r/place 2022: Irregular Placement Activity

Across the 2022 r/place data, we found 4 irregular activity buckets:

1. **Platform controlled changes** (the final Whiteout): the rules change
2. **Bots that place pixels**: accounts place at the cooldown boundary with some jitter and no “sleep”.
3. **Synchronized pixels**: coordinated waves that repaint regions in spikes.
4. **Admin use**: accounts that were able to place pixels with great volume.

Bucket 1: Platform controlled phases (rule changes)

1) What it is in human terms

Reddit flips the mode so that pixel placements no longer reflect “normal” user activity. One case is the final Whiteout, when the only allowed action is to whiten the canvas. These minutes should be excluded from any bot interference because the canvas is constrained to one color.

2) Concrete r/place examples and visuals

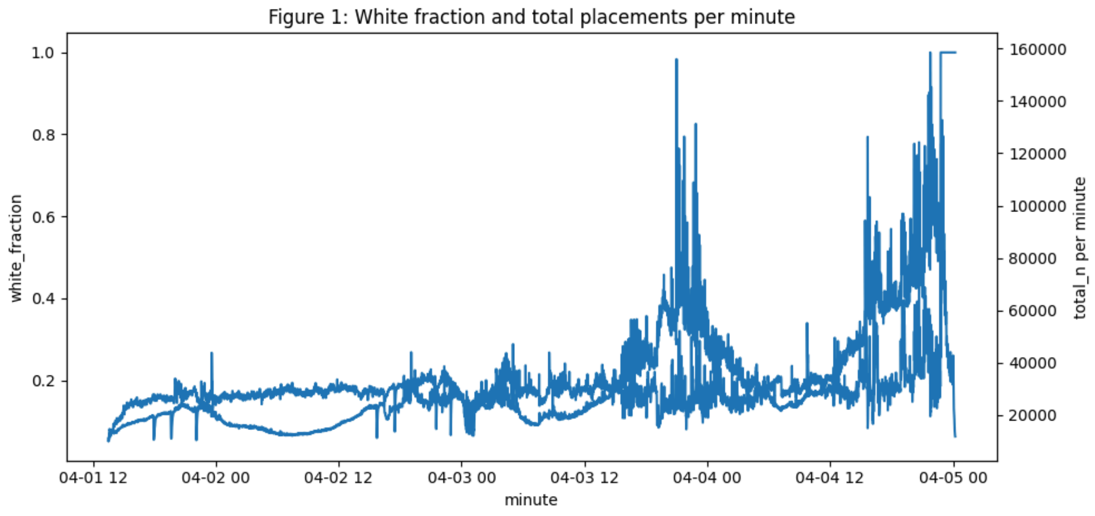

Fig 1: Image showing the occurrence of white pixels as a fraction of total pixels placed, the spike near 4-4 00 was reddit expanding the canvas, thus adding more pixels.

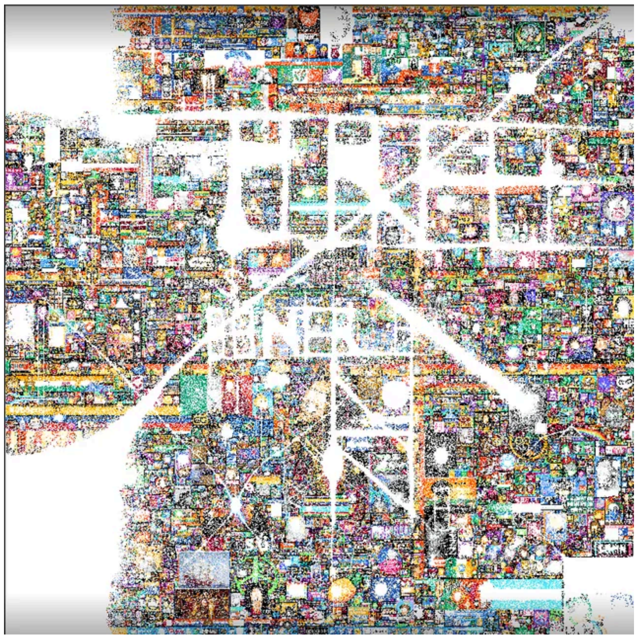

Fig 2: Screenshot of r/Place during the Whiteout

3) Detector script and mechanism

Detection Mechanism: The SQL detects events by identifying minutes in which one color dominates global pixel placements (>90%), a signature of the rule changes that force users to act in a non “normal” way such as the final Whiteout rather than user driven activity.

Bucket 2: Pixel placing automation (bots)

1) What it is in human terms

Accounts that behave like a bot they place a pixel at (or just after) the cooldown expires with basically stable timing, repeated across all hours. Humans don’t place one pixel every 5 minutes with a 1-2 second jitter for hundreds of events, for 24 hours a day.

2) Concrete r/place examples and visuals

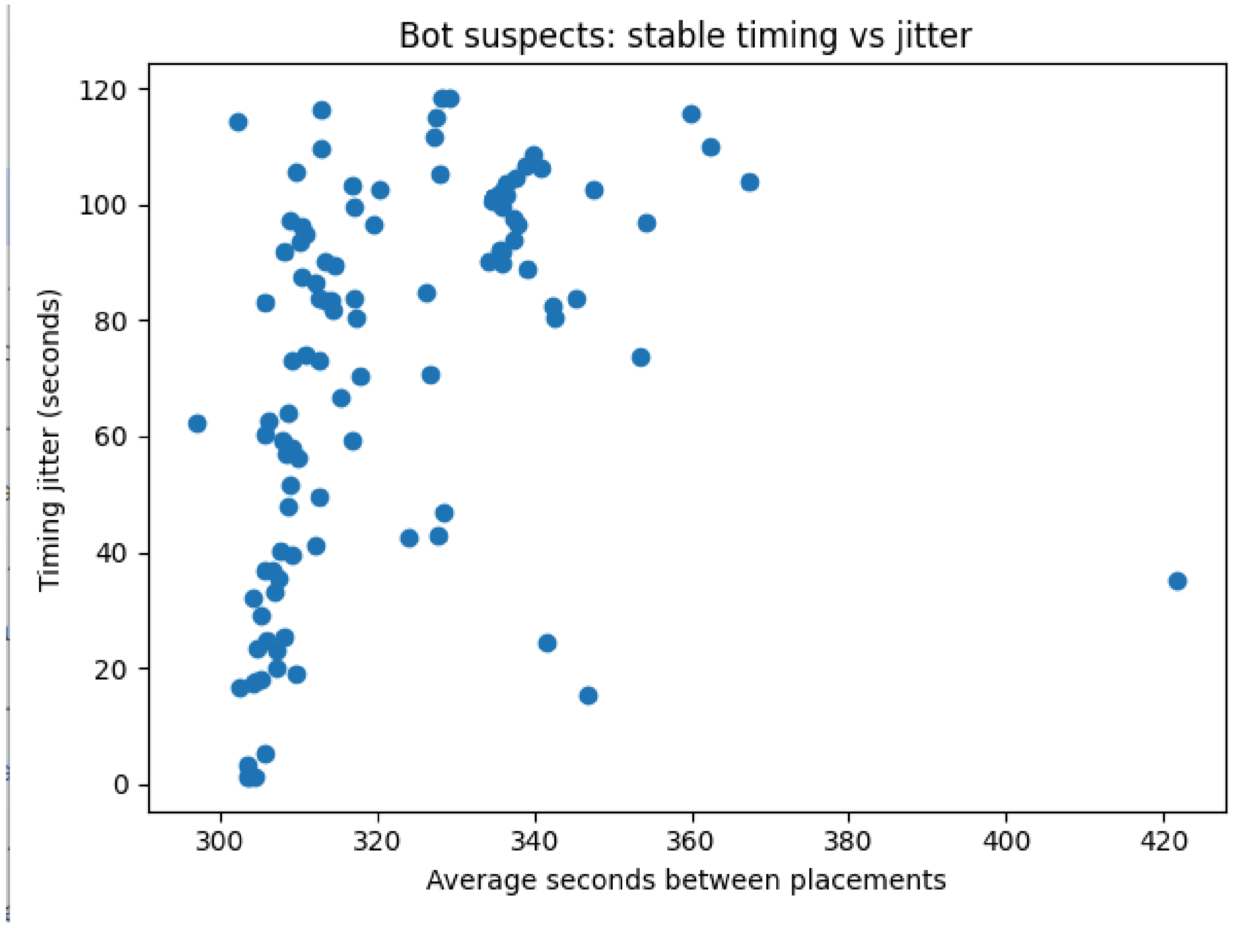

Fig 3: Each point represents one user flagged by the detector. The x-axis shows the user's average time between pixel placements, while the y-axis shows jitter (standard deviation of placement time). Users that cluster tightly around the global cooldown (300s) with very low jitter (bottom left corner), indicates highly regular, non-human timing consistent with bots.

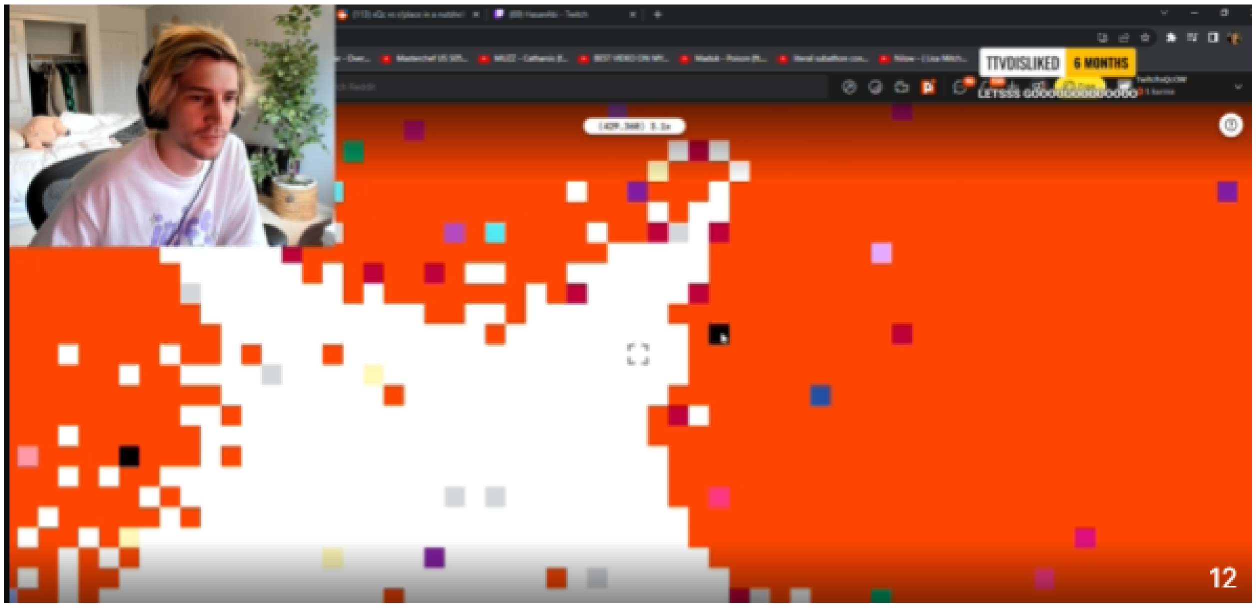

Fig 4: Streamer XQC discovers a bot with a new account defending a flag Source:
https://www.twitch.tv/xqc/clip/KathishVictoriousSquirrelTheThing-nAxwoQY23X-J7EX0

3) Detector script and mechanism

Detection Mechanism: It scans a fixed rectangle and flags users who repeatedly change a pixel within 60 seconds of another user’s last change at that same pixel. Users with ≥10 such back-and-forth edits are labeled and then ranked by count and speed.

Bucket 3: Image fixing (raid waves / scripted repaint)

1) What it is in human terms

“People” are actively defending an image by immediately repainting pixels after someone else changes them. A small number of users repeatedly watch the same area and quickly overwrite changes often within seconds so the image stays intact.

2) Concrete r/place examples and visuals

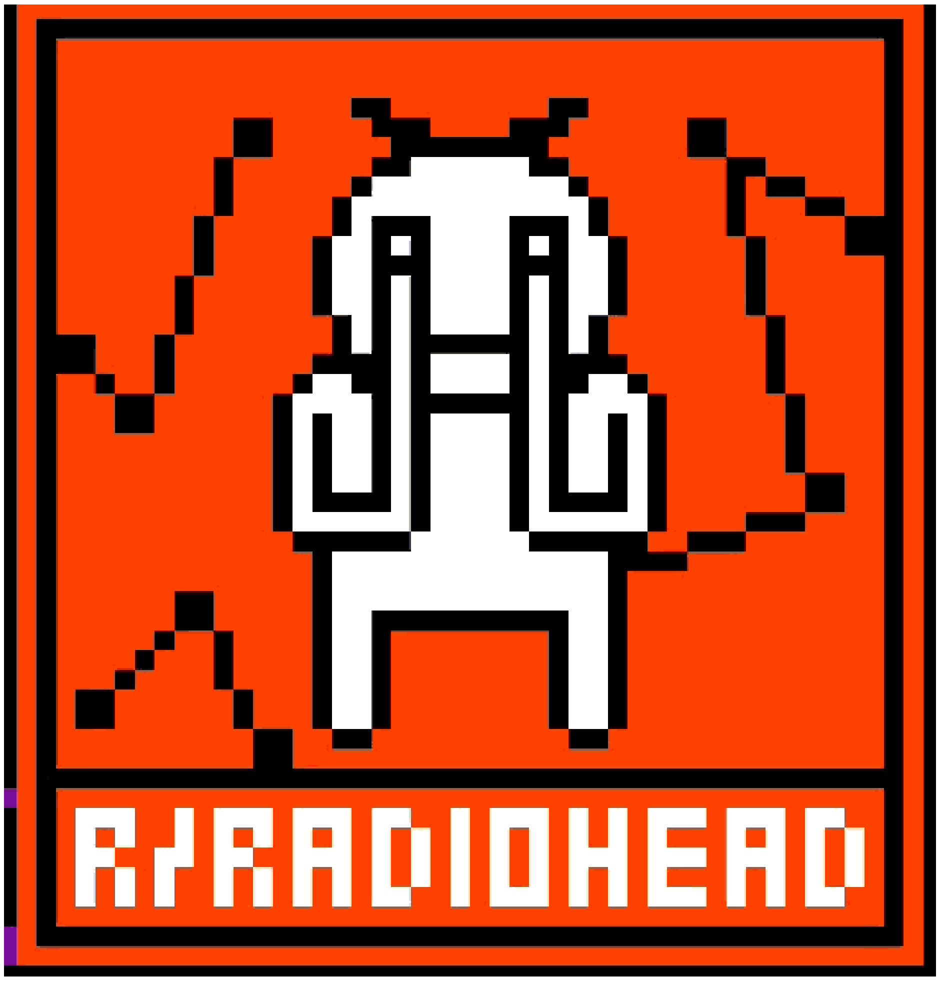

Fig 5: We used the Radiohead image on r/Place as it was small enough to demonstrate changes while also large enough to detect many users, One user had 129 changes to the image shown with an average placement of 17.244271 seconds after another person griefed/distorted the image.

3) Detector script and mechanism

Detection Mechanism: Filter to a time window and an area where there is pixel art. For each pixel (x,y), sort edits by time and compare each edit to the previous edit at that pixel. Count a hit when the pixel changed color, a different user did it, and the time gap is <60s. Then aggregate hits per user and flag users with >10 hits and report average latency.

Bucket 4: Admin Use

1) What it is in human terms

There are admin/mod “rectangle draws” instead of placing one pixel, a mod applies one color to every pixel inside a rectangular region in a single action.

2) Concrete r/place examples and visuals

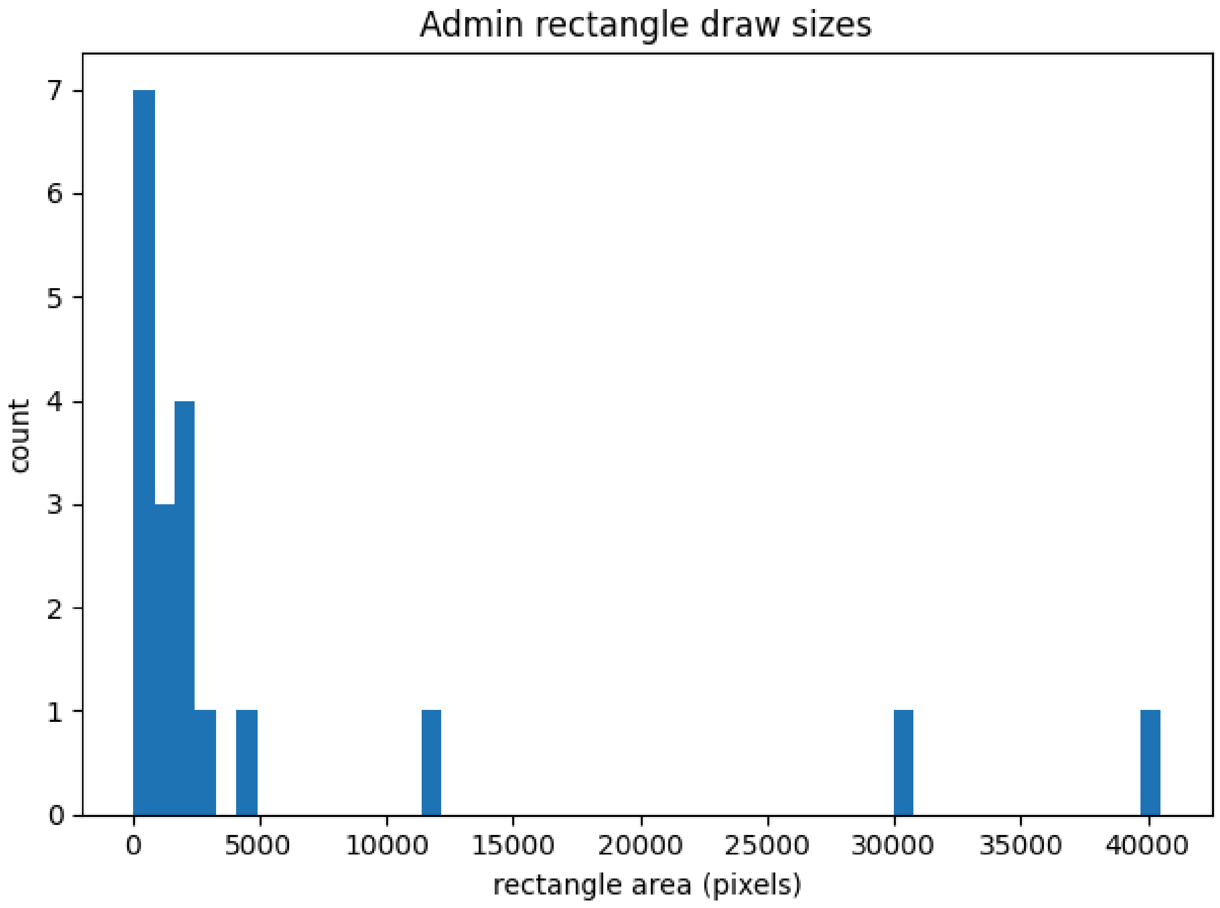

Fig 7: Admin rectangle draw actions are heavily skewed toward small fills with a long tail of large area interventions

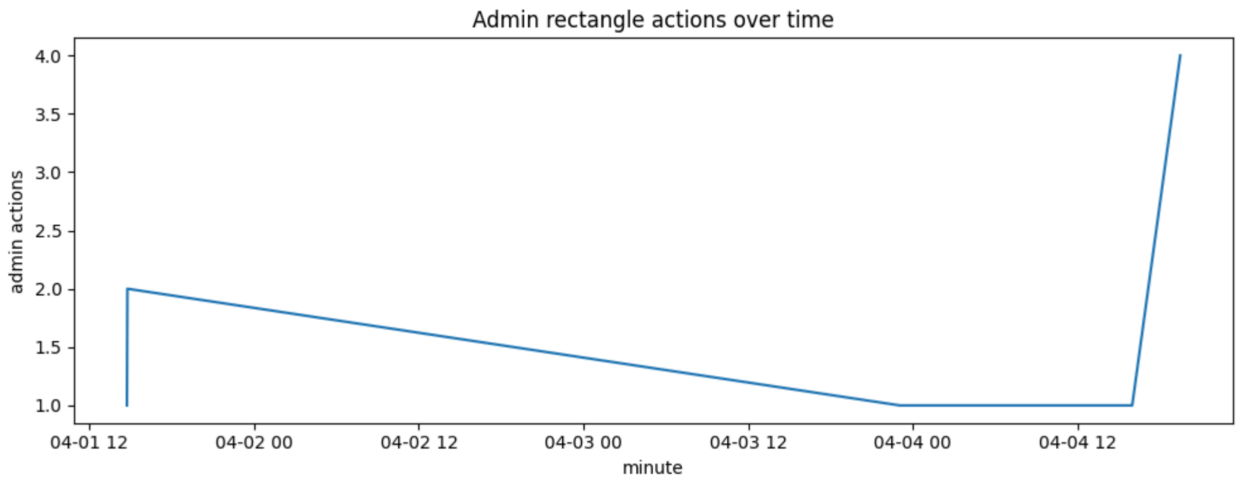

Fig 8: Admin moderation events over time, measured as rectangle draw actions per minute the spikes indicate discrete moderator interventions.

3) Detector script and mechanism

Detection Mechanism: Normal users have coordinate = "x,y" (one comma). Admin rectangle actions have coordinate = "x1,y1,x2,y2" (three commas), representing two rectangle corners; that action fills the whole rectangle with pixel_color.