

Sub-County Population Projections, 2025–2060

Forecast Methodology and Method Selection

Prepared by Pima Association of Governments | September 2026

1. Purpose and Scope

This report documents the methodology used to produce sub-county population projections for Pima County, Arizona, covering the period 2025 through 2060. It describes the data sources, the candidate forecasting methods, the criteria by which models and parameters were selected, and the differences among the methods that remain after selection.

The projections cover six jurisdictions: the towns of Marana, Oro Valley, and Sahuarita; the cities of South Tucson and Tucson; and the unincorporated balance of Pima County. Five forecasts are presented. Three are independent methods, each resting on a different premise about what drives the geographic distribution of population growth. Two are composites formed by averaging the independent methods.

The purpose of this document is to make the methodology transparent and reproducible. It describes what each method assumes, what evidence supports those assumptions, and where the methods disagree. It does not recommend a forecast. Selection among the alternatives is a policy decision for the jurisdictions and the regional council, and the differences documented here are intended to inform that decision.

1.1 Authority and Institutional Context

Executive Order 2011-04 designates the Arizona Office of Economic Opportunity (AOEO) as the state agency responsible for producing official population estimates and projections for the State of Arizona, for use by all state agencies. Regional Councils of Governments are asked to assist the Office in preparing the projection series, and under Office policy may also elect to produce sub-county population projections to accompany it.

As the Council of Governments for the region, the Pima Association of Governments (PAG) produces the sub-county series for the incorporated jurisdictions and the unincorporated balance of Pima County. The projections documented here are that series for the 2025 through 2060 horizon, developed to accompany the 2025 AOEO projection for Pima County.

1.2 The Five Forecasts

- Short DES (double exponential smoothing - Holt's linear trend method) fitted to each jurisdiction's recent historical trend, reconciled proportionally to the county control total.
- Destination Choice (Moderate) — a multinomial logit model of household location choice, calibrated to observed residential completions and constrained by developable land capacity. "Moderate" refers to the 60/40 scenario weighting of population and employment accessibility which was chosen to reflect a moderate shift of location preferences in favor of population versus employment accessibility.

- 2023 Adjusted — the PAG 2023 sub-county forecast re-anchored to the 2025 demographic baseline and reconciled to the control total, with South Tucson held constant.
- Two-Way Average — the equal-weight mean of Short DES and Destination Choice, with South Tucson held constant.
- Three-Way Average — the equal-weight mean of Short DES, Destination Choice, and 2023 Adjusted, with South Tucson held constant.

1.3 Assumptions

The following assumptions apply to every forecast presented in this report. They frame all five methods and are stated here so that the methodological differences described in later sections can be read against a common baseline.

- Boundaries. Projections are developed on municipal boundaries as they stood in 2025, and those boundaries are held unchanged across the projection horizon. Future annexations and de-annexations cannot be predicted and are therefore not modeled.
- Historical consistency. Because boundaries have changed over the historical period, the historical series is restated on 2025 boundaries before any model is fitted, so that trends reflect population change rather than boundary change.
- Development capacity. Each jurisdiction carries a maximum population derived from developable land at current planning standards. These constraints are held fixed across the horizon. A jurisdiction reaching its capacity plateaus rather than continuing to grow.
- County control total. All methods adopt the 2025 AOEO projection for Pima County. Jurisdiction values sum to that total exactly in every projection year.
- Common baseline. All methods begin from the same 2025 AOEO population estimates, so that differences among them reflect differences in projected trajectory rather than differences in starting point.
- South Tucson. In the composite forecasts and the 2023 Adjusted series presented for comparison, South Tucson is held at its 2025 population, reflecting its fully developed condition and the absence of a specific development plan.

1.4 Limitations

- All five forecasts are constrained to a single county control total. If that projection proves too high or too low, every sub-county forecast is affected proportionally, and the errors are not independent.
- Recently adopted City of Tucson housing policies, including middle housing and community corridor provisions, are not represented in any method. Their demographic effect warrants separate analysis. Because the county total is fixed, any upward revision to Tucson requires a corresponding downward revision elsewhere.
- Jurisdiction-level declines under a plateauing control total are largely arithmetic in origin. They indicate a smaller share of a fixed regional total, not a prediction of net out-migration from a specific place.
- The Destination Choice capacity inventory is uneven across the unincorporated subareas. Two subareas concentrate their entire developable capacity in a single traffic analysis zone, which makes the capacity-

weighted accessibility measure for those subareas dependent on one zone. This does not materially affect the six-jurisdiction results, because the subareas are aggregated before comparison and hold little population, but it constrains the use of the subarea detail on its own.

- Development capacity reflects current land use policy. Substantial changes to zoning, annexation, or infrastructure would change the capacity constraints and therefore the forecasts that depend on them.

2. The Regional Control Total

All five forecasts are constrained to the same county-level control total: the 2025 AOEO projection for Pima County (Figure 1). This constraint means the methods agree exactly on how much the county will grow and differ only in where that growth is distributed.

Year	Control total	Change from 2025
2025	1,093,761	+0
2030	1,121,464	+27,703
2035	1,138,827	+45,066
2040	1,147,353	+53,592
2045	1,149,572	+55,811
2050	1,148,212	+54,451
2055	1,145,957	+52,196
2060	1,143,575	+49,814

Source: AOEO 2025-2060 State and County Population Forecast, 2025

Table 1. AOEO county control total at benchmark years

The control total grows from 1,093,761 in 2025 to 1,143,575 in 2060, a net increase of 49,814 persons, or 4.6 percent over thirty-five years. The trajectory is not monotonic: county population peaks at approximately 1,149,572 in 2045 and declines modestly through 2060. This shape has a direct consequence for the sub-county forecasts. Under a control total that plateaus and then contracts, growth in one jurisdiction after 2045 requires decline in another. Several of the jurisdiction-level declines that appear later in this report are an arithmetic consequence of that constraint rather than a behavioral prediction of population loss.

3. Historical Base Data

3.1 Population Estimates

The historical series covers 1980 through 2025 at annual intervals for each of the six jurisdictions. Sahuarita enters the series in 1995, following its incorporation in 1994; earlier years carry no population for that jurisdiction. The series is maintained in the PAG assumptions workbook and serves two purposes: it is the training data for the time series models, and its final year establishes the 2025 baseline from which every forecast begins.

3.2 Annexation Adjustment

Municipal boundaries in Pima County have changed over the historical period. An as-reported population series records those changes as sudden jumps: a jurisdiction that annexes territory appears to gain population overnight, and the unincorporated area appears to lose it. A trend model fitted to such a series cannot distinguish a boundary change from organic growth, and will project the annexation forward as though it were a continuing trend.

To prevent this, the historical series is restated on current boundaries. Population in territory annexed during the historical period is attributed to the annexing jurisdiction in every prior year, and removed from the unincorporated balance in those same years (Table 2). The adjustment redistributes population between jurisdictions and leaves the county total unchanged in every year. It resolves to zero by 2025, where the adjusted and as-reported series are identical by construction.

Year	Marana	Oro Valley	Sahuarita	South Tucson	Tucson	Uninc. Pima County
1980	+7	+20	+0	+0	+6,840	-6,867
1990	+7	+20	+0	+0	+6,840	-6,867
2000	+7	+20	+730	+0	+6,840	-7,597
2010	+7	+20	+730	+0	+6,840	-7,597
2015	+7	+0	+730	+0	+6,490	-7,227
2020	+7	+0	+0	+0	+0	-7
2023	+7	+0	+0	+0	+0	-7
2025	+0	+0	+0	+0	+0	+0

Table 2. Annexation adjustment applied to the historical series, selected years

Tucson carries the largest adjustment, approximately 6,840 persons through 2014, reflecting annexations completed in the middle of the historical period. Sahuarita carries an adjustment of 730 persons from 2000 through 2015, and Marana a small and persistent adjustment of 7 persons. The unincorporated balance carries the offsetting negative in each case. By 2020 the adjustments have largely resolved, indicating that recent boundary changes have been minor (Figure 1).

Effect of the Annexation Adjustment on the Historical Series, 1980-2025
Population annexed after a given year is attributed to the annexing jurisdiction in all prior years

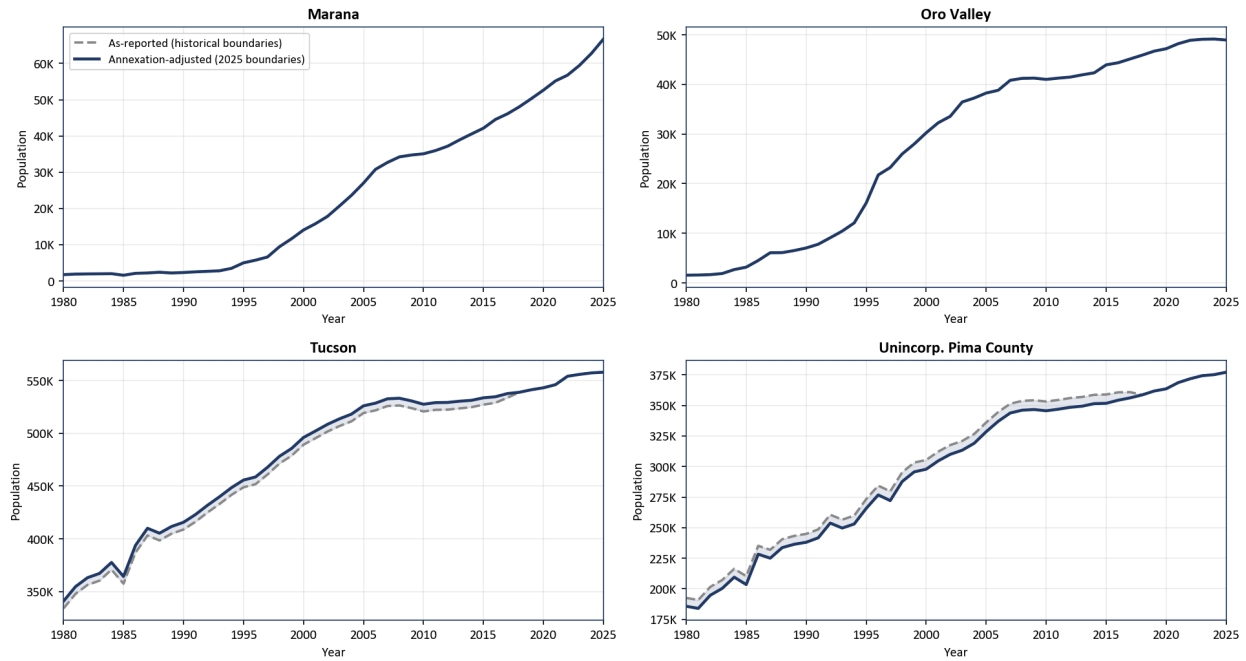


Figure 1. Effect of the annexation adjustment on the historical series, 1980-2025

3.3 The 2025 Baseline

All five forecasts begin from an identical 2025 baseline. Holding the starting point fixed ensures that differences among the methods reflect differences in projected trajectory rather than differences in where the projection begins.

Jurisdiction	2025 population	Share of county
Marana	66,736	6.1%
Oro Valley	48,967	4.5%
Sahuarita	38,421	3.5%
South Tucson	4,535	0.4%
Tucson	557,901	51.0%
Uninc. Pima County	377,201	34.5%
County Total	1,093,761	100.0%

Source: 2025 population baseline is from AOEO July 1, 2025 population estimates

Table 3. 2025 population baseline by jurisdiction

4. Time Series Method: Model and Window Selection

The first of the three independent methods projects each jurisdiction forward from its own historical trend. Two decisions had to be made before such a forecast could be produced: which statistical model to fit, and how much history to fit it to. Both were resolved empirically.

4.1 Candidate Models and Training Windows

Two model families were tested. The first, ARIMA, is an autoregressive integrated moving average model, a general-purpose time series method that captures autocorrelation and differencing structure. The second model, double exponential smoothing (DES), fits two components, weighting recent observations more heavily than distant ones. Holt's linear trend method is used, in which each component is governed by its own independently estimated smoothing parameter.

The DES model summarizes each jurisdiction's recent population history with two numbers. The first, the *level*, is a weighted average of all historical population values, with weights that decline geometrically into the past. The smoothing parameter α controls the rate of decline. The second, the *trend*, is an estimate of the average annual population the jurisdiction is currently adding or losing each year. The forecast extends these forward: each future year's population equals the level plus the trend multiplied by the number of years ahead. DES's raw output is therefore a straight line out of 2025, with its slope set by the smoothed rate of population change estimated over the 2010-2025 training window, anchored at the 2025 level estimate. The level component is a weighted average of the current observation and the prior period's forecast; the trend component is a weighted average of the observed change in level and the prior trend:

$$L_t = \alpha Y_t + (1 - \alpha)(L_{t-1} + T_{t-1})$$

$$T_t = \beta (L_t - L_{t-1}) + (1 - \beta) T_{t-1}$$

$$\hat{Y}_{t+h} = L_t + h T_t$$

Here, Y_t is observed population in year t , L_t and T_t are the level and trend components, and $\hat{Y}_{t+h}$ is the forecast h years ahead. The smoothing parameters α and β , both between 0 and 1, govern how quickly the level and trend respond to new observations; values near 1 weight recent data heavily. Figure 2 shows the selected Short DES model's fitted versus actual population by jurisdiction for the 2010-2025 historical population series. Both parameters are estimated per jurisdiction by maximum likelihood rather than fixed in advance, and the fitted values are shown in Table 4.

Jurisdiction	Variant	Alpha	Beta	MAPE (%)	R2
Marana	Undamped	0.9922	0.3480	1.011	0.9957
Oro Valley	Undamped	0.9952	0.0001	0.791	0.9776
Sahuarita	Undamped	0.8951	0.0277	0.691	0.9964
South Tucson	Undamped	1.0000	0.6593	0.425	0.9939
Tucson	Undamped	1.0000	0.0000	0.193	0.9729
Uninc. Pima County	Undamped	0.9673	0.1343	0.239	0.9884

Note: Alpha (α) and Beta (β) control how strongly each year of data revises the model's estimates of population size and annual change respectively. Values near 1 give most weight to the most recent observation; values near 0 hold the existing estimate nearly unchanged. Low β values indicate that each jurisdiction's annual rate of change was stable across the training window, so the fitted trend is close to constant.

Table 4. Fitted DES parameters, short training window

All six jurisdictions fit an undamped trend. The level (alpha) parameters are high, ranging from 0.895 to 1.000, indicating that recent observations carry most of the weight. The trend (beta) parameters vary widely, from effectively zero for Tucson and Oro Valley to 0.659 for South Tucson, reflecting how much each series' direction shifts from year to year.

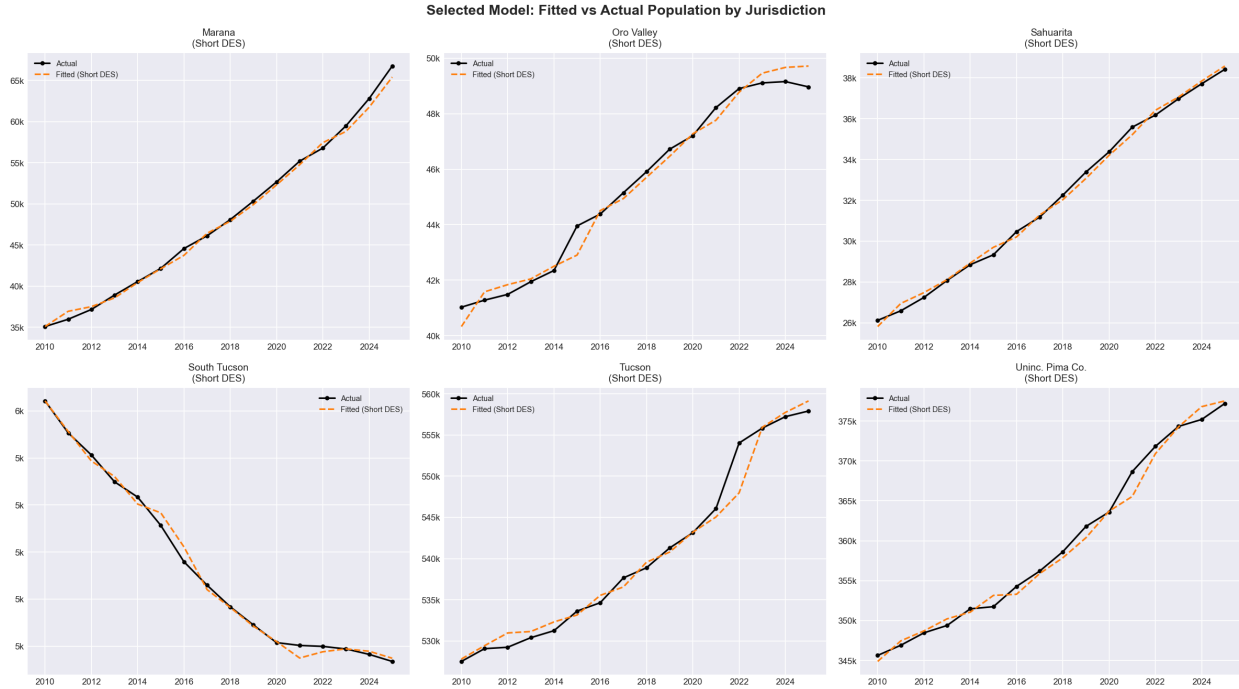


Figure 2. Fitted values against observed population, selected models

Two training windows were tested. The long window uses the full historical record from 1980 to 2025, providing 46 observations, or 31 for Sahuarita. The short window uses 2010 to 2025, providing 16 observations. The tradeoff is between statistical power and relevance: the long window offers more data, while the short window reflects the current land use and development regime and excludes patterns from a period when the region's growth dynamics differed substantially from today's. Crossing the two model families with the two windows yields four candidate variants per jurisdiction, twenty-four fits in total.

4.2 A Three-Step Decision Procedure

Comparing all four variants directly on a single criterion is not statistically valid. The Akaike Information Criterion measures model fit against model complexity, with lower values indicating a better model. AIC is derived from the log-likelihood, which depends on both the number of observations and the scale of the residuals. An AIC computed on 16 observations and one computed on 46 are therefore measuring fit against different datasets, and a difference between them carries no information about which model is better. Valid comparisons are only within a window: Short ARIMA against Short DES, and Long ARIMA against Long DES.

The selection therefore proceeded in three steps:

- Step 1 — ARIMA against DES within the short window. Both models see the same 16 observations, so AIC is a valid basis for comparison.
- Step 2 — ARIMA against DES within the long window. Both models see the same 46 observations, so AIC is again valid.
- Step 3 — the short-window winner against the long-window winner, judged on mean absolute percentage error and the coefficient of determination, which are scale-independent and comparable across sample sizes.

4.3 Results

DES outperforms ARIMA in every jurisdiction, in both windows, by margins that are decisive as shown in Table 5 and Figure 3. A difference above 10 is conventionally regarded as strong evidence, and every comparison here exceeds that threshold by a wide margin. Note that AIC values are comparable only within the same training window. Short-window values ($n = 16$) and long-window values ($n = 46$) are computed from different datasets and cannot be compared to each other.

Jurisdiction	Short ARIMA	Short DES	Long ARIMA	Long DES
Marana	249.50	214.21	717.87	602.60
Oro Valley	230.33	203.22	748.85	636.98
Sahuarita	214.02	183.38	471.66	401.95
South Tucson	155.66	117.27	639.77	527.19
Tucson	273.02	246.39	914.35	805.80
Uninc. Pima County	260.53	233.12	896.54	793.13

Table 5. Akaike Information Criterion by model and training window

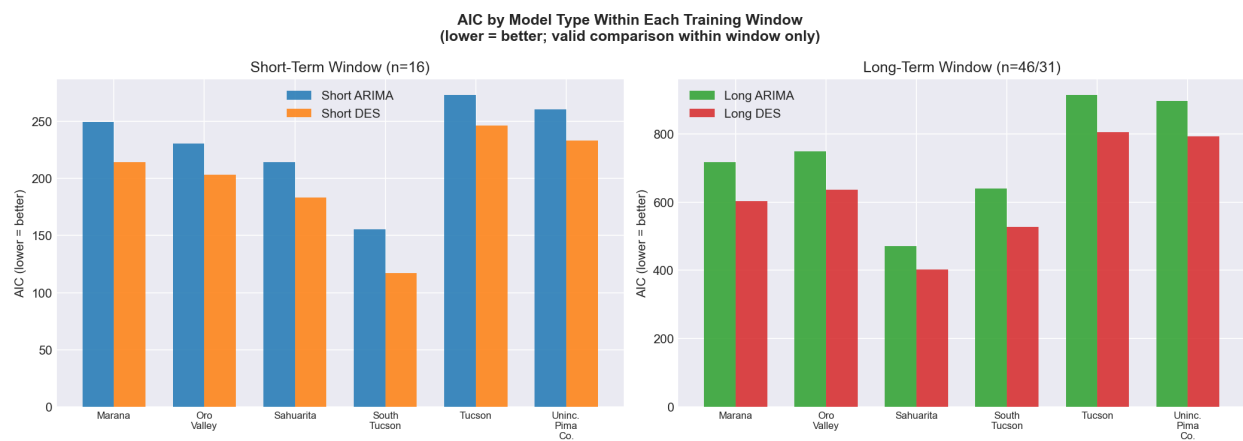


Figure 3. AIC by model type within each training window

In Figure 4, the MAPE error statistics also confirm the superiority of DES over ARIMA. DES's mean absolute percentage error (MAPE) in the short window ranges from 0.19 percent for Tucson to 1.01 percent for Marana (Table 6). The corresponding ARIMA errors range from 6.45 to 7.42 percent, roughly seven times higher. Five of the six ARIMA fits produce a negative coefficient of determination (R^2), meaning the fitted model tracks the observed series less closely than a horizontal line at the series mean (Table 7).

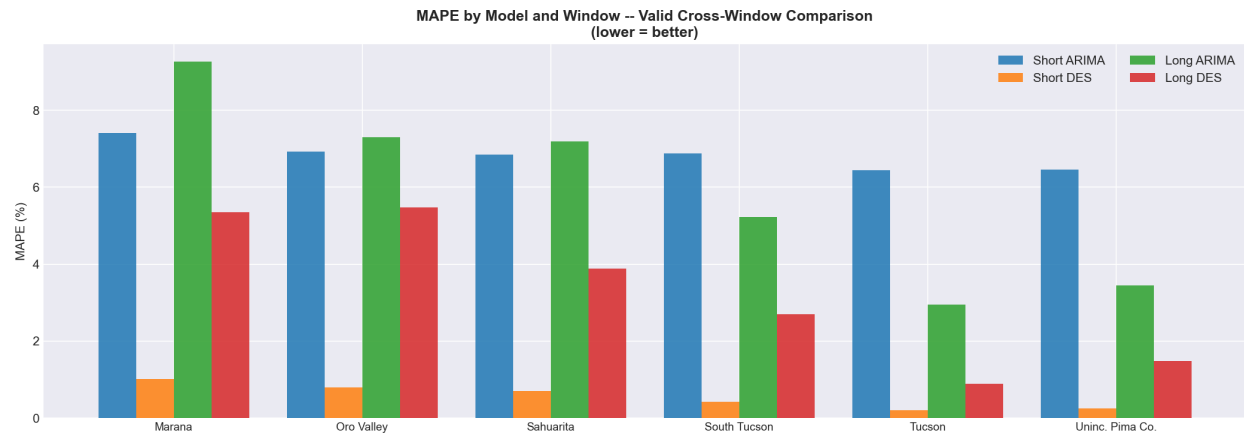


Figure 4. MAPE by model variant and training window

Jurisdiction	Short ARIMA	Short DES	Long ARIMA	Long DES
Marana	7.420%	1.011%	9.264%	5.345%
Oro Valley	6.932%	0.791%	7.303%	5.475%
Sahuarita	6.851%	0.691%	7.188%	3.880%
South Tucson	6.887%	0.425%	5.233%	2.697%
Tucson	6.447%	0.193%	2.945%	0.889%
Uninc. Pima County	6.465%	0.239%	3.440%	1.486%

Table 6. Mean absolute percentage error (MAPE) by model and training window. Lower values indicate better fit

Jurisdiction	Short ARIMA	Short DES	Long ARIMA	Long DES
Marana	0.158	0.996	0.999	0.999
Oro Valley	-10.872	0.978	0.997	0.997
Sahuarita	-1.642	0.996	0.997	0.998
South Tucson	-13.861	0.994	-2.869	0.692
Tucson	-158.556	0.973	0.407	0.992
Uninc. Pima County	-66.300	0.988	0.790	0.993

Table 7. Coefficient of determination (R^2) by model and training window

Final best time-series models (DES) for jurisdictions are listed in Table 8.

Jurisdiction	MAPE short (%)	MAPE long (%)	R2 short	R2 long	Final selection
Marana	1.011	5.345	0.9957	0.9991	Short DES
Oro Valley	0.791	5.475	0.9776	0.9971	Short DES
Sahuarita	0.691	3.880	0.9964	0.9979	Short DES
South Tucson	0.425	2.697	0.9939	0.6918	Short DES
Tucson	0.193	0.889	0.9729	0.9921	Short DES
Uninc. Pima County	0.239	1.486	0.9884	0.9930	Short DES

Table 8. Cross-window comparison and final model selection

The history of each jurisdiction also favors the short historical period. Marana’s population in the early 1980s was under 2,000, a base with little bearing on a jurisdiction now approaching 67,000. Sahuarita’s pre-incorporation years carry no data at all. The post-2010 period reflects the current land use regime, infrastructure network, and development pattern; the 1980s and 1990s reflect a dispersed-growth dynamic that no longer governs. The short window was selected for all six jurisdictions.

4.5 Development Capacity Constraints

A time-series model extrapolates without regard to physical limits. Left unconstrained, a jurisdiction growing steadily will be projected past the point at which it has land available to accommodate that growth. Each jurisdiction therefore carries a maximum population derived from developable land capacity as shown in Table 9.

Jurisdiction	2025 population	Maximum population	Remaining capacity	Percent built out
Marana	66,736	323,853	257,117	20.6%
Oro Valley	48,967	55,850	6,883	87.7%
Sahuarita	38,421	110,890	72,469	34.6%
South Tucson	4,535	4,927	392	92.0%
Tucson	557,901	761,380	203,479	73.3%
Uninc. Pima County	377,201	1,110,857	733,656	34.0%

Table 9. Maximum population and remaining capacity by jurisdiction

Figure 5 shows the trajectories of the jurisdictional projections, reconciled to the county control total. Two jurisdictions approach their limits within the forecast horizon. South Tucson, a fully developed municipality of approximately one square mile, is 92.0 percent built out at the 2025 baseline. Oro Valley is 87.7 percent built out, with a maximum population of 55,850 and remaining capacity of 6,883 persons. The remaining four jurisdictions retain substantial headroom.

The Short DES forecast reaches the Oro Valley maximum late in the horizon. Where the unconstrained projection would exceed 55,850, population is capped at that value and the excess is redistributed proportionally to Marana, Sahuarita, Tucson, and the unincorporated balance, in proportion to their reconciled values in that year. This preserves both the capacity constraint and exact reconciliation to the control total. No other method reaches the Oro Valley ceiling within the horizon.

Short DES — Jurisdiction Trajectories
Historical 2010–2025 · Raw and Pro-Rata Reconciled Forecasts 2025–2060

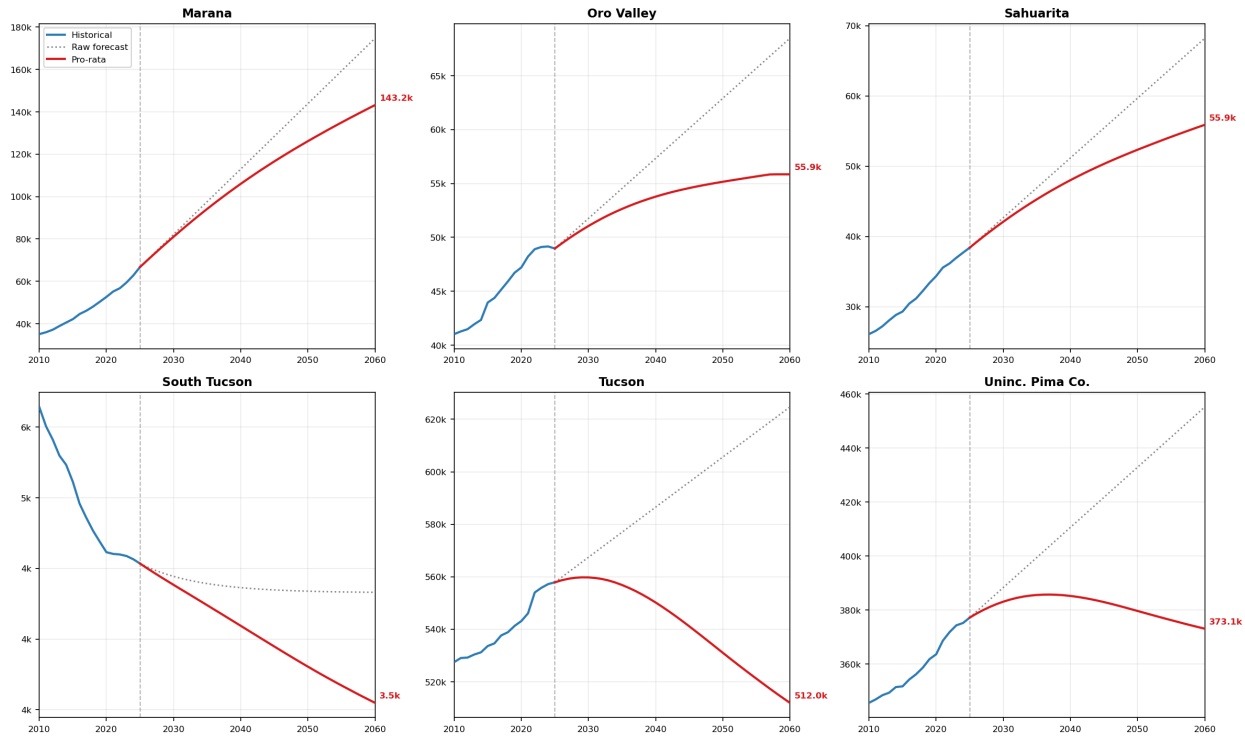


Figure 5. Short DES jurisdiction trajectories, historical and forecast

5. Destination Choice Model

The second independent method takes a different premise. Rather than projecting each jurisdiction from its own history, it models where households choose to locate, treating jurisdictions as competing destinations for a regional pool of growth. This captures a dynamic the trend models cannot: inter-jurisdictional competition, in which one jurisdiction's capture of growth reduces what is available to others.

5.1 Model Structure

The model is a multinomial logit specification. Each year, the increment of regional growth given by the control total is allocated across fourteen destinations (Figure 6) according to a utility function:

$$U_i(t) = JSC_i + \ln(Capacity_i(t)) + \beta \cdot Accessibility_i(t)$$

where:

$U_i(t)$ = utility of the destination i in year t ; a higher value means the destination attracts a larger share of that year's growth

i = destination: the five incorporated jurisdictions and nine unincorporated subareas (PC1–PC9), Figure 6

t = forecast year, 2025–2060

JSC_i = jurisdiction-specific constant for destination i , calibrated against 2019–2025 housing completions

$Capacity_i(t)$ = remaining developable housing unit capacity in destination i at the start of year t

$\ln$ = natural logarithm

β = accessibility coefficient, set to 0.01 (Table 11)

$Accessibility_i(t)$ = capacity-weighted accessibility of destination i in year t , combining population accessibility (60%) and employment accessibility (40%) under the Moderate scenario, interpolated between the four measured years

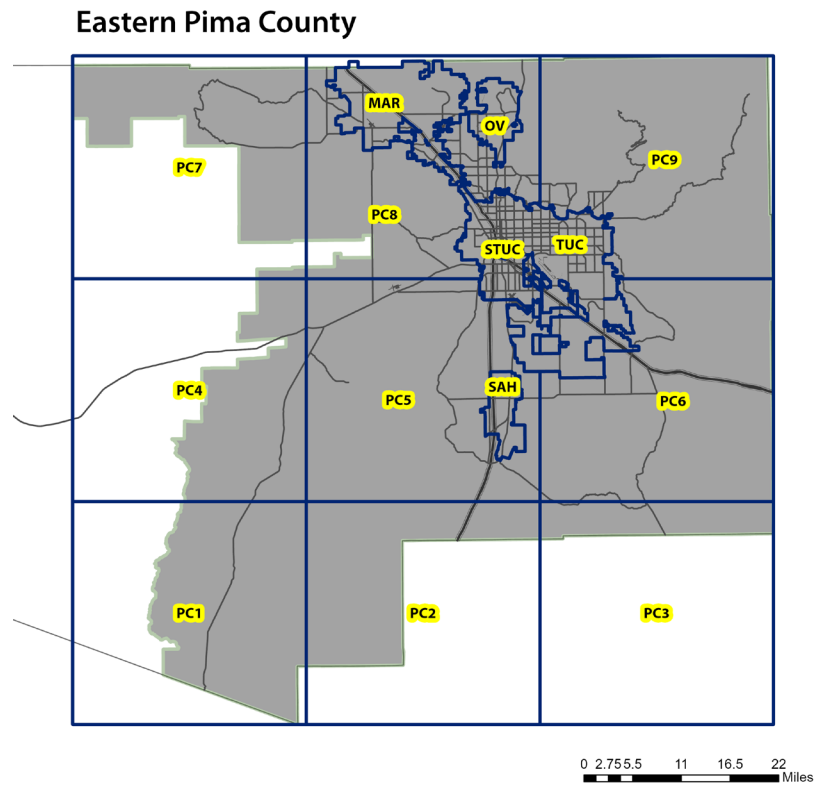


Figure 6. Grid of Five Jurisdictional and Nine Balance of County Destinations

The jurisdiction-specific constant (JSC) captures persistent jurisdictional attractiveness not explained by the other terms. The logarithm of remaining capacity ensures that a jurisdiction with more developable land attracts proportionally more growth, with diminishing returns, and that a jurisdiction approaching buildout attracts progressively less. Accessibility measures proximity to population and employment. Each jurisdiction's utility score is converted into its share of the year's growth: higher-scoring jurisdictions receive proportionally more, and the shares across all jurisdictions sum to one. Capacity is drawn down each year as growth is absorbed, and a jurisdiction stops receiving growth once fewer than 100 units of capacity remain.

The fourteen destinations comprise the five incorporated municipalities and nine subareas of unincorporated Pima County (Figure 6). These subareas are aggregated back to a single unincorporated total for comparison with the other methods, which do not produce sub-jurisdictional detail.

5.2 Developable Land Capacity and Accessibility

Capacity enters the model from a parcel-based inventory of developable land compiled at the traffic analysis zone (TAZ) level and expressed in housing units. Housing units are converted to population using jurisdiction-specific household size and occupancy rates, so that identical unit capacity in two jurisdictions yields different population capacity where household characteristics differ.

Destination	Persons per household	Occupancy rate
MAR	2.613	0.913
OV	2.242	0.892
SAH	2.756	0.921
STUC	2.551	0.854
TUC	2.327	0.920

Source: Census 2020. The nine unincorporated subareas share a common factor of 2.412 persons per household at an occupancy rate of 0.893.

Table 10. Housing unit to population conversion factors, municipalities

Accessibility is measured at the TAZ level for four horizon years and interpolated to an annual series. Aggregating TAZ-level accessibility to the jurisdiction level requires a weighting choice. A simple mean treats every TAZ equally, including remote TAZs with no development potential, which distorts the jurisdiction-level measure. The model instead weights each TAZ by its developable housing unit capacity, so that accessibility reflects conditions where growth can actually occur. The effect is greatest in the more rural unincorporated subareas. In these areas, the zones best connected to existing roads, jobs, and population are largely built out, and most remaining room for new housing lies in outlying zones that are harder to reach. A simple average across all zones would therefore overstate how accessible these subareas are to new growth; weighting by capacity reflects conditions where development can actually occur.

5.3 Calibration

The model was calibrated against observed residential completions for 2021 through 2025, converted from housing units to population using the factors above (Table 10). Completions for 2021 through 2024 served as the training set, and 2025 was held out for validation. JSCs were optimized to reproduce observed completion shares, and the accessibility coefficient was selected by testing five candidate values and choosing the one with the lowest validation error.

Beta	Training RMSE	Validation RMSE	Selected
0.005	0.0996	0.0944	
0.010	0.0996	0.0630	Selected
0.015	0.0996	0.1167	
0.020	0.0996	0.1732	
0.025	0.0996	0.1910	

Table 11. Accessibility coefficient selection by validation error

A coefficient of 0.01 produced the lowest validation error, 0.063, against values ranging from 0.094 to 0.191 for the alternatives (Table 11). Training error was identical for all five candidates because the jurisdiction constants are re-estimated for each and compensate for changes in the accessibility term. The constants therefore account for most of the model's fit, and accessibility adds relatively little at the jurisdiction level. The candidates are distinguished only by performance on the 2025 holdout year.

5.4 Accessibility Scenario

Accessibility combines proximity to population and proximity to employment. The relative weight given to each is not determined by the data, so six weighting schemes were specified and run, spanning the range from population-only (PopOnly) to employment-only (EmpOnly) in Table 10.

Scenario	Population weight	Employment weight	Applied
PopOnly	1.0	0.0	
EmpOnly	0.0	1.0	
Equal	0.5	0.5	
Amenity	0.7	0.3	
Employment	0.3	0.7	
Moderate	0.6	0.4	Applied

Table 12. Accessibility weighting scenarios

The Moderate scenario, weighting population accessibility at 0.6 and employment accessibility at 0.4, was adopted. It reflects the observation that residential location responds to both proximity to existing communities and proximity to employment, with the former somewhat more influential, and it avoids the extremes represented by the single-factor scenarios. The remaining scenarios were retained as a sensitivity range.

6. The 2023 Adjusted Forecast

The third independent forecast method differs in kind from the other two. Rather than fitting a statistical model to data, it carries forward an existing planning product: the PAG 2023 sub-county population forecast, re-anchored to the current baseline. Its value in the comparison is that it reflects a separate round of PAG forecasting, prepared independently of the methods applied here and re-anchored to the 2025 baseline. It provides a point of continuity with the previously published series rather than an additional statistical estimate.

6.1 Re-anchoring Procedure

The original 2023 forecast began from population estimates available at the time of its preparation, which differ from the 2025 AOEO estimates used throughout this report. Using it directly would introduce a discontinuity between the last observed year and the first forecast year, and would mean the methods no longer share a common starting point. Three steps correct this.

- Base year replacement. Each jurisdiction's starting population is replaced with its 2025 historical estimate, so the adjusted series matches the observed county total in the base year by design.
- Growth rate application. The implied year-over-year growth rates from the original forecast are extracted and applied forward from the new base. Using year-specific rates rather than a single average preserves the trajectory shape of the original, including its periods of acceleration and deceleration.
- Share-based redistribution. Each jurisdiction's share of an intermediate county total is computed and applied to the 2025 forecast's county-level totals, preserving the original's view of how growth should be distributed across jurisdictions.

The result is a continuous annual series from 2025 through 2060 that starts from the current baseline while retaining the inter-jurisdictional allocation logic of the original forecast.

6.2 Effect of Reconciliation

The re-anchored series projects substantially more county-wide growth than the control total permits, reaching approximately 1,305,212 persons by 2060 against a control total of 1,143,575. The gap of roughly 161,637 persons is the largest of any method and must be closed by reconciliation, which compresses every jurisdiction by approximately 12.4 percent at the end of the horizon. Section 7 describes the reconciliation procedure and Section 9 reports the outcome.

7. Reconciliation to the Control Total

Each method produces a raw series that reflects its own logic and does not, in general, sum to the control total. Reconciliation forces agreement. The choice of reconciliation procedure matters, because different procedures distribute the required adjustment differently across jurisdictions.

7.1 Pro-Rata Scaling

As shown in Table 13, a single scaling factor is computed for each year as the ratio of the control total to the method's raw total, and every jurisdiction is multiplied by that factor. The procedure preserves each method's cross-jurisdictional shares exactly: a jurisdiction holding 6 percent of the raw total holds 6 percent of the reconciled total.

Year	Control total	DES raw total	DES factor	2023 Adj raw total	2023 Adj factor
2025	1,093,761	1,093,761	1.0000	1,093,761	1.0000
2030	1,121,464	1,136,829	0.9865	1,129,414	0.9930
2035	1,138,827	1,179,917	0.9652	1,163,913	0.9784
2040	1,147,353	1,223,028	0.9381	1,195,070	0.9601
2045	1,149,572	1,266,150	0.9079	1,223,285	0.9397
2050	1,148,212	1,309,280	0.8770	1,249,828	0.9187
2055	1,145,957	1,352,414	0.8473	1,276,988	0.8974
2060	1,143,575	1,395,550	0.8194	1,305,212	0.8762

Source: raw and reconciled annual series. A factor below 1.0 indicates the raw series exceeds the control total and is compressed.

Table 13. Pro-rata scaling factors at benchmark years

Both trend-based methods project more growth than the control total allows, so both are compressed. The Short DES factor falls to 0.8194 by 2060, a reduction of about 18 percent; the 2023 Adjusted factor falls to 0.8762, a reduction of about 12 percent. The Destination Choice model requires no scaling because it allocates growth outward from the control total by construction and reconciles exactly in every year.

8. Averaged Forecasts

The three independent methods – Short DES, Destination Choice, and 2023 Adjusted – rest on different premises and produce different results. Where a jurisdiction has no strong basis for preferring one premise, an average of the candidates offers a middle position that does not commit fully to any single set of assumptions. Two composite population series are presented as alternative forecasts.

- Two-Way Average — the equal-weight mean of Short DES and Destination Choice, combining a trend-based and a behavioral method.
- Three-Way Average — the equal-weight mean of Short DES, Destination Choice, and 2023 Adjusted, adding the planning-context method.

Averaging is performed jurisdiction by jurisdiction and year by year on the reconciled series. The Destination Choice model's nine unincorporated subareas are aggregated to a single unincorporated total before averaging, so that each method contributes one value per jurisdiction per year.

8.1 South Tucson Held Constant

South Tucson is a fully developed municipality of approximately one square mile with essentially no capacity for additional residential development. Under pro-rata reconciliation it nonetheless drifts downward, because the compression applied to close the gap between a method's raw total and the control total is applied to every jurisdiction proportionally. That drift is an artifact of the reconciliation arithmetic rather than a forecast of population loss.

In the composite forecasts, South Tucson is therefore held constant at its 2025 baseline of 4,535 across the full horizon. Holding one jurisdiction fixed means the remaining five no longer sum to the control total on their own, so their averaged values are scaled proportionally to a target of the control total less the South Tucson constant, then rounded by the largest-remainder method. The county total continues to match the control total exactly. The same treatment is applied to the 2023 Adjusted forecast reported in the comparison, so that all three appear on consistent terms.

9. Comparative Results

All five forecasts agree on the county total in every year. They differ only in geographic distribution. This section reports where they agree and where they do not.

9.1 Population in 2060

Jurisdiction	2025	Short DES	Dest. Choice	2023 Adj	Two-Way	Three-Way
Marana	66,736	143,185	80,883	108,997	111,984	110,989
Oro Valley	48,967	55,850	53,648	48,572	54,725	52,674
Sahuarita	38,421	55,901	49,019	49,709	52,437	51,527
South Tucson	4,535	3,549	4,510	4,535	4,535	4,535
Tucson	557,901	511,998	567,736	548,874	539,627	542,710
Uninc. Pima County	377,201	373,092	387,779	382,888	380,267	381,140
County Total	1,093,761	1,143,575	1,143,575	1,143,575	1,143,575	1,143,575

Source: reconciled annual series, South Tucson is held constant in the 2023 Adjusted, Two-Way, and Three-Way series

Table 14. Population in 2060 by jurisdiction and method

Jurisdiction	Short DES	Dest. Choice	2023 Adj	Two-Way	Three-Way
Marana	+76,449	+14,147	+42,261	+45,248	+44,253
Oro Valley	+6,883	+4,681	-395	+5,758	+3,707
Sahuarita	+17,480	+10,598	+11,288	+14,016	+13,106
South Tucson	-986	-25	+0	+0	+0
Tucson	-45,903	+9,835	-9,027	-18,274	-15,191
Uninc. Pima County	-4,109	+10,578	+5,687	+3,066	+3,939
County Total	+49,814	+49,814	+49,814	+49,814	+49,814

Table 15. Net population change 2025 to 2060 by jurisdiction and method

The methods disagree most sharply about Marana and Tucson. Short DES projects Marana at 143,185 by 2060 while Destination Choice projects 80,883, a difference of 62,302 persons. The reason is straightforward: Marana has grown rapidly since 2010, and Short DES carries that pace forward, while Destination Choice weighs Marana against room for growth elsewhere in the region and arrives at a more moderate figure. For Tucson, the methods disagree on direction: Short DES projects a net loss of 45,903, and Destination Choice a net gain of 9,835.

The methods agree more closely on Sahuarita and unincorporated Pima County. For Sahuarita, four of the five projections place the 2060 population between about 49,000 and 52,400, with only Short DES higher at 55,901. For unincorporated Pima County, all five fall between 373,092 and 387,779.

9.2 Comparative Analyses and Results

The 2060 endpoint alone does not describe a forecast. Two methods can arrive at similar values by different paths, so the trajectory over time is examined alongside the endpoint. The table below reports the year in which each method reaches its maximum for each jurisdiction, and the change from that maximum to 2060.

Jurisdiction	Short DES	Dest. Choice	2023 Adj	Two-Way	Three-Way
Marana	2060	2045	2060	2060	2060
Oro Valley	2058	2030	2034	2057	2041
Sahuarita	2060	2045	2060	2060	2060
South Tucson	2025	2025	2025	2025	2025
Tucson	2029	2045	2037	2033	2035
Uninc. Pima County	2037	2045	2041	2040	2040

Source: reconciled annual series. A value of 2060 indicates the series is still rising at the end of the horizon.

Table 16. Year of maximum population by jurisdiction and method

Under every method Tucson peaks before 2060, somewhere between 2029 and 2045, and declines thereafter. The magnitude of that decline varies considerably, from 2,977 persons under Destination Choice to 47,795 under Short DES (Table 17). Because Tucson holds slightly more than half the county population, its trajectory largely determines what remains available to the other jurisdictions under a fixed control total.

Jurisdiction	Short DES	Dest. Choice	2023 Adj	Two-Way	Three-Way
Marana	+0	-425	+0	+0	+0
Oro Valley	+0	-283	-5,481	-29	-979
Sahuarita	+0	-259	+0	+0	+0
South Tucson	-986	-25	+0	+0	+0
Tucson	-47,795	-2,977	-19,143	-22,693	-21,339
Unincorp. Pima County	-12,634	-2,028	-4,987	-6,874	-6,240

Source: reconciled annual series. Zero indicates the maximum occurs in 2060. Negative values are shown in red

Table 17. Change from maximum population to 2060 by jurisdiction and method

In Table 18 and Figure 7, **Oro Valley** shows the widest divergence in trajectory shape. Short DES rises throughout, reaching the buildout ceiling of 55,850 in 2058. Destination Choice peaks early, in 2030, and holds nearly level thereafter. The 2023 Adjusted forecast peaks at 54,055 in 2034 and then declines by 5,460 persons, ending at 48,595, which is 372 persons below the 2025 baseline and the only result among the five that finishes below its starting point. The Two-Way Average peaks at 54,754 in 2057 and gives back 29 persons; the Three-Way Average peaks at 53,653 in 2041 and gives back 979.

Marana shows the widest absolute divergence. Short DES rises throughout to 143,185, more than double the 2025 base. Destination Choice peaks before 2060 and gives back 425 persons, finishing at 80,883 — a gap of 62,302 from Short DES, exceeding the entire 2060 population of Oro Valley. The 2023 Adjusted forecast and both averages rise throughout, finishing between 109,048 and 111,984. All five methods agree Marana grows; they disagree on the amount by nearly a factor of two.

Tucson is the only jurisdiction where the methods disagree on direction, and it shows the largest decline from peak population in the comparison. Destination Choice ends at 567,736, a net gain of 9,835, having fallen only 2,977 from its peak. Every other method peaks in the 2030s and declines substantially: Short DES falls 47,795 from its peak to finish at 511,998, a net loss of 45,903; the two averages drop roughly 21,000 to 23,000; and the 2023 Adjusted forecast falls 19,143. The difference between the highest and lowest 2060 values is 55,738 persons.

Unincorporated Pima County peaks and then declines under all five methods, ranging from 2,028 under Destination Choice to 12,634 under Short DES. Four of the five still finish above the 2025 base; only Short DES ends below it, at 373,092. The 2060 range of 14,687 persons is narrow relative to Marana and Tucson.

Sahuarita is the least contested jurisdiction. Four of five methods rise throughout, and four finish within about 3,400 persons of one another; only Short DES, at 55,901, stands apart. Destination Choice declines 259 persons from its peak.

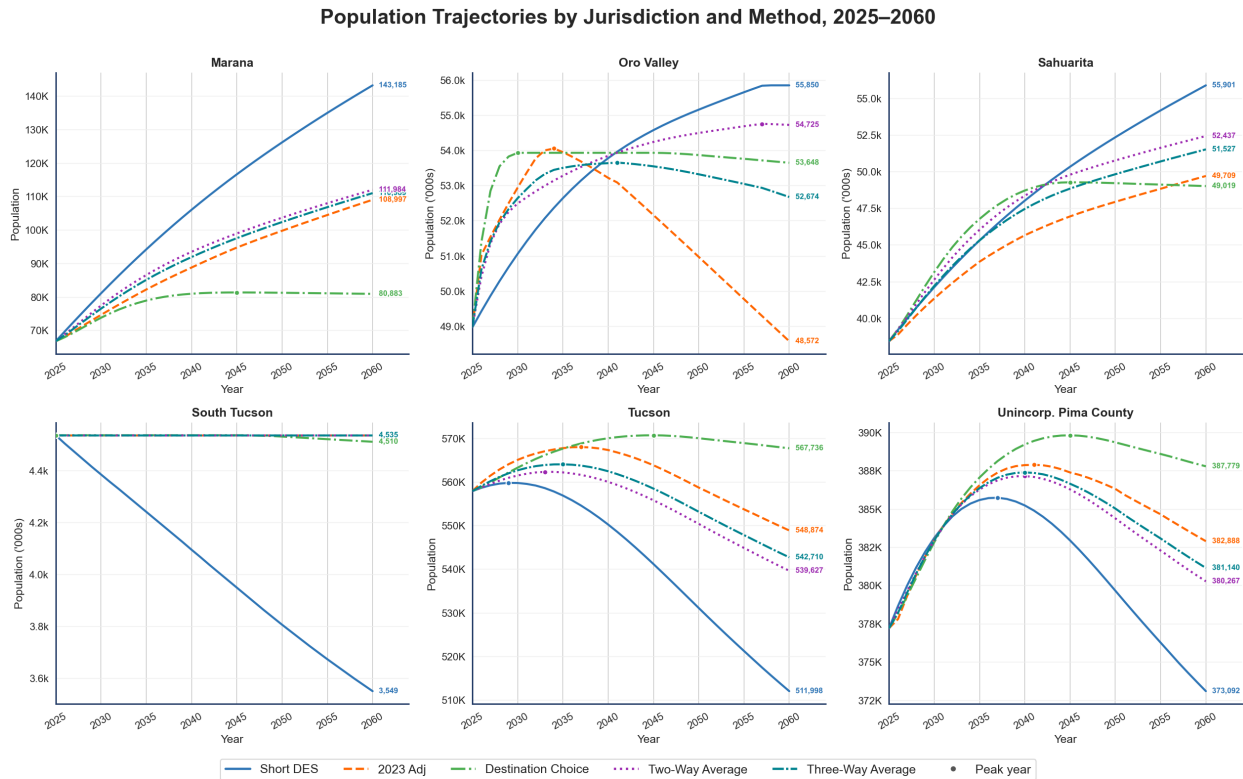
South Tucson is held constant at 4,535 in the 2023 Adjusted forecast and both averages. It declines under the other two methods, to 3,549 under Short DES and 4,510 under Destination Choice.

Reconciled 2060 Population and Net Change 2025–2060 by Method

Jurisdiction	2025 Base	Short DES (Pro-Rata)		Dest. Choice Moderate (Pro-Rata)		2023 Adjusted (Pro-Rata)		Two-Way Avg (STUC constant)		Three-Way Avg (STUC constant)	
	Population	2060 Pop.	Net Δ	2060 Pop.	Net Δ	2060 Pop.	Net Δ	2060 Pop.	Net Δ	2060 Pop.	Net Δ
Marana	66,736	143,185	+76,449	80,883	+14,147	109,048	+42,312	111,984	+45,248	110,989	+44,253
Oro Valley	48,967	55,850	+6,883	53,648	+4,681	48,595	-372	54,725	+5,758	52,674	+3,707
Sahuarita	38,421	55,901	+17,480	49,019	+10,598	49,732	+11,311	52,437	+14,016	51,527	+13,106
S. Tucson	4,535	3,549	-986	4,510	-25	4,002	-533	4,535	-0	4,535	-0
Tucson	557,901	511,998	-45,903	567,736	+9,835	549,131	-8,770	539,627	-18,274	542,710	-15,191
Uninc. Pima Co.	377,201	373,092	-4,109	387,779	+10,578	383,067	+5,866	380,267	+3,066	381,140	+3,939
County Total	1,093,761	1,143,575	+49,814	1,143,575	+49,814	1,143,575	+49,814	1,143,575	+49,814	1,143,575	+49,814

Red = net decline from 2025 baseline.
Two-Way and Three-Way Averages hold South Tucson constant at the 2025 averaged value.
All series reconciled to AOEO county control total.
Dashed divider separates candidate methods (left) from averaged methods (right).

Table 18. 2060 population and net change by method



All methods share the 2025 baseline and reconcile to the AOE county control total. Markers show each series' maximum where it occurs before 2060. South Tucson is held constant at 4,535 in the 2023 Adjusted forecast and both averages. Source: PAG Sub-County Population Projections.

Figure 7. Population trajectories by jurisdiction and method, 2025-2060

10. Review and Approval

The sub-county projection series is developed with the participation of PAG’s member jurisdictions and advances through the agency’s committee structure before adoption. Technical review is conducted by the Population Technical Subcommittee, whose recommendation is forwarded to the Management Committee and then to the Regional Council for action.

The Population Technical (PopTech) Subcommittee considered the final five forecast alternatives documented in this report at its meeting of May 14, 2026 ([LINK](#)) based on previous March meeting ([LINK](#)) and follow-up one-on-one meetings with jurisdictions. PAG staff had recommended either the Two-Way or the Three-Way Average. The Subcommittee recommended the 2023 Adjusted forecast with South Tucson held constant. The Management Committee approved the PopTech Subcommittee recommendation on September 9, 2026. Regional Council approved the subcounty population projections on September 24, 2026.

The approved subcounty population projections, 2023 Adjusted model, from 2025-2060 is shown in Table 19 and Figure 8.

Population Forecast at 5-Year Intervals — South Tucson Held Constant

2023 Adjusted (Pro-Rata, South Tucson constant) ★ Approved							
Year	Marana	Oro Valley	Sahuarita	S. Tucson	Tucson	Uninc. Pima Co.	County Total
2025	66,736	48,967	38,421	4,535	557,901	377,201	1,093,761
2030	74,608	52,940	41,342	4,535	565,067	382,972	1,121,464
2035	82,187	53,950	43,853	4,535	567,761	386,541	1,138,827
2040	88,754	53,218	45,659	4,535	567,328	387,859	1,147,353
2045	94,715	52,160	46,947	4,535	563,837	387,378	1,149,572
2050	99,738	50,971	47,942	4,535	558,719	386,307	1,148,212
2055	104,447	49,769	48,835	4,535	553,727	384,644	1,145,957
2060	108,997	48,572	49,709	4,535	548,874	382,888	1,143,575

Table 19. Jurisdictional Population Projections (2023 Adjusted)

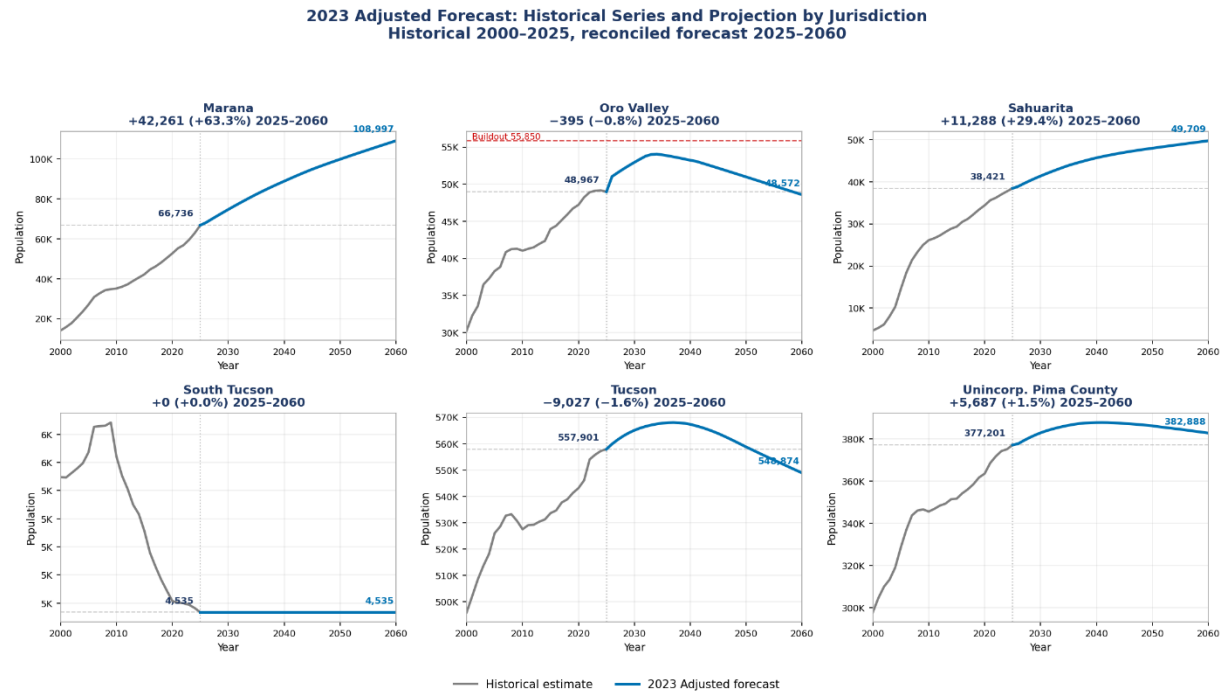


Figure 8. Historical Series and Jurisdictional Population Projections, 2000 to 2060