

OLO Memorandum Report 2024-10

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The term "housing starts" refers to the number of new housing units that builders have begun to construct. The number of housing starts in a community is a helpful metric for understanding trends in the supply of housing. The U.S. Census Bureau's Building Permits Survey (BPS) collects data on newly permitted housing units from "permit-issuing places," meaning jurisdictions that issue building or zoning permits for residential construction.

Concerns have been raised that historical BPS data for Montgomery County are not accurate because the County was not reporting data to the U.S. Census Bureau. This OLO memorandum report examines and compares available data on newly permitted housing units from 2000 to 2023. It is organized as follows:

- Section A provides background on the U.S. Census Bureau's Building Permits Survey (BPS) and Survey of Construction (SOC);
- Section B summarizes national data from the BPS and the SOC;
- Section C describes existing Building Permits Survey Data for Montgomery County;
- Section D examines decennial census data on housing units in Montgomery County; and
- Section E summarizes OLO's conclusions.

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Summary of Findings

Background on the U.S. Census Bureau's Building Permits Survey and Survey of Construction

- The Building Permits Survey (BPS) is a voluntary survey that solicits data on *housing* units authorized for construction by permit from all jurisdictions in the United States that issue building or zoning permits.
- In 2023, the average monthly response rate for the BPS from permit-issuing jurisdictions surveyed monthly was 66%.
- The Survey of Construction (SOC) collects data on *housing units that started and completed construction* based on a sample of buildings in the United States and does not produce county-level estimates.

National Trends in Numbers of Housing Units Authorized by Permit and Housing Starts and Completions

- SOC and BPS data show that the national trend in housing units completed is similar, with a slight lag, to those of housing units authorized and started.
- Nationally, the numbers of new housing units authorized by permit decreased from their peak of 2.2 million in 2005 to a low of 583,000 in 2009, increased to a second peak of 1.7 million in 2021, and decreased to 1.5 million in 2023.
- Between 2000 and 2023, the percentages of housing units authorized by permit that were single-family buildings decreased from 75% to 62%, while the percentage in multi-family buildings increased from 25% to 38%.

Building Permits Survey Data for Montgomery County

- From 2000 to 2023, Montgomery County did not respond to the BPS in most months, the City of Gaithersburg responded inconsistently, and the City of Rockville responded in most months of each year.
- In 2023, County Government staff worked with the U.S. Census Bureau, the City of Gaithersburg and the City of Rockville to provide accurate BPS data for the period from 2019 to 2022 and to establish data reporting processes moving forward.
- The revised estimates differ significantly from the original BPS estimates for each of the three permit-issuing jurisdictions in Montgomery County.
- Housing units in multi-family buildings accounted for the majority of newly permitted housing units in four out of five years for which corrected local data are available.

Other Housing Data, Estimates and Forecasts

- Data from the decennial census indicate that trends in numbers of housing units in Montgomery County from 2000 to 2020 mirror national trends.
- The Census Bureau and other entities use BPS data to inform various types of housing estimates and forecasts.

A. Background on the Census Bureau's Building Permits Survey and Survey of Construction

The Census Bureau is the Federal Government's largest statistical agency and is a unit of the U.S. Department of Commerce. It is responsible for conducting the decennial census of the U.S. population as required by Article One of the United States Constitution. It also conducts regular surveys on a wide range of topics including population trends, housing, time use, government finances, retail trade and more. The following two Census Bureau surveys relate to housing starts:

- The Building Permits Survey (BPS); and
- The Survey of Construction (SOC).

This section describes the BPS and summarizes information on the SOP. The BPS is most relevant to the Council's request because, unlike the SOC, the BPS offers county-level data. In summary:

- The BPS solicits data on housing units authorized for construction by permit from all
 jurisdictions in the United States that issue building or zoning permits ("permit-issuing
 places"); whereas
- The SOC collects data on "starts" and "completions" of housing units meaning units
 that have, respectively, started or completed construction as well as selected financial
 and physical characteristics for each unit, from a sample of buildings in the United
 States.

	BUILDING PERMITS SURVEY	SURVEY OF CONSTRUCTION
TYPE OF DATA COLLECTED	Housing units authorized for construction by permit	Housing units that have started and/or completed construction
WHO THE SURVEY SOLICITS DATA FROM	All permit-issuing places in the United States	A sample of building permits from permit-issuing places and of buildings from places that do not issue permits
LOWEST GEOGRAPHIC LEVEL OF ESTIMATES PRODUCED	Permit-issuing place (e.g. county, municipality)	Census Region (Northeast, Midwest, South, and West)

1. The Building Permits Survey

The Building Permits Survey (BPS) is a voluntary Census Bureau survey that collects data on the number, valuation and structure type of new privately-owned housing units authorized by building permits in the U.S. The Census Bureau solicits the data via mail from all "permit-issuing places," or jurisdictions that issue building or zoning permits, in the United States. As of January 2023, this universe included 19,900 permit-issuing places.

History. The Federal Government has collected data on building permits through different surveys since 1889, beginning with the U.S. Geological Survey. Initially, the goal of building permit data collection was to measure use of raw materials for building construction, and these efforts did not track numbers of new housing units.

However, in 1920, Congress requested data on new housing in response to housing shortages occurring following World War I. At this time, the Bureau of Labor Statistics (BLS), a unit of the U.S. Department of Labor, took over building permit data collection. In 1959, the Census Bureau assumed responsibility for building permit data collection and created a survey design that involved monthly data collection from a sample of places, and annual data collection from all permit-issuing places.¹

Target population. The BPS solicits data on building permits for privately owned residential structures from jurisdictions that issue building or zoning permits, referred to as permit-issuing places. According to the Census Bureau, more than 99% of private residential buildings in the United States are located in permit-issuing places.

A sampling frame is a list of all the members of the target population, in this case permit-issuing places. The BPS collects data on zoning permits only for places that require zoning permits but not building permits. The sampling frame includes all *unique* permit-issuing places in order to avoid double reporting. Therefore, if a location is subject to both building and zoning permit requirements (e.g. the city requires building permits and the county requires zoning permits), only one type of permit would be included in the survey for that location. The Census Bureau updates the sampling frame annually via a survey of local jurisdictions in the United States. In January 2023, the sampling frame included approximately 19,900 permit-issuing places.²

Sample design. The Census Bureau surveys less than half (about 8,400) of permit-issuing places monthly and surveys the remainder of places annually. To be surveyed monthly, a place must

¹ How the Data Are Collected. U.S. Census Bureau, Accessed May 21, 2024.

² Building Permits Survey Methodology. U.S. Census Bureau, Accessed May 21, 2024.

have issued an average of six or more permits per year from 2018 to 2020. The Census Bureau reports the permit-issuing places that are surveyed annually account for only 1% of all permit activity.

Of note, the Census Bureau changed the BPS sample design – meaning how the Census Bureau determines which places to survey and at what frequency – effective January 2022. Prior to January 2022, monthly estimates were based on a probability sample and subject to sampling error. Sampling error reflects the fact that only a particular sample was surveyed rather than the entire population. Monthly samples were selected approximately every 10 years. Annual data has always contained all permit issuing places.³

Data collected. As noted above, the BPS collects data on the number, valuation and structure type of new privately owned housing units authorized by building permits in the United States.⁴ "New housing units" exclude those in group quarters (such as dormitories and rooming houses), transient accommodations (such as transient hotels, motels, and tourist courts), "HUD-code" manufactured (mobile) homes, moved or relocated buildings, and housing units created in an existing residential or nonresidential structure.⁵

Nonresponse and Imputation. For 2023, the average monthly response rate from permitissuing places surveyed monthly was 66%. The annual response rate for all permit-issuing places surveyed monthly and annually was 83%. Nonresponse refers to the inability to obtain requested data from a requested unit including:

- *Item nonresponse*: when a permit-issuing place responds to the survey, but does not answer all questions or when an answer is not usable; and
- *Unit nonresponse*: when a permit-issuing place does not respond to the survey after follow-up by the Census Bureau.

When nonresponse occurs, the Census Bureau either attempts to obtain equivalent data from another source (e.g. the Survey of Construction or a third-party if local data are available from these sources) or impute the data. Imputing the data refers to the process of estimating the missing data using other available data.

In the case of *item nonresponse*, the Census Bureau may impute the data based on the responses to other items in the survey and other data sources (e.g. if the number of units but not their valuation is provided, the valuation may be estimated based on regional averages for the same type of structure). In the case of *unit nonresponse*, the Census Bureau uses an imputation methodology that uses regional and prior years' data.⁶

⁴ Ibid.

³ Ibid.

⁵ <u>Building Permits Survey Definitions</u>. U.S. Census Bureau, Accessed May 21, 2024.

⁶ Building Permits Survey Methodology. U.S. Census Bureau, Accessed May 21, 2024.

2. Survey of Construction

The Survey of Construction (SOC) encompasses two monthly surveys that collect similar information in different ways:

- The Survey of Use of Permits (SUP) collects data on new construction in areas that require a building permit; and
- *The Non-Permit Survey* (NP) collects data on new construction in areas that do not require a building permit.

The SOC collects the following information for each housing unit: start date, completion date, sales date, sales price (single-family houses only), and physical characteristics, such as square footage and number of bedrooms.

Target population and sampling frame. The SOC collects data on new single-family and multifamily housing units in the United States. The sampling frames for the SUP and the NP (the two surveys that make up the SOC) are listed below.⁷

SOC SURVEY	SAMPLING FRAME
SURVEY OF USE PERMITS (SUP)	Permit-issuing places in the United States
NON-PERMIT SURVEY (NP)	Land areas in the United States that do not issue permits

Sample design. Field representatives collect data for the SOC from builders or owners of new residential buildings. The SOC uses a three-step process to identify which buildings to include in the sample. Specifically:

- 1. The SOC uses a subsample of primary sampling units (PSUs), or groups of counties, towns or townships within states, from the PSUs used for the Census Bureau's Current Population Survey (CPS).
- 2. From this subsample of PSUs, the Census Bureau selects two separate samples of geographic areas one for permit-issuing places, and one for non-permit areas. Areas with more permits (for permit-issuing places) or larger populations (for non-permit areas) have a higher probability for selection.
- 3. Finally, the Census Bureau selects two samples: the first sample is of permits from permit-issuing places in the sample. The second sample consists of new residential buildings in non-permit areas identified by field representatives that canvass each area selected for the sample.⁸

⁷ Survey of Construction Methodology. U.S. Census Bureau, Accessed May 21, 2024.

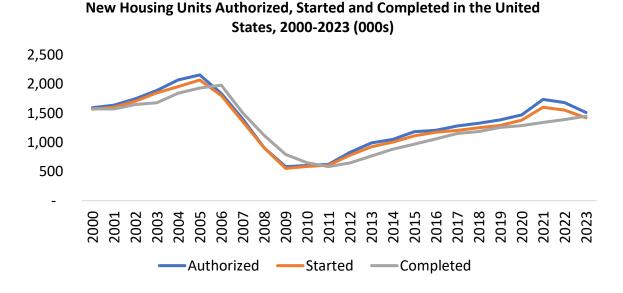
⁸ Ibid.

Nonresponse. When field representatives are unable to obtain building information from a builder or owner, they either conduct a site visit or identify an alternate source for the information such as a building permit office or realtor handling the sale of the unit.⁹

B. National Trends in Numbers of Housing Units Authorized by Permit and Housing Starts and Completions

As noted above, the BPS collects data on housing units authorized for construction, while the SOC collects data on housing units that have started and completed construction. The chart below displays the nationwide trend from 2000 to 2023 in the total numbers of housing units:

- Authorized for construction by permit;
- Started construction; and
- Completed.



Source: OLO analysis of the following U.S. Census Bureau tables from <u>Time Series/Trend Charts</u>: Housing Units Started: United States — Not Seasonally Adjusted Total Units [Thousands of Units]; Housing Units Completed: United States — Not Seasonally Adjusted Total Units [Thousands of Units]; and Housing Units Authorized in Permit-Issuing Places: United States — Not Seasonally Adjusted Total Units [Thousands of Units].

The chart above shows that the trend in housing units completed is similar, with a slight lag, to those of housing units authorized and started. Looking specifically at the numbers of housing units authorized by permit each year, these:

•	Decreased	from th	neir peak	of	2.2	million	in 200)5 to	a lo	w of	583	.000	in	200	9
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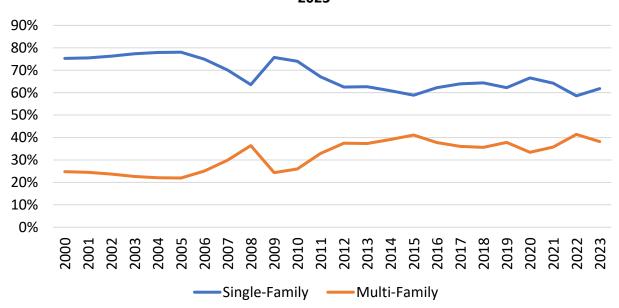
⁹ Ibid.

- Increased to a second peak of 1.7 million in 2021; and
- Decreased to 1.5 million in 2023.

The next chart displays the trend in housing units authorized by building type. ¹⁰ It shows that between 2000 and 2023, the percentages of housing units authorized by permit:

- In single-family buildings decreased from 75% to 62%; and
- In multi-family buildings increased from 25% to 38%.

Housing Units Authorized In the United States By Building Type, 2000-2023



Sources: OLO analysis of the following U.S. Census Bureau tables generated from <u>Time Series/Trend</u>
<u>Charts</u>: Housing Units Authorized in Permit-Issuing Places: United States — Not Seasonally Adjusted
Single-family Units [Thousands of Units]; and Housing Units Authorized in Permit-Issuing Places: United
States — Not Seasonally Adjusted Total Units [Thousands of Units]

C. Data on New Housing Units Authorized by Permit in Montgomery County

Within Montgomery County, three jurisdictions issue building permits:

- Montgomery County;
- City of Gaithersburg; and

¹⁰ The Census Bureau's <u>Definitions: Building Permits Survey</u> web page states: "The single-family statistics include fully detached, semidetached (semiattached, side-by-side), row houses, and townhouses. In the case of attached units, each must be separated from the adjacent unit by a ground-to-roof wall in order to be classified as a single-family structure. Also, these units must not share heating/air-conditioning systems or utilities."

• City of Rockville.

The Census Bureau surveys each of the three jurisdictions monthly to collect data for the BPS. However, Census Bureau staff report that only the City of Rockville has consistently reported permit data since 2012. In 2023, Executive Branch staff worked with the Census Bureau, the City of Rockville, and the City of Gaithersburg to provide accurate data for the period from 2019 to 2022, and to ensure consistent reporting moving forward.

1. Numbers of BPS Responses from Permit-Issuing Jurisdictions from 2000 to 2023

As noted on page 4, the BPS is a voluntary survey. When a permit-issuing jurisdiction does not respond to the BPS, the Census Bureau either:

- Obtains the data from another source, such as the Survey of Construction or a third party, if equivalent local data are available from that source; or
- Imputes, or estimates, the data based on regional and prior years' data.

The table on the following page displays the number of months in each year that each permitissuing jurisdiction in Montgomery County responded to the BPS. The table shows that:

- In most years, Montgomery County did not respond to the BPS in most months;
- The City of Gaithersburg responded to the BPS inconsistently between 2000 and 2023;
 and
- The City of Rockville responded to the survey in most months of every year from 2001 to 2023.¹¹

The table also displays the number of months that the BPS used alternate local data sources. Because neither Montgomery County nor the City of Gaithersburg responded consistently to the BPS prior to 2023, BPS data for these jurisdictions between 2000 and 2022 include local data from other sources, such as the SOC, as well as imputed data, which are estimates based on regional and prior years' data.

In contrast to imputed data, alternate data sources, such as the SOC, reflect local data on permitted housing units. SOC data are only used if the jurisdiction is included in the SOC sample. The table below shows that although Montgomery County did not respond to the BPS in most months, the Census Bureau was able to obtain local data for Montgomery County through an alternate source. In contrast, alternate local data for Gaithersburg were not available after 2005.

¹¹ In 2022, the City of Rockville responded to the BPS during 7 out of 12 months. City of Rockville staff stated that this interruption in BPS reporting was due to the implementation of a new permitting system.

Census Bureau staff note that even when local data were available, they were not always correct. For example, the original BPS data reported by the City of Rockville erroneously did not include multi-family units for 2020-2022. As shown in the following section, revised data submitted in 2023 for the period from 2019-2022 differed significantly from the original BPS data for each of the three permit-issuing jurisdictions.

Number of Months that Each Permit-Issuing Jurisdiction in Montgomery County Responded to the BPS or That BPS Used Alternative Local Data Source, 2000-2023

	Months Jurisdiction	on Responded to	BPS Used Alternative Local Data Source			
Year	Montgomery County	Gaithersburg	Rockville	Montgomery County	Gaithersburg	Rockville
2000	1	1	1	10	11	_
2001	0	1	8	8	11	
2002	0	0	12	8	12	
2003	3	0	11	5	11	
2004	5	3	11	7	9	
2005	8	1	11	4	1	1
2006	6	9	9	6		3
2007	11	6	12	1		
2008	12	0	11			1
2009	11	2	10			2
2010	4	3	12	8		
2011	3	1	11	9		1
2012	1	2	12	11		
2013	0	11	12	10		
2014	0	9	12	10		
2015	0	7	12	12		
2016	1	9	12	10		
2017	0	12	12	11		
2018	0	4	12	11		
2019*	0	9	12	12		
2020*	0	2	12	11		
2021*	0	0	12	12		
2022*	0	0	7	11		5
2023*	6	6	12	6		

Source: OLO analysis of <u>Building Permits Survey Master Compiled Data Set</u>, U.S. Census Bureau, Accessed May 3, 2024.

^{*}As noted in the following section, in 2023 County Government staff worked with the U.S. Census Bureau, the City of Gaithersburg and the City of Rockville to provide accurate data for the period from 2019 to 2022 and to establish reporting processes moving forward. 2023 BPS data reflect these new processes.

2. Available Data on Newly Permitted Housing Units for Montgomery County

In 2023, County Government staff worked with the U.S. Census Bureau, the City of Gaithersburg and the City of Rockville to provide accurate BPS data for the period from 2019 to 2022 and to establish data reporting processes moving forward. The public BPS datasets available on the Census Bureau's website do not reflect the revised data because the Census Bureau's processes do not allow for revisions after the datasets are finalized. Census Bureau staff provided revised data to OLO. As shown in the table below, the revised estimates differ significantly from the original BPS estimates for Montgomery County.

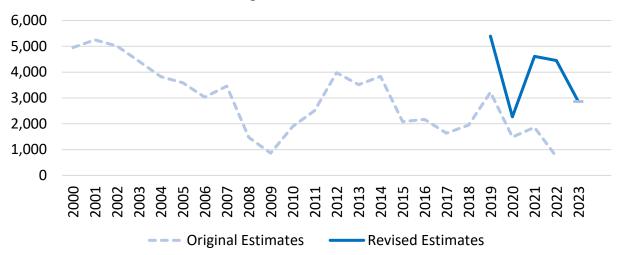
BPS Original and Revised Estimates for Numbers of New Residential Units Permitted in Montgomery County by Permit-Issuing Jurisdiction

Year	Montgomery County	Gaithersburg	Rockville	Total			
Original Estimates							
2019	2,414	66	745	3,225			
2020	1,219	86	181	1,486			
2021	1,660	111	86	1,857			
2022	550	124	50	724			
Revised Est	imates						
2019	4,080	391	923	5,394			
2020	1,898	124	245	2,267			
2021	3,686	838	86	4,610			
2022	3,868	70	510	4,448			
% Change							
2019	69%	492%	24%	67%			
2020	56%	44%	35%	53%			
2021	122%	655%	0%	148%			
2022	603%	-44%	920%	514%			

Source: U.S. Census Bureau

Revised data prior to 2019 are not available. DPS's internal systems prior to 2019 did not allow for tracking of trends in numbers of *units* authorized by permit. The following chart displays the trend in the original and revised BPS estimates of numbers of newly permitted housing units in Montgomery County (including Gaithersburg and Rockville) from 2000 to 2023. As noted above, neither Montgomery County nor the City of Gaithersburg responded consistently to the BPS prior to 2023, and data that were originally reported included errors or omissions. The 2023 BPS data are reflective of new data reporting processes established in 2023, and therefore reflect updated local data.

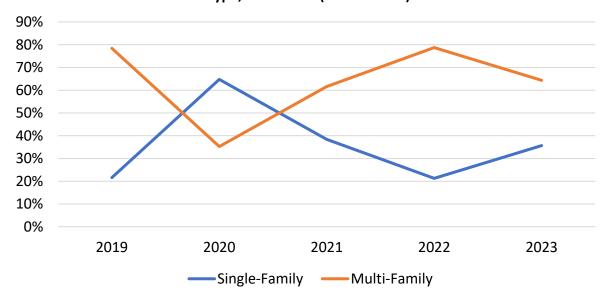
BPS Data on Total Newly Permitted Housing Units in Montgomery County: Original and Revised Data



Sources: U.S. Census Bureau and OLO analysis of <u>Building Permits Survey Master Compiled Data Set</u>, U.S. Census Bureau, Accessed May 3, 2024.

The following chart displays the percentages of housing units authorized by permit in Montgomery County (including Gaithersburg and Rockville) by building type (single-family or multi-family) between 2019 and 2023. It shows that housing units in multi-family buildings accounted for the majority of newly permitted housing units in four out of the five years for which local data are available.

Housing Units Authorized by Permit in Montgomery County By Building Type, 2019-2023 (revised data)



Source: U.S. Census Bureau

The next chart displays revised data on the total valuation of newly permitted units in Montgomery County (including Gaithersburg and Rockville). It shows the annual valuation ranged from \$542 million to \$1.2 billion during the five-year period.

Total Valuation of Housing Units Authorized By Permit (\$ millions) in

\$1,400 \$1,200 \$1,000 \$800 \$600 \$400 \$200 \$-

Source: U.S. Census Bureau

2019

D. Decennial Census Data on Housing Units

2020

As noted above, neither Montgomery County nor the City of Gaithersburg responded consistently to the BPS between 2000 and 2023. While Executive Branch staff have worked with the City of Gaithersburg and the City of Rockville to provide revised estimates of newly permitted housing units for the years from 2019 to 2022, revised data are not available for the years prior to 2019. BPS estimates for the period from 2000 to 2018 reflect either local data from other sources, such as the SOC, or imputed data. In some cases, local data reported to the BPS were subsequently found to be incorrect.

2021

2022

2023

Corrected BPS data are not available for the period from 2000-2019. One alternative source of data on housing supply in Montgomery County is the decennial census. Every ten years, the U.S. Census Bureau conducts a census of the U.S. population, meaning that it counts every person residing in the United States. As part of this process, the Census Bureau collects information on the addresses of all housing units in the United States and reports counts of housing units by geographical location.

It is important to note that decennial census data on numbers of housing units is not directly comparable to BPS data for the following reasons:

- BPS data on newly permitted housing units is a measure of housing production that
 does not account for housing loss (e.g. demolished units), while decennial census counts
 of housing units reflect both housing production and housing loss compared with the
 previous censuses;
- Decennial census counts include housing units that are not included in BPS data, such as publicly-owned housing units, residential units converted from office space, group quarters, and HUD-inspected manufactured homes;
- While BPS data reflect data reported by permit-issuing jurisdictions, decennial census counts are the product of canvassing processes that may change from one census to the next, so increases in housing units may be reflective of improved canvassing rather than more units.

The table below displays numbers of housing units in Montgomery County and the United States by occupancy status (occupied versus vacant) and tenure (renter-occupied versus owner-occupied) for 2000, 2010 and 2020. It shows that the percentage changes in numbers of housing units in Montgomery County, based on decennial census counts, are similar to the changes for the United States.

Decennial Census Housing Unit Counts By Occupancy and Tenure, 2000-2020

Housing Units	N	umbers of Uni	ts	Percentage Changes				
Housing Offics	2000	2010	2020	2000-2010	2010-2020	2000-2020		
Montgomery County	334,632	375,905	404,423	12%	8%	21%		
Owner-Occupied	223,017	241,465	246421	8%	2%	10%		
Renter-Occupied	101,548	115,621	140510	14%	22%	38%		
Vacant	10,067	18,819	17,492	87%	-7%	74%		
United States	115,904,641	131,704,730	140,498,736	14%	7%	21%		
Owner-Occupied	69,815,753	75,986,074	80,051,358	9%	5%	15%		
Renter-Occupied	35,664,348	40,730,218	46,766,222	14%	15%	31%		
Vacant	10,424,540	14,988,438	13,681,156	44%	-9%	31%		

Sources: OLO analysis of U.S. Census Bureau. <u>HOUSING UNITS</u>. 2000, 2010 and 2020 Decennial Censuses, Tables H1, H3 and H14 2020, Accessed on May 21, 2024, and Cromwell, M. and Mazur, C., "<u>Housing Characteristics: 2020</u>," 2020 Census Briefs C2020BR-09, United States Census Bureau, September 2023, Accessed June 5, 2024.

Data Products that Incorporate BPS and SOC Data

The Census Bureau and other entities use BPS data to inform various types of housing estimates and forecasts. Below are examples of data products that incorporate BPS data:

- Census Bureau's Population Estimates Program (PEP). The PEP produces annual population and housing estimates at the national, state and local levels. PEP estimates inform federal funding allocations and serve as survey controls and indicators of demographic changes. To develop PEP housing estimates, the Census Bureau uses the number of housing units from the most recent decennial census as the "base," adds new residential units using BPS and SOC data and subtracts the estimated number of housing units lost (using data from the American Housing Survey).
- Metropolitan Washington Council of Governments (COG) Cooperative Forecast. COG
 develops regional forecasts of population, jobs, and households in the Metropolitan
 Washington region. Their cooperative forecasts use BPS data as an input and are used
 by COG and member jurisdictions for planning and modeling purposes.
- Housing Association of Nonprofit Developers' (HAND) Housing Indicator Tool (HIT).
 The HIT aims to track local housing production and preservation efforts. Planning
 Department staff use BPS data to calculate the net housing production estimates that
 Montgomery County submits for the HIT (staff subtract demolitions from BPS totals).

E. Conclusions

OLO finds that BPS data for Montgomery County for the period from 2000 to 2019 may not accurately reflect housing starts in Montgomery County. BPS data reported for this period may include inaccurate data reported to the Census Bureau as well as estimates developed based on prior year and regional data. DPS's internal systems prior to 2019 did not allow for tracking of trends in numbers of units authorized by permit, only numbers of permits.

In 2023, Executive Branch staff worked with staff from the City of Gaithersburg and the City of Rockville to develop revised estimates of newly permitted housing units for 2019-2022 and to establish accurate BPS reporting processes moving forward. However, the Census Bureau's publicly reported data from 2019-2022 do not reflect these revised estimates because the Census Bureau does not have a process that allows for revisions after datasets are finalized. The revised data indicate significantly higher numbers of newly permitted housing units compared with original BPS data for each of the three permit-issuing jurisdictions in Montgomery County.

Finally, OLO's analysis of decennial census data indicates trends in numbers of housing units in Montgomery County from 2000 to 2020 mirror national trends.