

RasmussenWyattWeek5Exercises

Wyatt Rasmussen

4/18/2021

Wyatt Rasmussen

Week 5 Exercises

```
getwd( )
```

```
## [1] "/Users/wrasmussen/Desktop/MastersOfDataScience/DSC520/dsc520/dsc520/assignments/  
wyattassignments"
```

Creating a dataframe using read.csv

```
am_comm_df <- read.csv("acs-14-1yr-s0201.csv")  
am_comm_df
```

##		Id	Id2	Geography	PopGroupID
## 1	05000000US01073	1073		Jefferson County, Alabama	1
## 2	05000000US04013	4013		Maricopa County, Arizona	1
## 3	05000000US04019	4019		Pima County, Arizona	1
## 4	05000000US06001	6001		Alameda County, California	1
## 5	05000000US06013	6013		Contra Costa County, California	1
## 6	05000000US06019	6019		Fresno County, California	1
## 7	05000000US06029	6029		Kern County, California	1
## 8	05000000US06037	6037		Los Angeles County, California	1
## 9	05000000US06059	6059		Orange County, California	1
## 10	05000000US06065	6065		Riverside County, California	1
## 11	05000000US06067	6067		Sacramento County, California	1
## 12	05000000US06071	6071		San Bernardino County, California	1
## 13	05000000US06073	6073		San Diego County, California	1
## 14	05000000US06075	6075		San Francisco County, California	1
## 15	05000000US06077	6077		San Joaquin County, California	1
## 16	05000000US06081	6081		San Mateo County, California	1
## 17	05000000US06085	6085		Santa Clara County, California	1
## 18	05000000US06097	6097		Sonoma County, California	1
## 19	05000000US06099	6099		Stanislaus County, California	1
## 20	05000000US06111	6111		Ventura County, California	1
## 21	05000000US08005	8005		Arapahoe County, Colorado	1
## 22	05000000US08031	8031		Denver County, Colorado	1
## 23	05000000US08041	8041		El Paso County, Colorado	1
## 24	05000000US08059	8059		Jefferson County, Colorado	1
## 25	05000000US09001	9001		Fairfield County, Connecticut	1
## 26	05000000US09003	9003		Hartford County, Connecticut	1
## 27	05000000US09009	9009		New Haven County, Connecticut	1
## 28	05000000US10003	10003		New Castle County, Delaware	1
## 29	05000000US11001	11001	District of Columbia, District of Columbia		1
## 30	05000000US12009	12009		Brevard County, Florida	1
## 31	05000000US12011	12011		Broward County, Florida	1
## 32	05000000US12031	12031		Duval County, Florida	1
## 33	05000000US12057	12057		Hillsborough County, Florida	1
## 34	05000000US12071	12071		Lee County, Florida	1
## 35	05000000US12086	12086		Miami-Dade County, Florida	1
## 36	05000000US12095	12095		Orange County, Florida	1
## 37	05000000US12099	12099		Palm Beach County, Florida	1
## 38	05000000US12103	12103		Pinellas County, Florida	1
## 39	05000000US12105	12105		Polk County, Florida	1
## 40	05000000US12127	12127		Volusia County, Florida	1
## 41	05000000US13067	13067		Cobb County, Georgia	1
## 42	05000000US13089	13089		DeKalb County, Georgia	1
## 43	05000000US13121	13121		Fulton County, Georgia	1
## 44	05000000US13135	13135		Gwinnett County, Georgia	1
## 45	05000000US15003	15003		Honolulu County, Hawaii	1
## 46	05000000US17031	17031		Cook County, Illinois	1
## 47	05000000US17043	17043		DuPage County, Illinois	1
## 48	05000000US17089	17089		Kane County, Illinois	1
## 49	05000000US17097	17097		Lake County, Illinois	1
## 50	05000000US17197	17197		Will County, Illinois	1
## 51	05000000US18097	18097		Marion County, Indiana	1
## 52	05000000US20091	20091		Johnson County, Kansas	1

## 53	0500000US20173	20173	Sedgwick County, Kansas	1
## 54	0500000US21111	21111	Jefferson County, Kentucky	1
## 55	0500000US24003	24003	Anne Arundel County, Maryland	1
## 56	0500000US24005	24005	Baltimore County, Maryland	1
## 57	0500000US24031	24031	Montgomery County, Maryland	1
## 58	0500000US24033	24033	Prince George's County, Maryland	1
## 59	0500000US24510	24510	Baltimore city, Maryland	1
## 60	0500000US25005	25005	Bristol County, Massachusetts	1
## 61	0500000US25009	25009	Essex County, Massachusetts	1
## 62	0500000US25017	25017	Middlesex County, Massachusetts	1
## 63	0500000US25021	25021	Norfolk County, Massachusetts	1
## 64	0500000US25023	25023	Plymouth County, Massachusetts	1
## 65	0500000US25025	25025	Suffolk County, Massachusetts	1
## 66	0500000US25027	25027	Worcester County, Massachusetts	1
## 67	0500000US26081	26081	Kent County, Michigan	1
## 68	0500000US26099	26099	Macomb County, Michigan	1
## 69	0500000US26125	26125	Oakland County, Michigan	1
## 70	0500000US26163	26163	Wayne County, Michigan	1
## 71	0500000US27053	27053	Hennepin County, Minnesota	1
## 72	0500000US27123	27123	Ramsey County, Minnesota	1
## 73	0500000US29095	29095	Jackson County, Missouri	1
## 74	0500000US29189	29189	St. Louis County, Missouri	1
## 75	0500000US31055	31055	Douglas County, Nebraska	1
## 76	0500000US32003	32003	Clark County, Nevada	1
## 77	0500000US34003	34003	Bergen County, New Jersey	1
## 78	0500000US34007	34007	Camden County, New Jersey	1
## 79	0500000US34013	34013	Essex County, New Jersey	1
## 80	0500000US34017	34017	Hudson County, New Jersey	1
## 81	0500000US34023	34023	Middlesex County, New Jersey	1
## 82	0500000US34025	34025	Monmouth County, New Jersey	1
## 83	0500000US34029	34029	Ocean County, New Jersey	1
## 84	0500000US34031	34031	Passaic County, New Jersey	1
## 85	0500000US34039	34039	Union County, New Jersey	1
## 86	0500000US35001	35001	Bernalillo County, New Mexico	1
## 87	0500000US36005	36005	Bronx County, New York	1
## 88	0500000US36029	36029	Erie County, New York	1
## 89	0500000US36047	36047	Kings County, New York	1
## 90	0500000US36055	36055	Monroe County, New York	1
## 91	0500000US36059	36059	Nassau County, New York	1
## 92	0500000US36061	36061	New York County, New York	1
## 93	0500000US36081	36081	Queens County, New York	1
## 94	0500000US36103	36103	Suffolk County, New York	1
## 95	0500000US36119	36119	Westchester County, New York	1
## 96	0500000US37081	37081	Guilford County, North Carolina	1
## 97	0500000US37119	37119	Mecklenburg County, North Carolina	1
## 98	0500000US37183	37183	Wake County, North Carolina	1
## 99	0500000US39035	39035	Cuyahoga County, Ohio	1
## 100	0500000US39049	39049	Franklin County, Ohio	1
## 101	0500000US39061	39061	Hamilton County, Ohio	1
## 102	0500000US39113	39113	Montgomery County, Ohio	1
## 103	0500000US39153	39153	Summit County, Ohio	1
## 104	0500000US40109	40109	Oklahoma County, Oklahoma	1
## 105	0500000US40143	40143	Tulsa County, Oklahoma	1
## 106	0500000US41051	41051	Multnomah County, Oregon	1

## 107	05000000US41067	41067	Washington County, Oregon	1
## 108	05000000US42003	42003	Allegheny County, Pennsylvania	1
## 109	05000000US42017	42017	Bucks County, Pennsylvania	1
## 110	05000000US42029	42029	Chester County, Pennsylvania	1
## 111	05000000US42045	42045	Delaware County, Pennsylvania	1
## 112	05000000US42071	42071	Lancaster County, Pennsylvania	1
## 113	05000000US42091	42091	Montgomery County, Pennsylvania	1
## 114	05000000US42101	42101	Philadelphia County, Pennsylvania	1
## 115	05000000US44007	44007	Providence County, Rhode Island	1
## 116	05000000US47037	47037	Davidson County, Tennessee	1
## 117	05000000US47157	47157	Shelby County, Tennessee	1
## 118	05000000US48029	48029	Bexar County, Texas	1
## 119	05000000US48085	48085	Collin County, Texas	1
## 120	05000000US48113	48113	Dallas County, Texas	1
## 121	05000000US48121	48121	Denton County, Texas	1
## 122	05000000US48141	48141	El Paso County, Texas	1
## 123	05000000US48157	48157	Fort Bend County, Texas	1
## 124	05000000US48201	48201	Harris County, Texas	1
## 125	05000000US48215	48215	Hidalgo County, Texas	1
## 126	05000000US48339	48339	Montgomery County, Texas	1
## 127	05000000US48439	48439	Tarrant County, Texas	1
## 128	05000000US48453	48453	Travis County, Texas	1
## 129	05000000US49035	49035	Salt Lake County, Utah	1
## 130	05000000US49049	49049	Utah County, Utah	1
## 131	05000000US51059	51059	Fairfax County, Virginia	1
## 132	05000000US53033	53033	King County, Washington	1
## 133	05000000US53053	53053	Pierce County, Washington	1
## 134	05000000US53061	53061	Snohomish County, Washington	1
## 135	05000000US55025	55025	Dane County, Wisconsin	1
## 136	05000000US55079	55079	Milwaukee County, Wisconsin	1
##	POPGROUP.display.label	RacesReported	HSDegree	BachDegree
## 1	Total population	660793	89.1	30.5
## 2	Total population	4087191	86.8	30.2
## 3	Total population	1004516	88.0	30.8
## 4	Total population	1610921	86.9	42.8
## 5	Total population	1111339	88.8	39.7
## 6	Total population	965974	73.6	19.7
## 7	Total population	874589	74.5	15.4
## 8	Total population	10116705	77.5	30.3
## 9	Total population	3145515	84.6	38.0
## 10	Total population	2329271	80.6	20.7
## 11	Total population	1482026	86.8	28.9
## 12	Total population	2112619	78.6	18.9
## 13	Total population	3263431	86.6	37.1
## 14	Total population	852469	88.1	54.2
## 15	Total population	715597	77.6	18.3
## 16	Total population	758581	88.1	47.5
## 17	Total population	1894605	87.4	48.4
## 18	Total population	500292	87.6	34.8
## 19	Total population	531997	78.4	17.0
## 20	Total population	846178	83.6	31.6
## 21	Total population	618821	91.9	40.9
## 22	Total population	663862	85.5	44.3
## 23	Total population	663519	92.8	36.5

## 24	Total population	558503	94.1	42.0
## 25	Total population	945438	89.8	46.7
## 26	Total population	897985	89.3	36.8
## 27	Total population	861277	89.5	34.5
## 28	Total population	552778	90.1	35.8
## 29	Total population	658893	90.2	55.0
## 30	Total population	556885	91.6	27.2
## 31	Total population	1869235	88.4	30.5
## 32	Total population	897698	89.0	26.1
## 33	Total population	1316298	87.3	29.8
## 34	Total population	679513	86.3	26.5
## 35	Total population	2662874	80.9	26.6
## 36	Total population	1253001	87.9	31.4
## 37	Total population	1397710	87.7	33.0
## 38	Total population	938098	90.1	29.5
## 39	Total population	634638	84.9	19.7
## 40	Total population	507531	88.9	22.5
## 41	Total population	730981	90.3	43.7
## 42	Total population	722161	88.4	41.7
## 43	Total population	996319	91.3	49.2
## 44	Total population	877922	88.0	35.4
## 45	Total population	991788	91.8	32.6
## 46	Total population	5246456	85.5	36.2
## 47	Total population	932708	92.3	48.0
## 48	Total population	527306	82.9	32.6
## 49	Total population	705186	90.3	44.0
## 50	Total population	685419	90.7	33.1
## 51	Total population	934243	85.0	28.8
## 52	Total population	574272	95.5	52.8
## 53	Total population	508803	88.8	30.7
## 54	Total population	760026	88.5	31.6
## 55	Total population	560133	91.9	38.8
## 56	Total population	826925	90.4	37.2
## 57	Total population	1030447	90.9	58.5
## 58	Total population	904430	85.5	31.0
## 59	Total population	622793	84.4	30.0
## 60	Total population	554194	82.5	25.7
## 61	Total population	769091	89.1	38.9
## 62	Total population	1570315	92.3	52.3
## 63	Total population	692254	94.1	51.9
## 64	Total population	507022	92.2	34.1
## 65	Total population	767254	83.9	42.3
## 66	Total population	813475	90.1	34.6
## 67	Total population	629237	89.1	33.7
## 68	Total population	860112	89.3	23.9
## 69	Total population	1237868	93.6	44.8
## 70	Total population	1764804	84.9	22.1
## 71	Total population	1212064	93.2	47.3
## 72	Total population	532655	89.9	40.9
## 73	Total population	683191	90.0	29.5
## 74	Total population	1001876	93.2	42.8
## 75	Total population	543244	88.2	36.3
## 76	Total population	2069681	84.5	22.7
## 77	Total population	933572	91.5	46.2

## 78	Total population	511038	88.3	31.3
## 79	Total population	795723	85.5	32.7
## 80	Total population	669115	83.4	38.2
## 81	Total population	836297	89.1	41.0
## 82	Total population	629279	93.1	43.7
## 83	Total population	586301	91.7	28.6
## 84	Total population	508856	83.8	28.6
## 85	Total population	552939	86.2	33.0
## 86	Total population	675551	88.0	32.7
## 87	Total population	1438159	70.5	19.3
## 88	Total population	922835	90.6	31.3
## 89	Total population	2621793	80.0	34.3
## 90	Total population	749857	90.3	35.9
## 91	Total population	1358627	90.7	43.2
## 92	Total population	1636268	86.8	59.9
## 93	Total population	2321580	80.4	29.8
## 94	Total population	1502968	89.8	34.0
## 95	Total population	972634	87.4	47.1
## 96	Total population	512119	89.0	33.3
## 97	Total population	1012539	89.5	43.0
## 98	Total population	998691	92.4	49.2
## 99	Total population	1259828	88.1	31.0
## 100	Total population	1231393	90.0	38.0
## 101	Total population	806631	90.5	35.6
## 102	Total population	533116	89.7	25.7
## 103	Total population	541943	91.1	30.3
## 104	Total population	766215	86.8	30.6
## 105	Total population	629598	88.6	30.7
## 106	Total population	776712	91.1	41.6
## 107	Total population	562998	90.2	39.7
## 108	Total population	1231255	93.9	37.7
## 109	Total population	626685	93.9	37.7
## 110	Total population	512784	92.3	49.3
## 111	Total population	562960	91.5	36.3
## 112	Total population	533320	84.9	26.0
## 113	Total population	816857	93.7	47.3
## 114	Total population	1560297	82.6	26.0
## 115	Total population	631974	82.0	25.2
## 116	Total population	668347	86.7	37.3
## 117	Total population	938803	87.4	29.9
## 118	Total population	1855866	83.0	26.3
## 119	Total population	885241	93.7	50.0
## 120	Total population	2518638	77.6	29.1
## 121	Total population	753363	91.9	41.5
## 122	Total population	833487	75.8	21.1
## 123	Total population	685345	88.6	44.1
## 124	Total population	4441370	79.8	29.7
## 125	Total population	831073	62.2	17.9
## 126	Total population	518947	85.9	34.1
## 127	Total population	1945360	84.9	30.0
## 128	Total population	1151145	88.6	45.6
## 129	Total population	1091742	89.5	31.9
## 130	Total population	560974	93.7	37.5
## 131	Total population	1137538	91.5	60.3

```
## 132      Total population      2079967      92.3      48.6
## 133      Total population      831928      90.3      24.6
## 134      Total population      759583      92.0      29.1
## 135      Total population      516284      94.9      49.8
## 136      Total population      956406      86.9      29.5
```

dplyr package - use *GroupBy*, *Summarize*, *Mutate*, *Filter*, *Select*, and *Arrange*

```
library(dplyr)
```

```
##
## 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
```

Use GroupBy

```
group_by(am_comm_df, min(BachDegree))
```

```
## # A tibble: 136 x 9
## # Groups:   min(BachDegree) [1]
##   Id      Id2 Geography   PopGroupID POPGROUP.displa... RacesReported HSDegree
##   <chr>   <int> <chr>         <int> <chr>              <int>   <dbl>
## 1 050000... 1073 Jefferson C...      1 Total population    660793    89.1
## 2 050000... 4013 Maricopa Co...      1 Total population    4087191   86.8
## 3 050000... 4019 Pima County...      1 Total population    1004516    88
## 4 050000... 6001 Alameda Cou...      1 Total population    1610921   86.9
## 5 050000... 6013 Contra Cost...      1 Total population    1111339   88.8
## 6 050000... 6019 Fresno Coun...      1 Total population     965974   73.6
## 7 050000... 6029 Kern County...      1 Total population     874589   74.5
## 8 050000... 6037 Los Angeles...      1 Total population    10116705   77.5
## 9 050000... 6059 Orange Coun...      1 Total population     3145515   84.6
## 10 050000... 6065 Riverside C...      1 Total population    2329271   80.6
## # ... with 126 more rows, and 2 more variables: BachDegree <dbl>,
## #   min(BachDegree) <dbl>
```

Use Summarize from dplyr

```
summarise(am_comm_df, mean(HSDegree), median(HSDegree), min(HSDegree), max(HSDegree),
          IQR(HSDegree), sd(HSDegree))
```

```
##    mean(HSDegree) median(HSDegree) min(HSDegree) max(HSDegree) IQR(HSDegree)
## 1      87.63235      88.7          62.2          95.5          5.25
##    sd(HSDegree)
## 1      5.117941
```

Use Mutate from dplyr

```
mutated_am_comm_df <- mutate(am_comm_df, percent_rank(BachDegree), percent_rank(HSDegree))
mutated_am_comm_df
```


##		Id	Id2	Geography	PopGroupID
## 1	05000000US01073	1073		Jefferson County, Alabama	1
## 2	05000000US04013	4013		Maricopa County, Arizona	1
## 3	05000000US04019	4019		Pima County, Arizona	1
## 4	05000000US06001	6001		Alameda County, California	1
## 5	05000000US06013	6013		Contra Costa County, California	1
## 6	05000000US06019	6019		Fresno County, California	1
## 7	05000000US06029	6029		Kern County, California	1
## 8	05000000US06037	6037		Los Angeles County, California	1
## 9	05000000US06059	6059		Orange County, California	1
## 10	05000000US06065	6065		Riverside County, California	1
## 11	05000000US06067	6067		Sacramento County, California	1
## 12	05000000US06071	6071		San Bernardino County, California	1
## 13	05000000US06073	6073		San Diego County, California	1
## 14	05000000US06075	6075		San Francisco County, California	1
## 15	05000000US06077	6077		San Joaquin County, California	1
## 16	05000000US06081	6081		San Mateo County, California	1
## 17	05000000US06085	6085		Santa Clara County, California	1
## 18	05000000US06097	6097		Sonoma County, California	1
## 19	05000000US06099	6099		Stanislaus County, California	1
## 20	05000000US06111	6111		Ventura County, California	1
## 21	05000000US08005	8005		Arapahoe County, Colorado	1
## 22	05000000US08031	8031		Denver County, Colorado	1
## 23	05000000US08041	8041		El Paso County, Colorado	1
## 24	05000000US08059	8059		Jefferson County, Colorado	1
## 25	05000000US09001	9001		Fairfield County, Connecticut	1
## 26	05000000US09003	9003		Hartford County, Connecticut	1
## 27	05000000US09009	9009		New Haven County, Connecticut	1
## 28	05000000US10003	10003		New Castle County, Delaware	1
## 29	05000000US11001	11001		District of Columbia, District of Columbia	1
## 30	05000000US12009	12009		Brevard County, Florida	1
## 31	05000000US12011	12011		Broward County, Florida	1
## 32	05000000US12031	12031		Duval County, Florida	1
## 33	05000000US12057	12057		Hillsborough County, Florida	1
## 34	05000000US12071	12071		Lee County, Florida	1
## 35	05000000US12086	12086		Miami-Dade County, Florida	1
## 36	05000000US12095	12095		Orange County, Florida	1
## 37	05000000US12099	12099		Palm Beach County, Florida	1
## 38	05000000US12103	12103		Pinellas County, Florida	1
## 39	05000000US12105	12105		Polk County, Florida	1
## 40	05000000US12127	12127		Volusia County, Florida	1
## 41	05000000US13067	13067		Cobb County, Georgia	1
## 42	05000000US13089	13089		DeKalb County, Georgia	1
## 43	05000000US13121	13121		Fulton County, Georgia	1
## 44	05000000US13135	13135		Gwinnett County, Georgia	1
## 45	05000000US15003	15003		Honolulu County, Hawaii	1
## 46	05000000US17031	17031		Cook County, Illinois	1
## 47	05000000US17043	17043		DuPage County, Illinois	1
## 48	05000000US17089	17089		Kane County, Illinois	1
## 49	05000000US17097	17097		Lake County, Illinois	1
## 50	05000000US17197	17197		Will County, Illinois	1
## 51	05000000US18097	18097		Marion County, Indiana	1
## 52	05000000US20091	20091		Johnson County, Kansas	1

## 53	05000000US20173	20173	Sedgwick County, Kansas	1
## 54	05000000US21111	21111	Jefferson County, Kentucky	1
## 55	05000000US24003	24003	Anne Arundel County, Maryland	1
## 56	05000000US24005	24005	Baltimore County, Maryland	1
## 57	05000000US24031	24031	Montgomery County, Maryland	1
## 58	05000000US24033	24033	Prince George's County, Maryland	1
## 59	05000000US24510	24510	Baltimore city, Maryland	1
## 60	05000000US25005	25005	Bristol County, Massachusetts	1
## 61	05000000US25009	25009	Essex County, Massachusetts	1
## 62	05000000US25017	25017	Middlesex County, Massachusetts	1
## 63	05000000US25021	25021	Norfolk County, Massachusetts	1
## 64	05000000US25023	25023	Plymouth County, Massachusetts	1
## 65	05000000US25025	25025	Suffolk County, Massachusetts	1
## 66	05000000US25027	25027	Worcester County, Massachusetts	1
## 67	05000000US26081	26081	Kent County, Michigan	1
## 68	05000000US26099	26099	Macomb County, Michigan	1
## 69	05000000US26125	26125	Oakland County, Michigan	1
## 70	05000000US26163	26163	Wayne County, Michigan	1
## 71	05000000US27053	27053	Hennepin County, Minnesota	1
## 72	05000000US27123	27123	Ramsey County, Minnesota	1
## 73	05000000US29095	29095	Jackson County, Missouri	1
## 74	05000000US29189	29189	St. Louis County, Missouri	1
## 75	05000000US31055	31055	Douglas County, Nebraska	1
## 76	05000000US32003	32003	Clark County, Nevada	1
## 77	05000000US34003	34003	Bergen County, New Jersey	1
## 78	05000000US34007	34007	Camden County, New Jersey	1
## 79	05000000US34013	34013	Essex County, New Jersey	1
## 80	05000000US34017	34017	Hudson County, New Jersey	1
## 81	05000000US34023	34023	Middlesex County, New Jersey	1
## 82	05000000US34025	34025	Monmouth County, New Jersey	1
## 83	05000000US34029	34029	Ocean County, New Jersey	1
## 84	05000000US34031	34031	Passaic County, New Jersey	1
## 85	05000000US34039	34039	Union County, New Jersey	1
## 86	05000000US35001	35001	Bernalillo County, New Mexico	1
## 87	05000000US36005	36005	Bronx County, New York	1
## 88	05000000US36029	36029	Erie County, New York	1
## 89	05000000US36047	36047	Kings County, New York	1
## 90	05000000US36055	36055	Monroe County, New York	1
## 91	05000000US36059	36059	Nassau County, New York	1
## 92	05000000US36061	36061	New York County, New York	1
## 93	05000000US36081	36081	Queens County, New York	1
## 94	05000000US36103	36103	Suffolk County, New York	1
## 95	05000000US36119	36119	Westchester County, New York	1
## 96	05000000US37081	37081	Guilford County, North Carolina	1
## 97	05000000US37119	37119	Mecklenburg County, North Carolina	1
## 98	05000000US37183	37183	Wake County, North Carolina	1
## 99	05000000US39035	39035	Cuyahoga County, Ohio	1
## 100	05000000US39049	39049	Franklin County, Ohio	1
## 101	05000000US39061	39061	Hamilton County, Ohio	1
## 102	05000000US39113	39113	Montgomery County, Ohio	1
## 103	05000000US39153	39153	Summit County, Ohio	1
## 104	05000000US40109	40109	Oklahoma County, Oklahoma	1
## 105	05000000US40143	40143	Tulsa County, Oklahoma	1
## 106	05000000US41051	41051	Multnomah County, Oregon	1

## 107	05000000US41067	41067	Washington County, Oregon	1
## 108	05000000US42003	42003	Allegheny County, Pennsylvania	1
## 109	05000000US42017	42017	Bucks County, Pennsylvania	1
## 110	05000000US42029	42029	Chester County, Pennsylvania	1
## 111	05000000US42045	42045	Delaware County, Pennsylvania	1
## 112	05000000US42071	42071	Lancaster County, Pennsylvania	1
## 113	05000000US42091	42091	Montgomery County, Pennsylvania	1
## 114	05000000US42101	42101	Philadelphia County, Pennsylvania	1
## 115	05000000US44007	44007	Providence County, Rhode Island	1
## 116	05000000US47037	47037	Davidson County, Tennessee	1
## 117	05000000US47157	47157	Shelby County, Tennessee	1
## 118	05000000US48029	48029	Bexar County, Texas	1
## 119	05000000US48085	48085	Collin County, Texas	1
## 120	05000000US48113	48113	Dallas County, Texas	1
## 121	05000000US48121	48121	Denton County, Texas	1
## 122	05000000US48141	48141	El Paso County, Texas	1
## 123	05000000US48157	48157	Fort Bend County, Texas	1
## 124	05000000US48201	48201	Harris County, Texas	1
## 125	05000000US48215	48215	Hidalgo County, Texas	1
## 126	05000000US48339	48339	Montgomery County, Texas	1
## 127	05000000US48439	48439	Tarrant County, Texas	1
## 128	05000000US48453	48453	Travis County, Texas	1
## 129	05000000US49035	49035	Salt Lake County, Utah	1
## 130	05000000US49049	49049	Utah County, Utah	1
## 131	05000000US51059	51059	Fairfax County, Virginia	1
## 132	05000000US53033	53033	King County, Washington	1
## 133	05000000US53053	53053	Pierce County, Washington	1
## 134	05000000US53061	53061	Snohomish County, Washington	1
## 135	05000000US55025	55025	Dane County, Wisconsin	1
## 136	05000000US55079	55079	Milwaukee County, Wisconsin	1
##	POPGROUP.display.label	RacesReported	HSDegree	BachDegree
## 1	Total population	660793	89.1	30.5
## 2	Total population	4087191	86.8	30.2
## 3	Total population	1004516	88.0	30.8
## 4	Total population	1610921	86.9	42.8
## 5	Total population	1111339	88.8	39.7
## 6	Total population	965974	73.6	19.7
## 7	Total population	874589	74.5	15.4
## 8	Total population	10116705	77.5	30.3
## 9	Total population	3145515	84.6	38.0
## 10	Total population	2329271	80.6	20.7
## 11	Total population	1482026	86.8	28.9
## 12	Total population	2112619	78.6	18.9
## 13	Total population	3263431	86.6	37.1
## 14	Total population	852469	88.1	54.2
## 15	Total population	715597	77.6	18.3
## 16	Total population	758581	88.1	47.5
## 17	Total population	1894605	87.4	48.4
## 18	Total population	500292	87.6	34.8
## 19	Total population	531997	78.4	17.0
## 20	Total population	846178	83.6	31.6
## 21	Total population	618821	91.9	40.9
## 22	Total population	663862	85.5	44.3
## 23	Total population	663519	92.8	36.5

## 24	Total population	558503	94.1	42.0
## 25	Total population	945438	89.8	46.7
## 26	Total population	897985	89.3	36.8
## 27	Total population	861277	89.5	34.5
## 28	Total population	552778	90.1	35.8
## 29	Total population	658893	90.2	55.0
## 30	Total population	556885	91.6	27.2
## 31	Total population	1869235	88.4	30.5
## 32	Total population	897698	89.0	26.1
## 33	Total population	1316298	87.3	29.8
## 34	Total population	679513	86.3	26.5
## 35	Total population	2662874	80.9	26.6
## 36	Total population	1253001	87.9	31.4
## 37	Total population	1397710	87.7	33.0
## 38	Total population	938098	90.1	29.5
## 39	Total population	634638	84.9	19.7
## 40	Total population	507531	88.9	22.5
## 41	Total population	730981	90.3	43.7
## 42	Total population	722161	88.4	41.7
## 43	Total population	996319	91.3	49.2
## 44	Total population	877922	88.0	35.4
## 45	Total population	991788	91.8	32.6
## 46	Total population	5246456	85.5	36.2
## 47	Total population	932708	92.3	48.0
## 48	Total population	527306	82.9	32.6
## 49	Total population	705186	90.3	44.0
## 50	Total population	685419	90.7	33.1
## 51	Total population	934243	85.0	28.8
## 52	Total population	574272	95.5	52.8
## 53	Total population	508803	88.8	30.7
## 54	Total population	760026	88.5	31.6
## 55	Total population	560133	91.9	38.8
## 56	Total population	826925	90.4	37.2
## 57	Total population	1030447	90.9	58.5
## 58	Total population	904430	85.5	31.0
## 59	Total population	622793	84.4	30.0
## 60	Total population	554194	82.5	25.7
## 61	Total population	769091	89.1	38.9
## 62	Total population	1570315	92.3	52.3
## 63	Total population	692254	94.1	51.9
## 64	Total population	507022	92.2	34.1
## 65	Total population	767254	83.9	42.3
## 66	Total population	813475	90.1	34.6
## 67	Total population	629237	89.1	33.7
## 68	Total population	860112	89.3	23.9
## 69	Total population	1237868	93.6	44.8
## 70	Total population	1764804	84.9	22.1
## 71	Total population	1212064	93.2	47.3
## 72	Total population	532655	89.9	40.9
## 73	Total population	683191	90.0	29.5
## 74	Total population	1001876	93.2	42.8
## 75	Total population	543244	88.2	36.3
## 76	Total population	2069681	84.5	22.7
## 77	Total population	933572	91.5	46.2

## 78	Total population	511038	88.3	31.3
## 79	Total population	795723	85.5	32.7
## 80	Total population	669115	83.4	38.2
## 81	Total population	836297	89.1	41.0
## 82	Total population	629279	93.1	43.7
## 83	Total population	586301	91.7	28.6
## 84	Total population	508856	83.8	28.6
## 85	Total population	552939	86.2	33.0
## 86	Total population	675551	88.0	32.7
## 87	Total population	1438159	70.5	19.3
## 88	Total population	922835	90.6	31.3
## 89	Total population	2621793	80.0	34.3
## 90	Total population	749857	90.3	35.9
## 91	Total population	1358627	90.7	43.2
## 92	Total population	1636268	86.8	59.9
## 93	Total population	2321580	80.4	29.8
## 94	Total population	1502968	89.8	34.0
## 95	Total population	972634	87.4	47.1
## 96	Total population	512119	89.0	33.3
## 97	Total population	1012539	89.5	43.0
## 98	Total population	998691	92.4	49.2
## 99	Total population	1259828	88.1	31.0
## 100	Total population	1231393	90.0	38.0
## 101	Total population	806631	90.5	35.6
## 102	Total population	533116	89.7	25.7
## 103	Total population	541943	91.1	30.3
## 104	Total population	766215	86.8	30.6
## 105	Total population	629598	88.6	30.7
## 106	Total population	776712	91.1	41.6
## 107	Total population	562998	90.2	39.7
## 108	Total population	1231255	93.9	37.7
## 109	Total population	626685	93.9	37.7
## 110	Total population	512784	92.3	49.3
## 111	Total population	562960	91.5	36.3
## 112	Total population	533320	84.9	26.0
## 113	Total population	816857	93.7	47.3
## 114	Total population	1560297	82.6	26.0
## 115	Total population	631974	82.0	25.2
## 116	Total population	668347	86.7	37.3
## 117	Total population	938803	87.4	29.9
## 118	Total population	1855866	83.0	26.3
## 119	Total population	885241	93.7	50.0
## 120	Total population	2518638	77.6	29.1
## 121	Total population	753363	91.9	41.5
## 122	Total population	833487	75.8	21.1
## 123	Total population	685345	88.6	44.1
## 124	Total population	4441370	79.8	29.7
## 125	Total population	831073	62.2	17.9
## 126	Total population	518947	85.9	34.1
## 127	Total population	1945360	84.9	30.0
## 128	Total population	1151145	88.6	45.6
## 129	Total population	1091742	89.5	31.9
## 130	Total population	560974	93.7	37.5
## 131	Total population	1137538	91.5	60.3

## 132	Total population	2079967	92.3	48.6
## 133	Total population	831928	90.3	24.6
## 134	Total population	759583	92.0	29.1
## 135	Total population	516284	94.9	49.8
## 136	Total population	956406	86.9	29.5
##	percent_rank(BachDegree)	percent_rank(HSDegree)		
## 1	0.318518519	0.540740741		
## 2	0.296296296	0.303703704		
## 3	0.355555556	0.400000000		
## 4	0.762962963	0.333333333		
## 5	0.688888889	0.503703704		
## 6	0.044444444	0.014814815		
## 7	0.000000000	0.022222222		
## 8	0.303703704	0.037037037		
## 9	0.651851852	0.192592593		
## 10	0.059259259	0.096296296		
## 11	0.207407407	0.303703704		
## 12	0.029629630	0.066666667		
## 13	0.607407407	0.288888889		
## 14	0.970370370	0.422222222		
## 15	0.022222222	0.044444444		
## 16	0.881481481	0.422222222		
## 17	0.896296296	0.355555556		
## 18	0.533333333	0.377777778		
## 19	0.007407407	0.059259259		
## 20	0.400000000	0.155555556		
## 21	0.703703704	0.829629630		
## 22	0.822222222	0.237037037		
## 23	0.592592593	0.903703704		
## 24	0.748148148	0.977777778		
## 25	0.851851852	0.614814815		
## 26	0.600000000	0.570370370		
## 27	0.518518519	0.585185185		
## 28	0.555555556	0.651851852		
## 29	0.977777778	0.674074074		
## 30	0.177777778	0.807407407		
## 31	0.318518519	0.459259259		
## 32	0.148148148	0.525925926		
## 33	0.259259259	0.348148148		
## 34	0.162962963	0.281481481		
## 35	0.170370370	0.103703704		
## 36	0.392592593	0.392592593		
## 37	0.451851852	0.385185185		
## 38	0.229629630	0.651851852		
## 39	0.044444444	0.200000000		
## 40	0.081481481	0.518518519		
## 41	0.792592593	0.688888889		
## 42	0.740740741	0.459259259		
## 43	0.911111111	0.777777778		
## 44	0.540740741	0.400000000		
## 45	0.422222222	0.822222222		
## 46	0.570370370	0.237037037		
## 47	0.888888889	0.866666667		
## 48	0.422222222	0.133333333		

## 49	0.807407407	0.688888889
## 50	0.466666667	0.740740741
## 51	0.200000000	0.229629630
## 52	0.962962963	1.000000000
## 53	0.340740741	0.503703704
## 54	0.400000000	0.474074074
## 55	0.674074074	0.829629630
## 56	0.614814815	0.718518519
## 57	0.985185185	0.755555556
## 58	0.362962963	0.237037037
## 59	0.281481481	0.177777778
## 60	0.118518519	0.118518519
## 61	0.681481481	0.540740741
## 62	0.955555556	0.866666667
## 63	0.948148148	0.977777778
## 64	0.496296296	0.859259259
## 65	0.755555556	0.170370370
## 66	0.525925926	0.651851852
## 67	0.481481481	0.540740741
## 68	0.096296296	0.570370370
## 69	0.829629630	0.933333333
## 70	0.074074074	0.200000000
## 71	0.866666667	0.918518519
## 72	0.703703704	0.629629630
## 73	0.229629630	0.637037037
## 74	0.762962963	0.918518519
## 75	0.577777778	0.444444444
## 76	0.088888889	0.185185185
## 77	0.844444444	0.785185185
## 78	0.377777778	0.451851852
## 79	0.437037037	0.237037037
## 80	0.666666667	0.148148148
## 81	0.718518519	0.540740741
## 82	0.792592593	0.911111111
## 83	0.185185185	0.814814815
## 84	0.185185185	0.162962963
## 85	0.451851852	0.274074074
## 86	0.437037037	0.400000000
## 87	0.037037037	0.007407407
## 88	0.377777778	0.733333333
## 89	0.511111111	0.081481481
## 90	0.562962963	0.688888889
## 91	0.785185185	0.740740741
## 92	0.992592593	0.303703704
## 93	0.259259259	0.088888889
## 94	0.488888889	0.614814815
## 95	0.859259259	0.355555556
## 96	0.474074074	0.525925926
## 97	0.777777778	0.585185185
## 98	0.911111111	0.896296296
## 99	0.362962963	0.422222222
## 100	0.651851852	0.637037037
## 101	0.548148148	0.725925926
## 102	0.118518519	0.607407407

```
## 103      0.303703704      0.762962963
## 104      0.333333333      0.303703704
## 105      0.340740741      0.481481481
## 106      0.733333333      0.762962963
## 107      0.688888889      0.674074074
## 108      0.637037037      0.962962963
## 109      0.637037037      0.962962963
## 110      0.925925926      0.866666667
## 111      0.577777778      0.785185185
## 112      0.133333333      0.200000000
## 113      0.866666667      0.940740741
## 114      0.133333333      0.125925926
## 115      0.111111111      0.111111111
## 116      0.622222222      0.296296296
## 117      0.274074074      0.355555556
## 118      0.155555556      0.140740741
## 119      0.940740741      0.940740741
## 120      0.214814815      0.044444444
## 121      0.725925926      0.829629630
## 122      0.066666667      0.029629630
## 123      0.814814815      0.481481481
## 124      0.251851852      0.074074074
## 125      0.014814815      0.000000000
## 126      0.496296296      0.266666667
## 127      0.281481481      0.200000000
## 128      0.837037037      0.481481481
## 129      0.414814815      0.585185185
## 130      0.629629630      0.940740741
## 131      1.000000000      0.785185185
## 132      0.903703704      0.866666667
## 133      0.103703704      0.688888889
## 134      0.214814815      0.851851852
## 135      0.933333333      0.992592593
## 136      0.229629630      0.333333333
```

Using filter from dplyr with percentile rank of bachelors degree above 50% and hs degree 1 sd below mean

```
filter(mutated_am_comm_df, percent_rank(BachDegree) > 0.5, HSDegree < (87.63235-5.117941
))
```

```
##      Id  Id2      Geography PopGroupID POPGROUP.display.label
## 1 0500000US36047 36047 Kings County, New York      1      Total population
##      RacesReported HSDegree BachDegree percent_rank(BachDegree)
## 1      2621793      80      34.3      0.5111111
##      percent_rank(HSDegree)
## 1      0.08148148
```

Using the select from dplyr to choose three columns and simplify data set

```
select(am_comm_df, Geography, HSDegree, BachDegree)
```


##	Geography	HSDegree	BachDegree
## 1	Jefferson County, Alabama	89.1	30.5
## 2	Maricopa County, Arizona	86.8	30.2
## 3	Pima County, Arizona	88.0	30.8
## 4	Alameda County, California	86.9	42.8
## 5	Contra Costa County, California	88.8	39.7
## 6	Fresno County, California	73.6	19.7
## 7	Kern County, California	74.5	15.4
## 8	Los Angeles County, California	77.5	30.3
## 9	Orange County, California	84.6	38.0
## 10	Riverside County, California	80.6	20.7
## 11	Sacramento County, California	86.8	28.9
## 12	San Bernardino County, California	78.6	18.9
## 13	San Diego County, California	86.6	37.1
## 14	San Francisco County, California	88.1	54.2
## 15	San Joaquin County, California	77.6	18.3
## 16	San Mateo County, California	88.1	47.5
## 17	Santa Clara County, California	87.4	48.4
## 18	Sonoma County, California	87.6	34.8
## 19	Stanislaus County, California	78.4	17.0
## 20	Ventura County, California	83.6	31.6
## 21	Arapahoe County, Colorado	91.9	40.9
## 22	Denver County, Colorado	85.5	44.3
## 23	El Paso County, Colorado	92.8	36.5
## 24	Jefferson County, Colorado	94.1	42.0
## 25	Fairfield County, Connecticut	89.8	46.7
## 26	Hartford County, Connecticut	89.3	36.8
## 27	New Haven County, Connecticut	89.5	34.5
## 28	New Castle County, Delaware	90.1	35.8
## 29	District of Columbia, District of Columbia	90.2	55.0
## 30	Brevard County, Florida	91.6	27.2
## 31	Broward County, Florida	88.4	30.5
## 32	Duval County, Florida	89.0	26.1
## 33	Hillsborough County, Florida	87.3	29.8
## 34	Lee County, Florida	86.3	26.5
## 35	Miami-Dade County, Florida	80.9	26.6
## 36	Orange County, Florida	87.9	31.4
## 37	Palm Beach County, Florida	87.7	33.0
## 38	Pinellas County, Florida	90.1	29.5
## 39	Polk County, Florida	84.9	19.7
## 40	Volusia County, Florida	88.9	22.5
## 41	Cobb County, Georgia	90.3	43.7
## 42	DeKalb County, Georgia	88.4	41.7
## 43	Fulton County, Georgia	91.3	49.2
## 44	Gwinnett County, Georgia	88.0	35.4
## 45	Honolulu County, Hawaii	91.8	32.6
## 46	Cook County, Illinois	85.5	36.2
## 47	DuPage County, Illinois	92.3	48.0
## 48	Kane County, Illinois	82.9	32.6
## 49	Lake County, Illinois	90.3	44.0
## 50	Will County, Illinois	90.7	33.1
## 51	Marion County, Indiana	85.0	28.8
## 52	Johnson County, Kansas	95.5	52.8

## 53	Sedgwick County, Kansas	88.8	30.7
## 54	Jefferson County, Kentucky	88.5	31.6
## 55	Anne Arundel County, Maryland	91.9	38.8
## 56	Baltimore County, Maryland	90.4	37.2
## 57	Montgomery County, Maryland	90.9	58.5
## 58	Prince George's County, Maryland	85.5	31.0
## 59	Baltimore city, Maryland	84.4	30.0
## 60	Bristol County, Massachusetts	82.5	25.7
## 61	Essex County, Massachusetts	89.1	38.9
## 62	Middlesex County, Massachusetts	92.3	52.3
## 63	Norfolk County, Massachusetts	94.1	51.9
## 64	Plymouth County, Massachusetts	92.2	34.1
## 65	Suffolk County, Massachusetts	83.9	42.3
## 66	Worcester County, Massachusetts	90.1	34.6
## 67	Kent County, Michigan	89.1	33.7
## 68	Macomb County, Michigan	89.3	23.9
## 69	Oakland County, Michigan	93.6	44.8
## 70	Wayne County, Michigan	84.9	22.1
## 71	Hennepin County, Minnesota	93.2	47.3
## 72	Ramsey County, Minnesota	89.9	40.9
## 73	Jackson County, Missouri	90.0	29.5
## 74	St. Louis County, Missouri	93.2	42.8
## 75	Douglas County, Nebraska	88.2	36.3
## 76	Clark County, Nevada	84.5	22.7
## 77	Bergen County, New Jersey	91.5	46.2
## 78	Camden County, New Jersey	88.3	31.3
## 79	Essex County, New Jersey	85.5	32.7
## 80	Hudson County, New Jersey	83.4	38.2
## 81	Middlesex County, New Jersey	89.1	41.0
## 82	Monmouth County, New Jersey	93.1	43.7
## 83	Ocean County, New Jersey	91.7	28.6
## 84	Passaic County, New Jersey	83.8	28.6
## 85	Union County, New Jersey	86.2	33.0
## 86	Bernalillo County, New Mexico	88.0	32.7
## 87	Bronx County, New York	70.5	19.3
## 88	Erie County, New York	90.6	31.3
## 89	Kings County, New York	80.0	34.3
## 90	Monroe County, New York	90.3	35.9
## 91	Nassau County, New York	90.7	43.2
## 92	New York County, New York	86.8	59.9
## 93	Queens County, New York	80.4	29.8
## 94	Suffolk County, New York	89.8	34.0
## 95	Westchester County, New York	87.4	47.1
## 96	Guilford County, North Carolina	89.0	33.3
## 97	Mecklenburg County, North Carolina	89.5	43.0
## 98	Wake County, North Carolina	92.4	49.2
## 99	Cuyahoga County, Ohio	88.1	31.0
## 100	Franklin County, Ohio	90.0	38.0
## 101	Hamilton County, Ohio	90.5	35.6
## 102	Montgomery County, Ohio	89.7	25.7
## 103	Summit County, Ohio	91.1	30.3
## 104	Oklahoma County, Oklahoma	86.8	30.6
## 105	Tulsa County, Oklahoma	88.6	30.7
## 106	Multnomah County, Oregon	91.1	41.6

## 107	Washington County, Oregon	90.2	39.7
## 108	Allegheny County, Pennsylvania	93.9	37.7
## 109	Bucks County, Pennsylvania	93.9	37.7
## 110	Chester County, Pennsylvania	92.3	49.3
## 111	Delaware County, Pennsylvania	91.5	36.3
## 112	Lancaster County, Pennsylvania	84.9	26.0
## 113	Montgomery County, Pennsylvania	93.7	47.3
## 114	Philadelphia County, Pennsylvania	82.6	26.0
## 115	Providence County, Rhode Island	82.0	25.2
## 116	Davidson County, Tennessee	86.7	37.3
## 117	Shelby County, Tennessee	87.4	29.9
## 118	Bexar County, Texas	83.0	26.3
## 119	Collin County, Texas	93.7	50.0
## 120	Dallas County, Texas	77.6	29.1
## 121	Denton County, Texas	91.9	41.5
## 122	El Paso County, Texas	75.8	21.1
## 123	Fort Bend County, Texas	88.6	44.1
## 124	Harris County, Texas	79.8	29.7
## 125	Hidalgo County, Texas	62.2	17.9
## 126	Montgomery County, Texas	85.9	34.1
## 127	Tarrant County, Texas	84.9	30.0
## 128	Travis County, Texas	88.6	45.6
## 129	Salt Lake County, Utah	89.5	31.9
## 130	Utah County, Utah	93.7	37.5
## 131	Fairfax County, Virginia	91.5	60.3
## 132	King County, Washington	92.3	48.6
## 133	Pierce County, Washington	90.3	24.6
## 134	Snohomish County, Washington	92.0	29.1
## 135	Dane County, Wisconsin	94.9	49.8
## 136	Milwaukee County, Wisconsin	86.9	29.5

Using the arrange function to arrange my data based on a variable (HSDegree) filtered with the highest first

```
arrange(am_comm_df, desc(HSDegree))
```

##		Id	Id2	Geography	PopGroupID
## 1	05000000US20091	20091		Johnson County, Kansas	1
## 2	05000000US55025	55025		Dane County, Wisconsin	1
## 3	05000000US08059	8059		Jefferson County, Colorado	1
## 4	05000000US25021	25021		Norfolk County, Massachusetts	1
## 5	05000000US42003	42003		Allegheny County, Pennsylvania	1
## 6	05000000US42017	42017		Bucks County, Pennsylvania	1
## 7	05000000US42091	42091		Montgomery County, Pennsylvania	1
## 8	05000000US48085	48085		Collin County, Texas	1
## 9	05000000US49049	49049		Utah County, Utah	1
## 10	05000000US26125	26125		Oakland County, Michigan	1
## 11	05000000US27053	27053		Hennepin County, Minnesota	1
## 12	05000000US29189	29189		St. Louis County, Missouri	1
## 13	05000000US34025	34025		Monmouth County, New Jersey	1
## 14	05000000US08041	8041		El Paso County, Colorado	1
## 15	05000000US37183	37183		Wake County, North Carolina	1
## 16	05000000US17043	17043		DuPage County, Illinois	1
## 17	05000000US25017	25017		Middlesex County, Massachusetts	1
## 18	05000000US42029	42029		Chester County, Pennsylvania	1
## 19	05000000US53033	53033		King County, Washington	1
## 20	05000000US25023	25023		Plymouth County, Massachusetts	1
## 21	05000000US53061	53061		Snohomish County, Washington	1
## 22	05000000US08005	8005		Arapahoe County, Colorado	1
## 23	05000000US24003	24003		Anne Arundel County, Maryland	1
## 24	05000000US48121	48121		Denton County, Texas	1
## 25	05000000US15003	15003		Honolulu County, Hawaii	1
## 26	05000000US34029	34029		Ocean County, New Jersey	1
## 27	05000000US12009	12009		Brevard County, Florida	1
## 28	05000000US34003	34003		Bergen County, New Jersey	1
## 29	05000000US42045	42045		Delaware County, Pennsylvania	1
## 30	05000000US51059	51059		Fairfax County, Virginia	1
## 31	05000000US13121	13121		Fulton County, Georgia	1
## 32	05000000US39153	39153		Summit County, Ohio	1
## 33	05000000US41051	41051		Multnomah County, Oregon	1
## 34	05000000US24031	24031		Montgomery County, Maryland	1
## 35	05000000US17197	17197		Will County, Illinois	1
## 36	05000000US36059	36059		Nassau County, New York	1
## 37	05000000US36029	36029		Erie County, New York	1
## 38	05000000US39061	39061		Hamilton County, Ohio	1
## 39	05000000US24005	24005		Baltimore County, Maryland	1
## 40	05000000US13067	13067		Cobb County, Georgia	1
## 41	05000000US17097	17097		Lake County, Illinois	1
## 42	05000000US36055	36055		Monroe County, New York	1
## 43	05000000US53053	53053		Pierce County, Washington	1
## 44	05000000US11001	11001		District of Columbia, District of Columbia	1
## 45	05000000US41067	41067		Washington County, Oregon	1
## 46	05000000US10003	10003		New Castle County, Delaware	1
## 47	05000000US12103	12103		Pinellas County, Florida	1
## 48	05000000US25027	25027		Worcester County, Massachusetts	1
## 49	05000000US29095	29095		Jackson County, Missouri	1
## 50	05000000US39049	39049		Franklin County, Ohio	1
## 51	05000000US27123	27123		Ramsey County, Minnesota	1
## 52	05000000US09001	9001		Fairfield County, Connecticut	1

## 53	05000000US36103	36103	Suffolk County, New York	1
## 54	05000000US39113	39113	Montgomery County, Ohio	1
## 55	05000000US09009	9009	New Haven County, Connecticut	1
## 56	05000000US37119	37119	Mecklenburg County, North Carolina	1
## 57	05000000US49035	49035	Salt Lake County, Utah	1
## 58	05000000US09003	9003	Hartford County, Connecticut	1
## 59	05000000US26099	26099	Macomb County, Michigan	1
## 60	05000000US01073	1073	Jefferson County, Alabama	1
## 61	05000000US25009	25009	Essex County, Massachusetts	1
## 62	05000000US26081	26081	Kent County, Michigan	1
## 63	05000000US34023	34023	Middlesex County, New Jersey	1
## 64	05000000US12031	12031	Duval County, Florida	1
## 65	05000000US37081	37081	Guilford County, North Carolina	1
## 66	05000000US12127	12127	Volusia County, Florida	1
## 67	05000000US06013	6013	Contra Costa County, California	1
## 68	05000000US20173	20173	Sedgwick County, Kansas	1
## 69	05000000US40143	40143	Tulsa County, Oklahoma	1
## 70	05000000US48157	48157	Fort Bend County, Texas	1
## 71	05000000US48453	48453	Travis County, Texas	1
## 72	05000000US21111	21111	Jefferson County, Kentucky	1
## 73	05000000US12011	12011	Broward County, Florida	1
## 74	05000000US13089	13089	DeKalb County, Georgia	1
## 75	05000000US34007	34007	Camden County, New Jersey	1
## 76	05000000US31055	31055	Douglas County, Nebraska	1
## 77	05000000US06075	6075	San Francisco County, California	1
## 78	05000000US06081	6081	San Mateo County, California	1
## 79	05000000US39035	39035	Cuyahoga County, Ohio	1
## 80	05000000US04019	4019	Pima County, Arizona	1
## 81	05000000US13135	13135	Gwinnett County, Georgia	1
## 82	05000000US35001	35001	Bernalillo County, New Mexico	1
## 83	05000000US12095	12095	Orange County, Florida	1
## 84	05000000US12099	12099	Palm Beach County, Florida	1
## 85	05000000US06097	6097	Sonoma County, California	1
## 86	05000000US06085	6085	Santa Clara County, California	1
## 87	05000000US36119	36119	Westchester County, New York	1
## 88	05000000US47157	47157	Shelby County, Tennessee	1
## 89	05000000US12057	12057	Hillsborough County, Florida	1
## 90	05000000US06001	6001	Alameda County, California	1
## 91	05000000US55079	55079	Milwaukee County, Wisconsin	1
## 92	05000000US04013	4013	Maricopa County, Arizona	1
## 93	05000000US06067	6067	Sacramento County, California	1
## 94	05000000US36061	36061	New York County, New York	1
## 95	05000000US40109	40109	Oklahoma County, Oklahoma	1
## 96	05000000US47037	47037	Davidson County, Tennessee	1
## 97	05000000US06073	6073	San Diego County, California	1
## 98	05000000US12071	12071	Lee County, Florida	1
## 99	05000000US34039	34039	Union County, New Jersey	1
## 100	05000000US48339	48339	Montgomery County, Texas	1
## 101	05000000US08031	8031	Denver County, Colorado	1
## 102	05000000US17031	17031	Cook County, Illinois	1
## 103	05000000US24033	24033	Prince George's County, Maryland	1
## 104	05000000US34013	34013	Essex County, New Jersey	1
## 105	05000000US18097	18097	Marion County, Indiana	1
## 106	05000000US12105	12105	Polk County, Florida	1

## 107	05000000US26163	26163	Wayne County, Michigan	1
## 108	05000000US42071	42071	Lancaster County, Pennsylvania	1
## 109	05000000US48439	48439	Tarrant County, Texas	1
## 110	05000000US06059	6059	Orange County, California	1
## 111	05000000US32003	32003	Clark County, Nevada	1
## 112	05000000US24510	24510	Baltimore city, Maryland	1
## 113	05000000US25025	25025	Suffolk County, Massachusetts	1
## 114	05000000US34031	34031	Passaic County, New Jersey	1
## 115	05000000US06111	6111	Ventura County, California	1
## 116	05000000US34017	34017	Hudson County, New Jersey	1
## 117	05000000US48029	48029	Bexar County, Texas	1
## 118	05000000US17089	17089	Kane County, Illinois	1
## 119	05000000US42101	42101	Philadelphia County, Pennsylvania	1
## 120	05000000US25005	25005	Bristol County, Massachusetts	1
## 121	05000000US44007	44007	Providence County, Rhode Island	1
## 122	05000000US12086	12086	Miami-Dade County, Florida	1
## 123	05000000US06065	6065	Riverside County, California	1
## 124	05000000US36081	36081	Queens County, New York	1
## 125	05000000US36047	36047	Kings County, New York	1
## 126	05000000US48201	48201	Harris County, Texas	1
## 127	05000000US06071	6071	San Bernardino County, California	1
## 128	05000000US06099	6099	Stanislaus County, California	1
## 129	05000000US06077	6077	San Joaquin County, California	1
## 130	05000000US48113	48113	Dallas County, Texas	1
## 131	05000000US06037	6037	Los Angeles County, California	1
## 132	05000000US48141	48141	El Paso County, Texas	1
## 133	05000000US06029	6029	Kern County, California	1
## 134	05000000US06019	6019	Fresno County, California	1
## 135	05000000US36005	36005	Bronx County, New York	1
## 136	05000000US48215	48215	Hidalgo County, Texas	1
##	POPGROUP.display.label	RacesReported	HSDegree	BachDegree
## 1	Total population	574272	95.5	52.8
## 2	Total population	516284	94.9	49.8
## 3	Total population	558503	94.1	42.0
## 4	Total population	692254	94.1	51.9
## 5	Total population	1231255	93.9	37.7
## 6	Total population	626685	93.9	37.7
## 7	Total population	816857	93.7	47.3
## 8	Total population	885241	93.7	50.0
## 9	Total population	560974	93.7	37.5
## 10	Total population	1237868	93.6	44.8
## 11	Total population	1212064	93.2	47.3
## 12	Total population	1001876	93.2	42.8
## 13	Total population	629279	93.1	43.7
## 14	Total population	663519	92.8	36.5
## 15	Total population	998691	92.4	49.2
## 16	Total population	932708	92.3	48.0
## 17	Total population	1570315	92.3	52.3
## 18	Total population	512784	92.3	49.3
## 19	Total population	2079967	92.3	48.6
## 20	Total population	507022	92.2	34.1
## 21	Total population	759583	92.0	29.1
## 22	Total population	618821	91.9	40.9
## 23	Total population	560133	91.9	38.8

## 24	Total population	753363	91.9	41.5
## 25	Total population	991788	91.8	32.6
## 26	Total population	586301	91.7	28.6
## 27	Total population	556885	91.6	27.2
## 28	Total population	933572	91.5	46.2
## 29	Total population	562960	91.5	36.3
## 30	Total population	1137538	91.5	60.3
## 31	Total population	996319	91.3	49.2
## 32	Total population	541943	91.1	30.3
## 33	Total population	776712	91.1	41.6
## 34	Total population	1030447	90.9	58.5
## 35	Total population	685419	90.7	33.1
## 36	Total population	1358627	90.7	43.2
## 37	Total population	922835	90.6	31.3
## 38	Total population	806631	90.5	35.6
## 39	Total population	826925	90.4	37.2
## 40	Total population	730981	90.3	43.7
## 41	Total population	705186	90.3	44.0
## 42	Total population	749857	90.3	35.9
## 43	Total population	831928	90.3	24.6
## 44	Total population	658893	90.2	55.0
## 45	Total population	562998	90.2	39.7
## 46	Total population	552778	90.1	35.8
## 47	Total population	938098	90.1	29.5
## 48	Total population	813475	90.1	34.6
## 49	Total population	683191	90.0	29.5
## 50	Total population	1231393	90.0	38.0
## 51	Total population	532655	89.9	40.9
## 52	Total population	945438	89.8	46.7
## 53	Total population	1502968	89.8	34.0
## 54	Total population	533116	89.7	25.7
## 55	Total population	861277	89.5	34.5
## 56	Total population	1012539	89.5	43.0
## 57	Total population	1091742	89.5	31.9
## 58	Total population	897985	89.3	36.8
## 59	Total population	860112	89.3	23.9
## 60	Total population	660793	89.1	30.5
## 61	Total population	769091	89.1	38.9
## 62	Total population	629237	89.1	33.7
## 63	Total population	836297	89.1	41.0
## 64	Total population	897698	89.0	26.1
## 65	Total population	512119	89.0	33.3
## 66	Total population	507531	88.9	22.5
## 67	Total population	1111339	88.8	39.7
## 68	Total population	508803	88.8	30.7
## 69	Total population	629598	88.6	30.7
## 70	Total population	685345	88.6	44.1
## 71	Total population	1151145	88.6	45.6
## 72	Total population	760026	88.5	31.6
## 73	Total population	1869235	88.4	30.5
## 74	Total population	722161	88.4	41.7
## 75	Total population	511038	88.3	31.3
## 76	Total population	543244	88.2	36.3
## 77	Total population	852469	88.1	54.2

## 78	Total population	758581	88.1	47.5
## 79	Total population	1259828	88.1	31.0
## 80	Total population	1004516	88.0	30.8
## 81	Total population	877922	88.0	35.4
## 82	Total population	675551	88.0	32.7
## 83	Total population	1253001	87.9	31.4
## 84	Total population	1397710	87.7	33.0
## 85	Total population	500292	87.6	34.8
## 86	Total population	1894605	87.4	48.4
## 87	Total population	972634	87.4	47.1
## 88	Total population	938803	87.4	29.9
## 89	Total population	1316298	87.3	29.8
## 90	Total population	1610921	86.9	42.8
## 91	Total population	956406	86.9	29.5
## 92	Total population	4087191	86.8	30.2
## 93	Total population	1482026	86.8	28.9
## 94	Total population	1636268	86.8	59.9
## 95	Total population	766215	86.8	30.6
## 96	Total population	668347	86.7	37.3
## 97	Total population	3263431	86.6	37.1
## 98	Total population	679513	86.3	26.5
## 99	Total population	552939	86.2	33.0
## 100	Total population	518947	85.9	34.1
## 101	Total population	663862	85.5	44.3
## 102	Total population	5246456	85.5	36.2
## 103	Total population	904430	85.5	31.0
## 104	Total population	795723	85.5	32.7
## 105	Total population	934243	85.0	28.8
## 106	Total population	634638	84.9	19.7
## 107	Total population	1764804	84.9	22.1
## 108	Total population	533320	84.9	26.0
## 109	Total population	1945360	84.9	30.0
## 110	Total population	3145515	84.6	38.0
## 111	Total population	2069681	84.5	22.7
## 112	Total population	622793	84.4	30.0
## 113	Total population	767254	83.9	42.3
## 114	Total population	508856	83.8	28.6
## 115	Total population	846178	83.6	31.6
## 116	Total population	669115	83.4	38.2
## 117	Total population	1855866	83.0	26.3
## 118	Total population	527306	82.9	32.6
## 119	Total population	1560297	82.6	26.0
## 120	Total population	554194	82.5	25.7
## 121	Total population	631974	82.0	25.2
## 122	Total population	2662874	80.9	26.6
## 123	Total population	2329271	80.6	20.7
## 124	Total population	2321580	80.4	29.8
## 125	Total population	2621793	80.0	34.3
## 126	Total population	4441370	79.8	29.7
## 127	Total population	2112619	78.6	18.9
## 128	Total population	531997	78.4	17.0
## 129	Total population	715597	77.6	18.3
## 130	Total population	2518638	77.6	29.1
## 131	Total population	10116705	77.5	30.3

## 132	Total population	833487	75.8	21.1
## 133	Total population	874589	74.5	15.4
## 134	Total population	965974	73.6	19.7
## 135	Total population	1438159	70.5	19.3
## 136	Total population	831073	62.2	17.9

Installing and loading the purrr library

```
library(purrr)
```

Using the purrr package – perform 2 functions on your dataset.

You could use `zip_n`, `keep`, `discard`, `compact`, etc.

```
new_df <- keep(am_comm_df$HSDegree, ~ .x > 87.63235)
new_df
```

```
## [1] 89.1 88.0 88.8 88.1 88.1 91.9 92.8 94.1 89.8 89.3 89.5 90.1 90.2 91.6 88.4
## [16] 89.0 87.9 87.7 90.1 88.9 90.3 88.4 91.3 88.0 91.8 92.3 90.3 90.7 95.5 88.8
## [31] 88.5 91.9 90.4 90.9 89.1 92.3 94.1 92.2 90.1 89.1 89.3 93.6 93.2 89.9 90.0
## [46] 93.2 88.2 91.5 88.3 89.1 93.1 91.7 88.0 90.6 90.3 90.7 89.8 89.0 89.5 92.4
## [61] 88.1 90.0 90.5 89.7 91.1 88.6 91.1 90.2 93.9 93.9 92.3 91.5 93.7 93.7 91.9
## [76] 88.6 88.6 89.5 93.7 91.5 92.3 90.3 92.0 94.9
```

```
discard <- discard(am_comm_df$BachDegreeFromMean, ~ .x < 0)
discard
```

```
## NULL
```

Use the `cbind` and `rbind` function on your dataset

```
rows <- c(1:nrow(am_comm_df))
cbind(am_comm_df, rows)
```

##		Id	Id2	Geography	PopGroupID
## 1	05000000US01073	1073		Jefferson County, Alabama	1
## 2	05000000US04013	4013		Maricopa County, Arizona	1
## 3	05000000US04019	4019		Pima County, Arizona	1
## 4	05000000US06001	6001		Alameda County, California	1
## 5	05000000US06013	6013		Contra Costa County, California	1
## 6	05000000US06019	6019		Fresno County, California	1
## 7	05000000US06029	6029		Kern County, California	1
## 8	05000000US06037	6037		Los Angeles County, California	1
## 9	05000000US06059	6059		Orange County, California	1
## 10	05000000US06065	6065		Riverside County, California	1
## 11	05000000US06067	6067		Sacramento County, California	1
## 12	05000000US06071	6071		San Bernardino County, California	1
## 13	05000000US06073	6073		San Diego County, California	1
## 14	05000000US06075	6075		San Francisco County, California	1
## 15	05000000US06077	6077		San Joaquin County, California	1
## 16	05000000US06081	6081		San Mateo County, California	1
## 17	05000000US06085	6085		Santa Clara County, California	1
## 18	05000000US06097	6097		Sonoma County, California	1
## 19	05000000US06099	6099		Stanislaus County, California	1
## 20	05000000US06111	6111		Ventura County, California	1
## 21	05000000US08005	8005		Arapahoe County, Colorado	1
## 22	05000000US08031	8031		Denver County, Colorado	1
## 23	05000000US08041	8041		El Paso County, Colorado	1
## 24	05000000US08059	8059		Jefferson County, Colorado	1
## 25	05000000US09001	9001		Fairfield County, Connecticut	1
## 26	05000000US09003	9003		Hartford County, Connecticut	1
## 27	05000000US09009	9009		New Haven County, Connecticut	1
## 28	05000000US10003	10003		New Castle County, Delaware	1
## 29	05000000US11001	11001		District of Columbia, District of Columbia	1
## 30	05000000US12009	12009		Brevard County, Florida	1
## 31	05000000US12011	12011		Broward County, Florida	1
## 32	05000000US12031	12031		Duval County, Florida	1
## 33	05000000US12057	12057		Hillsborough County, Florida	1
## 34	05000000US12071	12071		Lee County, Florida	1
## 35	05000000US12086	12086		Miami-Dade County, Florida	1
## 36	05000000US12095	12095		Orange County, Florida	1
## 37	05000000US12099	12099		Palm Beach County, Florida	1
## 38	05000000US12103	12103		Pinellas County, Florida	1
## 39	05000000US12105	12105		Polk County, Florida	1
## 40	05000000US12127	12127		Volusia County, Florida	1
## 41	05000000US13067	13067		Cobb County, Georgia	1
## 42	05000000US13089	13089		DeKalb County, Georgia	1
## 43	05000000US13121	13121		Fulton County, Georgia	1
## 44	05000000US13135	13135		Gwinnett County, Georgia	1
## 45	05000000US15003	15003		Honolulu County, Hawaii	1
## 46	05000000US17031	17031		Cook County, Illinois	1
## 47	05000000US17043	17043		DuPage County, Illinois	1
## 48	05000000US17089	17089		Kane County, Illinois	1
## 49	05000000US17097	17097		Lake County, Illinois	1
## 50	05000000US17197	17197		Will County, Illinois	1
## 51	05000000US18097	18097		Marion County, Indiana	1
## 52	05000000US20091	20091		Johnson County, Kansas	1

## 53	0500000US20173	20173	Sedgwick County, Kansas	1
## 54	0500000US21111	21111	Jefferson County, Kentucky	1
## 55	0500000US24003	24003	Anne Arundel County, Maryland	1
## 56	0500000US24005	24005	Baltimore County, Maryland	1
## 57	0500000US24031	24031	Montgomery County, Maryland	1
## 58	0500000US24033	24033	Prince George's County, Maryland	1
## 59	0500000US24510	24510	Baltimore city, Maryland	1
## 60	0500000US25005	25005	Bristol County, Massachusetts	1
## 61	0500000US25009	25009	Essex County, Massachusetts	1
## 62	0500000US25017	25017	Middlesex County, Massachusetts	1
## 63	0500000US25021	25021	Norfolk County, Massachusetts	1
## 64	0500000US25023	25023	Plymouth County, Massachusetts	1
## 65	0500000US25025	25025	Suffolk County, Massachusetts	1
## 66	0500000US25027	25027	Worcester County, Massachusetts	1
## 67	0500000US26081	26081	Kent County, Michigan	1
## 68	0500000US26099	26099	Macomb County, Michigan	1
## 69	0500000US26125	26125	Oakland County, Michigan	1
## 70	0500000US26163	26163	Wayne County, Michigan	1
## 71	0500000US27053	27053	Hennepin County, Minnesota	1
## 72	0500000US27123	27123	Ramsey County, Minnesota	1
## 73	0500000US29095	29095	Jackson County, Missouri	1
## 74	0500000US29189	29189	St. Louis County, Missouri	1
## 75	0500000US31055	31055	Douglas County, Nebraska	1
## 76	0500000US32003	32003	Clark County, Nevada	1
## 77	0500000US34003	34003	Bergen County, New Jersey	1
## 78	0500000US34007	34007	Camden County, New Jersey	1
## 79	0500000US34013	34013	Essex County, New Jersey	1
## 80	0500000US34017	34017	Hudson County, New Jersey	1
## 81	0500000US34023	34023	Middlesex County, New Jersey	1
## 82	0500000US34025	34025	Monmouth County, New Jersey	1
## 83	0500000US34029	34029	Ocean County, New Jersey	1
## 84	0500000US34031	34031	Passaic County, New Jersey	1
## 85	0500000US34039	34039	Union County, New Jersey	1
## 86	0500000US35001	35001	Bernalillo County, New Mexico	1
## 87	0500000US36005	36005	Bronx County, New York	1
## 88	0500000US36029	36029	Erie County, New York	1
## 89	0500000US36047	36047	Kings County, New York	1
## 90	0500000US36055	36055	Monroe County, New York	1
## 91	0500000US36059	36059	Nassau County, New York	1
## 92	0500000US36061	36061	New York County, New York	1
## 93	0500000US36081	36081	Queens County, New York	1
## 94	0500000US36103	36103	Suffolk County, New York	1
## 95	0500000US36119	36119	Westchester County, New York	1
## 96	0500000US37081	37081	Guilford County, North Carolina	1
## 97	0500000US37119	37119	Mecklenburg County, North Carolina	1
## 98	0500000US37183	37183	Wake County, North Carolina	1
## 99	0500000US39035	39035	Cuyahoga County, Ohio	1
## 100	0500000US39049	39049	Franklin County, Ohio	1
## 101	0500000US39061	39061	Hamilton County, Ohio	1
## 102	0500000US39113	39113	Montgomery County, Ohio	1
## 103	0500000US39153	39153	Summit County, Ohio	1
## 104	0500000US40109	40109	Oklahoma County, Oklahoma	1
## 105	0500000US40143	40143	Tulsa County, Oklahoma	1
## 106	0500000US41051	41051	Multnomah County, Oregon	1

## 107	05000000US41067	41067	Washington County, Oregon	1	
## 108	05000000US42003	42003	Allegheny County, Pennsylvania	1	
## 109	05000000US42017	42017	Bucks County, Pennsylvania	1	
## 110	05000000US42029	42029	Chester County, Pennsylvania	1	
## 111	05000000US42045	42045	Delaware County, Pennsylvania	1	
## 112	05000000US42071	42071	Lancaster County, Pennsylvania	1	
## 113	05000000US42091	42091	Montgomery County, Pennsylvania	1	
## 114	05000000US42101	42101	Philadelphia County, Pennsylvania	1	
## 115	05000000US44007	44007	Providence County, Rhode Island	1	
## 116	05000000US47037	47037	Davidson County, Tennessee	1	
## 117	05000000US47157	47157	Shelby County, Tennessee	1	
## 118	05000000US48029	48029	Bexar County, Texas	1	
## 119	05000000US48085	48085	Collin County, Texas	1	
## 120	05000000US48113	48113	Dallas County, Texas	1	
## 121	05000000US48121	48121	Denton County, Texas	1	
## 122	05000000US48141	48141	El Paso County, Texas	1	
## 123	05000000US48157	48157	Fort Bend County, Texas	1	
## 124	05000000US48201	48201	Harris County, Texas	1	
## 125	05000000US48215	48215	Hidalgo County, Texas	1	
## 126	05000000US48339	48339	Montgomery County, Texas	1	
## 127	05000000US48439	48439	Tarrant County, Texas	1	
## 128	05000000US48453	48453	Travis County, Texas	1	
## 129	05000000US49035	49035	Salt Lake County, Utah	1	
## 130	05000000US49049	49049	Utah County, Utah	1	
## 131	05000000US51059	51059	Fairfax County, Virginia	1	
## 132	05000000US53033	53033	King County, Washington	1	
## 133	05000000US53053	53053	Pierce County, Washington	1	
## 134	05000000US53061	53061	Snohomish County, Washington	1	
## 135	05000000US55025	55025	Dane County, Wisconsin	1	
## 136	05000000US55079	55079	Milwaukee County, Wisconsin	1	
##	POPGROUP.display.label	RacesReported	HSDegree	BachDegree	rows
## 1	Total population	660793	89.1	30.5	1
## 2	Total population	4087191	86.8	30.2	2
## 3	Total population	1004516	88.0	30.8	3
## 4	Total population	1610921	86.9	42.8	4
## 5	Total population	1111339	88.8	39.7	5
## 6	Total population	965974	73.6	19.7	6
## 7	Total population	874589	74.5	15.4	7
## 8	Total population	10116705	77.5	30.3	8
## 9	Total population	3145515	84.6	38.0	9
## 10	Total population	2329271	80.6	20.7	10
## 11	Total population	1482026	86.8	28.9	11
## 12	Total population	2112619	78.6	18.9	12
## 13	Total population	3263431	86.6	37.1	13
## 14	Total population	852469	88.1	54.2	14
## 15	Total population	715597	77.6	18.3	15
## 16	Total population	758581	88.1	47.5	16
## 17	Total population	1894605	87.4	48.4	17
## 18	Total population	500292	87.6	34.8	18
## 19	Total population	531997	78.4	17.0	19
## 20	Total population	846178	83.6	31.6	20
## 21	Total population	618821	91.9	40.9	21
## 22	Total population	663862	85.5	44.3	22
## 23	Total population	663519	92.8	36.5	23

## 24	Total population	558503	94.1	42.0	24
## 25	Total population	945438	89.8	46.7	25
## 26	Total population	897985	89.3	36.8	26
## 27	Total population	861277	89.5	34.5	27
## 28	Total population	552778	90.1	35.8	28
## 29	Total population	658893	90.2	55.0	29
## 30	Total population	556885	91.6	27.2	30
## 31	Total population	1869235	88.4	30.5	31
## 32	Total population	897698	89.0	26.1	32
## 33	Total population	1316298	87.3	29.8	33
## 34	Total population	679513	86.3	26.5	34
## 35	Total population	2662874	80.9	26.6	35
## 36	Total population	1253001	87.9	31.4	36
## 37	Total population	1397710	87.7	33.0	37
## 38	Total population	938098	90.1	29.5	38
## 39	Total population	634638	84.9	19.7	39
## 40	Total population	507531	88.9	22.5	40
## 41	Total population	730981	90.3	43.7	41
## 42	Total population	722161	88.4	41.7	42
## 43	Total population	996319	91.3	49.2	43
## 44	Total population	877922	88.0	35.4	44
## 45	Total population	991788	91.8	32.6	45
## 46	Total population	5246456	85.5	36.2	46
## 47	Total population	932708	92.3	48.0	47
## 48	Total population	527306	82.9	32.6	48
## 49	Total population	705186	90.3	44.0	49
## 50	Total population	685419	90.7	33.1	50
## 51	Total population	934243	85.0	28.8	51
## 52	Total population	574272	95.5	52.8	52
## 53	Total population	508803	88.8	30.7	53
## 54	Total population	760026	88.5	31.6	54
## 55	Total population	560133	91.9	38.8	55
## 56	Total population	826925	90.4	37.2	56
## 57	Total population	1030447	90.9	58.5	57
## 58	Total population	904430	85.5	31.0	58
## 59	Total population	622793	84.4	30.0	59
## 60	Total population	554194	82.5	25.7	60
## 61	Total population	769091	89.1	38.9	61
## 62	Total population	1570315	92.3	52.3	62
## 63	Total population	692254	94.1	51.9	63
## 64	Total population	507022	92.2	34.1	64
## 65	Total population	767254	83.9	42.3	65
## 66	Total population	813475	90.1	34.6	66
## 67	Total population	629237	89.1	33.7	67
## 68	Total population	860112	89.3	23.9	68
## 69	Total population	1237868	93.6	44.8	69
## 70	Total population	1764804	84.9	22.1	70
## 71	Total population	1212064	93.2	47.3	71
## 72	Total population	532655	89.9	40.9	72
## 73	Total population	683191	90.0	29.5	73
## 74	Total population	1001876	93.2	42.8	74
## 75	Total population	543244	88.2	36.3	75
## 76	Total population	2069681	84.5	22.7	76
## 77	Total population	933572	91.5	46.2	77

## 78	Total population	511038	88.3	31.3	78
## 79	Total population	795723	85.5	32.7	79
## 80	Total population	669115	83.4	38.2	80
## 81	Total population	836297	89.1	41.0	81
## 82	Total population	629279	93.1	43.7	82
## 83	Total population	586301	91.7	28.6	83
## 84	Total population	508856	83.8	28.6	84
## 85	Total population	552939	86.2	33.0	85
## 86	Total population	675551	88.0	32.7	86
## 87	Total population	1438159	70.5	19.3	87
## 88	Total population	922835	90.6	31.3	88
## 89	Total population	2621793	80.0	34.3	89
## 90	Total population	749857	90.3	35.9	90
## 91	Total population	1358627	90.7	43.2	91
## 92	Total population	1636268	86.8	59.9	92
## 93	Total population	2321580	80.4	29.8	93
## 94	Total population	1502968	89.8	34.0	94
## 95	Total population	972634	87.4	47.1	95
## 96	Total population	512119	89.0	33.3	96
## 97	Total population	1012539	89.5	43.0	97
## 98	Total population	998691	92.4	49.2	98
## 99	Total population	1259828	88.1	31.0	99
## 100	Total population	1231393	90.0	38.0	100
## 101	Total population	806631	90.5	35.6	101
## 102	Total population	533116	89.7	25.7	102
## 103	Total population	541943	91.1	30.3	103
## 104	Total population	766215	86.8	30.6	104
## 105	Total population	629598	88.6	30.7	105
## 106	Total population	776712	91.1	41.6	106
## 107	Total population	562998	90.2	39.7	107
## 108	Total population	1231255	93.9	37.7	108
## 109	Total population	626685	93.9	37.7	109
## 110	Total population	512784	92.3	49.3	110
## 111	Total population	562960	91.5	36.3	111
## 112	Total population	533320	84.9	26.0	112
## 113	Total population	816857	93.7	47.3	113
## 114	Total population	1560297	82.6	26.0	114
## 115	Total population	631974	82.0	25.2	115
## 116	Total population	668347	86.7	37.3	116
## 117	Total population	938803	87.4	29.9	117
## 118	Total population	1855866	83.0	26.3	118
## 119	Total population	885241	93.7	50.0	119
## 120	Total population	2518638	77.6	29.1	120
## 121	Total population	753363	91.9	41.5	121
## 122	Total population	833487	75.8	21.1	122
## 123	Total population	685345	88.6	44.1	123
## 124	Total population	4441370	79.8	29.7	124
## 125	Total population	831073	62.2	17.9	125
## 126	Total population	518947	85.9	34.1	126
## 127	Total population	1945360	84.9	30.0	127
## 128	Total population	1151145	88.6	45.6	128
## 129	Total population	1091742	89.5	31.9	129
## 130	Total population	560974	93.7	37.5	130
## 131	Total population	1137538	91.5	60.3	131

## 132	Total population	2079967	92.3	48.6	132
## 133	Total population	831928	90.3	24.6	133
## 134	Total population	759583	92.0	29.1	134
## 135	Total population	516284	94.9	49.8	135
## 136	Total population	956406	86.9	29.5	136

Split a string, then concatenate the results back together

```
split_string <- strsplit("Kansas City, Kansas", split = ",")
split_string
```

```
## [[1]]
## [1] "Kansas City" " Kansas"
```

```
concatenate_string <- paste("Kansas City", "Kansas", sep = ", ")
concatenate_string
```

```
## [1] "Kansas City, Kansas"
```