

FPL Assistant App

John Grossi
AC40001 Honours Project
BSc (Hons) Computing Science
University of Dundee, 2021
Supervisor: Daniel Rough

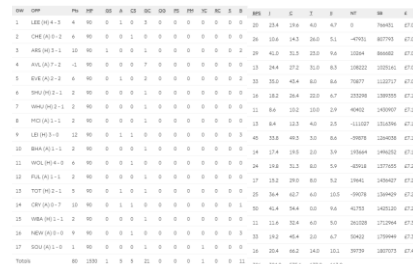
Abstract – Fantasy Premier League (FPL) is a free to play game that lets anyone become a fantasy manager at the top level of English football. In the most basic form managers have a budget to pick players from teams then decide who plays each week, having one free transfer each week. It is a game of strategy in which players must predict who will get them the most points and have them in their team.

The aim of this project is to design and develop an Android app which will benefit players of FPL in making transfer decisions. The app will include features such as predicted line-up predictions for all fixtures, a player comparison tool and a best FPL team predictor for every week. The official app does not include these, but these features are what players of the game seek as known by user surveys I gave out and provide a positive impact on their decision making as known from my research into them. To ensure the app achieves the goal of helping FPL users, users were involved in the requirements and prototyping stage (will also be used at the end of the project to evaluate the app) to ensure all features are ones that the average FPL user is seeking and also that the whole UX of the app is fit for purpose.

1 Introduction

Every week millions of FPL players are left with the same tantalising question “who do I transfer in this week?”. The main objective of FPL is transferring in and out different players trying to get the best 11 for that week’s fixtures to score the highest number of points. But how do you know who to bring in? This is decided on several factors: who they play for, who they are playing against, form, numbers of goals, assists or clean sheets (not conceding a goal), if they are fit/available to play and several other

factors. FPL gives you all this data and more as you can see in Figure 1. This is great for the people who have a great interest in stats and numbers but for the average FPL player this screen can be daunting. If you want to compare two players you must click on the player, look through the spreadsheet and then memorise the numbers you want to compare. You then must do the same for the other player you want to compare with. This is highly impractical given that comparing two or more players to decide which one to include is such a crucial element of gameplay. Having such a poor and intimidating user experience can be such a turn off to new and current players of the game and I feel this is crucial to address this issue.



| WEEK | OPP | PTS | AVG | GOALS | ASSISTS | CLEAN SHEETS | POINTS PER GAME | FORM | VALUE | TRANSFERS | STATUS |
|-------|-----------|-----|------|-------|---------|--------------|-----------------|------|-------|-----------|--------|
| 1 | LEW (LIV) | 4 | 40 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | CHE (CHE) | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | ARS (ARS) | 10 | 40 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | WOL (WOL) | 1 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | BUR (BUR) | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | MUN (MUN) | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | WHA (WHA) | 2 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | FUL (FUL) | 2 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | LEW (LEW) | 12 | 40 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | BHA (BHA) | 2 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | WOL (WOL) | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | FUL (FUL) | 2 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | TOT (TOT) | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | CRY (CRY) | 10 | 40 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | WHA (WHA) | 2 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | BHA (BHA) | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | CRY (CRY) | 1 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | | 60 | 1000 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Figure 1: Data that is shown when clicking on a player

What I propose is an Android app that will achieve two objectives. One is to include features that FPL players want and would benefit from that the official app/website does not provide to help make transfer decisions. The second being to improve on the way users compare players they may be trying to decide between, instead of the separate spreadsheet system FPL currently uses.

To achieve this, the following steps are required. Construct research into other FPL assistant app features and construct a survey to ask FPL players directly what features they want and what data they care about. While doing this I will do research into how to implement these

features or why they are important. For example, researching prediction algorithms that will produce the best results in fantasy sports or why it is important to know the starting line-up of a team from an FPL perspective. I will then create paper and high-fidelity prototypes to let users try to get feedback on the features and the overall UI of the app. Lastly, I will use an agile software development approach to create the application.

In summary, the primary goal of this project is to help FPL player's overall user experience with fantasy football by having access to features that are not available from the official app and will have a positive impact on their decision making when it comes to player transfers.

2 RELATED WORK

In recent years FPL has seen a recent surge in popularity when it comes to content outside of the official site. From the many YouTube channels uploading videos about their team selections and tactics to apps designed to help players make their transfer decisions. To see what other apps are doing and sometimes more importantly what they are not doing I downloaded some of the most popular FPL apps.

2.1 Other FPL Apps

Five of the most popular FPL apps I found were: Fantasy Football Fix (100,000+ downloads), Fantasy Manager (50,000+ downloads), Fantasy Football Manager (1,000,000+ downloads), Fantasy Football Assistant (10,000+ downloads) and FFHub (10,000+ downloads). After downloading all of these and trying them I created a table to highlight their features [Appendix 1] and a full write up of the apps. Two of the apps I found did not offer much in terms of new features, they seemed to just be re-skinned versions of the official app. These did not offer much for me I wanted to gather the full range of different features offered by popular apps to use as prompts in my user research. The other 3 apps all offered different features that I decided to delve into further to see how much of an impact they might have on a user's performance and the most effective ways to implement them.

2.2 Predicted Line-Ups

Knowing who will start in a premier league game is very important for different reasons. It is not as simple as more playing time means more chance of doing something (although this is important). It is due to the scoring system in FPL [Appendix 2]. Each player gets one point for playing in a game and a second for playing 60+ minutes. Let us look at goalkeepers and defenders. These types of players are defensive-minded so their goal in a game is to not concede goals as they get points for not letting it happen and lose points if they do. They only get clean sheet points from playing 60+ minutes and not conceding. So, it is important when picking defenders to make sure they are going to start so they are more likely to get these points as they cannot get this unless they then come on before the 30th minute. This is highly unlikely as first half substitutes are very rare, and defenders are the least substituted players (next to GKs) [1]. Therefore, it is critical to pick defenders who will start the game. Midfielders and forwards also benefit from starting games rather than coming on as a sub. Both types of players get most of their points from scoring goals.

Here it shows players that play a full 90 minutes or even start the game but later get subbed off score more goals than players that get subbed on. So knowing who starts games can be vital to picking players for your team from defenders getting clean sheets and a more likely scenario of your forward players scoring goals. All of which results in you getting more points.

| Premier League 2012/13 Season | | | |
|----------------------------------|-------|-------------|------------|
| Role | Goals | Mins Played | Goal Per90 |
| Full 90 | 359 | 88,020 | 0.367 |
| Sub_Off | 163 | 39,876 | 0.368 |
| Sub_on | 57 | 5,999 | 0.855 |

Figure 2: Table showing number of goals from players depending on time played [2]

2.3 Best FPL Team This Week Prediction

When choosing a structure for my algorithm I looked at other people's attempts at predicting the best FPL team and general sports prediction algorithms. After searching I narrowed my focus

to two algorithms that both showed promising results and had similar structures to what I wanted to use.

First was a model proposed by Bonomo et al [3]. This model was based on the Argentinian fantasy football (Gran DT) which is “run by a major Argentinian newspaper for the first division of the real Argentinian professional soccer league”. The scoring system and transfer system has the same idea as FPL with a few additions such as points awarded by the newspaper for MOTM. The model worked by averaging the past three weeks points for a player to then predict how many they would get in the upcoming. This number was then multiplied a number between 1.05 and 0.95 four times depending on the following things: playing at home (x1.05) or away (x0.95, league position (1 to 1.05 if in the bottom five of the table, 0.95 to 1 if in the top five) and a number between 1.05 and 0.95 depending on a scoring streak. Lastly it is multiplied by 1 or 0, 1 if they are expected to play and 0 if not. So if someone has a high expected points but isn't going to start (say because of injury) their points are set to 0 as they won't play. There is an exception for if they think they will be substituted on they get x1 instead of 0.

The second algorithm was a linear/lasso regression approach proposed by William Eilertsen et al [4]. Regression algorithms are common tools in sports prediction but for the purpose of this review I'm going to be looking at the specific one proposed by William. He splits the model into 3 steps: position, variable selection and then fit into a regression model. The variables are the realised points (actual points gained), team, position and home/away. There are then the numerical variables: each week's previous points, price, transfers in/out, minutes played in each game, yellow/red cards, goals, assists, penalties missed/saved, saves and clean sheets. In the paper they recognise that each position gets different points for different things. They categorise them into each position before continuing with the regression. This is what lasso regression is, by not factoring in for example clean sheets for a striker it gives a more accurate point prediction as it does not matter in a points perspective if a striker's team does not concede a goal. The model then takes

in training data which is done to determine the accuracy and the value of error, this error is then accounted for.

2.4 Why Look at The Stats?

Why not look solely on real-life ability when making transfer decisions? One of the biggest mistakes that new or existing FPL players make is going for “big name” players. When they are given the choice of players, they will go for all the players that are heavily talked about in the media or their social circles. Although this is not the way to look at fantasy football. Fantasy football is a stats game, not a popularity game. Even though pundits will go on about how good some players are it does not always transfer over to FPL. Two examples of great players not transferring well into FPL are N'Golo Kanté and Virgil van Dijk, with Kanté winning the player of the year in the 16/17 season and Van Dijk winning the same honour in the 18/19 season. Both players had excellent seasons, coming in for big money moves, and were instrumental to their teams doing well that season with Kanté helping Chelsea win the league and Van Dijk steadying a leaky Liverpool defence.

| | first_name | second_name | goals | assists | total_point | minutes | goals_conceded | creativity |
|-----|------------|-------------|-------|---------|-------------|---------|----------------|------------|
| 1 | Alexis | Sánchez | 24 | 11 | 264 | 3217 | 41 | 1278.3 |
| 2 | Bamidele | Alli | 18 | 11 | 225 | 3036 | 22 | 778.7 |
| 3 | Eden | Hazard | 16 | 9 | 224 | 2985 | 29 | 1306.8 |
| 4 | Harry | Kane | 29 | 7 | 224 | 2523 | 19 | 548.4 |
| 5 | Romelu | Lukaku | 25 | 6 | 221 | 3266 | 42 | 701.4 |
| 156 | N'Golo | Kanté | 1 | 1 | 83 | 3138 | 33 | 432.8 |

Figure 3: 16/17 FPL player season stats [5]

But as these figures show real-life ability does not always move over to FPL. The season that Kanté won the player of the year award he only came in 156th place for points, as seen in Figure 3. A drastic 181 points off the topmost points. The main reason he is not a good FPL option is due to his role as a player which is a defensive midfielder. A midfielder will only get one point for clean sheets. Therefore with this system Kanté does not get as many points as the defenders who get 4. Since Kanté does not offer much in the attacking sense of goals and assists and only gets one point for his defensive contribution he is not a good FPL option

| Player | T | P | Goals | Assists | CS | Pts/game | Bonus | Price | Price Change | Ownership % | | |
|------------------|-----|-----|-------|---------|----|----------|-------|-------|--------------|-------------|------|-----|
| Salah | LIV | MD | 3254 | 22 | 12 | 6.8 | 259 | 16 | 0.2 | 33.9 | | |
| Revard | CHE | MD | 2888 | 16 | 16 | 6.4 | 228 | 36 | 9 | 27.2 | | |
| Storling | MCI | MD | 2770 | 17 | 16 | 6.0 | 234 | 26 | 5.7 | 24.8 | | |
| Martín | LIV | MD | 3076 | 22 | 3 | 19 | 6.4 | 231 | 24 | 10.3 | 38.6 | |
| Robertson | LIV | DEF | 3218 | 0 | 12 | 21 | 5.9 | 219 | 29 | 6.7 | 33.0 | |
| van Dijk | LIV | DEF | 3384 | 4 | 4 | 20 | 5.5 | 208 | 22 | 6.7 | 32.3 | |
| Aubameyang | ARS | FWD | 2722 | 22 | 7 | 7 | 5.7 | 205 | 32 | 10.8 | 18.8 | |
| Agüero | MCI | FWD | 2487 | 21 | 9 | 17 | 6.1 | 201 | 26 | 12 | 42.7 | |
| Alexander-Arnold | LIV | DEF | 2480 | 1 | 13 | 16 | 6.4 | 185 | 25 | 8.8 | 26.9 | |
| Sigurdsson | FUL | MD | 3122 | 13 | 6 | 15 | 4.8 | 162 | 20 | 7.4 | -0.1 | 8.3 |

Figure 4: 18/19 FPL player seasons stats [6]

Van Dijk suffers a different problem compared to Kanté. Van Dijk is a highly renowned player and he greatly improved Liverpool's defence which resulted in them winning more games [7]. When he is playing Liverpool have a 70.5% win rate and concede an average of 0.94 goals per match. When he is not playing, Liverpool's win rate decreases to 42.9% and concede an average of 1.57 goals per match. Conclusively, without Van Dijk playing Liverpool concede more goals and lose more games. Conceding fewer goals mean more clean sheet points and if they're winning more games they have to be scoring more goals. These statistics show that Van Dijk is fundamental to Liverpool playing well, keeping clean sheets and is highly praised, winning player of the year that season. However, Van Dijk was still not the highest-scoring defender, or even the highest scoring Liverpool defender for that matter in the season he won player of the year, as seen in Figure 4. Andy Robertson (Liverpool, left-back) has outscored Van Dijk every season for Liverpool as seen below.

| Previous Seasons | | | | | | Previous Seasons | | | | | |
|------------------|-----|------|----|----|----|------------------|-----|------|----|---|----|
| Season | Pts | MP | GS | A | CS | Season | Pts | MP | GS | A | CS |
| 2019/20 | 181 | 3111 | 2 | 12 | 13 | 2019/20 | 178 | 3420 | 5 | 2 | 15 |
| 2018/19 | 213 | 3216 | 0 | 12 | 21 | 2018/19 | 208 | 3384 | 4 | 4 | 20 |
| 2017/18 | 111 | 1940 | 1 | 5 | 10 | 2017/18 | 78 | 2253 | 0 | 0 | 8 |
| 2016/17 | 73 | 2736 | 1 | 2 | 5 | 2016/17 | 75 | 1852 | 1 | 0 | 7 |
| 2014/15 | 45 | 1526 | 0 | 2 | 3 | 2015/16 | 130 | 3060 | 3 | 0 | 10 |

Figure 5 : Robertson vs Van Dijk season stats [FPL website, in transfers]

The main reason for this is because Robertson is a full-back and Van Dijk is a centre-back. Centre-backs are traditionally more defensive and full-backs can be more attacking. Since they have this freedom to go further up the field, they are more likely to get assists more often. Where centre-backs are more likely to get goals from corners (due to their height) but far less often. In summary a player should not be picked solely on their on pitch ability but instead how likely they are to do things that result in gaining points and not losing points.

This stat-based approach is most commonly known as a 'Moneyball' approach. Instead of using scouts who use a subjective approach Billie Bean (an American baseball coach) used

a stat-based approach when bringing in new players with their team's small budget. This approach was later written into a book by Michael Lewis called 'Moneyball: The Art of Winning an Unfair Game' [8] and has been shown to work in football as Liverpool have adopted this approach with much success [9].

3 THE SYSTEM

3.1 Survey [Appendix 3]

To gather my requirements/features the best way was to go straight to the people who would use the app and ask them what they want. The survey included questions to find what features they would most like to see in an app, what data they use to make decisions and what other medias they used to help them make transfer decisions. Thanks to this I was able to see what feature people were most passionate about and what data they wanted to be shown to compare players to make their transfer decisions. Some of the most popular answers included the current weeks fixtures, a player comparison tool, predicted line-ups and a best FPL team predictor. Thanks to the answers I got I also knew what data to show the user when they wanted to compare two players.

3.2 Paper Prototype

After consulting my background research and my user surveys I decided on the following features:

- This week's fixtures
- Line-up predictor for each fixture
- Player comparison tool
- Highest scoring team predictor

The background research helped my realise that knowing who starts games often result in more points, so this is important to know. A player comparison tool was one of the most popular results from the survey. Finally, prediction algorithms of the best FPL team that week have great results according to my research into them. Overall, all my features had a combination of a positive reception from the survey and from my background research.

With these features in mind, I created a paper prototype to encompass them [Appendix 4].

These were then put into Marvel which lets you create your paper prototypes into more interactive ones, where clicking the drawn buttons will move you to the next screen. You can try it yourself here: <https://marvelapp.com/prototype/27a4d81g>. This was sent to 3 FPL users and a focus group was constructed. The interviewees were asked what they liked and did not like about the prototype. The array of features and clear design were the highlights but some things, for example the predicted line up not being clear that it wasn't the official one, were brought up as a negative. Feedback was recorded and was applied to my high-fidelity prototype [Appendix 5].

3.3 High-Fidelity Prototype

All the feedback from the paper prototype was taken into consideration and applied to the production of the high-fidelity prototype. This was created using Adobe XD and can be seen in the appendix [Appendix 6]. This also was then presented to a focus group of the same 3 people and feedback was again recorded was will be used when creating the final product [Appendix 7].

4 THE PLAN

4.1 Progress So Far

As far as being on schedule I feel like I have been managing my time very well. I wrote up a Gantt chart [Appendix 8] and I have managed to meet all my milestones except my last two. In the first week of January, I planned to create my backlog and plan my sprints. However, I realised that I had not taken time into account to create my prototypes. This was finished by the end of the first week in January. The second week will be used to create my backlog and plan my sprints. The effect of this is that I will complete one less sprint than planned. However, I still feel very comfortable in my ability to get the app programmed in time. Overall, I have completed everything in my Gantt chart up until the start of January (as of the 8th January).

4.2 Things to Do

I have to write up my backlog and plan my sprints, but this will be done by the 14th January. My next steps will be programming, evaluation

and writing my final report is all that is left to do. I have used Github to manage my whole project with all my documentation being stored there and all my source code will also be managed there. As far as keeping on top of my backlog I have decided to use Jira to put all my user stories into sprints to keep them ordered.

5 REFLECTIONS

I think the most beneficial thing that I have done so far is as I previously mentioned was simply not falling behind my plan/Gantt chart. By doing this I have not had to rush any part of the project so no quality has had to be lost as a result. The amount of user involvement I have had has been beneficial for making sure that what I am creating is an app that FPL users want. My motivation has stemmed from speaking to people as this has given me the feeling that what I am creating could be of use to other people.

During the first semester, I feel that I learned a lot of skills, the first being prototyping. Not just using Marvel and Adobe XD (which I had little experience with) but the process. Planning a solution and getting feedback on it before I start creating it was not something I had previously done well. Normally I would get an idea and just go with it. Getting feedback and tinkering my idea before going ahead with it is an important skill and attitude I have gained.

One of the biggest worries I have is with COVID-19 still being such a prominent part of everyday life and with a new national lockdown is that the English Premier League could be stopped. The government have stated that despite the new lockdown elite sports may still continue behind closed doors [10]. However, some games are occasionally getting called off and I have had to be prepared that the league could be suspended. If this were to happen, I have planned to pick a date and create the app from that point as there will not be any more games to be played. For example, pick game week 5 so I have the data before that week and still have a list of the games after it before the season had been cancelled. I am unsure if the FPL API will work if this were to happen. If it does not, I will need to come up with an idea of where to get my data. I feel confident that if the

league were cancelled, I could create the app to show how it would work by picking a past game week and basing it off this instead of working for every current game week. Provided the league does not get called off very close to the submission deadline I should have time to adapt the app.

6 Conclusions

In summary, I felt that the project has gone well to date and I am feeling confident that I can continue the project to completion provided that the COVID-19 situation does not get worst late in the late stages of the project. Semester two will heavily focus on the software development of the project and then later the evaluation and the final report will be written and finalised.

6.1 Limitations

I have tried to minimise the effect of limitations where possible. For example, my user surveys were passed to many people I did not know as my connections passed it to theirs. On the other

hand, my prototypes were evaluated by friends that I knew from school. I told them to be as critical as possible, but I am aware that I could have got complete non-bias opinions if I interviewed people I had no relationship with. The only limitation I see when it comes to the app is that I am dependant on other people's data. For example using the API and web scraping specific URLs for line-up predictions. If any of these things were to be changed, like the URL, I would need to manually change the code to scrape the new path. I suspect that this would be unlikely though this season but it could change for next season.

6.2 Future work

When it comes to future work it is not as simple as adding more features. Quantity over quality would hamper and crowd the app. Instead, an iterative design process would be used to improve the features already present. User feedback on the app would be used to determine this.

References

- [1] - Gomez, M., Lago-Peñas, C. and Owen, L., 2016. The influence of substitutions on elite soccer teams' performance. *International Journal of Performance Analysis in Sport*, 16(2), pp.553-568.
- [2] - StatsBomb. 2021. *Smart Use Of Substitutes Can Make A Difference* | Statsbomb. [online] Available at: <https://statsbomb.com/2014/01/smart-use-of-substitutes-can-make-a-difference/>
- [3] - Bonomo, F., Durán, G. and Marengo, J., 2013. Mathematical programming as a tool for virtual soccer coaches: a case study of a fantasy sport game. *International Transactions in Operational Research*, 21(3), pp.399-414.
- [4] - William Eilertsen, Akash Gupta and Bjørn Kåre Kristiansen, 2018, Developing a Forecast-Based Optimization Model for Fantasy Premier League, pp.39-44.
- [5] - Google Docs. 2017. *Player Data FPL 2016-17*. [online] Available at: https://docs.google.com/spreadsheets/d/176H3jng0MY1v_4Tiz6gtE8s0eFaMZDAxdAsOGLWwtCM/edit#gid=1814073723
- [6] - Fplanalytics.com. 2019. *Season 2018/19* | Fplanalytics. [online] Available at: <https://www.fplanalytics.com/history1819.html>
- [7] - Planet Football. 2020. *Comparing Liverpool'S Record With And Without Virgil Van Dijk Since 2018* - Planet Football. [online] Available at: <https://www.planetfootball.com/quick-reads/comparing-liverpools-record-with-and-without-virgil-van-dijk-since-2018/>
- [8] - Lewis, M., 2013. *Moneyball*. New York: W.W. Norton.
- [9] - Goal.com. 2020. *'It Is Brilliantly Executed' - Moneyball Guru Praises Liverpool Transfer Strategy* | Goal.Com. [online] Available at: <https://www.goal.com/en-gb/news/moneyball-guru-praises-liverpool-transfer-strategy/1xys03c1b33tq1gmg94xon8486>
- [10] - BBC Sport. 2021. *Elite Sport Can Continue In England*. [online] Available at: <https://www.bbc.co.uk/sport/55534762>

Appendices

Appendix 1

| App name | This week's fixtures | Starting line-up predictor for each game | Player comparison tool | Blog/Articles | Best FPL team predictor | Your live rank/points | Predicted players price risers/drop | predict teams score this week | Show how you compare to the top 1000 managers |
|----------------------------|----------------------|--|------------------------|---------------|-------------------------|-----------------------|-------------------------------------|-------------------------------|---|
| Fantasy Football Fix | | | | | | | | | |
| Fantasy Manager | | | | | | | | | |
| Fantasy Football Manager | | | | | | | | | |
| Fantasy Football Assistant | | | | | | | | | |
| FFHub | | | | | | | | | |

<https://play.google.com/store/apps/details?id=com.fixsportsstatsltd.fantasyfootballfix>

<https://play.google.com/store/apps/details?id=com.gorogue.fplassistant>

<https://play.google.com/store/apps/details?id=com.homemade.ffm2>

<https://play.google.com/store/apps/details?id=uk.co.fantasyfootballhub.app>

<https://play.google.com/store/apps/details?id=com.kadrma.fpl>

Appendix 2

Rules and Scoring System

FPL like any other game has a set of rules that all player have to follow [#]. The following are the ones that involve picking your team as these are the only ones that apply to my prediction algorithm.

Game Rules

- Users have a budget of 100 million to spend on players
- A squad must have 2 Goalkeepers, 5 Defenders, 5 Midfielders and 3 Strikers
- Each week you must pick 11 players to play (1 GK, 3-5 DEF, 2-5 MID, 1-3 FRW) and 4 on the bench
- Can only have 0-3 player from one team in the squad

Scoring System

GK

Clean Sheets : 4

Penalty Save : 5

3 Shots Saved : 1

2 Goals Conceded: -1

Goal : 6

DEF

Clean Sheets : 4 2 Goals Conceded: -1

Goals : 6

MID

Clean Sheets : 1

Goals : 5

FWD

Goal: 4

All Players

Playing 0-60 minutes : 1 Penalty Miss : -2

Playing 60-90 minutes : 1 Yellow Card : -1

Assists : 3 Red Card : -3

Own Goals : -2

Bonus Points : Best 3 players in a game get 3,2,1 points, respectively

Captain : Player's total points are multiplied by 2

Appendix 3

Survey

<https://dundee.onlinesurveys.ac.uk/fpl-app-survey-4>

Question 1:

How long have you been playing FPL for?

Answers:

1. 0
2. 1
3. 2
4. 3+

Reason: Just a nice introduction question to ease the user into the survey. Shouldn't have anyone with) but this just makes sure of it, can see how much experience users have with the game



Question 2:

Do you use other apps/websites when making transfer decisions?

Answers:

1. Yes
2. No

Reason: Justify having an assistant app alongside the official website/app



Question 2a:

If yes which ones?

Reason: To see what things FPL users are using

| Showing all 7 responses Show less | |
|--|--|
| mainly fpl scout, but i'll browse others to check out who people have captained and what their teams are | 679936-679927-69440834 |
| BBC, Googling for info on matches & players | 679936-679927-69442095 |
| Sometimes watch youtube videos | 679936-679927-69442406 |
| The Athletic, Twitter | 679936-679927-69444423 |
| reddit.com/r/FantasyPL | 679936-679927-69449158 |
| BBC Sport / Sky Sports | 679936-679927-69554630 |
| Reddit and YouTube | 679936-679927-69848774 |

Question 3:

Do you look up team news to see who will be starting games?

Answers:

1. Yes
2. No

Reason: Justify having a line-up predictor



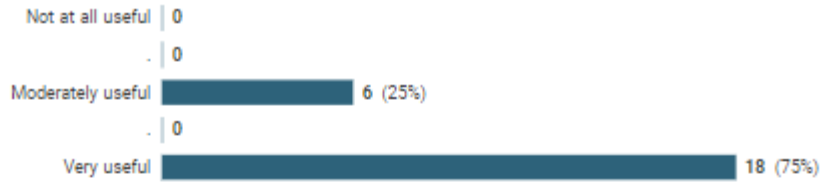
Question 4:

Which of the following features do you see as the most important/useful outside of the ones offered by the official app/website?

Answers: (pick 1-5 next to each for how useful)

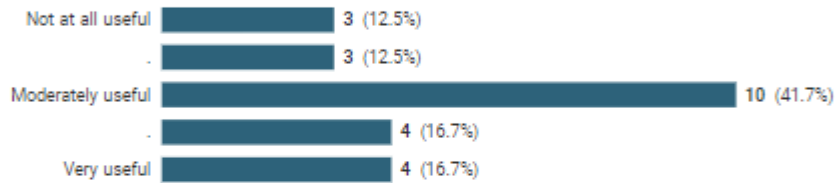
1. This weeks fixtures
2. Line-up predictor
3. Player comparison tool
4. Blog/Articles
5. Best team this week predictor (with 100m budget and without)
6. Your live rank/points
7. Predicted players price risers/drop
8. Tool to analyze your team, predict score and who to captain
9. Show how you compare to the top 1000 managers (opposed to average rank of all players)
10. Other ...

Reason: To choose/justify what features to have in the app



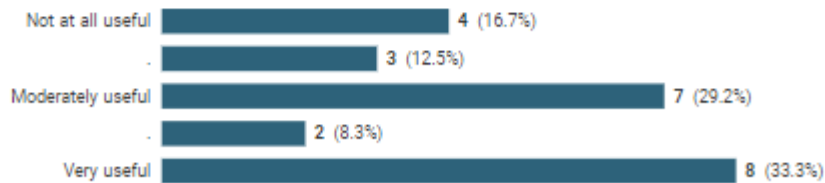
Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

2. Starting line-up predictor for each game



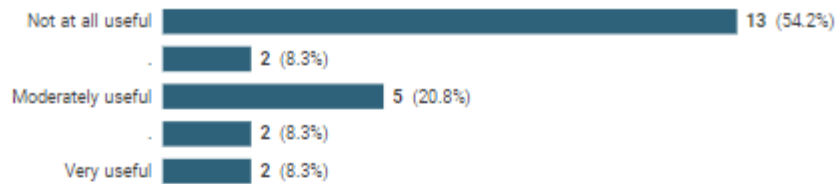
Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

3. Player comparison tool



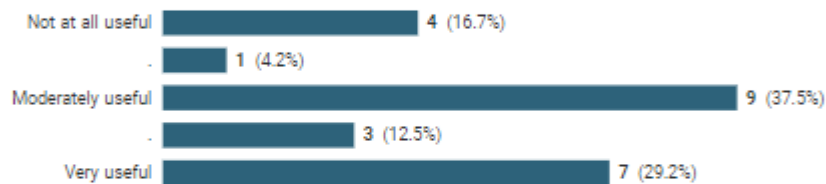
Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

4. Blog/Articles



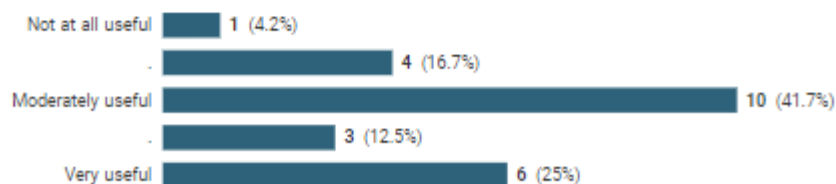
Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

5. Best FPL team this week predictor (team that would get the most points)



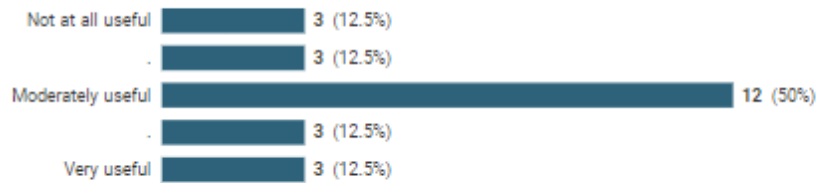
Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

6. Your live rank/points



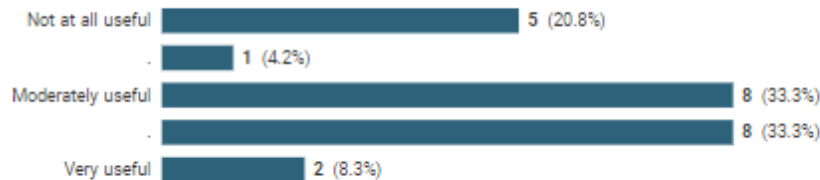
Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

7. Predicted players price risers/drop



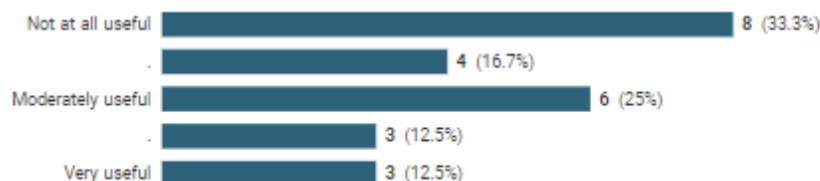
Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

8. Tool to analyzes your team and predict its score this week



Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

9. Show how you compare to the top 1000 managers (opposed to average rank of all players)



Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

Question 5:

Would putting in your email address put you off using an FPL assistant app?

Answers:

1. Yes
2. No

Reason: To see what would turn away a user from using the app



Question 6:

Would a paywall put you off using a FPL assistant app?

Answers :

1. Yes
2. No

Reason: To see what would turn away a user from using the app



Question 7

What's the biggest problem you face in assembling a successful team?

Reason : To see what people are struggling with the most so i can see what features would fix these best

| Showing all 24 responses Show less | |
|--|------------------------|
| choosing between players to transfer in or choosing who to captain this gameweek | 679936-679927-69440834 |
| Chemistry, consistently, balance between defence and attack | 679936-679927-69442283 |
| Guessing! Injuries or players missing games unreported | 679936-679927-69442095 |
| Knowing which players are in good form and will stay in form, and how long to keep players after a bad run of form | 679936-679927-69442406 |
| Squad rotation | 679936-679927-69444423 |
| Time | 679936-679927-69444820 |
| Injuries | 679936-679927-69444937 |
| I play with my heart, not my head (no Liverpool players because I'm a United fan) | 679936-679927-69445801 |
| Taking too many punts on risky picks | 679936-679927-69449158 |
| Finance | 679936-679927-69474824 |
| Rely too much on scout | 679936-679927-69484109 |
| Budget | 679936-679927-69501951 |
| Budget | 679936-679927-69502457 |
| Knowledge of who is most likely to play in a set position within a team | 679936-679927-69526642 |
| Time | 679936-679927-69526900 |
| nobody i pick plays well | 679936-679927-69527187 |
| Lack of free transfers per GW | 679936-679927-69527200 |
| The teams can be so unpredictable it's hard to choose. | 679936-679927-69527783 |
| Trying to go for wildcards that have no chance of getting points | 679936-679927-69528246 |
| Selection dilemma | 679936-679927-69528640 |
| Injuries | 679936-679927-69529770 |
| Transfer Budget | 679936-679927-69554630 |
| Bias | 679936-679927-69587623 |
| Trying to pick between 2 players | 679936-679927-69848774 |

Question 8

When choosing a GK transfer which of the following aspects do you look at? (choose all that apply)

Answers:

1. Team they play for
2. Number of saves
3. Total number of clean sheets
4. Most recent results (last 3)
5. Next 3 fixtures
6. Average number of saves a game
7. Total number of minutes played (past 3 gws)
8. Number of minutes played in previous week (last 1 gw)
9. Number of penalty saves
10. Number of assists
11. Number of goals scored
12. Availability (Fully fit, injured, suspended)
13. Number of cards (yellow, red)
14. Total number of points
15. Last 3 gw points
16. Last weeks gw points
17. Other...

Reason: what stats people want in the player comparison tool

1. Team they play for



tick box  15 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

2. Number of saves



tick box  7 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

3. Total number of clean sheets



tick box  18 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

4. Most recent results (last 3)



tick box  10 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

5. Next 3 fixtures



tick box  17 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

6. Average number of saves a game



tick box  1 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

7. Total number of minutes played (past 3 gws)



tick box  6 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

8. Number of minutes played in previous week (last 1 gw)



tick box  4 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

9. Number of penalty saves



tick box  2 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

10. Number of assists



tick box | 0

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

11. Number of goals scored



tick box | 0

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

12. Availability (Fully fit, injured, suspended)



tick box  12 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

13. Number of cards (yellow, red)



tick box | 0

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

14. Total number of points



tick box  17 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

15. Last 3 gw points



tick box  12 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

16. Last weeks gw points



tick box  6 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

Other:



| Showing all 3 responses | |
|--------------------------------|------------------------|
| Who they are playing this week | 679936-679927-69442095 |
| Bonus Points | 679936-679927-69474824 |
| Price | 679936-679927-69848774 |

Question 8

When choosing a DEF transfer which of the following aspects do you look at? (choose all that apply)

Answers:

1. Team they play for
2. Total number of clean sheets
3. Most recent results (last 3)
4. Next 3 fixtures
5. Average number of tackles a game
6. Total number of minutes played (past 3 gws)
7. Number of minutes played in previous week (last 1 gw)
8. Number of assists
9. Number of goals scored
10. Availability (Fully fit, injured, suspended)
11. Number of cards (yellow, red)
12. Total number of points
13. Last 3 gw points
14. Last weeks gw points
15. other...

Reason: what stats people want in the player comparison tool

1. Team they play for



tick box 18 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

2. Total number of clean sheets



tick box 16 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

3. Most recent results (last 3)



tick box 12 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

4. Next 3 fixtures



tick box 18 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

5. Average number of tackles a game



tick box 1 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

6. Total number of minutes played (past 3 gws)



tick box  8 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

7. Number of minutes played in previous week (last 1 gw)



tick box  6 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

8. Number of assists



tick box  9 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

9. Number of goals scored



tick box  7 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

10. Availability (Fully fit, injured, suspended)



tick box  15 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

11. Number of cards (yellow, red)



tick box  4 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

12. Total number of points



tick box  17 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

13. Last 3 gw points



tick box  10 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

14. Last weeks gw points



tick box  8 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

Other:



| Showing all 2 responses | |
|--|------------------------|
| Price, Likelihood of being a regular starter | 679936-679927-69449158 |
| Price | 679936-679927-69848774 |

Question 9

When choosing a MID transfer which of the following aspects do you look at? (choose all that apply)

Answers:

1. Team they play for
2. Total number of clean sheets
3. Most recent results (last 3)
4. Next 3 fixtures
5. Total number of minutes played (past 3 gws)
6. Number of minutes played in previous week (last 1 gw)
7. Number of assists
8. Number of goals scored
9. Availability (Fully fit, injured, suspended)
10. Number of cards (yellow, red)
11. Total number of points
12. Last 3 gw points
13. Last weeks gw points
14. Number of goals in the past 3 game weeks
15. How many games in row have they scored
16. Number of assists in the past 3 game weeks
17. How many games in row have they assisted
18. other...

Reason: what stats people want in the player comparison tool

1. Team they play for



tick box 15 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

2. Total number of clean sheets



tick box 2 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

3. Most recent results (last 3)



tick box 11 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

4. Next 3 fixtures



tick box 17 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

5. Total number of minutes played (past 3 gws)



tick box 7 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

6. Number of minutes played in previous week (last 1 gw)



tick box  9 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

7. Number of assists



tick box  19 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

8. Number of goals scored



tick box  19 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

9. Availability (Fully fit, injured, suspended)



tick box  16 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

10. Number of cards (yellow, red)



tick box  2 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

11. Total number of points



tick box  18 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

12. Last 3 gw points



tick box  13 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

13. Last weeks gw points



tick box  10 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

14. Number of goals in the past 3 game weeks



tick box  9 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

15. How many games in row have they scored



tick box  6 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

16. Number of assists in the past 3 game weeks



tick box 10 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

17, How many games in row have they assisted



tick box 4 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

Other:



| Showing all 2 responses | |
|---|------------------------|
| Likelihood of being a regular starter, consistency of returns overall | 679936-679927-69449158 |
| Price | 679936-679927-69848774 |

Question 10

When choosing a FWR transfer which of the following aspects do you look at? (choose all that apply)

Answers:

1. Team they play for
2. Most recent results (last 3)
3. Next 3 fixtures
4. Total number of minutes played (past 3 gws)
5. Number of minutes played in previous week (last 1 gw)
6. Number of assists
7. Number of goals scored
8. Availability (Fully fit, injured, suspended)
9. Number of cards (yellow, red)
10. Total number of points
11. Last 3 gw points
12. Last weeks gw points
13. Number of goals in the past 3 game weeks
- 14, How many games in row have they scored
15. Number of assists in the past 3 game weeks

- 16, How many games in row have they assisted
- 17. other...

Reason: what stats people want in the player comparison tool

1. Team they play for



tick box  15 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

2. Most recent results (last 3)



tick box  12 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

3. Next 3 fixtures



tick box  20 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

4. Total number of minutes played (past 3 gws)



tick box  8 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

5. Number of minutes played in previous week (last 1 gw)



tick box  6 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

6. Number of assists



tick box  16 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

7. Number of goals scored



tick box  20 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

8. Availability (Fully fit, injured, suspended)



tick box  19 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

9. Number of cards (yellow, red)



tick box  2 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

10. Total number of points



tick box  15 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

11. Last 3 gw points



tick box  13 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

12. Last weeks gw points



tick box  8 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

13. Number of goals in the past 3 game weeks



tick box  12 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

14. How many games in row have they scored



tick box  9 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

15. Number of assists in the past 3 game weeks



tick box  10 (100%)

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

16, How many games in row have they assisted



tick box 5 (100%)

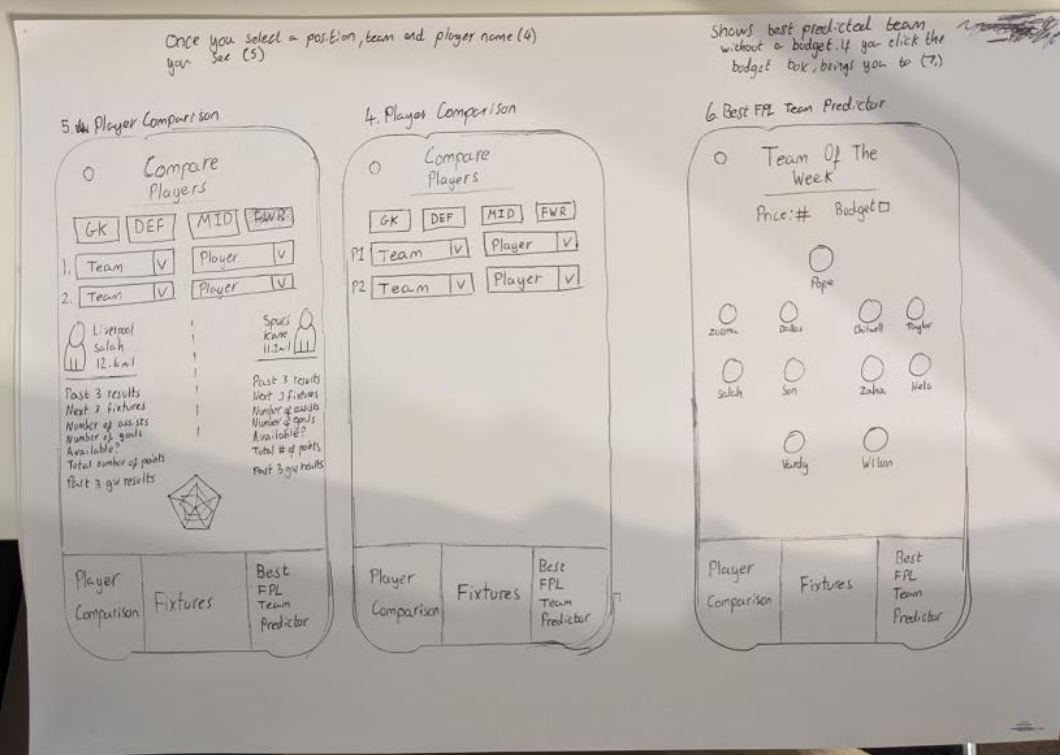
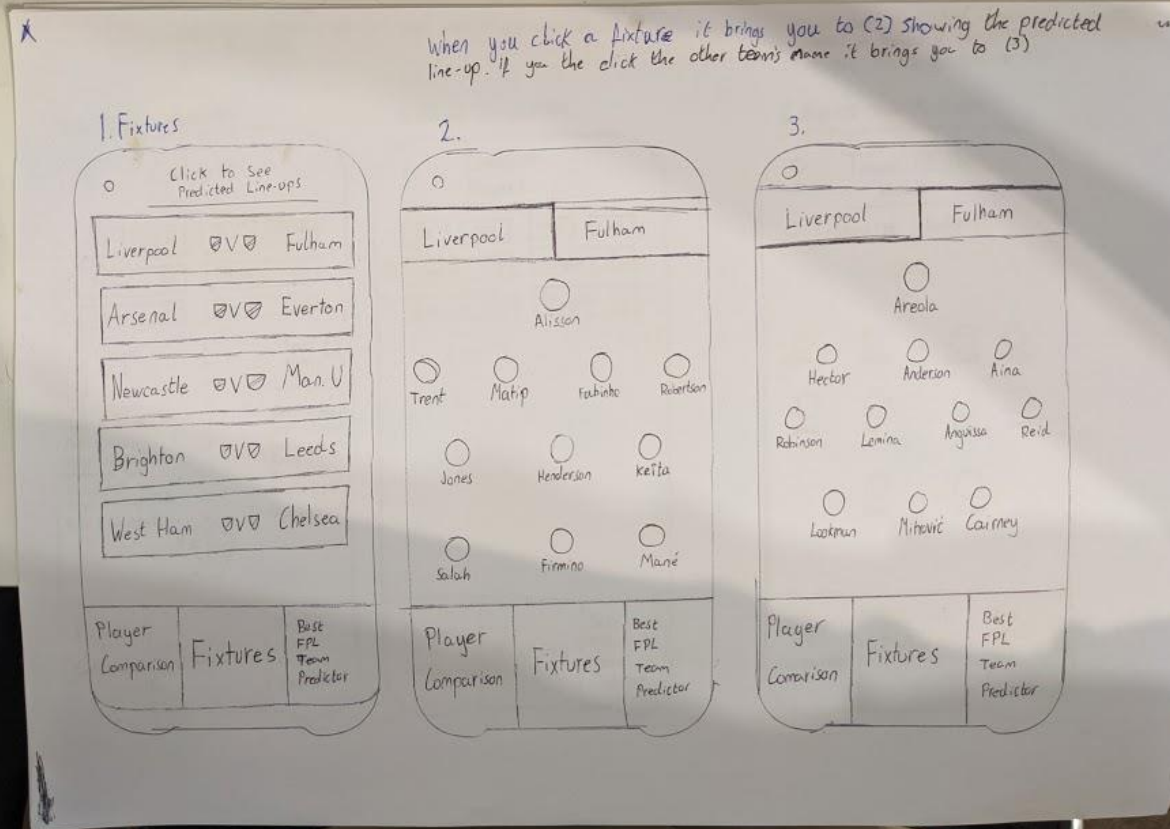
Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

Other:



| Showing all 2 responses | |
|-------------------------|------------------------|
| Price | 679936-679927-69449158 |
| Price | 679936-679927-69848774 |

Appendix 4





7.

Team Of The Week

Price: # Budget



Leno



Cash



Mine



Robertson



sterling



Son



Mone



Borran



Watkins



Adams



Kane

Player
Comparison

Fixtures

Best
FPL
Team
Predictor

Paper Prototype Focus Group

The following notes were taken by a focus group on the 28/12/20. This included myself and three other individuals. The paper prototype was sent to them with the following link: <https://marvelapp.com/prototype/27a4d81g>. The feedback was then recorded and summarized below.

Pros

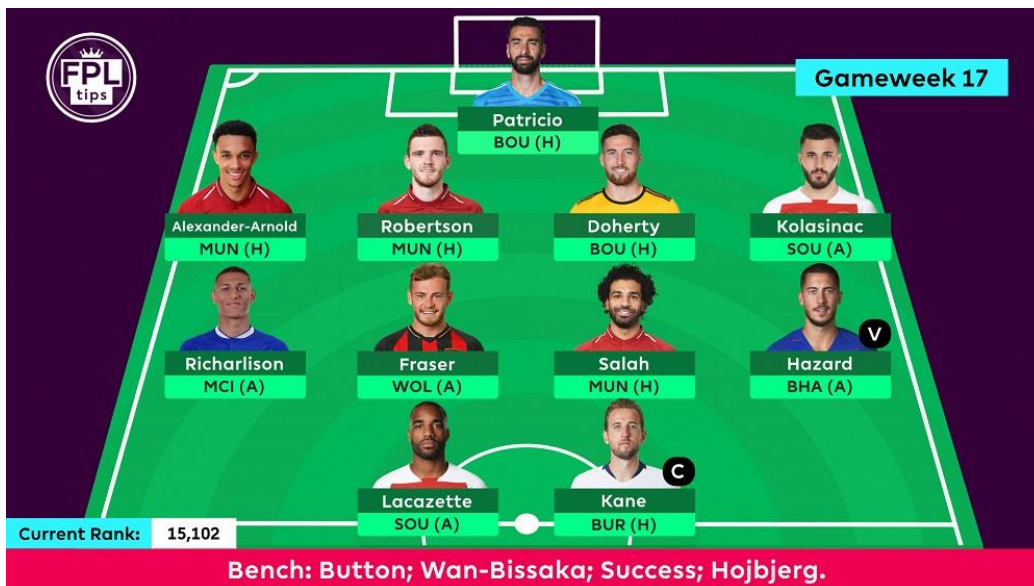
- Feature are varied but also all useful
- Clear design, easy to and intuitive to use
- Data being shown is all useful
- Best team screen – like that you could see the best team with and without a budget. Also with the price shown
- Liked the layout of the predicted line-up screen with the two tabs for each team

Cons / Questions

- Not clear that the line up show isn't the actual one and is instead a predicted one, could miss the title on the previous screen
- When was it last updated?
- What does the spider chart show on the player comparison screen?
- Whats the background when showing players?

Changes/Answers

- Add title to the predicted line-up screen
- Add a date to when the line-up was last predicted
- Will be a half football pitch background, similar to the picture below, may add pictures of the players instead of dots



Appendix 6



Adobe XD Prototype Focus Group

The following notes were taken by a focus group on the 02/01/21. This included myself and three other individuals. The prototype was sent to them with the following link: "--". The feedback was then recorded and summarized below.

Pros

(ones in red are repeated from the first paper prototype but they were all repeated during this stage too)

- Feature are varied but also all useful
- Clear design, easy to and intuitive to use
- Data being shown is all useful
- Best team screen –like that you could see the best team with and without a budget. Also, with the price shown
- Liked the layout of the predicted line-up screen with the two tabs for each team
 - Preferred the images of the players to just having circles with their names
 - Liked the simple pitch graphic too when showing the players
 - Most buttons were clear that they were buttons, also clear when they had been pressed
 - Colour being used was a good and quick way to show results and fixture difficulty
 - Some cons were addressed in this version
 - Showed price of the TOTW prediction

Cons / Questions

- When was it last updated? This was addressed in the paper prototype but forgot to change in this version. This will be displayed at the top of the screen on the prediction team page
- What does the spider chart show on the player comparison screen? I was unable to find a way to do this in adobe XD so just put a graphic on the page and told the users what the fields would be
- Budget toggle button is a bit small and not clear it was an option. "Change to a ON/OFF looking button" was suggested

Changes/Answers

- Add a date to when the line-up was last predicted
- Change budget button to be bigger and clearer that it can be changed

Appendix 8

