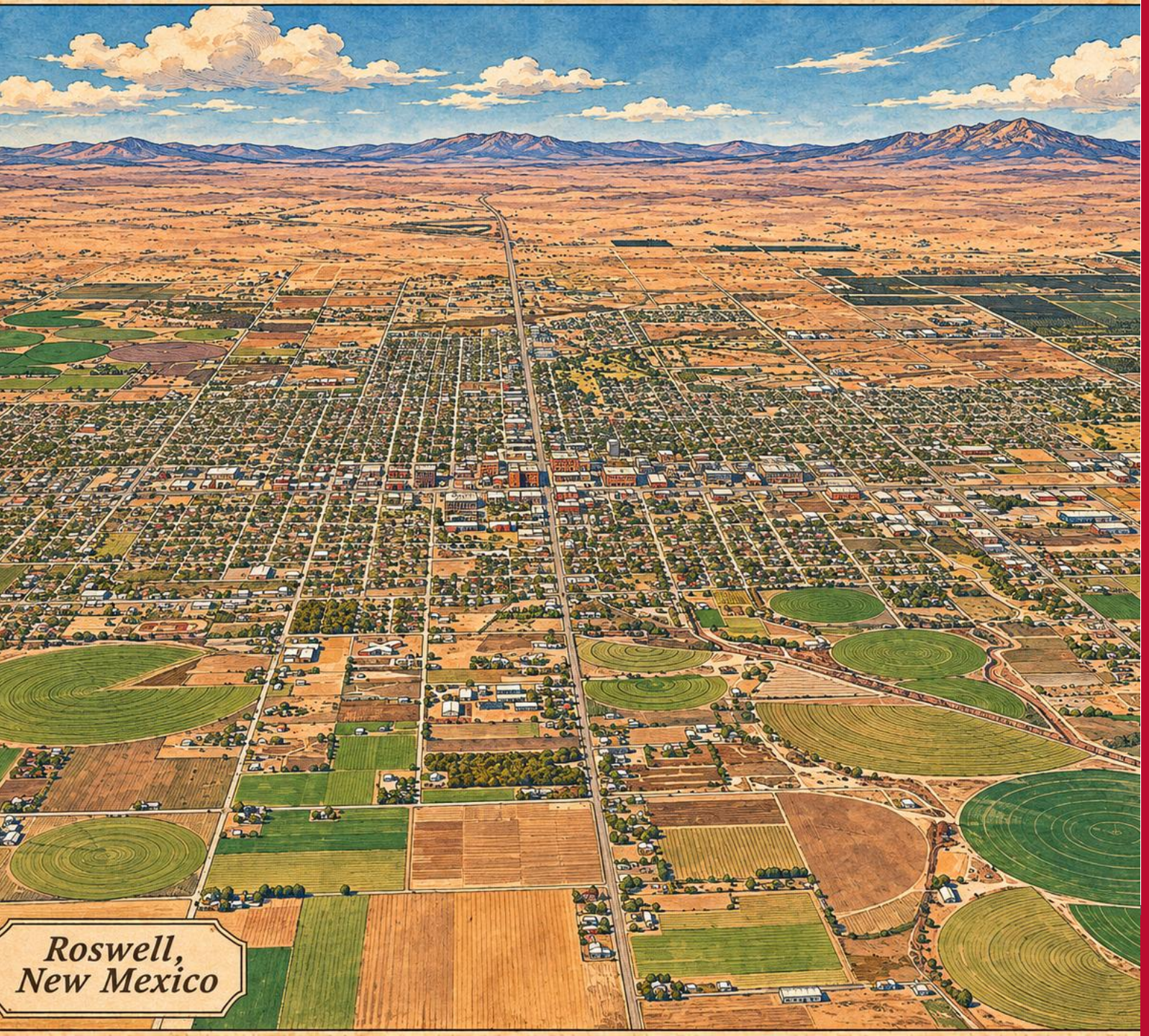
GEOSPATIAL & POPULATION STUDIES

New Mexico Population Estimates

Concepts, Methods, and 2025 Results

KEVIN DRAIN, PhD, SR RESEARCH SCIENTIST

KDRAIN@UNM.EDU



What is the population of Roswell?

DEPARTMENT OF POPULATION MANAGEMENT

BUREAU OF ENUMERATION AND CIVIC ACCOUNTING

CITY DOME

ENUMERATION CONTROL CONCEPT

CONFIDENTIAL

CONCEPT DRAWING No. EC-417
REV. A — MAR. 15, 1962

- ✓ COMPLETE POPULATION ENUMERATION
- ✓ CONTROLLED ACCESS
- ✓ ACCURATE, CONTINUOUS CENSUS
- ✓ IMPROVED SECURITY
- ✓ EFFICIENT ALLOCATION OF RESOURCES (PEOPLE, HOUSING, RATIONS, ETC.)

GLASS ENCLOSURE

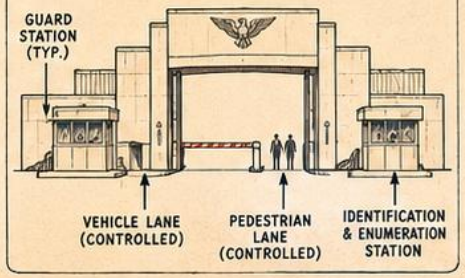
- HIGH-STRENGTH TRANSPARENT GLASS
- WEATHER-TIGHT
- LONG-LIFE CONSTRUCTION
- CLEAR VISUAL OVERSIGHT
- SYMBOL OF AN ORDERLY NATION



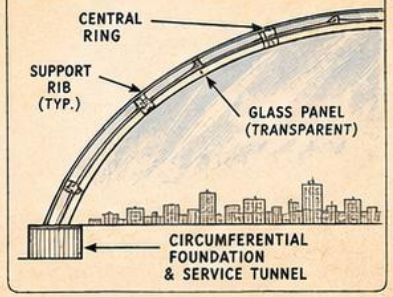
ENTRY CHECKPOINT (TYPICAL)



ACCESS GATE — SCHEMATIC



DOME SECTION (TYP.)



KEY DATA

- DIAMETER: 5 MILES (26,400 FEET)
- RADIUS: 2.5 MILES
- ENCLOSED AREA: ≈ 19.6 SQ. MI.
- EST. POPULATION: 500,000 (INITIAL)
- ENTRY POINTS: 8 (PRIMARY)
- CONSTRUCTION: PHASED (5 YEARS)
- DESIGN LIFE: 100+ YEARS

"A COUNTED CITY IS A BETTER CITY!"

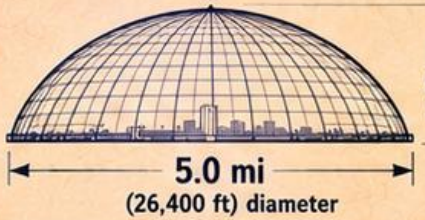
POPULATION · ACCOUNTABILITY · SECURITY · PLANNING · PROGRESS

POPULATION MANAGEMENT

CITY DOME RELOCATION

Project No. PM-47
Phase: Deployment
From: Construction Yard (Roswell, NM)
To: Roswell, NM (Site A)
Method: Aerial Lift (H-12)

CITY DOME — SPECIFICATIONS



Enclosed area:	~19.6 sq mi
Height (apex):	~1.0 mi (5,280 ft)
Structure:	Reinforced glass and steel
Lift system:	12 × Bell H-12 helicopters
Purpose:	Enumeration control (total population count)


H-12
ROSWELL


ROSWELL

official

BRIEFING MEMO

FILE NO. USG-5437

Finland's population data

- Centralized welfare state
- Excellent record keeping
- DVV — Digital and Population Data Services Agency *(Digi- ja väestötietovirasto)*
- High participation and support
- ***GAPS?***



Data dictionary:

Isoisoäiti = great grandmother

DECLASSIFIED

official

BRIEFING MEMO

FILE NO. USG-5437

Finland's population data

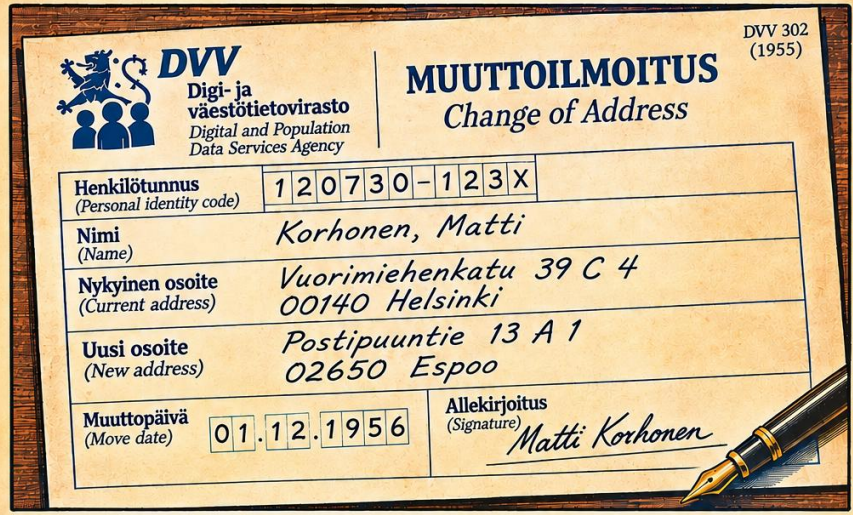
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- **GAPS?**

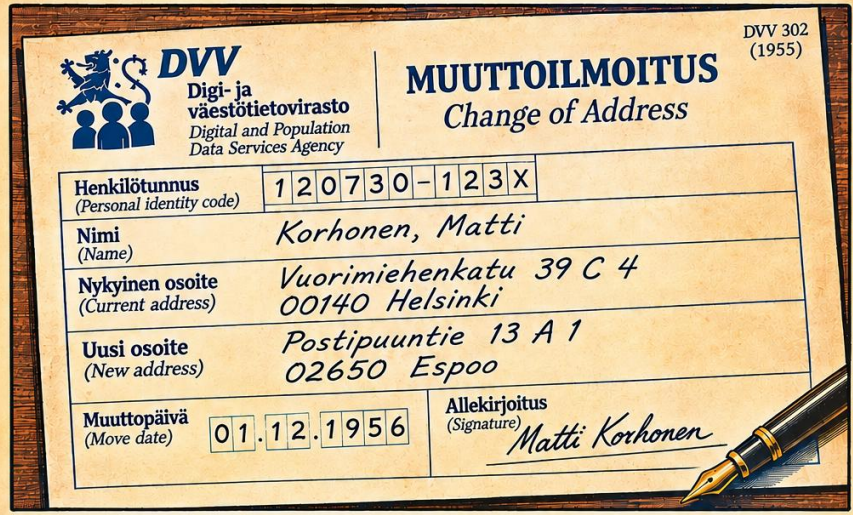


Data dictionary:

Isoisoäiti = great grandmother

DECLASSIFIED





DVV 302 (1955)

DVV
Digi- ja väestötietovirasto
Digital and Population Data Services Agency

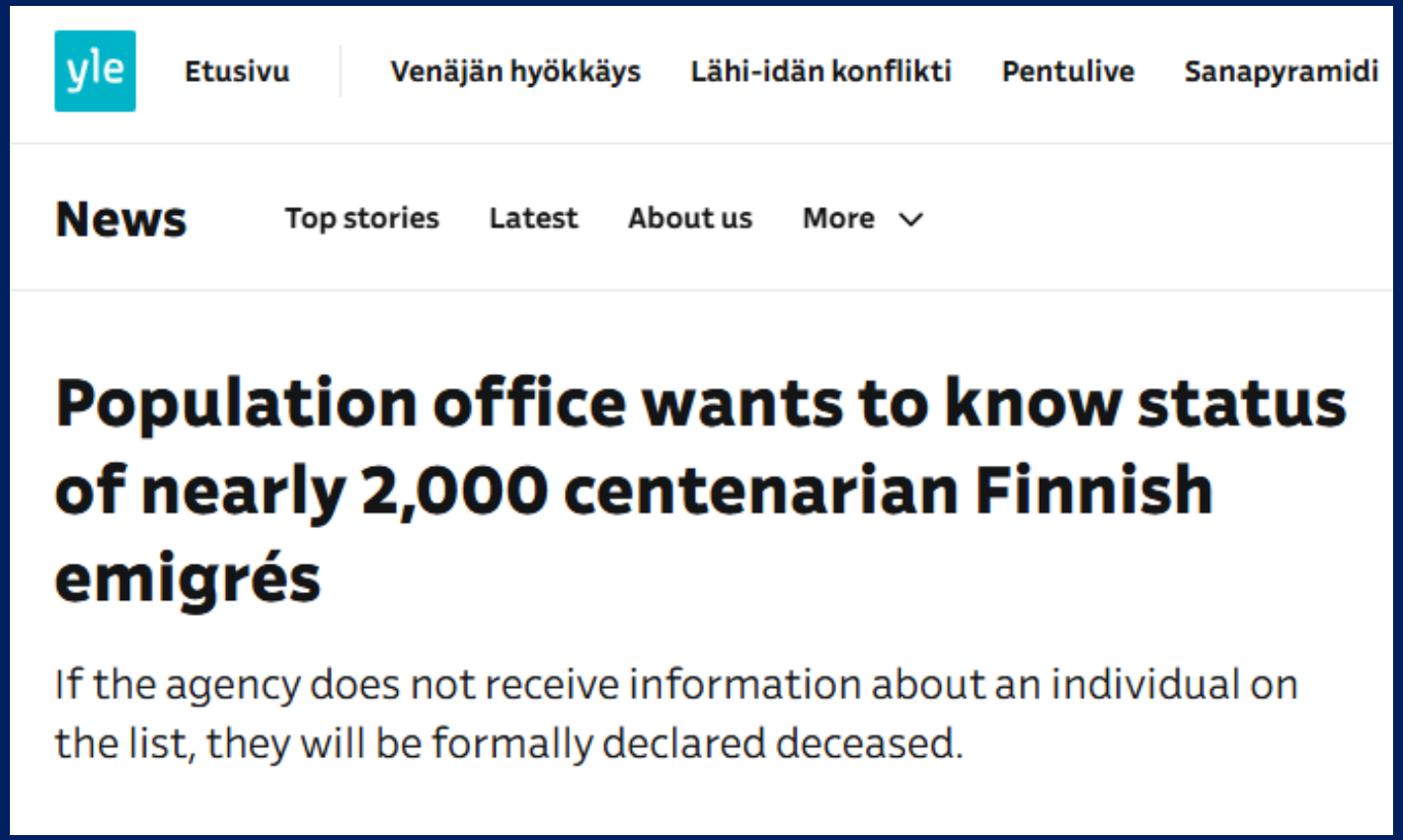
MUUTTOILMOITUS
Change of Address

Henkilötunnus *(Personal identity code)*	120730-123X
Nimi *(Name)*	Korhonen, Matti
Nykyinen osoite *(Current address)*	Vuorimiehenkatu 39 C 4 00140 Helsinki
Uusi osoite *(New address)*	Postipuuntie 13 A 1 02650 Espoo
Muuttopäivä *(Move date)*	01.12.1956
Allekirjoitus *(Signature)*	Matti Korhonen






FINNAIR
DVV
Digi- ja väestötietovirasto
Verohallinto
Kela



The population agency "has published a list of citizens registered as living abroad who are over the age of 100, in an effort to confirm whether they are still alive or not…"

"Authorities have **no information** about the later stages of their lives."

The public is asked to "contact the agency if they have information about their status."

If they don't hear anything by the end of the year, **they will be declared dead**.

Source: YLE News, 14 October 2026 https://yle.fi/a/74-20251471


Helsingin Sanomat
Hakaniemen kauppahallin remontti
España


Suomen hallitus
Oletko elossa?
100+
Helsingin Sanomat
Hakaniemen kauppahallin remontti
España

A census is challenging

- Hard-to-reach communities
- Varying participation
- Changing universe of rules about who gets counted, and where
- Changing target as populations change in real time

Keeping track is challenging

*Difficult to truly **know** how many people are in a given place at a given time.*

THE WORLD IS CHAOTIC
WE KNOW VERY LITTLE

“Estimating is what we do when we don’t know.”

SHERMAN KENT, CHIEF OF OFFICE OF NATIONAL ESTIMATES, US CENTRAL INTELLIGENCE AGENCY, 1969


CENTRAL INTELLIGENCE AGENCY
UNITED STATES OF AMERICA
OFFICE OF NATIONAL ESTIMATES
CIA
SHERMAN KENT
Chief
Office of National Estimates

ESTIMATING:

A process of calculating or approximating a value


CENTRAL INTELLIGENCE AGENCY
UNITED STATES OF AMERICA
OFFICE OF NATIONAL ESTIMATES
CIA
SHERMAN KENT
Chief
Office of National Estimates


CENTRAL INTELLIGENCE AGENCY
UNITED STATES OF AMERICA
OFFICE OF NATIONAL ESTIMATES
CIA
TOP SECRET
TOP SECRET
TOP SECRET
SHERMAN KENT
Chief
Office of National Estimates



How might we estimate the number of pennies in a jar?

Audience ideas?

Three approaches to estimates



Calculating from assumptions



Shared knowledge / expert wisdom



Integrating new information

Theme 1

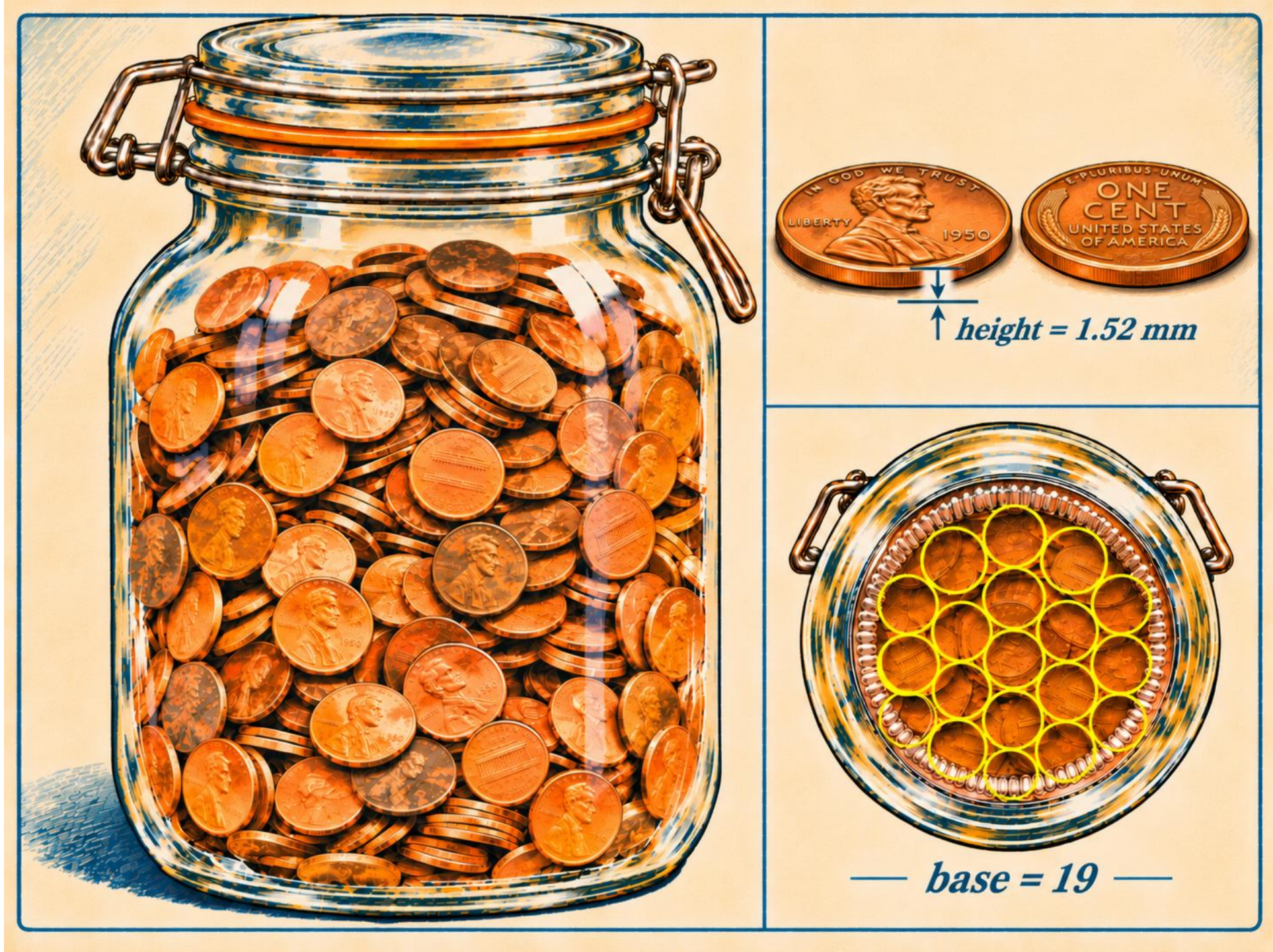






Calculating from assumptions


IN GOD WE TRUST
LIBERTY
1950
E PLURIBUS UNUM
ONE
CENT
UNITED STATES
OF AMERICA
base = 19

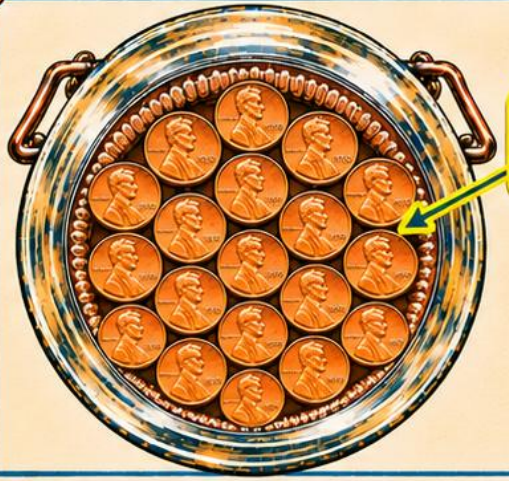

IN GOD WE TRUST
LIBERTY
1950
E PLURIBUS UNUM
ONE
CENT
UNITED STATES
OF AMERICA
height = 1.52 mm
base = 19



base layer = 19
height = 1.52 mm

height = 1.52 mm





Base layer:
19 pennies

Number of pennies in the jar:

$$N = (\text{pennies per layer}) \times (\text{number of layers})$$

$$= 19 \times (\text{jar fill height} \div 1.52\ \text{mm})$$

— Estimating Error —



Voids between pennies

Void (unfilled space)

Packing fraction (ϕ):

$$\phi = \frac{V_{pennies}}{V_{filled}}$$

- ϕ = packing fraction (proportion of volume occupied by pennies)
- $V_{pennies}$ = total volume of pennies
- V_{filled} = volume of the filled jar (pennies + voids)

Void fraction: $\varepsilon = 1 - \phi$

A 2006 study measured ~57% packing in a jar of 3,000 pennies (~43% voids).

Chaikin et al. (2006), p. 6965, Figure 6.





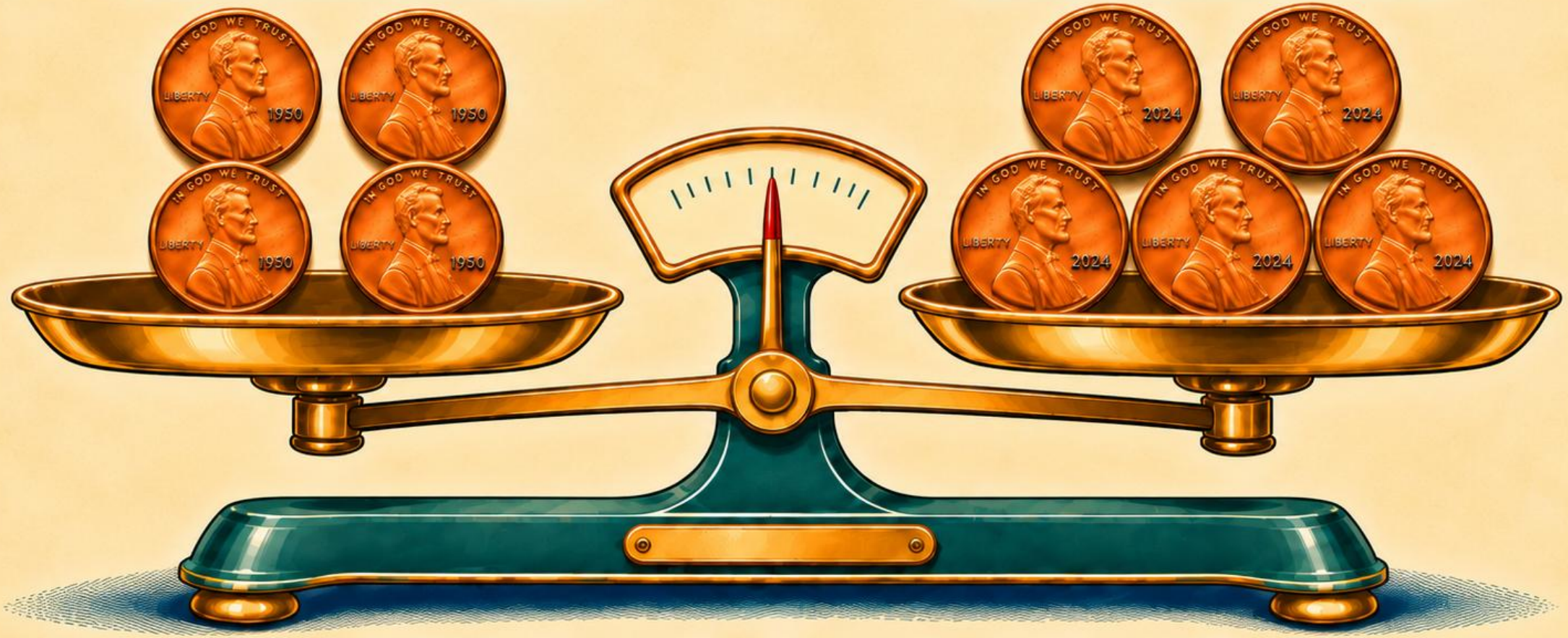
“Just weigh the jar, divide by the weight of a penny!”

4 older pennies
(1909–1982)

12.44 g

5 newer pennies
(1982–2025)

12.50 g



older: 3.11 g each / newer: 2.50 g each

Theme 2



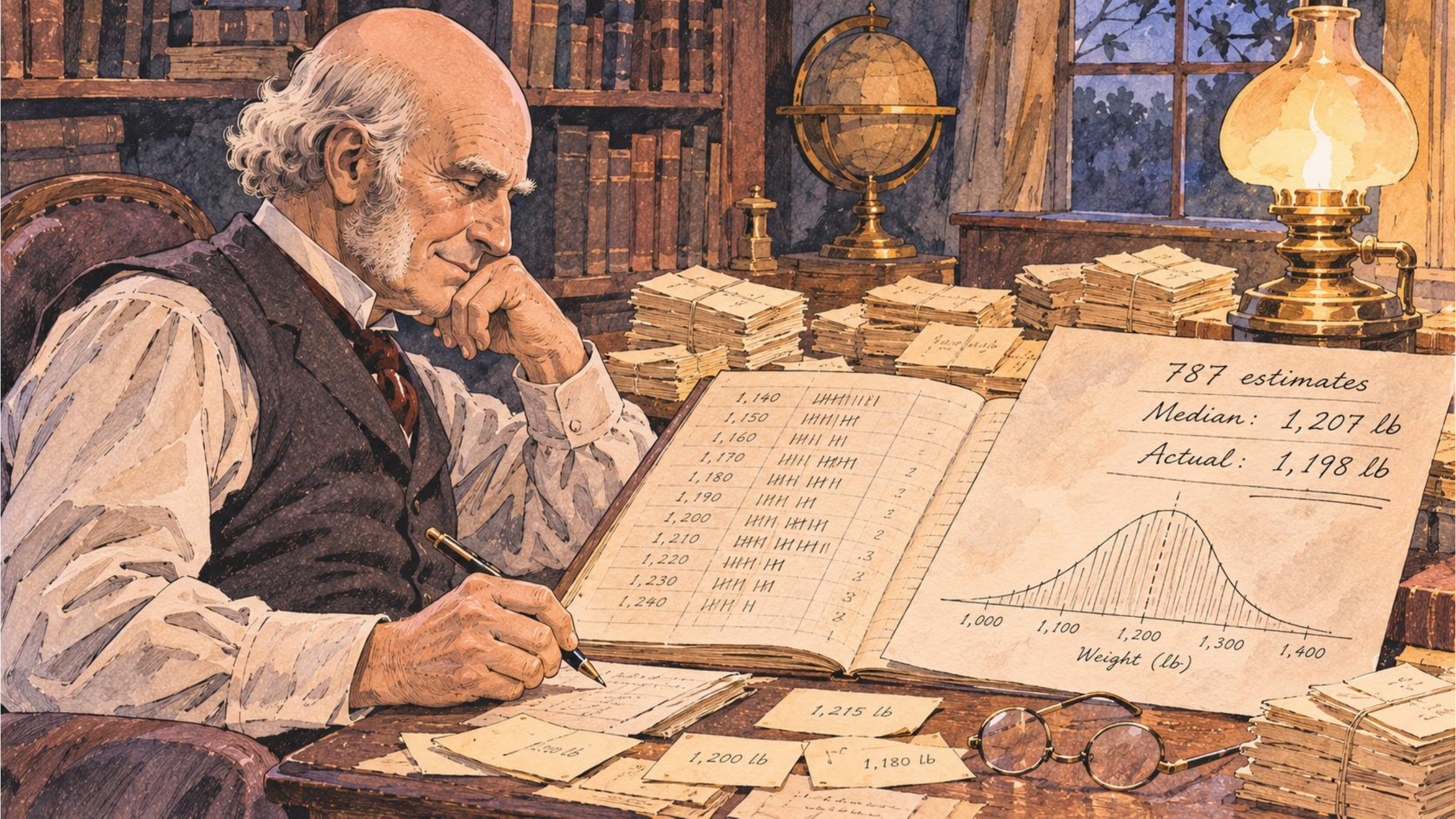
Shared wisdom / Expert knowledge

Any penny jar experts in the crowd?

Maybe more than one


Härkä!


1,200 lb
1,180 lb
1,215 lb
1,250 lb


787 estimates
Median: 1,207 lb
Actual: 1,198 lb
1,000
1,100
1,200
1,300
1,400
Weight (lb)
1,215 lb
1,200 lb
1,180 lb

Experiment 001 / **Wisdom of the Crowds**

FILE NO. EST-001

NM Data Users Conference

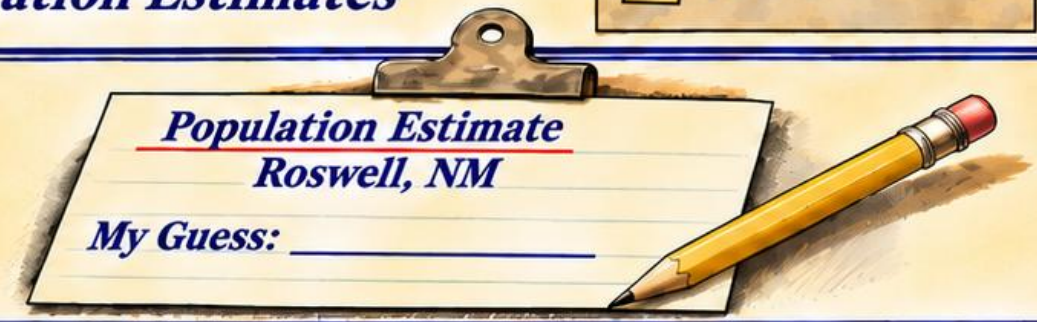
What is the population of the City of Roswell?

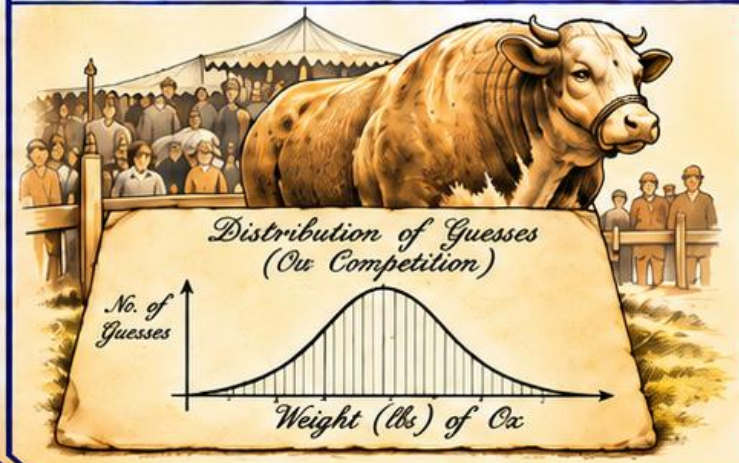


Reference Period: Census Bureau 2025 Population Estimates

Instructions

Write your individual guess on the note card provided.





Include name for consideration in prize pool.

Closest 3 guesses win an Eisenhower silver dollar.

Group results announced after lunch.



Theme 3







Integrating new information



Updating the original question

Q: *What is the dollar value of all the coins in the jar?*

A: *Easy! Divide penny count estimate by 100.*

What if other assumptions change?


?
IN GOD WE TRUST
LIBERTY
1964
— Nickel —
LIBERTY
IN GOD WE TRUST
1964
— Dime —
LIBERTY
IN GOD WE TRUST
1958
— Quarter —
LIBERTY
IN GOD WE TRUST
1964
— Half Dollar —
LIBERTY
IN GOD WE TRUST
1978
— Silver Dollar —

— U.S. Coins: Size, Weight, and Circulation Frequency —



	Penny (1¢)	Nickel (5¢)	Dime (10¢)	Quarter (25¢)	Half Dollar (50¢)	Eisenhower Dollar ($1)
Thickness	1.52 mm	1.95 mm	1.35 mm	1.75 mm	2.15 mm	2.58 mm
Weight (varies)	2.50 g	5.00 g	2.268 g	5.67 g	11.34 g	22.68 g
Relative frequency (2025 shipments)	59.8%	7.7%	16.5%	15.6%	0.45%	Not reported*

Note: Relative frequency is the share of coins shipped to Federal Reserve Banks (by count) in FY2025.
*Eisenhower dollars are no longer produced for general circulation; current circulation frequency is not estimated.

Sources: U.S. Mint (coin specifications); U.S. Mint Annual Report, FY2025 (coin shipments).

Three approaches to estimates



Calculating from assumptions



Shared knowledge / expert wisdom



Integrating new information

Not always separate, often overlapping

Three approaches to estimates



Calculating from assumptions



Shared knowledge / expert wisdom



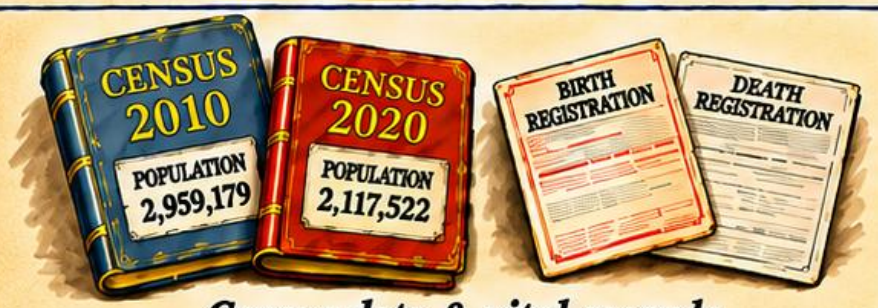
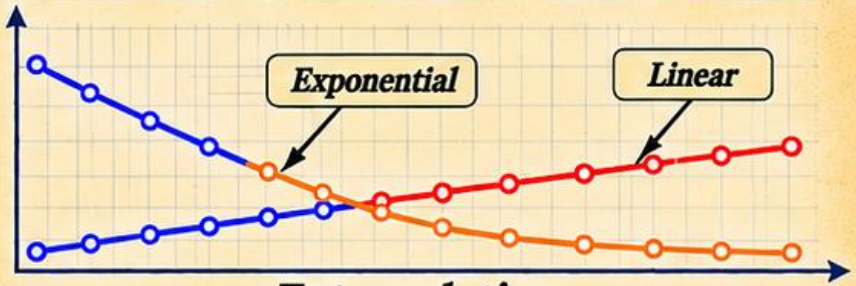
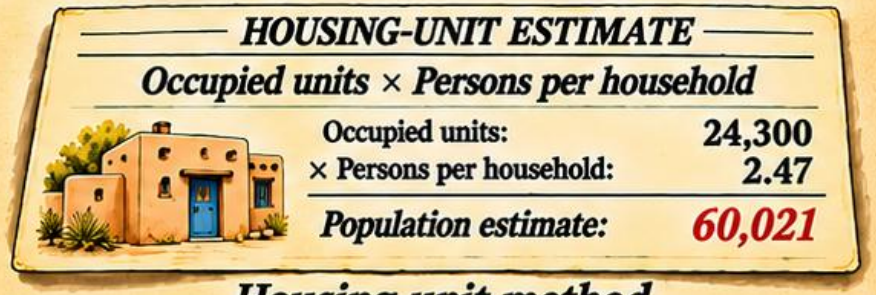
Integrating new information

How does this look in our population estimates?

CALCULATIONS & ASSUMPTIONS

FILE NO. EST-01

Technical Brief 01 | Population Estimates

INPUTS	ASSUMPTIONS	CALCULATIONS
 *Census data & vital records*	**Historical population trends remain informative.**	 *Extrapolation*
 *Driver's licenses & enrollment*	**Indicator–population relationships remain stable.**	 *Ratio-correlation estimates*
 *Permits, housing & occupancy data*	**Housing-to-population relationships remain applicable.**	 *Housing-unit method*

SHARED KNOWLEDGE & EXPERT WISDOM

FILE NO. EST-02

Technical Brief 02 | **Population Estimates**



1 Census Partnerships



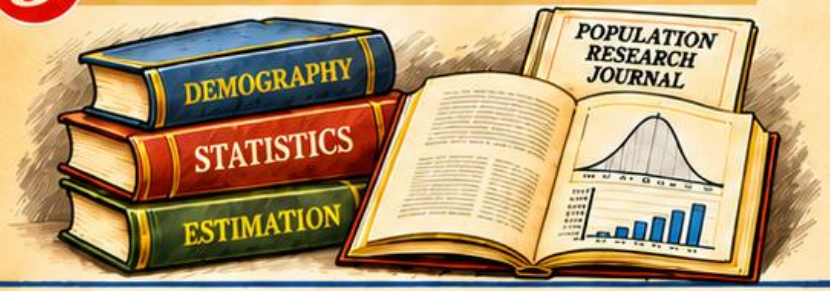
- Federal-State Cooperative for Population Estimates
- Reviewing Census estimates (Housing Unit Review, Group Quarters Review),providing better data where possible
- Conference attendance, Census webinars, early data releases

2 Colleagues in Other States



- Building relationships FSCPE meetings, conferences
- Sharing best practices and discussing shared issues

3 Peer-Reviewed Research



- Reviewing latest research as blind peer reviewers
- Producing our own academic research for peer review



NEW INFORMATION & REVISION

FILE NO. EST-003

Technical Brief 03 | Population Estimates



1 Updated Census Data



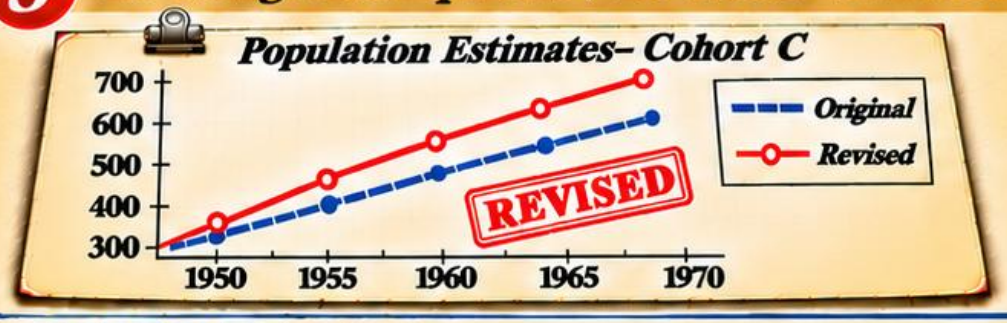
- Anticipating and integrating new data from the Census
- Understanding Census Bureau methodology and changes in their approach or data products

2 New Features of Local Data



- Continually learning about the diverse communities of NM
- Discovering new features, limitations and details of the local data available to us
- Distinguishing between changes in reporting and changes in population

3 Revising Assumptions / Revised Estimates



- Whenever new information becomes available, we must be prepared to abandon prior assumptions and revise our estimates

BRINGING IT ALL TOGETHER

FILE NO. EST-004

Technical Brief 04 | Population Estimates



ESTIMATION PROCESS



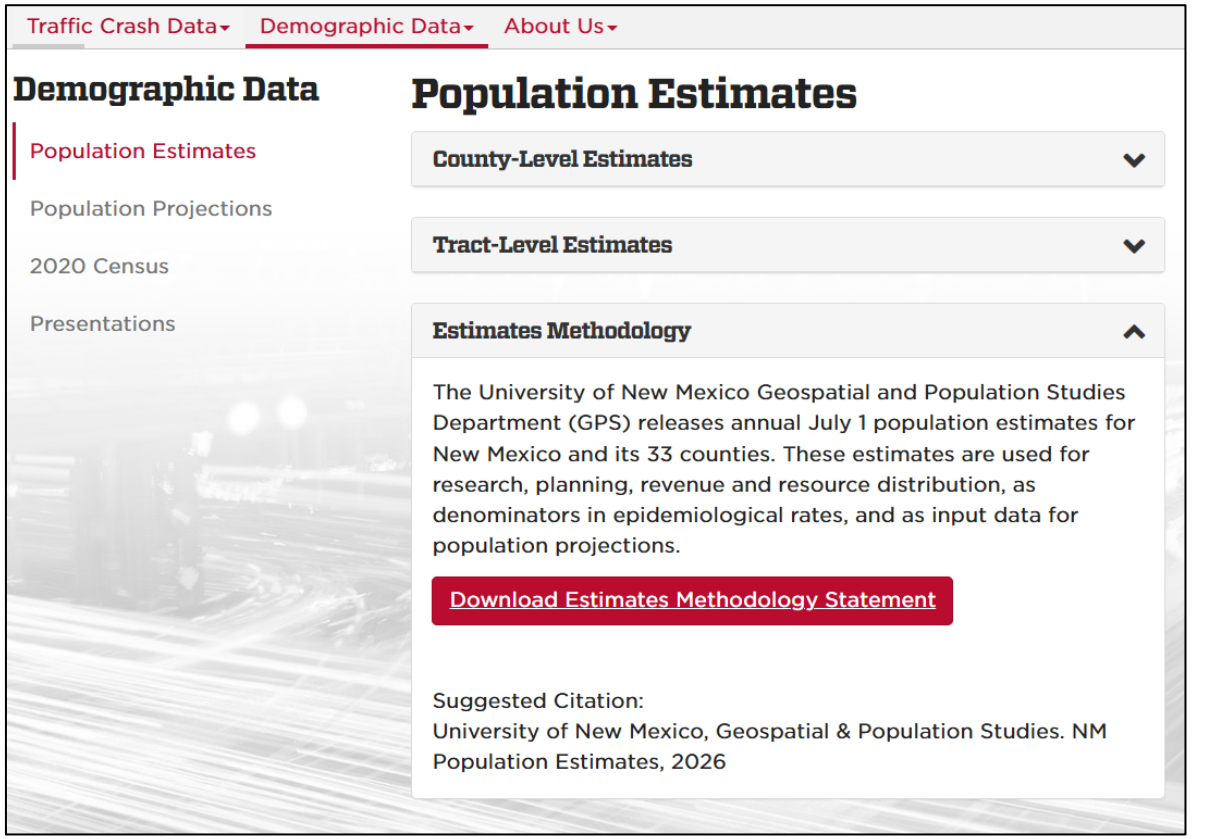
TRUTH ?

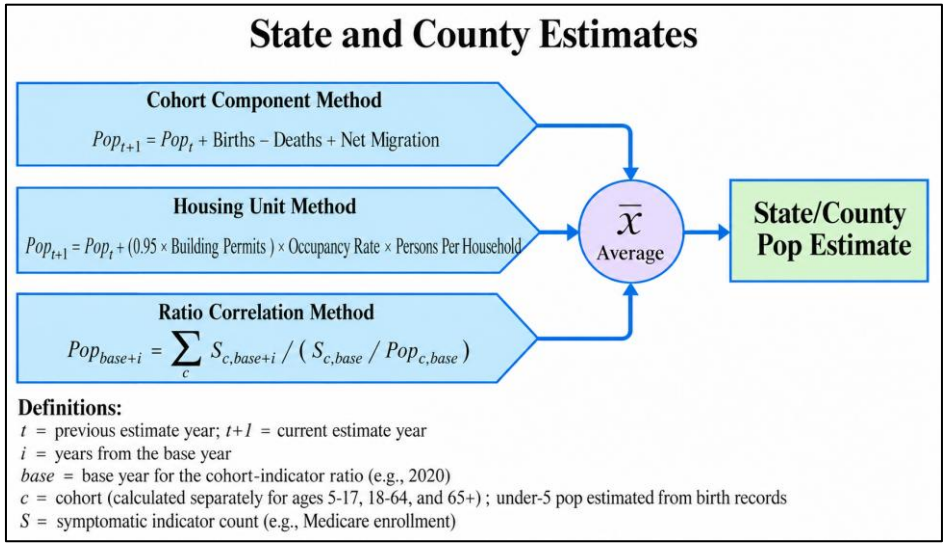
- *These are not entirely separate approaches… they all feed into one another to help us refine our estimates*
- *We might get closer to "Truth", even if we can never reach it*

More on methodology

Updated statement (October 2026) available online

https://gps.unm.edu/pop/population-estimates.html



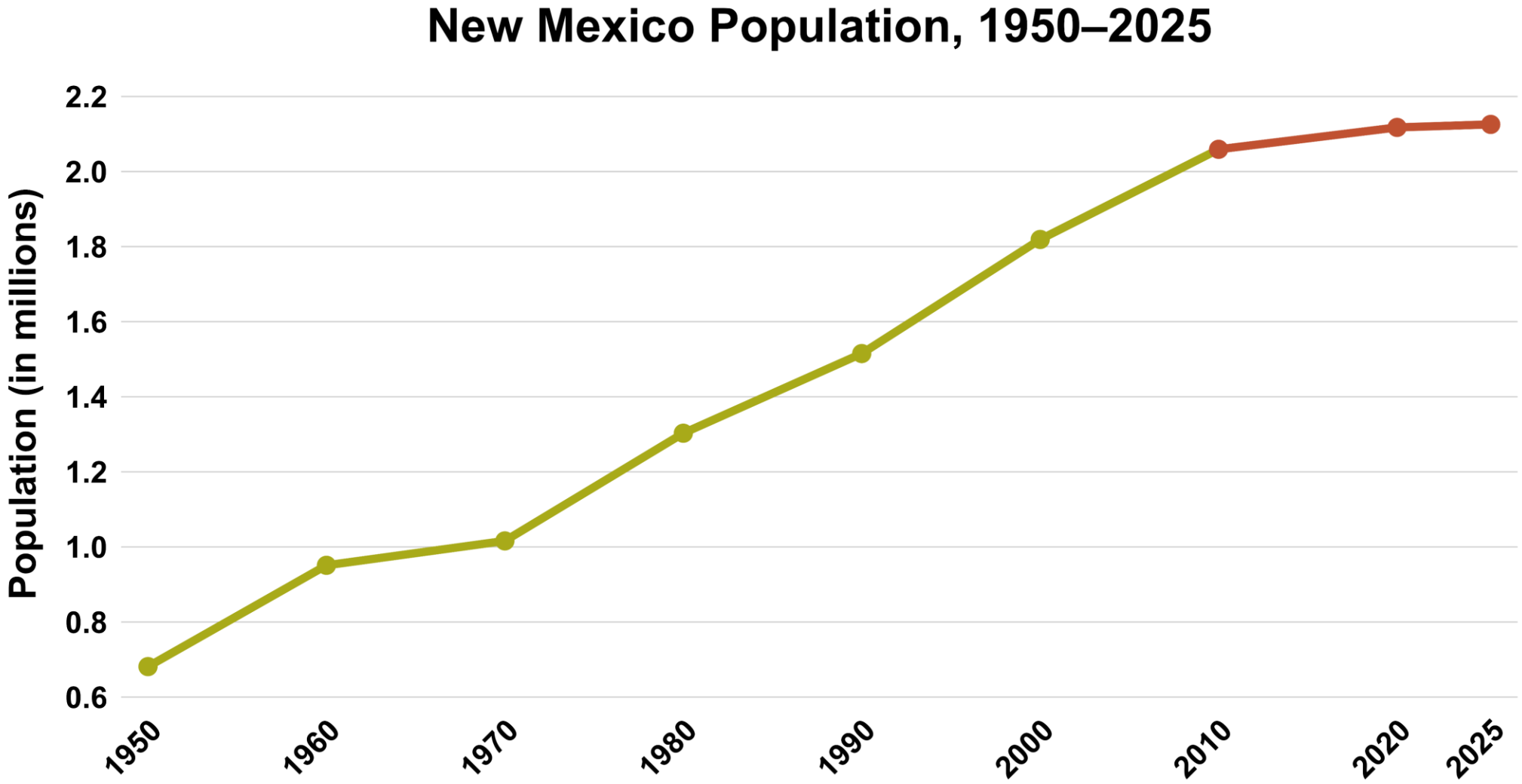


2025 New Mexico Population Estimates

- New Mexico is no longer growing
- New Mexico is aging
- Migration matters

New Mexico is no longer growing

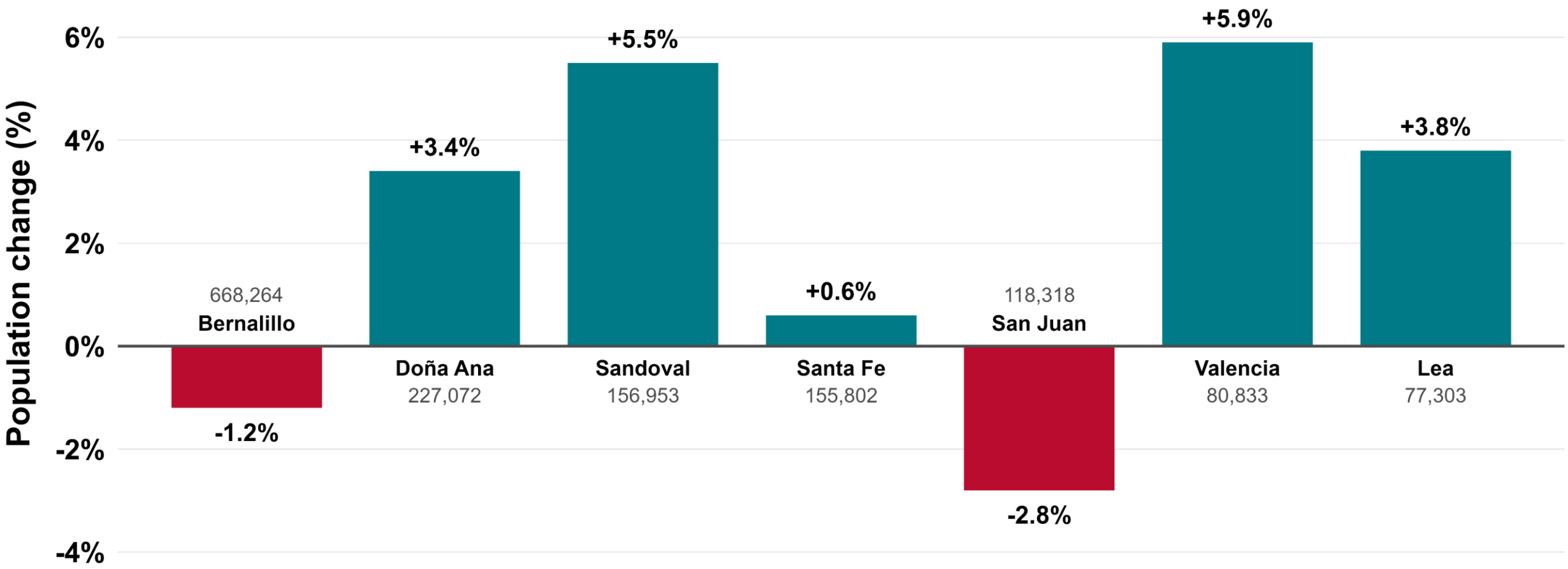
State population



Data sources: GPS Estimates 2025; US Census Bureau Historical Population Change Data (1910-2020)

Population Change in New Mexico's Seven Largest Counties, 2020–2025

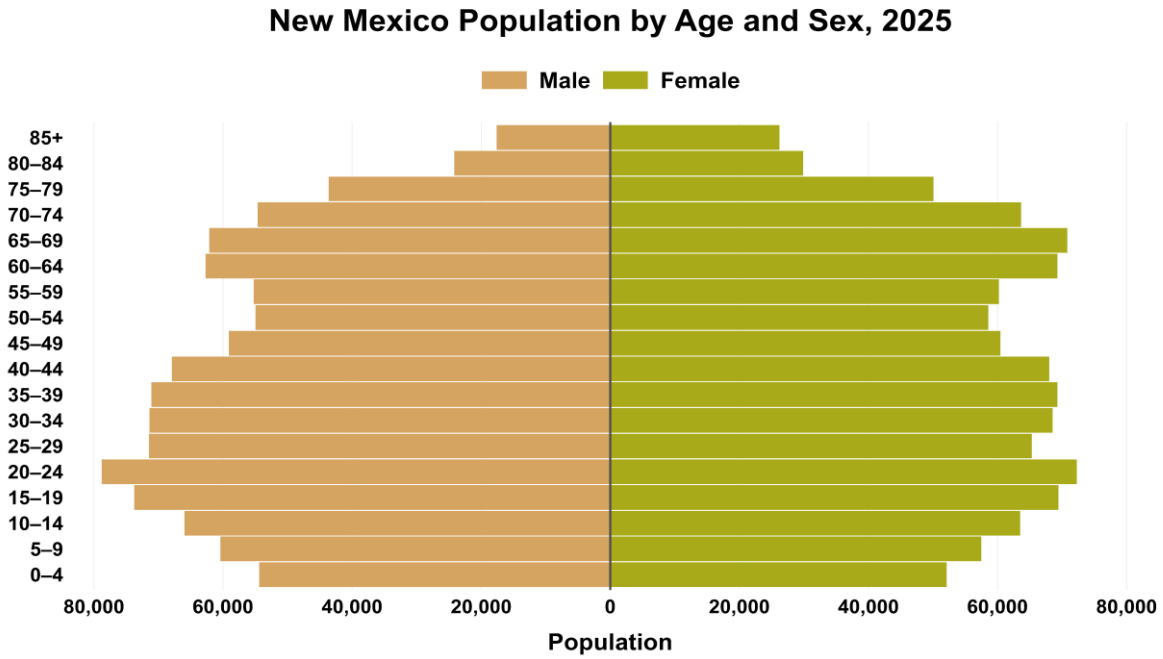
Counties ranked by 2025 population; values show 2025 population



Source: UNM Geospatial and Population Studies, 2025 population estimates.

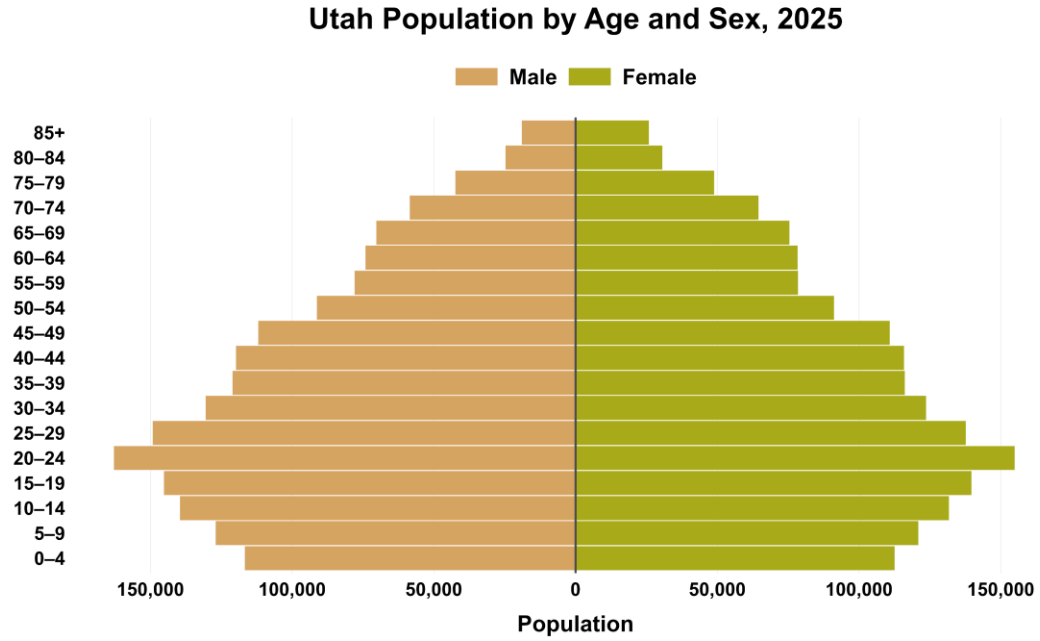
New Mexico is aging

New Mexico



Source: UNM Geospatial and Population Studies, 2025 population estimates.

Utah

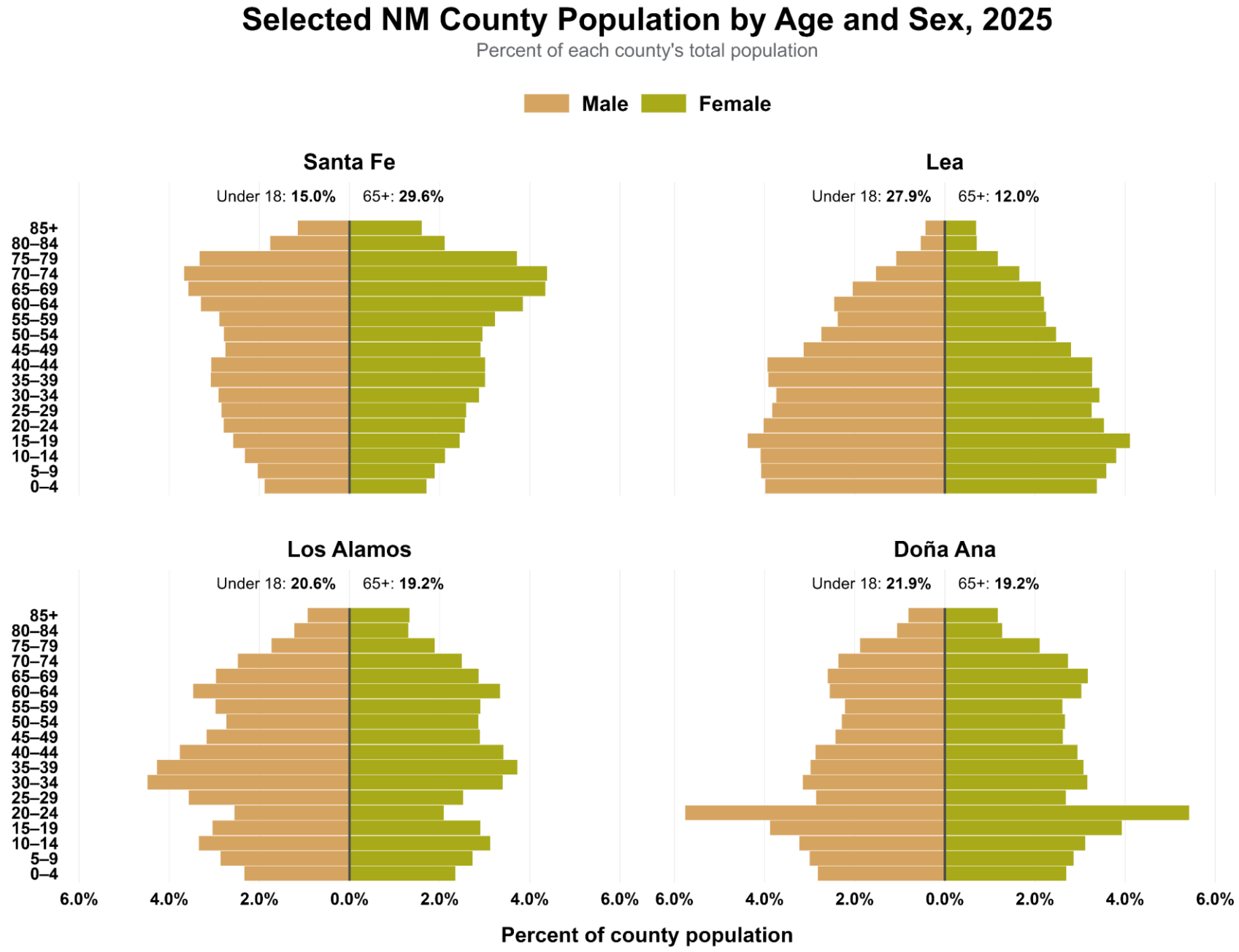


Source: U.S. Census Bureau, 2025 population estimates.

Data sources: GPS Estimates 2025: U.S. Census Bureau, 2025 population estimates.

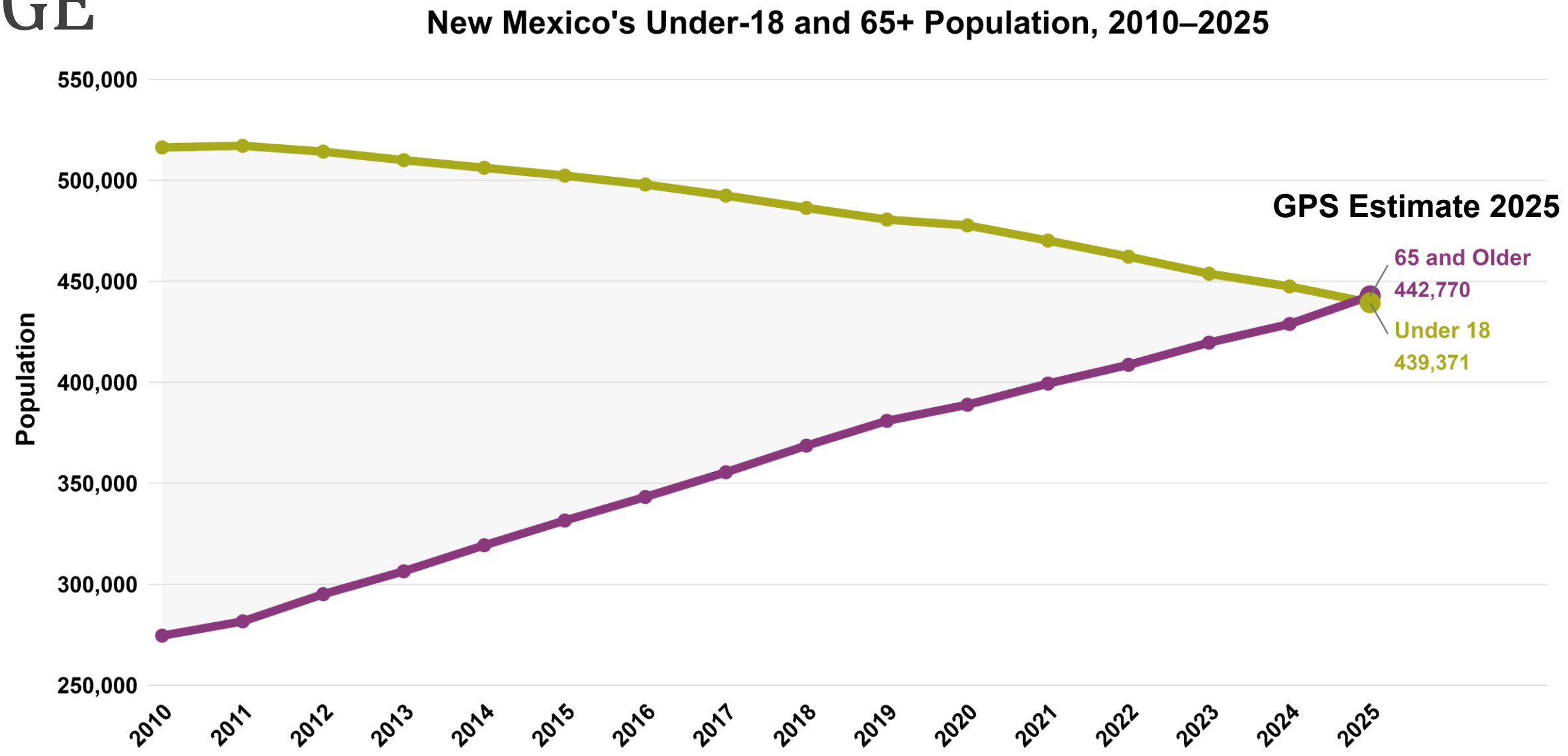
AGE

Population structure not uniform



Source: UNM Geospatial and Population Studies, 2025 population estimates.

AGE



Data sources: GPS Estimates 2025: U.S. Census Bureau, 2025 population estimates.

Migration matters

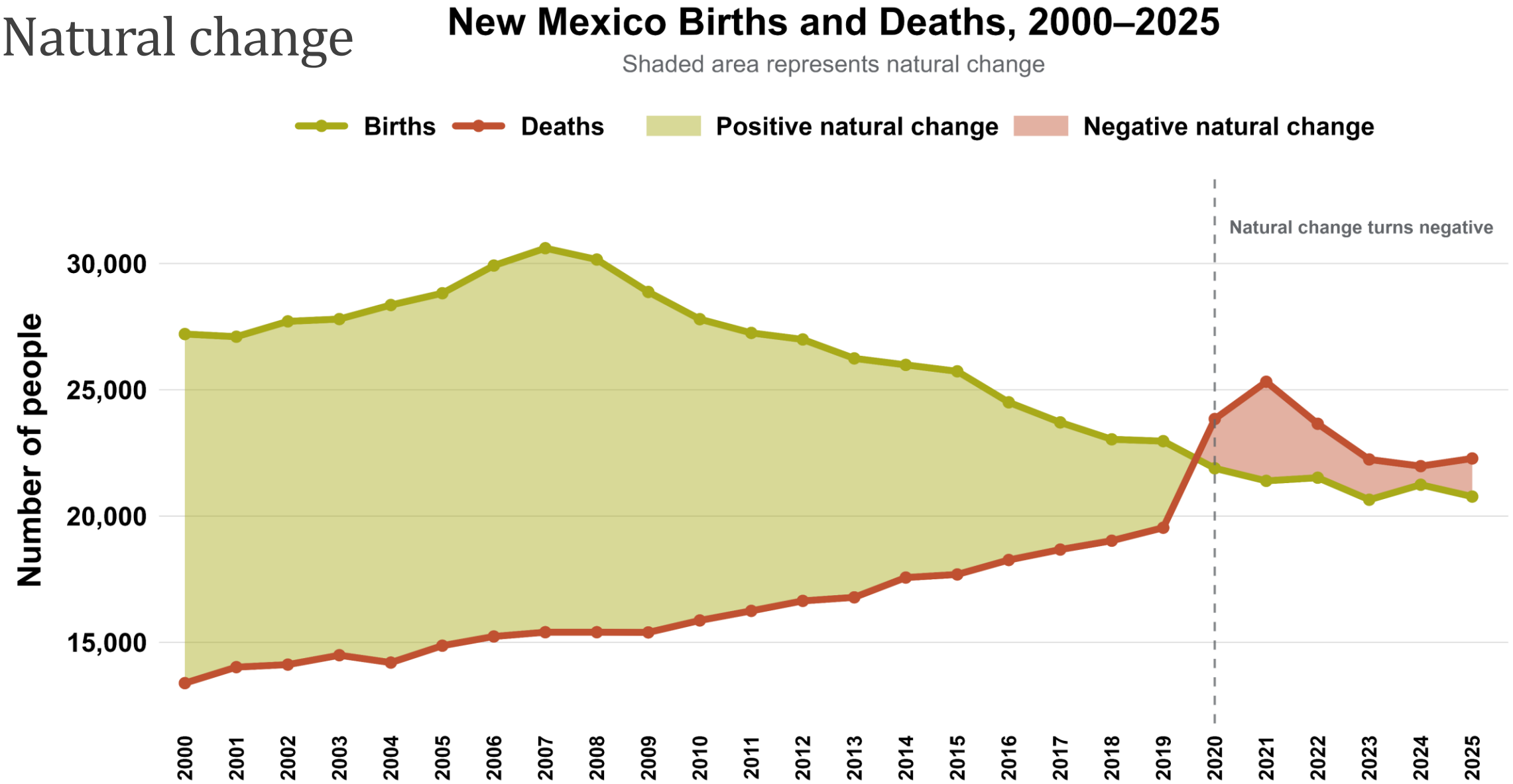
Fundamental demographic equation

$\underline{Pop_2 = Pop_1 + \text{natural change} + \text{net migration}}$

Natural change = births – deaths

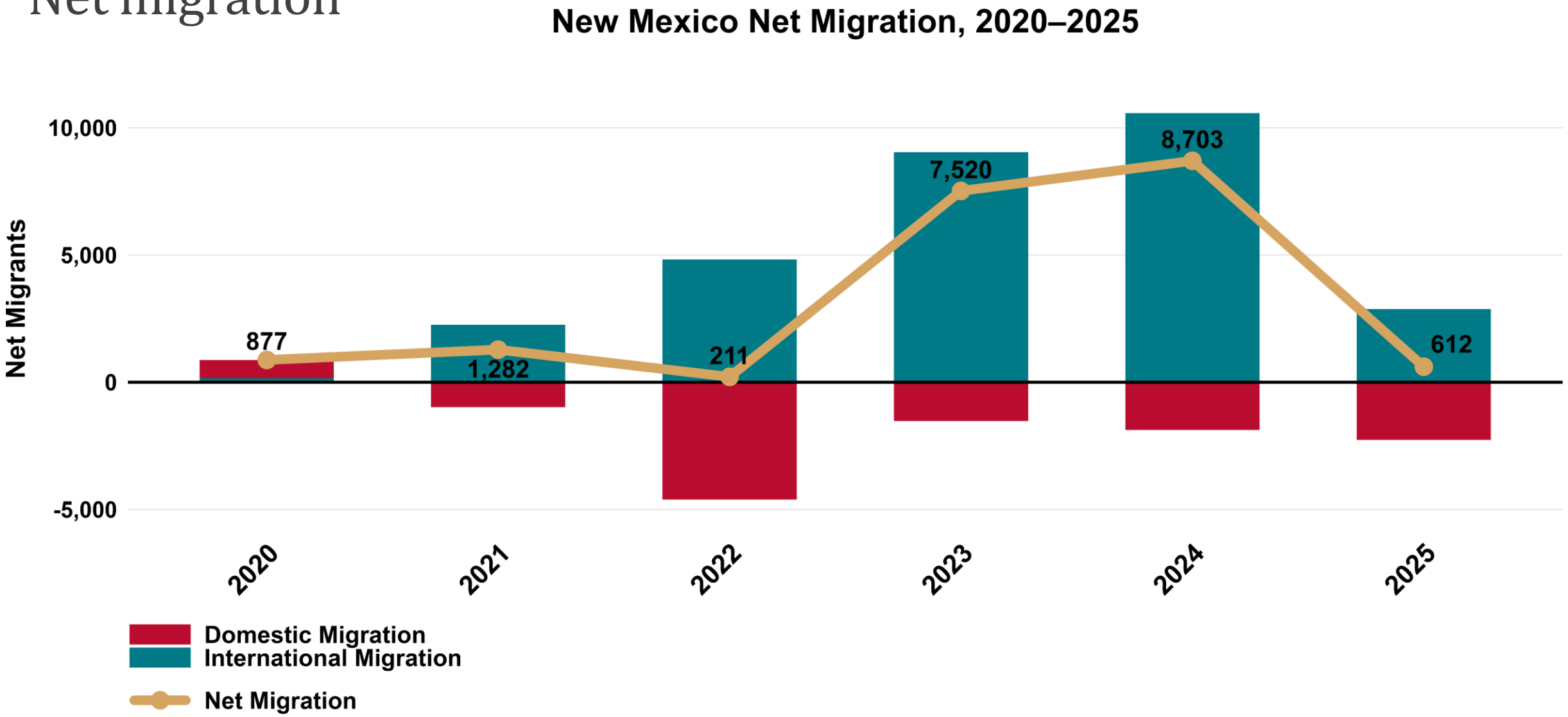
Net migration = (in-migrants) – (out-migrants)

Natural change



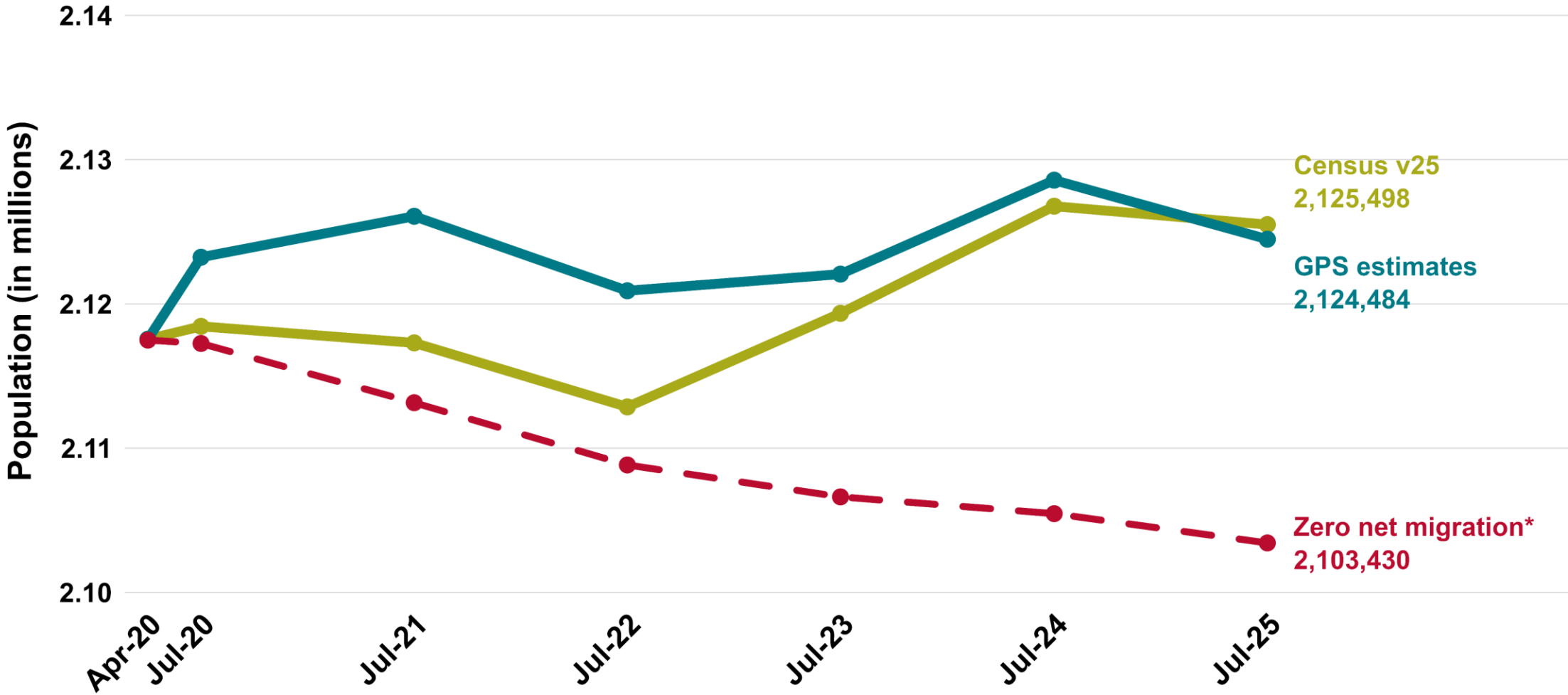
Data source: NM DOH, https://ibis.doh.nm.gov/

Net migration



Data source: U.S. Census Bureau, 2025 population estimates.

New Mexico Population Estimates and Zero-Migration Scenario, 2020–2025



**Zero-net-migration scenario based on births and deaths since April 2020.*

Data sources: GPS estimates 2025; US Census Bureau County Population Totals and Components of Change: 2020-2025

2025 Estimates, Key takeaways

- New Mexico is no longer growing

  Decades of growth have flattened. Why?

- New Mexico's population is aging

  Since 2020, NM deaths exceed births. Age 65+ population exceeds under-18 for first time in known history.

- Migration matters

  Without net positive migration, our population would already be in decline. For years, positive net international migration has compensated for negative net domestic migration. From 2024 to 2025, international migration witnessed a steep decline.

Parting thoughts

- We don’t know what 2026 data will indicate
- We don’t know what the future holds for international migration
- Census 2030 is on the horizon, and much is at stake

Questions?

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Sr Research Scientist

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GEOSPATIAL & POPULATION STUDIES

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Wallis, K. F. (2014). Revisiting Francis Galton's forecasting competition. *Statistical Science, 29*(3), 420–424. https://projecteuclid.org/journals/statistical-science/volume-29/issue-3/Revisiting-Francis-Galtons-Forecasting-Competition/10.1214/14-STS468.full

US Census Bureau (2026):

Historical Population Change Data (1910-2020)

County Population Totals and Components of Change: 2020-2025