

# Accessing ACS Data Using Missouri Census Data Center Web Tools

Presentation for ACS Data Users Conference. Alexandria, VA, May 12, 2017

# MCDC provides easy access to ACS data

- ▶ The data are for the United States going back to 2005.
- ▶ Access is provided via:
  - Easy web applications for displaying standard profiles:
    - ACS Profile
    - ACS Trends
    - CAPS for ACS
  - ACS Standard Profile Extract Assistant.
  - Direct access to data (our standard profiles and summary tables) via **Uexplore/Dexter** web apps.
  - Custom programming (including ACS/PUMS access).

# ACS Profiles - Data Sets

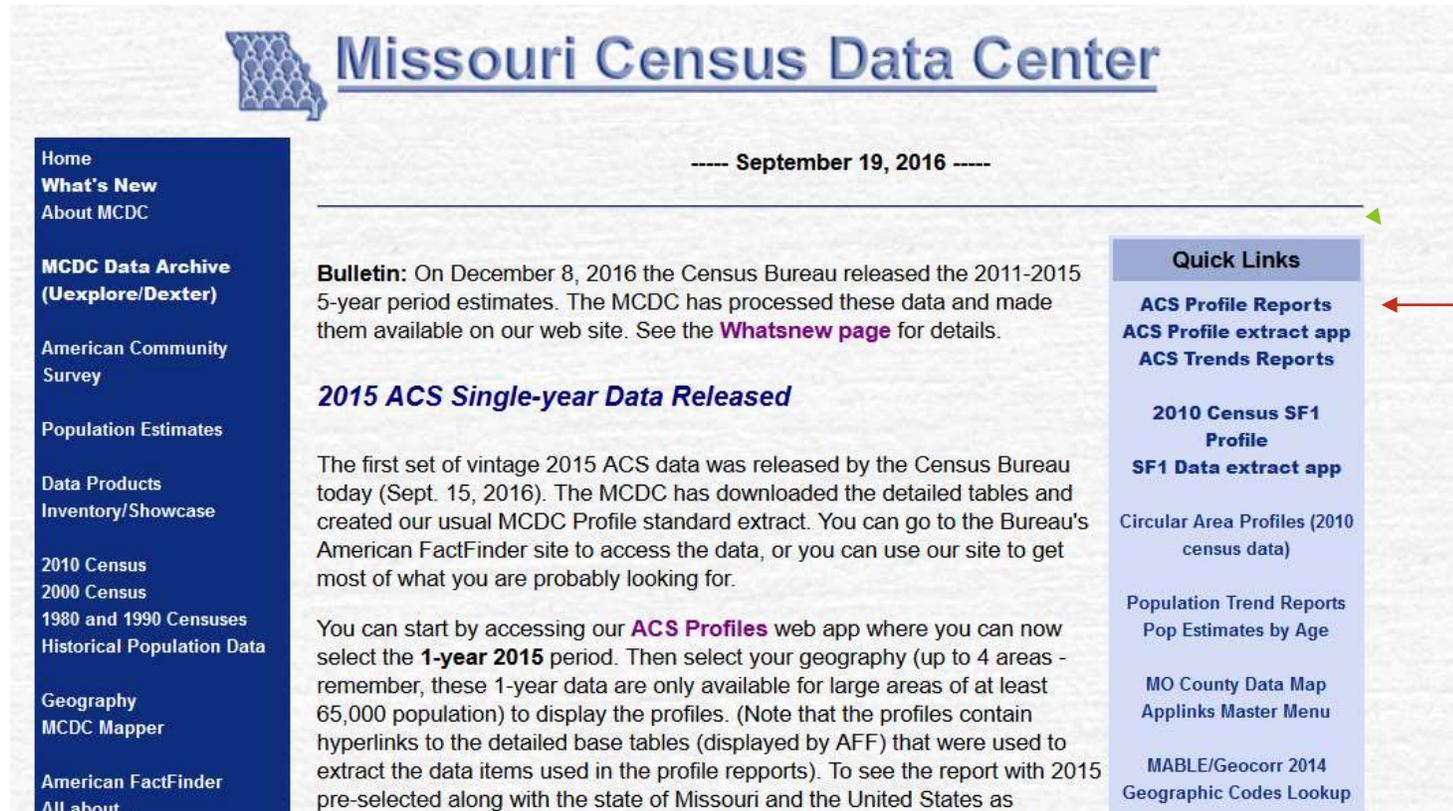
- ▶ These custom extracts include the most-used data items: over **360 data items**, most with corresponding Pct and MOE variables. For example:
  - ▶ Age0\_4, PctAge0\_4, Age0\_4 MOE .
- ▶ Modeled on Census Bureau profiles with same 4 major categories: Demographic, Economic, Social and Housing.
- ▶ Similar but not identical.
- ▶ Variables are derived from the Summary tables. MOEs estimated.
- ▶ Enhanced geography variables including internal point lat-long and areas.
- ▶ 2010 census pop count added for most geographies.

# ACS Profiles - The Web App

- ▶ Dynamic web application that accesses the acsprofiles data set(s).
- ▶ Allows you to select and compare up to **four geographic areas** (can be mixed levels) for a single time period (vintage/period).
- ▶ Provides access to all available data for the entire U.S. going back to vintage 2005.
- ▶ Generated report has many hyperlinks and a critical mouse-over feature to view MOE info.

# Access App Via MCDC Home Page

## First Item in the Quick Links box (upper right)



 **Missouri Census Data Center**

---- September 19, 2016 ----

**Home**  
**What's New**  
About MCDC

**MCDC Data Archive**  
(Uexplore/Dexter)

American Community Survey

Population Estimates

Data Products  
Inventory/Showcase

2010 Census  
2000 Census  
1980 and 1990 Censuses  
Historical Population Data

Geography  
MCDC Mapper

American FactFinder  
All about...

**Bulletin:** On December 8, 2016 the Census Bureau released the 2011-2015 5-year period estimates. The MCDC has processed these data and made them available on our web site. See the [Whatsnew page](#) for details.

**2015 ACS Single-year Data Released**

The first set of vintage 2015 ACS data was released by the Census Bureau today (Sept. 15, 2016). The MCDC has downloaded the detailed tables and created our usual MCDC Profile standard extract. You can go to the Bureau's American FactFinder site to access the data, or you can use our site to get most of what you are probably looking for.

You can start by accessing our [ACS Profiles](#) web app where you can now select the **1-year 2015** period. Then select your geography (up to 4 areas - remember, these 1-year data are only available for large areas of at least 65,000 population) to display the profiles. (Note that the profiles contain hyperlinks to the detailed base tables (displayed by AFF) that were used to extract the data items used in the profile reports). To see the report with 2015 pre-selected along with the state of Missouri and the United States as

**Quick Links**

- ACS Profile Reports**  
**ACS Profile extract app**  
**ACS Trends Reports**
- 2010 Census SF1 Profile**  
**SF1 Data extract app**
- Circular Area Profiles (2010 census data)
- Population Trend Reports  
Pop Estimates by Age
- MO County Data Map  
Applinks Master Menu
- MABLE/Geocorr 2014  
Geographic Codes Lookup

App Uses Dynamic Menus to Lead User Through Choices - mostly geography.  
Usage notes are displayed on initial screen.

The screenshot shows a web browser window displaying the 'ACS Profiles Menu' page. The browser's address bar shows the URL 'https://census.missouri.edu/acs/profiles/'. The page content includes a title 'ACS Profiles Menu', a brief description of the data, a 'Usage notes' section with a list of instructions, a 'Menu' section with a 'Current area selection(s):' header and a 'Select period:' dropdown menu, and a footer with links to sample reports, detailed usage notes, and a tutorial, along with citation and generation information.

**ACS Profiles Menu**

The Missouri Census Data Center's ACS Profiles are summaries of the most frequently accessed data items from the U.S. Census Bureau's American Community Survey summary data products.

**Usage notes**

- Use the form to narrow your results to ACS periods and areas.
- Periods correspond to specific ACS data product releases. (Note that different period lengths offer different geographic availability and statistical reliability. In general, 1-year datasets are available for fewer areas and are less statistically reliable than the longer periods. Refer to the Census Bureau's [ACS guidance page](#) for more info.)
- Areas include all locations and types (states, counties, etc.) available for a given data period. For area types smaller than a state, an additional "Filter by state" selector will help find the desired area.
- You may select areas of different types to display in the profile report. The final report may contain up to four areas of any area type or a mix of area types. Click the "remove" icon (✖) next to a selected area to remove it from the list.
- Additional tips are available by clicking the help icons (?) on the form.

**Menu** Current area selection(s):

Select period: [choose one]

[\[Sample profile report\]](#) [\[Detailed usage notes\]](#) [\[Tutorial\]](#)

Citation: Missouri Census Data Center. (2017). ACS Profiles [dataset application]. Available from <https://census.missouri.edu/acs/profiles/>.

Link to this page: <http://census.missouri.edu/acs/profiles/>

Generated: Sat, 01 Apr 2017 10:19:34 -0500.

# After selecting 4 geographic areas...

The screenshot shows a web browser window with the URL <https://census.missouri.edu/acs/profiles/>. The page is titled "ACS Profiles Menu / Misso..." and contains a form for selecting geographic areas and subjects.

**Menu**

- Select period: 2015
- Select area type: Nation
- Include geographic components? No (default)
- Select up to four areas (in all): [\(or, show a list of these areas\)](#)

**Current area selection(s):**

- Columbia city, Missouri
- Boone County, Missouri
- Missouri
- United States

**Show subjects:**

- Demographic
- Economic
- Social
- Housing

Buttons:

Footer information:

- [\[Sample profile report\]](#) [\[Detailed usage notes\]](#) [\[Tutorial\]](#)
- Citation: Missouri Census Data Center. (2017). ACS Profiles [dataset application]. Available from <https://census.missouri.edu/acs/profiles/>.
- Link to this page: <http://census.missouri.edu/acs/profiles/>
- Generated: Sat, 01 Apr 2017 10:19:34 -0500.
- Application created by the Office of Social and Economic Data Analysis (OSEDA) under contract with the Missouri Census Data Center (MCDC).

## ACS Profile Report: 2015 (1-year estimates)

### For geographies:

[Columbia city, Missouri \(16000US2915670\)](#)

[Boone County, Missouri \(05000US29019\)](#)

[Missouri \(04000US29\)](#)

[United States \(01000US\)](#)

### Other formats

[Export data to Excel](#)

[PDF version](#)

[Variable metadata](#)

[Extract data via Dexter](#)

### Usage notes

- Hover mouse pointer over a value for one second to see MOE/confidence interval info.
- Relative margins of error are also indicated by number font. **BOLD** values: RMOE < 15%; **NORMAL** values: 15% ≤ RMOE < 35%; **LIGHT** values: RMOE ≥ 35%.
- Click the calendar icon next to a geography name (above) to see trend data for that area.
- Click the small chart icon next to a subtitle (below) to view chart(s) of selected data from that table.
- Click a reference table link to see underlying data (provided by the US Census Bureau's American FactFinder application).

Jump to section: [\[Demographic\]](#) [\[Economic\]](#) [\[Social\]](#) [\[Housing\]](#)

### Demographic

Columbia city, Missouri Boone County, Missouri Missouri United States

# Output - part 1

Note links in geographic section at top.

Usage notes explain the use of fonts and MOEs.

Subject	Columbia city, Missouri		Boone County, Missouri		Missouri		United States	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
<b>E3. OTHER INCOME MEASURES</b>								
Universe: Various								
Reference tables: <a href="#">B19301</a> <a href="#">B11010</a> <a href="#">B19202</a> <a href="#">B19214</a> <a href="#">B11001</a> <a href="#">B19325</a> <a href="#">B20017</a>								
Per-capita income	\$25,995		\$26,609		\$27,384		\$29,979	
Nonfamily households	24,683	53.2	32,053	46.4	854,881	36.0	40,677,496	34.4
Median nonfamily income	\$24,970		\$28,222		\$30,092		\$33,617	
Mean nonfamily income	\$39,239		\$41,628		\$42,538		\$49,834	
All full-time workers	40,189		60,294		2,062,094		106,358,684	
All male full-time workers	21,537	53.6	32,020	53.1	1,146,474	55.6	61,032,256	57.4
All female full-time workers	18,652	46.4	28,274	46.9	915,620	44.4	45,326,428	42.6
Median earnings for workers	\$24,998		\$27,552		\$30,139		\$31,394	
Median earnings for male full-time, year-round workers	\$41,265		\$42,334		\$45,897		\$49,938	
Median earnings for female full-time, year-round workers	\$37,886		\$37,809		\$35,759		\$39,940	
<b>E4. POVERTY STATUS OVER THE LAST 12 MONTHS</b>								
Universe: Persons for whom poverty status is determined								
Reference tables: <a href="#">B17001</a> <a href="#">B17021</a> <a href="#">B17010</a> <a href="#">B17007</a> <a href="#">C17002</a>								
Persons for whom poverty status is determined	110,123		165,818		5,901,967		313,476,416	
Persons below poverty	27,040	24.6	30,604	18.5	875,495	14.8	46,153,076	14.7
Persons under 18 for whom poverty status is determined	21,519		35,592		1,362,918		72,454,786	
Persons under 18 in poverty	3,304	15.4	3,718	10.4	275,711	20.2	15,000,273	20.7

## Sample section of report

With over 350 data lines plus headers, universes, and reference table links it is a lengthy report. The pdf version is 16 pages.

# ACS Profiles Features

- ▶ Standard user friendly interface.
- ▶ Allows selecting single time period and geographic areas (up to 4 - mix and match).
- ▶ User can specify which of the 4 major categories they want to see. (DESH)
- ▶ Detailed Usage Notes and Online tutorials walk the user through the interface.
- ▶ Profile reports are organized into over 40 "tables" (subject areas).
- ▶ Most tables have links to graphics (charts) related to the data.
- ▶ There are also links to allow display of Summary tables relevant to the table. (Links to AFF for these table displays)

# Result of clicking table C17002 link

Advanced Search - Search all data in American FactFinder

1 Advanced Search 2 Table Viewer

Result 1 of 1 VIEW ALL AS PDF

C17002 RATIO OF INCOME TO POVERTY LEVEL IN THE PAST 12 MONTHS  
 Universe: Population for whom poverty status is determined  
 2015 American Community Survey 1-Year Estimates

Table View BACK TO ADVANCED SEARCH

Actions: Modify Table Add/Remove Geographies Bookmark/Save Print Download Create a Map

View Geography Notes View Table Notes

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties

Versions of this table are available for the following years:

2015 ▶

2014

2013

2012

2011

2010

2009

2008

2007

2006

	United States		Missouri		Boone County, Missouri		Columbia city, Missouri	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Total	313,476,400	+/-22,840	5,901,967	+/-3,392	168,818	+/-1,472	110,123	+/-1,492
Under .50	20,441,866	+/-156,191	376,734	+/-14,791	19,235	+/-2,846	17,698	+/-2,922
.50 to .99	25,711,211	+/-184,671	496,761	+/-17,942	11,369	+/-2,348	9,342	+/-2,034
1.00 to 1.24	14,398,942	+/-131,281	267,295	+/-13,811	3,745	+/-1,430	3,339	+/-1,357
1.25 to 1.49	14,376,827	+/-118,826	263,771	+/-14,767	6,203	+/-1,744	2,929	+/-1,017
1.50 to 1.94	20,281,908	+/-142,893	407,832	+/-16,770	8,788	+/-2,423	4,693	+/-1,640
1.85 to 1.99	8,238,442	+/-80,426	166,768	+/-10,063	3,959	+/-1,847	1,130	+/-563
2.00 and over	210,027,204	+/-360,096	3,920,806	+/-25,262	112,519	+/-5,401	70,992	+/-4,604

Source: U.S. Census Bureau, 2015 American Community Survey 1-Year Estimates

# ACS Profiles Features (continued)

- ▶ Data cells are displayed in one of 3 fonts to indicate margin of error categories. Bold for reliable, barely visible light gray for cells with relative MOE's of 35% or more.
- ▶ Margin-of-error intervals (including relative MOEs) can be viewed by hovering the mouse over a cell.
- ▶ Links allow converting the output to pdf and Excel formats.
- ▶ A link is provided for Dexter to access the dataset used as source of the report.
- ▶ Links are provided for each geographic area to see a corresponding ACS Trends report for that area (single-year data).
- ▶ A metadata link shows the formulas used to derive each variable (based on summary table cells). A “Universe” column indicates denominator for the Percent value.
- ▶ Does not allow selecting Block Groups.

# ACS Trends Report

- ▶ Format and data very similar to ACS Profiles reports.
- ▶ Instead of up to 4 geographic areas for one point in time you get data for a single geographic area for two selected (non-overlapping) time periods.
- ▶ Link to this app is in the *Quick Links* box. Also linked to from the geographic header section of companion ACS Profiles report.

# Sample ACS Trend Report

MCDC American Community Survey Profiles **Missouri Census Data Center**

## ACS Trend Report: Virginia (04000US51)

Other formats  
[Export data to Excel](#)

### Usage notes

- Hover mouse pointer over a value for one second to see MOE/confidence interval info.
- Margins of error are also indicated by number font. **BOLD** values: MOE < 15%; **NORMAL** values: 15% ≤ MOE < 35%; **LIGHT** values: MOE ≥ 35%.
- Click the small chart icon next to a subtitle (below) to view chart(s) of selected data from that table.
- If the items in the Change column are in **BOLD**, the difference is statistically significant.

Jump to section: [Demographic](#) [Economic](#)

### Demographic

Subject	2015		2011		Change	
	Number	Percent	Number	Percent	Number	Percent
<b>D1. AGE</b> Universe: Total population						
Total population	<b>8,382,993</b>	-	<b>8,096,604</b>	-	<b>286,389</b>	<b>3.54</b>
Under 5 years	<b>510,917</b>	<b>6.1</b>	<b>508,416</b>	<b>6.3</b>	2,501	0.49
5 to 9 years	<b>527,609</b>	<b>6.3</b>	<b>515,172</b>	<b>6.4</b>	12,437	2.41
10 to 14 years	<b>517,600</b>	<b>6.2</b>	<b>516,720</b>	<b>6.4</b>	880	0.17

# ACS Profiles Extract Assistant

- ▶ This web app is for when you want access to (all or selected) ACS Profiles data for many geographic areas.
- ▶ E.g. all counties in the U.S. or all census tracts in Virginia or all block groups in Montana.
- ▶ User friendly front end lets you choose geographic level(s), geographic universe (nation, state or counties), and which of the 40 subject tables.
- ▶ The good/bad news is that it takes you to Dexter to complete the extract.
- ▶ Online video tutorial is linked to.
- ▶ Note “old style” page.

# The Extract Assistant Page (top)

The screenshot shows a web browser window with the following elements:

- Browser Tabs:** SAS Output, http://mcdc.m...20labels.txt, ACS Profile Report: 2015 /... , ACS Profiles Standard Extr...
- Address Bar:** mcdc.missouri.edu/cgi-bin/broker?\_PROGRAM=websas.acsmcdcprofiles\_extract\_menu.sas&\_SERVICE=api
- Page Header:** Missouri Census Data Center logo and title.
- Section Title:** American Community Survey Standard Profile Extract Assistant
- Text:** See the [online video-based tutorial](#) regarding this application.
- Instructions:** This application helps you to make typical choices when generating an extract from the **2015 ACS** 5-year period estimates data (MCDC standard profiles). It generates and presents you with a custom Dexter query form which you can then submit to get your custom extract.
- Form Fields:**
  - Choose a single State or Nation:** A dropdown menu with options from Colorado to Missouri. Missouri is selected.
  - Leave this blank if you want data regardless of county. If you would like to filter your results to keep only geographic entities within a county (or counties) you may do so by choosing it (them) from this list:** A dropdown menu with Missouri counties listed, including Adair MO, Andrew MO, Atchison MO, Audrain MO, Barry MO, Barton MO, Bates MO, Benton MO, Bollinger MO, Boone MO, Buchanan MO, Butler MO, Caldwell MO, Callaway MO, Camden MO, Cape Girardeau MO, and Carroll MO.
  - Choose the geographic unit(s) ("summary levels") for which you would like to extract data:** A dropdown menu.
  - Choose one or more variable groups (tables):** A dropdown menu showing "SF1 items added by MCDC".

# Extract Assistant Page (bottom)

The screenshot shows a web browser window with the following details:

- Browser tabs: SAS Output, http://mcdc.m...20labels.bt, ACS Profile Report: 2015 /... ACS Profiles Standard Extr...
- Address bar: mcdc.missouri.edu/cgi-bin/broker?\_PROGRAM=websas.acsmcdcprofiles\_extract\_menu.sas&\_SERVICE=apj
- Location: Missouri, Carroll MO
- Section: Choose the geographic unit(s) ("summary levels") for which you would like to extract data:
  - Nation (no geographic components) -010
  - Census Region (no geographic components) -020
  - Census Division (no geographic components) -030
  - State (no geographic components) -040
  - County (or equivalent) -050
  - County Subdivision -060
  - Place-County -155
  - Place -160
  - PUMA (2010 defs) - 795
  - Census Tract -140
  - Block Group -150 \*\*
  - 2015 CBSA (Metropolitan/Micropolitan SA) -310
  - 2015 CBSA (Metropolitan/Micropolitan SA)-State -311
  - 2015 CSA (Combined Statistical Area) -330
  - 2015 CSA (Combined Statistical Area)-State -331
  - 2015 Metro Division -314
  - 2015 Metro Division-State -315
  - 2015 NECTA (New England City & Town Area) -350
  - 2015 NECTA (New England City & Town Area)-State -351
  - Urban Area (Urban Cluster/Urbanized Area) -400
- Section: Choose **one or more** variable groups (tables):
  - SF1 Items added by MCDC
    - D1. AGE
    - D2. AGE AND SEX
    - D3. RACE
    - D4. HISPANIC OR LATINO (ANY RACE)
    - E1. HOUSEHOLD INCOME AND BENEFITS(IN 2015 INFLATION-ADJUSTED DOLLARS)
    - E2. FAMILY INCOME AND BENEFITS (IN 2015 INFLATION-ADJUSTED DOLLARS)
    - E3. OTHER INCOME MEASURES (IN 2015 INFLATION-ADJUSTED DOLLARS)
    - E4. POVERTY STATUS OVER THE LAST 12 MONTHS
    - E5. EMPLOYMENT STATUS
    - E6. CHILDREN WITH ALL PARENTS WORKING
    - E7. COMMUTING TO WORK
    - E8. WORKERS BY OCCUPATION
    - E9. WORKERS BY INDUSTRY
    - E10. CLASS OF WORKER
    - E11. INSURANCE COVERAGE
    - S1. HOUSEHOLDS BY TYPE
    - S2. PERSONS BY HOUSEHOLD TYPE / GROUP QUARTERS
    - S3. RELATIONSHIP
    - S4. MARITAL STATUS
    - S5. FERTILITY
    - S6. GRANDPARENTS AS CAREGIVERS
    - S7. SCHOOL ENROLLMENT
    - S8. EDUCATIONAL ATTAINMENT
    - S9. VETERAN STATUS
- Footnote: \* You can choose only a single Level except you can combine the following:
  - 010, 020 and 030
  - 040 050
  - 155 160
  - 310 311 314 315 330 331 350 351
  - 950 960 970
- Checkbox:  Keep the moe (margin of error) variables for the selected tables.
- Footnote: \*\* (BG level data for 2015 has a few missing variables). Note: Some variables are not available at the block group level.
- Button: Run application
- URL at bottom: http://mcdc.missouri.edu/cgi-bin/broker?\_PROGRAM=websas.acsmcdcprofiles\_extract\_menu.sas&\_SERVICE=appdev&st=

# Which takes you to Dexter



## Dexter -- Data Extracter

[Dexter Quick Start Guide](#)

Section headers are links to the relevant sections of [online help](#).

**Data Set:** [/pub/data/acs2015](#) -  : . rows/observations, 998 columns/variables (appx)

See [detailed metadata](#) for this dataset.

Rankster option:  -or- skip dexter and go straight to [rankster](#)

Quick Look

### I. Choose Output Format(s)

- Delimited File:  Comma ("csv")  Tab-delimited  none
- Listing/Report:  Plain text  PDF  HTML  none (**Not** recommended for over 30 variables)
- Database File:  DBF  SAS dataset (Windows)  none

Check here  if requesting *only* a report in plain text or html format that you want piped directly to your browser.

### II. Choose rows (observations) to keep by specifying a filter.

	Variable/Column	Operator	Value
<input type="checkbox"/> (	<input type="text" value="SumLev - Geographic Summary Level"/>	<input type="text" value="In List (Separate items with :)"/>	<input type="text" value="040:050"/>
		<input checked="" type="radio"/> And <input type="radio"/> Or <input type="radio"/> And Not	
<input type="checkbox"/> (	<input type="text" value="State"/>	<input type="text" value="In List (Separate items with :)"/>	<input type="text" value="29"/>

# CAPS ACS Reports

- ▶ Circular Area Profiling System.
- ▶ There is actually a family of CAPS apps that generate data for n-mile circular areas for various sets of data (2000 STF3, 2010 STF1, ACS latest vintage 5-year estimates). The apps link to one another. A [capsindex](#) page lets you choose.
- ▶ User enters a site (lat-long coordinates & optional name) & a list of (up to 5) radii.
- ▶ A link to **google maps** makes it easy to get coordinates based on a street address.
- ▶ Output is a set of reports (one for each radius specified) that contain the same basic data that you see from our **ACS Profiles** app but now aggregated to approximate a circular area.
- ▶ *Format* of the report(s) is different from **ACS Profiles** output (no frills here) - but it's the same data. (Currently estimates only, no MOEs)
- ▶ Uses the latest available 5-year period estimates. ACS data at the census tract or block group level is aggregated to estimate the circular area.
- ▶ Not recommended for radii of less than 3 miles. (But that doesn't stop anyone)
- ▶ The latest (beta) version uses a new algorithm to enhance the way we include or exclude a tract/BG from the aggregation. Uses "BBIA"="Block-based Inclusion Algorithm".

# ALPS and CAPS

- ▶ This is of interest to users who want to see a lot (i.e. thousands) of circular areas profiled.
- ▶ The Address List Processing System (ALPS) provides processing of files with street addresses and/or latitude-longitude coordinates.
- ▶ We do not allow users on our web site to run more than 500 CAPS runs in a day (we add them to a deny-service list).
- ▶ ALPS products are created by MCDC/OSEDA staff for customers on a fee basis.
- ▶ For example, \$310 for a file with 5000 locations .
- ▶ A typical CAPS with ACS data run via the web takes about 2 or 3 seconds to complete.
- ▶ Using an enhanced batch-based algorithm for handling large number of points we have found that we can process about 160 locations per second (!) This is with the enhanced BBIA algorithm.
- ▶ ALPS needs to be automated and marketed and cost less.

# Accessing ACS Data Using Uexplore/Dexter

- ▶ If you already know how these utility applications (Uexplore and Dexter) work then this is a very viable tool, especially when accessing the mcdcprofiles data sets.
- ▶ Accessing the Base (i.e “Summary”) tables is more of a challenge.
- ▶ We did a webinar on this topic several years ago. We need to do an update.
- ▶ Not nearly enough time to get into this today.

# Key Neighborhood Indicators Using ACS

- ▶ We have developed a crude prototype of a system that uses mostly ACS data to define key indicators at the census tract level.
- ▶ Involves use of thematic/menu maps to display data and provide access to brief narrative summaries of what a neighborhood is “like”.
- ▶ See more detailed presentation at MCDC web site.

# Links

- ▶ This presentation is available at <http://mcdc.missouri.edu/tutorials/acskonf2017/acskonf2017.ppt>
- ▶ A web page with links to pages referenced in the presentation (plus a few more that we did not have time for) is available at <http://mcdc.missouri.edu/tutorials/acskonf2017/acskonflinks.shtml> .

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