Indicators of Smart Growth in Maryland

Appendices

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*The views expressed in this report are those of The National Center for Smart Growth Research and Education and do not necessarily represent those of the University of Maryland or agencies of the State of Maryland with responsibilities for the management of some of the systems addressed in this report.

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APPENDIX A: A SHORT HISTORY OF GROWTH MANAGEMENT IN MARYLAND

Public officials in Maryland have been trying to find ways to better manage land use and growth for more than 60 years. In 1933, the state created the Maryland State Planning Commission, considered the oldest state planning commission in the country. By 1959, the Commission staff became the State Planning Department and later the Office of Planning. It was subsequently elevated to cabinet status as the Maryland Department of Planning.

Since the end of World War II, but mostly since the mid-1970s, a steady stream of planning and land use legislation has been enacted by the Maryland General Assembly, including

- State Planning Act, 1974
- Chesapeake Bay Critical Areas Act, 1984
- Economic Growth, Resource Protection and Planning Act, 1992
- Smart Growth and Neighborhood Conservation initiative, 1997
- Gubernatorial executive order established a Smart Growth Policy for state government agencies, 1998
- Priority Places Program. Executive order, 2003
- Amendments to the Smart Growth legislation of 1997, including the Smart, Green and Growing Act, 2009

These state measures complemented a number of land use management efforts implemented at the local government level in Maryland. Baltimore County, for example, developed a program to contain new development within what it called the Urban-Rural Demarcation Line, with most of the land outside the "URDL" zoned for agriculture or extremely low densities. Montgomery County in suburban Washington implemented a "wedges and corridors" plan designed to promote corridors of development separated by wedges of environmentally protected lands. Carroll County became a leader in farmland preservation, and several counties experimented with the concept of Transferable Development Rights.

Together, these various laws and executive orders, as well as other related budgetary, legislative and regulatory initiatives in recent years, were intended to protect rural areas by controlling or at least arresting the land use phenomenon known as "sprawl development" and to revitalize older urbanized areas. The State of Maryland put in place an array of progressive environmental programs, including measures to protect both tidal and non-tidal wetlands, to preserve farmland, to purchase open space for parks, to regulate storm water runoff from development projects, and to require trees to be preserved or planted to replace those cut to make way for development.

The underlying premise of this steady stream of legislative initiatives was that Maryland's increasingly dispersed pattern of development was harmful to the state's environment, a threat to the state's declining acreage of farmland and natural resources, costly to taxpayers, and damaging to the state's overall beauty and quality of life.

APPENDIX B: OVERVIEW OF PROGRAM EVALUATION AND PERFORMANCE INDICATORS[1]

B.1 DEFINITIONS

Policy discussion typically moves from general desires to specific steps necessary to fulfill those desires—a continuum from the broad to the specific. The terms used to talk about where one is on the continuum array themselves like this:

- **Broad terms**: Goals, principles, fundamentals, strategies, objectives
- **Specific terms**: Impacts, outcomes, measures, indicators, evaluation criteria, policies, actions, implementation tools

The terms get used differently in different studies, which is fine as long as the definitions are used consistently. But if they get used inconsistently in the same study, people get confused. Here is how the Maryland Smart Growth Indicators Project uses the terms:

Things a community is trying to achieve (**desired outcomes**) may be stated broadly or specifically. **Positives** (what we want; desired outcomes; benefits) are mirror images of **negatives** (what we want to reduce or avoid; undesired outcomes; costs).

Goals are broad statements of desired outcomes (e.g., increase environmental quality, economic prosperity, transportation choice, social justice). If the high-level goals get divided into sub-goals, they are often called **objectives**. Logically, since goals and objectives are the categories of things people care about, they are roughly synonymous with the term **impacts**: the objectives are about good impacts a community wants to increase, and bad impacts it wants to reduce.

Indicators are specific statements of outcomes. They should fall under (or "nest within") one of the higher-level goals or objectives. For example, parts per million of CO_2 might be an indicator within the objective of reducing air pollution or mitigating climate change; number of new jobs by type might be an indicator within the objective of creating a diverse economy; number of transit lines might

[1] This appendix was written by Terry Moore and draws heavily on an appendix in his *The Transportation / Land Use Connection*: Appendix A, Framework for Evaluating Public Policy.

be an indicator within the objective of providing multiple transportation options; amount of new investment in lower-income neighborhoods might be an indicator within the objective of redeveloping distressed communities. Indicators are also called **measures** (because they always specify a goal or objective by describing something that can be measured) or **benchmarks** (because they provide a measurable standard against which progress toward goals can be evaluated).

Taken together, goals and indicators are **evaluation criteria**: decisionmakers should evaluate their policy choices on how effectively a specific policy achieves desired outcomes.

Actions are things a community is willing to do to increase its chances of achieving what it wants to achieve. The actions that the public sector (a local, regional, or state government) chooses to take are its **policies**. Actions can be classified several ways: by where they get applied, by who implements them, and by the area of development they affect. Most public actions fit under one of these categories:

- **Planning**: identifying efficient opportunities for collective action
- **Funding**: getting the public to agree to pay for some of those actions; getting the money
- **Investment**: building public facilities; providing public programs (follows Planning and Funding: there should be agreement on what to do and on how much can be paid for before building can occur)
- **Incentives**: giving financial incentives (direct or in-kind) to the private or non-profit sectors to provide the desired public facilities or programs (a different way to direct public investment)
- **Regulation**: requiring the private sector, as a condition of development, to preserve or provide certain public facilities, amenities, or services (an alternative to incentives)
- **Coordination**: getting everyone to cooperate and to do so efficiently: not just public-private partnerships, but public-public partnerships.

In summary:

- Goals, objectives, and outcomes are what we want to achieve.

- Indicators are measurements of the degree of our success in achieving them.
- Policies are the actions we agree collectively to undertake to increase the likelihood that we will achieve them.

Figure B.1 shows how these pieces fit together:

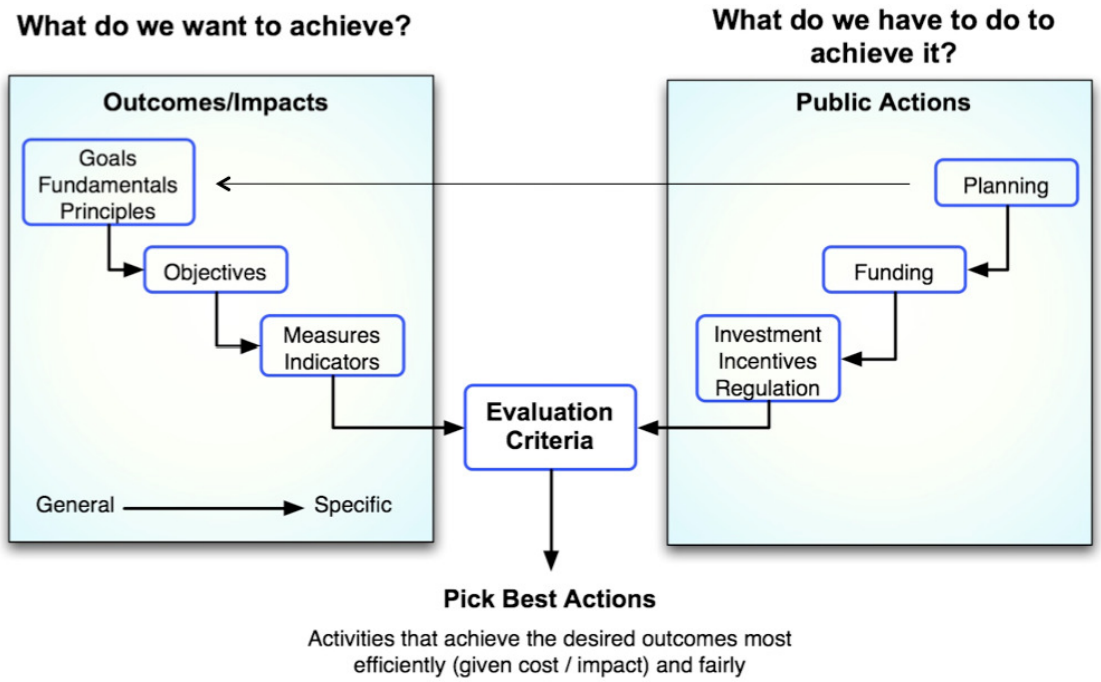


Figure B.1: Summary of terms used in policy evaluation. Source: Moore, Terry and Paul Thorsnes. 2007. The Transportation/Land-Use Connection. American Planning Association. Chicago.

Note that indicators are in the left-hand box about outcomes and impacts: they are more specific measures of broad goals for desired outcomes. The right-hand box is about actions (public policy). Indicators join with public policy in the middle at "Evaluation Criteria" because indicators are likely to be some of the criteria by which alternative public actions get evaluated (e.g., "What kind of effect is Action X likely to have on Indicator Y?").

Indicators attempt to measure progress toward achieving desirable public goals/objectives (as specified on the left side of Figure 1). Indicators should fall under ("nest within") one of the higher level goals or objectives. For example, the number of new jobs by type is an indicator (a measure) of the broader goal of "economic development."

B.2 TYPICAL GOALS OF PUBLIC POLICY

The goal of public policy (of government action) is, in broad terms, to make the people government serves better off. The presumption is that collective action in some areas will yield superior results to no action. That is the justification for taxing people: government will provide some desirable services individuals might otherwise be unable to provide by themselves (e.g., construction of roads or schools, or certain aspects of environmental protection) or would not provide very efficiently (e.g., a regional highway system).

Government usually operates at the base of psychology's hierarchy of needs, trying to make sure certain biological, physiological, and safety needs are met (e.g., clean air and water; shelter; personal and property security). Individuals must supply their higher needs (belongingness, esteem, self-actualization) themselves. The assumption is that adequately meeting the base needs provide the time, security, and economic resources for pursuing the higher needs.

But "making people better off" is too broad a goal to be measured. We must get more specific. What people do we want to make better off? In what area (Maryland residents only, or Maryland workers, too, regardless of where they live)? In what capacity (as residents, employees, property owners, or business owners)? And for what time period (current residents, or future residents too)? What can we change that improves the things people care about? In broad terms, public policy aims at improving:

- **Economic prosperity**: more and better jobs, higher wages, and so on
- **Environmental quality**: air, water, flora, fauna, and so on
- **Amenity**: mobility, housing, shopping, education, security, recreation, and so on.

Public policy addresses each of these issues by providing public facilities and services to try to make them better. It does that, of course, subject to the constraints of efficiency (doing so in ways that don't waste money or otherwise increase the cost of living) and fairness (people should pay for these improvements in proportion to the benefits they receive or the costs they impose, unless society decides through public policy that certain people are in a group that should be treated differently).

B.3 THE ROLE OF INDICATORS

Per Figure B.1, indicators are measurements of factor of concern. Indicators are about impacts—about benefits and costs. When policymakers inform public debate and influence public action, they become evaluation criteria: for example, "We said we wanted X by now (goal and evaluation criterion); this indicator tells us that we have achieved only 10% of X (evaluation); we need to adopt policy Y now (action)."

Indicators provide communities with an opportunity to look at their past and predict future trends. They also help identify problems and set an agenda to create new policies to address the issues communities face. They simplify (both an advantage and a potential problem) the complexity of the multiple factors and interactions that affect economic, environmental, and social quality of life. By comprehensively tracking and establishing goals across a wide array of indicators, policymakers and stakeholders may be able to see more easily how policies might be affecting outcomes. Indicators provide a comprehensive look at how policies are being implemented and help identify the areas in which communities are succeeding and those that require more attention. They also play an integral role in identifying key turning points and monitoring trends (Button 2002). Indicators have been defined as "statistical series and all other forms of evidence…that enable us to assess where we stand and are going in respect to our values and goals, and to evaluate specific programs and determine their impact." (Bauer 1966) They can range from broad measures of societal performance to specific technical data.

B.4 TYPICAL PROBLEMS WITH USING INDICATORS

In the context of policy evaluation, specific and measurable outcomes that are deemed consistent with the more general goals are often referred to as performance indicators or performance measures.

B.4.1 Connection of indicators to goals

There is always agreement on broad goals: no one opposes, for example, economic prosperity and environmental quality. But those goals are too broad to measure. We must ask, for example, "What would we have to see to have some confidence that we are becoming more economically prosperous?" Each answer may provoke another similar question, until we get to specifics-and the specifics

usually are something that can be measured. For example, as one gets more specific about one part of the definition of "Economic Prosperity," one moves from a broad goal toward specific measurements. In this example, economic prosperity eventually gets measured as jobs and average wage by sub-area, race, and other neighborhood of socioeconomic characteristics.

Broad Goal	*Intermediate Goal*	*Objective*	*Specific Measurement*
Economic prosperity			
	Business growth		
		Jobs and Income and Wealth	
			Number of Jobs, by type and wage
			Average wage
			Distribution of jobs and wages by:
			Sub-area
			Race
			Income
			Other

B.4.2 Number of indicators

The preceding diagram illustrates another point: a single goal may generate many sub-goals (objectives), each of which may have a dozen reasonable indicators. Some of those indicators may overlap, but each of them will be different ways of measuring related impacts of interest. For example, if one starts at the left with the single goal of "Environment Quality" one may end up on the right with hundreds of measurements. Consider just indicators relevant to water quality:

- Measurements of types of pollutants;
- Measurements of sources of pollutants;
- Measurements of impacts of pollutants;
- Split out (disaggregate) of all the above measurements by:
    - Political jurisdiction;
    - Watershed;
    - Time (past, current, forecast);
    - Units of measurement: total vs. change; absolute amount vs. percent; other ratios.

Multiply all those indicators by the same number for other areas of environmental quality (water quantity, air quality, open space, flora, fauna) and, yes, there are potentially hundreds of measurements: certainly in theory, and possibly in practice (i.e., there may be standardized data to support the creation of that many indicators).

B.4.3 Measurement of indicators

Measurement requires that the data sources and units of measurement be selected, specified, collected, and standardized.

Selection and specification of indicators

One must consider the following:

- The nature of the measure. What, precisely, is the measure measuring and what form will the measure take?
- What level of detail is being addressed in the measure? Will the measure be applied to the entire subject or only a subset of the subject?
- How will the impact be specified? Assume, heroically, that policy makers can agree on a type of measure. How should it then be reported: as a total, as a change, as a percent change, as a ratio, by the rank of the region against another metropolitan area, or by some other method? Dozens of impacts, each with dozens of potential measures, each with a dozen ways they could be specified and reported.
- The geographic focus of the measure. Will the measurement of impact be applied to the entire metropolitan area?; a region within the metropolitan area?; a city?; a neighborhood?; or some other area?
- The length of time the measure will be applied. Is the intent to focus on the present (get a snapshot of where we are now) or to look at change over time? If the later, how far back should we go in collecting data? Or should we focus our energies instead on creating a good benchmark now (a snapshot) so we can measure it against comparable snapshots in the future?
- The link between action being considered and the measure of the impact. For example, in the context of transportation, does a clear and significant link exist between a certain type of transportation action and the measure of its impact? If so, what is the direction of the link? How strong is the

relationship? What is the magnitude of the relationship? For example, does the change in the transportation system (e.g., a policy, backed by funding, to make transit stations safer for and more accessible to elderly travelers) have a positive, strong relationship with the nature of the measure (e.g., the percentage of elderly that use public transportation) that can result in a large change (overall increased ridership, more equity in the various modes of transportation)?

- Bang for the buck. How well does the measure relate to an important goal, and how much effort does it take to collect information about the measure?
- Winners and losers. Who are the beneficiaries of the project? Are they the "right" beneficiaries? Equity considerations, in essence, expand the reporting of measurements as a multiple of the number of sub-groups of interest. If, for example, the measure were "change in travel time," that single measure may need to be calculated in a dozen ways: by city, by corridor, by mode, by income, and so on.

No single measure of any category of goals and objectives can cover all these issues. What seems like a simple item to measure might require many measurements to cover everything people care about.

For example, one measure of a healthy economy is the change in the number of jobs in the region. Should the measurement include all jobs, jobs by sector, or only traded-sector jobs (i.e., jobs that produce goods and services traded outside the region and therefore having a greater multiplier effect on the regional economy)? If the region gets jobs, is that enough? Or, does one care about their distribution to subareas? Or the quality or salary levels of the jobs? What time period is being measured: for example, the year after the project or after 10 years with the project? Yet more complicated, and beyond the scope of an indicators project, is an assessment of whether any of the job retention or creation, however measured, is worth the cost when all the corollary effects are counted: e.g., if all the jobs are taken by commuters from outside a region, are the job benefits overwhelmed by new costs of transportation infrastructure and emissions.

Collection and standardization of indicators

The specification of the measures in the previous step would not occur without some consideration of the data sources available to actually make the

measurement. Thus, one assumes that data are available – at a reasonable price and for a reasonable effort – to make measurements of the specified indicators. But they have to be collected.

Collection is not enough. The data in their raw form will often not meet the specifications for the indicators. Tasks include:

- "Cleaning" the data. (For example, applying database techniques to identify anomalies or fixing known errors.)
- Converting the data to standard geographies. (For example, aggregating parcels data to census tracts or allocating census tract data to GIS grids.)
- Converting the data to desired units of measurements.

Interpretation of indicators

People can look at the same indicator and see different things. Part of the reason could be that they are looking at slightly different specifications of the same general indicator.

For example, assume that the average density of housing can be shown to have increased over a five-year period. Advocates of Smart Growth may see this as positive: they usually correlate density with open space protection, better transit service, and lower infrastructure costs. But what if density is increasing at a slower rate than population growth, or if, despite density increases on average, significant natural areas are being converted to single-family dwellings? What if density is increasing slower in Maryland than in Virginia, or in Wyoming? And, for some groups, increasing residential density may be seen as a bad idea: one associated with lower rates of home ownership, higher costs of housing per square foot, and more noise, trash, crime, traffic congestion, and so on.

There is no simple and universally correct answer here. The point is that the indicators (1) provide some facts, but not all the facts, and (2) they are subject to different interpretations. They can inform discussion; they can point out what is actually happening on the ground; but they cannot, in some mechanical way, be summed up to provide policy decisions that only the public and its representatives can make.

Aggregation of indicators

Everybody wants to add and average scores to get an overall ranking. Even though school report cards go subject by subject, with notes from each teacher on where our child needs specific help, we want that information converted to an overall grade-point average and class rank. School administrators want further summation: to a school score that can be compared to other schools.

With a school report card, the indicator for each topic of interest is measured in the same unit-a grade-which can be converted to a grade point number, which can then be combined with other grade point numbers to create a grade-point average. But for the factors that Maryland cares about as it grows (the economy, pollution, farm land, traffic congestion, the cost of housing, and so on), there is no common unit. Indicators do not add up easily – not within a single topic and certainly not cumulatively.

Other indicator projects around the country deal with that problem in different ways. The most common is to not try to score the indicators on a common scale, but instead to show how they change over time relative to a benchmark measure. In other words, each indicator is ranked only against itself-either its past performance or some agreed upon target-and then rated as improving or deteriorating; succeeding or falling short. A summary score might be "Percent of indicators that improved in the last year" or "Percent of indicators meeting or exceeding target performance."

The real complexity here is daunting:

- A city, region, or state may consist of tens or hundreds of thousands or millions of people, all of whom have slightly different values, preferences, and circumstances, and many will be affected somewhat differently by a change in policy.
- Regional economies, ecosystems, and public policies are complex and interrelated; many effects occur only over a long period; and outside market, social, and natural forces affect those systems. They certainly are not constrained by artificial political boundaries. Thus, the net impact of a policy change on all significant aspects of those systems is impossible to predict.

- Even if one could somehow add all the different types of impacts for all individuals to get some estimate of the total net impact, and even if that impact were positive, policy makers might still decide that negative impacts on some people are too great to justify the total net benefits to society as a whole.

Only a small percentage of policy makers, and a smaller percentage of citizens, have the desire or patience to wade through the complexity of the interrelationships in an urban economy and ecosystem. Even if technical experts attempt to deal with that complexity, it ultimately must be simplified substantially. That simplification cannot occur without value judgments.

B.5 REFERENCES

Bauer, Raymond A., ed. 1966. *Social Indicators*. Cambridge, MA: The MIT Press.

Button, Kenneth. 2002. City Management and Urban Environmental Indicators. *Ecological Economics* 40(2): 217-233.

APPENDIX C: INDICATOR TABLES

C.1 INTRODUCTION

For nearly six years, the National Center for Smart Growth Research and Education at the University of Maryland has worked to gather data related to growth in Maryland. Much of these data are posted in relatively raw form on the project's website, located at www.indicatorproject.com. Some of these, as well as additional growth-related data, have been presented in the main text of this report. This appendix provides a comprehensive display of the data gathered to generate the measures discussed in the report as well as other data that help tell the story of how Maryland is doing with regard to smart growth. It includes tables and graphical expressions of the data that are distinct from those presented on the website.

To the extent possible, each section of the appendix (which follows the structure and indicator categorization of the main report) provides data at three geographical levels: state, Maryland regional, and county. The map in Figure C.1 shows Maryland's 24 counties (including the City of Baltimore) located within the six regions of the state.

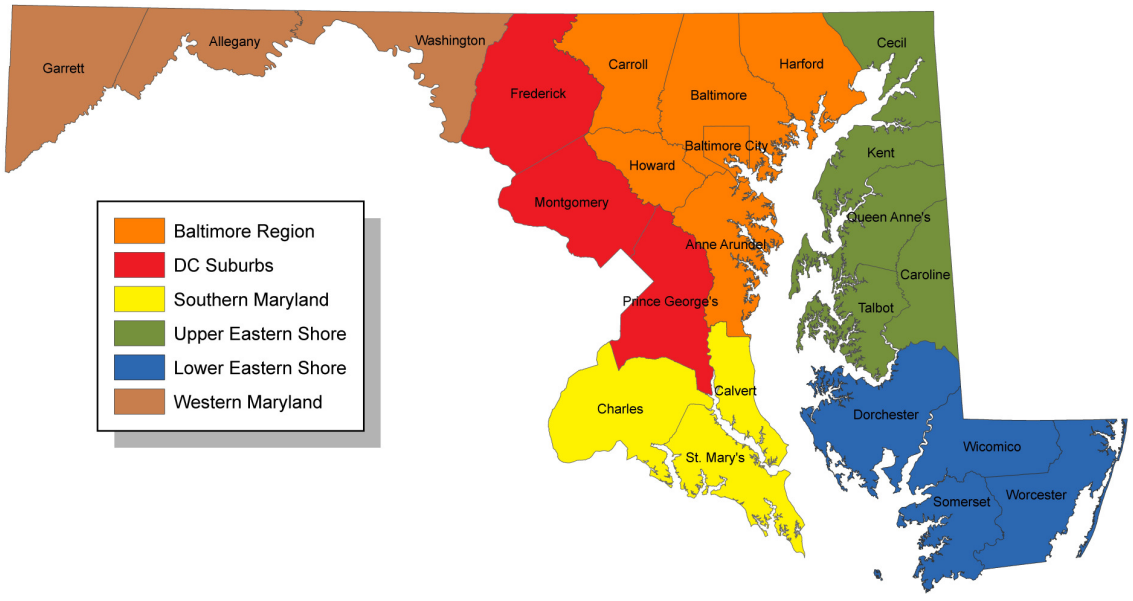


Figure C.1 Map of Maryland identifying the 24 counties and six regions of the state.

C.2 POPULATION

C.2.1 Data notes

These population data come from the Population Division at the U.S. Census Bureau. Since the Census only takes official population counts on a decennial basis, the intercensal data are *estimates* published and updated by the Census on an annual basis. Included are data highlighting the impact of race on population growth. For the purposes of this report, a white person is someone who is not Hispanic, and only white. All other combinations of races and ethnicities, including white Hispanics, are considered a minority.[2]

C.2.2 Tables and figures

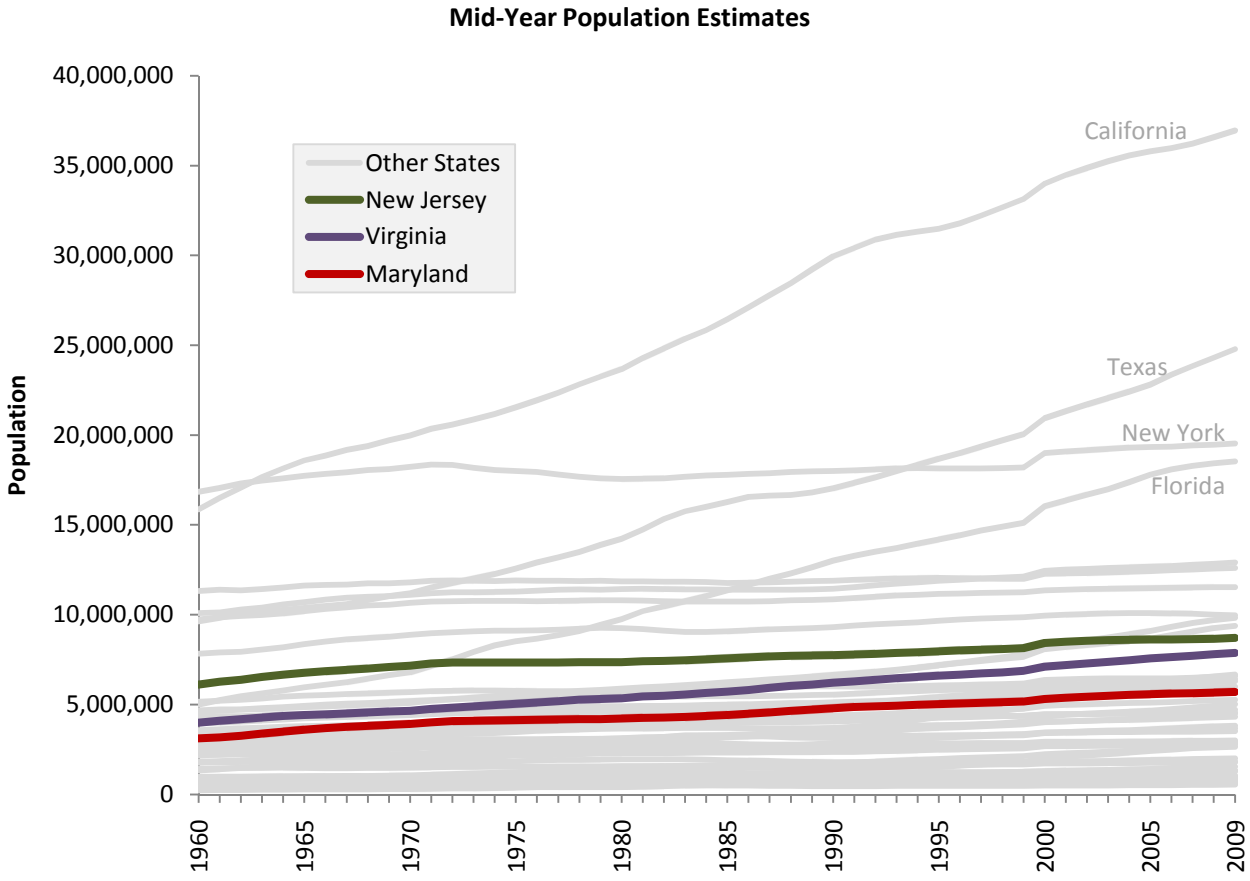


Figure C.2 Annual mid-year population estimates, 1960-2009. Source: Population Division, U.S. Census Bureau.

[2] More specifically, the term "minorities" includes everyone other than "non-Hispanic white" for data from prior to 2000, and everyone other than "non-Hispanic white alone" for the post-2000 data.

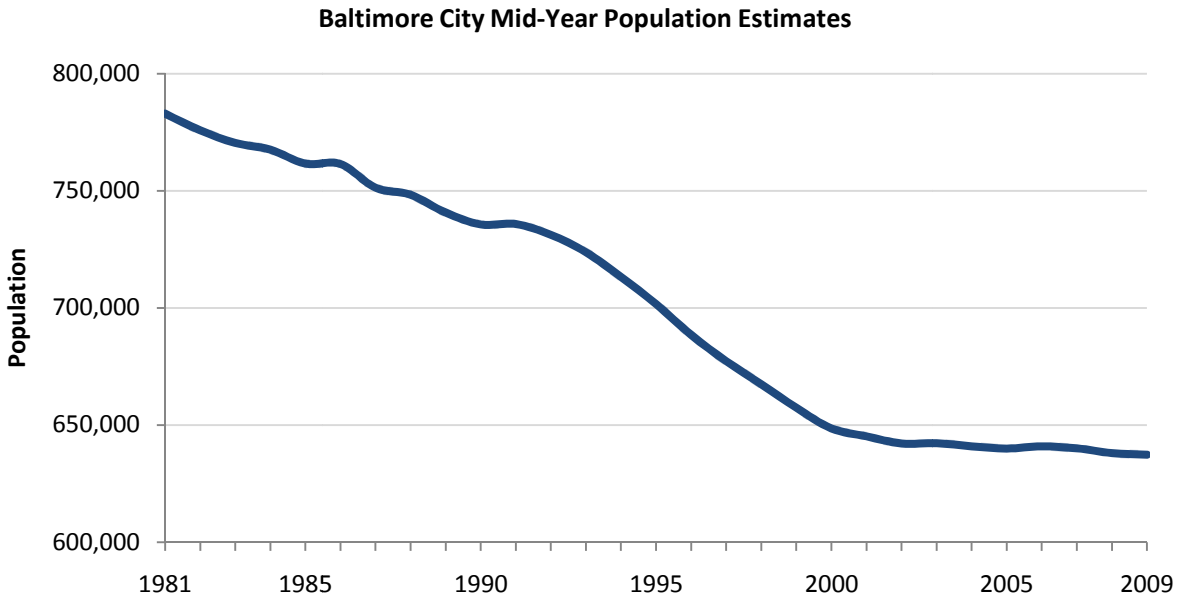


Figure C.3 Baltimore City mid-year population estimates, 1981-2009. Source: Population Division, U.S. Census Bureau.

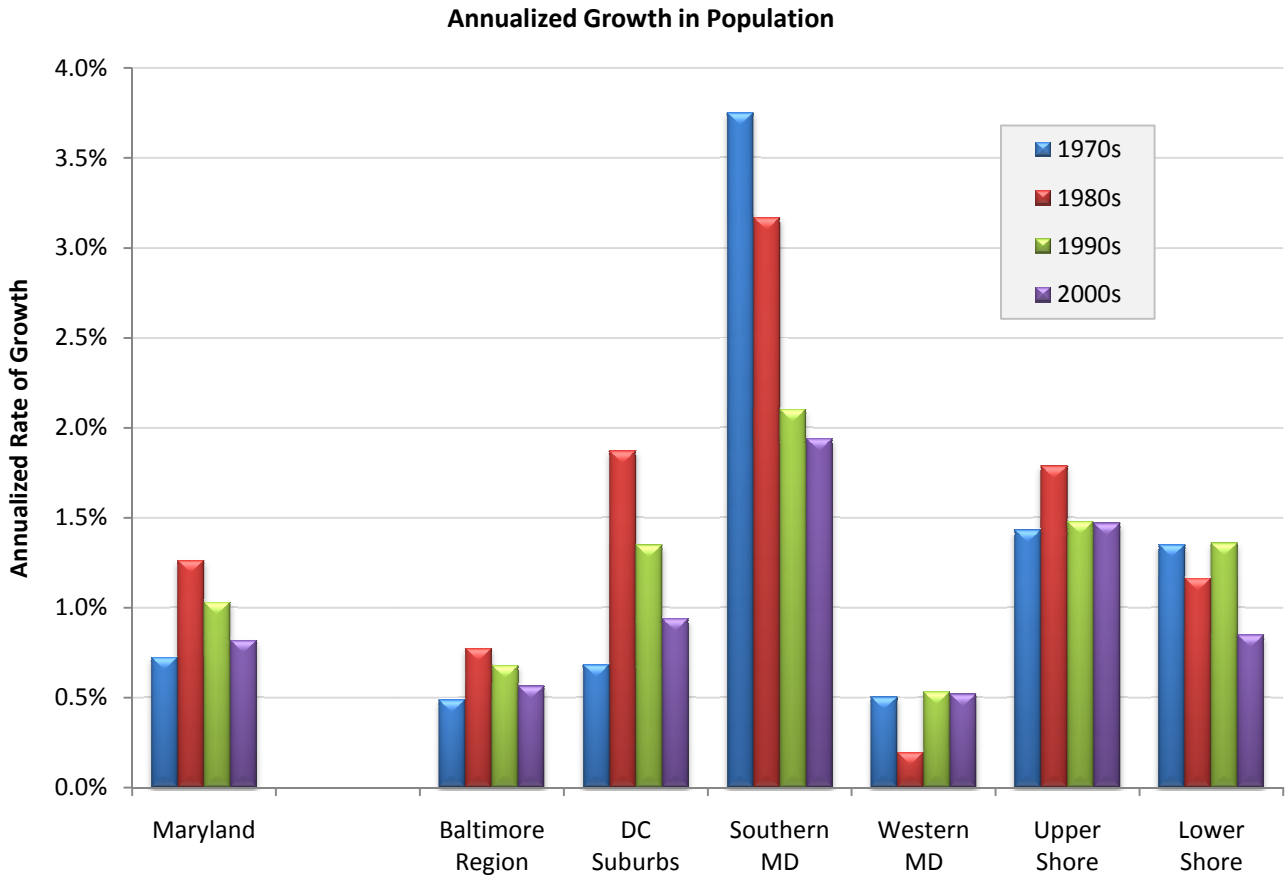


Figure C.4 Annualized population growth in Maryland by decade and region through 2009. Source: U.S. Census Bureau.

	Total Population					Population Density (people/sq.mi)				
	Census 1970	Census 1980	Census 1990	Census 2000	2009 Estimates	1970	1980	1990	2000	2009
MARYLAND	**3,923,897**	**4,216,933**	**4,780,753**	**5,296,486**	**5,699,478**	**401.5**	**431.5**	**489.1**	**541.9**	**583.1**
BALTIMORE REGION	**2,071,016**	**2,173,989**	**2,348,219**	**2,512,431**	**2,642,928**	**925.9**	**971.9**	**1,049.8**	**1,123.2**	**1,181.5**
Anne Arundel County	298,042	370,775	427,239	489,656	521,209	716.6	891.4	1,027.2	1,177.2	1,253.1
Baltimore City	905,787	786,741	736,014	651,154	637,418	11,210.2	9,736.9	9,109.1	8,058.8	7,888.8
Baltimore County	620,409	655,615	692,134	754,292	789,814	1,036.5	1,095.3	1,156.3	1,260.1	1,319.5
Carroll County	69,006	96,356	123,372	150,897	170,089	153.6	214.5	274.7	336.0	378.7
Harford County	115,378	145,930	182,132	218,590	242,514	262.0	331.4	413.6	496.4	550.7
Howard County	62,394	118,572	187,328	247,842	281,884	247.6	470.4	743.2	983.3	1,118.4
DC SUBURBS	**1,269,455**	**1,358,916**	**1,635,788**	**1,870,133**	**2,034,140**	**772.3**	**826.7**	**995.1**	**1,137.7**	**1,237.4**
Montgomery County	522,809	579,053	757,027	873,341	971,600	1,055.1	1,168.6	1,527.7	1,762.5	1,960.8
Prince George's County	661,719	665,071	728,553	801,515	834,560	1,363.2	1,370.1	1,500.8	1,651.1	1,719.2
Frederick County	84,927	114,792	150,208	195,277	227,980	128.1	173.2	226.6	294.6	343.9
SOUTHERN MARYLAND	**115,748**	**167,284**	**228,500**	**281,320**	**334,437**	**111.6**	**161.3**	**220.3**	**271.2**	**322.4**
Calvert County	20,682	34,638	51,372	74,563	89,212	96.1	161.0	238.8	346.5	414.6
Charles County	47,678	72,751	101,154	120,546	142,226	103.4	157.8	219.4	261.5	308.5
St. Mary's County	47,388	59,895	75,974	86,211	102,999	131.2	165.8	210.3	238.6	285.1
WESTERN MARYLAND	**209,349**	**220,124**	**224,477**	**236,699**	**247,997**	**136.7**	**143.7**	**146.6**	**154.6**	**161.9**
Allegany County	84,044	80,548	74,946	74,930	72,532	197.6	189.3	176.2	176.1	170.5
Garrett County	21,476	26,490	28,138	29,846	29,555	33.1	40.9	43.4	46.1	45.6
Washington County	103,829	113,086	121,393	131,923	145,910	226.6	246.8	265.0	288.0	318.5
UPPER EASTERN SHORE	**131,322**	**151,380**	**180,726**	**209,295**	**238,630**	**82.6**	**95.3**	**113.7**	**131.7**	**150.2**
Caroline County	19,781	23,143	27,035	29,772	33,367	61.8	72.3	84.4	93.0	104.2
Cecil County	53,291	60,430	71,347	85,951	100,796	153.1	173.6	204.9	246.9	289.5
Kent County	16,146	16,695	17,842	19,197	20,247	57.8	59.7	63.9	68.7	72.5
Queen Anne's County	18,422	25,508	33,953	40,563	47,958	49.5	68.5	91.2	109.0	128.8
Talbot County	23,682	25,604	30,549	33,812	36,262	88.0	95.1	113.5	125.6	134.7
LOWER EASTERN SHORE	**127,007**	**145,240**	**163,043**	**186,608**	**201,346**	**73.2**	**83.7**	**94.0**	**107.5**	**116.0**
Dorchester County	29,405	30,623	30,236	30,674	32,043	52.7	54.9	54.2	55.0	57.5
Somerset County	18,924	19,188	23,440	24,747	25,959	57.8	58.6	71.6	75.6	79.3
Wicomico County	54,236	64,540	74,339	84,644	94,222	143.8	171.1	197.1	224.4	249.8
Worcester County	24,442	30,889	35,028	46,543	49,122	51.6	65.3	74.0	98.3	103.8

Table C.1 Local and regional population and population density in Maryland, 1970, 1980, 1990, 2000 and 2009. Source: U.S. Census Bureau.

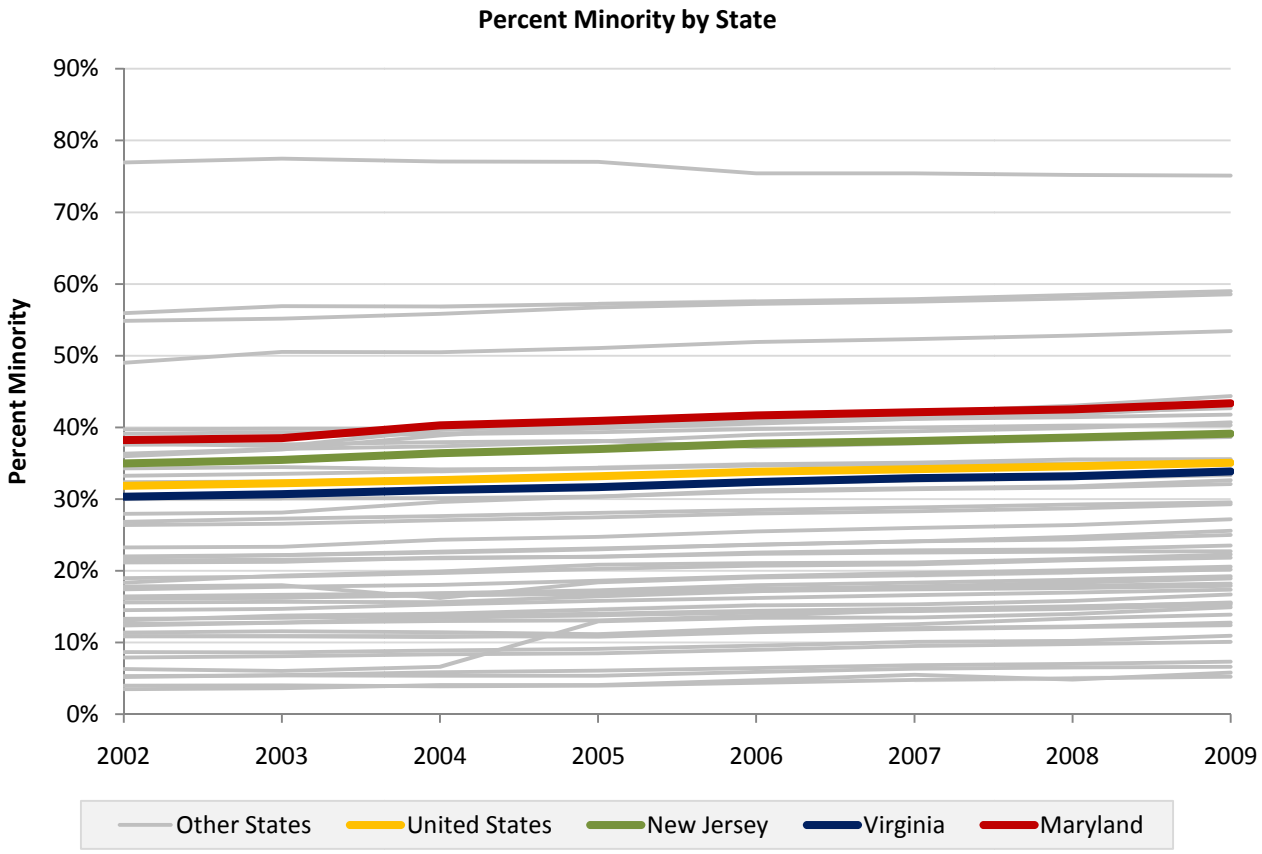


Figure C.5 Estimated percent of population that is minority, 2002-09. Source: U.S. Census Bureau.

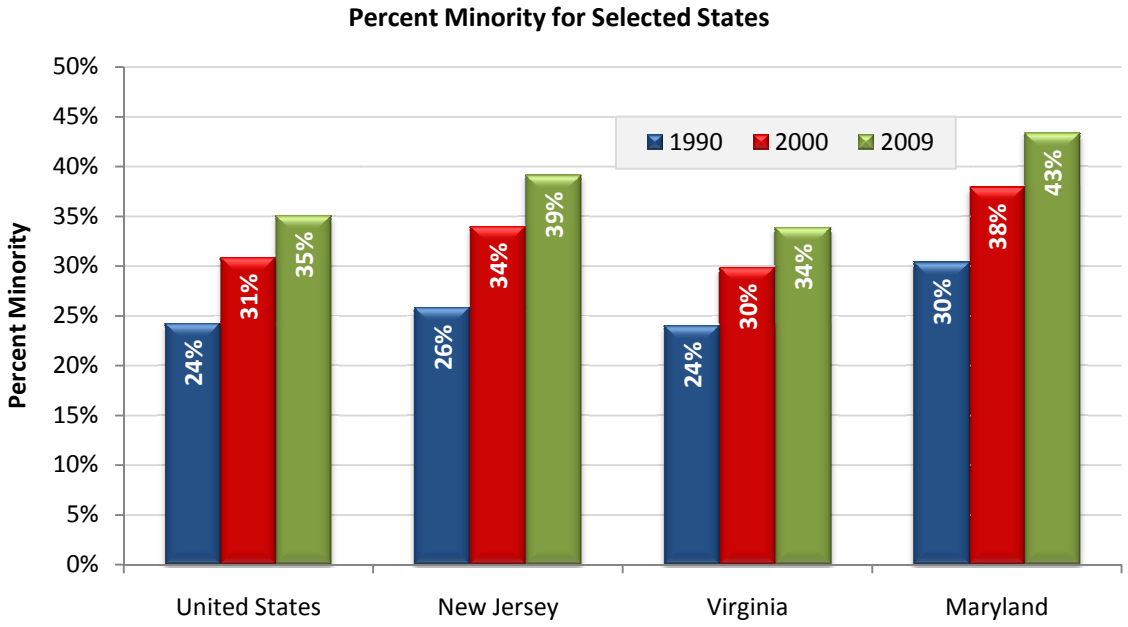


Figure C.6 Percent of population that is either minority or white Hispanic for select states, 1990, 2000 and 2009. Source: U.S. Census Bureau.

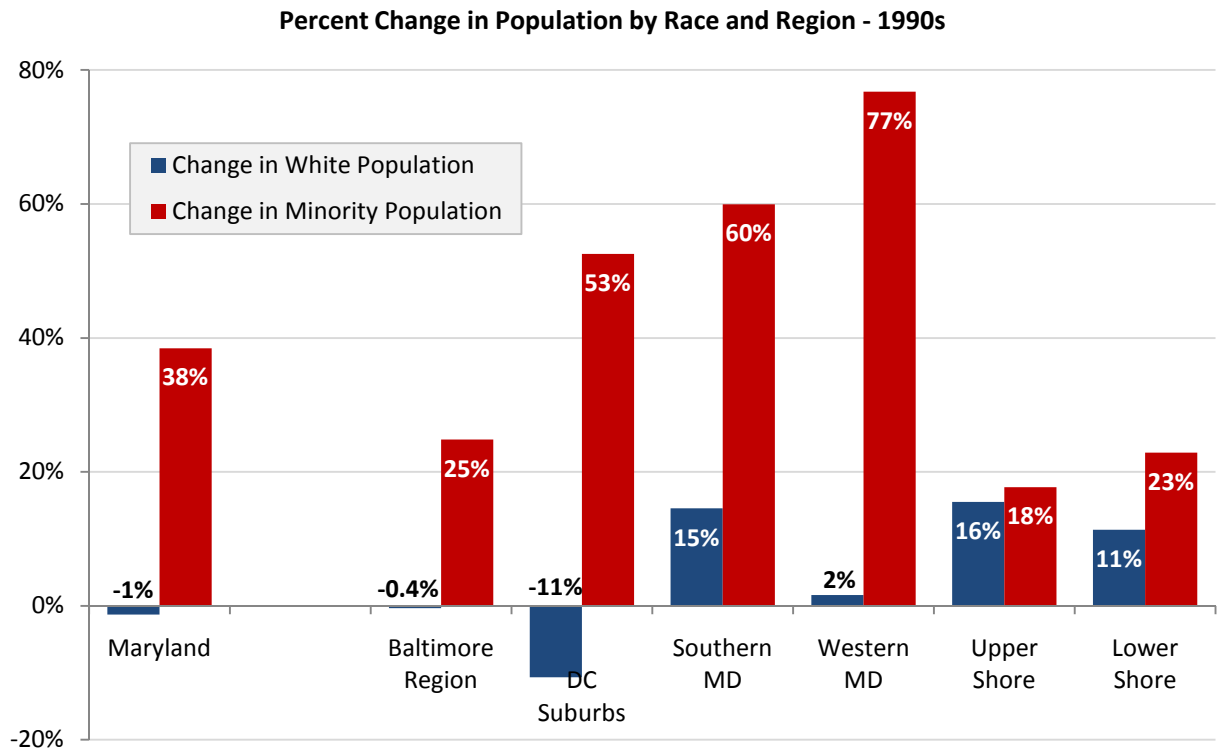


Figure C.7 Percent change in white and minority populations in Maryland in the 1990s by region. Source: U.S. Census Bureau.

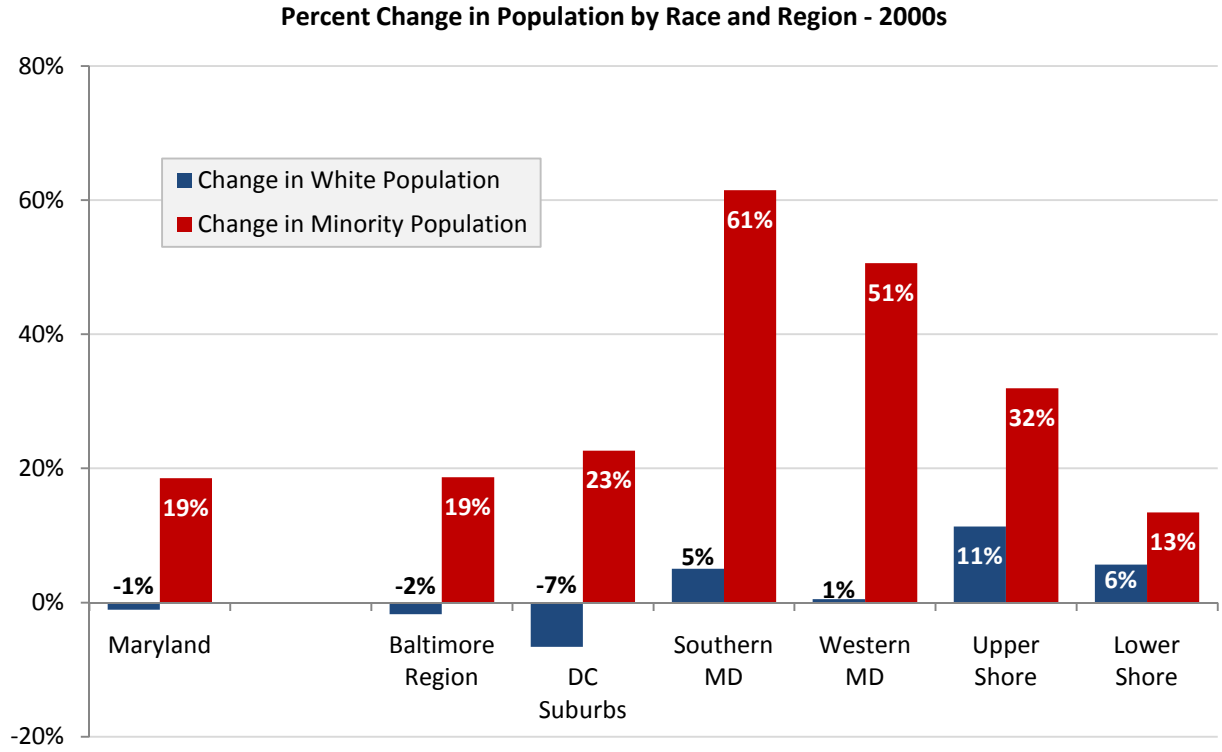


Figure C.8 Percent change in white and minority populations in Maryland in the 2000s by region (through 2009). Source: U.S. Census Bureau.

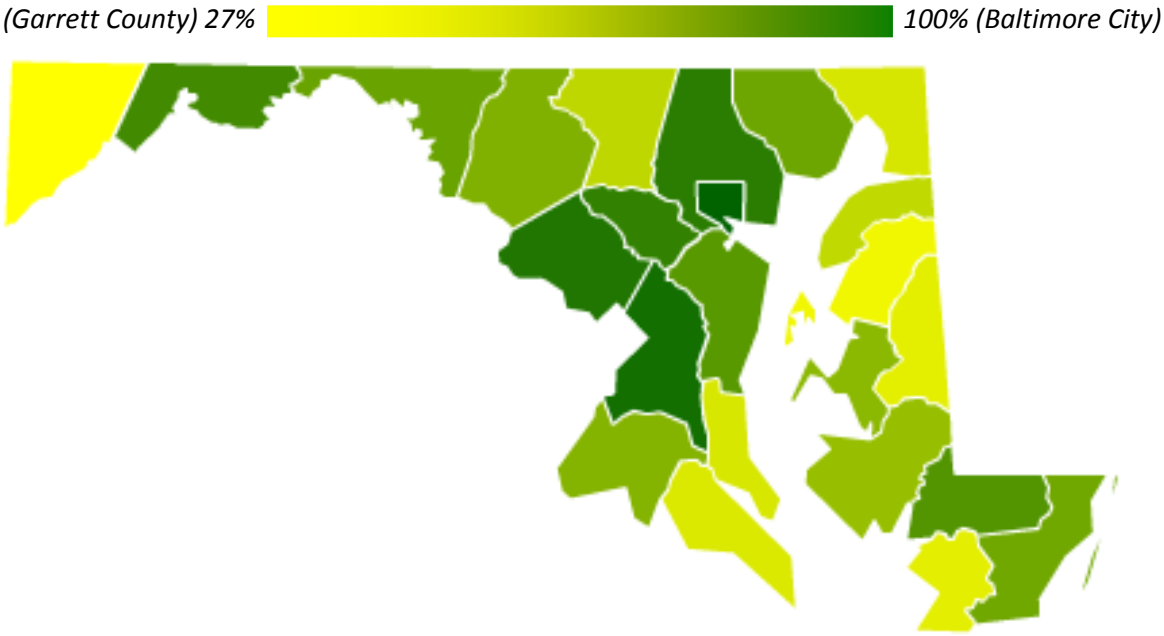


Figure C.9 Relative share of county population located within Priority Funding Areas in 2000.
Sources: Maryland Department of Planning; U.S. Census Bureau.

C.3 EMPLOYMENT AND THE ECONOMY

C.3.1 Data notes

The employment data included in this section come from the U.S. Bureau of Economic Analysis (BEA) at the Department of Commerce. BEA updates and reports employment data by state and county and by industry on an annual basis. The initial figures included here graph total employment (full- and part-time) in all industries, including proprietor jobs. The industry sector employment figures use the North American Industry Classification System (NAICS) that has been used by BEA since 2001, however BEA has provided employment data in these classifications dating back to 1990.

The income data reported – both personal and median household income – come from the U.S. Census Bureau. Recent data are provided by the Census through its American Community Survey (ACS), which is administered on an annual basis. In the interest of protecting people's privacy, the Census only reports annual ACS data for jurisdictions with populations of 65,000 or larger. As a result, annual county level ACS data are only available for 16 of Maryland's 24 counties. To provide data on smaller jurisdictions, the Census reports data from a consecutive three-year period for populations of 20,000 or more people. For the

first time, all 24 Maryland counties are included in the most recent reporting period of 2006-08.

C.3.2 Tables and figures

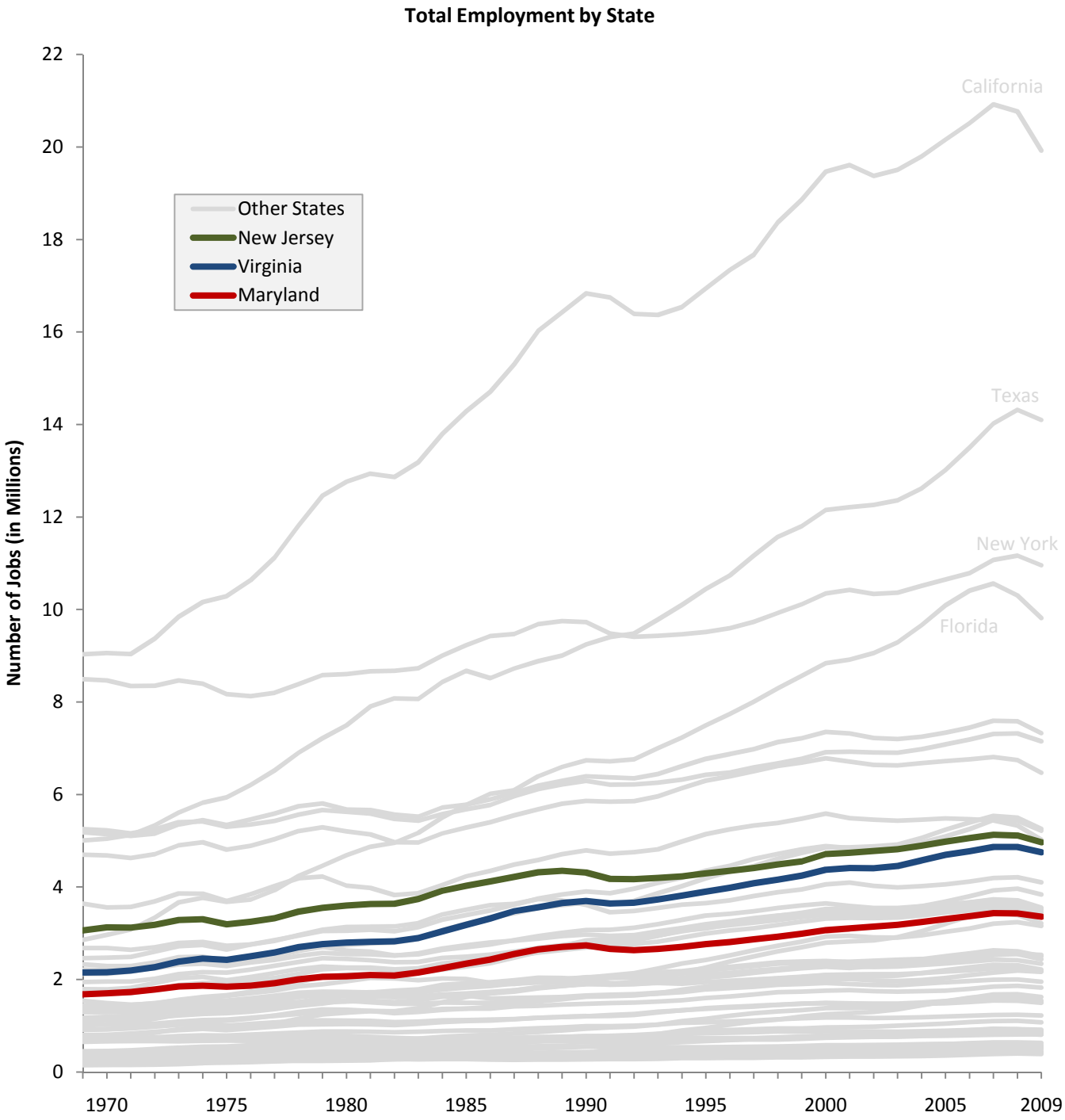


Figure C.10 Total employment for all 50 states between, 1969-2009. Source: Regional Economic Information System, Bureau of Economic Analysis.

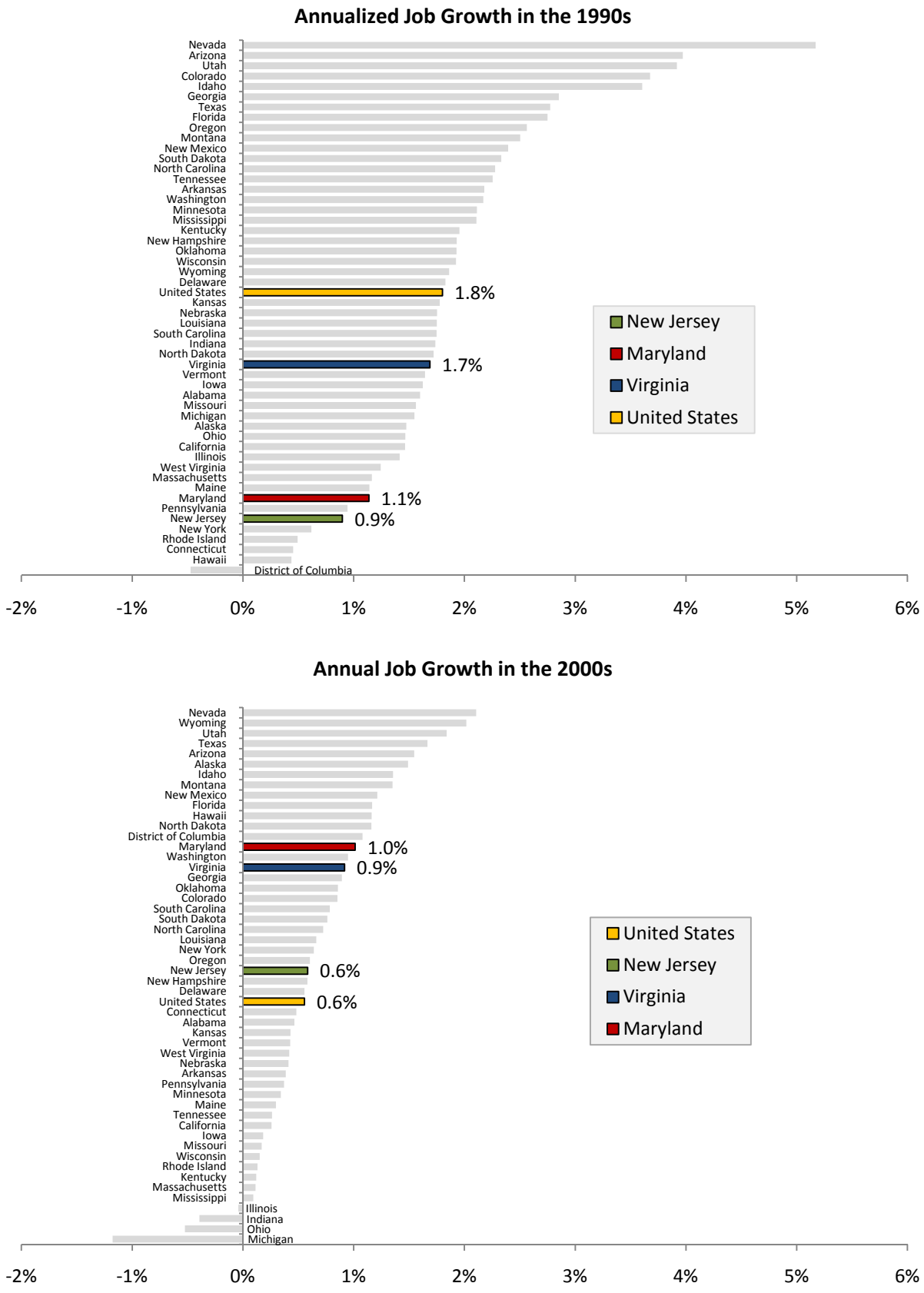


Figure C.11 Annualized job growth across the U.S. in the 1990s and 2000s (through 2009). Source: Regional Economic Information System, Bureau of Economic Analysis

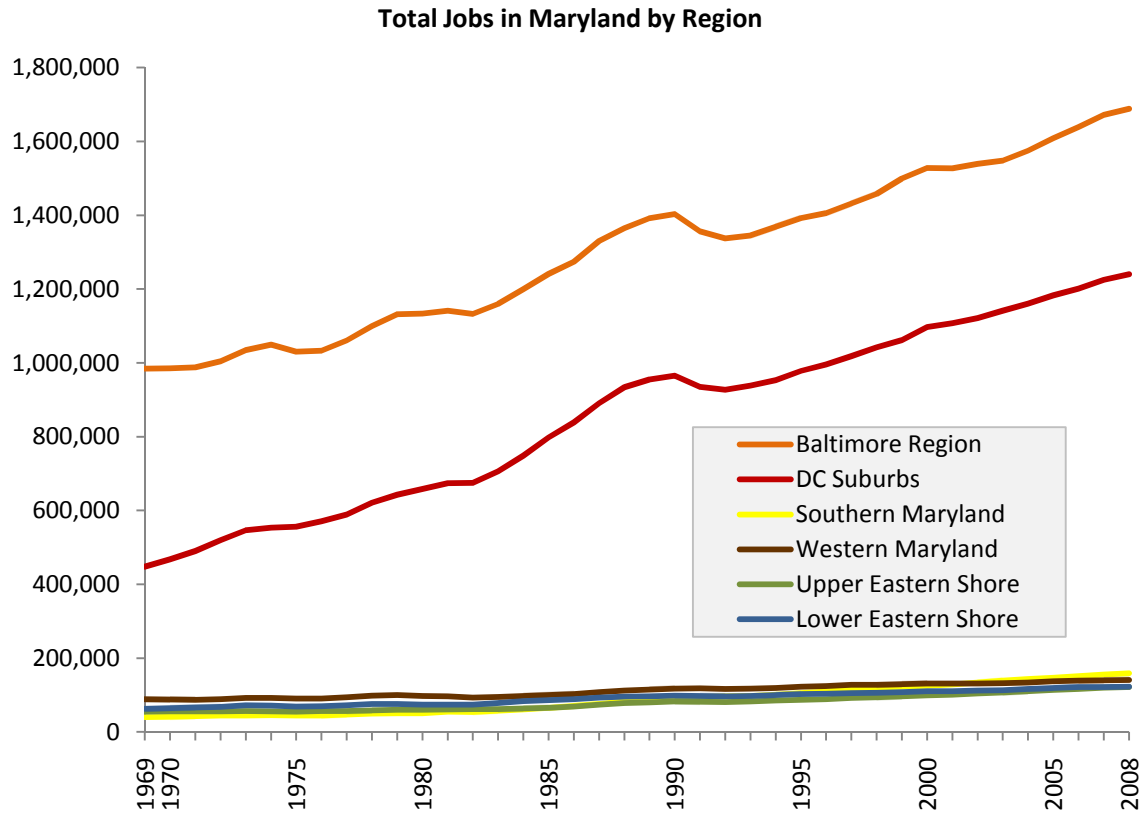


Figure C.12 Total employment by region within Maryland, 1969 and 2008. Source: Regional Economic Information System, Bureau of Economic Analysis.

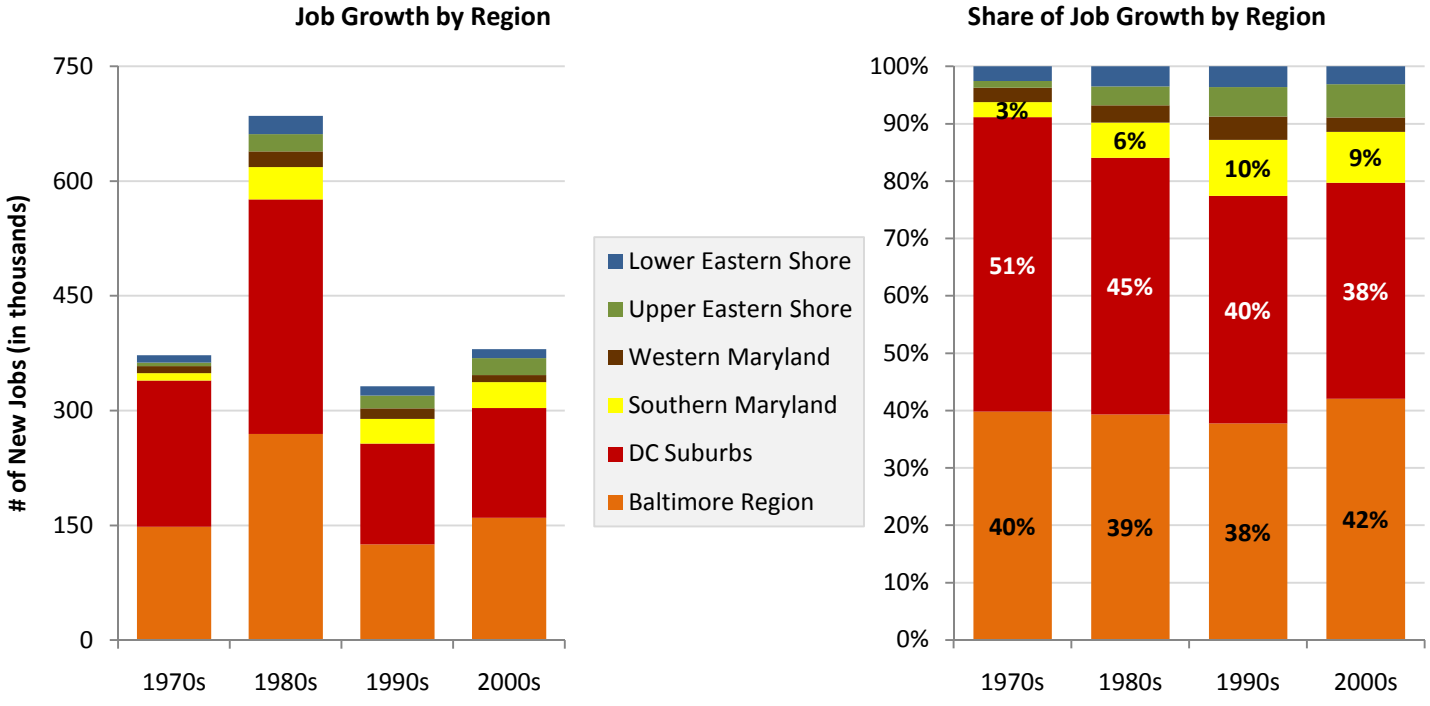


Figure C.13 Job growth in Maryland by decade and region (through 2008). Source: Regional Economic Information System, Bureau of Economic Analysis.

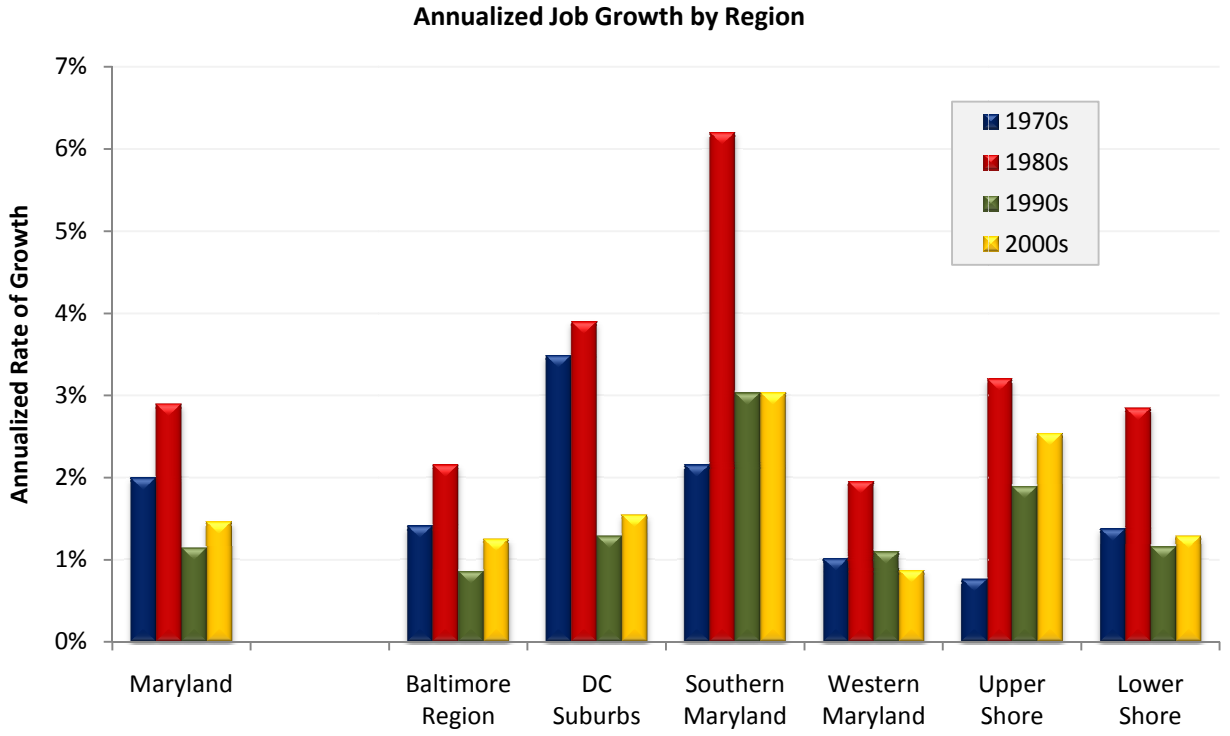


Figure C.14 Annualized job growth by Maryland decade and region (through 2008). Source: Regional Economic Information System, Bureau of Economic Analysis.

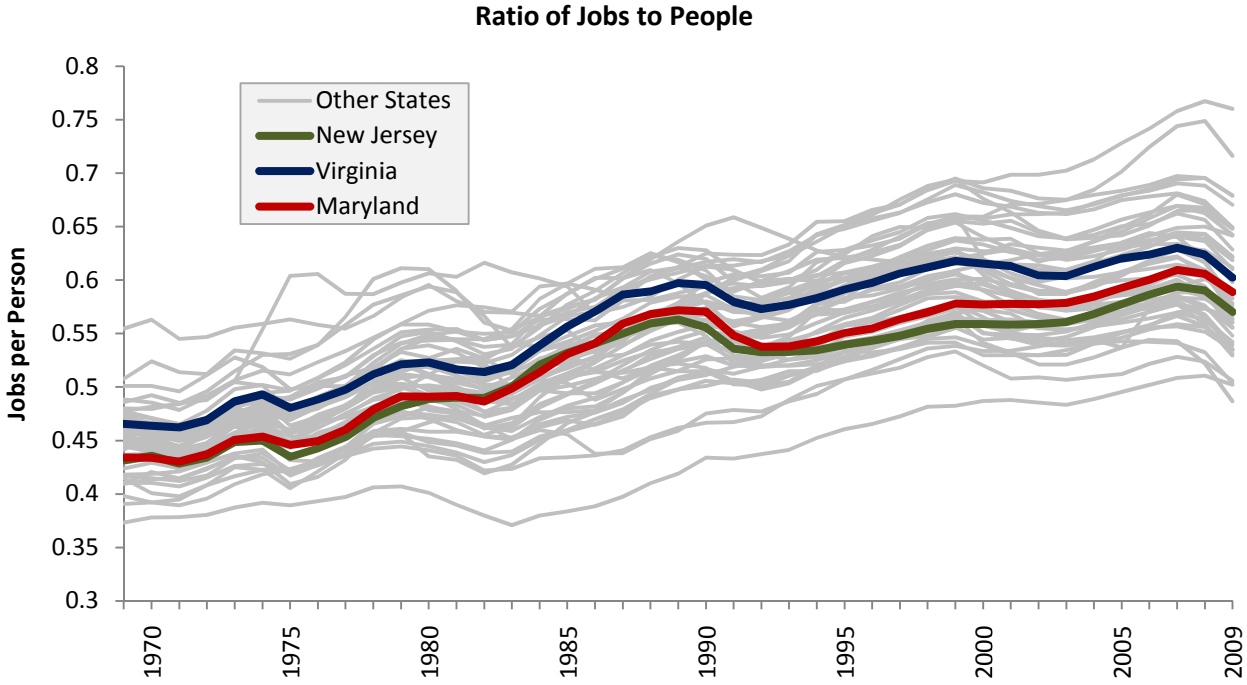
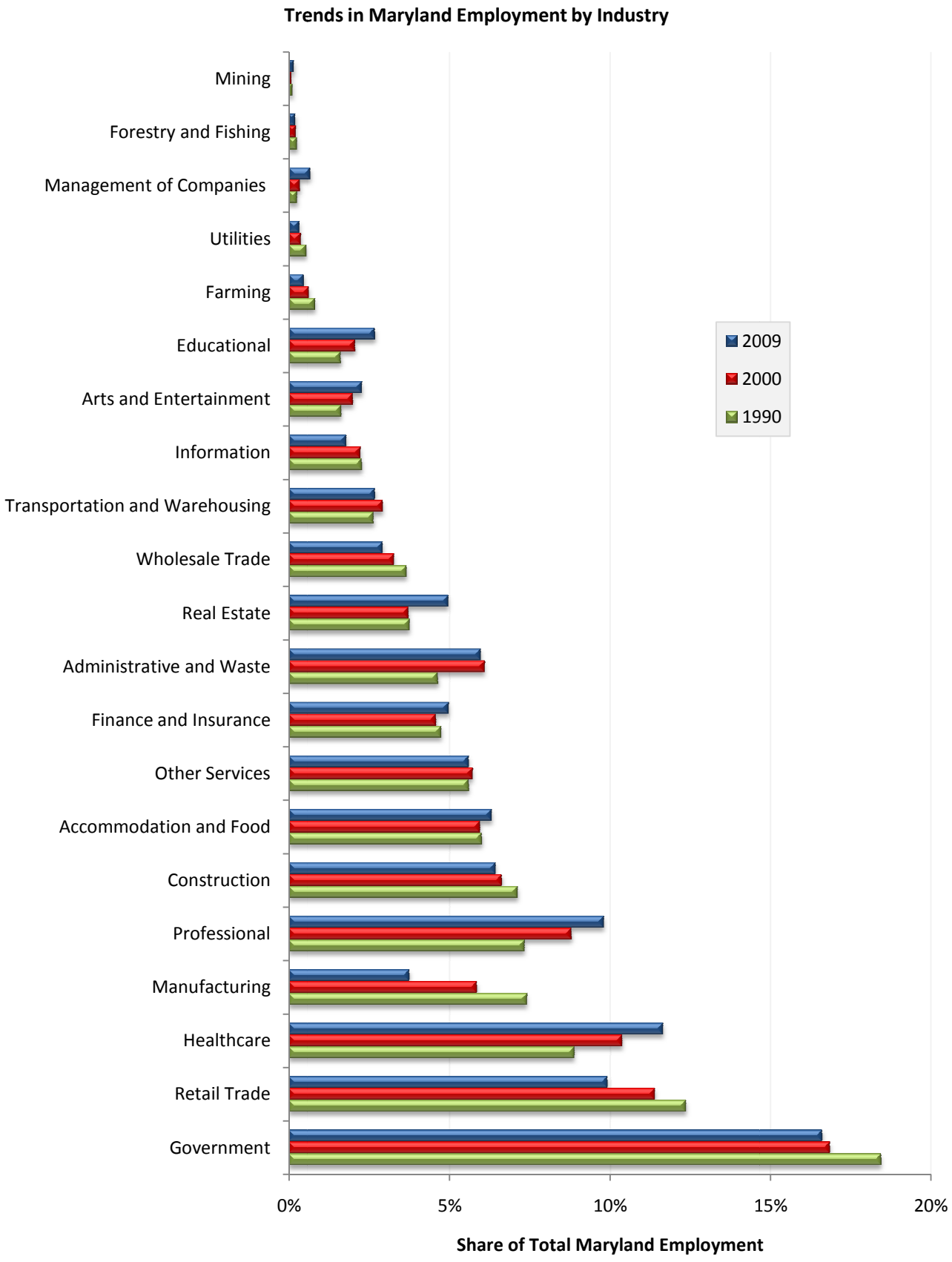


Figure C.15 Jobs per person trends by state, 1969-2009. Sources: Population Division, U.S. Census Bureau; Bureau of Economic Analysis.

Fewest Jobs per Capita *Most Jobs per Capita*

	2000	2001	2002	2003	2004	2005	2006	2007	2008
BALTIMORE REGION	**0.61**	**0.60**	**0.60**	**0.60**	**0.61**	**0.62**	**0.63**	**0.64**	**0.64**
Anne Arundel	0.61	0.61	0.62	0.64	0.66	0.68	0.69	0.71	0.72
Baltimore City	0.69	0.66	0.66	0.64	0.63	0.62	0.62	0.63	0.63
Baltimore	0.60	0.61	0.61	0.61	0.62	0.63	0.64	0.66	0.66
Carroll	0.46	0.45	0.46	0.45	0.46	0.48	0.49	0.50	0.51
Harford	0.45	0.43	0.43	0.44	0.46	0.47	0.48	0.49	0.50
Howard	0.65	0.65	0.65	0.64	0.65	0.67	0.69	0.70	0.70
DC SUBURBS	**0.59**	**0.58**	**0.58**	**0.58**	**0.59**	**0.60**	**0.60**	**0.62**	**0.62**
Frederick	0.54	0.53	0.54	0.55	0.56	0.57	0.57	0.58	0.58
Montgomery	0.69	0.67	0.66	0.67	0.67	0.68	0.69	0.70	0.70
Prince George's	0.49	0.49	0.49	0.50	0.50	0.50	0.51	0.53	0.54
SOUTHERN MARYLAND	**0.45**	**0.44**	**0.45**	**0.45**	**0.46**	**0.46**	**0.47**	**0.47**	**0.48**
Calvert	0.35	0.35	0.36	0.36	0.37	0.37	0.38	0.39	0.39
Charles	0.41	0.41	0.41	0.41	0.42	0.42	0.43	0.43	0.44
St. Mary's	0.57	0.57	0.58	0.59	0.59	0.59	0.60	0.61	0.62
WESTERN MARYLAND	**0.55**	**0.55**	**0.55**	**0.55**	**0.55**	**0.56**	**0.57**	**0.57**	**0.57**
Allegany	0.51	0.50	0.50	0.51	0.52	0.53	0.54	0.53	0.54
Garrett	0.59	0.59	0.62	0.63	0.65	0.68	0.70	0.71	0.73
Washington	0.57	0.57	0.56	0.56	0.55	0.56	0.56	0.55	0.55
UPPER EASTERN SHORE	**0.47**	**0.47**	**0.48**	**0.48**	**0.49**	**0.50**	**0.50**	**0.51**	**0.51**
Caroline	0.44	0.42	0.43	0.42	0.43	0.44	0.43	0.43	0.43
Cecil	0.37	0.37	0.38	0.39	0.40	0.40	0.40	0.41	0.41
Kent	0.61	0.60	0.60	0.60	0.63	0.64	0.66	0.67	0.66
Queen Anne's	0.43	0.44	0.44	0.45	0.46	0.47	0.48	0.49	0.49
Talbot	0.75	0.76	0.76	0.77	0.77	0.78	0.78	0.80	0.81
LOWER EASTERN SHORE	**0.59**	**0.59**	**0.59**	**0.59**	**0.60**	**0.61**	**0.61**	**0.61**	**0.61**
Dorchester	0.53	0.53	0.52	0.54	0.55	0.55	0.54	0.54	0.53
Somerset	0.43	0.43	0.43	0.43	0.43	0.43	0.44	0.43	0.44
Wicomico	0.61	0.61	0.61	0.60	0.62	0.64	0.64	0.64	0.63
Worcester	0.68	0.67	0.68	0.67	0.68	0.69	0.70	0.70	0.70
MARYLAND TOTALS	**0.58**	**0.58**	**0.58**	**0.58**	**0.58**	**0.59**	**0.60**	**0.61**	**0.62**

Table C.2 Jobs per capita by region and county, 2000-08. Sources: U.S. Census Bureau; Bureau of Economic Analysis


Trends in Maryland Employment by Industry
Mining
Forestry and Fishing
Management of Companies
Utilities
Farming
Educational
Arts and Entertainment
Information
Transportation and Warehousing
Wholesale Trade
Real Estate
Administrative and Waste
Finance and Insurance
Other Services
Accommodation and Food
Construction
Professional
Manufacturing
Healthcare
Retail Trade
Government
2009
2000
1990
0%
5%
10%
15%
20%
Share of Total Maryland Employment

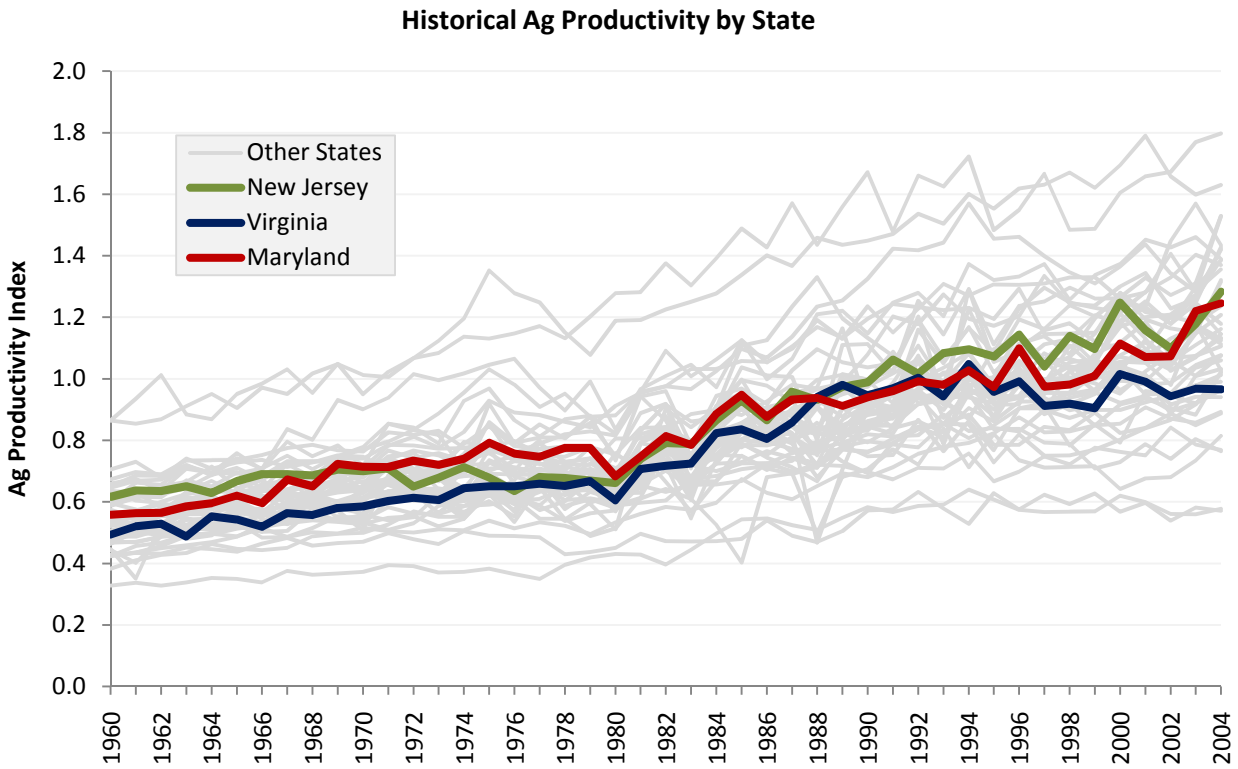


Figure C.17 Historical agriculture productivity by state, 1960-2004 (Ag Productivity Index = 1.0 for Alabama in 1996). Source: U.S. Department of Agriculture.

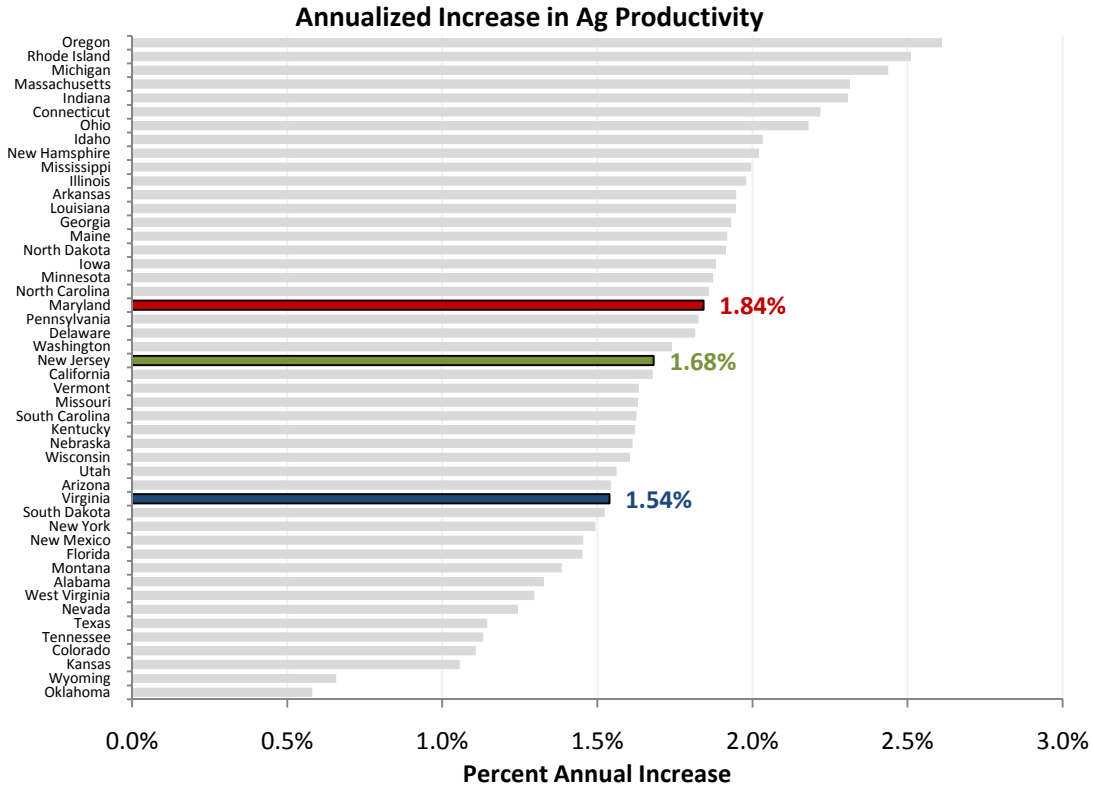


Figure C.18 Annualized increase in agriculture productivity between 1960 and 2004. Source: U.S. Department of Agriculture.

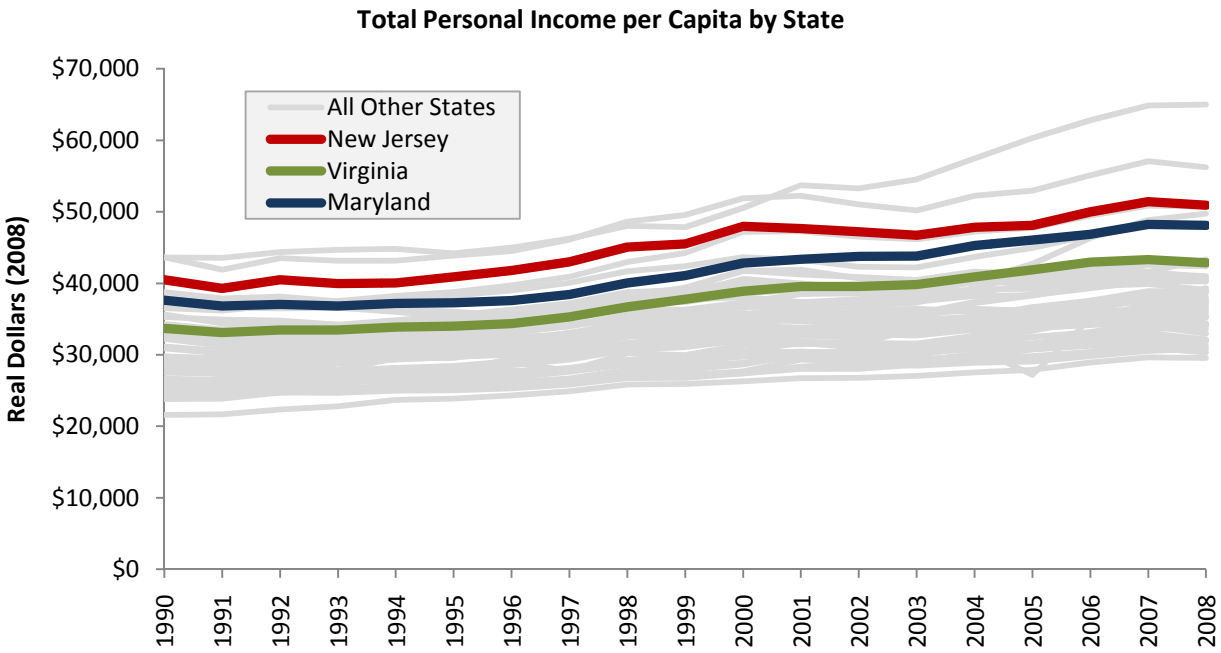


Figure C.19 Total personal income per capita by state, 1990-2008. Source: U.S. Census Bureau.

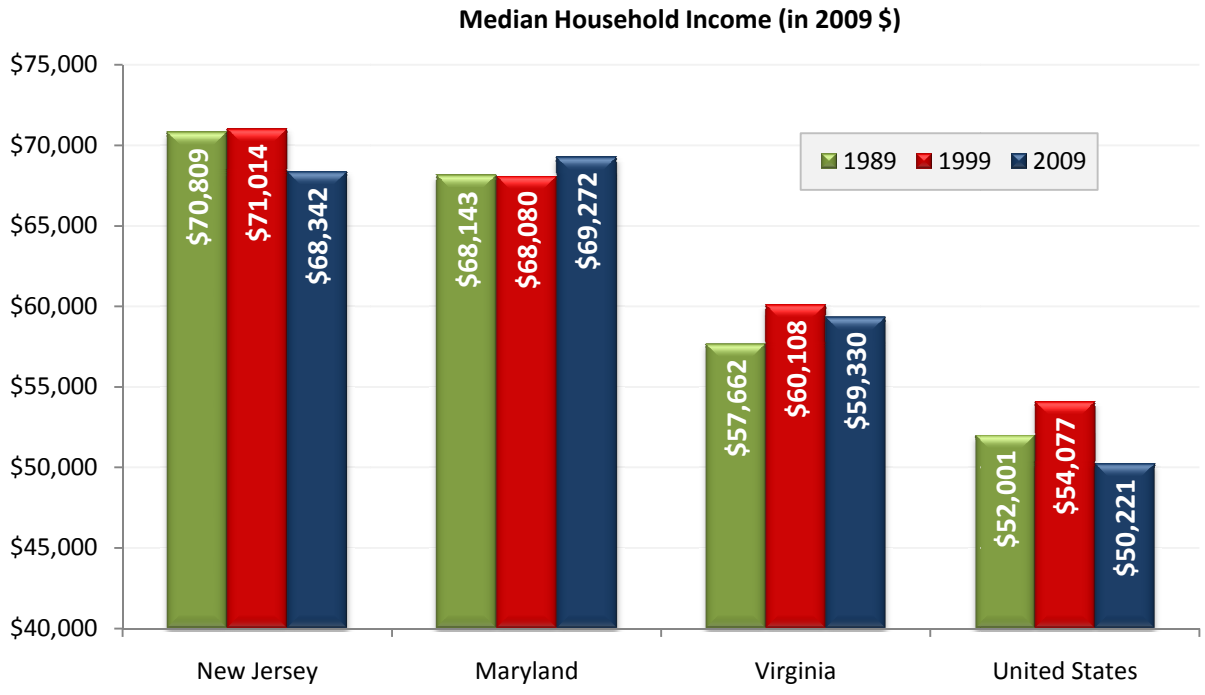


Figure C.20 Median household income trends for Maryland, New Jersey, Virginia and the U.S. as a whole, 1989, 1999 and 2009. Source: U.S. Census Bureau.

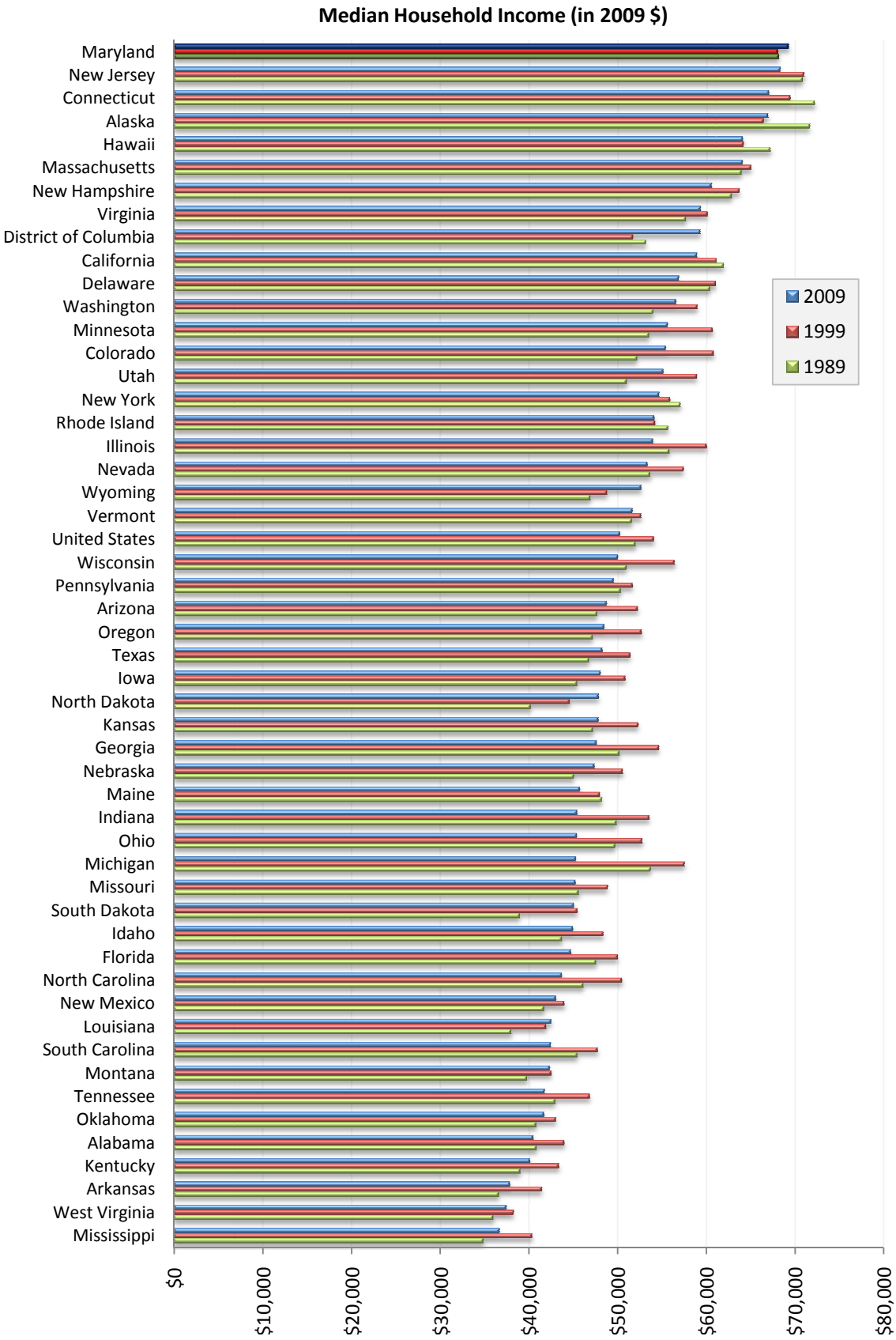


Figure C.21 Median household income trends by state, 1989, 1999 and 2009. Source: U.S. Census Bureau.

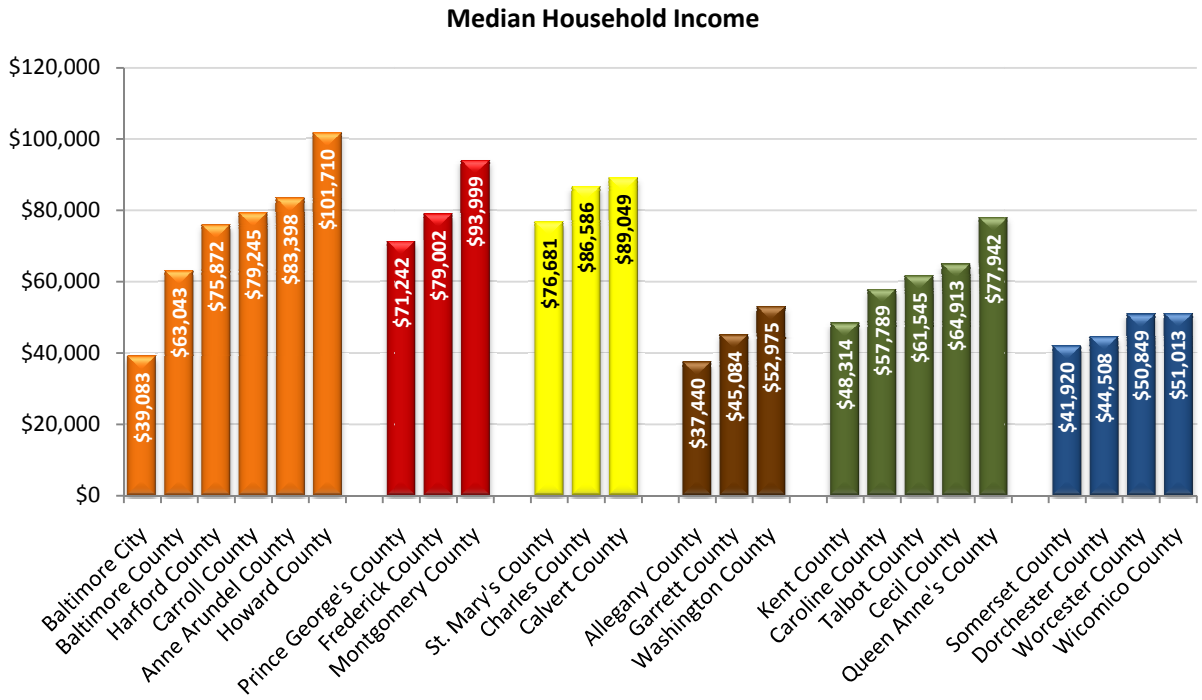


Figure C.22 Median household income by county, grouped by region, 2006-08. Source: U.S. Census Bureau.

C.4 TRANSPORTATION AND OTHER INFRASTRUCTURE

C.4.1 Data notes

The transportation data discussed in this report that are related to commute mode come from the U.S. Census Bureau's travel to work data. One important thing to note is that while these data give an indication of overall mode share, trips to and from work do not even make up a majority of all trips taken in Maryland on a daily basis. Additional transportation data come from the Maryland Department of Transportation and its various divisions (transit, highway, etc.). Transit data are also provided by local and regional transit authorities, including the Washington Metropolitan Area Transit Authority (WMATA).

Table C.3 and Table C.4 include measures of roadway utilization with values representing levels of congestion calculated by dividing annual estimated volume of traffic for an individual segment of road in 2000, by its total capacity level. Table C.3 includes nearly 14,000 segments of arterial road throughout the entire state of Maryland. Table C.4 summarizes the utilization levels of approximately 2,000 segments of highways (interstates, freeways, and expressways) in Maryland. In both cases, the first column of data represents the overall utilization level for the

particular type of road for each county. The subsequent columns highlight the capacity utilization by time of day: morning rush hour; midday; afternoon rush hour; and nighttime. The color coding for the first column is exclusive from the other columns, which are color coded collectively to provide a relative sense of the utilization values for each of the four time period columns. This allows for easy comparison of utilization levels both between counties and between times of day.

Table C.5, Figure C.36 and Figure C.37 all contain Maryland State Department of Education school capacity utilization data obtained in early 2009 from the Maryland Department of Planning. These data do not represent a single snapshot in time. Different schools, within different counties, report their capacity and enrollment figures at different times. The data are, however, the most recent data MDP had available at the time for each public school in the state.

C.4.2 Tables and figures

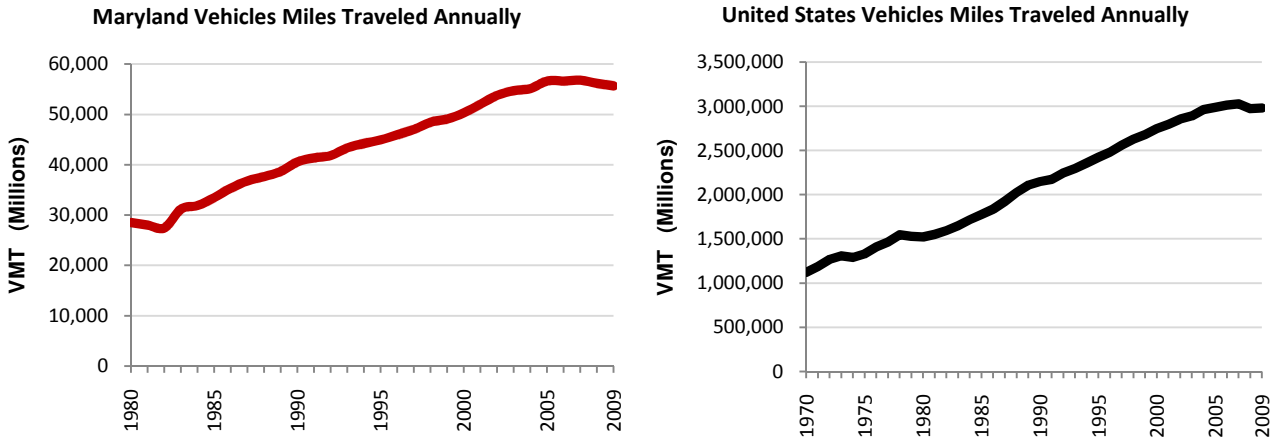
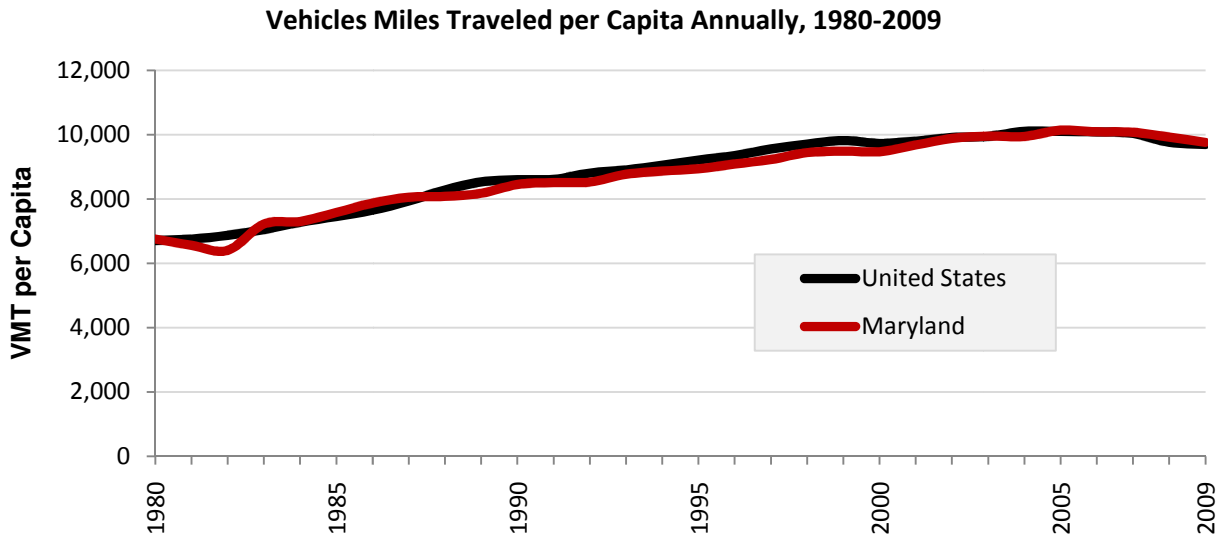


Figure C.23 Comparison of trends in vehicle miles traveled (VMT) in Maryland and the U.S., 1980-2009. Sources: Maryland Department of Transportation, State Highway Administration; U.S. Department of Transportation, Federal Highway Administration.



Sources: U.S.
ion; U.S. Department

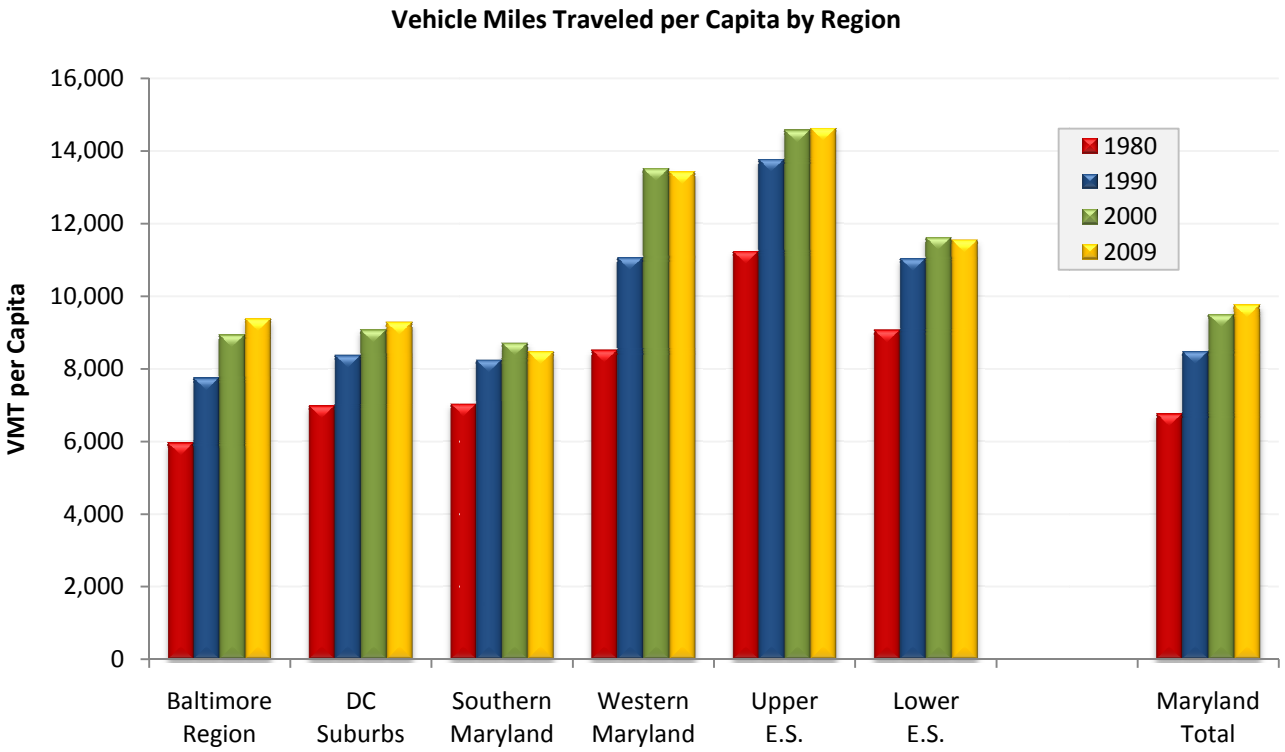


Figure C.25 Regional trends and comparisons for vehicle miles traveled (VMT) per capita, 1980, 1990, 2000 and 2009. Sources: Maryland State Highway Administration and U.S. Census Bureau.

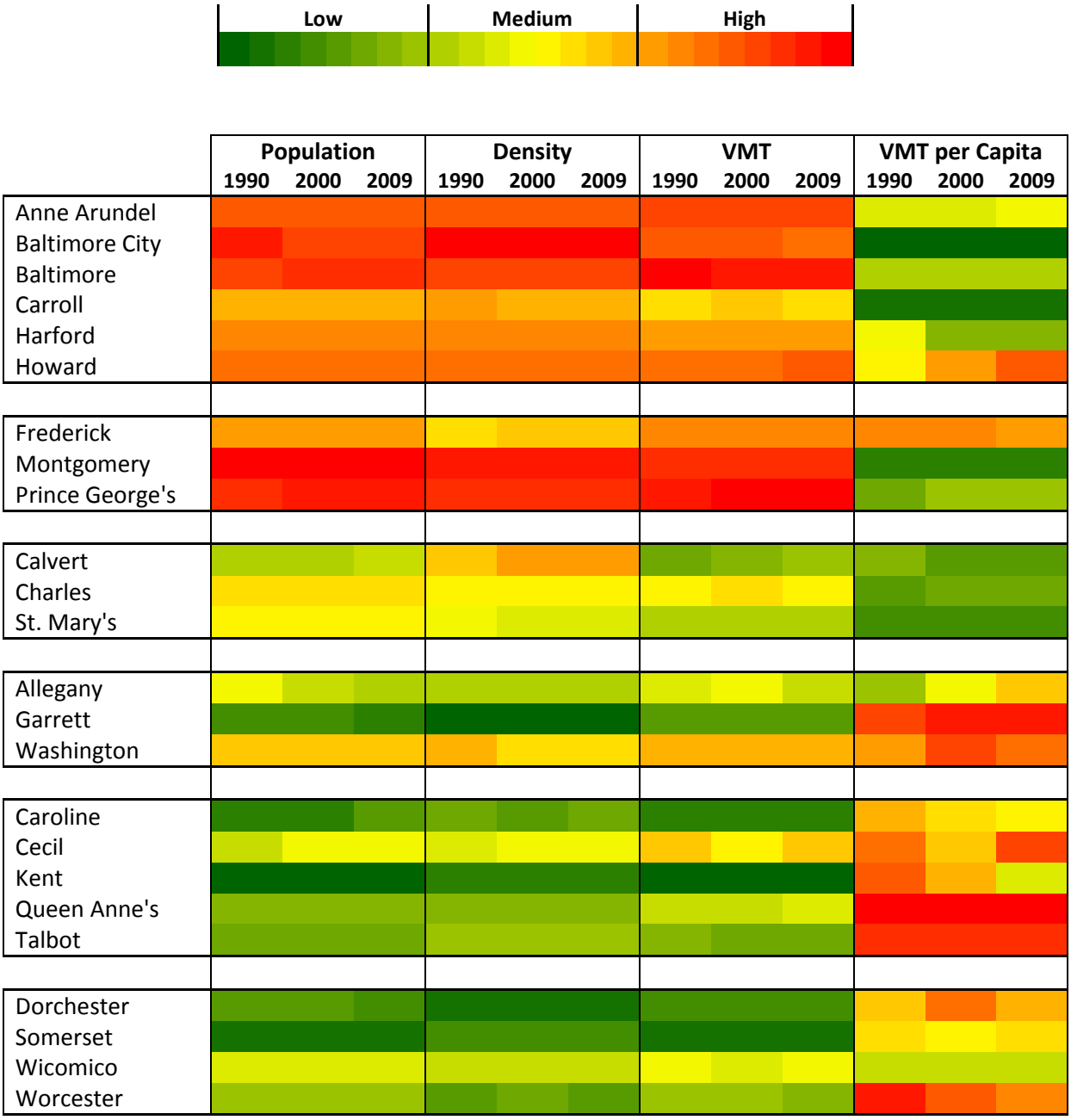


Figure C.26 Comparison of county ranks in population, population density, vehicle miles traveled (VMT) and VMT per capita, 1990, 2000 and 2009. Sources: Maryland State Highway Administration and U.S. Census Bureau.

Arterial Capacity Utilization

	Overall	Morning	Midday	Afternoon	Nighttime
BALTIMORE REGION	**25.6%**	**28.2%**	**26.4%**	**35.8%**	**16.4%**
Anne Arundel	27.7%	32.5%	26.7%	40.2%	17.9%
Baltimore	23.2%	27.1%	22.9%	33.6%	14.6%
Baltimore City	26.4%	25.2%	30.2%	34.5%	17.4%
Carroll	30.7%	40.0%	27.1%	46.7%	18.9%
Harford	24.8%	33.3%	22.3%	35.2%	15.8%
Howard	25.2%	33.0%	22.3%	39.3%	14.5%
DC SUBURBS	**29.3%**	**35.9%**	**27.4%**	**44.1%**	**17.6%**
Frederick	23.9%	29.8%	22.3%	32.6%	15.1%
Montgomery	30.5%	37.2%	28.7%	46.3%	18.2%
Prince George's	29.3%	36.0%	27.3%	44.9%	17.5%
SOUTHERN MARYLAND	**19.5%**	**24.0%**	**18.5%**	**28.6%**	**12.0%**
Calvert	21.4%	25.9%	20.6%	31.2%	13.3%
Charles	20.3%	25.4%	19.0%	29.9%	12.6%
St. Mary's	16.3%	20.0%	15.5%	24.0%	10.0%
WESTERN MARYLAND	**14.8%**	**17.4%**	**15.0%**	**20.7%**	**9.3%**
Allegany	10.2%	10.8%	10.9%	13.8%	6.7%
Garrett	7.0%	8.7%	6.5%	10.1%	4.5%
Washington	19.3%	23.2%	19.4%	27.0%	11.9%
UPPER EASTERN SHORE	**18.2%**	**24.0%**	**16.5%**	**26.2%**	**11.4%**
Caroline	11.0%	13.8%	10.4%	15.5%	7.3%
Cecil	21.8%	29.7%	19.1%	32.1%	13.5%
Kent	7.7%	9.5%	7.3%	10.9%	4.9%
Queen Anne's	16.5%	21.8%	15.6%	23.2%	10.2%
Talbot	24.2%	28.4%	24.0%	34.2%	15.6%
LOWER EASTERN SHORE	**13.7%**	**16.0%**	**13.7%**	**18.9%**	**9.1%**
Dorchester	12.0%	14.5%	11.4%	17.1%	7.7%
Somerset	9.7%	11.6%	9.5%	13.2%	6.5%
Wicomico	18.5%	20.5%	19.0%	24.7%	12.5%
Worcester	9.1%	11.5%	8.5%	13.2%	5.8%
MARYLAND TOTAL	**25.7%**	**29.6%**	**25.6%**	**36.9%**	**16.1%**

Table C.3 Roadway capacity utilization for arterial roads across Maryland. Source: National Center for Smart Growth Research and Education.

Highway Capacity Utilization

	Overall	Morning	Midday	Afternoon	Nighttime
BALTIMORE REGION	**45.6%**	**57.9%**	**41.8%**	**64.1%**	**30.6%**
Anne Arundel	41.9%	52.9%	38.8%	59.3%	27.7%
Baltimore	49.7%	62.2%	46.0%	69.6%	33.5%
Baltimore City	40.2%	50.8%	37.7%	56.6%	26.4%
Carroll	27.1%	40.7%	21.0%	42.2%	16.0%
Harford	50.9%	67.3%	43.0%	66.7%	39.6%
Howard	47.1%	61.6%	41.4%	67.3%	31.7%
DC SUBURBS	**54.3%**	**67.2%**	**50.9%**	**73.9%**	**37.9%**
Frederick	42.9%	55.9%	38.7%	60.1%	28.8%
Montgomery	57.9%	70.2%	54.6%	77.2%	42.1%
Prince George's	55.0%	68.6%	51.8%	75.9%	37.0%
SOUTHERN MARYLAND	**21.1%**	**30.1%**	**23.1%**	**26.0%**	**18.0%**
Calvert	8.4%	32.2%	41.0%	24.4%	28.7%
Charles	42.1%	25.4%	19.0%	29.9%	12.6%
St. Mary's	16.3%	20.0%	15.5%	24.0%	10.0%
WESTERN MARYLAND	**14.8%**	**17.4%**	**15.0%**	**20.7%**	**9.3%**
Allegany	10.2%	10.8%	10.9%	13.8%	6.7%
Garrett	7.0%	8.7%	6.5%	10.1%	4.5%
Washington	19.3%	23.2%	19.4%	27.0%	11.9%
UPPER EASTERN SHORE	**18.2%**	**24.0%**	**16.5%**	**26.2%**	**11.4%**
Caroline	11.0%	13.8%	10.4%	15.5%	7.3%
Cecil	21.8%	29.7%	19.1%	32.1%	13.5%
Kent	7.7%	9.5%	7.3%	10.9%	4.9%
Queen Anne's	16.5%	21.8%	15.6%	23.2%	10.2%
Talbot	24.2%	28.4%	24.0%	34.2%	15.6%
LOWER EASTERN SHORE	**27.1%**	**26.1%**	**17.2%**	**18.8%**	**20.6%**
Dorchester	16.7%	20.7%	15.7%	24.3%	10.3%
Somerset	37.0%	37.0%	51.8%	31.8%	29.0%
Wicomico	45.3%	24.6%	19.3%	17.7%	24.0%
Worcester	14.4%	25.3%	7.1%	6.1%	9.0%
MARYLAND TOTAL	**44.0%**	**46.4%**	**39.0%**	**57.7%**	**29.5%**

Table C.4 Roadway capacity utilization for highways across Maryland. Source: National Center for Smart Growth Research and Education.

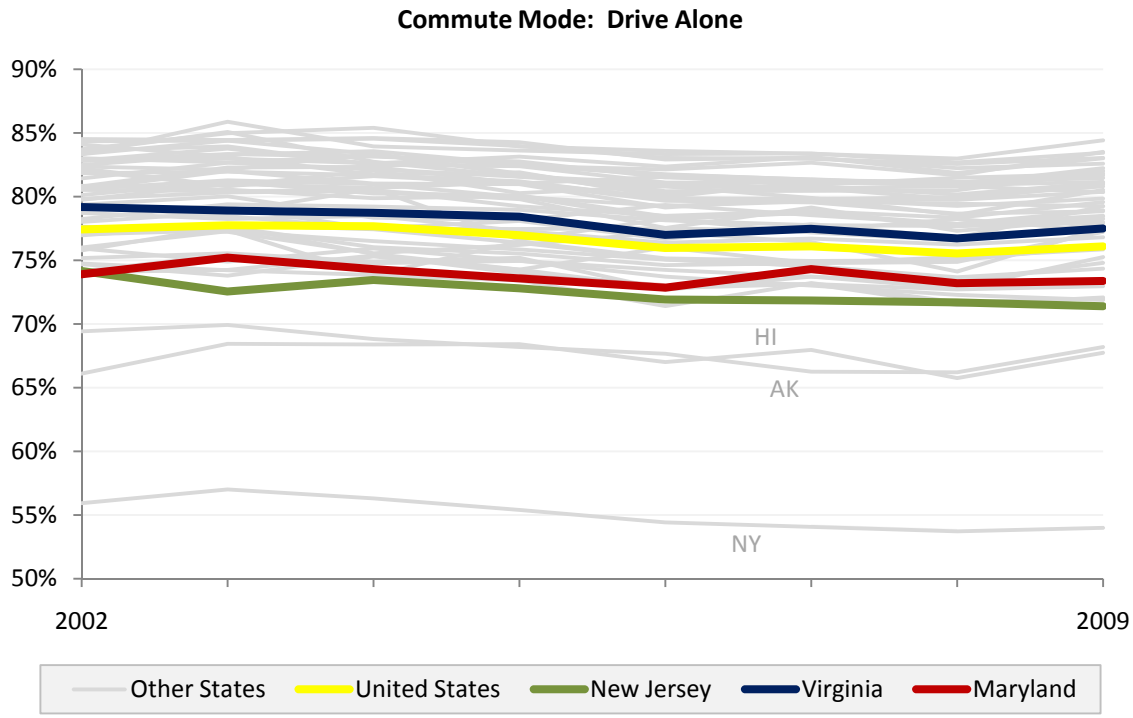


Figure C.27 State trends in the portion of commute trips driven alone, 2002-09. Source: U.S. Census Bureau.

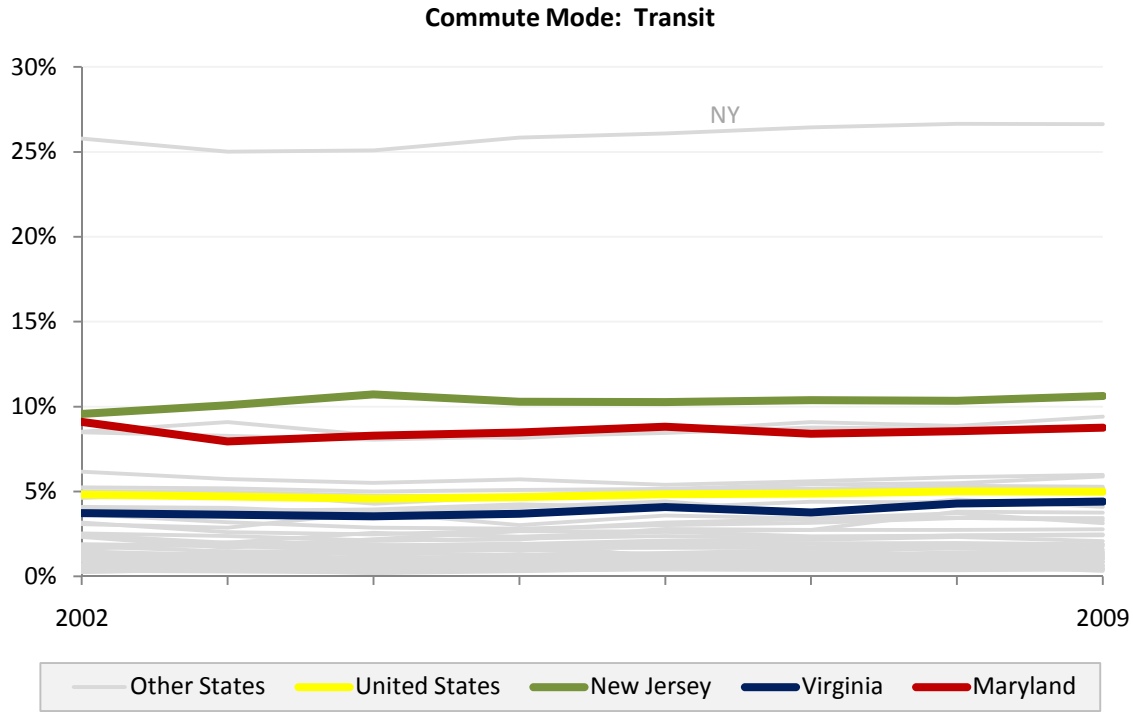


Figure C.28 State trends in the portion of commute trips taken by transit, 2002-09. Source: U.S. Census Bureau.

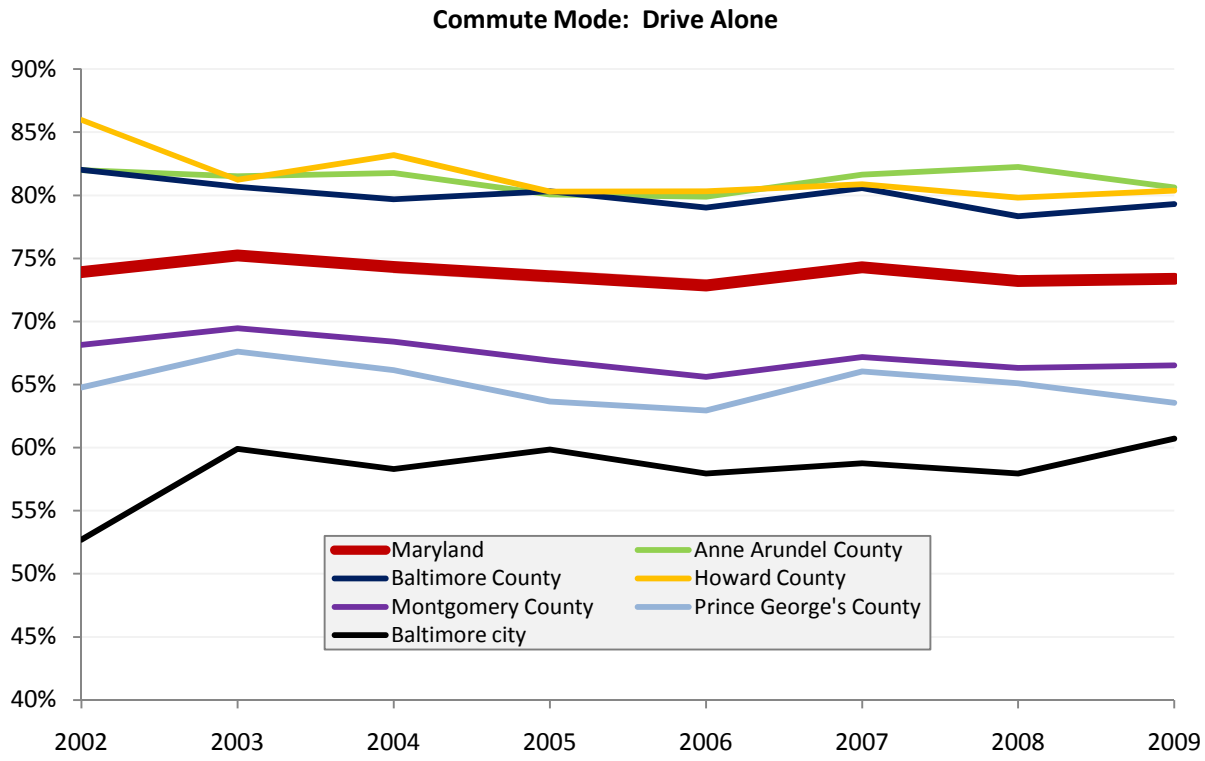


Figure C.29 Trends in the portion of commute trips driven alone for all of Maryland and select counties, 2002-09. Source: U.S. Census Bureau.

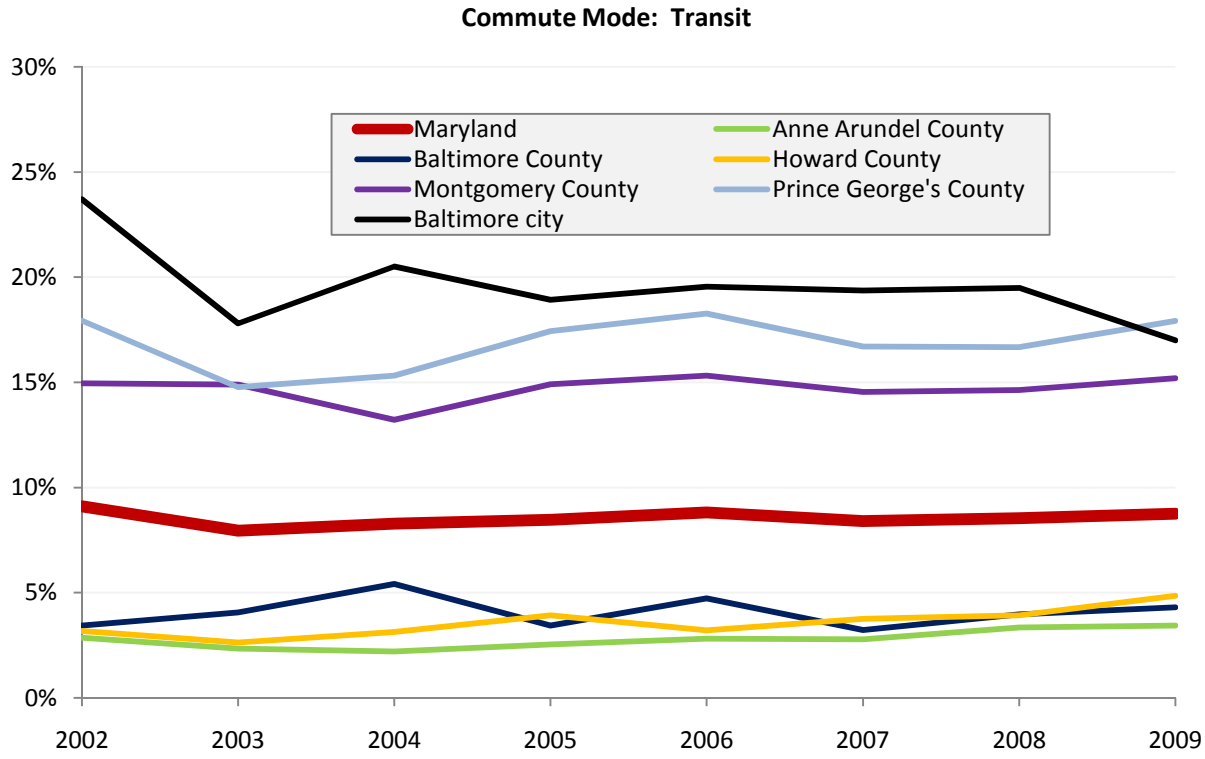


Figure C.30 Trends in the portion of commute trips taken by transit for all of Maryland and select counties, 2002-09. Source: U.S. Census Bureau.

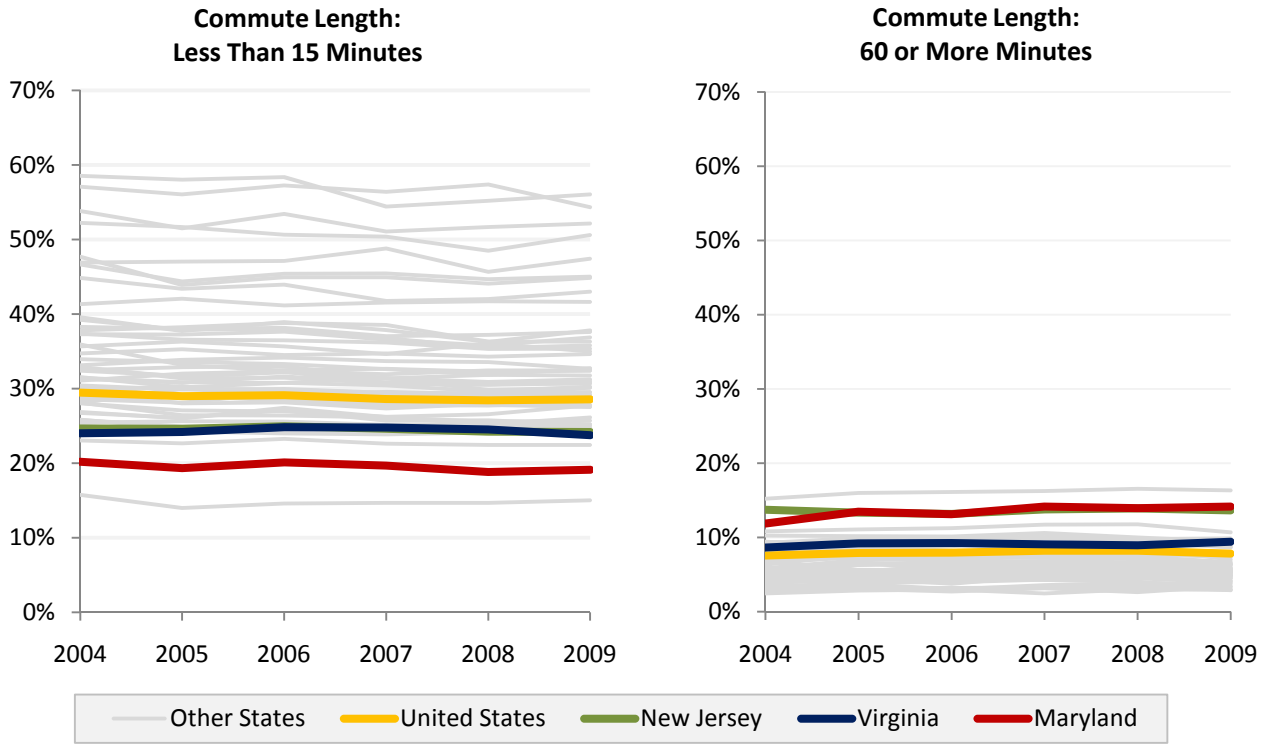


Figure C.31 Percentage of all commute trips that are less than 15 minutes and percentage that are 60 minutes or more; all 50 states and the District of Columbia, 2004-09. Source: U.S. Census Bureau.

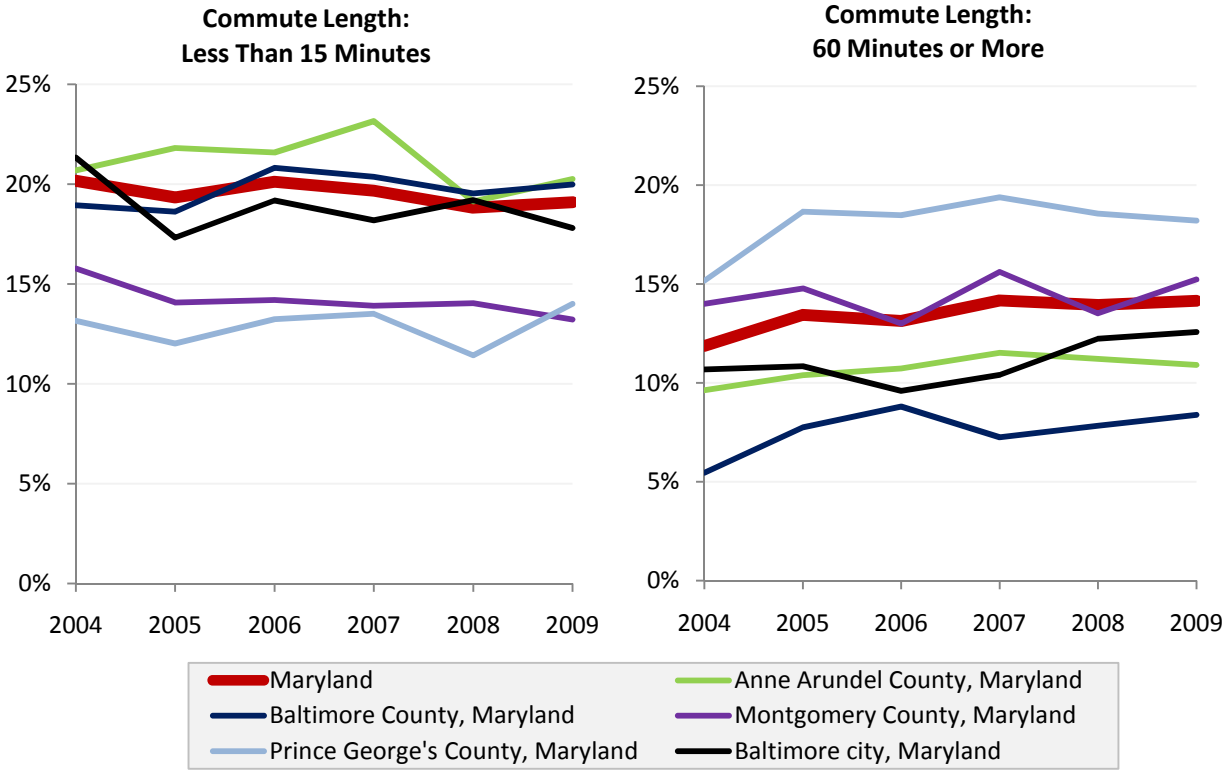


Figure C.32 Percentage of all commute trips that are less than 15 minutes and percentage that are 60 minutes or more; all of Maryland and select counties, 2004-09. Source: U.S. Census Bureau.

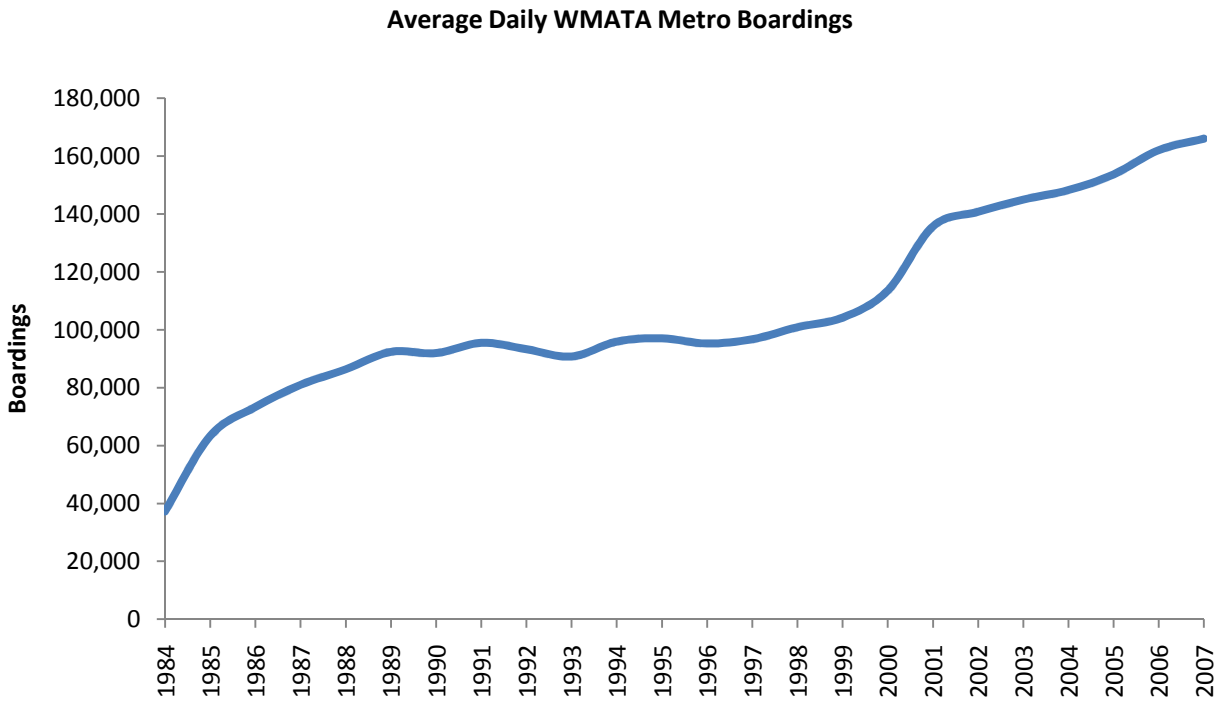


Figure C.33 Average daily boardings at WMATA Metro stations in Maryland, 1984-2007. Source: Washington Metropolitan Area Transit Authority.

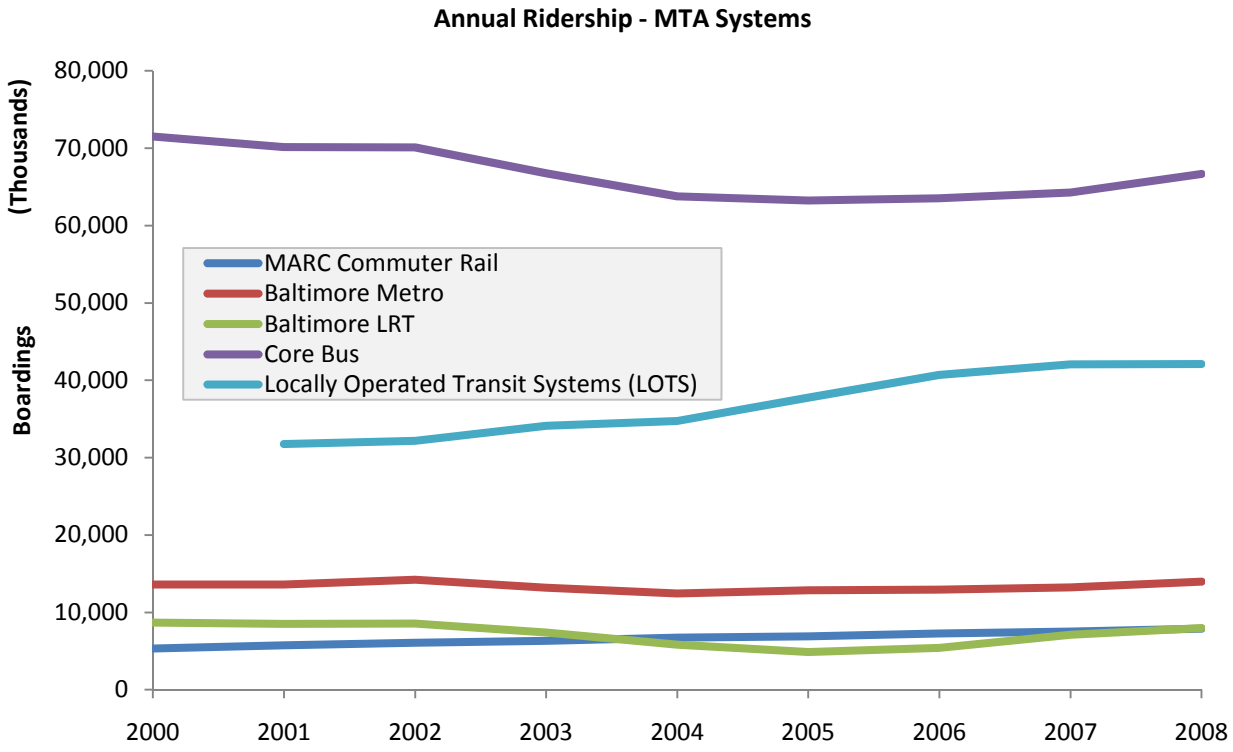


Figure C.34 Total annual ridership for MTA funded transit systems, 2000-08. Source: Maryland Transit Administration.

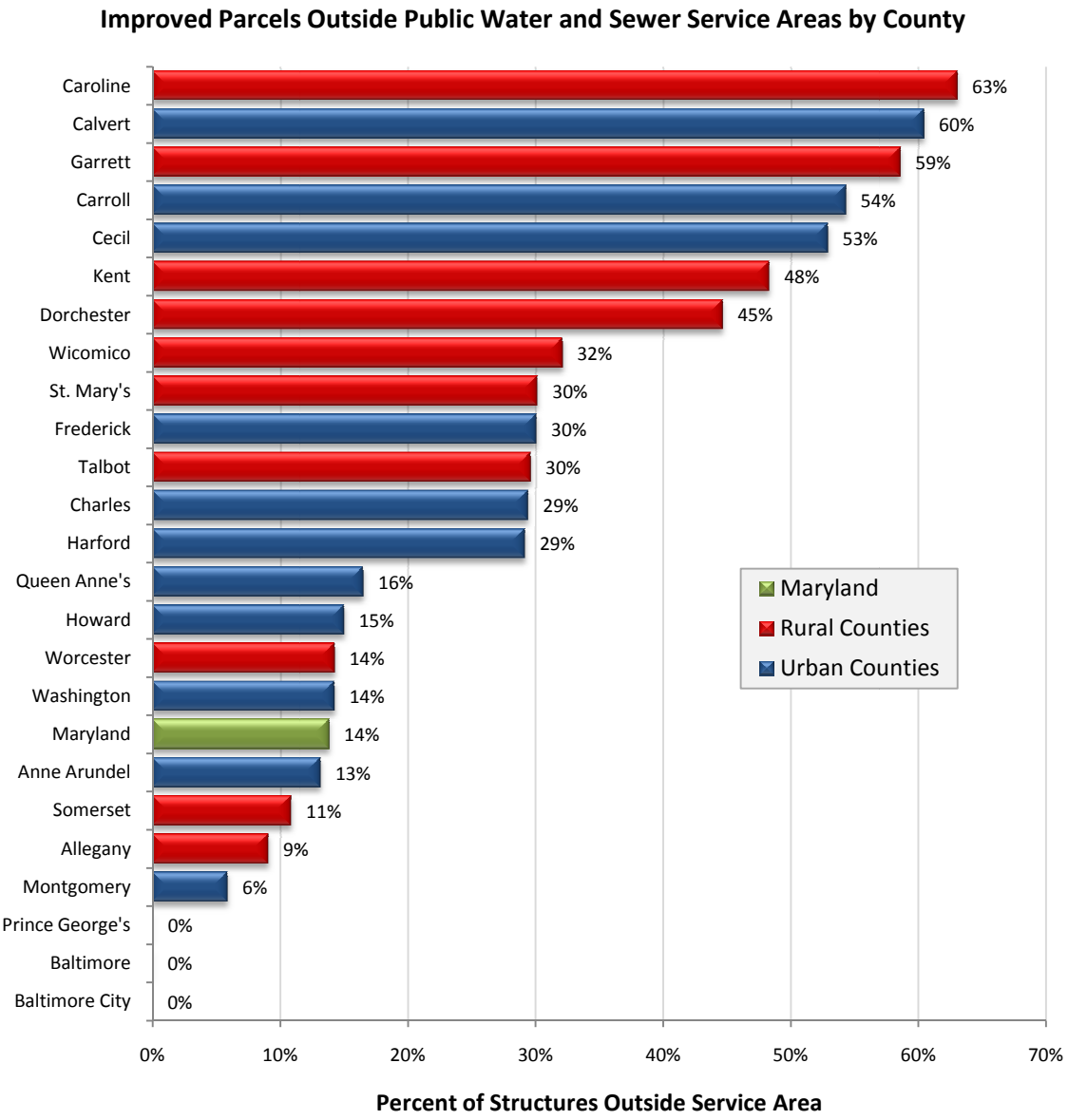


Figure C.35 Percent of improved residential parcels located outside public water and sewer service areas by county, 2007. Only properties with improved values greater than $10,000 were included and this is not an indication of the number of housing units on the parcel. Source: Maryland Department of Planning, Maryland Property View database.

	Utilization	Highest County	Lowest County
Overall	93.1%	Charles – 112.8%	Kent – 60.6%
Elementary School	92.4%	Somerset – 111.1%	Talbot – 73.1%
Middle School	86.1%	Charles – 121.0%	Kent – 42.7%
High School	100.1%	Wicomico – 115.8%	Baltimore City – 63.7%

Table C.5 Summary of public school capacity utilization (enrollment divided by capacity). These data include the most recently available data from all public schools in all counties as of January 2009. Sources: Maryland Department of Planning; Maryland State Department of Education.

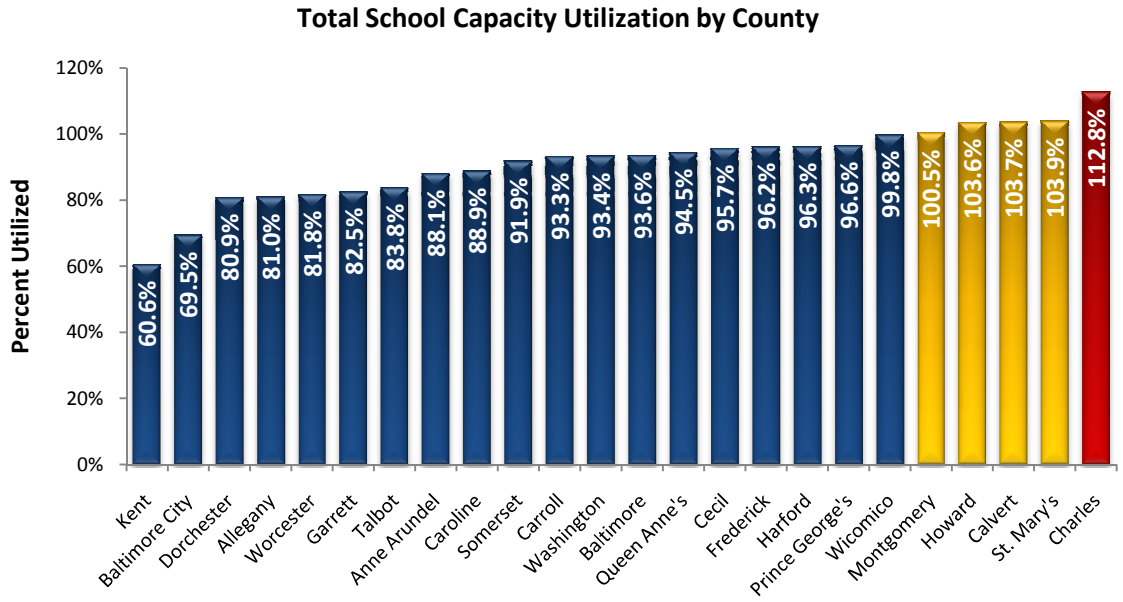


Figure C.36 Total school capacity utilization (enrollment divided by capacity) by county. Sources: Maryland Department of Planning; Maryland State Department of Education.

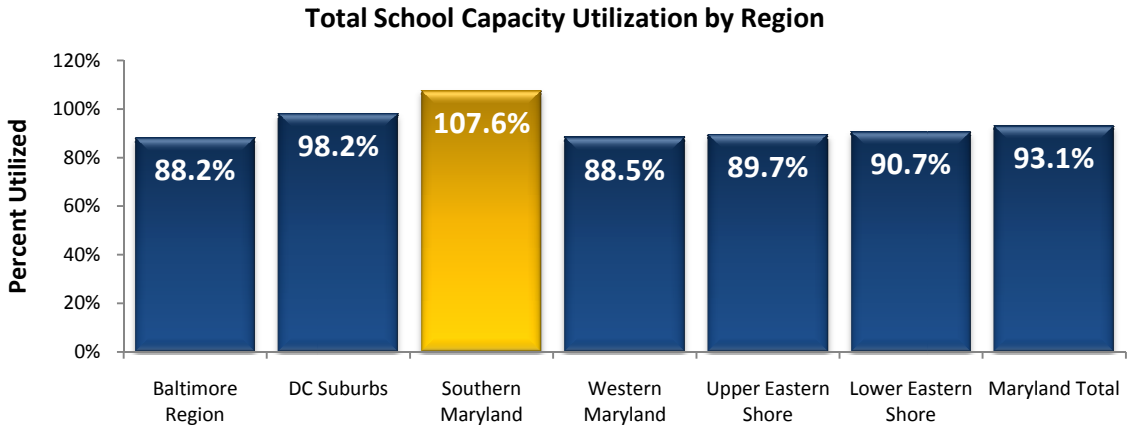


Figure C.37 Total school capacity utilization (enrollment divided by capacity) by region. Sources: Maryland Department of Planning; Maryland State Department of Education.

C.5 DEVELOPMENT PATTERNS

C.5.1 Data notes

Data for the figures in this section depicting land use patterns and shares of new development occurring inside or outside Priority Funding Areas come from the Maryland Department of Planning. The data for Figure C.39 through Figure C.46 include all residential parcels with improved values of $10,000 or more and single family detached and attached units on a lot size of 20 acres or less. Several of the time series graphs include a black vertical line marking 1998, the year Maryland's Smart Growth legislation initially took effect.

This section also includes several figures and a table demonstrating various job-housing balances. We have calculated these using total employment data from the Bureau of Economic Analysis, divided by the total number of housing units in the jurisdiction, which is supplied by the Census Bureau. These employment data include the total number of full- and part-time jobs in the jurisdiction, as well as proprietor jobs.

In Table C.8 we have estimated the portion of a county's population that is located within a half mile of a rail transit station for those counties in Maryland that have rail transit. In order to calculate these estimates, we assumed that census block groups have a uniform population density.

Figure C.49 demonstrates the density of jobs located within a half mile of a rail transit station for those counties in Maryland that have rail transit. The job location data come from the Maryland Department of Labor, Licensing and Regulation, and are estimated using unemployment insurance data. Due to the nature of these data, the location of jobs for some sectors (including the railroad industry, private household employment, farm labor contractors, private schools, religious organizations, and the military) are not included in the dataset.

C.5.2 Tables and figures

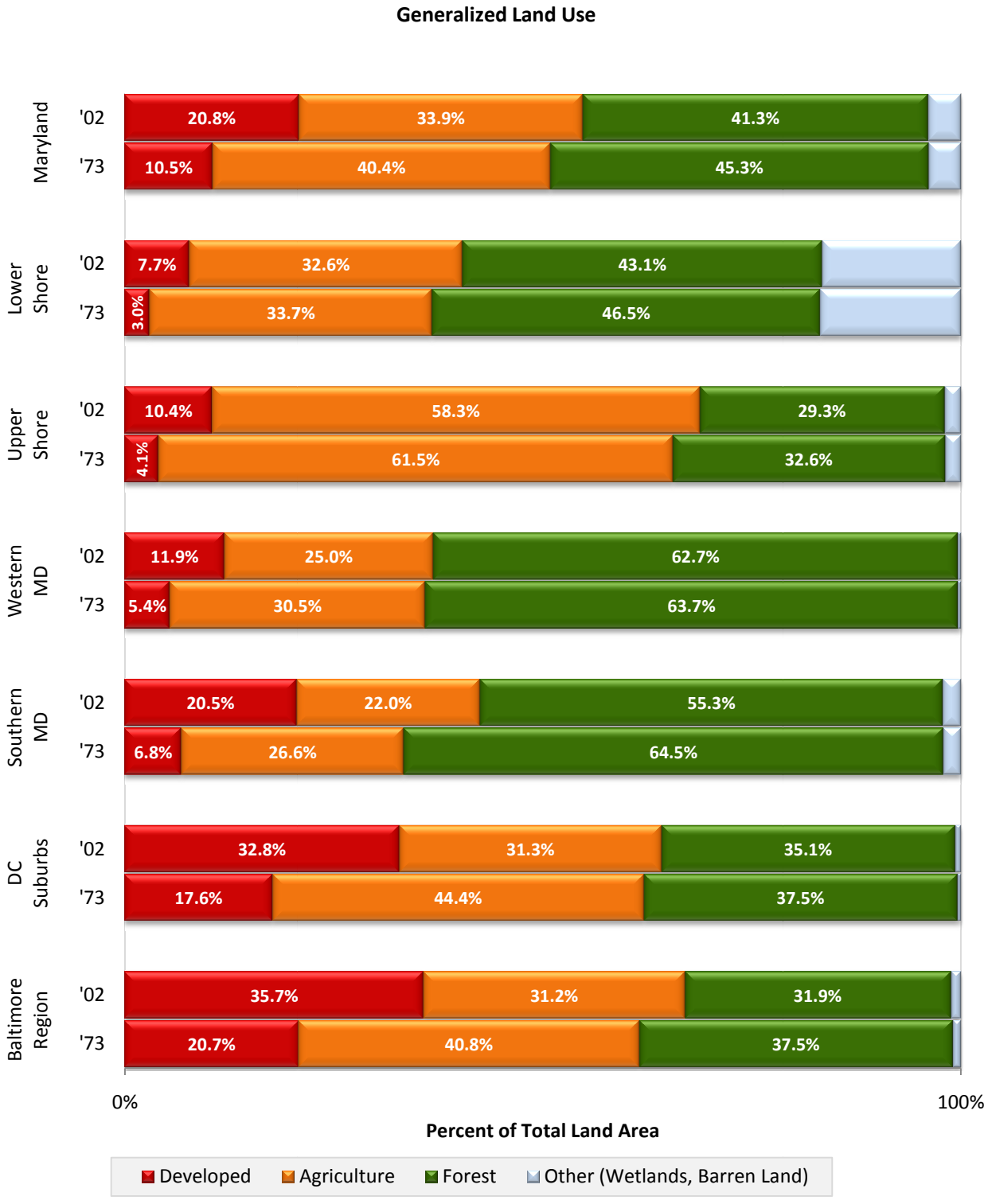


Figure C.38 Generalized land use by region, 1973 and 2002. Source: Maryland Department of Planning.

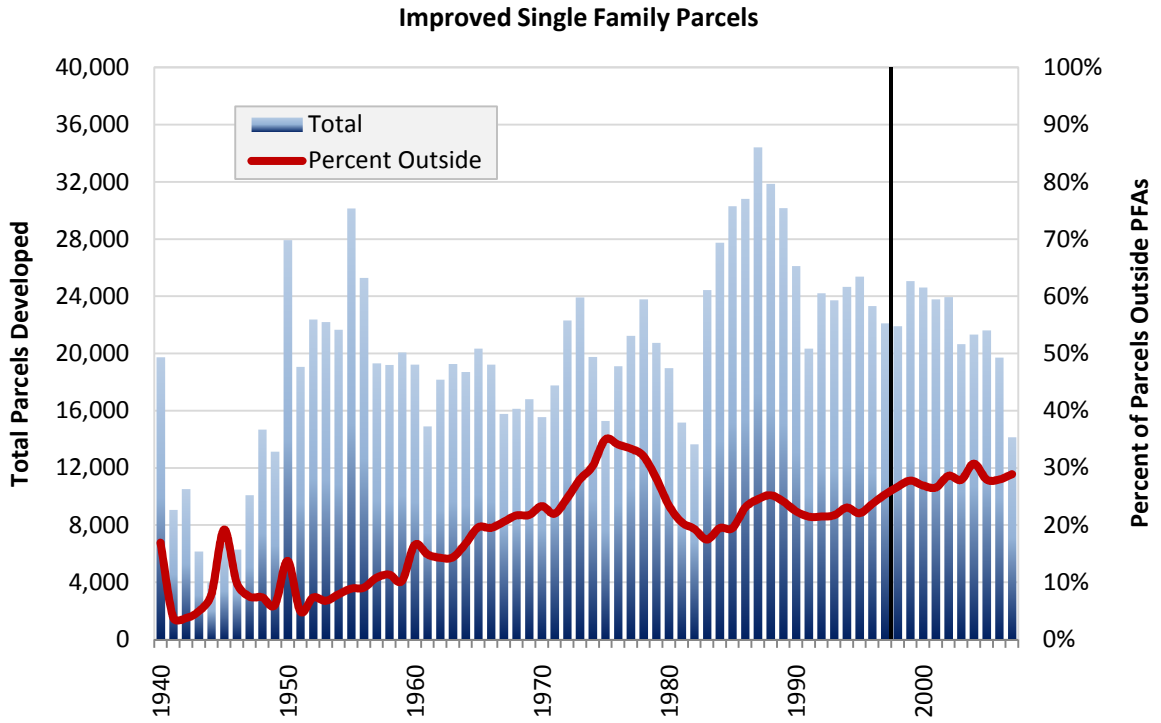


Figure C.39 Single family parcels developed, by year and percent located *outside* Priority Funding Areas, 1940-2007. Source: Maryland Department of Planning.

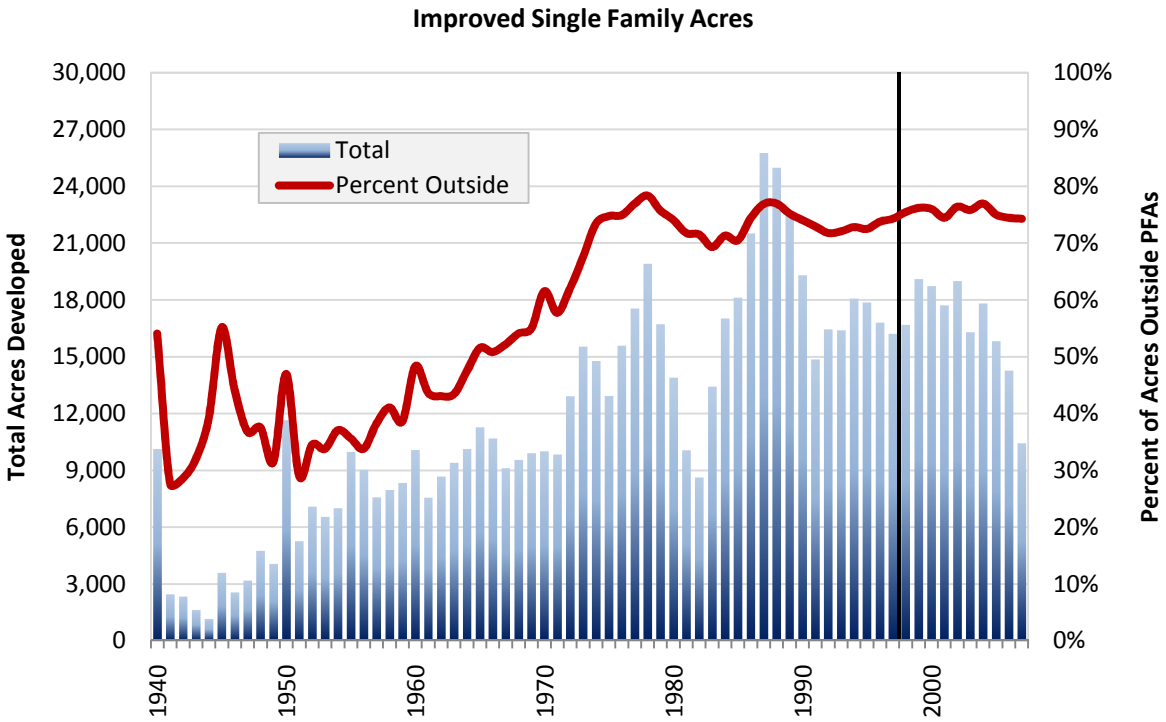
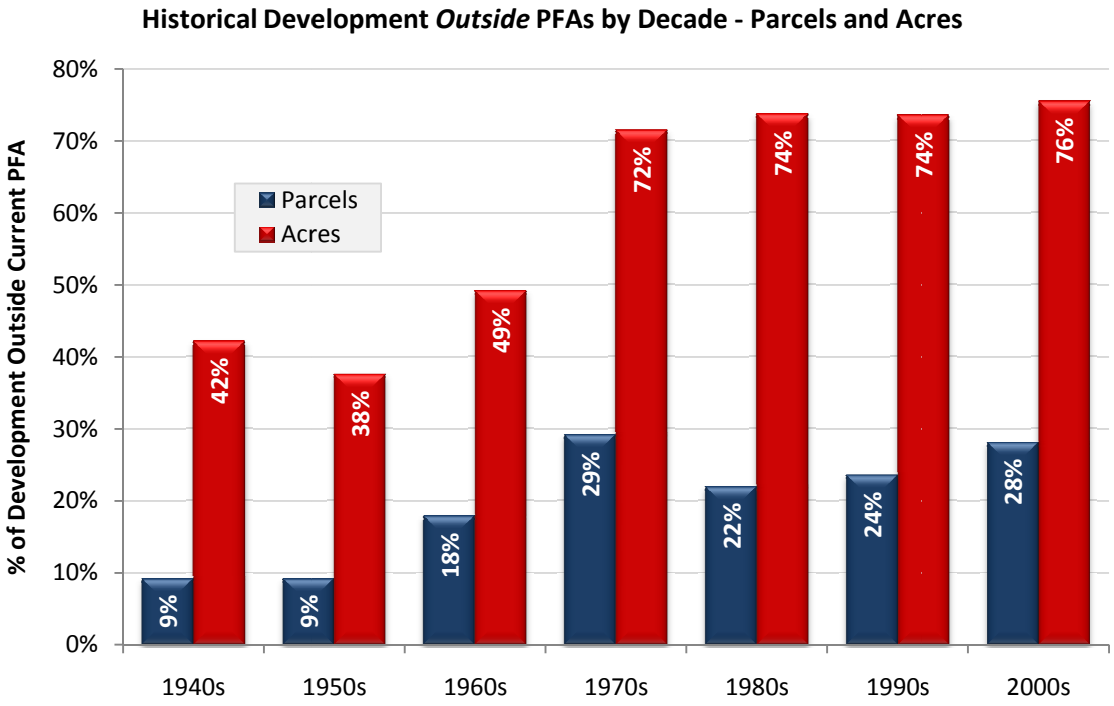


Figure C.40 Acres developed for single family development, by year and percent located *outside* Priority Funding Areas, 1940-2007. Source: Maryland Department of Planning.



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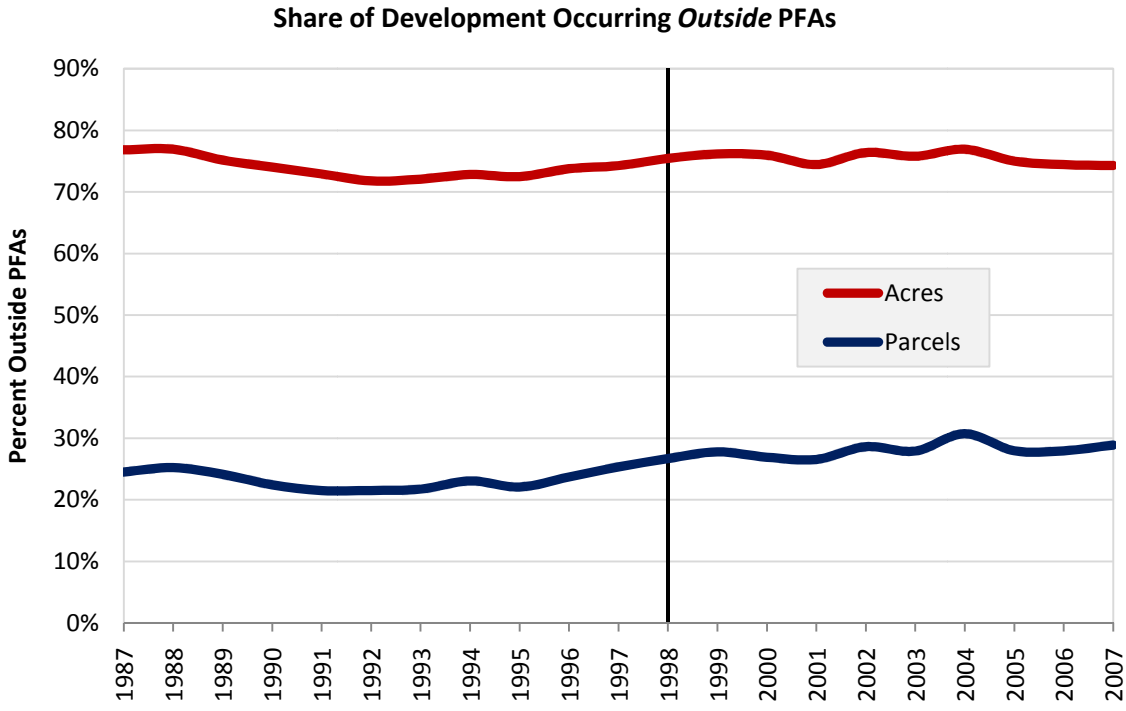

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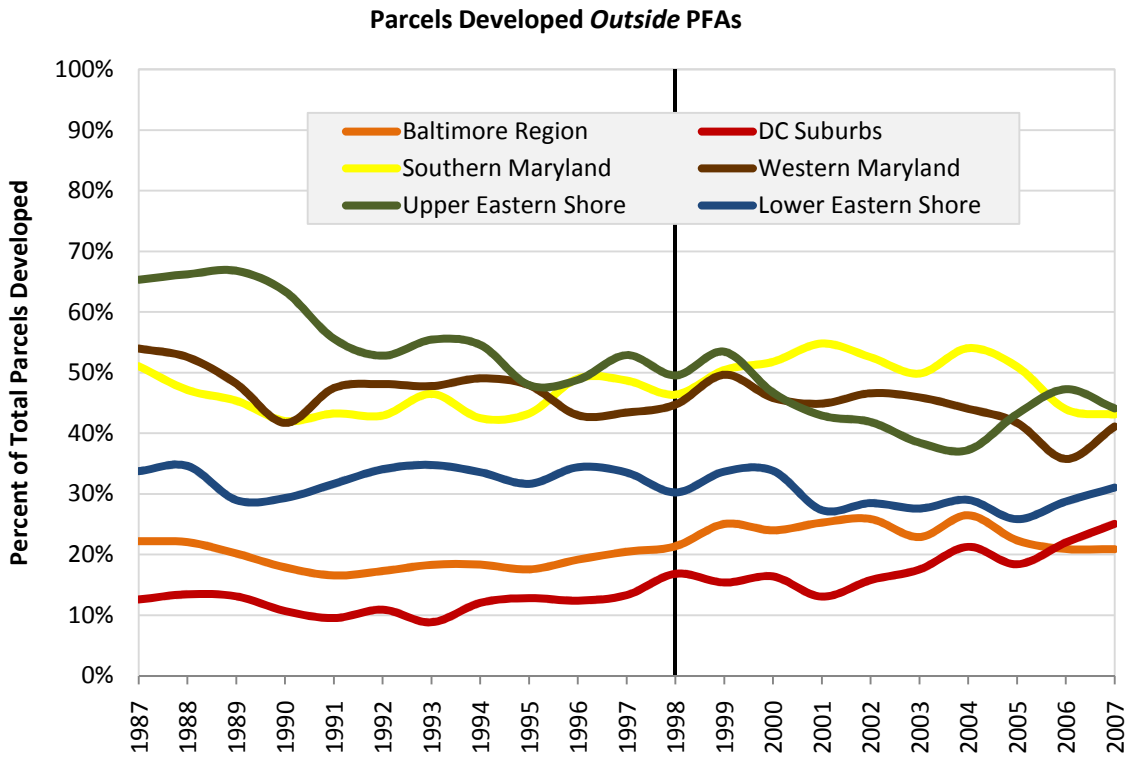


Figure C.43 Percent of parcels developed *outside* Priority Funding Areas by region, 1987-2007.
Source: Maryland Department of Planning.

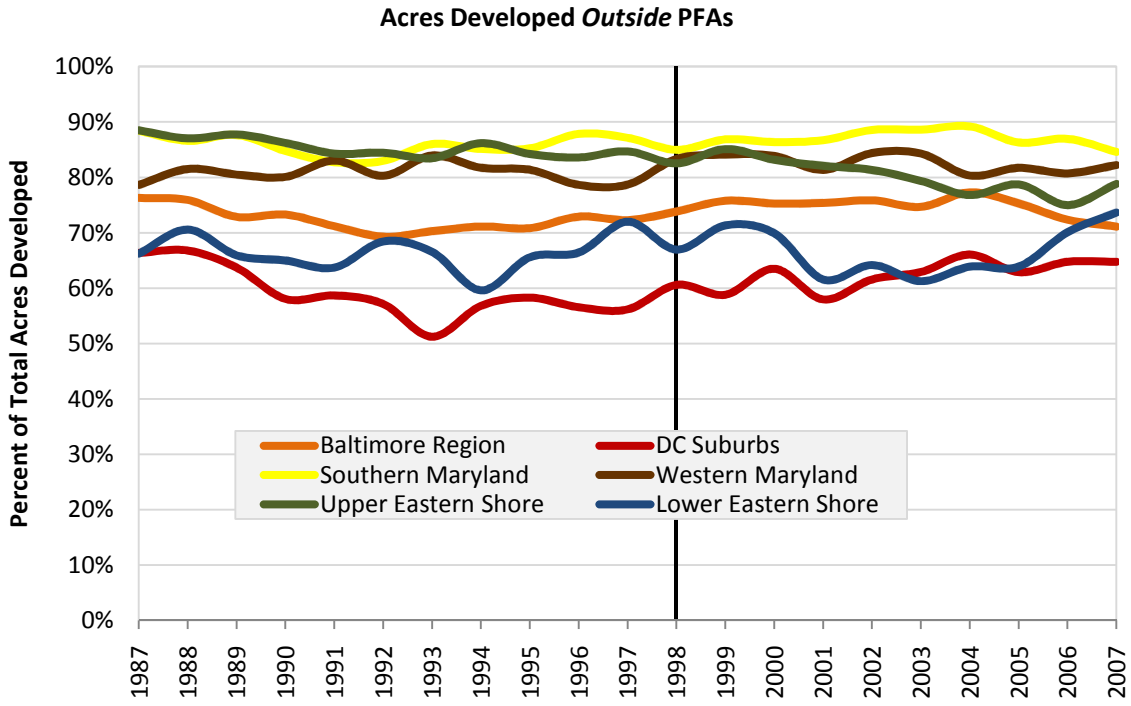


Figure C.44 Percent of acres developed *outside* Priority Funding Areas by region, 1987-2007.
Source: Maryland Department of Planning.

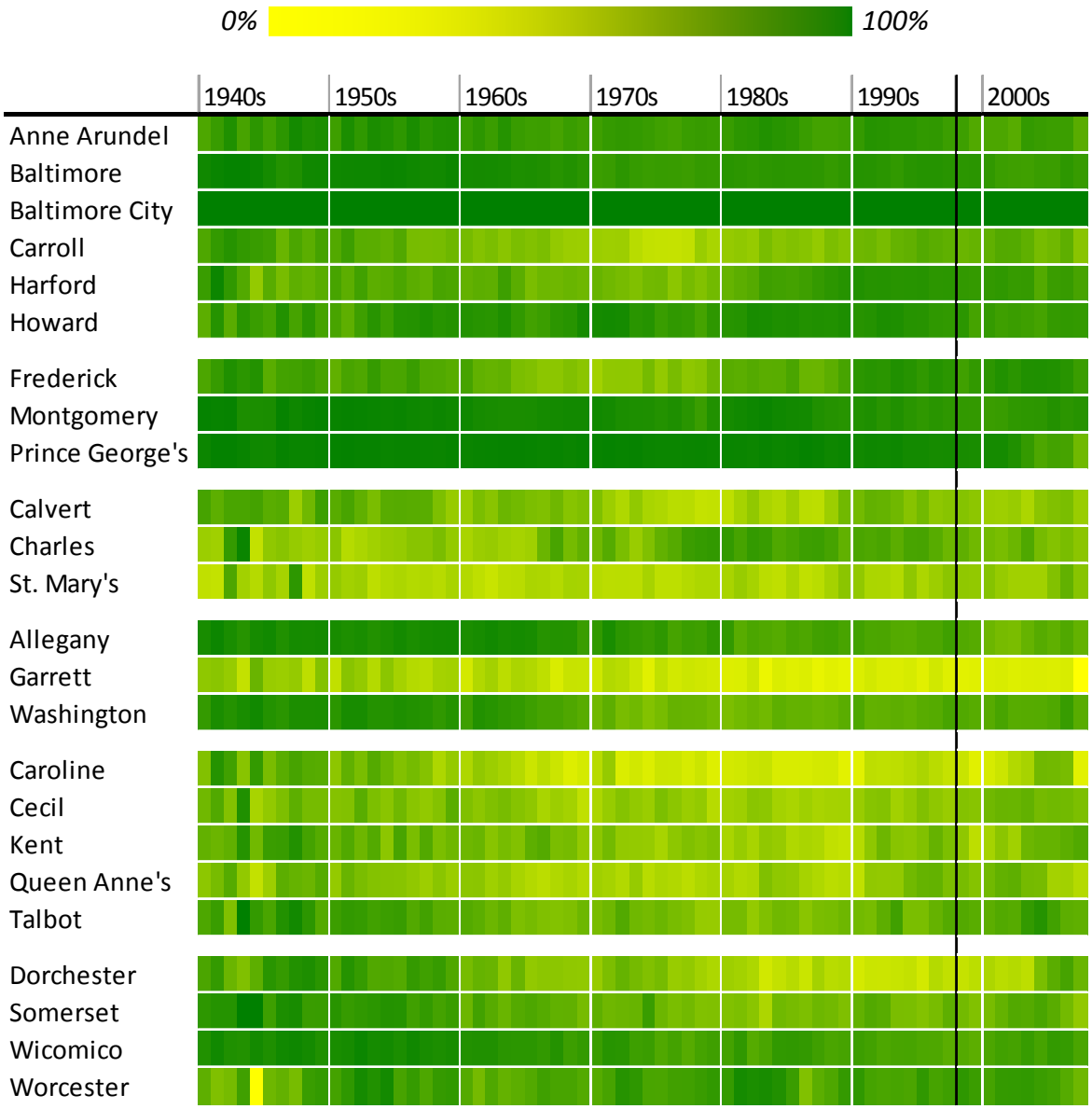


Figure C.45 County development trends - percent of developed parcels *inside* Priority Funding Areas, 1940-2007. The black line denotes 1998, the year after Maryland's initial Smart Growth legislation was adopted. Source: Maryland Department of Planning.

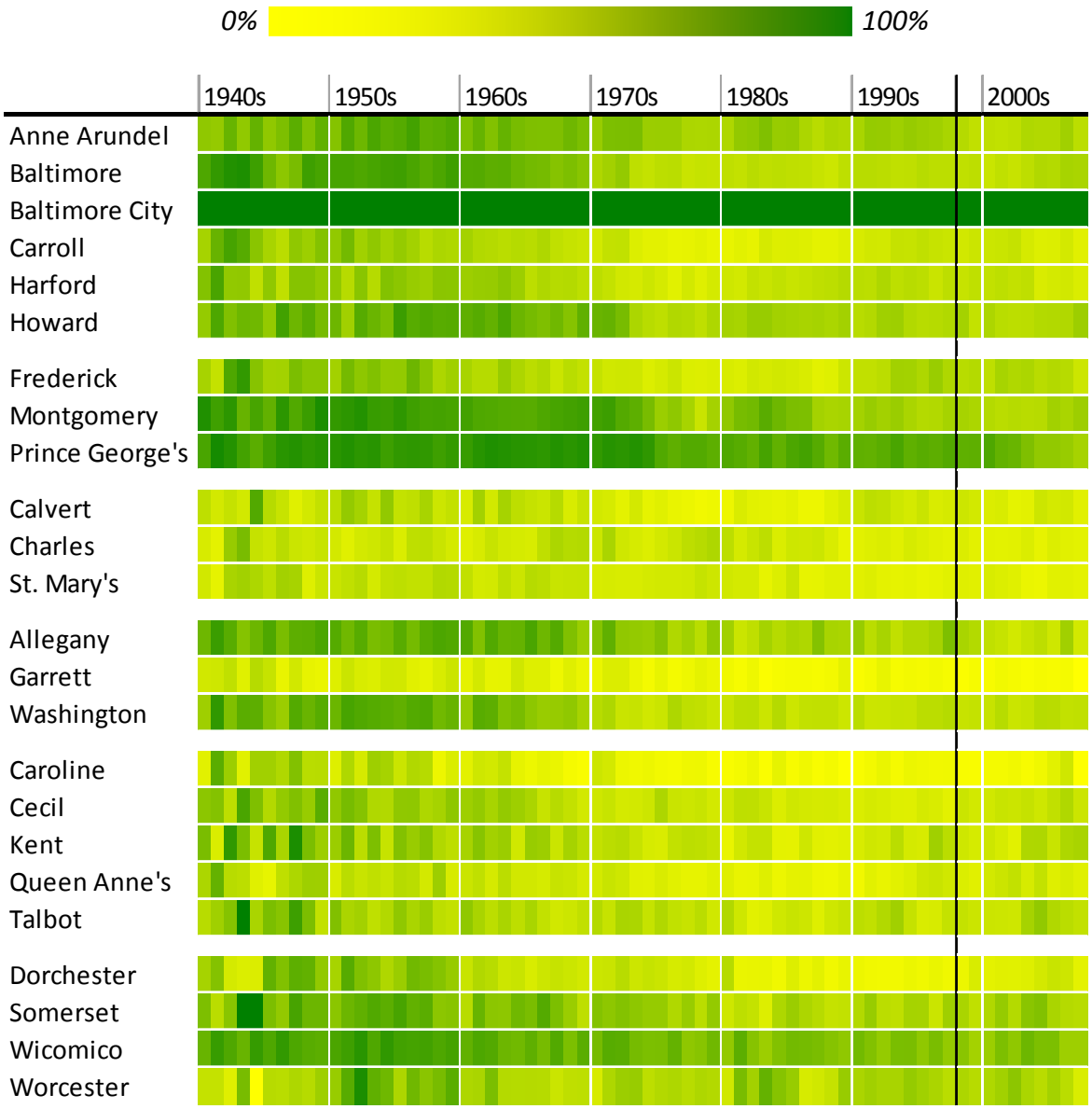


Figure C.46 County development trends - percent of developed acres *inside* Priority Funding Areas, 1940-2007. Source: Maryland Department of Planning.

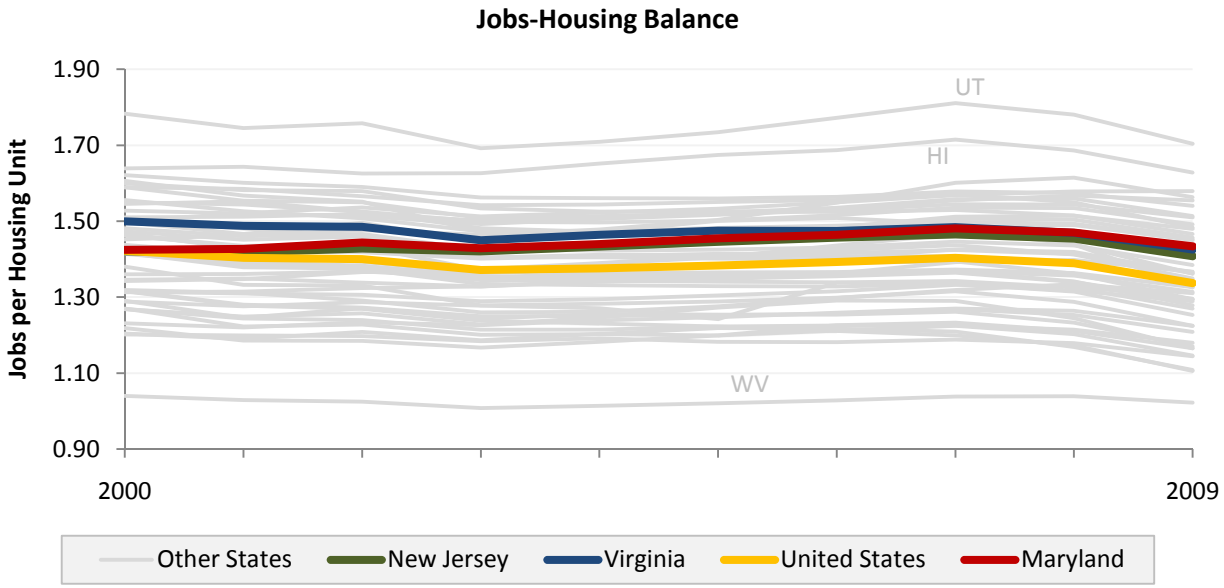


Figure C.47 Ratio of jobs to housing units for the U.S. and all 50 states, 2000-09. Sources: U.S. Bureau of Economic Analysis; U.S. Census Bureau.

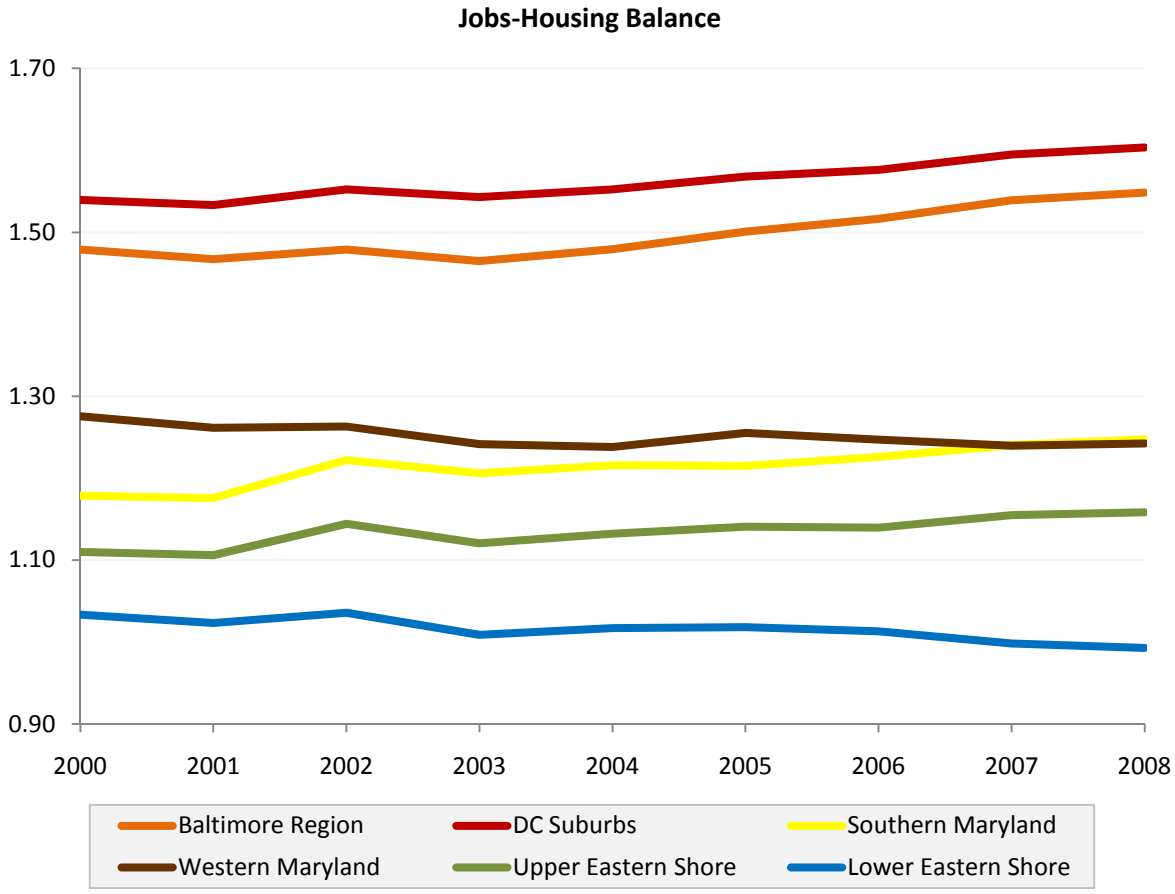


Figure C.48 Ratio of jobs to housing units for Maryland regions, 2000-08. Sources: U.S. Bureau of Economic Analysis; U.S. Census Bureau.

Lowest Jobs-Housing Ratio (0.63) *Highest Jobs-Housing Ratio (1.83)*

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Baltimore Region									
Anne Arundel	1.58	1.60	1.64	1.65	1.69	1.73	1.75	1.79	1.81
Baltimore	1.44	1.47	1.47	1.46	1.49	1.53	1.55	1.57	1.59
Baltimore City	1.50	1.43	1.42	1.40	1.37	1.35	1.36	1.36	1.36
Carroll	1.26	1.26	1.29	1.26	1.29	1.33	1.35	1.37	1.39
Harford	1.17	1.12	1.16	1.15	1.18	1.21	1.22	1.23	1.23
Howard	1.72	1.73	1.76	1.72	1.74	1.76	1.81	1.82	1.83
DC Suburbs									
Frederick	1.42	1.41	1.47	1.46	1.48	1.50	1.49	1.52	1.51
Montgomery	1.78	1.76	1.77	1.76	1.76	1.79	1.80	1.81	1.83
Prince George's	1.30	1.31	1.33	1.32	1.34	1.34	1.34	1.37	1.38
Southern Maryland									
Calvert	0.94	0.95	1.01	0.99	1.01	1.01	1.03	1.06	1.07
Charles	1.13	1.14	1.17	1.13	1.14	1.16	1.16	1.16	1.16
St. Mary's	1.44	1.41	1.47	1.48	1.48	1.45	1.46	1.49	1.50
Western Maryland									
Allegany	1.16	1.13	1.13	1.13	1.15	1.17	1.17	1.16	1.17
Garrett	1.05	1.03	1.08	1.07	1.08	1.11	1.11	1.11	1.13
Washington	1.42	1.41	1.41	1.36	1.34	1.35	1.33	1.32	1.32
Upper Eastern Shore									
Caroline	1.08	1.02	1.06	1.04	1.04	1.06	1.04	1.05	1.05
Cecil	0.92	0.93	0.98	0.96	0.98	0.98	0.99	1.01	1.02
Kent	1.24	1.22	1.23	1.19	1.22	1.24	1.24	1.26	1.23
Queen Anne's	1.03	1.05	1.09	1.08	1.11	1.12	1.14	1.17	1.17
Talbot	1.53	1.52	1.55	1.51	1.50	1.49	1.47	1.46	1.46
Lower Eastern Shore									
Dorchester	1.11	1.09	1.08	1.09	1.10	1.09	1.05	1.03	1.02
Somerset	1.05	1.07	1.08	1.08	1.06	1.04	1.04	1.03	1.03
Wicomico	1.50	1.48	1.50	1.44	1.47	1.50	1.50	1.47	1.46
Worcester	0.66	0.66	0.68	0.65	0.65	0.64	0.64	0.63	0.63
Maryland	**1.44**	**1.43**	**1.44**	**1.43**	**1.44**	**1.46**	**1.46**	**1.48**	**1.49**

Table C.6 Ratio of jobs to housing units for Maryland counties, 2000-08. Sources: U.S. Bureau of Economic Analysis; U.S. Census Bureau.

	1990	2000	2009
Baltimore Region	**55.2%**	**53.2%**	**52.2%**
Anne Arundel County	60.6%	56.3%	56.0%
Baltimore City	66.1%	61.9%	59.5%
Baltimore County	50.5%	52.7%	50.3%
Carroll County	45.5%	44.9%	46.1%
Harford County	53.3%	51.9%	52.8%
Howard County	35.8%	38.0%	40.1%
DC Suburbs	**50.6%**	**50.6%**	**52.3%**
Frederick County	60.2%	58.9%	59.9%
Montgomery County	58.6%	58.7%	60.4%
Prince George's County	40.3%	39.2%	40.7%
Southern Maryland	**52.2%**	**50.3%**	**48.5%**
Calvert County	42.7%	39.4%	40.9%
Charles County	42.1%	40.2%	35.5%
St. Mary's County	72.7%	74.3%	72.8%
Western Maryland	**79.3%**	**76.4%**	**73.4%**
Allegany County	86.2%	85.1%	87.4%
Garrett County*	78.9%	72.8%	78.6%
Washington County	75.8%	73.0%	65.8%
Upper Eastern Shore	**55.4%**	**50.7%**	**51.8%**
Caroline County*	48.5%	44.1%	40.7%
Cecil County	48.8%	43.9%	48.4%
Kent County*	73.5%	72.0%	71.8%
Queen Anne's County*	42.4%	40.2%	43.4%
Talbot County*	80.2%	76.1%	72.2%
Lower Eastern Shore	**76.9%**	**73.0%**	**71.5%**
Dorchester County*	76.6%	67.2%	64.6%
Somerset County*	62.4%	57.8%	55.3%
Wicomico County	81.1%	78.3%	77.8%
Worcester County*	75.6%	73.0%	70.3%
Maryland	**54.9%**	**53.5%**	**53.4%**
United States	**76.1%**	**73.3%**	**72.7%**

* The 2009 estimates for these counties actually come from the 2007-09 American Community Survey 3-year estimates data set. All other 2009 estimates are from the 2009 America Community Survey 1-year estimates data set.

Table C.7 Percent of workers that work in their county of residence, by county and region, 1990, 2000 and 2009. Source: U.S. Census Bureau.

	Population Density within Transit Shed (people per square mile)			Share of Population within Transit Shed	
	1990	2000	% Change	1990	2000
Anne Arundel	959	1,702	77.5%	0.58%	2.76%
Baltimore	2,718	2,102	-22.7%	1.56%	3.08%
Baltimore City	13,539	9,933	-26.6%	13.89%	19.00%
Cecil	N/A	486	N/A	N/A	0.32%
Frederick	232	258	11.2%	0.19%	0.16%
Harford	N/A	1,845	N/A	N/A	1.33%
Howard	1,160	1,702	46.7%	0.96%	1.20%
Montgomery	4,242	4,753	12.0%	8.63%	8.81%
Prince George's	3,985	4,184	5.0%	4.41%	5.43%

Table C.8 Population within transit shed (half mile of rail transit station) for counties in Maryland with rail transit. Source: Washington Metropolitan Area Transit Authority, Maryland Transit Administration, U.S. Census Bureau.

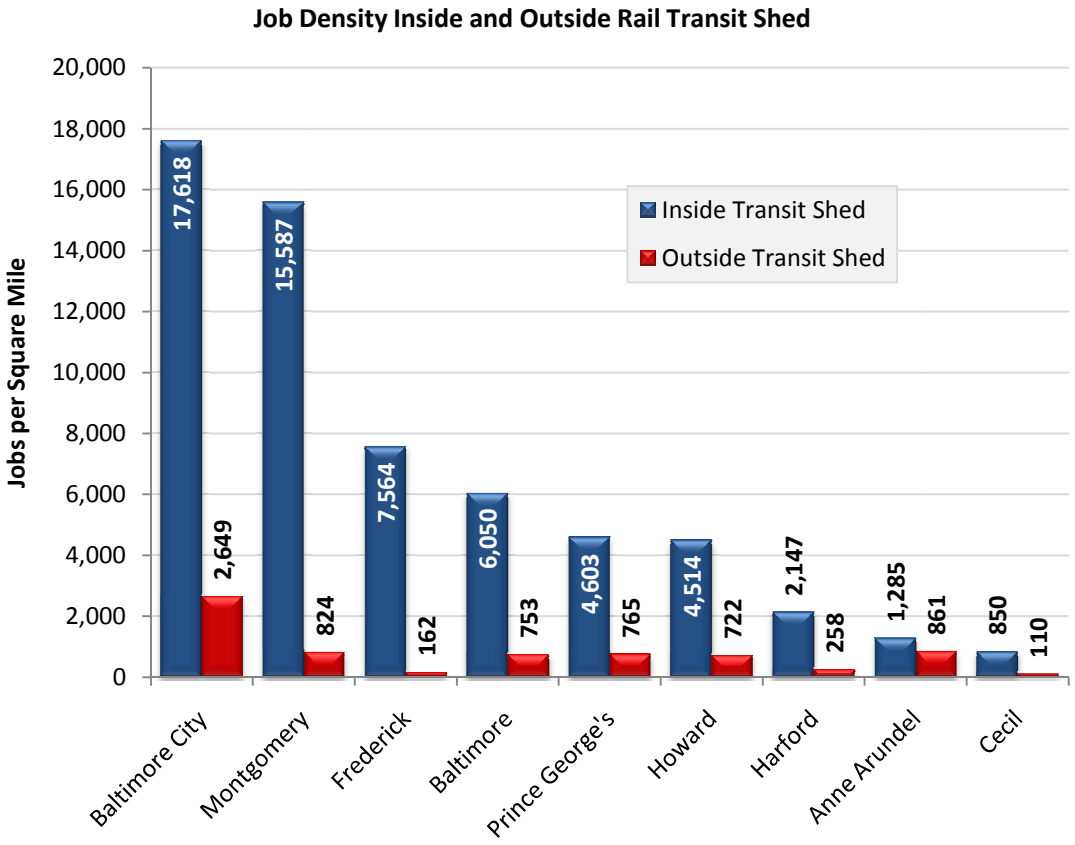


Figure C.49 Job density within transit shed (half mile of rail transit station) for counties in Maryland with rail transit, 2007. Source: Maryland Department of Labor, Licensing and Regulation, MTA, WMATA.

C.6 HOUSING

C.6.1 Data notes

In this section, we include several figures that highlight the mix of housing being developed in Maryland. We also include figures and tables highlighting the changes in home prices and the affordability of housing. In Table C.11 and Table C.12, we offer two measures of housing affordability and present them in a way that allows you to compare Maryland's counties and regions, as well as individual regions over time. Table C.11 compares the median home sales price in a county to the median household income in the state, giving you a relative sense of how affordable housing is in each county to the typical Maryland household. Table C.12 compares the median home sales price in a county to the median household income in the same county. This gives you a relative sense of how affordable housing is in each county to the typical resident household in the county.

In Figure C.52 through Figure C.54, we present U.S. Census data demonstrating the shares of various homeowner populations (including one broken down by income level) that are burdened by the cost of housing. Prior to 2000, the Census defined a housing cost burden as costs greater than 30% of a household's income. With the 2000 Census, the Census Bureau began recording a second level of cost burden at 50% of a household's income.

C.6.2 Tables and figures

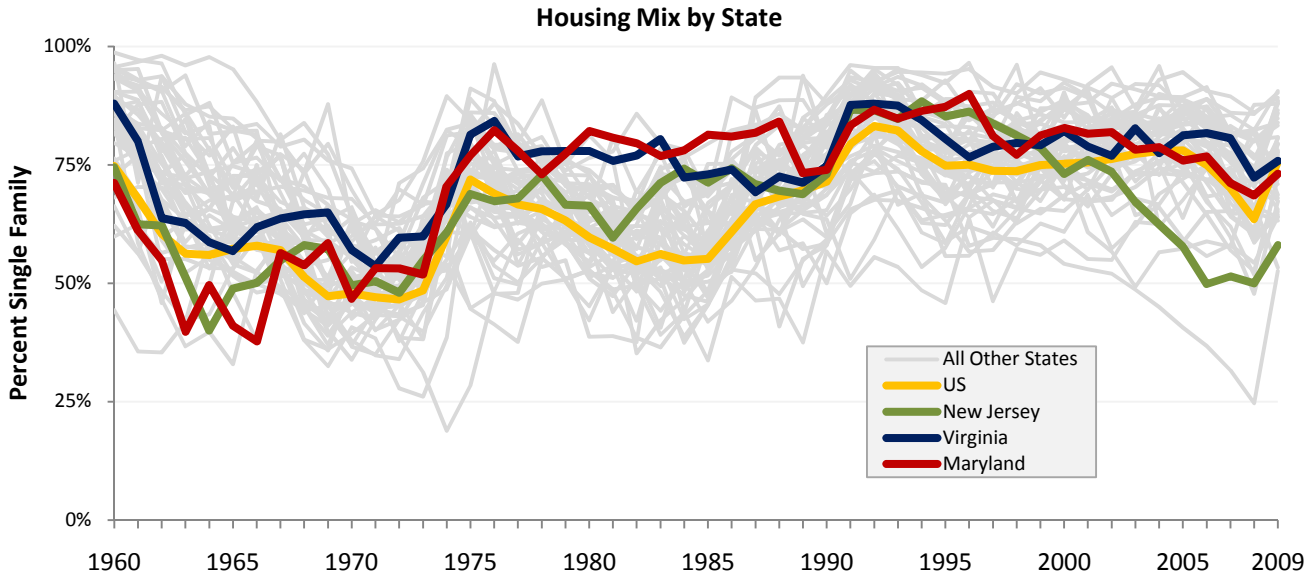


Figure C.50 Housing mix (percent of building permits issued for single family development) by state, 1960-2009. Source: U.S. Census Bureau.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Baltimore Region	**70%**	**84%**	**86%**	**81%**	**85%**	**86%**	**86%**	**80%**	**73%**	**76%**	**82%**	**81%**	**84%**	**74%**	**72%**	**73%**	**77%**	**76%**	**55%**	**60%**
Anne Arundel	55%	93%	95%	89%	89%	76%	79%	80%	46%	75%	80%	81%	86%	72%	75%	63%	78%	57%	85%	70%
Baltimore	71%	83%	72%	63%	75%	84%	82%	68%	82%	61%	76%	59%	72%	68%	71%	78%	81%	93%	37%	43%
Baltimore City	66%	46%	100%	59%	100%	60%	65%	77%	100%	24%	85%	59%	62%	30%	59%	51%	51%	64%	14%	40%
Carroll	100%	90%	100%	97%	95%	98%	99%	97%	96%	97%	92%	97%	91%	94%	70%	89%	99%	100%	96%	79%
Harford	73%	86%	83%	86%	90%	96%	88%	96%	100%	87%	91%	96%	96%	94%	78%	83%	84%	83%	83%	70%
Howard	79%	78%	98%	87%	83%	93%	98%	77%	75%	87%	75%	100%	87%	68%	70%	75%	66%	80%	72%	60%
DC Suburbs	**71%**	**80%**	**89%**	**85%**	**86%**	**87%**	**91%**	**74%**	**77%**	**79%**	**79%**	**77%**	**74%**	**73%**	**79%**	**72%**	**71%**	**56%**	**82%**	**82%**
Frederick	79%	93%	93%	80%	85%	88%	89%	80%	93%	81%	98%	87%	86%	87%	97%	76%	84%	78%	86%	89%
Montgomery	49%	64%	83%	86%	83%	77%	85%	63%	67%	82%	59%	61%	58%	53%	62%	47%	41%	41%	68%	100%
Prince George's	90%	89%	92%	87%	90%	97%	97%	83%	83%	75%	92%	100%	97%	96%	96%	95%	96%	67%	97%	64%
Southern Maryland	**89%**	**90%**	**89%**	**93%**	**96%**	**85%**	**98%**	**96%**	**94%**	**99%**	**93%**	**100%**	**93%**	**89%**	**90%**	**85%**	**89%**	**85%**	**77%**	**89%**
Calvert	97%	96%	100%	81%	97%	63%	99%	98%	93%	97%	97%	100%	92%	100%	100%	100%	100%	100%	100%	100%
Charles	92%	100%	87%	100%	99%	100%	96%	91%	100%	100%	93%	100%	96%	93%	100%	71%	86%	74%	62%	78%
Saint Mary's	74%	74%	78%	100%	90%	99%	100%	99%	86%	99%	90%	99%	89%	78%	79%	97%	90%	91%	87%	99%
Western Maryland	**86%**	**90%**	**87%**	**89%**	**88%**	**92%**	**96%**	**95%**	**96%**	**94%**	**85%**	**85%**	**84%**	**93%**	**90%**	**79%**	**81%**	**94%**	**83%**	**83%**
Allegany	72%	67%	59%	75%	77%	98%	98%	92%	98%	92%	100%	91%	88%	100%	83%	91%	100%	99%	89%	46%
Garrett	80%	100%	100%	90%	100%	100%	100%	91%	99%	100%	100%	85%	100%	99%	98%	100%	100%	88%	100%	100%
Washington	93%	93%	92%	95%	87%	86%	94%	98%	94%	93%	78%	85%	79%	91%	89%	74%	73%	95%	71%	99%
Upper Eastern Shore	**93%**	**91%**	**74%**	**92%**	**90%**	**99%**	**90%**	**87%**	**71%**	**95%**	**96%**	**90%**	**95%**	**92%**	**94%**	**93%**	**100%**	**92%**	**73%**	**97%**
Caroline	82%	86%	85%	100%	100%	100%	100%	100%	90%	91%	100%	100%	98%	79%	100%	93%	98%	91%	98%	100%
Cecil	95%	94%	68%	86%	81%	100%	85%	82%	62%	93%	89%	75%	92%	86%	84%	83%	100%	77%	43%	100%
Kent	82%	69%	100%	79%	100%	100%	93%	100%	46%	100%	100%	99%	91%	100%	100%	100%	100%	95%	100%	100%
Queen Anne's	99%	97%	92%	100%	97%	98%	94%	97%	94%	95%	100%	100%	100%	99%	98%	98%	100%	100%	100%	87%
Talbot	98%	96%	62%	99%	98%	97%	88%	76%	89%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Lower Eastern Shore	**84%**	**75%**	**89%**	**86%**	**76%**	**89%**	**90%**	**86%**	**70%**	**75%**	**80%**	**68%**	**72%**	**77%**	**69%**	**74%**	**63%**	**69%**	**68%**	**63%**
Dorchester	82%	64%	100%	78%	90%	100%	72%	100%	79%	100%	100%	100%	100%	99%	86%	69%	69%	76%	61%	56%
Somerset	90%	77%	69%	79%	78%	90%	95%	100%	57%	100%	100%	96%	86%	50%	58%	95%	100%	64%	100%	31%
Wicomico	83%	79%	98%	91%	67%	90%	97%	89%	60%	74%	77%	56%	69%	81%	75%	83%	65%	52%	60%	73%
Worcester	84%	74%	85%	85%	82%	86%	89%	80%	82%	70%	77%	74%	70%	73%	60%	64%	55%	90%	80%	86%

Table C.9 Housing mix (percent of building permits issued for single family development) by county and region, 1990-2009. Source: U.S. Census Bureau.

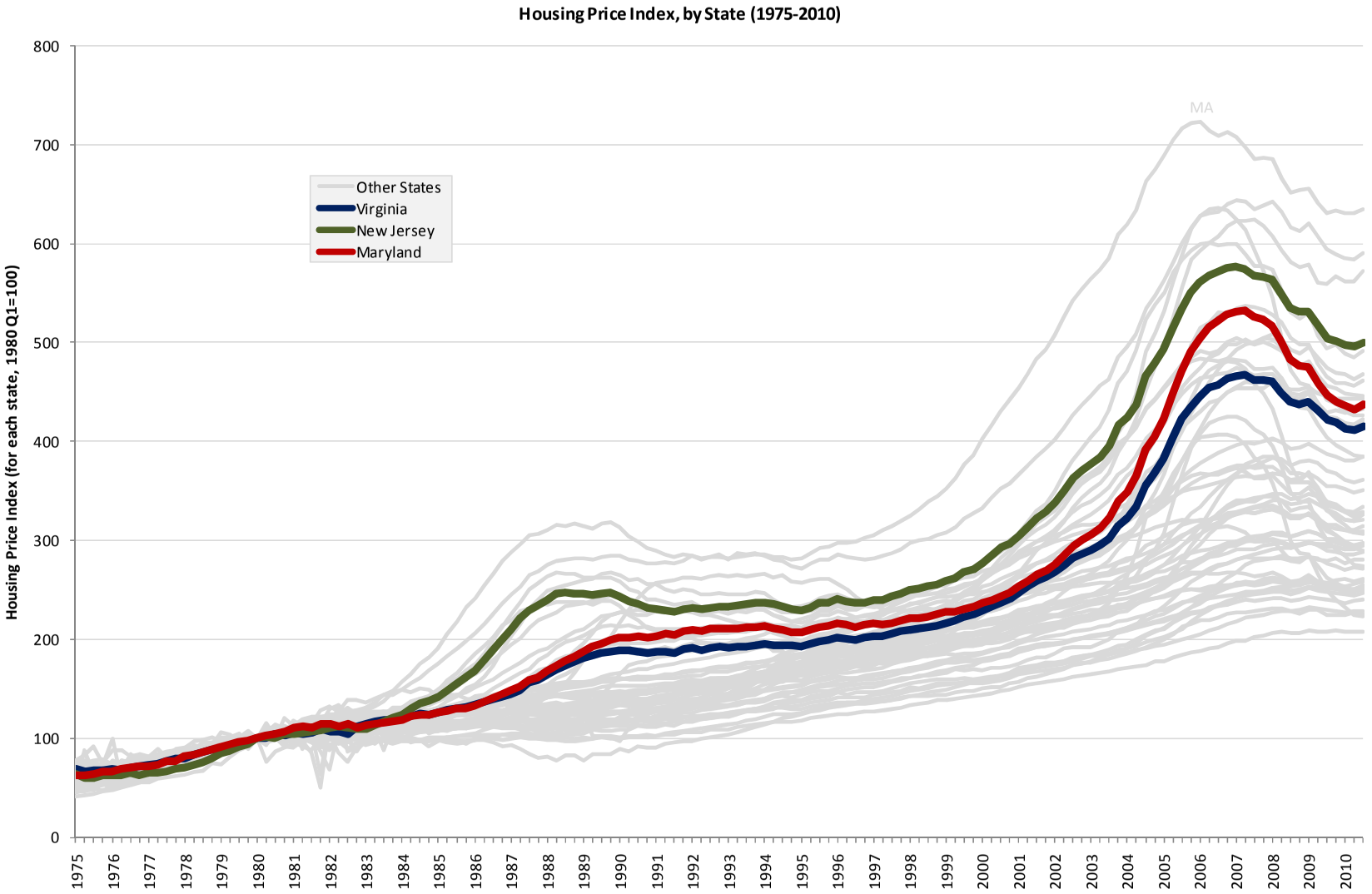


Figure C.51 Housing price index for the 50 states and the District of Columbia by quarter, estimated using sales prices and appraisal data, 1975Q1-2010Q3. Source: Federal Housing Finance Agency.

Lowest Price Index (0.82) *Highest Price Index (247)*

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Baltimore Region									
Anne Arundel	100	116	136	166	199	211	209	198	181
Baltimore	100	108	124	150	188	203	208	195	180
Baltimore City	100	108	121	145	194	226	247	246	218
Carroll	100	112	129	154	185	185	188	168	152
Harford	100	102	122	144	176	186	187	183	170
Howard	100	118	133	166	197	203	205	197	179
DC Suburbs									
Frederick	100	113	128	156	194	202	194	169	147
Montgomery	100	119	137	165	198	204	207	184	158
Prince George's	100	113	131	162	211	236	229	196	157
Southern Maryland									
Calvert	100	110	134	151	188	197	206	180	168
Charles	100	110	126	161	203	216	213	193	168
Saint Mary's	100	110	127	154	190	206	212	194	179
Western Maryland									
Allegany	100	102	105	107	131	142	163	143	179
Garrett	100	122	157	177	210	220	219	187	170
Washington	100	104	122	144	184	190	180	159	137
Upper Eastern Shore									
Caroline	100	120	138	164	199	236	212	194	179
Cecil	100	111	124	147	175	187	189	174	167
Kent	100	105	119	163	181	208	199	181	156
Queen Anne's	100	116	137	167	193	200	202	178	156
Talbot	100	114	140	171	199	204	208	190	187
Lower Eastern Shore									
Dorchester	100	103	132	162	212	223	195	190	163
Somerset	100	82	113	150	173	242	211	199	217
Wicomico	100	106	118	136	156	177	176	177	156
Worcester	100	142	154	209	215	239	237	214	216

Table C.10 Trends in county median home prices, 2001-2009 (housing price index with 2001=100).
Source: Adapted from Maryland Association of Realtors home price data.

Least Affordable — *Most Affordable*

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Baltimore Region									
Anne Arundel	3.07	3.52	4.07	4.73	5.28	5.29	5.00	4.57	4.26
Baltimore	2.35	2.51	2.85	3.28	3.82	3.89	3.82	3.45	3.25
Baltimore City	1.17	1.24	1.38	1.58	1.95	2.16	2.25	2.17	1.95
Carroll	3.35	3.71	4.24	4.82	5.36	5.07	4.93	4.25	3.90
Harford	2.62	2.64	3.12	3.51	3.96	3.97	3.82	3.62	3.41
Howard	3.58	4.18	4.65	5.52	6.09	5.92	5.74	5.32	4.91
DC Suburbs									
Frederick	3.01	3.37	3.78	4.39	5.04	4.96	4.56	3.83	3.40
Montgomery	4.05	4.74	5.44	6.23	6.91	6.75	6.53	5.60	4.91
Prince George's	2.64	2.93	3.38	3.98	4.81	5.07	4.71	3.90	3.18
Southern Maryland									
Calvert	3.25	3.53	4.27	4.56	5.28	5.23	5.22	4.40	4.18
Charles	2.92	3.15	3.61	4.38	5.12	5.15	4.85	4.24	3.76
Saint Mary's	2.92	3.16	3.63	4.17	4.79	4.90	4.84	4.26	4.00
Western Maryland									
Allegany	1.18	1.19	1.22	1.17	1.34	1.37	1.51	1.28	1.63
Garrett	2.77	3.34	4.26	4.55	5.02	4.96	4.74	3.89	3.61
Washington	2.31	2.36	2.76	3.09	3.66	3.57	3.24	2.77	2.43
Upper Eastern Shore									
Caroline	1.85	2.19	2.49	2.81	3.17	3.55	3.06	2.70	2.53
Cecil	2.54	2.78	3.08	3.49	3.83	3.87	3.75	3.33	3.25
Kent	2.54	2.62	2.95	3.86	3.98	4.31	3.96	3.47	3.03
Queen Anne's	3.45	3.94	4.60	5.35	5.74	5.61	5.44	4.61	4.12
Talbot	3.31	3.71	4.54	5.26	5.69	5.53	5.37	4.75	4.76
Lower Eastern Shore									
Dorchester	1.73	1.76	2.24	2.61	3.17	3.15	2.64	2.48	2.17
Somerset	1.38	1.11	1.52	1.92	2.05	2.71	2.26	2.07	2.29
Wicomico	2.07	2.15	2.38	2.62	2.78	2.98	2.84	2.76	2.48
Worcester	2.78	3.90	4.19	5.41	5.17	5.42	5.15	4.50	4.62

Table C.11 Housing affordability – ratio of county median home price to *state* median household income by county, 2001-09. Source: Maryland Association of Realtors; U.S. Census Bureau SAIPE.

Least Affordable — *Most Affordable*

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Baltimore Region									
Anne Arundel	2.64	3.00	3.43	4.08	4.54	4.39	4.24	3.90	3.69
Baltimore	2.57	2.75	3.08	3.57	4.18	4.23	4.27	3.85	3.48
Baltimore City	2.17	2.38	2.57	3.02	3.70	3.92	4.15	3.81	3.51
Carroll	2.89	3.10	3.45	3.99	4.45	4.47	4.20	3.82	3.44
Harford	2.34	2.33	2.74	3.12	3.73	3.73	3.61	3.33	3.13
Howard	2.43	2.82	3.17	3.89	4.15	4.12	3.87	3.68	3.35
DC Suburbs									
Frederick	2.57	2.78	3.08	3.62	4.29	4.37	4.04	3.44	2.85
Montgomery	2.85	3.37	3.85	4.61	5.19	5.04	4.86	4.21	3.63
Prince George's	2.62	3.01	3.42	4.12	4.70	5.03	4.73	3.84	3.16
Southern Maryland									
Calvert	2.59	2.74	3.24	3.48	3.97	4.09	3.98	3.78	3.36
Charles	2.51	2.66	2.97	3.63	4.51	4.27	4.05	3.51	3.03
Saint Mary's	2.81	2.98	3.35	3.88	4.70	4.54	4.54	3.86	3.88
Western Maryland									
Allegany	2.06	2.04	2.03	1.99	2.45	2.59	2.76	2.30	3.03
Garrett	4.48	5.37	6.68	7.19	7.91	8.15	7.67	6.31	5.91
Washington	2.97	2.99	3.41	3.88	4.79	4.54	4.38	3.78	3.44
Upper Eastern Shore									
Caroline	2.58	3.09	3.44	3.87	4.31	5.05	4.30	3.46	3.57
Cecil	2.69	2.92	3.16	3.61	4.04	4.42	4.08	3.55	3.72
Kent	3.40	3.49	3.84	5.14	5.60	6.03	5.76	4.61	4.15
Queen Anne's	3.14	3.55	4.09	4.77	5.36	5.22	4.87	4.18	3.79
Talbot	3.89	4.29	5.13	6.05	6.78	6.60	6.46	5.39	5.53
Lower Eastern Shore									
Dorchester	2.78	2.84	3.50	4.09	5.09	5.24	4.26	4.04	3.43
Somerset	2.56	2.12	2.80	3.61	3.86	5.07	4.33	3.70	4.45
Wicomico	2.90	3.03	3.22	3.63	3.91	4.21	3.87	4.00	3.70
Worcester	3.72	5.18	5.40	7.08	6.81	7.37	7.13	6.30	6.69

Table C.12 Housing affordability – ratio of county median home price to *county* median household income by county, 2001-09. Source: Maryland Association of Realtors; U.S. Census Bureau SAIPE.

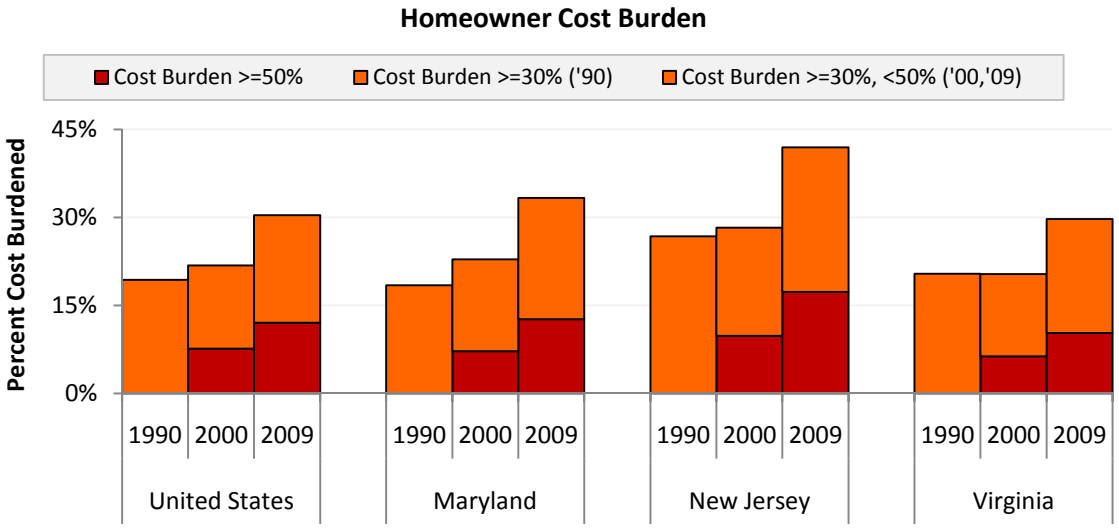


Figure C.52 Homeowner cost burden for the U.S. and selected states, 1990, 2000 and 2009. Source: U.S. Census Bureau.

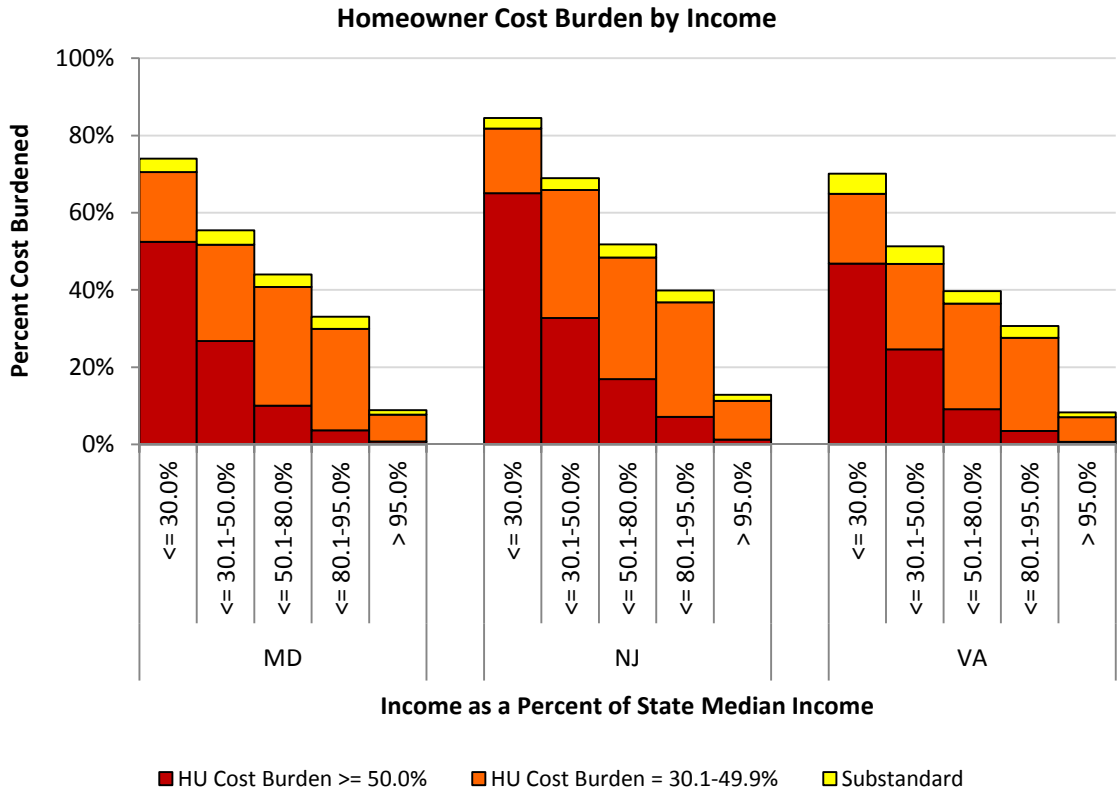


Figure C.53 Homeowner cost burden by income as a percent of state median income for selected states, 2000. Source: U.S. Department of Housing and Urban Development.

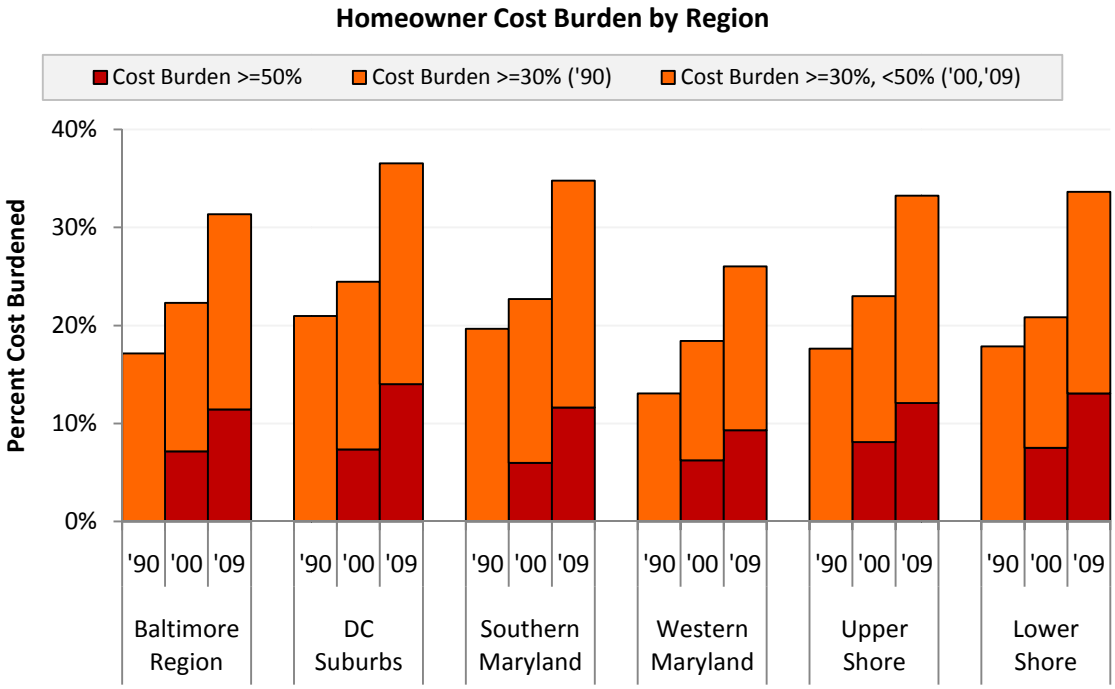
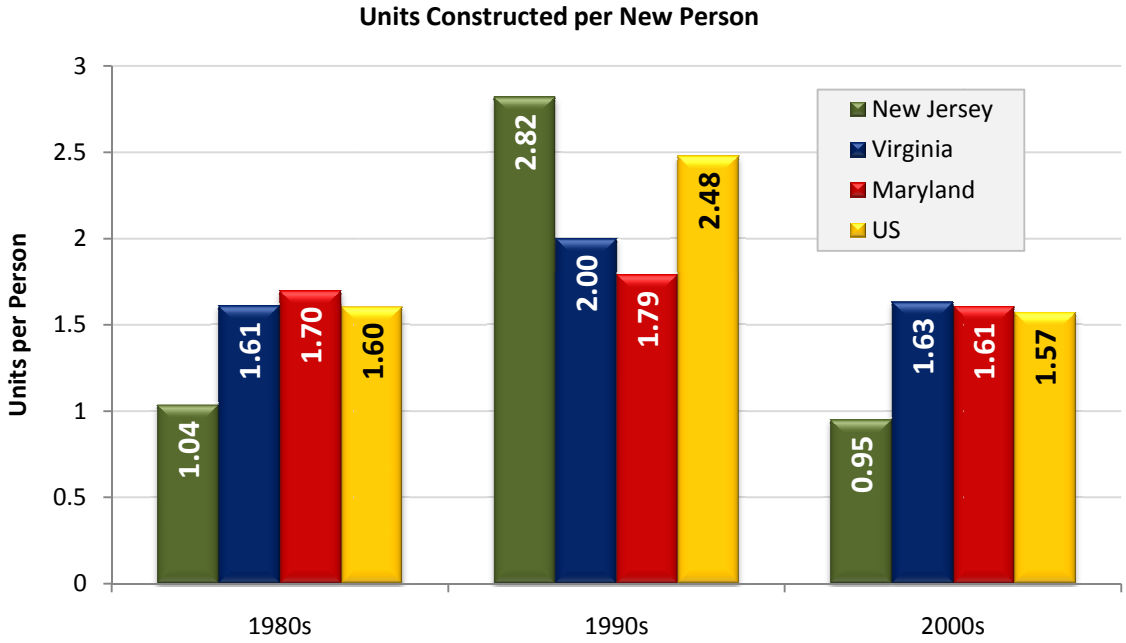


Figure C.54 Homeowner cost burden by Maryland region, 1990, 2000 and 2009. Source: U.S. Census Bureau.



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C.7 NATURAL AREAS AND THE ENVIRONMENT

C.7.1 Data notes

The final section of indicators includes data on Maryland's efforts to protect farmlands and natural areas, as well as additional data pertaining to the impact of growth on the environment. Figure C.58 through Figure C.63 include land conservation data from the Maryland Department of Natural Resources (DNR). Across Maryland and its local jurisdictions, there are many programs intended to help preserve land. These figures present DNR's most comprehensive collection of preservation data and include data from the Rural Legacy program, the Maryland Environmental Trust, Maryland Agricultural Land Preservation Foundation and Program Open Space. The Targeted Ecological Areas (TEA) shown in Figure C.60 and Figure C.63, are conservation priority areas identified by DNR as having a high ecological value.

C.7.2 Tables and figures

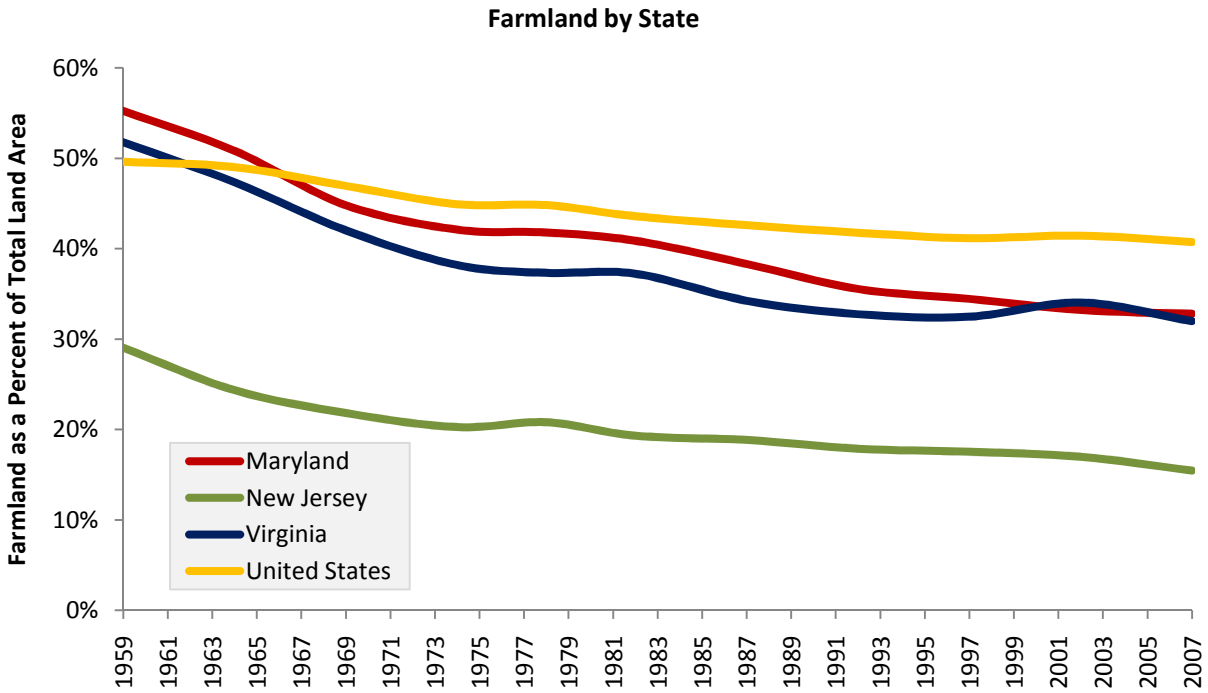

Figure C.56 Trends in farmland as a percent of total land area for the U.S. and selected states, 1959-2007. Source: U.S. Department of Agriculture.

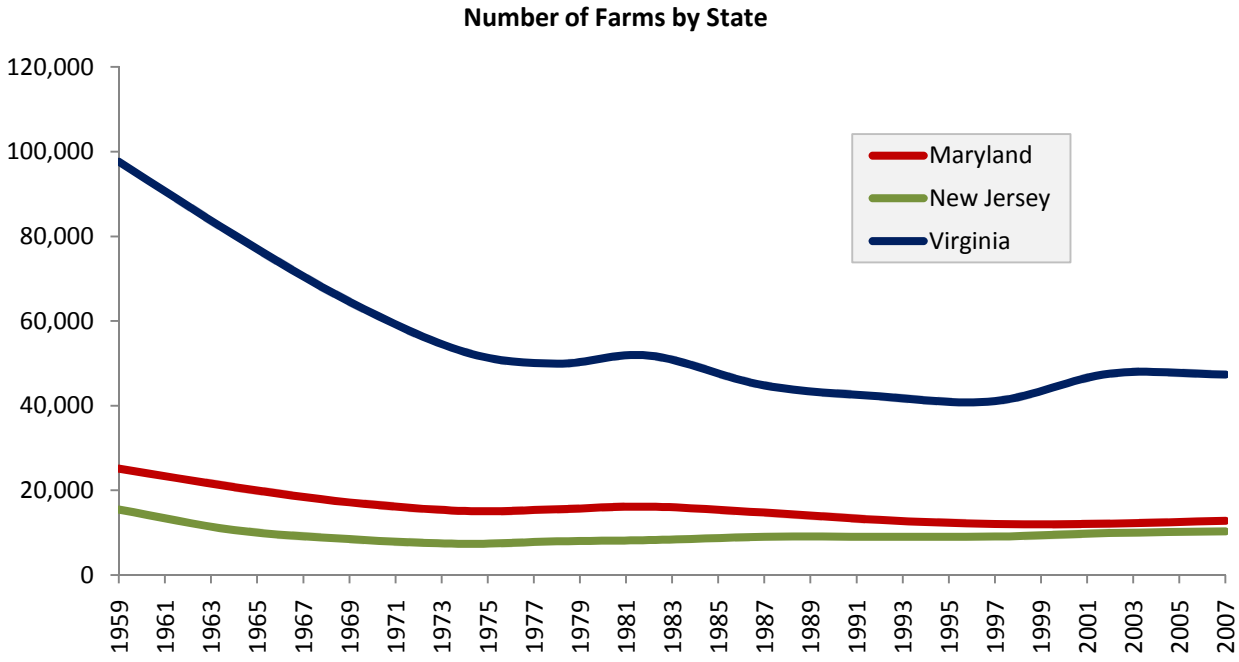

Figure C.57 Number of farms in selected states, 1959-2007. Source: U.S. Department of Agriculture.

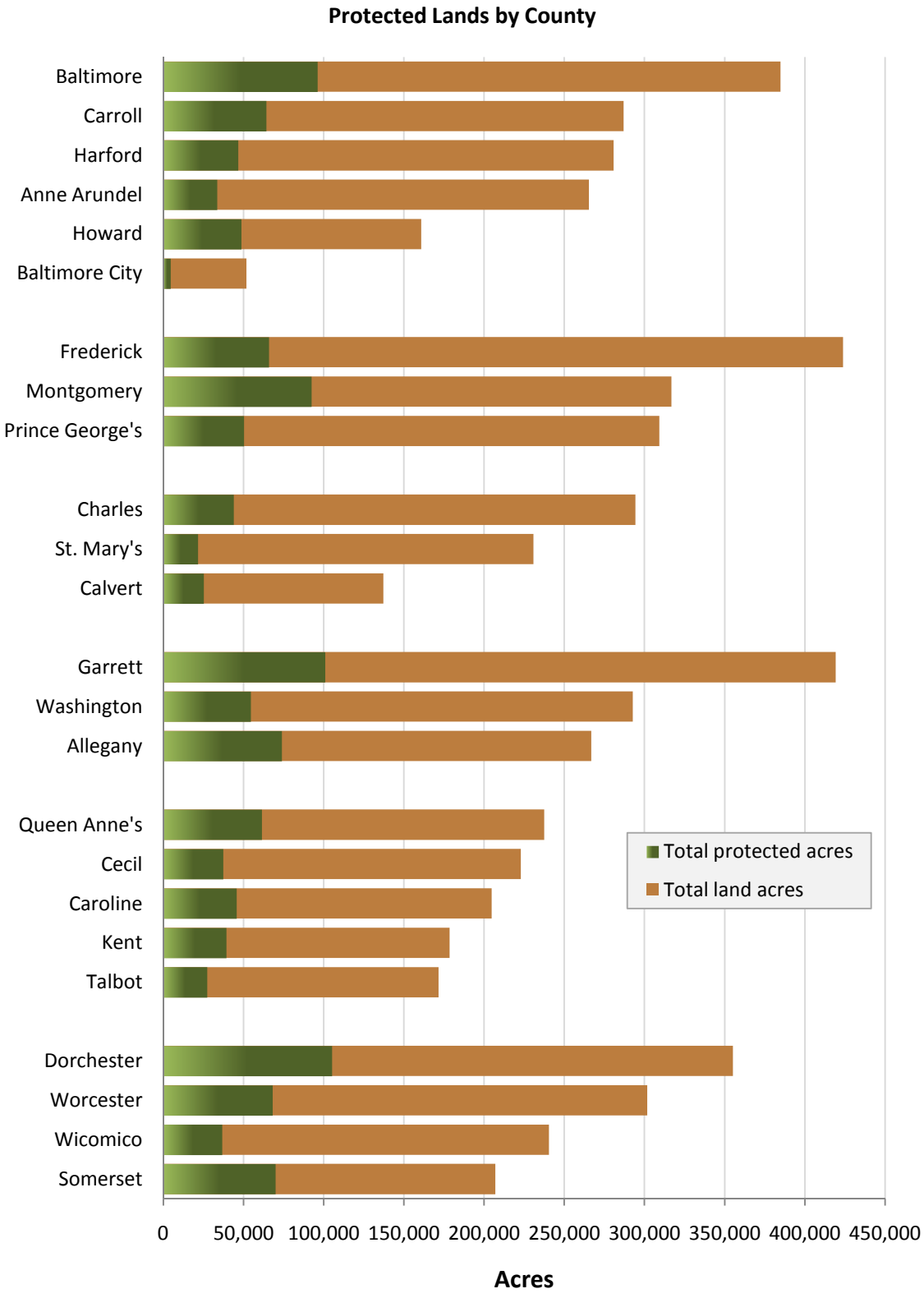

Figure C.58 Total protected lands as a portion of total land area by Maryland county, 2008.
Source: Maryland Department of Natural Resources.

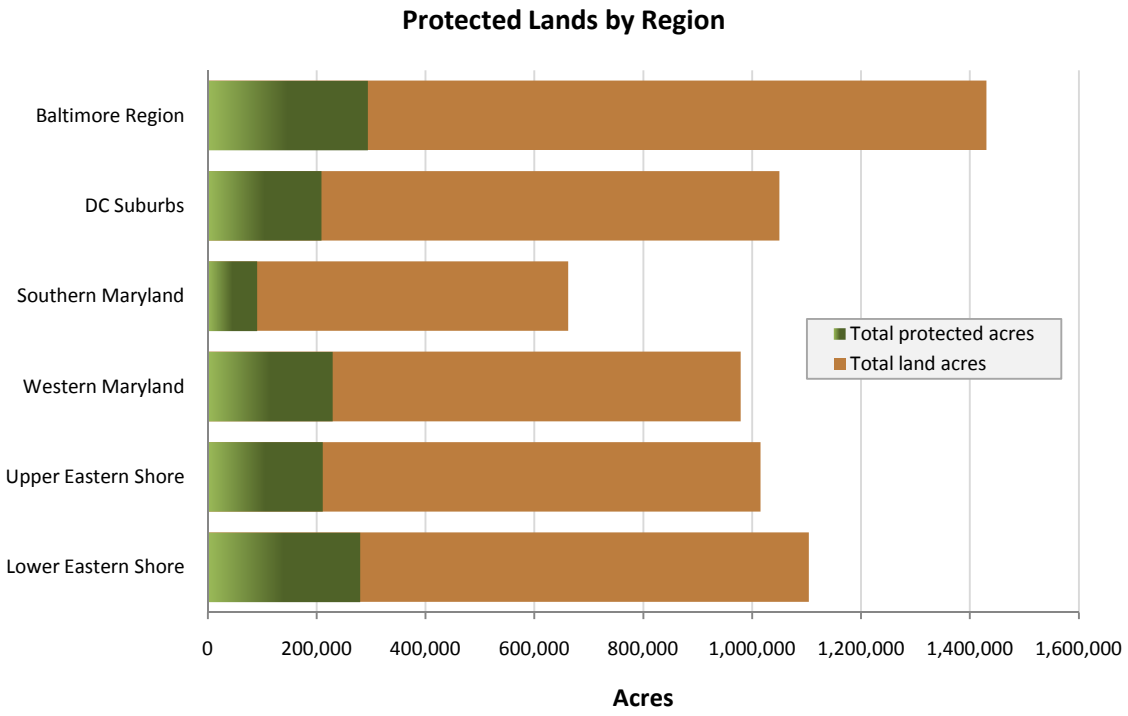

Figure C.59 Total protected lands as a portion of total land area by Maryland region, 2008. Source: Maryland Department of Natural Resources.

Figure C.60 Protected Targeted Ecological Area (TEA) lands as a portion of TEA lands and as a portion of total land area by Maryland region, 2008. Source: Maryland Department of Natural Resources.

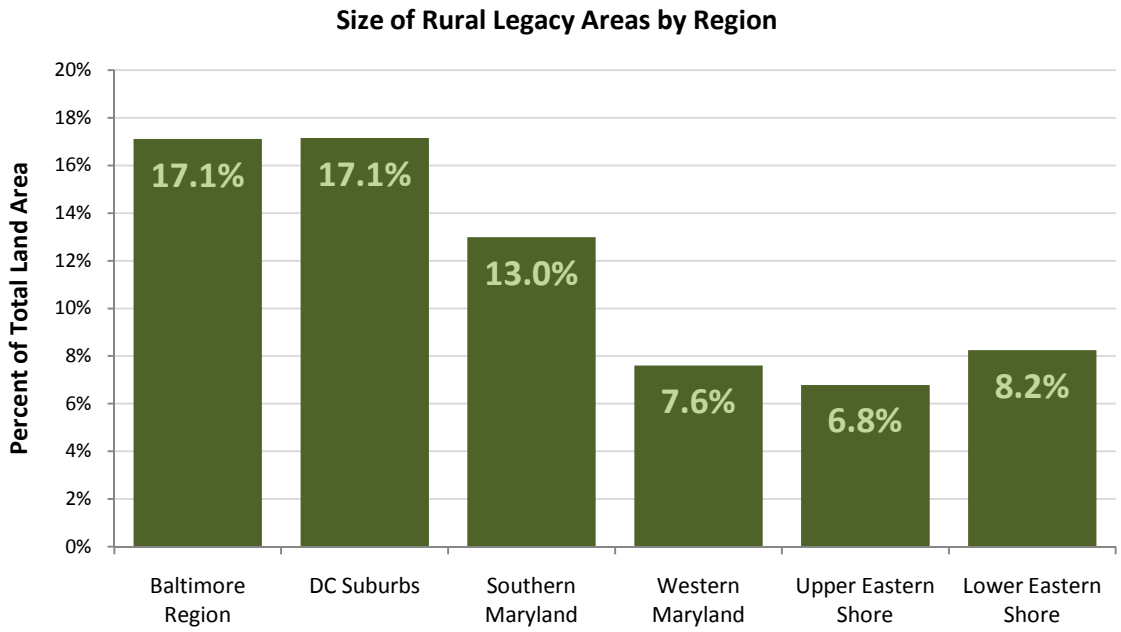

Figure C.61 Size of Rural Legacy Areas as percent of total land area by region, 2008. Source: Maryland Department of Natural Resources.

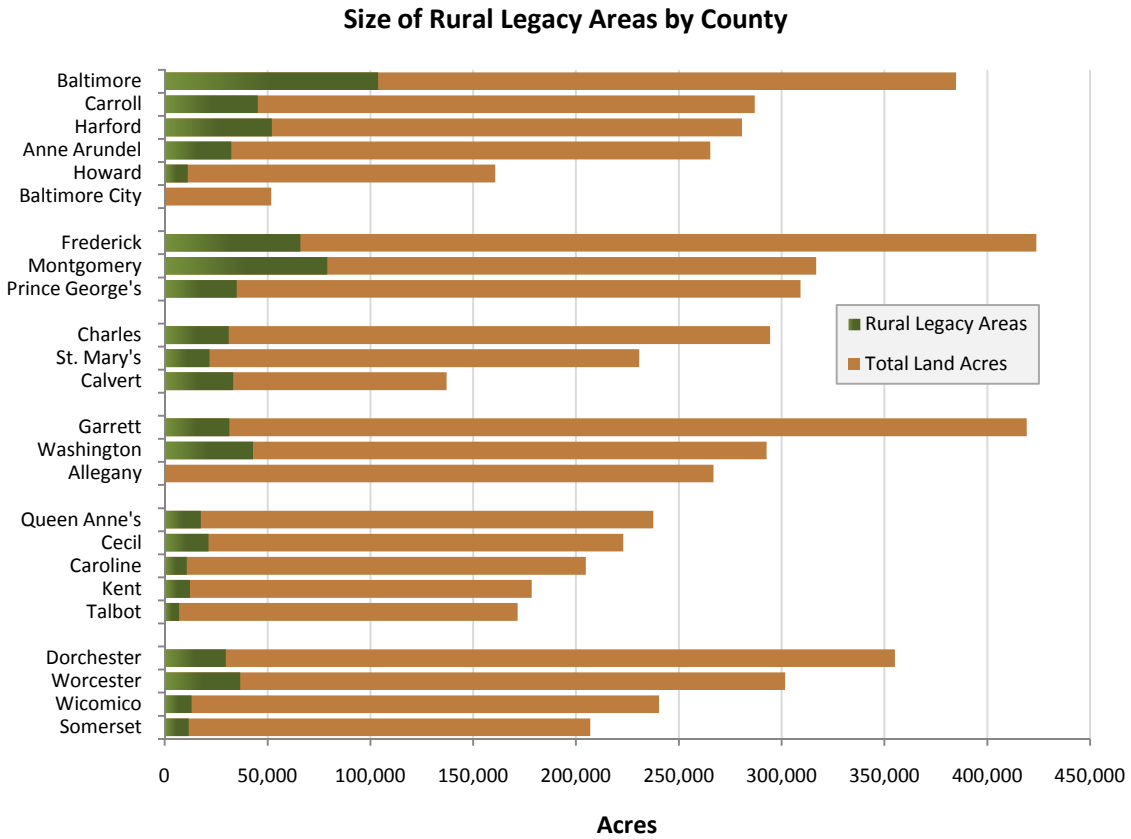

Figure C.62 Size of Rural Legacy Areas as percent of total land area by county. Source: Maryland Department of Natural Resources.

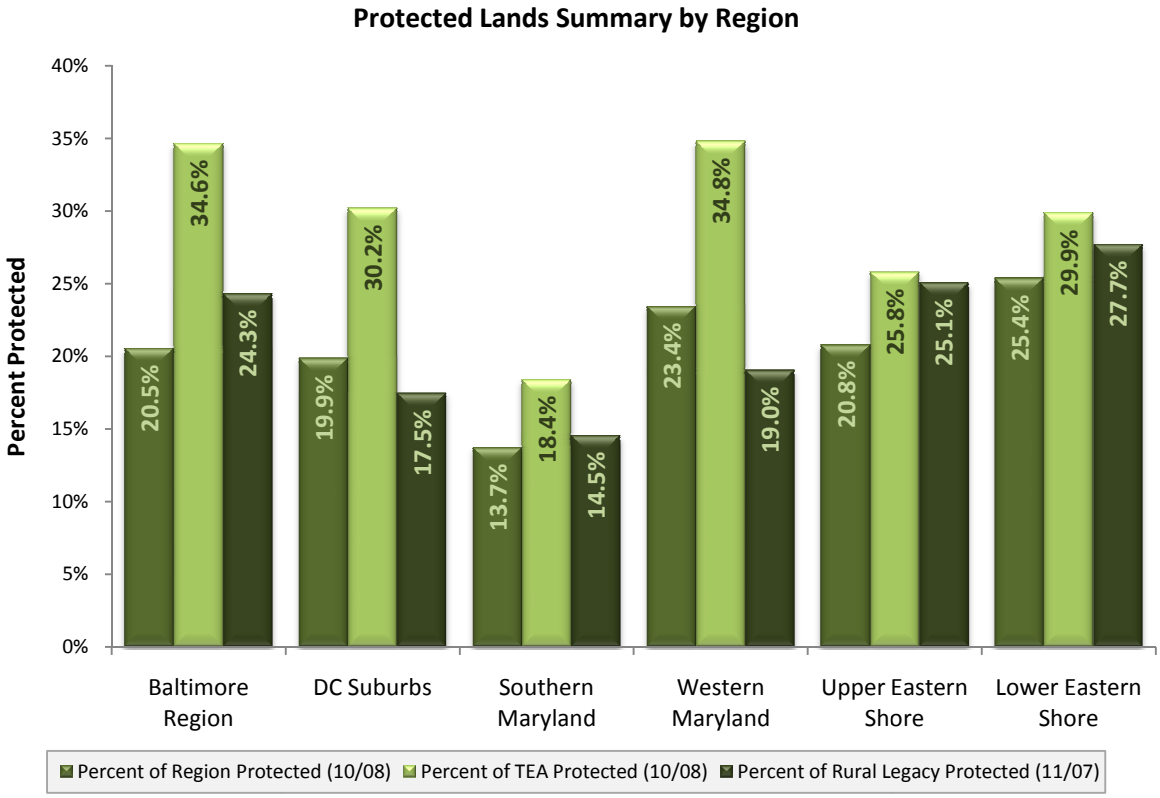

Figure C.63 Summary of protected lands in Maryland by region, including 1) the percent of all land protected, 2) the percent of TEA lands protected, and 3) the percent of Rural Legacy Areas protected. Source: Maryland Department of Natural Resources.

Emissions Measure	State	2002 Amount	2002 Rank	2005 Amount	2005 Rank
Volatile Organic Compound (VOC) Tons per Capita	U.S.	0.073		0.067	
	Maryland	0.048	7	0.043	8
	New Jersey	0.041	6	0.037	6
	Virginia	0.061	15	0.055	15
Nitrogen Oxide (NO_x) Tons per Capita	U.S.	0.073		0.063	
	Maryland	0.052	10	0.044	9
	New Jersey	0.037	5	0.032	5
	Virginia	0.069	20	0.058	19
Carbon Monoxide (CO) Tons per Capita	U.S.	0.383		0.325	
	Maryland	0.308	14	0.262	14
	New Jersey	0.242	5	0.204	5
	Virginia	0.349	16	0.302	16
Particulate Matter (PM_{10}) Tons per Capita	U.S.	0.074		0.072	
	Maryland	0.024	8	0.024	8
	New Jersey	0.009	2	0.009	2
	Virginia	0.039	13	0.037	13
Ammonia (NH_3) Tons per Capita	U.S.	0.014		0.014	
	Maryland	0.006	11	0.006	11
	New Jersey	0.002	4	0.002	4
	Virginia	0.008	17	0.008	17
Sulfur Dioxide (SO_2) Tons per Capita	U.S.	0.051		0.050	
	Maryland	0.063	32	0.066	32
	New Jersey	0.011	4	0.011	7
	Virginia	0.049	28	0.044	24

Table C.13 Various per capita air emission measurements for the U.S. and selected states, including rank among the 50 states and the District of Columbia (2002 and 2005). Source: U.S. Environmental Protection Agency.

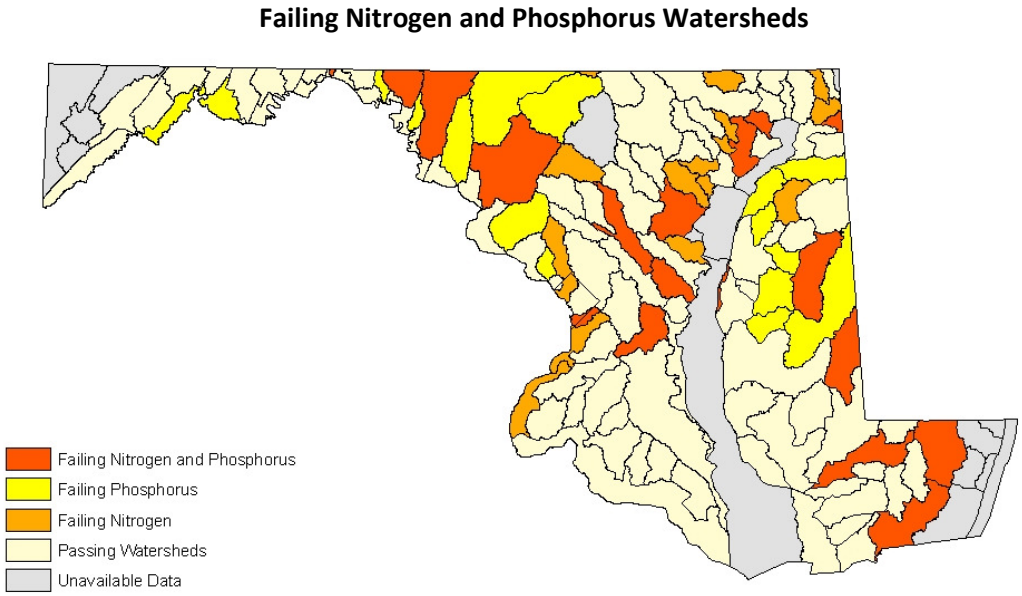

Figure C.64 Map showing failing nutrient (nitrogen and phosphorous) loading levels (modeled) by watershed. Source: Maryland Department of Natural Resources.

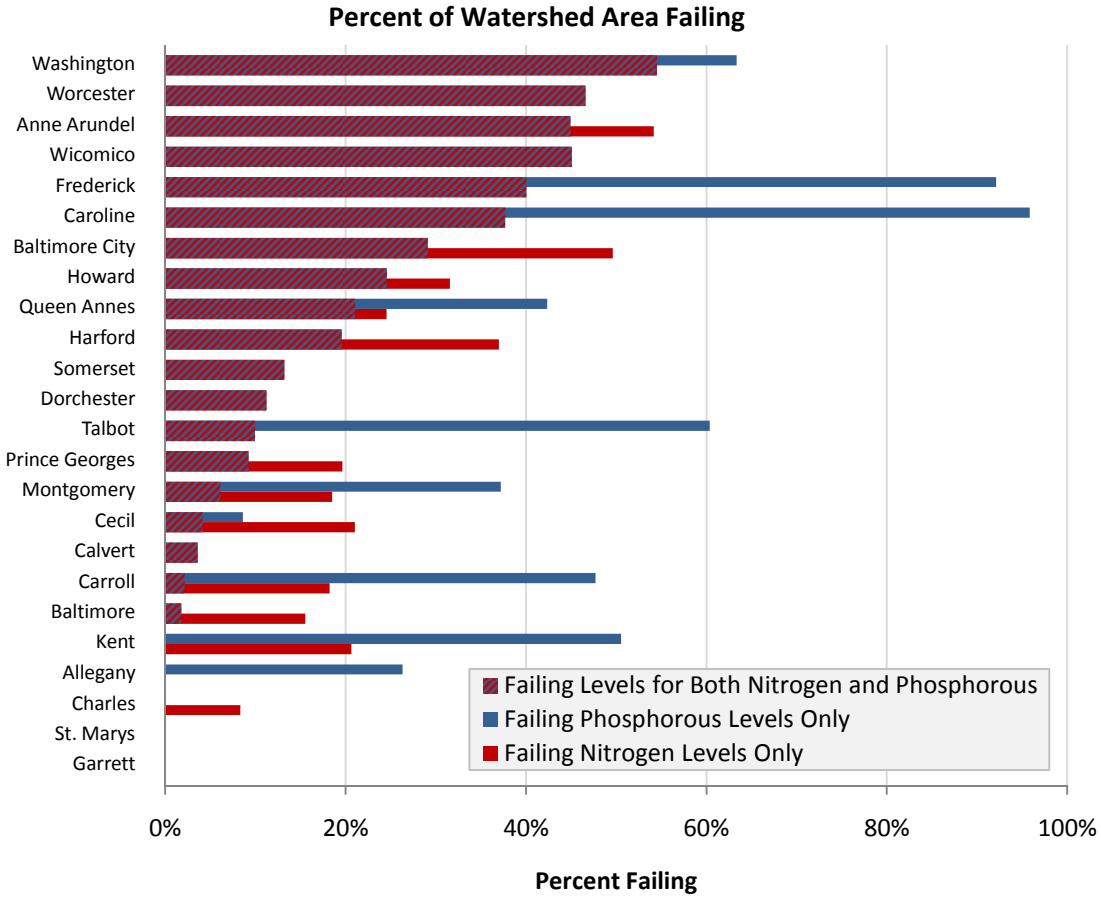

Figure C.65 Percent of watershed area in each county that is failing nitrogen and phosphorus loading levels. Source: Maryland Department of Natural Resources.

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