

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

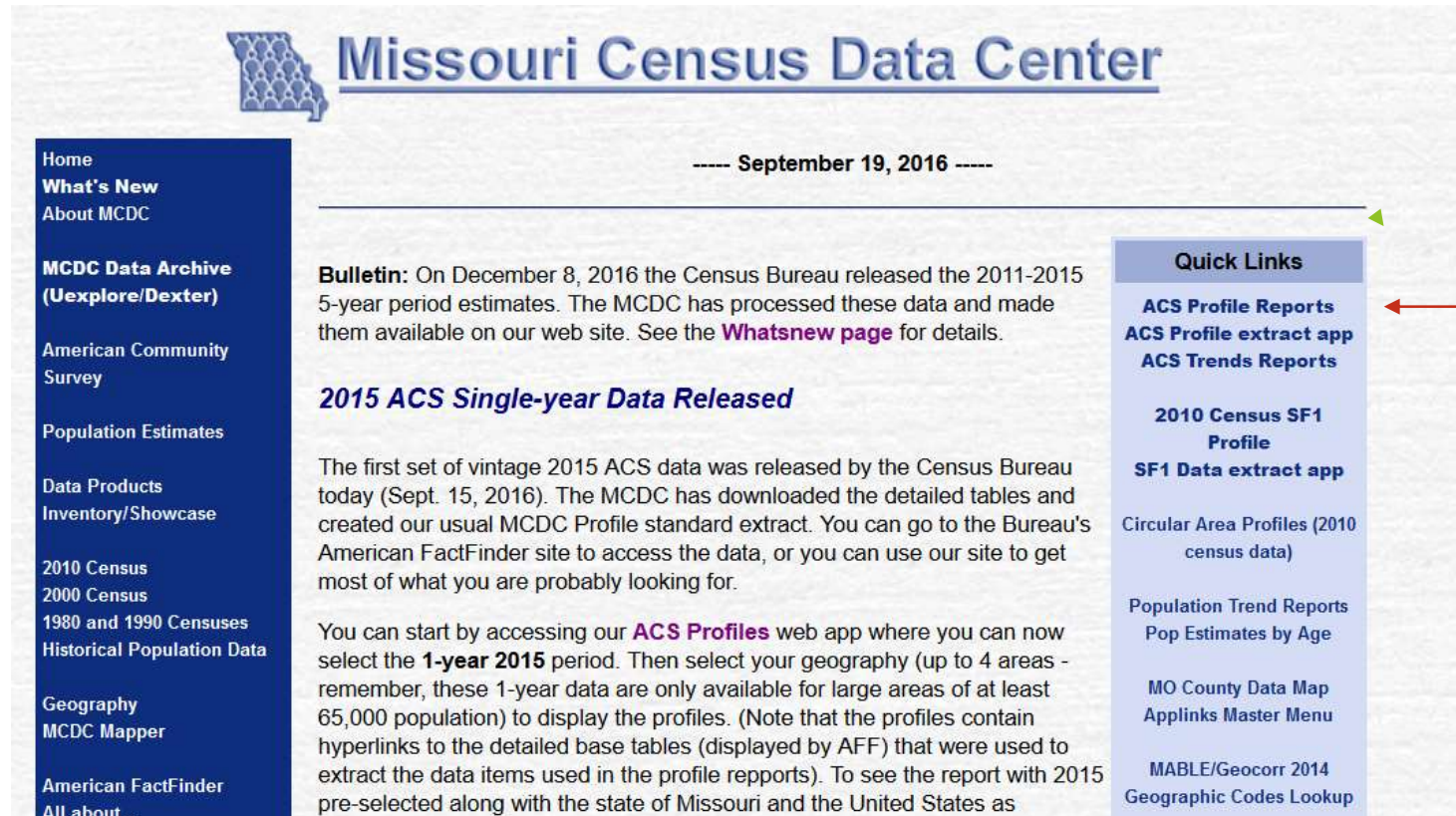
- ▶ These custom extracts include the most-used data items: over **360 data items**, most with corresponding Pct and MOE variables. For example:
 - ▶ Age0_4, PctAge0_4, Age0_4 MOE .
- ▶ Modeled on Census Bureau profiles with same 4 major categories: Demographic, Economic, Social and Housing.
- ▶ Similar 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, and a section titled "Usage notes" with a list of instructions. Below the notes is a "Menu" section with a "Current area selection(s)" header and a "Select period:" dropdown menu. At the bottom, there are links for "Sample profile report", "Detailed usage notes", and "Tutorial", along with a citation and a "Generated" timestamp.

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: <https://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...".

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: [Generate report](#) [Clear selections & start over](#)

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 |
| E3. OTHER INCOME MEASURES | | | | | | | | |
| Universe: Various | | | | | | | | |
| Reference tables: B19301 B11010 B19202 B19214 B11001 B19325 B20017 | | | | | | | | |
| 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 | |
| E4. POVERTY STATUS OVER THE LAST 12 MONTHS | | | | | | | | |
| Universe: Persons for whom poverty status is determined | | | | | | | | |
| Reference tables: B17001 B17021 B17010 B17007 C17002 | | | | | | | | |
| 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

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 1.84 | 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 |
| D1. AGE Universe: Total population | | | | | | |
| Total population | 8,382,993 | - | 8,096,604 | - | 286,389 | 3.54 |
| Under 5 years | 510,917 | 6.1 | 508,416 | 6.3 | 2,501 | 0.49 |
| 5 to 9 years | 527,609 | 6.3 | 515,172 | 6.4 | 12,437 | 2.41 |
| 10 to 14 years | 517,600 | 6.2 | 516,720 | 6.4 | 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 URL `mcdc.missouri.edu/cgi-bin/broker?_PROGRAM=websas.acsmcdcprofiles_extract_menu.sas&_SERVICE=api`. The page title is "Missouri Census Data Center" and the main heading is "American Community Survey Standard Profile Extract Assistant". Below the heading, there is a link to an "online video-based tutorial". The main content area contains two columns of dropdown menus for selecting geographic units and variable groups.

Choose a single State or Nation:

- Colorado
- Connecticut
- Delaware
- District of Columbia
- Florida
- Georgia
- Hawaii
- Idaho
- Illinois
- Indiana
- Iowa
- Kansas
- Kentucky
- Louisiana
- Maine
- Maryland
- Massachusetts
- Michigan
- Minnesota
- Mississippi
- Missouri

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:

- Missouri
- 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
- Carroll MO

Choose the geographic unit(s) ("summary levels") for which you would like to extract data:

Choose **one or more** variable groups (tables):

- SF1 items added by MCDC

Extract Assistant Page (bottom)

The screenshot shows a web browser window with the URL `http://mcdc.missouri.edu/cgi-bin/broker?_PROGRAM=websas.acsmcdcprofiles_extract_menu.sas&_SERVICE=app`. The page is titled "Extract Assistant" and is for the state of Missouri and Carroll MO. It features two main sections for data selection:

- Choose the geographic unit(s) ("summary levels") for which you would like to extract data:** A list of geographic units is shown, with "State (no geographic components) -040" selected. Other options include Nation, Census Region, Census Division, County Subdivision, Place-County, Place, PUMA, Census Tract, Block Group, and various CBSA and NECTA levels.
- Choose one or more variable groups (tables):** A list of variable groups is shown, including SF1 Items added by MCDC, D1. AGE, D2. AGE AND SEX, D3. RACE, D4. HISPANIC OR LATINO (ANY RACE), E1. HOUSEHOLD INCOME AND BENEFITS, E2. FAMILY INCOME AND BENEFITS, E3. OTHER INCOME MEASURES, E4. POVERTY STATUS, 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, and S9. VETERAN STATUS.

Additional information includes a note about combining geographic levels (010, 020 and 030; 040 050; 155 160; 310 311 314 315 330 331 350 351; 950 960 970) and a checkbox for "Keep the moe (margin of error) variables for the selected tables." A "Run application" button is located at the bottom of the form.

The URL for accessing this page is: `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"/> (| SumLev - Geographic Summary Level | In List (Separate items with :) | 040:050 |
| | | <input checked="" type="radio"/> And <input type="radio"/> Or <input type="radio"/> And Not | |
| <input type="checkbox"/> (| State | In List (Separate items with :) | 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> .

Contact Info

John Blodgett

OSEDA -- 231 Heinkel Building

University of Missouri

Columbia, MO 65211

blodgettj@missouri.edu

573 884-2727