

# Visual Attention and Housing Choice

An Eye-Tracking Study

Isaac Beres and Spicer Pagan  
CPSC 4120

# Agenda

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2. Background
3. Methodology
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5. Discussion
6. Practical Implications
7. Conclusion
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# Introduction

- Apartment searches begin online; decisions are influenced by visual information.
- Eye-tracking reveals where and when viewers focus attention.
- Goal: Characterize gaze allocation across 6 AOIs in Mill and Uncommon apartments.
- Six AOIs: kitchen, bathroom, bedroom, living room, pool, and floor plan.
- Online housing platforms rely heavily on images, so understanding attention patterns may help explain how people form early impressions.

# Research Questions

1. Which regions receive the earliest and most sustained visual attention?
2. How do attention patterns differ between Mill and Uncommon apartments?
3. Do any areas tend to receive similar patterns of attention from participants?

# Background

- Soundararaj and Pettit
  - Buyers' spoken preferences versus eye-tracking data
  - Contradictions between the two
- Ripoll, Nolé, and Llinares
  - Fixation time of certain AOIs had a positive correlation with how users rated those AOIs
  - Gender and architectural expertise differences

# Method: Apparatus & Participants

**Eye tracker:** Tobii Pro X-series (60-120hz), desktop-mounted.

**Display:** 24-27" monitor at ~60-70 cm, lab lighting.

**Calibration:** 5- or 9 point; repeated if error was high.

## **Participants:**

n = 9 (7 male, 2 female; mean age about 21).

Normal or correct-to-normal vision.

Some prior experience selecting apartments in Clemson.

# Method: Stimuli & AOIs

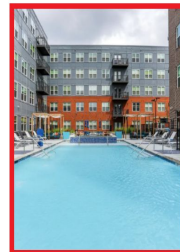
Composite apartment images from **Mill** and **Uncommon** complexes.

Each image annotated with six AOIs:

Kitchen, Bathroom, Bedroom, Living Room, Pool, and Floor Plan.

AOIs defined to tightly match semantic regions.

Images were normalized for resolution and approximate brightness/contrast.



# Method: Design & Procedure

**Design:** Within-subjects

Each participant viewed two composite images (Mill & Uncommon) containing all AOIs.

**Stimuli:** Single composite image per apartment containing all 6 AOIs

**Viewing Time:** ~45 seconds free viewing per apartment

**Measures:** TFF, Dwell Time, Fixation Count

**Decision Task:**

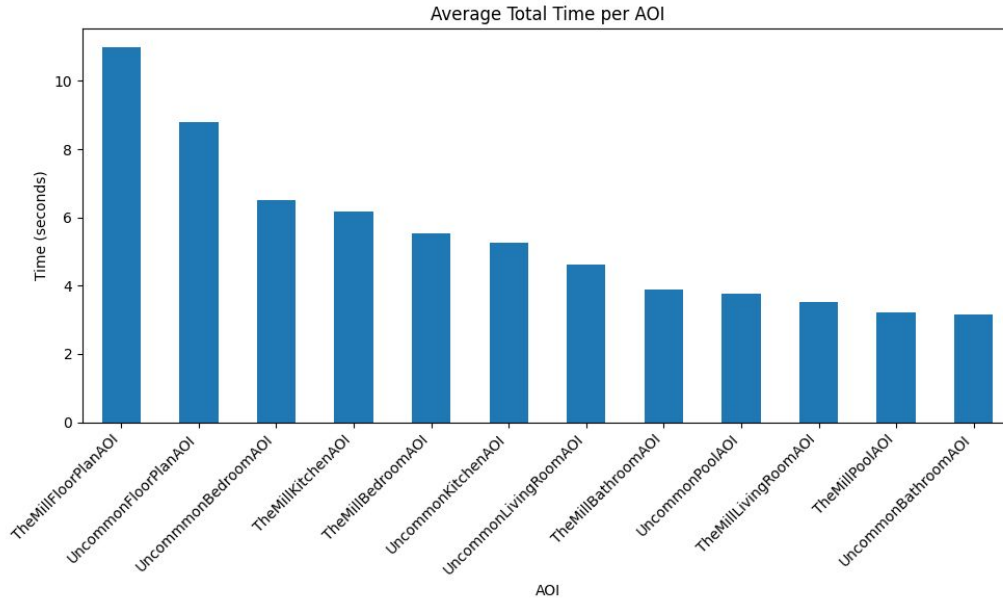
Participants chose which apartment they would prefer to tour.



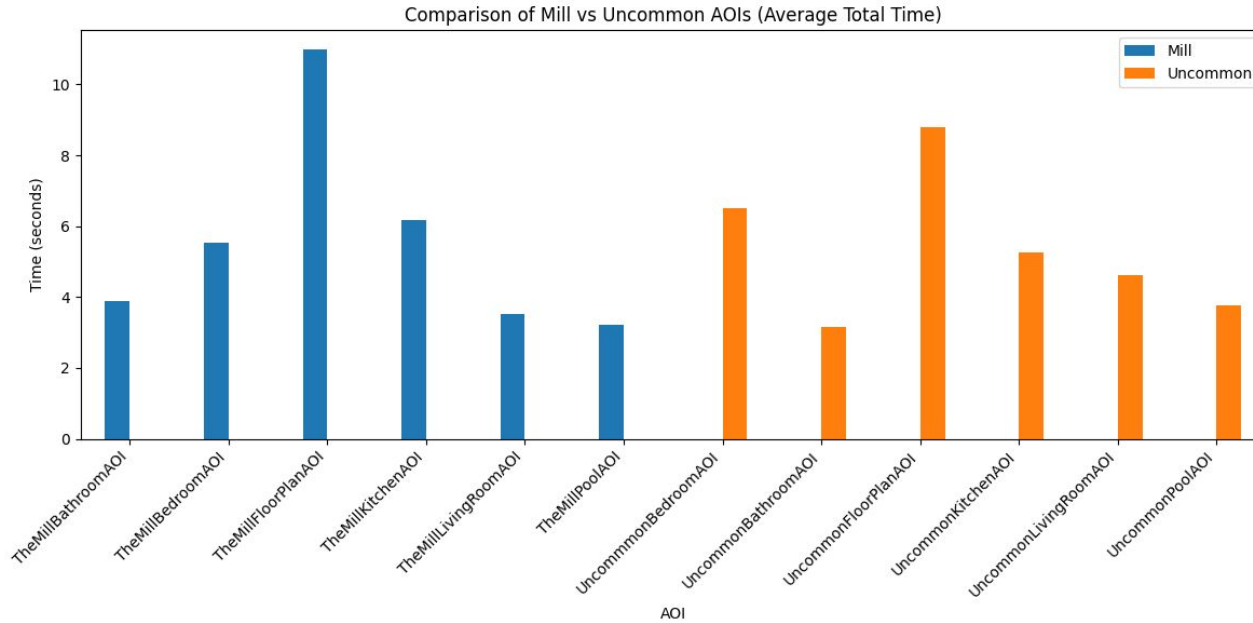
# Results

- Overall dwell time per AOI
- Apartment differences
- Correlations between regions
- Time to First Fixation (TFF)

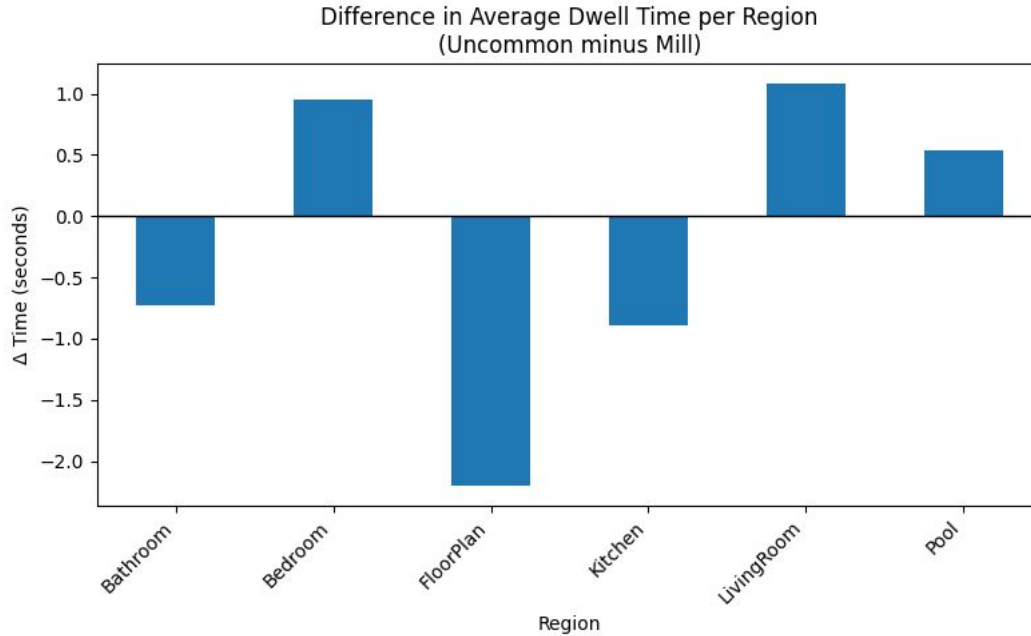
# Results: Dwell Time per AOI



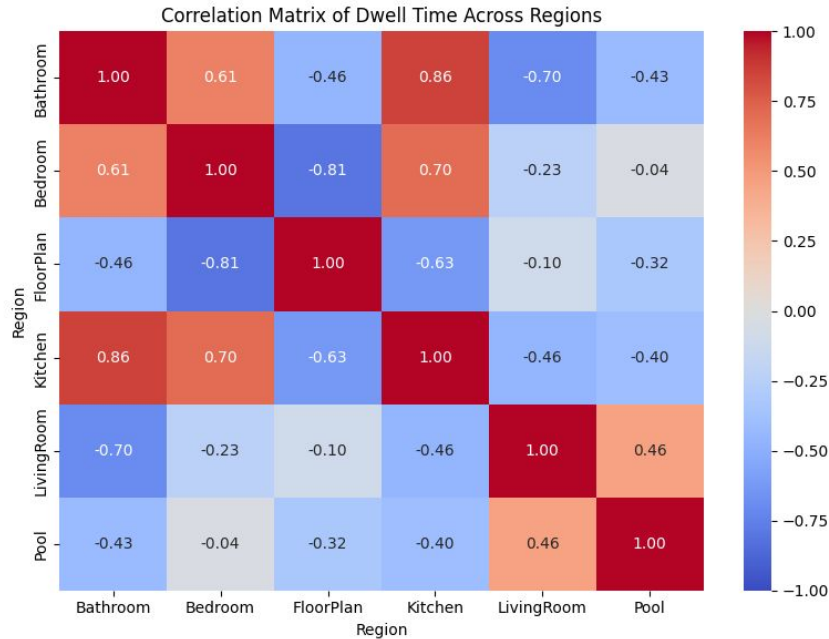
# Results: Apartment Differences



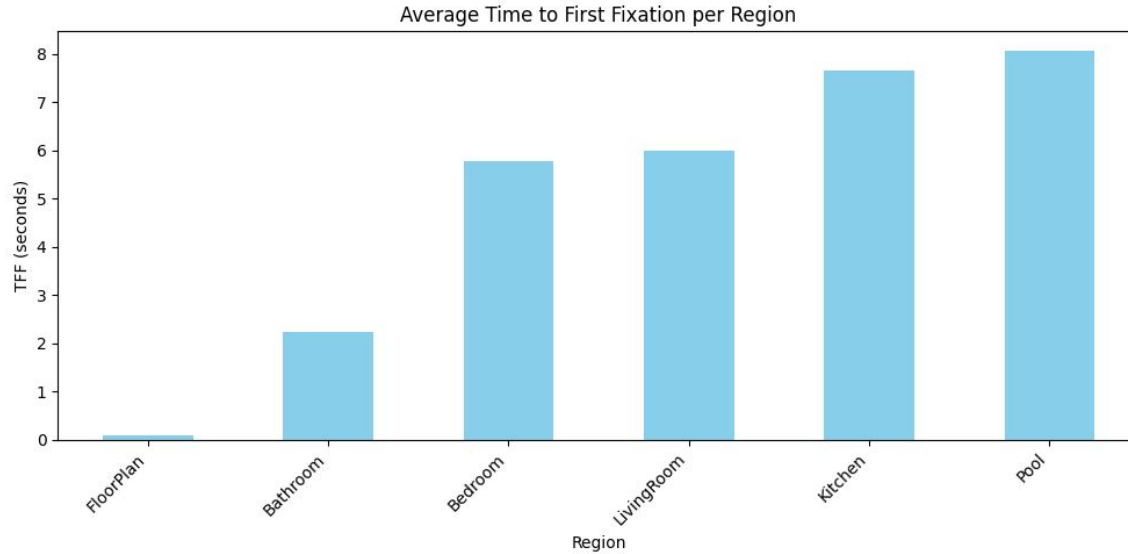
## Results: Apartment Differences (Continued)



# Results: Correlations Between Regions



# Results: Time to First Fixation (TFF)



# Discussion - Key Takeaways

## Overall Viewing Pattern

- Participants relied first on global layout, then inspected key functional rooms
- Floor plan was the earliest and most consistent fixation across everyone
- Kitchens and bedrooms received the next highest attention

## Differences Between Mill vs. Uncommon

- *Uncommon*: More time on bedroom, living room, and pool  
Where these features are more prominent and enticing comparative to the Mill
- *Mill*: More time on floor plan, kitchen, and bathroom  
Participants may have relied on layout more heavily when the space felt more standard

## Individual Viewing Strategies

- Some participants were layout-first
- Others were feature-first, focusing on rooms instead of the floor plan

# Practical Meaning & Implications

## **What This Suggests About Apartment Searching:**

- Floor plans act as cognitive anchors (Should be shown early or prominently in listings)
- Kitchen & Bedrooms are consistently top priority features
- Novel amenities (pool) draw attention but do not replace core spatial features

## **Why These Findings Matter:**

- Can help understand how renters form first impressions
- Indicates which visuals matter most in online housing platforms
- Supports smarter interface design



# Conclusion

***Floor plans dominated attention:*** earliest fixations and longest dwell time.

Bedrooms and kitchens were the next most consistently viewed functional spaces.

Bathrooms received early fixations, but did not sustain attention.

***More time on Uncommon:*** bedroom, living room, pool.

***More time on Mill:*** floor plan, kitchen, bathroom.

Despite individual variation, the overall viewing pattern was stable:

- **Layout first -> Key rooms -> Amenities**

Thank You / Any Questions?