Welcome

Edmundo Gamillo
Executive Director for Commercial Banking
Tucson and Southern Arizona
JPMorgan Chase & Co.
Tucson Outlook

George Hammond
Director and Research Professor
Economic and Business Research Center

75 Years of Excellence
Eller Economic and Business Research Center
Key Topics

► Tucson’s labor market remains in solid shape
  ▶ With steady job growth and very low unemployment
► Phoenix inflation is well below the U.S.
  ▶ Primarily because shelter inflation has moderated more in Phoenix
► Housing permits fell last year, but are poised to recover in 2024
  ▶ Single-family permits drive the rebound
► Housing affordability remains low
► Arizona per capita personal income growth outpaced the U.S. last year
► Arizona, Phoenix, and Tucson are forecast to continue to grow
  ▶ But demographic pressures eventually weigh on gains

Tucson MSA Jobs and Wages by Industry

Thousands of Jobs, Dollars per Worker

<table>
<thead>
<tr>
<th>Industry</th>
<th>Apr. 2023-Apr. 2024</th>
<th>2022 Annual Wage</th>
<th>Total Nonfarm Jobs</th>
<th>Year-to-Date Change 2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priv. Education and Health Services</td>
<td>3.4</td>
<td>55,969</td>
<td>Tucson</td>
<td>3,825</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>0.0</td>
<td>101,026</td>
<td>Tucson %</td>
<td>1.0%</td>
</tr>
<tr>
<td>Construction</td>
<td>0.7</td>
<td>58,800</td>
<td>U.S. %</td>
<td>1.8%</td>
</tr>
<tr>
<td>Trade, Transportation, and Utilities</td>
<td>0.6</td>
<td>44,150</td>
<td>Arizona %</td>
<td>2.2%</td>
</tr>
<tr>
<td>Other Services</td>
<td>0.3</td>
<td>88,721</td>
<td>Phoenix %</td>
<td>2.3%</td>
</tr>
<tr>
<td>Natural Resources and Mining</td>
<td>0.3</td>
<td>70,902</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Activities</td>
<td>0.2</td>
<td>88,472</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>-0.1</td>
<td>64,996</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>-0.6</td>
<td>62,038</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional and Business Services</td>
<td>-1.3</td>
<td>26,269</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leisure and Hospitality</td>
<td>-2.1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Arizona and U.S. Unemployment Rates

Seasonally Adjusted

Arizona

U.S.

April 2024

U.S. 3.9%

Arizona 3.6%

Employment Cost Index

Total Private-Sector Compensation for U.S. and Phoenix MSA

Year-Over-Year Percent Change

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Phoenix</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2022Q1</td>
<td>5.5</td>
<td>4.8</td>
</tr>
<tr>
<td>2022Q2</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>2022Q3</td>
<td>5.5</td>
<td>5.2</td>
</tr>
<tr>
<td>2022Q4</td>
<td>4.4</td>
<td>5.1</td>
</tr>
<tr>
<td>2023Q1</td>
<td>4.6</td>
<td>4.8</td>
</tr>
<tr>
<td>2023Q2</td>
<td>3.9</td>
<td>4.5</td>
</tr>
<tr>
<td>2023Q3</td>
<td>3.5</td>
<td>4.3</td>
</tr>
<tr>
<td>2023Q4</td>
<td>4.1</td>
<td>4.1</td>
</tr>
<tr>
<td>2024Q1</td>
<td>2.7</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Arizona Initial Claims and Layoffs

Seasonally Adjusted, Layoffs from JOLTS

![Graph showing Initial Claims and Layoffs over time]

Phoenix Inflation Is Lower Than the U.S.

All-Items CPIU, Over the Year

![Graph comparing Inflation over time between U.S. and Phoenix MSA]

<table>
<thead>
<tr>
<th></th>
<th>April 2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>3.4%</td>
</tr>
<tr>
<td>Phoenix</td>
<td>2.6%</td>
</tr>
</tbody>
</table>
Phoenix Inflation Is **Lower** Than the U.S.

**Shelter CPIU, House Prices, Rent, Over the Year**

<table>
<thead>
<tr>
<th>Year</th>
<th>Shelter CPIU</th>
<th>House Prices</th>
<th>Rent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Phoenix</td>
<td>Tucson</td>
<td>U.S.</td>
</tr>
<tr>
<td>19</td>
<td>3.5%</td>
<td>3.5%</td>
<td>3.5%</td>
</tr>
<tr>
<td>20</td>
<td>5.5%</td>
<td>5.5%</td>
<td>5.5%</td>
</tr>
<tr>
<td>21</td>
<td>7.5%</td>
<td>7.5%</td>
<td>7.5%</td>
</tr>
<tr>
<td>22</td>
<td>9.5%</td>
<td>9.5%</td>
<td>9.5%</td>
</tr>
<tr>
<td>23</td>
<td>11.5%</td>
<td>11.5%</td>
<td>11.5%</td>
</tr>
<tr>
<td>24</td>
<td>13.5%</td>
<td>13.5%</td>
<td>13.5%</td>
</tr>
</tbody>
</table>

**Housing Affordability**

**NAHB-Wells Fargo**

<table>
<thead>
<tr>
<th>City</th>
<th>2019Q4</th>
<th>2023Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Los Angeles</td>
<td>11.3</td>
<td>2.7</td>
</tr>
<tr>
<td>Phoenix</td>
<td>64.9</td>
<td>21.7</td>
</tr>
<tr>
<td>San Francisco</td>
<td>12.3</td>
<td>5.4</td>
</tr>
<tr>
<td>San Jose</td>
<td>20.6</td>
<td>6.8</td>
</tr>
<tr>
<td>Seattle</td>
<td>44.3</td>
<td>20.6</td>
</tr>
<tr>
<td>Tucson</td>
<td>71.2</td>
<td>32.5</td>
</tr>
<tr>
<td>U.S.</td>
<td>63.2</td>
<td>37.7</td>
</tr>
</tbody>
</table>

The share of homes sold that are affordable to a family making the median income.
Arizona Per Capita Personal Income

Annual

Percent of U.S.

70 75 80 85 90 95 100 105

<table>
<thead>
<tr>
<th></th>
<th>2022</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>$65,473</td>
<td>$68,531</td>
</tr>
<tr>
<td>Arizona</td>
<td>$58,390</td>
<td>$61,652</td>
</tr>
<tr>
<td>Phoenix MSA</td>
<td>$61,840</td>
<td>NA</td>
</tr>
<tr>
<td>Tucson MSA</td>
<td>$54,464</td>
<td>NA</td>
</tr>
</tbody>
</table>

Data from U.S. Bureau of Economic Analysis. County/metro data not yet available for 2023.

Arizona Per Capita Personal Income

Annual, Nominal and Real

Dollars per Person

19 20 21 22 23

December 2001 Dollars per Person

Inflation adjustment using Phoenix CPIU

Up 2.9% from 2019.
Arizona Housing Permits

Seasonally Adjusted Annual Rates

Arizona

Tucson MSA

Permits

Permits

Single Family

Multi Family

19 20 21 22 23 24

Permits

0 10,000 20,000 30,000 40,000 50,000 60,000 70,000 80,000 90,000

19 20 21 22 23 24

Permits

0 10,000 20,000 30,000 40,000 50,000

Single Family

Multi Family

Monthly data benchmarked to sum to revised annual data through 2023.

Arizona Taxable Sales Growth

Nominal, Over the Year, 2023, Smoothed with Trend/Cycle, Accrual

Retail plus Remote Sellers

Restaurants and Bars

Percent

Percent

20:01 21:01 22:01 23:01 24:01

20:01 21:01 22:01 23:01 24:01

Prescott

Phoenix

Tucson

Arizona

Prescott

Phoenix

Tucson

Arizona
**U.S. Interest Rates**

*S&P Global, April 2024*

![Graph showing U.S. interest rates with lines for Federal Funds, 10 Year Treas., and 30 Year Conv. Mtg.](image)

**U.S. Consumer Spending and Disposable Income**

*S&P Global, April 2024, Over-the-Year Growth, Inflation Adjusted, Smoothed*

![Graph showing U.S. consumer spending and disposable income with bars and lines for Disposable Income and Consumption.](image)
U.S. Debt Service Ratios

Household Debt Service Relative to Disposable Income

Total Debt

Consumer and Mortgage Debt

U.S. Core Inflation

S&P Global, April 2024, Over-the-Year Growth
Tucson MSA Outlook Summary

Annual Growth Rates

<table>
<thead>
<tr>
<th>Growth Rate</th>
<th>Actual 2023</th>
<th>Forecast 2024</th>
<th>Forecast 2025</th>
<th>Forecast 2026</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonfarm Jobs</td>
<td>1.6</td>
<td>1.2</td>
<td>1.2</td>
<td>1.0</td>
</tr>
<tr>
<td>Personal Income*</td>
<td>5.2</td>
<td>5.3</td>
<td>5.9</td>
<td>5.8</td>
</tr>
<tr>
<td>Retail Plus Remote Sales</td>
<td>3.8</td>
<td>2.6</td>
<td>3.7</td>
<td>3.6</td>
</tr>
<tr>
<td>Population</td>
<td>0.7</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing Permits</td>
<td>5,255</td>
<td>5,383</td>
<td>4,868</td>
<td>4,495</td>
</tr>
</tbody>
</table>

*Personal income data are forecast in 2023.

Tucson MSA and U.S. Job Growth

Annual Growth Rates

[Graph showing annual growth rates for Tucson MSA and U.S. with data labels for years 2010-2024]
Main Takeaways

- **Tucson’s labor market remains tight**
  - Although compensation growth has moderated somewhat and layoffs are trending up

- **Phoenix shelter inflation has moderated significantly**
  - Contributing to reduced inflation in the all-items index

- **Housing permits are on pace to increase in 2024**
  - Driven by single-family activity

- **Arizona per capita personal income was 90.0% of the U.S. last year**

- **Arizona, Phoenix, and Tucson are on track to grow**
  - U.S. recession risks are still an important consideration
Arizona Water

Dr. Sharon Megdal
Director and Professor
UA Water Resources Research Center

“Is Arizona Running Out of Water? Find out at the Breakfast with the Economists”

Arizona Water Resources: What to Expect
Sharon B. Megdal, Ph.D.
Breakfast with the Economists
June 5, 2024

smegdal@arizona.edu
wrrc.arizona.edu
How an applied microeconomist focused on the economics of government tax and expenditures and econometrics fell into water...

Said in 1987 at an Arizona Futures Symposium on the topic of transportation:
When looking toward the future, I asked: “What will make things change so that a farsighted public policy replaces the crisis management spirit that pervades so much of government’s – and the private sector’s – operations? We are talking about things that require a long lead time. Shorter run problems require more immediate attention and resources. How can a community that cannot determine its carrying capacity in the short run (or does so only by default) ever find the resources to devote to longer term problem solving?” I noted the need to “…educate the public – including decision makers— on the questions and also on the future implications of current decisions…..”

WRRC bridges academia and the real-world of water management

• Mission: We tackle key water policy and management issues, empower informed decision-making, and enrich understanding through engagement, education, and applied research.
• Webinars, annual conference, publications, county water factsheets, etc.
• Partnerships, engagement, and respectful dialogues are essential to our work.

Stay Informed
Subscribe to keep up with WRRC news and events.
wrrc.arizona.edu/subscribe
WRRC resources include County Water Factsheets and annual *Arroyo* publication
From my graduate course, Water Policy in Arizona and Semi-arid Regions

Water policy and management reflect many determining factors

- Resource Availability
- Location of water demands and supplies
- Economics
- Historic and Current Legal/Institutional Framework
- The nature of involvement of multiple governmental and non-governmental entities, including the extent of centralized versus decentralized decision making
- Politics of Area
- Public values and socio-cultural factors
- Technology
- Historical context
- Information
- Etc...

Importance of Context

Megal, Graduate class, Water Policy in Arizona and Semi-arid Regions, Updated May 2024

Arizona Water Resources: What to Expect

Tucson Active Management Area

Arizona Water Resources
Water is not like other goods and services...

- In terms of how people view water and the different ways it is used
- How it is priced and how people think it should be priced
- What people think about the role of the private sector, including public-private partnerships
- Etc.

Arizona water uses and sources
(Source: Arizona Dept. of Water Resources)
Complex situation...details matter and vary depending on where you live and do business

Map of AZ showing Active Management Areas (AMAs) and Irrigation Non-Expansion Areas (INAs)

Wicked Water Problems Context

- Wicked Water Problems are big problems that do not have a simple pathway to resolving them.
  - Some reasons
    - incomplete or contradictory knowledge
    - the number of people and opinions involved
    - the large economic burden
    - the interconnected nature of these problems with other problems [e.g., geopolitics, poverty]
  - Collaboration and interdisciplinary work are necessary for addressing Wicked Water Problems.
  - Process is important for identifying solutions pathways.

https://awra.org/Members/Publications/IMPACT.aspx for free download
Wicked problem: Colorado River Basin supply-demand imbalance

Lake Mead behind Hoover Dam

Central Arizona Project customers are particularly vulnerable to cutbacks in Colorado River water deliveries

Colorado River (CR) Basin (outlined below)
About 250,000 square miles (647,000 km²)
7 states in the USA; 2 states in Mexico
30 Native Nations
40 million people rely on CR water

Source: Reclamation

1906-1999
15.2 MAF

2000-2022
12.2 MAF

2018-2022
10.7 MAF

Photo: SB Megdal-Dec.2022
Taken from Hoover Dam
Wicked problem: Groundwater depletion

Groundwater invisibility
Figure from Arizona Department of Water Resources Model

Phoenix area can’t meet groundwater demands over next century, threatening growth

How a Saudi firm tapped a gusher of water in drought-stricken Arizona

Groundwater issues remain in the Active Management Areas and exist outside the AMAs

ASSURED WATER SUPPLY COMMITTEE

OBJECTIVE

The Assured Water Supply Committee was established to review and make recommendations for changes to Assured Water Supply policies - legislatively, administratively, or by executive action - to address the challenges revealed by Assured Water Supply modeling projections while continuing to:

- Strengthen the integrity of the Assured Water Supply program
- Protect consumers and aquifers
- Ensure future growth is not reliant on mined groundwater

RURAL GROUNDWATER MANAGEMENT COMMITTEE

GOAL

The Rural Groundwater Management Committee was established to develop policy, legislative, or other actionable recommendations for a water management framework to assist rural Arizona communities to manage their local groundwater resources, protect water users, and sustainably manage aquifers.

OBJECTIVES

- These recommendations will assist rural communities outside the state’s Active Management Areas (AMAs) and Irrigation Non-Expansion Areas (INAs) in managing local groundwater resources and mitigating further aquifer depletion.
- These recommendations should be broad enough to apply to any groundwater basin’s management needs and customizable to be tailored to a basin’s unique characteristics

https://www.azwater.gov/gwpc
Issued January 2024
Many water bills introduced this legislative session, many of which are still pending.

- Not always agreement on the statement of or the severity of the issue
- Lack of agreement on how to address the issue
- Policy analysis can identify trade-offs associated with alternative policy approaches
- Efforts to come to agreement, particularly on groundwater regulation and management outside the Active Management Areas

And there is much else going on, most notably renegotiating the guidelines for sharing cutbacks in Colorado River deliveries!

Are we running out of water?

The answer depends on the context.

- Where are you located?
- What water source do you rely on?
- Are you asking about those already in the area or those not yet there?
- At what point in time?
- What assumptions are you making?

Even if the current water source is running low, does that mean there will not be enough water to meet the needs/demands?

Is this the right question? Should the question be whether we are or will be prepared for changing water availability and water quality challenges?
Categories of solution options to address imbalance of supply and demand

- Conservation
- Greater efficiency
- Water reuse
- Water storage/banking/managed aquifer recharge (MAR)
- Desalination (augmentation example)
- Moving water
- Marketing and other mutually agreed-upon transactions
- Rainwater and stormwater capture
- How we design our buildings, communities, and landscapes

The Tucson region has adapted to changing water conditions through innovation, partnerships, and other actions

Cooperation with Phoenix area

Source: Metro GM Joe Olsen
Arizona faces both surface water and groundwater challenges! What we can expect depends on all of us.

- Be informed
  - Know where your water comes from
  - Don’t take water for granted
  - Understand the trade-offs associated with different policy options and actions in terms of cost, timing, scale, sustainability, etc.
- Be good water stewards in your personal and professional lives
- Be ready to discuss water matters with decision makers and state, regional, and local agencies and utilities, including the Arizona Dept. of Water Resource, the Arizona Dept of Environmental Quality, Central Arizona Project, and the Water Infrastructure Financing Authority (WIFA).

In closing, I am optimistic that we can adapt to changing circumstances because we have been adapting - and because failure is not an option. BUT we must stay informed and engaged, be vigilant, and be prepared to incur the associated costs.

Thank you!!
Connect with us!
Sharon B Megdal, Ph.D.
smegdal@arizona.edu
wrrc.arizona.edu
Visit the award-winning Arizona’s Economy
azeconomy.org

Explore data for border economies. Arizona-Mexico Economic Indicators
azmex.eller.arizona.edu
New features now available!
The Arizona’s Economy App
Real-time data at your fingertips.

Free at the Apple App Store and Google Play.

A special thank you to
JPMorgan Chase & Co.
for presenting today’s event.