



## 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](http://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)

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

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

## Data Summary

```

> summary(TX)
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]
# Check data in SpatialPolygonDataFrame

```

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	
TURNOT12	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	
TURNOT16	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 : 0.010638	
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	SINGLEMEM	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	

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

