events$ITTER107 <-
    these_venues$ITTER107[match(these_events$venue, these_venues$venue_id)]
  if(any(is.na(these_events$ITTER107))) stop
  count_tbl <- as.data.frame(table(these_events$ITTER107))
  province_sp_list[[as.character(y)]]$n_meetup_events <- NA
  province_sp_list[[as.character(y)]]$n_meetup_events <-
    count_tbl$Freq[match(province_sp_list[[as.character(y)]]$ITTER107, count_tbl$Var1)]
  province_sp_list[[as.character(y)]]$n_meetup_events[
    is.na(province_sp_list[[as.character(y)]]$n_meetup_events)] <- 0
  these_meetup_7days <-
    these_events %>%
    dplyr::group_by(ITTER107) %>%
    dplyr::summarize(meetup_7days = length(unique(week)))
  province_sp_list[[as.character(y)]]$meetup_7days <-
    these_meetup_7days$meetup_7days[
      match(province_sp_list[[as.character(y)]]$ITTER107,
            these_meetup_7days$ITTER107)]
  province_sp_list[[as.character(y)]]$meetup_7days[
    is.na(province_sp_list[[as.character(y)]]$meetup_7days)] <- 0
}

# Meetup freq pre election
## 2013
y <- 2013
election_date_2013 <- as.Date("2013-02-24")
week_seq <- seq(from = election_date_2013 - 6 * 30,
                to = election_date_2013,
                by = 'week')
these_events <-
  subset(meetup_event_it, yes_rsvp_count > 0 &
           as.Date(time) > min(week_seq) &
           as.Date(time) < max(week_seq))
these_venues <-
  meetup_venue_it[meetup_venue_it$venue_id %in% these_events$venue,]
these_events$week <-
  cut(as.Date(these_events$time), breaks = week_seq)
res <- over(these_venues, province_sp_list[[as.character(y)]])
these_venues$ITTER107 <- res$ITTER107
these_events$ITTER107 <-
  these_venues$ITTER107[match(these_events$venue, these_venues$venue_id)]
meetup2013_7days <-
  these_events %>%
  dplyr::group_by(ITTER107) %>%
  dplyr::summarize(meetup_7days = length(unique(week)))

## 2017
y <- 2017
```

```
election_date_2018 <- as.Date("2018-03-04")
week_seq <- seq(from = election_date_2018 - 6 * 30,
                to = election_date_2018,
                by = 'week')
these_events <-
  subset(meetup_event_it, yes_rsvp_count > 0 &
           as.Date(time) > min(week_seq) & as.Date(time) < max(week_seq))
these_venues <-
  meetup_venue_it[meetup_venue_it$venue_id %in% these_events$venue,]
these_events$week <-
  cut(as.Date(these_events$time), breaks = week_seq)
res <- over(these_venues, province_sp_list[[as.character(y)]])
these_venues$ITTER107 <-
  res$ITTER107
these_events$ITTER107 <-
  these_venues$ITTER107[match(these_events$venue, these_venues$venue_id)]
meetup2018_7days <-
  these_events %>%
  dplyr::group_by(ITTER107) %>%
  dplyr::summarize(meetup_7days = length(unique(week)))

## Meetup

for(i in 2:13) {
  province_sp_list[[i]]$n_meetup_events_per_10k <-
    province_sp_list[[i]]$n_meetup_events /
    (province_sp_list[[i]]$population/10000)
}


## Assign region
load('replication_file_05_regione2018_sp_sf.RData')
for (y in 2005:2017) {
  print(y)
  this_crs <-
    CRS(proj4string(province_sp_list[[as.character(y)]]))
  these_coords <-
    coordinates(province_sp_list[[as.character(y)]])
  these_coords <- SpatialPointsDataFrame(these_coords,
                                         data = province_sp_list[[as.character(y)]]@data,
                                         proj4string = this_crs)
  res <- over(these_coords, spTransform(regione2018_sp, this_crs))
  province_sp_list[[as.character(y)]]$region <-
    res$DEN_REG

  province_sp_list[[as.character(y)]]$region[
    province_sp_list[[as.character(y)]]$str_name == 'Rimini'] <-
    "Emilia-Romagna"
  province_sp_list[[as.character(y)]]$region[
    province_sp_list[[as.character(y)]]$str_name == 'Cagliari'] <-
    "Sardegna"
}
```

```r
## Check
for (y in 2005:2017) {
  print(y)
  print(any(is.na(province_sp_list[[as.character(y)]]$population)))
  print(any(is.na(province_sp_list[[as.character(y)]]$n_meetup_events)))
  # print(any(is.na(province_sp_list[[as.character(y)]]$region)))
  print(province_sp_list[[as.character(y)]]$str_name[
    is.na(province_sp_list[[as.character(y)]]$region)])
}

# Add income
base_url <-
  'http://www1.finanze.gov.it/finanze3/analisi_stat/v_4_0_0/contenuti/Redditi_e_principali_variabili_IR

for (y in 2008:2016) {
  print(y)
  td <- tempdir()
  # create the placeholder file
  tf <- tempfile(tmpdir=td, fileext=".zip")
  # download into the placeholder file
  download.file(sprintf(base_url, y), tf)
  fname = unzip(tf, list=TRUE)$Name[1]
  unzip(tf, files=fname, exdir=td, overwrite=TRUE)
  fpath = file.path(td, fname)
  this_dat <- read.csv(fpath, header=TRUE, row.names=NULL, sep=";",
                       stringsAsFactors=FALSE,
                       na.strings = "")
  freq_col_i <-
    which(grepl("Reddito.complessivo", colnames(this_dat)) &
            grepl("Frequenza", colnames(this_dat)))
  amm_col_i <-
    which(grepl("Reddito.complessivo", colnames(this_dat)) &
            grepl("Ammontare", colnames(this_dat)))

  tot_df <-
    data.frame(SIGLA = this_dat$Sigla.Provincia,
               n_taxpayers = apply(this_dat[,freq_col_i], 1, sum, na.rm = T),
               taxable_income = apply(this_dat[,amm_col_i], 1, sum,  na.rm = T),
               stringsAsFactors = F)

  tot_df <- tot_df[!is.na(tot_df$SIGLA),]
  tot_df <-
    tot_df %>%
    dplyr::group_by(SIGLA) %>%
    summarize_all(sum)

  print(head(tot_df))

  province_sp_list[[as.character(y)]] <-
    merge(province_sp_list[[as.character(y)]],
          tot_df,
          by = 'SIGLA')
```

```
}

save(province_sp_list, file = "replication_file_07_province_sp_list.RData")
```

```
read_chunk('replication_code_04_reg_demographics.R')
```

```
library(sp)

load("replication_file_07_province_sp_list.RData")

region_sp_list <- list()

region_sp_list[['2013']] <-
  readOGR('secondary_data/istat_reg_shapefiles/Reg01012013_g',
          'Reg01012013_g_WGS84')
region_sp_list[['2014']] <-
  readOGR('secondary_data/istat_reg_shapefiles/Reg01012014_g',
          'Reg01012014_g_WGS84')
region_sp_list[['2015']] <-
  readOGR('secondary_data/istat_reg_shapefiles/Reg01012015_g',
          'Reg01012015_g_WGS84')
region_sp_list[['2016']] <-
  readOGR('secondary_data/istat_reg_shapefiles/Reg01012016_g',
          'Reg01012016_g_WGS84')

for (y in 2013:2016) {
  this_dat <- province_sp_list[[as.character(y)]]@data
  this_dat <-
    this_dat %>%
    dplyr::group_by(COD_REG) %>%
    dplyr::summarise(population = sum(population),
                     population_over_65 = sum(population_over_65),
                     foreignpop = sum(foreignpop),
                     foreignpop_africa = sum(foreignpop_africa),
                     n_meetup_events = sum(n_meetup_events))
  region_sp_list[[as.character(y)]]@data$population <-
    this_dat$population[
      match(region_sp_list[[as.character(y)]]@data$COD_REG, this_dat$COD_REG)]
  region_sp_list[[as.character(y)]]@data$population_over_65 <-
    this_dat$population_over_65[
      match(region_sp_list[[as.character(y)]]@data$COD_REG, this_dat$COD_REG)]
  region_sp_list[[as.character(y)]]@data$foreignpop <-
    this_dat$foreignpop[
      match(region_sp_list[[as.character(y)]]@data$COD_REG, this_dat$COD_REG)]
  region_sp_list[[as.character(y)]]@data$foreignpop_africa <-
    this_dat$foreignpop_africa[
      match(region_sp_list[[as.character(y)]]@data$COD_REG, this_dat$COD_REG)]
  region_sp_list[[as.character(y)]]@data$n_meetup_events <-
    this_dat$n_meetup_events[
      match(region_sp_list[[as.character(y)]]@data$COD_REG, this_dat$COD_REG)]
}

## Load income
```

```
istat_reg_income <-
  read_csv("secondary_data/DCCN_ISTITUZ_TNA_09072018030940580.csv")
istat_reg_income <-
  istat_reg_income[
    istat_reg_income$`Tipo aggregato`=='reddito disponibile netto' &
      istat_reg_income$`Settore istituzionale` == 'famiglie',]
istat_reg_income <-
  istat_reg_income[istat_reg_income$Territorio %in%
                     c(as.character(region_sp_list[[1]]@data$DEN_REG),
                       "Valle d'Aosta / Vallée d'Aoste",
                       "Provincia Autonoma Bolzano / Bozen",
                       "Provincia Autonoma Trento"),]
istat_reg_income$Territorio <- gsub(" / (.*)$", "", istat_reg_income$Territorio)
istat_reg_income$DEN_REG <- istat_reg_income$Territorio
istat_reg_income$DEN_REG[grepl("Bolzano|Trento", istat_reg_income$DEN_REG)] <-
  'Trentino-Alto Adige/Südtirol'
istat_reg_income$DEN_REG[grepl("Aosta", istat_reg_income$DEN_REG)] <-
  "Valle d'Aosta/Vallée d'Aoste"
istat_reg_income <-
  istat_reg_income %>%
  dplyr::group_by(DEN_REG, TIME) %>%
  dplyr::summarise(family_income = mean(Value))

## Load unemployment rate
istat_reg_unemployment <-
  read_csv("secondary_data/DCCV_TAXDISOCCU1_09072018033752528.csv")
istat_reg_unemployment <-
  istat_reg_unemployment[istat_reg_unemployment$Sesso == 'totale' &
                           istat_reg_unemployment$ETA1 == 'Y_GE15' &
                           istat_reg_unemployment$`Titolo di studio` == 'totale' &
                           istat_reg_unemployment$TIME %in% 2013:2016,]
istat_reg_unemployment$Territorio <- gsub(" / ", "/", istat_reg_unemployment$Territorio)
istat_reg_unemployment$Territorio[
  istat_reg_unemployment$Territorio == 'Trentino Alto Adige/Südtirol'] <-
  'Trentino-Alto Adige/Südtirol'
istat_reg_unemployment <-
  istat_reg_unemployment[
    istat_reg_unemployment$Territorio %in% as.character(region_sp_list[[1]]@data$DEN_REG),]

## Load occupation rate
istat_reg_employment <-
  read_csv("secondary_data/DCCV_TAXOCCU1_09072018035105009.csv")
istat_reg_employment <-
  istat_reg_employment[istat_reg_employment$Sesso == 'totale' &
                         istat_reg_employment$ETA1 == 'Y_GE15' &
                         istat_reg_employment$`Titolo di studio` == 'totale' &
                         istat_reg_employment$TIME %in% 2013:2016,]
istat_reg_employment$Territorio <- gsub(" / ", "/", istat_reg_employment$Territorio)
istat_reg_employment$Territorio[
  istat_reg_employment$Territorio == 'Trentino Alto Adige/Südtirol'] <-
  'Trentino-Alto Adige/Südtirol'
istat_reg_employment <-
  istat_reg_employment[
```

```
    istat_reg_employment$Territorio %in%
      as.character(region_sp_list[[1]]@data$DEN_REG),]

## Add
for (y in 2013:2016) {
  print(y)
  this_unemp <- subset(istat_reg_unemployment[istat_reg_unemployment$TIME == y,])
  this_emp <- subset(istat_reg_employment[istat_reg_employment$TIME == y,])
  this_income <- subset(istat_reg_income[istat_reg_income$TIME == y,])

  region_sp_list[[as.character(y)]]$unemployment <-
    this_unemp$Value[
      match(region_sp_list[[as.character(y)]]$DEN_REG, this_unemp$Territorio)]
  region_sp_list[[as.character(y)]]$employment <-
    this_emp$Value[
      match(region_sp_list[[as.character(y)]]$DEN_REG, this_emp$Territorio)]
  region_sp_list[[as.character(y)]]$income <-
    this_income$family_income[
      match(region_sp_list[[as.character(y)]]$DEN_REG, this_income$DEN_REG)]
}

## Survey 2013
load("secondary_data/istat_aspetti_survey/AVQ_2013_IT_R/MICRODATI/DF_AVQ_A2013.RData")

DF_AVQ_A2013$reg[DF_AVQ_A2013$reg %in% c(41,42)] <- 300

DF_AVQ_A2013$coemicro <-
  as.numeric(as.character(DF_AVQ_A2013$coemicro))

# Correlation local / national
with(DF_AVQ_A2013, cor.test(puntifi4 + puntifi1, puntifi8 + puntifi9 + puntifi10))
DF_AVQ_A2013$pol_trust_diff <-
  with(DF_AVQ_A2013, (puntifi1 + puntifi4) - (puntifi8 + puntifi9 + puntifi10))

with(DF_AVQ_A2013, cor.test((puntifi8 + puntifi9 + puntifi10), volon))

survey2013 <-
  DF_AVQ_A2013 %>%
  dplyr::group_by(reg = sprintf("%03d", reg)) %>%
  dplyr::summarize(

    ppapo_mean = weighted.mean(ppapo==2, coemicro, na.rm = T),
    psind_mean = weighted.mean(psind==4, coemicro, na.rm = T),
    pgrvo_mean = weighted.mean(pgrvo==6, coemicro, na.rm = T),
    paeco_mean = weighted.mean(paeco==2, coemicro, na.rm = T),

    puntifi1_mean = weighted.mean(puntifi1, coemicro, na.rm = T),
    puntifi2_mean = weighted.mean(puntifi2, coemicro, na.rm = T),
    puntifi3_mean = weighted.mean(puntifi3, coemicro, na.rm = T),
    puntifi4_mean = weighted.mean(puntifi4, coemicro, na.rm = T),
    puntifi5_mean = weighted.mean(puntifi5, coemicro, na.rm = T),
    puntifi8_mean = weighted.mean(puntifi8, coemicro, na.rm = T),
    puntifi9_mean = weighted.mean(puntifi9, coemicro, na.rm = T),
```

```
    puntifi10_mean = weighted.mean(puntifi10, coemicro, na.rm = T),

    pol_trust_diff_mean = weighted.mean(pol_trust_diff, coemicro, na.rm = T),

    comiz_mean = weighted.mean(comiz, coemicro, na.rm = T),
    cortei_mean = weighted.mean(cortei, coemicro, na.rm = T),
    dibpo_mean = weighted.mean(dibpo, coemicro, na.rm = T),

    volon_mean = weighted.mean(volon==4, coemicro, na.rm = T),
    degree_perc = weighted.mean(istr < 3, coemicro, na.rm = T),
    survey_n = n()

  )

region_labels_2013 <-
  c("Piemonte", "Valle d'Aosta/Vallée d'Aoste",
    "Lombardia", "Bolzano", "Trento", "Veneto",
    "Friuli-Venezia Giulia", "Liguria", "Emilia-Romagna",
    "Toscana", "Umbria", "Marche",
    "Lazio", "Abruzzo", "Molise", "Campania", "Puglia",
    "Basilicata", "Calabria", "Sicilia",
    "Sardegna", "Trentino-Alto Adige/Südtirol")
names(region_labels_2013) <-
  c("010", "020", "030", "041", "042", "050", "060", "070",
    "080", "090", "100", "110", "120", "130",
    "140", "150", "160", "170", "180", "190", "200", "300")

survey2013$DEN_REG <-  region_labels_2013[match(survey2013$reg, names(region_labels_2013))]
survey2013$reg <- NULL

region_sp_list[['2013']] <- merge(region_sp_list[['2013']], survey2013, by = "DEN_REG")

## Survey 2014
load("secondary_data/istat_aspetti_survey/AVQ_2014_IT_R/MICRODATI/DF_AVQ_A2014.RData")

DF_AVQ_A2014 <- DF_AVQ_A2014[DF_AVQ_A2014$REGMif != 999,]

names(DF_AVQ_A2014) <- tolower(names(DF_AVQ_A2014))

DF_AVQ_A2014$coemicro <- as.numeric(as.character(DF_AVQ_A2014$coefin))

DF_AVQ_A2014$pol_trust_diff <-
  with(DF_AVQ_A2014, (puntifi1 + puntifi4) - (puntifi8 + puntifi9 + puntifi10))

survey2014 <-
  DF_AVQ_A2014 %>%
  dplyr::group_by(reg = sprintf("%03d", regmif)) %>%
  dplyr::summarize(

    ppapo_mean = weighted.mean(ppapo==2, coemicro, na.rm = T),
    psind_mean = weighted.mean(psind==4, coemicro, na.rm = T),
    pgrvo_mean = weighted.mean(pgrvo==6, coemicro, na.rm = T),
    paeco_mean = weighted.mean(paeco==2, coemicro, na.rm = T),
```

```
    puntifi1_mean = weighted.mean(puntifi1, coemicro, na.rm = T),
    puntifi2_mean = weighted.mean(puntifi2, coemicro, na.rm = T),
    puntifi3_mean = weighted.mean(puntifi3, coemicro, na.rm = T),
    puntifi4_mean = weighted.mean(puntifi4, coemicro, na.rm = T),
    puntifi5_mean = weighted.mean(puntifi5, coemicro, na.rm = T),
    puntifi8_mean = weighted.mean(puntifi8, coemicro, na.rm = T),
    puntifi9_mean = weighted.mean(puntifi9, coemicro, na.rm = T),
    puntifi10_mean = weighted.mean(puntifi10, coemicro, na.rm = T),

    pol_trust_diff_mean = weighted.mean(pol_trust_diff, coemicro, na.rm = T),

    comiz_mean = weighted.mean(comiz, coemicro, na.rm = T),
    cortei_mean = weighted.mean(cortei, coemicro, na.rm = T),
    dibpo_mean = weighted.mean(dibpo, coemicro, na.rm = T),

    volon_mean = weighted.mean(volon==4, coemicro, na.rm = T),
    degree_perc = weighted.mean(istrmi==1, coemicro, na.rm = T),
    survey_n = n()

  )

region_labels_2014 <-
  c("Piemonte", "Valle d'Aosta/Vallée d'Aoste", "Lombardia",
    "Trentino-Alto Adige/Südtirol", "Veneto",
    "Friuli-Venezia Giulia", "Liguria", "Emilia-Romagna",
    "Toscana", "Umbria", "Marche", "Lazio",
    "Abruzzo", "Molise", "Campania", "Puglia", "Basilicata",
    "Calabria", "Sicilia", "Sardegna",
    "non disponibile")
names(region_labels_2014) <-
  c("010", "020", "030", "040", "050", "060", "070", "080", "090", "100", "110", "120", "130",
    "140", "150", "160", "170", "180", "190", "200", "999")

survey2014$DEN_REG <-  region_labels_2014[match(survey2014$reg, names(region_labels_2014))]
survey2014$reg <- NULL

region_sp_list[['2014']] <- merge(region_sp_list[['2014']], survey2014, by = "DEN_REG")

## Survey 2015
load("secondary_data/istat_aspetti_survey/AVQ_2015_IT_R/MICRODATI/DF_AVQ_A2015.RData")

DF_AVQ_A2015 <- DF_AVQ_A2015[DF_AVQ_A2015$REGMif != 999,]

names(DF_AVQ_A2015) <- tolower(names(DF_AVQ_A2015))

DF_AVQ_A2015$coemicro <- as.numeric(as.character(DF_AVQ_A2015$coefin))

DF_AVQ_A2015$pol_trust_diff <-
  with(DF_AVQ_A2015, (puntifi1 + puntifi4) - (puntifi8 + puntifi9 + puntifi10))

survey2015 <-
  DF_AVQ_A2015 %>%
  dplyr::group_by(reg = sprintf("%03d", regmif)) %>%
```

```
  dplyr::summarize(

    ppapo_mean = weighted.mean(ppapo==2, coemicro, na.rm = T),
    psind_mean = weighted.mean(psind==4, coemicro, na.rm = T),
    pgrvo_mean = weighted.mean(pgrvo==6, coemicro, na.rm = T),
    paeco_mean = weighted.mean(paeco==2, coemicro, na.rm = T),

    puntifi1_mean = weighted.mean(puntifi1, coemicro, na.rm = T),
    puntifi2_mean = weighted.mean(puntifi2, coemicro, na.rm = T),
    puntifi3_mean = weighted.mean(puntifi3, coemicro, na.rm = T),
    puntifi4_mean = weighted.mean(puntifi4, coemicro, na.rm = T),
    puntifi5_mean = weighted.mean(puntifi5, coemicro, na.rm = T),
    puntifi8_mean = weighted.mean(puntifi8, coemicro, na.rm = T),
    puntifi9_mean = weighted.mean(puntifi9, coemicro, na.rm = T),
    puntifi10_mean = weighted.mean(puntifi10, coemicro, na.rm = T),

    pol_trust_diff_mean = weighted.mean(pol_trust_diff, coemicro, na.rm = T),

    comiz_mean = weighted.mean(comiz, coemicro, na.rm = T),
    cortei_mean = weighted.mean(cortei, coemicro, na.rm = T),
    dibpo_mean = weighted.mean(dibpo, coemicro, na.rm = T),

    volon_mean = weighted.mean(volon==4, coemicro, na.rm = T),
    degree_perc = weighted.mean(istrmi==1, coemicro, na.rm = T),
    survey_n = n()

  )

region_labels_2015 <-
  c("Piemonte", "Valle d'Aosta/Vallée d'Aoste", "Lombardia",
    "Trentino-Alto Adige/Südtirol", "Veneto",
    "Friuli-Venezia Giulia", "Liguria", "Emilia-Romagna",
    "Toscana", "Umbria", "Marche", "Lazio",
    "Abruzzo", "Molise", "Campania", "Puglia", "Basilicata",
    "Calabria", "Sicilia", "Sardegna",
    "non disponibile")
names(region_labels_2015) <-
  c("010", "020", "030", "040", "050", "060", "070", "080",
    "090", "100", "110", "120", "130",
    "140", "150", "160", "170", "180", "190", "200", "999")

survey2015$DEN_REG <-  region_labels_2015[match(survey2015$reg, names(region_labels_2015))]
survey2015$reg <- NULL

region_sp_list[['2015']] <- merge(region_sp_list[['2015']], survey2015, by = "DEN_REG")

## Survey 2016
load("secondary_data/istat_aspetti_survey/AVQ_2016_IT_R/MICRODATI/DF_AVQ_A2016.RData")

DF_AVQ_A2016 <- DF_AVQ_A2016[DF_AVQ_A2016$REGMiF != 999,]

names(DF_AVQ_A2016) <- tolower(names(DF_AVQ_A2016))
```

```r
DF_AVQ_A2016$coemicro <- as.numeric(as.character(DF_AVQ_A2016$coefin))

DF_AVQ_A2016$pol_trust_diff <-
  with(DF_AVQ_A2016, (puntifi1 + puntifi4) - (puntifi8 + puntifi9 + puntifi10))

survey2016 <-
  DF_AVQ_A2016 %>%
  dplyr::group_by(reg = sprintf("%03d", regmif)) %>%
  dplyr::summarize(

    ppapo_mean = weighted.mean(ppapo==2, coemicro, na.rm = T),
    psind_mean = weighted.mean(psind==4, coemicro, na.rm = T),
    pgrvo_mean = weighted.mean(pgrvo==6, coemicro, na.rm = T),
    paeco_mean = weighted.mean(paeco==2, coemicro, na.rm = T),

    puntifi1_mean = weighted.mean(puntifi1, coemicro, na.rm = T),
    puntifi2_mean = weighted.mean(puntifi2, coemicro, na.rm = T),
    puntifi3_mean = weighted.mean(puntifi3, coemicro, na.rm = T),
    puntifi4_mean = weighted.mean(puntifi4, coemicro, na.rm = T),
    puntifi5_mean = weighted.mean(puntifi5, coemicro, na.rm = T),
    puntifi8_mean = weighted.mean(puntifi8, coemicro, na.rm = T),
    puntifi9_mean = weighted.mean(puntifi9, coemicro, na.rm = T),
    puntifi10_mean = weighted.mean(puntifi10, coemicro, na.rm = T),

    pol_trust_diff_mean = weighted.mean(pol_trust_diff, coemicro, na.rm = T),

    comiz_mean = weighted.mean(comiz, coemicro, na.rm = T),
    cortei_mean = weighted.mean(cortei, coemicro, na.rm = T),
    dibpo_mean = weighted.mean(dibpo, coemicro, na.rm = T),

    volon_mean = weighted.mean(volon==4, coemicro, na.rm = T),
    degree_perc = weighted.mean(istrmi==1, coemicro, na.rm = T),
    survey_n = n()

  )

region_labels_2016 <-
  c("Piemonte", "Valle d'Aosta/Vallée d'Aoste", "Lombardia",
    "Trentino-Alto Adige/Südtirol", "Veneto",
    "Friuli-Venezia Giulia", "Liguria", "Emilia-Romagna", "Toscana",
    "Umbria", "Marche", "Lazio",
    "Abruzzo", "Molise", "Campania", "Puglia", "Basilicata", "Calabria",
    "Sicilia", "Sardegna",
    "non disponibile")

names(region_labels_2016) <-
  c("010", "020", "030", "040", "050", "060", "070", "080", "090",
    "100", "110", "120", "130",
    "140", "150", "160", "170", "180", "190", "200", "999")

survey2016$DEN_REG <-
  region_labels_2016[match(survey2016$reg,
                           names(region_labels_2016))]
```

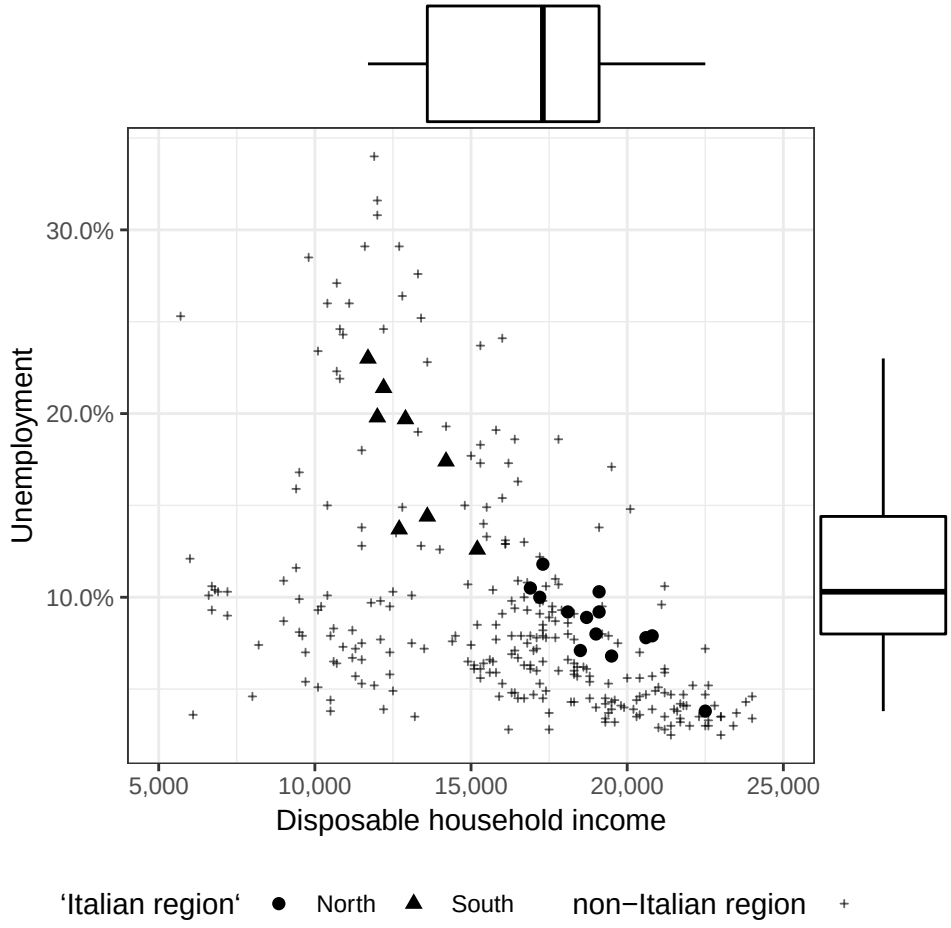
```r
survey2016$reg <- NULL

region_sp_list[['2016']] <-
  merge(region_sp_list[['2016']], survey2016, by = "DEN_REG")

save(region_sp_list, file = "replication_file_08_region_sp_list.RData")
```

```r
dat1 <-
  eurostat::get_eurostat("tgs00026",
                         time_format = "raw", stringsAsFactors = FALSE)
dat2 <-
  eurostat::get_eurostat("lfst_r_lfu3rt",
                         time_format = "raw", stringsAsFactors = FALSE)

datit <-
  merge(dat1 %>% dplyr::filter(nchar(geo) == 4, grepl("^IT", geo)),
        dat2 %>% dplyr::filter(age == 'Y15-74',
                               sex == 'T', nchar(geo) == 4, grepl("^IT", geo)),
        by = c('geo','time'))
datit$northsouth <-
  ifelse(grepl("^ITF|^ITG", datit$geo), "South", "North")

datit$south <- 0
datit$south[datit$northsouth == 'South'] <- 1

dat1 <-
  dat1 %>% dplyr::filter(nchar(geo) == 4, time == 2015)

dat2 <-
  dat2 %>% dplyr::filter(age == 'Y15-74', sex == 'T',
                         time == 2015, nchar(geo) == 4)

table(dat1$time)
```

```
##
## 2015
##  286
```

```r
merge_dat <- merge(dat1, dat2, by = 'geo')

merge_dat$it <- grepl("^IT", merge_dat$geo)
merge_dat$`Italian region` <- NA
merge_dat$`Italian region`[grepl("^ITF|^ITG", merge_dat$geo)] <- 'South'
merge_dat$`Italian region`[
  grepl("^ITC|^ITD|^ITE|^ITI|^ITH", merge_dat$geo)] <-
  'North'

merge_dat$cnt <- str_extract(merge_dat$geo, "^[A-Z]{2}")

p <-
  ggplot() +
  geom_point(data=merge_dat[merge_dat$it,],
             aes(x=values.x,y=values.y/100,
                 shape = `Italian region`), size = 2) +
```

```
  geom_point(data=merge_dat[!merge_dat$it,],
             aes(x=values.x,y=values.y/100,fill=it),
             alpha = 0.6, size = .6, shape = 3) +
  scale_colour_manual(values = c('red','blue')) +
  scale_fill_manual(labels = NULL, values = 'black') +
  theme_bw() +
  scale_x_continuous(limits = c(5000, 25000), label = comma) +
  scale_y_continuous(label = percent) +
  labs(x = 'Disposable household income', y = 'Unemployment', fill = 'non-Italian region') +
  theme(legend.position = 'bottom')

ggExtra::ggMarginal(p, type = "boxplot")
```



Summary statistics of Istat surveys

```
load("secondary_data/istat_aspetti_survey/AVQ_2013_IT_R/MICRODATI/DF_AVQ_A2013.RData")
load("secondary_data/istat_aspetti_survey/AVQ_2014_IT_R/MICRODATI/DF_AVQ_A2014.RData")
load("secondary_data/istat_aspetti_survey/AVQ_2015_IT_R/MICRODATI/DF_AVQ_A2015.RData")
load("secondary_data/istat_aspetti_survey/AVQ_2016_IT_R/MICRODATI/DF_AVQ_A2016.RData")

DF_AVQ_A2013$nat_pol_trust <-
  rescale(DF_AVQ_A2013$puntifi4 + DF_AVQ_A2013$puntifi1,
```

```
          to = c(0,10),
          from = c(0,20))
DF_AVQ_A2013$loc_pol_trust <-
  rescale(DF_AVQ_A2013$puntifi8 + DF_AVQ_A2013$puntifi9 +
            DF_AVQ_A2013$puntifi10,
          to = c(0,10),
          from = c(0,30))
DF_AVQ_A2013$pol_trust <-
  with(DF_AVQ_A2013,
       rescale(puntifi8 + puntifi9 + puntifi10 +
                 puntifi4 + puntifi1,
               to = c(0,10),
               from = c(0,50)))

DF_AVQ_A2014$nat_pol_trust <-
  rescale(DF_AVQ_A2014$PUNTIFI4 + DF_AVQ_A2014$PUNTIFI1,
          to = c(0,10),
          from = c(0,20))
DF_AVQ_A2014$loc_pol_trust <-
  rescale(DF_AVQ_A2014$PUNTIFI8 + DF_AVQ_A2014$PUNTIFI9 +
            DF_AVQ_A2014$PUNTIFI10,
          to = c(0,10),
          from = c(0,30))
DF_AVQ_A2014$pol_trust <-
  with(DF_AVQ_A2014,
       rescale(PUNTIFI8 + PUNTIFI9 + PUNTIFI10 +
                 PUNTIFI4 + PUNTIFI1,
               to = c(0,10),
               from = c(0,50)))

DF_AVQ_A2015$nat_pol_trust <-
  rescale(DF_AVQ_A2015$PUNTIFI4 + DF_AVQ_A2015$PUNTIFI1,
          to = c(0,10),
          from = c(0,20))
DF_AVQ_A2015$loc_pol_trust <-
  rescale(DF_AVQ_A2015$PUNTIFI8 + DF_AVQ_A2015$PUNTIFI9 +
            DF_AVQ_A2015$PUNTIFI10,
          to = c(0,10),
          from = c(0,30))
DF_AVQ_A2015$pol_trust <-
  with(DF_AVQ_A2015,
       rescale(PUNTIFI8 + PUNTIFI9 + PUNTIFI10 +
                 PUNTIFI4 + PUNTIFI1,
               to = c(0,10),
               from = c(0,50)))

DF_AVQ_A2016$nat_pol_trust <-
  rescale(DF_AVQ_A2016$PUNTIFI4 + DF_AVQ_A2016$PUNTIFI1,
          to = c(0,10),
          from = c(0,20))
DF_AVQ_A2016$loc_pol_trust <-
  rescale(DF_AVQ_A2016$PUNTIFI8 + DF_AVQ_A2016$PUNTIFI9 +
            DF_AVQ_A2016$PUNTIFI10,
```

```
          to = c(0,10),
          from = c(0,30))
DF_AVQ_A2016$pol_trust <-
  with(DF_AVQ_A2016,
       rescale(PUNTIFI8 + PUNTIFI9 + PUNTIFI10 +
                 PUNTIFI4 + PUNTIFI1,
               to = c(0,10),
               from = c(0,50)))

## 2013
weighted.mean(DF_AVQ_A2013$nat_pol_trust,
              weight = DF_AVQ_A2013$COEFIN, na.rm = T)
```

```
## [1] 2.733621
```

```
weighted.mean(DF_AVQ_A2013$loc_pol_trust,
              weight = DF_AVQ_A2013$COEFIN, na.rm = T)
```

```
## [1] 3.869436
```

```
weighted.mean(DF_AVQ_A2013$pol_trust,
              weight = DF_AVQ_A2013$COEFIN, na.rm = T)
```

```
## [1] 3.41349
```

```
## 2014
weighted.mean(DF_AVQ_A2014$nat_pol_trust,
              weight = DF_AVQ_A2014$COEFIN, na.rm = T)
```

```
## [1] 2.89469
```

```
weighted.mean(DF_AVQ_A2014$loc_pol_trust,
              weight = DF_AVQ_A2014$COEFIN, na.rm = T)
```

```
## [1] 3.716159
```

```
weighted.mean(DF_AVQ_A2014$pol_trust,
              weight = DF_AVQ_A2014$COEFIN, na.rm = T)
```

```
## [1] 3.387474
```

```
## 2015
weighted.mean(DF_AVQ_A2015$nat_pol_trust,
              weight = DF_AVQ_A2015$COEFIN, na.rm = T)
```

```
## [1] 2.867401
```

```
weighted.mean(DF_AVQ_A2015$loc_pol_trust,
              weight = DF_AVQ_A2015$COEFIN, na.rm = T)
```

```
## [1] 3.698245
```

```
weighted.mean(DF_AVQ_A2015$pol_trust,
              weight = DF_AVQ_A2015$COEFIN, na.rm = T)
```

```
## [1] 3.362878
```

```
## 2016
weighted.mean(DF_AVQ_A2016$nat_pol_trust,
              weight = DF_AVQ_A2016$COEFIN, na.rm = T)
```

```
## [1] 3.066659
```

```
weighted.mean(DF_AVQ_A2016$loc_pol_trust,
              weight = DF_AVQ_A2016$COEFIN, na.rm = T)
```

```
## [1] 3.938403
```

```
weighted.mean(DF_AVQ_A2016$pol_trust,
              weight = DF_AVQ_A2016$COEFIN, na.rm = T)
```

```
## [1] 3.587631
```

```
load("secondary_data/istat_aspetti_survey/AVQ_2013_IT_R/MICRODATI/DF_AVQ_A2013.RData")

DF_AVQ_A2013$reg[DF_AVQ_A2013$reg %in% c(41,42)] <- 300

DF_AVQ_A2013$coemicro <-
  as.numeric(as.character(DF_AVQ_A2013$coemicro))
# weighted.mean(as.numeric(dat$ppapo==2), weight=coemicro, na.rm=T)

# Correlation local / national
with(DF_AVQ_A2013, cor.test(puntifi4 + puntifi1, puntifi8 + puntifi9 + puntifi10))
```

```
##
##  Pearson's product-moment correlation
##
## data:  puntifi4 + puntifi1 and puntifi8 + puntifi9 + puntifi10
## t = 125.85, df = 16988, p-value < 2.2e-16
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.6867442 0.7023096
## sample estimates:
##       cor
## 0.6946082
```

```
DF_AVQ_A2013$pol_trust_diff <-
  with(DF_AVQ_A2013, (puntifi1 + puntifi4) - (puntifi8 + puntifi9 + puntifi10))

dat <- DF_AVQ_A2013

# Political trust
dat$loc_pol_trust <- rescale(with(dat, (puntifi8 + puntifi9 + puntifi10)),
                             to = c(0,10),
                             from = c(0,30))
dat$nat_pol_trust <- rescale(with(dat, (puntifi1 + puntifi4),
                                  to = c(0,10),
                                  from = c(0,20)))

asIndexComp <- function(x) {
  x <- as.numeric(x)
  x[is.na(x)] <- 0
  x
}
reverse <- function(x) {
  if (is.na(x)) {
    res <- NA
  } else if (x == 1) {
```

```
    res <- 3
  } else if (x == 2) {
    res <- 2
  } else if (x == 3) {
    res <- 1
  } else if (x == 4) {
    res <- 0
  } else {
    res <- NA
  }
  return(res)
}

# Social capital: association membership

dat$member <-
  as.logical(as.numeric(with(dat,
                             asIndexComp(volon==4) +
                               asIndexComp(psind == 4) + asIndexComp(pgrvo == 6) +
                               asIndexComp(paeco == 2) + asIndexComp(pcult == 4) +
                               asIndexComp(paspro == 6) > 0)))

# Social capital: Trust
dat$interpers_trust <-
  rescale(
    with(dat,
         asIndexComp(fiducia == 1) +
           sapply(fidu1, reverse)*0.1 +
           sapply(fidu2, reverse)*0.2 +
           sapply(fidu3, reverse)*0.4),
    to = c(0, 10),
    from = c(0, 3.1))


dat$edu <-
  as.numeric(factor(as.factor(dat$istr),
                    levels = c('11', '10', '9', '7', '2', '1')))
dat$north <- dat$rip < 4
dat$unemployed <- dat$cond %in% 2:3
dat$type_comune <- factor(as.character(dat$dom))
levels(dat$type_comune) <- c('Metropolitan area', 'Periphery of metropolitan area',
                             'Comune up to 2000', 'Comune between 2001 and 10,000',
                             'Comune between 10.001 and 50,000', 'Comune over 50,000')
dat$male <- dat$sesso == 1
dat$age <- dat$eta

# Political interest
dat$pol_interest <-
  rescale(with(dat, polit), to = c(0,10), from = c(6,1))

# Political participation
dat$pol_part <-
  rescale(
```

```
    with(dat,
       as.numeric(comiz==2) +
         as.numeric(cortei==4) +
         as.numeric(dibpo==6) +
          as.numeric(ppapo==2) +
          as.numeric(volpa==8)),
    to = c(0,10))


aspetti2013_ind_lev_lmmod1 <-
  lm(data = dat, pol_part ~ nat_pol_trust + loc_pol_trust +
       edu + north + member +
       interpers_trust +
       type_comune + unemployed + age + male)

aspetti2013_ind_lev_lmmod3 <-
  lm(data = dat, loc_pol_trust ~ nat_pol_trust + edu + member + north +
       type_comune + unemployed + age + male)
```

Table 7 (Supplemental online material)

```
do.call(stargazer,
        c(list(aspetti2013_ind_lev_lmmod1, aspetti2013_ind_lev_lmmod3,
               type = 'latex', out = "table/aspetti2013_ind_lev_lmmod_full.tex",
               dep.var.labels = var_dict_labels[c("pol_part", "loc_pol_trust")],
               column.labels = c("(B)", "(B)"),
               covariate.labels = var_dict_labels[
                 c('nat_pol_trust', 'loc_pol_trust',
                   'edu', 'north',
                   'member', 'interpers_trust',
                   "type_comunePeriphery of metropolitan area",
                   "type_comuneComune up to 2000",
                   "type_comuneComune between 2001 and 10,000",
                   "type_comuneComune between 10.001 and 50,000",
                   "type_comuneComune over 50,000",
                   'unemployed', 'age', 'male')]),
          sg_param_appendix))
```

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Thu, Oct 10, 2019 - 15:17:16

	Political participation	Trust in local institutions
	OLS (B)	OLS (B)
	Model 1	Model 2
Trust in national institutions	0.708***	7.598***
Trust in local institutions	−0.028***	
Education level	0.214***	−0.081***
North (bin)	−0.269***	0.920***
Member of an association (bin.)	1.104***	0.181***
Interpersonal trust	0.023***	
Comune type: Periphery of metropolitan area	0.063	0.202***
Comune type: up to 2000	0.013	0.778***
Comune type: between 2001 and 10,000	0.098*	0.572***
Comune type: between 10.001 and 50,000	0.051	0.373***
Comune type: over 50,000	0.086	0.284***
Unemployed (bin)	−0.064	−0.133**
Age	0.016***	0.005
Male (bin)	0.349***	−0.023
Constant	−0.480***	1.034***
N	16475	16990
R-squared	0.141	0.528
Adj. R-squared	0.140	0.528
Residual Std. Error	1.529 (df = 16460)	1.661 (df = 16977)

***p < .001; **p < .01; *p < .05

```
load('replication_file_08_region_sp_list.RData')

region_2013_sf <- st_as_sf(region_sp_list[[1]])
region_2014_sf <- st_as_sf(region_sp_list[[2]])
region_2015_sf <- st_as_sf(region_sp_list[[3]])
region_2016_sf <- st_as_sf(region_sp_list[[4]])

region_2013_sf$nat_pol_trust <-
  rescale(region_2013_sf$puntifi4_mean + region_2013_sf$puntifi1_mean,
          to = c(0,10),
          from = c(0,20))
region_2013_sf$loc_pol_trust <-
```

```
  rescale(region_2013_sf$puntifi8_mean + region_2013_sf$puntifi9_mean +
            region_2013_sf$puntifi10_mean,
          to = c(0,10),
          from = c(0,30))
region_2013_sf$pol_trust <-
  with(region_2013_sf,
       rescale(puntifi8_mean + puntifi9_mean + puntifi10_mean +
                 puntifi4_mean + puntifi1_mean,
               to = c(0,10),
               from = c(0,50)))

region_2014_sf$nat_pol_trust <-
  rescale(region_2014_sf$puntifi4_mean + region_2014_sf$puntifi1_mean,
          to = c(0,10),
          from = c(0,20))
region_2014_sf$loc_pol_trust <-
  rescale(region_2014_sf$puntifi8_mean + region_2014_sf$puntifi9_mean +
            region_2014_sf$puntifi10_mean,
          to = c(0,10),
          from = c(0,30))
region_2014_sf$pol_trust <-
  with(region_2014_sf,
       rescale(puntifi8_mean + puntifi9_mean + puntifi10_mean +
                 puntifi4_mean + puntifi1_mean,
               to = c(0,10),
               from = c(0,50)))

region_2015_sf$nat_pol_trust <-
  rescale(region_2015_sf$puntifi4_mean + region_2015_sf$puntifi1_mean,
          to = c(0,10),
          from = c(0,20))
region_2015_sf$loc_pol_trust <-
  rescale(region_2015_sf$puntifi8_mean + region_2015_sf$puntifi9_mean +
            region_2015_sf$puntifi10_mean,
          to = c(0,10),
          from = c(0,30))
region_2015_sf$pol_trust <-
  with(region_2015_sf,
       rescale(puntifi8_mean + puntifi9_mean + puntifi10_mean +
                 puntifi4_mean + puntifi1_mean,
               to = c(0,10),
               from = c(0,50)))

region_2016_sf$nat_pol_trust <-
  rescale(region_2016_sf$puntifi4_mean + region_2016_sf$puntifi1_mean,
          to = c(0,10),
          from = c(0,20))
region_2016_sf$loc_pol_trust <-
  rescale(region_2016_sf$puntifi8_mean + region_2016_sf$puntifi9_mean +
            region_2016_sf$puntifi10_mean,
          to = c(0,10),
          from = c(0,30))
region_2016_sf$pol_trust <-
```

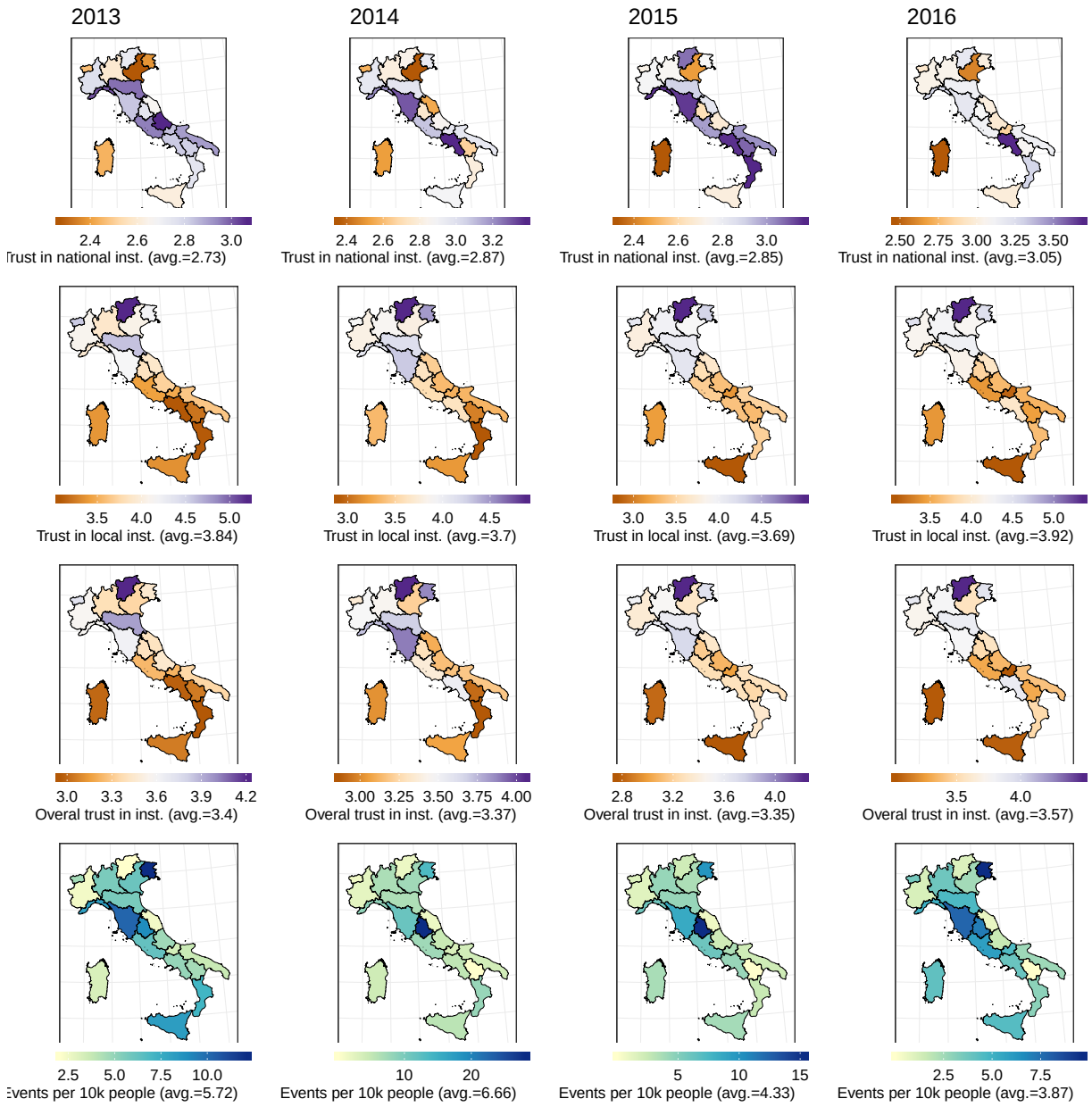
```
  with(region_2016_sf,
       rescale(puntifi8_mean + puntifi9_mean + puntifi10_mean +
                 puntifi4_mean + puntifi1_mean,
               to = c(0,10),
               from = c(0,50)))

is <- c('4','1','8','9','10')
labels <- c('1' = 'Parliament', '4' = 'Parties', '8' = 'Regional gov.',
            '9' = 'Provincial gov.', '10' = 'Municipal gov.')
```

```
plotRegIndex <- function(year) {
  this_sf <- get(sprintf('region_%s_sf', year))
  this_sf$n_meetup_events_per_10k <- this_sf$n_meetup_events / (this_sf$population/10000)
  this_mean_nat <- round(mean(this_sf$nat_pol_trust),2)
  this_mean_loc <- round(mean(this_sf$loc_pol_trust),2)
  this_mean_trust <- round(mean(this_sf$pol_trust),2)
  this_mean_meetups <- round(mean(this_sf$n_meetup_events_per_10k),2)
  grid.arrange(
    ggplot(this_sf) +
      geom_sf(aes(fill = nat_pol_trust), colour = 'black', size = .04) +
      scale_fill_gradientn(colours = brewer.pal(7, "PuOr")) +
      theme_bw() +
      labs(caption = paste0("Trust in national inst.",
                            " (avg.=",this_mean_nat,")"),
           fill = NULL, title = year) +
      theme(axis.text = element_blank(),
            axis.ticks = element_blank(),
            legend.position = c(0.5, 0.02),
            legend.direction="horizontal",
            legend.key.width=unit(.8,"cm"),
            legend.key.height=unit(.15,"cm")),
    ggplot(this_sf) +
      geom_sf(aes(fill = loc_pol_trust), colour = 'black', size = .04) +
      scale_fill_gradientn(colours = brewer.pal(7, "PuOr")) +
      theme_bw() +
      labs(caption = paste0("Trust in local inst.",
                            " (avg.=",this_mean_loc,")"),
           fill = NULL, title = NULL) +
      theme(axis.text = element_blank(),
            axis.ticks = element_blank(),
            legend.position = c(0.5, 0.02),
            legend.direction="horizontal",
            legend.key.width=unit(.8,"cm"),
            legend.key.height=unit(.15,"cm")),
    ggplot(this_sf) +
      geom_sf(aes(fill = pol_trust), colour = 'black', size = .04) +
      scale_fill_gradientn(colours = brewer.pal(7, "PuOr")) +
      theme_bw() +
      labs(caption = paste0("Overal trust in inst.",
                            " (avg.=",this_mean_trust,")"),
           fill = NULL, title = NULL) +
      theme(axis.text = element_blank(),
            axis.ticks = element_blank(),
            legend.position = c(0.5, 0.02),
```

```
            legend.direction="horizontal",
            legend.key.width=unit(.8,"cm"),
            legend.key.height=unit(.15,"cm")),
    ggplot(this_sf) +
      geom_sf(aes(fill = n_meetup_events_per_10k),
              colour = 'black', size = .04) +
      scale_fill_gradientn(colours = brewer.pal(7, "YlGnBu")) +
      theme_bw() +
      labs(caption = paste0("Events per 10k people",
                            " (avg.=",this_mean_meetups,")"),
           fill = NULL, title = NULL) +
      theme(axis.text = element_blank(),
            axis.ticks = element_blank(),
            legend.position = c(0.5, 0.02),
            legend.direction="horizontal",
            legend.key.width=unit(.8,"cm"),
            legend.key.height=unit(.15,"cm")),
    nrow = 4
  )
}

plots <- lapply(2013:2016, plotRegIndex)
```

Figure 11 (Supplemental online material)

```
grid.arrange(grobs = plots, ncol = 4)
```




```
dat <- read_excel("secondary_data/bfna/Disruptive_Italy 2018.xlsx",
                  sheet = "baza date completes")
dat <- dat[!is.na(dat$Q1),]

# Coding
dat$m5s_voter <- dat$Q42 == 1
dat$SouthIslands <- dat$Q3 %in% c("Islands","South")

dat$age <- as.numeric(as.Date('2018-03-04') - as.Date(dat$Q2)) / 365

dat$Q14[is.na(dat$Q14)] <- 7
dat$Q14[dat$Q14 == 997] <- 7

dat$Q24[dat$Q24 == 997] <- 7
```

```r
dat$Q32_3[dat$Q32_3 == 999] <- 1

dat$Q33[dat$Q33] <- dat$Q33 < 3

dat$Q34[dat$Q34] <- dat$Q34 < 3

dat$Q39[dat$Q39 == 999] <- NA


dat$Q46 <- dat$Q46 < 3

dat$Q48 <- dat$Q48 < 3

dat$Q54_8[dat$Q54_8 == 999] <- NA

ivars <- c('Q1','age','Q5','Q6', 'Q14', 'Q24',
           paste0('Q27_bis_', 1:6),
           paste0('Q28_0', 1:8),
           paste0('Q29_', 1:9),
           paste0('Q30_0', 1:10),
           paste0('Q31_2_0', 1:9),
           paste0('Q32_0', 1:11),
           'Q32_1', 'Q32_3',
           'Q33', 'Q34', 'Q36',
           paste0('Q38_0', 1:11),
           paste0('Q45_0', 1:10),
           'Q46', 'Q47', 'Q48',
           paste0('Q53_', 1:9),
           paste0('Q54_', 1:8))

for (var in ivars) {
  if (length(table(dat[[var]])) == 1) {
    dat[[var]] <- dat[[var]] %in% 1
  }
}

q_demo <- 1:6
q_mediause <- 11:29
q_civicpart <- 30:54

dat_m5s <- subset(dat, m5s_voter)

# Significance

require(ggplot2)
require(scales)

dat$SouthIslands <- as.factor(dat$SouthIslands)
levels(dat$SouthIslands) <- c("North", "South")

dat$m5s_voter <- as.character(dat$m5s_voter)
dat$m5s_voter[is.na(dat$m5s_voter)] <- "Didn't\nvote"
dat$m5s_voter <- as.factor(dat$m5s_voter)
```

```
levels(dat$m5s_voter)[2:3] <- c("Other\nparty", "M5S")
dat$m5s_voter <- factor(dat$m5s_voter, levels = rev(levels(dat$m5s_voter)))

## All issues
require(reshape2)
require(dplyr)
dat_issues <- dat[,grepl("^Q32_0\\d{1,2}$|m5s_voter|SouthIslands", names(dat))]
dat_issues <- melt(dat_issues, id.vars = c("m5s_voter","SouthIslands"))
dat_issues <-
  dat_issues %>%
  dplyr::group_by(variable) %>%
  dplyr::mutate(nat_true = sum(value)/n()) %>%
  dplyr::group_by(m5s_voter, SouthIslands, variable) %>%
  dplyr::summarise(group_diff =  sum(value)/n() - nat_true[1],
                   group_sd   = sd(value),
                   se   = sd(value) / sqrt(n()))

levels(dat_issues$variable) <-
  c('Corruption', 'Costs of living', 'Discrimination', 'Education',
    'Healthcare', 'Lack of security', 'Lack of economic stability',
    'Immigration', 'Political instability', 'Terrorism', 'Unemployment')

ggplot(dat_issues,
       aes(fill=SouthIslands, y=group_diff, x=m5s_voter)) +
  geom_bar(stat = 'identity', position = 'dodge') +
  geom_errorbar(aes(ymin=group_diff-se, ymax=group_diff+se),
                width=.2, position=position_dodge(.9)) +
  scale_y_continuous(labels = scales::percent) +
  facet_wrap(~variable) + theme_bw() +
  theme(legend.position = 'bottom',
        legend.title=element_blank()) +
  labs(x='In 2018 voted...', y=NULL)
```

Models

```
camera_sp$north <-
  camera_sp$macro_region %in%
  c('North-west', 'North-east', 'Centre')
comuni_sp$north <-
  comuni_sp$macro_region %in%
  c('North-west', 'North-east', 'Centre')

## 2018
camera_sp$M5S_2018_neigh_avg <- NA
for (i in 1:nrow(camera_sp)) {
  camera_sp$M5S_2018_neigh_avg[i] <-
    mean(camera_sp$M5S_2018[camera_nb[['10']][[i]]])
}
camera_sp$M5S_2018_neigh_avg[
  is.na(camera_sp$M5S_2018_neigh_avg)] <- 0 # Islands

comuni_sp$M5S_2018_neigh_avg <- NA
for (i in 1:nrow(comuni_sp)) {
```

```
  comuni_sp$M5S_2018_neigh_avg[i] <-
    mean(comuni_sp$M5S_2018[comuni_nb[['10']][[i]]])
}
comuni_sp$M5S_2018_neigh_avg[
  is.na(comuni_sp$M5S_2018_neigh_avg)] <- 0 # Islands

# 2013
comuni_sp$M5S_2013_neigh_avg <- NA
for (i in 1:nrow(comuni_sp)) {
  comuni_sp$M5S_2013_neigh_avg[i] <-
    mean(comuni_sp$M5S_2013[comuni_nb[['10']][[i]]])
}
comuni_sp$M5S_2013_neigh_avg[
  is.na(comuni_sp$M5S_2013_neigh_avg)] <- 0 # Islands

# Correction dist_10k_ppl
camera_sp$dist_10k_ppl <- camera_sp$dist_10k_ppl + 1
comuni_sp$dist_10k_ppl <- comuni_sp$dist_10k_ppl + 1

# Correction income2016_procapite
comuni_sp$income2016_procapite <-
  comuni_sp$income2016_procapite / 10000

# Make participation binary
camera_sp$meetup2018_5km_buff_freq_7days_bin <-
  camera_sp$meetup2018_5km_buff_freq_7days>1
comuni_sp$meetup2018_5km_buff_freq_7days_bin <-
  comuni_sp$meetup2018_5km_buff_freq_7days>1

camera_sp$meetup_treated_2018 <-
  camera_sp$meetup2018_5km_buff_freq_7days_bin
comuni_sp$meetup_treated_2018 <-
  comuni_sp$meetup2018_5km_buff_freq_7days_bin

camera_sp$meetup2014_5km_buff_freq_7days_bin <-
  camera_sp$meetup2014_5km_buff_freq_7days>1
comuni_sp$meetup2014_5km_buff_freq_7days_bin <-
  comuni_sp$meetup2014_5km_buff_freq_7days>1

camera_sp$meetup_treated_2013 <-
  camera_sp$meetup2014_5km_buff_freq_7days_bin
comuni_sp$meetup_treated_2013 <-
  comuni_sp$meetup2014_5km_buff_freq_7days_bin

comuni_sp$meetup2013_5km_buff_freq_7days_bin <-
  comuni_sp$meetup2014_5km_buff_freq_7days_bin
comuni_sp$meetup2013_5km_buff_freq_7days <-
  comuni_sp$meetup2014_5km_buff_freq_7days

comuni_sp$meetup2018_treated_diff <-
  comuni_sp$meetup_treated_2018 + comuni_sp$meetup_treated_2013

comuni_sp$meetup2018_treated_diff <-
```

```
  comuni_sp$meetup_treated_2018 + comuni_sp$meetup_treated_2013
comuni_sp$meetup2018_treated_diff <-
  comuni_sp$meetup_treated_2018 + comuni_sp$meetup2018_treated_diff

comuni_sp$meetup2018_treated_diff <-
  factor(comuni_sp$meetup2018_treated_diff, levels = c(0, 1, 3, 2))
levels(comuni_sp$meetup2018_treated_diff) <-
  c("Never", "2013 only", "2013 & 2018", "2018 only")

sum(comuni_sp$meetup_treated_2018) / nrow(comuni_sp)
```

```
## [1] 0.205557
```

```
sum(comuni_sp$meetup_treated_2013) / nrow(comuni_sp)
```

```
## [1] 0.286774
```

```
sum(comuni_sp$meetup2018_treated_diff == 'Never') / nrow(comuni_sp)
```

```
## [1] 0.6465929
```

```
sum(comuni_sp$meetup2018_treated_diff == '2013 & 2018') / nrow(comuni_sp)
```

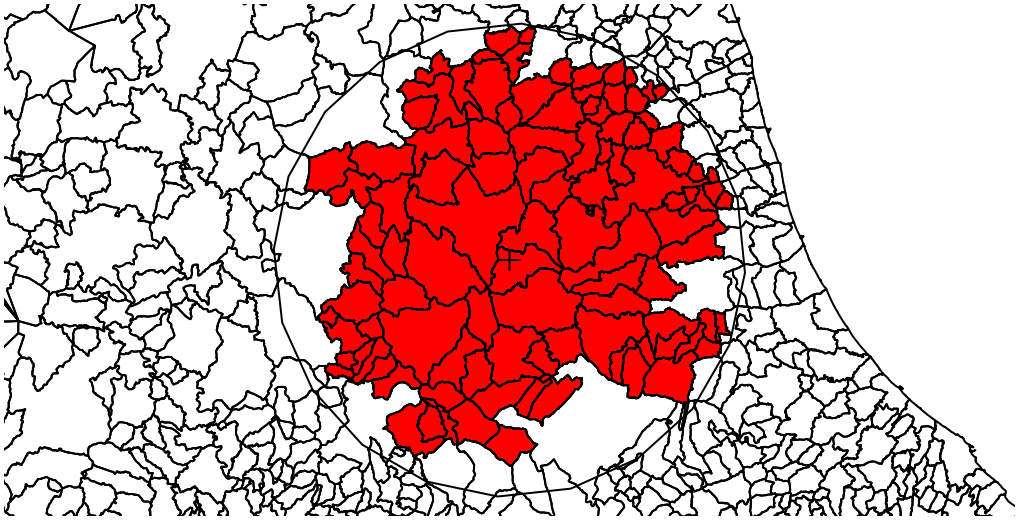
```
## [1] 0.1389238
```

```
comuni_sp$income <- comuni_sp$income2016_procapite

## Add associations
load("secondary_data/istat_censimento_noprofit/01_comuni_harmonized.RData")
comuni_sp <- merge(comuni_sp, comuni_nvol, by = 'PRO_COM_T', all.x = T)
comuni_sp$ANPIV[is.na(comuni_sp$ANPIV)] <- 0
comuni_sp$ANPINV[is.na(comuni_sp$ANPINV)] <- 0

comuni_sp$ANPIV_perc <-
  comuni_sp$ANPIV / comuni_sp$pop2011
```

Note: Turnout for the comune affected by the 2016 earthquake is averaged due to displacements.

```
## Add referendum turnout
load("secondary_data/minint_referendum_2016/01_comuni2018_turnout2016.RData")
comuni_sp <-
  merge(comuni_sp,
        comuni2018_turnout2016[,c('comuni2018',
                                  "registered_voters",
                                  "effective_voters" )],
        by.x = 'PRO_COM_T', by.y = 'comuni2018', all.x = T)
comuni_sp$ref16_turnout <-
  comuni_sp$effective_voters / comuni_sp$registered_voters

utm_crs <-
  '+proj=utm +zone=32 +datum=WGS84 +units=m +no_defs'
lonlat_crs <-
  '+proj=longlat +datum=WGS84 +no_defs +ellps=WGS84 +towgs84=0,0,0'

earthquake_pnt <-
  SpatialPoints(cbind(13.22, 42.71),
                proj4string = CRS(lonlat_crs))
```

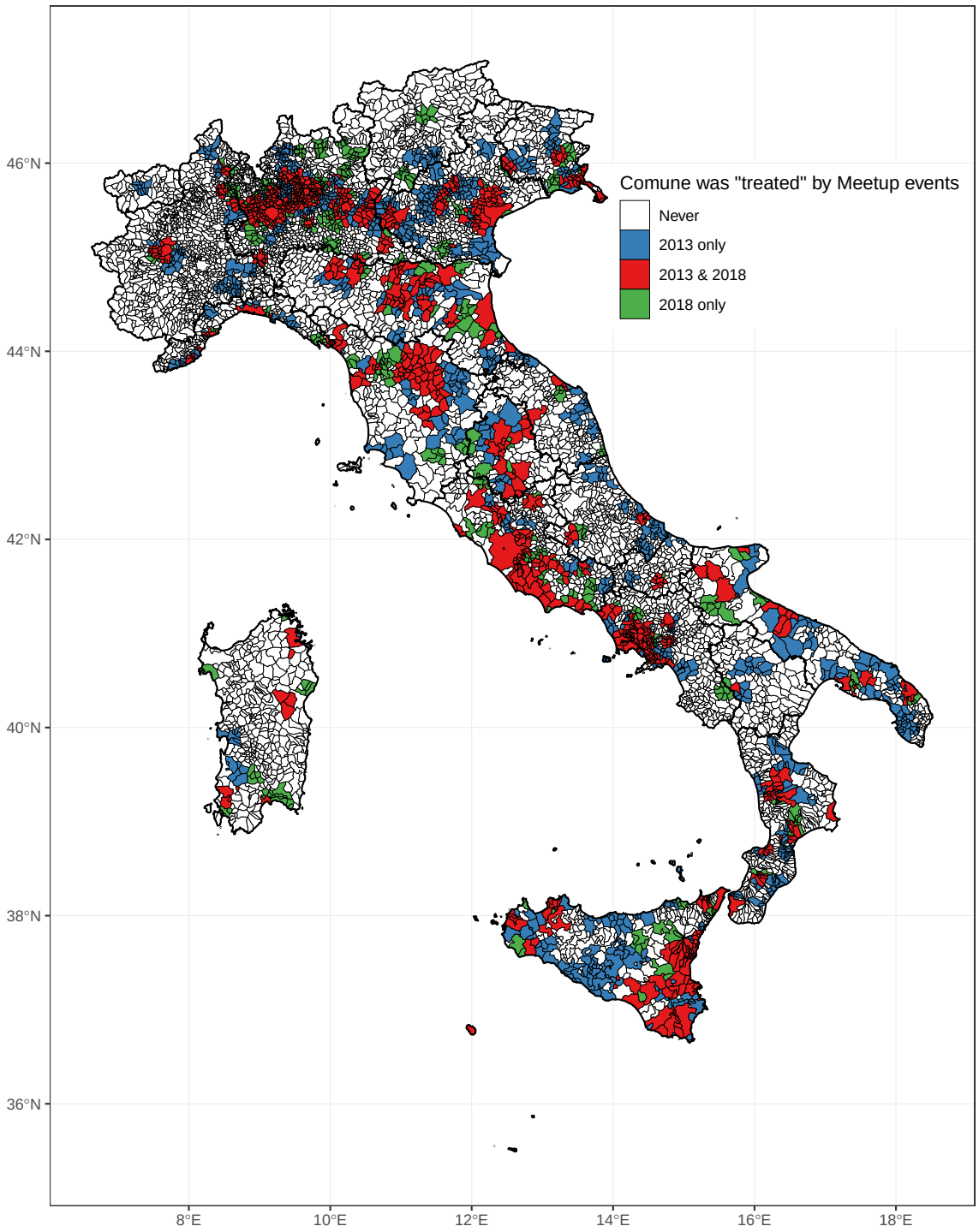
```
buffer_earthquake <-
  gBuffer(spTransform(earthquake_pnt,
                      utm_crs), width = 50000)
buffer_plot <-
  gBuffer(spTransform(earthquake_pnt,
                      utm_crs), width = 250000)
res1 <- gWithin(comuni_sp, spTransform(buffer_earthquake, lonlat_crs),
                byid = TRUE)[1,]
res2 <- gWithin(comuni_sp, spTransform(buffer_plot, lonlat_crs),
                byid = TRUE)[1,]

plot(spTransform(buffer_earthquake, lonlat_crs))
plot(comuni_sp[res1,], add=T, col = 'red')
plot(earthquake_pnt, add=T)
plot(comuni_sp[res2,], add=T)
```



```
comuni_sp$ref16_turnout[res1] <-
  sum(comuni_sp$effective_voters[res1]) / sum(comuni_sp$registered_voters[res1])
```

```
comuni_sf_keep005 <- st_as_sf(comuni_sp_keep005)
comuni_sf_keep005 <- merge(comuni_sf_keep005, comuni_sp, by = 'PRO_COM_T')

ggplot(comuni_sf_keep005) +
  geom_sf(aes(fill = as.factor(meetup2018_treated_diff)),
          colour = 'black', size = .02) +
  geom_sf(data = regione2018_sf, fill = NA, colour = 'black') +
```

```
  scale_fill_manual(values = c("white", "#377eb8","#e41a1c","#4daf4a")) +
  labs(fill='Comune was "treated" by Meetup events' ,
       caption = paste0("number of Comune in 2018: ", nrow(comuni_sp),
                        "\nnumber of 2018 Comune \"treated\" by events in 2018: ",
                        sum(comuni_sp$meetup2018_treated),
                        " (",
                        round(sum(comuni_sp$meetup2018_treated) /
                                nrow(comuni_sp) * 100,2), "%)",
                        "\nnumber of 2018 Comune \"treated\" by events in 2013: ",
                        sum(comuni_sp$meetup2013_treated),
                        " (", round(sum(comuni_sp$meetup2014_treated) /
                                      nrow(comuni_sp) * 100,2), "%)",
                        "\nnumber of 2018 Comune \"treated\" by events in both 2013 & 2018: ",
                        sum(comuni_sp$meetup2018_treated_diff == "2013 & 2018"),
                        " (", round(sum(comuni_sp$meetup2018_treated_diff ==
                                          "2013 & 2018") / nrow(comuni_sp) * 100,2),
                        "%)")) +
  theme_bw() +
  theme(legend.position = c(0.8,0.8))
```



number of Comune in 2018: 7954
number of 2018 Comune "treated" by events in 2018: 0 (0%)
number of 2018 Comune "treated" by events in 2013: 0 (0%)
number of 2018 Comune "treated" by events in both 2013 & 2018: 1105 (13.89%)

```
comuni_sp_data <- comuni_sp@data
save(comuni_sp_data, file = "replication_file_09_comuni_sp_data.RData")
```

```
load("replication_file_07_province_sp_list.RData")
load("replication_file_09_comuni_sp_data.RData")
```

```
require(ggplot2)
require(dplyr)
require(sf)

prov.sf  <-
  st_as_sf(province_sp_list[['2012']])

comuni_centroids.sf <-
  comuni_sp %>%
  st_as_sf() %>%
  st_transform(32632) %>%
  st_centroid()

comuni_centroids.sf <-
  merge(comuni_centroids.sf %>%
          select(PRO_COM_T),
        comuni_sp_data %>%
          dplyr::select(PRO_COM_T, ANPIV, pop2011,
                        popdegree2011, pophousewife2011,
                        registered_voters, effective_voters,
                        popworkforce2011, popnotworkforce2011))

comuni_centroids.sf$lat <-
  st_coordinates(comuni_centroids.sf)[,2]

res <-
  st_join(comuni_centroids.sf, prov.sf, join = st_within) %>%
  as.data.frame() %>%
  dplyr::filter(!is.na(SIGLA)) %>%
  dplyr::group_by(SIGLA) %>%
  dplyr::summarize(ANPIV_perc = sum(ANPIV) / population[1],
                   degree_perc = sum(popdegree2011) /
                     sum(pop2011),
                   housewive_perc = sum(pophousewife2011) /
                     sum(pop2011),
                   ref16_turnout = sum(effective_voters) /
                     sum(registered_voters),
                   partwf_perc =
                     sum(popworkforce2011) /
                     sum(popworkforce2011 + popnotworkforce2011),
                   lat = mean(lat))

prov_with_data.sf <-
  merge(prov.sf, res, by = "SIGLA")

prov_with_data.sf$puntifi1_mean <-
  region_sp_list[["2013"]]$puntifi1_mean[match(prov_with_data.sf$COD_REG,
                                               region_sp_list[["2013"]]$COD_REG)]
```

```
prov_with_data.sf$puntifi4_mean <-
  region_sp_list[["2013"]]$puntifi4_mean[match(prov_with_data.sf$COD_REG,
                                               region_sp_list[["2013"]]$COD_REG)]
prov_with_data.sf$puntifi8_mean <-
  region_sp_list[["2013"]]$puntifi8_mean[match(prov_with_data.sf$COD_REG,
                                               region_sp_list[["2013"]]$COD_REG)]
prov_with_data.sf$puntifi9_mean <-
  region_sp_list[["2013"]]$puntifi9_mean[match(prov_with_data.sf$COD_REG,
                                               region_sp_list[["2013"]]$COD_REG)]
prov_with_data.sf$puntifi10_mean <-
  region_sp_list[["2013"]]$puntifi10_mean[match(prov_with_data.sf$COD_REG,
                                               region_sp_list[["2013"]]$COD_REG)]

load('secondary_data/istisan_reg_2014/01_istisan_reg_2014.RData')
istisan_reg_2014$donor_perc <-
  istisan_reg_2014$donors / (istisan_reg_2014$pop1865/10000)
istisan_reg_2014$COD_REG <-
  c(13, 17, 18, 15, 8, 6, 12, 7, 3, 11, 14, 1, 16, 20, 19, 9, 4, 10, 2, 5)

prov_with_data.sf$donor_perc <-
  istisan_reg_2014$donor_perc[match(prov_with_data.sf$COD_REG,
                                    istisan_reg_2014$COD_REG)]

prov_with_data.sf <-
  prov_with_data.sf %>%
  dplyr::mutate(pop_density = population / Shape_Area,
                over65_perc = population_over_65 / population,
                foreignpop_perc = foreignpop / population,
                foreignpop_africa_perc = foreignpop_africa / population,
                income = taxable_income / n_taxpayers,
                nat_pol_trust = puntifi4_mean + puntifi1_mean,
                loc_pol_trust = puntifi8_mean + puntifi9_mean + puntifi10_mean)

prov_with_data.sf$north <-
  as.numeric(as.character(prov_with_data.sf$COD_REG)) < 13

prov_with_data.sf$metropolian_city <-
  prov_with_data.sf$SIGLA %in%
  c("NA", "MI", "RM", "GE", "VE", "CA", "TO", "BA", "CT", "FI", "BO",
    "PA", "ME", "RC")
```

Table 1

```
require(lm.beta)
meetup_prov_lm1 <-
  lm(n_meetup_events_per_10k ~
       log(pop_density) + metropolian_city + unemployment +
       employment + over65_perc + housewive_perc + partwf_perc +
       foreignpop_perc +  foreignpop_africa_perc + income + degree_perc +
       # ref16_turnout + donor_perc + ANPIV_perc +
       nat_pol_trust + loc_pol_trust,
     data = prov_with_data.sf)
```

```
meetup_prov_lm2 <-
  lm(n_meetup_events_per_10k ~
       log(pop_density) + metropolian_city + unemployment +
       employment + over65_perc + housewive_perc + partwf_perc +
       foreignpop_perc + foreignpop_africa_perc +
       income + degree_perc +
       ref16_turnout + donor_perc + ANPIV_perc +
       nat_pol_trust + loc_pol_trust,
     data = prov_with_data.sf)

do.call(
  stargazer,
  c(list(meetup_prov_lm1,
         meetup_prov_lm2,
         coef = list(lm.beta(meetup_prov_lm1)$standardized.coefficients,
                     lm.beta(meetup_prov_lm2)$standardized.coefficients),
         p = list(summary(meetup_prov_lm1)$coefficients[,4],
                  summary(meetup_prov_lm2)$coefficients[,4]),
         type = 'html', out = "table/meetup_prov_lmod.html",
         # type = 'latex', out = "table/meetup_prov_lmod.tex",
         dep.var.labels = "Meetup events per 10k ppl.",
         column.labels = c("Mod. 1 (Beta)", "Mod. 2 (Beta)"),
         omit = c('pop_density', 'metropolian_city',
                  '^employment', 'over65_perc', 'housewive_perc',
                  'foreignpop_perc', 'partwf_perc',
                  'foreignpop_africa_perc', 'loc_pol_trust'),
         order = c('degree_perc',
                   'unemployment', 'income',
                   'nat_pol_trust',
                   'ANPIV_perc', 'donor_perc', 'ref16_turnout'),
         covariate.labels = var_dict_labels[
           c('degree_perc',
             'unemployment', 'income',
             'nat_pol_trust',
             'ANPIV_perc', 'donor_perc', 'ref16_turnout')]),
    sg_param_intext))
```

Meetup events per 10k ppl.

Mod. 1 (Beta)

Mod. 2 (Beta)

With university degree (pct)

0.290*

0.230

Unemployment (pct)

-0.035

-0.036

Income (procapite, 10K €)

-0.166

0.031

Trust in national institutions

-0.374***

-0.248*

Volunteers (pct)

-0.114

Blood donors (pct)

0.421**

Turnout 2016 referendum (pct)

-0.297

Constant

0.000

0.000

N

110

110

R-squared

0.271

0.342

***p* < .001;** *p* < .01; p < .05

Table 2 (Supplemental online material)

```
do.call(
  stargazer,
  c(list(meetup_prov_lm1,
         meetup_prov_lm2,
         coef = list(lm.beta(meetup_prov_lm1)$standardized.coefficients,
                     lm.beta(meetup_prov_lm2)$standardized.coefficients),
         p = list(summary(meetup_prov_lm1)$coefficients[,4],
                  summary(meetup_prov_lm2)$coefficients[,4]),
         type = 'latex', out = "table/meetup_prov_lmod_full.tex",
         # type = 'html', out = "table/meetup_prov_lmod_full.html",
         dep.var.labels = "Meetup events per 10k ppl.",
         column.labels = c("Beta", "Beta")
         ,
         covariate.labels = var_dict_labels[
           c("log(pop_density)", "metropolitan_city",
             "unemployment","employment",
             "over65_perc","housewive_perc","partwf_perc",
             "foreignpop_perc",
             "foreignpop_africa_perc", "income", "degree_perc",
             "ref16_turnout", "donor_perc", "ANPIV_perc",
             "nat_pol_trust", "loc_pol_trust")]
```

```
        ),
    sg_param_appendix))
```

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Thu, Oct 10, 2019 - 15:19:39

	Meetup events per 10k ppl.	
	OLS	
	Beta	**Beta**
	Model 1	**Model 2**
Population density (log)	0.194	0.175
Metropolitan city	−0.050	−0.057
Unemployment (pct)	−0.035	−0.036
Employment (pct)	−0.229	−0.010
Population over 65 (pct)	0.225	0.019
Housewive among population (pct)	0.269	0.111
Workforce participation (pct)	−0.335	−0.554
Foreign population (pct)	0.344	0.430
Foreign African population (pct)	−0.019	0.025
Income (procapite, 10K €)	−0.166	0.031
With university degree (pct)	0.290*	0.230
Turnout 2016 referendum (pct)		−0.297
Blood donors (pct)		0.421**
Volunteers (pct)		−0.114
Trust in national institutions	−0.374***	−0.248*
Trust in local institutions	0.472**	0.289
Constant	0.000	0.000
N	110	110
R-squared	0.271	0.342
Adj. R-squared	0.172	0.229
Residual Std. Error	2.215 (df = 96)	2.138 (df = 93)

***p < .001; **p < .01; *p < .05

Figure 4

```
require(scales)
grid.arrange(

ggplot(prov_with_data.sf) +
  geom_sf(aes(fill = ANPIV_perc), size = .05) +
  scale_fill_distiller(palette = "Spectral",
                       labels = function(x){paste0(round(x*100,0),"%")}) +
  theme_bw() +
  theme(axis.title=element_blank(),
        axis.text=element_blank(),
        axis.ticks=element_blank(),
        legend.position = "bottom") +
  labs(fill = "Volunteers"),

ggplot(prov_with_data.sf) +
  geom_sf(aes(fill = n_meetup_events_per_10k), , size = .05) +
  scale_fill_distiller(palette = "Spectral") +
  theme_bw() +
  theme(axis.title=element_blank(),
        axis.text=element_blank(),
        axis.ticks=element_blank(),
        legend.position = "bottom") +
  labs(fill = "Meetup events per 10k ppl."),
ncol = 2)
```

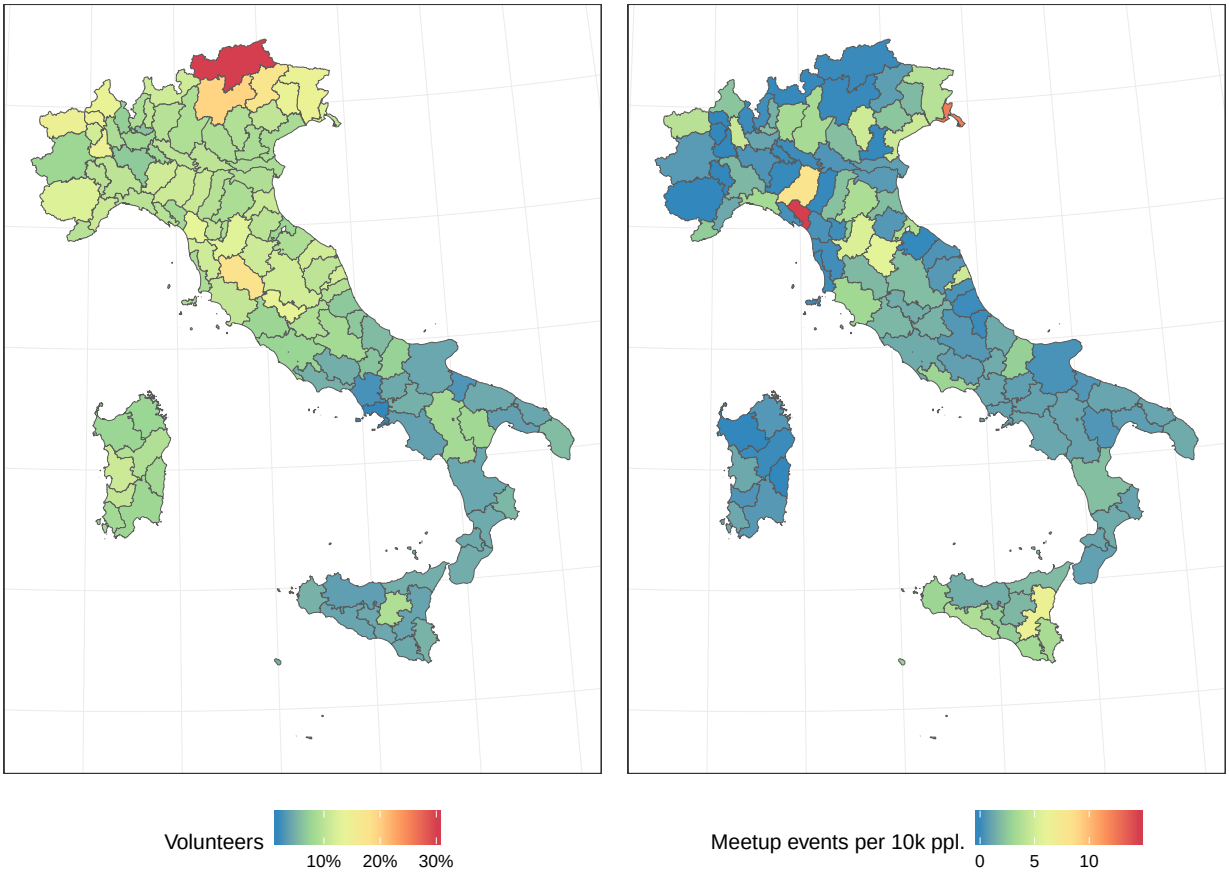
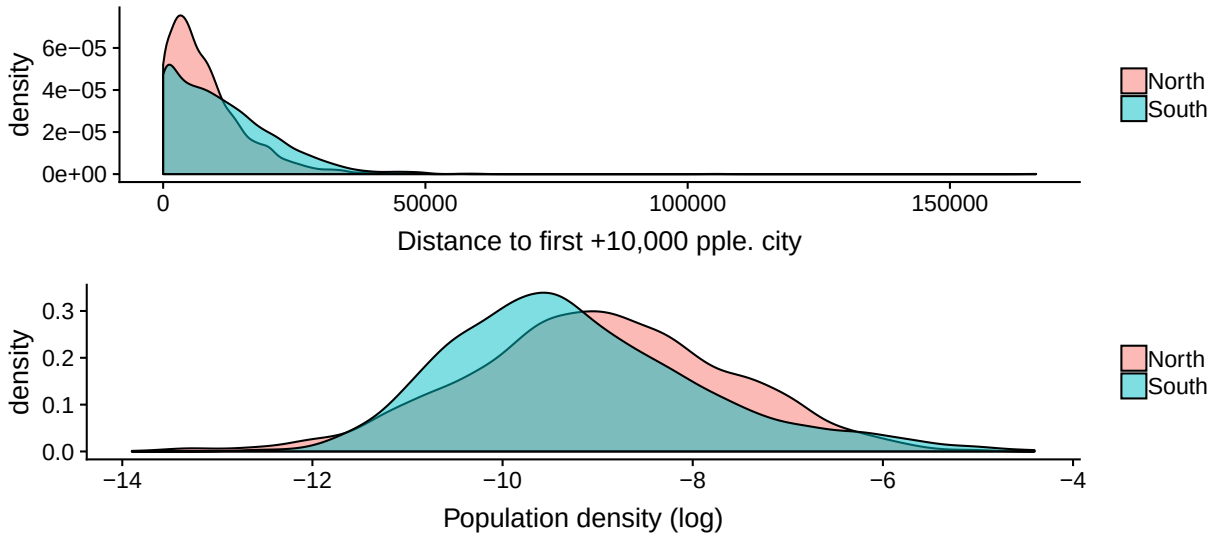


Figure 10 (Supplemental online material)

```
pop_density_df <-
  data.frame(pop2011 = comuni_sp_data$pop2011,
             pop_density = comuni_sp_data$pop_density,
             dist_10k_ppl = comuni_sp_data$dist_10k_ppl,
             north = comuni_sp_data$north)

pop_density_df$north_south <-
  ifelse(pop_density_df$north, "North", "South")

grid.arrange(
  ggplot(data=pop_density_df, aes(x=dist_10k_ppl))+
    geom_density(aes(fill=north_south), alpha = .5) +
    theme(legend.title = element_blank()) +
    labs(x=var_dict_labels['dist_10k_ppl']),
  ggplot(data=pop_density_df, aes(x=log(pop_density)))+
    geom_density(aes(fill=north_south), alpha = .5) +
    theme(legend.title = element_blank()) +
    labs(x=var_dict_labels['log(pop_density)']))
```




```
## LM 2018
m5s_2018_comuni_lmmod <-
  lm(data = comuni_sp_data,
     formula = "M5S_2018~log(pop_density)+log(dist_10k_ppl)+
      unemployment*north+housewive_perc+
      partwf_perc+over65_perc+degree_perc+foreignpop_perc+foreignpop_africa_perc+
      M5S_2018_neigh_avg+meetup_treated_2018+income+ANPIV_perc+ref16_turnout",
     weights = pop2011, na.action=na.exclude)

m5s_2018_comuni_lmmod_nointeraction <-
  lm(data = comuni_sp_data,
     formula = "M5S_2018~log(pop_density)+log(dist_10k_ppl)+
      unemployment+north+housewive_perc+
      partwf_perc+over65_perc+degree_perc+foreignpop_perc+foreignpop_africa_perc+
      M5S_2018_neigh_avg+meetup_treated_2018+income+ANPIV_perc+ref16_turnout",
     weights = pop2011, na.action=na.exclude)

m5s_2018_comuni_lmmod_north <-
  lm(data = comuni_sp_data[comuni_sp_data$north==TRUE,],
     formula = "M5S_2018~log(pop_density)+log(dist_10k_ppl)+
      unemployment+housewive_perc+
      partwf_perc+over65_perc+degree_perc+foreignpop_perc+foreignpop_africa_perc+
      M5S_2018_neigh_avg+meetup_treated_2018+income+ANPIV_perc+ref16_turnout",
     weights = pop2011, na.action=na.exclude)

m5s_2018_comuni_lmmod_south <-
  lm(data = comuni_sp_data[!comuni_sp_data$north,],
     formula = "M5S_2018~log(pop_density)+log(dist_10k_ppl)+
      unemployment+housewive_perc+
      partwf_perc+over65_perc+degree_perc+foreignpop_perc+foreignpop_africa_perc+
      M5S_2018_neigh_avg+meetup_treated_2018+income+ANPIV_perc+ref16_turnout",
     weights = pop2011, na.action=na.exclude)

m5s_diff_comuni_lmmod <-
  lm(data = comuni_sp_data,
     formula = "M5S_diff~log(pop_density)+log(dist_10k_ppl)+
```

```
      unemployment*north+housewive_perc+
      partwf_perc+over65_perc+degree_perc+foreignpop_perc+foreignpop_africa_perc+
      M5S_2018_neigh_avg+meetup_treated_2018+income+ANPIV_perc+ref16_turnout",
     weights = pop2011,
     na.action = 'na.exclude')

m5s_diff_comuni_lmmod_north <-
  lm(data = comuni_sp_data[comuni_sp_data$north==TRUE,],
     formula = "M5S_diff~log(pop_density)+log(dist_10k_ppl)+
      unemployment*north+housewive_perc+
      partwf_perc+over65_perc+degree_perc+foreignpop_perc+foreignpop_africa_perc+
      M5S_2018_neigh_avg+meetup_treated_2018+income+ANPIV_perc+ref16_turnout",
     weights = pop2011,
     na.action = 'na.exclude')

m5s_diff_comuni_lmmod_south <-
  lm(data = comuni_sp_data[comuni_sp_data$north==FALSE,],
     formula = "M5S_diff~log(pop_density)+log(dist_10k_ppl)+
      unemployment*north+housewive_perc+
      partwf_perc+over65_perc+degree_perc+foreignpop_perc+foreignpop_africa_perc+
      M5S_2018_neigh_avg+meetup_treated_2018+income+ANPIV_perc+ref16_turnout",
     weights = pop2011,
     na.action = 'na.exclude')

m5s_diff_comuni_lmmod_nointeraction <-
  lm(data = comuni_sp_data,
     formula = "M5S_diff~log(pop_density)+log(dist_10k_ppl)+
      unemployment+north+housewive_perc+
      partwf_perc+over65_perc+degree_perc+foreignpop_perc+foreignpop_africa_perc+
      M5S_2018_neigh_avg+meetup_treated_2018+income+ANPIV_perc+ref16_turnout",
     weights = pop2011,
     na.action = 'na.exclude')

comuni_m5s_lmmod_residuals_sf <-
  comuni_sf_keep005
comuni_m5s_lmmod_residuals_sf$residuals2018 <-
  resid(m5s_2018_comuni_lmmod)
```

Table 5 (Supplemental online material)

```
do.call(
  stargazer,
  c(list(m5s_2018_comuni_lmmod,
         m5s_2018_comuni_lmmod_nointeraction,
         m5s_2018_comuni_lmmod_north,
         m5s_2018_comuni_lmmod_south,
         type = 'latex', out = "table/m5s2018_lmod_full.tex",
         dep.var.labels = "M5S vote 2018, \\%",
         column.labels = c("w/t interaction term (B)",
                           "w/tout interaction term (B)",
                           "North only (B)",
                           "South only (B)"),
         covariate.labels = var_dict_labels[
```

```
          c("log(pop_density)","log(dist_10k_ppl)",
            "unemployment","north",
            "housewive_perc","partwf_perc","over65_perc",
            "degree_perc","foreignpop_perc",
            "foreignpop_africa_perc","M5S_2018_neigh_avg",
            "meetup_treated_2018",
            "income","ANPIV_perc",
            "ref16_turnout", "unemployment:north")]),
   sg_param_appendix))
```

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Thu, Oct 10, 2019 - 15:19:49

	M5S vote 2018, %		
	OLS		
	w/t interaction term (B)	w/tout interaction term (B)	North on
	Model 1	Model 2	Mode
Population density (log)	−0.001	−0.001	−0.005
Distance to first +10,000 pple. city (log)	−0.002***	−0.003***	−0.002
Unemployment (pct)	0.042	0.396***	1.113'
North (bin)	−0.145***	−0.048***	
Housewive among population (pct)	0.214***	0.200***	−0.00
Workforce participation (pct)	0.230***	0.161***	0.116
Population over 65 (pct)	−0.232***	−0.255***	−0.268
With university degree (pct)	0.252***	0.373***	0.443'
Foreign population (pct)	−0.385***	−0.347***	−0.333
Foreign African population (pct)	−0.168*	−0.256***	−0.263
M5S vote in neigh. 2018 election (pct)	0.147***	0.157***	0.145'
+2 weeks with +1 event (2018)	0.006***	0.005***	0.00
Income (procapite, 10K €)	−0.047***	−0.065***	−0.060
Volunteers (pct)	−0.142***	−0.191***	−0.208
Turnout 2016 referendum (pct)	−0.044**	−0.051***	−0.136
Unemployment X North	1.059***		
Constant	0.345***	0.369***	0.360'
N	7953	7953	5401
R-squared	0.805	0.800	0.47
Adj. R-squared	0.805	0.799	0.47
Residual Std. Error	4.519 (df = 7936)	4.582 (df = 7937)	3.738 (df =

***p < .001; **p < .01; *p < .05

```
stargazer(m5s_diff_comuni_lmmod,
          m5s_diff_comuni_lmmod_nointeraction,
          m5s_diff_comuni_lmmod_north,
          m5s_diff_comuni_lmmod_south,
          type = 'latex', out = "table/m5s_diff_lmod_full.tex",
          dep.var.labels = "M5S vote 2018, \\%",
          column.labels = c("w/t interaction term (B)",
                            "w/tout interaction term (B)",
```

```
                          "North only (B)",
                          "South only (B)"),
          covariate.labels = var_dict_labels[
            c("log(pop_density)","log(dist_10k_ppl)",
              "unemployment","north",
              "housewive_perc","partwf_perc","over65_perc",
              "degree_perc","foreignpop_perc",
              "foreignpop_africa_perc","M5S_2018_neigh_avg",
              "meetup_treated_2018",
              "income","ANPIV_perc",
              "ref16_turnout", "unemployment:north")],
          column.sep.width = "4pt",
          omit.stat = c('f','ser'),
          report = "vc*",
          single.row = TRUE,
          model.numbers = FALSE,
          model.names = FALSE,
          float = FALSE,
          style = 'ajps')
```

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Thu, Oct 10, 2019 - 15:19:51

		M5S vote 2018, %	
	w/t interaction term (B)	**w/tout interaction term (B)**	**North onl**
Population density (log)	0.005***	0.005***	−0.003
Distance to first +10,000 pple. city (log)	0.00001	0.00001	−0.001
Unemployment (pct)	−0.022	−0.028	0.275*
North (bin)	−0.089***	−0.091***	
Housewive among population (pct)	−0.193***	−0.193***	−0.191
Workforce participation (pct)	−0.960***	−0.959***	−0.510
Population over 65 (pct)	−0.978***	−0.977***	−0.661
With university degree (pct)	−0.018	−0.021	0.141*
Foreign population (pct)	−0.015	−0.015	−0.032
Foreign African population (pct)	−0.221***	−0.219***	−0.00
M5S vote in neigh. 2018 election (pct)	0.057***	0.056***	0.048*
+2 weeks with +1 event (2018)	0.015***	0.015***	0.011*
Income (procapite, 10K €)	0.0002	0.001	0.004
Volunteers (pct)	0.054***	0.055***	0.015
Turnout 2016 referendum (pct)	−0.050***	−0.050***	−0.140
Unemployment X North	−0.018		
Constant	0.920***	0.919***	0.485*
N	7953	7953	5401
R-squared	0.781	0.781	0.199
Adj. R-squared	0.780	0.781	0.197

***p < .01; **p < .05; *p < .1

```
## LM 2013

m5s_2013_comuni_lmmod <-
  lm(data = comuni_sp_data,
     formula = "M5S_2013~log(pop_density)+log(dist_10k_ppl)+
     unemployment*north+housewive_perc+partwf_perc+over65_perc+
```

```
    degree_perc+foreignpop_perc+foreignpop_africa_perc+M5S_2013_neigh_avg+
    meetup_treated_2013+income+ANPIV_perc+ref16_turnout",
    weights = pop2011, na.action = na.exclude)

m5s_2013_comuni_lmmod_nointeraction <-
  lm(data = comuni_sp_data,
    formula = "M5S_2013~log(pop_density)+log(dist_10k_ppl)+
    unemployment+north+housewive_perc+partwf_perc+over65_perc+
    degree_perc+foreignpop_perc+foreignpop_africa_perc+M5S_2013_neigh_avg+
    meetup_treated_2013+income+ANPIV_perc+ref16_turnout",
    weights = pop2011, na.action = na.exclude)

m5s_2013_comuni_lmmod_north <-
  lm(data = comuni_sp_data[comuni_sp_data$north == TRUE,],
    formula = "M5S_2013~log(pop_density)+log(dist_10k_ppl)+
    unemployment+housewive_perc+partwf_perc+over65_perc+
    degree_perc+foreignpop_perc+foreignpop_africa_perc+M5S_2013_neigh_avg+
    meetup_treated_2013+income+ANPIV_perc+ref16_turnout",
    weights = pop2011, na.action = na.exclude)

m5s_2013_comuni_lmmod_south <-
  lm(data = comuni_sp_data[comuni_sp_data$north == FALSE,],
    formula = "M5S_2013~log(pop_density)+log(dist_10k_ppl)+
    unemployment+housewive_perc+partwf_perc+over65_perc+
    degree_perc+foreignpop_perc+foreignpop_africa_perc+M5S_2013_neigh_avg+
    meetup_treated_2013+income+ANPIV_perc+ref16_turnout",
    weights = pop2011, na.action = na.exclude)

comuni_m5s_lmmod_residuals_sf$residuals2013 <-
  resid(m5s_2013_comuni_lmmod)
```

Table 3

```
do.call(
  stargazer, c(list(m5s_2013_comuni_lmmod,
                    m5s_2018_comuni_lmmod,
                    # type = 'latex', out = "table/m5s2018-13_lmod.tex",
                    type = 'html', out = "table/m5s2018-13_lmod.html",
                    dep.var.labels = "M5S vote, \\%",
                    column.labels = c("2013 (B)", "2018 (B)"),
                    omit = c('^northTRUE$', 'partwf_perc', 'pop\\_density', 'over65',
                             'foreignpop', 'degree', 'year',
                             'Constant', "dist\\_10k_ppl","housewive"),
                    order = c("^unemployment$",
                              "meetup_treated_2013", "meetup_treated_2018",
                              "income", "ANPIV_perc", "ref16_turnout",
                              "M5S\\_2013\\_neigh", "M5S\\_2018\\_neigh", "unemployment:north"),
                    covariate.labels = c("Unemployment (pct) | North = 0", var_dict_labels[
                      c("meetup_treated_2013",
                        "meetup_treated_2018",
                        "income","ANPIV_perc","ref16_turnout",
                        "M5S_2013_neigh_avg", "M5S_2018_neigh_avg", "unemployment:north")
                      ])),
```

```
                sg_param_intext))
```

M5S vote, %

2013 (B)

2018 (B)

Unemployment (pct) | North = 0

0.025

0.042

+2 weeks with +1 event (2013)

0.008***

+2 weeks with +1 event (2018)

0.006***

Income (procapite, 10K €)

-0.046***

-0.047***

Volunteers (pct)

-0.169***

-0.142***

Turnout 2016 referendum (pct)

-0.057***

-0.044**

M5S vote in neigh. 2013 election (pct)

0.240***

M5S vote in neigh. 2018 election (pct)

0.147***

Unemployment X North

0.933***

1.059***

N

7953

7953

R-squared

0.394

0.805

p < .001; *p < .01;* p < .05

Table 4 (Supplemental online material)

```
do.call(
  stargazer,
  c(list(m5s_2013_comuni_lmmod,
         m5s_2013_comuni_lmmod_nointeraction,
         m5s_2013_comuni_lmmod_north,
         m5s_2013_comuni_lmmod_south,
         type = 'latex', out = "table/m5s2013_lmod_full.tex",
         dep.var.labels = "M5S vote 2013, \\%",
         column.labels = c("w/t interaction term (B)",
                           "w/tout interaction term (B)",
                           "North only (B)",
                           "South only (B)"),
         covariate.labels = var_dict_labels[
           c("log(pop_density)","log(dist_10k_ppl)",
             "unemployment","north",
             "housewive_perc","partwf_perc","over65_perc",
             "degree_perc","foreignpop_perc",
             "foreignpop_africa_perc","M5S_2013_neigh_avg",
             "meetup_treated_2013",
             "income","ANPIV_perc",
             "ref16_turnout", "unemployment:north")
           ]),
    sg_param_appendix))
```

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Thu, Oct 10, 2019 - 15:19:57

	M5S vote 2013, %		
	OLS		
	w/t interaction term (B)	w/tout interaction term (B)	North on
	Model 1	Model 2	Mode
Population density (log)	−0.009***	−0.008***	−0.005
Distance to first +10,000 pple. city (log)	−0.002***	−0.002***	−0.001
Unemployment (pct)	0.025	0.332***	0.719'
North (bin)	−0.046***	0.038***	
Housewive among population (pct)	0.350***	0.335***	0.164'
Workforce participation (pct)	0.994***	0.921***	0.551'
Population over 65 (pct)	0.513***	0.480***	0.235'
With university degree (pct)	0.352***	0.459***	0.382'
Foreign population (pct)	−0.347***	−0.314***	−0.303
Foreign African population (pct)	−0.009	−0.088	−0.234
M5S vote in neigh. 2013 election (pct)	0.240***	0.252***	0.204'
+2 weeks with +1 event (2013)	0.008***	0.007***	0.006'
Income (procapite, 10K €)	−0.046***	−0.061***	−0.062
Volunteers (pct)	−0.169***	−0.211***	−0.200
Turnout 2016 referendum (pct)	−0.057***	−0.064***	−0.090
Unemployment X North	0.933***		
Constant	−0.441***	−0.408***	−0.0
N	7953	7953	540
R-squared	0.394	0.378	0.39
Adj. R-squared	0.393	0.377	0.39
Residual Std. Error	4.114 (df = 7936)	4.168 (df = 7937)	3.710 (df =

***p < .001; **p < .01; *p < .05

Figure 9 (Supplemental online material)

```
grid.arrange(
    ggplot(comuni_m5s_lmmod_residuals_sf, aes(fill = residuals2013)) +
    geom_sf(colour = NA) + scale_fill_viridis() +
    theme_bw() + theme(legend.position = 'bottom') + labs(fill = '2013'),
  ggplot(comuni_m5s_lmmod_residuals_sf, aes(fill = residuals2018)) +
```

```
    geom_sf(colour = NA) + scale_fill_viridis() +
    theme_bw() + theme(legend.position = 'bottom') + labs(fill = '2018'),
  ncol = 2)
```

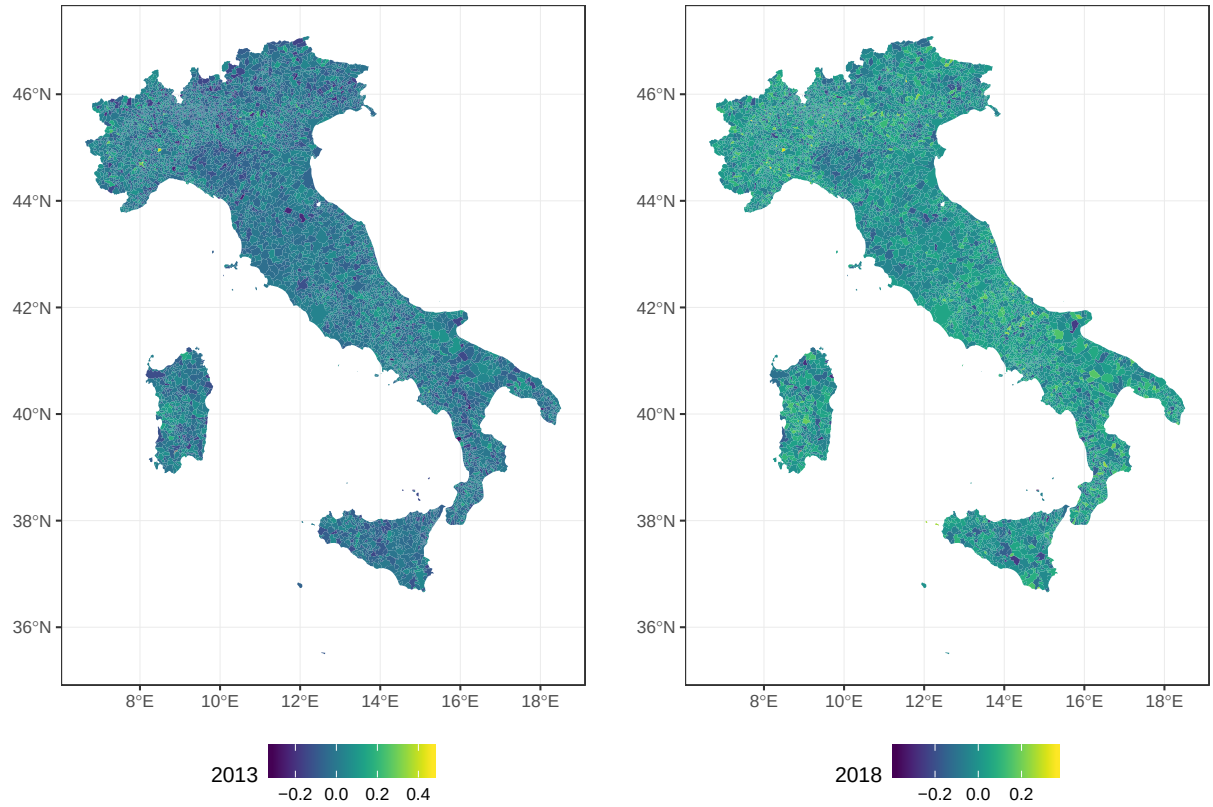
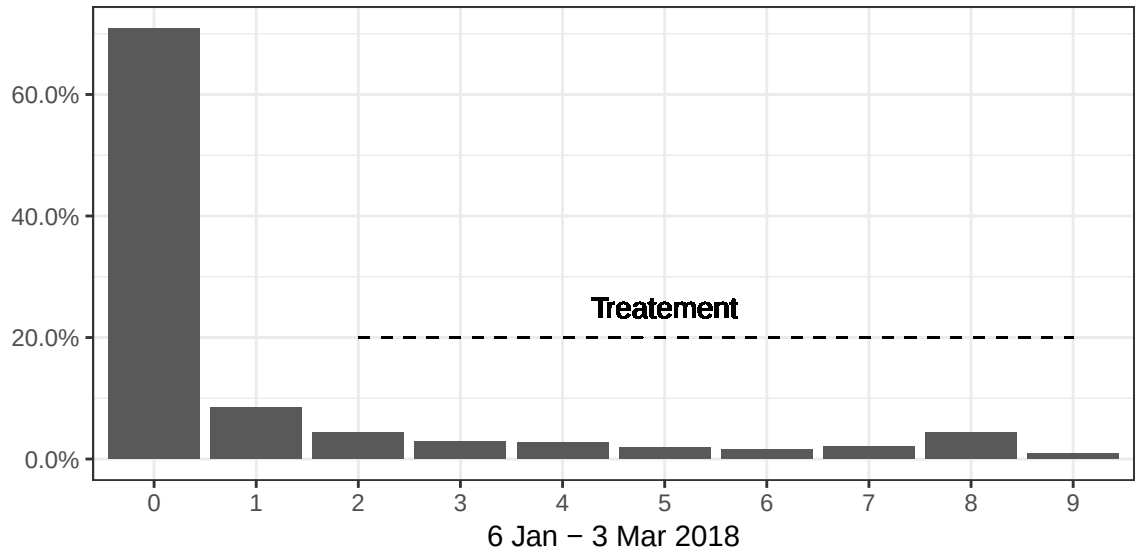
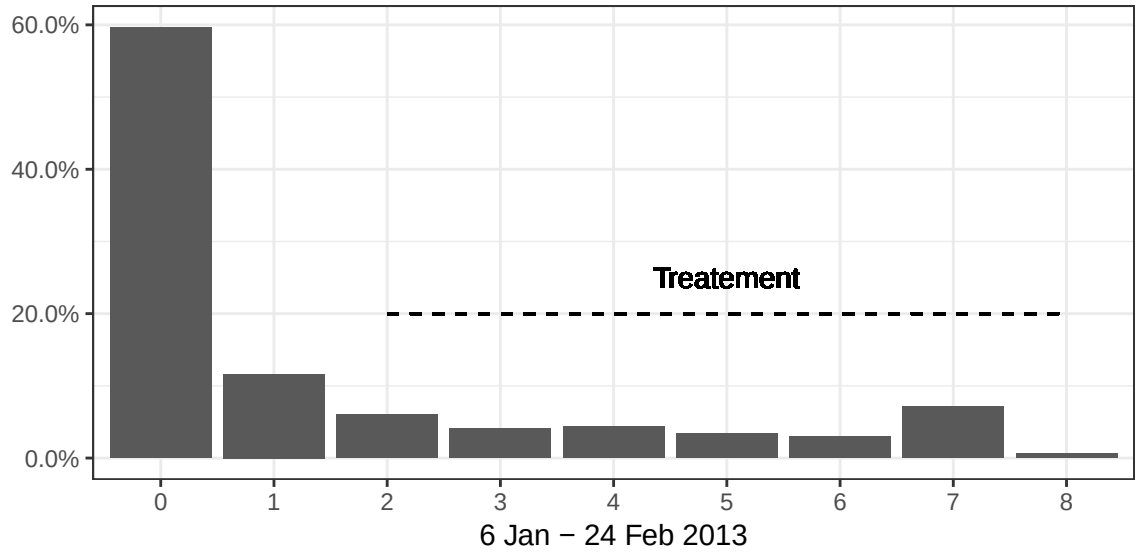


Figure 3

```
grid.arrange(
  ggplot(data=comuni_sp_data, aes(x=as.factor(meetup2018_5km_buff_freq_7days))) +
    geom_bar(aes(y = (..count..)/sum(..count..))) +
    theme_bw() + scale_y_continuous(labels = percent) +
    labs(x = "6 Jan - 3 Mar 2018", y = NULL) +
    geom_segment(aes(x = 3, xend = 10, y = .2, yend = .2), linetype = 2) +
    geom_text(aes(y = .25, x = 6, label = 'Treatement')),
  ggplot(data=comuni_sp_data, aes(x=as.factor(meetup2014_5km_buff_freq_7days))) +
    geom_bar(aes(y = (..count..)/sum(..count..))) +
    theme_bw() + scale_y_continuous(labels = percent) +
    labs(x = "6 Jan - 24 Feb 2013", y = NULL) +
    geom_segment(aes(x = 3, xend = 9, y = .2, yend = .2), linetype = 2) +
    geom_text(aes(y = .25, x = 6, label = 'Treatement')),
  ncol = 1)
```






```
load('replication_file_10_camera_2013_by_region.RData')

camera_2013_by_region_df$DEN_REG <-
  region_sp_list$`2013`$DEN_REG[
    match(camera_2013_by_region_df$COD_REG, region_sp_list$`2013`$COD_REG)]

reg_long_df <- data.frame()

for (y in 2013:2016) {
  reg_long_df <-
    rbind(reg_long_df,
          data.frame(name =
                       region_sp_list[[as.character(y)]]$DEN_REG,
                     COD_REG =
                       region_sp_list[[as.character(y)]]$COD_REG,
                     n_meetup_events =
                       region_sp_list[[as.character(y)]]$n_meetup_events,
```

```
                    population =
                      region_sp_list[[as.character(y)]]$population,
                    population_over_65 =
                      region_sp_list[[as.character(y)]]$population_over_65,
                    unemployment =
                      region_sp_list[[as.character(y)]]$unemployment,
                    employment =
                      region_sp_list[[as.character(y)]]$employment,
                    foreignpop =
                      region_sp_list[[as.character(y)]]$foreignpop,
                    foreignpop_africa =
                      region_sp_list[[as.character(y)]]$foreignpop_africa,
                    income =
                      region_sp_list[[as.character(y)]]$income/10000,

                    ppapo_mean =
                      region_sp_list[[as.character(y)]]$ppapo_mean,
                    psind_mean =
                      region_sp_list[[as.character(y)]]$psind_mean,
                    pgrvo_mean =
                      region_sp_list[[as.character(y)]]$pgrvo_mean,
                    paeco_mean =
                      region_sp_list[[as.character(y)]]$paeco_mean,

                    puntifi1_mean =
                      region_sp_list[[as.character(y)]]$puntifi1_mean,
                    puntifi2_mean =
                      region_sp_list[[as.character(y)]]$puntifi2_mean,
                    puntifi3_mean =
                      region_sp_list[[as.character(y)]]$puntifi3_mean,
                    puntifi4_mean =
                      region_sp_list[[as.character(y)]]$puntifi4_mean,
                    puntifi5_mean =
                      region_sp_list[[as.character(y)]]$puntifi5_mean,
                    puntifi8_mean =
                      region_sp_list[[as.character(y)]]$puntifi8_mean,
                    puntifi9_mean =
                      region_sp_list[[as.character(y)]]$puntifi9_mean,
                    puntifi10_mean =
                      region_sp_list[[as.character(y)]]$puntifi10_mean,

                    pol_trust_diff_mean =
                      region_sp_list[[
                        as.character(y)]]$pol_trust_diff_mean,

                    comiz_mean =
                      region_sp_list[[as.character(y)]]$comiz_mean,
                    cortei_mean =
                      region_sp_list[[as.character(y)]]$cortei_mean,
                    dibpo_mean =
                      region_sp_list[[as.character(y)]]$dibpo_mean,

                    volon_mean =
```

```
                      region_sp_list[[as.character(y)]]$volon_mean,
                    degree_perc =
                      region_sp_list[[as.character(y)]]$degree_perc,

                    area =
                      region_sp_list[[as.character(y)]]$Shape_Area,
                    year = y))
}

## Add blood donation
load('secondary_data/istisan_reg_2014/01_istisan_reg_2014.RData')
istisan_reg_2014$donor_perc <-
  istisan_reg_2014$donors / (istisan_reg_2014$pop1865/10000)

reg_long_df <-
  merge(reg_long_df,
        istisan_reg_2014[,c('Regione','donor_perc')], by.x='name', by.y="Regione")

## Add associations
load('secondary_data/istat_censimento_noprofit/01_comuni_harmonized.RData')

regioni_nvol <-
  comuni_nvol %>%
  dplyr::group_by(DEN_REG) %>%
  dplyr::summarize(ANPIV = sum(ANPIV, na.rm = T))

reg_long_df <-
  merge(reg_long_df, regioni_nvol[,c('DEN_REG', "ANPIV")],
        by.x='name', by.y="DEN_REG")

reg_long_df$ANPIV_perc <-
  reg_long_df$ANPIV / reg_long_df$population

## Add referendum turnout
load("secondary_data/minint_referendum_2016/01_comuni2018_turnout2016.RData")
regioni_turnout <-
  comuni2018_turnout2016 %>%
  dplyr::group_by(region_nam) %>%
  dplyr::summarize(ref16_turnout =
                    sum(effective_voters) / sum(registered_voters))

reg_long_df <-
  merge(reg_long_df,
        regioni_turnout[,c('region_nam', "ref16_turnout")],
        by.x='name', by.y="region_nam")

assignMacroRegion <- function(x) {
  if (x %in% c('Piemonte','Lombardia',
               'Liguria',"Valle d'Aosta/Vallée d'Aoste")) {
    return('North-west')
  }
  if(x %in% c('Veneto','Friuli-Venezia Giulia',
              "Trentino-Alto Adige/Südtirol",
```

```
              "Emilia-Romagna")) {
    return('North-east')
  }
  if (x %in% c("Toscana", "Umbria", "Marche", "Lazio")) {
    return('Centre')
  }
  if (x %in% c("Abruzzo", "Puglia", "Basilicata",
               "Campania", "Calabria", "Molise")) {
    return('South')
  }
  if (x %in% c("Sicilia", "Sardegna")) {
    return("Islands")
  }
}

reg_long_df$macro_region <-
  sapply(reg_long_df$name, assignMacroRegion)
reg_long_df$north_south <-
  ifelse(reg_long_df$macro_region %in%
           c('South','Islands'), "South", "North")
reg_long_df$north <-
  reg_long_df$north_south == "North"
reg_long_df$n_meetup_events_per_10k <-
  reg_long_df$n_meetup_events / (reg_long_df$population/10000)

reg_long_df <-
  reg_long_df %>%
  dplyr::group_by(name) %>%
  dplyr::arrange(year, .by_group = TRUE) %>%
  dplyr::mutate(pop_density = population / area,
                over65_perc = population_over_65 / population,
                foreignpop_perc = foreignpop / population,
                foreignpop_africa_perc = foreignpop_africa / population)

reg_long_df$nat_pol_trust <-
  with(reg_long_df, puntifi4_mean + puntifi1_mean)
reg_long_df$loc_pol_trust <-
  with(reg_long_df, puntifi8_mean + puntifi9_mean + puntifi10_mean)
reg_long_df$pol_trust_diff <-
  reg_long_df$pol_trust_diff_mean

reg_long_df$veneto <-
  as.numeric(reg_long_df$name == 'Veneto')

reg_2013_long_df <-
  reg_long_df[reg_long_df$year == 2013,]
reg_2013_long_df$M5S_2013 <-
  camera_2013_by_region_df$M5S_2013[
    match(reg_2013_long_df$name,
          camera_2013_by_region_df$DEN_REG)]

reg_long_df$unemployment <- reg_long_df$unemployment / 100
reg_long_df$employment <- reg_long_df$employment / 100
```

```
meetup_reg_lmmod1 <-
  lm(n_meetup_events_per_10k ~
       log(pop_density) + unemployment * north +
       employment + over65_perc + foreignpop_perc +
       foreignpop_africa_perc + income + degree_perc +
       nat_pol_trust + loc_pol_trust +
       year,
     data = reg_long_df)

meetup_reg_lmmod2 <-
  lm(n_meetup_events_per_10k ~ log(pop_density) + unemployment * north +
       employment + over65_perc + foreignpop_perc +
       foreignpop_africa_perc + income + degree_perc +
       nat_pol_trust + loc_pol_trust +
       donor_perc + ANPIV_perc + ref16_turnout +
       year, data = reg_long_df)

# Predict with interaction effect
newdata <-
  reg_long_df %>%
          dplyr::group_by(north) %>%
          dplyr::select(north, pop_density,
                        employment, over65_perc, foreignpop_perc,
                        foreignpop_africa_perc, income, degree_perc,
                        nat_pol_trust, loc_pol_trust,
                        donor_perc, ANPIV_perc, ref16_turnout, year) %>%
          dplyr::summarize_all(median)

newdata <-
  newdata[c(rep(1, 100),
            rep(2, 100)), ]
newdata$unemployment <-
  c(seq(from = min(reg_long_df$unemployment[reg_long_df$north == FALSE]),
      to  = max(reg_long_df$unemployment[reg_long_df$north == FALSE]),
      length.out = 100),
    seq(from = min(reg_long_df$unemployment[reg_long_df$north == TRUE]),
      to  = max(reg_long_df$unemployment[reg_long_df$north == TRUE]),
      length.out = 100))

predict.df <-
  predict(meetup_reg_lmmod2,
        newdata,
        type="response", interval="confidence") %>%
  as.data.frame()
predict.df$unemployment <-
  newdata$unemployment
predict.df$north <-
  newdata$north

# Max difference
max_unemp_north <-
  with(predict.df, max(unemployment[north == TRUE]))
```

```
predict_north <-
  predict.df$fit[predict.df$unemployment == max_unemp_north]

predict_south <-
  predict.df$fit[with(predict.df,
                      which.min(abs(unemployment[north == FALSE] -
                                      max_unemp_north)))]
# Difference north/south when unemployment is about:
max_unemp_north
```

[1] 0.12505

```
predict_north - predict_south
```

[1] 5.601365

```
meetup_reg_femod1 <-
  plm::plm(n_meetup_events_per_10k ~ log(pop_density) +
        unemployment * north + employment + over65_perc + foreignpop_perc +
        foreignpop_africa_perc + income + degree_perc +
        nat_pol_trust + loc_pol_trust,
      index = c("year","name"), model = "within",
      data = as.data.frame(reg_long_df))

meetup_reg_femod2 <-
  plm(n_meetup_events_per_10k ~ log(pop_density) + unemployment * north +
        employment + over65_perc + foreignpop_perc +
        foreignpop_africa_perc + income + degree_perc +
        nat_pol_trust + loc_pol_trust +
        donor_perc + ANPIV_perc + ref16_turnout,
      index = c("year","name"), model = "within",
      data = as.data.frame(reg_long_df))

meetup_reg_lmmod1_stdcoef <- lm.beta(meetup_reg_lmmod1)
meetup_reg_lmmod2_stdcoef <- lm.beta(meetup_reg_lmmod2)

do.call(stargazer,
        c(list(meetup_reg_lmmod1,
               meetup_reg_lmmod2,
               type = 'latex', out = "table/meetup_reg_lmod.tex",
               # type = 'html', out = "table/meetup_reg_lmod.html",
               coef = list(meetup_reg_lmmod1_stdcoef$standardized.coefficients,
                           meetup_reg_lmmod2_stdcoef$standardized.coefficients),
               p = list(summary(meetup_reg_lmmod1)$coefficients[,4],
                        summary(meetup_reg_lmmod2)$coefficients[,4]),
               dep.var.labels = "Meetup events per 10k ppl.",
               column.labels = c("Mod. 1 (Beta)", "Mod. 2 (Beta)"),
               omit = c('density', 'over65', 'foreignpop', 'year', 'Constant', 'degree', '^north'),
               order=c("^unemployment$",
                       "^employment$", "income",
                       "^nat_pol","^loc_pol",
                       "donor_perc", "ANPIV_perc", "ref16_turnout",
                       "unemployment:north"),
               covariate.labels = c("Unemployment (pct) | North = 0", var_dict_labels[
                 c('employment','income',
```

```
                  "nat_pol_trust","loc_pol_trust",
                  "donor_perc","ANPIV_perc", "ref16_turnout",
                  "unemployment:north")])),
          sg_param_intext))
```

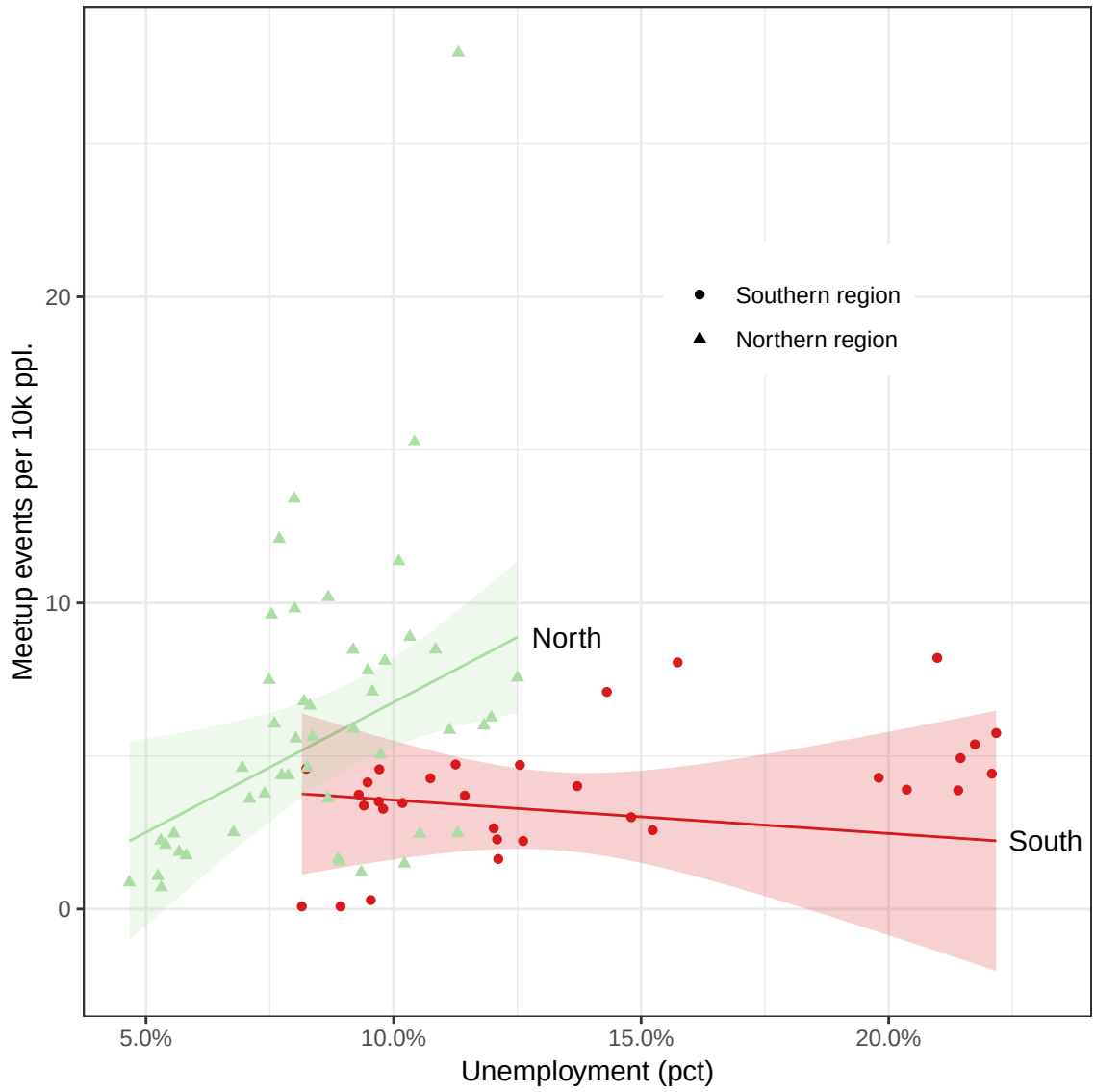
% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Thu, Oct 10, 2019 - 15:22:08

	Meetup events per 10k ppl.	
	Mod. 1 (Beta)	**Mod. 2 (Beta)**
Unemployment (pct) | North = 0	0.280	−0.116
Employment (pct)	−1.290**	−2.779***
Income (procapite, 10K €)	0.291	0.281
Trust in national institutions	−0.451**	−0.308*
Trust in local institutions	0.543*	0.094
Blood donors (pct)		0.469**
Volunteers (pct)		1.211**
Turnout 2016 referendum (pct)		0.643
Unemployment X North	0.297	1.065*
N	80	80
R-squared	0.507	0.621

***p < .001; **p < .01; *p < .05

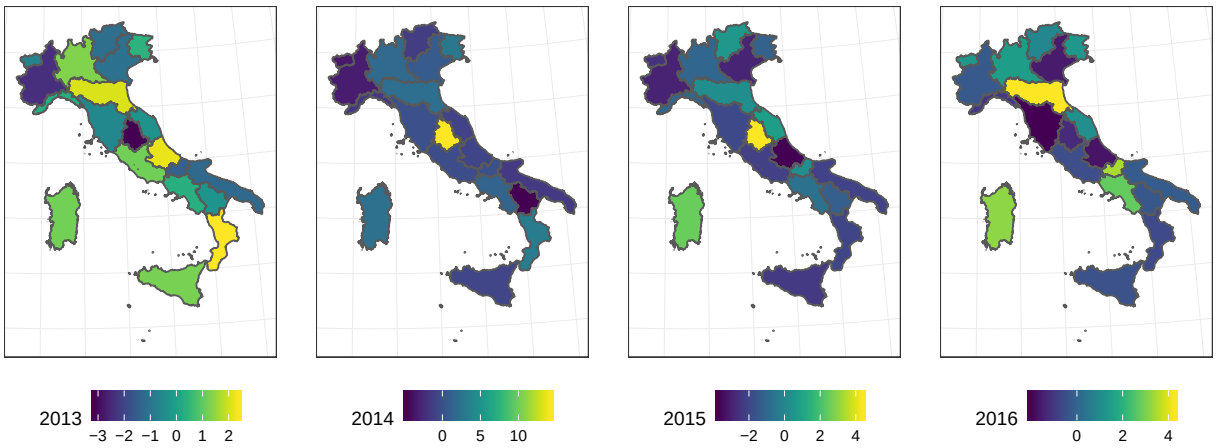
```
ggplot() +
  geom_line(data = predict.df,
            aes(y=fit,
                x = unemployment,
                colour = north)) +
  geom_ribbon(data = predict.df,
              aes(x=unemployment, ymax=upr, ymin=lwr,fill=north),
              alpha = 0.2) +
  geom_point(data =
               reg_long_df, aes(colour=north, x=unemployment,
                                y=n_meetup_events_per_10k,shape=north)) +
  theme_bw() + scale_x_continuous(label = percent) +
  scale_color_manual(values = two_colours) +
  scale_fill_manual(values = two_colours) +
  scale_shape_discrete(labels = c("Southern region", "Northern region")) +
  theme(legend.position = c(0.7,0.7)) +
  labs(x = var_dict_labels['unemployment'], y = "Meetup events per 10k ppl.", shape = NULL) +
  guides(fill = FALSE, colour = FALSE) +
  geom_text(data = data.frame(x=c(max(predict.df$unemployment[predict.df$north==TRUE])+.01,
                                  max(predict.df$unemployment[predict.df$north==FALSE])+.01),
                              y=c(max(predict.df$fit[predict.df$north==TRUE]),
```

```
                                    min(predict.df$fit[predict.df$north==FALSE])),
                                text=c("North","South")),
            aes(x=x,y=y,label=text))
```




```
# residuals plot
meetup_reg_lmmod_residuals <-
  data.frame(residuals = summary(meetup_reg_lmmod2)$residuals,
             year = reg_long_df$year,
             region = reg_long_df$name)

reg_residuals_2013_sf <-
  merge(regione2018_sf,
        meetup_reg_lmmod_residuals[meetup_reg_lmmod_residuals$year == 2013,],
        by.x = 'DEN_REG', by.y = 'region')
reg_residuals_2014_sf <-
  merge(regione2018_sf,
        meetup_reg_lmmod_residuals[meetup_reg_lmmod_residuals$year == 2014,],
```

```
        by.x = 'DEN_REG', by.y = 'region')
reg_residuals_2015_sf <-
  merge(regione2018_sf,
        meetup_reg_lmmod_residuals[meetup_reg_lmmod_residuals$year == 2015,],
        by.x = 'DEN_REG', by.y = 'region')
reg_residuals_2016_sf <-
  merge(regione2018_sf,
        meetup_reg_lmmod_residuals[meetup_reg_lmmod_residuals$year == 2016,],
        by.x = 'DEN_REG', by.y = 'region')

grid.arrange(
  ggplot(reg_residuals_2013_sf, aes(fill = residuals)) +
    geom_sf() + scale_fill_viridis() + theme_bw() + theme(legend.position = 'bottom') +
    labs(fill = "2013") +
    theme(axis.title=element_blank(),
          axis.text=element_blank(),
          axis.ticks=element_blank()),
  ggplot(reg_residuals_2014_sf, aes(fill = residuals)) +
    geom_sf() + scale_fill_viridis() + theme_bw() + theme(legend.position = 'bottom') +
    labs(fill = "2014") +
    theme(axis.title=element_blank(),
          axis.text=element_blank(),
          axis.ticks=element_blank()),
  ggplot(reg_residuals_2015_sf, aes(fill = residuals)) +
    geom_sf() + scale_fill_viridis() + theme_bw() + theme(legend.position = 'bottom') +
    labs(fill = "2015") +
    theme(axis.title=element_blank(),
          axis.text=element_blank(),
          axis.ticks=element_blank()),
  ggplot(reg_residuals_2016_sf, aes(fill = residuals)) +
    geom_sf() + scale_fill_viridis() + theme_bw() + theme(legend.position = 'bottom') +
    labs(fill = "2016") +
    theme(axis.title=element_blank(),
          axis.text=element_blank(),
          axis.ticks=element_blank()),
  ncol = 4)
```



```
do.call(
  stargazer, c(
    list(meetup_reg_lmmod1,
          meetup_reg_lmmod1,
          meetup_reg_lmmod2,
          meetup_reg_lmmod2,
          meetup_reg_femod1,
          meetup_reg_femod2,
          type = 'latex', out = "table/meetup_reg_lmod_femod_full.tex",
          coef = list(meetup_reg_lmmod1$coefficients,
                      meetup_reg_lmmod1_stdcoef$standardized.coefficients,
                      meetup_reg_lmmod2$coefficients,
                      meetup_reg_lmmod2_stdcoef$standardized.coefficients,
                      meetup_reg_femod1$coefficients,
                      meetup_reg_femod2$coefficients),
          p = list(summary(meetup_reg_lmmod1)$coefficients[,4],
                   summary(meetup_reg_lmmod1)$coefficients[,4],
                   summary(meetup_reg_lmmod2)$coefficients[,4],
                   summary(meetup_reg_lmmod2)$coefficients[,4],
                   summary(meetup_reg_femod1)$coefficients[,4],
                   summary(meetup_reg_femod2)$coefficients[,4]),
          dep.var.labels = "Meetup events (per 10k people)",
          column.labels = c("(B)", "(beta)",
                            "(B)", "(beta)",
                            "(B)", "(B)"),
          order = c('north', 'log(pop_density)',
                    'unemployment', '^employment',
                    'over65_perc',
                    'foreignpop_perc',
                'foreignpop_africa_perc',
                'income', 'degree_perc', 'nat_pol_trust',
                'loc_pol_trust', 'donor_perc',
                'ANPIV_perc', 'ref16_turnout',
                'year', 'unemployment:north'),
                    covariate.labels =
            c("North (bin) | Unemployment = 0",
              var_dict_labels['log(pop_density)'],
              "Unemployment (pct) | North = 0",
              var_dict_labels[
              c('^employment',
                    'over65_perc',
                    'foreignpop_perc',
                'foreignpop_africa_perc',
                'income', 'degree_perc', 'nat_pol_trust',
                'loc_pol_trust', 'donor_perc',
                'ANPIV_perc', 'ref16_turnout',
                'year', 'unemployment:north')])),
          sg_param_appendix))
```

% Error: Unrecognized object type.

Matching

```
var <-
  c('PRO_COM_T', 'M5S_2018','M5S_2013','pop_density',
    'dist_10k_ppl', 'degree_perc', 'meetup_treated_2018',
    'meetup_treated_2013', 'unemployment', 'housewive_perc',
    'partwf_perc', 'over65_perc', "foreignpop_perc",
    "foreignpop_africa_perc", "income2016_procapite", "M5S_2018_neigh_avg",
    "M5S_2013_neigh_avg", "pop2011",
    "macro_region", "lon", "lat", "M5S_diff", "north",
    "ANPIV_perc", "ref16_turnout")

comuni_df <-
  comuni_sp_data %>%
  dplyr::select(one_of(var)) %>%
  na.omit()

comuni_df$income <-
  comuni_df$income2016_procapite

# Recode
comuni_df$income2016_procapite_quintile <-
  cut(comuni_df$income2016_procapite,
      breaks = quantile(comuni_df$income2016_procapite,
                        probs = seq(0,1, by=.2)),
      include.lowest = T)


## 2013
m.out <-
  matchit(meetup_treated_2013 ~
            income2016_procapite_quintile + dist_10k_ppl,
          data = comuni_df,
          method = "exact")
m.data <- match.data(m.out)

match_2013_residuals_sf <-
  comuni_sf_keep005
match_2013_residuals_sf <-
  match_2013_residuals_sf[match_2013_residuals_sf$PRO_COM_T %in%
                            m.data$PRO_COM_T,]

m5s_2013_comuni_match_lmmod <-
  lm(M5S_2013 ~ meetup_treated_2013 + log(pop_density) +
       unemployment * north + housewive_perc +
       partwf_perc + over65_perc + degree_perc +
       foreignpop_perc + foreignpop_africa_perc + income +
       M5S_2013_neigh_avg + ANPIV_perc + ref16_turnout,
     weights = pop2011,
     data = m.data, na.action = na.exclude)

match_2013_residuals_sf$residuals <-
  resid(m5s_2013_comuni_match_lmmod)
match_2013_residuals_sf$meetup_treated_2013 <-
```

```
  m.data$meetup_treated_2013

## 2018
m.out <-
  matchit(meetup_treated_2018 ~
            income2016_procapite_quintile + dist_10k_ppl,
          data = comuni_df,
          method = "exact")
m.data <- match.data(m.out)

m5s_2018_comuni_match_lmmod <-
  lm(M5S_2018 ~ meetup_treated_2018 + log(pop_density) + unemployment * north  +
       housewive_perc + partwf_perc + over65_perc + degree_perc + foreignpop_perc +
       foreignpop_africa_perc + income + M5S_2018_neigh_avg + ANPIV_perc +
       ref16_turnout,
     weights = pop2011,
     data = m.data, na.action = na.exclude)

match_2018_residuals_sf <- comuni_sf_keep005
match_2018_residuals_sf <-
  match_2018_residuals_sf[match_2018_residuals_sf$PRO_COM_T %in%
                            m.data$PRO_COM_T,]

match_2018_residuals_sf$residuals <-
  resid(m5s_2018_comuni_match_lmmod)

match_2018_residuals_sf$meetup_treated_2018 <-
  m.data$meetup_treated_2018

m5s_diff_comuni_match_lmmod <-
  lm(M5S_diff ~ meetup_treated_2018 + log(pop_density) + unemployment * north  +
       housewive_perc + partwf_perc + over65_perc + degree_perc +
       foreignpop_perc + foreignpop_africa_perc + income + M5S_2018_neigh_avg  +
       ANPIV_perc + ref16_turnout,
     weights = pop2011,
     data = m.data)
```

```
stargazer(m5s_2013_comuni_match_lmmod,
          m5s_2018_comuni_match_lmmod,
          type = 'latex', out = "table/m5s_matching_lmod.tex",
          dep.var.labels = "M5S vote",
          column.labels = c("\\%, 2013", "\\%, 2018"),
          omit = c('pop\\_density', 'over65', 'foreignpop', 'degree', 'year',
                   'Constant', "dist\\_10k_ppl","housewive","partwf",
                   "M5S\\_2018\\_neigh", "M5S\\_2013\\_neigh"),
          omit.stat = c('adj.rsq', 'f', 'ser'),
          covariate.labels =
            var_dict_labels[
              c('meetup_treated_2013', 'meetup_treated_2018',
                'unemployment', 'north', 'income',
                'ANPIV_perc', 'ref16_turnout',
                'unemployment:north')],
          report = "vc*",
          model.numbers = FALSE,
```

```
          model.names = FALSE,
          float = FALSE,
          style = 'ajps')
```

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Thu, Oct 10, 2019 - 15:22:14

	M5S vote %, 2013	**M5S_2018 %, 2018**
+2 weeks with +1 event (2013)	0.014***	
+2 weeks with +1 event (2018)		0.009**
Unemployment (pct)	−0.163	−0.165
North (bin)	−0.044**	−0.119***
Income (procapite, 10K €)	−0.059***	−0.060***
Volunteers (pct)	−0.133***	−0.097*
Turnout 2016 referendum (pct)	−0.385***	−0.174***
Unemployment X North	0.948***	0.835***
N	887	887
R-squared	0.470	0.867

***p < .01; **p < .05; *p < .1

```
stargazer(m5s_2013_comuni_match_lmmod,
          m5s_2018_comuni_match_lmmod,
          m5s_diff_comuni_match_lmmod,
          type = 'latex', out = "table/m5s_matching_lmod_full.tex",
          dep.var.labels = "M5S vote",
          column.labels = c("\\%, 2013", "\\%, 2018", "diff. 2018/13"),
          covariate.labels = var_dict_labels[
            c('meetup_treated_2013', 'meetup_treated_2018',
              'log(pop_density)', 'unemployment', 'north',
              'housewive_perc', 'partwf_perc', 'over65_perc',
              'degree_perc', 'foreignpop_perc', 'foreignpop_africa_perc',
              'income', 'M5S_2013_neigh_avg', 'M5S_2018_neigh_avg',
              'ANPIV_perc', 'ref16_turnout', 'unemployment:north')
            ],
          report = "vc*",
          model.numbers = FALSE,
          model.names = FALSE,
          float = FALSE,
          style = 'ajps')
```

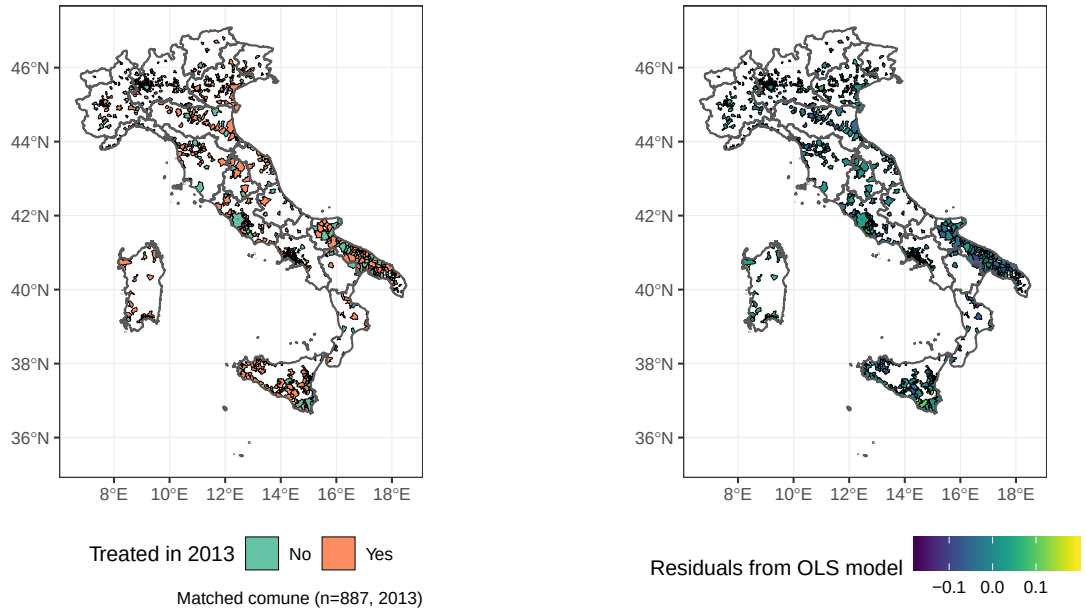
% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Thu, Oct 10, 2019 - 15:22:15

	M5S vote %, 2013	M5S_2018 %, 2018	M5S_diff diff. 2018/13
+2 weeks with +1 event (2013)	0.014***		
+2 weeks with +1 event (2018)		0.009**	0.014***
Population density (log)	−0.010***	0.003	0.010***
Unemployment (pct)	−0.163	−0.165	−0.040
North (bin)	−0.044**	−0.119***	−0.064***
Housewive among population (pct)	0.388***	0.241***	−0.176***
Workforce participation (pct)	1.532***	0.327***	−1.314***
Population over 65 (pct)	0.867***	−0.406***	−1.462***
With university degree (pct)	0.280***	0.270***	0.055
Foreign population (pct)	−0.572***	−0.535***	0.061
Foreign African population (pct)	−0.025	−0.197	−0.287
Income (procapite, 10K €)	−0.059***	−0.060***	−0.001
M5S vote in neigh. 2013 election (pct)	0.138***		
M5S vote in neigh. 2018 election (pct)		0.075***	0.035***
Volunteers (pct)	−0.133***	−0.097*	0.071
Turnout 2016 referendum (pct)	−0.385***	−0.174***	0.182***
Unemployment X North	0.948***	0.835***	−0.228
Constant	−0.497***	0.505***	1.062***
N	887	887	887
R-squared	0.470	0.867	0.828
Adj. R-squared	0.461	0.864	0.826
Residual Std. Error (df = 871)	8.482	9.027	8.799
F Statistic (df = 15; 871)	51.463***	377.775***	280.469***

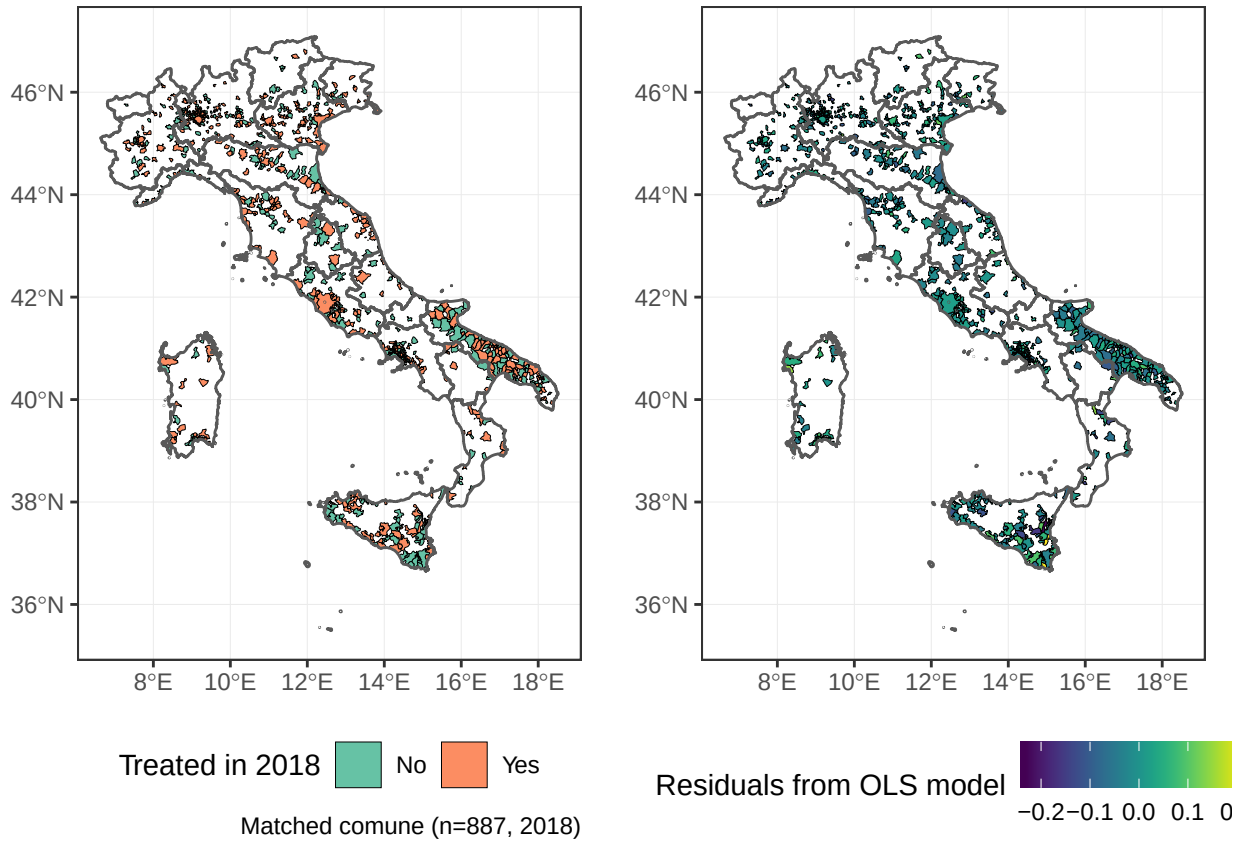
***p < .01; **p < .05; *p < .1

```
grid.arrange(
  ggplot(match_2013_residuals_sf, aes(fill = as.factor(meetup_treated_2013))) +
    scale_fill_manual(values = c('#66c2a5','#fc8d62'), name = 'Treated in 2013',
                      labels = c("No", "Yes")) +
    geom_sf(size = .05, colour = 'black') + theme_bw() +
    geom_sf(data = regione2018_sf, fill = NA) +
    theme(legend.position = 'bottom') +
    labs(caption = paste0('Matched comune (n=', nrow(match_2013_residuals_sf),', 2013)')),
```

```
  ggplot(match_2013_residuals_sf, aes(fill = residuals)) +
    scale_fill_viridis(name = 'Residuals from OLS model') +
    geom_sf(size = .05, colour = 'black') + theme_bw() +
    geom_sf(data = regione2018_sf, fill = NA) +
    theme(legend.position = 'bottom'),
  ncol = 2)
```




```
grid.arrange(
  ggplot(match_2018_residuals_sf, aes(fill = as.factor(meetup_treated_2018))) +
    scale_fill_manual(values = c('#66c2a5','#fc8d62'),
                      name = 'Treated in 2018', labels = c("No", "Yes")) +
    geom_sf(size = .05, colour = 'black') + theme_bw() +
    geom_sf(data = regione2018_sf, fill = NA) +
    theme(legend.position = 'bottom') +
    labs(caption = paste0('Matched comune (n=',
                          nrow(match_2018_residuals_sf),', 2018)')),
  ggplot(match_2018_residuals_sf, aes(fill = residuals)) +
    scale_fill_viridis(name = 'Residuals from OLS model') +
    geom_sf(size = .05, colour = 'black') + theme_bw() +
    geom_sf(data = regione2018_sf, fill = NA) +
    theme(legend.position = 'bottom'),
  ncol = 2)
```



Individual level models

```
itanes_2013 <-
  read_spss("secondary_data/itanes/ITA2013_(envers2015_01_19).sav")
itanes_2018 <-
  read_spss("secondary_data/itanes/2019_03_27_Itanes Pastel 2018_release_01_pre-post.sav")

itanes_2013$M5S <-  as.integer(itanes_2013$d90==5)
itanes_2018$M5S <- as.integer(itanes_2018$votoC1==4)

# Closeness to M5S
recodeD43 <- function(x) {
  x <- as.numeric(x)
  x[x %in% c(4,5)] <- NA
  return(x)
}
itanes_2013$clsness_M5S <-
  ifelse(itanes_2013$d41 == 12, 1, 0)
itanes_2013$clsness_M5S <-
  itanes_2013$clsness_M5S * recodeD43(itanes_2013$d43)

itanes_2013$unemployed <- itanes_2013$d4 %in% c(5,6,8)
itanes_2018$unemployed <- itanes_2018$d10_7 %in% c(4:6,9)
itanes_2013$degree <- itanes_2013$stu %in% 9:10
itanes_2018$degree <- itanes_2018$d10_11 %in% 8:11
```

```
itanes_2013$north <- itanes_2013$regint < 13
itanes_2018$north <- itanes_2018$AreaQ < 4

# Economic stress
itanes_2013$eco_stress <-
  rescale(
  1*(itanes_2013$lav_1 == 1) + 1*(itanes_2013$lav_2 == 1) +
  0.5*(itanes_2013$lav2 == 1) + 0.25*(itanes_2013$lav2 == 2) +
  0.75*(itanes_2013$lav2b1 == 1) + 0.75*(itanes_2013$lav2b2 == 1) +
  1*(itanes_2013$lav3 == 1) + 0.5*(itanes_2013$lav3 == 2),
  to = c(0,10))

itanes_2013$eco_perception <-
  rescale(rowMeans(cbind(
    recode(as.numeric(as.character(itanes_2013$d5)),
           '1' = 1,
           '2' = 2,
           '3' = 3,
           '4' = 4,
           '5' = 5,
           '6' = 3)*1,
    recode(as.numeric(as.character(itanes_2013$d5)),
           '1' = 1,
           '2' = 2,
           '3' = 3,
           '4' = 4,
           '5' = 5,
           '6' = 3)*.75
  )), to = c(10,0))

itanes_2018$eco_perception <-
  rescale(rowMeans(cbind(
    recode(as.numeric(as.character(itanes_2018$d1_1)),
           '1' = 1,
           '2' = 2,
           '3' = 3,
           '4' = 4,
           '5' = 5,
           '6' = 3)*1,
    recode(as.numeric(as.character(itanes_2018$d1_2)),
           '1' = 1,
           '2' = 2,
           '3' = 3,
           '4' = 4,
           '5' = 5,
           '6' = 3)*.75
  )), to = c(10,0))

# Political partecipation
itanes_2013$pol_part <-
  rescale(
    with(itanes_2013,
         (d78_8 == 1) +
```

```
           (d21_1 == 1) +
           (d21_2 == 1) +
           (d21_3 == 1) +
           (d21_4 == 1) +
           (d21_5 == 1) +
           (d21_6 == 1) +
           (d21_7 == 1) +
           (d21_8 == 1)),
    to = c(0,10))


# Online political discussion
itanes_2013$online_pol_discussion <- 0
itanes_2013$online_pol_discussion[itanes_2013$d72_5 == 3] <- 1
itanes_2013$online_pol_discussion[itanes_2013$d72_5 == 2] <- 2
itanes_2013$online_pol_discussion[itanes_2013$d72_5 == 1] <- 3
itanes_2013$online_pol_discussion[itanes_2013$d72_5 == 6] <- NA

# INFORMATION
itanes_2013$info_internet <-
  itanes_2013$d57 == 7 | itanes_2013$d57b == 7

itanes_2018$info_internet_news <-
  itanes_2018$d4_1 == 4 | itanes_2018$d4_1_1 == 4
itanes_2018$info_social_media <-
  itanes_2018$d4_1 == 5 | itanes_2018$d4_1_1 == 5

itanes_2013$info_personal <-
  itanes_2013$d57 == 2 | itanes_2013$d57b == 2 |
  itanes_2013$d57 == 6 | itanes_2013$d57b == 6

itanes_2018$info_personal <-
  itanes_2018$d4_1 == 6 | itanes_2018$d4_1_1 == 6

itanes_2013$info_written <-
  itanes_2013$d57 == 3 | itanes_2013$d57b == 3 |
  itanes_2013$d57 == 4 | itanes_2013$d57b == 4

itanes_2018$info_written <-
  itanes_2018$d4_1 == 2 | itanes_2018$d4_1_1 == 2

itanes_2013$info_tv <-
  itanes_2013$d57 == 1 | itanes_2013$d57b == 1

itanes_2018$info_tv <-
  itanes_2018$d4_1 == 1 | itanes_2018$d4_1_1 == 1

itanes_2013$internet_mediated_part <-
  as_factor(itanes_2013$d72_6)
itanes_2013$internet_mediated_part <-
  itanes_2013$d72_6 %in% c(1,2,3)
itanes_2013$internet_mediated_part[itanes_2013$d72_6 %in% c(5,6)] <-
  NA
```

```r
# TRUST
itanes_2013$d15_1[itanes_2013$d15_1 > 4] <- NA
itanes_2013$d15_2[itanes_2013$d15_2 > 4] <- NA
itanes_2013$nat_pol_trust <-
  rescale(as.numeric(itanes_2013$d15_1) + as.numeric(itanes_2013$d15_2),
          to = c(0,10), from = c(2,8))

weighted.mean(itanes_2013$nat_pol_trust, weight = weight, na.rm = T)
```

[1] 2.705215

```r
itanes_2018$nat_pol_trust <-
  rescale(as.numeric(itanes_2018$it_post_1_1_slice) +
            as.numeric(itanes_2018$it_post_1_2_slice),
          to = c(0,10), from = c(2,22))

mean(itanes_2018$nat_pol_trust, na.rm  = T)
```

[1] 3.086669

```r
recodeIntPerTrust2013 <- function(x) {
  x <- as.numeric(x)
  x[x %in% c(8,9)] <- NA
  return(x)
}

itanes_2013$interpers_trust <-
  rescale(rowMeans(cbind(
    recodeIntPerTrust2013(itanes_2013$d18),
    recodeIntPerTrust2013(itanes_2013$d19),
    recodeIntPerTrust2013(itanes_2013$d20)),
    na.rm = T),
          to = c(0,10), from = c(1,7))

recodeIntPerTrust2018 <- function(x) {
  x <- as.numeric(x)
  x[x %in% c(12,13)] <- NA
  return(x)
}

itanes_2018$interpers_trust <-
    rescale(rowMeans(cbind(
    recodeIntPerTrust2018(itanes_2018$it_5_1_slice),
    recodeIntPerTrust2018(itanes_2018$it_6_1_slice)),
    na.rm = T),
          to = c(0,10), from = c(1,11))

# Association
itanes_2013$member <-
  itanes_2013$d78_1 == 1 |
  itanes_2013$d78_5 == 1 |
  itanes_2013$d78_6 == 1 |
  itanes_2013$d78_7 == 1
```

```r
# Political interest
itanes_2013$pol_interest <- 0
itanes_2013$pol_interest[itanes_2013$d27 == 3] <- 1
itanes_2013$pol_interest[itanes_2013$d27 == 2] <- 2
itanes_2013$pol_interest[itanes_2013$d27 == 1] <- 3
itanes_2013$pol_interest[itanes_2013$d27 == 6] <- NA
itanes_2013$pol_interest <-
  rescale(itanes_2013$pol_interest,
          to = c(0,10))

itanes_2018$pol_interest <- 0
itanes_2018$pol_interest[itanes_2018$d5_1 == 3] <- 1
itanes_2018$pol_interest[itanes_2018$d5_1 == 2] <- 2
itanes_2018$pol_interest[itanes_2018$d5_1 == 1] <- 3
itanes_2018$pol_interest[itanes_2018$d5_1 == 5] <- NA
itanes_2018$pol_interest <-
  rescale(itanes_2018$pol_interest,
          to = c(0,10))

# Use interne
itanes_2013$use_facebook <- 0
itanes_2013$use_facebook[itanes_2013$d73 == 3] <- 1
itanes_2013$use_facebook[itanes_2013$d73 == 2] <- 2
itanes_2013$use_facebook[itanes_2013$d73 == 1] <- 3
itanes_2013$use_facebook[itanes_2013$d73 == 6] <- NA

# Political talk
itanes_2013$poltalk_freq <- as.numeric(itanes_2013$d28)
itanes_2013$poltalk_freq[itanes_2013$d28 %in% c(6,7)] <- NA

# Demographics
itanes_2013$female <- itanes_2013$sex == 2
itanes_2013$age <- itanes_2013$d1

itanes_2018$age <- as.numeric(itanes_2018$EtaCl)

# Ecological
itanes_2013$PRO_COM_T <-
  as.character(comuni_sp_data$PRO_COM_T)[match(itanes_2013$comune,
                                toupper(as.character(comuni_sp_data$COMUNE)))]
itanes_2013$PRO_COM_T[itanes_2013$comune == "SAINT VINCENT"] <-
  "007065"
itanes_2013$PRO_COM_T[itanes_2013$comune == "ALBANO S ALESSANDRO"] <-
  "016003"
itanes_2013$PRO_COM_T[itanes_2013$comune == "TOSCOLANO MADERNO"] <-
  "017187"
itanes_2013$PRO_COM_T[itanes_2013$comune == "CAERANO SAN MARCO"] <-
  "026006"
itanes_2013$PRO_COM_T[itanes_2013$comune == "MARANO DI VALPOLICEL"] <-
  "023046"
itanes_2013$PRO_COM_T[itanes_2013$comune == "REGGIO EMILIA"] <-
  "035033"
itanes_2013$PRO_COM_T[itanes_2013$comune == "PENNA S  ANDREA"] <-
```

```
  "067033"
itanes_2013$PRO_COM_T[itanes_2013$comune == "CASTELLAMMARE DI STA"] <-
  "063024"
itanes_2013$PRO_COM_T[itanes_2013$comune == "CAVA DEI TIRRENI"] <-
  "065037"

itanes_2013 <-
  merge(itanes_2013,
        comuni_sp_data %>%
          dplyr::select(PRO_COM_T,
                        M5S_2013, M5S_2013_neigh_avg,
                        meetup_treated_2013,
                        meetup2014_19km_buff_freq_30days,
                        unemployment, partwf_perc, ANPIV_perc,
                        pop_density, dist_10k_ppl,
                        ANPIV_perc, ref16_turnout, income2016_procapite),
        by = 'PRO_COM_T')

itanes_2018$regint <-
  as.numeric(itanes_2018$regio1)

itanes_2018 <-
  merge(itanes_2018,
        reg_long_df %>%
          filter(year == 2016) %>%
          dplyr::select(COD_REG, unemployment, employment,
                        n_meetup_events_per_10k,
                 ANPIV_perc, ref16_turnout, income),
        by.x = 'regint', by.y = 'COD_REG')

itanes_2013$employment <- itanes_2013$partwf_perc

itanes_2013$income_norm <-
  rescale(itanes_2013$income2016_procapite,
          to = c(0,10))
itanes_2018$income_norm <-
  rescale(itanes_2018$income,
          to = c(0,10))

itanes_2013_logit_1 <-
  glm(M5S ~
        unemployed +
        eco_stress + eco_perception +
        unemployment + employment +
        interpers_trust +
        info_internet  + info_personal + info_tv + info_written +
        meetup_treated_2013 + nat_pol_trust +
        internet_mediated_part +
        M5S_2013 + M5S_2013_neigh_avg +
        ANPIV_perc + log(pop_density) + log(dist_10k_ppl) + ref16_turnout +
      income_norm + poltalk_freq,
      data = itanes_2013, family = quasibinomial,
      weight = weight)
```

```r
itanes_2013_logit_2 <-
  glm(M5S ~
        unemployed +
        eco_stress + eco_perception +
        unemployment + employment +
        interpers_trust +
        info_internet  + info_personal + info_tv + info_written +
        meetup_treated_2013 + nat_pol_trust +
        internet_mediated_part +
        M5S_2013 + M5S_2013_neigh_avg +
        ANPIV_perc + log(pop_density) + log(dist_10k_ppl) + ref16_turnout +
      income_norm + poltalk_freq + age,
      data = itanes_2013, family = quasibinomial,
      weight = weight)

itanes_2018_logit_1 <-
  glm(M5S ~
        unemployed +
        eco_perception +
        unemployment + employment +
        interpers_trust +
        info_internet_news + info_social_media +
        info_personal + info_tv + info_written +
        nat_pol_trust +
        ANPIV_perc +
        AmpQ + income_norm,
      data = itanes_2018, family = quasibinomial)

itanes_2018_logit_2 <-
  glm(M5S ~
        unemployed +
        eco_perception +
        unemployment + employment +
        interpers_trust +
        info_internet_news + info_social_media +
        info_personal + info_tv + info_written +
        nat_pol_trust +
        ANPIV_perc +
        AmpQ + income_norm + age,
      data = itanes_2018, family = quasibinomial)

itanes_2013$eco_stress_inv <-
  rescale(itanes_2013$eco_stress, to = c(10,0))

itanes_2013_lm_2 <-
  lm(poltalk_freq ~
       meetup_treated_2013 * nat_pol_trust +
       clsness_M5S  +
       eco_stress_inv +
       ANPIV_perc + ref16_turnout +
       pol_interest + degree + unemployed +
       female + age
      + log(pop_density) + log(dist_10k_ppl)
```

```
    ,
    data = itanes_2013[itanes_2013$M5S == 1,],
    weight = weight)

itanes_2013_lm_3 <-
  lm(poltalk_freq ~
       meetup_treated_2013 * eco_stress_inv +
       clsness_M5S +
       nat_pol_trust +
       ANPIV_perc + ref16_turnout +
       pol_interest + degree + unemployed +
       female + age
     + log(pop_density) + log(dist_10k_ppl)
    ,
    data = itanes_2013[itanes_2013$M5S == 1,],
    weight = weight)

itanes_2013_lm_8 <-
  lm(poltalk_freq ~
       meetup_treated_2013 + nat_pol_trust +
       clsness_M5S  +
       eco_stress_inv +
       ANPIV_perc + ref16_turnout +
       pol_interest + degree + unemployed +
       female + age
     + log(pop_density) + log(dist_10k_ppl)
    ,
    data = itanes_2013[itanes_2013$M5S == 1,],
    weight = weight)

itanes_2013_lm_4 <-
  lm(poltalk_freq ~
       meetup_treated_2013 * nat_pol_trust * internet_mediated_part +
       clsness_M5S  +
       eco_stress +
       ANPIV_perc + ref16_turnout +
       pol_interest + degree + unemployed +
       female + age
     + log(pop_density) + log(dist_10k_ppl)
    ,
    data = itanes_2013[itanes_2013$M5S == 1,],
    weight = weight)

itanes_2013_lm_5 <-
  lm(pol_part ~
       nat_pol_trust * clsness_M5S +
       eco_stress +
       # ANPIV_perc + ref16_turnout +
       member + interpers_trust +
       pol_interest + degree + unemployed +
       female + age
     + log(pop_density) + log(dist_10k_ppl)
    ,
    data = itanes_2013,
```

```
    weight = weight)

itanes_2013_lm_6 <-
  lm(pol_part ~
       nat_pol_trust +
       eco_stress * clsness_M5S +
       # ANPIV_perc + ref16_turnout +
       member + interpers_trust +
       pol_interest + degree + unemployed +
       female + age
     + log(pop_density) + log(dist_10k_ppl)
     ,
     data = itanes_2013,
     weight = weight)

itanes_2013_lm_7 <-
  lm(pol_part ~
       nat_pol_trust +
       eco_stress + clsness_M5S +
       # ANPIV_perc + ref16_turnout +
       member + interpers_trust +
       pol_interest + degree + unemployed +
       female + age
     + log(pop_density) + log(dist_10k_ppl)
     ,
     data = itanes_2013,
     weight = weight)

baseline_df <-
  data.frame(nat_pol_trust = 0:10,
             ANPIV_perc =
               median(itanes_2013$ANPIV_perc[itanes_2013$M5S == 1]),
             ref16_turnout =
               median(itanes_2013$ref16_turnout[itanes_2013$M5S == 1]),
             pol_interest =
               median(itanes_2013$pol_interest[itanes_2013$M5S == 1]),
             degree =
               median(itanes_2013$degree[itanes_2013$M5S == 1]),
             unemployed =
               median(itanes_2013$unemployed[itanes_2013$M5S == 1]),
             female =
               TRUE,
             age =
               median(itanes_2013$age[itanes_2013$M5S == 1]),
             pop_density =
               median(itanes_2013$pop_density[itanes_2013$M5S == 1]),
             dist_10k_ppl =
               median(itanes_2013$dist_10k_ppl[itanes_2013$M5S == 1]),
             clsness_M5S =
               median(itanes_2013$clsness_M5S[itanes_2013$M5S == 1],
                      na.rm = T),
             eco_stress_inv =
               median(itanes_2013$eco_stress_inv[itanes_2013$M5S == 1],
```

```
                      na.rm = T))

itanes_2013_lm_2_predTRUE <-
  predict(itanes_2013_lm_2,
          newdata = cbind(baseline_df, meetup_treated_2013=TRUE),
          se = TRUE)

itanes_2013_lm_2_predFALSE <-
  predict(itanes_2013_lm_2,
          newdata = cbind(baseline_df, meetup_treated_2013=FALSE),
          se = TRUE)

itanes_2013_lm_2_pred.df <-
  rbind(with(itanes_2013_lm_2_predTRUE,
             data.frame(nat_pol_trust = 0:10,
                        meetup_treated_2013 = TRUE,
                        fit,
                        upper_err = fit + se.fit,
                        lower_err = fit - se.fit)),
        with(itanes_2013_lm_2_predFALSE,
             data.frame(nat_pol_trust = 0:10,
                        meetup_treated_2013 = FALSE,
                        fit,
                        upper_err = fit + se.fit,
                        lower_err = fit - se.fit))
  )

predict_itanes_logit_2013 <-
  itanes_2013 %>%
  dplyr::select(unemployed,
                eco_stress, eco_perception,
                unemployment, employment,
                interpers_trust,
                info_internet , info_personal, info_tv, info_written,
                meetup_treated_2013, nat_pol_trust,
                internet_mediated_part,
                M5S_2013, M5S_2013_neigh_avg,
                ANPIV_perc, pop_density, dist_10k_ppl, ref16_turnout,
                income_norm, poltalk_freq) %>%
  summarize_all(median, na.rm = T)
predict_itanes_logit_2013$unemployed <-
  as.logical(predict_itanes_logit_2013$unemployed)
predict_itanes_logit_2013$info_internet <-
  as.logical(predict_itanes_logit_2013$info_internet)
predict_itanes_logit_2013$info_personal <-
  as.logical(predict_itanes_logit_2013$info_personal)
predict_itanes_logit_2013$info_internet <-
  as.logical(predict_itanes_logit_2013$info_internet)
predict_itanes_logit_2013$info_tv <-
  as.logical(predict_itanes_logit_2013$info_tv)
predict_itanes_logit_2013$info_written <-
  as.logical(predict_itanes_logit_2013$info_written)
predict_itanes_logit_2013$meetup_treated_2013 <-
```

```
  as.logical(predict_itanes_logit_2013$meetup_treated_2013)

prop.table(table(itanes_2013$M5S))
```

```
    0         1
```

0.8428382 0.1571618

```
predict(itanes_2013_logit_1,
        predict_itanes_logit_2013[rep(1, 4),] %>%
          mutate(nat_pol_trust = c(0, 2.705, 5, 10)),
        type = "response")
```

```
     1          2          3          4
```

0.12812824 0.09156315 0.06820297 0.03517392

```
predict(itanes_2013_logit_1,
        predict_itanes_logit_2013[rep(1, 2),] %>%
          mutate(internet_mediated_part = c(TRUE, FALSE)),
        type = "response")
```

```
     1          2
```

0.15391426 0.08453332

```
predict(itanes_2013_logit_1,
        predict_itanes_logit_2013[rep(1, 2),] %>%
          mutate(poltalk_freq = c(1, 5)),
        type = "response")
```

```
     1          2
```

0.06519415 0.10894070

Table 4

```
do.call(
  stargazer,
  c(list(itanes_2013_logit_1,
         itanes_2018_logit_1,
         # type = 'latex', out = "table/itanes_2013-18_logit.tex",
         type = 'html', out = "table/itanes_2013-18_logit.html",
         dep.var.labels = "M5S vote (binary)",
         column.labels = c("2013 (B)", "2013 (B)", "2018 (B)", "2018 (B)"),
         omit = c('unemployment', 'employment',
                  "interpers_trust", "info_personal",
                  "info_tv", "info_written", "M5S_2013",
                  "M5S_2013_neigh_avg", "pop_density", "dist_10k_ppl",
                  "ref16_turnout", 'Constant', "ANPIV_perc", "income_norm", "AmpQ",
                  "info_internet_news"),
         order = c("nat_pol_trust",
                   "eco_stress", "eco_perception","unemployed",
                   "info_internet", "info_social_media",
                   "internet_mediated_part",
                   "poltalk_freq",
                   "meetup_treated_2013"),
         covariate.labels = var_dict_labels[
```

```
          c("nat_pol_trust",
            "eco_stress", "eco_perception","unemployed",
            "info_internet", "info_social_media",
            "internet_mediated_part",
            "poltalk_freq",
            "meetup_treated_2013")]),
    sg_param_intext))
```

```
##
## <table style="text-align:center"><tr><td colspan="3" style="border-bottom: 1px solid black"></td></t
## <tr><td style="text-align:left"></td><td><strong>2013 (B)</strong></td><td><strong>2013 (B)</strong>
## <tr><td colspan="3" style="border-bottom: 1px solid black"></td></tr><tr><td style="text-align:left"
## <tr><td style="text-align:left"></td><td></td><td></td></tr>
## <tr><td style="text-align:left">Household perceived economic distress</td><td>0.214<sup>***</sup></td
## <tr><td style="text-align:left"></td><td></td><td></td></tr>
## <tr><td style="text-align:left">National economy perception</td><td>0.034</td><td>-0.176<sup>***</sup
## <tr><td style="text-align:left"></td><td></td><td></td></tr>
## <tr><td style="text-align:left">Unemployed (bin)</td><td>-0.435</td><td>-0.028</td></tr>
## <tr><td style="text-align:left"></td><td></td><td></td></tr>
## <tr><td style="text-align:left">Internet primary info. source</td><td>0.997<sup>***</sup></td><td></t
## <tr><td style="text-align:left"></td><td></td><td></td></tr>
## <tr><td style="text-align:left">Soc. media primary info. source (bin.)</td><td></td><td>0.458<sup>*<
## <tr><td style="text-align:left"></td><td></td><td></td></tr>
## <tr><td style="text-align:left">Internet-mediated participation (bin.)</td><td>0.678<sup>*</sup></td
## <tr><td style="text-align:left"></td><td></td><td></td></tr>
## <tr><td style="text-align:left">Frequency political talks</td><td>0.140<sup>*</sup></td><td></td></t
## <tr><td style="text-align:left"></td><td></td><td></td></tr>
## <tr><td style="text-align:left">+2 weeks with +1 event (2013)</td><td>-0.037</td><td></td></tr>
## <tr><td style="text-align:left"></td><td></td><td></td></tr>
## <tr><td style="text-align:left">N</td><td>1459</td><td>1844</td></tr>
## <tr><td colspan="3" style="border-bottom: 1px solid black"></td></tr><tr><td colspan="3" style="text
## </table>
```

```
# Issue salience

## 2013
itanes_salience_firstone_2013 <-
  data.frame(M5S  = itanes_2013$M5S == 1,
             `Employment policies` =
               as_factor(itanes_2013$d11_rec) == "Employment policies",
             `Economic development` =
               as_factor(itanes_2013$d11_rec) == "Economic development",
             `Political ethics` =
               as_factor(itanes_2013$d11_rec) == "Political ethics",
             `Taxes` =
               as_factor(itanes_2013$d11_rec) == "Taxes",
             `Economic insecurity` =
               as_factor(itanes_2013$d11_rec) == "Economic insecurity",
             `Business aids` =
               as_factor(itanes_2013$d11_rec) == "Business aids",
             `Public administration/Institutional reforms` =
               as_factor(itanes_2013$d11_rec) == "Public administration/Institutional reforms" |
               as_factor(itanes_2013$d12_rec) == "Public administration/Institutional reforms",
             `Legality` =
```

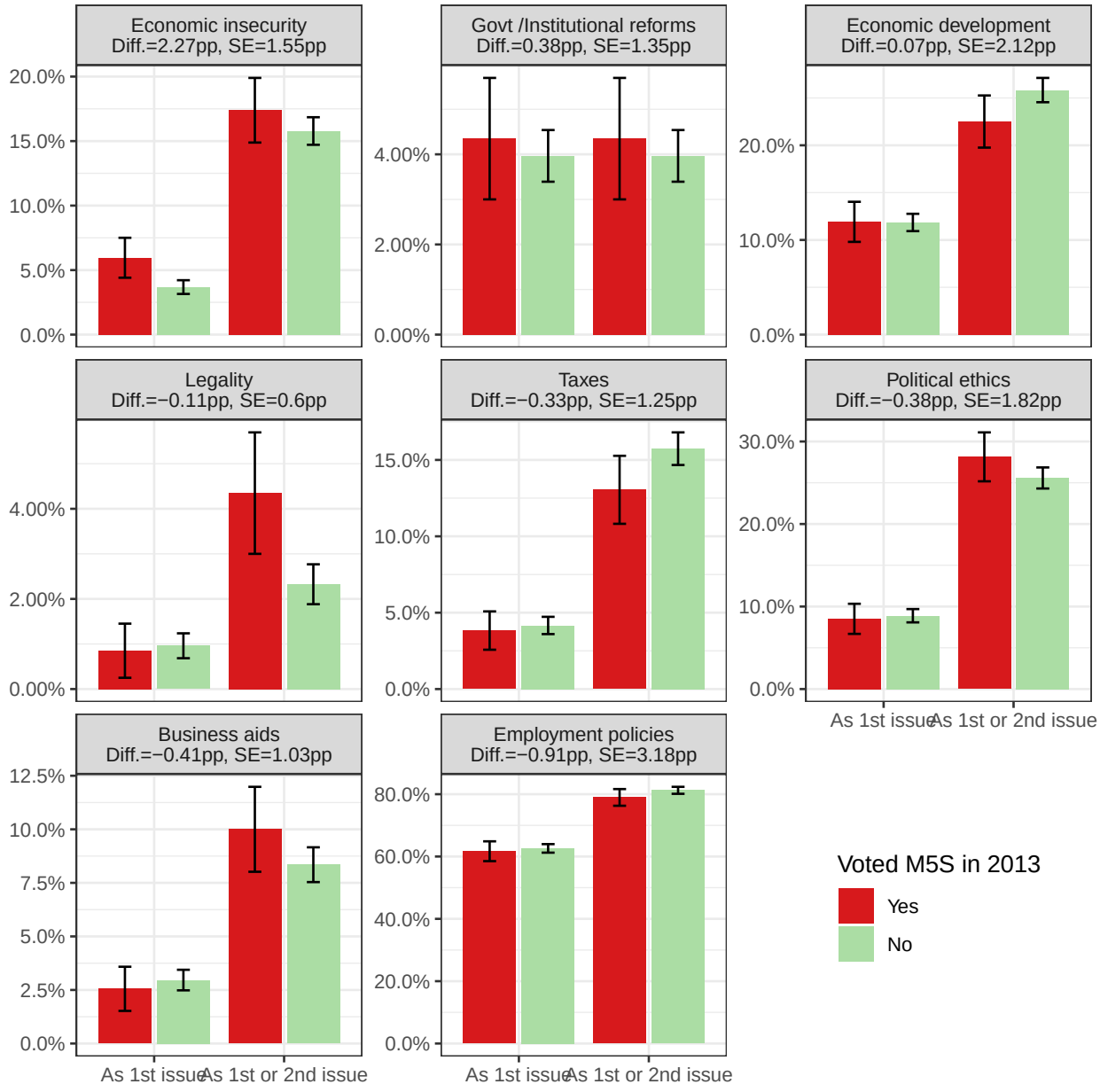
```
              as_factor(itanes_2013$d11_rec) == "Legality"
  )

itanes_salience_firsttwo_2013 <-
  data.frame(M5S  = itanes_2013$M5S == 1,
             `Employment policies` =
               as_factor(itanes_2013$d11_rec) == "Employment policies" |
               as_factor(itanes_2013$d12_rec) == "Employment policies",
             `Economic development` =
               as_factor(itanes_2013$d11_rec) == "Economic development" |
               as_factor(itanes_2013$d12_rec) == "Economic development",
             `Political ethics` =
               as_factor(itanes_2013$d11_rec) == "Political ethics" |
               as_factor(itanes_2013$d12_rec) == "Political ethics",
             `Taxes` =
               as_factor(itanes_2013$d11_rec) == "Taxes" |
               as_factor(itanes_2013$d12_rec) == "Taxes",
             `Economic insecurity` =
               as_factor(itanes_2013$d11_rec) == "Economic insecurity" |
               as_factor(itanes_2013$d12_rec) == "Economic insecurity",
             `Business aids` =
               as_factor(itanes_2013$d11_rec) == "Business aids" |
               as_factor(itanes_2013$d12_rec) == "Business aids",
             `Public administration/Institutional reforms` =
               as_factor(itanes_2013$d11_rec) == "Public administration/Institutional reforms" |
               as_factor(itanes_2013$d12_rec) == "Public administration/Institutional reforms",
             `Legality` =
               as_factor(itanes_2013$d11_rec) == "Legality" |
               as_factor(itanes_2013$d12_rec) == "Legality"
  )


itanes_salience_firstone_stats_2013 <- data.frame()

for (this_colname in names(itanes_salience_firstone_2013)[2:9]) {
  this_df <-
    itanes_salience_firstone_2013 %>%
    dplyr::group_by(M5S) %>%
    dplyr::summarize(mean = mean(!!sym(this_colname), na.rm = T),
                     sd = sd(!!sym(this_colname), na.rm = T),
                     se = sd(!!sym(this_colname), na.rm = T) /
                       sqrt(sum(!is.na(!!sym(this_colname)))))
  this_df$issue <- this_colname
  itanes_salience_firstone_stats_2013 <-
    rbind(itanes_salience_firstone_stats_2013,
          this_df)
}

itanes_salience_firstone_stats_2013$issue <-
  gsub("\\.", " ", itanes_salience_firstone_stats_2013$issue)
itanes_salience_firstone_stats_2013$issue[grepl("Institutional reforms",
                                                itanes_salience_firstone_stats_2013$issue)] <-
  "Govt./Institutional reforms"
```

```r
itanes_salience_firsttwo_stats_2013 <- data.frame()

for (this_colname in names(itanes_salience_firsttwo_2013)[2:9]) {
  this_df <-
    itanes_salience_firsttwo_2013 %>%
    dplyr::group_by(M5S) %>%
    dplyr::summarize(mean = mean(!!sym(this_colname), na.rm = T),
                     sd = sd(!!sym(this_colname), na.rm = T),
                     se = sd(!!sym(this_colname), na.rm = T) /
                       sqrt(sum(!is.na(!!sym(this_colname)))))
  this_df$issue <- this_colname
  itanes_salience_firsttwo_stats_2013 <-
    rbind(itanes_salience_firsttwo_stats_2013,
          this_df)
}

itanes_salience_firsttwo_stats_2013$issue <-
  gsub("\\.", " ", itanes_salience_firsttwo_stats_2013$issue)
itanes_salience_firsttwo_stats_2013$issue[grepl("Institutional reforms",
                                                itanes_salience_firsttwo_stats_2013$issue)] <-
  "Govt./Institutional reforms"


## 2018

itanes_salience_firstone_2018 <-
  data.frame(M5S  = itanes_2018$M5S == 1,
             `Taxes` =
               as_factor(itanes_2018$it_3) == "Le tasse",
                         `Unemployment` =
               as_factor(itanes_2018$it_3) == "La disoccupazione",
                                    `Public debt` =
               as_factor(itanes_2018$it_3) == "Il debito pubblico",
                                    `EU economic policies` =
               as_factor(itanes_2018$it_3) == "Le politiche economiche dell'Europa",
                                    `Tax evasion` =
               as_factor(itanes_2018$it_3) == "L'evasione fiscale",
                                    `Political corruption` =
               as_factor(itanes_2018$it_3) == "La corruzione politica",
                                    `Immigration` =
               as_factor(itanes_2018$it_3) == "L'immigrazione",
                                    `Crime` =
               as_factor(itanes_2018$it_3) == "La criminalità",
                                    `Economic stagnation` =
               as_factor(itanes_2018$it_3) == "La mancanza di crescita",
                                    `Environment protection` =
               as_factor(itanes_2018$it_3) == "La difesa dell'ambiente"
  )


itanes_salience_firsttwo_2018 <-
  data.frame(M5S  = itanes_2018$M5S == 1,
             `Taxes` =
```

```
                as_factor(itanes_2018$it_3) == "Le tasse" |
                as_factor(itanes_2018$it_3_1) == "Le tasse",
                          `Unemployment` =
                as_factor(itanes_2018$it_3) == "La disoccupazione" |
                as_factor(itanes_2018$it_3_1) == "La disoccupazione",
                                  `Public debt` =
                as_factor(itanes_2018$it_3) == "Il debito pubblico" |
                as_factor(itanes_2018$it_3_1) == "Il debito pubblico",
                                  `EU economic policies` =
                as_factor(itanes_2018$it_3) == "Le politiche economiche dell'Europa" |
                as_factor(itanes_2018$it_3_1) == "Le politiche economiche dell'Europa",
                                  `Tax evasion` =
                as_factor(itanes_2018$it_3) == "L'evasione fiscale" |
                as_factor(itanes_2018$it_3_1) == "L'evasione fiscale",
                                  `Political corruption` =
                as_factor(itanes_2018$it_3) == "La corruzione politica" |
                as_factor(itanes_2018$it_3_1) == "La corruzione politica",
                                  `Immigration` =
                as_factor(itanes_2018$it_3) == "L'immigrazione" |
                as_factor(itanes_2018$it_3_1) == "L'immigrazione",
                                  `Crime` =
                as_factor(itanes_2018$it_3) == "La criminalità" |
                as_factor(itanes_2018$it_3_1) == "La criminalità",
                                  `Economic stagnation` =
                as_factor(itanes_2018$it_3) == "La mancanza di crescita" |
                as_factor(itanes_2018$it_3_1) == "La mancanza di crescita",
                                  `Environment protection` =
                as_factor(itanes_2018$it_3) == "La difesa dell'ambiente" |
                as_factor(itanes_2018$it_3_1) == "La difesa dell'ambiente"
  )


itanes_salience_firstone_stats_2018 <- data.frame()

for (this_colname in names(itanes_salience_firstone_2018)[2:9]) {
  this_df <-
    itanes_salience_firstone_2018 %>%
    dplyr::group_by(M5S) %>%
    dplyr::summarize(mean = mean(!!sym(this_colname), na.rm = T),
                     sd = sd(!!sym(this_colname), na.rm = T),
                     se = sd(!!sym(this_colname), na.rm = T) /
                       sqrt(sum(!is.na(!!sym(this_colname)))))
  this_df$issue <- this_colname
  itanes_salience_firstone_stats_2018 <-
    rbind(itanes_salience_firstone_stats_2018,
          this_df)
}

itanes_salience_firsttwo_stats_2018 <- data.frame()

for (this_colname in names(itanes_salience_firsttwo_2018)[2:9]) {
  this_df <-
    itanes_salience_firsttwo_2018 %>%
```

```
    dplyr::group_by(M5S) %>%
    dplyr::summarize(mean = mean(!!sym(this_colname), na.rm = T),
                     sd = sd(!!sym(this_colname), na.rm = T),
                     se = sd(!!sym(this_colname), na.rm = T) /
                       sqrt(sum(!is.na(!!sym(this_colname)))))
  this_df$issue <- this_colname
  itanes_salience_firsttwo_stats_2018 <-
    rbind(itanes_salience_firsttwo_stats_2018,
          this_df)
}


itanes_salience_final_stats_2013_2018 <-
  rbind(itanes_salience_firstone_stats_2013 %>%
          mutate(year = '2013', type = "As 1st issue"),
        itanes_salience_firstone_stats_2018 %>%
          mutate(year = '2018', type = "As 1st issue"),
        itanes_salience_firsttwo_stats_2013 %>%
          mutate(year = '2013', type = "As 1st or 2nd issue"),
        itanes_salience_firsttwo_stats_2018 %>%
          mutate(year = '2018', type = "As 1st or 2nd issue"))

itanes_salience_final_stats_2013_2018$issue <-
  gsub("\\.", " ", itanes_salience_final_stats_2013_2018$issue)

itanes_salience_final_stats_2013_2018 <-
  itanes_salience_final_stats_2013_2018 %>%
  dplyr::filter(!is.na(M5S)) %>%
  dplyr::group_by(issue, year) %>%
  dplyr::mutate(diff = mean[M5S == TRUE &
                              type == "As 1st issue"] -
                  mean[M5S == FALSE &
                         type == "As 1st issue"],
                se_1st = se[M5S == TRUE &
                              type == "As 1st issue"])

itanes_salience_final_stats_2013_2018$issue <-
  paste0(itanes_salience_final_stats_2013_2018$issue,
         "\nDiff.=",
         round(itanes_salience_final_stats_2013_2018$diff*100, 2),
         "pp, SE=",
         round(itanes_salience_final_stats_2013_2018$se_1st*100, 2),"pp")

itanes_salience_final_stats_2013_2018$issue <-
  factor(itanes_salience_final_stats_2013_2018$issue,
         levels = unique(itanes_salience_final_stats_2013_2018$issue[
           order(itanes_salience_final_stats_2013_2018$diff,
                 decreasing = TRUE)
         ]))

itanes_salience_final_stats_2013_2018$M5S <-
  factor(itanes_salience_final_stats_2013_2018$M5S,
         levels = c(TRUE, FALSE))
```

```
ggplot(itanes_salience_final_stats_2013_2018 %>%
         filter(year == '2013'),
       aes(x=type, y=mean, fill = M5S,
           ymin=mean-se, ymax=mean+se)) +
  geom_bar(stat='identity', position = 'dodge2') +
  geom_errorbar(
              width=.2, position=position_dodge(.9)) +
  facet_wrap(.~issue, scales = "free_y") +
  scale_y_continuous(label = percent) +
  scale_fill_manual(labels = c("Yes", "No"), values = two_colours) +
  theme_bw() +
  labs(x = NULL, y = NULL, fill = "Voted M5S in 2013") +
  theme(legend.position = c(.85,.15))
```



```r
ggplot(itanes_salience_final_stats_2013_2018 %>%
         filter(!is.na(M5S) &
                  year == '2018'),
       aes(x=type, y=mean, fill = M5S,
           ymin=mean-se, ymax=mean+se)) +
  geom_bar(stat='identity', position = 'dodge2') +
  geom_errorbar(
              width=.2, position=position_dodge(.9)) +
  facet_wrap(.~issue, scales = "free_y") +
  scale_y_continuous(label = percent) +
  scale_fill_manual(labels = c("Yes", "No"), values = two_colours) +
  theme_bw() +
  labs(x = NULL, y = NULL, fill = "Voted M5S in 2018") +
  theme(legend.position = c(.85,.15))
```

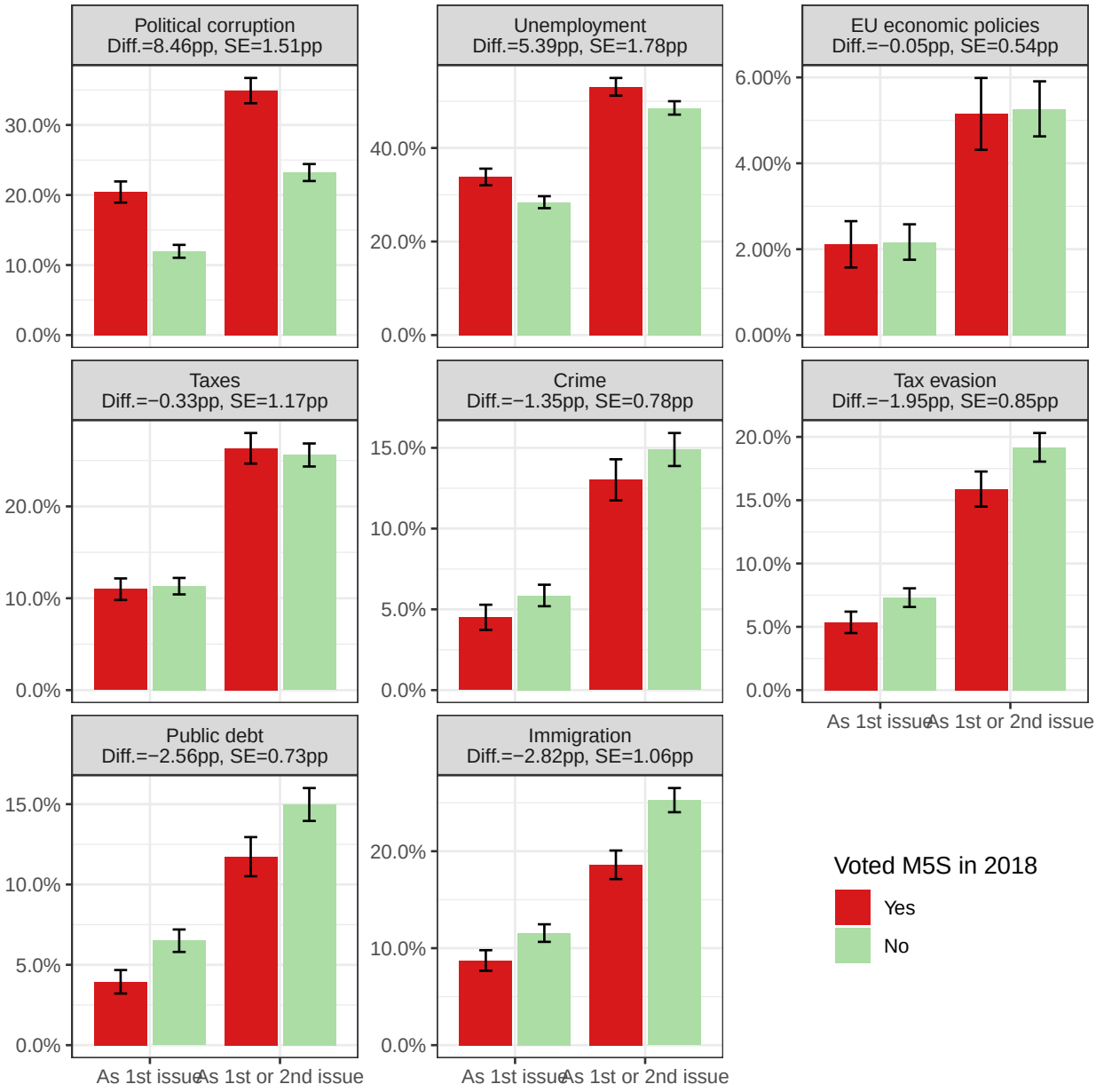
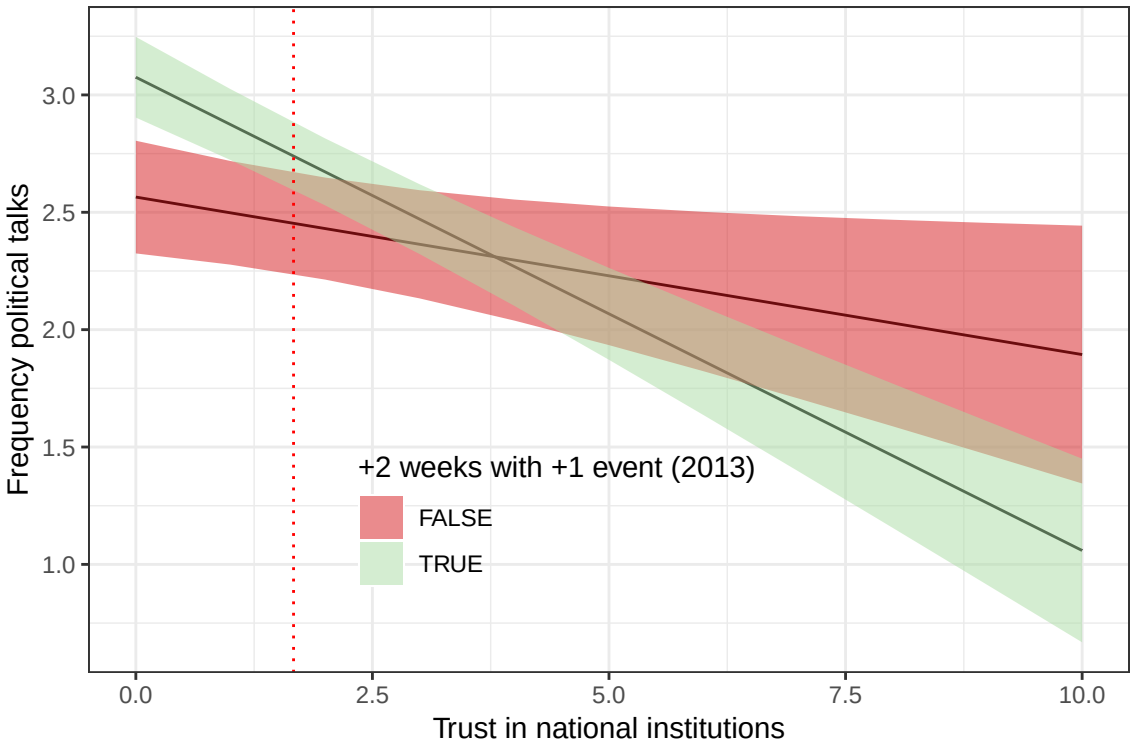


Figure 5

```
library(egg)
ggarrange(
  ggplot(itanes_2013_lm_2_pred.df,
         aes(x = nat_pol_trust, fill = meetup_treated_2013,
             y = fit,
             ymax = upper_err,
             ymin = lower_err)) +
    geom_line() +
    geom_ribbon(alpha = .5) +
    geom_vline(xintercept = quantile(itanes_2013$nat_pol_trust[itanes_2013$M5S ==
                                                               1], probs = .5, na.rm = T),
```

```
              colour = 'red', linetype=3) +
  labs(x = var_dict_labels[['nat_pol_trust']],
       y = var_dict_labels[['poltalk_freq']],
       fill = var_dict_labels[['meetup_treated_2013']]) +
  scale_fill_manual(values = two_colours) +
  theme_bw() +
  theme(legend.position = c(.45,.23),
        legend.background = element_rect(fill = "transparent")),
ggplot(itanes_2013[itanes_2013$M5S == 1,],
       aes(y=(..count..)/sum(..count..), x = nat_pol_trust)) +
  geom_bar() + theme_bw() +
  scale_y_continuous(labels = percent_format(accuracy = 1)) +
  labs(x = var_dict_labels[['nat_pol_trust']], y = NULL),
ncol = 1)
```



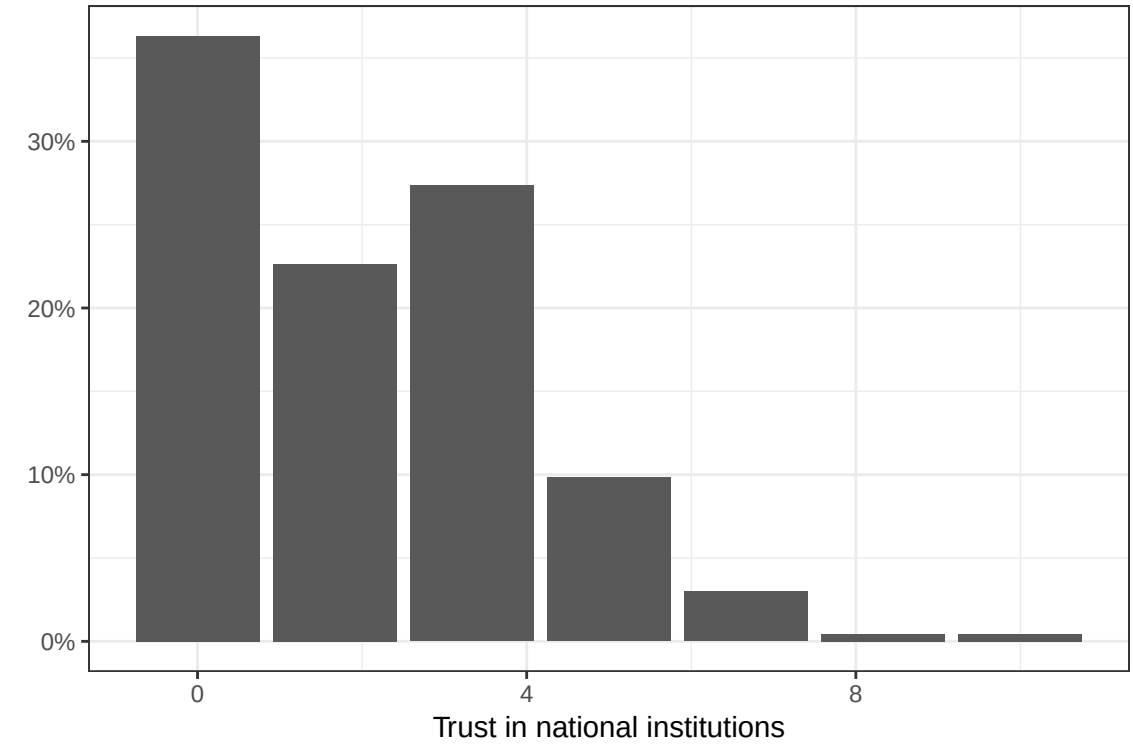


Table 5

```
do.call(stargazer,
        c(list(itanes_2013_lm_2, itanes_2013_lm_3,
```

```
            # type = 'latex', out = "table/itanes_2013_lm.tex",
            type = 'html', out = "table/itanes_2013_lm.html",
            dep.var.labels = var_dict_labels['poltalk_freq'],
            column.labels = c("1 (B)", "2 (B)"),
            omit = c('clsness_M5S', 'pop_density',
                     'dist_10k_ppl', 'ref16_turnout', 'age'),
            order = c("^meetup_treated_2013TRUE$",
                      "^nat_pol_trust$",
                      "^eco_stress_inv$",
                      "pol_interest",
                      "degree", "unemployed", "female",
                      "ANPIV_perc",
                      "meetup_treated_2013TRUE:nat_pol_trust",
                      "meetup_treated_2013TRUE:eco_stress_inv"),
            covariate.labels = var_dict_labels[
              c("meetup_treated_2013",
                "nat_pol_trust",
                "eco_stress_inv",
                "pol_interest",
                "degree", "unemployed", "female",
                "ANPIV_perc",
                "meetup_treated_2013TRUE:nat_pol_trust",
                "meetup_treated_2013TRUE:eco_stress_inv")]),
          sg_param_intext))
```

Frequency political talks

1 (B)

2 (B)

+2 weeks with +1 event (2013)

0.511*

0.728

Trust in national institutions

-0.067

-0.147***

Household perceived economic comfort

0.011

0.053

Political interest

0.191***

0.183***

With university degree (bin)

0.453*

0.488*

Unemployed (bin)

-0.285

-0.265

Female

-0.366*

-0.383*

Volunteers (pct)

4.446*

4.584*

+2 w. +1 e. X trust nat. inst.

-0.135

+2 w. +1 e. X HH eco. comfort

-0.073

Constant

4.032***

4.095***

N

230

230

R-squared

0.349

0.343

p < .001; *p < .01;* p < .05

Table 6 (Supplemental online material)

```
do.call(
  stargazer,
  c(list(itanes_2013_lm_2, itanes_2013_lm_3, itanes_2013_lm_8,
         # type = 'latex', out = "table/itanes_2013_lm_full.tex",
         type = 'html', out = "table/itanes_2013_lm_full.html",
         dep.var.labels = var_dict_labels['poltalk_freq'],
         column.labels = c("(B)", "(B)", "(B)"),
         order = c("^meetup_treated_2013TRUE$",
                   "^nat_pol_trust$",
                   "^eco_stress_inv$",
                   "pol_interest",
                   "degree", "unemployed", "female",
                   "ANPIV_perc",
                   "meetup_treated_2013TRUE:nat_pol_trust",
                   "meetup_treated_2013TRUE:eco_stress_inv")
         ,
         covariate.labels = var_dict_labels[
           c("meetup_treated_2013",
```

```
            "nat_pol_trust",
            "eco_stress_inv",
            "pol_interest",
            "degree", "unemployed", "female",
            "ANPIV_perc",
            "meetup_treated_2013TRUE:nat_pol_trust",
            "meetup_treated_2013TRUE:eco_stress_inv",
            "clsness_M5S", "ref16_turnout", "age", "log(pop_density)",
            "log(dist_10k_ppl)")]
        ),
    sg_param_appendix))
```

Frequency political talks

OLS

(B)

(B)

(B)

Model 1

Model 2

Model 3

+2 weeks with +1 event (2013)

0.511*

0.728

0.240

Trust in national institutions

-0.067

-0.147***

-0.152***

Household perceived economic comfort

0.011

0.053

0.005

Political interest

0.191***

0.183***

0.186***

With university degree (bin)

0.453*

0.488*

0.448*

Unemployed (bin)

-0.285

-0.265

-0.296

Female

-0.366*

-0.383*

-0.390*

Volunteers (pct)

4.446*

4.584*

4.768**

+2 w. +1 e. X trust nat. inst.

-0.135

+2 w. +1 e. X HH eco. comfort

-0.073

Closeness to M5S identity

0.040

0.042

0.042

Turnout 2016 referendum (pct)

-2.378*

-2.440*

-2.587*

Age

0.005

0.006

0.006

Population density (log)

0.103

0.119

0.112

Distance to first +10,000 pple. city (log)

0.055*

0.057*

0.059*

Constant

4.032***

4.095***

4.448***

N

230

230

230

R-squared

0.349

0.343

0.340

Adj. R-squared

0.307

0.301

0.300

Residual Std. Error

1.071 (df = 215)

1.076 (df = 215)

1.077 (df = 216)

p < .001; *p < .01;* p < .05

Table 2

```
itanes_2013_lm_5_stdcoef <-
  lm.beta(itanes_2013_lm_5)
do.call(
  stargazer,
  c(list(itanes_2013_lm_5,
          # type = 'latex', out = "table/itanes_2013_lm_pol_part.tex",
          type = 'html', out = "table/itanes_2013_lm_pol_part.html",
         dep.var.labels = var_dict_labels['pol_part'],
          column.labels = "(Beta)",
          omit = c('pop_density', 'female',
                   'dist_10k_ppl', 'age', 'nat_pol_trust'),
          coef = list(itanes_2013_lm_5_stdcoef$standardized.coefficients),
          p = list(summary(itanes_2013_lm_5)$coefficients[,4]),
          covariate.labels = c("Closeness to M5S | Trust in nat. inst. = 0",
                               var_dict_labels[
            c("eco_stress",
              "member", "interpers_trust",
              "pol_interest",
                    "degree", "unemployed",
```

```
                    "nat_pol_trust:clsness_M5S")])),
    sg_param_intext))
```

```
##
## <table style="text-align:center"><tr><td colspan="2" style="border-bottom: 1px solid black"></td></t
## <tr><td style="text-align:left"></td><td><strong>(Beta)</strong></td></tr>
## <tr><td colspan="2" style="border-bottom: 1px solid black"></td></tr><tr><td style="text-align:left"
## <tr><td style="text-align:left"></td><td></td></tr>
## <tr><td style="text-align:left">Household perceived economic distress</td><td>0.045</td></tr>
## <tr><td style="text-align:left"></td><td></td></tr>
## <tr><td style="text-align:left">Member of an association (bin.)</td><td>0.284<sup>***</sup></td></tr
## <tr><td style="text-align:left"></td><td></td></tr>
## <tr><td style="text-align:left">Interpersonal trust</td><td>0.053<sup>*</sup></td></tr>
## <tr><td style="text-align:left"></td><td></td></tr>
## <tr><td style="text-align:left">Political interest</td><td>0.295<sup>***</sup></td></tr>
## <tr><td style="text-align:left"></td><td></td></tr>
## <tr><td style="text-align:left">With university degree (bin)</td><td>0.129<sup>***</sup></td></tr>
## <tr><td style="text-align:left"></td><td></td></tr>
## <tr><td style="text-align:left">Unemployed (bin)</td><td>-0.021</td></tr>
## <tr><td style="text-align:left"></td><td></td></tr>
## <tr><td style="text-align:left">Trust nat. inst. X closeness to M5S</td><td>0.000</td></tr>
## <tr><td style="text-align:left"></td><td></td></tr>
## <tr><td style="text-align:left">N</td><td>1424</td></tr>
## <tr><td style="text-align:left">R-squared</td><td>0.311</td></tr>
## <tr><td colspan="2" style="border-bottom: 1px solid black"></td></tr><tr><td colspan="2" style="text
## </table>
```

Table 8 (Supplemental online material)

```
itanes_2013_lm_5_stdcoef <-
  lm.beta(itanes_2013_lm_5)
itanes_2013_lm_6_stdcoef <-
  lm.beta(itanes_2013_lm_6)
itanes_2013_lm_7_stdcoef <-
  lm.beta(itanes_2013_lm_7)

do.call(
  stargazer,
  c(list(itanes_2013_lm_5, itanes_2013_lm_5,
         itanes_2013_lm_6, itanes_2013_lm_6,
         itanes_2013_lm_7, itanes_2013_lm_7,
         coef = list(itanes_2013_lm_5$coefficients,
                     itanes_2013_lm_5_stdcoef$standardized.coefficients,
                     itanes_2013_lm_6$coefficients,
                     itanes_2013_lm_6_stdcoef$standardized.coefficients,
                     itanes_2013_lm_7$coefficients,
                     itanes_2013_lm_7_stdcoef$standardized.coefficients),
         p = list(summary(itanes_2013_lm_5)$coefficients[,4],
                  summary(itanes_2013_lm_5)$coefficients[,4],
                  summary(itanes_2013_lm_6)$coefficients[,4],
                  summary(itanes_2013_lm_6)$coefficients[,4],
                  summary(itanes_2013_lm_7)$coefficients[,4],
                  summary(itanes_2013_lm_7)$coefficients[,4]),
```

```
        column.labels = rep(c("(B)", "(Beta)"), 3),
        type = 'latex', out = "table/itanes_2013_lm_pol_part_full.tex",
        dep.var.labels = var_dict_labels['pol_part'],
        covariate.labels = var_dict_labels[
          c("nat_pol_trust", "clsness_M5S", "eco_stress",
            "member", "interpers_trust",
            "pol_interest",
            "degree", "unemployed", "female", "age",
            "log(pop_density)", "log(dist_10k_ppl)",
            "nat_pol_trust:clsness_M5S", "eco_stress:clsness_M5S")]),
    sg_param_appendix))
```

```
##
## % Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harva
## % Date and time: Thu, Oct 10, 2019 - 15:23:06
## \begin{tabular}{@{\extracolsep{5pt}}lcccccc}
## \\[-1.8ex]\hline \\[-1.8ex]
## \\[-1.8ex] & \multicolumn{6}{c}{\textbf{Political participation}} \\
## \\[-1.8ex] & \multicolumn{6}{c}{\textbf{OLS}} \\
##  & \textbf{(B)} & \textbf{(Beta)} & \textbf{(B)} & \textbf{(Beta)} & \textbf{(B)} & \textbf{(Beta)} \
## \\[-1.8ex] & \textbf{Model 1} & \textbf{Model 2} & \textbf{Model 3} & \textbf{Model 4} & \textbf{Mode
## \hline \\[-1.8ex]
##  Trust in national institutions & 0.046$^{*}$ & 0.056$^{*}$ & 0.034 & 0.042 & 0.034 & 0.042 \\
##   & & & & & & \\
##  Closeness to M5S identity & 0.342$^{***}$ & 0.121$^{***}$ & 0.330$^{***}$ & 0.117$^{***}$ & 0.214$^
##   & & & & & & \\
##  Household perceived economic distress & 0.035 & 0.045 & 0.049$^{*}$ & 0.064$^{*}$ & 0.035 & 0.046 \\
##   & & & & & & \\
##  Member of an association (bin.) & 1.201$^{***}$ & 0.284$^{***}$ & 1.193$^{***}$ & 0.282$^{***}$ & 1
##   & & & & & & \\
##  Interpersonal trust & 0.038$^{*}$ & 0.053$^{*}$ & 0.037$^{*}$ & 0.051$^{*}$ & 0.037$^{*}$ & 0.051$^
##   & & & & & & \\
##  Political interest & 0.179$^{***}$ & 0.295$^{***}$ & 0.180$^{***}$ & 0.297$^{***}$ & 0.180$^{***}$ &
##   & & & & & & \\
##  With university degree (bin) & 0.661$^{***}$ & 0.129$^{***}$ & 0.643$^{***}$ & 0.125$^{***}$ & 0.65
##   & & & & & & \\
##  Unemployed (bin) & $-$0.117 & $-$0.021 & $-$0.112 & $-$0.020 & $-$0.120 & $-$0.022 \\
##   & & & & & & \\
##  Female & $-$0.063 & $-$0.018 & $-$0.057 & $-$0.016 & $-$0.062 & $-$0.018 \\
##   & & & & & & \\
##  Age & $-$0.007$^{**}$ & $-$0.071$^{**}$ & $-$0.006$^{**}$ & $-$0.065$^{**}$ & $-$0.007$^{**}$ & $-$
##   & & & & & & \\
##  Population density (log) & 0.012 & 0.010 & 0.008 & 0.006 & 0.011 & 0.009 \\
##   & & & & & & \\
##  Distance to first +10,000 pple. city (log) & $-$0.003 & $-$0.006 & $-$0.004 & $-$0.010 & $-$0.003 &
##   & & & & & & \\
##  Trust nat. inst. X closeness to M5S & $-$0.061 & $-$0.061 &  &  &  \\
##   & & & & & & \\
##  HH eco. distress X closeness to M5S &  &  & $-$0.045 & $-$0.061 &  &  \\
##   & & & & & & \\
##  Constant & 0.297 & 0.000 & 0.245 & 0.000 & 0.313 & 0.000 \\
##   & & & & & & \\
## N & 1424 & 1424 & 1424 & 1424 & 1424 & 1424 \\
## R-squared & 0.311 & 0.311 & 0.311 & 0.311 & 0.309 & 0.309 \\
```

```
## Adj. R-squared & 0.304 & 0.304 & 0.304 & 0.304 & 0.303 & 0.303 \\
## Residual Std. Error & 1.402 (df = 1410) & 1.402 (df = 1410) & 1.402 (df = 1410) & 1.402 (df = 1410) &
## \hline \\[-1.8ex]
## \multicolumn{7}{l}{$^{***}$p $<$ .001; $^{**}$p $<$ .01; $^{*}$p $<$ .05} \\
## \end{tabular}
```

Table 3 (Supplemental online material)

```
do.call(
stargazer, c(list(itanes_2013_logit_1, itanes_2013_logit_2,
                  itanes_2018_logit_1, itanes_2018_logit_2,
          type = 'latex', out = "table/itanes_2013-18_logit_full.tex",
          # type = 'html', out = "table/itanes_2013-18_logit_full.html",
          dep.var.labels = "M5S vote",
          column.labels = c("2013 (bin.)", "2013 (bin.)",
                            "2018 (bin.)", "2018 (bin.)")
          ,
          covariate.labels = var_dict_labels[
            c('unemployed','eco_stress', 'eco_perception',
              'unemployment', 'employment', 'interpers_trust',
              'info_internet', 'info_internet_news', 'info_social_media',
              'info_personal', 'info_tv', 'info_written', 'meetup_treated_2013',
              'nat_pol_trust', 'internet_mediated_part', 'M5S_2013',
              'M5S_2013_neigh_avg',
              'ANPIV_perc', 'log(pop_density)', 'log(dist_10k_ppl)', 'ref16_turnout',
              'AmpQ', 'income_norm', 'poltalk_freq', 'age')]
          ),
          sg_param_appendix))
```

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Thu, Oct 10, 2019 - 15:23:11

	M5S vote			
		glm: quasibinomial link = logit		
	2013 (bin.)	2013 (bin.)	2018 (bin.)	2018 (bin.)
	Model 1	Model 2	Model 3	Model 4
Unemployed (bin)	−0.435	−0.598*	−0.028	−0.057
Household perceived economic distress	0.214***	0.194***		
National economy perception	0.034	0.058	−0.176***	−0.179***
Unemployment (pct)	−6.840	−5.646	1.197	1.014
Employment (pct)	−0.884	−0.820	−2.460	−2.636
Interpersonal trust	0.013	0.029	−0.005	−0.003
Internet primary info. source	0.997***	0.747***		
News websites primary info. source (bin.)			0.051	0.033
Soc. media primary info. source (bin.)			0.458*	0.415*
Family/Friends primary info. source (bin.)	0.154	0.052	0.169	0.139
TV primary info. source (bin.)	−0.019	−0.082	−0.090	−0.087
Newspapers/Magazines primary info. source (bin.)	0.265	0.209	−0.359*	−0.355*
+2 weeks with +1 event (2013)	−0.037	−0.060		
Trust in national institutions	−0.139***	−0.141***	−0.077**	−0.078**
Internet-mediated participation (bin.)	0.678*	0.541		
M5S vote 2013 election (pct)	6.932***	6.876***		
M5S vote in neigh. 2013 election (pct)	−1.220	−0.988		
Volunteers (pct)	−2.203	−1.862	−5.443	−5.318
Population density (log)	0.092	0.081		
Distance to first +10,000 pple. city (log)	0.004	0.002		
Turnout 2016 referendum (pct)	−0.050	−0.102		
Size of comune			−0.034	−0.030
Income (procapite/family, norm.)	0.054	0.063	−0.079*	−0.074*
Frequency political talks	0.140*	0.168**		
Age		−0.022***		−0.119
Constant	−2.873	−2.222	2.202*	2.539*
N	1459	1459	1844	1844

```r
stargazer(itanes_2013_lm_2, itanes_2013_lm_3, itanes_2013_lm_4,
          type = 'latex', out = "table/itanes_2013_lm_full.tex",
          dep.var.labels = var_dict_labels['poltalk_freq'],
          omit.stat = c('adj.rsq', 'f', 'ser'),
          order = c("^meetup_treated_2013TRUE$",
                    "^nat_pol_trust$",
                    "^eco_stress$",
                    "^internet_mediated_partTRUE$",
                    "^pol_interest$",
                    "clsness_M5S",
                    "degree", "unemployed", "female", "age",
                    "ANPIV_perc", "ref16_turnout",
                    "pop_density", "dist_10k_ppl",
                    "meetup_treated_2013TRUE:nat_pol_trust^",
                    "meetup_treated_2013TRUE:eco_stress^",
                    "meetup_treated_2013TRUE:internet_mediated_part^",
                    "nat_pol_trust:internet_mediated_part^",
                    "meetup_treated_2013TRUE:nat_pol_trust:internet_mediated_part"),
          covariate.labels = var_dict_labels[
            c("meetup_treated_2013",
              "nat_pol_trust",
              "eco_stress",
              "internet_mediated_part",
              "pol_interest",
              "clsness_M5S",
              "degree", "unemployed", "female", "age",
              "ANPIV_perc", "ref16_turnout",
              "log(pop_density)", "log(dist_10k_ppl)",
              "meetup_treated_2013TRUE:nat_pol_trust",
              "meetup_treated_2013TRUE:eco_stress",
              "meetup_treated_2013TRUE:internet_mediated_part",
              "nat_pol_trust:internet_mediated_part",
              "meetup_treated_2013TRUE:nat_pol_trust:internet_mediated_part")],
          report = "vc*",
          model.numbers = FALSE,
          model.names = FALSE,
          float = FALSE,
          style = 'ajps')
```

```
##
## % Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harva
## % Date and time: Thu, Oct 10, 2019 - 15:23:12
## \begin{tabular}{@{\extracolsep{5pt}}lccc}
## \\[-1.8ex]\hline \\[-1.8ex]
## \\[-1.8ex] & \multicolumn{3}{c}{\textbf{Frequency political talks}} \\
## \hline \\[-1.8ex]
##  +2 weeks with +1 event (2013) & 0.511$^{**}$ & 0.728 & 0.648$^{**}$ \\
##   & & & \\
##  Trust in national institutions & $-$0.067 & $-$0.147$^{***}$ & $-$0.049 \\
##   & & & \\
##  Household perceived economic distress &  &  & $-$0.004 \\
##   & & & \\
##  Internet-mediated participation (bin.) &  &  & 1.316$^{**}$ \\
##   & & & \\
```

```
##  Political interest & 0.191$^{***}$ & 0.183$^{***}$ & 0.187$^{***}$ \\
##   & & & \\
##  Closeness to M5S identity & 0.040 & 0.042 & 0.026 \\
##   & & & \\
##  With university degree (bin) & 0.453$^{**}$ & 0.488$^{**}$ & 0.432$^{**}$ \\
##   & & & \\
##  Unemployed (bin) & $-$0.285 & $-$0.265 & $-$0.245 \\
##   & & & \\
##  Female & $-$0.366$^{**}$ & $-$0.383$^{**}$ & $-$0.395$^{**}$ \\
##   & & & \\
##  Age & 0.005 & 0.006 & 0.006 \\
##   & & & \\
##  Volunteers (pct) & 4.446$^{**}$ & 4.584$^{**}$ & 4.424$^{**}$ \\
##   & & & \\
##  Turnout 2016 referendum (pct) & $-$2.378$^{**}$ & $-$2.440$^{**}$ & $-$2.386$^{**}$ \\
##   & & & \\
##  Population density (log) & 0.103 & 0.119 & 0.122$^{*}$ \\
##   & & & \\
##  Distance to first +10,000 pple. city (log) & 0.055$^{**}$ & 0.057$^{**}$ & 0.056$^{**}$ \\
##   & & & \\
##  +2 w. +1 e. X trust nat. inst. &  &  & 0.180 \\
##   & & & \\
##  +2 w. +1 e. X HH eco. distress & 0.011 & 0.053 &  \\
##   & & & \\
##  +2 w. +1 e. X Internet-med. part. & $-$0.135$^{*}$ &  & $-$0.148$^{*}$ \\
##   & & & \\
##  Trust nat. inst. X Internet-med. part. &  & $-$0.073 &  \\
##   & & & \\
##  +2 w. +1 e. X trust nat. inst. X Internet-med. part. &  &  & $-$1.510$^{**}$ \\
##   & & & \\
##  nat\_pol\_trust:internet\_mediated\_part &  &  & $-$0.172 \\
##   & & & \\
##  Constant & 4.032$^{***}$ & 4.095$^{***}$ & 4.144$^{***}$ \\
##   & & & \\
## N & 230 & 230 & 230 \\
## R-squared & 0.349 & 0.343 & 0.369 \\
## \hline \\[-1.8ex]
## \multicolumn{4}{l}{$^{***}$p $<$ .01; $^{**}$p $<$ .05; $^{*}$p $<$ .1} \\
## \end{tabular}
```

```
library(haven)
dat_2014 <-
  read_sav("secondary_data/misc_european_elections/ZA5160_v4-0-0.sav")
dat_2009 <-
  read_sav("secondary_data/misc_european_elections/ZA5055_v1-1-1.sav")

parties_2014 <- unique(dat_2014$qp2_ees)
partie_2009 <- unique(dat_2009$q25)
new_parties <- parties_2014[!parties_2014 %in% partie_2009]
old_parties <- parties_2014[parties_2014 %in% partie_2009]

dat_2014$internet_daily <- dat_2014$d62_1 == 1

require(dplyr)
```

```r
dat_2014_new_parties <- dat_2014 %>% filter(qp2_ees %in% new_parties)
dat_2014_old_parties <- dat_2014 %>% filter(qp2_ees %in% old_parties)

weighted.mean(dat_2014_new_parties$internet_daily,
              w = dat_2014_new_parties$wex)
```

```
## [1] 0.6164366
```

```r
weighted.mean(dat_2014_old_parties$internet_daily,
              w = dat_2014_old_parties$wex)
```

```
## [1] 0.5729448
```

```r
# Internet

parties <-
  c(`Podemos` = 1724230,
    `Citizens` = 1724410,
    `Five Star Movement` = 1380956,
    `Democratic Left` = 1300225,
    `Independent Greeks` = 1300611,
    `Golden Dawn` = 1300710,
    `Alternative for Germany` = 1276621,
    `The British National Party` = 1826720)

dat_2014$new_party <- dat_2014$qp2_ees %in% parties

require(weights)

is_spain <- dat_2014$countrycode == 1724
is_greece <- dat_2014$countrycode == 1300
is_italy <- dat_2014$countrycode == 1380
is_germany <- dat_2014$countrycode == 1276
is_uk <- dat_2014$countrycode == 1826

res <- data.frame()

test_res <-
  wtd.t.test(dat_2014$internet_daily[is_spain & dat_2014$new_party],
             dat_2014$internet_daily[is_spain & !dat_2014$new_party],
             weight = dat_2014$wex[is_spain & dat_2014$new_party],
             weighty = dat_2014$wex[is_spain & !dat_2014$new_party])

res <- rbind(res,
             data.frame(country = "Spain",
                        party = "All new parties",
                        `vote %` = "34.6 (2015)",
                        `Internet daily %` = test_res$additional[2],
                        `Diff.` = test_res$additional[1],
                        `p` = test_res$coefficients[3],
                        `test` = test_res$test,
                        `source` = "EES 2014"))

test_res <-
  wtd.t.test(dat_2014$internet_daily[is_spain & dat_2014$qp2_ees == parties['Podemos']],
```

```
            dat_2014$internet_daily[is_spain & !dat_2014$new_party],
            weight = dat_2014$wex[is_spain & dat_2014$qp2_ees == parties['Podemos']],
            weighty = dat_2014$wex[is_spain & !dat_2014$new_party])

res <- rbind(res,
            data.frame(country = "Spain",
                       party = "Podemos",
                       `vote %` = "20.7 (2015)",
                       `Internet daily %` = test_res$additional[2],
                       `Diff.` = test_res$additional[1],
                       `p` = test_res$coefficients[3],
                       `test` = test_res$test,
                       `source` = "EES 2014"))

test_res <-
  wtd.t.test(dat_2014$internet_daily[is_spain & dat_2014$qp2_ees == parties['Citizens']],
            dat_2014$internet_daily[is_spain & !dat_2014$new_party],
            weight = dat_2014$wex[is_spain & dat_2014$qp2_ees == parties['Citizens']],
            weighty = dat_2014$wex[is_spain & !dat_2014$new_party])

res <- rbind(res,
            data.frame(country = "Spain",
                       party = "Ciudadanos",
                       `vote %` = "13.9 (2015)",
                       `Internet daily %` = test_res$additional[2],
                       `Diff.` = test_res$additional[1],
                       `p` = test_res$coefficients[3],
                       `test` = test_res$test,
                       `source` = "EES 2014"))

test_res <-
  wtd.t.test(dat_2014$internet_daily[is_greece & dat_2014$qp2_ees %in% new_parties],
            dat_2014$internet_daily[is_greece & !dat_2014$new_party],
            weight = dat_2014$wex[is_greece & dat_2014$qp2_ees %in% new_parties],
            weighty = dat_2014$wex[is_greece & !dat_2014$new_party])

res <- rbind(res,
            data.frame(country = "Greece",
                       party = "All new parties",
                       `vote %` = "25.4 (May 2012)",
                       `Internet daily %` = test_res$additional[2],
                       `Diff.` = test_res$additional[1],
                       `p` = test_res$coefficients[3],
                       `test` = test_res$test,
                       `source` = "EES 2014"))

test_res <-
  wtd.t.test(dat_2014$internet_daily[is_greece & dat_2014$qp2_ees == parties['Independent Greeks']],
            dat_2014$internet_daily[is_greece & !dat_2014$new_party],
            weight = dat_2014$wex[is_greece & dat_2014$qp2_ees == parties['Independent Greeks']],
            weighty = dat_2014$wex[is_greece & !dat_2014$new_party])

res <- rbind(res,
```

```
            data.frame(country = "Greece",
                       party = "Independent Greeks",
                       `vote %` = "10.6 (May 2012)",
                       `Internet daily %` = test_res$additional[2],
                       `Diff.` = test_res$additional[1],
                       `p` = test_res$coefficients[3],
                       `test` = test_res$test,
                       `source` = "EES 2014"))

test_res <-
  wtd.t.test(dat_2014$internet_daily[is_greece & dat_2014$qp2_ees == parties['Democratic Left']],
             dat_2014$internet_daily[is_greece & !dat_2014$new_party],
             weight = dat_2014$wex[is_greece & dat_2014$qp2_ees == parties['Democratic Left']],
             weighty = dat_2014$wex[is_greece & !dat_2014$new_party])

res <- rbind(res,
             data.frame(country = "Greece",
                       party = "Democratic Left",
                       `vote %` = "6.1 (May 2012)",
                       `Internet daily %` = test_res$additional[2],
                       `Diff.` = test_res$additional[1],
                       `p` = test_res$coefficients[3],
                       `test` = test_res$test,
                       `source` = "EES 2014"))

test_res <-
  wtd.t.test(dat_2014$internet_daily[is_greece & dat_2014$qp2_ees == parties['Golden Dawn']],
             dat_2014$internet_daily[is_greece & !dat_2014$new_party],
             weight = dat_2014$wex[is_greece & dat_2014$qp2_ees == parties['Golden Dawn']],
             weighty = dat_2014$wex[is_greece & !dat_2014$new_party])

res <- rbind(res,
             data.frame(country = "Greece",
                       party = "Golden Dawn",
                       `vote %` = "7 (May 2012)",
                       `Internet daily %` = test_res$additional[2],
                       `Diff.` = test_res$additional[1],
                       `p` = test_res$coefficients[3],
                       `test` = test_res$test,
                       `source` = "EES 2014"))

test_res <-
  wtd.t.test(dat_2014$internet_daily[is_italy & dat_2014$new_party],
             dat_2014$internet_daily[is_italy & !dat_2014$new_party],
             weight = dat_2014$wex[is_italy & dat_2014$new_party],
             weighty = dat_2014$wex[is_italy & !dat_2014$new_party])

res <- rbind(res,
             data.frame(country = "Italy",
                       party = "Five Star Movement",
                       `vote %` = "25.6 (2013)",
                       `Internet daily %` = test_res$additional[2],
                       `Diff.` = test_res$additional[1],
```

```
                        `p` = test_res$coefficients[3],
                        `test` = test_res$test,
                        `source` = "EES 2014"))

test_res <-
  wtd.t.test(dat_2014$internet_daily[is_germany & dat_2014$qp2_ees == parties['Alternative for Germany']],
             dat_2014$internet_daily[is_germany & !dat_2014$new_party],
             weight = dat_2014$wex[is_germany & dat_2014$qp2_ees == parties['Alternative for Germany']],
             weighty = dat_2014$wex[is_germany & !dat_2014$new_party])

res <- rbind(res,
             data.frame(country = "Germany",
                        party = "Alternative for Germany",
                        `vote %` = "4.7 (2013)",
                        `Internet daily %` = test_res$additional[2],
                        `Diff.` = test_res$additional[1],
                        `p` = test_res$coefficients[3],
                        `test` = test_res$test,
                        `source` = "EES 2014"))

# Iceland

dat_2013 <-
  read_sav("secondary_data/misc_european_elections/icenes_2013_open_access_english_1release.sav")
dat_2013$internet_daily <- dat_2013$internet == 1

iceland_parties <-
  c(`Bright Future` = 5,
    `Pirate Party` = 6, `Household Party` = 14,
    `Iceland Democratic Party` = 8,
    `Right-Green People's Party` = 10,
    `Rainbow` = 13)

dat_2013$new_party <- dat_2013$prtvote13 %in% iceland_parties

test_res <-
  t.test(dat_2013$internet_daily[dat_2013$new_party],
         dat_2013$internet_daily[!dat_2013$new_party])

res <- rbind(res,
             data.frame(country = "Iceland",
                        party = "All new parties",
                        `vote %` = "21.7 (2013)",
                        `Internet daily %` = test_res$estimate[1],
                        `Diff.` = test_res$estimate[1] - test_res$estimate[2],
                        `p` = test_res$p.value,
                        `test` = "Student's t-Test",
                        `source` = "ICENES 2013"))

test_res <-
  t.test(dat_2013$internet_daily[dat_2013$prtvote13 == iceland_parties['Bright Future']],
       dat_2013$internet_daily[!dat_2013$new_party])
```

```
res <- rbind(res,
             data.frame(country = "Iceland",
                        party = "Bright Future",
                        `vote %` = "8.25 (2013)",
                        `Internet daily %` = test_res$estimate[1],
                        `Diff.` = test_res$estimate[1] - test_res$estimate[2],
                        `p` = test_res$p.value,
                        `test` = "Student's t-Test",
                        `source` = "ICENES 2013"))

test_res <-
  t.test(dat_2013$internet_daily[dat_2013$prtvote13 == iceland_parties['Pirate Party']],
       dat_2013$internet_daily[!dat_2013$new_party])

res <- rbind(res,
             data.frame(country = "Iceland",
                        party = "Pirate Party",
                        `vote %` = "5.1 (2013)",
                        `Internet daily %` = test_res$estimate[1],
                        `Diff.` = test_res$estimate[1] - test_res$estimate[2],
                        `p` = test_res$p.value,
                        `test` = "Student's t-Test",
                        `source` = "ICENES 2013"))

# France

library(haven)
dat_2017 <-
  read_sav("secondary_data/misc_european_elections/cdsp_FES2017_v2/FES2017.sav")

table(dat_2017$V7)
```

```
##
##   1   2   3   4   5   6   7   8   9  10  11  12
##  16  36 205  78  39 428  15 146  28 188  11  37
```

```
dat_2017$new_party <-
  dat_2017$V7 %in% c(`La France insoumise` = 3,
                     `En Marche` = 6,
                     `Debout la France` = 9)

dat_2017$internet_daily <-
  dat_2017$PA6 %in%  0:1
dat_2017$internet_daily[dat_2017$PA6 > 2] <- NA

test_res <-
  wtd.t.test(dat_2017$internet_daily[dat_2017$new_party],
             dat_2017$internet_daily[!dat_2017$new_party],
             weight = dat_2017$w2[dat_2017$new_party],
             weighty = dat_2017$w2[!dat_2017$new_party])

res <- rbind(res,
             data.frame(country = "France",
                        party = c("All new parties"),
```

```
                          `vote %` = "40.4 (2017)",
                          `Internet daily %` = test_res$additional[2],
                          `Diff.` = test_res$additional[1],
                          `p` = test_res$coefficients[3],
                          `test` = test_res$test,
                          `source` = "FES 2017"))

test_res <-
  wtd.t.test(dat_2017$internet_daily[dat_2017$V7 %in% 3],
             dat_2017$internet_daily[!dat_2017$new_party],
             weight = dat_2017$w2[dat_2017$V7 %in% 3],
             weighty = dat_2017$w2[!dat_2017$new_party])

res <- rbind(res,
             data.frame(country = "France",
                        party = c("La France insoumise"),
                        `vote %` = "11 (2017)",
                        `Internet daily %` = test_res$additional[2],
                        `Diff.` = test_res$additional[1],
                        `p` = test_res$coefficients[3],
                        `test` = test_res$test,
                        `source` = "FES 2017"))

test_res <-
  wtd.t.test(dat_2017$internet_daily[dat_2017$V7 %in% 6],
             dat_2017$internet_daily[!dat_2017$new_party],
             weight = dat_2017$w2[dat_2017$V7 %in% 6],
             weighty = dat_2017$w2[!dat_2017$new_party])

res <- rbind(res,
             data.frame(country = "France",
                        party = c("En Marche"),
                        `vote %` = "28.2 (2017)",
                        `Internet daily %` = test_res$additional[2],
                        `Diff.` = test_res$additional[1],
                        `p` = test_res$coefficients[3],
                        `test` = test_res$test,
                        `source` = "FES 2017"))

res <- res[order(as.character(res$country),
                 as.character(res$`Internet.daily..`)),]
colnames(res)
```

```
## [1] "country"          "party"            "vote.."
## [4] "Internet.daily.." "Diff."            "p"
## [7] "test"             "source"
```

```
colnames(res)[3:7] <- c("vote %", "Internet use %", "delta", "p", "test")
res$`Internet use %` <- res$`Internet use %`*100
res$delta <- res$delta *100
res$test <- NULL

res$perc_diff <-
  res$`Internet use %` /
```

```
  (res$`Internet use %` - res$delta)

res$perc_diff <- (res$perc_diff-1)  * 100

# Regression analysis
dat_2014$age <- as.numeric(dat_2014$d11r2)
dat_2014$age[dat_2014$age == 7] <- NA

dat_2014$edu <- as.numeric(dat_2014$d8)
dat_2014$edu[!dat_2014$edu %in% 1:3] <- NA

dat_2014$m5s <- dat_2014$qp2_ees == parties['Five Star Movement']
dat_2014$podemos <- dat_2014$qp2_ees == parties['Podemos']
dat_2014$citizens <- dat_2014$qp2_ees == parties['Citizens']
dat_2014$demo_left <- dat_2014$qp2_ees == parties['Democratic Left']

res_m5s <-
  glm(m5s ~ internet_daily + age + edu,
      family = 'binomial', data = dat_2014[is_italy,])
res_podemos <-
  glm(podemos ~ internet_daily + age + edu,
      family = 'binomial', data = dat_2014[is_spain,])
res_citizens <-
  glm(citizens ~ internet_daily + age + edu,
      family = 'binomial', data = dat_2014[is_spain,])
res_demo_left <-
  glm(demo_left ~ internet_daily + age + edu,
      family = 'binomial', data = dat_2014[is_greece,])
```

Table 1 (Supplemental online material)

```
require(xtable)
print(xtable(
  res[c("country", "party", "vote %", "Internet use %", "perc_diff",
                  "p", "source")], digits = 1),
      include.rownames=FALSE, type = "latex")
```

% latex table generated in R 3.6.1 by xtable 1.8-3 package % Thu Oct 10 15:23:28 2019

country	party	vote %	Internet use %	perc_diff	p	source
France	En Marche	28.2 (2017)	22.4	12.4	0.3	FES 2017
France	All new parties	40.4 (2017)	27.9	39.5	0.0	FES 2017
France	La France insoumise	11 (2017)	41.3	106.6	0.0	FES 2017
Germany	Alternative for Germany	4.7 (2013)	65.3	11.3	0.3	EES 2014
Greece	Golden Dawn	7 (May 2012)	48.5	-0.4	1.0	EES 2014
Greece	All new parties	25.4 (May 2012)	54.1	11.0	0.1	EES 2014
Greece	Democratic Left	6.1 (May 2012)	56.9	16.8	0.8	EES 2014
Greece	Independent Greeks	10.6 (May 2012)	62.6	28.6	0.1	EES 2014
Iceland	All new parties	21.7 (2013)	84.9	9.3	0.0	ICENES 2013
Iceland	Pirate Party	5.1 (2013)	88.2	13.5	0.0	ICENES 2013
Iceland	Bright Future	8.25 (2013)	91.9	18.3	0.0	ICENES 2013
Italy	Five Star Movement	25.6 (2013)	65.6	54.3	0.0	EES 2014
Spain	Ciudadanos	13.9 (2015)	60.7	16.9	0.6	EES 2014
Spain	All new parties	34.6 (2015)	69.7	34.1	0.0	EES 2014
Spain	Podemos	20.7 (2015)	71.4	37.5	0.0	EES 2014