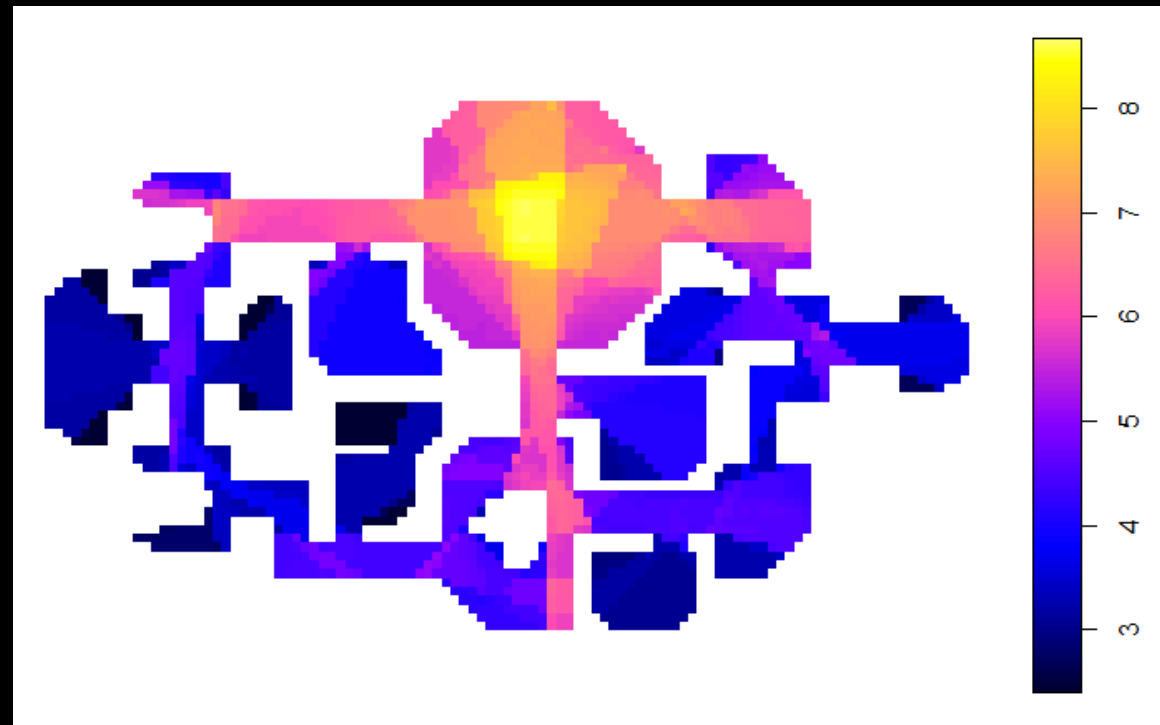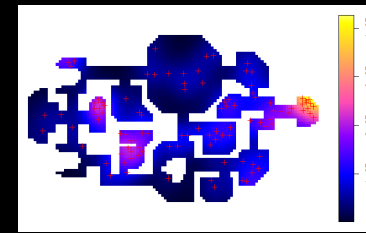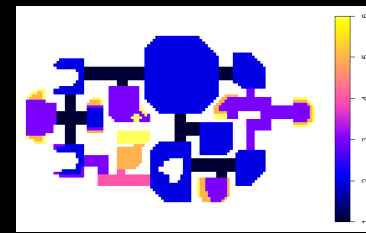# Spatial Logic in Among Us

Ryan Tan
Genevieve Shaun
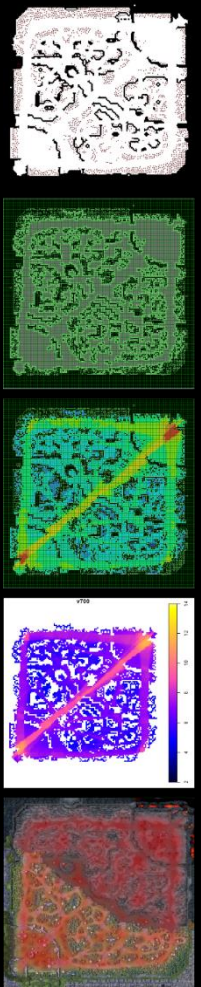
Dota2 - Patch 7.29
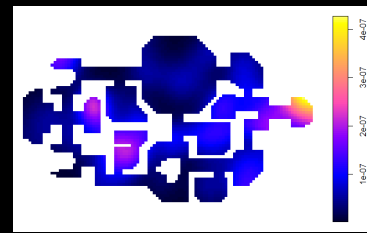
Among Us; Skeld

Game Space as a resource to understand Spatial Logic

How can Spatial Theory help you?

1) Spatial Qualities that influences Behaviour (Risks)

2) Spatial Logic in Design (Game Balance)

3) Interaction btw Space and Objects in the System (Tasks)

waoW, the game relies greatly on visibility and accessibility

Why is Electrical such a vulnerable place??

Is this even an intended outcome???

Space and Risk
An imbalance within Game Space
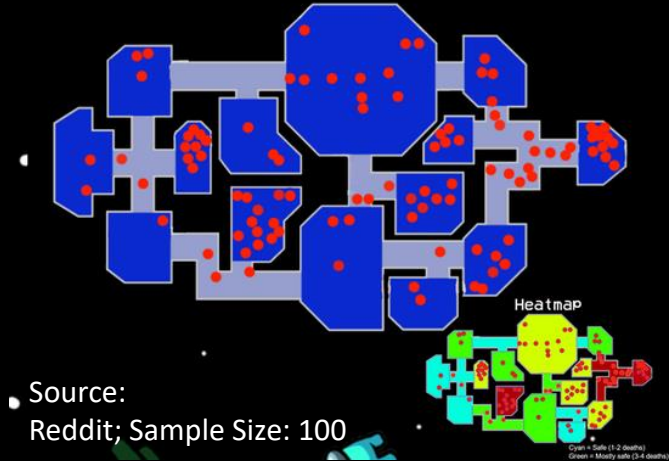
Actual Risk:
Death Occurrences
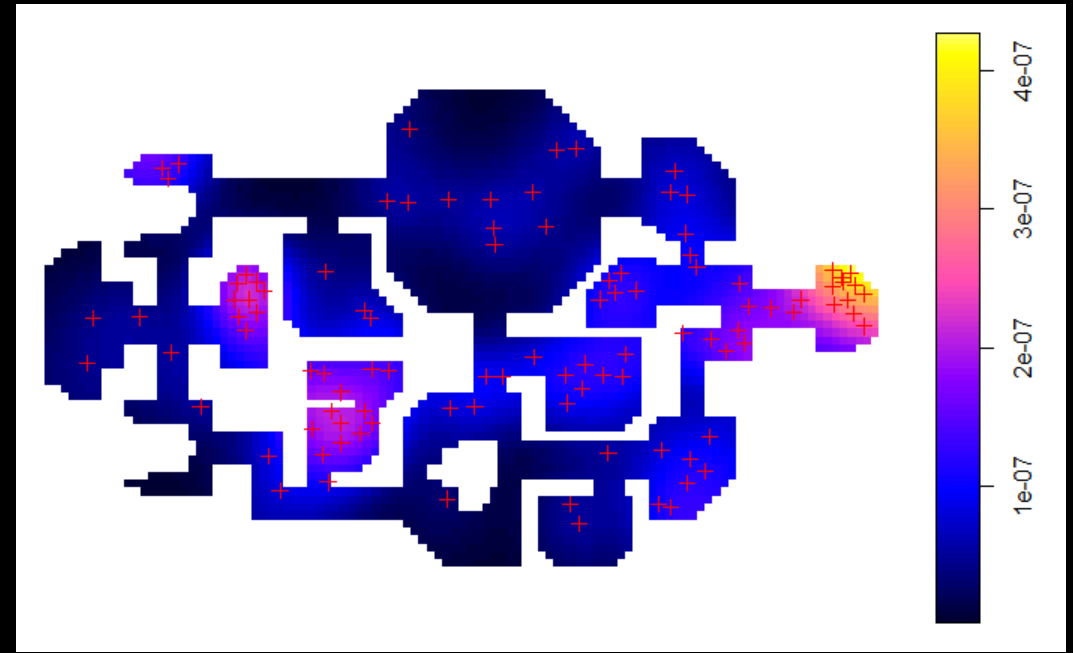
Perception of Risk:
Online advice on where might be dangerous

Visual Integration
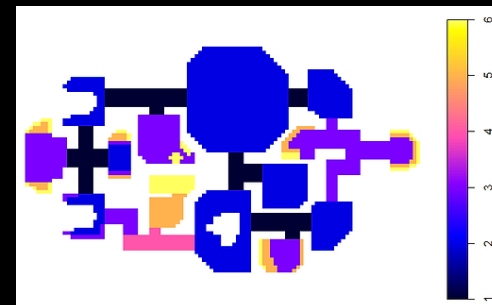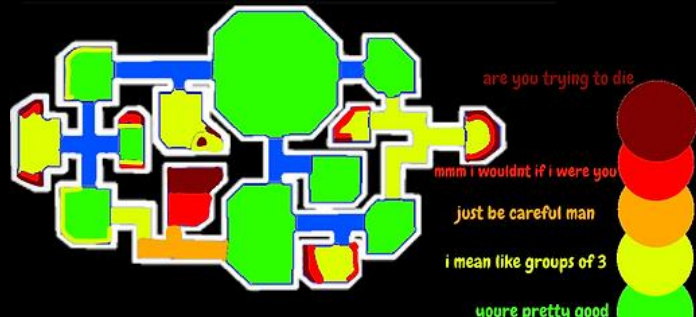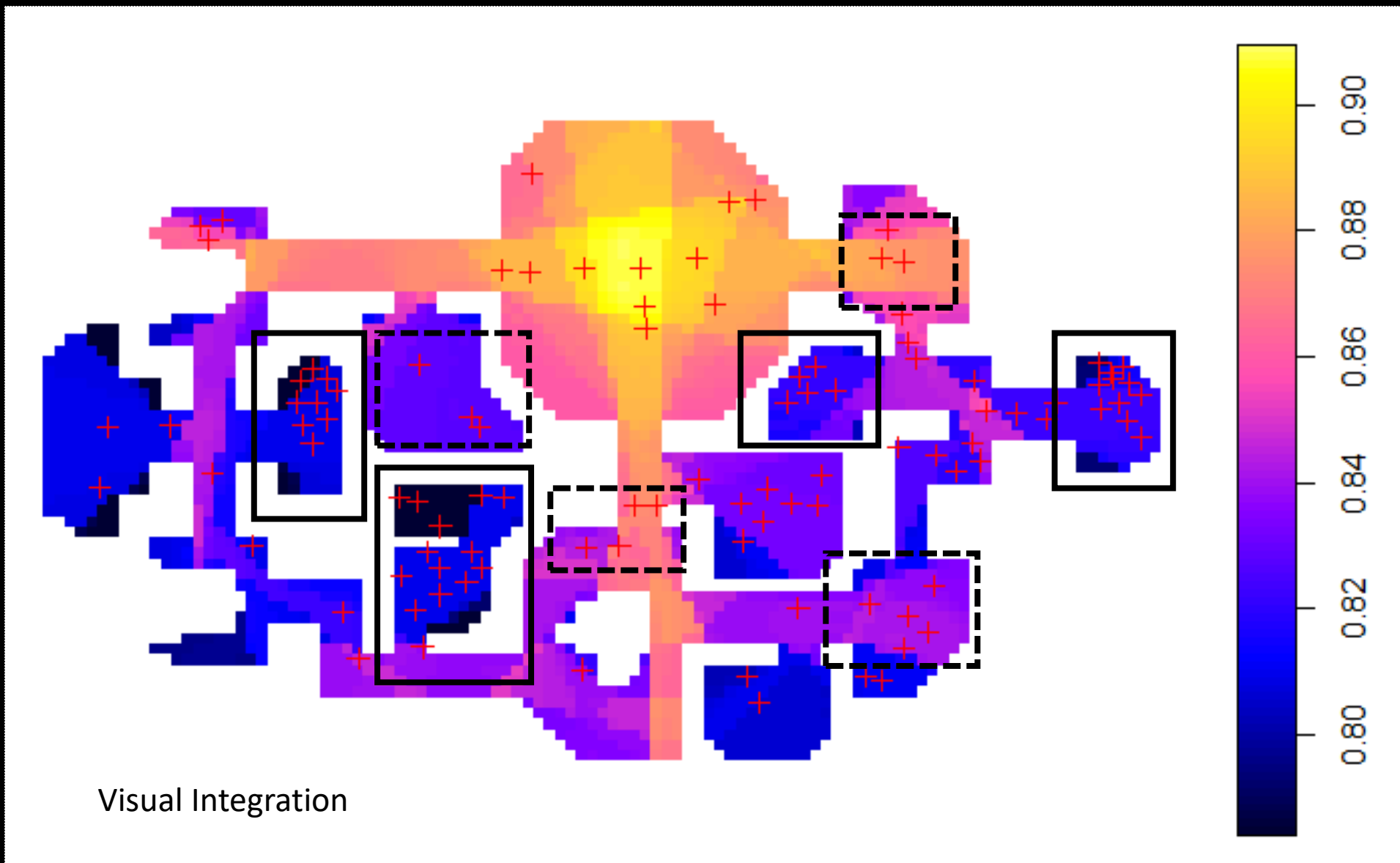
What affects risk? Could it be…

Visibility implies "Safety"

What spatial qualities influence risk?
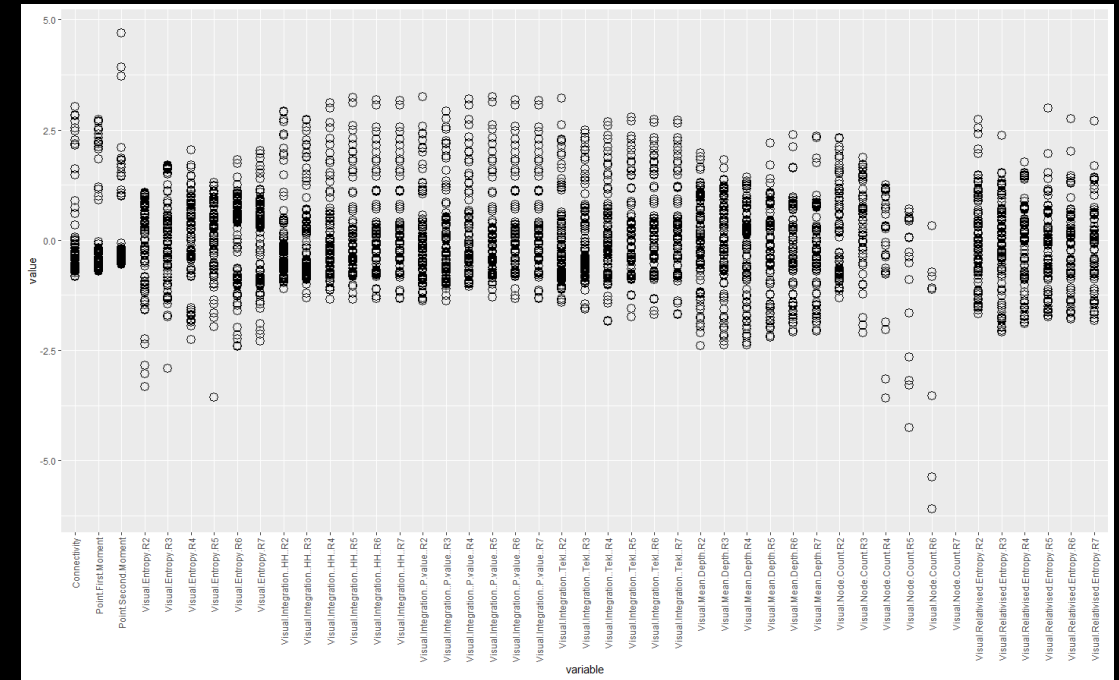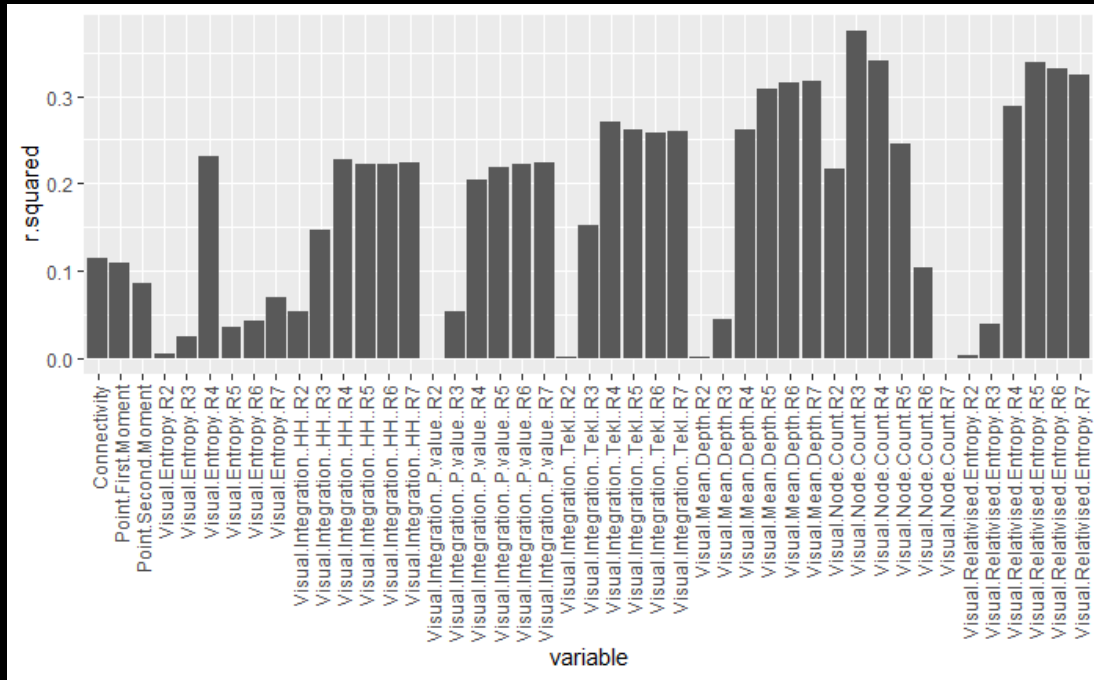
Perception of Risk

correlates with

Visual Relativized Entropy

which represents

Accessibility: Complexity of Travel

Actual Risk (deaths)

correlates with

Visual Integration

which represents

Visibility: Eyes on the Street

With imbalance, what do people even think of it?

Posted by u/436687

1 year ago

The Skeld is by far the worst map in Among Us

`Gaming`

The map is the most popular of the three, and I don't understand why. The map feels small and is boring. Whenever I'm impostor in the Skeld I do the same things, I kill in electrical and security and then vent to medbay. This is boring. Whenever I'm in either Polus or Mira HQ I have to come up with different strategies. The small feel of the map also makes it easy to be caught because there are a few rooms very close together that people visit frequently. In Polus, the rooms are far apart which makes it easier to escape. In Mira HQ the rooms are separated by the long hallway and the decontamination chamber, which spreads things apart. In conclusion, The Skeld is a boring map that is too small while the other maps offer fun and different gameplay experiences.

It's not fun, because its just too easy.
They want more possibilities within the gameplay.

/r/AmongUsMemes: "When the kill cooldown is too low"

Unique Game Settings

Less Vision, Longer Cooldowns
> More difficult for Imposters

More Tasks
> More difficult for Crewmates

60 FPS
Custom Settings
Map: The Skeld
Impostors: 3 (Limit: 0)
Confirm Ejects: Off
Emergency Meetings
Anonymous Votes: Off
Emergency Cooldown: 0s
Discussion Time: 0s
Voting Time: 75s
Player Speed: 1.25x
Crewmate Vision: 1.75x
Impostor Vision: 0.25x
Kill Cooldown: 10s
Kill Distance: Short
Task Bar Updates: Always
Visual Tasks: Off
Common Tasks: 2
Long Tasks: 3
Short Tasks: 3

Color   Hat   Pe

Kill Distance

Visual Tasks

Task Bar Updates

Common Tasks

Long Tasks

Short Tasks

PRIVATE

Why is Game Balance Important?

- There will always be asymmetry in a game

- Each and every Player want an equal chance of each outcome (e.g. winning/losing)

- It's not fun when its too predictable or repetitive

Crewmates 47% **Imposters 53%**

Existing Mechanisms!

- Existing solution is mostly self regulatory, but barely intuitive

- *Only influence win loss ratio (crew/imposter) but not the "balance of the space"

Exploring how does space contribute to Game Balance
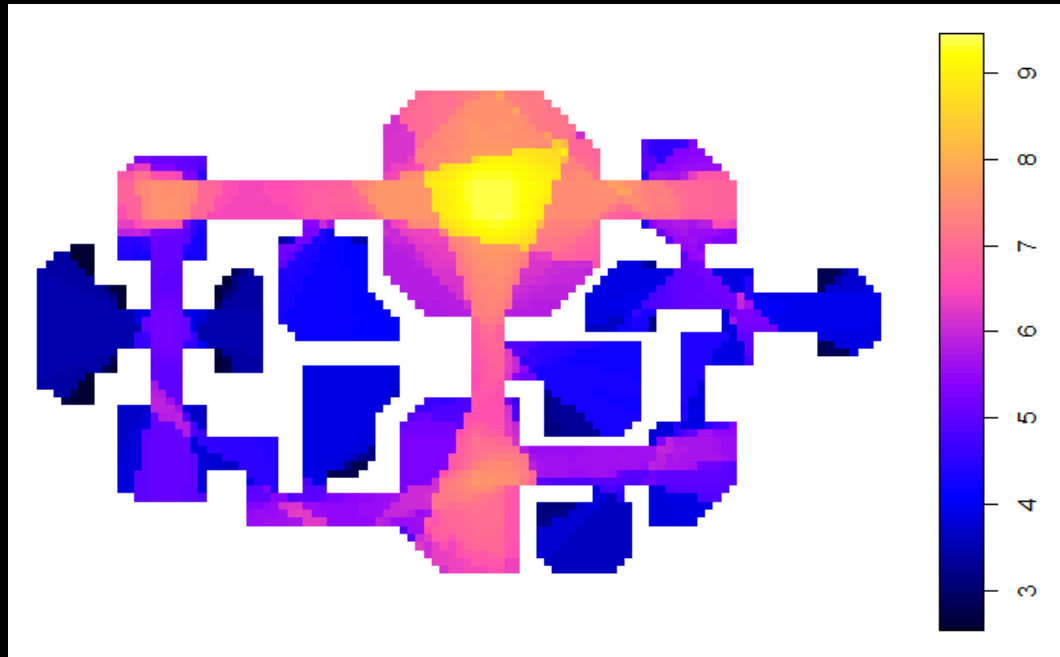
(Hypothetical) Visibility Map Without Obstacles
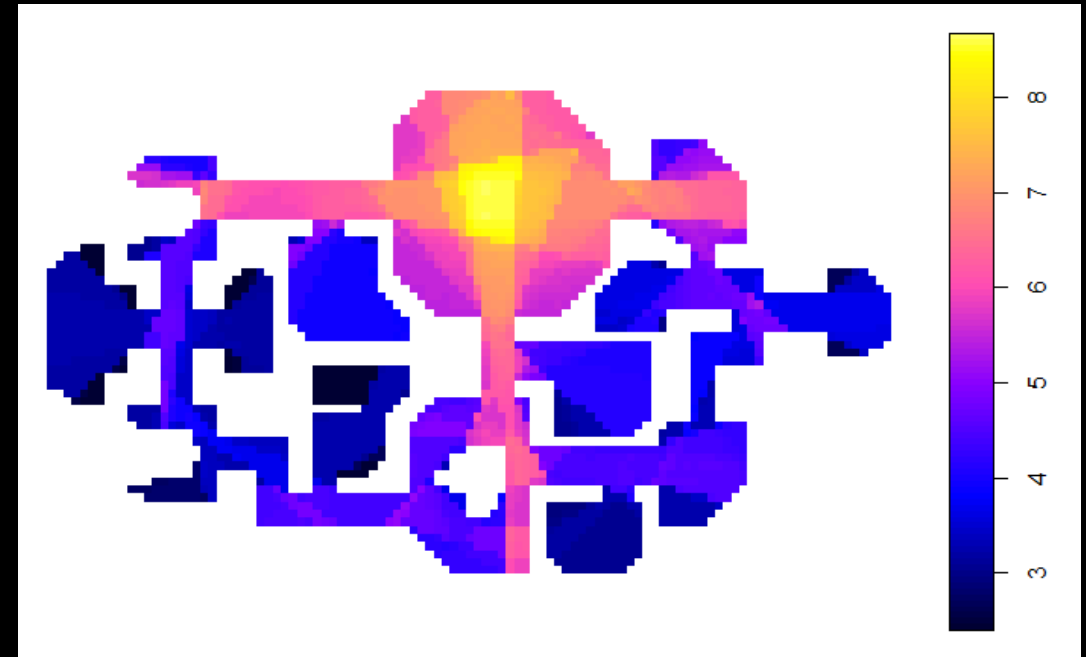
(Original) Visibility Map With Obstacles

The "Distribution of Visibility" is more balanced out.

Hence, the death rate is likely to be more "Balanced Out".

Game Balance in Among Us		
	Win-ability/Fairness	**Meaningfulness of Game**
Metric	Win Loss Ratio	Spatial Interactions (Deaths, Traffic)
Influence by	In-Game Mechanics	Spatial Qualities (Visibility, Accessibility)
Addressed sufficiently?	Mostly, yes	Not enough, hence complaints

Visual Integration of Map

Visibility can be used to understand "Safety"

Is there a logic to why Some Tasks are placed at its corresponding locations?

Security

Medical

Manipulator

Admin

Storage

Doors

... Doors

... or Meltdown (Critical)
...munications Disabling
...en Depletion (Critical)
...out

Fix Wiring
5.8

Cafeteria

Upload Data (PART 1)
6.171

Garbage (PART 1)
6.372

Weapons
5.12

sshotskeld

Accept Diverted Power
(PART 2)
4.206

Clear Asteroids
6.372

Accept Diverted Power
(PART 2)

4.286

Not recom...
...Impostors

6.469

6.063

Upper Engine

Align Engine Output (1/2)

EMERGENCY MEETING

8.518

6.507

...ines (PART 2)
3.126

3.068

2.411

[SABOTAGE]
Reactor Meltdown
... Manifolds

3.199

3.206

3.028

Accept Diverted Power
(PART 2)

Reactor

Fix Wiring
3.416

3.233

... Reactor

Not useful while in Comms sabotage
[ACTION] Check Security Cameras

2.708

MedBay

Leads to Security
3.969

3.916

Inspect Sample

3.935
Not recom... ...d Impostors

Submit Scan

Clean O2 Filter
3.647
3.64

3.641

Accept Diverted Power

(PART 2)

(PART 2)
Accept Diverted Power

2.656

2.926

2.661

3.568

[SABOTAGE]
Oxygen Depletion

3.638

Fix Wiring
3.715

O2

Chart Course

Navigation

Stat...
Sp...
3.677

VENT
Leads to Security and Electrical

3.155

VENT
Leads to Security
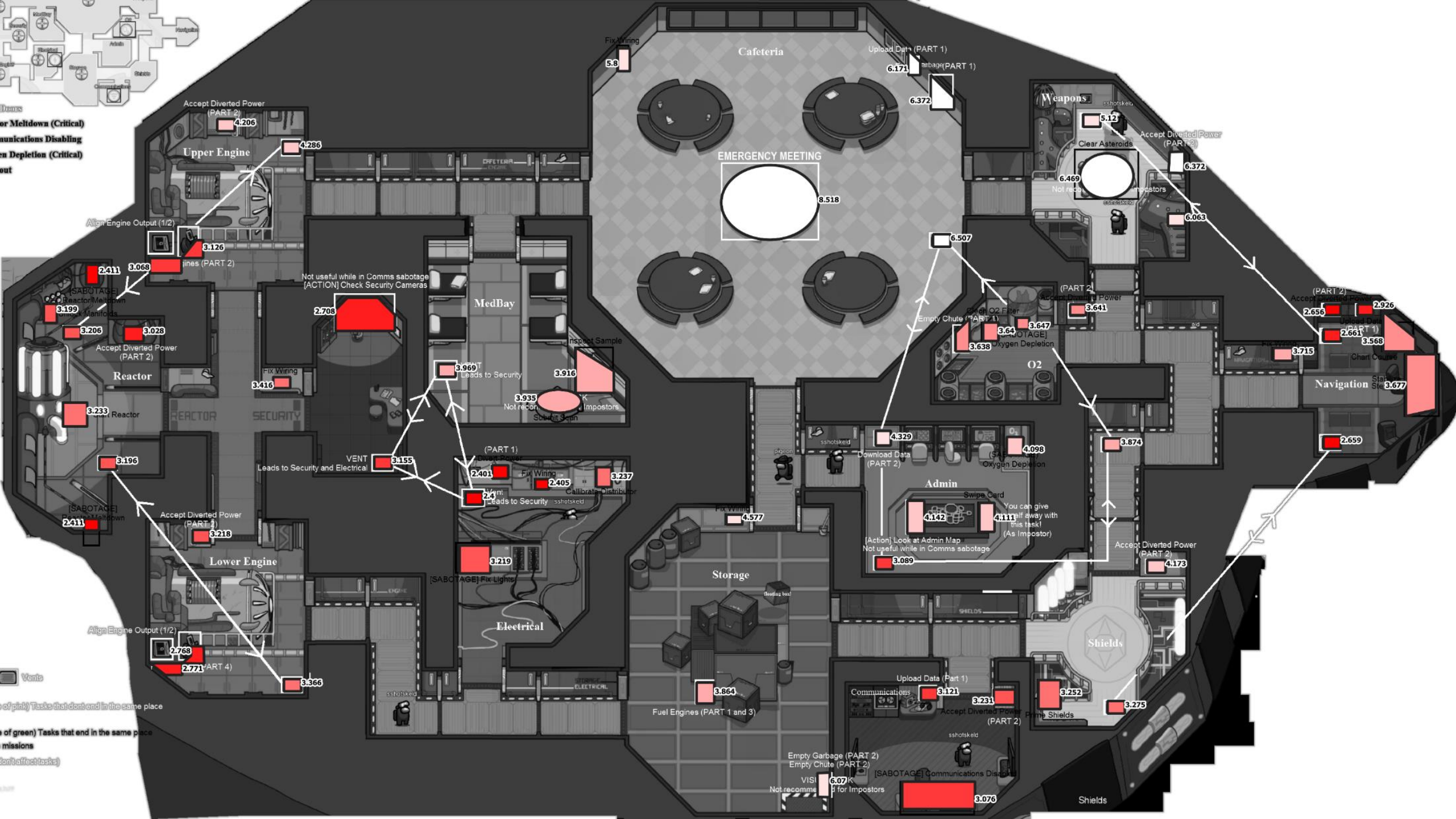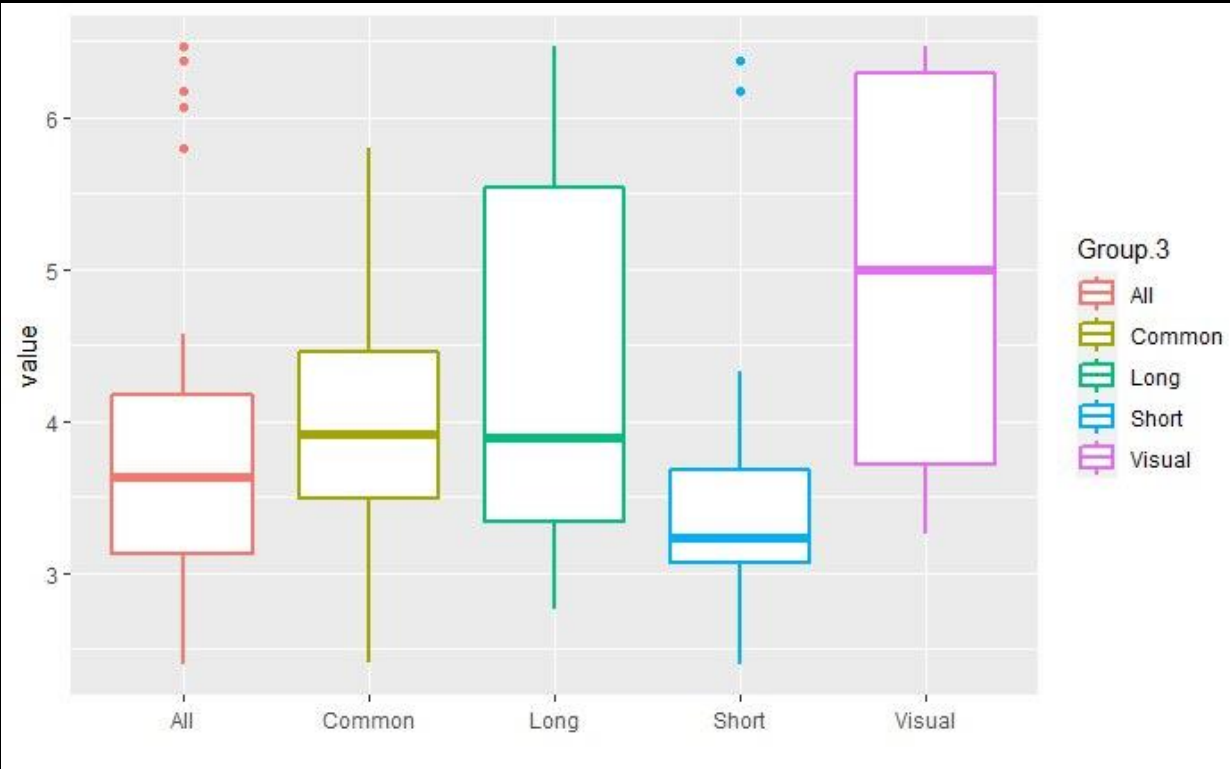
3.196

[SABOTAGE]
Reactor Meltdown

2.411

Accept Diverted Power
(PART 2)

3.218

Lower Engine

Align Engine Output (1/2)

2.768

2.771 ...ART 4)

3.366

(PART 1)
Divert Power

2.401
2.405

Fix Wiring

3.237

Calibrate Distributor

2.4

Vents

... of pink) Tasks that dont end in the same place

... of green) Tasks that end in the same place

... missions

...dont affect tasks)

[SABOTAGE] Fix Lights

3.219

Electrical

Fix Wiring
4.577

3.874

2.659

4.329

Download Data
(PART 2)

sshotskeld

4.098

[SABOTAGE]
Oxygen Depletion

pigeon

Admin

Swipe Card

4.142

4.111

You can give
...elf away with
this task!
(As Impostor)

[Action] Look at Admin Map
Not useful while in Comms sabotage

3.089

Accept Diverted Power
(PART 2)

4.173

Storage

floating box

SHIELDS

Shields

Prime Shields

3.252

3.275

Upload Data (Part 1)
3.121

3.231

Accept Diverted Power
(PART 2)

Communications

Fuel Engines (PART 1 and 3)
3.864

sshotskeld

STORA...
ELECTRICAL

sshotskeld

sshotskeld

Empty Garbage (PART 2)
Empty Chute (PART 2)

VISU... ...K
6.07
Not recommend...d for Impostors

[SABOTAGE] Communications Disa...

3.076

Shields

Plot of Visibility by Task Category

Long Tasks are quite Visible

Short Tasks are less Visible

Visual Tasks are very Visible

Example of <u>Long Tasks</u>

Dwelling Time -> More Dangerous

The longer you spend in one spot,
the more vulnerable you become

Location -> More Safe

Spaces around Tasks are extremely Visible

Plot of Visibility by Task Category

The Role of each Task Category

Long Tasks are quite Visible

Short Tasks are less Visible

Visual Tasks are very Visible

Long Tasks are located at safer areas
> but time spent makes it <u>more dangerous</u>

Short Tasks are located at dangerous areas
> but time spent makes it <u>more safe</u>

Visual Tasks are located at central areas
> serve a <u>unique function</u> in the game, beyond "safety"

In-game elements interacts with the layout to provide the function of the space.

How can Spatial Theory help you?

1) Spatial Qualities that influences Behaviour (Risks)

   e.g. Creating movement, interaction, vibrancy

2) Spatial Logic in Design (Game Balance)

   e.g. Logic of the existing space/environment

3) Interaction btw Space and Objects in the System (Tasks)

   e.g. How elements can shape the space