



Chapter 2

Regional Growth, Forecasting and Demographic Trends



How many people will call the Baltimore region home over the next 20+ years? Where will they live, work and play? How can we plan now for a transportation system that accommodates the future growth of the Baltimore region?

This chapter sets the stage for *Resilience 2050* by discussing planning for regional growth. It then details how BRTB members work together to create forecasts of future population, households and employment in the Baltimore region, and how these forecasts support the development of *Resilience 2050*. The chapter concludes with a discussion of the demographic trends likely to shape the future of the Baltimore region.

Regional Growth and the Transportation System

Over the past several years, the world has faced extraordinary challenges because of the COVID-19 pandemic. During this demanding period, the Baltimore region's transportation system demonstrated its tremendous resiliency and we are beginning to see indicators of recovery. This recovery is measured in growth of various economic indicators that demonstrate a variety of benefits to residents and businesses. Some of the important indicators include economic benefits, such as increased job creation, higher incomes and increased tax revenues, as well as increased social benefits, such as improved infrastructure and public services and higher quality of life for residents. Growth can also lead to environmental benefits, such as the development of cleaner and more efficient technologies and the creation of green jobs. Growth can also lead to some potential challenges, such as inequality and gentrification. However, with the right policies, strategies and investments, regional growth can provide numerous benefits and improve the lives of all residents, the regional economy and the environment.

Continued growth in the region depends on a strong transportation system. Essential outcomes of a strong transportation system improve affordability, availability, efficiency, convenience, safety and speed. A strong transportation system enables people to access essential services, such as healthcare, education and employment opportunities. It also plays a crucial role in connecting people, businesses and markets, allowing for the efficient movement of goods and services and underpins the viability and livability of the region's communities. A strong transportation system can also play a crucial role in reducing congestion and pollution, improving public health and fostering economic development. The degree

to which our region can deliver and sustain these outcomes will allow it to thrive or fade.

The region's transportation system influences its growth and development, while the type and location of growth in turn influence travel choices. Transportation systems also affect the viability and livability of the region's communities. Faster and safer travel times improve connections of more disconnected areas to jobs and to markets for products made in those areas. Improvements to transportation systems may provide residents access to jobs that are currently physically out of reach. Information infrastructure is also increasingly important and can replace the need for travel for some, as we've seen since the start of the global pandemic. This said, many jobs cannot be remote and many citizens lack internet access, often because it is either unavailable or unaffordable. Together these issues impact residents' ability to access education, employment, job searches, food and healthcare, as well as the region's industry and business development and our environment.

Growth Management and the Transportation System

Thinking about our system requires planners to consider not only the transportation infrastructure but also the uses of the land served by that infrastructure. Land use planning can influence accessibility and mobility across the transportation network as different land use patterns may require distinct

transportation strategies to achieve system efficiencies and address specific objectives and needs.

In addition to land use, planners must consider future growth and how existing zoning designations and land uses will accommodate additional residents and workers. Population in the Baltimore region continues to grow, but is expected to do so at a slower rate than in previous years. According to decennial census data, the region grew by 460,000 persons (19.4%) in the 30-year period between 1990 and 2020. The region is anticipated to grow by 360,000 persons (12.6%) in the 30-year period from 2020 to 2050. Population growth can only occur through natural change (births minus deaths) and migration. The region's aging population and low levels of net migration are contributing to softened population growth expectations through 2050.

Household growth is expected to outpace population growth over the forecast horizon, with growth of 15.0%, while average household size is anticipated to decrease from 2.53 in 2020 to 2.48 in 2050. And employment growth is anticipated to outpace both population and households, with regional growth of approximately 375,000 jobs from 2020 to 2050 (25.5%). These forecasts are generated by local jurisdictions, and are discussed in more detail in the next section of this chapter (see Socioeconomic Forecasting).

Growth management refers to the policies and procedures that local jurisdictions, regions and states use to accommodate more residents and workers. Good planning practice requires frequent and ongoing communication and

coordination between land use and transportation planning agencies to avoid unnecessary conflicts and issues. While specific policies, regulations and procedures differ from jurisdiction to jurisdiction, commonalities exist in the form of basic principles shared across the region. An example is a transportation system capable of safely and effectively serving the existing population and any future growth. Other examples include protecting the environment and enhancing community character while supporting the economy.

All local jurisdiction members use their growth management policies, regulations and procedures to encourage, guide and support development in areas where public facilities and services are in place or are planned to be in place. Such an approach is intended to maximize social, economic and environmental benefits and minimize negative impacts and consequences. In addition, growth management is also used to limit the development of land where there may be a particular land use that is valuable to the public. For example, local jurisdictions often use growth management to preserve environmental, historic and/or economic resources and land for future transportation corridors.

Comprehensive Plans and Community Development

Local government members of the BRTB exercise planning and zoning powers and regulate land development. Their comprehensive plans outline strategies, policies, programs and

funding for growth and development, resource conservation, infrastructure and transportation, integrated across local jurisdictions, the region and the state.

In developing a comprehensive plan, each local jurisdiction first forecasts the number of new residents and new workers expected in the jurisdiction over a period of 20+ years, and where the new residents and workers might choose to locate. The forecasts, often called “socioeconomic” or “cooperative” forecasts, are then used to plan for the public facilities and services—such as schools, water/sewer lines, roads, police departments and fire stations—needed to accommodate all residents and workers in the local jurisdiction.

Generally, the transportation element of these local Comprehensive Plans discusses the importance of an interconnected transportation system where all modes—vehicle circulation/parking, transit and bicycle/pedestrian activities—work together. Typically, they also address access to jobs and other opportunities and destinations. These key objectives are supported by policies that promote the management of growth in traffic on key roadways, provide parking solutions that deal with peak and long-term demands and enhance local and regional transit systems. Improving the transit system can provide stronger links among neighborhoods, employment locations, shopping destinations, schools and other local services. It also can provide transportation options for those who cannot or do not drive, including persons with disabilities, the elderly or people with other special needs.

Many jurisdictions have stand-alone elements or plans that further break out specific goals and strategies for individual communities, issues or modes of travel. For instance, some have bicycle and pedestrian master or area plans.

Growth Management – Historical Perspective

The commitment to growth management in the Baltimore region dates from the 1960s. That decade saw innovative policies such as the Urban Rural Demarcation Line (URDL) in Baltimore County and ambitious efforts such as the plan for a completely “new” town, Columbia, in Howard County. In addition, the state of Maryland, considered a pioneer in statewide growth management policies, has provided guidance, technical expertise and regulatory requirements to support these commitments.

State Government

In 1984, to safeguard the Chesapeake Bay from the negative consequences of intense development, the Maryland General Assembly enacted the Chesapeake Bay Critical Area Protection Program, a far-reaching effort to control future land use development in the Chesapeake’s watershed. The “critical area” is a ribbon of land within 1000 feet of the tidal influence of the Bay and was determined by the Maryland General Assembly to be crucial because development in this “critical area” has direct and immediate effects on the health of the Chesapeake Bay. The Chesapeake Bay Critical Area Commission was charged

with devising a set of criteria to minimize the adverse effects of human activities on water quality and natural habitats and foster consistent, uniform and more sensitive development activity within this sensitive environmental area. In cooperation with the Critical Area Commission, local jurisdictions were required to enact and actively manage growth management programs for their critical area that are partially or entirely within the Critical Area.

Later, the Maryland General Assembly passed a much broader effort to manage the state’s growth, known as the 1992 Maryland Economic Growth, Resource Protection, and Planning Act. The Planning Act established the State Planning Policy, which has evolved through subsequent legislation and is currently known as the 12 Visions found in Subtitle 5-7A of the State Finance and Procurement Article. The 12 Visions call for growing smarter and more sustainably and making efficient use of State resources through a more collaborative and informed public process. Among them, the transportation vision promotes multimodal transportation that facilitates

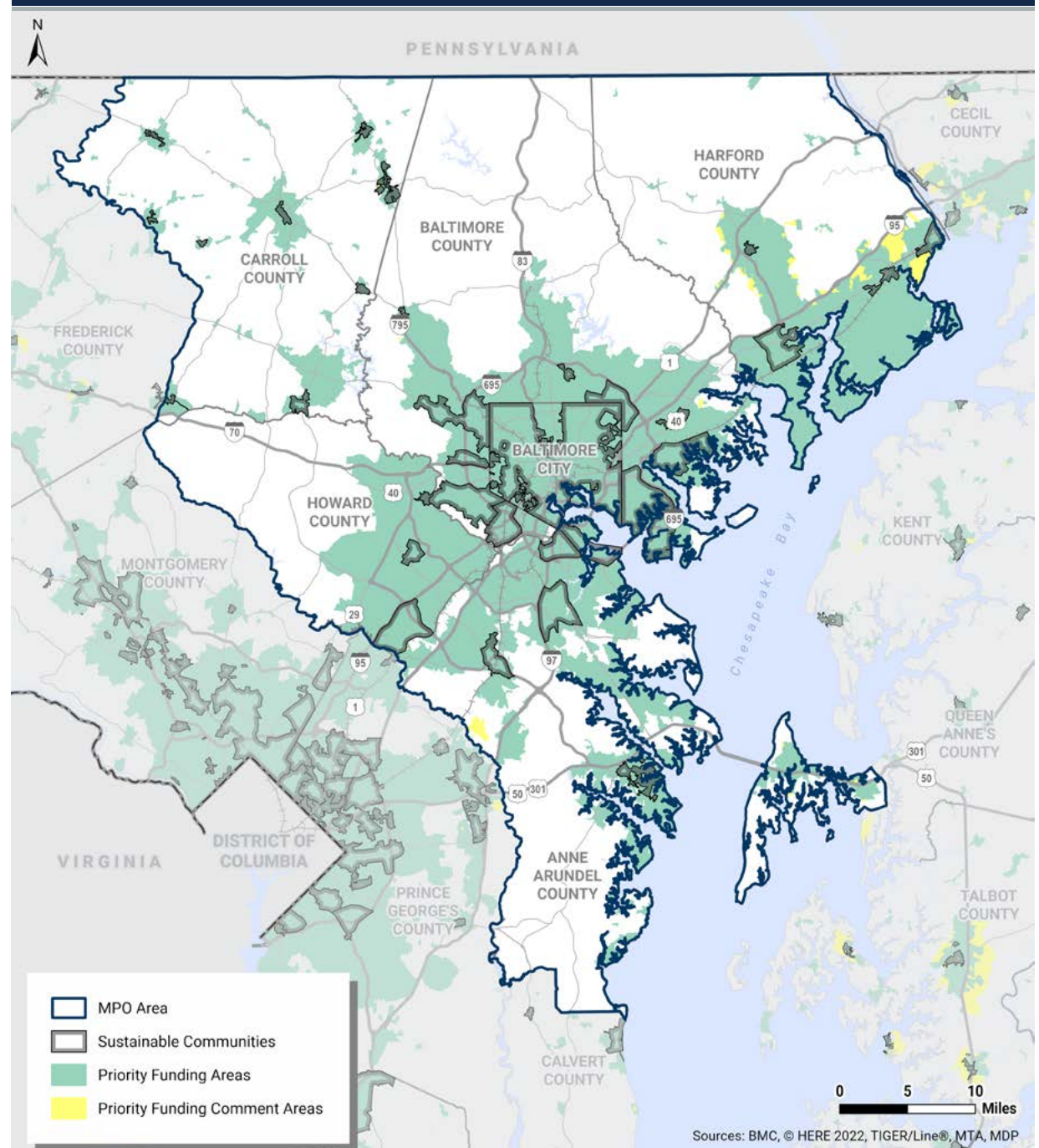
The commitment to growth management in the Baltimore region dates from the 1960s.

"the safe, convenient, affordable, and efficient movement of people, goods, and services within and between population and business centers." The Planning Act requires local jurisdictions to address these visions in their comprehensive plans. It also requires state-funded major transportation or other capital improvement projects to be consistent with the 12 Visions.

In 1997, the Maryland General Assembly enacted the Priority Funding Areas Act. That Act provided a new approach to managing growth statewide based on fiscal incentives, as opposed to regulations. The legislation created five programs to encourage investment in developed areas and preservation of farmland, forests and other natural resources.

The Priority Funding Areas (PFA) program provides incentives for jurisdictions and developers by concentrating growth-related projects in PFAs that are existing communities and places where local governments want state funding for future growth. Growth-related projects include most state programs that encourage growth and development,

Map 1 - Priority Funding Areas and Sustainable Communities in the Baltimore Region



such as highways, sewer and water construction, economic development assistance and state leases or construction of new office facilities. The Rural Legacy Areas (RLA) program provides state funds to support the preservation of large, contiguous tracts of land that are designated by local governments and land trusts and are critical to the economy, environment and quality of life.

The Sustainable Communities Act of 2010 established Sustainable Communities (SCs) to stimulate reinvestment in Maryland's older communities by preserving historic or non-historic properties and refocusing the state's community programs.

The Sustainable Growth and Agricultural Preservation Act of 2012 linked development potential to wastewater treatment. This act established four additional designated areas, or tiers, to encourage development in areas with existing or planned public sewer service and to limit development in areas with private septic systems. Local jurisdictions set the boundaries of all designated areas, which the State then uses to set priorities for infrastructure investment statewide.

We also use these designations to evaluate and score transportation projects submitted for inclusion in *Resilience 2050*. Specifically, projects are given more points in the technical project scoring process if they are located within a PFA and/or SC.

Local Government

Each county in the region exercises land use planning authority to guide its growth and development. In 2012, the Maryland General Assembly repealed Article 66B and Article 28 and replaced it with the Land Use Article. The Land Use Article of the Maryland Annotated Code delegates planning and land use regulatory authority to all non-charter counties and all incorporated municipalities. The statute outlines the responsibilities, roles and functions of the planning commission and sets the ground rules for planning and zoning powers for local jurisdictions exercising these powers.

Socioeconomic Forecasting

Planning for a regional transportation system requires an understanding of current and forecast demographic and socioeconomic characteristics across geography and time. As discussed in the previous section, a region's transportation system influences its growth and development, while the type and location of growth in turn influence travel choices.





But how can we attempt to predict where and when growth will occur? This is accomplished through socioeconomic forecasting. This section discusses socioeconomic forecasting and why it is so important for *Resilience 2050* and the work of the BRTB.

Recognizing the transportation/land use connection described above, we strive to coordinate land use planning and transportation decisions among municipal, county, regional and state partners. A vital part of this coordination is the work of the Cooperative Forecasting Group (CFG). The purpose of the CFG, a subcommittee of the BRTB comprised of representatives of state and local planning agencies, is to develop a set of population, household and employment estimates and forecasts at the jurisdiction and small area levels of geography for transportation planning purposes.

These forecasts serve as key inputs to the region's travel demand model, which is utilized to simulate work and non-work travel patterns of individuals across the region. The CFG forecasts are key to the development of *Resilience 2050*, since travel demand modeling is used to make decisions and analyze long-range transportation plan (LRTP) projects. *Resilience 2050* includes a list of planned federally funded major projects that the region expects to implement from 2028 to 2050 as well as analysis of the potential impacts associated with these projects. This requires a forecast of population, households and employment extending through the year 2050.



The CFG forecasts are key to the development of *Resilience 2050*, since travel demand modeling is used to make decisions and analyze LRTP projects.

The CFG follows a cooperative, bottom-up approach to develop population, household and employment forecasts for the Baltimore region. This approach helps to ensure that these forecasts, and the LRTP that relies on the forecasts, are consistent with the growth management policies and procedures of the jurisdictions included in the scope of the forecasts. The cooperative forecasts provide the spatial location and concentration of population, households and employment over time (typically a 30-year period). The current round of forecasts, deemed Round 10, use 2020 as a base year and extend through 2050. It was adopted by the BRTB in July 2022.

Round 10 Development and Methodology

Round 10 development by the CFG started soon after the COVID-19 pandemic began and associated closures took hold in March and April of 2020. The pandemic presented

challenges for Round 10, including capturing “pandemic impacts” upon employment in job counts and delays in 2020 census operations and data release schedules. New factors in the Round 10 cooperative forecasts included:

- > **Pandemic impacts upon employment totals:** Measuring the scale of the impacts of an event like this in real time is challenging, particularly with any degree of spatial granularity. Moreover, the employment data sets that the CFG utilizes in the development of base-year employment have lags in data release of six months to a year. The CFG adjusted its methodology to reconcile the Round 10 development schedule with data availability that supported the inclusion of pandemic impacts.
- > **2020 Decennial Census data:** The decennial census provides the most reliable small area demographic data available, and the CFG incorporated this data

(for population, group quarters population and households) into its Round 10 development work upon the release of the block-level 2020 redistricting data file in August of 2021. The incorporation of the redistricting data allowed CFG membership to recalibrate their jurisdictional and small area base-year estimates to this federal source for year 2020, from which population and household data are forecast.

- > **New base year 2020 and horizon year 2050:** For Round 10, the base year and horizon year were set to 2020 and 2050, respectively, to serve the timeline requirements of the LRTP.
- > **New Transportation Analysis Zone (TAZ) structure:** The TAZ structure was updated to reflect 2020 census geography. TAZs are the unit of geography used to model travel behavior in the travel demand model.

Round 10 Socioeconomic Forecasts

Table 1 summarizes the Round 10 socioeconomic forecasts for population, households and employment for the Baltimore region.

The Round 10 forecasts show that regional population is expected to grow by 360,000 in the 30-year period from 2020-2050 (12.6%). This is slower than the 30-year growth from 1990-2020 when the region expanded by 460,000 (19.4%). Regional employment is expected to grow by 375,000 jobs from 2020-2050, a growth rate of 25.5%. In numeric terms, population and employment growth are quite similar, but the employment growth rate is double that of population.

The Round 10 forecasts use a base year of 2020. It's important to note that the employment growth forecast accounts for the 94,000 jobs (-6.3%) lost in the region in 2020 - largely due to the COVID-19 pandemic. Although the forecasts were developed in a time of uncertainty, the CFG

membership assumed in Round 10 that the immediate job losses due to the pandemic would largely be recaptured in the shorter term, and that additional growth would occur beyond the recovery and through the forecast horizon. In the interest of gaining insight into pandemic impacts on future growth patterns and how these changes might impact future forecasting efforts, the CFG proposed a project exploring postpandemic trends in employment, commercial real estate, housing location choice and travel demand. The project was approved and work will likely begin in late summer 2023.

Household growth is expected to outpace that of population, leading to declining household sizes for the region over the course of the forecast period. The average household size of the region is anticipated to decline modestly over the forecast horizon, from 2.53 in 2020 to 2.48 in 2050. Average household size has an effect upon transportation (and travel demand modeling), as larger household sizes tend to produce more trips than smaller or single-person households.

Table 1 - Round 10 Forecasts for the Baltimore Region (2020-2050)

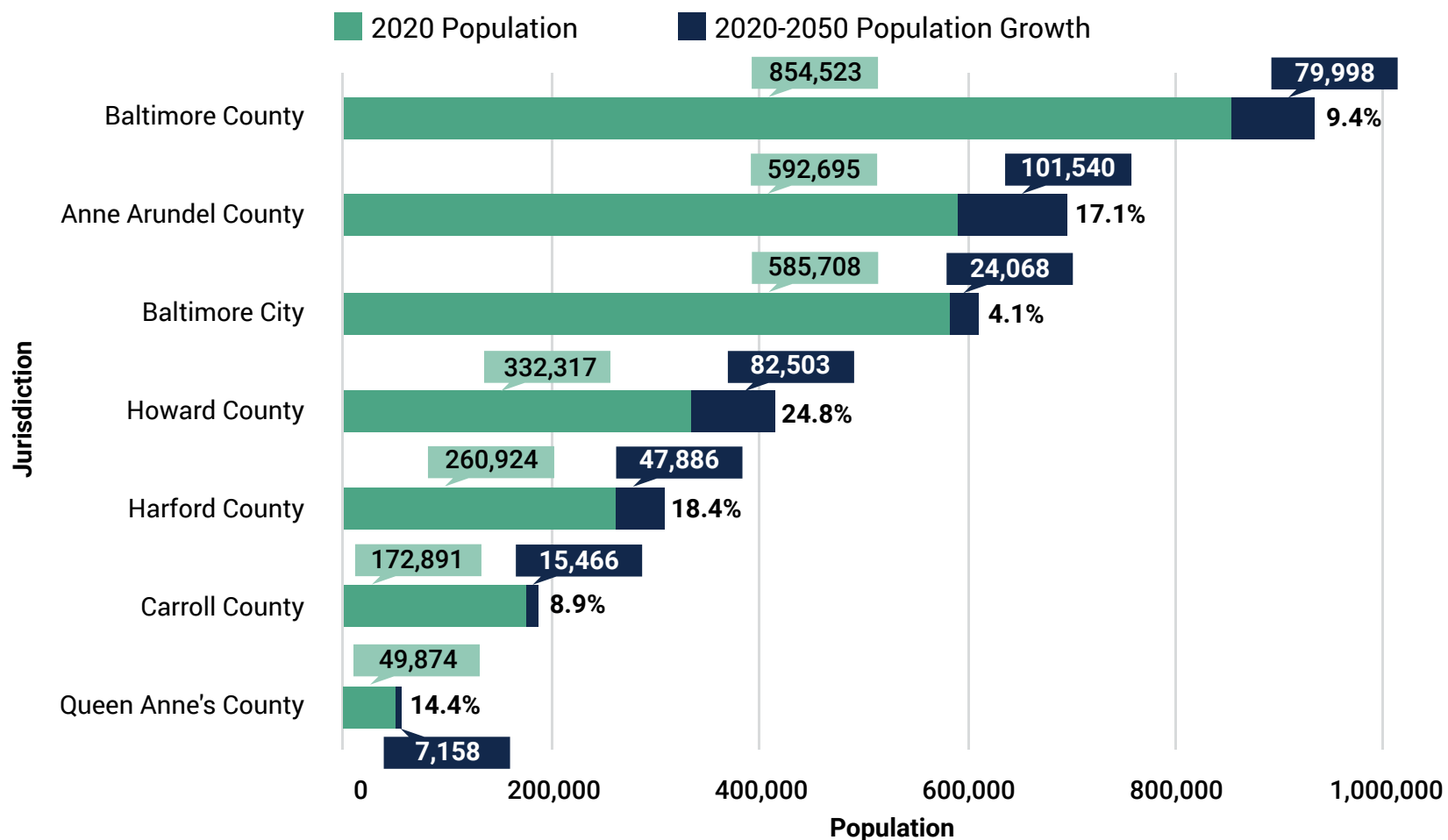
Data Point	2020	2030	2040	2050	Number Chg: 2020-2050	Percent Chg: 2020-2050
Population	2,848,932	2,995,213	3,113,473	3,207,550	358,618	12.6%
Households	1,100,758	1,161,643	1,217,960	1,265,686	164,928	15.0%
Employment	1,470,019	1,617,869	1,743,438	1,844,339	374,320	25.5%

Note: Forecasts endorsed by the Baltimore Regional Transportation Board on July 15, 2022. Source: Local jurisdictions; Cooperative Forecasting Group.

Figure 1 shows Round 10 population levels and growth expectations for each jurisdiction in the Baltimore region.

The chart shows that for population, Baltimore County remains the largest jurisdiction in the region, Anne Arundel County expects the biggest numeric growth (with an additional 102,000 persons from 2020 to 2050), and Howard County has the greatest population growth rate at 24.8%. The 2020 decennial census marked the first time that Anne Arundel County's population surpassed that of Baltimore City. While the Baltimore City population has been in decline for decades, Round 10 indicates slow yet positive growth expectations in Baltimore City, with population growth of 4.1% forecast from 2020 through 2050.

Figure 1 - Round 10 Population Forecasts by Jurisdiction (2020-2050)

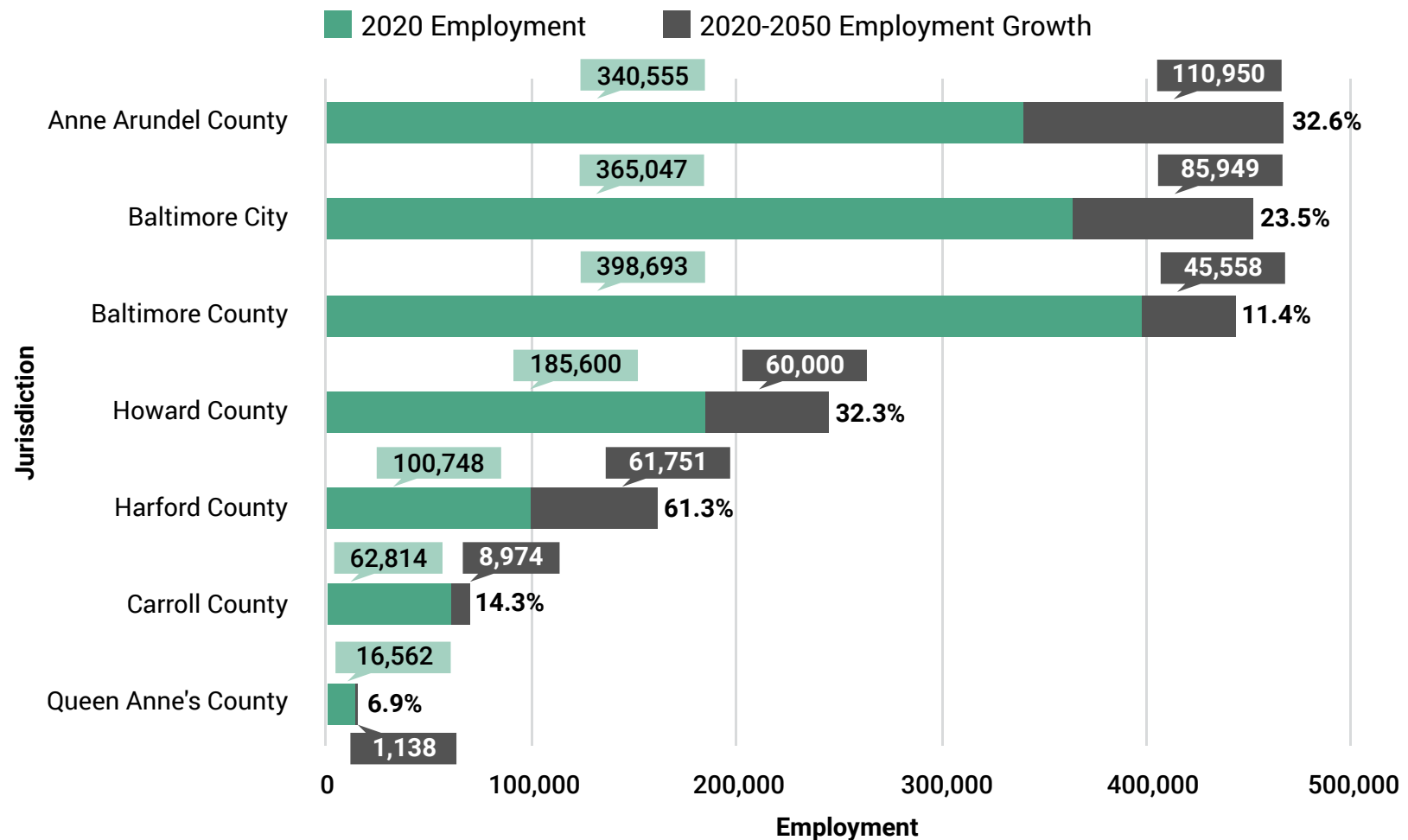


Source: Local Jurisdictions: Cooperative Forecasting Group.

Figure 2 shows Round 10 employment levels and growth expectations for each jurisdiction in the Baltimore region. For Round 10 employment, the largest numeric increase is expected in Anne Arundel County, where an additional 111,000 jobs are forecast. In 2020, Anne Arundel County was ranked third in terms of total employment. By 2050, the forecast job

growth moves Anne Arundel County to the first rank, just ahead of both Baltimore City and Baltimore County. Together, these three jurisdictions account for about 75% of regional employment. The largest percentage increase is forecast to be in Harford County, where employment is expected to grow by 61.3% from 2020 to 2050.

Figure 2 - Round 10 Employment Forecasts by Jurisdiction (2020-2050)



Source: Local Jurisdictions: Cooperative Forecasting Group.



The largest percentage increase is forecast to be in Harford County, where employment is expected to grow by 61.3% from 2020 to 2050.

The Round 10 forecasts served as critical inputs for *Resilience 2050*, including travel demand modeling and air quality conformity analyses. Output from the travel demand model helps to identify regional transportation needs. This informs the decisions we make about potential new projects in developing the LRTP. Appendix C presents additional information about the travel demand model's forecasts with respect to projects in this plan. For more information on the Round 10 cooperative forecasts, please refer to the [Socioeconomic Forecasting White Paper](#).

Demographic Trends

Demographic data includes characteristics of a population such as age, sex, race, income, educational attainment and employment status. This data has a profound effect on business marketing strategies and location choices, as well as on public policy decisions and government funding allocations. Additionally, analysis of demographic trends plays a critical role in the planning process at

all levels of government including community and economic development and land use, transportation and environmental planning. This section highlights a selection of three demographic trends that are timely, and are likely to have significant impacts upon the future of the Baltimore region: the components of population change; changing age composition; and work from home trends.

Components of Population Change

Future population change can be estimated by understanding three components: 1) births, 2) deaths and 3) net migration. Demographers refer to the difference between the number of births and deaths as the natural change in population. When births exceed the number of deaths in a given time period, an area's population increases, and decreases when the opposite is true. Likewise, migration has two components: persons moving in and persons moving out. When a greater number of people move to an area compared to moving out, the population increases, and decreases when the opposite is true. Persons migrating to the Baltimore region can be from either international (outside the USA) or domestic (from another state or Maryland jurisdiction) locations.

The region's population is getting older, driven by the large "Baby Boomer" generation (those born between 1946 and 1964). The share of the population that is 65 years or older was 13% in 2010 and is expected to represent 20% by 2030. At the same time, the fertility rates of the region (and nation) are in decline, resulting in fewer births. As a result, the region's



population growth due to natural increase (births minus deaths) is projected to turn negative, with deaths expected to exceed births by around 2030. Population changes due to natural increase are depicted in Table 2.

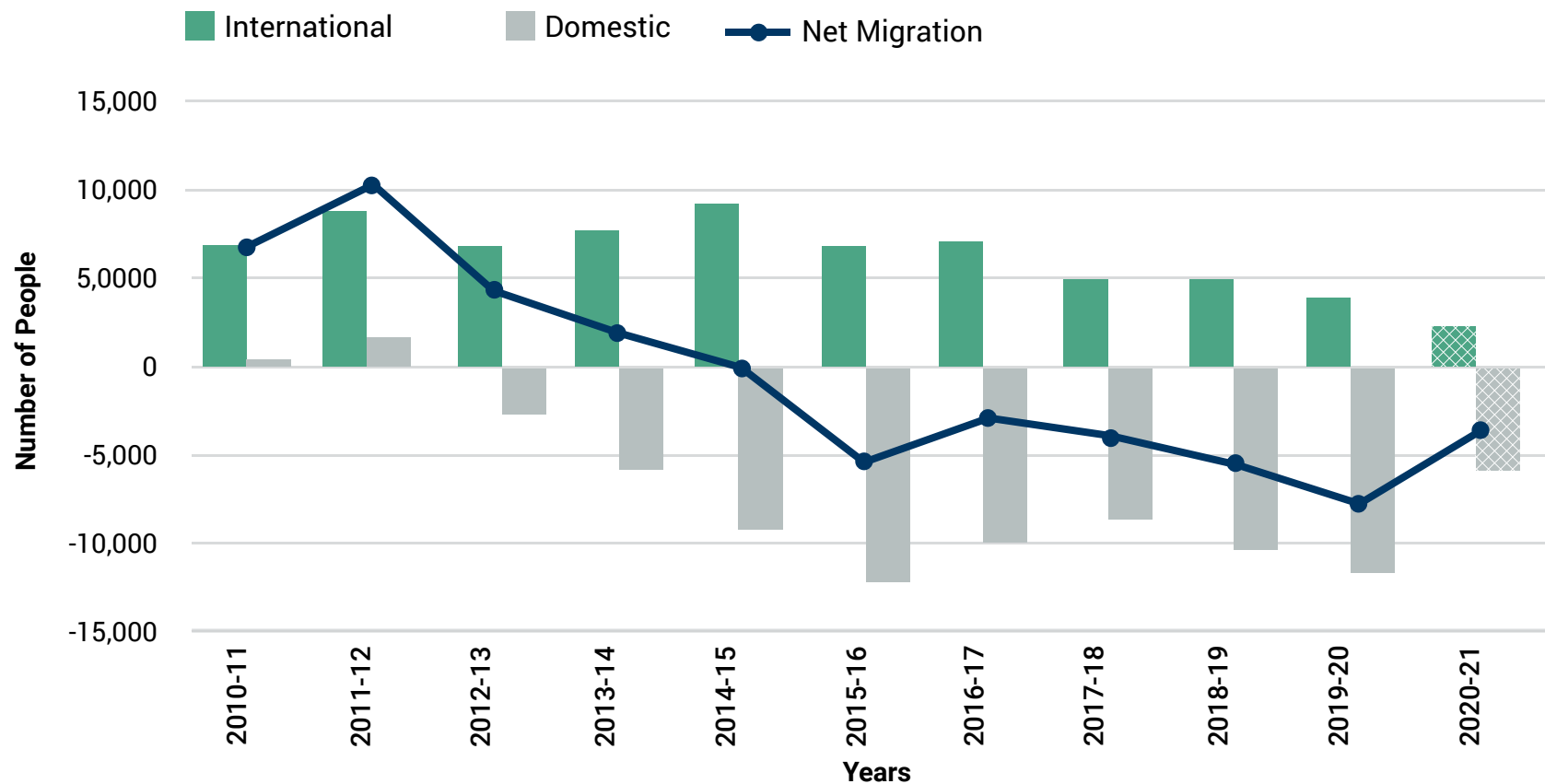
With natural change anticipated to become negative in the coming years, the Baltimore region's future population growth will become more dependent upon migration. However, international migration has been slowing and net domestic migration has been negative (as seen in Figure 3). In this scenario, positive regional population growth is contingent upon attracting more international and domestic migrants, while also retaining current residents.

Table 2 - Baltimore Region Natural Increase (2020-2050)

Horizon Year	Births	Deaths	Natural Increase
2020	180,496	-145,822	34,674
2025	180,358	-161,386	18,972
2030	179,129	-180,186	-1,057
2035	178,451	-200,072	-21,621
2040	181,830	-217,442	-35,612
2045	185,521	-229,310	-43,789
2050	189,699	-234,935	-45,236

Source: BMC cohort component model (pOptics)

Figure 3 - Baltimore Region Migration Trends



Source: U.S. Census Bureau, Population Estimates Program - v2020 (solid) and v2021 (cross-hatched).



Fertility rates of the region (and nation) are in decline, resulting in fewer births. As a result, the region's population growth due to natural increase (births minus deaths) is projected to turn negative, with deaths expected to exceed births by around 2030.

Components of Population Change, Transportation and *Resilience 2050*

The trends and observations in the composition of the population are important in transportation planning, as both the size (number of persons) and the characteristics of the population (working vs. retired and household composition, for example) affect travel demand. These trends prompt questions such as:

- If the growing number of Baltimore region seniors choose to stay and age in place, how might this choice affect travel?
 - Will Vehicle Miles Traveled (VMT) decrease? VMT might decrease as fewer seniors are employed and some age out of their ability to drive safely.
 - Will demand increase for off-peak alternative transportation services related to medical and social appointments?
- If migration is to drive future regional population growth, who are the migrants and where will they choose to live?
 - What will migrants' ages and household structure look like (number of workers and dependents), since larger households produce more travel?
 - Where will migrants choose to live - urban, suburban or rural areas? Will migrants' residential location choices continue the region's sprawling residential pattern and increase demand for automobile infrastructure improvements? Or will migrants' residential

location choices cluster in densely populated urban neighborhoods served more by non-automobile modes such as transit, walking and biking?

Age Composition of the Population

When attempting to understand the current and future needs of the population of a given area, it is important to consider not only the size of the population, but also the characteristics of the population. One of the characteristics that is critical in planning to accommodate the future needs of a population is its age structure. Understanding the age structure of the population can help planners anticipate demand for age-specific services, such as public schools or senior services and facilities, and make adjustments to the transportation system in order to better accommodate a changing age distribution. The age composition of the population can also inform analyses of the future of the economy, including consideration of whether there will be enough workers to sustain forecasted job growth and to support dependent populations.

The population of the Baltimore region is aging, mirroring national trends. A variety of factors are contributing to the demographic shift, including the large size of the aging "baby-boomer" generation, advances in science and medicine resulting in longer lifespans and changes in fertility rates largely due to differences in family formation preferences (many are having fewer children, later in-life).

Table 3 provides information on the growth of the median age of the population in the Baltimore region, the pace of growth over time and some geographical context. The data shows that the median age of the population in the Baltimore region increased by eight years (26%) over the nearly 40-year time period. This is slightly slower than the median age growth for Maryland and the United States.

While the median age is helpful to get a general sense of the age of a population, it does not provide details on the age distribution of the population. When analyzing the current and projected age structure of a population, it can be helpful to understand the shares that are children and seniors, as well as the shares that are of working age, as this distribution can have significant impacts upon the economy of a region. For the purposes of this analysis, dependent populations are comprised of children (persons <18 years of age) and seniors (persons ≥ 65 years of age). The working age population consists of those between 18 and 64 years old.

Table 3 - Median Age by Jurisdiction (1980-2019)

Jurisdiction	1980	2019	Chg: 1980-2019	
			Numeric	Percent
Baltimore Region	30.6	38.6	8.0	26%
Maryland	30.3	39.0	8.7	29%
United States	30.0	38.5	8.5	28%

Source: U.S. Census Bureau Decennial Censuses and American Community Survey, Tables B01002, K200103; NHGIS, University of Minnesota.

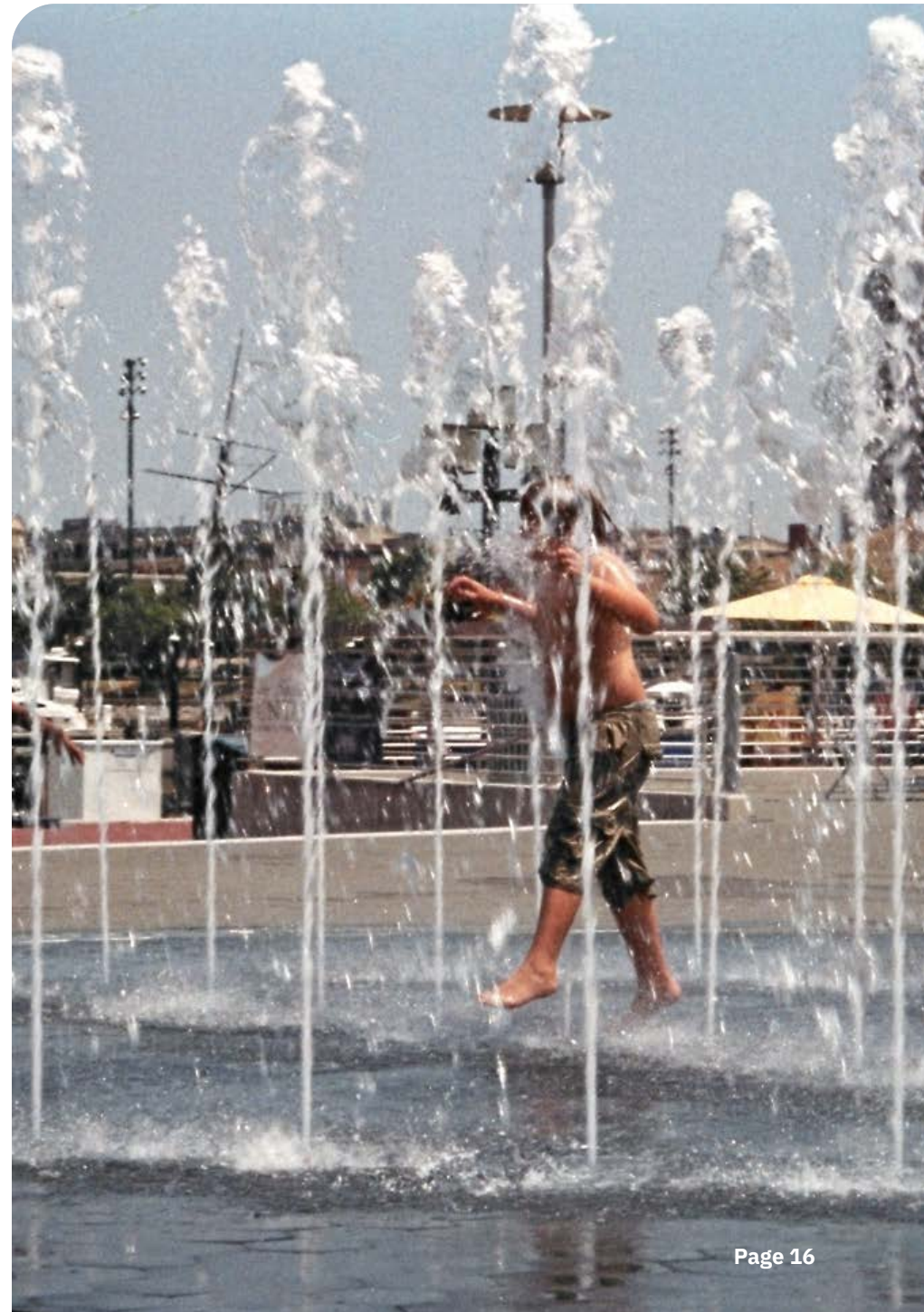
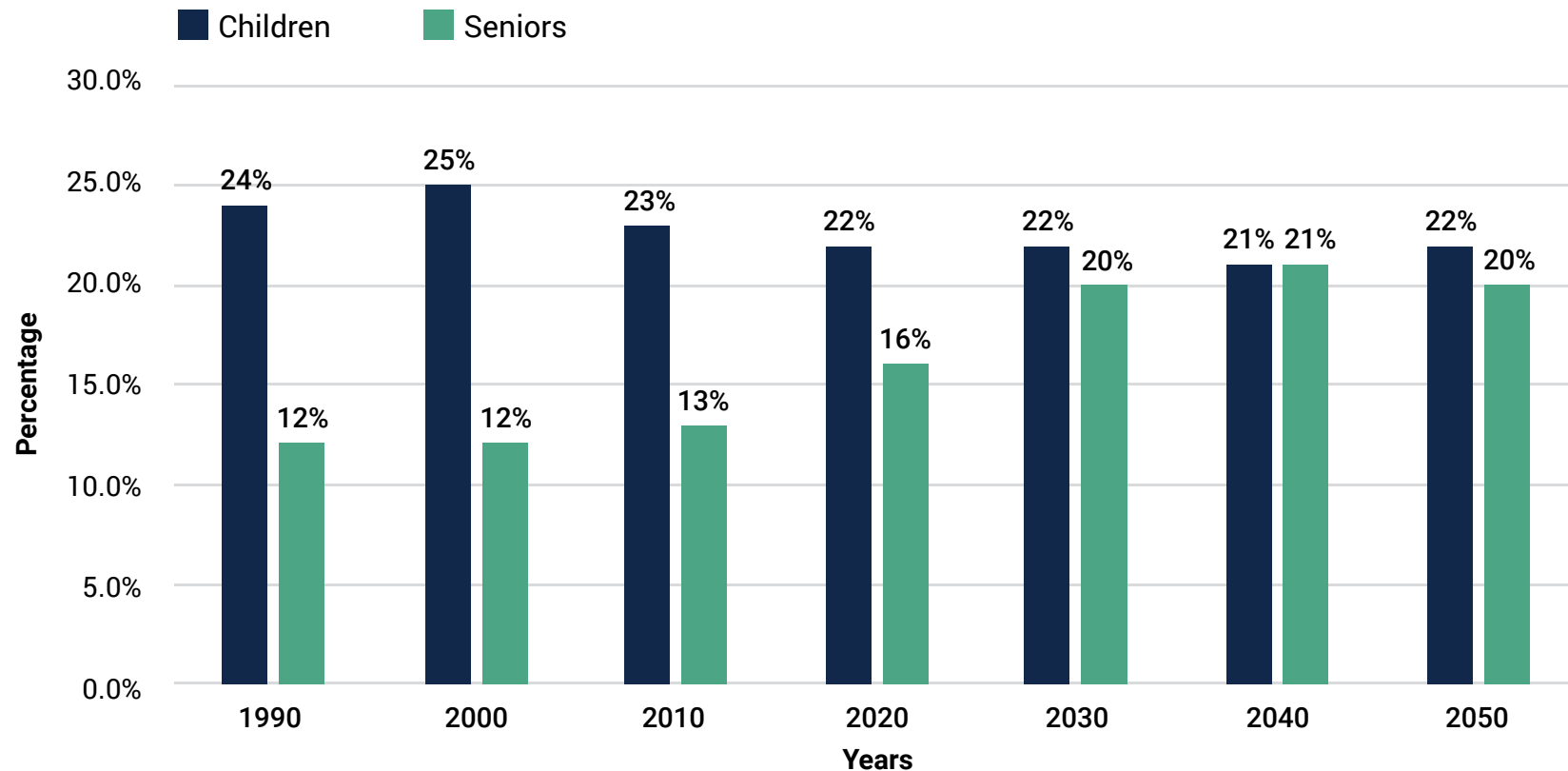


Figure 4 illustrates a decline in the share of the population that are children, while the share that are seniors is increasing. By 2030, it is projected that the share of the population that are children and seniors will be nearly the same, after many years of the share of children exceeding that of seniors. The share of the population that were children was double the share that were seniors from 1990 to 2000.

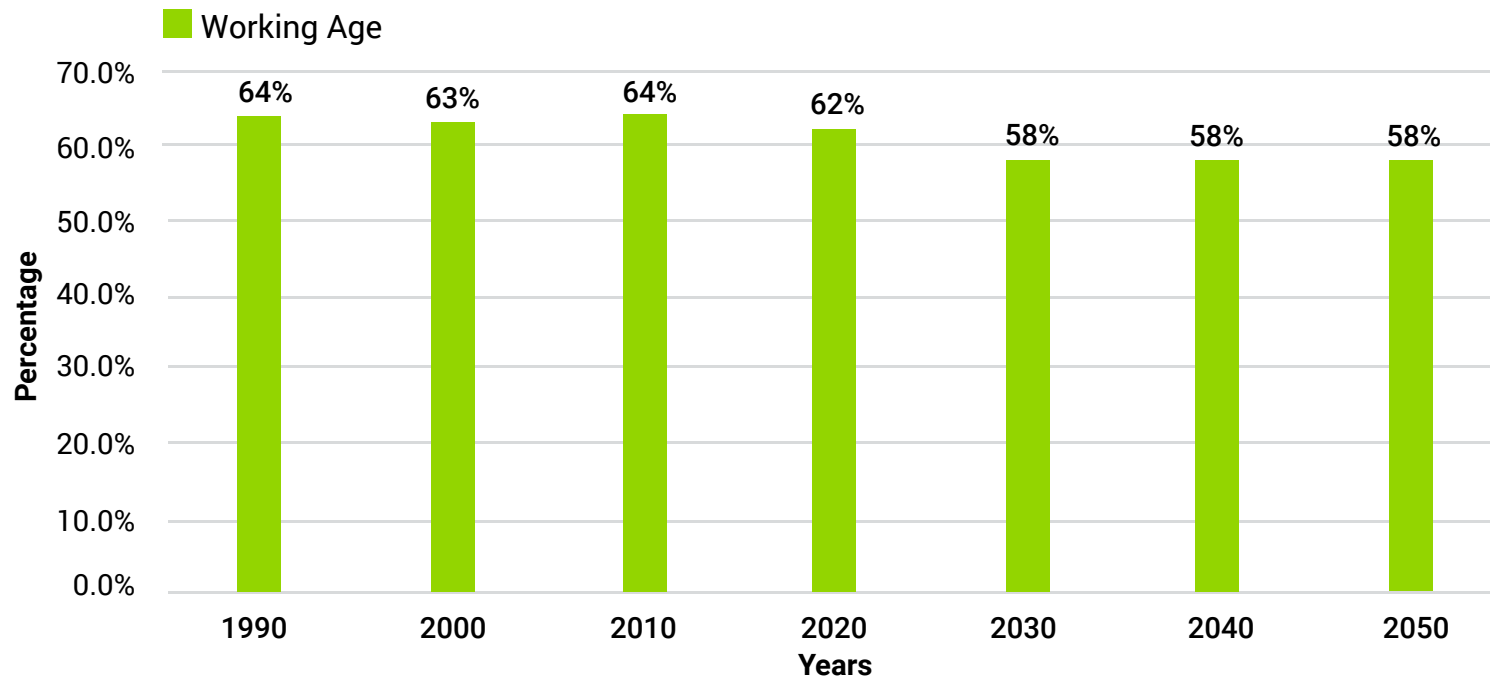
Figure 4 - Share of Population that are Children and Seniors: Baltimore Region



Source: U.S. Census Bureau (Decennial Censuses, American Community Survey); BMC cohort component model (pOPTICS).

Another consideration is the observed and projected decline in the share of the population that is of working age, depicted in Figure 5. In 1990, the share of the population in the Baltimore region that was of working age was 64%.

The share declined to 62% in 2020 and is expected to drop further to 58% from 2030 through 2050. This decline prompts a number of questions for planners, economic development professionals and businesses, such as:

Figure 5 - Share of Population that is Working Age (18-64): Baltimore Region

Source: U.S. Census Bureau (Decennial Censuses, American Community Survey); BMC cohort component model (pOPTICS).

- Is the projected size of the working age population adequate to support future job growth?
- Is the projected size of the working age population adequate to support dependent populations?
- Are adjustments necessary to accommodate changes in the demand for services that could accompany smaller shares that are children and working age and larger shares that are seniors?
- Will adjustments be necessary to help increase the size of the employed population, such as attempts to attract additional workers or to increase labor force participation rates?

Analysis of the age composition of the population can also help inform an understanding of the demand for travel. Two of the most significant age-related factors to consider are the presence of senior populations and the number and share of households with workers and children present. For example, senior populations tend to generate fewer trips, as seniors are less likely to be in the labor force and to have children present in their households. Larger households with both workers and children tend to generate more trips, as work and child escort trips increase travel demand. These age-related differences in travel behavior and choices are accounted for in the region's travel demand modeling efforts.

Work From Home Trends

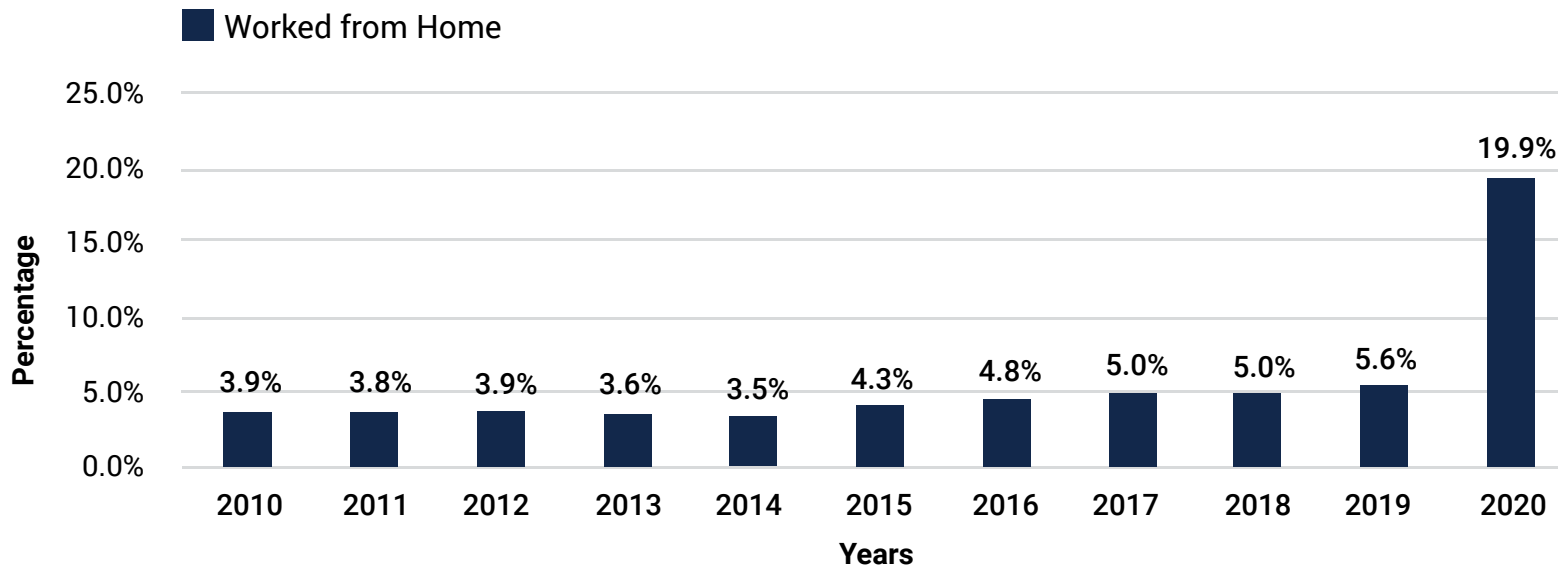
In the decade prior to the COVID-19 pandemic, the share of the population working from home was increasing, but still accounted for a small share of all workers in the region (3.9% in 2010 and 5.6% in 2019). In 2020, the pandemic caused an unexpected large-scale work from home (WFH) experiment. Estimates from the U.S. Census Bureau's American Community Survey (ACS) indicate that WFH was the primary work arrangement for nearly 20% of the region's population in 2020, as depicted in Figure 6.

For context, it is important to note that the WFH share presented in the ACS is likely a lower bound for an estimate

of the number of workers that work remotely. The ACS questionnaire refers to the "usual" means of transportation to work, and thus accounts for only those that have WFH as their primary work arrangement at the exclusion of many of those that may work from home on a hybrid basis.

While the share of workers that WFH grew rapidly from 2019 to 2020 and accounted for the primary work arrangement of 1 in 5 workers in the region in 2020, there is variance in the rates of adoption by demographic characteristics of workers and by industry. The ACS also captures demographic details regarding those that WFH. Below are a few observations regarding the rates of WFH by selected demographic characteristics:

Figure 6 - Share of Workers that Worked From Home: Baltimore Region



Source: U.S. Census Bureau, American Community Survey 1-Yr Estimates, Public Use Microdata Sample files.

- > **Sex:** More women than men WFH. In 2020, 21.9% of women and 17.9% of men worked from home.
- > **Age:** Prior to the pandemic, the share of the population that WFH generally increased with age, with a substantial jump from the 55-64 to the 65+ age category. However, once the pandemic began in 2020, workers from 25 to 54 years of age had the greatest shares engaged in WFH.
- > **Race:** Those who identify as White alone, Asian alone or as two or more races had higher rates of WFH than those who identified as other race categories.
- > **Education:** Those with higher levels of educational attainment (Bachelor's Degree and Advanced Degree) had higher rates of WFH than those with lower levels of educational attainment.
- > **Industry:** There is great variation by industry in the share of workers that WFH. In 2020, the three industries with the highest rates of WFH were: Information (39.4%), Professional, scientific, management, and administrative and waste management services (31.5%), and Finance and insurance, and real estate and rental and leasing (31.0%). Lower rates of WFH are evident in industries that are more reliant upon customer interaction or otherwise require in-person work, such as: Arts, entertainment and recreation; Accommodation and food services; Retail trade; Construction; and Manufacturing.

The ACS data shows that while the share of workers that WFH has grown over time, there is variance in the rates of adoption by demographic characteristics and by industry. While the rapid adoption of WFH at the onset of the pandemic has been widely reported, the longer-term post-pandemic future of WFH is less clear. Though the specific rates of adoption in the future may be uncertain, it is sure that WFH is more than a short-lived response to a public health crisis, and that it will continue to evolve.

Work from Home, Transportation and Resilience 2050

While the precise impacts of WFH adoption upon transportation in the future are uncertain, consideration of the size, location and characteristics of the WFH segment of the workforce will be important for future land use and transportation planning efforts. There are a variety of potential effects that warrant additional consideration, including:

- **Travel Differences:** What are the differences in trip rates generated by WFH workers? If there is a reduction in trips to the workplace, are other trips taken in their place (kids/errands/other) and with what frequency? What is the overall impact on Vehicle Miles Traveled (VMT) (Up/Down)?
 - > What are the implications for traffic volume and transit?
 - > What does expansion of WFH mean to future funding for transportation? Would gas tax revenue decline?
- **Changes in Home Location Choice:** For those that can WFH full-time or on a hybrid basis, the reduction in frequency of



commute may lead some to consider living farther from their traditional work location. Will WFH increase sprawl? What are the implications to future land use?

- Impacts upon downtowns and employment centers:
 - Will there be reduced demand for downtown office space? If so, what are the potential effects? Will rents decrease? Will adaptive reuse of some office buildings that are no longer viable increase?
 - Will there be reduced demand for office-supportive businesses (such as restaurants) that primarily rely on office workers?
- Equity Considerations: Many of the jobs that are WFH capable are not accessible to all. For example, educational attainment and income are strong predictors of the ability to work from home. Will low-income individuals and those with lower educational attainment be able to access opportunities enabling them to transition into WFH careers if they would like? Will adequate service be available for those that must commute to work by transit?

We look forward to continuing to monitor the trends and projections presented in this chapter, and to considering their impacts upon the region's transportation needs. For more detailed information on these trends, please refer to the [Demographic Trends White Paper](#).