MAP MAKING ACTION POSSIBLE for Southern Arizona

Moving Data to Action

Jennifer Pullen
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Eller College of Management
University of Arizona

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Arizona Daily Star

Tucson economy: MAP Dashboard

Monthly Stats	Change Year/Year
Non-farm jobs **389,100** (October 2018)	+1.9%
Unemployment rate **4.1%** (October 2018)	-0.2% pts.
Median home price **$215,000** (October 2018)	+7.6%
Pesos per U.S. dollar **19.20** (October 2018)	+2.0%

Tucson ranks high for national park visits as growth rate doubled in 2017

In 2017, the growth rate in national park visits within the Tucson metropolitan statistical area was 16.2 percent, double the previous year's growth. Tucson ranked second among peer western MSAs behind El Paso. Colorado Springs and Portland posted a decline in the number of visitors to national parks located in their respective regions, while the growth in visitors to national parks across the U.S. remained flat. Recreational land and outdoor leisure opportunities attract visitors to a region, which can serve as an important input for local retail and service sectors. Additionally, recreation land provides communities with direct social and economic benefits and has been linked to amenity-driven economic development, increased real estate values, and positive public health outcomes.

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A project of the Economic and Business Research Center at the University of Arizona Eller College of Management

Real-time economic data is at your fingertips with the Arizona's Economy smartphone app. Available free on iTunes and Google Play.

About the MAP Dashboard
The MAP (Making Action Possible for Southern Arizona) Dashboard is produced by the UA Economic and Business Research Center in partnership with the Community Foundation for Southern Arizona, the Pima Association of Governments, the Southern Arizona Leadership Council, and Sun Corridor Inc. A portion is published monthly in the **Arizona Daily Star**. To view more data, go to mapazdashboard.arizona.edu

11/25/18

CHIARA BAUTISTA / ARIZONA DAILY STAR

Tucson's health: MAP Dashboard

In 2016, those living in the Tucson MSA reported 3.9 poor mental health days each month. This tied Tucson for eighth place with Portland among 12 peer western metros. Residents of Austin and Denver reported the least number of poor mental health days at 3.3, and Las Vegas residents reported the most at 4.3. Behavioral health is a key component of a person's well-being and can affect an individual's health, longevity and productivity. To learn more about mental health and other behavioral health conditions in Southern Arizona visit the MAP Dashboard.

Number of poor mental health days per month (2016)

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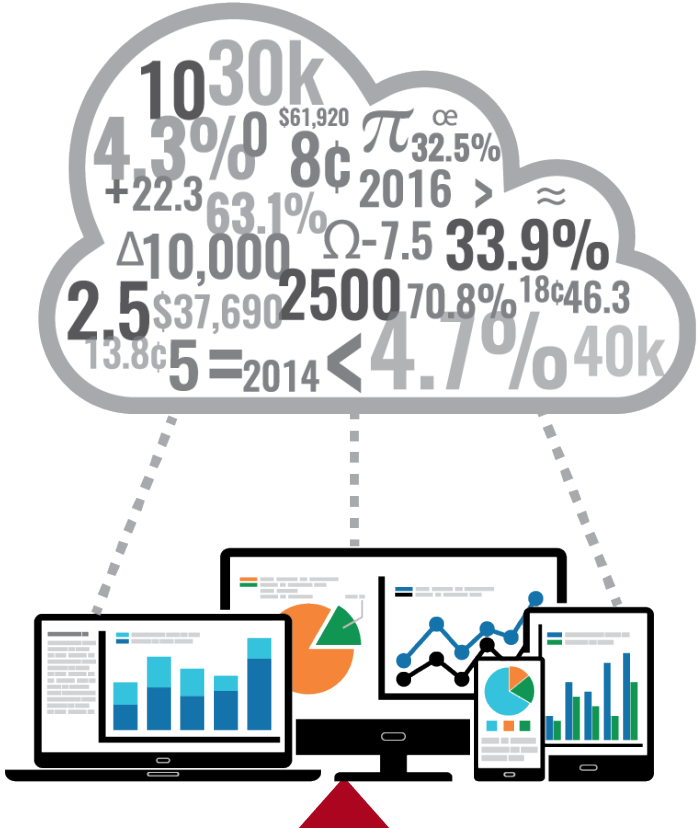
12/3/18

CHIARA BAUTISTA / ARIZONA DAILY STAR

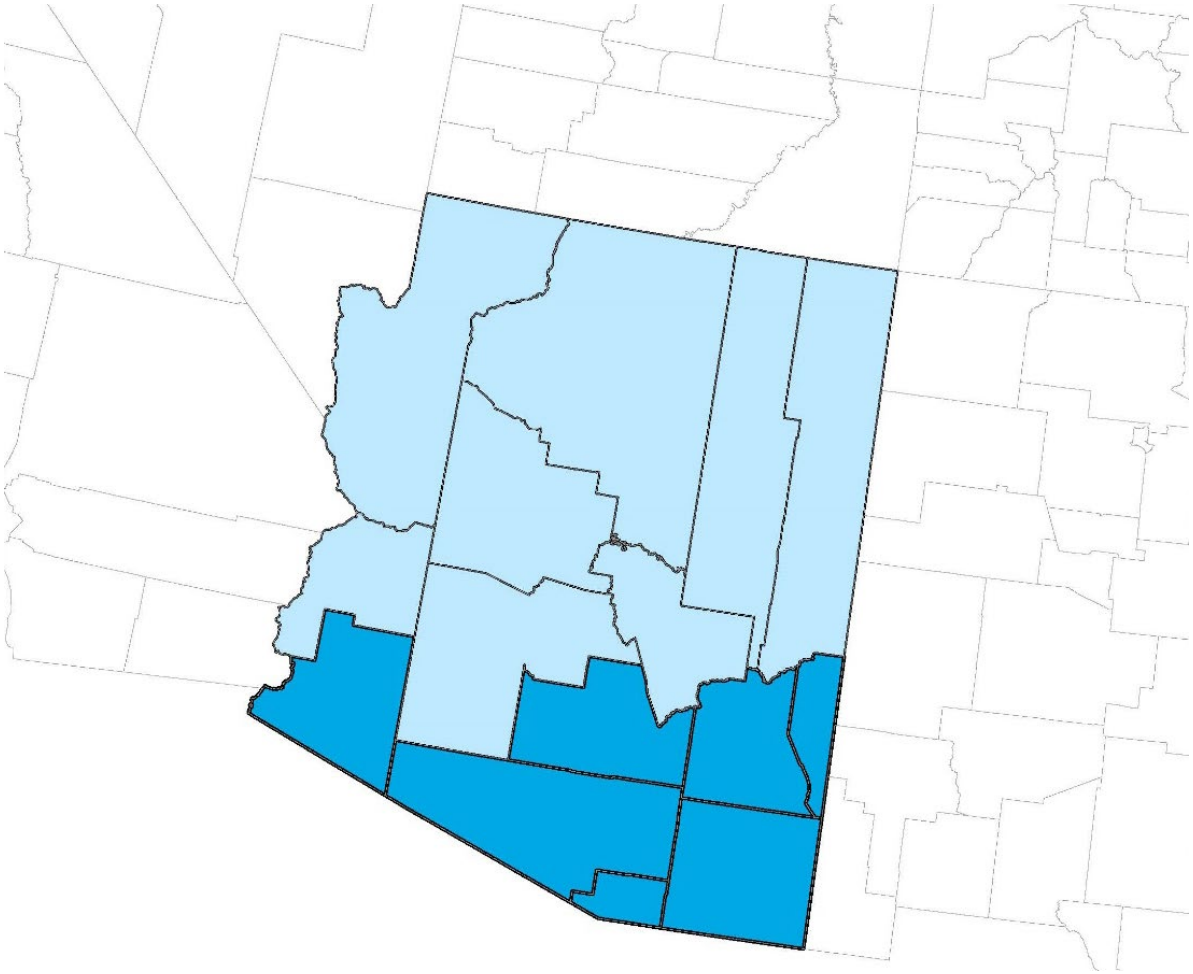
Source of Information

- People need information not just NUMBERS



Community Comparison

Arizona Focus



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ECONOMY | EDUCATION | HEALTH & SOCIAL WELL-BEING | INFRASTRUCTURE | QUALITY OF PLACE | WORKFORCE & DEMOGRAPHICS

Feature Article: Home Prices Continue to Rise

Explore Your County

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How we use data to inform decision making in Southern Arizona

- Two Examples
  - Teacher wages
  - Housing affordability

Education Category Overview

Take Our Pulse With An Overview Table

Tucson Metropolitan Statistical Area Education Scorecard

INDICATOR	HOW ARE WE DOING?	HOW DO WE COMPARE?	RECENT CHANGE
COLLEGE MAJOR	47.1% SCIENCE, ENG., OR RELATED		
EDUCATIONAL ATTAINMENT	31.6% BA OR BETTER		
GRADUATION RATES	78.0% FOR ARIZONA		
PRE K-12 ENROLLMENT	40.4% IN EARLY EDUCATION		
STUDENT ACHIEVEMENT	282.2 AVERAGE MATH SCORE IN AZ		
TEACHER WAGES	$39,010		

Ranked in Top 1/3 · Ranked in Middle 1/3 · Ranked in Bottom 1/3 · Ranked Last

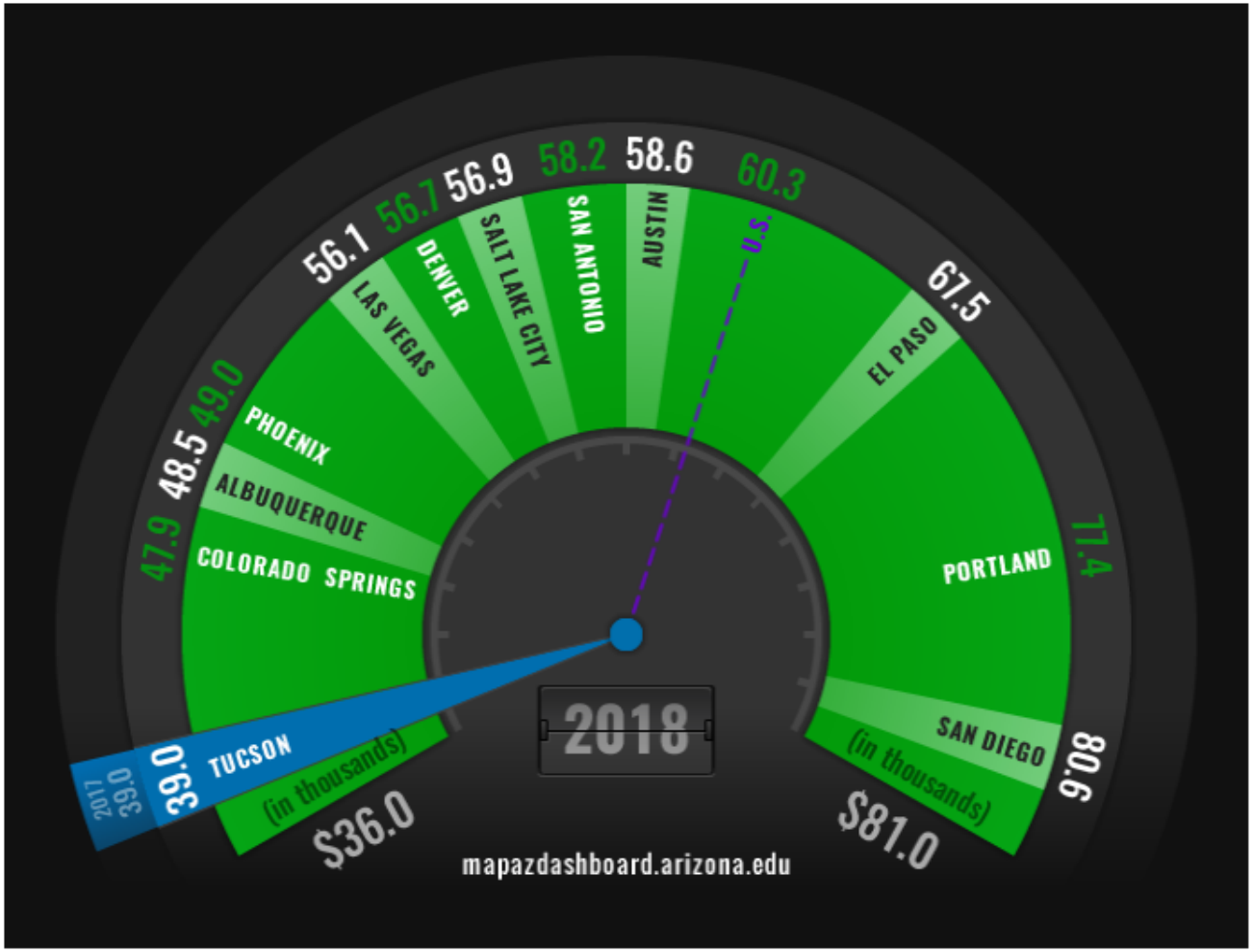
MAP Scorecard "How Do We Compare?" Rankings Are Relative To The Following Peer Metropolitan Areas:
Albuquerque, Austin, Colorado Springs, Denver, El Paso, Las Vegas, Phoenix, Portland, Salt Lake City, San Antonio, and San Diego

mapazdashboard.arizona.edu

Education Category

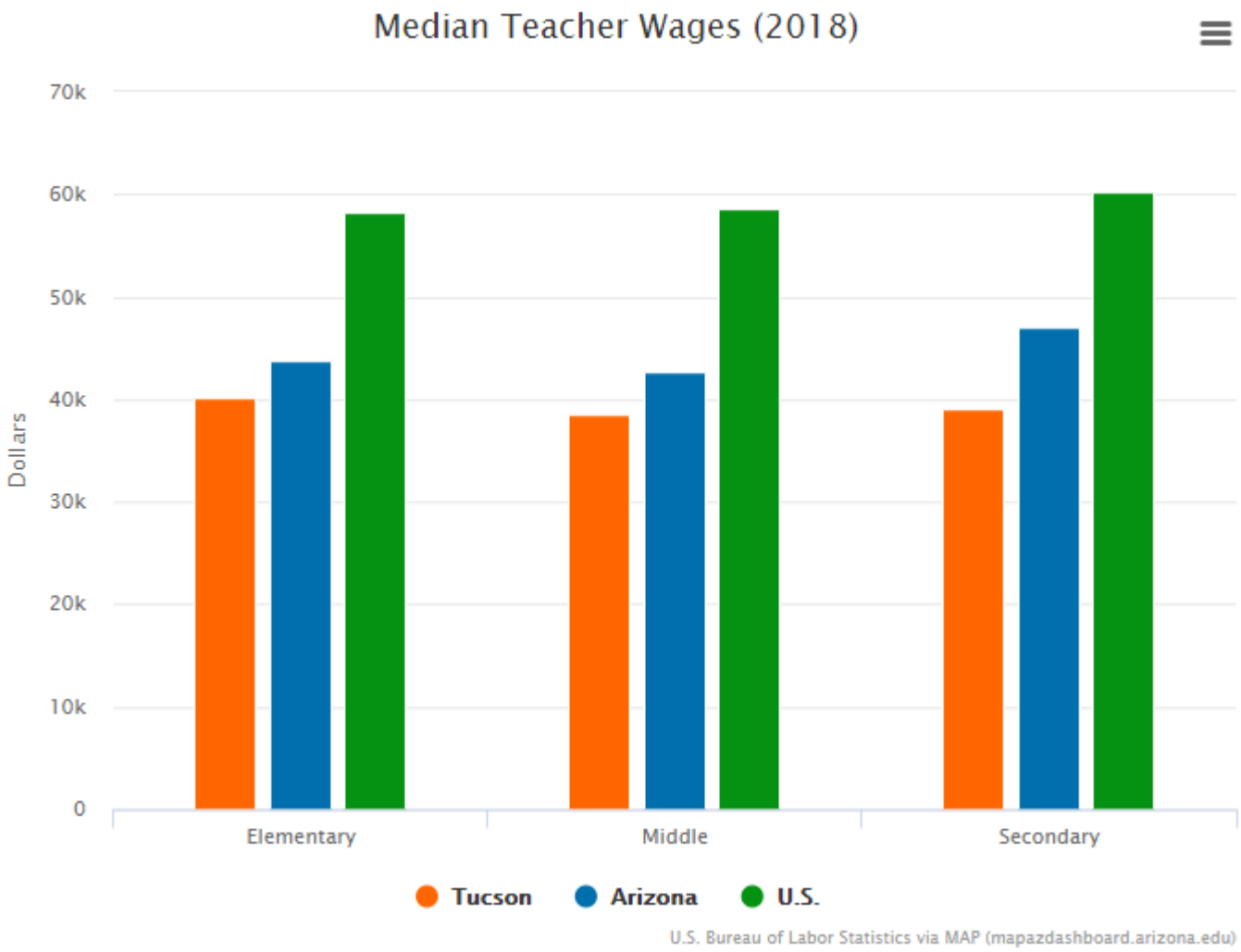
Get Perspective With a Fuel Gauge

Median Annual Wage for Secondary School Teachers (2018)



Education Category

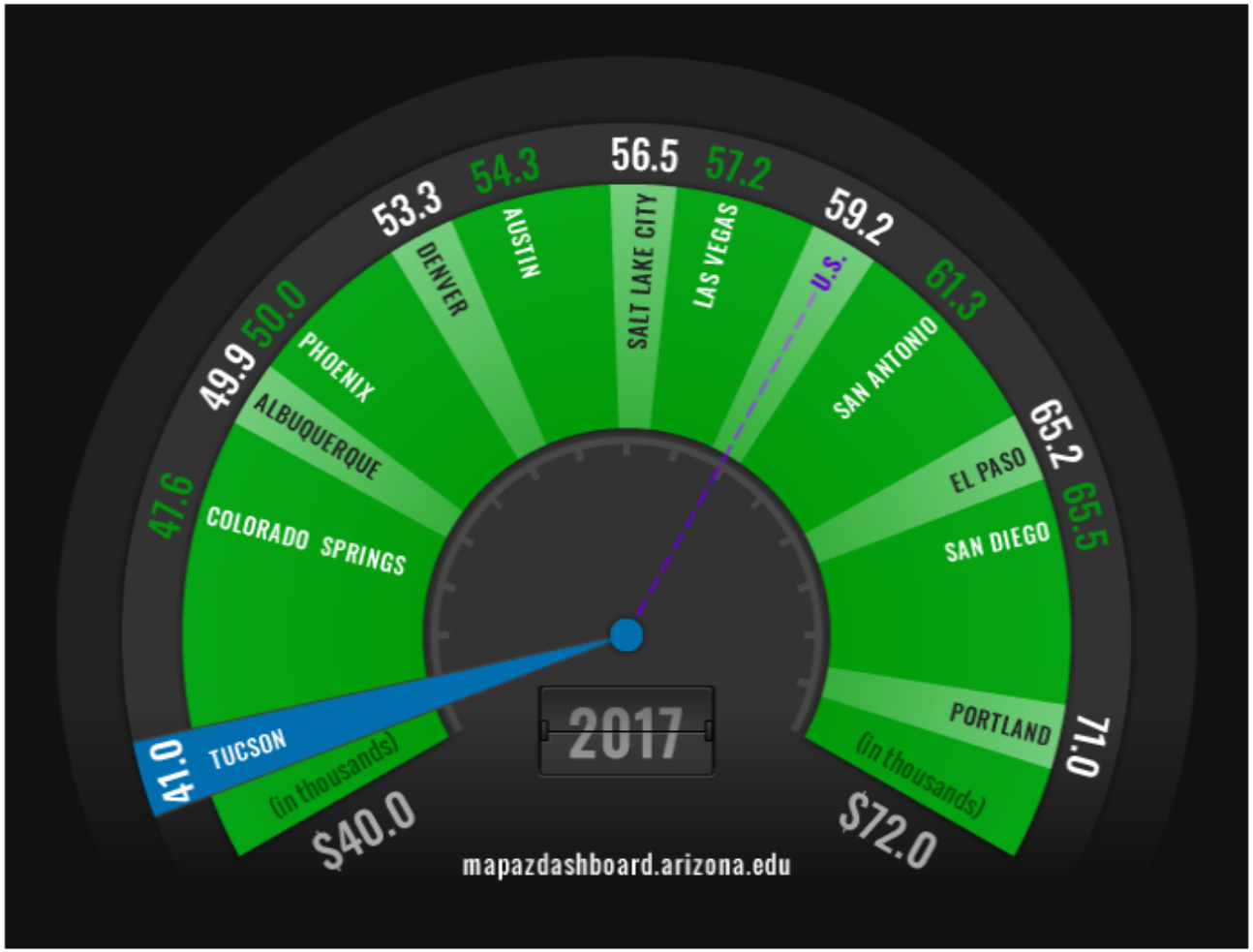
Comparative Analysis



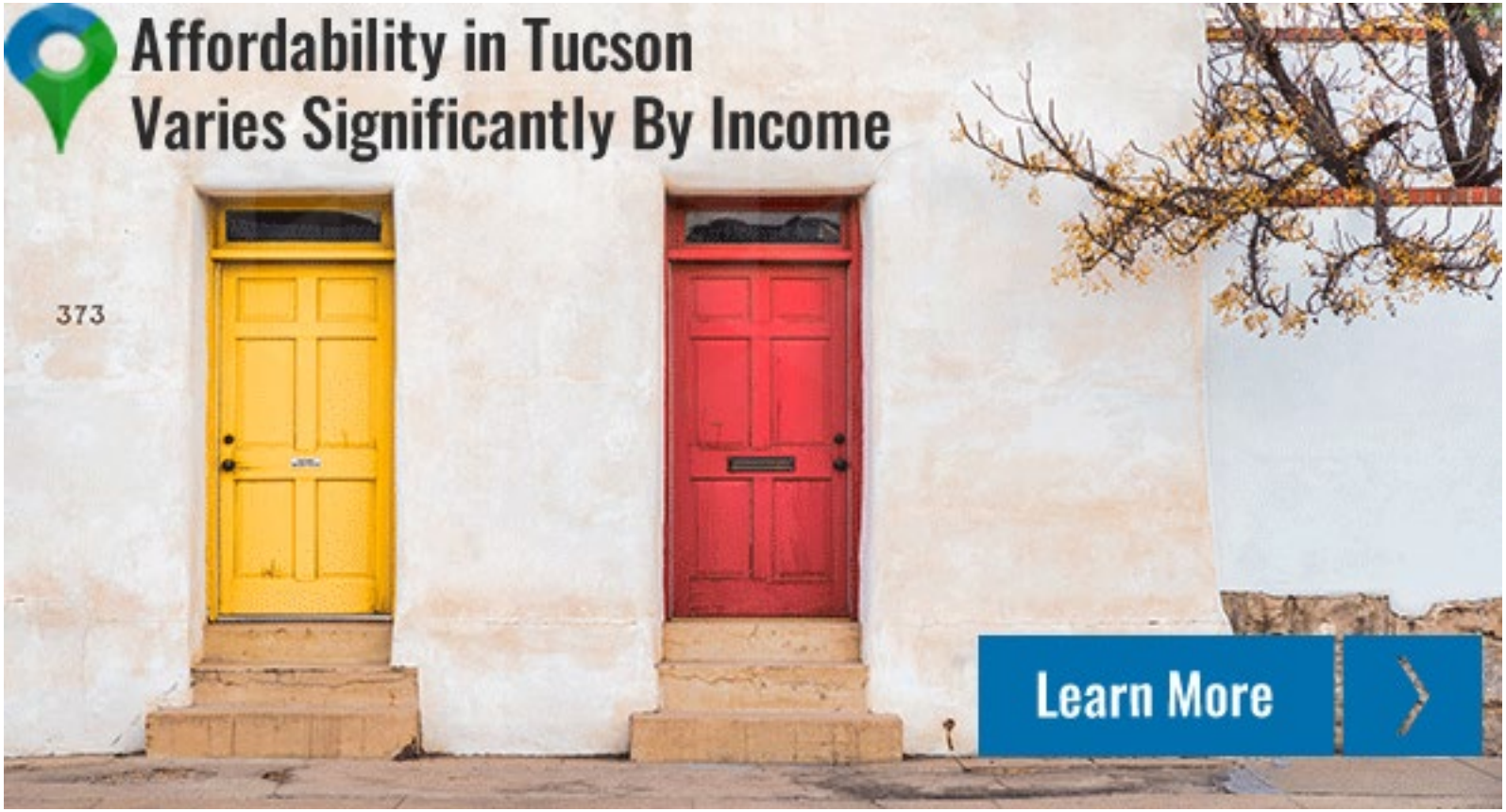
Education Category

Get Perspective With a Fuel Gauge

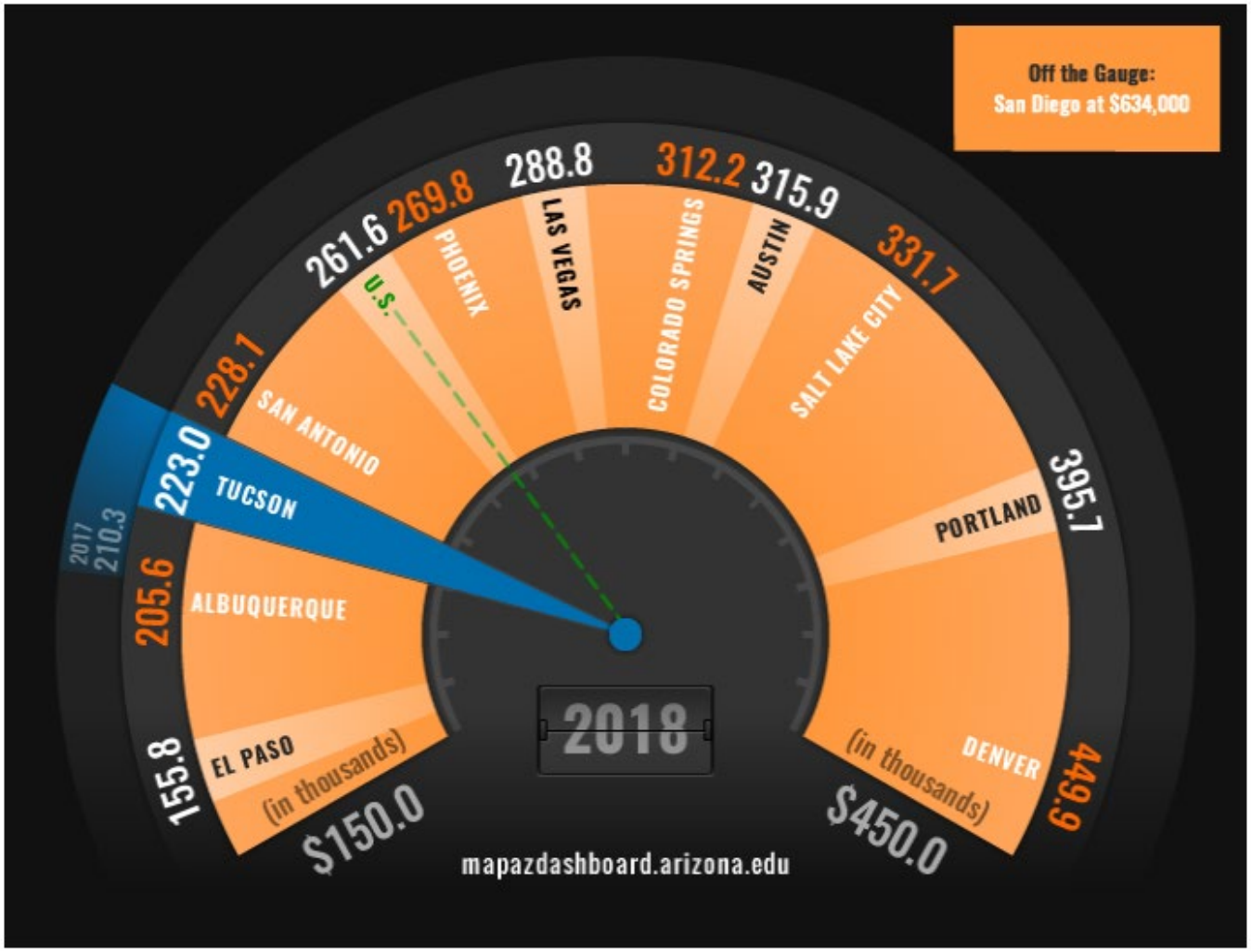
Secondary School Teacher Wages Adjusted for Cost of Living (2017)



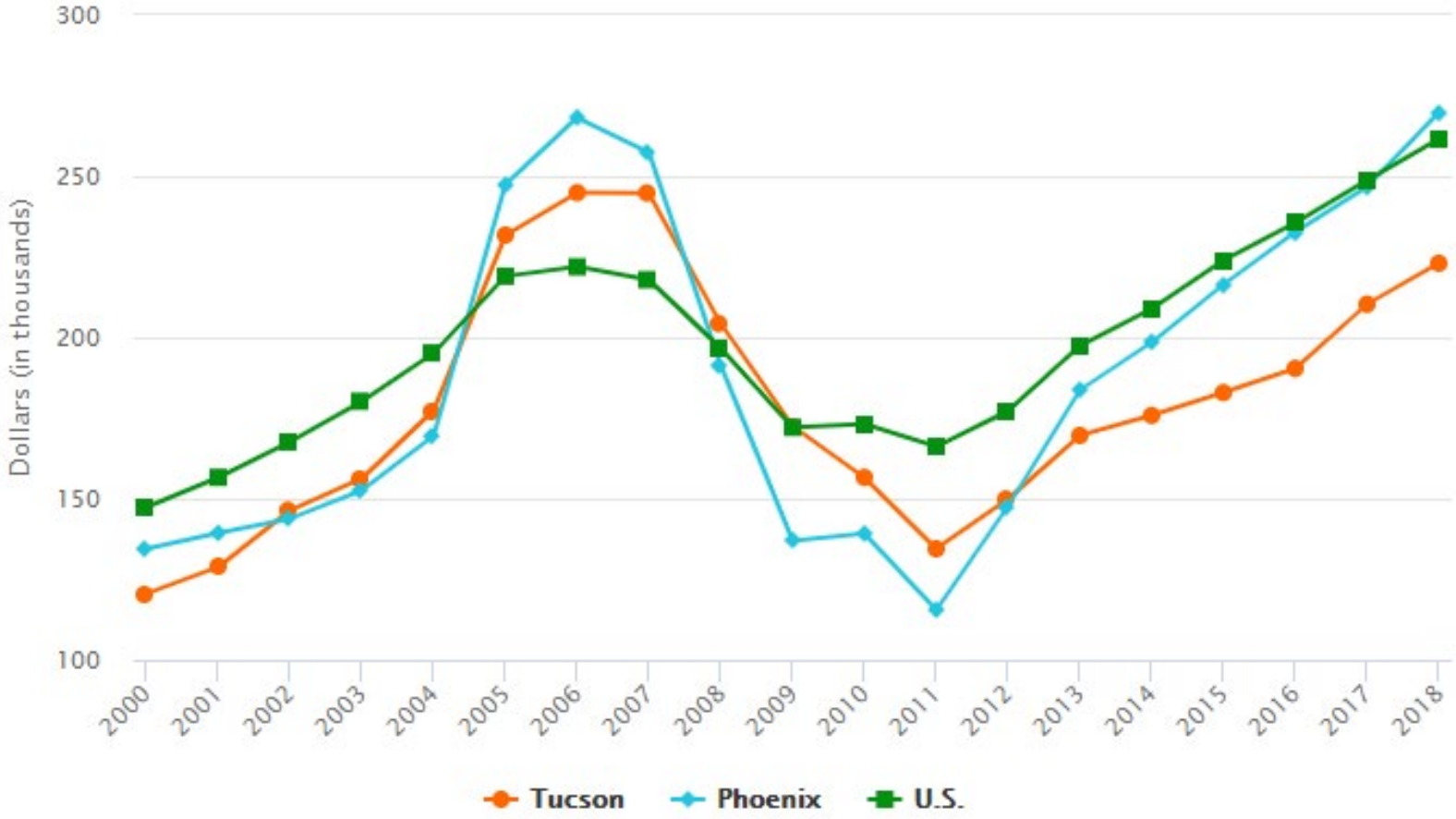
Affordable Housing in Tucson? It Depends



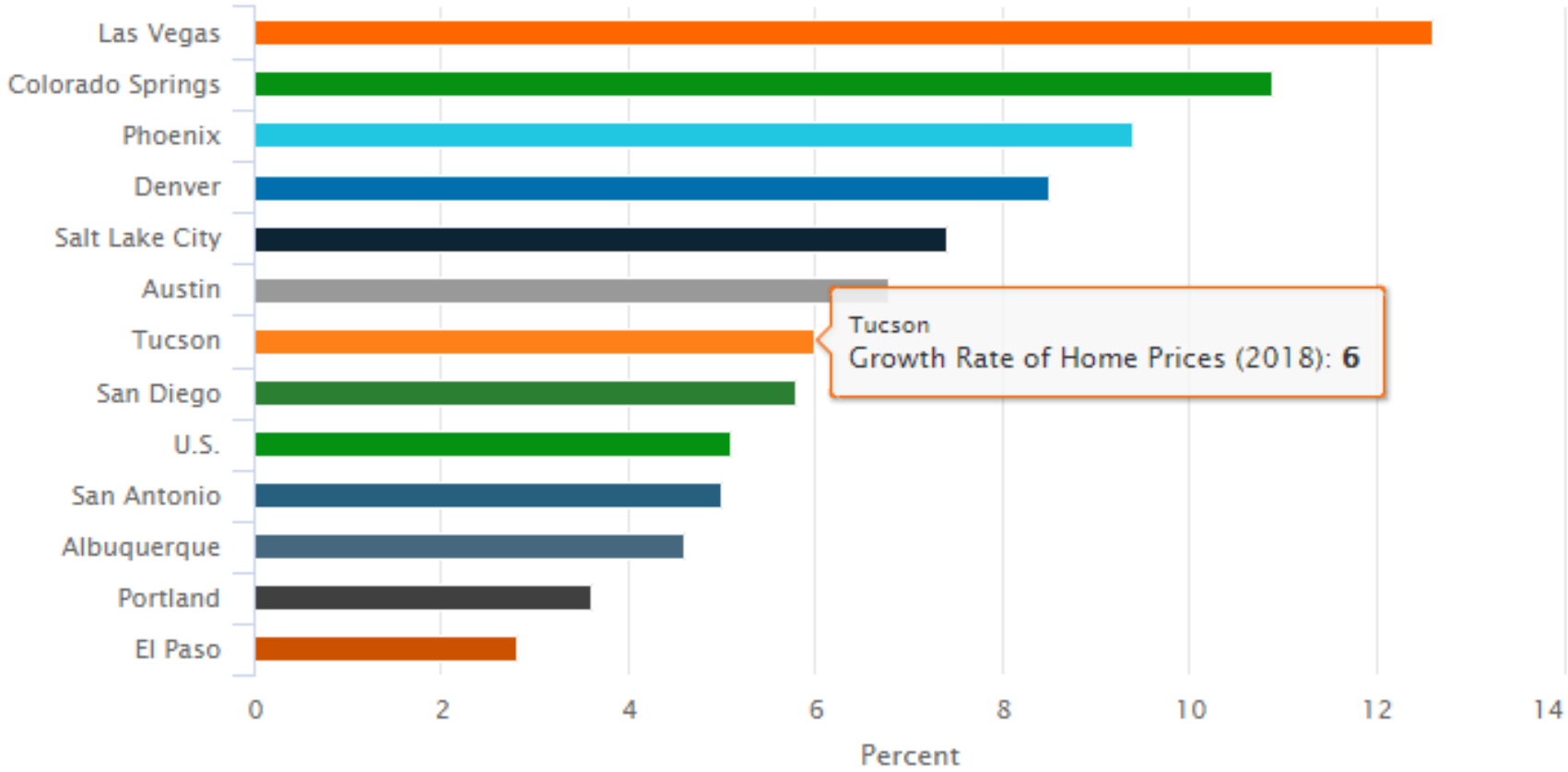
Median Home Price (2018)



Median Home Price



Growth Rate of Home Prices (2018)



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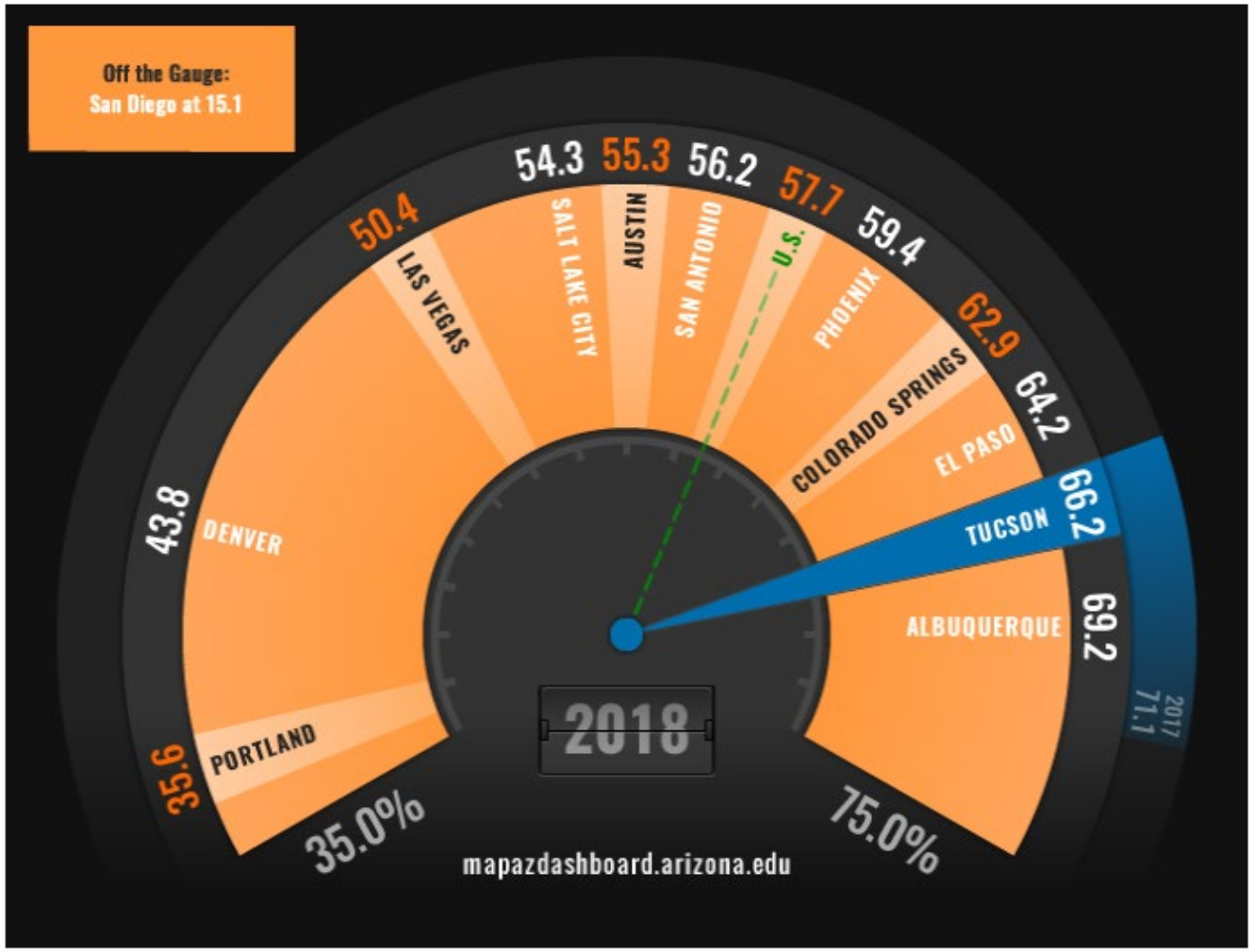
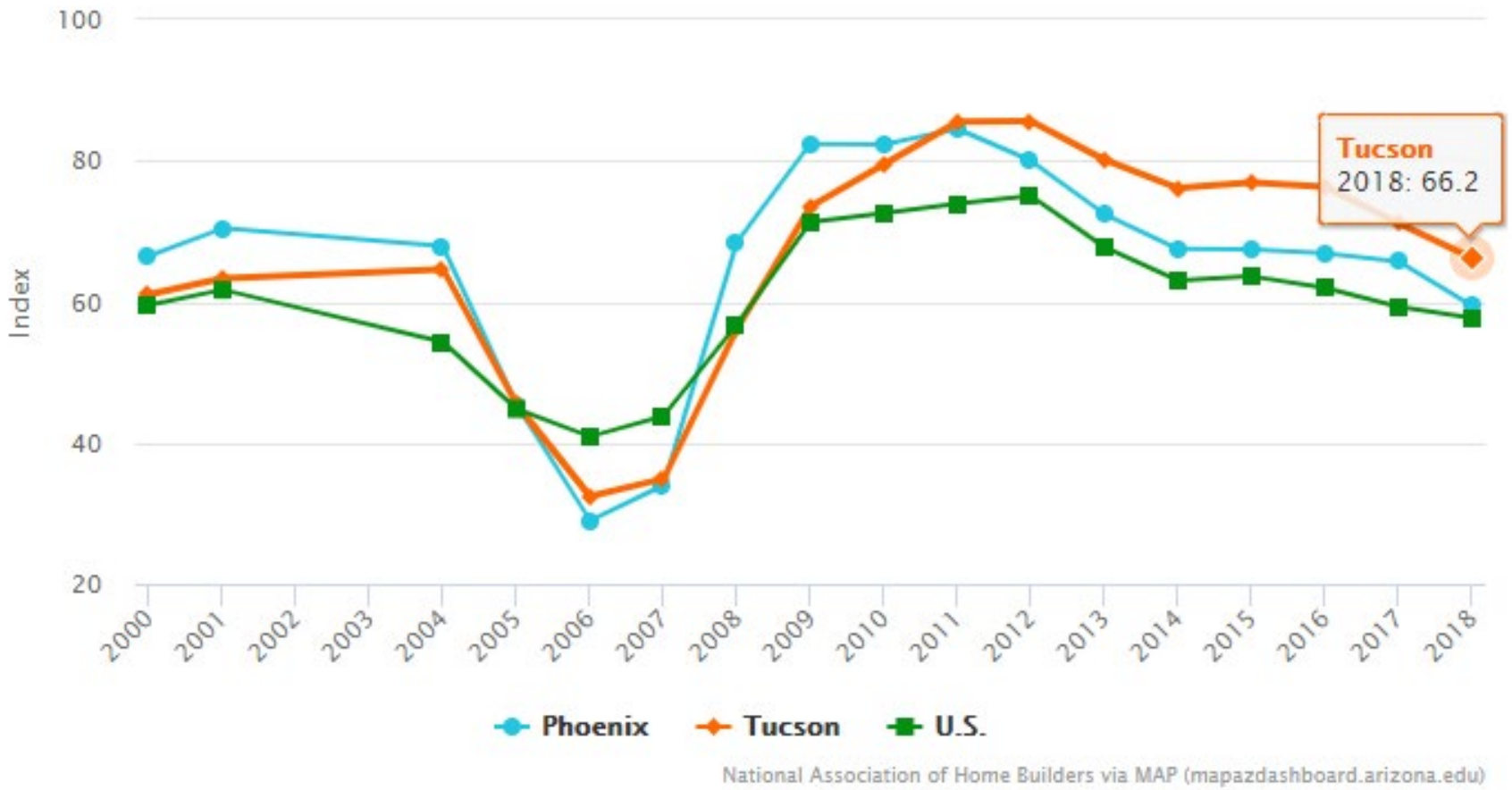
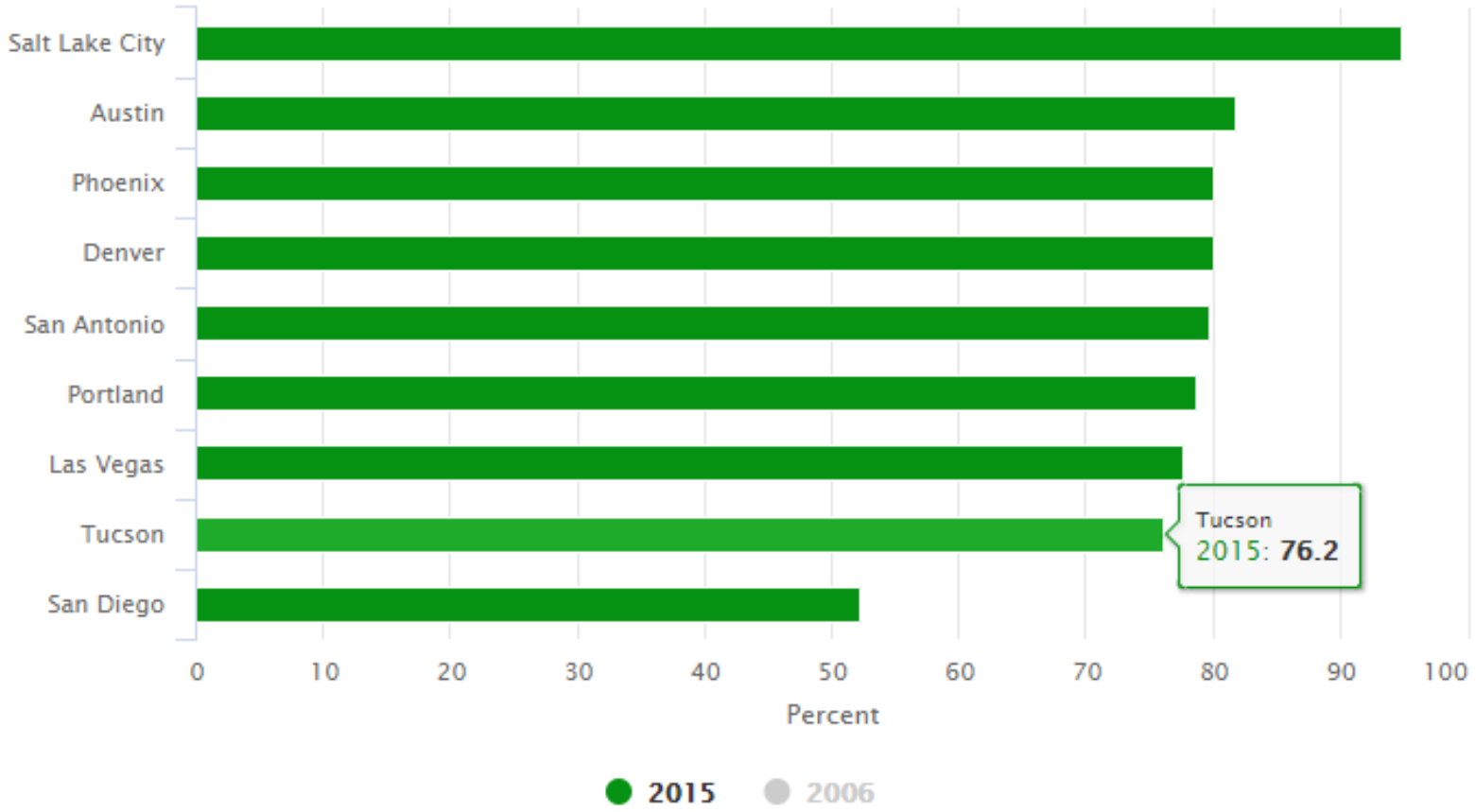
Housing Affordability (2018)



Housing Affordability



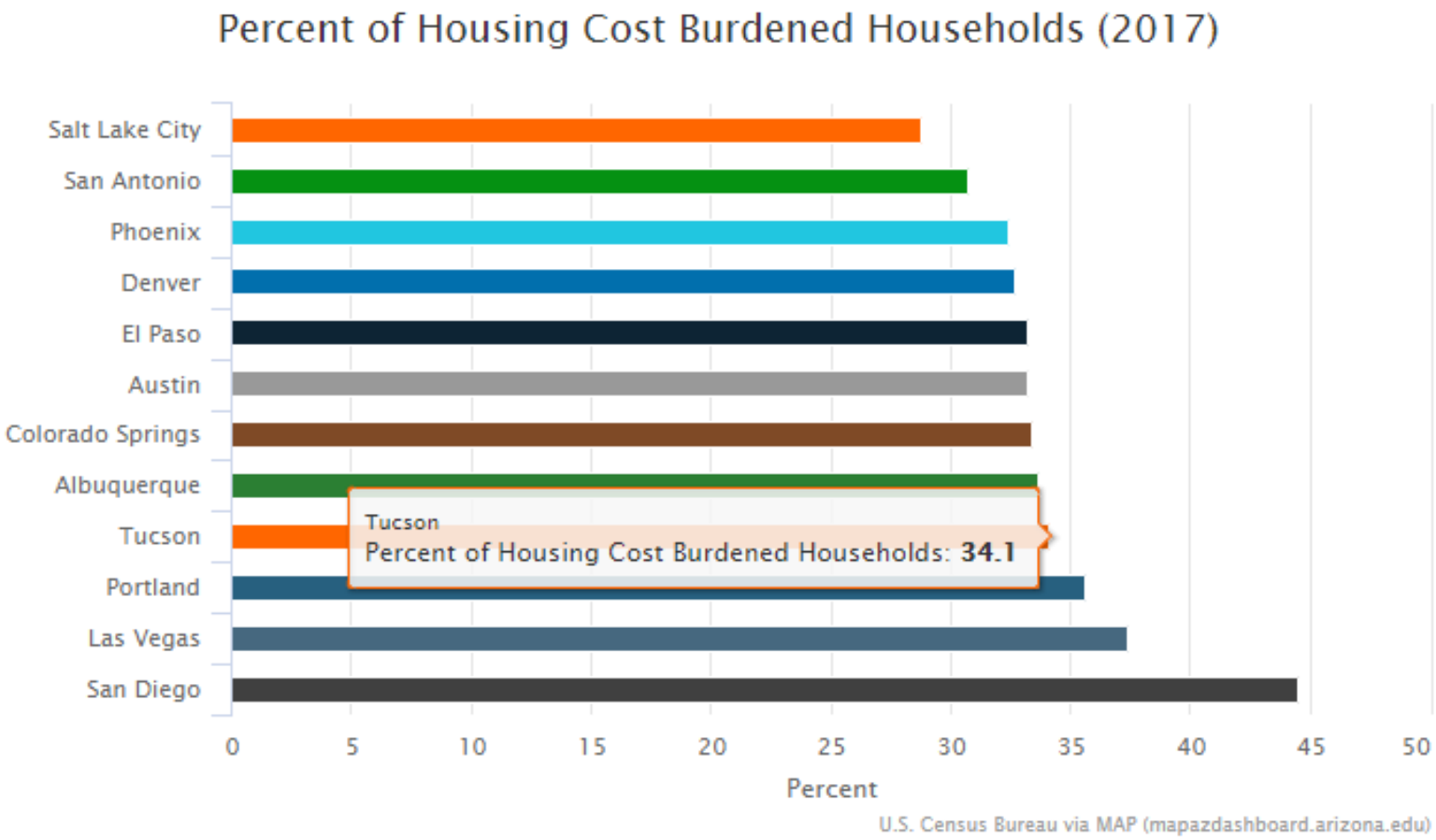
Share of Affordable Rentals (2015)



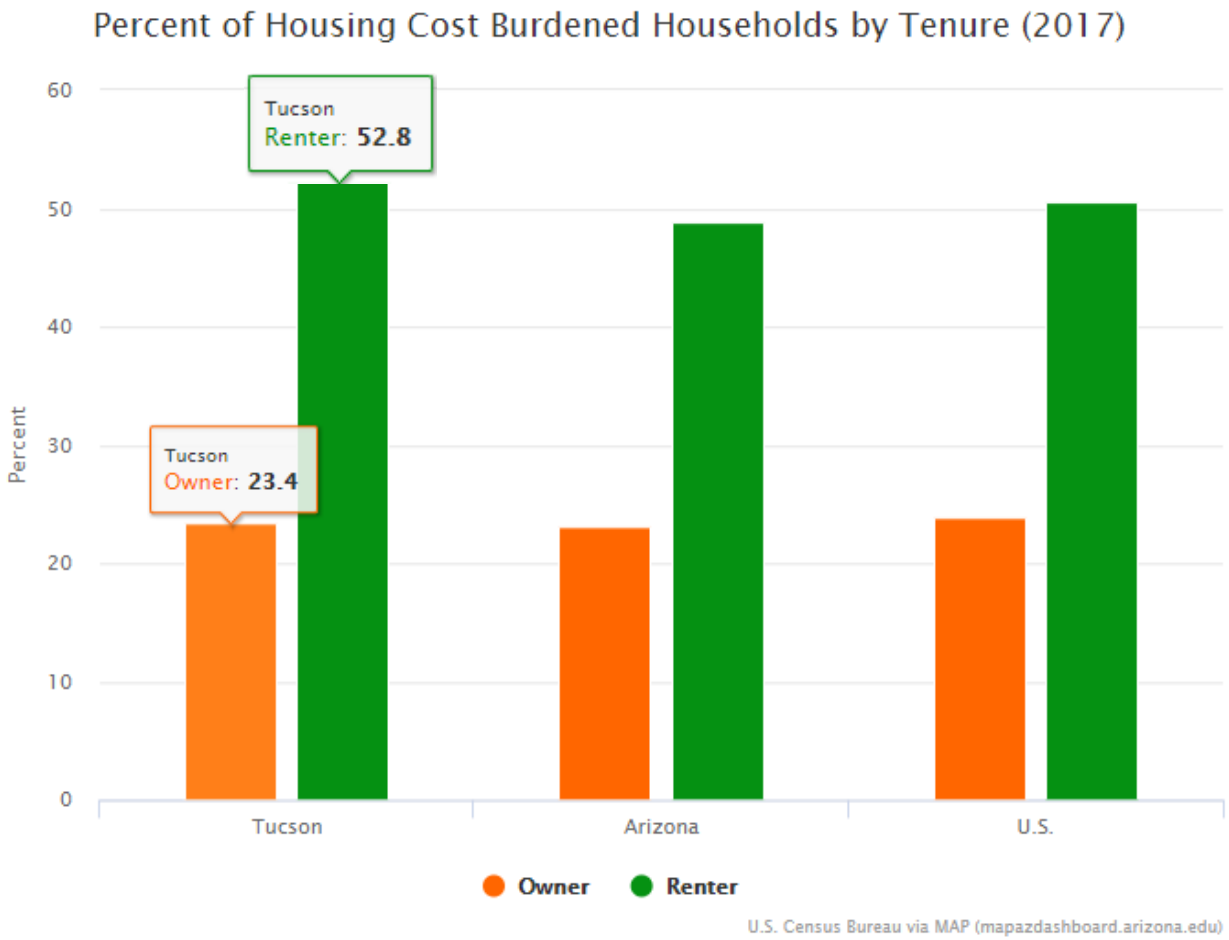
Income Measures Used to Calculate Affordability

- Housing Affordability
  - Median Family Income (~$60,000)
- Rental Affordability
  - Median Household Income (~48,000)

Housing Cost Burden



Housing Cost Burden



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Housing Cost Burden by Income (2017)

mapazdashboard.arizona.edu

INCOME	TUCSON	ARIZONA	U.S.
Less than $20,000	14.6%	11.8%	11.9%
$20,000 - $34,999	10.1%	9.4%	8.6%
$35,000 - $49,999	4.6%	5.2%	4.9%
$50,000 - $74,999	2.6%	3.2%	3.9%
$75,000 or more	1.1%	1.4%	2.7%

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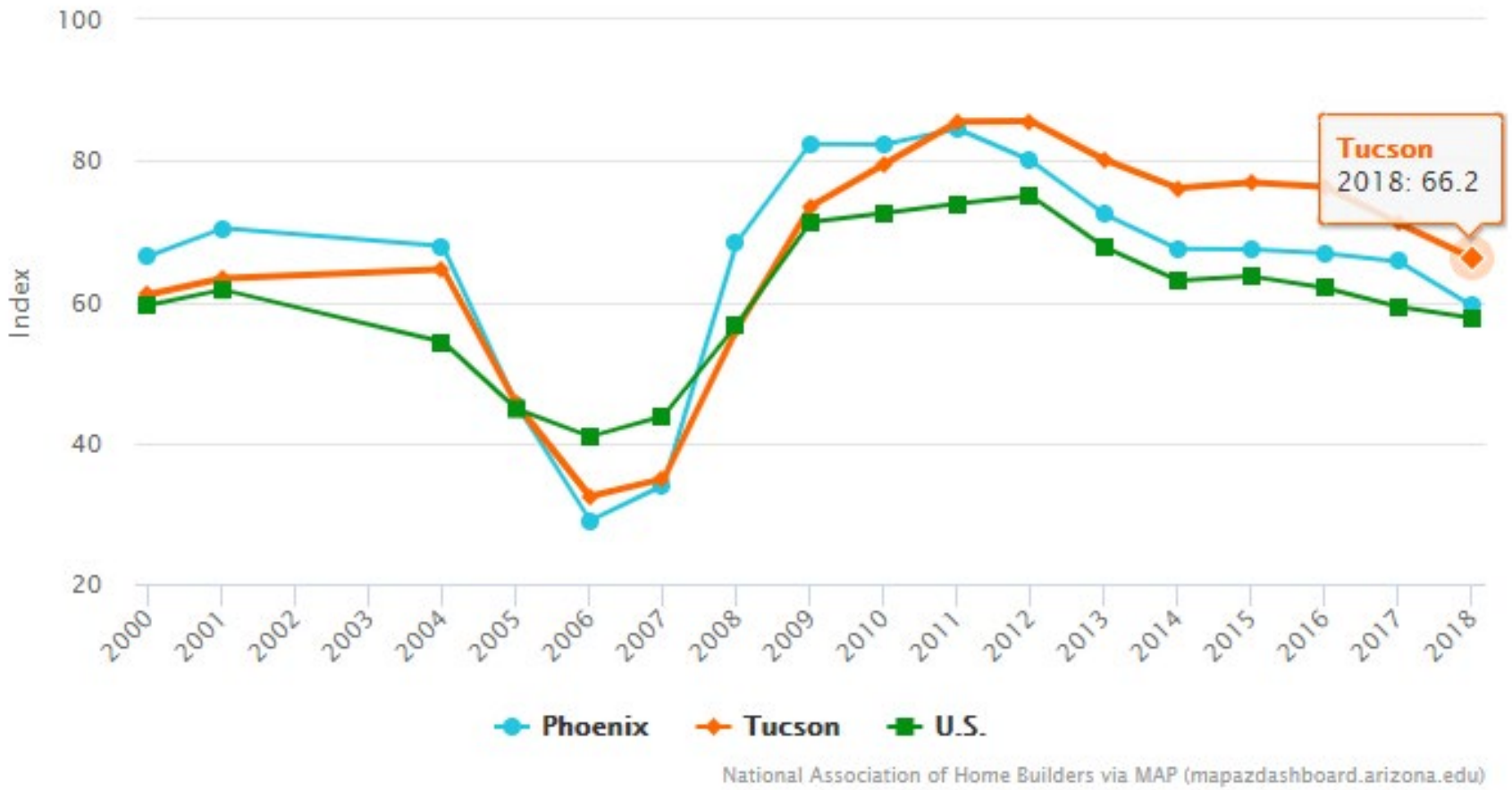
R for Data Visualization

Katelyn Chamarro
Research Economist
Economic and Business Research Center
Eller College of Management
University of Arizona

Housing Affordability



RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Auber R graphs.R* | HousingAffordability

```r
#Run packages
library(readxl)
library(highcharter)
library(htmlwidgets)

#set working directory
setwd("C:/Users/kchamarro/Documents/Auber")

##################################Line graph: Housing Affordability##########################################
HousingAffordability <- read_excel("Housing Affordability.xlsx")
View(HousingAffordability)


HousingAffordability_graph <- highchart() %>%
  hc_chart(type = "line") %>%
  hc_title(text = "Housing Affordability") %>%
  hc_xAxis(categories = HousingAffordability$DateTime) %>%
  hc_yAxis(title = list(text = "Index")) %>%
  hc_colors(c("#ff6d00","#23c3e1","#089014")) %>%
  hc_add_series(name = "Tucson", data = HousingAffordability$Tucson) %>%
  hc_add_series(name = "Phoenix", data = HousingAffordability$Phoenix) %>%
  hc_add_series(name = "U.S.", data = HousingAffordability$U.S.) %>%
  hc_tooltip(shared = TRUE, valueDecimals = 1) %>%
  hc_credits(enabled = TRUE, text = "National Association of Home Builders via MAP (mapazdashboard.arizona.edu)") %>%
  hc_exporting(enabled = TRUE,
               filename = "Housing Affordability")
HousingAffordability_graph

#save html
saveWidget(HousingAffordability_graph, "C:/Users/kchamarro/Documents/Auber//HousingAffordability.html",
           selfcontained = TRUE, background = "white")
```

33:1 Line graph: Housing Affordability — R Script

Console | Terminal | Jobs

~/Auber/

```
> library(readxl)
> library(highcharter)
> library(htmlwidgets)
> setwd("C:/Users/kchamarro/Documents/Auber")
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> HousingAffordability_graph
>
```

Environment | History | Connections

Global Environment

Data

HousingAffordability	17 obs. of 4 variables
HousingAffordability_graph	List of 8

Files | Plots | Packages | Help | Viewer

Auber R graphs.R* | HousingAffordability

Filter

	DateTime	Tucson	Phoenix	U.S.
1	2000	61.0	66.5	59.5
2	2001	63.3	70.4	61.7
3	2004	64.6	67.9	54.3
4	2005	45.5	45.4	44.8
5	2006	32.4	29.0	40.9
6	2007	34.9	34.0	43.8
7	2008	56.2	68.5	56.8
8	2009	73.5	82.4	71.3
9	2010	79.5	82.3	72.6
10	2011	85.5	84.5	73.9
11	2012	85.6	80.0	75.0
12	2013	80.1	72.4	67.7
13	2014	76.1	67.5	63.0
14	2015	76.9	67.4	63.6
15	2016	76.3	66.9	62.0
16	2017	71.1	65.7	59.3
17	2018	66.2	59.4	57.7

Showing 1 to 17 of 17 entries, 4 total columns

Auber R graphs.R* | HousingAffordability

Source on Save | Run | Source

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```

32:1 | Line graph: Housing Affordability | R Script


Files
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Housing Affordability
Index
90
80
70
60
50
40
30
20
2000
2001
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2018
Tucson: 66.2
Phoenix: 59.4
U.S.: 57.7
Tucson
Phoenix
U.S.
National Association of Home Builders via MAP (mapazdashboard.arizona.edu)

Moving R Charts to Web

- Chart saved as html object to local folder
- Uploaded to host server using Dreamweaver
- iframe dropped into html text
- Ex: <iframe frameborder="0" height="500" src="https://www.azeconomy.org/maps-2018/HousingAffordability.html" width="100%"></iframe>

Housing Affordability | MAP AZ

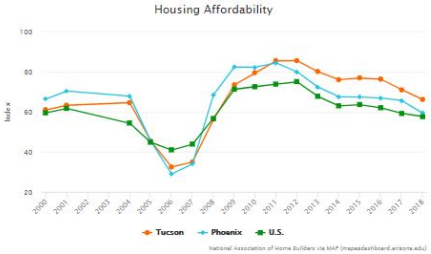
mapazdashboard.arizona.edu/economy/housing-affordability

Why is it important?

Housing affordability is an important issue for many households. Access to affordable housing is important because the home is the largest asset for most people, and its price can affect spending in other areas such as: childcare, education, health care, and leisure activities. Since personal consumption makes up the better part of the economy, and discretionary income levels are influenced by the cost of housing, home prices are an important factor in the local economy. Several factors can influence home prices, including mortgage rates, demographics, income growth, the supply of new housing, and speculative trends. Housing affordability is determined by the share of homes sold in an area that would have been affordable to a family earning the local median income. Housing affordability data comes from the National Association of Home Builders (NAHB).

What are the key trends?

The share of homes sold in Tucson during 2018 that were affordable to a family earning the median income was 66.2%. This was 8.5 percentage points higher than the share of affordable homes in the U.S. Likewise, Phoenix had a slightly higher share of affordable homes than the U.S. at 59.4%. Tucson's share of affordable homes has fluctuated significantly during the past eighteen years with a low of 32.4% in 2006, just before the housing boom, and a high of 85.6% in 2012. The recent trend in housing affordability has declined as home prices continue to rise faster than wages.



How is it measured?

Housing affordability data comes from the National Association of Home Builders (NAHB). The index is calculated for a given area based on two major components: income and housing. NAHB's methodology includes using annual median family income estimates and assumes that a family can afford to spend 28% of its gross income on housing. Additionally, monthly sales transaction records are used to determine the sales price of sold homes. Further, NAHB calculates the monthly principal, interest, and taxes based on a 30 year fixed rate mortgage with a loan for 90% of the sales price. The data is reported quarterly and the Making Action Possible (MAP) research team aggregates the data to an annual index value.

Thank you!

Contact Information

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Jennifer Pullen: jpullen@eller.arizona.edu

THE UNIVERSITY OF ARIZONA