

STM5IPL Initial Report

Interpreting key player and team performances into AFL using data visualizations

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1972 - 1975



1976 - 1989



1990 - 1999



2000 - now

August 2024

Abstract

AFL, commonly known as Australian Rule Football, where the sport was drafted in 1859 by “Hammersley, Smith, Thompson and Wills”, who constructed the “rules” which has been the sport has been famous for in over “140+ years or more”. Where the first clubs were formed in “1860” and “1866” in South Australia and Queensland respectively. Later, continued to expand in Victoria in “1877”, forming “eight-team leagues” alongside with South Australia, forming VFA/VFL in “1897” but was renamed to AFL in 1990 expanded more teams up to AFL 2011-2012 Season where two new teams GWS Giants and Gold Coast Suns were added into the AFL official roster. To understand the “draft system” has been a main goal building relationships between teams and players. The “selection process” requires intensive “scouting reports” and “player assessments” to inform decision-making. When drafting players, we must consider under two conditions fairness and talent amongst across multiple football clubs. One method using recent and up to date data from “previous drafts” to understand patterns of player and team performance. Hence, will be valuable for the player and team success and satisfaction of “drafting outcomes”.

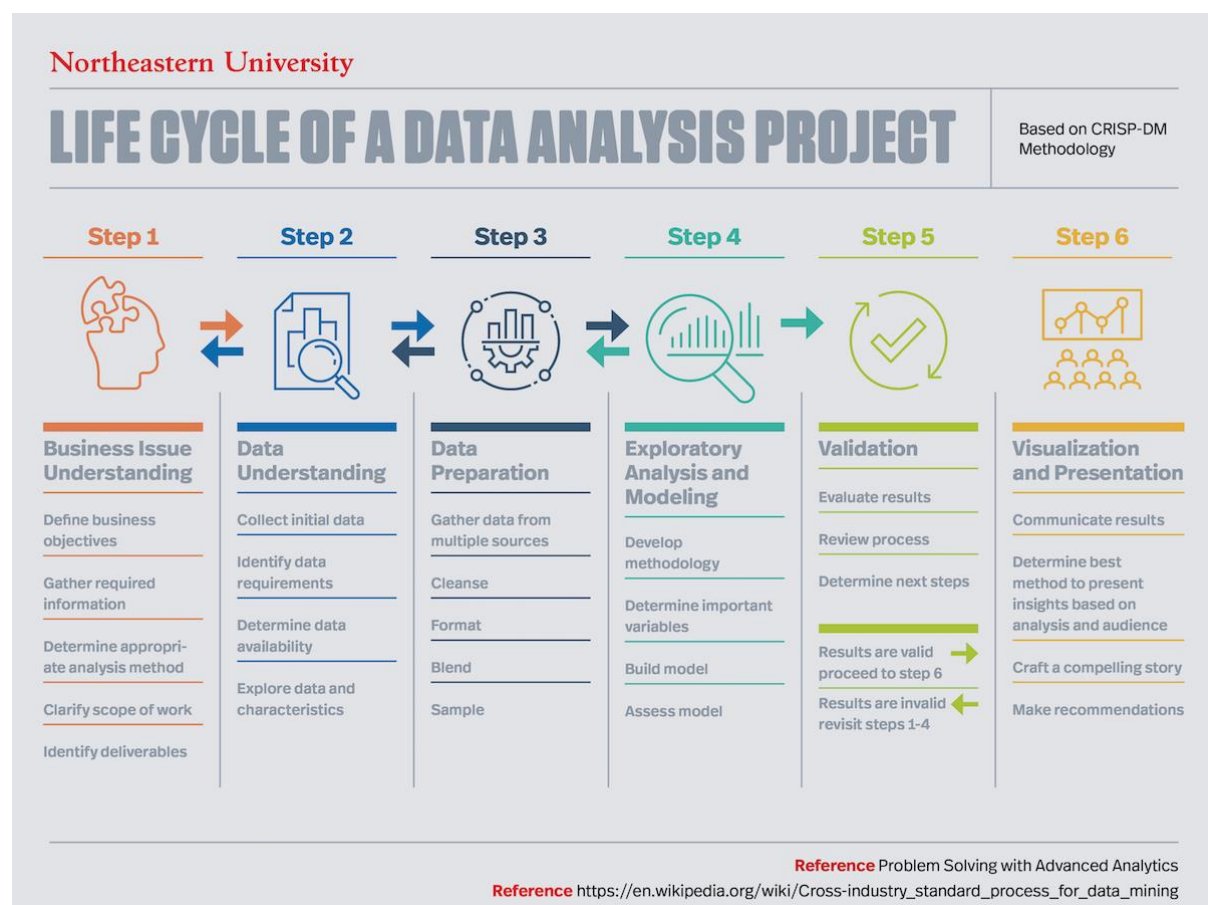


Figure 1. Life Cycle of a Data Analysis Project from Northeastern University

Introduction

The purpose of finding key performances in Australian Rules Football is to determine best talent among player candidates based on their “physical skills”, “past performance in matches”, “athletic abilities”, and “psychological assessments”. Most of the factors may include such as “speed”, “growth”, “endurance” and “strength” that is “quantifiable” to enable passionate and determined players to officially be drafted into the AFL Season. To enable decision making when it comes to their selection of players from the Sandringham Football Club at Foundry Athletic. The data was collected through email to discuss open-minded questions regarding key aspects to finding the best talent to provide an appropriate data visualization tool to demonstrate meaningful insights. Interpreting the “Business issue Understanding” and “Data Understanding” phases to determine on how well the team is performing. Includes, how well players are performing to easily process key talent and team performance during data analysis project. By understanding the data analytics lifecycle consists of six phases “based on the CRISP-DM methodology”. Include, the “business issue”, “understanding the data set, preparing the data, exploratory analysis, validation, visualization and presentation”. To execute a well-informed data analysis project report.

Methodology

During the “Data Preparation” phase (**seen Figure 1**), in performing an explanatory analysis of the data collected on Australian Football games, understanding two key concepts talent and recruitment when drafting only 12 out of the 170 players from the Sandringham Football Club will be drafted into AFL. This can be achieved trends through data preparation, is the process of transforming and cleaning raw data by “standardizing data formats, enriching source data, or removing outliers.” The data collection contains folders containing (**seen Figure 2 below**). After further discussion with the data team and supervisor during the meeting. We decided to divide the number of folders to focus only the folders from **2km Results, Combine Testing Data, GPS Data, Gym Strength Testing Data, Height & Weight Data, Max Speed Data** and **Player Football Match Statistics**, without losing valuable information containing Excel Spreadsheets.

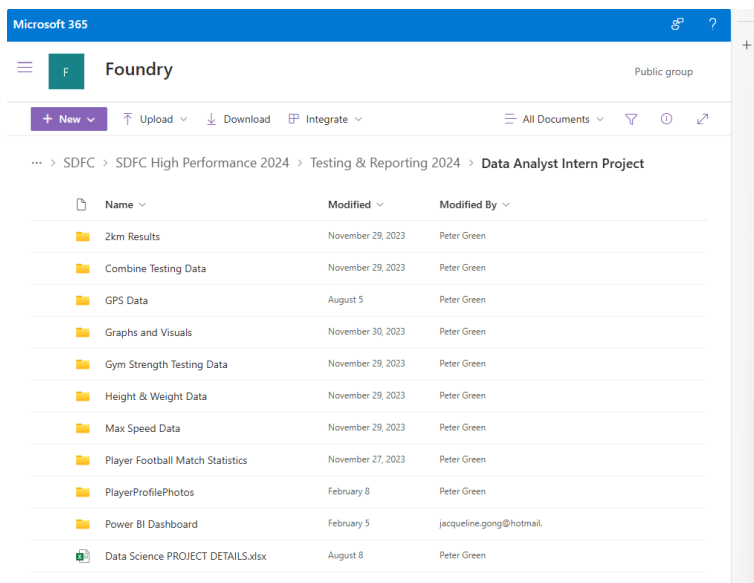


Figure 2. Supervisor’s Folders containing all Player and Team Performance data from the Sandringham Football Club

Recommended technologies when necessarily used to perform these tasks using Microsoft Excel, combining multiple tables for each of the following folders without losing valuable information using Python programming language to merge. During the data collection process, up to the end of Week 3 of the placement, the data team have completed transformed and cleaned all raw data for **Max Speed Data, Player Football Match Statistics (in Figures 4,5 and 6 respectively), and Combine Testing Data confirmed via chat while the GPS Data, while folders 2km Results and Heights and Weights** are still in progress and lastly **Gym Strength Testing Data (in Figure 3)** is almost completed, where the cells are filled in red are the remaining entries needed to clean.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1	Name	Date_y	Date_x	Jump H - ID	Weight	NORD	NORD	Peak V	Peak V	Contac	RSI (JH)	Jump H	Conce	DSI (CF)	TYPE	Test IS	L Max F	R Max F	Max Im	Test Ty	Test Ty	BW (KG)		
2	Alfie Lambert	12/11/2023	30.9	ATHLETE 3	68.3	235	278	15.6	2457	36.57	0.171	2.16	28.9	1677	0.68	Neutral	ISO 30	234.75	278	15.55755	SI	IMTP	68.3	
3	Angus Phillips	12/08/2023	8/12/2023	30.2	ATHLETE 5	82.1	288	438	11.6	2676	32.82	0.272	1.99	23.8	1892	0.71	Neutral	ISO 30	387.5	438.5	11.63096	SI	IMTP	82.1
4	Angus Taylor	12/11/2023	11/12/2023	27.1	ATHLETE 6	80.8	283	350	19.3	2616	32.74	0.236	0.93	25	1575	0.6	Neutral	ISO 30	282.75	350.25	19.27195	SI	IMTP	80.8
5	Archer Grant	12/11/2023	11/12/2023	27.9	ATHLETE 7	70.5	290	276	-5	2534	36.52	0.217	1.18	0	1461	0.58	Strong	ISO 30	290.25	275.75	-1.95959	SI	IMTP	70.5
6	Archie Ludowyke	12/11/2023	11/12/2023	34.1	ATHLETE 8	78.8	340	339	-0.4	2814	36.08	0.223	1.58	32.3	1781	0.63	Neutral	ISO 30	340.25	339	-0.36738	SI	IMTP	78.8
7	Bennett Martin	12/11/2023	11/12/2023	29.4	ATHLETE 10	68.4	264	297	11.1	2389	35.03	0.251	1.41	30.4	1577	0.66	Neutral	ISO 30	264.25	297.25	11.10177	SI	IMTP	68.4
8	Charlie Beaumont	12/11/2023	11/12/2023	33.9	ATHLETE 12	67.5	382	416	8.3	3068	45.93	0.186	1.79	0	1501	0.49	Strong	ISO 30	381.75	416.25	8.28826	SI	IMTP	67.5
9	Charlie Rozenes	12/08/2023	8/12/2023	38.9	ATHLETE 13	75.8	426	366	-14	0	0	0	40.4	1886	0	Neutral	ISO 30	425.75	366	-14.0341	SI	IMTP	75.8	
10	Christopher Kellaway	12/08/2023	8/12/2023	34.8	ATHLETE 14	77.6	382	400	4.6	3181	41.37	0.206	1.37	32	1872	0.59	Strong	ISO 30	381.5	399.75	4.56533	SI	IMTP	77.6
11	Dexter Prime	12/08/2023	8/12/2023	33.9	ATHLETE 15	82.3	508	526	3.4	3231	38.7	0.215	1.6	32.8	1912	0.59	Strong	ISO 30	508	526	3.42203	SI	IMTP	82.3
12	Eden Pitt	12/11/2023	11/12/2023	32	ATHLETE 16	83.3	361	345	-4.6	3415	41.59	0.331	0.94	29.6	1997	0.58	Strong	ISO 30	361.25	344.75	-4.56747	SI	IMTP	83.3
13	Eden Pitt	12/11/2023	11/12/2023	32	ATHLETE 17	83.3	361	345	-4.6	3415	41.59	0.331	0.94	29.6	1997	0.58	Strong	ISO 30	361.25	344.75	-4.56747	SI	IMTP	83.3
14	Emmanuel Ganas	12/11/2023	11/12/2023	27.7	ATHLETE 18	85.8	470	624	24.6	3417	39.92	0.217	1.3	28.7	1941	0.57	Strong	ISO 30	470.25	623.75	24.60922	SI	IMTP	85.8
15	Freddy Brayshaw	12/11/2023	11/12/2023	34.7	ATHLETE 21	63	283	367	22.9	2429	38.93	0.192	1.77	36.8	1505	0.62	Neutral	ISO 30	283	367.25	22.94078	SI	IMTP	63
16	Harvey Allan	12/11/2023	11/12/2023	36.4	ATHLETE 24	78.5	343	376	8.9	0	0	0.252	1.17	30.4	2058	0	Neutral	ISO 30	342.5	376	8.90924	SI	IMTP	78.5
17	Jack Cheep	12/08/2023	8/12/2023	36.5	ATHLETE 26	86.5	306	336	8.9	3210	37.54	0.183	1.99	35.1	2385	0.71	Neutral	ISO 30	306.25	336.25	8.92153	SI	IMTP	86.5
18	Jack Dalton	12/11/2023	11/12/2023	41.7	ATHLETE 27	72.8	233	287	18.9	3113	42.7	0.211	1.88	32.3	2983	0.64	Neutral	ISO 30	232.5	286.75	18.91892	SI	IMTP	72.8
19	Jack Hayter	12/11/2023	11/12/2023	34.5	ATHLETE 28	71.6	363	333	-8.2	2965	41.36	0.214	1.83	35.7	1849	0.56	Strong	ISO 30	362.5	332.75	-8.2069	SI	IMTP	71.6
20	Jack Meredith	12/11/2023	11/12/2023	36.4	ATHLETE 29	68.9	481	400	-16.9	0	0	0.24	1.32	29.3	1505	0	Neutral	ISO 30	480.5	399.5	-16.8574	SI	IMTP	68.9
21	Jake Matthews	12/08/2023	8/12/2023	32.9	ATHLETE 30	9	496	496	18.2	0	0	0.227	1.38	29.3	0	0	Neutral	ISO 30	405.75	496.75	18.15431	SI	IMTP	88.1
22	Jake Mehl	12/11/2023	11/12/2023	34.2	ATHLETE 31	68	357	377	5.4	2570	38.41	0.235	1.68	35.1	1621	0.63	Neutral	ISO 30	356.5	376.75	5.374917	SI	IMTP	68
23	James Arnold	12/11/2023	11/12/2023	35.1	ATHLETE 32	73.7	342	347	1.4	2583	35.62	0.271	1.29	30.1	1755	0.68	Neutral	ISO 30	342	347	1.449022	SI	IMTP	73.7
24	James Cutler	12/11/2023	11/12/2023	26.5	ATHLETE 33	77.4	404	433	6.7	0	0	0.182	1.35	26.7	1623	0	Neutral	ISO 30	403.5	432.5	6.70502	SI	IMTP	77.4
25	James Georgiou	12/11/2023	11/12/2023	40.6	ATHLETE 34	74.7	310	410	24.5	2942	39.6	0.224	1.75	35	1716	0.58	Strong	ISO 30	309.5	409.75	24.46614	SI	IMTP	74.7
26	James Michael	12/11/2023	11/12/2023	34.1	ATHLETE 35	77.3	383	454	15.6	2331	30.35	0.191	2.1	38	1765	0.76	Neutral	ISO 30	383.25	454	15.5837	SI	IMTP	77.3
27	Jett Haata	12/08/2023	8/12/2023	35.1	ATHLETE 36	76.3	313	397	21.2	0	0	0	33.4	1869	0	Neutral	ISO 30	313	397.25	21.20831	SI	IMTP	76.3	
28	Jordan Tessier	12/11/2023	11/12/2023	30.2	ATHLETE 37	77.7	370	452	16.2	2513	32.73	0.244	1.12	29.7	1592	0.63	Neutral	ISO 30	369.75	452	16.1969	SI	IMTP	77.7
29	Joshua Dolan	12/08/2023	8/12/2023	40.6	ATHLETE 38	75.1	288	328	12.3	0	0	0	36	1920	0	Neutral	ISO 30	287.75	328	12.27134	SI	IMTP	75.1	
30	Kye Fincher	12/11/2023	11/12/2023	36.8	ATHLETE 40	77.3	349	438	20.4	2935	38.26	0.151	2.32	32.5	2445	0.83	Powerful	ISO 30	348.75	438.25	20.42213	SI	IMTP	77.3
31	Lenny Hoffman	12/08/2023	8/12/2023	38.9	ATHLETE 41	81.8	384	439	12.5	3235	39.98	0.213	1.71	39.5	2117	0.65	Neutral	ISO 30	384	438.75	12.47863	SI	IMTP	81.8
32	Louis Fulcher	12/11/2023	11/12/2023	37.3	ATHLETE 42	74.3	366	439	16.8	2861	38.76	0.226	1.51	33.7	1959	0.68	Neutral	ISO 30	365.5	439.25	16.78998	SI	IMTP	74.3
33	Luka Pieor	12/08/2023	8/12/2023	29.4	ATHLETE 44	87.5	346	446	22.7	2480	28.53	0.317	0.94	28.2	2093	0.84	Powerful	ISO 30	346.25	447.75	22.6889	SI	IMTP	87.5
34	Luke McGinness	12/11/2023	11/12/2023	27.1	ATHLETE 46	84.5	422	500	15.7	2823	33.93	0.292	1.14	26.2	1896	0.66	Neutral	ISO 30	421.75	500.25	15.69215	SI	IMTP	84.5
35	Max Hoult	12/08/2023	8/12/2023	38.8	ATHLETE 47	86.7	506	422	-16.7	0	0	0	36.9	2199	0	Neutral	ISO 30	506	421.5	-16.6996	SI	IMTP	86.7	
36	Maximus Chalimandaris	12/08/2023	8/12/2023	40.5																			77.3	
37	Miles Tyler	12/11/2023	11/12/2023	30.4	ATHLETE 48	91.7	364	385	5.6	2826	31.02	0.278	0.84	25.1	2244	0.79	Neutral	ISO 30	363.5	385.25	5.64585	SI	IMTP	91.7

Figure 3. Transformed Gym Strength Testing Data (shown only partially of it)

	A	B	C	D	E	F	G	H	I
1	Player Name	Vmax	D(vmax)	T(vmax)	90% Vmax	D(90%)	T(90%)	Speed (km/hr)	
2	Billy McGee	8.77	38.69	5.4	7.89	17.99	3	31.57	
3	Brodie Fin	8.52	49.48	6.7	7.67	21.1	3.6	30.67	
4	Charlie Ed	8.86	39.6	5.3	7.97	18.77	2.9	31.9	
5	Charlie Ee	8.64	46.61	6.5	7.78	19.3	3.3	31.1	
6	Charlton F	9.12	58.25	7.5	8.21	22.33	3.2	32.83	
7	Cooper Lo	8.83	35.43	4.9	7.95	21.48	3.3	31.79	
8	Ethan Will	8.63	46.96	6.3	7.77	15.83	2.6	31.07	
9	Harrison C	8.6	31.22	4.6	7.74	22.66	3.6	30.96	
10	Harry Sull	9.17	44.35	5.8	8.25	19.26	3	33.01	
11	Harvey Jol	8.49	38.69	5.5	7.64	18.66	3.1	30.56	
12	Jack Daltc	8.54	24.82	3.7	7.69	16.29	2.7	30.74	
13	Jeremy a F	8.61	29.09	4.3	7.75	18.77	3.1	31	
14	Joshua Dc	9.19	37.94	5.1	8.27	23.57	3.5	33.08	
15	Joshua Dc	8.97	42.8	5.8	8.07	17.35	2.9	32.29	
16	Justin Kro	8.63	27.83	4.1	7.77	16.8	2.8	31.07	
17	Lachlan V	8.59	41.12	5.8	7.73	21.92	3.5	30.92	
18	Levi Ashcr	9.16	47.32	6.2	8.24	19.4	3.1	32.98	
19	Levi Young	8.16	37.65	5.6	7.34	17.74	3.1	29.38	
20	Luke Kenn	9.03	37.1	5	8.13	20.45	3.2	32.51	
21	Mason Sz	9.28	44.42	5.9	8.35	24.32	3.7	33.41	
22	Mitchell K	8.68	43.31	5.9	7.81	19.14	3.1	31.25	
23	Nathan S	8.43	34.3	4.9	7.81	20.71	3.8	30.35	
24	Nathaniel	8.9	41.36	5.6	8.01	19.51	3.1	32.04	
25	Ned Magri	8.92	44.97	6.2	8.03	21.37	3.5	32.11	
26	Ollie Murp	8.1	42.06	5.9	7.29	17.23	2.8	29.16	
27	Ollie Wart	8.74	39.49	5.4	7.67	18.99	3	31.46	
28	Riely Coll	9.07	44.56	5.9	8.16	20.55	3.2	32.65	
29	Ryley Sanc	9.2	43.35	5.8	8.28	18.89	3.1	33.12	
30	Samuel Li	8.39	42.98	6.1	7.55	18.34	3.1	30.2	
31	Taj Hottor	8.54	46.29	6.3	7.69	16.92	2.8	30.74	
32	Timothy P	8.75	47.27	6.4	7.88	20.59	3.3	31.5	
33	Vigo Viser	8.37	40.53	5.6	7.53	16.56	2.7	30.13	
34	William Bi	8.57	37.96	5.4	7.71	17.66	3	30.85	
35	William N	9.07	51.16	6.8	8.16	20.58	3.4	32.65	
36									
37	Average	8.75	41.15	5.65	7.88	19.44	3.15	31.5	

Figure 4. Transformed Sandringham Dragons Football Club Max Speed Data

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Figure 5. Transformed Player Football Match Statistics: Under 18-year boys 2023 BenchMarks

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1	Round	Rank	D	K	H	E	K	KEV	CP	UP	CP%	M	IP	C	G	ACCN	SA	SL	T								
2	2023 Games	60	14.3	11.5	21.8	4.18	35	56.1	0.1	4	8.7	28.1	4	1.3	4.3	1.3	2.3	0.3	0	1.3							
3	7 x Murray (1)	44	11	10	1	10	40	43.5	1	4	7	36.4	4	1	3	1	2	0	0	1							
4	1 x Jantzi (1)	80	17	10	2	5	30	25	0	7	1	50.3	3	1	3	1	3	0	0	0	1						
5	11 x Gippsland (N)	87	19	10	3	5.33	62.1	60.4	1	5	13	18.8	6	5	9	3	3	1	0	1							
6	14 x Western Ints (N)	66	15	10	5	2	60	73.3	0	2	14	12.5	3	0	2	0	1	0	0	3							
7	TOTAL	547	87	46	11	4.68	58	56.1	2	35	39	29.1	16	5	17	5	9	1	0	5							

Figure 6. Transformed Player Football Match Statistics: Dragons Data season 2023 game by game

After enhancing and improving the data, we process only the “Exploratory Data Analysis”, since we would not be modelling during the data analysis project if necessary, depending on the supervisor’s proposal. We wanted to recognise and understand patterns of data using appropriate libraries to perform data manipulation, aggregation methods for statistical analysis such as computing their averages, standard deviations and z-scores to compute for the final dashboard. The supervisor prefers key statistics for computing average values from the GPS Data, 2km Results, and Combine Testing Data. (Seen in Figure 7 and 8) below, taking the maximum value as the supervisor proposed for each of the columns to solve for following z-scores, which will be later be used to form into a Rader Chart (See Figure 11 below) into the final dashboard.

1. Z-Score Formula

The Z-Score formula is used to measure how many standard deviations a specific data point is from the mean of the distribution. It’s used to standardize scores on a common scale:

$$z = \frac{x - \mu}{\sigma}$$

Where:

- x is a single data point.
- μ is the mean of the population.
- σ is the standard deviation of the population.

Figure 7. Z-Score Formula

|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

Figure 8. Gym Strength Testing Data: Dashboard Spreadsheet

After careful selection, intensive preparation and exploratory analysis from the First Four Phases during the data analysis project. The data team wanted to make sure all “the correct information” is obtained during the deliverables, ensure we do not have to repeat through an iterative process. Maintain all quality and security issues resolved to guarantee better outcomes when it comes to data visualizations into a dashboard using one of the two data visualization tools from either Tableau or Power-BI. After preparation and exploratory analysis stages is completed, the supervisor initialized what our final dashboards will be, shown in the figures below. During the placement, proposals may change periodically over time, since were still waiting for all data collection is completely finalised, likely due to the expansion for new recruits towards both boys and girls under 16 years of age. This will likely improve our results in terms of GPS averages, and Team GPS averages and comparisons (shown in Figure 10.) to “becoming more accurate” avoiding bias.

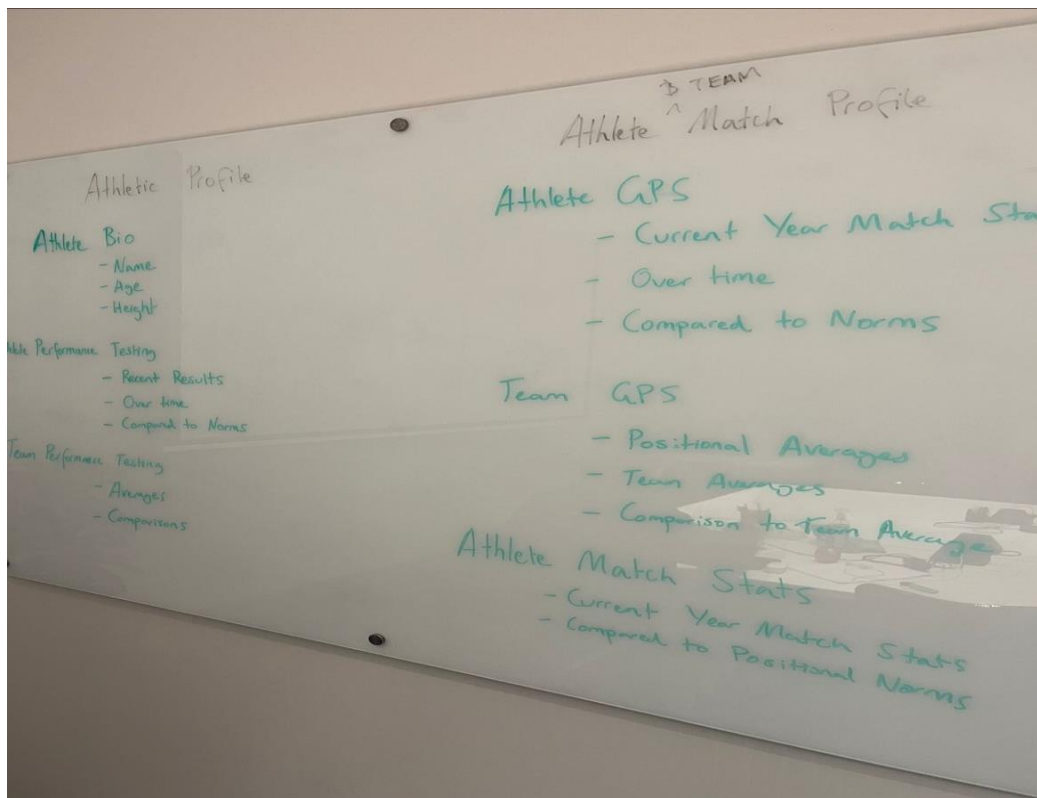
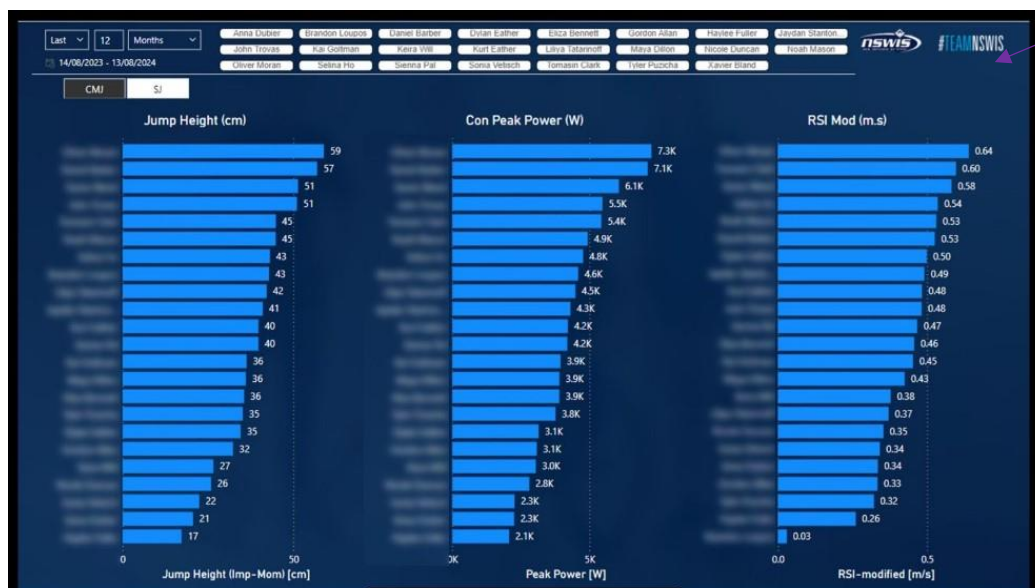
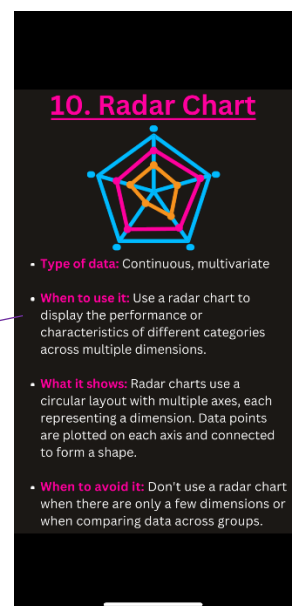
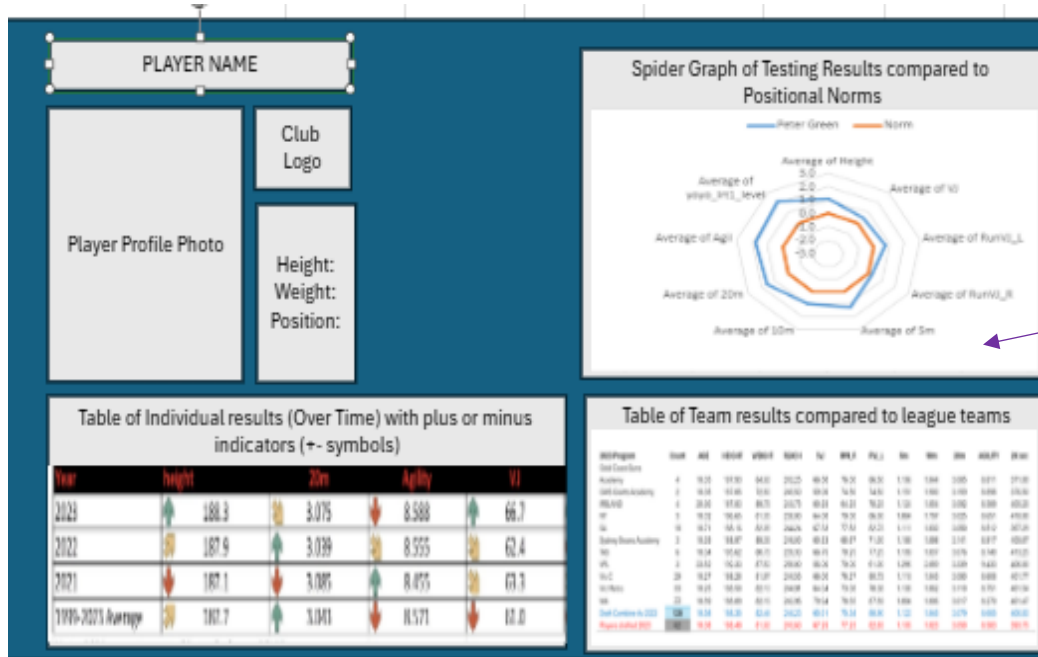
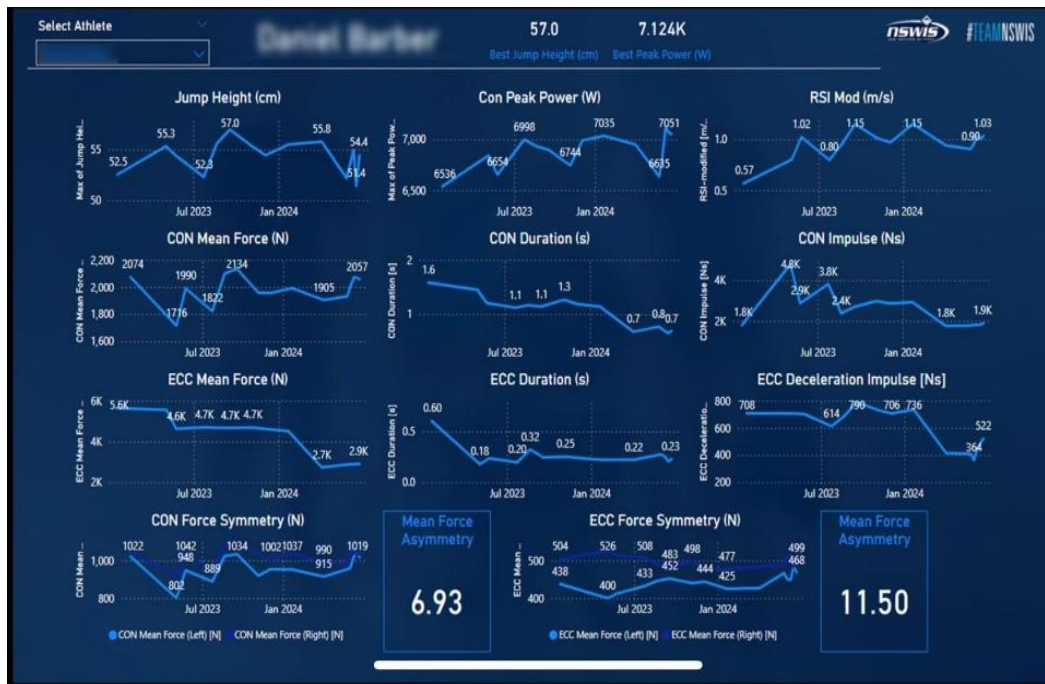


Figure 10. Supervisor’s initial dashboard 1. Took place during the first day Week 1 during the placement





2. Line Chart

- **Type of data:** Continuous, time-series
- **When to use it:** Use a line chart to show trends over time.
- **What it shows:** Line charts plot data points connected by lines. The X-axis usually represents time, and the Y-axis represents the value.
- **When to avoid it:** Only use a line chart when there is a logical order or relationship between data points.

Figure 13. Line chart displaying key metrics for player performance growth from July 2023 to January 2024 using PowerBI. Shown during via live chat during Week 3

Displaying in onto the dashboards (**from Figures 10-13 shown above**) to tell relevant “highlights” of that story for the organization to secure trust and integrity that is required to accomplish their goals. To clarify better interpretations in terms of using the appropriate data to enable decision-making to drive key performances more effectively without being misinterpreted in a kindly manner. Without reinforcing bias and always consider fairness for the clients and what is required to the overall business to succeed for players to be eligible to be drafted into AFL. The organization at Foundry Athletic proposed one of two powerful tools in their domain to enable stakeholders and organizations to interact data. Deciding from Tableau or Microsoft Power BI which data and business analysts frequently use on the daily basis (**seen in Figure 14**).

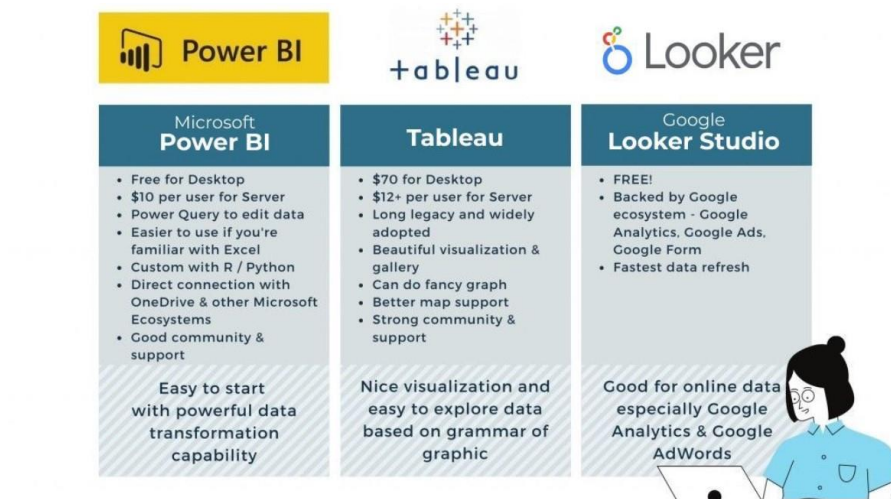


Figure 14. Comparison of data visualization tools

During the placement, when after the first phases of the data analysis project is completed, the data team proposed to use Microsoft Power-BI since it is free and convenient to use, making it suitable. Despite costs for each server are in USD not AUD, the data team will eventually have to pay these servers upfront to get familiarity and adapt with the new data visualization tool. Assuming the validation of the data is updated leaving no flaws or bias of our data during the 5th phase of the project. It has “the ability to analyze and share large datasets” to businesses. Enhances “sharing and collaboration aspects of business intelligence”, like Tableau, Power-BI can integrate Microsoft Excel spreadsheets which it can be shared with colleagues and stakeholders effortlessly when creating dashboards and reports. Adjustments can be made with “the data being updated in real-time; businesses can identify and address issues promptly”.

Overall, it enables coaches and stakeholders to interact with the visualizations through “charts, graphs and maps that brings data to life”. To be satisfied with high expectations with their results in terms of finding key talent and recruitment from player and team performances. The reason the data team prefer Microsoft Power BI over Tableau because we want to perform more reports, since we wanted 2 pages at least to showcase the player key statistics and team performance statistics. Available “in Power BI Desktop” since we can build and view reports. Able to “filter data” to showcase data manipulation and aggregations more effectively and efficiently. Without using programming languages such as Python or R which can be integrated into Power-BI if necessarily to update more data visualizations. Our goal for the data analysis project was to allow more people to access more freedom of how they understand and handle the data to a huger audience and businesses overall. To conclude how the data team can best stories to clients about our data findings of how we can implement further strategies using player and team performances. To allow recruitment and finding key talent more effectively when drafting players into the Australian Football League for the Sandringham Football Club at Foundry Athletic.

References

- AFL. (n.d.). *History of football - AFL.com.au*. afl.com.au. <https://www.afl.com.au/about-afl/history>
- Collins, B. (2019, November 24). *How do I get drafted by an AFL club? Am I eligible?* afl.com.au. <https://www.afl.com.au/news/149356/how-do-i-get-drafted-by-an-afl-club-am-i-eligible>
- maggiesMSFT. (2023, October 11). *Intro to dashboards for power BI designers - Power BI*. Microsoft Learn: Build skills that open doors in your career. <https://learn.microsoft.com/en-us/power-bi/create-reports/service-dashboards>
- McLean, J. (n.d.). *The Science of Success: How AFL Teams Scout and Develop Emerging Talent*. <https://preparelikeapro.com/the-science-of-success-how-afl-teams-scout-and-develop-emerging-talent>
- Staff, G. P. (2023, April 26). *Understanding the lifecycle of a data analysis project*. Graduate Blog. <https://graduate.northeastern.edu/resources/data-analysis-project-lifecycle/>

- ***What is data preparation? Processes and example.*** Talend - A Leader in Data Integration & Data Integrity. <https://www.talend.com/resources/what-is-data-preparation>
- ***Charlesworth Author Services. (2022, May 26). The Importance of Large Sample Sizes in Research | CW Authors. Www.cwauthors.com; Charlesworth Author Services.*** <https://www.cwauthors.com/article/importance-of-having-large-sample-sizes-for-research>
- ***12 Top Benefits of Power BI - Why Use It In BI? | Multishoring. (2024, April 11). Multishoring.com. https://multishoring.com/blog/benefits-of-power-bi/***

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