Review

IMGD 2905

What are two main sources for data for game analytics?
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- **Quantitative** – instrumented game
- **Qualitative** – subjective evaluation

What steps are in the game analytics pipeline?
What steps are in the game analytics pipeline?

- **Game** (instrumented)
- **Data** (collected from players playing game)
- **Extracted data** (e.g., from scripts)
- **Analysis**
  - Statistics, Charts, Tests
- **Dissemination**
  - Report
  - Talk, Presentation

What is population versus sample?
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- **Population** – all members of group pertaining to study
- **Sample** – part of population selected for analysis

What is probability sampling?
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• **Probability sampling** – sampling considering likelihood of selection
  – Likelihood as part of population

What is a Pareto chart? When used?
What is a Pareto chart? When used?

- Bar chart, arranged most to least frequent
- Line showing cumulative percent
- Helps identify most common, relative amounts

When should you not use pie chart?
When should you *not* use *pie chart*?

- When too many slices

When should you *not* use *pie chart*?

- (Often) when comparing pies
What is a heat map? Describe an example

• Map where data represented as colors
Provide three guidelines for good charts

1. Require minimum effort from reader
2. Maximize information
3. Minimize ink
4. Use commonly accepted practices
5. Avoid ambiguity
Which Measure of Central Tendency to Use? Why?

What are Quartiles?
What are Quartiles?

Three values that divide population into four equal sized groups

Describe how to Compute Variance
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1. Compute mean.
2. Take a sample and compute how far it is from mean. Square this.
3. Repeat #2 for each sample.
4. Add up all.
5. Divide by number of samples (-1).

\[
\text{Sample Variance} = s^2 = \frac{\sum(X - \bar{X})^2}{n - 1}
\]

In Probability, what is an Exhaustive Set of Events? Give an Example.
In Probability, what is an **Exhaustive Set** of Events? Give an Example.

- A set of all possible outcomes of an experiment or observation
- e.g., coin: events {heads, tails}
- e.g., d6: events {even number, odd number}
- e.g., picking Hero in HOTS: events {LiLi, Ana, Malfurion, ...} (all possible Champions listed)

Broadly, What are 3 Ways to **Assign Probabilities**? Give examples.
Broadly, What are 3 Ways to Assign Probabilities? Give examples.

• Classical (theory)
  – e.g., equal likelihood d6, so P(1) = 1/6th
• Empirical (by measurement/observation)
  – Probability of 1 min service rate at DD by observing service rates for 1 hour
• Subjective (hunch – sometimes guided by a bit of theory)
  – Probability of Iceland winning World Cup by deep analysis of teams and competition

Probability

• Draw 2 cards simultaneously. What is the probability of drawing 2 Jacks?
Probability

• Draw 2 cards simultaneously. What is the probability of drawing 2 Jacks?

\[ P(2J) = P(J) \times P(J | J) \]
\[ = \frac{2}{5} \times \frac{1}{4} \]
\[ = \frac{1}{10} \]

Probability

• Draw 3 cards simultaneously. What is the probability of not drawing at least one King?
Draw 3 cards simultaneously. What is the probability of not drawing at least one King?

\[ P(K') \times P(K' \mid K') \times P(K' \mid K'K') \]

\[ = \frac{3}{5} \times \frac{2}{4} \times \frac{1}{3} \]

\[ = \frac{6}{60} \]

\[ = \frac{1}{10} \]