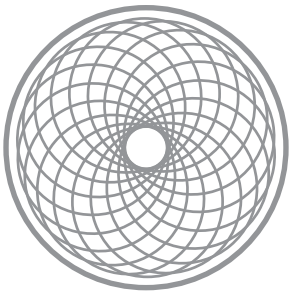

# City Housing Search

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# Executive Summary

## Objective

Moving to a new city can be a daunting task, and choosing a place to live can be even more so. This last summer I moved on short notice from Provo, UT to Charlotte, NC. Upon arrival to Charlotte, I began my search for reasonably priced housing where I would live during the year. After several days of visiting apartment complexes, I received some useful advice from an apartment manager. The particular complex that I was looking at was unacceptable to live at, so I asked the manager if she knew of any apartments in the area that offered short-term leases. She replied, "You know, there is one place that I know of that offers short-term leases that… <pause>…wait, that won't work for you. There was a deadly shooting there this morning; I couldn't recommend you live there." That made me think of how I could search for housing when moving to a new city.

## Goals

I wanted to create an effective program that would allow me to search multiple websites and retrieve data that would help me make a smart decision on where I could live. With the results I could choose several possible cities and then talk to local people in a particular city to confirm whether or not a city would be good to live in.

I wanted my program to be simple enough for anyone to use, and be able to get results for any major city in the United States; not just for Atlanta. I wanted it to be very dynamic, because of the possibility of relocating during my future career.

## Solution

I created this neighborhood housing search program which takes into consideration several variables that I hold to be important when choosing a housing location. Median rental cost,

crime index rating, and time and distance to a specified location (e.g., work location). The following websites are used to gather the information needed to perform this search:

www.city-data.com
- Neighborhood list
- Median rent cost
- Neighborhood zip code

www.clrsearch.com
- Crime index rating

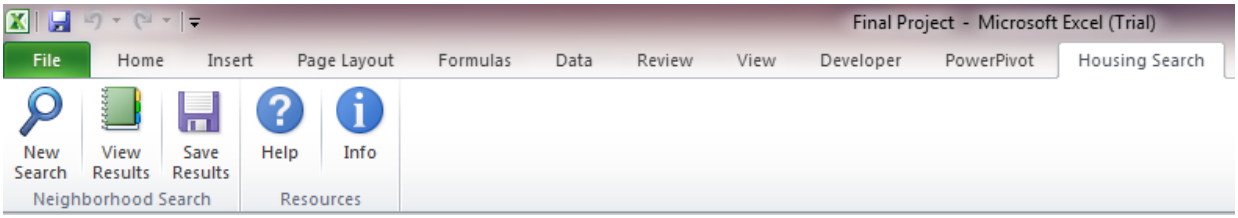
www.maps.google.com
- Time and distance to a specified location

When the search window is opened it will ask the user for three things: 1) City name, 2) State name, and 3) an address to calculate distance. Once these parameters are entered the user clicks on "Populate Neighborhoods." Using the City name and State, the program goes to city-data.com to retrieve a list of all the neighborhoods located nearby. Note that this will only work for larger cities. If no smaller neighborhoods are located it will ask you to enter a new city name. The neighborhood names are stored in a dynamic array, which are later used for further searches. Once all neighborhood names have been received, the program runs a search for each of the neighborhoods which are stored in the array. That search retrieves the median rent cost, and neighborhood zip codes which are also placed in arrays. With the zip code, the program then searches www.clrsearch.com to retrieve the crime index rating for the neighborhoods. The final search retrieves the time and distance from the neighborhood to the specified address using google maps. When the searches are all finished, the results are copied to a summary worksheet and the program ends.

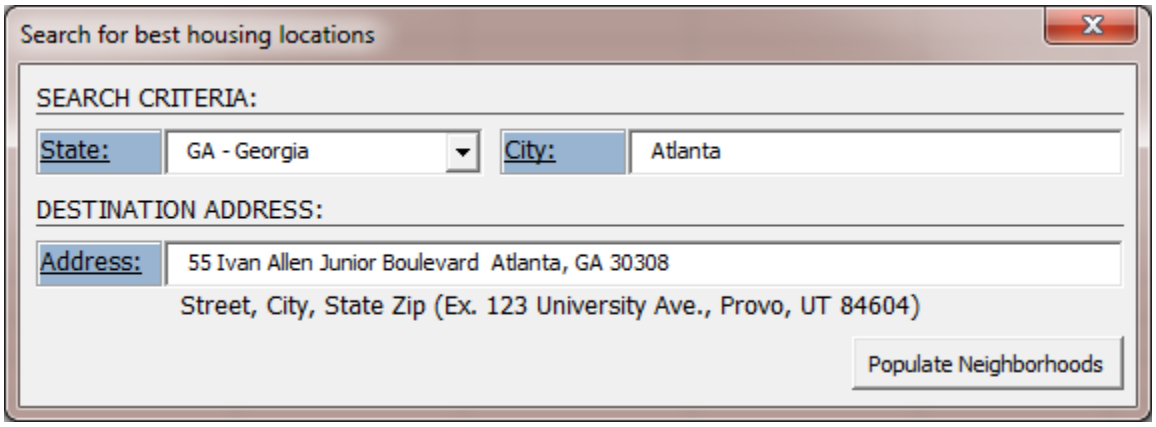
The end result is one summary sheet that can be quickly scanned and reviewed to determine safe, affordable, and convenient locations to live. I am going to move to Atlanta next year. Atlanta has 272 smaller neighborhoods located around it. If I wanted to review each of those neighborhoods manually, I would have to open up nearly 900 web pages and scroll through thousands and thousands of lines of irrelevant information. Depending on the size of the city, the search can take anywhere from 3 minutes to 20 minutes. The results can be viewed in either a spreadsheet format or in the View Results window.

## Desktop Procedure

When you first open the Excel spreadsheet, you should notice a new tab on the control bar named “Housing Search”. Inside the tab there are five custom buttons: New Search, View Results, Save Results, Help, and Info.

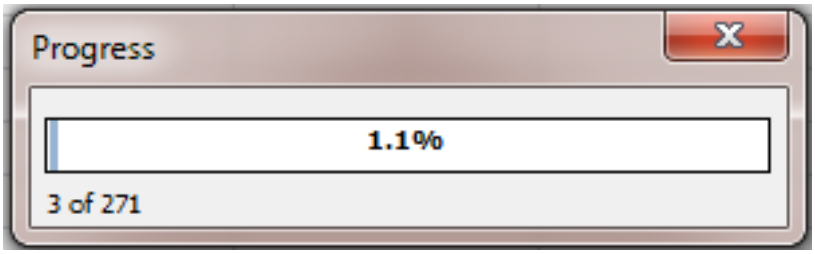



When you click on the New Search button the below prompt will appear. Type or select a state name from the pre populated drop down list. Type the name of a major city which is located in the specified state. Finally, enter an address to a location or a city in the Address line. This address will be used to calculate time and distance from all the neighborhoods in the specified city and state. This address is useful to calculate commute times to work from possible neighborhoods to live in.

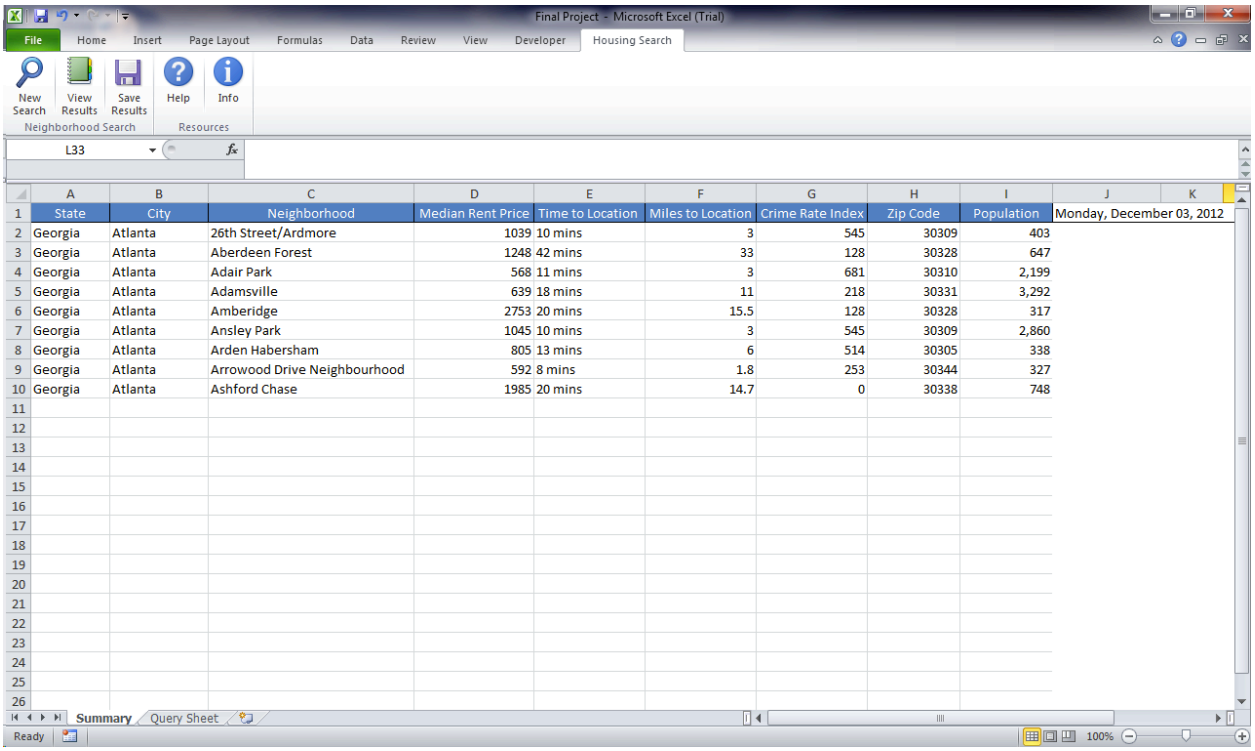



After all these parameters are input correctly, click on “Populate Neighborhoods” to run the program. Depending on the size of the city selected, this could take anywhere from 5 to 20 minutes. If any fields are left blank prior to clicking on “Populate Neighborhoods”, you will be prompted to enter values before proceeding.

Once the program has begun running, you will see a progress bar appear on the screen to indicate how many more records are remaining to be complete.



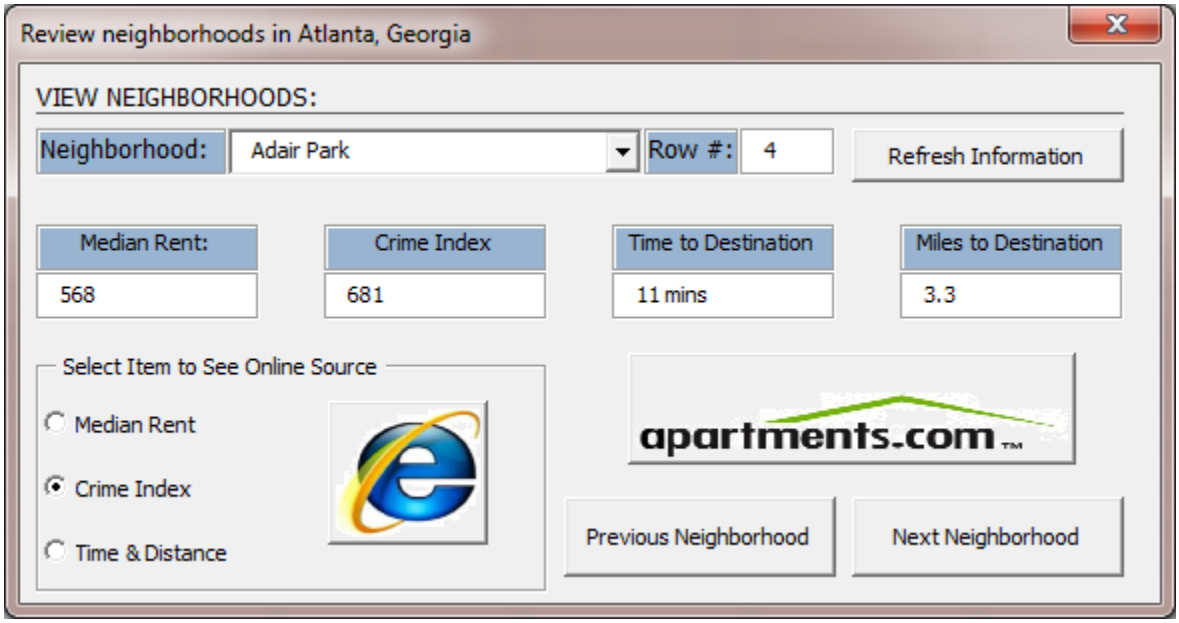

When the search is complete, the results will be placed in the Summary Worksheet and will look like this:




| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | State | City | Neighborhood | Median Rent Price | Time to Location | Miles to Location | Crime Rate Index | Zip Code | Population | Monday, December 03, 2012 | |
| 2 | Georgia | Atlanta | 26th Street/Ardmore | 1039 | 10 mins | 3 | 545 | 30309 | 403 | | |
| 3 | Georgia | Atlanta | Aberdeen Forest | 1248 | 42 mins | 33 | 128 | 30328 | 647 | | |
| 4 | Georgia | Atlanta | Adair Park | 568 | 11 mins | 3 | 681 | 30310 | 2,199 | | |
| 5 | Georgia | Atlanta | Adamsville | 639 | 18 mins | 11 | 218 | 30331 | 3,292 | | |
| 6 | Georgia | Atlanta | Amberidge | 2753 | 20 mins | 15.5 | 128 | 30328 | 317 | | |
| 7 | Georgia | Atlanta | Ansley Park | 1045 | 10 mins | 3 | 545 | 30309 | 2,860 | | |
| 8 | Georgia | Atlanta | Arden Habersham | 805 | 13 mins | 6 | 514 | 30305 | 338 | | |
| 9 | Georgia | Atlanta | Arrowood Drive Neighbourhood | 592 | 8 mins | 1.8 | 253 | 30344 | 327 | | |
| 10 | Georgia | Atlanta | Ashford Chase | 1985 | 20 mins | 14.7 | 0 | 30338 | 748 | | |

Next, click on the “View Results” button up in the Housing Search tab to pull up the following window. You will notice a drop down box titled Neighborhoods. This contains all of the neighborhoods gathered during the search. Select one of the cities from the list and click Refresh Information. Doing so will populate the rest of the boxes on the View Results window. The window displays Median rent, Crime index, Time to destination, and distance (in miles) to destination provided.

On the bottom left there are three selectable option buttons labeled Median Rent, Crime Index, and Time & Distance. Select one of the boxes and click on the internet explorer icon to open the source page of the information for the currently selected neighborhood, in desired. The icon shows that of Internet Explorer, but it will open the page in your systems default web browser.




On the bottom right there is a button with the apartments.com logo on it. Clicking on this button will open a window in your computers default web browsing window showing apartments in, or near, the selected neighborhood. An examples of this is displayed on the next page.

apartments.com™

legal | replay | Build Your Own | Locate a Dealer | Request a Quote | Payment Estimator

Search | Reviews | Apartment Living | Place an Ad

City & State or ZIP: (Required) 30310 | Rent Min: Any | Rent Max: Any | Bedrooms: Any | Bathrooms: Any | Neighborhoods: Any | Amenities: Any

## 90 Apartments for rent in 30310

1 BEST MATCH UPDATED AD

**$531 – $1219** **1 - 2 Bedrooms** **1 - 2 Bath**

**Oglethorpe Place** – Atlanta, GA 30310

The best deal in Downtown Atlanta. Gated Community with... More >

(404) 963-9543 | Check Availability

(20) Photos | (3) Floorplans | (4) 360s | (0) Videos

2 BEST MATCH

**$592 – $899** **1 - 3 Bedrooms** **1 - 2 Bath**

**Heritage Station Apartments** – Atlanta, GA 30310

From the moment you enter Heritage Station, you know you... More >

(877) 266-7220 | Check Availability

(32) Photos | (4) Floorplans | (4) 360s | (0) Videos

3 BEST MATCH

**$399 – $619** **1 - 2 Bedrooms** **1 - 1.5 Bath**

**Donnelly Gardens** – Atlanta, GA 30310

Donnelly Gardens: We provide the apartment, you make it a... More >

(678) 701-7221 | Check Availability

(6) Photos | (0) Floorplans | (0) 360s | (0) Videos

4 BEST MATCH

**$625 – $1400** **1 - 3 Bedrooms** **1 - 2.5 Bath**

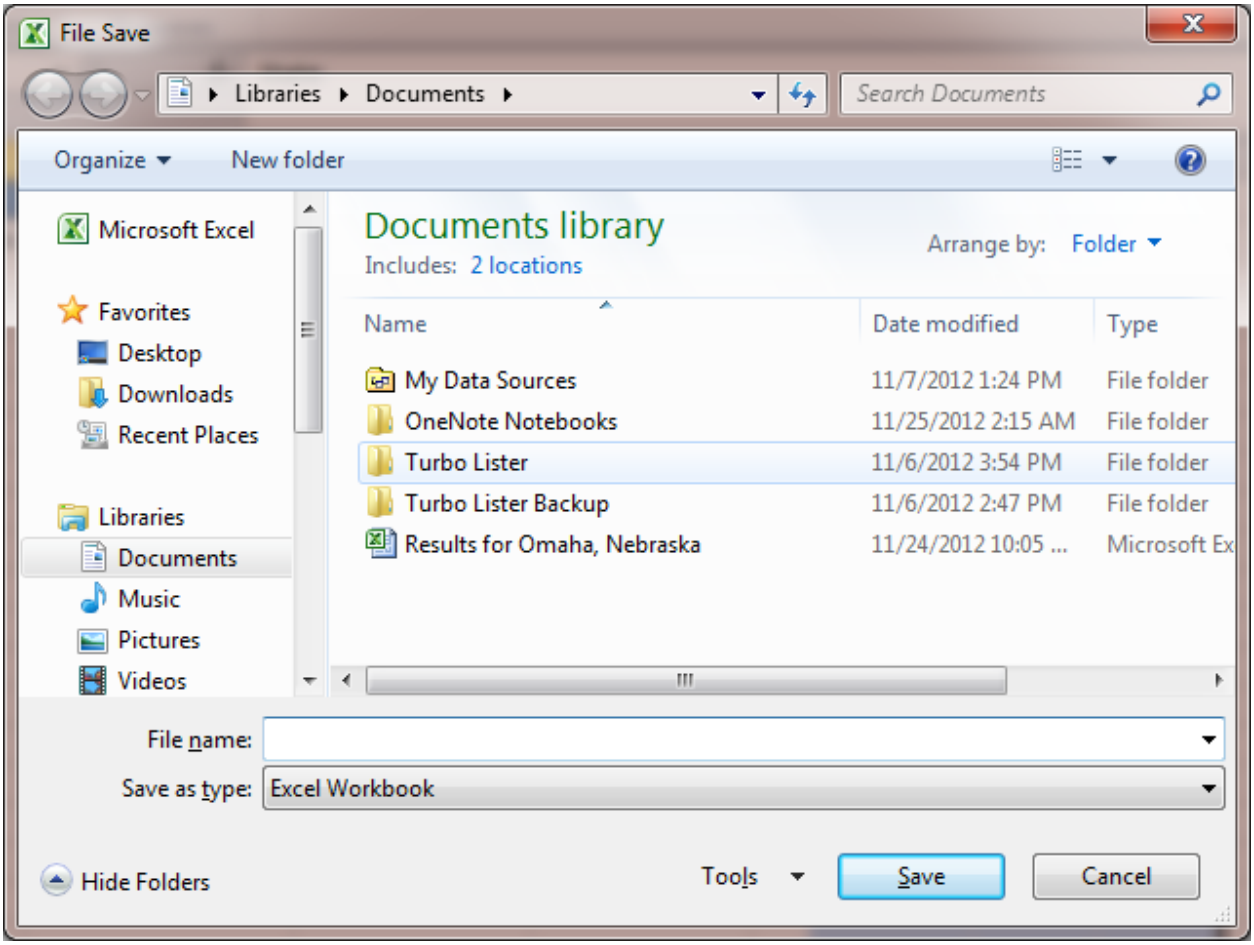
**Ashley Collegetown** – Atlanta, GA 30310

Reinvent the way you rent! Washer/dryer, electric, salt... More >

(866) 711-7604 | Check Availability

(29) Photos | (7) Floorplans | (2) 360s | (0) Videos

When you click on the Save Results button in the Housing Search tab, all of the results from the City and State entered in the beginning will be copied and placed into a new workbook. You will be prompted to choose a location and file name to save the results, as shown below.




## Learning and conceptual difficulties

As I was developing my project I rewrote my code several times in order to simplify and improve functionality. As I was reviewing my code part way through I noticed that I had similar code used multiple times. In order to clean up the look of my code I divided what I could into separate sub procedures. The end result cut my code in half, and made it more readable for future editing.

When I partially finished my project and was testing it, I noticed several areas that were prone to errors. I was able to isolate several key components and place them inside of appropriate error traps to keep the program from running only part way through. Knowing that I am a beginning programmer, I can't predict every possible user/system error, so I rearranged my code to compensate. The end result of my application retrieves data from several web queries and places them in a summary worksheet. The values for that sheet come from arrays used throughout the code. This transfer from the arrays to the summary sheet was the final step in the procedure. If any unexpected error happened while the program was running, it would get disrupted and not complete the transfer from the arrays to the summary sheet (i.e., summary worksheet would remain blank). To solve this, I analyzed my code and found ways to rearrange the other sub procedures in order to transfer the array values to the summary sheet one by one as each cycle of the loop processed. With that arrangement the summary sheet would at least be partially complete if any unexpected error should occur.

Other Elements. There were a few things that I wanted to include, but either did not have sufficient time, or understanding to complete. With the progress bar, it will only show the progress incrementing when you click outside of the excel window (e.g., clicking on the windows task bar). I tried tinkering with the application.screenupdating options, but with no success. It seems to be effected by the web queries being run in the background. A simple annoyance, but nothing that interferes with the functionality of the overall program.

I also wanted to include more data into my program, such as, local tax rates, but I was unable to find an appropriate web site to gather this information for different states. Also, I did not want to bog down too many web servers with my hundreds of web queries running in the background. I thought about using the "IE agent" instead of using web queries in hope of speeding up my program, but thought it might be just as cumbersome. Plus, I did not feel quite comfortable enough using that module to do my final project. I plan to make several of these changes after the semester ends when I have more time to work on it (I am using this tool to partially determine where I am going to live after all).

## Assistance

The only portion of my code that I got help on was creating the progress bar and opening internet explorer. I got the majority of the code for the progress bar from professor Gove. The code to open the default internet browser I got from a blog on the internet (just one line of code). I thought of using the "agent" that we used in class, but I did not want to use IE. I wanted to open web pages using the systems default web browser instead.