

R version 4.1.2 (2021-11-01) -- "Bird Hippie"  
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 Platform: i386-w64-mingw32/i386 (32-bit)

NAME: MAJJIGA JASWANTH  
 REGNO: 20BCD7171

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 'help.start()' for an HTML browser interface to help.  
 Type 'q()' to quit R.

[Previously saved workspace restored]

```
> install.packages("dplyr")
Installing package into 'C:/Users/MAJJIGA JASWANTH/Documents/R/win-library/4.1'
(as 'lib' is unspecified)
--- Please select a CRAN mirror for use in this session ---
trying URL 'https://cloud.r-project.org/bin/windows/contrib/4.1/dplyr_1.0.7.zip'
Content type 'application/zip' length 1344372 bytes (1.3 MB)
downloaded 1.3 MB
```

package 'dplyr' successfully unpacked and MD5 sums checked

The downloaded binary packages are in  
 C:\Users\MAJJIGA JASWANTH\AppData\Local\Temp\RtmpKUtAKI\downloaded\_packages  
 > 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

```
> mydata=read.csv
> mydata=read.csv("c:\\Users\\MAJJIGA JASWANTH\\Documents\\sampledata.csv")
> sample_n(mydata,3)
  Index State Y2002 Y2003 Y2004 Y2005 Y2006 Y2007 Y2008
1     N North Dakota 1618807 1510193 1876940 1443172 1425030 1868788 1720352
2     C   Colorado 1343824 1878473 1886149 1236697 1871471 1814218 1875146
3     F   Florida 1964626 1468852 1419738 1362787 1339608 1278550 1756185
  Y2009 Y2010 Y2011 Y2012 Y2013 Y2014 Y2015
1 1671468 1534571 1271132 1430978 1529024 1563898 1604118
2 1752387 1913275 1665877 1491604 1178355 1383978 1330736
3 1818438 1198403 1497051 1131928 1107448 1407784 1170389
> sample_frac(mydata, 0.1)
  Index State Y2002 Y2003 Y2004 Y2005 Y2006 Y2007 Y2008
1     I   Illinois 1508356 1527440 1493029 1261353 1540274 1747614 1871645
2     K   Kentucky 1813878 1448846 1800760 1250524 1137913 1911227 1301848
3     O   Oregon 1794912 1726665 1805445 1133510 1502242 1419251 1482786
4     G   Georgia 1929009 1541565 1810773 1779091 1326846 1223770 1773090
5     M Massachusetts 1647582 1686259 1620601 1777250 1531641 1380529 1978904
  Y2009 Y2010 Y2011 Y2012 Y2013 Y2014 Y2015
1 1658551 1422021 1751422 1696729 1915435 1645465 1583516
2 1956681 1350895 1512894 1916616 1878271 1722762 1913350
3 1862351 1103794 1935687 1905378 1522129 1509171 1893515
4 1630325 1145473 1851245 1850111 1887157 1259353 1725470
5 1567651 1761048 1658538 1482203 1731917 1669749 1963337
> x1 = distinct(mydata)
```

&gt; x1

	Index	State	Y2002	Y2003	Y2004	Y2005	Y2006	Y2007
1	A	Alabama	1296530	1317711	1118631	1492583	1107408	1440134
2	A	Alaska	1170302	1960378	1818085	1447852	1861639	1465841
3	A	Arizona	1742027	1968140	1377583	1782199	1102568	1109382
4	A	Arkansas	1485531	1994927	1119299	1947979	1669191	1801213
5	C	California	1685349	1675807	1889570	1480280	1735069	1812546
6	C	Colorado	1343824	1878473	1886149	1236697	1871471	1814218
7	C	Connecticut	1610512	1232844	1181949	1518933	1841266	1976976
8	D	Delaware	1330403	1268673	1706751	1403759	1441351	1300836
9	D	District of Columbia	1111437	1993741	1374643	1827949	1803852	1595981
10	F	Florida	1964626	1468852	1419738	1362787	1339608	1278550
11	G	Georgia	1929009	1541565	1810773	1779091	1326846	1223770
12	H	Hawaii	1461570	1200280	1213993	1245931	1459383	1430465
13	I	Idaho	1353210	1438538	1739154	1541015	1122387	1772050
14	I	Illinois	1508356	1527440	1493029	1261353	1540274	1747614
15	I	Indiana	1776918	1734104	1269927	1204117	1848073	1129546
16	I	Iowa	1499269	1444576	1576367	1388924	1554813	1452911
17	K	Kansas	1509054	1290700	1522230	1532094	1104256	1863278
18	K	Kentucky	1813878	1448846	1800760	1250524	1137913	1911227
19	L	Louisiana	1584734	1110625	1868456	1751920	1233709	1920301
20	M	Maine	1582720	1678622	1208496	1912040	1438549	1330014
21	M	Maryland	1579713	1404700	1849798	1397738	1310270	1789128
22	M	Massachusetts	1647582	1686259	1620601	1777250	1531641	1380529
23	M	Michigan	1295635	1149931	1601027	1340716	1729449	1567494
24	M	Minnesota	1729921	1675204	1903907	1561839	1985692	1148621
25	M	Mississippi	1983285	1292558	1631325	1943311	1354579	1731643
26	M	Missouri	1221316	1858368	1773451	1573967	1374863	1486197
27	M	Montana	1877154	1540099	1332722	1273327	1625721	1983568
28	N	Nebraska	1885081	1309769	1425527	1240465	1500594	1278272
29	N	Nevada	1426117	1114500	1119707	1758830	1694526	1765826
30	N	New Hampshire	1419776	1854370	1195119	1990062	1645430	1286967
31	N	New Jersey	1605532	1141514	1613550	1181452	1541327	1156804
32	N	New Mexico	1819239	1226057	1935991	1124400	1723493	1475985
33	N	New York	1395149	1611371	1170675	1446810	1426941	1463171
34	N	North Carolina	1616742	1292223	1482792	1532347	1158716	1827420
35	N	North Dakota	1618807	1510193	1876940	1443172	1425030	1868788
36	O	Ohio	1802132	1648498	1441386	1670280	1534888	1314824
37	O	Oklahoma	1173918	1334639	1663622	1798714	1312574	1708245
38	O	Oregon	1794912	1726665	1805445	1133510	1502242	1419251
39	P	Pennsylvania	1320191	1446723	1218591	1122030	1971479	1563062
40	R	Rhode Island	1501744	1942942	1266657	1961923	1835983	1234040
41	S	South Carolina	1631522	1803455	1425193	1458191	1538731	1825195
42	S	South Dakota	1159037	1150689	1660148	1417141	1418586	1279134
43	T	Tennessee	1811867	1485909	1974179	1157059	1786132	1399191
44	T	Texas	1520591	1310777	1957713	1907326	1873544	1655483
45	U	Utah	1771096	1195861	1979395	1241662	1437456	1859416
46	V	Vermont	1146902	1832249	1492704	1579265	1332048	1563537
47	V	Virginia	1134317	1163996	1891068	1853855	1708715	1197698
48	W	Washington	1977749	1687136	1199490	1163092	1334864	1621989
49	W	West Virginia	1677347	1380662	1176100	1888948	1922085	1740826
50	W	Wisconsin	1788920	1518578	1289663	1436888	1251678	1721874
51	W	Wyoming	1775190	1498098	1198212	1881688	1750527	1523124

	Y2008	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
1	1945229	1944173	1237582	1440756	1186741	1852841	1558906	1916661
2	1551826	1436541	1629616	1230866	1512804	1985302	1580394	1979143
3	1752886	1554330	1300521	1130709	1907284	1363279	1525866	1647724
4	1188104	1628980	1669295	1928238	1216675	1591896	1360959	1329341
5	1487315	1663809	1624509	1639670	1921845	1156536	1388461	1644607
6	1875146	1752387	1913275	1665877	1491604	1178355	1383978	1330736
7	1764457	1972730	1968730	1945524	1228529	1582249	1503156	1718072
8	1762096	1553585	1370984	1318669	1984027	1671279	1803169	1627508
9	1193245	1739748	1707823	1353449	1979708	1912654	1782169	1410183
10	1756185	1818438	1198403	1497051	1131928	1107448	1407784	1170389
11	1773090	1630325	1145473	1851245	1850111	1887157	1259353	1725470
12	1919423	1928416	1330509	1902816	1695126	1517184	1948108	1150882
13	1335481	1748608	1436809	1456340	1643855	1312561	1713718	1757171
14	1871645	1658551	1422021	1751422	1696729	1915435	1645465	1583516
15	1139551	1883976	1999102	1559924	1905760	1129794	1988394	1467614
16	1317983	1150783	1751389	1992996	1501879	1173694	1431705	1641866

```

17 1949478 1561528 1550433 1465812 1882929 1410249 1930090 1385528
18 1301848 1956681 1350895 1512894 1916616 1878271 1722762 1913350
19 1185085 1124853 1498662 1210385 1234234 1287663 1908602 1403857
20 1295877 1969163 1627262 1706080 1437088 1318546 1116792 1529233
21 1112765 1967225 1486246 1872327 1175819 1314343 1979529 1569566
22 1978904 1567651 1761048 1658538 1482203 1731917 1669749 1963337
23 1990431 1575185 1267626 1274673 1709853 1815596 1965196 1646634
24 1328133 1890633 1995304 1575533 1910216 1972021 1515366 1864553
25 1428291 1568049 1383227 1629132 1988270 1907777 1649668 1991232
26 1735099 1800620 1164202 1425363 1800052 1698105 1767835 1996005
27 1251742 1592690 1350619 1520064 1185225 1465705 1110394 1125903
28 1140598 1270585 1128711 1187207 1569665 1690920 1459243 1802211
29 1903270 1231480 1526066 1143343 1980195 1283813 1225348 1903804
30 1762936 1763211 1265642 1704297 1131298 1197576 1242623 1963313
31 1568034 1357418 1443718 1390010 1202326 1100990 1850165 1183568
32 1237704 1820856 1801430 1653384 1475715 1623388 1533494 1868612
33 1732098 1426216 1604531 1683687 1500089 1718837 1619033 1367705
34 1267737 1116168 1791535 1553750 1472258 1104893 1596452 1229085
35 1720352 1671468 1534571 1271132 1430978 1529024 1563898 1604118
36 1516621 1511460 1585465 1887714 1227303 1840898 1880804 1573117
37 1256746 1853142 1673831 1822933 1674707 1900523 1956742 1307678
38 1482786 1862351 1103794 1935687 1905378 1522129 1509171 1893515
39 1274168 1571032 1433835 1483292 1290329 1475344 1931500 1668232
40 1151409 1993136 1983569 1781016 1909119 1531212 1990412 1611730
41 1250499 1864685 1345102 1116203 1532332 1591735 1188417 1110655
42 1171870 1852424 1554782 1647245 1811156 1147488 1302834 1136443
43 1826406 1326460 1231739 1469785 1849041 1560887 1349173 1162164
44 1785986 1827503 1447457 1978374 1882532 1698698 1646508 1705322
45 1939284 1915865 1619186 1288285 1108281 1123353 1801019 1729273
46 1123567 1618583 1326369 1792600 1714960 1146278 1282790 1565924
47 1803330 1590043 1516758 1171686 1262342 1647032 1706707 1850394
48 1545621 1555554 1179331 1150089 1775787 1273834 1387428 1377341
49 1238174 1539322 1539603 1872519 1462137 1683127 1204344 1198791
50 1980167 1901394 1648755 1940943 1729177 1510119 1701650 1846238
51 1587602 1504455 1282142 1881814 1673668 1994022 1204029 1853858
> x2 = distinct(mydata, Index, Y2010, .keep_all = TRUE)
> x2
  Index      State      Y2002      Y2003      Y2004      Y2005      Y2006      Y2007
1     A      Alabama 1296530 1317711 1118631 1492583 1107408 1440134
2     A      Alaska 1170302 1960378 1818085 1447852 1861639 1465841
3     A      Arizona 1742027 1968140 1377583 1782199 1102568 1109382
4     A      Arkansas 1485531 1994927 1119299 1947979 1669191 1801213
5     C      California 1685349 1675807 1889570 1480280 1735069 1812546
6     C      Colorado 1343824 1878473 1886149 1236697 1871471 1814218
7     C      Connecticut 1610512 1232844 1181949 1518933 1841266 1976976
8     D      Delaware 1330403 1268673 1706751 1403759 1441351 1300836
9     D District of Columbia 1111437 1993741 1374643 1827949 1803852 1595981
10    F      Florida 1964626 1468852 1419738 1362787 1339608 1278550
11    G      Georgia 1929009 1541565 1810773 1779091 1326846 1223770
12    H      Hawaii 1461570 1200280 1213993 1245931 1459383 1430465
13    I      Idaho 1353210 1438538 1739154 1541015 1122387 1772050
14    I      Illinois 1508356 1527440 1493029 1261353 1540274 1747614
15    I      Indiana 1776918 1734104 1269927 1204117 1848073 1129546
16    I      Iowa 1499269 1444576 1576367 1388924 1554813 1452911
17    K      Kansas 1509054 1290700 1522230 1532094 1104256 1863278
18    K      Kentucky 1813878 1448846 1800760 1250524 1137913 1911227
19    L      Louisiana 1584734 1110625 1868456 1751920 1233709 1920301
20    M      Maine 1582720 1678622 1208496 1912040 1438549 1330014
21    M      Maryland 1579713 1404700 1849798 1397738 1310270 1789128
22    M      Massachusetts 1647582 1686259 1620601 1777250 1531641 1380529
23    M      Michigan 1295635 1149931 1601027 1340716 1729449 1567494
24    M      Minnesota 1729921 1675204 1903907 1561839 1985692 1148621
25    M      Mississippi 1983285 1292558 1631325 1943311 1354579 1731643
26    M      Missouri 1221316 1858368 1773451 1573967 1374863 1486197
27    M      Montana 1877154 1540099 1332722 1273327 1625721 1983568
28    N      Nebraska 1885081 1309769 1425527 1240465 1500594 1278272
29    N      Nevada 1426117 1114500 1119707 1758830 1694526 1765826
30    N      New Hampshire 1419776 1854370 1195119 1990062 1645430 1286967
31    N      New Jersey 1605532 1141514 1613550 1181452 1541327 1156804
32    N      New Mexico 1819239 1226057 1935991 1124400 1723493 1475985

```

33	N	New York	1395149	1611371	1170675	1446810	1426941	1463171
34	N	North Carolina	1616742	1292223	1482792	1532347	1158716	1827420
35	N	North Dakota	1618807	1510193	1876940	1443172	1425030	1868788
36	O	Ohio	1802132	1648498	1441386	1670280	1534888	1314824
37	O	Oklahoma	1173918	1334639	1663622	1798714	1312574	1708245
38	O	Oregon	1794912	1726665	1805445	1133510	1502242	1419251
39	P	Pennsylvania	1320191	1446723	1218591	1122030	1971479	1563062
40	R	Rhode Island	1501744	1942942	1266657	1961923	1835983	1234040
41	S	South Carolina	1631522	1803455	1425193	1458191	1538731	1825195
42	S	South Dakota	1159037	1150689	1660148	1417141	1418586	1279134
43	T	Tennessee	1811867	1485909	1974179	1157059	1786132	1399191
44	T	Texas	1520591	1310777	1957713	1907326	1873544	1655483
45	U	Utah	1771096	1195861	1979395	1241662	1437456	1859416
46	V	Vermont	1146902	1832249	1492704	1579265	1332048	1563537
47	V	Virginia	1134317	1163996	1891068	1853855	1708715	1197698
48	W	Washington	1977749	1687136	1199490	1163092	1334864	1621989
49	W	West Virginia	1677347	1380662	1176100	1888948	1922085	1740826
50	W	Wisconsin	1788920	1518578	1289663	1436888	1251678	1721874
51	W	Wyoming	1775190	1498098	1198212	1881688	1750527	1523124

	Y2008	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
1	1945229	1944173	1237582	1440756	1186741	1852841	1558906	1916661
2	1551826	1436541	1629616	1230866	1512804	1985302	1580394	1979143
3	1752886	1554330	1300521	1130709	1907284	1363279	1525866	1647724
4	1188104	1628980	1669295	1928238	1216675	1591896	1360959	1329341
5	1487315	1663809	1624509	1639670	1921845	1156536	1388461	1644607
6	1875146	1752387	1913275	1665877	1491604	1178355	1383978	1330736
7	1764457	1972730	1968730	1945524	1228529	1582249	1503156	1718072
8	1762096	1553585	1370984	1318669	1984027	1671279	1803169	1627508
9	1193245	1739748	1707823	1353449	1979708	1912654	1782169	1410183
10	1756185	1818438	1198403	1497051	1131928	1107448	1407784	1170389
11	1773090	1630325	1145473	1851245	1850111	1887157	1259353	1725470
12	1919423	1928416	1330509	1902816	1695126	1517184	1948108	1150882
13	1335481	1748608	1436809	1456340	1643855	1312561	1713718	1757171
14	1871645	1658551	1422021	1751422	1696729	1915435	1645465	1583516
15	1139551	1883976	1999102	1559924	1905760	1129794	1988394	1467614
16	1317983	1150783	1751389	1992996	1501879	1173694	1431705	1641866
17	1949478	1561528	1550433	1465812	1882929	1410249	1930090	1385528
18	1301848	1956681	1350895	1512894	1916616	1878271	1722762	1913350
19	1185085	1124853	1498662	1210385	1234234	1287663	1908602	1403857
20	1295877	1969163	1627262	1706080	1437088	1318546	1116792	1529233
21	1112765	1967225	1486246	1872327	1175819	1314343	1979529	1569566
22	1978904	1567651	1761048	1658538	1482203	1731917	1669749	1963337
23	1990431	1575185	1267626	1274673	1709853	1815596	1965196	1646634
24	1328133	1890633	1995304	1575533	1910216	1972021	1515366	1864553
25	1428291	1568049	1383227	1629132	1988270	1907777	1649668	1991232
26	1735099	1800620	1164202	1425363	1800052	1698105	1767835	1996005
27	1251742	1592690	1350619	1520064	1185225	1465705	1110394	1125903
28	1140598	1270585	1128711	1187207	1569665	1690920	1459243	1802211
29	1903270	1231480	1526066	1143343	1980195	1283813	1225348	1903804
30	1762936	1763211	1265642	1704297	1131298	1197576	1242623	1963313
31	1568034	1357418	1443718	1390010	1202326	1100990	1850165	1183568
32	1237704	1820856	1801430	1653384	1475715	1623388	1533494	1868612
33	1732098	1426216	1604531	1683687	1500089	1718837	1619033	1367705
34	1267737	1116168	1791535	1553750	1472258	1104893	1596452	1229085
35	1720352	1671468	1534571	1271132	1430978	1529024	1563898	1604118
36	1516621	1511460	1585465	1887714	1227303	1840898	1880804	1573117
37	1256746	1853142	1673831	1822933	1674707	1900523	1956742	1307678
38	1482786	1862351	1103794	1935687	1905378	1522129	1509171	1893515
39	1274168	1571032	1433835	1483292	1290329	1475344	1931500	1668232
40	1151409	1993136	1983569	1781016	1909119	1531212	1990412	1611730
41	1250499	1864685	1345102	1116203	1532332	1591735	1188417	1110655
42	1171870	1852424	1554782	1647245	1811156	1147488	1302834	1136443
43	1826406	1326460	1231739	1469785	1849041	1560887	1349173	1162164
44	1785986	1827503	1447457	1978374	1882532	1698698	1646508	1705322
45	1939284	1915865	1619186	1288285	1108281	1123353	1801019	1729273
46	1123567	1618583	1326369	1792600	1714960	1146278	1282790	1565924
47	1803330	1590043	1516758	1171686	1262342	1647032	1706707	1850394
48	1545621	1555554	1179331	1150089	1775787	1273834	1387428	1377341
49	1238174	1539322	1539603	1872519	1462137	1683127	1204344	1198791
50	1980167	1901394	1648755	1940943	1729177	1510119	1701650	1846238

```
51 1587602 1504455 1282142 1881814 1673668 1994022 1204029 1853858
```

```
> mydata2 = select(mydata, Index, State:Y2008)
```

```
> mydata2
```

	Index	State	Y2002	Y2003	Y2004	Y2005	Y2006	Y2007
1	A	Alabama	1296530	1317711	1118631	1492583	1107408	1440134
2	A	Alaska	1170302	1960378	1818085	1447852	1861639	1465841
3	A	Arizona	1742027	1968140	1377583	1782199	1102568	1109382
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6	C	Colorado	1343824	1878473	1886149	1236697	1871471	1814218
7	C	Connecticut	1610512	1232844	1181949	1518933	1841266	1976976
8	D	Delaware	1330403	1268673	1706751	1403759	1441351	1300836
9	D	District of Columbia	1111437	1993741	1374643	1827949	1803852	1595981
10	F	Florida	1964626	1468852	1419738	1362787	1339608	1278550
11	G	Georgia	1929009	1541565	1810773	1779091	1326846	1223770
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13	I	Idaho	1353210	1438538	1739154	1541015	1122387	1772050
14	I	Illinois	1508356	1527440	1493029	1261353	1540274	1747614
15	I	Indiana	1776918	1734104	1269927	1204117	1848073	1129546
16	I	Iowa	1499269	1444576	1576367	1388924	1554813	1452911
17	K	Kansas	1509054	1290700	1522230	1532094	1104256	1863278
18	K	Kentucky	1813878	1448846	1800760	1250524	1137913	1911227
19	L	Louisiana	1584734	1110625	1868456	1751920	1233709	1920301
20	M	Maine	1582720	1678622	1208496	1912040	1438549	1330014
21	M	Maryland	1579713	1404700	1849798	1397738	1310270	1789128
22	M	Massachusetts	1647582	1686259	1620601	1777250	1531641	1380529
23	M	Michigan	1295635	1149931	1601027	1340716	1729449	1567494
24	M	Minnesota	1729921	1675204	1903907	1561839	1985692	1148621
25	M	Mississippi	1983285	1292558	1631325	1943311	1354579	1731643
26	M	Missouri	1221316	1858368	1773451	1573967	1374863	1486197
27	M	Montana	1877154	1540099	1332722	1273327	1625721	1983568
28	N	Nebraska	1885081	1309769	1425527	1240465	1500594	1278272
29	N	Nevada	1426117	1114500	1119707	1758830	1694526	1765826
30	N	New Hampshire	1419776	1854370	1195119	1990062	1645430	1286967
31	N	New Jersey	1605532	1141514	1613550	1181452	1541327	1156804
32	N	New Mexico	1819239	1226057	1935991	1124400	1723493	1475985
33	N	New York	1395149	1611371	1170675	1446810	1426941	1463171
34	N	North Carolina	1616742	1292223	1482792	1532347	1158716	1827420
35	N	North Dakota	1618807	1510193	1876940	1443172	1425030	1868788
36	O	Ohio	1802132	1648498	1441386	1670280	1534888	1314824
37	O	Oklahoma	1173918	1334639	1663622	1798714	1312574	1708245
38	O	Oregon	1794912	1726665	1805445	1133510	1502242	1419251
39	P	Pennsylvania	1320191	1446723	1218591	1122030	1971479	1563062
40	R	Rhode Island	1501744	1942942	1266657	1961923	1835983	1234040
41	S	South Carolina	1631522	1803455	1425193	1458191	1538731	1825195
42	S	South Dakota	1159037	1150689	1660148	1417141	1418586	1279134
43	T	Tennessee	1811867	1485909	1974179	1157059	1786132	1399191
44	T	Texas	1520591	1310777	1957713	1907326	1873544	1655483
45	U	Utah	1771096	1195861	1979395	1241662	1437456	1859416
46	V	Vermont	1146902	1832249	1492704	1579265	1332048	1563537
47	V	Virginia	1134317	1163996	1891068	1853855	1708715	1197698
48	W	Washington	1977749	1687136	1199490	1163092	1334864	1621989
49	W	West Virginia	1677347	1380662	1176100	1888948	1922085	1740826
50	W	Wisconsin	1788920	1518578	1289663	1436888	1251678	1721874
51	W	Wyoming	1775190	1498098	1198212	1881688	1750527	1523124

	Y2008
1	1945229
2	1551826
3	1752886
4	1188104
5	1487315
6	1875146
7	1764457
8	1762096
9	1193245
10	1756185
11	1773090
12	1919423
13	1335481
14	1871645

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15 1139551
16 1317983
17 1949478
18 1301848
19 1185085
20 1295877
21 1112765
22 1978904
23 1990431
24 1328133
25 1428291
26 1735099
27 1251742
28 1140598
29 1903270
30 1762936
31 1568034
32 1237704
33 1732098
34 1267737
35 1720352
36 1516621
37 1256746
38 1482786
39 1274168
40 1151409
41 1250499
42 1171870
43 1826406
44 1785986
45 1939284
46 1123567
47 1803330
48 1545621
49 1238174
50 1980167
51 1587602
> mydata3 = select(mydata, -Index, -State)
> mydata3
      Y2002   Y2003   Y2004   Y2005   Y2006   Y2007   Y2008   Y2009   Y2010
1  1296530 1317711 1118631 1492583 1107408 1440134 1945229 1944173 1237582
2  1170302 1960378 1818085 1447852 1861639 1465841 1551826 1436541 1629616
3  1742027 1968140 1377583 1782199 1102568 1109382 1752886 1554330 1300521
4  1485531 1994927 1119299 1947979 1669191 1801213 1188104 1628980 1669295
5  1685349 1675807 1889570 1480280 1735069 1812546 1487315 1663809 1624509
6  1343824 1878473 1886149 1236697 1871471 1814218 1875146 1752387 1913275
7  1610512 1232844 1181949 1518933 1841266 1976976 1764457 1972730 1968730
8  1330403 1268673 1706751 1403759 1441351 1300836 1762096 1553585 1370984
9  1111437 1993741 1374643 1827949 1803852 1595981 1193245 1739748 1707823
10 1964626 1468852 1419738 1362787 1339608 1278550 1756185 1818438 1198403
11 1929009 1541565 1810773 1779091 1326846 1223770 1773090 1630325 1145473
12 1461570 1200280 1213993 1245931 1459383 1430465 1919423 1928416 1330509
13 1353210 1438538 1739154 1541015 1122387 1772050 1335481 1748608 1436809
14 1508356 1527440 1493029 1261353 1540274 1747614 1871645 1658551 1422021
15 1776918 1734104 1269927 1204117 1848073 1129546 1139551 1883976 1999102
16 1499269 1444576 1576367 1388924 1554813 1452911 1317983 1150783 1751389
17 1509054 1290700 1522230 1532094 1104256 1863278 1949478 1561528 1550433
18 1813878 1448846 1800760 1250524 1137913 1911227 1301848 1956681 1350895
19 1584734 1110625 1868456 1751920 1233709 1920301 1185085 1124853 1498662
20 1582720 1678622 1208496 1912040 1438549 1330014 1295877 1969163 1627262
21 1579713 1404700 1849798 1397738 1310270 1789128 1112765 1967225 1486246
22 1647582 1686259 1620601 1777250 1531641 1380529 1978904 1567651 1761048
23 1295635 1149931 1601027 1340716 1729449 1567494 1990431 1575185 1267626
24 1729921 1675204 1903907 1561839 1985692 1148621 1328133 1890633 1995304
25 1983285 1292558 1631325 1943311 1354579 1731643 1428291 1568049 1383227
26 1221316 1858368 1773451 1573967 1374863 1486197 1735099 1800620 1164202
27 1877154 1540099 1332722 1273327 1625721 1983568 1251742 1592690 1350619
28 1885081 1309769 1425527 1240465 1500594 1278272 1140598 1270585 1128711
29 1426117 1114500 1119707 1758830 1694526 1765826 1903270 1231480 1526066
30 1419776 1854370 1195119 1990062 1645430 1286967 1762936 1763211 1265642
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31	1605532	1141514	1613550	1181452	1541327	1156804	1568034	1357418	1443718
32	1819239	1226057	1935991	1124400	1723493	1475985	1237704	1820856	1801430
33	1395149	1611371	1170675	1446810	1426941	1463171	1732098	1426216	1604531
34	1616742	1292223	1482792	1532347	1158716	1827420	1267737	1116168	1791535
35	1618807	1510193	1876940	1443172	1425030	1868788	1720352	1671468	1534571
36	1802132	1648498	1441386	1670280	1534888	1314824	1516621	1511460	1585465
37	1173918	1334639	1663622	1798714	1312574	1708245	1256746	1853142	1673831
38	1794912	1726665	1805445	1133510	1502242	1419251	1482786	1862351	1103794
39	1320191	1446723	1218591	1122030	1971479	1563062	1274168	1571032	1433835
40	1501744	1942942	1266657	1961923	1835983	1234040	1151409	1993136	1983569
41	1631522	1803455	1425193	1458191	1538731	1825195	1250499	1864685	1345102
42	1159037	1150689	1660148	1417141	1418586	1279134	1171870	1852424	1554782
43	1811867	1485909	1974179	1157059	1786132	1399191	1826406	1326460	1231739
44	1520591	1310777	1957713	1907326	1873544	1655483	1785986	1827503	1447457
45	1771096	1195861	1979395	1241662	1437456	1859416	1939284	1915865	1619186
46	1146902	1832249	1492704	1579265	1332048	1563537	1123567	1618583	1326369
47	1134317	1163996	1891068	1853855	1708715	1197698	1803330	1590043	1516758
48	1977749	1687136	1199490	1163092	1334864	1621989	1545621	1555554	1179331
49	1677347	1380662	1176100	1888948	1922085	1740826	1238174	1539322	1539603
50	1788920	1518578	1289663	1436888	1251678	1721874	1980167	1901394	1648755
51	1775190	1498098	1198212	1881688	1750527	1523124	1587602	1504455	1282142
	Y2011	Y2012	Y2013	Y2014	Y2015				
1	1440756	1186741	1852841	1558906	1916661				
2	1230866	1512804	1985302	1580394	1979143				
3	1130709	1907284	1363279	1525866	1647724				
4	1928238	1216675	1591896	1360959	1329341				
5	1639670	1921845	1156536	1388461	1644607				
6	1665877	1491604	1178355	1383978	1330736				
7	1945524	1228529	1582249	1503156	1718072				
8	1318669	1984027	1671279	1803169	1627508				
9	1353449	1979708	1912654	1782169	1410183				
10	1497051	1131928	1107448	1407784	1170389				
11	1851245	1850111	1887157	1259353	1725470				
12	1902816	1695126	1517184	1948108	1150882				
13	1456340	1643855	1312561	1713718	1757171				
14	1751422	1696729	1915435	1645465	1583516				
15	1559924	1905760	1129794	1988394	1467614				
16	1992996	1501879	1173694	1431705	1641866				
17	1465812	1882929	1410249	1930090	1385528				
18	1512894	1916616	1878271	1722762	1913350				
19	1210385	1234234	1287663	1908602	1403857				
20	1706080	1437088	1318546	1116792	1529233				
21	1872327	1175819	1314343	1979529	1569566				
22	1658538	1482203	1731917	1669749	1963337				
23	1274673	1709853	1815596	1965196	1646634				
24	1575533	1910216	1972021	1515366	1864553				
25	1629132	1988270	1907777	1649668	1991232				
26	1425363	1800052	1698105	1767835	1996005				
27	1520064	1185225	1465705	1110394	1125903				
28	1187207	1569665	1690920	1459243	1802211				
29	1143343	1980195	1283813	1225348	1903804				
30	1704297	1131298	1197576	1242623	1963313				
31	1390010	1202326	1100990	1850165	1183568				
32	1653384	1475715	1623388	1533494	1868612				
33	1683687	1500089	1718837	1619033	1367705				
34	1553750	1472258	1104893	1596452	1229085				
35	1271132	1430978	1529024	1563898	1604118				
36	1887714	1227303	1840898	1880804	1573117				
37	1822933	1674707	1900523	1956742	1307678				
38	1935687	1905378	1522129	1509171	1893515				
39	1483292	1290329	1475344	1931500	1668232				
40	1781016	1909119	1531212	1990412	1611730				
41	1116203	1532332	1591735	1188417	1110655				
42	1647245	1811156	1147488	1302834	1136443				
43	1469785	1849041	1560887	1349173	1162164				
44	1978374	1882532	1698698	1646508	1705322				
45	1288285	1108281	1123353	1801019	1729273				
46	1792600	1714960	1146278	1282790	1565924				
47	1171686	1262342	1647032	1706707	1850394				
48	1150089	1775787	1273834	1387428	1377341				

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49 1872519 1462137 1683127 1204344 1198791
50 1940943 1729177 1510119 1701650 1846238
51 1881814 1673668 1994022 1204029 1853858
> mydata4 = select(mydata, starts_with("Y"))
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>
> mydata4 = select(mydata, starts_with("Y"))
> mydata4
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2  1170302 1960378 1818085 1447852 1861639 1465841 1551826 1436541 1629616
3  1742027 1968140 1377583 1782199 1102568 1109382 1752886 1554330 1300521
4  1485531 1994927 1119299 1947979 1669191 1801213 1188104 1628980 1669295
5  1685349 1675807 1889570 1480280 1735069 1812546 1487315 1663809 1624509
6  1343824 1878473 1886149 1236697 1871471 1814218 1875146 1752387 1913275
7  1610512 1232844 1181949 1518933 1841266 1976976 1764457 1972730 1968730
8  1330403 1268673 1706751 1403759 1441351 1300836 1762096 1553585 1370984
9  1111437 1993741 1374643 1827949 1803852 1595981 1193245 1739748 1707823
10 1964626 1468852 1419738 1362787 1339608 1278550 1756185 1818438 1198403
11 1929009 1541565 1810773 1779091 1326846 1223770 1773090 1630325 1145473
12 1461570 1200280 1213993 1245931 1459383 1430465 1919423 1928416 1330509
13 1353210 1438538 1739154 1541015 1122387 1772050 1335481 1748608 1436809
14 1508356 1527440 1493029 1261353 1540274 1747614 1871645 1658551 1422021
15 1776918 1734104 1269927 1204117 1848073 1129546 1139551 1883976 1999102
16 1499269 1444576 1576367 1388924 1554813 1452911 1317983 1150783 1751389
17 1509054 1290700 1522230 1532094 1104256 1863278 1949478 1561528 1550433
18 1813878 1448846 1800760 1250524 1137913 1911227 1301848 1956681 1350895
19 1584734 1110625 1868456 1751920 1233709 1920301 1185085 1124853 1498662
20 1582720 1678622 1208496 1912040 1438549 1330014 1295877 1969163 1627262
21 1579713 1404700 1849798 1397738 1310270 1789128 1112765 1967225 1486246
22 1647582 1686259 1620601 1777250 1531641 1380529 1978904 1567651 1761048
23 1295635 1149931 1601027 1340716 1729449 1567494 1990431 1575185 1267626
24 1729921 1675204 1903907 1561839 1985692 1148621 1328133 1890633 1995304
25 1983285 1292558 1631325 1943311 1354579 1731643 1428291 1568049 1383227
26 1221316 1858368 1773451 1573967 1374863 1486197 1735099 1800620 1164202
27 1877154 1540099 1332722 1273327 1625721 1983568 1251742 1592690 1350619
28 1885081 1309769 1425527 1240465 1500594 1278272 1140598 1270585 1128711
29 1426117 1114500 1119707 1758830 1694526 1765826 1903270 1231480 1526066
30 1419776 1854370 1195119 1990062 1645430 1286967 1762936 1763211 1265642
31 1605532 1141514 1613550 1181452 1541327 1156804 1568034 1357418 1443718
32 1819239 1226057 1935991 1124400 1723493 1475985 1237704 1820856 1801430
33 1395149 1611371 1170675 1446810 1426941 1463171 1732098 1426216 1604531
34 1616742 1292223 1482792 1532347 1158716 1827420 1267737 1116168 1791535
35 1618807 1510193 1876940 1443172 1425030 1868788 1720352 1671468 1534571
36 1802132 1648498 1441386 1670280 1534888 1314824 1516621 1511460 1585465
37 1173918 1334639 1663622 1798714 1312574 1708245 1256746 1853142 1673831
38 1794912 1726665 1805445 1133510 1502242 1419251 1482786 1862351 1103794
39 1320191 1446723 1218591 1122030 1971479 1563062 1274168 1571032 1433835
40 1501744 1942942 1266657 1961923 1835983 1234040 1151409 1993136 1983569
41 1631522 1803455 1425193 1458191 1538731 1825195 1250499 1864685 1345102
42 1159037 1150689 1660148 1417141 1418586 1279134 1171870 1852424 1554782
43 1811867 1485909 1974179 1157059 1786132 1399191 1826406 1326460 1231739
44 1520591 1310777 1957713 1907326 1873544 1655483 1785986 1827503 1447457
45 1771096 1195861 1979395 1241662 1437456 1859416 1939284 1915865 1619186
46 1146902 1832249 1492704 1579265 1332048 1563537 1123567 1618583 1326369
47 1134317 1163996 1891068 1853855 1708715 1197698 1803330 1590043 1516758
48 1977749 1687136 1199490 1163092 1334864 1621989 1545621 1555554 1179331
49 1677347 1380662 1176100 1888948 1922085 1740826 1238174 1539322 1539603
50 1788920 1518578 1289663 1436888 1251678 1721874 1980167 1901394 1648755
51 1775190 1498098 1198212 1881688 1750527 1523124 1587602 1504455 1282142
  Y2011  Y2012  Y2013  Y2014  Y2015
1  1440756 1186741 1852841 1558906 1916661
2  1230866 1512804 1985302 1580394 1979143
3  1130709 1907284 1363279 1525866 1647724
4  1928238 1216675 1591896 1360959 1329341
5  1639670 1921845 1156536 1388461 1644607
6  1665877 1491604 1178355 1383978 1330736
7  1945524 1228529 1582249 1503156 1718072
8  1318669 1984027 1671279 1803169 1627508
9  1353449 1979708 1912654 1782169 1410183

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10 1497051 1131928 1107448 1407784 1170389
11 1851245 1850111 1887157 1259353 1725470
12 1902816 1695126 1517184 1948108 1150882
13 1456340 1643855 1312561 1713718 1757171
14 1751422 1696729 1915435 1645465 1583516
15 1559924 1905760 1129794 1988394 1467614
16 1992996 1501879 1173694 1431705 1641866
17 1465812 1882929 1410249 1930090 1385528
18 1512894 1916616 1878271 1722762 1913350
19 1210385 1234234 1287663 1908602 1403857
20 1706080 1437088 1318546 1116792 1529233
21 1872327 1175819 1314343 1979529 1569566
22 1658538 1482203 1731917 1669749 1963337
23 1274673 1709853 1815596 1965196 1646634
24 1575533 1910216 1972021 1515366 1864553
25 1629132 1988270 1907777 1649668 1991232
26 1425363 1800052 1698105 1767835 1996005
27 1520064 1185225 1465705 1110394 1125903
28 1187207 1569665 1690920 1459243 1802211
29 1143343 1980195 1283813 1225348 1903804
30 1704297 1131298 1197576 1242623 1963313
31 1390010 1202326 1100990 1850165 1183568
32 1653384 1475715 1623388 1533494 1868612
33 1683687 1500089 1718837 1619033 1367705
34 1553750 1472258 1104893 1596452 1229085
35 1271132 1430978 1529024 1563898 1604118
36 1887714 1227303 1840898 1880804 1573117
37 1822933 1674707 1900523 1956742 1307678
38 1935687 1905378 1522129 1509171 1893515
39 1483292 1290329 1475344 1931500 1668232
40 1781016 1909119 1531212 1990412 1611730
41 1116203 1532332 1591735 1188417 1110655
42 1647245 1811156 1147488 1302834 1136443
43 1469785 1849041 1560887 1349173 1162164
44 1978374 1882532 1698698 1646508 1705322
45 1288285 1108281 1123353 1801019 1729273
46 1792600 1714960 1146278 1282790 1565924
47 1171686 1262342 1647032 1706707 1850394
48 1150089 1775787 1273834 1387428 1377341
49 1872519 1462137 1683127 1204344 1198791
50 1940943 1729177 1510119 1701650 1846238
51 1881814 1673668 1994022 1204029 1853858

```

```
> mydata44 = select(mydata, -starts_with("Y"))
```

```
> mydata44
```

	Index	State
1	A	Alabama
2	A	Alaska
3	A	Arizona
4	A	Arkansas
5	C	California
6	C	Colorado
7	C	Connecticut
8	D	Delaware
9	D	District of Columbia
10	F	Florida
11	G	Georgia
12	H	Hawaii
13	I	Idaho
14	I	Illinois
15	I	Indiana
16	I	Iowa
17	K	Kansas
18	K	Kentucky
19	L	Louisiana
20	M	Maine
21	M	Maryland
22	M	Massachusetts
23	M	Michigan
24	M	Minnesota
25	M	Mississippi

```

26      M      Missouri
27      M      Montana
28      N      Nebraska
29      N      Nevada
30      N      New Hampshire
31      N      New Jersey
32      N      New Mexico
33      N      New York
34      N      North Carolina
35      N      North Dakota
36      O      Ohio
37      O      Oklahoma
38      O      Oregon
39      P      Pennsylvania
40      R      Rhode Island
41      S      South Carolina
42      S      South Dakota
43      T      Tennessee
44      T      Texas
45      U      Utah
46      V      Vermont
47      V      Virginia
48      W      Washington
49      W      West Virginia
50      W      Wisconsin
51      W      Wyoming
> mydata5 = select(mydata, contains("I"))
> mydata5
  Index
1     A
2     A
3     A
4     A
5     C
6     C
7     C
8     D
9     D
10    F
11    G
12    H
13    I
14    I
15    I
16    I
17    K
18    K
19    L
20    M
21    M
22    M
23    M
24    M
25    M
26    M
27    M
28    N
29    N
30    N
31    N
32    N
33    N
34    N
35    N
36    O
37    O
38    O
39    P
40    R
41    S

```

```

42      S
43      T
44      T
45      U
46      V
47      V
48      W
49      W
50      W
51      W
>
> mydata6 = select(mydata, State, everything())
> mydata6
      State Index   Y2002   Y2003   Y2004   Y2005   Y2006   Y2007
1      Alabama   A 1296530 1317711 1118631 1492583 1107408 1440134
2      Alaska    A 1170302 1960378 1818085 1447852 1861639 1465841
3      Arizona   A 1742027 1968140 1377583 1782199 1102568 1109382
4      Arkansas  A 1485531 1994927 1119299 1947979 1669191 1801213
5      California C 1685349 1675807 1889570 1480280 1735069 1812546
6      Colorado  C 1343824 1878473 1886149 1236697 1871471 1814218
7      Connecticut C 1610512 1232844 1181949 1518933 1841266 1976976
8      Delaware  D 1330403 1268673 1706751 1403759 1441351 1300836
9  District of Columbia D 1111437 1993741 1374643 1827949 1803852 1595981
10     Florida   F 1964626 1468852 1419738 1362787 1339608 1278550
11     Georgia   G 1929009 1541565 1810773 1779091 1326846 1223770
12     Hawaii    H 1461570 1200280 1213993 1245931 1459383 1430465
13     Idaho     I 1353210 1438538 1739154 1541015 1122387 1772050
14     Illinois  I 1508356 1527440 1493029 1261353 1540274 1747614
15     Indiana   I 1776918 1734104 1269927 1204117 1848073 1129546
16     Iowa      I 1499269 1444576 1576367 1388924 1554813 1452911
17     Kansas    K 1509054 1290700 1522230 1532094 1104256 1863278
18     Kentucky  K 1813878 1448846 1800760 1250524 1137913 1911227
19     Louisiana L 1584734 1110625 1868456 1751920 1233709 1920301
20     Maine     M 1582720 1678622 1208496 1912040 1438549 1330014
21     Maryland  M 1579713 1404700 1849798 1397738 1310270 1789128
22     Massachusetts M 1647582 1686259 1620601 1777250 1531641 1380529
23     Michigan  M 1295635 1149931 1601027 1340716 1729449 1567494
24     Minnesota M 1729921 1675204 1903907 1561839 1985692 1148621
25     Mississippi M 1983285 1292558 1631325 1943311 1354579 1731643
26     Missouri  M 1221316 1858368 1773451 1573967 1374863 1486197
27     Montana   M 1877154 1540099 1332722 1273327 1625721 1983568
28     Nebraska  N 1885081 1309769 1425527 1240465 1500594 1278272
29     Nevada    N 1426117 1114500 1119707 1758830 1694526 1765826
30     New Hampshire N 1419776 1854370 1195119 1990062 1645430 1286967
31     New Jersey N 1605532 1141514 1613550 1181452 1541327 1156804
32     New Mexico N 1819239 1226057 1935991 1124400 1723493 1475985
33     New York  N 1395149 1611371 1170675 1446810 1426941 1463171
34     North Carolina N 1616742 1292223 1482792 1532347 1158716 1827420
35     North Dakota N 1618807 1510193 1876940 1443172 1425030 1868788
36     Ohio      O 1802132 1648498 1441386 1670280 1534888 1314824
37     Oklahoma  O 1173918 1334639 1663622 1798714 1312574 1708245
38     Oregon    O 1794912 1726665 1805445 1133510 1502242 1419251
39     Pennsylvania P 1320191 1446723 1218591 1122030 1971479 1563062
40     Rhode Island R 1501744 1942942 1266657 1961923 1835983 1234040
41     South Carolina S 1631522 1803455 1425193 1458191 1538731 1825195
42     South Dakota S 1159037 1150689 1660148 1417141 1418586 1279134
43     Tennessee T 1811867 1485909 1974179 1157059 1786132 1399191
44     Texas     T 1520591 1310777 1957713 1907326 1873544 1655483
45     Utah      U 1771096 1195861 1979395 1241662 1437456 1859416
46     Vermont   V 1146902 1832249 1492704 1579265 1332048 1563537
47     Virginia  V 1134317 1163996 1891068 1853855 1708715 1197698
48     Washington W 1977749 1687136 1199490 1163092 1334864 1621989
49     West Virginia W 1677347 1380662 1176100 1888948 1922085 1740826
50     Wisconsin W 1788920 1518578 1289663 1436888 1251678 1721874
51     Wyoming   W 1775190 1498098 1198212 1881688 1750527 1523124

      Y2008   Y2009   Y2010   Y2011   Y2012   Y2013   Y2014   Y2015
1 1945229 1944173 1237582 1440756 1186741 1852841 1558906 1916661
2 1551826 1436541 1629616 1230866 1512804 1985302 1580394 1979143
3 1752886 1554330 1300521 1130709 1907284 1363279 1525866 1647724
4 1188104 1628980 1669295 1928238 1216675 1591896 1360959 1329341

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5  1487315 1663809 1624509 1639670 1921845 1156536 1388461 1644607
6  1875146 1752387 1913275 1665877 1491604 1178355 1383978 1330736
7  1764457 1972730 1968730 1945524 1228529 1582249 1503156 1718072
8  1762096 1553585 1370984 1318669 1984027 1671279 1803169 1627508
9  1193245 1739748 1707823 1353449 1979708 1912654 1782169 1410183
10 1756185 1818438 1198403 1497051 1131928 1107448 1407784 1170389
11 1773090 1630325 1145473 1851245 1850111 1887157 1259353 1725470
12 1919423 1928416 1330509 1902816 1695126 1517184 1948108 1150882
13 1335481 1748608 1436809 1456340 1643855 1312561 1713718 1757171
14 1871645 1658551 1422021 1751422 1696729 1915435 1645465 1583516
15 1139551 1883976 1999102 1559924 1905760 1129794 1988394 1467614
16 1317983 1150783 1751389 1992996 1501879 1173694 1431705 1641866
17 1949478 1561528 1550433 1465812 1882929 1410249 1930090 1385528
18 1301848 1956681 1350895 1512894 1916616 1878271 1722762 1913350
19 1185085 1124853 1498662 1210385 1234234 1287663 1908602 1403857
20 1295877 1969163 1627262 1706080 1437088 1318546 1116792 1529233
21 1112765 1967225 1486246 1872327 1175819 1314343 1979529 1569566
22 1978904 1567651 1761048 1658538 1482203 1731917 1669749 1963337
23 1990431 1575185 1267626 1274673 1709853 1815596 1965196 1646634
24 1328133 1890633 1995304 1575533 1910216 1972021 1515366 1864553
25 1428291 1568049 1383227 1629132 1988270 1907777 1649668 1991232
26 1735099 1800620 1164202 1425363 1800052 1698105 1767835 1996005
27 1251742 1592690 1350619 1520064 1185225 1465705 1110394 1125903
28 1140598 1270585 1128711 1187207 1569665 1690920 1459243 1802211
29 1903270 1231480 1526066 1143343 1980195 1283813 1225348 1903804
30 1762936 1763211 1265642 1704297 1131298 1197576 1242623 1963313
31 1568034 1357418 1443718 1390010 1202326 1100990 1850165 1183568
32 1237704 1820856 1801430 1653384 1475715 1623388 1533494 1868612
33 1732098 1426216 1604531 1683687 1500089 1718837 1619033 1367705
34 1267737 1116168 1791535 1553750 1472258 1104893 1596452 1229085
35 1720352 1671468 1534571 1271132 1430978 1529024 1563898 1604118
36 1516621 1511460 1585465 1887714 1227303 1840898 1880804 1573117
37 1256746 1853142 1673831 1822933 1674707 1900523 1956742 1307678
38 1482786 1862351 1103794 1935687 1905378 1522129 1509171 1893515
39 1274168 1571032 1433835 1483292 1290329 1475344 1931500 1668232
40 1151409 1993136 1983569 1781016 1909119 1531212 1990412 1611730
41 1250499 1864685 1345102 1116203 1532332 1591735 1188417 1110655
42 1171870 1852424 1554782 1647245 1811156 1147488 1302834 1136443
43 1826406 1326460 1231739 1469785 1849041 1560887 1349173 1162164
44 1785986 1827503 1447457 1978374 1882532 1698698 1646508 1705322
45 1939284 1915865 1619186 1288285 1108281 1123353 1801019 1729273
46 1123567 1618583 1326369 1792600 1714960 1146278 1282790 1565924
47 1803330 1590043 1516758 1171686 1262342 1647032 1706707 1850394
48 1545621 1555554 1179331 1150089 1775787 1273834 1387428 1377341
49 1238174 1539322 1539603 1872519 1462137 1683127 1204344 1198791
50 1980167 1901394 1648755 1940943 1729177 1510119 1701650 1846238
51 1587602 1504455 1282142 1881814 1673668 1994022 1204029 1853858

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> mydata7 = rename(mydata, Index1 = Index)
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> mydata7
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	Index1	State	Y2002	Y2003	Y2004	Y2005	Y2006	Y2007
1	A	Alabama	1296530	1317711	1118631	1492583	1107408	1440134
2	A	Alaska	1170302	1960378	1818085	1447852	1861639	1465841
3	A	Arizona	1742027	1968140	1377583	1782199	1102568	1109382
4	A	Arkansas	1485531	1994927	1119299	1947979	1669191	1801213
5	C	California	1685349	1675807	1889570	1480280	1735069	1812546
6	C	Colorado	1343824	1878473	1886149	1236697	1871471	1814218
7	C	Connecticut	1610512	1232844	1181949	1518933	1841266	1976976
8	D	Delaware	1330403	1268673	1706751	1403759	1441351	1300836
9	D District of Columbia		1111437	1993741	1374643	1827949	1803852	1595981
10	F	Florida	1964626	1468852	1419738	1362787	1339608	1278550
11	G	Georgia	1929009	1541565	1810773	1779091	1326846	1223770
12	H	Hawaii	1461570	1200280	1213993	1245931	1459383	1430465
13	I	Idaho	1353210	1438538	1739154	1541015	1122387	1772050
14	I	Illinois	1508356	1527440	1493029	1261353	1540274	1747614
15	I	Indiana	1776918	1734104	1269927	1204117	1848073	1129546
16	I	Iowa	1499269	1444576	1576367	1388924	1554813	1452911
17	K	Kansas	1509054	1290700	1522230	1532094	1104256	1863278
18	K	Kentucky	1813878	1448846	1800760	1250524	1137913	1911227
19	L	Louisiana	1584734	1110625	1868456	1751920	1233709	1920301
20	M	Maine	1582720	1678622	1208496	1912040	1438549	1330014

21	M	Maryland	1579713	1404700	1849798	1397738	1310270	1789128
22	M	Massachusetts	1647582	1686259	1620601	1777250	1531641	1380529
23	M	Michigan	1295635	1149931	1601027	1340716	1729449	1567494
24	M	Minnesota	1729921	1675204	1903907	1561839	1985692	1148621
25	M	Mississippi	1983285	1292558	1631325	1943311	1354579	1731643
26	M	Missouri	1221316	1858368	1773451	1573967	1374863	1486197
27	M	Montana	1877154	1540099	1332722	1273327	1625721	1983568
28	N	Nebraska	1885081	1309769	1425527	1240465	1500594	1278272
29	N	Nevada	1426117	1114500	1119707	1758830	1694526	1765826
30	N	New Hampshire	1419776	1854370	1195119	1990062	1645430	1286967
31	N	New Jersey	1605532	1141514	1613550	1181452	1541327	1156804
32	N	New Mexico	1819239	1226057	1935991	1124400	1723493	1475985
33	N	New York	1395149	1611371	1170675	1446810	1426941	1463171
34	N	North Carolina	1616742	1292223	1482792	1532347	1158716	1827420
35	N	North Dakota	1618807	1510193	1876940	1443172	1425030	1868788
36	O	Ohio	1802132	1648498	1441386	1670280	1534888	1314824
37	O	Oklahoma	1173918	1334639	1663622	1798714	1312574	1708245
38	O	Oregon	1794912	1726665	1805445	1133510	1502242	1419251
39	P	Pennsylvania	1320191	1446723	1218591	1122030	1971479	1563062
40	R	Rhode Island	1501744	1942942	1266657	1961923	1835983	1234040
41	S	South Carolina	1631522	1803455	1425193	1458191	1538731	1825195
42	S	South Dakota	1159037	1150689	1660148	1417141	1418586	1279134
43	T	Tennessee	1811867	1485909	1974179	1157059	1786132	1399191
44	T	Texas	1520591	1310777	1957713	1907326	1873544	1655483
45	U	Utah	1771096	1195861	1979395	1241662	1437456	1859416
46	V	Vermont	1146902	1832249	1492704	1579265	1332048	1563537
47	V	Virginia	1134317	1163996	1891068	1853855	1708715	1197698
48	W	Washington	1977749	1687136	1199490	1163092	1334864	1621989
49	W	West Virginia	1677347	1380662	1176100	1888948	1922085	1740826
50	W	Wisconsin	1788920	1518578	1289663	1436888	1251678	1721874
51	W	Wyoming	1775190	1498098	1198212	1881688	1750527	1523124

	Y2008	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
1	1945229	1944173	1237582	1440756	1186741	1852841	1558906	1916661
2	1551826	1436541	1629616	1230866	1512804	1985302	1580394	1979143
3	1752886	1554330	1300521	1130709	1907284	1363279	1525866	1647724
4	1188104	1628980	1669295	1928238	1216675	1591896	1360959	1329341
5	1487315	1663809	1624509	1639670	1921845	1156536	1388461	1644607
6	1875146	1752387	1913275	1665877	1491604	1178355	1383978	1330736
7	1764457	1972730	1968730	1945524	1228529	1582249	1503156	1718072
8	1762096	1553585	1370984	1318669	1984027	1671279	1803169	1627508
9	1193245	1739748	1707823	1353449	1979708	1912654	1782169	1410183
10	1756185	1818438	1198403	1497051	1131928	1107448	1407784	1170389
11	1773090	1630325	1145473	1851245	1850111	1887157	1259353	1725470
12	1919423	1928416	1330509	1902816	1695126	1517184	1948108	1150882
13	1335481	1748608	1436809	1456340	1643855	1312561	1713718	1757171
14	1871645	1658551	1422021	1751422	1696729	1915435	1645465	1583516
15	1139551	1883976	1999102	1559924	1905760	1129794	1988394	1467614
16	1317983	1150783	1751389	1992996	1501879	1173694	1431705	1641866
17	1949478	1561528	1550433	1465812	1882929	1410249	1930090	1385528
18	1301848	1956681	1350895	1512894	1916616	1878271	1722762	1913350
19	1185085	1124853	1498662	1210385	1234234	1287663	1908602	1403857
20	1295877	1969163	1627262	1706080	1437088	1318546	1116792	1529233
21	1112765	1967225	1486246	1872327	1175819	1314343	1979529	1569566
22	1978904	1567651	1761048	1658538	1482203	1731917	1669749	1963337
23	1990431	1575185	1267626	1274673	1709853	1815596	1965196	1646634
24	1328133	1890633	1995304	1575533	1910216	1972021	1515366	1864553
25	1428291	1568049	1383227	1629132	1988270	1907777	1649668	1991232
26	1735099	1800620	1164202	1425363	1800052	1698105	1767835	1996005
27	1251742	1592690	1350619	1520064	1185225	1465705	1110394	1125903
28	1140598	1270585	1128711	1187207	1569665	1690920	1459243	1802211
29	1903270	1231480	1526066	1143343	1980195	1283813	1225348	1903804
30	1762936	1763211	1265642	1704297	1131298	1197576	1242623	1963313
31	1568034	1357418	1443718	1390010	1202326	1100990	1850165	1183568
32	1237704	1820856	1801430	1653384	1475715	1623388	1533494	1868612
33	1732098	1426216	1604531	1683687	1500089	1718837	1619033	1367705
34	1267737	1116168	1791535	1553750	1472258	1104893	1596452	1229085
35	1720352	1671468	1534571	1271132	1430978	1529024	1563898	1604118
36	1516621	1511460	1585465	1887714	1227303	1840898	1880804	1573117
37	1256746	1853142	1673831	1822933	1674707	1900523	1956742	1307678
38	1482786	1862351	1103794	1935687	1905378	1522129	1509171	1893515

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39 1274168 1571032 1433835 1483292 1290329 1475344 1931500 1668232
40 1151409 1993136 1983569 1781016 1909119 1531212 1990412 1611730
41 1250499 1864685 1345102 1116203 1532332 1591735 1188417 1110655
42 1171870 1852424 1554782 1647245 1811156 1147488 1302834 1136443
43 1826406 1326460 1231739 1469785 1849041 1560887 1349173 1162164
44 1785986 1827503 1447457 1978374 1882532 1698698 1646508 1705322
45 1939284 1915865 1619186 1288285 1108281 1123353 1801019 1729273
46 1123567 1618583 1326369 1792600 1714960 1146278 1282790 1565924
47 1803330 1590043 1516758 1171686 1262342 1647032 1706707 1850394
48 1545621 1555554 1179331 1150089 1775787 1273834 1387428 1377341
49 1238174 1539322 1539603 1872519 1462137 1683127 1204344 1198791
50 1980167 1901394 1648755 1940943 1729177 1510119 1701650 1846238
51 1587602 1504455 1282142 1881814 1673668 1994022 1204029 1853858
> mydata8 = filter(mydata, Index == "A")
> mydata8
  Index State Y2002 Y2003 Y2004 Y2005 Y2006 Y2007 Y2008
1     A Alabama 1296530 1317711 1118631 1492583 1107408 1440134 1945229
2     A  Alaska 1170302 1960378 1818085 1447852 1861639 1465841 1551826
3     A Arizona 1742027 1968140 1377583 1782199 1102568 1109382 1752886
4     A Arkansas 1485531 1994927 1119299 1947979 1669191 1801213 1188104
  Y2009 Y2010 Y2011 Y2012 Y2013 Y2014 Y2015
1 1944173 1237582 1440756 1186741 1852841 1558906 1916661
2 1436541 1629616 1230866 1512804 1985302 1580394 1979143
3 1554330 1300521 1130709 1907284 1363279 1525866 1647724
4 1628980 1669295 1928238 1216675 1591896 1360959 1329341
> mydata9 = filter(mydata, Index %in% c("A","C"))
> mydata9
  Index State Y2002 Y2003 Y2004 Y2005 Y2006 Y2007 Y2008
1     A Alabama 1296530 1317711 1118631 1492583 1107408 1440134 1945229
2     A  Alaska 1170302 1960378 1818085 1447852 1861639 1465841 1551826
3     A Arizona 1742027 1968140 1377583 1782199 1102568 1109382 1752886
4     A Arkansas 1485531 1994927 1119299 1947979 1669191 1801213 1188104
5     C California 1685349 1675807 1889570 1480280 1735069 1812546 1487315
6     C  Colorado 1343824 1878473 1886149 1236697 1871471 1814218 1875146
7     C Connecticut 1610512 1232844 1181949 1518933 1841266 1976976 1764457
  Y2009 Y2010 Y2011 Y2012 Y2013 Y2014 Y2015
1 1944173 1237582 1440756 1186741 1852841 1558906 1916661
2 1436541 1629616 1230866 1512804 1985302 1580394 1979143
3 1554330 1300521 1130709 1907284 1363279 1525866 1647724
4 1628980 1669295 1928238 1216675 1591896 1360959 1329341
5 1663809 1624509 1639670 1921845 1156536 1388461 1644607
6 1752387 1913275 1665877 1491604 1178355 1383978 1330736
7 1972730 1968730 1945524 1228529 1582249 1503156 1718072
> mydata10 = filter(mydata, Index %in% c("A","C") & Y2002>=1300000)
> mydata10
  Index State Y2002 Y2003 Y2004 Y2005 Y2006 Y2007 Y2008
1     A Arizona 1742027 1968140 1377583 1782199 1102568 1109382 1752886
2     A Arkansas 1485531 1994927 1119299 1947979 1669191 1801213 1188104
3     C California 1685349 1675807 1889570 1480280 1735069 1812546 1487315
4     C  Colorado 1343824 1878473 1886149 1236697 1871471 1814218 1875146
5     C Connecticut 1610512 1232844 1181949 1518933 1841266 1976976 1764457
  Y2009 Y2010 Y2011 Y2012 Y2013 Y2014 Y2015
1 1554330 1300521 1130709 1907284 1363279 1525866 1647724
2 1628980 1669295 1928238 1216675 1591896 1360959 1329341
3 1663809 1624509 1639670 1921845 1156536 1388461 1644607
4 1752387 1913275 1665877 1491604 1178355 1383978 1330736
5 1972730 1968730 1945524 1228529 1582249 1503156 1718072
> mydata11 = filter(mydata, Index %in% c("A","C") | Y2002>=1300000)
> mydata11
  Index State Y2002 Y2003 Y2004 Y2005 Y2006 Y2007 Y2008
1     A Alabama 1296530 1317711 1118631 1492583 1107408 1440134 1945229
2     A  Alaska 1170302 1960378 1818085 1447852 1861639 1465841 1551826
3     A Arizona 1742027 1968140 1377583 1782199 1102568 1109382 1752886
4     A Arkansas 1485531 1994927 1119299 1947979 1669191 1801213 1188104
5     C California 1685349 1675807 1889570 1480280 1735069 1812546 1487315
6     C  Colorado 1343824 1878473 1886149 1236697 1871471 1814218 1875146
7     C Connecticut 1610512 1232844 1181949 1518933 1841266 1976976 1764457
8     D Delaware 1330403 1268673 1706751 1403759 1441351 1300836 1762096
9     F Florida 1964626 1468852 1419738 1362787 1339608 1278550 1756185
10    G Georgia 1929009 1541565 1810773 1779091 1326846 1223770 1773090

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11	H	Hawaii	1461570	1200280	1213993	1245931	1459383	1430465	1919423
12	I	Idaho	1353210	1438538	1739154	1541015	1122387	1772050	1335481
13	I	Illinois	1508356	1527440	1493029	1261353	1540274	1747614	1871645
14	I	Indiana	1776918	1734104	1269927	1204117	1848073	1129546	1139551
15	I	Iowa	1499269	1444576	1576367	1388924	1554813	1452911	1317983
16	K	Kansas	1509054	1290700	1522230	1532094	1104256	1863278	1949478
17	K	Kentucky	1813878	1448846	1800760	1250524	1137913	1911227	1301848
18	L	Louisiana	1584734	1110625	1868456	1751920	1233709	1920301	1185085
19	M	Maine	1582720	1678622	1208496	1912040	1438549	1330014	1295877
20	M	Maryland	1579713	1404700	1849798	1397738	1310270	1789128	1112765
21	M	Massachusetts	1647582	1686259	1620601	1777250	1531641	1380529	1978904
22	M	Minnesota	1729921	1675204	1903907	1561839	1985692	1148621	1328133
23	M	Mississippi	1983285	1292558	1631325	1943311	1354579	1731643	1428291
24	M	Montana	1877154	1540099	1332722	1273327	1625721	1983568	1251742
25	N	Nebraska	1885081	1309769	1425527	1240465	1500594	1278272	1140598
26	N	Nevada	1426117	1114500	1119707	1758830	1694526	1765826	1903270
27	N	New Hampshire	1419776	1854370	1195119	1990062	1645430	1286967	1762936
28	N	New Jersey	1605532	1141514	1613550	1181452	1541327	1156804	1568034
29	N	New Mexico	1819239	1226057	1935991	1124400	1723493	1475985	1237704
30	N	New York	1395149	1611371	1170675	1446810	1426941	1463171	1732098
31	N	North Carolina	1616742	1292223	1482792	1532347	1158716	1827420	1267737
32	N	North Dakota	1618807	1510193	1876940	1443172	1425030	1868788	1720352
33	O	Ohio	1802132	1648498	1441386	1670280	1534888	1314824	1516621
34	O	Oregon	1794912	1726665	1805445	1133510	1502242	1419251	1482786
35	P	Pennsylvania	1320191	1446723	1218591	1122030	1971479	1563062	1274168
36	R	Rhode Island	1501744	1942942	1266657	1961923	1835983	1234040	1151409
37	S	South Carolina	1631522	1803455	1425193	1458191	1538731	1825195	1250499
38	T	Tennessee	1811867	1485909	1974179	1157059	1786132	1399191	1826406
39	T	Texas	1520591	1310777	1957713	1907326	1873544	1655483	1785986
40	U	Utah	1771096	1195861	1979395	1241662	1437456	1859416	1939284
41	W	Washington	1977749	1687136	1199490	1163092	1334864	1621989	1545621
42	W	West Virginia	1677347	1380662	1176100	1888948	1922085	1740826	1238174
43	W	Wisconsin	1788920	1518578	1289663	1436888	1251678	1721874	1980167
44	W	Wyoming	1775190	1498098	1198212	1881688	1750527	1523124	1587602

	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
1	1944173	1237582	1440756	1186741	1852841	1558906	1916661
2	1436541	1629616	1230866	1512804	1985302	1580394	1979143
3	1554330	1300521	1130709	1907284	1363279	1525866	1647724
4	1628980	1669295	1928238	1216675	1591896	1360959	1329341
5	1663809	1624509	1639670	1921845	1156536	1388461	1644607
6	1752387	1913275	1665877	1491604	1178355	1383978	1330736
7	1972730	1968730	1945524	1228529	1582249	1503156	1718072
8	1553585	1370984	1318669	1984027	1671279	1803169	1627508
9	1818438	1198403	1497051	1131928	1107448	1407784	1170389
10	1630325	1145473	1851245	1850111	1887157	1259353	1725470
11	1928416	1330509	1902816	1695126	1517184	1948108	1150882
12	1748608	1436809	1456340	1643855	1312561	1713718	1757171
13	1658551	1422021	1751422	1696729	1915435	1645465	1583516
14	1883976	1999102	1559924	1905760	1129794	1988394	1467614
15	1150783	1751389	1992996	1501879	1173694	1431705	1641866
16	1561528	1550433	1465812	1882929	1410249	1930090	1385528
17	1956681	1350895	1512894	1916616	1878271	1722762	1913350
18	1124853	1498662	1210385	1234234	1287663	1908602	1403857
19	1969163	1627262	1706080	1437088	1318546	1116792	1529233
20	1967225	1486246	1872327	1175819	1314343	1979529	1569566
21	1567651	1761048	1658538	1482203	1731917	1669749	1963337
22	1890633	1995304	1575533	1910216	1972021	1515366	1864553
23	1568049	1383227	1629132	1988270	1907777	1649668	1991232
24	1592690	1350619	1520064	1185225	1465705	1110394	1125903
25	1270585	1128711	1187207	1569665	1690920	1459243	1802211
26	1231480	1526066	1143343	1980195	1283813	1225348	1903804
27	1763211	1265642	1704297	1131298	1197576	1242623	1963313
28	1357418	1443718	1390010	1202326	1100990	1850165	1183568
29	1820856	1801430	1653384	1475715	1623388	1533494	1868612
30	1426216	1604531	1683687	1500089	1718837	1619033	1367705
31	1116168	1791535	1553750	1472258	1104893	1596452	1229085
32	1671468	1534571	1271132	1430978	1529024	1563898	1604118
33	1511460	1585465	1887714	1227303	1840898	1880804	1573117
34	1862351	1103794	1935687	1905378	1522129	1509171	1893515
35	1571032	1433835	1483292	1290329	1475344	1931500	1668232

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36 1993136 1983569 1781016 1909119 1531212 1990412 1611730
37 1864685 1345102 1116203 1532332 1591735 1188417 1110655
38 1326460 1231739 1469785 1849041 1560887 1349173 1162164
39 1827503 1447457 1978374 1882532 1698698 1646508 1705322
40 1915865 1619186 1288285 1108281 1123353 1801019 1729273
41 1555554 1179331 1150089 1775787 1273834 1387428 1377341
42 1539322 1539603 1872519 1462137 1683127 1204344 1198791
43 1901394 1648755 1940943 1729177 1510119 1701650 1846238
44 1504455 1282142 1881814 1673668 1994022 1204029 1853858

```

```
> mydata12 = filter(mydata, !Index %in% c("A","C"))
```

```
> mydata12
```

	Index	State	Y2002	Y2003	Y2004	Y2005	Y2006	Y2007
1	D	Delaware	1330403	1268673	1706751	1403759	1441351	1300836
2	D	District of Columbia	1111437	1993741	1374643	1827949	1803852	1595981
3	F	Florida	1964626	1468852	1419738	1362787	1339608	1278550
4	G	Georgia	1929009	1541565	1810773	1779091	1326846	1223770
5	H	Hawaii	1461570	1200280	1213993	1245931	1459383	1430465
6	I	Idaho	1353210	1438538	1739154	1541015	1122387	1772050
7	I	Illinois	1508356	1527440	1493029	1261353	1540274	1747614
8	I	Indiana	1776918	1734104	1269927	1204117	1848073	1129546
9	I	Iowa	1499269	1444576	1576367	1388924	1554813	1452911
10	K	Kansas	1509054	1290700	1522230	1532094	1104256	1863278
11	K	Kentucky	1813878	1448846	1800760	1250524	1137913	1911227
12	L	Louisiana	1584734	1110625	1868456	1751920	1233709	1920301
13	M	Maine	1582720	1678622	1208496	1912040	1438549	1330014
14	M	Maryland	1579713	1404700	1849798	1397738	1310270	1789128
15	M	Massachusetts	1647582	1686259	1620601	1777250	1531641	1380529
16	M	Michigan	1295635	1149931	1601027	1340716	1729449	1567494
17	M	Minnesota	1729921	1675204	1903907	1561839	1985692	1148621
18	M	Mississippi	1983285	1292558	1631325	1943311	1354579	1731643
19	M	Missouri	1221316	1858368	1773451	1573967	1374863	1486197
20	M	Montana	1877154	1540099	1332722	1273327	1625721	1983568
21	N	Nebraska	1885081	1309769	1425527	1240465	1500594	1278272
22	N	Nevada	1426117	1114500	1119707	1758830	1694526	1765826
23	N	New Hampshire	1419776	1854370	1195119	1990062	1645430	1286967
24	N	New Jersey	1605532	1141514	1613550	1181452	1541327	1156804
25	N	New Mexico	1819239	1226057	1935991	1124400	1723493	1475985
26	N	New York	1395149	1611371	1170675	1446810	1426941	1463171
27	N	North Carolina	1616742	1292223	1482792	1532347	1158716	1827420
28	N	North Dakota	1618807	1510193	1876940	1443172	1425030	1868788
29	O	Ohio	1802132	1648498	1441386	1670280	1534888	1314824
30	O	Oklahoma	1173918	1334639	1663622	1798714	1312574	1708245
31	O	Oregon	1794912	1726665	1805445	1133510	1502242	1419251
32	P	Pennsylvania	1320191	1446723	1218591	1122030	1971479	1563062
33	R	Rhode Island	1501744	1942942	1266657	1961923	1835983	1234040
34	S	South Carolina	1631522	1803455	1425193	1458191	1538731	1825195
35	S	South Dakota	1159037	1150689	1660148	1417141	1418586	1279134
36	T	Tennessee	1811867	1485909	1974179	1157059	1786132	1399191
37	T	Texas	1520591	1310777	1957713	1907326	1873544	1655483
38	U	Utah	1771096	1195861	1979395	1241662	1437456	1859416
39	V	Vermont	1146902	1832249	1492704	1579265	1332048	1563537
40	V	Virginia	1134317	1163996	1891068	1853855	1708715	1197698
41	W	Washington	1977749	1687136	1199490	1163092	1334864	1621989
42	W	West Virginia	1677347	1380662	1176100	1888948	1922085	1740826
43	W	Wisconsin	1788920	1518578	1289663	1436888	1251678	1721874
44	W	Wyoming	1775190	1498098	1198212	1881688	1750527	1523124

	Y2008	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
1	1762096	1553585	1370984	1318669	1984027	1671279	1803169	1627508
2	1193245	1739748	1707823	1353449	1979708	1912654	1782169	1410183
3	1756185	1818438	1198403	1497051	1131928	1107448	1407784	1170389
4	1773090	1630325	1145473	1851245	1850111	1887157	1259353	1725470
5	1919423	1928416	1330509	1902816	1695126	1517184	1948108	1150882
6	1335481	1748608	1436809	1456340	1643855	1312561	1713718	1757171
7	1871645	1658551	1422021	1751422	1696729	1915435	1645465	1583516
8	1139551	1883976	1999102	1559924	1905760	1129794	1988394	1467614
9	1317983	1150783	1751389	1992996	1501879	1173694	1431705	1641866
10	1949478	1561528	1550433	1465812	1882929	1410249	1930090	1385528
11	1301848	1956681	1350895	1512894	1916616	1878271	1722762	1913350
12	1185085	1124853	1498662	1210385	1234234	1287663	1908602	1403857
13	1295877	1969163	1627262	1706080	1437088	1318546	1116792	1529233



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14 1112765 1967225 1486246 1872327 1175819 1314343 1979529 1569566
15 1978904 1567651 1761048 1658538 1482203 1731917 1669749 1963337
16 1990431 1575185 1267626 1274673 1709853 1815596 1965196 1646634
17 1328133 1890633 1995304 1575533 1910216 1972021 1515366 1864553
18 1428291 1568049 1383227 1629132 1988270 1907777 1649668 1991232
19 1735099 1800620 1164202 1425363 1800052 1698105 1767835 1996005
20 1251742 1592690 1350619 1520064 1185225 1465705 1110394 1125903
21 1140598 1270585 1128711 1187207 1569665 1690920 1459243 1802211
22 1903270 1231480 1526066 1143343 1980195 1283813 1225348 1903804
23 1762936 1763211 1265642 1704297 1131298 1197576 1242623 1963313
24 1568034 1357418 1443718 1390010 1202326 1100990 1850165 1183568
25 1237704 1820856 1801430 1653384 1475715 1623388 1533494 1868612
26 1732098 1426216 1604531 1683687 1500089 1718837 1619033 1367705
27 1267737 1116168 1791535 1553750 1472258 1104893 1596452 1229085
28 1720352 1671468 1534571 1271132 1430978 1529024 1563898 1604118
29 1516621 1511460 1585465 1887714 1227303 1840898 1880804 1573117
30 1256746 1853142 1673831 1822933 1674707 1900523 1956742 1307678
31 1482786 1862351 1103794 1935687 1905378 1522129 1509171 1893515
32 1274168 1571032 1433835 1483292 1290329 1475344 1931500 1668232
33 1151409 1993136 1983569 1781016 1909119 1531212 1990412 1611730
34 1250499 1864685 1345102 1116203 1532332 1591735 1188417 1110655
35 1171870 1852424 1554782 1647245 1811156 1147488 1302834 1136443
36 1826406 1326460 1231739 1469785 1849041 1560887 1349173 1162164
37 1785986 1827503 1447457 1978374 1882532 1698698 1646508 1705322
38 1939284 1915865 1619186 1288285 1108281 1123353 1801019 1729273
39 1123567 1618583 1326369 1792600 1714960 1146278 1282790 1565924
40 1803330 1590043 1516758 1171686 1262342 1647032 1706707 1850394
41 1545621 1555554 1179331 1150089 1775787 1273834 1387428 1377341
42 1238174 1539322 1539603 1872519 1462137 1683127 1204344 1198791
43 1980167 1901394 1648755 1940943 1729177 1510119 1701650 1846238
44 1587602 1504455 1282142 1881814 1673668 1994022 1204029 1853858
> mydata13 = filter(mydata, grepl("Ar",State))
> mydata13
  Index State Y2002 Y2003 Y2004 Y2005 Y2006 Y2007 Y2008
1     A Arizona 1742027 1968140 1377583 1782199 1102568 1109382 1752886
2     A Arkansas 1485531 1994927 1119299 1947979 1669191 1801213 1188104
  Y2009 Y2010 Y2011 Y2012 Y2013 Y2014 Y2015
1 1554330 1300521 1130709 1907284 1363279 1525866 1647724
2 1628980 1669295 1928238 1216675 1591896 1360959 1329341
>
> summarise(mydata, Y2015_mean = mean(Y2015), Y2015_med = median(Y2015))
  Y2015_mean Y2015_med
1    1588297    1627508
>
> summarise_at(mydata, vars(Y2005, Y2006), funs(n(), mean, median))
  Y2005_n Y2006_n Y2005_mean Y2006_mean Y2005_median Y2006_median
1      51      51    1522064    1530969    1480280    1531641
Warning message:
`funs()` was deprecated in dplyr 0.8.0.
Please use a list of either functions or lambdas:

# Simple named list:
list(mean = mean, median = median)

# Auto named with `tibble::lst()`:
tibble::lst(mean, median)

# Using lambdas
list(~ mean(., trim = .2), ~ median(., na.rm = TRUE))
This warning is displayed once every 8 hours.
Call `lifecycle::last_lifecycle_warnings()` to see where this warning was generated.
> summarise_at(mydata, vars(Y2011, Y2012), funs(n(), missing = sum(is.na(.)), mean(., na.rm = TRUE),
), median(., na.rm = TRUE)))
  Y2011_n Y2012_n Y2011_missing Y2012_missing Y2011_mean Y2012_mean
1      51      51             0             0    1574968    1591135
  Y2011_median Y2012_median
1    1575533    1643855
> summarise_if(mydata, is.numeric, funs(n(), mean, median))
  Y2002_n Y2003_n Y2004_n Y2005_n Y2006_n Y2007_n Y2008_n Y2009_n Y2010_n
1      51      51      51      51      51      51      51      51      51

```

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Y2011_n Y2012_n Y2013_n Y2014_n Y2015_n Y2002_mean Y2003_mean Y2004_mean
1      51      51      51      51      51      1566034      1509193      1540555
Y2005_mean Y2006_mean Y2007_mean Y2008_mean Y2009_mean Y2010_mean Y2011_mean
1      1522064      1530969      1553219      1538398      1658519      1504108      1574968
Y2012_mean Y2013_mean Y2014_mean Y2015_mean Y2002_median Y2003_median
1      1591135      1530078      1583360      1588297      1584734      1485909
Y2004_median Y2005_median Y2006_median Y2007_median Y2008_median Y2009_median
1      1522230      1480280      1531641      1563062      1545621      1658551
Y2010_median Y2011_median Y2012_median Y2013_median Y2014_median Y2015_median
1      1498662      1575533      1643855      1531212      1580394      1627508
> summarise_all(mydata['Index'], funs(nlevels(.), nmiss=sum(is.na(.))))
nlevels nmiss
1      0      0
> summarise_all(mydata['Index'], funs(nlevels(.), nmiss=sum(is.na(.))))
nlevels nmiss
1      0      0
> arrange(mydata, Index, Y2011)
  Index      State      Y2002      Y2003      Y2004      Y2005      Y2006      Y2007
1      A      Arizona 1742027 1968140 1377583 1782199 1102568 1109382
2      A      Alaska 1170302 1960378 1818085 1447852 1861639 1465841
3      A      Alabama 1296530 1317711 1118631 1492583 1107408 1440134
4      A      Arkansas 1485531 1994927 1119299 1947979 1669191 1801213
5      C      California 1685349 1675807 1889570 1480280 1735069 1812546
6      C      Colorado 1343824 1878473 1886149 1236697 1871471 1814218
7      C      Connecticut 1610512 1232844 1181949 1518933 1841266 1976976
8      D      Delaware 1330403 1268673 1706751 1403759 1441351 1300836
9      D District of Columbia 1111437 1993741 1374643 1827949 1803852 1595981
10     F      Florida 1964626 1468852 1419738 1362787 1339608 1278550
11     G      Georgia 1929009 1541565 1810773 1779091 1326846 1223770
12     H      Hawaii 1461570 1200280 1213993 1245931 1459383 1430465
13     I      Idaho 1353210 1438538 1739154 1541015 1122387 1772050
14     I      Indiana 1776918 1734104 1269927 1204117 1848073 1129546
15     I      Illinois 1508356 1527440 1493029 1261353 1540274 1747614
16     I      Iowa 1499269 1444576 1576367 1388924 1554813 1452911
17     K      Kansas 1509054 1290700 1522230 1532094 1104256 1863278
18     K      Kentucky 1813878 1448846 1800760 1250524 1137913 1911227
19     L      Louisiana 1584734 1110625 1868456 1751920 1233709 1920301
20     M      Michigan 1295635 1149931 1601027 1340716 1729449 1567494
21     M      Missouri 1221316 1858368 1773451 1573967 1374863 1486197
22     M      Montana 1877154 1540099 1332722 1273327 1625721 1983568
23     M      Minnesota 1729921 1675204 1903907 1561839 1985692 1148621
24     M      Mississippi 1983285 1292558 1631325 1943311 1354579 1731643
25     M      Massachusetts 1647582 1686259 1620601 1777250 1531641 1380529
26     M      Maine 1582720 1678622 1208496 1912040 1438549 1330014
27     M      Maryland 1579713 1404700 1849798 1397738 1310270 1789128
28     N      Nevada 1426117 1114500 1119707 1758830 1694526 1765826
29     N      Nebraska 1885081 1309769 1425527 1240465 1500594 1278272
30     N      North Dakota 1618807 1510193 1876940 1443172 1425030 1868788
31     N      New Jersey 1605532 1141514 1613550 1181452 1541327 1156804
32     N      North Carolina 1616742 1292223 1482792 1532347 1158716 1827420
33     N      New Mexico 1819239 1226057 1935991 1124400 1723493 1475985
34     N      New York 1395149 1611371 1170675 1446810 1426941 1463171
35     N      New Hampshire 1419776 1854370 1195119 1990062 1645430 1286967
36     O      Oklahoma 1173918 1334639 1663622 1798714 1312574 1708245
37     O      Ohio 1802132 1648498 1441386 1670280 1534888 1314824
38     O      Oregon 1794912 1726665 1805445 1133510 1502242 1419251
39     P      Pennsylvania 1320191 1446723 1218591 1122030 1971479 1563062
40     R      Rhode Island 1501744 1942942 1266657 1961923 1835983 1234040
41     S      South Carolina 1631522 1803455 1425193 1458191 1538731 1825195
42     S      South Dakota 1159037 1150689 1660148 1417141 1418586 1279134
43     T      Tennessee 1811867 1485909 1974179 1157059 1786132 1399191
44     T      Texas 1520591 1310777 1957713 1907326 1873544 1655483
45     U      Utah 1771096 1195861 1979395 1241662 1437456 1859416
46     V      Virginia 1134317 1163996 1891068 1853855 1708715 1197698
47     V      Vermont 1146902 1832249 1492704 1579265 1332048 1563537
48     W      Washington 1977749 1687136 1199490 1163092 1334864 1621989
49     W      West Virginia 1677347 1380662 1176100 1888948 1922085 1740826
50     W      Wyoming 1775190 1498098 1198212 1881688 1750527 1523124
51     W      Wisconsin 1788920 1518578 1289663 1436888 1251678 1721874
Y2008      Y2009      Y2010      Y2011      Y2012      Y2013      Y2014      Y2015

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1  1752886 1554330 1300521 1130709 1907284 1363279 1525866 1647724
2  1551826 1436541 1629616 1230866 1512804 1985302 1580394 1979143
3  1945229 1944173 1237582 1440756 1186741 1852841 1558906 1916661
4  1188104 1628980 1669295 1928238 1216675 1591896 1360959 1329341
5  1487315 1663809 1624509 1639670 1921845 1156536 1388461 1644607
6  1875146 1752387 1913275 1665877 1491604 1178355 1383978 1330736
7  1764457 1972730 1968730 1945524 1228529 1582249 1503156 1718072
8  1762096 1553585 1370984 1318669 1984027 1671279 1803169 1627508
9  1193245 1739748 1707823 1353449 1979708 1912654 1782169 1410183
10 1756185 1818438 1198403 1497051 1131928 1107448 1407784 1170389
11 1773090 1630325 1145473 1851245 1850111 1887157 1259353 1725470
12 1919423 1928416 1330509 1902816 1695126 1517184 1948108 1150882
13 1335481 1748608 1436809 1456340 1643855 1312561 1713718 1757171
14 1139551 1883976 1999102 1559924 1905760 1129794 1988394 1467614
15 1871645 1658551 1422021 1751422 1696729 1915435 1645465 1583516
16 1317983 1150783 1751389 1992996 1501879 1173694 1431705 1641866
17 1949478 1561528 1550433 1465812 1882929 1410249 1930090 1385528
18 1301848 1956681 1350895 1512894 1916616 1878271 1722762 1913350
19 1185085 1124853 1498662 1210385 1234234 1287663 1908602 1403857
20 1990431 1575185 1267626 1274673 1709853 1815596 1965196 1646634
21 1735099 1800620 1164202 1425363 1800052 1698105 1767835 1996005
22 1251742 1592690 1350619 1520064 1185225 1465705 1110394 1125903
23 1328133 1890633 1995304 1575533 1910216 1972021 1515366 1864553
24 1428291 1568049 1383227 1629132 1988270 1907777 1649668 1991232
25 1978904 1567651 1761048 1658538 1482203 1731917 1669749 1963337
26 1295877 1969163 1627262 1706080 1437088 1318546 1116792 1529233
27 1112765 1967225 1486246 1872327 1175819 1314343 1979529 1569566
28 1903270 1231480 1526066 1143343 1980195 1283813 1225348 1903804
29 1140598 1270585 1128711 1187207 1569665 1690920 1459243 1802211
30 1720352 1671468 1543571 1271132 1430978 1529024 1563898 1604118
31 1568034 1357418 1443718 1390010 1202326 1100990 1850165 1183568
32 1267737 1116168 1791535 1553750 1472258 1104893 1596452 1229085
33 1237704 1820856 1801430 1653384 1475715 1623388 1533494 1868612
34 1732098 1426216 1604531 1683687 1500089 1718837 1619033 1367705
35 1762936 1763211 1265642 1704297 1131298 1197576 1242623 1963313
36 1256746 1853142 1673831 1822933 1674707 1900523 1956742 1307678
37 1516621 1511460 1585465 1887714 1227303 1840898 1880804 1573117
38 1482786 1862351 1103794 1935687 1905378 1522129 1509171 1893515
39 1274168 1571032 1433835 1483292 1290329 1475344 1931500 1668232
40 1151409 1993136 1983569 1781016 1909119 1531212 1990412 1611730
41 1250499 1864685 1345102 1116203 1532332 1591735 1188417 1110655
42 1171870 1852424 1554782 1647245 1811156 1147488 1302834 1136443
43 1826406 1326460 1231739 1469785 1849041 1560887 1349173 1162164
44 1785986 1827503 1447457 1978374 1882532 1698698 1646508 1705322
45 1939284 1915865 1619186 1288285 1108281 1123353 1801019 1729273
46 1803330 1590043 1516758 1171686 1262342 1647032 1706707 1850394
47 1123567 1618583 1326369 1792600 1714960 1146278 1282790 1565924
48 1545621 1555554 1179331 1150089 1775787 1273834 1387428 1377341
49 1238174 1539322 1539603 1872519 1462137 1683127 1204344 1198791
50 1587602 1504455 1282142 1881814 1673668 1994022 1204029 1853858
51 1980167 1901394 1648755 1940943 1729177 1510119 1701650 1846238
>
> arrange(mydata, desc(Index), Y2011)
  Index      State Y2002 Y2003 Y2004 Y2005 Y2006 Y2007
1     W Washington 1977749 1687136 1199490 1163092 1334864 1621989
2     W  West Virginia 1677347 1380662 1176100 1888948 1922085 1740826
3     W    Wyoming 1775190 1498098 1198212 1881688 1750527 1523124
4     W Wisconsin 1788920 1518578 1289663 1436888 1251678 1721874
5     V Virginia 1134317 1163996 1891068 1853855 1708715 1197698
6     V Vermont 1146902 1832249 1492704 1579265 1332048 1563537
7     U Utah 1771096 1195861 1979395 1241662 1437456 1859416
8     T Tennessee 1811867 1485909 1974179 1157059 1786132 1399191
9     T Texas 1520591 1310777 1957713 1907326 1873544 1655483
10    S South Carolina 1631522 1803455 1425193 1458191 1538731 1825195
11    S South Dakota 1159037 1150689 1660148 1417141 1418586 1279134
12    R Rhode Island 1501744 1942942 1266657 1961923 1835983 1234040
13    P Pennsylvania 1320191 1446723 1218591 1122030 1971479 1563062
14    O Oklahoma 1173918 1334639 1663622 1798714 1312574 1708245
15    O Ohio 1802132 1648498 1441386 1670280 1534888 1314824
16    O Oregon 1794912 1726665 1805445 1133510 1502242 1419251

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17	N	Nevada	1426117	1114500	1119707	1758830	1694526	1765826
18	N	Nebraska	1885081	1309769	1425527	1240465	1500594	1278272
19	N	North Dakota	1618807	1510193	1876940	1443172	1425030	1868788
20	N	New Jersey	1605532	1141514	1613550	1181452	1541327	1156804
21	N	North Carolina	1616742	1292223	1482792	1532347	1158716	1827420
22	N	New Mexico	1819239	1226057	1935991	1124400	1723493	1475985
23	N	New York	1395149	1611371	1170675	1446810	1426941	1463171
24	N	New Hampshire	1419776	1854370	1195119	1990062	1645430	1286967
25	M	Michigan	1295635	1149931	1601027	1340716	1729449	1567494
26	M	Missouri	1221316	1858368	1773451	1573967	1374863	1486197
27	M	Montana	1877154	1540099	1332722	1273327	1625721	1983568
28	M	Minnesota	1729921	1675204	1903907	1561839	1985692	1148621
29	M	Mississippi	1983285	1292558	1631325	1943311	1354579	1731643
30	M	Massachusetts	1647582	1686259	1620601	1777250	1531641	1380529
31	M	Maine	1582720	1678622	1208496	1912040	1438549	1330014
32	M	Maryland	1579713	1404700	1849798	1397738	1310270	1789128
33	L	Louisiana	1584734	1110625	1868456	1751920	1233709	1920301
34	K	Kansas	1509054	1290700	1522230	1532094	1104256	1863278
35	K	Kentucky	1813878	1448846	1800760	1250524	1137913	1911227
36	I	Idaho	1353210	1438538	1739154	1541015	1122387	1772050
37	I	Indiana	1776918	1734104	1269927	1204117	1848073	1129546
38	I	Illinois	1508356	1527440	1493029	1261353	1540274	1747614
39	I	Iowa	1499269	1444576	1576367	1388924	1554813	1452911
40	H	Hawaii	1461570	1200280	1213993	1245931	1459383	1430465
41	G	Georgia	1929009	1541565	1810773	1779091	1326846	1223770
42	F	Florida	1964626	1468852	1419738	1362787	1339608	1278550
43	D	Delaware	1330403	1268673	1706751	1403759	1441351	1300836
44	D	District of Columbia	1111437	1993741	1374643	1827949	1803852	1595981
45	C	California	1685349	1675807	1889570	1480280	1735069	1812546
46	C	Colorado	1343824	1878473	1886149	1236697	1871471	1814218
47	C	Connecticut	1610512	1232844	1181949	1518933	1841266	1976976
48	A	Arizona	1742027	1968140	1377583	1782199	1102568	1109382
49	A	Alaska	1170302	1960378	1818085	1447852	1861639	1465841
50	A	Alabama	1296530	1317711	1118631	1492583	1107408	1440134
51	A	Arkansas	1485531	1994927	1119299	1947979	1669191	1801213

	Y2008	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015
1	1545621	1555554	1179331	1150089	1775787	1273834	1387428	1377341
2	1238174	1539322	1539603	1872519	1462137	1683127	1204344	1198791
3	1587602	1504455	1282142	1881814	1673668	1994022	1204029	1853858
4	1980167	1901394	1648755	1940943	1729177	1510119	1701650	1846238
5	1803330	1590043	1516758	1171686	1262342	1647032	1706707	1850394
6	1123567	1618583	1326369	1792600	1714960	1146278	1282790	1565924
7	1939284	1915865	1619186	1288285	1108281	1123353	1801019	1729273
8	1826406	1326460	1231739	1469785	1849041	1560887	1349173	1162164
9	1785986	1827503	1447457	1978374	1882532	1698698	1646508	1705322
10	1250499	1864685	1345102	1116203	1532332	1591735	1188417	1110655
11	1171870	1852424	1554782	1647245	1811156	1147488	1302834	1136443
12	1151409	1993136	1983569	1781016	1909119	1531212	1990412	1611730
13	1274168	1571032	1433835	1483292	1290329	1475344	1931500	1668232
14	1256746	1853142	1673831	1822933	1674707	1900523	1956742	1307678
15	1516621	1511460	1585465	1887714	1227303	1840898	1880804	1573117
16	1482786	1862351	1103794	1935687	1905378	1522129	1509171	1893515
17	1903270	1231480	1526066	1143343	1980195	1283813	1225348	1903804
18	1140598	1270585	1128711	1187207	1569665	1690920	1459243	1802211
19	1720352	1671468	1543571	1271132	1430978	1529024	1563898	1604118
20	1568034	1357418	1443718	1390010	1202326	1100990	1850165	1183568
21	1267737	1116168	1791535	1553750	1472258	1104893	1596452	1229085
22	1237704	1820856	1801430	1653384	1475715	1623388	1533494	1868612
23	1732098	1426216	1604531	1683687	1500089	1718837	1619033	1367705
24	1762936	1763211	1265642	1704297	1131298	1197576	1242623	1963313
25	1990431	1575185	1267626	1274673	1709853	1815596	1965196	1646634
26	1735099	1800620	1164202	1425363	1800052	1698105	1767835	1996005
27	1251742	1592690	1350619	1520064	1185225	1465705	1110394	1125903
28	1328133	1890633	1995304	1575533	1910216	1972021	1515366	1864553
29	1428291	1568049	1383227	1629132	1988270	1907777	1649668	1991232
30	1978904	1567651	1761048	1658538	1482203	1731917	1669749	1963337
31	1295877	1969163	1627262	1706080	1437088	1318546	1116792	1529233
32	1112765	1967225	1486246	1872327	1175819	1314343	1979529	1569566
33	1185085	1124853	1498662	1210385	1234234	1287663	1908602	1403857
34	1949478	1561528	1550433	1465812	1882929	1410249	1930090	1385528

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35 1301848 1956681 1350895 1512894 1916616 1878271 1722762 1913350
36 1335481 1748608 1436809 1456340 1643855 1312561 1713718 1757171
37 1139551 1883976 1999102 1559924 1905760 1129794 1988394 1467614
38 1871645 1658551 1422021 1751422 1696729 1915435 1645465 1583516
39 1317983 1150783 1751389 1992996 1501879 1173694 1431705 1641866
40 1919423 1928416 1330509 1902816 1695126 1517184 1948108 1150882
41 1773090 1630325 1145473 1851245 1850111 1887157 1259353 1725470
42 1756185 1818438 1198403 1497051 1131928 1107448 1407784 1170389
43 1762096 1553585 1370984 1318669 1984027 1671279 1803169 1627508
44 1193245 1739748 1707823 1353449 1979708 1912654 1782169 1410183
45 1487315 1663809 1624509 1639670 1921845 1156536 1388461 1644607
46 1875146 1752387 1913275 1665877 1491604 1178355 1383978 1330736
47 1764457 1972730 1968730 1945524 1228529 1582249 1503156 1718072
48 1752886 1554330 1300521 1130709 1907284 1363279 1525866 1647724
49 1551826 1436541 1629616 1230866 1512804 1985302 1580394 1979143
50 1945229 1944173 1237582 1440756 1186741 1852841 1558906 1916661
51 1188104 1628980 1669295 1928238 1216675 1591896 1360959 1329341
> dt = mydata %>% select(Index, State) %>% sample_n(10)
> dt
  Index      State
1      K Kentucky
2      N New Hampshire
3      K Kansas
4      F Florida
5      V Virginia
6      R Rhode Island
7      I Iowa
8      U Utah
9      C Connecticut
10     M Minnesota
>
> t = mydata %>% group_by(Index) %>% summarise_at(vars(Y2011:Y2015), funs(n()), mean(., na.rm = TRUE)))
> t
# A tibble: 19 x 11
  Index Y2011_n Y2012_n Y2013_n Y2014_n Y2015_n Y2011_mean Y2012_mean
  <chr>   <int>   <int>   <int>   <int>   <int>   <dbl>   <dbl>
1 A      4      4      4      4      4    1432642. 1455876
2 C      3      3      3      3      3    1750357 1547326
3 D      2      2      2      2      2    1336059 1981868.
4 F      1      1      1      1      1    1497051 1131928
5 G      1      1      1      1      1    1851245 1850111
6 H      1      1      1      1      1    1902816 1695126
7 I      4      4      4      4      4    1690170. 1687056.
8 K      2      2      2      2      2    1489353 1899772.
9 L      1      1      1      1      1    1210385 1234234
10 M     8      8      8      8      8    1582714. 1586091.
11 N     8      8      8      8      8    1448351. 1470316.
12 O     3      3      3      3      3    1882111. 1602463.
13 P     1      1      1      1      1    1483292 1290329
14 R     1      1      1      1      1    1781016 1909119
15 S     2      2      2      2      2    1381724 1671744
16 T     2      2      2      2      2    1724080. 1865786.
17 U     1      1      1      1      1    1288285 1108281
18 V     2      2      2      2      2    1482143 1488651
19 W     4      4      4      4      4    1711341. 1660192.
# ... with 3 more variables: Y2013_mean <dbl>, Y2014_mean <dbl>,
#   Y2015_mean <dbl>
> mydata %>% filter(Index %in% c("A", "C", "I")) %>% group_by(Index) %>% do(head( . , 2))
# A tibble: 6 x 16
# Groups:   Index [3]
  Index State      Y2002      Y2003      Y2004      Y2005      Y2006      Y2007      Y2008      Y2009      Y2010
  <chr> <chr>   <int>   <int>   <int>   <int>   <int>   <int>   <int>   <int>
1 A     Alabama 1296530 1317711 1.12e6 1.49e6 1.11e6 1.44e6 1.95e6 1.94e6 1.24e6
2 A     Alaska 1170302 1960378 1.82e6 1.45e6 1.86e6 1.47e6 1.55e6 1.44e6 1.63e6
3 C     Califo~ 1685349 1675807 1.89e6 1.48e6 1.74e6 1.81e6 1.49e6 1.66e6 1.62e6
4 C     Colora~ 1343824 1878473 1.89e6 1.24e6 1.87e6 1.81e6 1.88e6 1.75e6 1.91e6
5 I     Idaho   1353210 1438538 1.74e6 1.54e6 1.12e6 1.77e6 1.34e6 1.75e6 1.44e6
6 I     Illino~ 1508356 1527440 1.49e6 1.26e6 1.54e6 1.75e6 1.87e6 1.66e6 1.42e6
# ... with 5 more variables: Y2011 <int>, Y2012 <int>, Y2013 <int>,

```

```

# Y2014 <int>, Y2015 <int>
> mydata %>% select(Index, Y2015) %>%filter(Index %in% c("A", "C","I")) %>%group_by(Index) %>%do(
  arrange(.,desc(Y2015))) %>% slice(3)
# A tibble: 3 x 2
# Groups:   Index [3]
  Index    Y2015
  <chr>    <int>
1 A      1647724
2 C      1330736
3 I      1583516
> mydata %>% select(Index, Y2015) %>%filter(Index %in% c("A", "C","I")) %>%group_by(Index) %>%fil
  ter(min_rank(desc(Y2015)) == 3)
# A tibble: 3 x 2
# Groups:   Index [3]
  Index    Y2015
  <chr>    <int>
1 A      1647724
2 C      1330736
3 I      1583516
> mydata %>%group_by(Index)%>%summarise(Mean_2014 = mean(Y2014, na.rm=TRUE),Mean_2015 = mean(Y201
  5, na.rm=TRUE)) %>%arrange(desc(Mean_2015))
# A tibble: 19 x 3
  Index Mean_2014 Mean_2015
  <chr>    <dbl>    <dbl>
1 U      1801019    1729273
2 G      1259353    1725470
3 A      1506531.    1718217.
4 M      1596816.    1710808.
5 V      1494748.    1708159
6 P      1931500    1668232
7 K      1826426    1649439
8 N      1511282    1615302
9 I      1694820.    1612542.
10 R     1990412    1611730
11 O     1782239    1591437.
12 W     1374363.    1569057
13 C     1425198.    1564472.
14 D     1792669    1518846.
15 T     1497840.    1433743
16 L     1908602    1403857
17 F     1407784    1170389
18 H     1948108    1150882
19 S     1245626.    1123549
> mutate(mydata, change=Y2015/Y2014)
  Index      State Y2002 Y2003 Y2004 Y2005 Y2006 Y2007
1     A     Alabama 1296530 1317711 1118631 1492583 1107408 1440134
2     A     Alaska 1170302 1960378 1818085 1447852 1861639 1465841
3     A   Arizona 1742027 1968140 1377583 1782199 1102568 1109382
4     A   Arkansas 1485531 1994927 1119299 1947979 1669191 1801213
5     C California 1685349 1675807 1889570 1480280 1735069 1812546
6     C   Colorado 1343824 1878473 1886149 1236697 1871471 1814218
7     C Connecticut 1610512 1232844 1181949 1518933 1841266 1976976
8     D   Delaware 1330403 1268673 1706751 1403759 1441351 1300836
9     D District of Columbia 1111437 1993741 1374643 1827949 1803852 1595981
10    F     Florida 1964626 1468852 1419738 1362787 1339608 1278550
11    G     Georgia 1929009 1541565 1810773 1779091 1326846 1223770
12    H     Hawaii 1461570 1200280 1213993 1245931 1459383 1430465
13    I     Idaho 1353210 1438538 1739154 1541015 1122387 1772050
14    I   Illinois 1508356 1527440 1493029 1261353 1540274 1747614
15    I   Indiana 1776918 1734104 1269927 1204117 1848073 1129546
16    I     Iowa 1499269 1444576 1576367 1388924 1554813 1452911
17    K     Kansas 1509054 1290700 1522230 1532094 1104256 1863278
18    K   Kentucky 1813878 1448846 1800760 1250524 1137913 1911227
19    L   Louisiana 1584734 1110625 1868456 1751920 1233709 1920301
20    M     Maine 1582720 1678622 1208496 1912040 1438549 1330014
21    M   Maryland 1579713 1404700 1849798 1397738 1310270 1789128
22    M Massachusetts 1647582 1686259 1620601 1777250 1531641 1380529
23    M   Michigan 1295635 1149931 1601027 1340716 1729449 1567494
24    M   Minnesota 1729921 1675204 1903907 1561839 1985692 1148621
25    M Mississippi 1983285 1292558 1631325 1943311 1354579 1731643

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26	M	Missouri	1221316	1858368	1773451	1573967	1374863	1486197
27	M	Montana	1877154	1540099	1332722	1273327	1625721	1983568
28	N	Nebraska	1885081	1309769	1425527	1240465	1500594	1278272
29	N	Nevada	1426117	1114500	1119707	1758830	1694526	1765826
30	N	New Hampshire	1419776	1854370	1195119	1990062	1645430	1286967
31	N	New Jersey	1605532	1141514	1613550	1181452	1541327	1156804
32	N	New Mexico	1819239	1226057	1935991	1124400	1723493	1475985
33	N	New York	1395149	1611371	1170675	1446810	1426941	1463171
34	N	North Carolina	1616742	1292223	1482792	1532347	1158716	1827420
35	N	North Dakota	1618807	1510193	1876940	1443172	1425030	1868788
36	O	Ohio	1802132	1648498	1441386	1670280	1534888	1314824
37	O	Oklahoma	1173918	1334639	1663622	1798714	1312574	1708245
38	O	Oregon	1794912	1726665	1805445	1133510	1502242	1419251
39	P	Pennsylvania	1320191	1446723	1218591	1122030	1971479	1563062
40	R	Rhode Island	1501744	1942942	1266657	1961923	1835983	1234040
41	S	South Carolina	1631522	1803455	1425193	1458191	1538731	1825195
42	S	South Dakota	1159037	1150689	1660148	1417141	1418586	1279134
43	T	Tennessee	1811867	1485909	1974179	1157059	1786132	1399191
44	T	Texas	1520591	1310777	1957713	1907326	1873544	1655483
45	U	Utah	1771096	1195861	1979395	1241662	1437456	1859416
46	V	Vermont	1146902	1832249	1492704	1579265	1332048	1563537
47	V	Virginia	1134317	1163996	1891068	1853855	1708715	1197698
48	W	Washington	1977749	1687136	1199490	1163092	1334864	1621989
49	W	West Virginia	1677347	1380662	1176100	1888948	1922085	1740826
50	W	Wisconsin	1788920	1518578	1289663	1436888	1251678	1721874
51	W	Wyoming	1775190	1498098	1198212	1881688	1750527	1523124

	Y2008	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015	change
1	1945229	1944173	1237582	1440756	1186741	1852841	1558906	1916661	1.2294911
2	1551826	1436541	1629616	1230866	1512804	1985302	1580394	1979143	1.2523099
3	1752886	1554330	1300521	1130709	1907284	1363279	1525866	1647724	1.0798615
4	1188104	1628980	1669295	1928238	1216675	1591896	1360959	1329341	0.9767679
5	1487315	1663809	1624509	1639670	1921845	1156536	1388461	1644607	1.1844820
6	1875146	1752387	1913275	1665877	1491604	1178355	1383978	1330736	0.9615297
7	1764457	1972730	1968730	1945524	1228529	1582249	1503156	1718072	1.1429765
8	1762096	1553585	1370984	1318669	1984027	1671279	1803169	1627508	0.9025821
9	1193245	1739748	1707823	1353449	1979708	1912654	1782169	1410183	0.7912734
10	1756185	1818438	1198403	1497051	1131928	1107448	1407784	1170389	0.8313697
11	1773090	1630325	1145473	1851245	1850111	1887157	1259353	1725470	1.3701242
12	1919423	1928416	1330509	1902816	1695126	1517184	1948108	1150882	0.5907691
13	1335481	1748608	1436809	1456340	1643855	1312561	1713718	1757171	1.0253560
14	1871645	1658551	1422021	1751422	1696729	1915435	1645465	1583516	0.9623517
15	1139551	1883976	1999102	1559924	1905760	1129794	1988394	1467614	0.7380901
16	1317983	1150783	1751389	1992996	1501879	1173694	1431705	1641866	1.1467907
17	1949478	1561528	1550433	1465812	1882929	1410249	1930090	1385528	0.7178567
18	1301848	1956681	1350895	1512894	1916616	1878271	1722762	1913350	1.1106293
19	1185085	1124853	1498662	1210385	1234234	1287663	1908602	1403857	0.7355420
20	1295877	1969163	1627262	1706080	1437088	1318546	1116792	1529233	1.3693087
21	1112765	1967225	1486246	1872327	1175819	1314343	1979529	1569566	0.7928987
22	1978904	1567651	1761048	1658538	1482203	1731917	1669749	1963337	1.1758276
23	1990431	1575185	1267626	1274673	1709853	1815596	1965196	1646634	0.8378981
24	1328133	1890633	1995304	1575533	1910216	1972021	1515366	1864553	1.2304308
25	1428291	1568049	1383227	1629132	1988270	1907777	1649668	1991232	1.2070501
26	1735099	1800620	1164202	1425363	1800052	1698105	1767835	1996005	1.1290675
27	1251742	1592690	1350619	1520064	1185225	1465705	1110394	1125903	1.0139671
28	1140598	1270585	1128711	1187207	1569665	1690920	1459243	1802211	1.2350315
29	1903270	1231480	1526066	1143343	1980195	1283813	1225348	1903804	1.5536843
30	1762936	1763211	1265642	1704297	1131298	1197576	1242623	1963313	1.5799748
31	1568034	1357418	1443718	1390010	1202326	1100990	1850165	1183568	0.6397094
32	1237704	1820856	1801430	1653384	1475715	1623388	1533494	1868612	1.2185323
33	1732098	1426216	1604531	1683687	1500089	1718837	1619033	1367705	0.8447666
34	1267737	1116168	1791535	1553750	1472258	1104893	1596452	1229085	0.7698853
35	1720352	1671468	1534571	1271132	1430978	1529024	1563898	1604118	1.0257178
36	1516621	1511460	1585465	1887714	1227303	1840898	1880804	1573117	0.8364067
37	1256746	1853142	1673831	1822933	1674707	1900523	1956742	1307678	0.6682935
38	1482786	1862351	1103794	1935687	1905378	1522129	1509171	1893515	1.2546723
39	1274168	1571032	1433835	1483292	1290329	1475344	1931500	1668232	0.8636976
40	1151409	1993136	1983569	1781016	1909119	1531212	1990412	1611730	0.8097469
41	1250499	1864685	1345102	1116203	1532332	1591735	1188417	1110655	0.9345667
42	1171870	1852424	1554782	1647245	1811156	1147488	1302834	1136443	0.8722853
43	1826406	1326460	1231739	1469785	1849041	1560887	1349173	1162164	0.8613899

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44 1785986 1827503 1447457 1978374 1882532 1698698 1646508 1705322 1.0357204
45 1939284 1915865 1619186 1288285 1108281 1123353 1801019 1729273 0.9601637
46 1123567 1618583 1326369 1792600 1714960 1146278 1282790 1565924 1.2207173
47 1803330 1590043 1516758 1171686 1262342 1647032 1706707 1850394 1.0841896
48 1545621 1555554 1179331 1150089 1775787 1273834 1387428 1377341 0.9927297
49 1238174 1539322 1539603 1872519 1462137 1683127 1204344 1198791 0.9953892
50 1980167 1901394 1648755 1940943 1729177 1510119 1701650 1846238 1.0849693
51 1587602 1504455 1282142 1881814 1673668 1994022 1204029 1853858 1.5397121

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```
> mutate_if(mydata,is.numeric, funs("new" = .*1000))
```

	Index	State	Y2002	Y2003	Y2004	Y2005	Y2006	Y2007
1	A	Alabama	1296530	1317711	1118631	1492583	1107408	1440134
2	A	Alaska	1170302	1960378	1818085	1447852	1861639	1465841
3	A	Arizona	1742027	1968140	1377583	1782199	1102568	1109382
4	A	Arkansas	1485531	1994927	1119299	1947979	1669191	1801213
5	C	California	1685349	1675807	1889570	1480280	1735069	1812546
6	C	Colorado	1343824	1878473	1886149	1236697	1871471	1814218
7	C	Connecticut	1610512	1232844	1181949	1518933	1841266	1976976
8	D	Delaware	1330403	1268673	1706751	1403759	1441351	1300836
9	D	District of Columbia	1111437	1993741	1374643	1827949	1803852	1595981
10	F	Florida	1964626	1468852	1419738	1362787	1339608	1278550
11	G	Georgia	1929009	1541565	1810773	1779091	1326846	1223770
12	H	Hawaii	1461570	1200280	1213993	1245931	1459383	1430465
13	I	Idaho	1353210	1438538	1739154	1541015	1122387	1772050
14	I	Illinois	1508356	1527440	1493029	1261353	1540274	1747614
15	I	Indiana	1776918	1734104	1269927	1204117	1848073	1129546
16	I	Iowa	1499269	1444576	1576367	1388924	1554813	1452911
17	K	Kansas	1509054	1290700	1522230	1532094	1104256	1863278
18	K	Kentucky	1813878	1448846	1800760	1250524	1137913	1911227
19	L	Louisiana	1584734	1110625	1868456	1751920	1233709	1920301
20	M	Maine	1582720	1678622	1208496	1912040	1438549	1330014
21	M	Maryland	1579713	1404700	1849798	1397738	1310270	1789128
22	M	Massachusetts	1647582	1686259	1620601	1777250	1531641	1380529
23	M	Michigan	1295635	1149931	1601027	1340716	1729449	1567494
24	M	Minnesota	1729921	1675204	1903907	1561839	1985692	1148621
25	M	Mississippi	1983285	1292558	1631325	1943311	1354579	1731643
26	M	Missouri	1221316	1858368	1773451	1573967	1374863	1486197
27	M	Montana	1877154	1540099	1332722	1273327	1625721	1983568
28	N	Nebraska	1885081	1309769	1425527	1240465	1500594	1278272
29	N	Nevada	1426117	1114500	1119707	1758830	1694526	1765826
30	N	New Hampshire	1419776	1854370	1195119	1990062	1645430	1286967
31	N	New Jersey	1605532	1141514	1613550	1181452	1541327	1156804
32	N	New Mexico	1819239	1226057	1935991	1124400	1723493	1475985
33	N	New York	1395149	1611371	1170675	1446810	1426941	1463171
34	N	North Carolina	1616742	1292223	1482792	1532347	1158716	1827420
35	N	North Dakota	1618807	1510193	1876940	1443172	1425030	1868788
36	O	Ohio	1802132	1648498	1441386	1670280	1534888	1314824
37	O	Oklahoma	1173918	1334639	1663622	1798714	1312574	1708245
38	O	Oregon	1794912	1726665	1805445	1133510	1502242	1419251
39	P	Pennsylvania	1320191	1446723	1218591	1122030	1971479	1563062
40	R	Rhode Island	1501744	1942942	1266657	1961923	1835983	1234040
41	S	South Carolina	1631522	1803455	1425193	1458191	1538731	1825195
42	S	South Dakota	1159037	1150689	1660148	1417141	1418586	1279134
43	T	Tennessee	1811867	1485909	1974179	1157059	1786132	1399191
44	T	Texas	1520591	1310777	1957713	1907326	1873544	1655483
45	U	Utah	1771096	1195861	1979395	1241662	1437456	1859416
46	V	Vermont	1146902	1832249	1492704	1579265	1332048	1563537
47	V	Virginia	1134317	1163996	1891068	1853855	1708715	1197698
48	W	Washington	1977749	1687136	1199490	1163092	1334864	1621989
49	W	West Virginia	1677347	1380662	1176100	1888948	1922085	1740826
50	W	Wisconsin	1788920	1518578	1289663	1436888	1251678	1721874
51	W	Wyoming	1775190	1498098	1198212	1881688	1750527	1523124

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3	1752886	1554330	1300521	1130709	1907284	1363279	1525866	1647724	1742027000
4	1188104	1628980	1669295	1928238	1216675	1591896	1360959	1329341	1485531000
5	1487315	1663809	1624509	1639670	1921845	1156536	1388461	1644607	1685349000
6	1875146	1752387	1913275	1665877	1491604	1178355	1383978	1330736	1343824000
7	1764457	1972730	1968730	1945524	1228529	1582249	1503156	1718072	1610512000
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16	1317983	1150783	1751389	1992996	1501879	1173694	1431705	1641866	1499269000
17	1949478	1561528	1550433	1465812	1882929	1410249	1930090	1385528	1509054000
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40	1151409	1993136	1983569	1781016	1909119	1531212	1990412	1611730	1501744000
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20	M	Maine	1582720	1678622	1208496	1912040	1438549	1330014
21	M	Maryland	1579713	1404700	1849798	1397738	1310270	1789128
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23	M	Michigan	1295635	1149931	1601027	1340716	1729449	1567494
24	M	Minnesota	1729921	1675204	1903907	1561839	1985692	1148621
25	M	Mississippi	1983285	1292558	1631325	1943311	1354579	1731643
26	M	Missouri	1221316	1858368	1773451	1573967	1374863	1486197
27	M	Montana	1877154	1540099	1332722	1273327	1625721	1983568
28	N	Nebraska	1885081	1309769	1425527	1240465	1500594	1278272
29	N	Nevada	1426117	1114500	1119707	1758830	1694526	1765826
30	N	New Hampshire	1419776	1854370	1195119	1990062	1645430	1286967
31	N	New Jersey	1605532	1141514	1613550	1181452	1541327	1156804
32	N	New Mexico	1819239	1226057	1935991	1124400	1723493	1475985
33	N	New York	1395149	1611371	1170675	1446810	1426941	1463171
34	N	North Carolina	1616742	1292223	1482792	1532347	1158716	1827420
35	N	North Dakota	1618807	1510193	1876940	1443172	1425030	1868788
36	O	Ohio	1802132	1648498	1441386	1670280	1534888	1314824
37	O	Oklahoma	1173918	1334639	1663622	1798714	1312574	1708245
38	O	Oregon	1794912	1726665	1805445	1133510	1502242	1419251
39	P	Pennsylvania	1320191	1446723	1218591	1122030	1971479	1563062
40	R	Rhode Island	1501744	1942942	1266657	1961923	1835983	1234040
41	S	South Carolina	1631522	1803455	1425193	1458191	1538731	1825195
42	S	South Dakota	1159037	1150689	1660148	1417141	1418586	1279134
43	T	Tennessee	1811867	1485909	1974179	1157059	1786132	1399191
44	T	Texas	1520591	1310777	1957713	1907326	1873544	1655483
45	U	Utah	1771096	1195861	1979395	1241662	1437456	1859416
46	V	Vermont	1146902	1832249	1492704	1579265	1332048	1563537
47	V	Virginia	1134317	1163996	1891068	1853855	1708715	1197698
48	W	Washington	1977749	1687136	1199490	1163092	1334864	1621989
49	W	West Virginia	1677347	1380662	1176100	1888948	1922085	1740826
50	W	Wisconsin	1788920	1518578	1289663	1436888	1251678	1721874
51	W	Wyoming	1775190	1498098	1198212	1881688	1750527	1523124

	Y2008	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015	Y2008_Rank
1	1945229	1944173	1237582	1440756	1186741	1852841	1558906	1916661	47
2	1551826	1436541	1629616	1230866	1512804	1985302	1580394	1979143	27
3	1752886	1554330	1300521	1130709	1907284	1363279	1525866	1647724	33
4	1188104	1628980	1669295	1928238	1216675	1591896	1360959	1329341	8
5	1487315	1663809	1624509	1639670	1921845	1156536	1388461	1644607	24
6	1875146	1752387	1913275	1665877	1491604	1178355	1383978	1330736	43
7	1764457	1972730	1968730	1945524	1228529	1582249	1503156	1718072	37
8	1762096	1553585	1370984	1318669	1984027	1671279	1803169	1627508	35
9	1193245	1739748	1707823	1353449	1979708	1912654	1782169	1410183	9

10	1756185	1818438	1198403	1497051	1131928	1107448	1407784	1170389	34
11	1773090	1630325	1145473	1851245	1850111	1887157	1259353	1725470	38
12	1919423	1928416	1330509	1902816	1695126	1517184	1948108	1150882	45
13	1335481	1748608	1436809	1456340	1643855	1312561	1713718	1757171	21
14	1871645	1658551	1422021	1751422	1696729	1915435	1645465	1583516	42
15	1139551	1883976	1999102	1559924	1905760	1129794	1988394	1467614	3
16	1317983	1150783	1751389	1992996	1501879	1173694	1431705	1641866	19
17	1949478	1561528	1550433	1465812	1882929	1410249	1930090	1385528	48
18	1301848	1956681	1350895	1512894	1916616	1878271	1722762	1913350	18
19	1185085	1124853	1498662	1210385	1234234	1287663	1908602	1403857	7
20	1295877	1969163	1627262	1706080	1437088	1318546	1116792	1529233	17
21	1112765	1967225	1486246	1872327	1175819	1314343	1979529	1569566	1
22	1978904	1567651	1761048	1658538	1482203	1731917	1669749	1963337	49
23	1990431	1575185	1267626	1274673	1709853	1815596	1965196	1646634	51
24	1328133	1890633	1995304	1575533	1910216	1972021	1515366	1864553	20
25	1428291	1568049	1383227	1629132	1988270	1907777	1649668	1991232	22
26	1735099	1800620	1164202	1425363	1800052	1698105	1767835	1996005	32
27	1251742	1592690	1350619	1520064	1185225	1465705	1110394	1125903	13
28	1140598	1270585	1128711	1187207	1569665	1690920	1459243	1802211	4
29	1903270	1231480	1526066	1143343	1980195	1283813	1225348	1903804	44
30	1762936	1763211	1265642	1704297	1131298	1197576	1242623	1963313	36
31	1568034	1357418	1443718	1390010	1202326	1100990	1850165	1183568	28
32	1237704	1820856	1801430	1653384	1475715	1623388	1533494	1868612	10
33	1732098	1426216	1604531	1683687	1500089	1718837	1619033	1367705	31
34	1267737	1116168	1791535	1553750	1472258	1104893	1596452	1229085	15
35	1720352	1671468	1534571	1271132	1430978	1529024	1563898	1604118	30
36	1516621	1511460	1585465	1887714	1227303	1840898	1880804	1573117	25
37	1256746	1853142	1673831	1822933	1674707	1900523	1956742	1307678	14
38	1482786	1862351	1103794	1935687	1905378	1522129	1509171	1893515	23
39	1274168	1571032	1433835	1483292	1290329	1475344	1931500	1668232	16
40	1151409	1993136	1983569	1781016	1909119	1531212	1990412	1611730	5
41	1250499	1864685	1345102	1116203	1532332	1591735	1188417	1110655	12
42	1171870	1852424	1554782	1647245	1811156	1147488	1302834	1136443	6
43	1826406	1326460	1231739	1469785	1849041	1560887	1349173	1162164	41
44	1785986	1827503	1447457	1978374	1882532	1698698	1646508	1705322	39
45	1939284	1915865	1619186	1288285	1108281	1123353	1801019	1729273	46
46	1123567	1618583	1326369	1792600	1714960	1146278	1282790	1565924	2
47	1803330	1590043	1516758	1171686	1262342	1647032	1706707	1850394	40
48	1545621	1555554	1179331	1150089	1775787	1273834	1387428	1377341	26
49	1238174	1539322	1539603	1872519	1462137	1683127	1204344	1198791	11
50	1980167	1901394	1648755	1940943	1729177	1510119	1701650	1846238	50
51	1587602	1504455	1282142	1881814	1673668	1994022	1204029	1853858	29

	Y2009_Rank	Y2010_Rank
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2	9	38
3	14	12
4	24	40
5	27	36
6	31	47
7	50	48
8	13	18
9	29	42
10	34	6
11	25	3
12	45	14
13	30	22
14	26	20
15	41	51
16	3	43
17	16	31
18	47	17
19	2	26
20	49	37
21	48	25
22	17	44
23	20	10
24	42	50
25	18	19
26	33	4
27	22	16

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28      5      2
29      4     28
30     32      9
31      7     23
32     35     46
33      8     34
34      1     45
35     28     29
36     11     33
37     38     41
38     39      1
39     19     21
40     51     49
41     40     15
42     37     32
43      6      7
44     36     24
45     44     35
46     23     13
47     21     27
48     15      5
49     12     30
50     43     39
51     10     11

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> mutate_at(mydata, vars(Y2008:Y2010), funs(Rank=min_rank(desc(.))))
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1	A	Alabama	1296530	1317711	1118631	1492583	1107408	1440134
2	A	Alaska	1170302	1960378	1818085	1447852	1861639	1465841
3	A	Arizona	1742027	1968140	1377583	1782199	1102568	1109382
4	A	Arkansas	1485531	1994927	1119299	1947979	1669191	1801213
5	C	California	1685349	1675807	1889570	1480280	1735069	1812546
6	C	Colorado	1343824	1878473	1886149	1236697	1871471	1814218
7	C	Connecticut	1610512	1232844	1181949	1518933	1841266	1976976
8	D	Delaware	1330403	1268673	1706751	1403759	1441351	1300836
9	D	District of Columbia	1111437	1993741	1374643	1827949	1803852	1595981
10	F	Florida	1964626	1468852	1419738	1362787	1339608	1278550
11	G	Georgia	1929009	1541565	1810773	1779091	1326846	1223770
12	H	Hawaii	1461570	1200280	1213993	1245931	1459383	1430465
13	I	Idaho	1353210	1438538	1739154	1541015	1122387	1772050
14	I	Illinois	1508356	1527440	1493029	1261353	1540274	1747614
15	I	Indiana	1776918	1734104	1269927	1204117	1848073	1129546
16	I	Iowa	1499269	1444576	1576367	1388924	1554813	1452911
17	K	Kansas	1509054	1290700	1522230	1532094	1104256	1863278
18	K	Kentucky	1813878	1448846	1800760	1250524	1137913	1911227
19	L	Louisiana	1584734	1110625	1868456	1751920	1233709	1920301
20	M	Maine	1582720	1678622	1208496	1912040	1438549	1330014
21	M	Maryland	1579713	1404700	1849798	1397738	1310270	1789128
22	M	Massachusetts	1647582	1686259	1620601	1777250	1531641	1380529
23	M	Michigan	1295635	1149931	1601027	1340716	1729449	1567494
24	M	Minnesota	1729921	1675204	1903907	1561839	1985692	1148621
25	M	Mississippi	1983285	1292558	1631325	1943311	1354579	1731643
26	M	Missouri	1221316	1858368	1773451	1573967	1374863	1486197
27	M	Montana	1877154	1540099	1332722	1273327	1625721	1983568
28	N	Nebraska	1885081	1309769	1425527	1240465	1500594	1278272
29	N	Nevada	1426117	1114500	1119707	1758830	1694526	1765826
30	N	New Hampshire	1419776	1854370	1195119	1990062	1645430	1286967
31	N	New Jersey	1605532	1141514	1613550	1181452	1541327	1156804
32	N	New Mexico	1819239	1226057	1935991	1124400	1723493	1475985
33	N	New York	1395149	1611371	1170675	1446810	1426941	1463171
34	N	North Carolina	1616742	1292223	1482792	1532347	1158716	1827420
35	N	North Dakota	1618807	1510193	1876940	1443172	1425030	1868788
36	O	Ohio	1802132	1648498	1441386	1670280	1534888	1314824
37	O	Oklahoma	1173918	1334639	1663622	1798714	1312574	1708245
38	O	Oregon	1794912	1726665	1805445	1133510	1502242	1419251
39	P	Pennsylvania	1320191	1446723	1218591	1122030	1971479	1563062
40	R	Rhode Island	1501744	1942942	1266657	1961923	1835983	1234040
41	S	South Carolina	1631522	1803455	1425193	1458191	1538731	1825195
42	S	South Dakota	1159037	1150689	1660148	1417141	1418586	1279134
43	T	Tennessee	1811867	1485909	1974179	1157059	1786132	1399191
44	T	Texas	1520591	1310777	1957713	1907326	1873544	1655483

45	U	Utah	1771096	1195861	1979395	1241662	1437456	1859416
46	V	Vermont	1146902	1832249	1492704	1579265	1332048	1563537
47	V	Virginia	1134317	1163996	1891068	1853855	1708715	1197698
48	W	Washington	1977749	1687136	1199490	1163092	1334864	1621989
49	W	West Virginia	1677347	1380662	1176100	1888948	1922085	1740826
50	W	Wisconsin	1788920	1518578	1289663	1436888	1251678	1721874
51	W	Wyoming	1775190	1498098	1198212	1881688	1750527	1523124

	Y2008	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015	Y2008_Rank
1	1945229	1944173	1237582	1440756	1186741	1852841	1558906	1916661	5
2	1551826	1436541	1629616	1230866	1512804	1985302	1580394	1979143	25
3	1752886	1554330	1300521	1130709	1907284	1363279	1525866	1647724	19
4	1188104	1628980	1669295	1928238	1216675	1591896	1360959	1329341	44
5	1487315	1663809	1624509	1639670	1921845	1156536	1388461	1644607	28
6	1875146	1752387	1913275	1665877	1491604	1178355	1383978	1330736	9
7	1764457	1972730	1968730	1945524	1228529	1582249	1503156	1718072	15
8	1762096	1553585	1370984	1318669	1984027	1671279	1803169	1627508	17
9	1193245	1739748	1707823	1353449	1979708	1912654	1782169	1410183	43
10	1756185	1818438	1198403	1497051	1131928	1107448	1407784	1170389	18
11	1773090	1630325	1145473	1851245	1850111	1887157	1259353	1725470	14
12	1919423	1928416	1330509	1902816	1695126	1517184	1948108	1150882	7
13	1335481	1748608	1436809	1456340	1643855	1312561	1713718	1757171	31
14	1871645	1658551	1422021	1751422	1696729	1915435	1645465	1583516	10
15	1139551	1883976	1999102	1559924	1905760	1129794	1988394	1467614	49
16	1317983	1150783	1751389	1992996	1501879	1173694	1431705	1641866	33
17	1949478	1561528	1550433	1465812	1882929	1410249	1930090	1385528	4
18	1301848	1956681	1350895	1512894	1916616	1878271	1722762	1913350	34
19	1185085	1124853	1498662	1210385	1234234	1287663	1908602	1403857	45
20	1295877	1969163	1627262	1706080	1437088	1318546	1116792	1529233	35
21	1112765	1967225	1486246	1872327	1175819	1314343	1979529	1569566	51
22	1978904	1567651	1761048	1658538	1482203	1731917	1669749	1963337	3
23	1990431	1575185	1267626	1274673	1709853	1815596	1965196	1646634	1
24	1328133	1890633	1995304	1575533	1910216	1972021	1515366	1864553	32
25	1428291	1568049	1383227	1629132	1988270	1907777	1649668	1991232	30
26	1735099	1800620	1164202	1425363	1800052	1698105	1767835	1996005	20
27	1251742	1592690	1350619	1520064	1185225	1465705	1110394	1125903	39
28	1140598	1270585	1128711	1187207	1569665	1690920	1459243	1802211	48
29	1903270	1231480	1526066	1143343	1980195	1283813	1225348	1903804	8
30	1762936	1763211	1265642	1704297	1131298	1197576	1242623	1963313	16
31	1568034	1357418	1443718	1390010	1202326	1100990	1850165	1183568	24
32	1237704	1820856	1801430	1653384	1475715	1623388	1533494	1868612	42
33	1732098	1426216	1604531	1683687	1500089	1718837	1619033	1367705	21
34	1267737	1116168	1791535	1553750	1472258	1104893	1596452	1229085	37
35	1720352	1671468	1534571	1271132	1430978	1529024	1563898	1604118	22
36	1516621	1511460	1585465	1887714	1227303	1840898	1880804	1573117	27
37	1256746	1853142	1673831	1822933	1674707	1900523	1956742	1307678	38
38	1482786	1862351	1103794	1935687	1905378	1522129	1509171	1893515	29
39	1274168	1571032	1433835	1483292	1290329	1475344	1931500	1668232	36
40	1151409	1993136	1983569	1781016	1909119	1531212	1990412	1611730	47
41	1250499	1864685	1345102	1116203	1532332	1591735	1188417	1110655	40
42	1171870	1852424	1554782	1647245	1811156	1147488	1302834	1136443	46
43	1826406	1326460	1231739	1469785	1849041	1560887	1349173	1162164	11
44	1785986	1827503	1447457	1978374	1882532	1698698	1646508	1705322	13
45	1939284	1915865	1619186	1288285	1108281	1123353	1801019	1729273	6
46	1123567	1618583	1326369	1792600	1714960	1146278	1282790	1565924	50
47	1803330	1590043	1516758	1171686	1262342	1647032	1706707	1850394	12
48	1545621	1555554	1179331	1150089	1775787	1273834	1387428	1377341	26
49	1238174	1539322	1539603	1872519	1462137	1683127	1204344	1198791	41
50	1980167	1901394	1648755	1940943	1729177	1510119	1701650	1846238	2
51	1587602	1504455	1282142	1881814	1673668	1994022	1204029	1853858	23

	Y2009_Rank	Y2010_Rank
1	6	44
2	43	14
3	38	40
4	28	12
5	25	16
6	21	5
7	2	4
8	39	34
9	23	10
10	18	46

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11      27      49
12      7      38
13     22     30
14     26     32
15     11      1
16     49      9
17     36     21
18      5     35
19     50     26
20      3     15
21      4     27
22     35      8
23     32     42
24     10      2
25     34     33
26     19     48
27     30     36
28     47     50
29     48     24
30     20     43
31     45     29
32     17      6
33     44     18
34     51      7
35     24     23
36     41     19
37     14     11
38     13     51
39     33     31
40      1      3
41     12     37
42     15     20
43     46     45
44     16     28
45      8     17
46     29     39
47     31     25
48     37     47
49     40     22
50      9     13
51     42     41

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> mutate_at(mydata,vars(Y2008:Y2010),funs(Rank=min_rank(desc(.))))
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	Index	State	Y2002	Y2003	Y2004	Y2005	Y2006	Y2007
1	A	Alabama	1296530	1317711	1118631	1492583	1107408	1440134
2	A	Alaska	1170302	1960378	1818085	1447852	1861639	1465841
3	A	Arizona	1742027	1968140	1377583	1782199	1102568	1109382
4	A	Arkansas	1485531	1994927	1119299	1947979	1669191	1801213
5	C	California	1685349	1675807	1889570	1480280	1735069	1812546
6	C	Colorado	1343824	1878473	1886149	1236697	1871471	1814218
7	C	Connecticut	1610512	1232844	1181949	1518933	1841266	1976976
8	D	Delaware	1330403	1268673	1706751	1403759	1441351	1300836
9	D	District of Columbia	1111437	1993741	1374643	1827949	1803852	1595981
10	F	Florida	1964626	1468852	1419738	1362787	1339608	1278550
11	G	Georgia	1929009	1541565	1810773	1779091	1326846	1223770
12	H	Hawaii	1461570	1200280	1213993	1245931	1459383	1430465
13	I	Idaho	1353210	1438538	1739154	1541015	1122387	1772050
14	I	Illinois	1508356	1527440	1493029	1261353	1540274	1747614
15	I	Indiana	1776918	1734104	1269927	1204117	1848073	1129546
16	I	Iowa	1499269	1444576	1576367	1388924	1554813	1452911
17	K	Kansas	1509054	1290700	1522230	1532094	1104256	1863278
18	K	Kentucky	1813878	1448846	1800760	1250524	1137913	1911227
19	L	Louisiana	1584734	1110625	1868456	1751920	1233709	1920301
20	M	Maine	1582720	1678622	1208496	1912040	1438549	1330014
21	M	Maryland	1579713	1404700	1849798	1397738	1310270	1789128
22	M	Massachusetts	1647582	1686259	1620601	1777250	1531641	1380529
23	M	Michigan	1295635	1149931	1601027	1340716	1729449	1567494
24	M	Minnesota	1729921	1675204	1903907	1561839	1985692	1148621
25	M	Mississippi	1983285	1292558	1631325	1943311	1354579	1731643
26	M	Missouri	1221316	1858368	1773451	1573967	1374863	1486197
27	M	Montana	1877154	1540099	1332722	1273327	1625721	1983568

28	N	Nebraska	1885081	1309769	1425527	1240465	1500594	1278272
29	N	Nevada	1426117	1114500	1119707	1758830	1694526	1765826
30	N	New Hampshire	1419776	1854370	1195119	1990062	1645430	1286967
31	N	New Jersey	1605532	1141514	1613550	1181452	1541327	1156804
32	N	New Mexico	1819239	1226057	1935991	1124400	1723493	1475985
33	N	New York	1395149	1611371	1170675	1446810	1426941	1463171
34	N	North Carolina	1616742	1292223	1482792	1532347	1158716	1827420
35	N	North Dakota	1618807	1510193	1876940	1443172	1425030	1868788
36	O	Ohio	1802132	1648498	1441386	1670280	1534888	1314824
37	O	Oklahoma	1173918	1334639	1663622	1798714	1312574	1708245
38	O	Oregon	1794912	1726665	1805445	1133510	1502242	1419251
39	P	Pennsylvania	1320191	1446723	1218591	1122030	1971479	1563062
40	R	Rhode Island	1501744	1942942	1266657	1961923	1835983	1234040
41	S	South Carolina	1631522	1803455	1425193	1458191	1538731	1825195
42	S	South Dakota	1159037	1150689	1660148	1417141	1418586	1279134
43	T	Tennessee	1811867	1485909	1974179	1157059	1786132	1399191
44	T	Texas	1520591	1310777	1957713	1907326	1873544	1655483
45	U	Utah	1771096	1195861	1979395	1241662	1437456	1859416
46	V	Vermont	1146902	1832249	1492704	1579265	1332048	1563537
47	V	Virginia	1134317	1163996	1891068	1853855	1708715	1197698
48	W	Washington	1977749	1687136	1199490	1163092	1334864	1621989
49	W	West Virginia	1677347	1380662	1176100	1888948	1922085	1740826
50	W	Wisconsin	1788920	1518578	1289663	1436888	1251678	1721874
51	W	Wyoming	1775190	1498098	1198212	1881688	1750527	1523124

	Y2008	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015	Y2008_Rank
1	1945229	1944173	1237582	1440756	1186741	1852841	1558906	1916661	5
2	1551826	1436541	1629616	1230866	1512804	1985302	1580394	1979143	25
3	1752886	1554330	1300521	1130709	1907284	1363279	1525866	1647724	19
4	1188104	1628980	1669295	1928238	1216675	1591896	1360959	1329341	44
5	1487315	1663809	1624509	1639670	1921845	1156536	1388461	1644607	28
6	1875146	1752387	1913275	1665877	1491604	1178355	1383978	1330736	9
7	1764457	1972730	1968730	1945524	1228529	1582249	1503156	1718072	15
8	1762096	1553585	1370984	1318669	1984027	1671279	1803169	1627508	17
9	1193245	1739748	1707823	1353449	1979708	1912654	1782169	1410183	43
10	1756185	1818438	1198403	1497051	1131928	1107448	1407784	1170389	18
11	1773090	1630325	1145473	1851245	1850111	1887157	1259353	1725470	14
12	1919423	1928416	1330509	1902816	1695126	1517184	1948108	1150882	7
13	1335481	1748608	1436809	1456340	1643855	1312561	1713718	1757171	31
14	1871645	1658551	1422021	1751422	1696729	1915435	1645465	1583516	10
15	1139551	1883976	1999102	1559924	1905760	1129794	1988394	1467614	49
16	1317983	1150783	1751389	1992996	1501879	1173694	1431705	1641866	33
17	1949478	1561528	1550433	1465812	1882929	1410249	1930090	1385528	4
18	1301848	1956681	1350895	1512894	1916616	1878271	1722762	1913350	34
19	1185085	1124853	1498662	1210385	1234234	1287663	1908602	1403857	45
20	1295877	1969163	1627262	1706080	1437088	1318546	1116792	1529233	35
21	1112765	1967225	1486246	1872327	1175819	1314343	1979529	1569566	51
22	1978904	1567651	1761048	1658538	1482203	1731917	1669749	1963337	3
23	1990431	1575185	1267626	1274673	1709853	1815596	1965196	1646634	1
24	1328133	1890633	1995304	1575533	1910216	1972021	1515366	1864553	32
25	1428291	1568049	1383227	1629132	1988270	1907777	1649668	1991232	30
26	1735099	1800620	1164202	1425363	1800052	1698105	1767835	1996005	20
27	1251742	1592690	1350619	1520064	1185225	1465705	1110394	1125903	39
28	1140598	1270585	1128711	1187207	1569665	1690920	1459243	1802211	48
29	1903270	1231480	1526066	1143343	1980195	1283813	1225348	1903804	8
30	1762936	1763211	1265642	1704297	1131298	1197576	1242623	1963313	16
31	1568034	1357418	1443718	1390010	1202326	1100990	1850165	1183568	24
32	1237704	1820856	1801430	1653384	1475715	1623388	1533494	1868612	42
33	1732098	1426216	1604531	1683687	1500089	1718837	1619033	1367705	21
34	1267737	1116168	1791535	1553750	1472258	1104893	1596452	1229085	37
35	1720352	1671468	1534571	1271132	1430978	1529024	1563898	1604118	22
36	1516621	1511460	1585465	1887714	1227303	1840898	1880804	1573117	27
37	1256746	1853142	1673831	1822933	1674707	1900523	1956742	1307678	38
38	1482786	1862351	1103794	1935687	1905378	1522129	1509171	1893515	29
39	1274168	1571032	1433835	1483292	1290329	1475344	1931500	1668232	36
40	1151409	1993136	1983569	1781016	1909119	1531212	1990412	1611730	47
41	1250499	1864685	1345102	1116203	1532332	1591735	1188417	1110655	40
42	1171870	1852424	1554782	1647245	1811156	1147488	1302834	1136443	46
43	1826406	1326460	1231739	1469785	1849041	1560887	1349173	1162164	11
44	1785986	1827503	1447457	1978374	1882532	1698698	1646508	1705322	13
45	1939284	1915865	1619186	1288285	1108281	1123353	1801019	1729273	6



```

46 1123567 1618583 1326369 1792600 1714960 1146278 1282790 1565924      50
47 1803330 1590043 1516758 1171686 1262342 1647032 1706707 1850394      12
48 1545621 1555554 1179331 1150089 1775787 1273834 1387428 1377341      26
49 1238174 1539322 1539603 1872519 1462137 1683127 1204344 1198791      41
50 1980167 1901394 1648755 1940943 1729177 1510119 1701650 1846238       2
51 1587602 1504455 1282142 1881814 1673668 1994022 1204029 1853858      23

```

```
Y2009_Rank Y2010_Rank
```

```

1      6      44
2     43     14
3     38     40
4     28     12
5     25     16
6     21      5
7      2      4
8     39     34
9     23     10
10    18     46
11    27     49
12     7     38
13    22     30
14    26     32
15    11      1
16    49      9
17    36     21
18     5     35
19    50     26
20     3     15
21     4     27
22    35      8
23    32     42
24    10      2
25    34     33
26    19     48
27    30     36
28    47     50
29    48     24
30    20     43
31    45     29
32    17      6
33    44     18
34    51      7
35    24     23
36    41     19
37    14     11
38    13     51
39    33     31
40     1      3
41    12     37
42    15     20
43    46     45
44    16     28
45     8     17
46    29     39
47    31     25
48    37     47
49    40     22
50     9     13
51    42     41

```

```
> mutate_at(mydata,vars(Y2008:Y2010),funs(Rank=min_rank(desc(.))))
```

```

  Index      State  Y2002  Y2003  Y2004  Y2005  Y2006  Y2007
1     A    Alabama 1296530 1317711 1118631 1492583 1107408 1440134
2     A    Alaska 1170302 1960378 1818085 1447852 1861639 1465841
3     A    Arizona 1742027 1968140 1377583 1782199 1102568 1109382
4     A    Arkansas 1485531 1994927 1119299 1947979 1669191 1801213
5     C    California 1685349 1675807 1889570 1480280 1735069 1812546
6     C    Colorado 1343824 1878473 1886149 1236697 1871471 1814218
7     C    Connecticut 1610512 1232844 1181949 1518933 1841266 1976976
8     D    Delaware 1330403 1268673 1706751 1403759 1441351 1300836
9     D District of Columbia 1111437 1993741 1374643 1827949 1803852 1595981
10    F    Florida 1964626 1468852 1419738 1362787 1339608 1278550

```

11	G	Georgia	1929009	1541565	1810773	1779091	1326846	1223770
12	H	Hawaii	1461570	1200280	1213993	1245931	1459383	1430465
13	I	Idaho	1353210	1438538	1739154	1541015	1122387	1772050
14	I	Illinois	1508356	1527440	1493029	1261353	1540274	1747614
15	I	Indiana	1776918	1734104	1269927	1204117	1848073	1129546
16	I	Iowa	1499269	1444576	1576367	1388924	1554813	1452911
17	K	Kansas	1509054	1290700	1522230	1532094	1104256	1863278
18	K	Kentucky	1813878	1448846	1800760	1250524	1137913	1911227
19	L	Louisiana	1584734	1110625	1868456	1751920	1233709	1920301
20	M	Maine	1582720	1678622	1208496	1912040	1438549	1330014
21	M	Maryland	1579713	1404700	1849798	1397738	1310270	1789128
22	M	Massachusetts	1647582	1686259	1620601	1777250	1531641	1380529
23	M	Michigan	1295635	1149931	1601027	1340716	1729449	1567494
24	M	Minnesota	1729921	1675204	1903907	1561839	1985692	1148621
25	M	Mississippi	1983285	1292558	1631325	1943311	1354579	1731643
26	M	Missouri	1221316	1858368	1773451	1573967	1374863	1486197
27	M	Montana	1877154	1540099	1332722	1273327	1625721	1983568
28	N	Nebraska	1885081	1309769	1425527	1240465	1500594	1278272
29	N	Nevada	1426117	1114500	1119707	1758830	1694526	1765826
30	N	New Hampshire	1419776	1854370	1195119	1990062	1645430	1286967
31	N	New Jersey	1605532	1141514	1613550	1181452	1541327	1156804
32	N	New Mexico	1819239	1226057	1935991	1124400	1723493	1475985
33	N	New York	1395149	1611371	1170675	1446810	1426941	1463171
34	N	North Carolina	1616742	1292223	1482792	1532347	1158716	1827420
35	N	North Dakota	1618807	1510193	1876940	1443172	1425030	1868788
36	O	Ohio	1802132	1648498	1441386	1670280	1534888	1314824
37	O	Oklahoma	1173918	1334639	1663622	1798714	1312574	1708245
38	O	Oregon	1794912	1726665	1805445	1133510	1502242	1419251
39	P	Pennsylvania	1320191	1446723	1218591	1122030	1971479	1563062
40	R	Rhode Island	1501744	1942942	1266657	1961923	1835983	1234040
41	S	South Carolina	1631522	1803455	1425193	1458191	1538731	1825195
42	S	South Dakota	1159037	1150689	1660148	1417141	1418586	1279134
43	T	Tennessee	1811867	1485909	1974179	1157059	1786132	1399191
44	T	Texas	1520591	1310777	1957713	1907326	1873544	1655483
45	U	Utah	1771096	1195861	1979395	1241662	1437456	1859416
46	V	Vermont	1146902	1832249	1492704	1579265	1332048	1563537
47	V	Virginia	1134317	1163996	1891068	1853855	1708715	1197698
48	W	Washington	1977749	1687136	1199490	1163092	1334864	1621989
49	W	West Virginia	1677347	1380662	1176100	1888948	1922085	1740826
50	W	Wisconsin	1788920	1518578	1289663	1436888	1251678	1721874
51	W	Wyoming	1775190	1498098	1198212	1881688	1750527	1523124

	Y2008	Y2009	Y2010	Y2011	Y2012	Y2013	Y2014	Y2015	Y2008_Rank
1	1945229	1944173	1237582	1440756	1186741	1852841	1558906	1916661	5
2	1551826	1436541	1629616	1230866	1512804	1985302	1580394	1979143	25
3	1752886	1554330	1300521	1130709	1907284	1363279	1525866	1647724	19
4	1188104	1628980	1669295	1928238	1216675	1591896	1360959	1329341	44
5	1487315	1663809	1624509	1639670	1921845	1156536	1388461	1644607	28
6	1875146	1752387	1913275	1665877	1491604	1178355	1383978	1330736	9
7	1764457	1972730	1968730	1945524	1228529	1582249	1503156	1718072	15
8	1762096	1553585	1370984	1318669	1984027	1671279	1803169	1627508	17
9	1193245	1739748	1707823	1353449	1979708	1912654	1782169	1410183	43
10	1756185	1818438	1198403	1497051	1131928	1107448	1407784	1170389	18
11	1773090	1630325	1145473	1851245	1850111	1887157	1259353	1725470	14
12	1919423	1928416	1330509	1902816	1695126	1517184	1948108	1150882	7
13	1335481	1748608	1436809	1456340	1643855	1312561	1713718	1757171	31
14	1871645	1658551	1422021	1751422	1696729	1915435	1645465	1583516	10
15	1139551	1883976	1999102	1559924	1905760	1129794	1988394	1467614	49
16	1317983	1150783	1751389	1992996	1501879	1173694	1431705	1641866	33
17	1949478	1561528	1550433	1465812	1882929	1410249	1930090	1385528	4
18	1301848	1956681	1350895	1512894	1916616	1878271	1722762	1913350	34
19	1185085	1124853	1498662	1210385	1234234	1287663	1908602	1403857	45
20	1295877	1969163	1627262	1706080	1437088	1318546	1116792	1529233	35
21	1112765	1967225	1486246	1872327	1175819	1314343	1979529	1569566	51
22	1978904	1567651	1761048	1658538	1482203	1731917	1669749	1963337	3
23	1990431	1575185	1267626	1274673	1709853	1815596	1965196	1646634	1
24	1328133	1890633	1995304	1575533	1910216	1972021	1515366	1864553	32
25	1428291	1568049	1383227	1629132	1988270	1907777	1649668	1991232	30
26	1735099	1800620	1164202	1425363	1800052	1698105	1767835	1996005	20
27	1251742	1592690	1350619	1520064	1185225	1465705	1110394	1125903	39
28	1140598	1270585	1128711	1187207	1569665	1690920	1459243	1802211	48

29	1903270	1231480	1526066	1143343	1980195	1283813	1225348	1903804	8
30	1762936	1763211	1265642	1704297	1131298	1197576	1242623	1963313	16
31	1568034	1357418	1443718	1390010	1202326	1100990	1850165	1183568	24
32	1237704	1820856	1801430	1653384	1475715	1623388	1533494	1868612	42
33	1732098	1426216	1604531	1683687	1500089	1718837	1619033	1367705	21
34	1267737	1116168	1791535	1553750	1472258	1104893	1596452	1229085	37
35	1720352	1671468	1534571	1271132	1430978	1529024	1563898	1604118	22
36	1516621	1511460	1585465	1887714	1227303	1840898	1880804	1573117	27
37	1256746	1853142	1673831	1822933	1674707	1900523	1956742	1307678	38
38	1482786	1862351	1103794	1935687	1905378	1522129	1509171	1893515	29
39	1274168	1571032	1433835	1483292	1290329	1475344	1931500	1668232	36
40	1151409	1993136	1983569	1781016	1909119	1531212	1990412	1611730	47
41	1250499	1864685	1345102	1116203	1532332	1591735	1188417	1110655	40
42	1171870	1852424	1554782	1647245	1811156	1147488	1302834	1136443	46
43	1826406	1326460	1231739	1469785	1849041	1560887	1349173	1162164	11
44	1785986	1827503	1447457	1978374	1882532	1698698	1646508	1705322	13
45	1939284	1915865	1619186	1288285	1108281	1123353	1801019	1729273	6
46	1123567	1618583	1326369	1792600	1714960	1146278	1282790	1565924	50
47	1803330	1590043	1516758	1171686	1262342	1647032	1706707	1850394	12
48	1545621	1555554	1179331	1150089	1775787	1273834	1387428	1377341	26
49	1238174	1539322	1539603	1872519	1462137	1683127	1204344	1198791	41
50	1980167	1901394	1648755	1940943	1729177	1510119	1701650	1846238	2
51	1587602	1504455	1282142	1881814	1673668	1994022	1204029	1853858	23

	Y2009_Rank	Y2010_Rank
--	------------	------------

1	6	44
2	43	14
3	38	40
4	28	12
5	25	16
6	21	5
7	2	4
8	39	34
9	23	10
10	18	46
11	27	49
12	7	38
13	22	30
14	26	32
15	11	1
16	49	9
17	36	21
18	5	35
19	50	26
20	3	15
21	4	27
22	35	8
23	32	42
24	10	2
25	34	33
26	19	48
27	30	36
28	47	50
29	48	24
30	20	43
31	45	29
32	17	6
33	44	18
34	51	7
35	24	23
36	41	19
37	14	11
38	13	51
39	33	31
40	1	3
41	12	37
42	15	20
43	46	45
44	16	28
45	8	17
46	29	39

```

47         31         25
48         37         47
49         40         22
50          9         13
51         42         41
> mydata %>% group_by(Index) %>% filter(min_rank(desc(Y2015)) ==1) %>% select(Index, State, Y2015)
)
# A tibble: 19 x 3
# Groups:   Index [19]
  Index State      Y2015
  <chr> <chr>      <int>
1 A     Alaska    1979143
2 C     Connecticut 1718072
3 D     Delaware    1627508
4 F     Florida     1170389
5 G     Georgia     1725470
6 H     Hawaii      1150882
7 I     Idaho       1757171
8 K     Kentucky    1913350
9 L     Louisiana   1403857
10 M    Missouri     1996005
11 N    New Hampshire 1963313
12 O    Oregon       1893515
13 P    Pennsylvania 1668232
14 R    Rhode Island 1611730
15 S    South Dakota 1136443
16 T    Texas        1705322
17 U    Utah          1729273
18 V    Virginia     1850394
19 W    Wyoming       1853858
> mydata %>% group_by(Index) %>% mutate(Total=cumsum(Y2015))%>%select(Index, Y2015, Total)
# A tibble: 51 x 3
# Groups:   Index [19]
  Index Y2015 Total
  <chr> <int> <int>
1 A     1916661 1916661
2 A     1979143 3895804
3 A     1647724 5543528
4 A     1329341 6872869
5 C     1644607 1644607
6 C     1330736 2975343
7 C     1718072 4693415
8 D     1627508 1627508
9 D     1410183 3037691
10 F    1170389 1170389
# ... with 41 more rows
> df1 = data.frame(
+   ID = c(1, 2, 3, 4, 5),
+   w = c('a', 'b', 'c', 'd', 'e'),
+   x = c(1, 1, 0, 0, 1),
+   y=rnorm(5),
+   z=letters[1:5]
+ )
> df2 = data.frame(
+   ID = c(1, 7, 3, 6, 8),
+   a = c('z', 'b', 'k', 'd', 'l'),
+   b = c(1, 2, 3, 0, 4),
+   c =rnorm(5),
+   d =letters[2:6]
+ )
> inner_join(df1, df2, by = "ID")
  ID w x      y z a b      c d
1  1 a 1 -0.2002455 a z 1 0.126004 b
2  3 c 0 -2.4777875 c k 3 -2.720019 d
> left_join(df1, df2, by = "ID")
  ID w x      y z a b      c d
1  1 a 1 -0.2002455 a z 1 0.126004 b
2  2 b 1 -0.9808181 b <NA> NA      NA <NA>
3  3 c 0 -2.4777875 c k 3 -2.720019 d
4  4 d 0 -0.1556964 d <NA> NA      NA <NA>

```

```

5 5 e 1 0.1308521 e <NA> NA NA <NA>
> mtcars$model = rownames(mtcars)
> first = mtcars[1:20, ]
> second = mtcars[10:32, ]
> intersect(first, second)
      mpg cyl  disp  hp drat   wt  qsec vs am gear carb
Merc 280    19.2   6 167.6 123 3.92 3.440 18.30 1 0   4   4
Merc 280C   17.8   6 167.6 123 3.92 3.440 18.90 1 0   4   4
Merc 450SE   16.4   8 275.8 180 3.07 4.070 17.40 0 0   3   3
Merc 450SL   17.3   8 275.8 180 3.07 3.730 17.60 0 0   3   3
Merc 450SLC  15.2   8 275.8 180 3.07 3.780 18.00 0 0   3   3
Cadillac Fleetwood 10.4   8 472.0 205 2.93 5.250 17.98 0 0   3   4
Lincoln Continental 10.4   8 460.0 215 3.00 5.424 17.82 0 0   3   4
Chrysler Imperial 14.7   8 440.0 230 3.23 5.345 17.42 0 0   3   4
Fiat 128    32.4   4  78.7  66 4.08 2.200 19.47 1 1   4   1
Honda Civic 30.4   4  75.7  52 4.93 1.615 18.52 1 1   4   2
Toyota Corolla 33.9   4  71.1  65 4.22 1.835 19.90 1 1   4   1
      model
Merc 280    Merc 280
Merc 280C    Merc 280C
Merc 450SE    Merc 450SE
Merc 450SL    Merc 450SL
Merc 450SLC    Merc 450SLC
Cadillac Fleetwood  Cadillac Fleetwood
Lincoln Continental Lincoln Continental
Chrysler Imperial   Chrysler Imperial
Fiat 128             Fiat 128
Honda Civic          Honda Civic
Toyota Corolla       Toyota Corolla
> x=data.frame(ID = 1:6, ID1= 1:6)
> y=data.frame(ID = 1:6, ID1 = 1:6)
> union(x,y)
  ID ID1
1  1   1
2  2   2
3  3   3
4  4   4
5  5   5
6  6   6
> union_all(x,y)
  ID ID1
1  1   1
2  2   2
3  3   3
4  4   4
5  5   5
6  6   6
7  1   1
8  2   2
9  3   3
10 4   4
11 5   5
12 6   6
> setdiff(first, second)
      mpg cyl  disp  hp drat   wt  qsec vs am gear carb
Mazda RX4    21.0   6 160.0 110 3.90 2.620 16.46 0 1   4   4
Mazda RX4 Wag 21.0   6 160.0 110 3.90 2.875 17.02 0 1   4   4
Datsun 710    22.8   4 108.0  93 3.85 2.320 18.61 1 1   4   1
Hornet 4 Drive 21.4   6 258.0 110 3.08 3.215 19.44 1 0   3   1
Hornet Sportabout 18.7   8 360.0 175 3.15 3.440 17.02 0 0   3   2
Valiant       18.1   6 225.0 105 2.76 3.460 20.22 1 0   3   1
Duster 360    14.3   8 360.0 245 3.21 3.570 15.84 0 0   3   4
Merc 240D     24.4   4 146.7  62 3.69 3.190 20.00 1 0   4   2
Merc 230      22.8   4 140.8  95 3.92 3.150 22.90 1 0   4   2
      model
Mazda RX4    Mazda RX4
Mazda RX4 Wag Mazda RX4 Wag
Datsun 710    Datsun 710
Hornet 4 Drive Hornet 4 Drive
Hornet Sportabout Hornet Sportabout

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Valiant          Valiant
Duster 360       Duster 360
Merc 240D        Merc 240D
Merc 230         Merc 230
> df <-c(-10,2, NA)
> if_else(df < 0, "negative", "positive", missing = "missing value")
[1] "negative"      "positive"      "missing value"
> df =data.frame(x = c(1,5,6,NA))
> df %>% mutate(newvar=if_else(x<5, x+1, x+2,0))
  x newvar
1 1      2
2 5      7
3 6      8
4 NA     0
> mydf =data.frame(x = c(1:5,NA))
> mydf %>% mutate(
+   newvar= if_else(is.na(x),"I ammissing",
+                 if_else(x==1,"I am one",
+                 if_else(x==2,"I am two",
+                 if_else(x==3,"I am three","Others"))))
+ )
  x      newvar
1 1 I am one
2 2 I am two
3 3 I am three
4 4 Others
5 5 Others
6 NA I ammissing
>

```