Data Description

Three ESRI shape files are packed into **TXCNTY2018.ZIP**. All are in the ***long/lat*** format and must be imported in ® with the option `proj4string=CRS("+proj=longlat")` to map properly projected. Since these files were digitized for high resolution maps it may take ® a several seconds to draw the maps. Be a little patient and try to get right the first time!

The file names are:

- **TXCNTY.SHP**: *Area layer* with the 254 counties of Texas. Its associate **DBASE** file holds the attribute information for this analysis.
- **TXNEIGHBORS.SHP**: *Area layer* with the neighboring states of Mexico and the United States of America. You *may* use this shape file as reference frame for the Texas counties.
- **INTERSTATEHWY.SHP**: *Line layer* of the main highways in and around Texas. You *may* use this shape file as spatial reference frame to locate the Texas counties.

Variable in TXCNTY.DBF

All variable for this project were retrieved from [a] the American Community Survey by the U.S. Census Bureau (2012 release of the 5 years summary estimate), [b] the presidential election results for 2012 are documented in www.data.gov, and the 2016 presidential election results can be found at http://www.sos.state.tx.us/index.html, [c] the Texas Department of Public Safety for 2015 (https://www.dps.texas.gov/), the Texas Department of Transportation (http://www.txdot.gov/inside-txdot/division/finance/discos.html) for 2015/2016 and [d] calculated by Caliper Inc.

Name	Format	Description
		Geo Reference
ID	Integer	Internal shape identifier of the areas
AREA	Numeric	County area in square miles
SEQID	Numeric	Sequence number following the alphabetically sorted county names
FIPS	Character	Unique Census Bureau identifier of the counties
NAME	Character	County name
LINKNAME	Character	Internal name of counties to link to external TX databases
DISTMEX	Metric	Distance to the Mexican border in miles
LONG	Metric	Longitude of county centroid in decimal degrees
LAT	Metric	Latitude of county centroid in decimal degrees
		Crime Statistics
AGENCIES	Count	Number of police agencies within a county (2013)
OFFICERS	Count	Number of sworn-in police officers in a county (2013)

MURDER	Count	Number of murders in a county (2015)
RAPE	Count	Number of rapes in a county (2015)
ROBBERY	Count	Number of robberies in a county (2015)
ASSAULT	Count	Number of assaults in a county (2015)
BURGLARY	Count	Number of burglaries in a county(2015)
LARCENY	Count	Number of larceny/theft (excluding cars) in a county (2015)
CARTHEFT	Count	Number of car thefts in a county (2015)
TOTCRIME	Count	Total number of crimes in a county (2015)
CRIMERATE	RATE	Crime rate per 100.000 population in a county (2015)
2012 Presidential Election Results		
ROMVOT12	Count	Absolute number of votes for Governor Mitt Romney in 2012 (Republican Party)
OBAVOT12	Count	Absolute number of votes for President Obama in 2012 (Democratic Party)
OTHERVOT12	Count	Absolute number of votes for other candidates in 2012 (Green, Libertarian etc.)
TOTALVOT12	Count	Absolute number of voters in 2012
REGVOT12	Count	Absolute number of registered voters in 2012
TURNOUT12	Rate	Proportion of voter turnout in 2012 (TOTALVOT12/REGVOT12)
2016 Presidential Election Results		
TRUMPVOT16	Count	Absolute number of votes for Donald Trump in 2016 (Republican Party)
CLINTONVOT	Count	Absolute number of votes for Hillary Clinton in 2016 (Democratic Party)
OTHERVOT16	Count	Absolute number of votes for other candidates in 2016 (Green, Libertarian etc.)
TOTALVOT16	Count	Absolute number of voters in 2016
REGVOT16	Count	Absolute number of registered voters in 2016
TURNOUT16	Rate	Proportion of voter turnout in 2016 (TOTALVOT16/REGVOT16)
Census and Geographic Information		
AGE18PLUS	Rate	Proportion of persons 18 years and older
REGION	Factor	Classification of counties into the Texan regions
RELIGADHER	Factor	Declared adherence to a religion; grouped rates
POP2010	Count	Census county population (2010)
POPEST2015	Count	Estimated county population (2015)
POPCHG	Rate	Rate of population change from 2010 to 2015
POPCRIME	Count	Population at risk by county used TX Dept. of Public Safety (2015)
POPDENSE	Ratio	Population density by square miles
UNINSURED	Rate	Proportion of non-institutionalized uninsured population
URBRURAL	Factor	Classification of counties' population density into "Rural", "LightUrban", "Urban", "Metro"
MEDAGE	Numeric	Median age of population in county

AGE18LESS	Rate	Proportion of persons younger than 18 years
AGE18TO64	Rate	Proportion of persons between 18 and 64 years
AGE65UP	Rate	Proportion of persons 65 years and older
OWNHOUSE	Rate	Proportion of households owning their home
PARTBLACK	Rate	Proportion of any part Afro-American population
PARTASIAN	Rate	Proportion of any part Asian population
HISPORG	Rate	Proportion of population with Hispanic ethnic background
WHINOHISP	Rate	Proportion of White non-Hispanic population (Caucasian population)
SINGLEMOM	Rate	Proportion of single mother families
BIR15TO50	Numeric	Number of annual births per 10,000 women aged 15 to 50
BIR15TO19	Numeric	Number of annual births per 10,000 women aged 15 to 19
NOGOODENG	Rate	Proportion of population 5+ years who do not speak English well
NODIPLOMA	Rate	Proportion of population 25+ who do not have a High School diploma
COLLEGEDEG	Rate	Proportion of population 25+ who do have a college degree and above
INCOLLEGE	Rate	Proportion of population 16+ who are currently enrolled in a college or university
UNEMPL	Rate	Proportion of population in labor force who are currently unemployed
INARMY	Rate	Proportion of population in labor force who are currently serving in the armed forces
INCOME	Numeric	Per capita income ($)
POVERTY	Rate	Proportion of people living below the poverty line
MEDHOMEVAL	Numeric	Median home value ($)
HOMEDENSE	Rate	Proportion of households with less than one room per person
		TX Dept. of Transportation Statistics
VECREG	Count	Number of registered vehicles in a county (2015/2016)
TXDOTREGION	Factor	Regions used by TXDOT
VMDD	Count	Estimate vehicle miles driven daily in a county (2015/2016)
VMDDPC	Rate	Per capita vehicle miles driven daily
ROADMILES	Count	Number of highway miles in a county (2015/2016)
LANEMILES	Count	Number of highway lane miles in a county (2015/2016)
ROADCON	Count	Dollars spend on road construction in a county (2015/2016)
ROADMAIN	Count	Dollars spend on road maintenance in a county (2015/2016)

Data Summary

```
> summary(TX)                          # Check data in SpatialPolygonDataFrame
Object of class SpatialPolygonsDataFrame
Coordinates:
        min       max
x -106.64558 -93.50804
y   25.83716  36.50070
Is projected: FALSE
proj4string : [+proj=longlat +ellps=WGS84]
```

```
Data attributes:
     ID               AREA              SEQID              FIPS             NAME             LINKNAME          DISTMEX
 Min.   :  1.00   Min.   : 148.8   Min.   :  1.00   48001  :  1   Anderson : 1   ANDERSON : 1   Min.   :  8.373
 1st Qu.: 64.25   1st Qu.: 844.3   1st Qu.: 64.25   48003  :  1   Andrews  : 1   ANDREWS  : 1   1st Qu.:143.680
 Median :127.50   Median : 919.6   Median :127.50   48005  :  1   Angelina : 1   ANGELINA : 1   Median :254.886
 Mean   :127.50   Mean   :1043.0   Mean   :127.50   48007  :  1   Aransas  : 1   ARANSAS  : 1   Mean   :243.517
 3rd Qu.:190.75   3rd Qu.:1060.8   3rd Qu.:190.75   48009  :  1   Archer   : 1   ARCHER   : 1   3rd Qu.:338.871
 Max.   :254.00   Max.   :6199.4   Max.   :254.00   48011  :  1   Armstrong: 1   ARMSTRONG: 1   Max.   :474.842
                                                    (Other):248   (Other) :248   (Other) :248
      LONG               LAT            AGENCIES          OFFICERS          MURDER            RAPE
 Min.   :-106234828   Min.   :26129554   Min.   : 1.000   Min.   :    2.0   Min.   :  0.000   Min.   :   0.00
 1st Qu.:-100778539   1st Qu.:30134017   1st Qu.: 2.000   1st Qu.:   12.0   1st Qu.:  0.000   1st Qu.:   0.25
 Median : -98542696   Median :31783336   Median : 3.000   Median :   33.5   Median :  0.000   Median :   5.00
 Mean   : -98654178   Mean   :31661149   Mean   : 4.126   Mean   :  304.4   Mean   :  5.185   Mean   :  48.06
 3rd Qu.: -96573928   3rd Qu.:33177321   3rd Qu.: 4.000   3rd Qu.:   86.0   3rd Qu.:  2.000   3rd Qu.:  21.00
 Max.   : -93744742   Max.   :36278418   Max.   :42.000   Max.   :38546.0   Max.   :404.000   Max.   :1681.00

     ROBBERY           ASSAULT          BURGLARY          LARCENY           CARTHEFT          TOTCRIME
 Min.   :    0.00   Min.   :    0.0   Min.   :    0.00   Min.   :     0.00   Min.   :    0.00   Min.   :     4.0
 1st Qu.:    0.00   1st Qu.:    6.0   1st Qu.:   24.25   1st Qu.:    39.75   1st Qu.:    5.00   1st Qu.:    85.0
 Median :    3.00   Median :   35.0   Median :   94.00   Median :   204.00   Median :   18.00   Median :   362.5
 Mean   :  125.60   Mean   :  265.3   Mean   :  600.36   Mean   :  2189.05   Mean   :  264.19   Mean   :  3497.7
 3rd Qu.:   13.75   3rd Qu.:  104.0   3rd Qu.:  241.75   3rd Qu.:   751.75   3rd Qu.:   53.75   3rd Qu.:  1154.8
 Max.   :14293.00   Max.   :16602.0   Max.   :32374.00   Max.   :108379.00   Max.   :21796.00   Max.   :195529.0

    CRIMERATE         ROMVOT12          OBAVOT12          OTHERVOT12        TOTALVOT12        REGVOT12
 Min.   : 152.2   Min.   :    54   Min.   :     5.0   Min.   :     1.0   Min.   :     64   Min.   :    123
 1st Qu.:1292.7   1st Qu.:  1428   1st Qu.:   486.5   1st Qu.:    22.0   1st Qu.:   2035   1st Qu.:   3822
 Median :1930.1   Median :  4239   Median :  1661.5   Median :    69.5   Median :   6228   Median :  10905
 Mean   :2110.2   Mean   : 17992   Mean   : 13024.1   Mean   :   456.2   Mean   :  31472   Mean   :  53725
 3rd Qu.:2784.3   3rd Qu.: 12074   3rd Qu.:  4678.2   3rd Qu.:   188.2   3rd Qu.:  16748   3rd Qu.:  27908
 Max.   :7954.5   Max.   :586073   Max.   :587044.0   Max.   : 15468.0   Max.   :1188585   Max.   :2000011

    TURNOUT12        TRUMPVOT16        CLINTONVOT        OTHERVOT16        TOTALVOT16        REGVOT16
 Min.   :0.3494   Min.   :    58   Min.   :     4.0   Min.   :    3.00   Min.   :     65   Min.   :    110
 1st Qu.:0.5316   1st Qu.:  1465   1st Qu.:   400.8   1st Qu.:   54.75   1st Qu.:   2138   1st Qu.:   3905
 Median :0.5867   Median :  4612   Median :  1477.0   Median :  163.50   Median :   6434   Median :  11542
 Mean   :0.5782   Mean   : 18445   Mean   : 15267.2   Mean   : 1599.65   Mean   :  35312   Mean   :  59453
 3rd Qu.:0.6270   3rd Qu.: 13196   3rd Qu.:  4535.0   3rd Qu.:  511.00   3rd Qu.:  18522   3rd Qu.:  30931
 Max.   :0.8422   Max.   :545955   Max.   :707914.0   Max.   :58243.00   Max.   :1312112   Max.   :2234671

    TURNOUT16        AGE18PLUS                          REGION        RELIGADHER   POP2010            POPEST2015
 Min.   :0.3661   Min.   :0.6490   North Central  :44   < 35%:13   Min.   :     85   Min.   :     81
 1st Qu.:0.5412   1st Qu.:0.7248   East Texas     :43   < 50%:64   1st Qu.:   6763   1st Qu.:   6948
 Median :0.5948   Median :0.7523   High Plains    :41   > 50%:81   Median :  18241   Median :  18938
 Mean   :0.5892   Mean   :0.7518   Edwards Plateau:29   > 65%:96   Mean   :  99248   Mean   : 109154
 3rd Qu.:0.6403   3rd Qu.:0.7750   Low Rolling Plains:28          3rd Qu.:  49246   3rd Qu.:  50716
 Max.   :0.7883   Max.   :1.0000   South Central  :25             Max.   :4101752   Max.   :4573568
                                   (Other)        :44
     POPCHG           POPCRIME          POPDENSE          UNINSURED         URBRURAL          MEDAGE
 Min.   :-0.139188   Min.   :     88   Min.   :   0.1255   Min.   :0.06854   LightUrb: 25   Min.   :24.50
 1st Qu.:-0.002976   1st Qu.:   6381   1st Qu.:   6.5207   1st Qu.:0.19293   Metro   :  6   1st Qu.:35.20
 Median : 0.033958   Median :  17927   Median :  21.1743   Median :0.21482   Rural   :214   Median :38.40
 Mean   : 0.038751   Mean   : 108014   Mean   : 101.4261   Mean   :0.22091   Urban   :  9   Mean   :38.89
 3rd Qu.: 0.066179   3rd Qu.:  49151   3rd Qu.:  59.3414   3rd Qu.:0.24336                  3rd Qu.:42.70
 Max.   : 0.303965   Max.   :4566277   Max.   :2617.0810   Max.   :0.40288                  Max.   :55.30

    AGE18LESS         AGE18TO64         AGE65UP           OWNHOUSE          PARTBLACK         PARTASIAN
 Min.   :0.0000   Min.   :0.4735   Min.   :0.05882   Min.   :0.3869   Min.   :0.00000   Min.   :0.000000
 1st Qu.:0.2250   1st Qu.:0.5666   1st Qu.:0.12493   1st Qu.:0.6870   1st Qu.:0.01621   1st Qu.:0.002433
 Median :0.2477   Median :0.5871   Median :0.14908   Median :0.7301   Median :0.04702   Median :0.005933
 Mean   :0.2482   Mean   :0.5932   Mean   :0.15861   Mean   :0.7272   Mean   :0.06992   Mean   :0.010648
 3rd Qu.:0.2752   3rd Qu.:0.6132   3rd Qu.:0.19100   3rd Qu.:0.7794   3rd Qu.:0.09723   3rd Qu.:0.011105
 Max.   :0.3510   Max.   :0.9412   Max.   :0.32471   Max.   :0.8973   Max.   :0.34523   Max.   :0.182059

     HISPORG          WHINOHISP         SINGLEMOM         BIR15TO50         BIR15TO19         NOGOODENG
 Min.   :0.0295   Min.   :0.01319   Min.   :0.00000   Min.   :  0.00   Min.   :  0.00   Min.   :0.00000
 1st Qu.:0.1614   1st Qu.:0.45642   1st Qu.:0.07535   1st Qu.: 50.25   1st Qu.:  0.00   1st Qu.:0.03998
 Median :0.2414   Median :0.62671   Median :0.09871   Median : 62.00   Median : 36.00   Median :0.06709
 Mean   :0.3242   Mean   :0.59018   Mean   :0.09829   Mean   : 63.76   Mean   : 46.04   Mean   :0.09125
 3rd Qu.:0.4658   3rd Qu.:0.75456   3rd Qu.:0.12125   3rd Qu.: 77.75   3rd Qu.: 64.50   3rd Qu.:0.11359
 Max.   :0.9832   Max.   :0.95161   Max.   :0.18245   Max.   :211.00   Max.   :386.00   Max.   :0.50135

    NODIPLOMA         COLLEGEDEG        INCOLLEGE         UNEMPL            INARMY            INCOME
 Min.   :0.05979   Min.   :0.03658   Min.   :0.00000   Min.   :0.00000   Min.   :0.000000   Min.   :11537
 1st Qu.:0.16718   1st Qu.:0.13132   1st Qu.:0.03396   1st Qu.:0.05249   1st Qu.:0.000000   1st Qu.:19275
 Median :0.20061   Median :0.15843   Median :0.04639   Median :0.06971   Median :0.000000   Median :21992
 Mean   :0.21936   Mean   :0.17518   Mean   :0.05608   Mean   :0.06918   Mean   :0.004225   Mean   :22432
 3rd Qu.:0.25466   3rd Qu.:0.20237   3rd Qu.:0.06539   3rd Qu.:0.08479   3rd Qu.:0.001679   3rd Qu.:24756
 Max.   :0.55123   Max.   :0.48991   Max.   :0.35189   Max.   :0.16354   Max.   :0.242718   Max.   :40241
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     POVERTY            MEDHOMEVAL          HOMEDENSE           VECREG             TXDOTREGIO        VECREGPC
 Min.   :0.0000     Min.   : 36600     Min.   :0.00000    Min.   :     205    AMA    : 17    Min.   :0.6861
 1st Qu.:0.1406     1st Qu.: 67350     1st Qu.:0.02471    1st Qu.:    7348    LBB    : 17    1st Qu.:0.9739
 Median :0.1686     Median : 83300     Median :0.03486    Median :   23043    SJT    : 15    Median :1.1001
 Mean   :0.1748     Mean   : 90160     Mean   :0.03969    Mean   :   94638    ABL    : 13    Mean   :1.1330
 3rd Qu.:0.2049     3rd Qu.:104825     3rd Qu.:0.04729    3rd Qu.:   53541    CHS    : 13    3rd Qu.:1.2511
 Max.   :0.4273     Max.   :272800     Max.   :0.16301    Max.   : 3534529    ODA    : 12    Max.   :2.9231
                                                                             (Other):167
       VMDD               VMDDPC             ROADMILES          LANEMILES           ROADCON           ROADMAIN
 Min.   :   45796   Min.   :   8.901   Min.   :  34.0     Min.   :  68.0     Min.   :    -2132   Min.   :  389454
 1st Qu.:  335638   1st Qu.:  23.809   1st Qu.: 209.5     1st Qu.: 468.0     1st Qu.:   382835   1st Qu.: 6054833
 Median :  709359   Median :  32.122   Median : 293.0     Median : 681.5     Median :  2308647   Median :13366698
 Mean   : 2030971   Mean   :  57.249   Mean   : 316.1     Mean   : 770.2     Mean   : 18212328   Mean   :32571282
 3rd Qu.: 1598928   3rd Qu.:  52.287   3rd Qu.: 378.2     3rd Qu.: 890.8     3rd Qu.:  9088642   3rd Qu.:25051632
 Max.   :60390553   Max.   :1203.916   Max.   :1272.0     Max.   :5057.0     Max.   :703246397   Max.   :776695177
```

Maps of Vote Percentage for Presidential Elections in 2016