event_data_exploration

Hennes

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Libraries and Data

```
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.4     v readr     2.1.5
## v forcats   1.0.0     v stringr   1.5.1
## v ggplot2   3.5.1     v tibble    3.2.1
## v lubridate 1.9.3     v tidyr     1.3.1
## v purrr     1.0.2
## -- Conflicts ---------------------------------------- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
library(sf)
```

```
## Linking to GEOS 3.12.2, GDAL 3.8.5, PROJ 9.3.1; sf_use_s2() is TRUE
```

```
library(ggmap)
```

```
## i Google's Terms of Service: <https://mapsplatform.google.com>
##   Stadia Maps' Terms of Service: <https://stadiamaps.com/terms-of-service/>
##   OpenStreetMap's Tile Usage Policy: <https://operations.osmfoundation.org/policies/tiles/>
## i Please cite ggmap if you use it! Use `citation("ggmap")` for details.
```

```
library(ggspatial)
source("helpers.R")

df <- read_csv("../data/ACLED_Ukraine_2013-11-01-2024-12-16.csv")
```

```
## Rows: 189863 Columns: 31
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (23): event_id_cnty, event_date, disorder_type, event_type, sub_event_ty...
## dbl  (8): year, time_precision, iso, latitude, longitude, geo_precision, fat...
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

Variables

```
names(df)
```

```
##  [1] "event_id_cnty"      "event_date"         "year"
##  [4] "time_precision"     "disorder_type"      "event_type"
##  [7] "sub_event_type"     "actor1"             "assoc_actor_1"
## [10] "inter1"             "actor2"             "assoc_actor_2"
## [13] "inter2"             "interaction"        "civilian_targeting"
## [16] "iso"                "region"             "country"
## [19] "admin1"             "admin2"             "admin3"
## [22] "location"           "latitude"           "longitude"
## [25] "geo_precision"      "source"             "source_scale"
## [28] "notes"              "fatalities"         "tags"
## [31] "timestamp"
```

Actors

```
show_top(df, actor1, 30)
```

```
## # A tibble: 119 x 2
##    actor1                                                              n
##    <chr>                                                           <int>
##  1 Military Forces of Russia (2000-)                               99419
##  2 Military Forces of Ukraine (2019-)                              29910
##  3 Military Forces of Russia (2000-) Air Force                     22235
##  4 NAF: United Armed Forces of Novorossiya                         20616
##  5 Military Forces of Ukraine (2014-2019)                          12231
##  6 Military Forces of Ukraine (2019-) Air Force                     1135
##  7 Unidentified Armed Group (Ukraine)                               1055
##  8 Unidentified Military Forces                                      913
##  9 Police Forces of Ukraine (2019-) State Emergency Service of Ukraine  486
## 10 Civilians (Ukraine)                                              400
## 11 Military Forces of Ukraine (2019-) Marines                       244
## 12 Wagner Group                                                      92
## 13 Government of Ukraine (2019-)                                     89
## 14 Police Forces of Ukraine (2014-2019)                              79
## 15 Police Forces of Ukraine (2019-) State Border Guard Service       78
## 16 Police Forces of Ukraine (2019-) Security Service of Ukraine      72
## 17 Police Forces of Ukraine (2019-)                                  69
## 18 Melitopol Communal Militia (Ukraine)                              61
## 19 Military Forces of Russia (2000-) Navy                            54
## 20 Police Forces of Ukraine (2014-2019) Security Service of Ukraine  44
## 21 Police Forces of Russian Occupation Government (2022-) State Emergency~  35
## 22 Military Forces of Ukraine (2019-) National Guard                 33
## 23 Military Forces of Ukraine (2019-) Navy                           31
## 24 Mariupol Communal Militia (Ukraine)                               28
## 25 Police Forces of Russia (2000-)                                   26
## 26 Police Forces of Russia (2000-) Federal Security Service          25
## 27 Military Forces of Ukraine (2019-) Special Forces                 24
## 28 Military Forces of Ukraine (2019-) Territorial Defense Forces     24
## 29 Donetsk People's Republic - Police                                22
## 30 Military Forces of Russia (2000-) Chechen Battalion of Ramzan Kadyrov  20
## # i 89 more rows
```

```r
show_top(df, actor2, 30)
```

```
## # A tibble: 86 x 2
##    actor2                                                          n
##    <chr>                                                       <int>
##  1 <NA>                                                        84873
##  2 Military Forces of Ukraine (2019-)                          46383
##  3 NAF: United Armed Forces of Novorossiya                     19399
##  4 Civilians (Ukraine)                                         10178
##  5 Military Forces of Russia (2000-)                            8395
##  6 Military Forces of Ukraine (2014-2019)                       8057
##  7 Military Forces of Ukraine (2019-) Air Force                 4699
##  8 Military Forces of Russia (2000-) 1st Donetsk Army Corps     4217
##  9 Military Forces of Russia (2000-) Air Force                  2224
## 10 Unidentified Armed Group (Ukraine)                            272
## 11 Unidentified Military Forces                                  259
## 12 Police Forces of Ukraine (2019-) State Emergency Service of Ukraine   94
## 13 Military Forces of Ukraine (2019-) Territorial Defense Forces         86
## 14 Military Forces of Russia (2000-) 2nd Luhansk Army Corps              83
## 15 Police Forces of Ukraine (2019-)                                      77
## 16 Government of Russia (2000-)                                          72
## 17 Military Forces of Russia (2000-) Navy                                56
## 18 Military Forces of Ukraine (2019-) National Guard                     39
## 19 Civilians (Russia)                                                    38
## 20 Civilians (International)                                             36
## 21 Military Forces of Ukraine (2019-) Marines                            36
## 22 Police Forces of Ukraine (2019-) State Border Guard Service           33
## 23 Military Forces of Ukraine (2019-) Navy                               24
## 24 Military Forces of Ukraine (2019-) International Legion               23
## 25 Military Forces of Ukraine (2019-) Special Forces                     21
## 26 Police Forces of Russian Occupation Government (2022-)                20
## 27 Military Forces of Russia (2000-) Chechen Battalion of Ramzan Kadyrov 16
## 28 Police Forces of Ukraine (2014-2019)                                  12
## 29 Wagner Group                                                          12
## 30 Private Security Forces (Ukraine)                                      7
## # i 56 more rows
```

Geo Precision

```r
show_top(df, geo_precision)
```

```
## # A tibble: 3 x 2
##   geo_precision      n
##           <dbl>  <int>
## 1             2 126889
## 2             1  58796
## 3             3   4178
```

Event Type

```r
show_top(df, event_type)
```

```
## # A tibble: 4 x 2
##   event_type                      n
##   <chr>                       <int>
## 1 Explosions/Remote violence 125175
## 2 Battles                     53778
## 3 Strategic developments       9519
## 4 Violence against civilians   1391
```

Sub Event Type

```
show_top(df, sub_event_type)
```

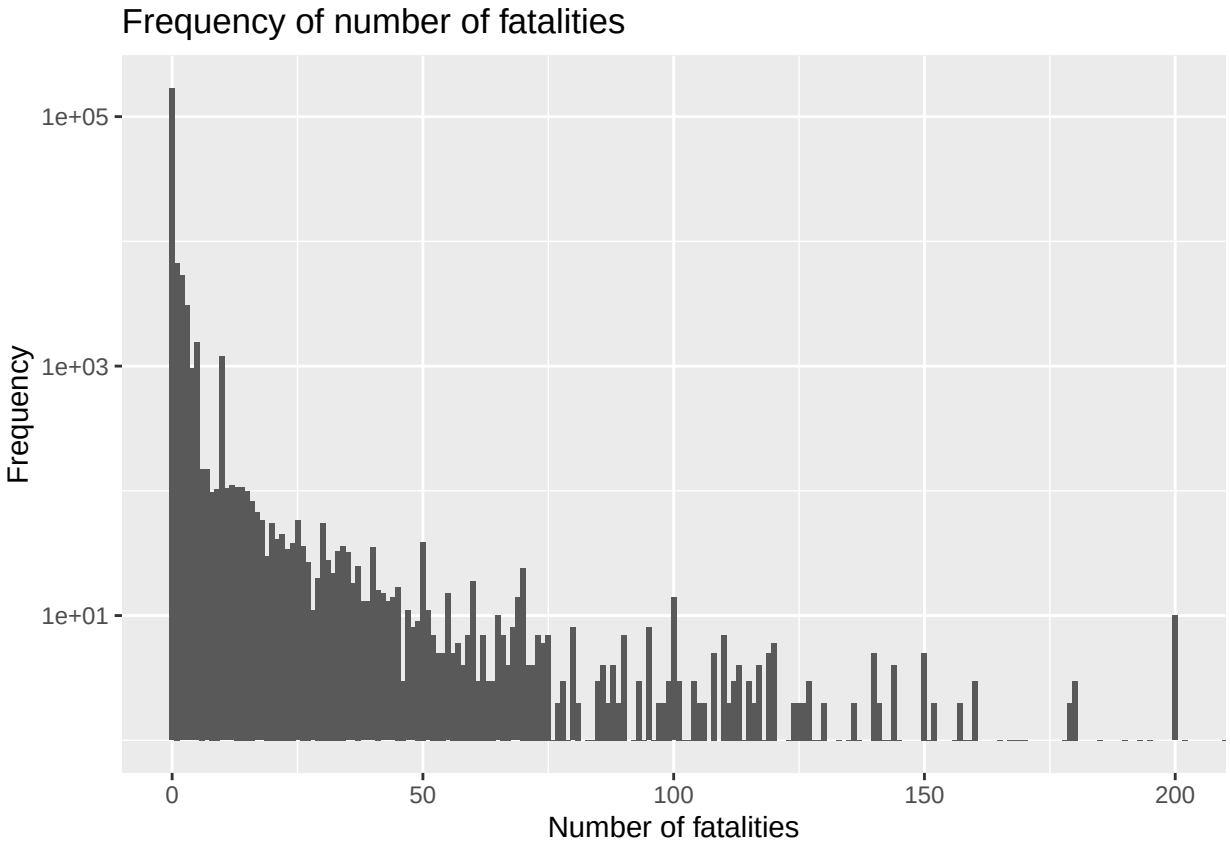
```
## # A tibble: 19 x 2
##    sub_event_type                      n
##    <chr>                           <int>
##  1 Shelling/artillery/missile attack   99967
##  2 Armed clash                         52931
##  3 Air/drone strike                    23295
##  4 Disrupted weapons use                7862
##  5 Remote explosive/landmine/IED        1819
##  6 Attack                                891
##  7 Non-state actor overtakes territory   516
##  8 Looting/property destruction          473
##  9 Other                                 471
## 10 Change to group/activity              439
## 11 Abduction/forced disappearance        401
## 12 Government regains territory          331
## 13 Non-violent transfer of territory     121
## 14 Sexual violence                        99
## 15 Grenade                                89
## 16 Agreement                              83
## 17 Arrests                                59
## 18 Headquarters or base established       11
## 19 Suicide bomb                            5
```

Plot the Frequency of Number of Fatalities

```
df %>% ggplot(aes(fatalities)) +
  scale_y_log10() +
  geom_histogram(binwidth = 1) +
  labs(title = "Frequency of number of fatalities", x = "Number of fatalities", y = "Frequency") +
  coord_cartesian(xlim = c(0, 200))
```

```
## Warning in scale_y_log10(): log-10 transformation introduced infinite values.
```

```
## Warning: Removed 426 rows containing missing values or values outside the scale range
## (`geom_bar()`).
```


Frequency of number of fatalities
Frequency
1e+05
1e+03
1e+01
0
50
100
150
200
Number of fatalities