

What is the First Day of the Week?

Whether the Gregorian calendar shows Sunday or Monday as the first day of the week depends on where you live.

Do more countries start the week on Sunday or Monday? What about people?

The file `first-day-of-week.csv` shows the first day of the week for each territory. The file `population.csv` shows the population in the year 2020 for each territory in millions.

Overview of the data frames

first_day_of-week.csv

```
import pandas as pd
import matplotlib.pyplot as plt

# Load the CSV file into a DataFrame
df = pd.read_csv("first-day-of-week.csv")
df
```

	territory	alpha3	first_day	units	paper
0	Afghanistan	AFG	sat	metric	A4
1	Aland Islands	ALA	mon	metric	A4
2	Albania	ALB	mon	metric	A4
3	Algeria	DZA	sat	metric	A4
4	American Samoa	ASM	sun	metric	A4
...
252	Wallis & Futuna	WLF	mon	metric	A4
253	Western Sahara	ESH	mon	metric	A4
254	Yemen	YEM	sun	metric	A4
255	Zambia	ZMB	mon	metric	A4
256	Zimbabwe	ZWE	sun	metric	A4

257 rows × 5 columns

population.csv

```
#Load the population CSV file into a DataFrame
df2 = pd.read_csv("population.csv")
df2
```

	alpha3	population
0	AFG	39.07
1	ALB	2.87
2	DZA	44.04
3	AND	0.08
4	AGO	33.45
...
192	VNM	98.08
193	PSE	5.07
194	YEM	36.13
195	ZMB	19.06
196	ZWE	15.53

197 rows × 2 columns

To answer the project's question, we have to merge the 'first_day_of-week.csv' and 'population' so that we can have the number of people per country.

```
# Number of people per countries
df2 = df.merge(df2, on='alpha3', how='left').dropna()
df2.dropna()
```

	territory	alpha3	first_day	units	paper	population
0	Afghanistan	AFG	sat	metric	A4	39.07
2	Albania	ALB	mon	metric	A4	2.87
3	Algeria	DZA	sat	metric	A4	44.04
5	Andorra	AND	mon	metric	A4	0.08
6	Angola	AGO	mon	metric	A4	33.45
...
250	Venezuela	VEN	sun	metric	US-Letter	28.44
251	Vietnam	VNM	mon	metric	A4	98.08
254	Yemen	YEM	sun	metric	A4	36.13
255	Zambia	ZMB	mon	metric	A4	19.06
256	Zimbabwe	ZWE	sun	metric	A4	15.53

196 rows × 6 columns

Once we got our merged data frame, we now have to gather countries that has "sun" or "mon" as their first day. We have to use a simple query in order to get this.

```
# Getting the countries where the first day of the week is either Monday or Sunday
solution = df2.query("first_day == 'mon' | first_day == 'sun'")
solution.sort_values(by='first_day', ascending=False)
```

	territory	alpha3	first_day	units	paper	population
256	Zimbabwe	ZWE	sun	metric	A4	15.53
205	South Africa	ZAF	sun	metric	A4	60.56
224	Taiwan	TWN	sun	metric	A4	23.66
126	Laos	LAO	sun	metric	A4	7.35
176	Panama	PAN	sun	metric	US-Letter	4.29
...
102	Haiti	HTI	mon	metric	A4	11.24
106	Hungary	HUN	mon	metric	A4	9.75
107	Iceland	ISL	mon	metric	A4	0.37
112	Ireland	IRL	mon	metric	A4	4.98
134	Luxembourg	LUX	mon	metric	A4	0.63

180 rows × 6 columns

The final step will be calculations of the total population by the first day of the week. We also added a `countries_count` for the cleaned answer to the question.

```
# Total population by first day of the week (Sunday vs Monday)
total_population = solution.groupby('first_day')['population'].sum()
total_population = total_population.reset_index()
total_population['countries_count'] = solution['first_day'].value_counts().values
total_population
```

	first_day	population	countries_count
0	mon	3600.19	131
1	sun	3844.08	49

Do more countries start the week on Sunday or Monday? What about people?

If we only looked at the number of countries, we can directly infer that Monday is the most common first day of the week. However, there's still an argument to be discussed, how many people does each country has?

We still need a supporting evidence for this claim. Therefore, we used the 'population' data frame to identify if our hypothesis is correct. It turns out that even though there are few countries starts their first day on Sunday, their population is still more than countries that starts on Monday. A plausible explanation is that these countries might have religious calendars or practices that they usually follow.

They do not follow the Gregorian Calendar which are commonly used throughout the world, that is why it might feel different if whenever we visit these countries.