



**Executive Summary:
A Regional Economic/Demographic Outlook for 2060**

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Executive Summary: Socioeconomic Forecasts for the Baltimore Region Through 2060

This document summarizes the findings of a forecasting program conducted in early 2010 by Parsons Brinckerhoff Inc. for the Baltimore Metropolitan Council. The forecasts cover the five Maryland counties under BMC purview, namely Anne Arundel, Baltimore, Carroll, Harford and Howard counties as well as the City of Baltimore. Primary emphasis has been placed upon development of socioeconomic profiles for the Baltimore region as a whole. The region-as-a-whole forecasts for employment, population and households will be used to inform the scenario planning portion of a process to develop a regional transportation vision for 2060. The forecasts cover every fifth year from 2000 through 2060 and have been prepared in considerable detail (with breakdowns of population by age and sex, households by income, dwelling units by structure type, employment by detailed industry, et cetera), but the present summary is limited mainly to aggregates. A final table compares the results for the Baltimore region with forecasts for several nearby regions spanned by the project.

The study design was shaped by two circumstances. The first was the need to allow for the influence of nearby trends on the Baltimore region, given its status as an integral part of the larger Washington-Baltimore urban complex. The second was the availability of an existing allocation model that was developed by the Parsons Brinckerhoff team in a 2008 study for the National Center for Smart Growth at the University of Maryland. This model covered 75 jurisdictions in four designated regions, which collectively spanned all counties within or adjacent to Maryland and all other components of the Washington-Baltimore and Philadelphia urban areas.

The study has utilized a top-down forecasting methodology that was developed and refined by the PB team in a dozen studies over the past decade. This approach draws upon national projections by federal agencies but otherwise relies exclusively on empirically estimated relationships. It successively addresses national demographics, national employment, regional employment, regional demographics, and socioeconomic descriptors for smaller areas. Employment is pegged to population at the national level on the assumption that in the long run the management of the national economy, combined with systemic responses such as currency revaluations, will create a persistent tendency to approach full employment. At the regional level, the forecasting sequence is reversed on the assumption that people tend to follow jobs rather than vice versa. Hence the steps involve statistically linking regional industries to national industries, applying the resultant relationships to the national forecast to obtain a regional economic forecast, and then using cohort-survival analysis to develop a consistent regional demographic profile for each future year. (Retirement in-migration is handled outside this framework for affected areas such as the Delmarva Peninsula.)

The chosen forecasting strategy in the present study involved preparing independent sets of regional forecasts in two parallel work efforts. Component A of the project addressed the six-jurisdiction Baltimore region in isolation, without acknowledgement of trends occurring elsewhere in the larger Washington-Baltimore urban complex. Component B addressed this larger urban complex as the target region, then used the allocation model to obtain forecasts that could be summed across the six jurisdictions of ultimate concern. The latter approach was designed to capture spatial interactions

such as the spread of residential development to outlying counties and the spillover of employment growth from the Washington area to greater Baltimore.

The quantities allocated across counties by a PB allocation model are regional control totals consisting of employment changes and demographic increments across future ten-year intervals. The employment changes pertain to specific industries, while the targeted demographic variables are numbers of households classified by relative income level (quintile). The predictive equations are empirical relationships calibrated to historical data for a large number of U.S. metropolitan counties in the eastern U.S. (The calibration sample for the present model spanned 326 counties in 31 Eastern metro areas.) The input data consist of statistics covering a recent time period – the calibration interval – and a prior period of equal length used for computation of past-change predictors. The modeling process deals with economic and demographic relationships on a fully integral basis, with all sectors tested statistically as potential influences upon all other sectors.

To simulate growth dynamics realistically, an allocation model must be able to capture the influence on each county of events occurring in nearby counties, and must register the growth-retarding effects of progressive reductions in land availability for development. The PB modeling approach meets the first criterion by structuring most predictors as “proximity” measures that cover past, initial or current conditions in all counties rather than just the one to which a measure pertains. It meets the second criterion by including an index of land availability as a weighting factor in all proximity variables, where land availability is measured as the area of developable land minus the area already preempted by urban uses at the start of a time interval.

As a last step, an allocation model is “pegged” so that it exactly reproduces the conditions observed in the study area during the calibration interval. Forecasts are then obtained by applying the model recursively to future time intervals, with the outputs obtained for one interval used as inputs in forecasting the next. All quantities predicted by the model equations are increments, which become absolute amounts when added to prior totals. The household forecasts thereby attained become the basis for estimating population and other demographic magnitudes via supplementary relationships.

In Component B of the present project, applying the available allocation model and summing results across counties yielded demographic forecasts for the Baltimore region virtually identical to those from Component A. For employment, however, the Component B forecasts were well above the Component A figures. The given excesses were consistent with expectations about the future spillover of job growth from the Washington area to the Baltimore area, which Component A could not capture. Hence the Component B forecasts were adopted as control totals in a further model application, which partitioned the Washington-Baltimore region into Washington and Baltimore components. This exercise yielded some revision at the regional level.

Table 1 on the next page summarizes the final results for the Baltimore region. The given descriptors are total population, total households and total employment. The figures in the right-hand column are overall percent changes in these magnitudes from 2005 to 2060. Those occupying the

table's lower three rows are annual percent changes over the intervals ending in the years denoted by the column headings. (The first two of these intervals span five years and the last three span fifteen years, but the annualized changes are comparable.)

Table 1. Aggregate Forecasts for the Baltimore Region

| | 2005 | 2010 | 2015 | 2030 | 2045 | 2060 | 2005-60 % Chg. |
|------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-------------------|
| Number | | | | | | | |
| Population | 2,605,094 | 2,669,772 | 2,770,506 | 3,028,180 | 3,231,739 | 3,449,310 | 32.4% |
| Households | 1,010,007 | 1,047,599 | 1,094,216 | 1,207,555 | 1,297,758 | 1,389,605 | 37.6% |
| Employment | 1,444,971 | 1,455,280 | 1,536,434 | 1,749,118 | 1,958,251 | 2,191,921 | 51.7% |
| Annual % Change | | | | | | | |
| Population | | 0.49% | 0.74% | 0.59% | 0.43% | 0.44% | |
| Households | | 0.73% | 0.87% | 0.66% | 0.48% | 0.46% | |
| Employment | | 0.14% | 1.09% | 0.87% | 0.76% | 0.75% | |

The Baltimore region's population is forecasted to increase by 32.4% between 2005 and 2060. This rather modest growth rate – less than three-fifths of the expected national rate – partly reflects the region's generally restrictive land use policies (which were built into the allocation model by the pegging process). Regional household growth during 2005-60 is expected to exceed the population gain by five percentage points. Much larger differences between population and household change were common during the past half-century, but the longstanding downtrend in average household size is nearing an end in the Baltimore region as elsewhere. The big expected gap involves employment growth, which at 51.7% exceeds the forecasted population gain by three-fifths. The Baltimore region promises to absorb a steadily increasing amount of economic activity linked directly and indirectly to Washington as noted momentarily. In the shorter run, almost no net employment gain is expected for 2005-10 due to the recent recession, but along with the subsequent economic recovery the region will be boosted during 2010-15 and to some extent 2015-30 by military realignment (BRAC) impacts. Thereafter its rates of population and household growth are likely to dip below 0.5% per year, while its employment gains stay at or above 0.75% per year.

Other demographic forecasts indicate that the Baltimore region will share in the nationwide trend toward population aging. The region will age faster than the U.S. in terms of population share aged 50-plus, but slower in terms of 75-plus population because it is strongly affected by retirement out-migration. The Baltimore region currently has a somewhat lower income profile than metropolitan Washington but a substantially higher profile than the U.S. as a whole. The forecasts suggest that over the next half-century greater Baltimore will advance modestly in terms of household income relative to both Washington and the U.S. The present study's projections of dwelling units by structure type call for a gradual shift of new construction from detached homes to higher-density housing. This shift will only return the region to a structure-type mix resembling that in 2000, however, because detached homes

dominated new construction during 2000-10 and because future growth will occur disproportionately in areas where such housing is favored.

Table 2 below tabulates Baltimore region employment by industry, using a condensed version of the classification system carried through the forecasting process. (This is called a modified SIC system because for transportation modeling purposes it includes the NAICS category covering professional, technical and scientific services, while most other industry groups are SIC categories.) These figures and the totals presented earlier include self-employed persons, with each such worker counted only once.

Table 2. Baltimore Region Employment by Modified SIC Industry

| | 2005 | 2015 | 2030 | 2045 | 2060 | 2005-60 % Chg. |
|---|------------------|------------------|------------------|------------------|------------------|---------------------------|
| Goods-producing activities | 173,173 | 144,606 | 152,545 | 163,724 | 174,935 | 1.0% |
| Trans., communication, utilities & wholesale trade | 133,249 | 144,186 | 161,712 | 178,177 | 196,967 | 47.8% |
| Retail trade | 237,400 | 236,102 | 253,974 | 272,197 | 290,343 | 22.3% |
| Finance, insurance & real estate | 105,961 | 99,314 | 112,492 | 127,808 | 145,695 | 37.5% |
| Business & repair services | 107,714 | 117,648 | 135,414 | 152,968 | 171,933 | 59.6% |
| Professional, technical & scientific services | 124,325 | 161,473 | 216,679 | 271,473 | 329,076 | 164.7% |
| Health services | 135,336 | 164,506 | 194,522 | 219,055 | 251,479 | 85.8% |
| Personal & miscellaneous serv. | 166,495 | 186,615 | 218,310 | 249,781 | 286,901 | 72.3% |
| Government | 261,317 | 281,984 | 303,468 | 323,068 | 344,593 | 31.9% |
| Total | 1,444,971 | 1,536,434 | 1,749,118 | 1,958,251 | 2,191,921 | 51.7% |

Due to job losses over the past five years, the goods-producing, retail trade and finance-related sectors will reach 2015 with fewer employees than in 2005. Thereafter these industries will all expand steadily, though this will only hold for goods-producing activities because gains in construction will exceed manufacturing losses. Across the 2005-60 interval as a whole, the Baltimore region's big gainers will be professional-technical-scientific services, health services, and private education (grouped here with miscellaneous services). The 200,000-job increase forecasted for professional-technical-scientific services – hereafter just professional services – would amount to 27% of the region's entire net job gain during 2005-60. The share of regional employment engaged in professional services would rise from 8.6% to 15%, or from 1.25 to 1.58 times the share of national employment in this sector. On the other hand, the corresponding employment share for greater Washington has recently ranged between 1.93 and 2.04 times the national share, so in relative terms the forecasted buildup of professional service activity in the Baltimore region would take it less than halfway to the position already held by greater Washington. The lawyers, lobbyists, programmers, health scientists, military advisors, consultants and techies who staff the professional service sector are a great deal of what the Capital-area economy is about, and an increasing proportion of them can be expected to spill over into the Baltimore region.

Table 3 on the following page shows the expected outcome of the Baltimore region’s divergent growth rates for employment and population. The given figures describe numbers of workers rather than jobs (and for various reasons omit military personnel and BRAC-related impacts).

Table 3. Estimated Commuting Relationships in the Baltimore Region

| | 2000 | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Live & work in region | 1,053,413 | 1,090,092 | 1,149,678 | 1,192,515 | 1,254,042 | 1,328,948 | 1,402,181 |
| Live outside, work inside | 99,759 | 109,624 | 146,458 | 216,755 | 259,701 | 310,253 | 362,272 |
| Live inside, work outside | 149,602 | 154,811 | 163,273 | 169,357 | 178,095 | 188,732 | 199,133 |
| Net commuting inflow | -49,843 | -45,187 | -16,815 | 47,398 | 81,606 | 121,520 | 163,140 |
| Gross commuting across regional boundary | 249,361 | 264,435 | 309,732 | 386,111 | 437,795 | 498,985 | 561,405 |

The Baltimore region has traditionally been a labor-exporting area, primarily to Washington and its nearby suburbs, but the commuting balance is expected to reverse over the coming decades. By 2060 there will be something like 160,000 more workers commuting into the region than commuting out. The total number of workers crossing the region’s boundary each day will rise by about 300,000, or 112%, over the next half-century.

As already noted, the present allocation model was designed to address four regions. The inputs for all four were updated as part of the present study, and every application of the model yielded results for each region and its constituent areas. Table 4 shows the final population and employment forecasts obtained. The Baltimore region will be the slower-growing component of the 41-jurisdiction Washington-Baltimore region, although it will lag the Washington part much less for employment than population. The fastest-growing territory will be the Delmarva Peninsula region (which in this table includes Cecil County, MD). On the other hand, greater Baltimore will gain population and employment much more rapidly than a region consisting of the Philadelphia-Wilmington and Lancaster metropolitan areas, and another consisting of Maryland’s two westernmost counties and all adjacent areas.

Table 4. Summary of Forecasts for Washington-Baltimore and Nearby Regions

| | Population | | | Employment | | |
|--|------------|------------|--------|------------|-----------|--------|
| | 2005 | 2060 | % Chg. | 2005 | 2060 | % Chg. |
| Washington-Baltimore Region | | | | | | |
| Baltimore (6 counties) | 2,605,094 | 3,449,310 | 32.4% | 1,444,971 | 2,191,921 | 51.7% |
| Washington (35 jurisd'ns) | 6,378,069 | 11,010,646 | 72.6% | 3,877,603 | 6,399,443 | 65.0% |
| Total W-B Region | 8,983,163 | 14,459,956 | 61.0% | 5,322,574 | 8,591,364 | 61.4% |
| Philadelphia-Wilmington-Lancaster Region | | | | | | |
| Lancaster Region | 6,185,497 | 7,406,863 | 19.7% | 3,345,985 | 4,028,901 | 20.4% |
| Delmarva Peninsula Region | 796,192 | 1,454,290 | 82.7% | 371,024 | 688,193 | 85.5% |
| Western Region | 465,798 | 519,353 | 11.5% | 175,212 | 214,086 | 22.2% |