

# Toward an understanding of first-time campus users' wayfinding: Observing users' routes and interaction with the signage system at KU Edwards Campus

The design of educational settings literature identifies the importance of understanding first-time user wayfinding behavior and designing around it, and this research is a first step toward answering that call.

## Preliminary Survey

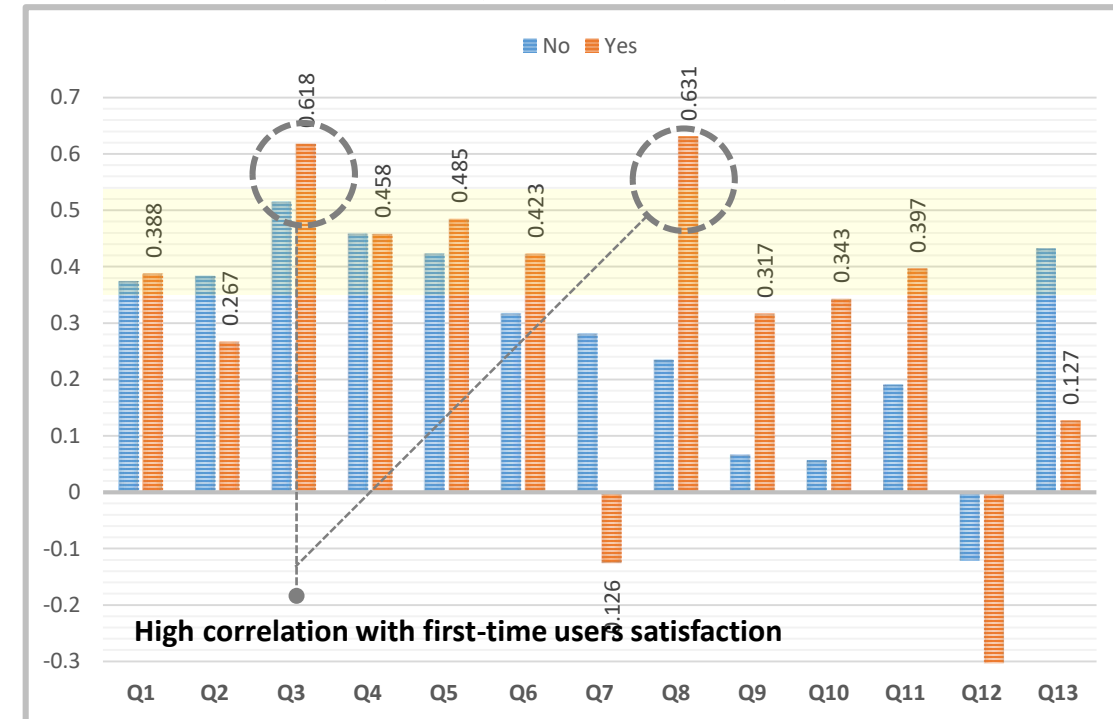
Pilot study were conducted at the **KU Edwards Campus** to explore the differences in users' satisfaction in signage system based on their familiarity. A survey instrument composed of different attributes related to **signage design and planning** such as location, size, type...etc was used to collect users attitudes towards the signage system. Analysis of variance and correlations were used to evaluate the data and explore the differences in participants' satisfaction based on their familiarity.

**Questionnaire Results:** The analysis of variance showed a statistically significant difference between the two groups (familiar and non-familiar users) in their satisfaction level based on their evaluation of different items.

Table 1: Kruskal-Wallis H test for Users' Satisfaction and wayfinding Aids

	Sig.	Mean
Q1- Identification Signs	.159	
Q2 -Directional Signs	.539	
Q3 - Signs in appropriate locations	.049	F>UF
Q4 - The size of signs	.505	
Q5 - The letters were large	.370	
Q6 - Signs contrast	.021	F<UF
Q7 - Using Maps	.309	
Q8 - Find destination on directory & directional sign	.003	F>UF
Q9 - Touch screens	.776	
Q10 - Floor numbering	.619	
Q11 - Room numbering	.372	
Q12 - too many Clutter	.000	F<UF
Q13 - Online information	.125	
Q14 - Satisfaction with the overall signage	.017	F<UF

Figure 1: Spearman Correlation Analysis

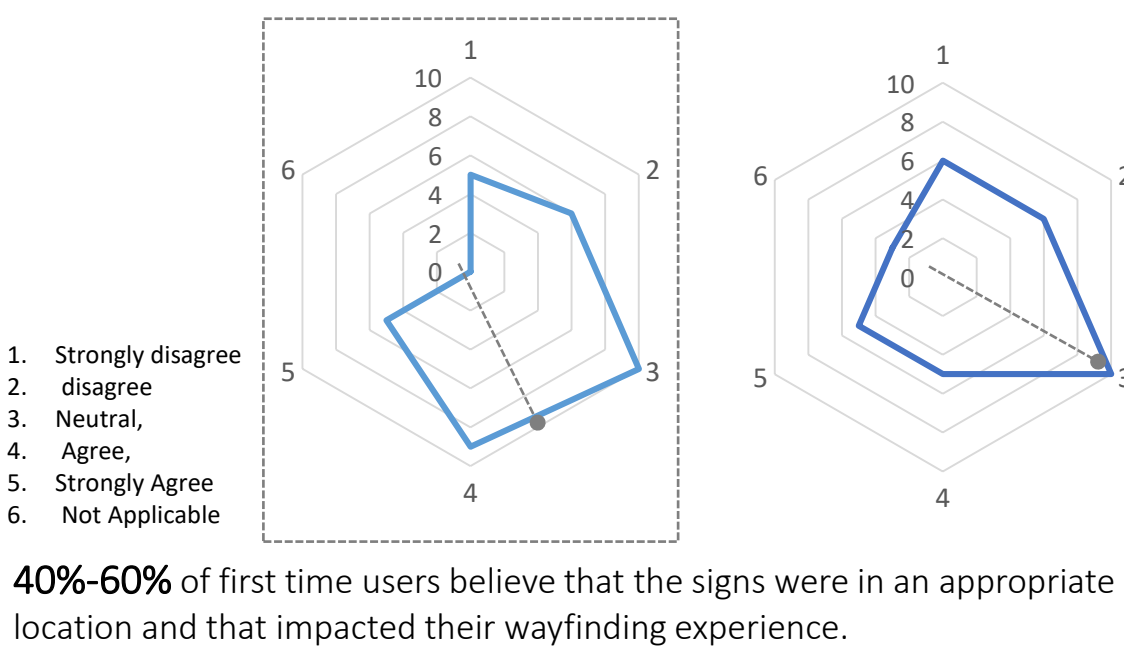


## Correlation Analysis:

Correlational analysis was conducted to evaluate the effect of different variables on satisfaction level of both groups.

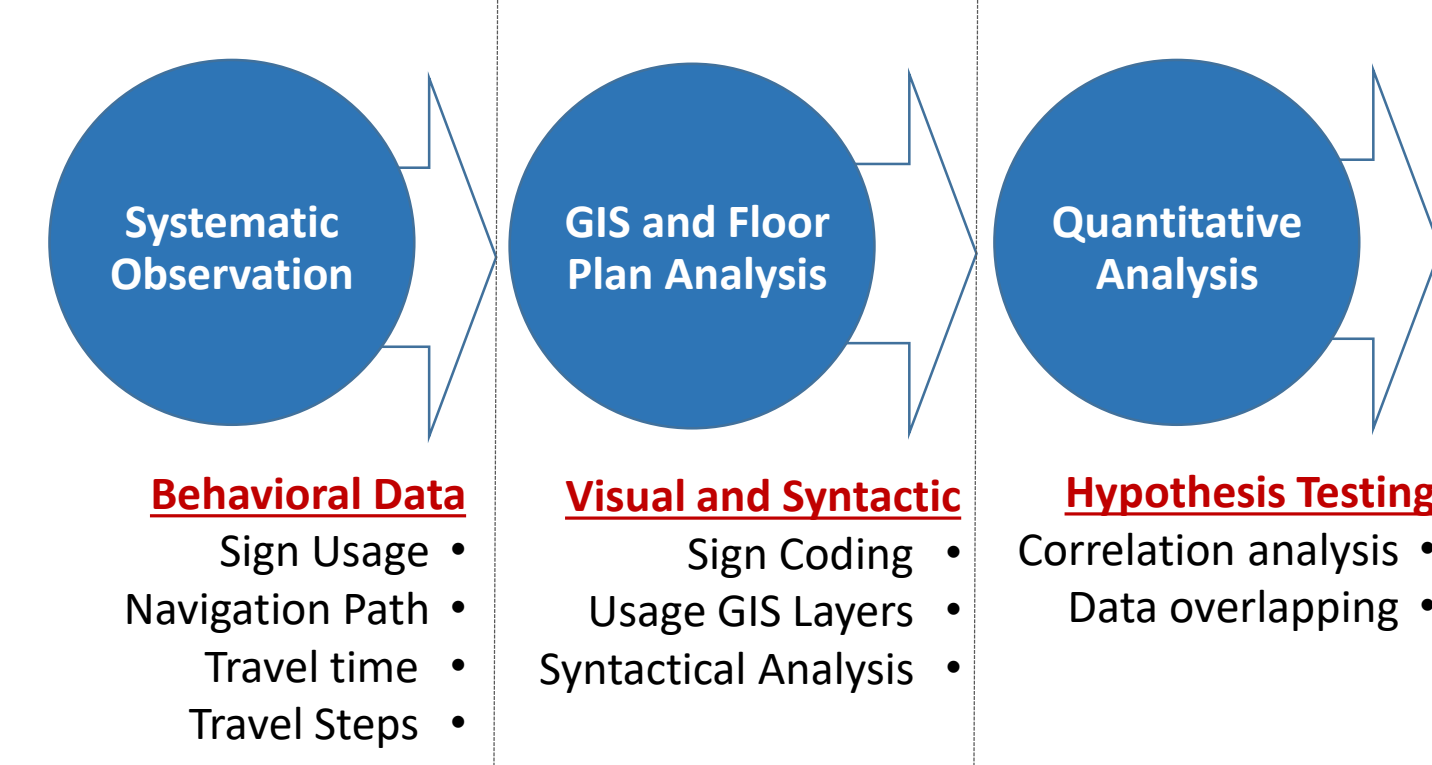
**The location of signs and find destination on directory** significantly correlate with the increase of first-time users satisfaction of signage system.

Which one is more influential? Looking back to percentages.



**40%-60%** of first time users believe that the signs were in an appropriate location and that impacted their wayfinding experience.

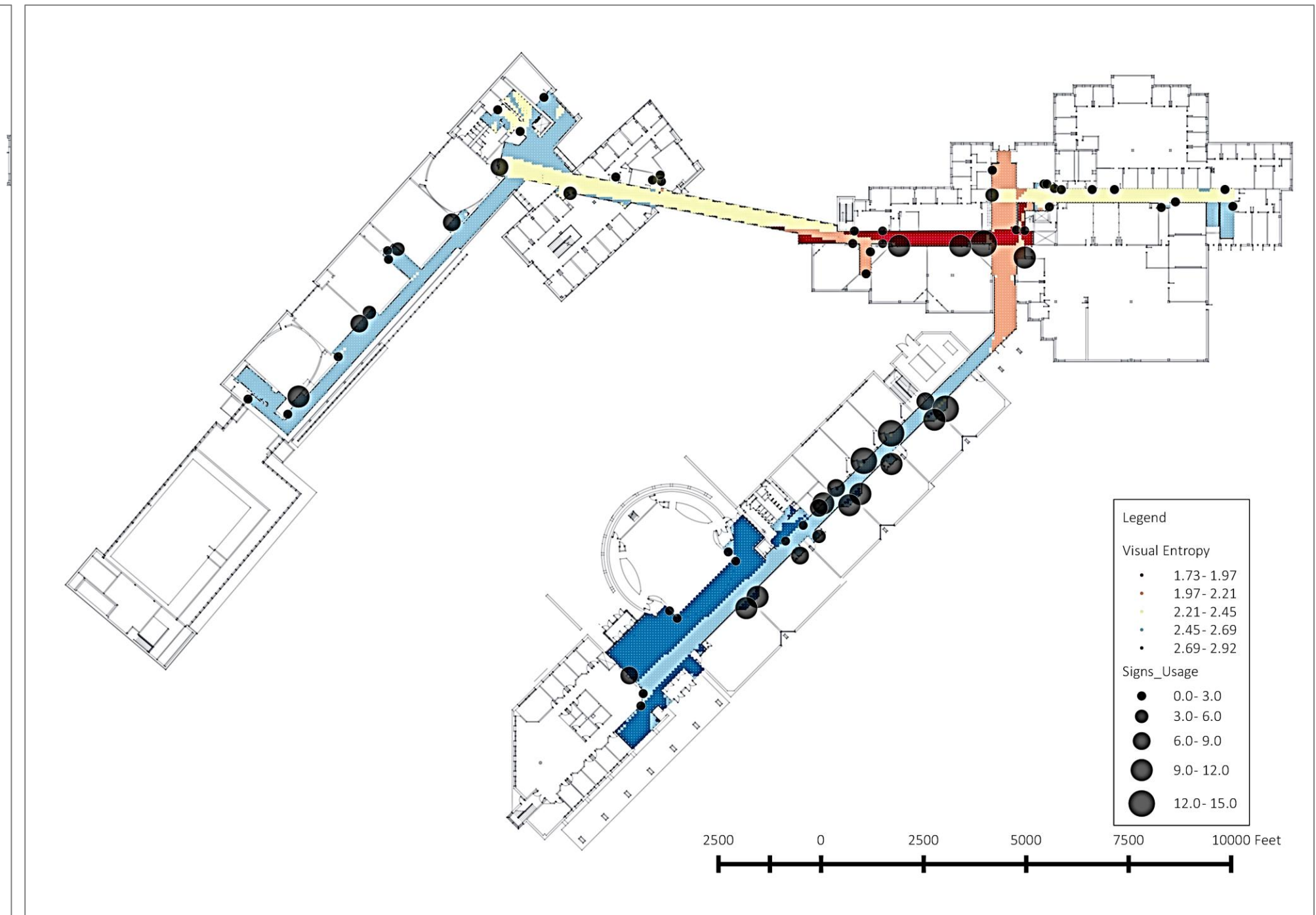
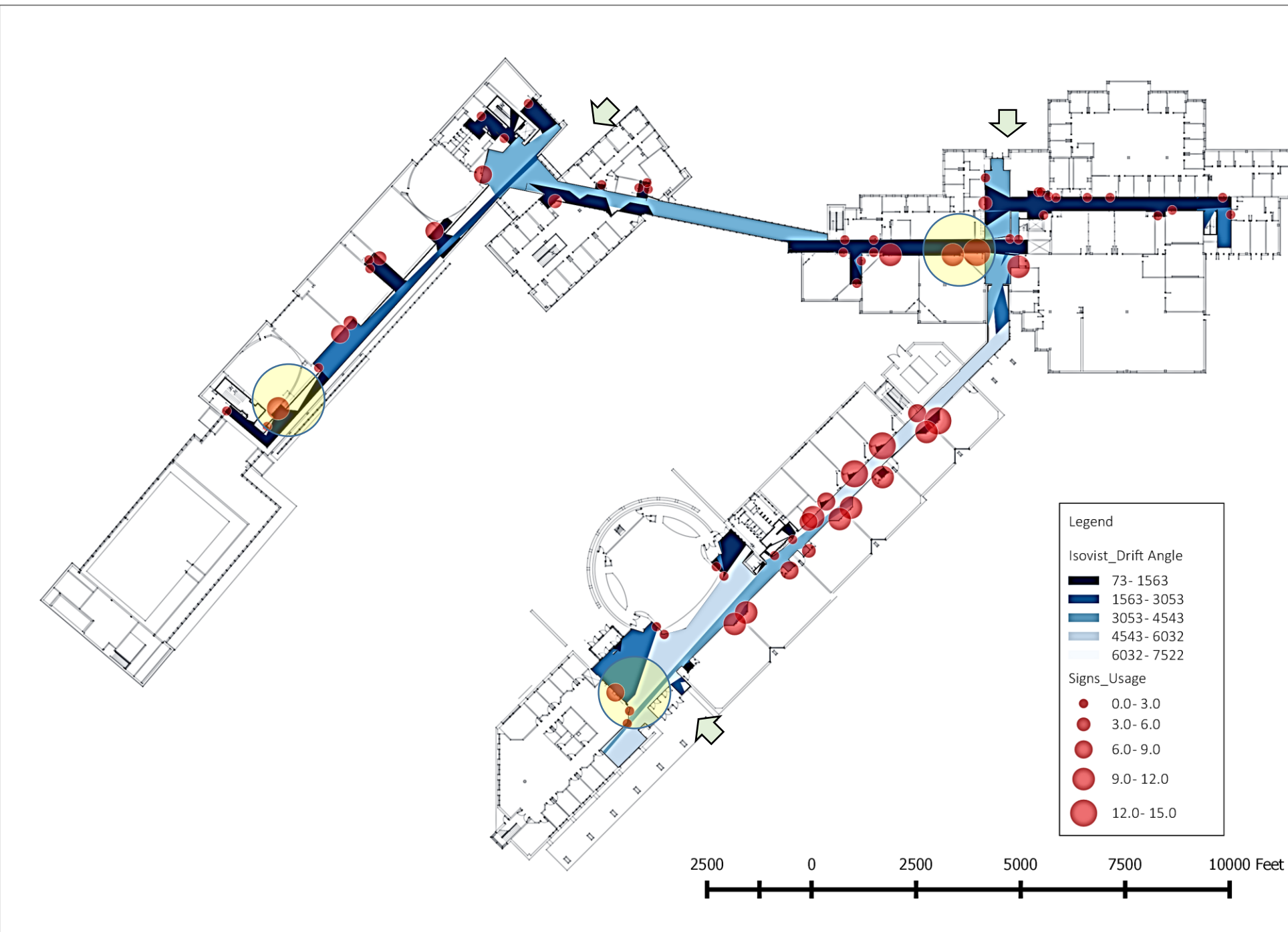
## Research Process



• **Research Question:** the research investigate the influence of signs' locational & spatial properties on the number of times people report seeing signs and using them in wayfinding.

• **Research Process:** Unobtrusive observation is conducted of campus' first-time visitors' initial wayfinding behavior from three entrances of the KU Edwards campus in overland park. 37 entry to a destination routes are observed during this study. we used geographic information systems (GIS) to map these routes. The ground floor plan of buildings were analyzed using space syntax to calculate the locational properties of the sign including connectedness of spaces and signs' view-sheds. Using Pearson correlation analysis, the study calculated different effects of Signs' spatial properties on the number of times users see and use signs in their wayfinding.

• **Benefits to KU Edwards Campus :** Campus personnel can benefit from this research to strategically provide enough information for users to increase the level of wayfinding ease in the campus areas. They can used information about which signboards at routes are most popular and market campus materials and services along highly-trafficked routes.



## Visual Properties of SIGNS' Spatial Location

### Isovist View-sheds

2D polygon representing the maximum area from within the sign can be seen. The polygon measurements include: Area, Perimeter, the longest, and shortest line lengths, drift and occluding edge lengths

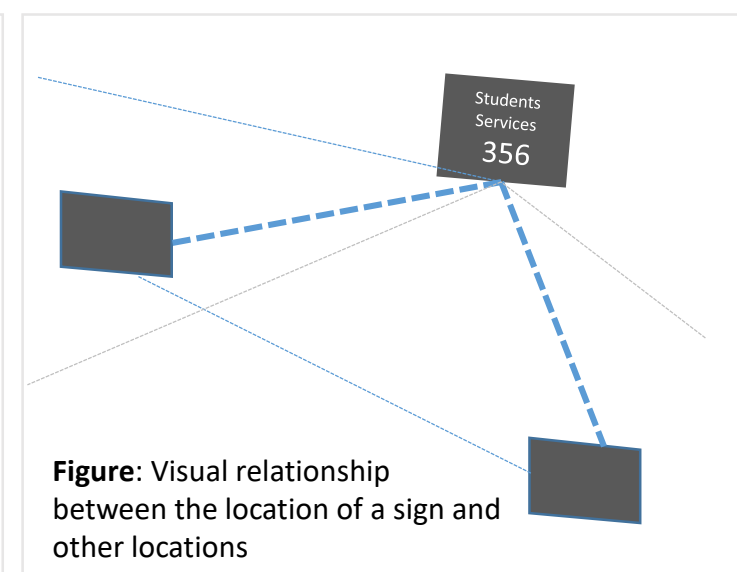
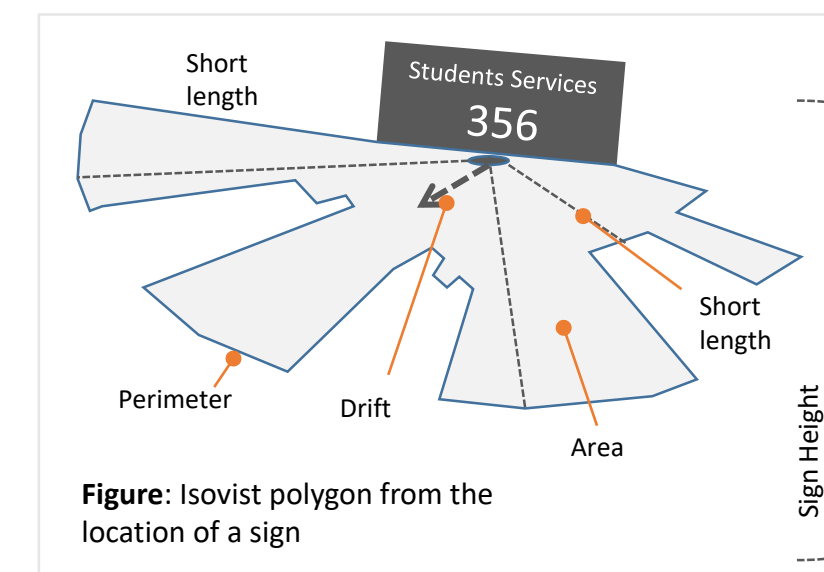
### Connectedness

Relational values representing the visual relationship between the current location of a sign and the whole spatial environment and internal visual relationships between locations. Measurements include: integration, connectivity, entropy, and control

Space Syntax Plugin in QGIS

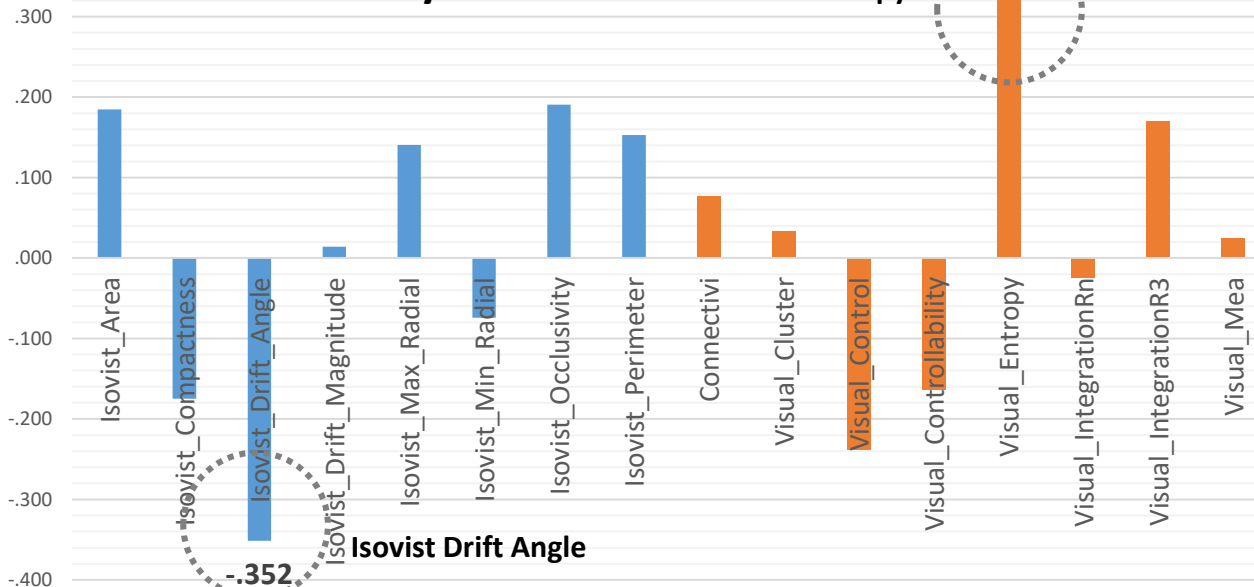


Usage Data



## Results

### Correlation Analysis



Based on the analysis both **isovist drift angle** and **visual Entropy** significantly correlate with the number of times signs were used by first time users in their wayfinding

**Isovist Drift Angle:** represents the angle of a line drawn between the sign and the center of the isovist polygon (gravity), smaller drifts from the gravity line offer the largest possible view of a sign.

• The results indicated that 48.4% the signs are not aligned in a way to offer the largest possible view for way-finders.

**Visual Entropy** indicates how ordered and easy the transition from a sign point to all of the points on the building (low disorder create an easy traverse).

• The results indicated that the number of times of using signs increases in spaces with high entropy that are linked to open pathways.

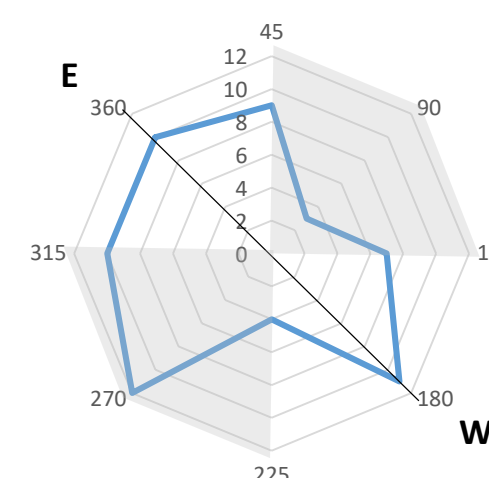


Figure: Signs Isovist drift angles

## Next Step:

Sign spatial location properties are important in understanding the dynamics of spatial behavior and interaction with signage system. The next step of the research will involve the investigation of the impact of signs angles on usage

