

There are three fundamental questions pertaining to the 2045 population projections found in the Draft Comprehensive Plan (DCP):

**Question 1: is the projected increase of 106,868 for all of Knox County reasonable?**

**Mobility 2045 Plan:**

- Page 8 of the DCP states the Regional Transportation Organization 2045 Mobility Plan study was used for population projections
- Mobility 2045, Appendix C, page C-3 estimates a county-wide population of 465,289 in 2018 and projects a 2045 population of 570,352 for a gain of 105,063. 2018 was 5 years ago; a more recent baseline should be used. Chart on page C-4 is not detailed enough for precise projections.
- 2022 Quick Facts Census estimates a county-wide population of 494,574 in 2022.
- Using 2022 as baseline suggests projected county-wide growth from 2022 to 2045 of 75,778, not 106,868.

**Answer 1: The Mobility 2045 Plan is using the old base year of 2018, results in an unreasonably high projection.**

- Error in question and fourth bullet: stated population growth as 106,868: that figure is the projected 2045 county employment growth total, not projected population growth total.
- Statement re. use of 2018 as projection modeling base year: 2018 was five years ago, but the model that sourced that base year was developed in 2021, and 2018 data were the latest at the time.
- You submitted a 2022 Census Bureau Population Estimates Program (PEP) figure for base year population, then used that figure to recalculate modeled total growth by 2045:
  - The Comprehensive Plan model covers the time period from 2018 to 2045. Your calculation dismisses four years (2018-2021) of calculated change by starting with a 2022 base.
  - You then calculated growth from 2022 to 2045 as total projected population minus the 2022 PEP value: not valid methodologically to insert 2022 PEP value for base year, then compare to model-projected 2045 total. That latter value was derived from data inputs beginning in 2018; not an apples/apples calculation otherwise. If not using those early-year data and, instead, using CB PEP 2022, the model would need to be restructured and rerun.
  - We cannot simply lop off four years of data, as proposed. The first four years of population growth are embedded in the scenario planning process and future land use models. Further, that new population is now here. When the 2018 to 2045 model was adopted, the population growth clock started, and we began seeing 3,891 new residents per year (projected average annual growth as calculated from model output). We cannot ignore their additions to local population and dismiss them from the long-term modeling process.
  - If we were to use a newer model, with base year 2022 (latest available from Boyd Center for Business and Economic Research (CBER)), we would have to re-start the projection modeling, scenario planning, preferred scenario development, multiple rounds of community input, future land use map, and growth plan map work. Such an effort would take almost two years to get back to this same point, then, once again, the base year would be four years old.

- If you want to tabulate remaining project period growth (2022-2045), you could use the model's projected average annual growth figure (3,891 persons per year), and multiply by the remaining 23 years of the projection period (2022-2045). The result is 89,493 persons (not 75,778).
- You concluded that the Mobility Plan model-generated projections were unreasonably high, but more recent models by both CBER and Woods and Poole Economics (WP) project even higher growth by 2045 than that in the Mobility Plan. See table below:

2045 Projected Knox County Population by Selected Models

Model	2019 Version	2022 Version	2023 Version
Woods and Poole	570,352	571,419	575,991
CBER	568,606	577,719	n/a

**Question 2: is the 75 % share of projected population growth attributed to unincorporated Knox County reasonable?**

**Draft Comprehensive Plan:**

- There is no methodology for the % used in assessing the unincorporated share of future population.
- Page 24 of Appendix B cites an increase of 77,000 assuming the unincorporated share of growth is 73%.
- Page 25 Appendix B cites an increase of 78,860 assuming the unincorporated share of growth is 75%. This would be 79,000 when rounded up.
- In verbal remarks to the Coordinating Committee during October and November meetings, the project team mentioned projections of 70,000 as well as 79,000 for the unincorporated county. The 70,000 does not appear in the DCP.
- Page 6 Appendix A cites unincorporated share of growth as 84% 2000 to 2010 dropping to 69% 2010 to 2020.
- Census data and estimate for unincorporated county indicates a 58.6% share of growth when comparing 2020 to 2022.

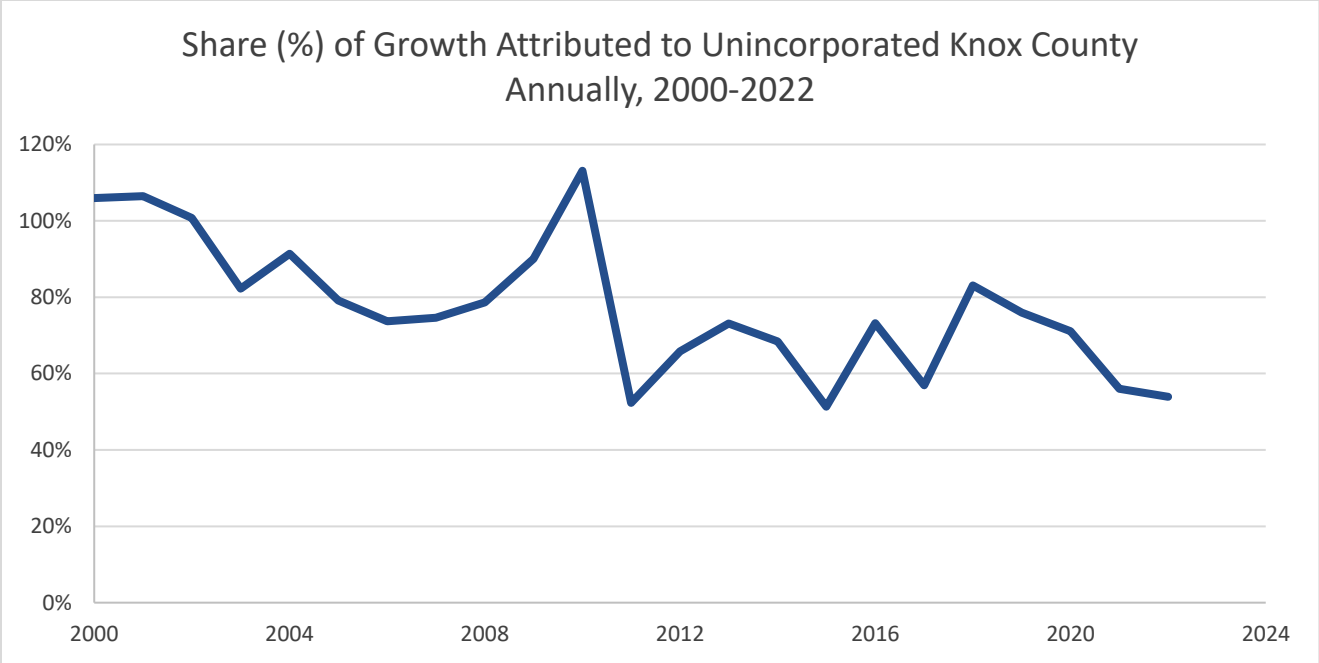
**Answer 2: % of recent population growth in unincorporated county varies from 84% to 58.6%. The Census trendline shows the county share decreasing the last 12 years. Why does DCP use 75%?**

The methodology behind the calculation of the growth shares for unincorporated Knox is provided on pages 23 and 24 of Appendix B of the draft Comprehensive Plan.

- Re. 77,000 growth figure: It is a rounded figure based on traffic analysis zone aggregations to calculate sub-county populations (for Knoxville, Farragut, and unincorporated Knox). The resultant

calculated share for unincorporated Knox is 73%. Note, the share (73%) is calculated from the aggregated total (77,000) - the total is not calculated from an assumed share (of 73%).

- Re. 79,000 growth figure: Correct. See above note.
- Re. verbal remarks about a growth figure of 70,000: Agreed, some earlier statements included inconsistent references to model-projected growth totals in unincorporated Knox.
- Re. stated issues with growth shares allocated to unincorporated Knox by Mobility Plan model:
  - The Mobility Plan model accommodates sub-county projection tabulations.
  - The model is comprised of 508 small geographic areas – traffic analysis zones (TAZs). They vary widely in size and are primarily determined by the density of the roadway network. They can be as small as a city block downtown and as large as several square miles in more rural/low density areas.
  - Projected populations are allocated from the county-wide control total to each TAZ based on certain factors, including:
    - Approved development,
    - Development estimated by local decision makers,
    - Inventory of developable land,
    - Demand/market factors, such as proximity to existing roads, schools, etc.
  - Projected 2045 population totals for City of Knoxville, Town of Farragut, and unincorporated Knox County are derived by aggregating the TAZs comprising each of those jurisdictions.
  - The model can similarly tabulate projected 2018 to 2045 population growth allocated to each of the jurisdictions.
  - Model output, and resultant jurisdictional allocations of growth, used in the draft Comprehensive Plan: 73% of projected growth was captured by TAZs comprising unincorporated Knox County, 19% for Knoxville, and 8% to Farragut.
  - As stated in Appendix B of the draft Plan, TAZ boundaries do not align perfectly with jurisdictional boundaries:
    - There is some overlap, where small portions of unincorporated county are assigned by the model to Knoxville and Farragut.
    - To compensate for the overlap, the unincorporated county share was adjusted to 75% for subsequent scenario planning and land use allocation modeling.
- Re. statement about current shares of growth held by unincorporated Knox:
  - Shares of growth held by unincorporated Knox have fluctuated widely each year since 2000:
    - High of 113% in 2010, to a low of 51% in 2015 (see line graph below).
    - The average annual growth share (2000 to 2022) was 77%.
    - In the past five years (2018 to 2022), the average annual growth share was 68%.
- You calculated a three-year growth share average of 58.6% and recommended carrying that through the model horizon year of 2045 (in question 3). However, actual local population data (2000-2022) show considerable variability from year to year. Applying a three-year ‘trend’ would not be appropriate.



Source data: U.S. Census Bureau, Population Division, Population Estimates Program  
Calculations by Knoxville-Knox County Planning

- Recent (2013 to 2022) local residential building permit approval data (see table below) suggest a faster pace of growth in unincorporated areas of Knox County than Knoxville and Farragut in the coming years:
  - Unincorporated Knox captured 19,042 approved units, comprising a 61.6% share of county-wide development.
  - Knoxville accounted for 9,960 new units, for a 32.2% share.
  - 12,238 (64.2%) of unincorporated Knox units are single-family detached houses; Knoxville reports 1,912 (19.2%) such units.
  - Knoxville development is dominated by apartments: 7,457 approvals, comprising 74.9% of all city units.

*Residential Building Unit Approvals, 2013-2022*

Jurisdiction	Detached Units	Share (%) of County Total	Attached Units	Share (%) of County Total	Apartment Units	Share (%) of County Total	Mobile Home Units	Share (%) of County Total	Total Units	Share (%) of County Total
City of Knoxville	1,912	12.6%	580	32.8%	7,457	57.8%	11	1.0%	9,960	32.2%
Town of Farragut	991	6.5%	147	8.3%	780	6.0%	1	0.1%	1,919	6.2%
Unincorporated Knox	12,238	80.8%	1,039	58.8%	4,668	36.2%	1,097	98.9%	19,042	61.6%
Knox County Total	15,141		1,766		12,905		1,109		30,921	

Source data: Knoxville-Knox County Planning, Development Activity Report, 2013-2022

- Average household size of single-family units is typically larger than apartments (see table below), suggesting greater population growth headed to the county over the city of Knoxville.
- A notable exception is recently built/forthcoming apartment inventory marketed to University of Tennessee students:
  - Many units are occupied by more than one student, depending on the number of bedrooms per unit.
  - Rental units in Fort Sanders range from 2.41 to 2.83 persons per household.
  - Hundreds of approved student apartments have been delivered in the UT campus area in the past five years – more are anticipated in the next couple of years in response to UT’s strategic plan (2021) to grow on-campus enrollment by an additional 4,600 students by 2026.

*Average Household Size, 2022*

Tenure	Knox County	Knoxville
Total:	2.41	2.17
Owner occupied	2.55	2.31
Renter occupied	2.15	2.05

Source: U.S. Census Bureau, 2022 American Community Survey, 5-Year Estimates

**Question 3: How well does the DCP match data from CBER?**

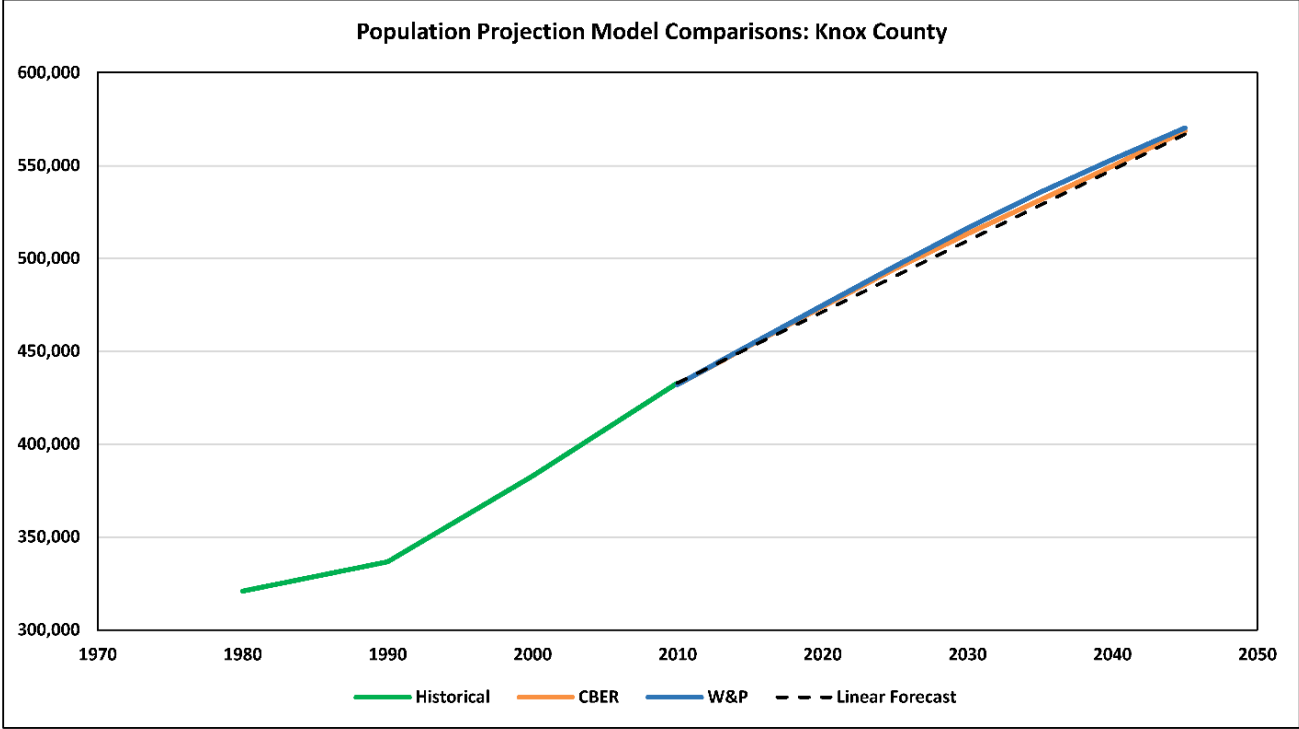
**Tennessee Boyd Center for Business and Economic Research:**

- CBER projects a 2024 to 2045 county-wide increase of 84,104.
- Applying the DCP % assumptions of 75% or 73% yield projections of 63,078 or 61,396 for the unincorporated county. Applying the Census 2020 to 2022 trend of 58.6% yields a population projection of 49,285.

**Answer 3: CBER county-wide population is less than DCP and the Mobility 2045 Plan. Also, justification for the DCP 73% or 75% unincorporated share of county-wide population increase is not evident.**

- CBER’s projected 2024 to 2045 growth = 84,099, based on its 2022 release, which is higher than the 2019 release; growth for the same period as projected in the 2019 model was 78,057.
- With the 2022 release, average annual growth is projected at 4,005 persons per year, up from the previous CBER (2019) model (3,717 persons per year) and Woods and Poole (2019) model (3,891 persons per year).

- Calculating growth from 2024 to 2045 dismisses six years of modeled population growth that is programmed/allocated in the scenario planning and land use models of the Comprehensive Plan.
- 2024 to 2045 growth of 84,104 (from your calculation) is from the 2022 CBER release: that is a different model, with different demographic and economic forces at work, than the model used in the Comprehensive Plan.
- Applying a three-year average growth share is not sound given the considerable annual variability demonstrated in the historic data.
- Re. the “Answer” to question 3 that you provide above, “CBER county-wide population is less than DCP and the Mobility 2045 Plan.”
  - This conclusion is based on an inappropriate comparison: a different projection model and different base year than those used in the Comprehensive Plan, dismissing six years of growth programmed in the Comprehensive Plan.
  - The CBER 2022 model you promote shows projected 2045 population at 577,719, which is higher than the CBER 2019 release figure of 568,606 and WP 2019 Mobility Plan figure of 570,352 – not lower.
- Lastly, Question 3 asks how well CBER and the Comprehensive Plan model “match.” The CBER 2019 release was compared to the Comprehensive Plan/Mobility Plan data, sourced from Woods and Poole Economics (2019) – the datasets were very close throughout the 2018-2045 projection period (see line graph), with 2045 figures 0.3% apart.



Source data: U.S. Census Bureau, Population Division, Population Estimates Program; UT Boyd Center for Business and Economic Research; Woods and Poole Economics