

## **Project 4: User Research**

Team Members: Christopher McLaughlin, Michael Peters, Samuel Pettinichi, Alex Samuel, & Eric Walters

Project Idea BC: Real Estate Application

### **1. Research Questions/Goals**

The goal of our research was to gain insight into potential users of our project idea, a real estate app that helps users locate property for sale. The likely users of this app would be individuals currently seeking to purchase a home and real estate agents. We used a semi-structured interview approach to discuss the experience of searching for a home with users interested in purchasing a home and a real estate agent. In addition, we also used a brief survey to ask participants to rate the importance of multiple factors when searching for a home. Finally, we also conducted an observation of a prospective home buyer as they used online tools to search for a home. We feel that using these different methods to gather data allowed us to triangulate our results and increase our confidence in the accuracy of the insights we gained from this research. The specific questions we want to answer from our research are as follows:

- How do users narrow and filter down their choices from thousands of potential houses?
  - -What are the most important factors they consider?
- Are there other possible users for this service?
- How reliant is the homebuyer on the realtor for information?
- After a user finds several potential options, how do they then use that information? What is their next step in the house buying process?
- How will an increase in the complexity/amount of user search options affect user satisfaction?
- How will we determine the appropriate balance between advertisements and user cost that will both generate revenue while maintaining a positive user experience when using the application? Which types of ads and ad placements are the best fit?

### **2. Process For Answering Research Questions**

We answered these questions by conducting three field interviews using a semi-structured interview style, asked users to weigh the importance of different factors they consider when purchasing a home by asking them to fill out a short survey, and also conducted an observation of a user searching house listings online. Those interviewed included two potential homebuyers and a real estate agent. The observation was made of a potential home buyer using online tools to search for a home. All users completed the short survey as well. All interviews and observations were conducted in the subject's homes, being either an apartment or a house. All interviews and observations were conducted between October 16-18th, 2015. The observation was conducted in the early evening at around 5:15 PM.

These three different methods will allow us to triangulate our data regarding the most important factors users consider when purchasing a home which will influence our design decisions when designing the site. Specifically, the relative importance of these factors will result in specific filtering options available to the user and the prominence of those filtering options. By conducting several interviews using the same baseline questions, we will also be able to triangulate our conclusions regarding the answers to these questions and see if the data coming from independent users point to the same conclusions.

The baseline questions we used in the semi-structured interview are listed below:

- What are the most important factors you consider when you are searching for a home?
- What services are you currently using to search for a home?
- How reliant are you on a realtor for searching for a new house?
- How do you feel about online advertisements?
- After you find a home listing you are interested in, what is your next step?
- How would an increase in information available influence your home search?
- What would you like to change most about the home buying process?

The factors we asked users to rate from 1-10 in terms of importance when searching for a home are as follows:

- |                            |                                     |
|----------------------------|-------------------------------------|
| 1. Locations               | 11. Days on Market                  |
| 2. Cost                    | 12. Last Price Paid for House       |
| 3. # of Bedrooms/Bathrooms | 13. Crime Rate                      |
| 4. Pool                    | 14. School Ratings                  |
| 5. Finished Basement       | 15. Access to Public Transportation |
| 6. Property Size           | 16. Proximity to Entertainment      |
| 7. Garage Size             | 17. Proximity to Supermarkets       |
| 8. HOA Fees                | 18. Proximity to Restaurants        |
| 9. Taxes                   | 19. Proximity to Interstate Highway |
| 10. Year House was Built   | 20. Proximity to Airport            |

Interview responses, survey results, and detailed observations are provided in the Survey Results, Interview Responses, & Detailed Observations section.

### 3. An exhaustive inventory of the elements: People, Objects, The Environment

#### oThe people in the space

Interview subject LC: Female, 28 years old, medical professional, potential homebuyer.

Interview subject MB: Female, 28 years old, registered nurse, currently searching for a home.

Interview subject SW: Female, age 54, real estate agent.

Observation subject CH: The individual being observed was a married, caucasian female, aged 40. She is college educated and an attorney. She is technologically proficient. An avid video game player. She currently lives with her husband in a 2 bedroom apartment in Methuen, MA.

#### oThe objects (technological and otherwise) in the space and with the people

Interview subject LC: There are pillows and dogs present. There is also a cellphone.

Interview subject MB: There is a dog present. In addition, there is a computer, cellphone, and TV remote control.

Interview subject SW: There is a couch and pillow chair present.

Observation subject CH: There is a computer desk and two office chairs. There is a desktop computer with a flatscreen monitor, speakers, and a mouse/keyboard. There is a simple solar calculator, shredder, pens and pencils, and several legal pads. There are also several pictures of CH with her husband. Subject used desktop computer during the observation.

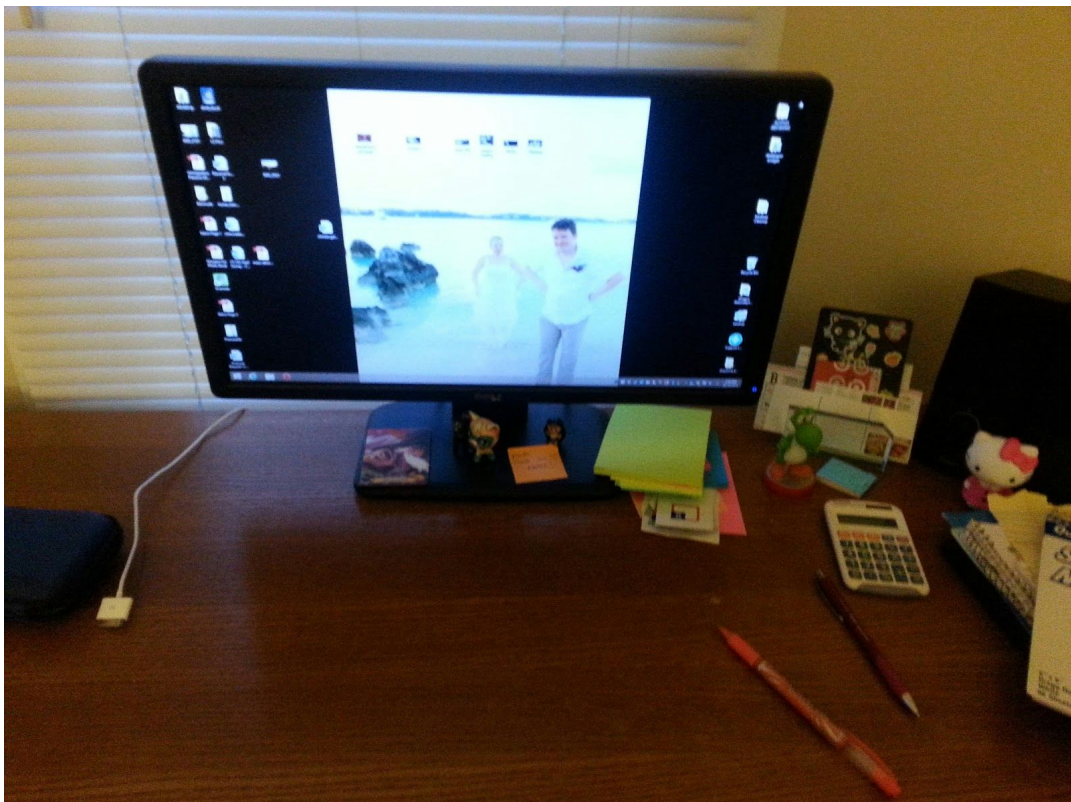
#### oThe environment: spaces, architecture, lighting etc

Interview subject LC: Interview was conducted in private on the couch in the living room of a 1 Bedroom apartment.

Interview subject MB: Interview was conducted in private at the kitchen table of a 2 bedroom apartment.

Interview subject SW: 3 bedroom house, subject is seated across from interviewer on the couch. It is a relaxed and comfortable atmosphere.

Observation subject CH: The observation was conducted in a personal office of a 2 bedroom apartment in Methuen, MA. Husband was not present for the observation. Pictures of the environment at the time of the observation are on the following page.



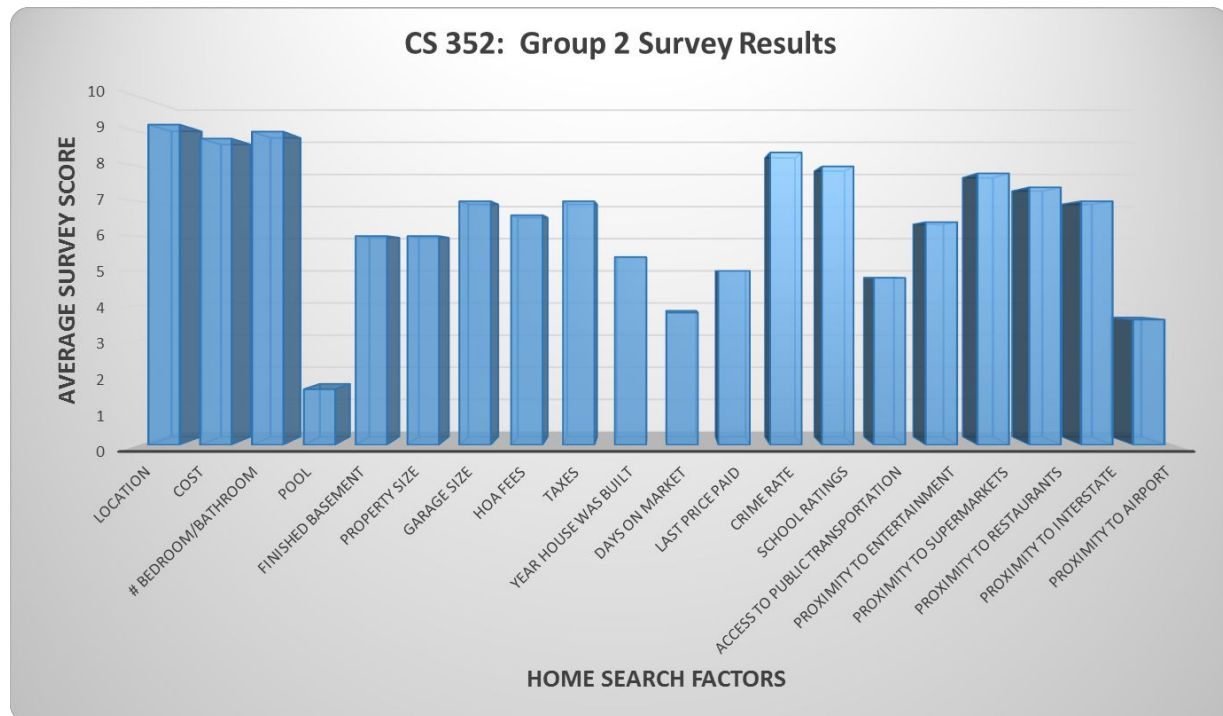
#### 4. Survey Results, Interview Responses, & Detailed Observations

##### Overview:

Our interview subjects were given structured surveys which tasked them to designate a level of importance to a series of home search factors. A rating was given from 1 to 10 with 1 being of “little” importance and 10 being of “high” importance. The results were documented, compiled, then sorted to reveal common trends and ultimately lead to insights regarding our user based design.

##### Unsorted Data:

UNSORTED SURVEY CHART						
Factors	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Average Score
Location	10	9	10	9	8	9.2
Cost	10	8	8	8	10	8.8
# Bedroom/Bathroom	9	10	7	9	10	9
Pool	1	1	3	1	2	1.6
Finished Basement	4	3	6	7	10	6
Property Size	8	6	3	5	8	6
Garage Size	6	7	7	7	8	7
HOA Fees	7	8	5	4	9	6.6
Taxes	7	8	6	5	9	7
Year House was Built	6	5	7	2	7	5.4
Days on Market	6	2	6	1	4	3.8
Last Price Paid	6	2	8	2	7	5
Crime Rate	8	8	8	8	10	8.4
School Ratings	7	6	9	9	9	8
Access to Public Transportation	7	7	3	3	4	4.8
Proximity to Entertainment	7	7	8	3	7	6.4
Proximity to Supermarkets	8	7	8	7	9	7.8
Proximity to Restaurants	8	7	8	7	7	7.4
Proximity to Interstate	8	8	4	6	9	7
Proximity to Airport	7	3	2	3	3	3.6

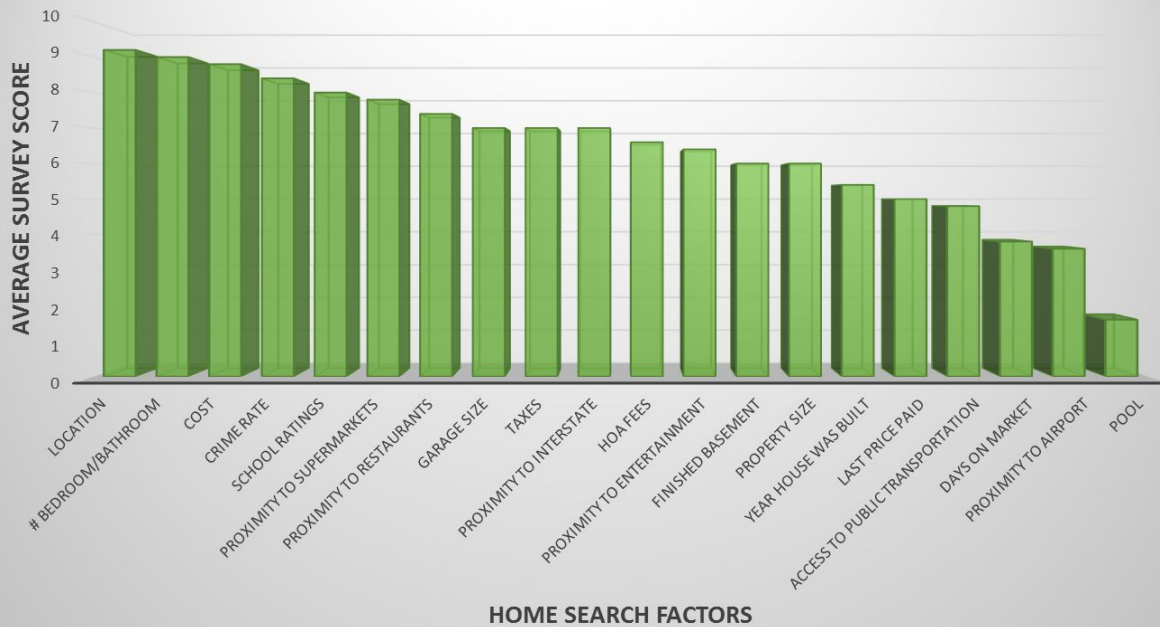




Sorted Data:

SORTED SURVEY CHART						
Factors	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Average Score
Location	10	9	10	9	8	9.2
# Bedroom/Bathroom	9	10	7	9	10	9
Cost	10	8	8	8	10	8.8
Crime Rate	8	8	8	8	10	8.4
School Ratings	7	6	9	9	9	8
Proximity to Supermarkets	8	7	8	7	9	7.8
Proximity to Restaurants	8	7	8	7	7	7.4
Garage Size	6	7	7	7	8	7
Taxes	7	8	6	5	9	7
Proximity to Interstate	8	8	4	6	9	7
HOA Fees	7	8	5	4	9	6.6
Proximity to Entertainment	7	7	8	3	7	6.4
Finished Basement	4	3	6	7	10	6
Property Size	8	6	3	5	8	6
Year House was Built	6	5	7	2	7	5.4
Last Price Paid	6	2	8	2	7	5
Access to Public Transportation	7	7	3	3	4	4.8
Days on Market	6	2	6	1	4	3.8
Proximity to Airport	7	3	2	3	3	3.6
Pool	1	1	3	1	2	1.6

CS 352: Group 2 - Sorted Survey Results



Interview Responses of LC (prospective home buyer):

**Q: What are the most important factors you consider when you are searching for a home?**

A: (She thinks to herself, pauses, and slowly lists) Price, location, and how many bedrooms and bathrooms.

**Q: What services are you currently using to search for a home?**

A: Trulia and Zillow.

**Q: Follow Up: What are those services, and how did you find them?**

A: The services help me look for homes within my search parameters in the area of my interest. (Pause)...I found those search engines through Google.

**Q: How reliant are you on a realtor for searching for a new house?**

A: I would be very reliant on a realtor; as I do not really know the process of looking for a home. I was looking at homes via the applications, just to look. But I wouldn't know all the details and would need a realtor to walk me through it.

**Q: How do you feel about online advertisements?**

A: I do not like them. I have been bombarded by advertisements. I have been affected by malware through those advertisements. I try to avoid clicking on them, and I'd prefer that they would not be there. (This was all said very assertively).

**Q: After you find a home listing you are interested in, what is your next step?**

A: I would contact a realtor to help me pursue that listing. Usually there is a realtor who is already associated with that listing that is on the site; which is helpful. Otherwise, I would contact one on my own.

**Q: How would an increase in information available influence your home search?**

A: Websites already have that...but, it would make me feel better about my choice. More options would make the search engine more desirable.

**Q: What would you like to change most about the home buying process?**

A: Too stressful...(laughs). The amount of money it takes to actually purchase the home in the end...(laughs). Probably, the mortgage aspect of it. Which is the same thing as I said, the money aspect.

### **Thoughts Post-Interview:**

During the interview, the subject was seemingly uncomfortable with answering the initial questions and took a lot of time thinking about her responses. She was comfortable in her surroundings, but was indecisive about her responses. I am unsure of whether or not filling out the survey prior to the interview affected its' outcome. The only time when the subject had a strong emotional response was when asked about advertisements.

### Interview Responses of MB (prospective home buyer):

**Q: What are the most important factors you consider when you are searching for a home?**

A: Ummmm, how many do I need to name?

**Me: However many you want.**

A: Price, location, and updates in home.

**Q: What services are you currently using to search for a home?**

A: Realtor and Zillow.

**Q: How reliant are you on a realtor for searching for a new house?**

A: I like to find the house myself (online app) and then have a realtor schedule open houses and handle any paperwork. The actual searching I do myself though. I can eliminate so many houses just by looking at some pictures. And oh my god it saves so much time. I've spent a whole day driving to houses that I could have said no to if a realtor had just shown me a few pictures.

**Q: How do you feel about online advertisements?**

A: I hate them (laughs). Unless I can skip over them quickly. They make me less likely to use the app. If I get one that automatically redirects me or makes the apple store pop up it drives me nuts.

**Q: After you find a home listing you are interested in, what is your next step?**

A: (pauses several seconds, thinking about question) If it is close by then I will drive by it myself. I will drive through the neighborhood or sometimes park nearby and walk around the neighborhood. If it is not close by I have a realtor schedule a walkthrough.



**Q: How would an increase in information available influence your home search?**

A: More options are always better. It can weed out (laughs) the bad houses. Anything to narrow the search is good. The different options need to work too. Sometimes the options I want are there but it doesn't sort them properly.

**Q: What would you like to change most about the home buying process?**

A: (laughs) THE MONEY!!

**Q: After that?(also laughing)**

A: The time it takes to search and find a home. Columbus (Ohio) has so many homes for sale it takes forever to go through them all. The nice neighborhoods are mostly outside the city so it can take 15-45 min to get to a different group of houses you want to look at. I know the few places I like to look pretty well, but if I was new to the city it would be impossible.

Interview Responses of SW (real estate agent):

**Q: What are the most important factors you consider when you are searching for a home?**

A: The look of the house (interior and exterior), garage, safe neighborhood, good school district, surrounding area, distance to shops and restaurants. LOCATION!

**Q: Follow Up: What are trends for interior of homes?**

A: Many people like open concept so people can spend more time together. Finished basements, walk-in closets.

**Q: What services are you currently using to search for a home?**

A: Mostly the MLS, Zillow, realtor.com.

**Q: How reliant are you on a realtor for searching for a new house?**

A: First time client brings a house to you, but once relationship is established they expect you to bring all the listings.

**Q: How do you feel about online advertisements?**

A: Can be very irritating when they pop up in the middle of the screen. Can often be invasive. More apt to click if it was visually appealing.

**Q: Follow Up: Do you find any advertisements helpful?**

A: If the pictures of the house are appealing and fits the style I'm looking for. Professional appearance is a plus and including price is helpful.

**Q: After you find a home listing you are interested in, what is your next step?**

A: Show the house as quickly as possible, call the listing agent.

**Q: Follow Up: What do you do once they've decided on a home?**

A: Write up a purchasing agreement, make sure they're pre-approved and that the sellers are aware of the pre-approval.

**Q: Follow Up: Who writes a purchasing agreement?**

A: The buyer's agent.

**Q: Follow Up: What format is the purchasing agreement?**

A: Mostly fill in the blanks with the details of the sale.

**Q: How would an increase in information available influence your home search?**

A: Extra information is more helpful to the buying process but sometimes showing too many homes can confuse the buyer. It can irritate the buyers.

**Q: Follow Up: How do you prevent them from looking at too many homes?**

A: Know your buyers, and understand what they are looking for in a home.

**Q: What would you like to change most about the home buying process?**

A: Sometimes clients have unrealistic expectations. Want everything and don't want to pay for it.

**Q: Follow Up: How do you temper expectations?**

A: More information and telling them what compromises they have to make.

### Observation of CH (prospective home buyer) while she searches house listings online :

I instructed the user that I was going to observe them search for real estate however they wanted to do it. Before we formally began, I asked some questions about her work and her week so that she would feel comfortable. Observation was conducted at 5:15 PM.

I provided the basic instructions for what the observation would involve and I emphasized the importance of "There are no wrong answers or actions." I wanted her to feel that she could anything in whatever fashion she wanted to. She began by opening her web browser (Opera) and entering "real estate" into the Google search box. She then clicked on the 2nd link which appeared, which opened Trulia. She found it interesting that the site showed listings for under \$<280,000 and wondered how the site chose that number. She then proceeded to click on a picture for a house she had known before arriving on the site (possibly driven by) and that appeared on the frontpage of the website. Upon opening the listing, she noted that all of the pictures were of the outside of the house and there were no pictures of the inside. She then looked at the affordability section of the listing for the total price and the estimated monthly mortgage payment for the listing. She then navigated back to the main page.

She then changed the prefilled city to "Salem, NH" and then looked at a property under listed under the category of "Best Deal in Town." She stated that she liked all the inside pictures and noted that it was an "old people's" home based on the presence of a stair lift in one of the photos.

She then browses other listings. I notice that the way she views these listings is in a particular order. First, she looks at the particular location of the house (neighborhood), then she looks at the total price, then she browses inside photos, then examines major features of the house and the number of bedrooms, then she looks at the affordability section and specifically the estimated monthly mortgage payment. Lastly, she reads the detailed description. She states that it is important that her and her husband find a house with a lower monthly mortgage payment than the rent they currently pay. She quickly glances at the price history but she states that she doesn't find it that important. She then clicked on the embedded Google street maps view but is also very interested in the satellite image view to get a sense of how nice the neighborhood is.

She then returned to the list of house listings and filtered by beds and baths first. She then expands the filtering options but there is no specific filtering option for the specific feature she is really interested in, which is air conditioning. She tried to enter air conditioning as a keyword and executes a search but is unable to locate any homes. She then returns to the listing of homes and selects another listing. She comments that she has a hard time picturing the yard size based only on acreage figure for lot size. She notes that she really likes the affordability section of the Trulia listings and especially the monthly payment estimate. But she cannot filter the listings based on the monthly payment estimate, she can only filter by total sale

price. In one of the listings, she comes across the word “Condex” but doesn’t understand what it means.

As she looks through pictures for another listing, she is trying to mentally map out the room based on pictures alone. She notes that pictures showing the view from windows is also important. When she is looking at the neighborhood of a particular listing via an embedded Google maps, she remarks she would have liked a fully featured Google maps integration because she is unable to “right click” on objects on the map to select the “What’s Here?” feature found in normal Google Maps.

She then navigated back to the filter section and remarks she doesn’t care about the type of sale (foreclosures vs. new construction, etc....) because she doesn’t quite understand the implications of the type of sale. She also notices a property type as “TIC” and then conducts a Google search in another browser tab to look up the definition as “Tenants in Common.”

After viewing a few more housing listings, she returned to the original Google search and then clicked on the next lower ranked link which opened Zillow.com . She began by searching for Salem, NH and really liked the map that pops up with total sales price. She then filtered by type of listing, removing “Rentals” and “Foreclosure Listings.” She then browsed the listings by zooming into specific neighborhoods. She then filtered by price and number of bedrooms and exclaimed that she really liked being able to see the listings disappear from the map. I noticed the listings did not disappear immediately when she clicked on a specific filter, there was a slight delay. She also stated she appreciated the “How much can I afford?” calculator so she could determine maximum house price. She then searched for home options in Lawrence, MA. She found a listing that in her words “looked sketchy” and tried to find crime rate data in the listing but couldn’t find it. She stated she wouldn’t normally look at crime rate data unless the listing “looked sketchy.” After viewing browsing a few more listings, I ended the observation.

Total time from beginning to end was around ~33 minutes.

## 5. Answers & Insights

### Answers to Research Questions:

- How do users narrow and filter down their choices from thousands of potential houses?

Users will begin filtering by their most important factors and then gradually add more filters until there exists a reasonably sized dataset for them to sift through results.

- -What are the most important factors they consider?

The three most important factors indicated by the survey are location, number of bedrooms/bathrooms, and price. Our interviews also confirmed that these were the most important factors mentioned by the interviewees when they were specifically asked the question. Our observation also confirmed this as these were the factors that the user first applied filters for. The triangulation of our data leaves with high confidence that these

are indeed the most important factors prospective buyers care about and therefore our system should enable easy filtering by these factors.

- Are there other possible users for this service?

Our research did not indicate other users besides potential home buyers and real estate agents.

- How reliant is the homebuyer on the realtor for information?

Users are still pretty reliant on realtors for informations. Our interviews revealed that although users would feel comfortable initially using an online search tool to browse listings, they would likely follow up using a realtor to arrange open houses and handle paperwork. The real estate agent also confirmed this view when she responded that once a client relationship is formed that the real estate agent is responsible for bringing the client listings.

- After a user finds several potential options, how do they then use that information? What is their next step in the house buying process?

Our interviews with potential home buyers indicate that their next step after finding several options would be to follow up with a realtor. In addition, they might drive by the neighborhood to take a closer look at the property.

- How will an increase in the complexity/amount of user search options affect user satisfaction?

Interviewees generally preferred to have more information available to them when searching for a home to purchase. They felt that more options would make filtering easier which would help narrow the large number of choices available. The real estate agent also mentioned that showing too many homes can irritate homebuyers so if more information was available to be sorted and filtered, the prospective purchaser can focus on fewer choices that more closely match their preferences. Additionally, during the observation, the user expressed the desire to filter by other options that were not available through the search tools she was using.

- How will we determine the appropriate balance between advertisements and user cost that will both generate revenue while maintaining a positive user experience when using the application? Which types of ads and ad placements are the best fit?

Our research indicates that users generally dislike advertisements but if they must be used they should be safe (security-wise), non-invasive, and visually appealing. Ads that auto-play audio or video or use automatic redirection should be avoided.

#### Insights from Survey Results:

1. Our initial theory that location, # bedroom/bathrooms, and Cost would be considered primary/expected search factors was confirmed.

2. A way to search for crime rate, school ratings, and proximity to food sources (both supermarkets and restaurants) should be readily available to the user once they have entered their primary search factors.
3. Search factors that appear on the lower end of our importance scale should be available, but positioned accordingly in a menu/list to avoid interference or obstruction of factors of higher importance.
4. Since our survey was structured; there may be additional search factors that our group has not included. The results of our semi-structured interviews may reveal these factors.

#### Insights from Interview with LC:

1. Advertisements negatively affect the user experience (We must adjust the balance of advertisements to be a limited as possible)
2. The users of this application could be very experienced and uncomfortable with the process of purchasing a home. Thus, easy access to a realtor to assist in the process may be beneficial.
3. Certain search factors when looking for a home are expected (i.e. Location, Price, # of Bedrooms/Bathrooms). We may have to set up our UI to require “primary” search factors and have the option to use “secondary” factors to further narrow a user’s search capabilities.
4. Having more options when searching for a home in comparison to other current applications may be more user beneficial.

#### Insights from Interview with MB:

1. More information is good
2. Ads can ruin the experience even if the rest of the APP is perfect
3. Convenience is key

#### Insights from Interview with SW:

1. Location and style are very important factors
2. Realtors bring houses to clients
3. If ads look professional and seamless, they’re beneficial
4. More information is good
5. More showings is not necessarily good

#### Insights from Observation of CH:

1. Need to be able to filter by fine details that certain individuals will consider very important (Air conditioning, estimated monthly mortgage payments)
2. Need to take account of cultural differences that exist between prospective homebuyer and home seller. For example, prospective home buyers from the Midwest who are searching for homes in New England would not understand what it means to purchase a house with a heating oil systems since heating oil is far less common in the Midwest compared to New England.
3. Need to define terms of art for users. (Condex, TIC, different heating systems).



4. Would be helpful for users if there was a small layout map of the room in the corner of pictures that the seller posts so that photos have perspective.
5. Prefers browsing photos via a method that allows previews rather than one that doesn't.
6. Important that user SEES how filtering affects listings available (which ones disappear).
7. Regardless of how many features the system has, users will likely only visit the site if it is located in the first few results when potential users execute a web search.

#### Collective Insights Based on our Research

1. The amount of advertisements must appear weighted towards the side of limited versus prevalent. Existing advertisements must be seamless and professional.
2. More user options to narrow a home search will be beneficial to its' usability
3. Certain search factors are more important to users than others
4. When selecting to view a home, information must be vast, detailed, and efficient to access.
5. When secondary search filters are imposed, it may be beneficial to display removed listings. This feature should not apply to primary search results to avoid excessive useless information.
6. Photos must be presented in a convenient, interactive, and useful manner. For example, a user is presented with a detailed layout of the property/floor plan with clickable viewpoints. The user selects a viewpoint which reveals a perspective photo from that location. All photos must be previewable prior to expansion.