Melor 2015 Counterfactual Data Generation

Brian K. Masinde

```r
# clean workspace and import libraries
rm(list = ls())
library(here)

# we need the renaming function for cleaning
source(here("R", "col_rename.R"))

base_data_regions <- read.csv(here("data", "base_data_regions.csv"))

base_data_regions <- col_rename(base_data_regions)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```r
# importing function for counterfactual data gen
source(here("R", "counterfactual_gen_exact.R"))

low_vul_building_vals <- c(80, 2,2,2,2,2,2,2, 10)

low_melor_2015  <- counterfactual_gen(df = base_data_regions,
                                tc = "melor2015",
                                storm_surge = 0.1,
                                landslide =0.1,
                                building_vals = low_vul_building_vals
                                )
```

```
## number of columns in remaining_mun 54
##  number of columns in counterfactual data 54
```

```r
head(low_melor_2015)
```

```
##      Mun_Code rain_total rain_max6h rain_max24h wind_max track_min_dist
## 1 PH175101000   287.2393  19.880357  11.0360182 51.25591       1.075211
```

```
## 2 PH030801000    287.2393    8.210417    5.8898936 51.25591          1.075211
## 3 PH083701000    287.2393    1.109375    0.5978723 51.25591          1.075211
## 4 PH045601000    287.2393   17.645455    8.7624113 51.25591          1.075211
## 5 PH025701000    287.2393   25.403333   16.7231250 51.25591          1.075211
## 6 PH015501000    287.2393   11.123611    6.4840278 51.25591          1.075211
##   ls_risk_pct ss_risk_pct blue_ss_frac blue_ls_frac red_ls_frac orange_ls_frac
## 1        2.64        6.18          0.1          0.1         0.1            0.1
## 2        0.78       40.87          0.1          0.1         0.1            0.1
## 3        0.06        0.00          0.1          0.1         0.1            0.1
## 4        3.53        2.77          0.1          0.1         0.1            0.1
## 5        0.34        0.07          0.1          0.1         0.1            0.1
## 6        1.52        1.28          0.1          0.1         0.1            0.1
##   yellow_ss_frac red_ss_frac orange_ss_frac yellow_ls_frac slope_mean elev_mean
## 1            0.1         0.1            0.1            0.1      16.48    479.57
## 2            0.1         0.1            0.1            0.1       6.50    232.23
## 3            0.1         0.1            0.1            0.1       8.73    182.19
## 4            0.1         0.1            0.1            0.1       3.23     38.78
## 5            0.1         0.1            0.1            0.1       8.75    335.60
## 6            0.1         0.1            0.1            0.1       4.58     60.23
##   ruggedness_sd ruggedness_mean slope_sd poverty_pct has_coast coast_length
## 1         47.20           82.19     9.73       11.34         1        37836
## 2         37.28           33.53     7.50        2.09         1         6116
## 3         36.80           43.56     7.71        6.09         1        38796
## 4         13.06           17.71     2.82        4.77         1        10378
## 5         34.98           43.73     7.67        4.82         0            0
## 6         16.51           24.32     3.73        7.87         1        36607
##   housing_units roof_strong_wall_strong roof_strong_wall_light
## 1          7185                      80                      2
## 2          9256                      80                      2
## 3         13294                      80                      2
## 4          3156                      80                      2
## 5          6540                      80                      2
## 6          6593                      80                      2
##   roof_strong_wall_salv roof_light_wall_strong roof_light_wall_light
## 1                     2                      2                     2
## 2                     2                      2                     2
## 3                     2                      2                     2
## 4                     2                      2                     2
## 5                     2                      2                     2
## 6                     2                      2                     2
##   roof_light_wall_salv roof_salv_wall_strong roof_salv_wall_light
## 1                    2                     2                    2
## 2                    2                     2                    2
## 3                    2                     2                    2
## 4                    2                     2                    2
## 5                    2                     2                    2
## 6                    2                     2                    2
##   roof_salv_wall_salv vulnerable_groups pantawid_benef damage_perc Mun_Code_2
## 1                  10         2.9515109      46.931106   0.6958942  175101000
## 2                  10         0.8676028       8.967156          NA   30801000
## 3                  10         3.3388729      25.989168          NA   83701000
## 4                  10         1.9531554      18.821293          NA   45601000
## 5                  10         1.2020009      19.984709          NA   25701000
## 6                  10         2.1317553      32.185651          NA   15501000
```

```
##   Unnamed..0 Municipality X10.Digit.Code Correspondence.Code Income.Class
## 1        522 Abra De Ilog    1705101000          175101000          2nd
## 2        281      Abucay     300801000           30801000          3rd
## 3        949      Abuyog      803701000           83701000          1st*
## 4        464    Agdangan      405601000           45601000          5th
## 5        275     Aglipay      205701000           25701000          3rd
## 6        148        Agno      105501000           15501000          3rd
##   Population.2020.Census.          region island_groups wind_blue_ss
## 1                   35176 MIMAROPA Region          Luzon     5.125591
## 2                   42984   Central Luzon          Luzon     5.125591
## 3                   61216 Eastern Visayas        Visayas     5.125591
## 4                   12764      CALABARZON          Luzon     5.125591
## 5                   30714  Cagayan Valley          Luzon     5.125591
## 6                   29947   Ilocos Region          Luzon     5.125591
##   wind_yellow_ss wind_orange_ss wind_red_ss rain_blue_ls rain_yellow_ls
## 1       5.125591       5.125591    5.125591     28.72393       28.72393
## 2       5.125591       5.125591    5.125591     28.72393       28.72393
## 3       5.125591       5.125591    5.125591     28.72393       28.72393
## 4       5.125591       5.125591    5.125591     28.72393       28.72393
## 5       5.125591       5.125591    5.125591     28.72393       28.72393
## 6       5.125591       5.125591    5.125591     28.72393       28.72393
##   rain_orange_ls rain_red_ls
## 1       28.72393    28.72393
## 2       28.72393    28.72393
## 3       28.72393    28.72393
## 4       28.72393    28.72393
## 5       28.72393    28.72393
## 6       28.72393    28.72393
```

```r
high_vul_building_vals <- c(10, 2,2,2,2,2,2,2, 80)

high_melor_2015  <- counterfactual_gen(df = base_data_regions,
                            tc = "melor2015",
                            storm_surge = 0.1,
                            landslide =0.1,
                            building_vals = high_vul_building_vals
                            )
```

```
## number of columns in remaining_mun 54
##  number of columns in counterfactual data 54
```

```r
head(high_melor_2015)
```

```
##       Mun_Code rain_total rain_max6h rain_max24h wind_max track_min_dist
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## 1        2.64        6.18          0.1          0.1         0.1            0.1
## 2        0.78       40.87          0.1          0.1         0.1            0.1
```

```
## 3      0.06          0.00          0.1           0.1           0.1           0.1
## 4      3.53          2.77          0.1           0.1           0.1           0.1
## 5      0.34          0.07          0.1           0.1           0.1           0.1
## 6      1.52          1.28          0.1           0.1           0.1           0.1
##   yellow_ss_frac red_ss_frac orange_ss_frac yellow_ls_frac slope_mean elev_mean
## 1            0.1         0.1            0.1            0.1       16.48    479.57
## 2            0.1         0.1            0.1            0.1        6.50    232.23
## 3            0.1         0.1            0.1            0.1        8.73    182.19
## 4            0.1         0.1            0.1            0.1        3.23     38.78
## 5            0.1         0.1            0.1            0.1        8.75    335.60
## 6            0.1         0.1            0.1            0.1        4.58     60.23
##   ruggedness_sd ruggedness_mean slope_sd poverty_pct has_coast coast_length
## 1         47.20           82.19     9.73       11.34         1        37836
## 2         37.28           33.53     7.50        2.09         1         6116
## 3         36.80           43.56     7.71        6.09         1        38796
## 4         13.06           17.71     2.82        4.77         1        10378
## 5         34.98           43.73     7.67        4.82         0            0
## 6         16.51           24.32     3.73        7.87         1        36607
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## 1                     2                      2                      2
## 2                     2                      2                      2
## 3                     2                      2                      2
## 4                     2                      2                      2
## 5                     2                      2                      2
## 6                     2                      2                      2
##   roof_light_wall_salv roof_salv_wall_strong roof_salv_wall_light
## 1                    2                     2                    2
## 2                    2                     2                    2
## 3                    2                     2                    2
## 4                    2                     2                    2
## 5                    2                     2                    2
## 6                    2                     2                    2
##   roof_salv_wall_salv vulnerable_groups pantawid_benef damage_perc Mun_Code_2
## 1                  80         2.9515109      46.931106   0.6958942  175101000
## 2                  80         0.8676028       8.967156          NA   30801000
## 3                  80         3.3388729      25.989168          NA   83701000
## 4                  80         1.9531554      18.821293          NA   45601000
## 5                  80         1.2020009      19.984709          NA   25701000
## 6                  80         2.1317553      32.185651          NA   15501000
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##   Population.2020.Census.          region island_groups wind_blue_ss
```

```
## 1                   35176 MIMAROPA Region       Luzon     5.125591
## 2                   42984    Central Luzon       Luzon     5.125591
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## 5                   30714   Cagayan Valley       Luzon     5.125591
## 6                   29947    Ilocos Region       Luzon     5.125591
##   wind_yellow_ss wind_orange_ss wind_red_ss rain_blue_ls rain_yellow_ls
## 1       5.125591       5.125591    5.125591     28.72393       28.72393
## 2       5.125591       5.125591    5.125591     28.72393       28.72393
## 3       5.125591       5.125591    5.125591     28.72393       28.72393
## 4       5.125591       5.125591    5.125591     28.72393       28.72393
## 5       5.125591       5.125591    5.125591     28.72393       28.72393
## 6       5.125591       5.125591    5.125591     28.72393       28.72393
##   rain_orange_ls rain_red_ls
## 1       28.72393    28.72393
## 2       28.72393    28.72393
## 3       28.72393    28.72393
## 4       28.72393    28.72393
## 5       28.72393    28.72393
## 6       28.72393    28.72393
```

```r
write.csv(low_melor_2015, here("data", "low_melor15_CF_data.csv"))

write.csv(high_melor_2015, here("data", "high_melor15_CF_data.csv"))
```