Mid-term exercises

GRA4157

30. September 2022

1)

Use the data set: GRA4157/lectures/mid-term-exercise/person_info.csv

a) Find out how many different age groups the population is divided into.

b) For each year, determine the total population and the proportion of men and women in the population.

c) Visualize three interesting aspects of the data set. Examples: Whether age distribution has changed over time. Whether the proportion of men versus women has changed. For a specific age group, how has their population changed compared to the general population? For a set of older ages (e.g. 90+ or 80+) how has the total population changed over time compared to the general population? And has the proportion of men versus women changed?

2)

Consider the Wikipedia site 2021-22 Premier League:

https://en.wikipedia.org/wiki/2021%E2%80%9322_Premier_League

Read the tables from the website with pandas. Locate the table with all results (see Figure 1). Based on this table only, your task is to produce a league table showing the final results of the premier league. The table shows match results between all teams in the league in a matrix format. E.g. in the top row, we can read that Arsenal won 3 - 1 against Aston Villa (AVL). For each win, a team is awarded 3 points, and for a draw each team is awarded 1 point. A loss does not give points.

Read the table and compute the total amount of points for each team throughout the season. If possible, include also the number of wins (W), draws (D) and losses (L) as separate columns. Additional statistics could be total goals scored for (GF) and total goals against (GA) as well as the goal difference (GD = GF - GA). You can look at the table above the table of interest at the wikipedia page for a reference on what you should reproduce. When you are done, write the dataframe to a csv-file.

Home \ Away	ARS	AVL	BRE	BHA	BUR	CHE	CRY	EVE	LEE	LEI	LIV	MCI	MUN	NEW	NOR	SOU	TOT	WAT	WHU	WOL
Arsenal	—	3-1	2-1	1-2	0-0	0-2	2-2	5-1	2-1	2-0	0-2	1-2	3-1	2-0	1-0	3-0	3-1	1-0	2-0	2-1
Aston Villa	0-1	—	1-1	2-0	1-1	1-3	1-1	3-0	3-3	2-1	1-2	1-2	2-2	2-0	2-0	4-0	0-4	0-1	1-4	2-3
Brentford	2-0	2-1	—	0-1	2-0	0-1	0-0	1-0	1-2	1-2	3-3	0-1	1-3	0-2	1-2	3-0	0-0	2-1	2-0	1-2
Brighton & Hove Albion	0-0	0-2	2-0	—	0-3	1-1	1-1	0-2	0-0	2-1	0-2	1-4	4-0	1-1	0-0	2-2	0-2	2-0	3-1	0-1
Burnley	0-1	1-3	3-1	1-2	—	0-4	3-3	3-2	1-1	0-2	0-1	0-2	1-1	1-2	0-0	2-0	1-0	0-0	0-0	1-0
Chelsea	2-4	3-0	1-4	1-1	1-1	—	3-0	1-1	3-2	1-1	2-2	0-1	1-1	1-0	7-0	3-1	2-0	2-1	1-0	2-2
Crystal Palace	3-0	1-2	0-0	1-1	1-1	0-1	—	3-1	0-0	2-2	1-3	0-0	1-0	1-1	3-0	2-2	3-0	1-0	2-3	2-0
Everton	2-1	0-1	2-3	2-3	3-1	1-0	3-2	—	3-0	1-1	1-4	0-1	1-0	1-0	2-0	3-1	0-0	2-5	0-1	0-1
Leeds United	1-4	0-3	2-2	1-1	3-1	0-3	1-0	2-2	—	1-1	0-3	0-4	2-4	0-1	2-1	1-1	0-4	1-0	1-2	1-1
Leicester City	0-2	0-0	2-1	1-1	2-2	0-3	2-1	1-2	1-0	—	1-0	0-1	4-2	4-0	3-0	4-1	2-3	4-2	2-2	1-0
Liverpool	4-0	1-0	3-0	2-2	2-0	1-1	3-0	2-0	6-0	2-0	—	2-2	4-0	3-1	3-1	4-0	1-1	2-0	1-0	3-1
Manchester City	5-0	3-2	2-0	3-0	2-0	1-0	0-2	3-0	7-0	6-3	2-2	—	4-1	5-0	5-0	0-0	2-3	5-1	2-1	1-0
Manchester United	3-2	0-1	3-0	2-0	3-1	1-1	1-0	1-1	5-1	1-1	0-5	0-2	—	4-1	3-2	1-1	3-2	1-1	2-4	1-0
Newcastle United	2-0	1-0	3-3	2-1	1-0	0-3	1-0	3-1	1-1	2-1	0-1	0-4	1-1	—	1-1	2-2	2-3	1-1	2-4	1-0
Norwich City	0-5	0-2	1-3	0-0	2-0	1-3	1-1	2-1	1-2	1-2	0-3	0-4	0-1	0-3	—	2-1	0-5	1-3	0-4	0-0
Southampton	1-0	1-0	4-1	1-1	2-2	0-6	1-2	2-0	1-0	2-2	1-2	1-1	1-2	2-0	2-0	—	1-1	1-2	0-0	0-1
Tottenham Hotspur	3-0	2-1	2-0	0-1	1-0	0-3	3-0	5-0	2-1	3-1	2-2	1-0	0-3	5-1	3-0	2-3	—	1-0	3-1	0-2
Watford	2-3	3-2	1-2	0-2	1-2	1-2	1-4	0-0	0-3	0-5	1-3	0-5	4-1	1-1	0-3	0-1	0-1	—	1-4	0-2
West Ham United	1-2	2-1	1-2	1-1	1-1	3-2	2-2	2-1	2-3	4-1	3-2	2-2	1-2	1-1	2-0	2-3	1-0	1-0	—	1-0
Wolverhampton Wanderers	0-1	2-1	0-2	0-3	0-0	0-0	0-2	2-1	2-3	2-1	0-1	1-5	0-1	2-1	1-1	3-1	0-1	4-0	1-0	—

Figure 1: All premier league results 2021 - 2022