

Datafest Planning

Script:

Hello everyone, we are team Data Dive, we'll be diving into the data! My name is ____

1. Introduce problem, background

PlayForward: Elm City Stories is a theory- and evidence-informed role-playing game in a graphic novel style, that offers an engaging way for adolescents to learn information and skills to reduce their risk for adverse outcomes. It incorporates concepts from prominent behavior change theories. Given player and game data, our challenge was to frame research questions to find meaningful insights about the game and its overall effect over players.

2. Brief methodology, findings, analysis, key statistics (slide 2)

After getting familiar with the data, we came up with 2 central questions. “*How do players change over time?*” and “*What general types of players are there?*” First of all, to answer the first question. We used R to tidy up the data, and selected “player id”, “event category”, “session number”, and “event time” in seconds. Then, we calculated the average time that each player spent on each event category over time as they played the game. From this Graph, we can see that throughout all 9 sessions, the players spent the most time on the Lifeline category (light blue dots), which indicates that players spent a lot of time considering which challenge they should do instead of actually doing the challenges or simply taking a break from the challenges. Some other findings we found were that players spent the most time in Minigames in Session 4, and players spent less and less time in Challenge Stack (the yellow dots).

3. Brief methodology, findings, analysis, key statistics (slide 3)

- Hierarchical clustering and kmeans to check
- Clustering to find natural groupings within the data
- Multiple linear regression on avatar gender, age, ethnic background compared to minigame losses (our indicator of success) showed no significance
- Clustered based on avatar personality choices, found 4 main types

To answer our second question: are there general types of players and do they play a certain way? We took a look at how players constructed their avatars. After performing a multiple linear regression analysis on avatar gender, age, and ethnic background in relation to minigame losses (which were our indicator of success) we found that they were not significantly related! So choosing what your avatar looked like really did not matter. So, we decided to dive deeper into avatar personality and personal value choices. We used hierarchical clustering to find 4 general groups, and k-means clustering to confirm our findings. These 4 graphs represent cumulative player losses by session, in their respective groupings.

1. Usually deemed cool by others, interested in tech, want to be successful in 30 years forward. They spend most of their time and money on passions
 - a. They started off with few mistakes, but as the game went on they began to lose more minigames, likely exhibiting a loss of interest. The performance did improve in the last few sessions, perhaps due to renewed interest or being reenergized as they were nearly done.
2. Extraverted, goofy, confident, cool. In the future, they will be in a good place, aspiring for more.
 - a. They played the game erratically, going through phases of fewer and many mistakes. This could well be due to a shorter attention span that caused them to only be engaged in the game for short bursts.
3. Health is very important, believe in the phrase “live and let live”
 - a. This group behaved very similarly to group 1, but did not have a renewal of interest near the end. While the clustering shows us these are two distinct groups, the difference between their gameplay is subtle and will have to be studied in more detail.
4. Likes music, books, generally angelic personality, loves family
 - a. This category seemed to be the most genuine, they initially made mistakes at a consistent pace but improved over time

4. Conclusions and recommendable **actionable insights**

- a. To reiterate, how users make an avatar (gender, age, ethnic background) does not affect the user’s gameplay, whereas the personality traits that users choose for their Aspirational Avatar can be used to clearly segregate the users into different categories. To better predict behavior, researchers should focus less on the user’s group identity and more on the individual and psychological aspects of the user.
- b. As time went on, players spent less and less time in the challenge stack and panned the scene fewer times to look for clues despite losing minigames more often than before. We have reason to believe players were losing interest in the game over time, especially in later sessions. While this may be unavoidable to some extent, this could be mitigated by incentivizing players to keep playing longer, perhaps by adding more RPG elements like leveling up and upgrades, or having a more engaging gameplay loop.

The goals of this game were intervention and prediction. One of the priorities of the game was equipping adolescents with knowledge on risky topics such as HIV. It was difficult to evaluate how the game performed on this goal so we focused on the prediction and classification of user behavior. We think the game has the potential in classifying kids based on their future behavior and will be able to do so even better if the developers enacted our insights.

After getting familiar with the data, we came up with 2 central questions. “*How do players change over time?*” and “*What general types of players are there?*” First of all, to answer the first question. We used tidyverse package in R to tidy up the data, which we selected out player id, event category, session number, and event time in seconds. Then, we came up with our own functions to calculate out

PROBLEM: help researchers see IF the game is useful in understanding real-live behavior.

Characterize, measure, observe, display patterns of play

1. Characterize types of players based on various types of features (clustering?)
2. Measure effect of patterns of play (refer to S5 results), play into the intervention results of this experiment
3. Patterns of play can refer to
 - a. How players change over time as they play the game (since they play it on 3rd week, 6th week)...
 - b. Types of players
 - c. Groupings of certain features indicating certain behaviors

General timeline

FRIDAY

- Read through challenge
- Watch the data provider's video
- Skim documentation
- Play a part of the game to gather information
- Explore data (messy ver., basic graphs, etc.)
- Decide on goals and hypotheses

To complete: the central question, our hypotheses, general story

Central questions (3):

1. How do players change over time as they play the game? (histograms)

2. What general types of players are there? Ex. cautious, reckless, always makes bad decisions, tends to be influenced by friends, strong morals (based on avatar choices)
3. Are certain groups of features indicators of certain behaviors? (not completed)

Hypotheses:

1. They get “better”, and make better decisions
2. We can divide by: time to make decision, one-game playing session time, number of actions/outcomes per session, player skill level, priority type; to determine “qualities”
3. Priority type + player point loss + rating + skill level + number of game actions/events

General story:

- Mirror narrative: does video game reflect reality? How deep can we dive into the mind based on their avatar behaviors? How does their avatar reflect real-life behavior?
-

SATURDAY

5 PM mid-competition check-in

- Present hypothesis and general direction to mentors
- Background research
- From solid narrative
- Someone prepare a general presentation template
- MINIGAME ANALYSIS

Analysis: Types of players based on the number of times they do certain events

1. Cluster based on player, session, number of times they do certain event
2. Determine which events/combo of events is prevalent
3. Use extracted events to filter players into groups (assume groups such as many counts of minigames, scan a lot, lots of clicking in challenges, etc.)
4. Choose response variable, determine how these different groups behave with that response variable

- 1.5 hrs script planning
- Background research
-

SUNDAY

11:30 AM DEADLINE

Ideas and Approaches

- Meaningful metric: how long it takes before certain action happens
- Amount of time between actions or events
- Count certain events
- Do some players favor different aspects of the game over others
- Time on avatar vs. game

Need to decide how to compare two players, make our own ranking

Notes

1. Develop some graphs for exploratory analysis
2. Then make hypotheses
3. Avoid text, love icons

Look at time taken per event to judge playstyle

Label important events and see

Repeating minigames means you failed

Introduction Video notes:

- Twofold purpose: intervention, prediction of behavior

In-game Notes:

- Prob shouldn't use number of clicks because this game is hard
-

S5 SCORES NOTES:

A **higher** mean scores indicates that the student has **lower** efficacy in resisting drugs.

Research Paper Notes:

- Evaluate efficacy of videogame intervention on preventing or reducing risk behaviors
- Primary outcome: delay in the initiation of sexual activity, collected through face-to-face assessments, follow-up; delay at the 12-month time-point (binary)
- Study on 333 teens 11-14 for primarily minority youth
- 50-75 min twice weekly for 6 weeks
- Ultimate goal; HIV prevention
- 5 mini games, 12 challenges
- Outcome measures collected at base line, 3 and 6 weeks, and 3,5, and 12 months, with ongoing follow-up at 24 months

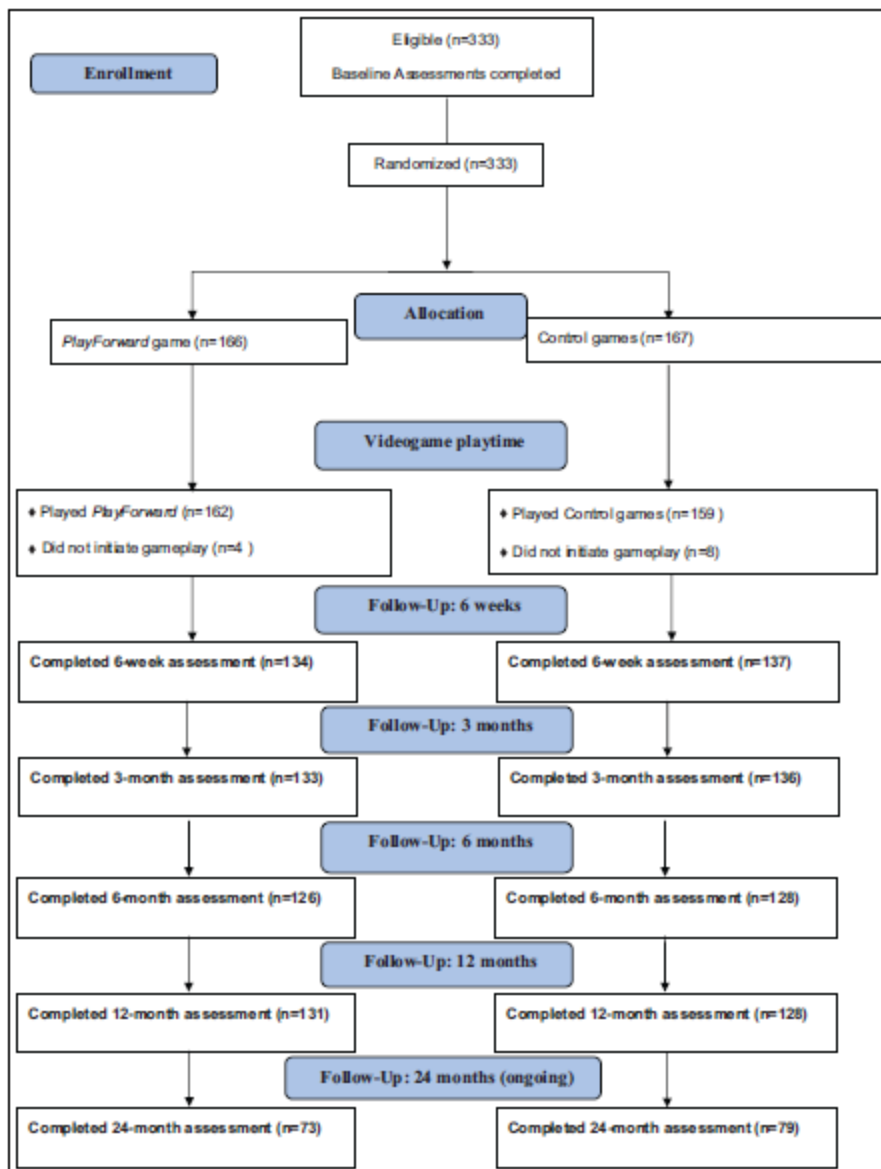


Figure 1. Study flow diagram (as of 1 March 2016).

Make table of number of times a player does something per session

Question 3: Are certain groups of features indicators of certain behaviors?

- Filter on one of the 12 stories (stack_id)

Cleaning data, removed:

- Date (corresponds with session)

- Wave (same person)
- Player_id
- School

Select:

- Row_id
- Event_id
- Event_time_dbl
-

Maybe:

- Event_category
- Skill_level_know... (set NA as 0)

Clustering types of players:

- Make new database
- Count each type of event, assign to (player, session)

—

Environment: mini games

Multiple linear regression based on

y: mini game level, stars_for_this_level_new, see lose panel

X: avatar_age, avatar_gender, priority_type

Cluster to find groups based on general aspirational avatar data

Multiple linear regression

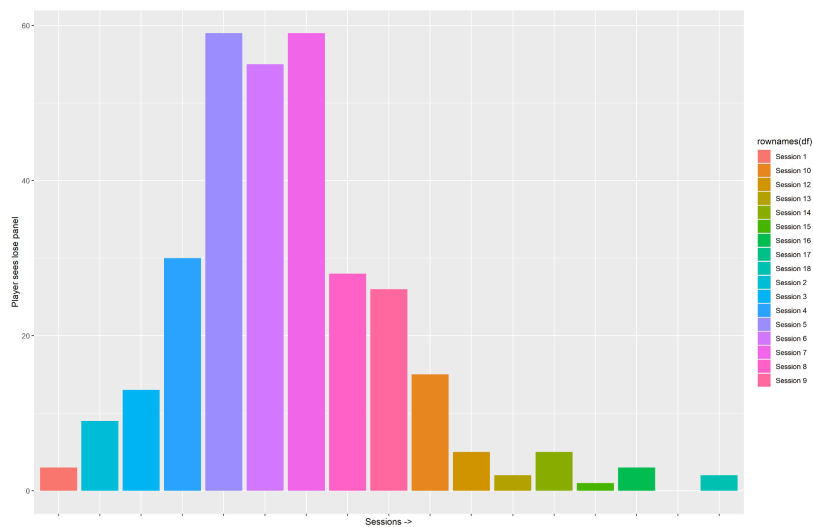
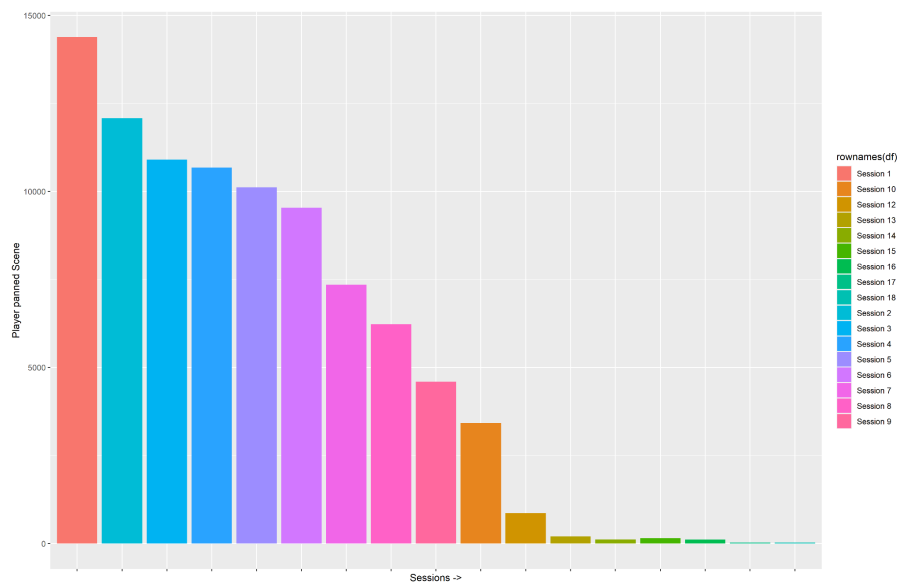
Player commits to age and gender, returns tuple (602)

Player commits to avatar and name, returns race (604)

CONCLUSIONS:

- Age, gender, race do not have impact on number of time player sees lose panel (aka lost mini-game)
- Players lose more as they get further into the game, but they spend less time(i.e., spend less time panning the scene searching for stuff). Meaning they are not trying as hard.
-

Mid-competition Notes:



category	total
<i><chr></i>	<i><dbl></i>
1 Lifeline	22772473
2 Minigame General	3379622
3 Epilogue	2254168
4 Challenge Stack	1464551
5 Knowledge Minigame	920685
6 People Sense	759384
7 AspirationalAvatar	675262
8 Refuse Power Minigame	537753
9 Priority Sense	440530
10 General	172610
11 Avatar Creation	10137

Background research:

It incorporates evidence-based concepts from prominent behavior change theories, including social learning theory, self-efficacy, social norms, prospect theory and message framing, and delay discounting as well as constructs related to social and emotional learning and character development.