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PAS MEMO

Data-Driven Housing Assessments and Action Plans, Part 1: The Data

By Mel Jones

Housing is a core component of our communities. Oldenburg (1989) deemed the home the "first place" in his discussion of communities and social environment. Academic research continually reaffirms and expands the importance of the home for stability, development, and security for both families and individuals.

Despite its importance, many communities assess their housing stock only on a development-by-development basis or in response to funding requirements such as consolidated planning for HUD. Local government staff often face barriers related to the accessibility of housing data or the challenge of combining estimates and information from multiple databases.

This *PAS Memo* is a guide to the most important publicly available housing data sources for planners. It offers some important notes about how to use them and ways in which each source contributes to a thorough housing needs assessment. Although this *Memo* will introduce some analytical techniques, a follow-up article (Part 2) will discuss analytical techniques in more depth and explore ways municipalities can use them to set goals, inform policymakers, and to develop or assess programs.

Planners can use the information in these articles to build a case for conducting regular housing needs assessments. Further, data and assessment techniques discussed in this and the subsequent *Memo* should be applicable in existing planning efforts, including comprehensive planning, transportation planning, economic development strategy, and required planning for HUD programs.

What Is an Adequate Housing Supply?

There are number of vantage points from which to assess the availability, affordability, and appropriateness of the housing stock in a municipality or, often more appropriately, in a region that represents a housing market. Most homebuyers and renters search for units with their commute in mind, so commute sheds are good approximations of housing markets. The Census defines MSAs based on commuting patterns, so MSAs provide a practical geography for housing analysis. Questions to ask include the following:

- Is the housing stock appropriate and affordable for the current residents of the jurisdiction?
- Is housing in the jurisdiction or region accessible for future residents? Think about residents who will age in place, growing families, changing demographics, and the workforce.
- Does the current housing stock (its number, composition, age, and location) pose any weaknesses or threats to the existing community or its future?

Each of these questions is related and each data source discussed below has information to help answer all three questions. For example, data from both the U.S. Census American Community Survey (ACS) and the U.S. Department of Housing and Urban Development (HUD) Consolidated Housing Affordability Strategy (CHAS) provides information on housing affordability for current residents, housing costs incurred by current residents, and thereby the affordability of the housing stock by county or county-equivalent jurisdictions. Housing cost measures and affordability estimates can be compared to data regarding market wages and salaries available from the U.S. Bureau of Labor Statistics (BLS) to assess which workers can access jurisdiction housing.

If large numbers of workers cannot afford to live in a particular jurisdiction, it follows that those workers commute. If transportation infrastructure is sufficient to handle the volume of commuting and there is enough affordable housing in nearby jurisdictions, traffic congestion should be minimal and there should be few households that are burdened by housing costs. However, if too little affordable and appropriate housing is available, a number of logical weaknesses and threats can follow. For example, if too much of the jurisdiction's work-

force has to commute too far, the region may first experience severe impacts on traffic congestion and later, the mismatch between housing and jobs may limit the economic growth of the jurisdiction as workers and employers begin to internalize commuting costs and relocate to or expand in more cost-effective places.

Alternatively, households may choose to accept housing cost burdens. HUD coined the term *cost burden* to describe households that need more affordable housing: cost-burdened families pay more than 30 percent of their income for housing and may have difficulty affording necessities such as food, clothing, transportation, and medical care (U.S. HUD 2017). It follows that such families have little extra income to invest in their property or save for emergencies. Cost burden among owners can lead to a deteriorating housing stock followed by lower property values. Cost-burdened renters may accept substandard housing conditions and thereby encourage the persistence of absentee ownership and property deterioration resulting in zoning and building code violations.

Conducting a Housing Needs Assessment: What Should You Consider?

A housing needs assessment is a supply and demand analysis for housing. On the supply side, consider housing attributes like number of rooms or number of bedrooms, as well as the type of housing—particularly whether it is single-family or multifamily, the age and condition of the building, its location, and its associated costs for the resident household. Keep in mind that the housing supply or *housing stock* is "sticky"; it cannot change quickly. Homes built decades ago to respond to housing needs at that time are still in use today. This sticky nature of housing is one reason that planning for future housing needs is so important.

On the other hand, demand is very fluid. Households can move from one house to another and from one jurisdiction to another relatively quickly. When assessing housing demand, the most important aspect of households to consider is what they can afford. Use household income and transportation costs to understand how much housing cost a household can afford.

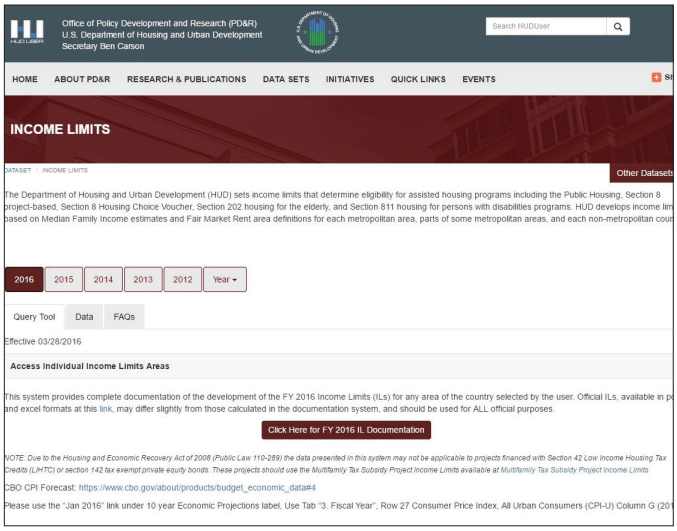
Family type and other demographic attributes such as householder age and presence of children also help us to understand what kinds of housing local residents or workers are or will be looking for. For example, the entire nation is beginning to observe the new and shifting housing preferences of two huge generations: millennials, born from 1980 to 1997, and baby boomers, born from 1946 to 1964. The oldest millennials are buying their first homes while the youngest are going to college or just graduating and beginning their careers. Most baby boomers have already retired or are approaching retirement. If they are not already dealing with housing challenges related to aging, they are planning for the future and many of them are downsizing. As they downsize, developers are notic-

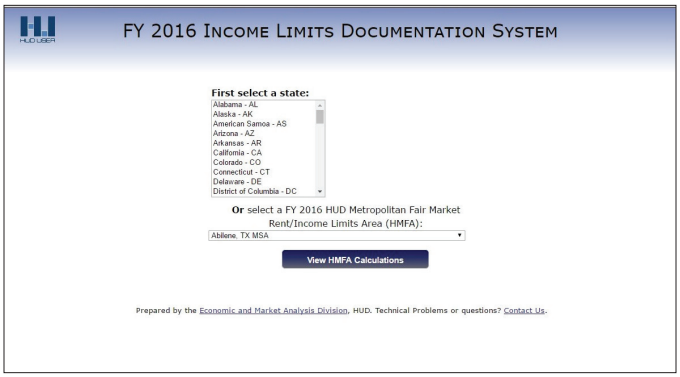
Data Sources for Housing Need Assessments

The data sets listed below are the best publicly available sources of information to assess housing availability and housing needs. This *Memo* discusses them in more detail and suggests some basic analytical approaches.

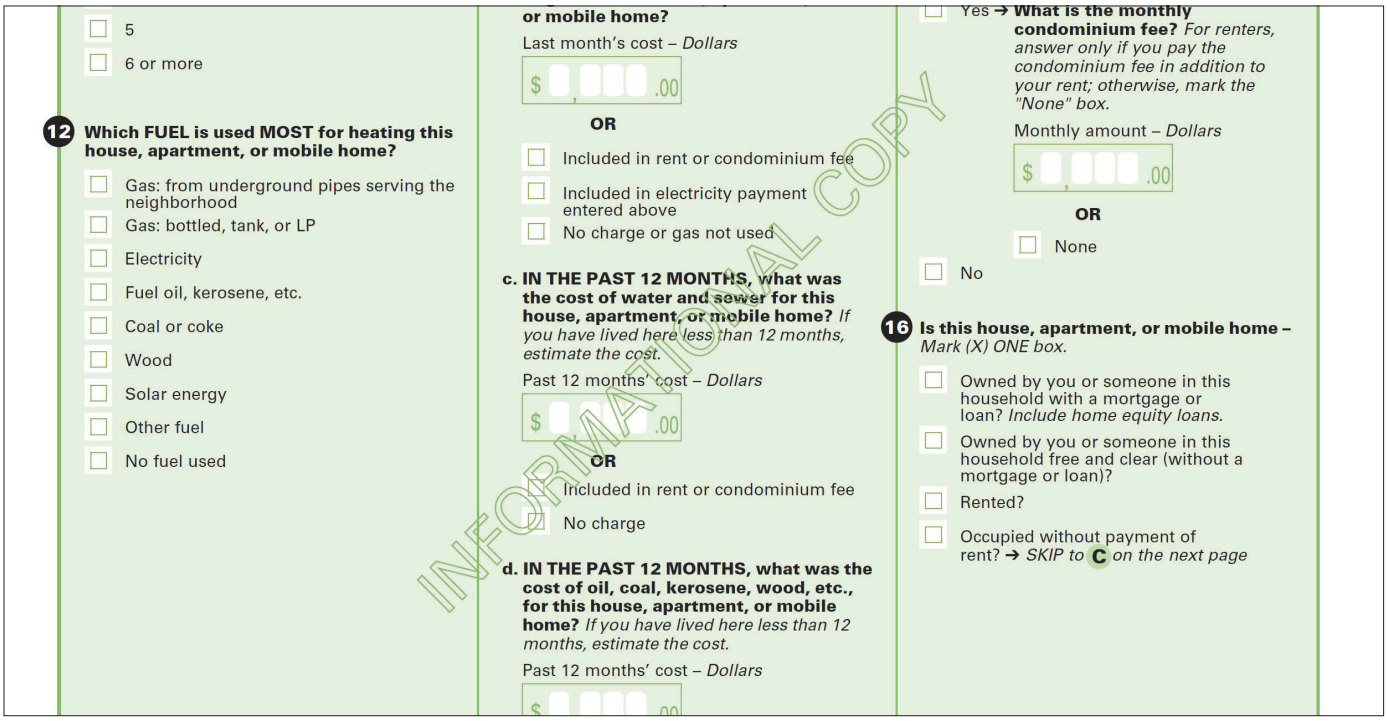
- **American Communities Survey (ACS)** is an ongoing survey of households conducted by the U.S. Census Bureau. The ACS provides information about characteristics of both individuals and households. The U.S. Census Bureau presents this information in published tables available in American Factfinder.
- **Consolidated Housing Affordability Strategy (CHAS)** data is a special tabulation of the ACS sponsored by the U.S. Department of Housing and Urban Development. It provides estimates of households by income level and housing costs as well as information about the affordability and occupancy of the housing stock. The CHAS query tool provides easy-to-access summary data, and the full set of estimates is available for download.
- The **U.S. Bureau of Labor Statistics (BLS)** provides annual earnings data by occupation and industry. Analysts can use annual earnings data to determine how much housing the average employee in a particular occupation or industry can afford. The BLS Occupational Employment Statistics (OES) survey provides wage data for by occupation MSAs. The BLS Quarterly Census of Employment and Wages (QCEW) provides wage data by industry for counties and county-equivalent jurisdictions.
- The **Location Affordability Index (LAI)** from HUD and the U.S. Department of Transportation estimates of the percentage of a family's income dedicated to the combined cost of housing and transportation in a specific location. This interactive tool allows users to choose among eight different family profiles, from a very low-income individual to a dual-professional family, to account for variations between households, neighborhoods, and regions and better analyze affordability.
- The **Longitudinal Employer-Household Dynamics (LEHD)** program is part of the Center for Economic Studies at the U.S. Census Bureau. The LEHD OnTheMap tool provides information about workers and commuting, including how many people live and work in a jurisdiction, how many people living in that jurisdiction commute out of the jurisdiction to work, and how many people commute in from other jurisdictions.

This *Memo* and Part 2 of this series describe the basic ways to use this data to conduct a housing needs assessment. Part 2 will provide important information about data reliability and additional analytical methods. This primer offers basic guidance in using this data in housing needs assessments, but these resources are very rich and the information they contain can be used in many ways.





Clockwise from right: Figure 1. The HUD USER Income Limits webpage (U.S. HUD PD&R 2017b); Figure 2. The HUD USER Income Limits Documentation webpage (U.S. HUD PD&R 2017a); Figure 3. 2016 ACS Questionnaire, Housing Question 16 (U.S. Census 2016).



ing a coincidence: many boomers are buying the houses that were built for millennials (Lawrence 2016; Rappaport 2015).

Publicly available data sources provide estimates that can help us understand the local and regional housing stock as well as the needs and preferences of local and regional households. This *Memo* will introduce resources from the ACS, CHAS, U.S. BLS, the Location Affordability Index (LAI), and Location Employment Household Dynamics (LEHD) OnTheMap (see sidebar for an overview).

To best utilize these resources, it is important to understand some common language, measurements, and benchmarks that will help you analyze the estimates provided. First, as discussed above, when a household cannot afford its current housing the household is considered *cost burdened*. Households that pay more than 30 percent of their income for housing are considered cost burdened and households that pay more than 50 percent of their income for housing are *severely cost burdened*. While cost-burdened households may have difficulty affording other necessities, severely cost-burdened household have to make tough choices between housing and other necessities like food and medical care. Both the ACS and CHAS data estimate the number of cost-burdened and severely cost-burdened households.

Next, HUD provides *income limits* annually by household size for Fair Market Rent/Income Areas. The income limits can be queried by county, metropolitan statistical area (MSA), or state. These limits act as functional definitions:

- *Extremely low-income households*: households with incomes less than 30 percent of area median income (AMI)

- *Very low-income households*: households with incomes greater than 30 percent of AMI, but less than 50 percent of AMI
- *Low-income households*: households with incomes greater than 50 percent of AMI and less than 80 percent of AMI
- *Moderate-income households*: households with incomes greater than 80 percent of AMI, but less than 100 percent or 120 percent of AMI. Definitions for moderate-income households are generally defined by local program requirements.

Although HUD only provides limits for one- to eight-person households at 30, 50, and 80 percent of AMI, you can use the methodological documentation found on HUD's Income Limits webpage (Figure 1) to calculate income limits for other income levels and household sizes. The organization of the HUD USER website changes often, however, so searching for "HUD Income Limits" in an internet search engine can be a more effective way to find this page than trying to navigate the HUD USER site.

Once you have reached the income limits site, choose the year corresponding to the data you are using. If you are using 2015 ACS estimates, us the 2015 income limits. If you are using 2009–2013 CHAS data, use the 2013 income limits. After you have chosen the appropriate year, click the button to navigate the Income Limits Documentation and choose your geography (Figure 2). To find methodological documentation, click on "explanation" under the "Very Low (50%) Income" heading or "click here" for years 2013 and earlier. Note that the method HUD uses to calculate income limits changes from year to year, so applying the methods used in 2014 will not produce the correct limits for 2015.

Last, both ACS and CHAS data tables use the term *tenure* to describe households' classification as renters or owners, including owners with a mortgage and owners without a mortgage. Although owner classifications refer to mortgage status, ACS has phrased the question from which this information is drawn more generally, so "mortgage" includes any home loan—for example, chattel loans for mobile and manufactured homes. Further, this ACS question asks if the owner owns their home "free and clear," which offers a more precise definition of "without a mortgage" that excludes other kind of home financing (Figure 3).

ACS survey questions can often help an analyst better interpret data tables by allowing the analyst to better use intuition about how a respondent may interpret the question. See the "Questions on the Form and Why We Ask" resource for further information.

Using Publicly Available Data Resources

This section discusses some of the most useful public data resources available for housing needs assessments and provides some direction regarding their use and more valuable components. This information will help you familiarize yourself with the resources in the context of a housing needs assessment. After working with the data in the ways described below and in the next *Memo*, you should be well on the road to conducting a self-directed housing needs assessment. Overcoming the perceived inaccessibility of this data is a matter of familiarizing yourself with the language and format of these resources and thereby building an intuition about how and where to look when you need additional information.

These resources are extremely useful but do not replace municipal administrative data. For example, the ACS provides an estimate of housing units by geography, but this *estimate* is developed from a sample and is therefore less accurate than local real estate assessment data, which provides a *census* or true *count* of residential housing units. In addition, data analysis can never replace the intuition planning staff have gained from working in a locality and interacting with residents and community stakeholders. Use that valuable intuition to guide your interpretation of the numbers while also using the numbers to guard against bias.

American Community Survey (ACS)

The ACS American Factfinder tool will be your most accessible public resource for housing stock characteristics and offers a basic snapshot of the housing stock: age, type, tenure, and cost. The ACS Public Use Microdata Sample (PUMS) is a superior resource when the Public Use Microdata Area (PUMA) aligns with your jurisdiction or region of interest. A PUMA must have at least 65,000 people, so this data set is less useful for smaller or less densely populated areas. Further, PUMA boundaries are set by state data centers and may change over time, so PUMS data is often less useful for trend analysis.

The housing stock tables you will find most valuable from ACS are the following:

- **B25032: Tenure by Units in Structure.** Allows the reader to tabulate the number of occupied single-family homes, mobile homes, and the number of units in multifamily buildings by building size and determine what proportion of these units are rented versus owner occupied.
- **B25024: Units in Structure.** Provides similar information about housing type, but includes vacant units as well. Since this table is not nested by tenure, it may provide estimates that are more reliable. The follow-up article, Part 2, will discuss how to assess reliability of ACS estimates.
- **B25034: Year Structure Built.** Provides the number of units by the decade in which they were built. This data is self-reported by survey respondents who may not know exactly when their house or building was built, so this data may be less reliable than real estate assessment data.
- **B25127: Tenure by Year Structure Built by Units in Structure.** Allows the user to estimate the age of the housing stock and the proportion of the housing stock that was built in each decade by type (single-family, multifamily, and mobile homes). Note that the "mobile homes" category includes both mobile homes built before the 1976 HUD code and manufactured homes built to the 1976 HUD code. The table also nests year built and units in structure within tenure designations (renter or owner occupied), so by comparing the share of rented units within a particular year category to the share of rented units in the total occupied housing stock, you can tell if older, newer, or units built in a particular time period are

disproportionately renter- or owner-occupied. Part 2 of this *Memo* series will provide a more in-depth discussion of *disproportionality* and its application.

- **B25041: Bedrooms**. The number of bedrooms in a unit are the best measure of housing unit size available in the ACS. Although ACS also provides the number of rooms per unit, without knowing the size and type of room, "number of rooms" remains somewhat ambiguous. (Number of rooms is more relevant as the CHAS data applies it to calculate *overcrowding*, defined by HUD as more than one person per room. If a housing unit has more than 1.5 persons per room, HUD considers the unit *severely overcrowded*.) The number of bedrooms can be compared to family size to determine whether the housing stock has the potential to meet growing demand for specific unit types, such as 1-bedroom or efficiency (0-bedroom) units.
- **B25056: Contract Rent**. Provides the number of units by level of contract rent.
- **B25063: Gross Rent**. Provides the number of units by level of gross rent (contract rent and utilities).
- **B25064: Median Gross Rent**. Provides the median gross rent for the jurisdiction.
- **B25088: Median Selected Monthly Owner Costs (Dollars) by Mortgage Status**. Provides median owner costs for the selected geography for all owners, as well as subcategories of owners with a mortgage and owners without a mortgage.
- **B25087: Mortgage Status and Selected Monthly Owner Costs**. Provides the number of units by level of housing costs for owners with a mortgage and owners without a mortgage. Note that these owner costs include mortgage payment, taxes, insurance, and utilities.

The household tables you will find most valuable from the ACS are the following:

- **B19001: Households by income**. Provides number of households by income level for the selected geography.
- **B25070: Gross Rent as a Percentage of Household Income**. Provides the number of households by percentage of income spent on rent in 5 to 10 percent increments. This table can be used to find number of cost-burdened and severely cost-burdened renters, as defined above.
- **B25091: Mortgage Status by Selected Monthly Owner Costs as a Percentage of Household Income**. Provides the number of households by percentage of income spent on owner costs in 5 to 10 percent increments for both owners with a mortgage and owners without a mortgage. This table can be used to find number of cost-burdened and severely cost-burdened owners.
- **B25106: Tenure by Housing Costs as a Percentage of Household Income in the Past 12 Months**. Combines the information in the previous two tables.
- **B11016: Household Type by Household Size**. Provides an estimate of households by size (one person through seven or more people) for family (two or more related individuals) and nonfamily households.
- **B25007: Tenure by Age of Householder**. Provides the number of households by tenure and the age of the householder (the person in whose name the housing unit is rented or owned and usually the person who responded to the survey).
- **B25011: Tenure by Household Type (Including Living Alone) and Age of Householder**. Provides similar information to the previous table but indicates the household type: married-couple family, family with a male householder and no wife present, nonfamily households, individuals living alone, etc.

Note that the more tables are nested, the smaller the sample the estimates are based on and the larger the margin of error. Highly nested tables such as table B25127 will have fewer reliable estimates and may be useful only in large or densely populated jurisdictions.

To access this data, navigate to factfinder.census.gov and choose "Advanced Search" from the menu bar at the top of the page (or choose "Advanced Search" and "SHOW ME ALL" from the left-hand menu). Then enter the table number in the search bar and choose your geography.

Note that the way you choose the geography may influence the data query. For example, choosing "Geography" and "MSA" as a subcategory of "State" will return data for the part of the MSA that is located within that state, not the entire MSA if the MSA crosses state boundaries. You can also select the sample you want to use, 1-year or 5-year, by filtering under "Topics" and "Dataset." Once you become accustomed to the language of housing table titles, you will have more success searching for data by keyword.

Consolidated Housing Affordability Strategy (CHAS)

The CHAS data offers unique housing affordability data and information about overcrowding that is not available in the ACS unless it is reconstructed from the PUMS data.

CHAS estimates allow the user to compare the number of housing units affordable to households within extremely low-, very low-, low-, and moderate-income categories to the number of households within each of these income categories. Housing units and households are sorted into these categories based on size, income, rent, and value or owner costs.

Further, CHAS provides estimates of occupant income, so the user can discern what proportion of units affordable to households in one income group are occupied by households in another income group. For instance, the user can discern how many housing units that are affordable to low-income households are occupied by households with incomes greater than the area median income. The market does not pair affordable units to the households that need them and households often choose to spend less than 30 percent of their income on housing, so if an appropriate unit is available for less, higher-income households that compete more effectively for housing based on income and credit or rental history will occupy housing units

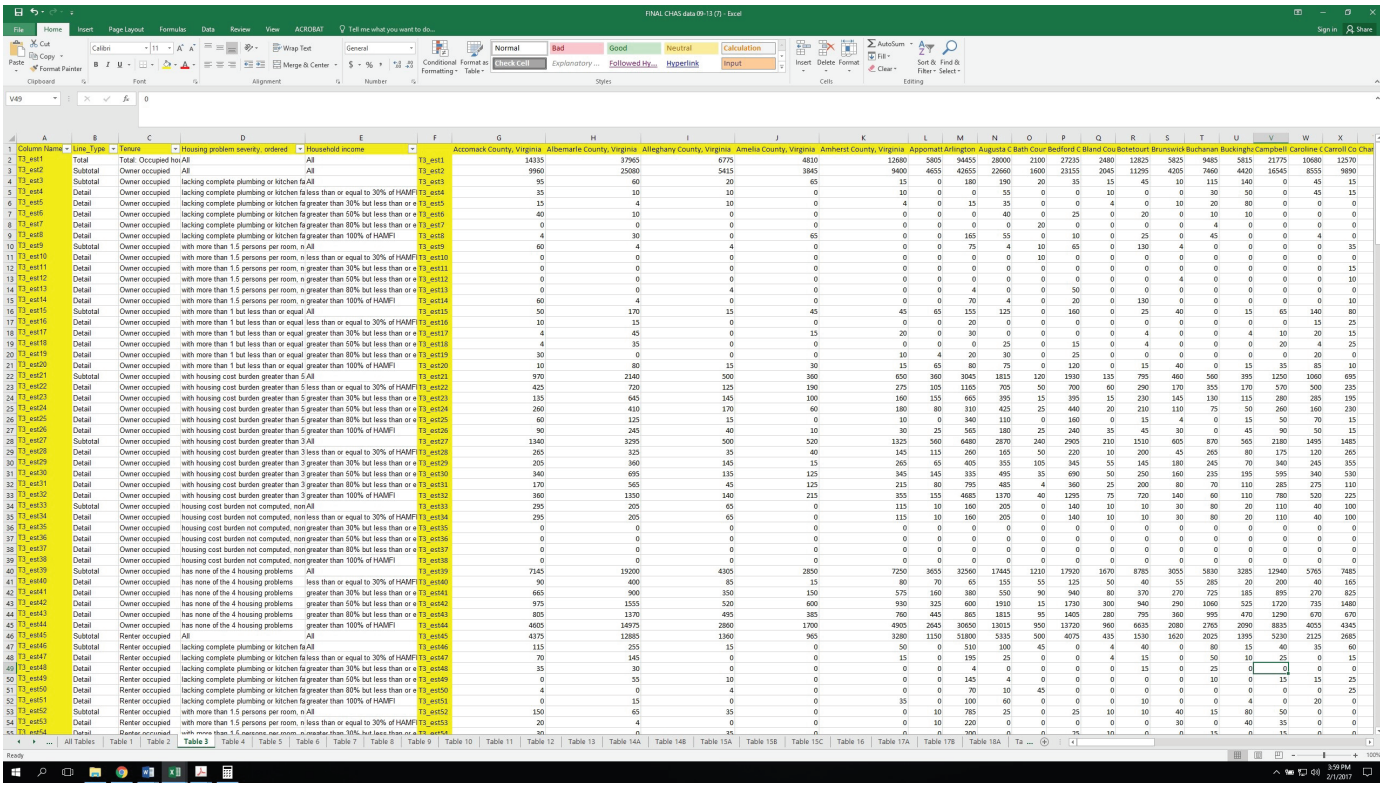


Figure 4. Filtering CHAS data in a spreadsheet (Author).

that are affordable to lower-income households. These households effectively crowd out lower-income households. From another perspective, households that cannot find affordable housing because the supply is too limited may be "forced" to accept housing cost burdens to obtain housing at all. Hence, extremely low-income households often occupy housing that is affordable only to households in higher-income groups.

The most valuable CHAS tables are tables 3, 14A, 14B, 15A, 15B, and 15C. These tables can be used to identify housing affordability gaps based on the affordability of the stock, the occupancy of the stock, and the number of available (vacant for-rent and for-sale) units by affordability. For example, the total number of units affordable to very low-income households (households with incomes less than 50 percent of AMI) can be estimated by summing:

- Vacant affordable units
  - **Table 14A, Estimate 4 (T14A_est4):** the estimate of vacant, for-sale units that have complete kitchen and plumbing facilities (i.e., not including rented rooms or certain accessory units) with a home price affordable to households with incomes less than 50 percent of AMI
  - **Table 14B, Estimate 4 (T14B_est4):** the estimate of vacant, for-rent units that have complete kitchen and plumbing facilities with a rent that is affordable to households with incomes less than 30 percent of AMI
  - **Table 14B, Estimate 8 (T14B_est8):** the estimate of vacant, for-rent units that have complete kitchen and plumbing facilities with a rent that is affordable to households with incomes greater than 30 percent of AMI, but less than 50 percent of AMI

- And occupied affordable units
  - **Table 15A, Estimate 4 (T15A_est4):** the estimate of owner-occupied units with a mortgage, complete kitchen and plumbing facilities, and a home value affordable to households with incomes less than 50 percent of AMI
  - **Table 15B, Estimate 4 (T15B_est4)**: the estimate of owner-occupied units with no mortgage, complete kitchen and plumbing facilities, and a home value affordable to households with incomes less than 50 percent of AMI
  - **Table 15C, Estimate 4 (T15C_est4):** the estimate of renter-occupied units with complete kitchen and plumbing facilities and a rent affordable to households with incomes less than 30 percent of AMI
  - **Table 15C, Estimate 25 (T15C_est25):** the estimate of renter-occupied units with complete kitchen and plumbing facilities and a rent affordable to households with incomes greater than 30 percent of AMI, but less than 50 percent of AMI

Tabulations such as this one can be used to assess housing gaps, deficits, and surpluses. For example, the number of units affordable to very low-income households minus the number of very low-income households from Table 3 will give

the deficit or surplus in physical stock. However, this measure is somewhat arbitrary since not all units that are affordable to households making less than 50 percent of AMI are occupied by households making less than 50 percent of AMI.

You can account for occupancy by using the occupancy characteristics in tables 15A, 15B, and 15C. The number of units affordable to very low-income households, minus the number of affordable units occupied by households with incomes greater than 50 percent of AMI, minus the number of households with incomes less than 50 percent of AMI, provides a more operational estimate of the affordable housing deficit or surplus for very low-income households. Another simpler approach is to subtract the number of available (vacant) affordable units from the number of cost-burdened households in the corresponding income category. In many cases, this housing affordability gap measure is very close to the deficit number that accounts for occupancy.

CHAS data is far less accessible than the published ACS tables. To access the breadth of the CHAS data you will need to download the data from the CHAS data download page (click on the "Data" tab). The zip file available for download includes a data dictionary and a data file.

This data is most accessible when the files are combined and filtered in a spreadsheet program like Microsoft Excel. Copy and paste the estimates into the corresponding data dictionary tabs, transposing the data to align the estimates vertically with the jurisdictions displayed horizontally as column headers. In both files, each tab contains the data descriptions or estimates for a single table. Retain column headers for the data table when transposing as a way of checking that you have combined the two files correctly. See the highlighted columns in Figure 4.

Once you have combined the files, you can easily filter the data to acquire the desired estimate. Note that all CHAS tables are nested and contain totals, subtotals, and detailed estimates. Totals have the lowest margins of error because the estimates are constructed based on the largest samples; subtotals and detailed estimated have higher margins of error because they are constructed from smaller samples. Subtotals can be aggregated and detailed estimates can be aggregated, but combining subtotals with detailed estimates will lead to double counting.

U.S. Bureau of Labor Statistics (BLS)

The U.S. Bureau of Labor Statistics (BLS) provides information on worker earnings by occupation. You can use annual wages or earnings to determine the affordable monthly housing costs by occupation. Divide the annual wages or earnings by 12, representing 12 months in a year, to get an estimate of monthly earnings. Then multiply by 0.3 to estimate the maximum affordable monthly housing costs, equivalent to 30 percent of monthly income for a household with a single earner.

The BLS Employment and Wages from the Occupational Employment Statistics (OES) survey is the most useful data set for this type of analysis. Note that this data is available at the state and MSA levels. BLS groups jurisdictions that are nonmetropolitan areas into state subregions in this data set. MSA-level data for wages is often the best resource for jurisdictions within an MSA because just as housing markets are not limited by jurisdictional boundaries, neither are wages. Since the Census designates MSAs based on commute-shed data, they are often a very good proxy for economic areas including housing markets and labor sheds with similar wage rates.

Many municipalities find it useful to compare wages in dominant occupations to rents in their municipality. A simple approach to this kind of analysis uses BLS OES data and the ACS tables mentioned above. Start with the BLS OES data for your MSA. Sort the data by Employment, from highest to lowest. Now isolate the top 10 occupations by employment. Use the annual median wage to calculate the maximum amount that someone in that occupation earning at the median can afford to pay for housing costs. Compare this number for each occupation to the median rent and owner costs in your jurisdiction. This comparison is a general indicator of whether or not employees in these occupations within your region can afford to live in your municipality. It may also be useful to compare the maximum affordable rent for two earners to the median rent or housing costs in your region, since many households include two workers.

You can use the same data to pinpoint occupations in which workers cannot earn enough to afford the median rent in your municipality. For this analysis, calculate the maximum affordable housing cost for all occupations using the annual 90th percentile wage for each occupation. Employees earning in the 90th percentile represent the highest earners in each occupation. Sort the data by maximum affordable rent, from lowest to highest. Those employees in occupations with median earnings that are too low to afford the median rent in your jurisdiction, even when earning in the 90th percentile, are likely to struggle or simply not be able to live in your jurisdiction. Those who could not afford the median when earning in the 90th percentile and doubled up (simulating a two-worker household with both workers earning at the same level) are even less likely to be able to live in your jurisdiction.

This analysis is particularly pertinent if the majority of housing units in a municipality are priced close to the median. ACS tables B25087 and B25063 give information on number of units by gross rent and owner costs. You can use these tables to get general information about the spread of the units in your jurisdiction. So, for example, comparing median wages to the median rent may indicate that certain occupations cannot afford the median-priced unit, but on further examination you find there are just as many lower-priced units as units priced near the median. In this case, it may be more prudent to compare median wages to a lower rent threshold to identify workers that might be excluded from your municipality by housing costs.

The BLS Quarterly Census of Employment and Wages (QCEW) is the best data set for jurisdictions located outside of an MSA. The QCEW provides employment, average weekly wage, and average annual pay by industry sector. Analysts can conduct a similar analysis comparing the maximum affordable housing costs of the average earner in an industry to the median housing costs (rent and/or owner costs) in a jurisdiction.

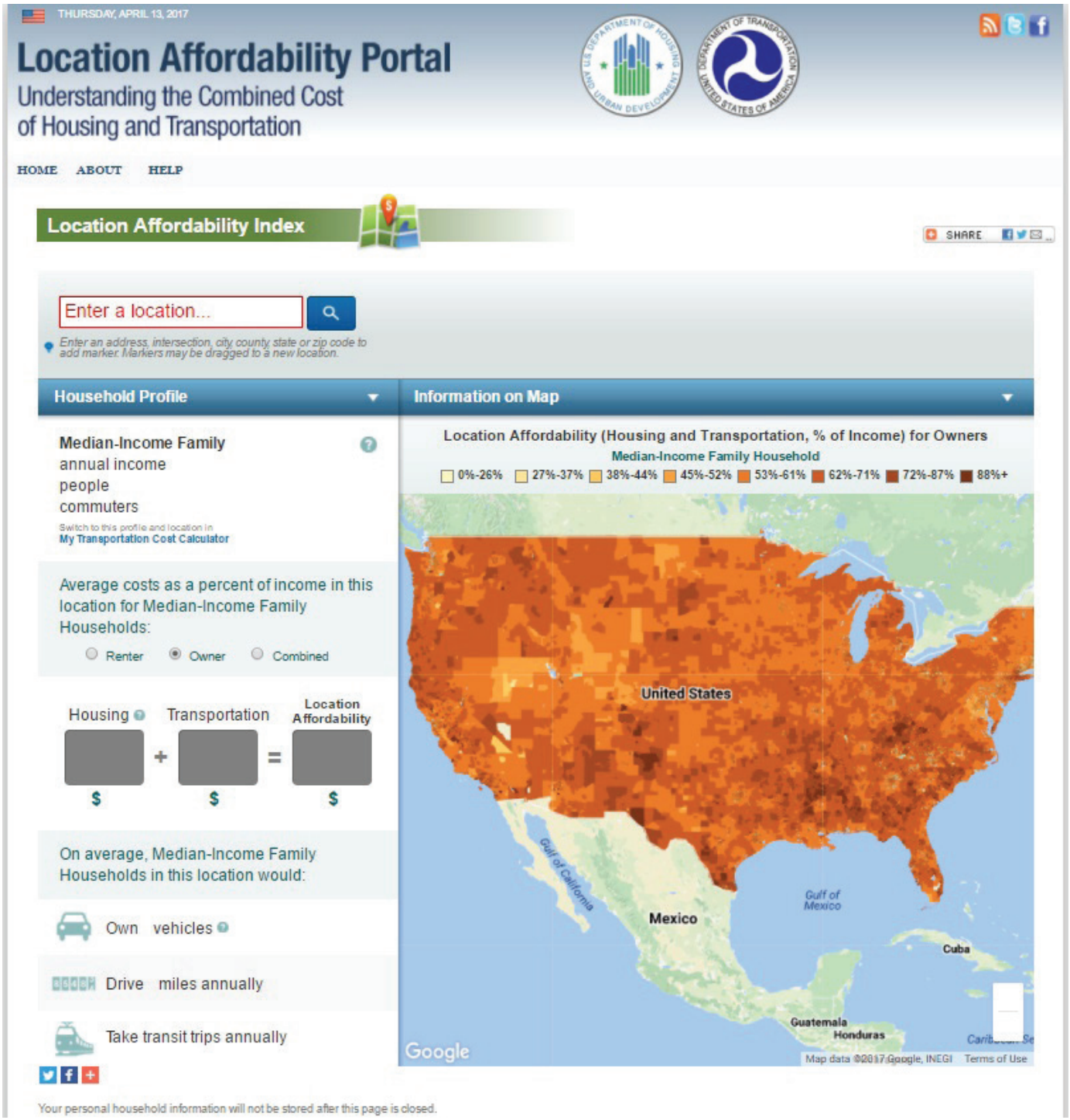
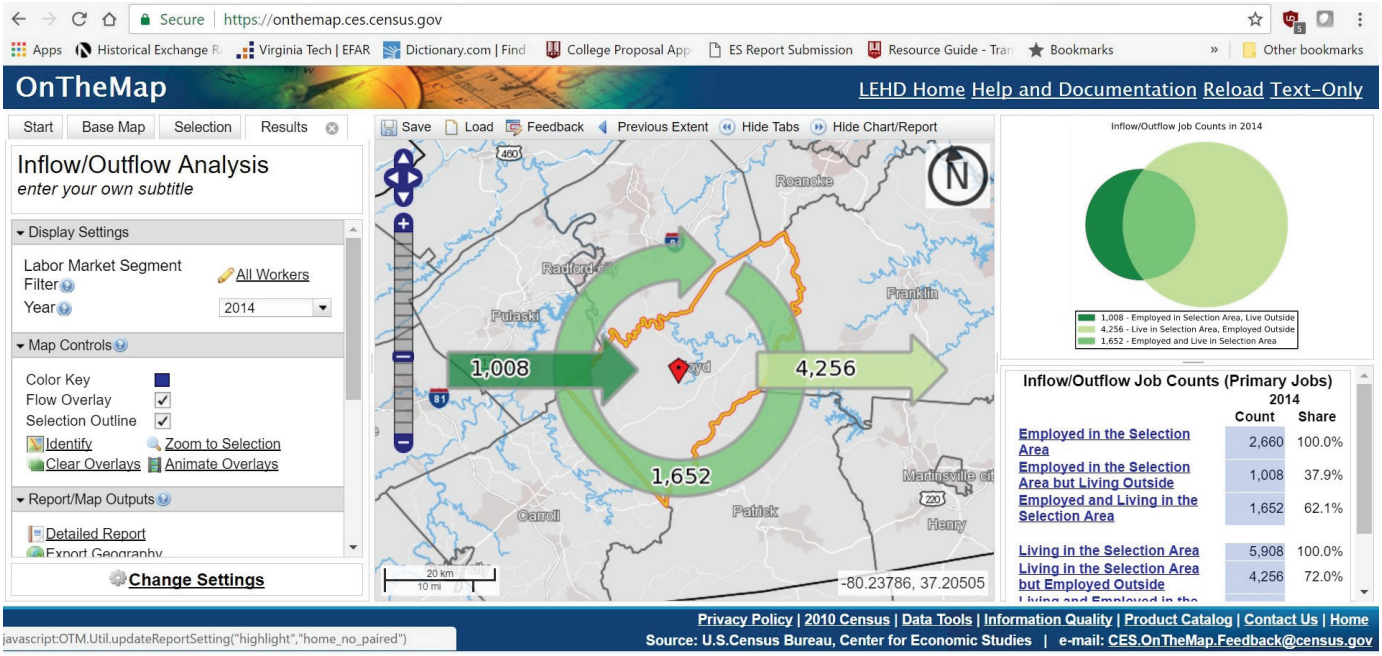


Figure 5. The Location Affordability Index portal (U.S. HUD & U.S. DOT 2017).

Location Affordability Index (LAI) & OnTheMap

HUD's Location Affordability Index (LAI) is a simple measure of housing costs plus transportation costs as a percentage of income for the median-income family, plus the average housing and transportation cost for seven other household types as a percentage of average household income for that household type (Figure 5). In addition, HUD provides the LAI for renters, owners, and all households.

HUD breaks down the LAI into housing costs and transportation costs, so that users can better understand their jurisdiction's LAI and how it compares to the LAI of other jurisdictions. If availability of affordable housing for workers is a concern in a particular jurisdiction, the problem may be alleviated by convenient, affordable transportation to neighboring jurisdictions or exacerbated by high transportation costs.



Top to bottom: Figure 6. OnTheMap "Inflow/Outflow" Analysis Tool (U.S. Census Bureau CES 2017); Figure 7. OnTheMap Destination Analysis Tool (U.S. Census Bureau CES 2017).

The U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) program OnTheMap tool provides information about workers and commuting. The "Inflow/Outflow" analysis provides estimates of how many people live and work in a jurisdiction, how many people living in that jurisdiction commute out of the jurisdiction to work, and how many people commute in from other jurisdictions (Figure 6). The "Destination" analysis shows where workers who live in the selected jurisdiction are commuting for work (Figure 7). The "Area Profile" also provides some useful estimates: workers by age, workers by level of earnings, and workers by industry sector. OnTheMap data complements the LAI data and helps the analyst further investigate the dynamics of housing and transportation.

You can use LAI and OnTheMap data to detect additional weaknesses and threats due to housing affordability and appropriateness. Use the LAI to assess whether housing plus transportation costs might be an advantage or disadvantage in a given jurisdiction. If the LAI in a community is relatively high, use the LAI breakdown to see if housing or transportation is the larger contributor. If housing costs are a small part of household expenses but transportation costs are large, households may be choosing to live in a jurisdiction because the

housing is more appropriate for the members of their households. They may be trading high transportation costs for low housing costs. If the opposite is true—housing costs are high, but transportation costs are low—households may be willing to accept higher housing costs in the jurisdiction because they know they can save on transportation costs. However, high housing costs could also represent a threat. If housing costs are too high, workers in a given jurisdiction may choose to live elsewhere to access a higher quality of life or to be able to afford housing at all.

Commuting trends can shed light on the impact of housing and transportation costs. If relatively few residents live and work in a jurisdiction, but the jurisdiction has many out-commuters, then households may be choosing that jurisdiction because of the quality of life.

Conclusion

This *Memo* provided a description of the most useful publicly available data resources for conducting a housing needs assessment. Part 2 of this series will continue this discussion by providing methods for assessing the reliability of the data described in this *Memo* and will introduce analytical techniques that may be useful as you undertake a housing needs assessment.

Much of a housing assessment may be descriptive in nature, with the intention being to profile the housing stock and households. The techniques presented in Part 2 will go a step further and demonstrate ways that you can compare estimates and extend your analysis to help your jurisdiction make policy and program decisions. Further, Part 2 will address policy and programs decisions and action planning in more depth.

After working with the data in the ways described above and in the next *Memo*, you should be well on the road to conducting a self-directed housing needs assessment.

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