

# Best Neighborhoods in South King County for Seattle Workers

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Data Science Capstone – The Battle of Neighborhoods

December 2020

## Abstract

South King County in Washington state, an area just outside Seattle, has many neighborhoods that still provide conveniences and allow for their residents to pursue job opportunities in Seattle proper. This report considers which areas in Auburn, Federal Way, Burien, Des Moines, Kent, and Renton have the most amenities in their zip code that would serve a typical Seattle worker. The amenities considered are how many police stations, hospitals/medical facilities, Metro park-and-rides, and restaurants are within each zip code. Each zip code/city can be scored accordingly, yielding the “best” neighborhood in South King County. Hopefully, this information will inform a typical Seattle employee who does not wish to live in the city about some great areas to live that still carry some of the perks of living in the city, while allowing easy transportation to and from Seattle.

## Introduction

King County in Washington State is agreed by many to be a great place to live. Home to the city of Seattle, it is, according to the Seattle Times, ranked 2<sup>nd</sup> in the country for home prices, as, despite the COVID-19 Coronavirus Pandemic, men and women are still flocking to this beautiful, convenient area. Many homebuyers, discouraged by the prices of living in Seattle proper, are looking for alternatives that still boast nearness to important institutions, such as police and medical care, but also have the convenience of dining options and transportation to and from Seattle for work purposes.

It is important for these potential homeowners to know what is available in an area and if it will meet their needs before committing to such a large and important purchase. Therefore, the goal of this project is to determine which neighborhood has the most amenities in 4 main areas: police stations, medical facilities, Metro park-and-rides, and restaurants. The hope is that the areas with more options will give residents a city-feel without the price tag.

Homebuyers will be benefited to know these things in advance in aid of narrowing-down their search, saving time and therefore money. Realtors can also use this information to better present and sell houses in these neighborhoods to prospective buyers.

## Data

The data used for South King County zip codes, police stations, medical facilities, and Metro park-and-rides is provided by the King County GIS Open Data website and was narrowed down to the zip codes in the cities of Auburn, Burien, Des Moines, Federal Way, Kent, Renton, SeaTac, and Tukwila.

For our stakeholders to get a richer understanding, the city or zip code alone was not used to define the area, but the combination of the two. This allows for more specificity in the analysis, giving a better understanding where to look in terms of locations. This combined field was labeled "City\_Zip".

The Metro park-and-ride data and the medical facility data had addresses and zip codes listed, but not cities. Therefore, before these tables were pulled into Python, each address was looked up via Google Maps and the city added in its own column. Data regarding restaurants in the area was pulled from Foursquare, and narrowed down to restaurants within 2 miles (about 3219 meters) of the cities and zip codes above, determined by the mean of the latitude and longitude data for each city and zip code. Consequently, "center" was not defined in terms of geography, but rather in terms of address density.

A sample portion of this data is provided below:

| Longitude    | Latitude    | OBJECTID | FEATURE_ID | ESITE  | CODE | NAME   | ABB_NAME                         | ADDRESS                  | ZIPCODE / CITY                   |
|--------------|-------------|----------|------------|--------|------|--|----------------------------------|--------------------------|----------------------------------|
| -122.3215305 | 47.64297722 | 1        | 650070     | 419120 | 65   | WSP District 2 Seattle North Detachment        | WSP District 2 Seattle N Detatch | 811 E Roanoke            | 98102 Seattle                    |
| -122.3553481 | 47.51702598 | 2        | 650016     | 500461 | 65   | White Center Storefront                        | White Center                     | 1327 SW 102nd St         | 98146 Unincorporated King County |
| -122.3041355 | 47.53737855 | 3        | 650084     | 764142 | 65   | KC Airport Law Enforcement                     | KC Airport Law Enforcement       | 7277 Perimeter Rd S      | 98108 Seattle                    |
| -122.1519583 | 47.44443481 | 4        | 650008     | 611396 | 65   | Fairwood Storefront                            | Fairwood                         | 17620 140th Ave SE       | 98058 Unincorporated King County |
| -122.0441405 | 47.39509227 | 5        | 650001     | 620199 | 65   | KC Precinct 3 Headquarters                     | KC Precinct 3 HQ                 | 22300 SE 231st St        | 98038 Maple Valley               |
| -122.3435671 | 47.76350026 | 6        | 650003     | 16141  | 65   | Shoreline Police Department                    | Shoreline PD                     | 1206 N 185th St          | 98133 Shoreline                  |
| -122.322802  | 47.5895736  | 7        | 650023     | 766111 | 65   | Metro Transit Police Unit                      | Metro Transit Police Unit        | 1301 Airport Way S       | 98104 Seattle                    |
| -121.3599777 | 47.71022038 | 8        | 650024     | 72724  | 65   | Skykomish Substation                           | Skykomish                        | 119 4th St N             | 98288 Skykomish                  |
| -122.168861  | 47.53853231 | 9        | 650025     | 988637 | 65   | Newcastle Police Department                    | Newcastle PD                     | 12835 Newcastle Way      | 98056 Newcastle                  |
| -122.1343241 | 47.58471363 | 10       | 650038     | 96617  | 65   | WSP District 2 Headquarters and Communications | WSP District 2 HQ                | 2803 156th Ave SE        | 98007 Bellevue                   |
| -122.2493805 | 47.76051602 | 11       | 650049     | 149398 | 65   | Kenmore Police Department                      | Kenmore PD                       | 18120 68th Ave NE        | 98028 Kenmore                    |
| -122.277537  | 47.4337568  | 12       | 650081     | 398703 | 65   | SeaTac Police Department                       | SeaTac PD                        | 4800 S 188th St          | 98188 SeaTac                     |
| -122.2896882 | 47.46262144 | 13       | 650071     | 734397 | 65   | WSP District 2 Seattle South Detachment        | WSP District 2 Seattle S Detatch | 15666 International Blvd | 98188 Tukwila                    |
| -121.8757013 | 47.52708967 | 14       | 650072     | 194417 | 65   | Snoqualmie Police Department                   | Snoqualmie PD                    | 34825 SE Douglas St      | 98065 Snoqualmie                 |
| -122.0368039 | 47.60132348 | 15       | 650006     | 375887 | 65   | Sammamish Police Department                    | Sammamish PD                     | 801 228th Ave NE         | 98075 Sammamish                  |
| -122.1180698 | 47.35922472 | 16       | 650020     | 672195 | 65   | Covington Police Department                    | Covington PD                     | 16720 SE 271st St        | 98042 Covington                  |
| -122.2391237 | 47.61536028 | 17       | 650039     | 118339 | 65   | Medina Police Department                       | Medina PD                        | 501 Evergreen Point Rd   | 98039 Medina                     |
| -122.0025837 | 47.30911746 | 18       | 650040     | 637870 | 65   | Black Diamond Police Department                | Black Diamond PD                 | 25510 Lawson St          | 98010 Black Diamond              |
| -122.2294419 | 47.36864845 | 19       | 650052     | 662134 | 65   | Corrections Facility (Jail)                    | Corrections                      | 1230 Central Ave S       | 98030 Kent                       |
| -122.3172777 | 47.61491969 | 20       | 650066     | 453753 | 65   | Seattle Police East Precinct                   | SPD East Precinct                | 1519 12th Ave            | 98122 Seattle                    |
| -122.4623406 | 47.44709249 | 21       | 650022     | 408450 | 65   | Vashon Substation                              | Vashon                           | 10011 SW Bank Rd         | 98070 Unincorporated King County |
| -122.2484147 | 47.27798961 | 22       | 650028     | 802571 | 65   | Algona Police Department                       | Algona                           | 402 Warde St             | 98001 Algona                     |

The website downloaded data was uploaded into a Jupyter Notebook using Python code. The tables were cleaned for necessary/helpful data only, city and zip code fields were merged, and counts were prepared for each amenity type, using the city-zip field for grouping to enhance specificity.

The restaurant data was uploaded using Foursquare and, likewise, cleaned and prepared. The tables were sorted by highest frequency and each city-zip code was evaluated.

Finally, an amenity score was given for each city-zip code for each amenity based on the number of total amenities available and the number found in each city-zip code. The scores were added and reported. The city-zip codes with the highest scores are considered the best ones to live in.

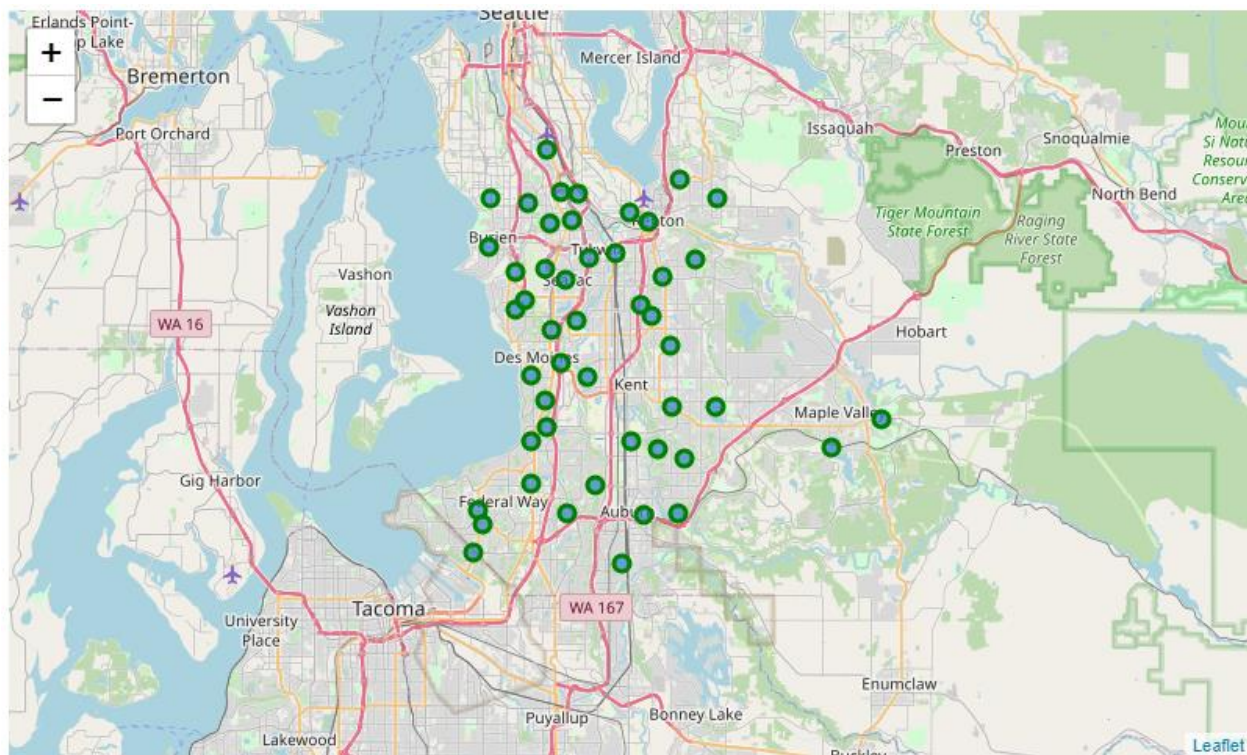
## Methodology

Having prepared the data for analysis, the general structure of the data and areas represented were examined, observing how the city-zip code delineation fits with the overall South King County area. A map was viewed to provide a visual reference.

Each amenity was scored based on how many of each exist in each city-zip code compared to how many total are in the South King County area. Those scores were totaled to give each city-zip a total score. Each total score was divided into tiers and mapped. Those tiers were analyzed for any patterns and their implications discussed.

## Analysis

The analysis began with viewing an overall map of South King County marked with each area formed by the city-zip code.



After reviewing the map, 2 outlier city-zip codes were evident in the Maple Valley region to the Eastern area of the map: Kent-98051 and Kent-98038. This project's goal is to find areas that are good for Seattle commuters. Since these outliers are away from the main thoroughfares that lead to Seattle and would result in far too long of a commute time, they were excluded from the analysis forthwith.

Some general statistics were gathered about the areas studied, including how many city-zip codes were created per city (first table below) and how many cities were found to be in each zip code (second table in two parts below).

| City_Zip    |   |
|-------------|---|
| City        |   |
| AUBURN      | 6 |
| BURIEN      | 4 |
| DES MOINES  | 4 |
| FEDERAL WAY | 6 |
| KENT        | 7 |
| RENTON      | 7 |
| SEATAC      | 5 |
| TUKWILA     | 7 |

| Zip |       | Total |
|-----|-------|-------|
| 0   | 98001 | 2     |
| 1   | 98002 | 1     |
| 2   | 98003 | 2     |
| 3   | 98023 | 1     |
| 4   | 98030 | 2     |
| 5   | 98031 | 2     |
| 6   | 98032 | 5     |
| 7   | 98042 | 1     |
| 8   | 98047 | 1     |
| 9   | 98055 | 2     |
| 10  | 98056 | 1     |
| 11  | 98057 | 2     |
| 12  | 98058 | 1     |
| 13  | 98059 | 1     |
| 14  | 98092 | 2     |
| 15  | 98093 | 1     |
| 16  | 98108 | 1     |
| 17  | 98118 | 1     |
| 18  | 98146 | 1     |
| 19  | 98148 | 3     |
| 20  | 98158 | 1     |
| 21  | 98166 | 1     |
| 22  | 98168 | 3     |
| 23  | 98178 | 2     |
| 24  | 98188 | 2     |
| 25  | 98198 | 3     |
| 26  | 98422 | 1     |

Other observations include:

- All of the city-zip codes were within the general area of each other (since outliers were removed)
- All of the cities have between 4 and 7 zip codes within them
- All the zip codes have between 1 and 3 cities within them

Since the statistics seemed decently spread out and even for the purposes of this project, the scoring and tiering were commenced (see results).

Further analysis was done based on the tiers (Tier 1: Score > 25, Tier 2: Score > 15, Tier 3: Score > 10, Tier 4: Score > 5, Tier 5: Score 5 or below).

How many city-zip codes were in each tier:

| City_Zip |    |
|----------|----|
| Tier     |    |
| 1        | 7  |
| 2        | 7  |
| 3        | 11 |
| 4        | 14 |
| 5        | 7  |

Break down of city representation in each tier:

|             | Tier 1 | Tier 2 | Tier 3 | Tier 4 | Tier 5 | Total |
|-------------|--------|--------|--------|--------|--------|-------|
| City        |        |        |        |        |        |       |
| AUBURN      | 1      | 0      | 2      | 2      | 1      | 6     |
| BURIEN      | 0      | 1      | 3      | 0      | 0      | 4     |
| DES MOINES  | 0      | 1      | 0      | 2      | 1      | 4     |
| FEDERAL WAY | 1      | 0      | 1      | 2      | 2      | 6     |
| KENT        | 2      | 1      | 1      | 2      | 1      | 7     |
| RENTON      | 1      | 2      | 3      | 1      | 0      | 7     |
| SEATAC      | 1      | 1      | 0      | 3      | 0      | 5     |
| TUKWILA     | 1      | 1      | 1      | 2      | 2      | 7     |

Break down of zip code representation in each tier:

|       | Tier 1 | Tier 2 | Tier 3 | Tier 4 | Tier 5 | Total |       |   |   |   |   |   |   |
|-------|--------|--------|--------|--------|--------|-------|-------|---|---|---|---|---|---|
| Zip   |        |        |        |        |        |       | 98059 | 0 | 0 | 1 | 0 | 0 | 1 |
| 98001 | 0      | 0      | 2      | 0      | 0      | 2     | 98092 | 0 | 0 | 1 | 0 | 1 | 2 |
| 98002 | 1      | 0      | 0      | 0      | 0      | 1     | 98093 | 0 | 0 | 0 | 1 | 0 | 1 |
| 98003 | 1      | 0      | 0      | 0      | 1      | 2     | 98108 | 0 | 0 | 0 | 1 | 0 | 1 |
| 98023 | 0      | 0      | 0      | 1      | 0      | 1     | 98118 | 0 | 0 | 0 | 0 | 1 | 1 |
| 98030 | 1      | 0      | 0      | 1      | 0      | 2     | 98146 | 0 | 0 | 1 | 0 | 0 | 1 |
| 98031 | 0      | 1      | 0      | 1      | 0      | 2     | 98148 | 0 | 0 | 1 | 2 | 0 | 3 |
| 98032 | 1      | 0      | 0      | 2      | 2      | 5     | 98158 | 0 | 1 | 0 | 0 | 0 | 1 |
| 98042 | 0      | 0      | 0      | 1      | 0      | 1     | 98166 | 0 | 1 | 0 | 0 | 0 | 1 |
| 98047 | 0      | 0      | 0      | 1      | 0      | 1     | 98168 | 0 | 1 | 1 | 1 | 0 | 3 |
| 98055 | 0      | 1      | 1      | 0      | 0      | 2     | 98178 | 0 | 0 | 1 | 0 | 1 | 2 |
| 98056 | 0      | 1      | 0      | 0      | 0      | 1     | 98188 | 2 | 0 | 0 | 0 | 0 | 2 |
| 98057 | 1      | 0      | 1      | 0      | 0      | 2     | 98198 | 0 | 1 | 0 | 2 | 0 | 3 |
| 98058 | 0      | 0      | 1      | 0      | 0      | 1     | 98422 | 0 | 0 | 0 | 0 | 1 | 1 |



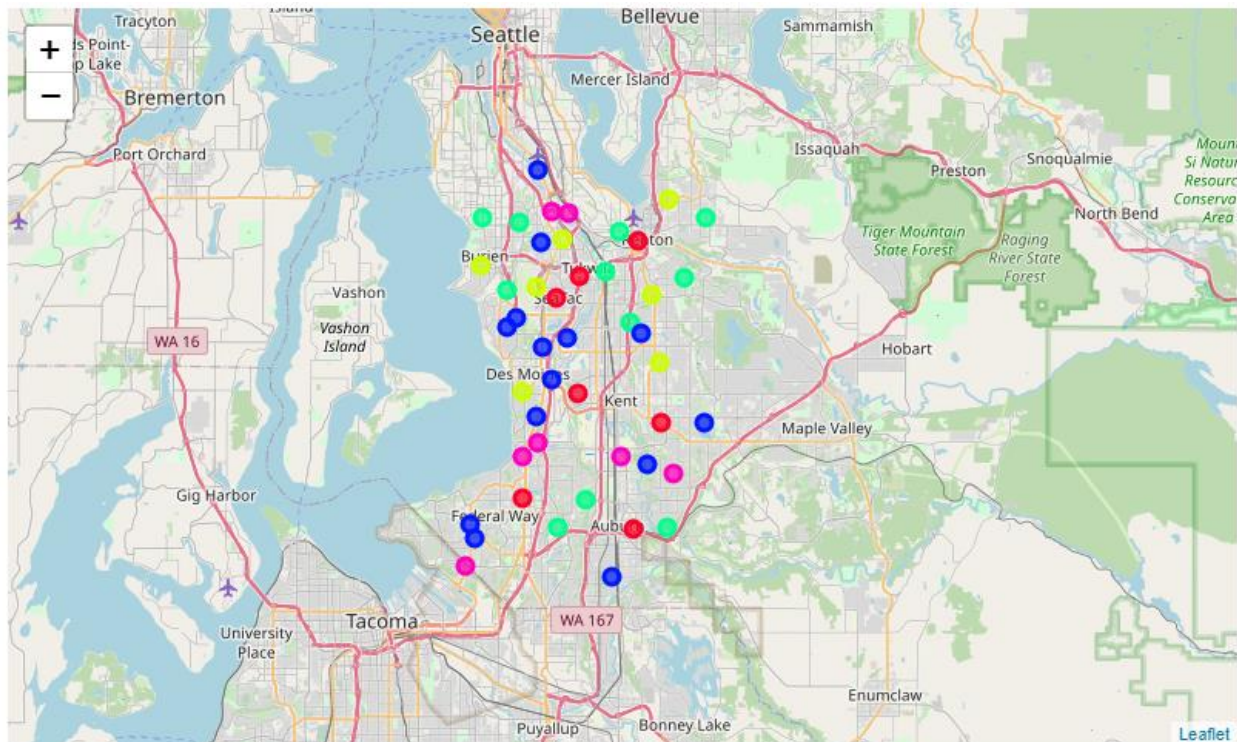
## Results

The area dubbed the Best Neighborhood in South King County according to the data is Federal Way-98003!

Here is a break down of the top 5 areas:

|    | City_Zip          | Latitude  | Longitude   | Med_Score | Pol_Score | Par_Score | Res_Score | Total_Score |
|----|-------------------|-----------|-------------|-----------|-----------|-----------|-----------|-------------|
| 15 | FEDERAL WAY-98003 | 47.323493 | -122.314357 | 21.212121 | 6.666667  | 15.217391 | 11.013216 | 54.109395   |
| 22 | KENT-98032        | 47.387198 | -122.265688 | 9.090909  | 13.333333 | 13.043478 | 8.149780  | 43.617500   |
| 1  | AUBURN-98002      | 47.305466 | -122.215589 | 12.121212 | 6.666667  | 2.173913  | 11.013216 | 31.975008   |
| 45 | TUKWILA-98188     | 47.457794 | -122.263982 | 3.030303  | 13.333333 | 4.347826  | 11.013216 | 31.724678   |
| 20 | KENT-98030        | 47.369566 | -122.191557 | 9.090909  | 13.333333 | 0.000000  | 6.497797  | 28.922040   |

In order to visualize the scores for each city-zip code, a map was made:



### LEGEND

Tier 1: Red, Score: > 25 | Tier 2: Yellow, Score: 25 - 15 | Tier 3: Green, Score: 15 - 10 | Tier 4: Blue, Score: 10 - 5 | Tier 5: Pink, Score: < 5

The top area for each score:

- Highest Score for Medical Facilities: Federal Way-98003
- Highest Score for Police Stations: Kent-98032, Tukwila-98188, Kent-98030
- Highest Score for Park-and-Rides: Federal Way-98003
- Highest Score for Restaurants: 10 different locations reached the 100 limit, spanning from Tier 1 - 3

Other results of the analysis:

- The city with the highest score is also the city with the lowest score. Within the top tier, Kent-98030 has at least 1 amenity with a score of 0 (park-and-ride)
- Besides those in the top tier, 2 other areas have at least 1 of each amenity: Tukwila-98168 and Burien-98166
- The city of Renton has only 1 area out of 7 in the top tier (the last place of the top tier), but no areas in Tier 5
- Both the areas in the 98188 zip code are in Tier 1 (Tukwila-98188 and SeaTac-98188)
- 2 cities have no Tier 1 areas: Burien and Des Moines – they are also the 2 cities with lowest number of city-zip code areas (4 each)

## Discussion

The analysis of this data shows that Federal Way-98003 has the highest amenity score and therefore the best chance of meeting the needs of a Seattle commuter.

Interestingly, the research has also pointed out the necessity when reviewing an area for a potential home of looking past just the city name or zip code. There are many examples in this data of cities and zip codes spanning across the tiers, suggesting that the greater specificity gained from using city and zip code has given a more accurate picture of what each area has to offer.

For example, the city of Kent shows scores as high as 43.6 and as low as 3.5, with areas in each of the 5 tiers. If a homebuyer were to ask a realtor what sort of amenities are available in the city of Kent, the answer would truly vary from area to area within Kent. Similar wide spreads are seen in other cities and when considering zip codes. In fact, the city with the highest score was also the city with the lowest score! Clearly, one cannot judge an area by its city or zip code.

This trend of a wide spread is not 100% across the board. It was demonstrated that for zip code 98188 that spans parts of Tukwila and SeaTac, that both areas considered were in Tier 1. The data also showed that both the cities of Burien and Des Moines held no areas that reached up to Tier 1 status, indicating that there are fewer amenities available in their areas, or at least that amenities may be spread out in their areas instead of concentrated, as found in a big city downtown scenario. These cities also had the fewest city-zip code areas: another circumstance that may have led to fewer amenities.

More research could be done to delve deeper into and provide even more specificity to the analysis. For example, restaurant scores were given for restaurants in a 2-mile radius of the center of the city-zip code areas, and there was a cap at 100 restaurants. 10 of the locations reached that cap. Without a cap, restaurants at 5 or 10 miles could be evaluated and scored with more accuracy.

Further, the location from the nearest amenity could be added as a partial score if a particular area doesn't have that amenity within its own borders. In lieu of looking for amenities that reside within that city-zip code boundaries, locations that are within a certain number of miles from that area could be considered for all the amenities, not just restaurants.

Other amenities could also be examined, depending upon the specific needs of a narrower audience base, such as art galleries for the art enthusiasts, or gas stations for those who like to drive into work instead of using public transit. There are many more variations and scope to which this type of examination could lend itself.

## Conclusion

The city of Seattle is an attractive place for homebuyers. The goal of this project was to provide aid for a less-expensive alternative to living in the big city for those who work downtown. The project hoped to provide both homebuyers and realtors insight into the areas of South King County that would provide some of the amenities of downtown, including commuting options, without the price tag.

By dividing each area by both its city and zip code, specific analysis of the locations in this vicinity was possible. Each area was scored and a working list developed by tier.

This information is ready to be used by potential homebuyers to give them an idea of where to begin their search. Realtors also can use this information to provide selling points and guide their city-worker buyers to these areas.

This study is only the tip of an iceberg of potential to understanding what is available, and to fine-tuning location hunting for homebuyers everywhere. Hopefully, the future will find many more reports like these coming to the aid of those who wish to enjoy a lifestyle at any price point.

## References

Khashimova Long, K. (2020, November 24). Seattle-area home price growth continues to accelerate; city still No. 2 in the nation. Seattle Times, Online. Retrieved December 04, 2020 from <https://www.seattletimes.com/business/real-estate/seattle-area-home-price-growth-continues-to-accelerate-city-still-no-2-in-the-nation/>.

King County, Washington. (2017). GIS Open Data. Updated June 19, 2019. Retrieved December 04, 2020, from <https://gis-kingcounty.opendata.arcgis.com/>.