**ISM 645/IAF 601: Predictive Analytics**

Impacts of Unemployment on Average House Prices in North Carolina

**October 13, 2020**

Oluwafunke Folarin

Vathana Him

Andrew Lindberg

Dajonna Williams

# 

# 

# 

# 

# 

# 

# 

# 

# Overview

During the recent economic growth and before the COVID-19 pandemic, it was known that house prices had increased year after year for major cities in North Carolina (Andrews, 2020). However, when the novel coronavirus hit, it had undoubtedly affected many sectors of North Carolina’s economic industries. This would eventually lead to massive unemployment rates, shutting down of businesses big and small, furloughs of private employees, and reduction in average wages (Carolina Small Business Development Fund, 2020). This ripple effect that resulted from the novel Coronavirus had caused a dramatic economic slowdown and drifted North Carolina into another economic recession. Much like other economic recession in the past, analysts suggested that this recession will cause a drop in house prices (Andrews, 2020). Evictions and foreclosures were on the rise due to the impact of this economic slowdown and rising unemployment rates (Sessoms, 2020). Thus, this project will examine the relationship between unemployment and average house prices in North Carolina. It will look into past historical data to see if there’s a linear relationship between unemployment rates and average house prices. Additionally, a predictive model will also be created to determine how unemployment rates in the future will impact the housing market.

# Goals

1. **Identify the relationship between unemployment and average house prices:** It is our belief that there is likely to be a correlation between these two variables.
2. **Build a predictive model that will project average house prices as a product of unemployment rates:**  A predictive model such as this could be useful for governments and community support agencies whose financial planning is likely to need to consider providing housing support for the millions of North Carolinians who have lost their job or part of their income as a result of the coronavirus.

# Specifications

The data set that will be analyzed for this project was retrieved from the U.S Bureau of Labor Statistics and the Zillow website. They both contain the unemployment rate and average house prices in North Carolina respectively. R studio is a tool that will be used for all the data analysis and predictive modeling. Time-series plots and analysis will be used to examine changes in unemployment rate and rental rates over time. After the analysis, predictive modeling will be built to see how unemployment rates in the future will have an impact on average house prices through a simple linear regression model.

# Milestones

## Preliminary Analysis - November 8, 2020

* 1. Data cleaning and manipulation to coincide with all of our data sources
  2. Development of simple linear regression models to see trends over time for both unemployment and rental rates

## Build Predictive Model - November 16, 2020

* 1. A simple linear regression model will be built to analyze relationships between unemployment rate and average house prices

## Present Findings - November 29, 2020

The final presentation will be provided as a video detailing the hypotheses, findings, and steps taken to determine the results. The video will be supported with a powerpoint presentation that is likely to include charts and graphs.

***References:***

Apartment Guide. (2020, September 23). Rent Report: The State of the Rental Market.

Retrieved October 14, 2020, from

https://www.apartmentguide.com/blog/apartment-guide-annual-rent-report/

Andrews, J. (2020, July 23). Home Prices May Be Dropping Soon. Here's Why. Retrieved

October 15, 2020, from

<https://archive.curbed.com/2020/7/23/21333325/housing-market-real-estate-prices-cor>

onavirus

Assessing the Economic Impacts of COVID-19 on North Carolina’s Small Business

Community APRIL 2020 RESEARCH REPORT. (2020). Retrieved October 14, 2020, from

http://carolinasmallbusiness.org/wp-content/uploads/2020/04/COVID-19-NC-Small-Business-Impacts-Report.pdf

Sessoms, B. (2020, September 28). Thousands of North Carolina residents fell through

crack between eviction halts. Retrieved October 14, 2020, from

<https://www.citizen-times.com/story/news/local/2020/09/28/north-carolina-landlords-fi>

led-more-than-18-000-eviction-orders-just-two-months/3529116001/

U.S. Bureau of Labor Statistics, Unemployment Rate in North Carolina [NCUR], retrieved

from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/NCUR>,

October 14, 2020.

Yale, A. (2020, August 10). Will Home Prices Drop During the 2020 Recession? Retrieved

October 15, 2020, from

<https://www.thebalance.com/when-will-housing-prices-drop-again-4773140>

ZHVI All Homes (SFR, Condo/Co-op) Time Series, Smoothed, Seasonally Adjusted ($),

Metro & U.S. (2020). *Zillow Housing Data.* Retrieved October 15, 2020, from

https://www.zillow.com/research/data/.