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| Phoenix home price predictor | Users Guide  Dawn Belbin |

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# **Introduction**

The Phoenix home price predictor is a model that is available to the casual investor to understand how real estate prices are affected by different features including zip code, pool, HOA, number of bedrooms, number of bathrooms, square footage of the house, lot square footage, and the year the house was built. The data used only includes those homes sold over the last year for $500,000 or less.

This users guide will walk through each of the screens of the app and explain the features and how to interact with the app.

The app can be found at the following url: <https://dbelbin-capstone-app-mp6x0y.streamlit.app/>

# **Home Page**

A picture containing engineering drawing

Description automatically generated

The first view of the app will display as shown above. This home page is the entrance into the app and navigating through the app will be down through the sidebar under the sold image

Diagram

Description automatically generated

Under the Pages header, there is a sub header showing Data Exploration or Prediction, under this header is a drop down selector to choose which page to navigate to. The options are shown below. These options are available from any of the pages.

Graphical user interface, application

Description automatically generated

# **Map of Historical Home Sales**

The map of historical home sales is an informational page to understand which area is covered by this app. Each red dot represents a house sold under $500,000 in the last year. The model is only applicable to zip codes within the City of Phoenix and does not cover any suburbs. This map has the user the option to zoom in and scroll around the map to highlight specific areas.

A picture containing map

Description automatically generated

# **Historical Prices by Zipcode**

When navigating to this page, the filter is set to include all zipcodes and home sales on the graph as shown below.

Graphical user interface, chart, scatter chart

Description automatically generated

The first step is to use the drop down selector and choose one or more zipcodes to view their prices over the past year. Within the chart is a trend line to show how the prices have trended over the prior year.

Chart, scatter chart

Description automatically generated

When selecting, the data table at the bottom will reflect the properties shown on the scatterplot above. The data table can be viewed by scrolling down through all the properties or right to see the different features.

Graphical user interface

Description automatically generated

# **Statistics by Home Sales**

The statistics by Home Sales page provides the median price, median number of bedrooms, median number of bathrooms, median square footage of the house, median lot size and median year built of all the homes sold in each zipcode groups by having a pool and having an HOA. This gives the user the ability to quickly see the key statistics when researching zip codes and prices. For example, in zipcode 85037 a house without a pool or an HOA has a median sale price of $375,000, 3 bedrooms, 2 bathrooms, 1,492 sqft, a 6,734 sq ft lot and a median build year of 1983. The same zipcode with an HOA has a median price of $403,000 for 3 bedrooms, 2 bathrooms, 1,678.5 sqft, 5,175 sqft lot size with a median build year of 2001. This same zipcode for a pool but no HOA is a median sale price of $380,000 for 3 bedrooms, 2 bathrooms, 1,518.5 sqft, 7,135 square foot lot size and a median year built of 1981. With both a pool and HOA, the median price is $430,000 for 3 bedrooms, 2 bathrooms, 1,874sqft, 6050 sqft lot size and a median build year of 2001.

Table

Description automatically generated

# **Correlation of Home Features**

The correlation of home features is a statistical representation of how each of the home features are related to each other. When looking at this heatmap, lot size and year built are negatively correlated. This means that older homes are more likely to have a larger lot size. On the positive correlation side, year built has a positive correlation to HOA as many new homes HOAs. This visualization is a quick snapshot of understanding the feature relationships.

Chart

Description automatically generated

# **Calculator**

The calculator page is the page used to predict or calculate a home’s value based on user inputs.

Zipcode: Select from the dropdown of the Phoenix zipcodes

Bedrooms: Select from the dropdown the number of bedrooms from one to five

Bathrooms: Select from the dropdown the number of bathrooms from one to four including half baths.

Square Footage of House: Enter the square footage of the house. The minimum square footage allowed is 500sqft and the maximum allowed is 3,500sqft.

Lot Size: Enter the square footage of the lot. The minimum value allowed is 3,500 square feet, and the maximum value allowed is 15,000sqft.

Year Built: Enter the year the house was built with a minimum year allowed of 1915 and a maximum year of 2023.

Pool: If the property contains a pool, select the checkbox.

HOA: If the property is part of an HOA, select the checkbox.

Once the data is entered, select the Calculated Predicted Price button at the bottom of the form and the model will produce a predicted price.

Graphical user interface, application, Teams

Description automatically generated

# **Troubleshooting**

Should the app pages fail to load, close the browser page that the app is on and reopen the app from the shared url. If after closing the app and browser the app still does not load, please try another device, or contact the owner of the app.

# **FAQ’s**

How to change viewer theme’s

On the top right corner of the app select the three bars  and open the settings option. From here, there is the choice to view the app in light or dark mode based on user preference.

How to view maps and visualizations on full screen

Each of the visualizations and graphs can be expanded by clicking on the arrows in the top right corner of the map or visualization

Chart, scatter chart

Description automatically generated

How to view charts and visualizations across the width of the screen without using full screen

On the top right corner of the app select the three bars  and open the settings option. From here click on settings and select ‘Wide mode’ under Appearance.

# **Help and Contact Details**

For help with this app, please contact the app owner at dbelbin@my.gcu.edu