



# Baltimore Real Estate Investment

By Seth Chart

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# Problem Statement

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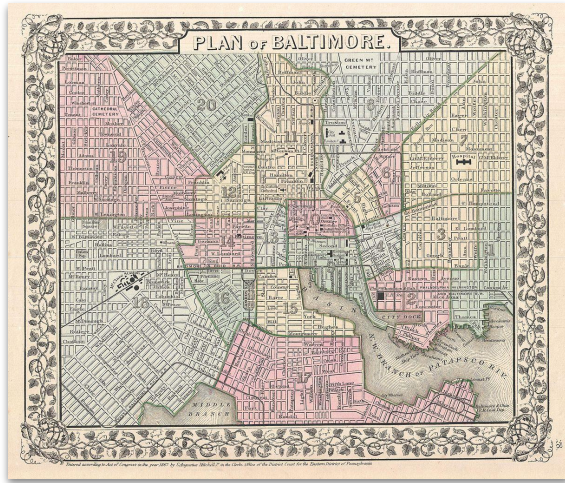


- Our client is an individual homebuyer who is moving to Baltimore Maryland.
- Our client plans to buy a single family home in the city of Baltimore, live in the home for five years, then sell the home.
- They want to select a house in a zip code that will maximize their expected return on investment.
- Our task is to identify the five best zip codes within the city of Baltimore for this type of investment.

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# Business Value

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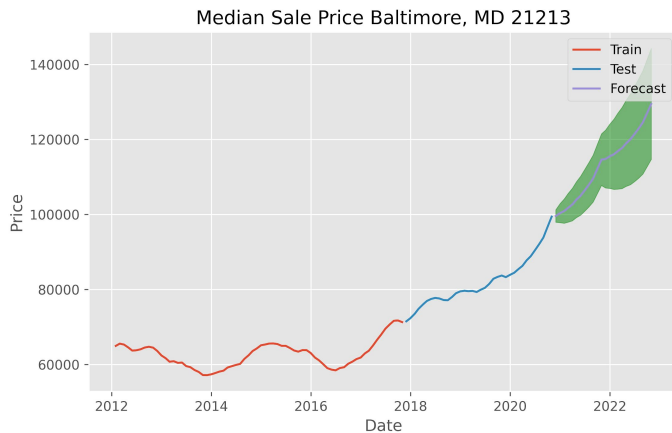
By identifying the five zip codes that are best suited to our client's investment strategy we expect to provide the following outcomes:

- Maximize return by identifying zip codes with favorable property cost trends.
- Assess risk associated by identifying the 95% confidence interval for five year return on investment

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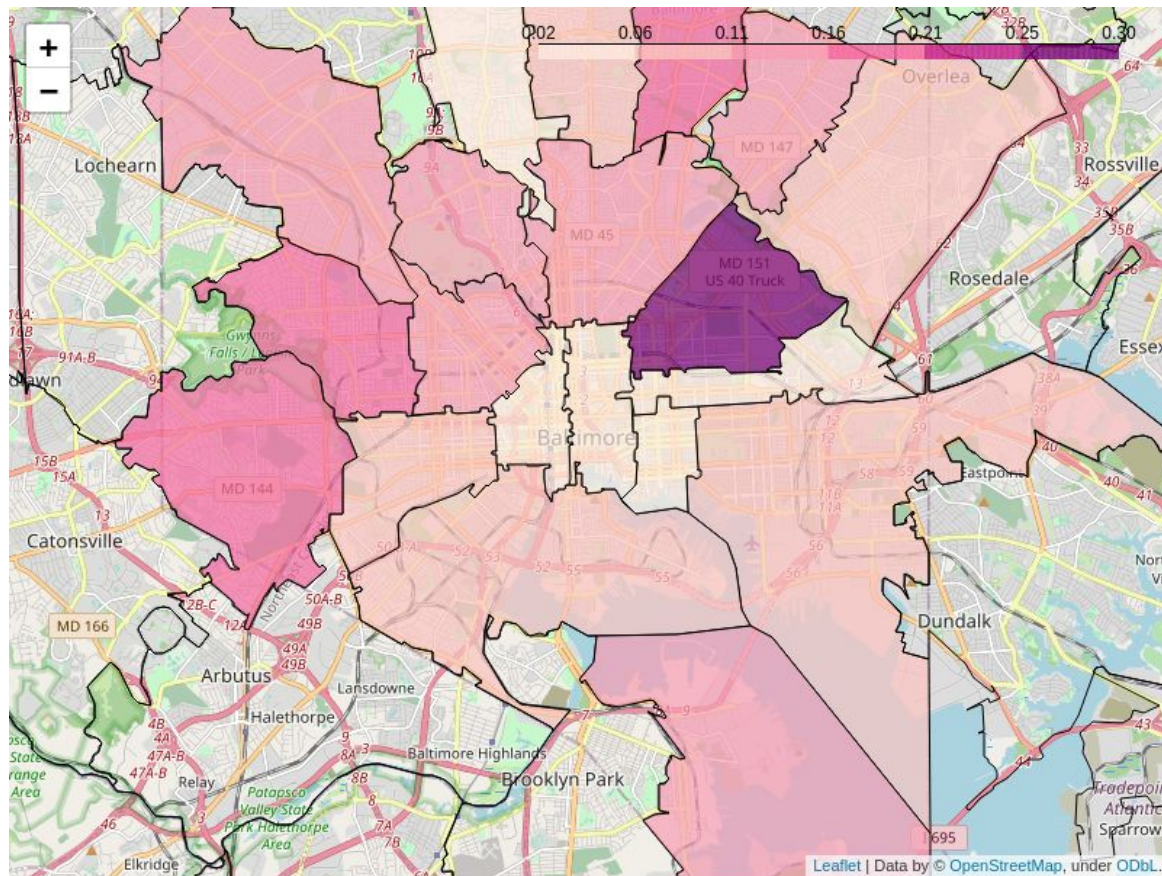
# Methodology

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- Collect historical median sale price by zip code from Zillow.
- Fit a Seasonal AutoRegressive Integrated Moving Average (SARIMA) model for each zip code in Baltimore.
- Use SARIMA models to forecast median sale price for each zip code five years into the future.
- Select five zip codes with highest forecasted ROI.

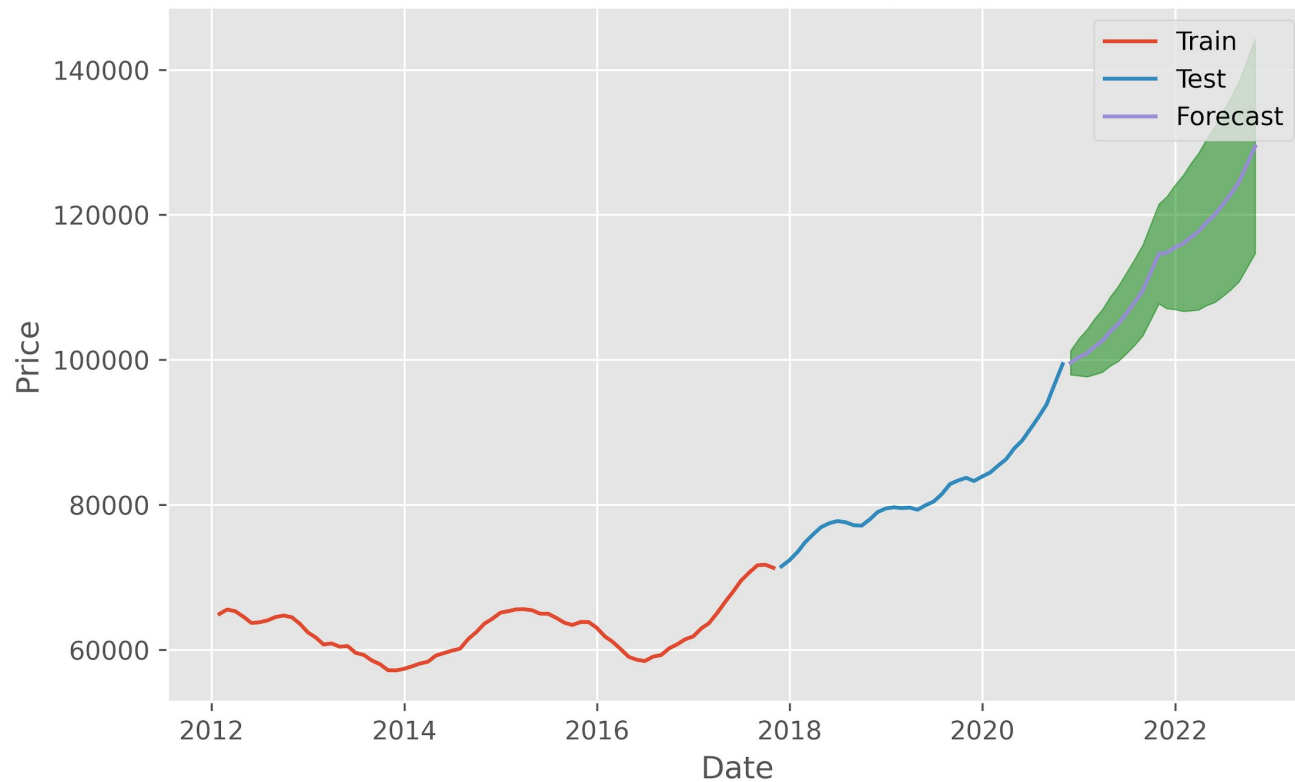




Map of Baltimore zip codes indicating projected return on investment.



## Median Sale Price Baltimore, MD 21213



Time series plot of median sale price for top zip code.

# Recommendations

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# Best Zip Code: 21213



## Belair-Edison Neighborhood:

- Median Sale Price: \$99,420
- Projected Median Sale Price: \$129,461
- Five Year ROI: 30%
- Main Attraction: Herring Run Park

## Second Best Zip Code: 21229



Irvington Southwest Baltimore:

- Median sale Price: \$131,301
- Forecast Median Sale Price: \$157,004
- Five Year ROI: 20%
- Main Attraction: Gwynns Falls Park

## Third Best Zip Code: 21216



Hanlon Longwood Neighborhood:

- Median sale Price: \$97,222
- Forecast Median Sale Price: \$115,741
- Five Year ROI: 19%
- Main Attraction: Hanlon Park

## Fourth Best Zip Code: 21239



### Idlewylde Neighborhood:

- Median sale Price: \$161,381 Forecast
- Median Sale Price: \$187,150
- Five Year ROI: 16%
- Main Attraction: Two Golf Courses
  - Country Club of Maryland
  - Mount Pleasant Golf Course



## Fifth Best Zip Code: 21226



### Curtis Bay Neighborhood:

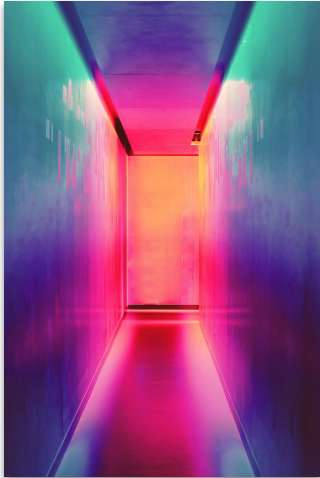
- Median sale Price: \$245,953
- Forecast Median Sale Price: \$279,256
- Five Year ROI: 14%
- Main Attraction: Curtis Bay waterfront

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# Future Work



# Future Work



- Optimize and parallelize code for a nation-wide search.
- Try Long Short-Term Memory neural networks in place of SARIMA models.
- Incorporate exogenous variables.
- Model a more realistic investment strategy.
  - House flipping
  - Rental property investment
- Build project dashboard.



# Thank You!



Ways to find me:

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- LinkedIn: [sethchart](https://www.linkedin.com/company/sethchart)
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- Email: [seth.chart@protonmail.com](mailto:seth.chart@protonmail.com)
- Project Repository: [Baltimore-Real-Estate-Investment](https://github.com/Baltimore-Real-Estate-Investment)

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# Appendix



# List of Images

- [city buildings near body of water photo](#) – Free Building Image on Unsplash by ActionVance
- [road near brown house photo](#) – Free Street Image on Unsplash by Erin White
- [Samuel Augustus Mitchell](#), Public domain, via Wikimedia Commons
- [multicolored hallway photo](#) – Free Neon Image on Unsplash by Efe Kurnaz
- By Belairedison (talk) - self-made, Public Domain,  
<https://en.wikipedia.org/w/index.php?curid=16090003>
- <http://www.gwynnsfallstrail.org/>
- Benjamin, Jancewicz <https://goo.gl/maps/vMF6oUF8Qpq77rDv8>
- <https://belvederesquare.com/directory/atwaters/>
- <https://www.ccofmd.com/Golf/Golf%20Shop.aspx>
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