Week 5 Analysis: Does Pixel Placement Location Vary Between User Activity Levels?

1 Introduction

This analysis aims to investigate whether the location of pixel placement varies across different user activity levels. Specifically, the question under investigation is whether more active `Rplace` users tend to place their respective pixels in different locations on the map compared to less engaged, or "nooby," users.

2 Analyzing User Activity and Classifying Users

To assess user activity, I initially plotted the total number of pixels placed by each user in a histogram. This visualization provides an overview of user engagement across the dataset.

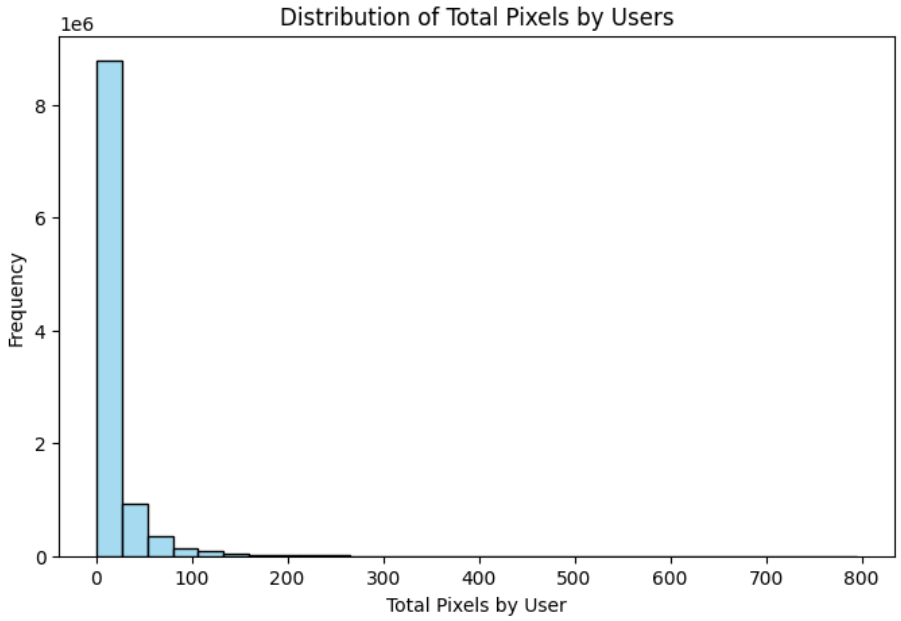


Figure 1: Histogram of total pixels placed by each user.

As observed in the histogram, the majority of users have placed relatively few pixels, with only a small proportion contributing a significant number of placements. This suggests that the user base is predominantly comprised of less active participants, while a smaller subset of users exhibits high levels of engagement.

3 Average Pixels Placed by User in Each Percentile Group

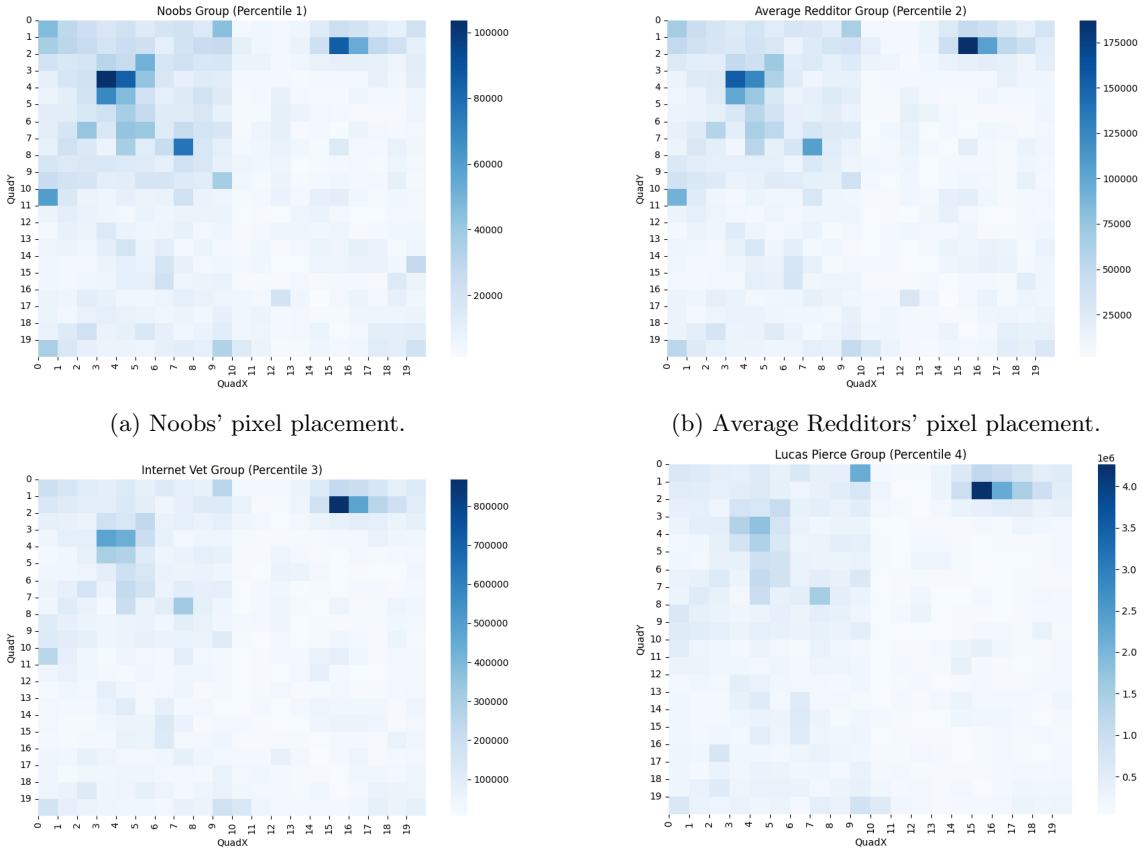
Percentile Group	**Average Pixels per User**
Noobs	1.33
Average Redditor	3.83
Internet Vet	9.95
Lucas Pierce	47.96

Table 1: Average Pixels Placed by User in Each Percentile Group

Each percentile group is constructed as follows, Noobs (0-25th percentile), Average Redditor (25-50th percentile), Internet Vet (50th-75th) percentile, and lastly the Lucas Pierce (75-100th) percentile. These bins, or percentile groups, were constructed in an attempt to simply categorize different levels of users. Looking at average pixels per user metric per percentile group corroborates with the previous analysis of the distribution of users plot. Meaning, the vast number of users that placed few pixels will drag down the average number of pixels placed per respective percentile group. However, there is definitely still a discernible difference between each respective bin, in particular the jumps from Average Redditor to Internet Vet and from Internet Vet to Lucas Pierce. This leads to the conclusion that while there is a vast swath of Noobs dragging down the average pixels placed these four respective bins still capture vastly varying levels of engagement with the platform.

4 User Behavior on R Place Canvas

To analyze user behavior, pixel placement patterns are analyzed across different activity levels.



(a) Noobs' pixel placement.

(b) Average Redditors' pixel placement.

(c) Internet Vets' pixel placement.

(d) Lucas Pierce's pixel placement.

Figure 2: Comparison of pixel placement across user groups.

Plotted in Figure 2 is a visualization that highlights the most frequently placed pixels across a 20x20 quadrant heatmap. In this representation, each 100x100 coordinate block on the original canvas has been condensed into a single quadrant, making it easier to identify the areas with the highest concentration of user activity.

At first glance, an interesting pattern emerges: Despite differences in experience and activity levels, all four user groups tend to interact with the same general areas of the canvas. This suggests that even the most active and experienced users are drawn to the same regions as those who participate less frequently. While this finding may initially seem unremarkable, it raises the question of why is this the case?

X Quad	Y Quad	Count	Percentage
3.0	3.0	103590	2.21%
1.0	15.0	85579	1.82%
3.0	4.0	84713	1.81%
7.0	7.0	76770	1.64%
4.0	3.0	68980	1.47%

(a) Noobs' placement statistics.

X Quad	Y Quad	Count	Percentage
1.0	15.0	186970	2.71%
3.0	3.0	155594	2.26%
3.0	4.0	125025	1.81%
7.0	7.0	106479	1.54%
1.0	16.0	105144	1.53%

(b) Average Redditors' placement statistics.

X Quad	Y Quad	Count	Percentage
1.0	15.0	867409	3.52%
3.0	3.0	475970	1.93%
1.0	16.0	474064	1.92%
3.0	4.0	435943	1.77%
7.0	7.0	325971	1.32%

(c) Internet Vets' placement statistics.

X Quad	Y Quad	Count	Percentage
1.0	15.0	4258376	3.43%
1.0	16.0	2217207	1.79%
0.0	9.0	2184993	1.76%
3.0	4.0	1778819	1.43%
7.0	7.0	1545161	1.24%

(d) Lucas Pierce's placement statistics.

Figure 3: Comparison of pixel placement statistics across user groups.

The next logical step in this analysis is to delve deeper into identifying which specific quadrants are most popular within each user group. As shown in Figure 2, there is a notable overlap in the quadrants that attract the most attention across different user categories. For instance, quadrants such as (1,15), (3,3), (3,4), and (7,7) appear consistently across all groups, highlighting their widespread popularity. This repetition across varying levels of user activity raises an important question: why are these particular regions so consistently favored by users from all groups?

5 Exploring (1,15)

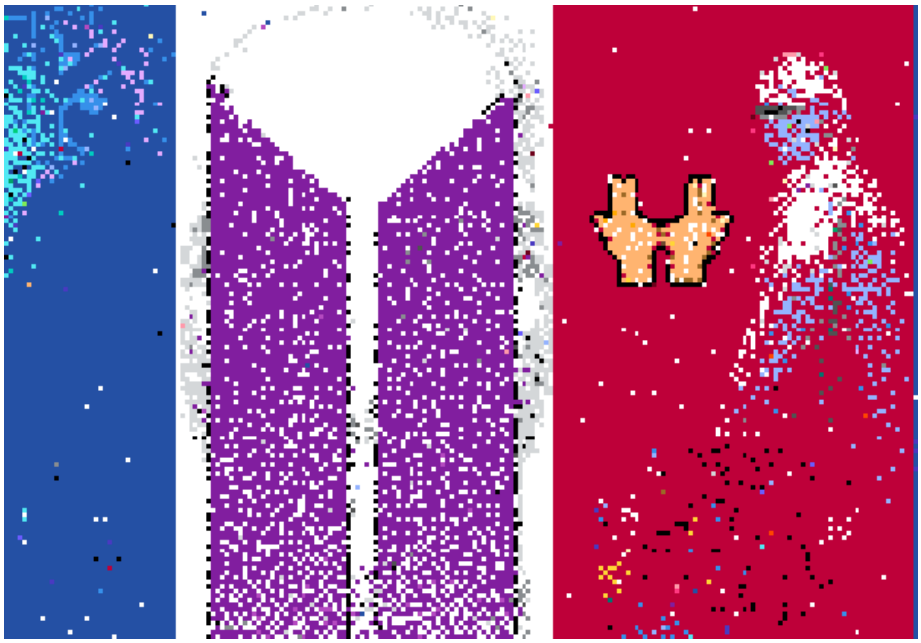


Figure 4: French Flag Defense: Pixel placement in the French-Spanish battle.

The (1,15) quadrant holds significant historical relevance from the 2022 r/place contest. This area was the focal point of a fierce battle between the French and Spanish communities, particularly over the preservation of the French flag. The controversy centered around Zidane's iconic eyebrows, which were under attack from the Spanish faction. The French community, determined to maintain Zidane's face intact, fought to defend this part of the flag, emphasizing the importance of these eyebrows as a symbol of French pride. This defense became one of the most emblematic moments of the 2022 r/place, with the French successfully retaining the integrity of Zidane's portrait despite the Spanish attempts to cover his eyebrows.

The battle escalated further when a popular Spanish streamer promised to stream BTS's "Butter" music video until it hit 1 billion views if the BTS ARMY helped them secure a spot on the French flag. This resulted in the BTS logo being placed on the flag, much to the frustration of the French users, who later offered BTS fans another location on the canvas. However, despite the French efforts, the Spanish community managed to keep the BTS logo intact.

6 Exploring (3,3) and (3,4)

Figure 5: Turkish Flag Defense: Pixel placement of the contested Turkish flag.

The quadrants (3,3) and (3,4) are in the heart of the Turkish flag, an area that was fiercely defended by the Turkish community. The Turkish flag, with its red background and the iconic white star and crescent, became the center of one of the most hotly contested spaces on the canvas. The flag featured the silhouette of Istanbul in its background, with Anıtkabir, the mausoleum of Mustafa Kemal Atatürk, located at the center. As one of the most recognizable symbols of the Turkish nation, the flag was an important point of pride for Turkish users, and they rallied to defend it from various other communities.

Throughout the duration of r/place, the Turkish flag was overtaken and rebuilt multiple times, each time provoking intense resistance from the Turkish community. The flag's defense became a rallying point for Turkish users who faced off against various opposing groups. Notably, the flag was also contested by communities such as TechnoBlade's followers, a very popular MC YTer who has since died. Despite these challenges, the Turkish community managed to maintain the integrity of their flag, demonstrating their commitment to preserving their cultural symbol in the r/place contest.

7 Exploring (7,7)

Figure 6: osu! Art: Pixel placement related to the osu! meme WYSI.

The coordinates (727,727) are significant for the osu! community, with this spot hosting one of the most iconic pieces of artwork during the 2022 r/place event. osu is a popular free-to-play rhythm game where players click circles to the beat of the music. The osu artwork became one of the most defended and enduring pieces on the r/place canvas, often being rebuilt and maintained despite numerous attempts by other communities to disrupt it.

The meme associated with the osu artwork, known as WYSI (When You See It), originated from a play by top player chocomint, who earned 727pp on the map "Blue Zenith" in 2016 and 2017. This play, paired with the number 727, became a meme within the community, and the circle centered on (727,727) is a reference to this popular meme. Even as other groups, such as r/Superstonk's GameStop supporters, tried to overtake parts of the canvas, osu users managed to maintain their artwork.

8 Final Conclusion

The analysis of pixel placement patterns across different user activity levels on the `Rplace` canvas reveals an unexpected trend, despite varying levels of user engagement, the most popular pixel placement areas, particularly defense spots, remained consistent across all groups. From the Noobs to the Lucas Pierce's (haha this never got old and I laughed every time I typed this), users consistently interacted with the same high-traffic quadrants, notably regions like (1,15), (3,3), (3,4), and (7,7).

This pattern suggests that these defense spots transcended individual user activity levels, becoming shared spaces of focus for the entire `Rplace` community. Regardless of whether users were occasional participants or highly engaged veterans, they gravitated toward these areas, contributing to a sense of collective action. These defense spots were not merely the focus of experienced users or a niche subset of participants; instead, they represented a community-wide event that united all members around a common cause.

9 PySpark Analysis

After working with DuckDB, Polars, and PySpark I realized each have their own strengths. DuckDB is great for quickly processing data using SQL commands. Polars is a fasttool for handling large datasets. PySpark was very very powerful but was a bit more complex to set up and work with. In particular, just even grabbing a single column from a PySpark dataframe is really odd syntax. Furthermore, I find it kinda interesting that the DF support with PySpark defaults to Pandas?? I feel that if exporting to a polars DF was an option, PySpark would achieve the awesome speed DuckDB has while being much easier to work with for large datasets with visualizations etc.