

State Tax Disrupters

Legislative Directors Pre- Conference

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August 13, 2023



THE UNIVERSITY OF
TENNESSEE
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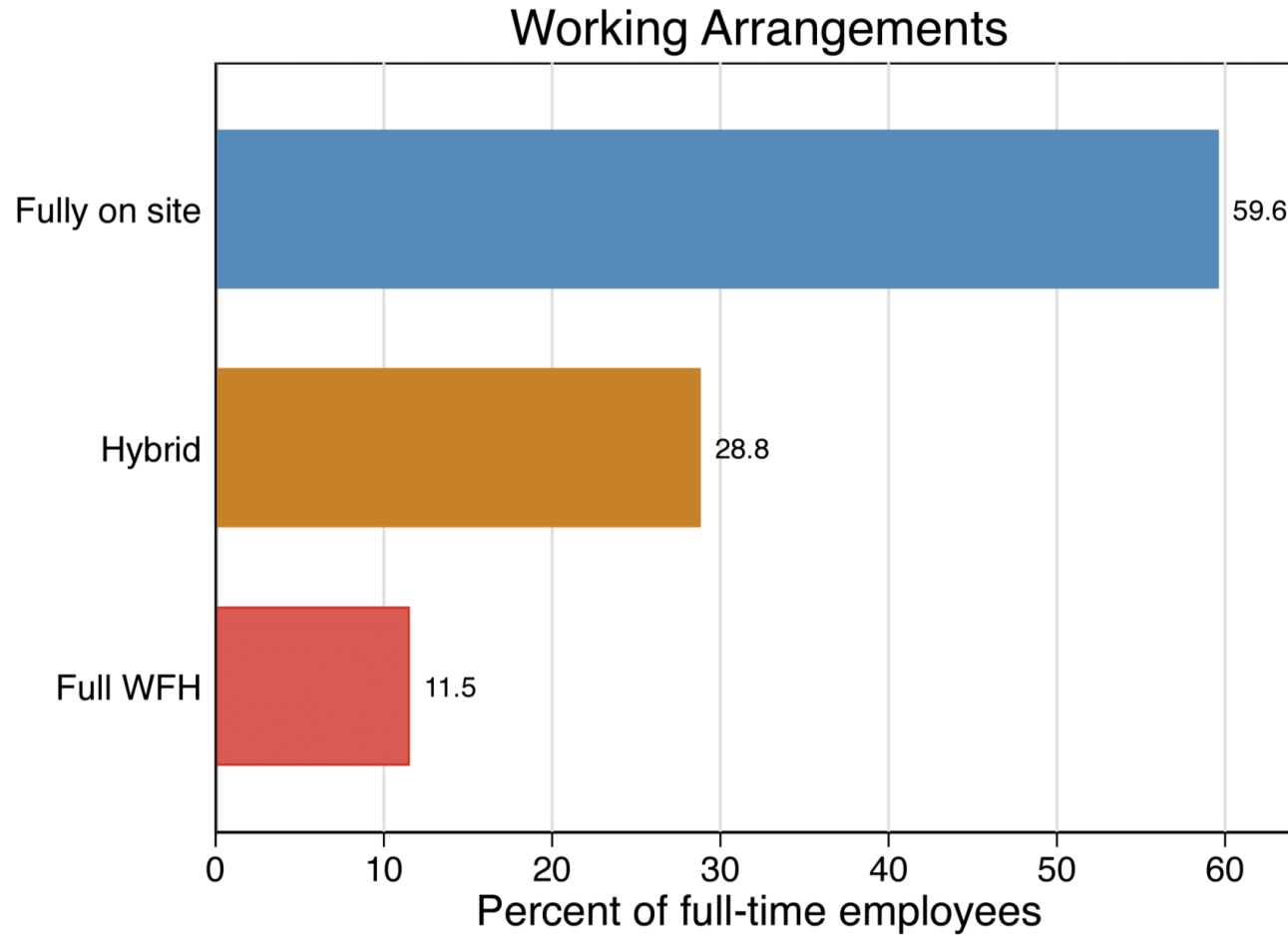
Tax Disrupters – focus on two broad areas

- Technology
 - Impacting the way firms produce – writers’ and actors’ strike
 - Impacting consumption options available to people – Alexa
 - Much of the discussion focuses on sales taxation
- Demographics
 - Broad economic effects
 - Changes demand for goods and services

Some Technology Based Tax Disruptions

- AI
- Cryptocurrencies
- Social media and two-sided platforms
- Remote commerce –
 - e-commerce
 - Remote work
- Electric and autonomous vehicles
- The bottom line, the sales tax base is too narrow and needs to be modernized

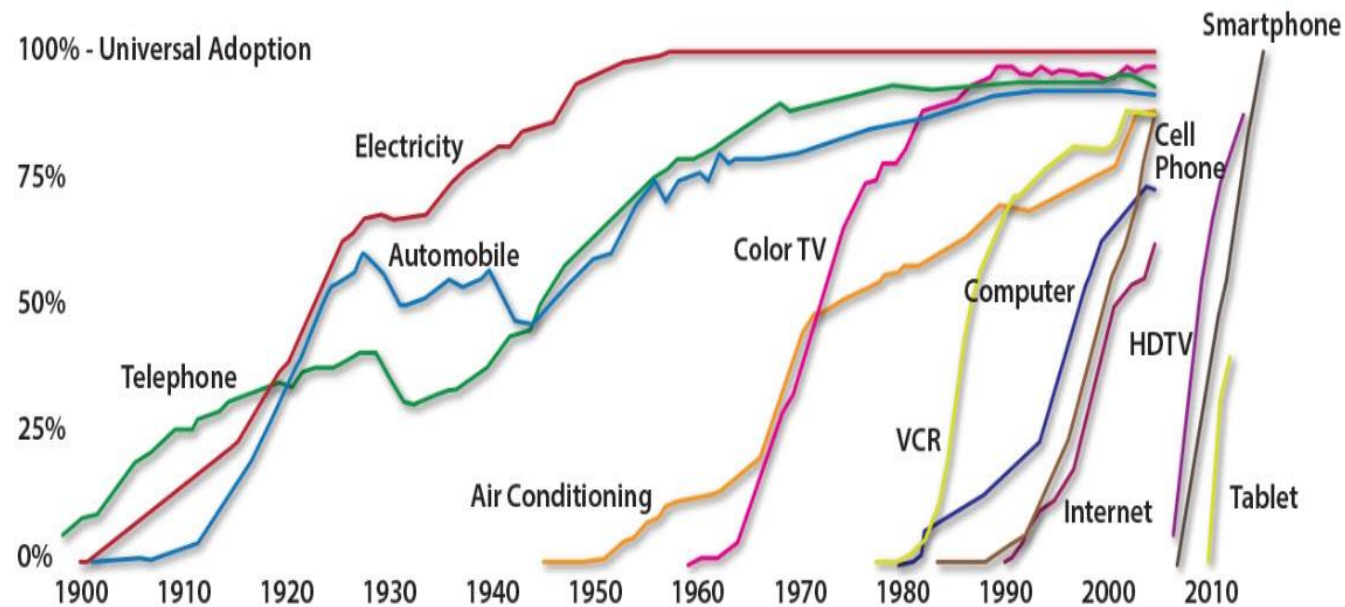
Figure 2: Employees are split into three groups



Source: The sample covers the January 2023 to April 2023 waves of the SWAA <https://wfhresearch.com/>

Source: “The Evolution of Working from Home” Barrero et al, 2023

Adoption Rates for New Technologies are Accelerating – Must Accelerate Sales Tax Base Expansion



Source: HDR CAV Services

Considerations for a Good Tax System

- Revenue growth – Finance public service delivery.
- Neutrality/economic growth – Key as we think about new technologies.
 - Jobs/higher incomes
 - Washington and Oregon
- Fairness
 - Horizontal equity – Even tax burden on those with the same ability to pay
 - Vertical equity – Tax burden differs with ability to pay.
- Administration and Compliance –New technologies both add tax issues/questions and help collect taxes (use of AI to enhance tax administration).

Sales Tax Policy Guidelines, focused on Neutrality/Revenue Growth

- Sales tax consumption broadly - Need strong reasons to exempt/fail to tax selected components of consumption
- Tax similar types of consumption the same – digital and physical versions taxed the same
- Sales tax intermediate inputs selectively - Tax intermediate inputs when the final sale is not taxed
- Income tax factors of production at similar rates

Limited Number of States Tax Some Modern Services, but the List of Services is Growing

Services	Taxing States
Software - Downloaded	33
Books - Downloaded	28
Music - Downloaded	28
Rental of video for home	45
Movies/video - Downloaded	27
Other electronic downloaded	23
Streaming music/audio	16
Streaming video	18

AI and Consumers – and we are only on the front end of employing AI

- NCSL reports at least 25 states introduced and 14 passed AI legislation this year
- Language translation
- Virtual personal assistants – Siri, Alexa, Google Assistants
- Music and movie recommendations - Rotten Tomatoes
- Social media filters – enhanced photos or video
- Virtual gaming
- ChatGPT – this list came from ChatGPT
- Are these be in your tax base?

AI and Production

- Companies will employ AI to be more productive/profitable – same argument as the Internet and laptop computers, which failed to deliver fully the expected productivity enhancements
- Labor is taxed by income taxes more heavily than capital. How does this affect decisions about automation?
 - Corporate tax rates and structures lower than personal income tax rates
 - Capital gains taxes lower than ordinary income
 - “Does the US Tax Code Favor Automation,” Acemoglu, Manera and Restrepo – can write off (expense) much investment in automation quickly

Generative AI Exposure Scores by Industry

Industry Title	Exposure Score
Finance and insurance	.49
Professional, scientific, and technical services	.49
Management of companies and enterprises	.48
Information	.47
Wholesale trade	.35
Federal government	.34
Real estate and rental and leasing	.33
Government	.3
Utilities	.29
Educational services; state, local, and private	.29
Administrative and support and waste management and remediation services	.27
Other services (except public administration)	.24
Manufacturing	.24
Retail trade	.22
Healthcare and social assistance	.22
Arts, entertainment, and recreation	.22
Mining, quarrying, and oil and gas extraction	.21
Transportation and warehousing	.2
Construction	.17
Accommodation and food services	.11
Agriculture, forestry, fishing and hunting	.086

Source: “They’re Calling it the AI Bull Market” UCLA Anderson Review
7/13/23

Highest and Lowest Gene rati ve AI Exposure Score Occupations

Occupation Title	Exposure Score
Telemarketers	.96
Proofreaders and copy markers	.95
Bookkeeping, accounting, and auditing clerks	.87
Mathematicians	.86
Computer programmers	.85
Word processors and typists	.85
Bill and account collectors	.83
Interpreters and translators	.82
Statistical assistants	.82
Web developers	.81
Executive secretaries and executive administrative assistants	.77
Payroll and timekeeping clerks	.77
Secretaries and administrative assistants, except legal, medical, and executive	.77
Production, planning, and expediting clerks	.76
Information security analysts	.75
Medical secretaries and administrative assistants	.75
Writers and authors	.75
Correspondence clerks	.74
Office clerks, general	.74
Sales representatives of services, except advertising, insurance, financial services, and travel	.73
:	:
Shampooers	0
Shoe and leather workers and repairers	0
Shoe machine operators and tenders	0
Slaughterers and meat packers	0
Stonemasons	0
Structural iron and steel workers	0
Structural metal fabricators and fitters	0
Surgical assistants	0
Tailors, dressmakers, and custom sewers	0
Tapers	0
Telecommunications line installers and repairers	0
Terrazzo workers and finishers	0
Textile winding, twisting, and drawing out machine setters, operators, and tenders	0
Tile and stone setters	0
Tire builders	0
Tire repairers and changers	0
Tool grinders, filers, and sharpeners	0
Ushers, lobby attendants, and ticket takers	0
Watch and clock repairers	0
Wellhead pumpers	0

Source: "They're Calling it the AI Bull Market"
UCLA Anderson Review 7/13/23

Cryptocurrencies, whose future is uncertain

- Key tax issue – currency or investments
- Sales tax the purchase if used as payment mechanism’ though used to limited extent to-date
 - Crypto can be hard to track as a currency since difficult to see the owner, so evasion easier, much like cash
- Impose capital gains tax on the asset value if gains are realized.
 - Again, how to enforce since centralized information sharing limited?
 - Holdings concentrated in a small number, so equity concerns
- “Taxing Cryptocurrencies” Katherine Baer, et al. IMF Working Paper, July 5, 2023.

Social Media and Types of Platforms

- Transaction platforms where the provider links *buyers* and *sellers* – Uber, Airbnb, Amazon, ultimately providers of autonomous vehicles
- Two-sided platforms – where there are externalities between consumers and businesses (digital data purchasers, advertisers) on different sides of the platform, but they are not linked through the platform – Facebook, Instagram, TikTok, Spotify – two-sided platforms are not new, but they have grown rapidly

Taxing Transactional Platforms – Marketplace Facilitator

- A channel for providing goods and services, which as a general rule should be sales taxable
- Revenue should generally be collected by the transaction platform because lowers administration and compliance costs
- Can be many issues and concerns at the practical level for collection by the platforms

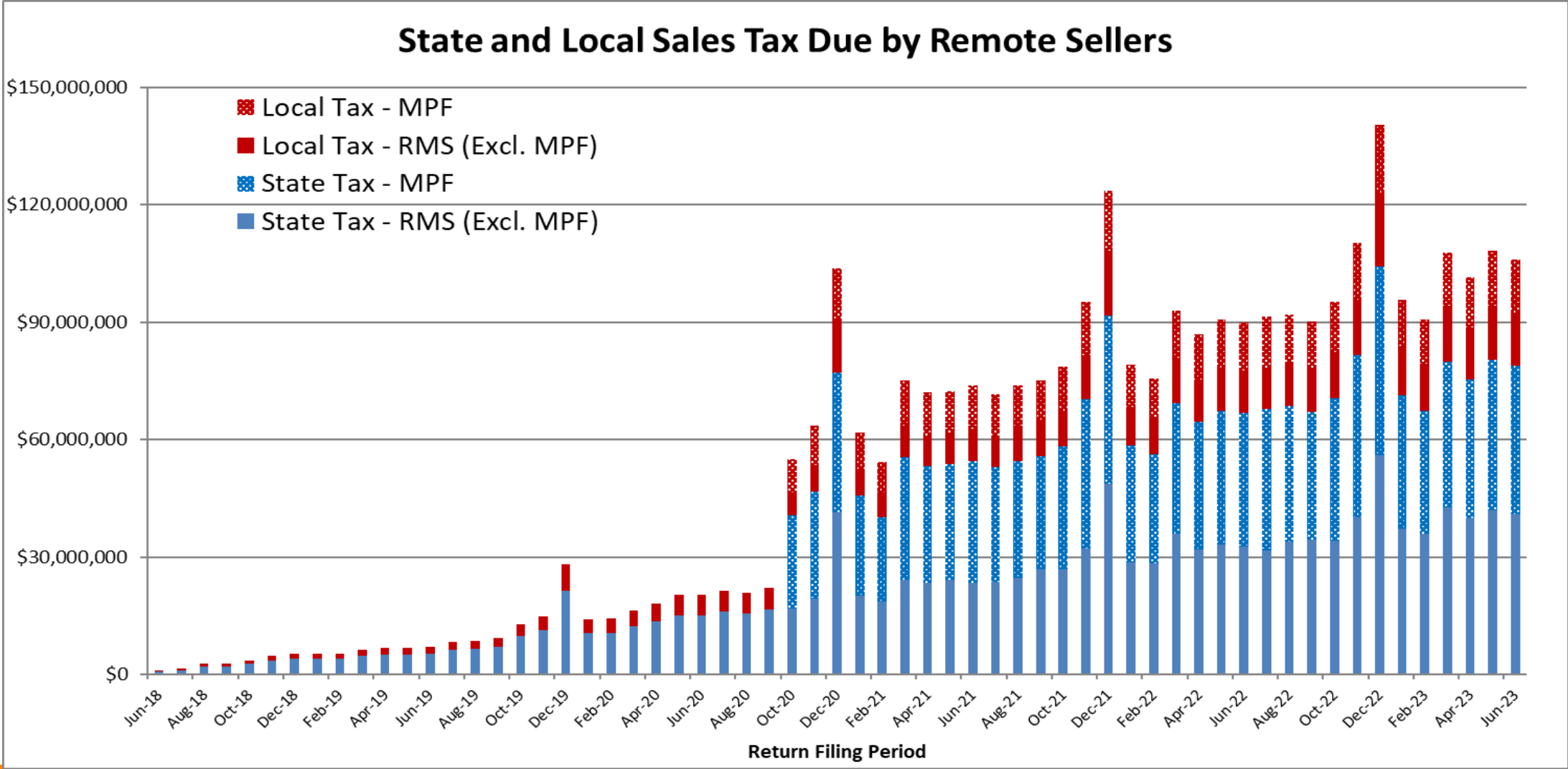
Taxing two sided platforms is more complicated

- Pricing models cross the continuum from
 - fully priced to the consumer (cable TV; Netflix, though advertising option now available)
 - to fully funded by the advertisers (Facebook)
 - to hybrids (Hulu, Spotify, Pandora and YouTube)
- How should taxes be imposed when different pricing structures are used for very similar products?
- What incentives arise from only sales taxing consumer payments and not when other payments are made?
- How do we ensure neutrality for consumers as they choose between services with different pricing structures?

Some Taxing Options

- Different from the European digital taxes –ways to impose sales tax on the value of the services
- Impose tax on the non-priced value of social media services
 - Why?
 - Approach for Spotify
 - Approach for Facebook
- Impose sales tax on all revenues of social media companies
 - As proxy for consumption value
 - All revenues, whether monetized or non-monetized to consumers
 - May need to apportion the tax base across states

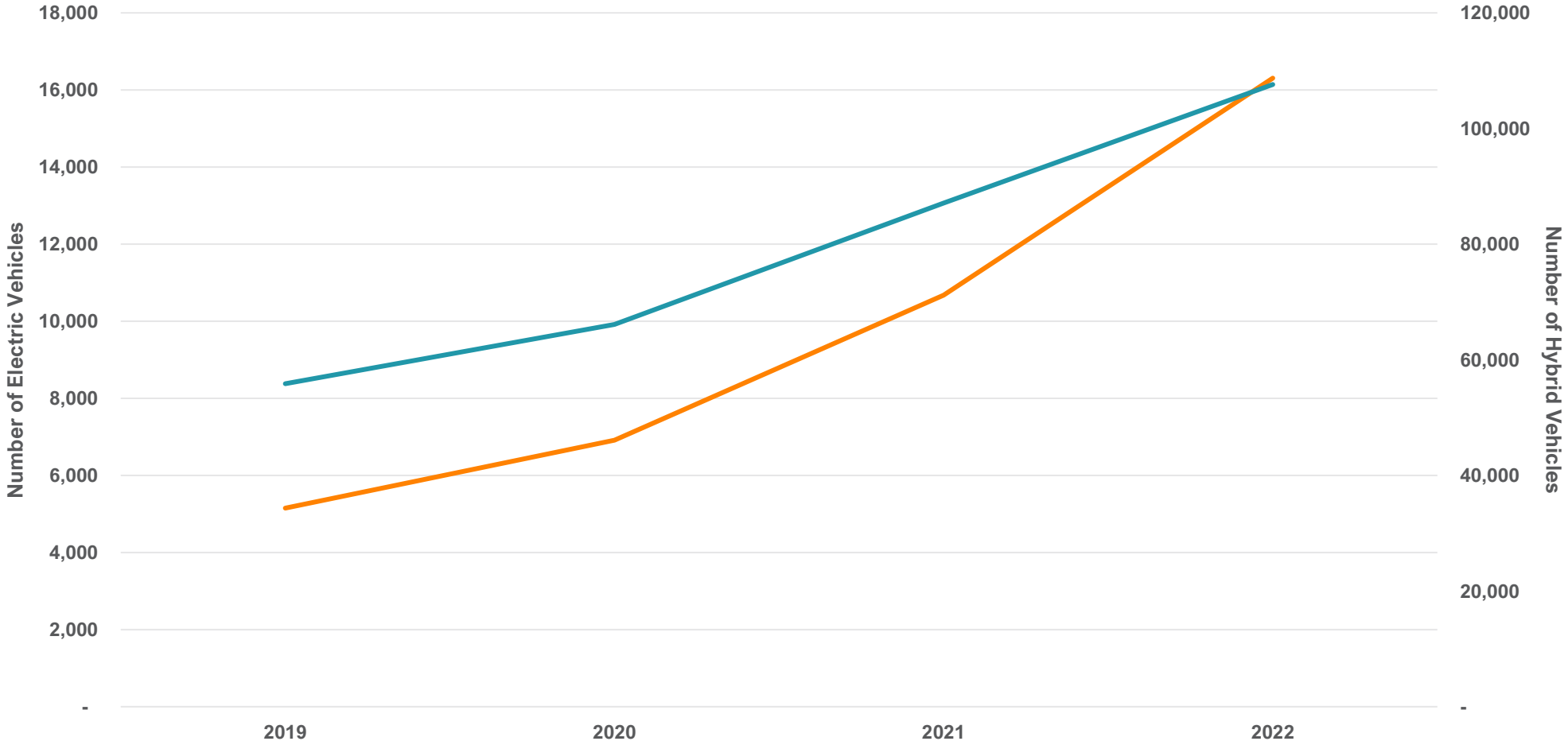
Tennessee Tax on New Remote Sellers has Risen Dramatically Since the Wayfair Case



How will remote sales tax be avoided/evaded in the future?

- Cross border shopping
- Firms below the states' collection thresholds
- Non-compliance - Firms not understanding how to comply – Avalara survey saying 58% of firms are confident that they are fully complying. We find that visible firms are much more likely to comply than less visible firms

Both Electric and Hybrid Vehicles have seen Rapid Adoption in Tennessee Despite Supply Chain Issues



Autonomous vehicles are already with us



AVs are Transporting Freight in Tennessee, and other States

Sweden's Einride to Test Autonomous Trucks on U.S. Roads

The company will put its chunky, self-driving vehicles on short runs between warehouses in Tennessee under an agreement with GE Appliances



An autonomous, electric freight truck at a logistics facility operated by GE Appliances in Louisville, Ky.

Several States have Autonomous Vehicles Moving People



ROUTE-FIFTY.COM

Driverless Vehicles Are Finally Hitting City Streets

In San Francisco, people can now catch rides in cars without anybody behind the wheel. But as the technology spreads, are regulators ready?

1 in 5 Jobs are in Vehicle Intensive Occupations, 2019

	Tennessee		U.S.	
	Employment	Share	Employment	Share
Total Employment	2,614,962	100.00%	126,307,286	100.00%
Vehicle Manufacturing	72,652	2.78%	1,054,481	0.83%
Vehicle Support	124,253	4.75%	5,526,730	4.38%
Motor Vehicle Operators & Other On-the-Job Drivers	364,910	13.95%	18,383,130	14.55%
Total, Vehicle-Related	561,815	21.48%	24,964,341	19.76%

Tennessee Taxes Fall Dramatically with EVs/AVs, (\$thousands)

	AVs fully adopted	Current Practice
Gasoline Tax	0	1,023,824
Motor Fuel Tax	0	328,833
Gasoline Inspection	0	78,377
Motor Vehicle Registration	192,196	384,393
Motor Vehicle Title	30,128	60,256
Motor Vehicle Sales Tax	1,300,568	2,601,136
Privilege Tax	14,725	13,154
Electric Vehicles	346,381	
Total Vehicle Related	1,883,998	4,489,972

Factors affecting revenue loss

- Importance of vehicle related taxes in tax structure.
- Many revenue sources are inelastic so fall relative to overall structure even without AVs/EVs.
- Fuel tax revenues are affected more than vehicle taxes.
- Electric vehicle tax.
- Total potential revenue loss depends on reduction of vehicles and movement to electric, not the timing.

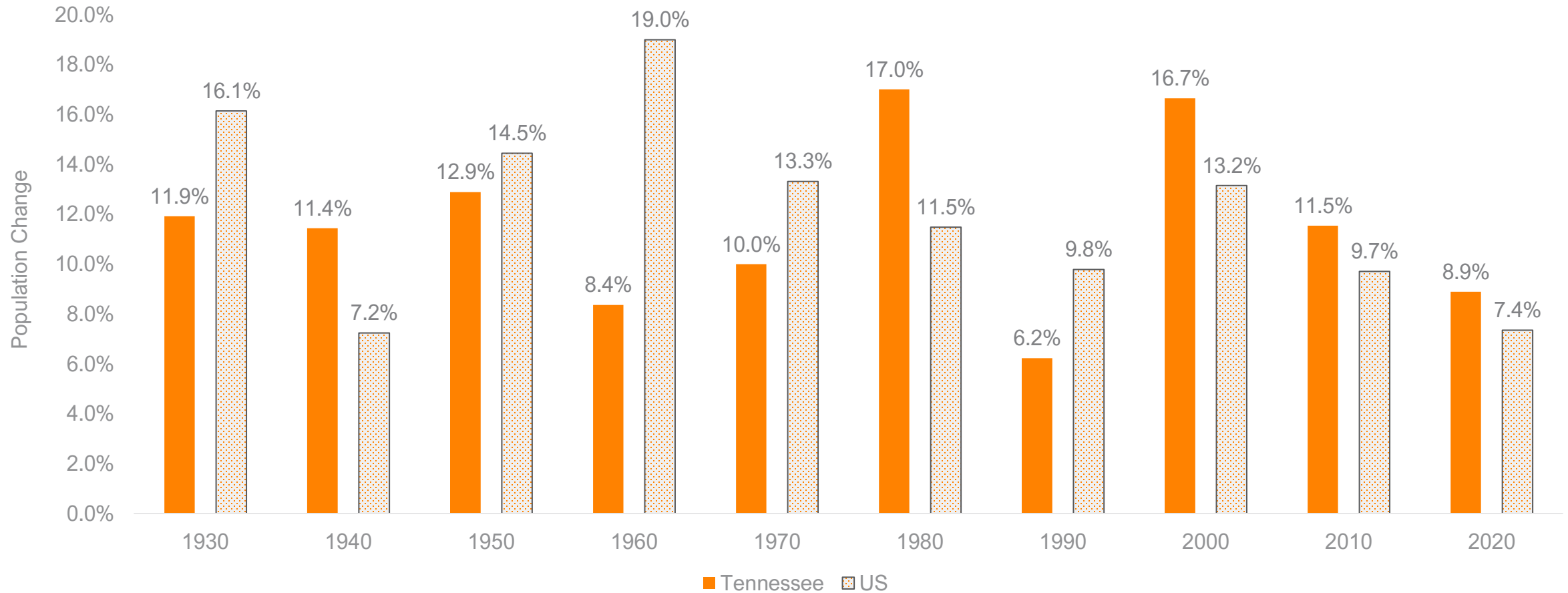
Policy options – keep tax structure up-to-date

- Two concerns, how to accommodate electric and autonomous vehicles
- Consider moving from taxes on vehicles and fuel to taxes on transportation services (sales, VMT taxes, etc.), such as vehicle sharing and taxis - CA, HI, OR, UT
- Carefully consider how to tax other shared assets with an eye towards level playing field, but must define the comparable service being provided.
- Collect at the most efficient point in the supply chain.

Changing Population Demographics

- Slower population growth
- Aging populations – living longer, baby boomers passing 65
- Falling birth rates
- Effect both demand for services and tax revenues

Over the Last Two Decades, Population Growth has Slowed for Tennessee Radically for the Nation. Lowest Growth since the 1940s

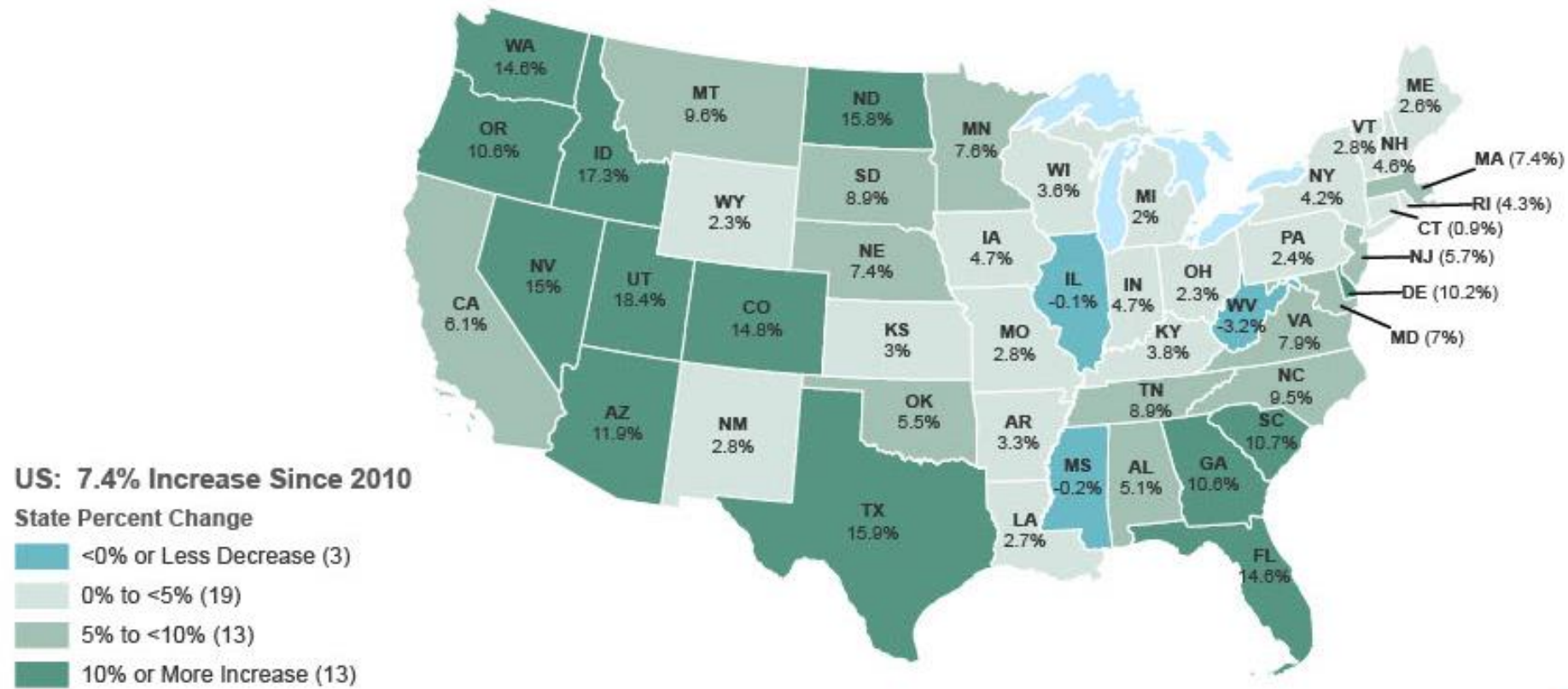


Source: U.S. Census Bureau

Note: Growth rates represent population changes as compared to the previous decennial Census.

Population Growth is Slowing in Most States

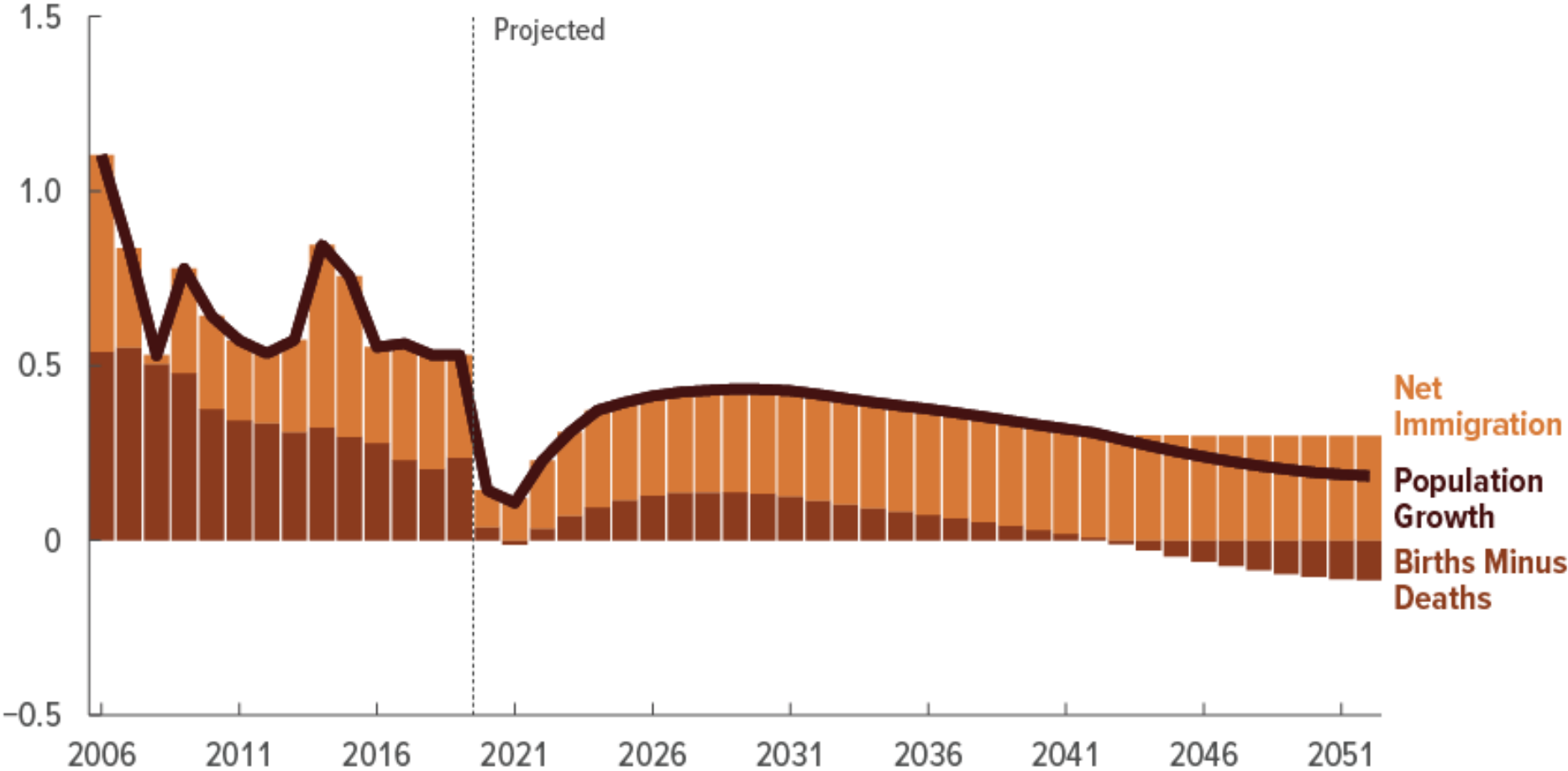
2020 Census: Percent Change in Resident Population (2010-2020)



Map: Tennessee State Data Center, University of Tennessee, Knoxville. Source: Resident Population of the 50 States (Table 2), US Census Bureau, 2010 and 2020. Note: Resident population excludes counts of overseas U.S. military and federal civilian employees (and their dependents living with them).

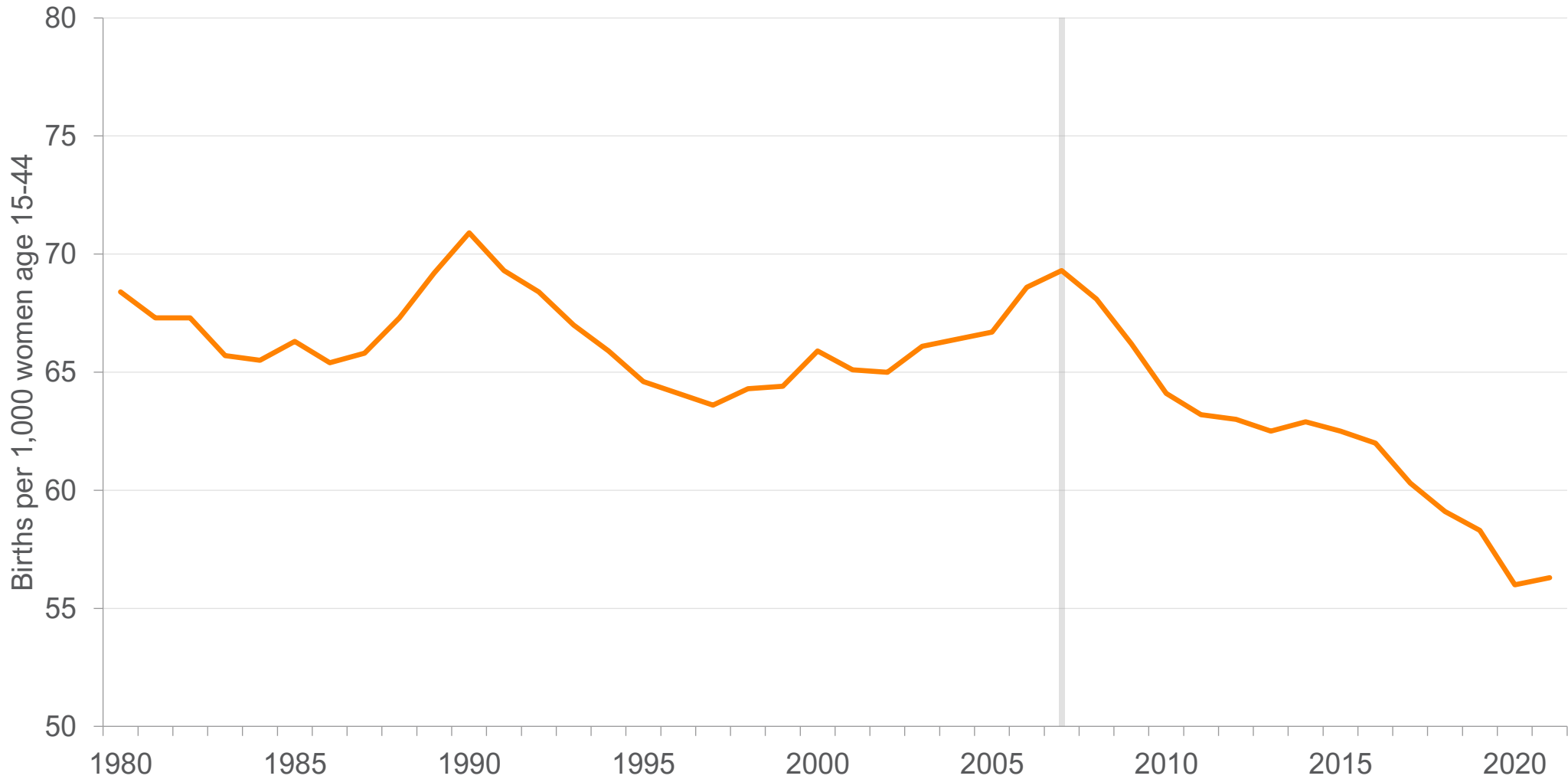


Natural Population Change will provide few New People in next 30 Years, Meaning Immigration likely will be the Source of Most Population Growth



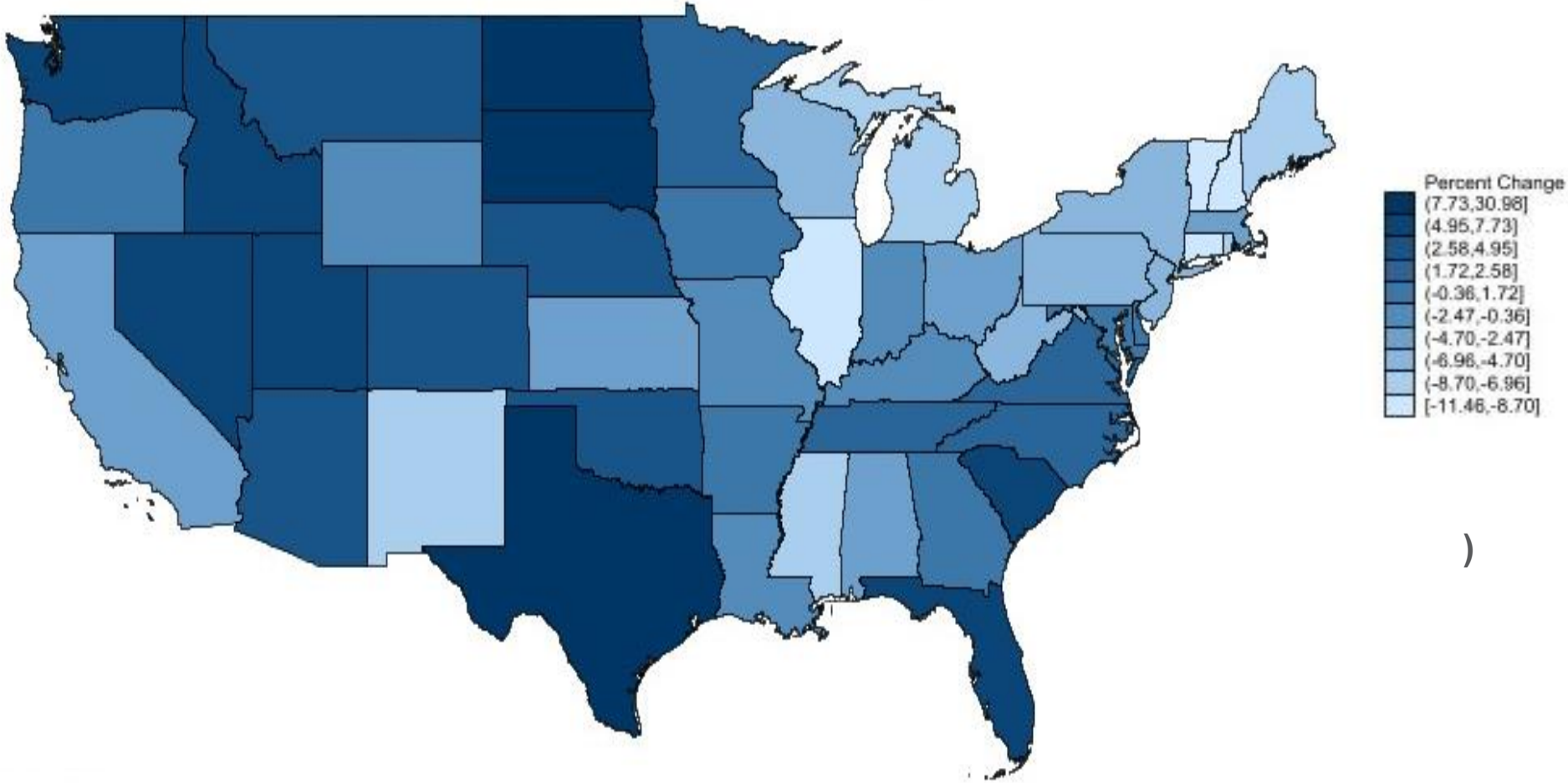
Source: CBO

Birth Rates have Plummeted Since the Great Recession



Children have the Slowest Growth in Population of All Age Groups

Percent Change in Population, Children Ages 0-17, 2010-2021

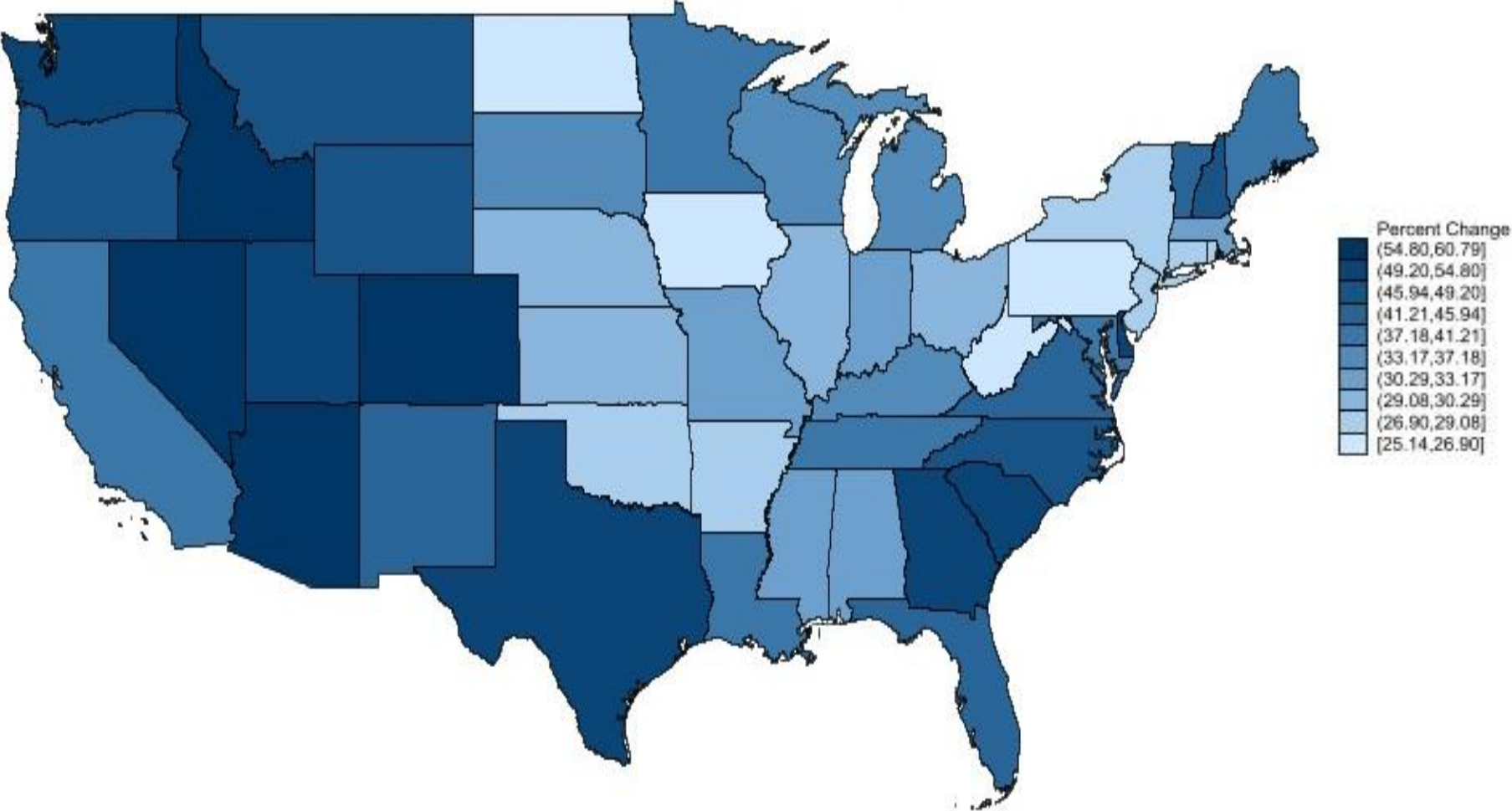


Source: U.S. Census Bureau

Note: Growth rates represent population changes as compared to the previous decennial Census.

The Population of Adults Aged 65+ Grew the Fastest in All States

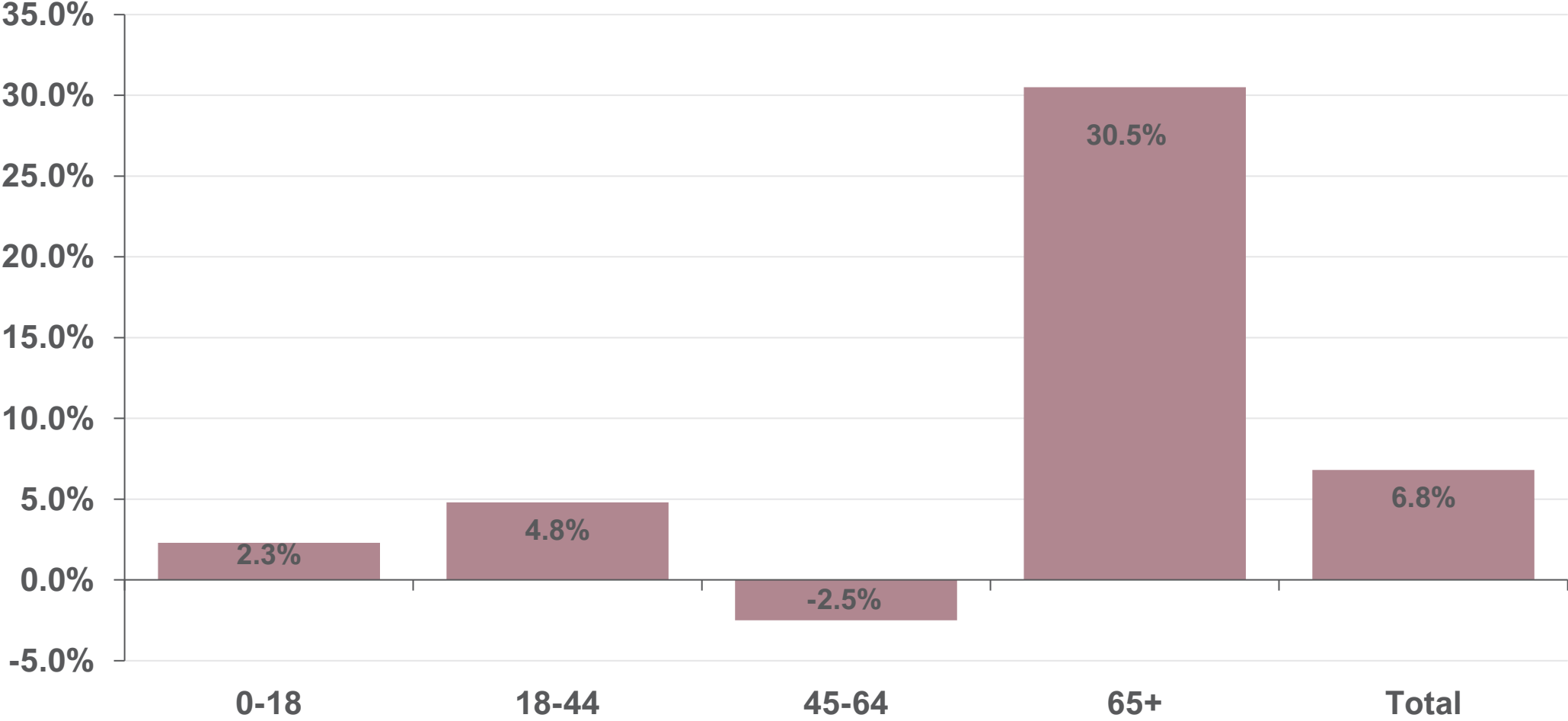
Percent Change in Population, Adults Ages 65+, 2010-2021



Source: U.S. Census Bureau

Note: Growth rates represent population changes as compared to the previous decennial Census.

US Labor Force Growth will be Very Slow in the 2020s

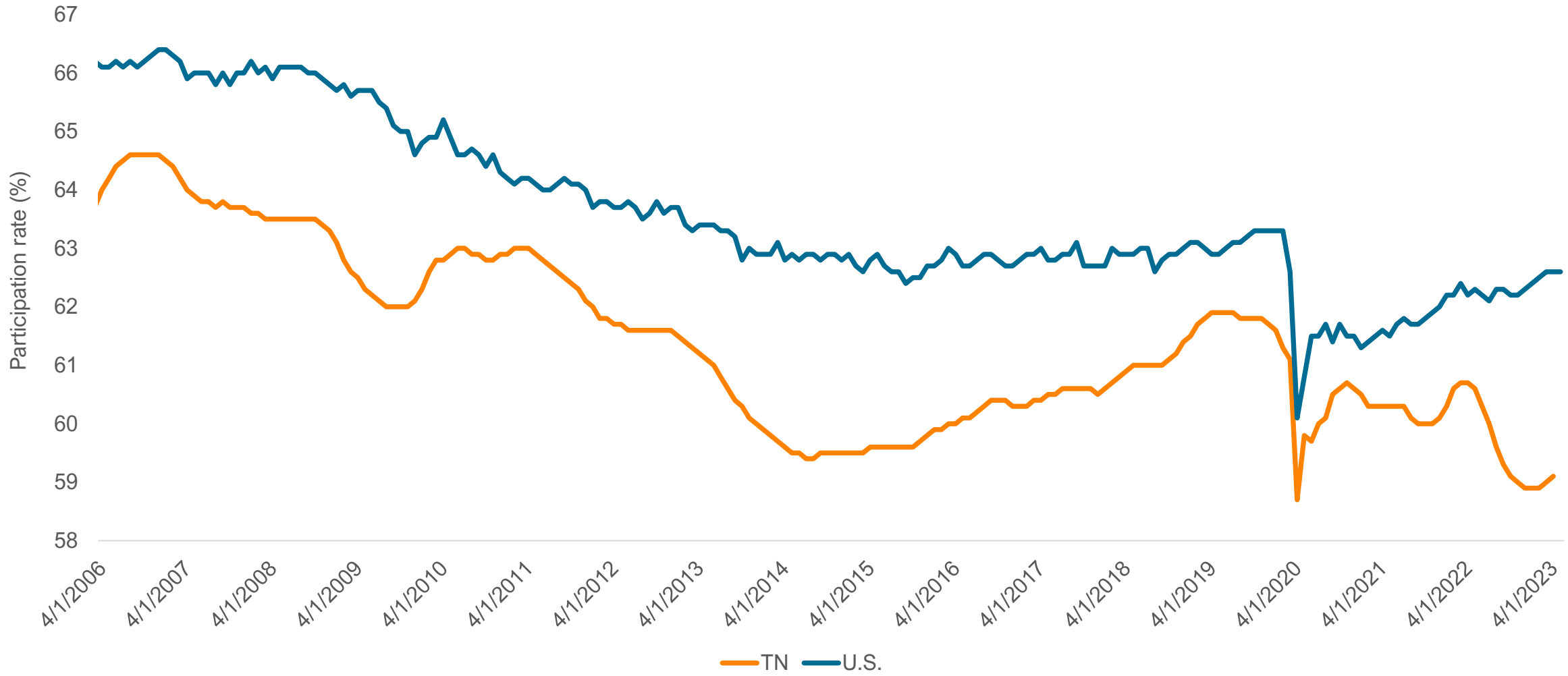


Source: Census Current Population Reports, Feb 2020

Why is the Labor Market Tight?

- Labor force participation rate
- Demographics
 - Low birth rates - likely increases LFPR for women
 - Aging
 - Limited immigration, though been better in recent months

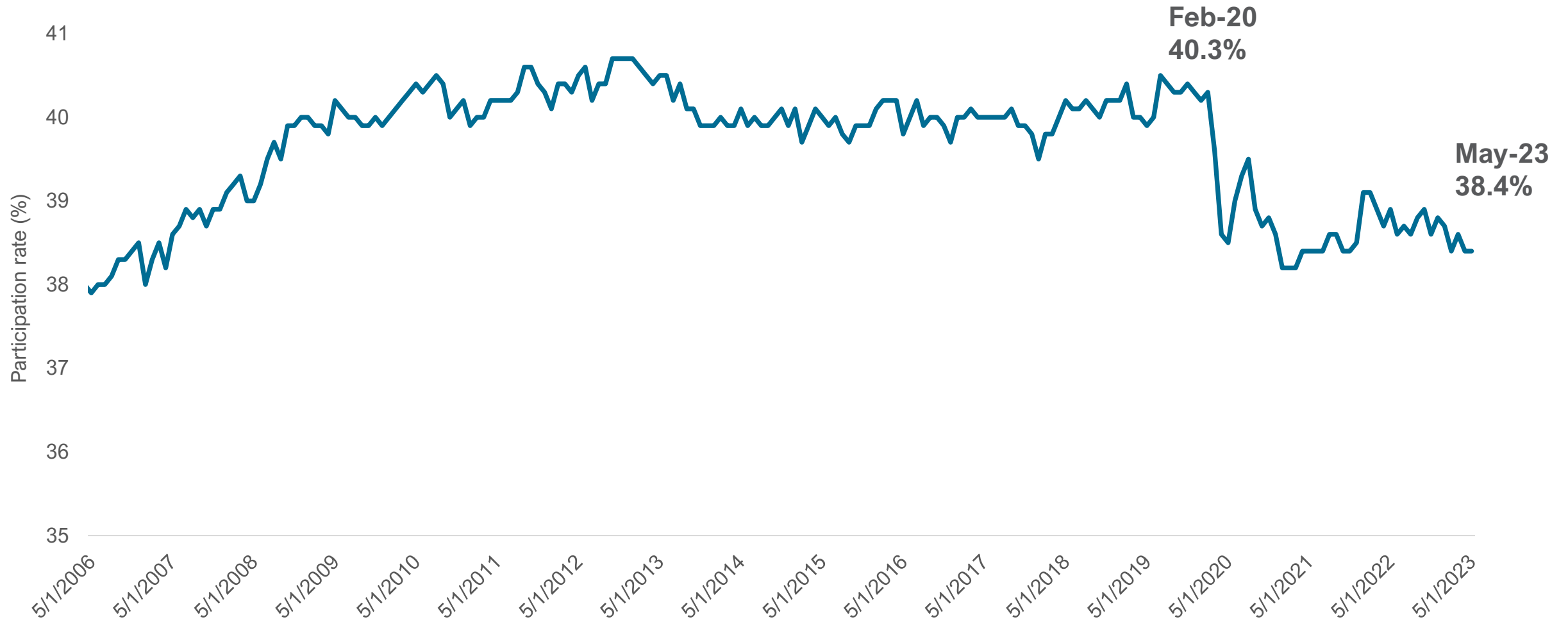
Labor Force Participation is About Where we Would Expect without COVID, but Fewer over 55 and many more females



Source: Bureau of Labor Statistics



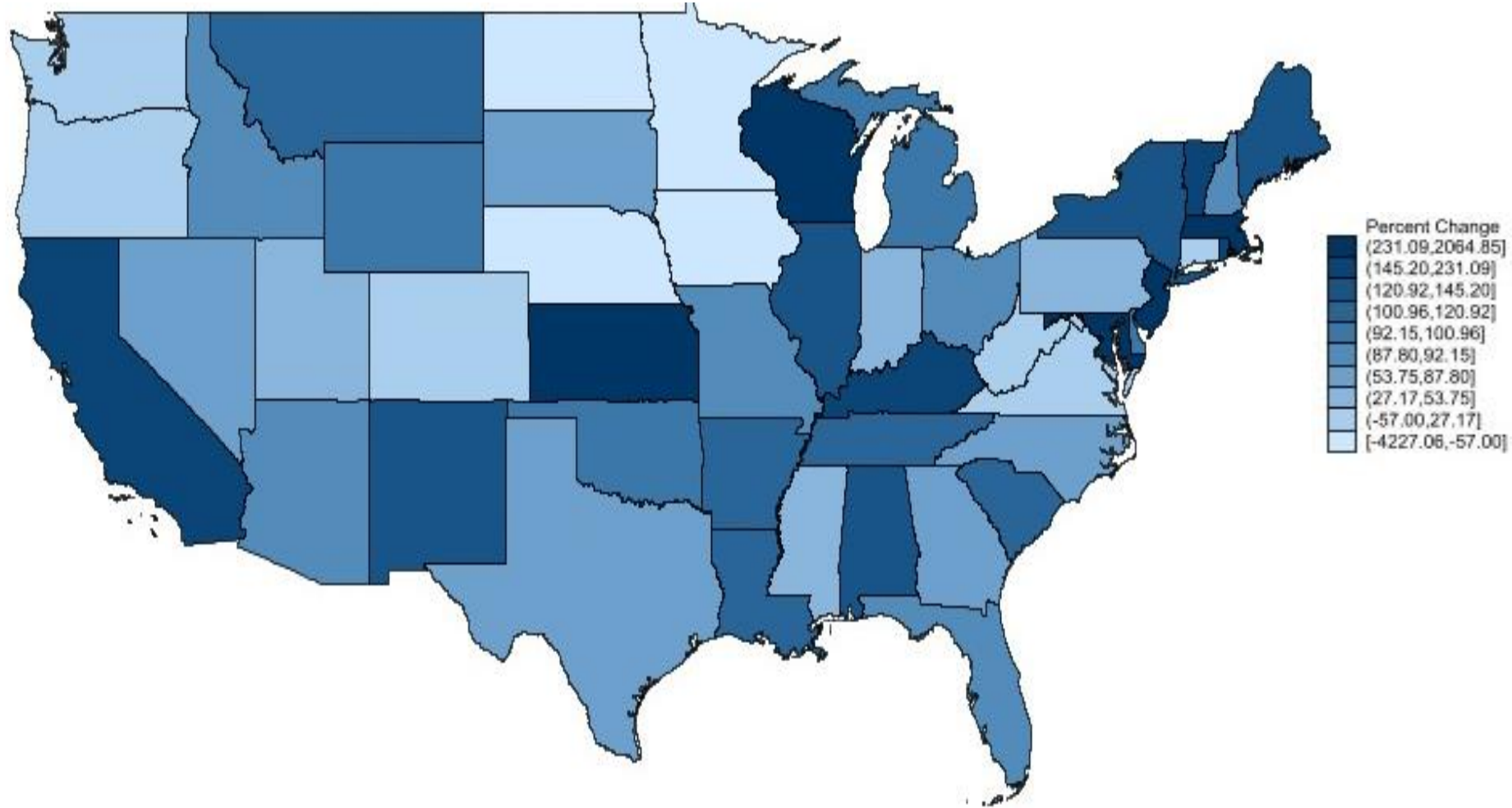
U.S. Labor Force Participation Aged 55+



Source: Bureau of Labor Statistics

Domestic Net Migration is greater than Total Population Change

Domestic Net Migration as a Percent of Population Change, 2010-2022



Source: U.S. Census Bureau

Possible Residence/Work Situations

- Live and work in same state
- Live in one state and physically work in another
- Live in one state and physically work in multiple states (possibly including state of residence) – includes hybrid workers
- Live in one state and remotely work in one or more other states
- Residence state could vary during a year if a person worked from their permanent residence, worked from a vacation home, and worked while living with family members
- People with no residence
- Firms with no office

Policy Options

- Where to tax work that crosses state borders
 - Source (where work takes place) – generally today's approach
 - Residence – where people live
 - Is apportionment appropriate?
 - Could the decision be different for remote workers vs commuters vs hybrid vs no residence?
- Tax rates
- What creates nexus in the state
- Can affect
 - Where people live
 - Where businesses locate
 - Where work is sourced

Some Policy/Economic Interactions

- No policies allow high tax/high wage states to maintain their advantage
- Remote work raises competition between states and puts downward pressure on tax rates
 - Need lower rates to avoid losing residents and to attract remote workers
 - Biggest effect on highest marginal tax rates
 - Decision to tax at source could cause employers to move out of the state, never locate in the state or redefine where the work occurs
- Will state taxation of commuters at source cause workers to slowly transition to remote work to avoid higher tax rates? What about workers with no residence?
 - Will cross border commuters and in-state workers continue being taxed at source while remote workers and hybrid workers (with limited commuting) are taxed at residence?
- Will states want to define business nexus based simply on the presence of remote workers, given that this may discourage some residential locations? Will firms want to prevent employees from working from states where the firm would not otherwise have presence?

