

Summary for Weekly Report

List of states covered (based on the Clark paper)

- 48 states + D.C.
- Not included were Alaska, Hawaii, Puerto Rico. (All states and territories not in the mainland)

Population given in 2000 and 2010 compared to information online (from the processed data file)

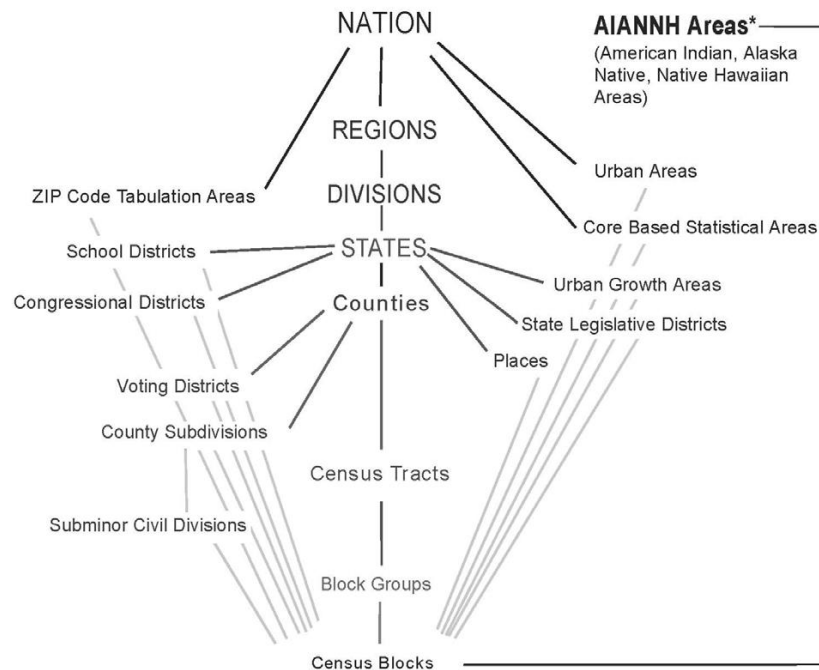
	Y2000	Y2010
Given		306,675,006
Online	281,421,906	306,675,006

Different levels of geographical areas & divisional hierarchy in US

The Census Bureau recognizes more than one type of geographical hierarchy for the US, the reason for that are that different data users need different data summary types (for example schools need a school district hierarchy), however, for population counts the Census Bureau collects the counts at the Census block level which is the smallest geographical entity that feed to all other hierarchy. For our study we will using the current hierarchy (the middle most hierarchy).

(Census block > Block Group > Census Tracts > Counties > States > Divisions and Regions > Nation)

In this hierarchy the lowest levels encompass the geographical area of the level above it and does not cross its boundaries. Unlike the other hierarchies (i.e. ZIP codes, the census blocks covers all the geographic area of the level above it but might also cross its boundaries).



* Refer to the "Hierarchy of American Indian, Alaska Native, and Native Hawaiian Areas"

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Census Regions, Census Divisions, and Their Constituent States

The highest summary level data below the Nation level we will be using is the (Division > Region). Clark et al. presented her summary data using the (Divisions) but named them (Regions) in the paper. The following present the Divisions/Regions and their constituent states according to the 2010 Census Bureau definition:

Figure A-3. (2010_reference)

Northeast Region

- *New England Division:*
 - Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut
- *Middle Atlantic Division:*
 - New York, New Jersey, Pennsylvania

Midwest Region

- *East North Central Division:*
 - Ohio, Indiana, Illinois, Michigan, Wisconsin
- *West North Central Division:*
 - Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas

South Region

- *South Atlantic Division:*
 - Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida
- *East South Central Division:*
 - Kentucky, Tennessee, Alabama, Mississippi
- *West South Central Division:*
 - Arkansas, Louisiana, Oklahoma, Texas

West Region

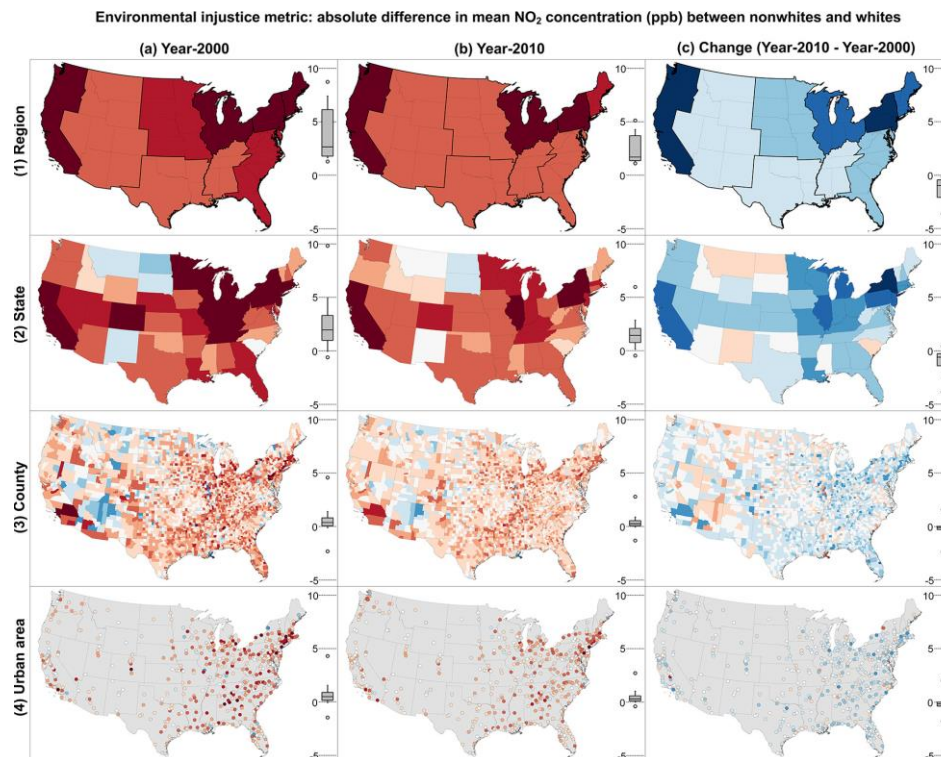
- *Mountain Division:*
 - Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada
- *Pacific Division:*
 - Washington, Oregon, California, Alaska, Hawaii

Summary for Weekly Report

Figure 6-1. Census Regions and Divisions of the United States (Defined by the 2010 Census Bureau)



From Clarks paper (Plotted division but named them regions)



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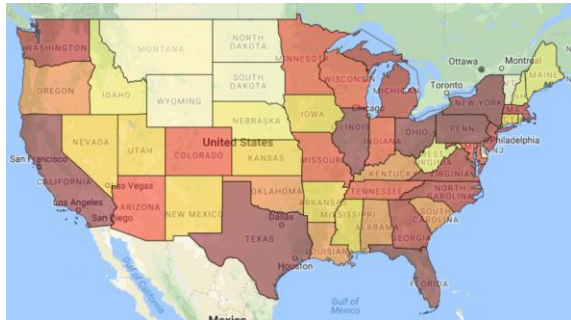
What is the difference between block level and block group level? What did Clark et al. 2017 use?

Blocks (Census Blocks) are **statistical areas bounded by visible features**, such as streets, roads, streams, and railroad tracks, and by nonvisible boundaries, such as selected property lines and city, township, school district, and county limits and short line-of-sight extensions of streets and roads. Generally, census blocks are small in area; for example, a block in a city bounded on all sides by streets. Census blocks in suburban and rural areas may be large, irregular, and bounded by a variety of features, such as roads, streams, and transmission lines. In remote areas, census blocks may encompass hundreds of square miles. Census blocks cover the entire territory of the United States, Puerto Rico, and the Island Areas. **Census blocks nest within all other tabulated census geographic entities and are the basis for all tabulated data.**

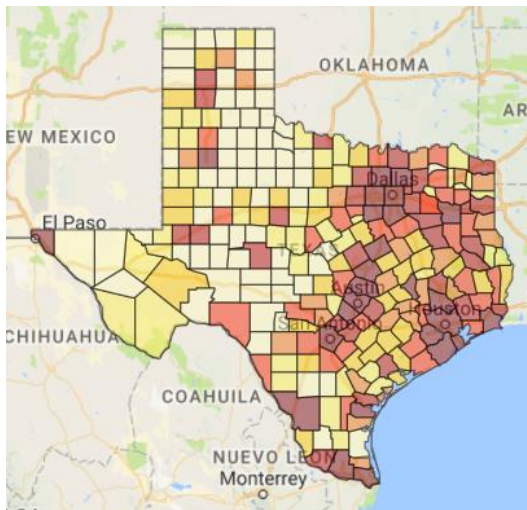
Block Groups (BGs) are **statistical divisions of census tracts, are generally defined to contain between 600 and 3,000 people**, and are used to present data and control block numbering. **A block group consists of clusters of blocks within the same census tract** that have the same first digit of their four-digit census block number. For example, blocks 3001, 3002, 3003, . . . , 3999 in census tract 1210.02 belong to BG 3 in that census tract. Most BGs were delineated by local participants in the Census Bureau's Participant Statistical Areas Program. The Census Bureau delineated BGs only where a local or tribal government declined to participate, and a regional organization or State Data Center was not available to participate. A BG usually covers a contiguous area. **Each census tract contains at least one BG, and BGs are uniquely numbered within the census tract.** Within the standard census geographic hierarchy, **BGs never cross state, county, or census tract boundaries** but may cross the boundaries of any other geographic entity.

Graphical description of the Census Hierarchy (an example)

National level of the contingent US (48 States + DC)



State of Texas

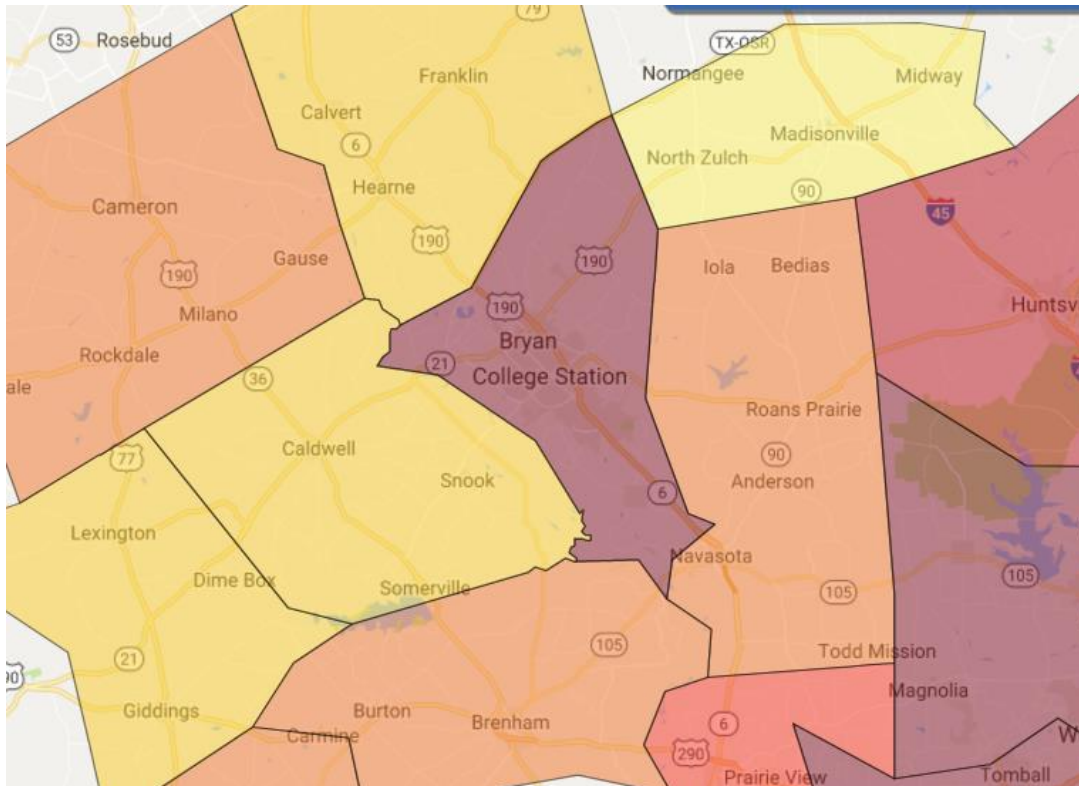


	TX - Texas
Male	12,472,280
Female	12,673,281
Under 18	6,865,824
18 and over	18,279,737
20-24	1,817,079
25-34	3,613,473
35-49	5,218,849
50 -64	4,272,560
65 & over	2,601,886

	TX - Texas
White	17,701,552
African American	2,979,598
Asian	964,596
AIAN	170,972
NHPI	21,656
Some Other Race	2,628,186
Two or more Races	679,001

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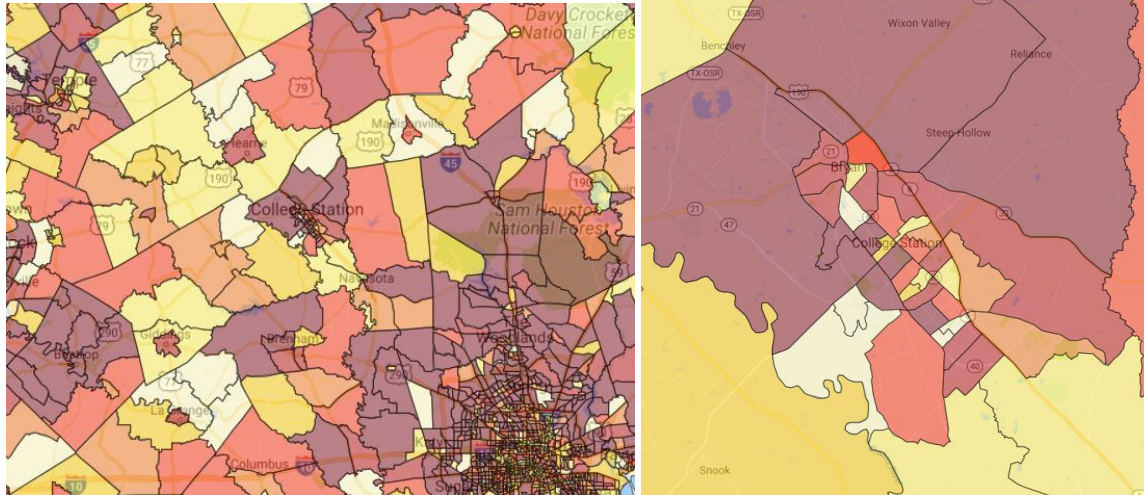
Brazos County



	TX - Brazos County		TX - Brazos County
Male	98,630	White	142,814
Female	96,221	African American	21,414
Under 18	39,831	Asian	10,083
18 and over	155,020	AIAN	865
20-24	42,690	NHPI	119
25-34	29,816	Some Other Race	14,997
35-49	28,378	Two or more Races	4,559
50 -64	22,655		
65 & over	14,059		

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Brazos County with censu tracts

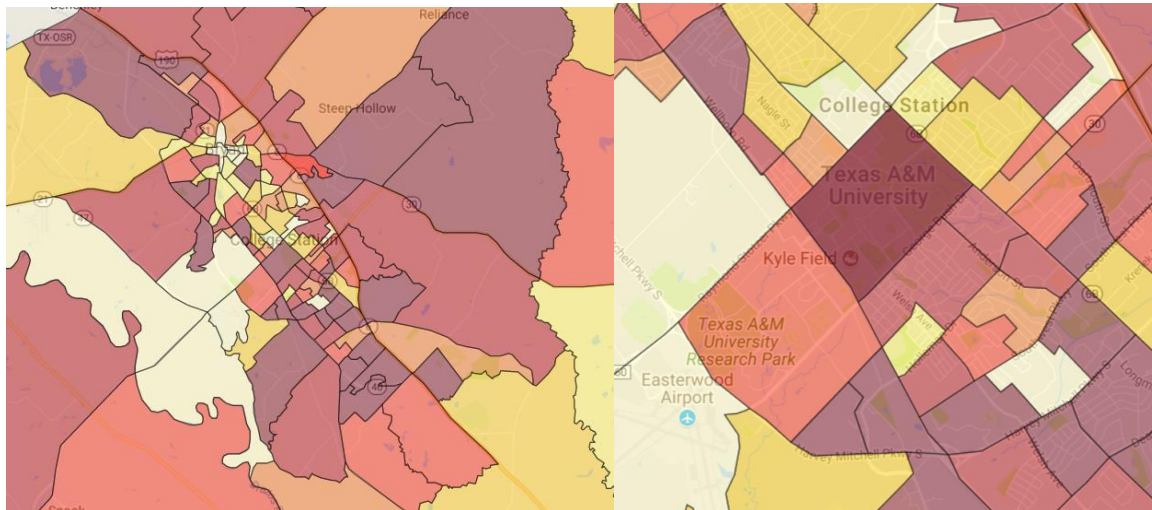


	TX - Brazos County - Census Tract 10
Male	4,402
Female	3,465
Under 18	1,378
18 and over	6,489
20-24	2,682
25-34	1,383
35-49	772
50 -64	515
65 & over	281

	TX - Brazos County - Census Tract 10
White	5,158
African American	925
Asian	690
AIAN	36
NHPI	4
Some Other Race	818
Two or more Races	236

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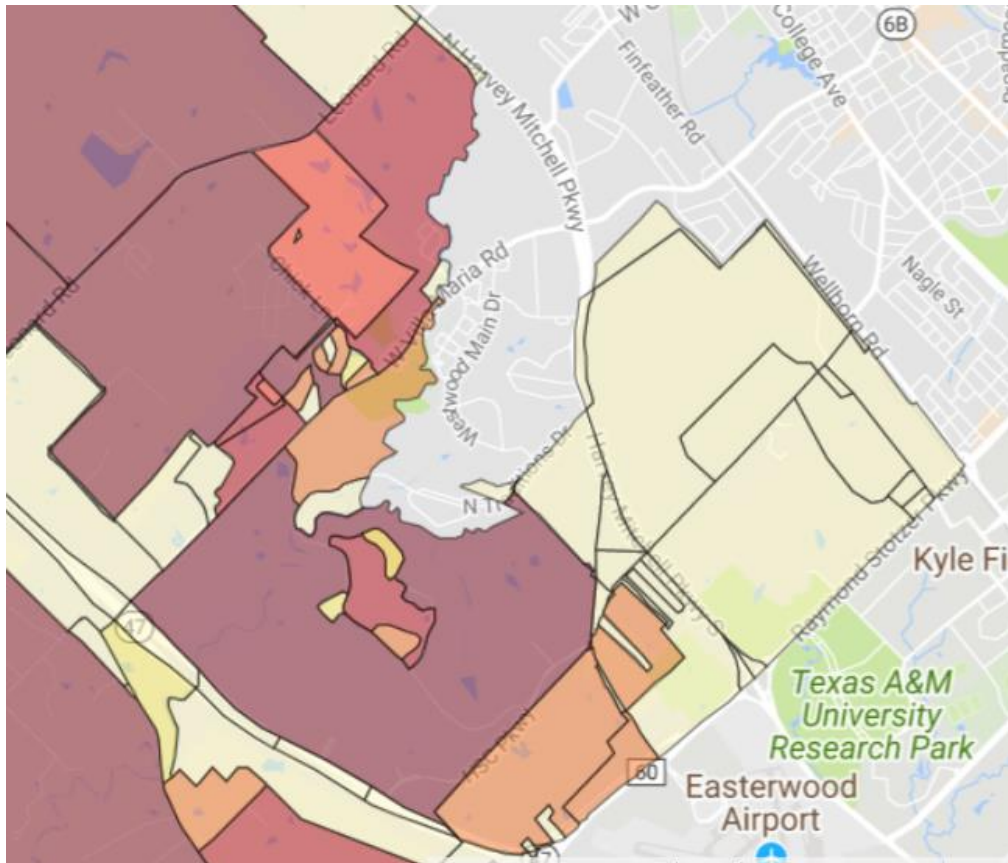
Census Block Group



	TX - Brazos County - Census Tract 10 - Block Group 4		TX - Brazos County - Census Tract 10 - Block Group 4
Male	662	White	890
Female	422	African American	71
Under 18	141	Asian	59
18 and over	943	AIAN	2
20-24	394	NHPI	0
25-34	193	Some Other Race	44
35-49	133	Two or more Races	18
50 -64	107		
65 & over	76		

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Census Block



	TX - Brazos County - Census Tract 2.02 - Block 2017
Male	42
Female	30
Under 18	13
18 and over	59
20-24	8
25-34	14
35-49	23
50 -64	9
65 & over	4

	TX - Brazos County - Census Tract 2.02 - Block 2017
White	65
African American	5
Asian	0
AIAN	0
NHPI	0
Some Other Race	2
Two or more Races	0

- Couldn't find if socioeconomic data is available at the block level.
- However race/ethnicity was available at the block level

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Number of Census Blocks & description of census block 2000 vs 2010

FIPS	Name	# Census Blocks 2000	# Census Blocks 2010	# Change	%Change
	United States	8,205,582	11,078,297	2,872,715	35
1	Alabama	175,220	252,266	77,046	44
2	Alaska	21,874	45,292	23,418	107.1
4	Arizona	158,294	241,666	83,372	52.7
5	Arkansas	141,178	186,211	45,033	31.9
6	California	533,163	710,145	176,982	33.2
8	Colorado	141,040	201,062	60,022	42.6
9	Connecticut	53,835	67,578	13,743	25.5
10	Delaware	17,483	24,115	6,632	37.9
11	D.C	5,674	6,507	833	14.7
12	Florida	362,499	484,481	121,982	33.7
13	Georgia	214,576	291,086	76,510	35.7
15	Hawaii	18,990	25,016	6,026	31.7
16	Idaho	88,452	149,842	61,390	69.4
17	Illinois	366,137	451,554	85,417	23.3
18	Indiana	201,321	267,071	65,750	32.7
19	Iowa	168,075	216,007	47,932	28.5
20	Kansas	173,107	238,600	65,493	37.8
21	Kentucky	122,141	161,672	39,531	32.4
22	Louisiana	139,867	204,447	64,580	46.2
23	Maine	56,893	69,518	12,625	22.2
24	Maryland	79,128	145,247	66,119	83.6
25	Massachusetts	109,997	157,508	47,511	43.2
26	Michigan	258,925	329,885	70,960	27.4
27	Minnesota	200,222	259,777	59,555	29.7
28	Mississippi	136,150	171,778	35,628	26.2
29	Missouri	241,532	343,565	102,033	42.2
30	Montana	99,018	132,288	33,270	33.6
31	Nebraska	133,692	193,352	59,660	44.6
32	Nevada	60,831	84,538	23,707	39
33	New Hampshire	34,728	48,837	14,109	40.6
34	New Jersey	141,342	169,588	28,246	20
35	New Mexico	137,055	168,609	31,554	23
36	New York	298,506	350,169	51,663	17.3
37	North Carolina	232,403	288,987	56,584	24.3
38	North Dakota	84,351	133,769	49,418	58.6
39	Ohio	277,807	365,344	87,537	31.5
40	Oklahoma	176,064	269,118	93,054	52.9
41	Oregon	156,232	196,621	40,389	25.9
42	Pennsylvania	322,424	421,545	99,121	30.7
44	Rhode Island	21,023	25,181	4,158	19.8
45	South Carolina	143,919	181,908	37,989	26.4
46	South Dakota	77,951	88,360	10,409	13.4
47	Tennessee	182,203	240,116	57,913	31.8
48	Texas	675,062	914,231	239,169	35.4
49	Utah	74,704	115,406	40,702	54.5
50	Vermont	24,824	32,580	7,756	31.2
51	Virginia	145,399	285,762	140,363	96.5
53	Washington	170,871	195,574	24,703	14.5
54	West Virginia	81,788	135,218	53,430	65.3
55	Wisconsin	200,348	253,096	52,748	26.3
56	Wyoming	67,264	86,204	18,940	28.2
72	Puerto Rico	56,781	77,189	20,408	35.9

Summary for Weekly Report

- We will have a separate excel file containing summary data by Nation/State level;
 - < 18 counts for both gender
 - Area summary statistics
 - Socioeconomic status
 - Summary statistics for block level description

Example images

	A	B	C	D	E	F	G	H	I	J	K	L
1			Count Numbers				Summary Stats for Block counts					
2	FIPS	Name	# Census Blocks 2000	# Census Blocks 2010	# Change	%Change	Mean	Min	25%	Median	75%	Max
3		United States	8,205,582	11,078,297	2,872,715	35						
4	1	Alabama	175,220	252,266	77,046	44						
5	2	Alaska	21,874	45,292	23,418	107.1						
6	4	Arizona	158,294	241,666	83,372	52.7						
7	5	Arkansas	141,178	186,211	45,033	31.9						
8	6	California	533,163	710,145	176,982	33.2						
9	8	Colorado	141,040	201,062	60,022	42.6						
10	9	Connecticut	53,835	67,578	13,743	25.5						

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1				< 18 characteristics						Area characteristics (m2)						
2	FIPS	Name	# Census Blocks 2000	Total	Males	Females	Mean	Min	Max	% <6 year	Mean	Min	Max	Mean Ur	Mean Ru	Mean com
3		United States	8,205,582													
4	1	Alabama	175,220													
5	2	Alaska	21,874													
6	4	Arizona	158,294													
7	5	Arkansas	141,178													
8	6	California	533,163													
9	8	Colorado	141,040													

How did Clark measure average NO2?

The paper estimated the population weighted average of NO2.

*Formula = sum (Annual average NO2 for Y2010 by block * Block population for Y2010) / sum (Block population for Y2010)*

	2000	2010
Clarks result		8.9
My results (processed data)		8.859058

Summary for Weekly Report

Questions That need answering

- Discrepancy in population count between data given and online [Answered: There is no discrepancy I found the problem]
- The processed data shows that there are 11.08 million census blocks for both years 2000/2010, however official data indicates that there are only 8.2 million census blocks for year 2000. Why is there a discrepancy between counts, and how was the extra block formulated [Answer: need to go through the email conversation first]
- Is there a readily available data set with the 2000 population count at the census block level?
- Is there data available for Socioeconomic data at the census block level?
- Is there a person within TTI who is knowledgeable with the US census data sets?

After going through the email conversation, I read these points:

Lara is finishing her PhD in the next month, she doesn't have the bandwidth to take this on; also, she might not be the best person. Another person in my group (Matt Bechle) would be better suited. We have these data. The air pollution data are easy for us to get. The Census data are available, but in a few places; we can pull those together in a little bit. It takes some work, not a lot, and we have done it before. (Note: the demographic data you seek have different geographies... for example, race is unavailable at the Block level, only at the Block Group level. More on that later.) We can also share with you where we got them, and what we did, so you have that information. I asked Matt to look into the timing next week; we'll be in touch shortly. Sound ok?

I now have all of the demographic data, they are available at block and block group level (these are nested Census boundaries). We have pollution estimates at the block level. I can provide data at all blocks, assigning block group level data to all blocks. Alternatively I can provide a separate file for block and block group level data with the block group IDs provided with the block level. Let me know which is best for you.

We are working on empirical models of criteria pollutants as part the EPA ACE center, and will have year 2000 and 2010 estimates at the block level for PM2.5, PM10, PM2.5-10, NO2, O3, SO2, and CO by the end of October. We can share those when we have them.

I'm aiming to have the demographic data ready to share by mid-week next week.

Here is a link to download a zipped folder with the data. I have provided both the processed data and the raw data. In the processed data folder I have included a summary file that provides details about the input and output files, and notes on data processing. All data comes from the National Historic Geographic Information System (NHGIS). You requested corresponding shapefiles for the blocks, these can be obtained from the NHGIS website. You will need to create a login, and can then download a file for each state (set the geographic levels filter to "BLOCK" and years filter to "2010", the shapefiles will appear in the "GIS boundary files" tab). To simplify the joining of data and shapefiles, the GISJOIN ID in all of the files I provided will be the same as those included in the shapefiles.

The NO2 data provided here is the same as was used in Lara's recent longitudinal EJ paper. As I mentioned in an earlier email, we will have block level predictions for many pollutants (PM2.5, PM10, PM2.5-10, NO2, SO2, O3, CO) for years 2000 and 2010 in ~1 week. I will share these when we have them.

I'll have to thoroughly go through the data we have to understand how to put it together!