IMDb Dataset

資料庫管理 期末報告

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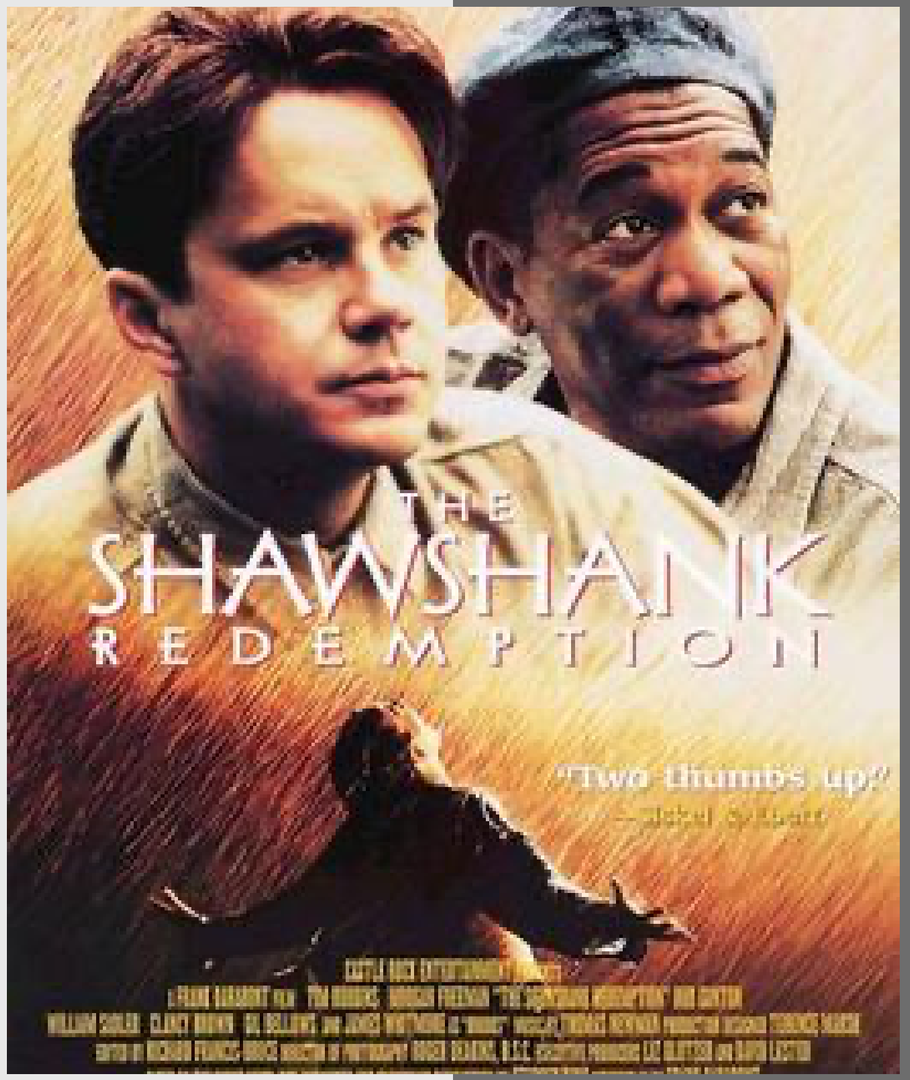
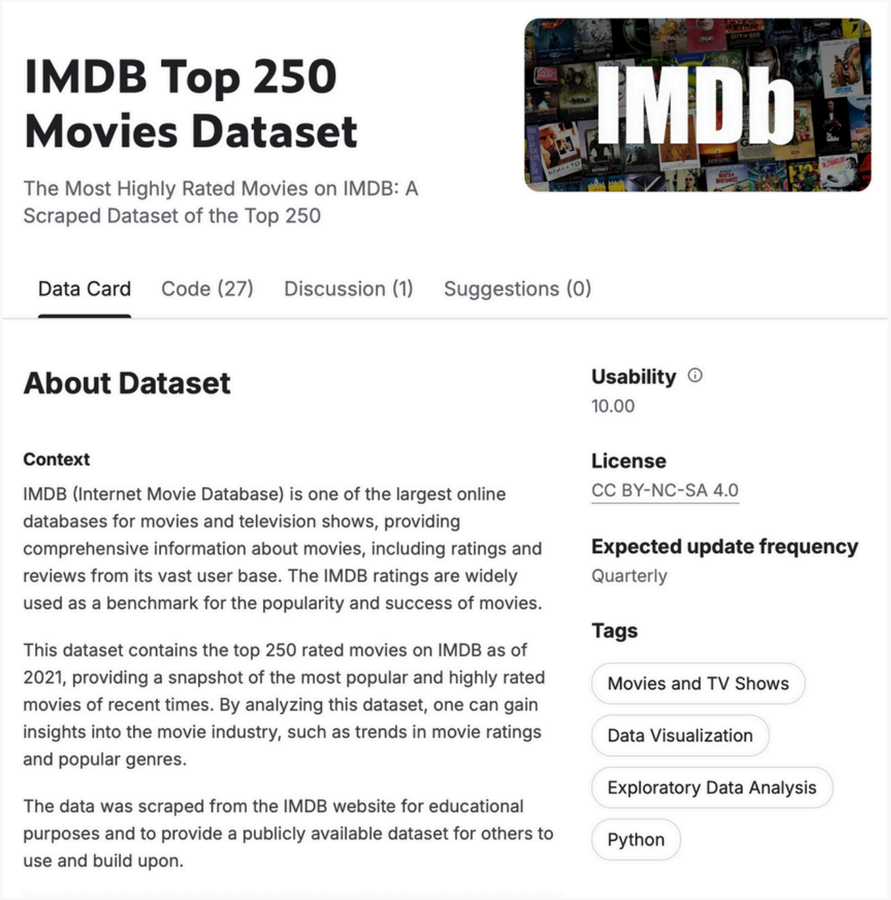
Outlines

- 資料集簡介
- 資料前處理
- ER model
- SQL
- 資料視覺化



Dataset Introduction



IMDB Top 250 Movies Dataset

The Most Highly Rated Movies on IMDB: A Scraped Dataset of the Top 250

Data Card | Code (27) | Discussion (1) | Suggestions (0)

About Dataset

Context

IMDB (Internet Movie Database) is one of the largest online databases for movies and television shows, providing comprehensive information about movies, including ratings and reviews from its vast user base. The IMDB ratings are widely used as a benchmark for the popularity and success of movies.

This dataset contains the top 250 rated movies on IMDB as of 2021, providing a snapshot of the most popular and highly rated movies of recent times. By analyzing this dataset, one can gain insights into the movie industry, such as trends in movie ratings and popular genres.

The data was scraped from the IMDB website for educational purposes and to provide a publicly available dataset for others to use and build upon.

Usability
10.00

License
CC BY-NC-SA 4.0

Expected update frequency
Quarterly

Tags

Movies and TV Shows
Data Visualization
Exploratory Data Analysis
Python

來源：

- 本資料集自Kaggle下載 (https://www.kaggle.com/datasets/rajugc/imdb-top-250-movies-dataset)
- 紀錄2021 年底時 IMDb評分前250的電影

欄位：

- 包含：rank, year, rating, genre等

注意事項:

- 部分資料有缺失值
- 時間欄位需要進行轉換

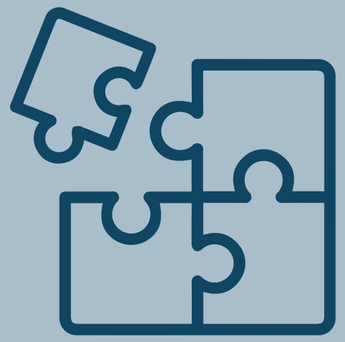
Dataset Introduction

rank	name	year	rating	genre	certificate	run_time	tagline	budget	box_office	casts	directors	writers
1	The Shawshank Redemption	1994	9.3	Drama	R	2h 22m	Fear can hold you prisoner. Hope can set you f...	25000000	28884504	Tim Robbins,Morgan Freeman,Bob Gunton,William ...	Frank Darabont	Stephen King,Frank Darabont
2	The Godfather	1972	9.2	Crime,Drama	R	2h 55m	An offer you can't refuse.	6000000	250341816	Marlon Brando,Al Pacino,James Caan,Diane Keato...	Francis Ford Coppola	Mario Puzo,Francis Ford Coppola
3	The Dark Knight	2008	9.0	Action,Crime,Drama	PG-13	2h 32m	Why So Serious?	185000000	1006234167	Christian Bale,Heath Ledger,Aaron Eckhart,Mich...	Christopher Nolan	Jonathan Nolan,Christopher Nolan,David S. Goyer
4	The Godfather Part II	1974	9.0	Crime,Drama	R	3h 22m	All the power on earth can't change destiny.	13000000	47961919	Al Pacino,Robert De Niro,Robert Duvall,Diane K...	Francis Ford Coppola	Francis Ford Coppola,Mario Puzo
5	12 Angry Men	1957	9.0	Crime,Drama	Approved	1h 36m	Life Is In Their Hands -- Death Is On Their Mi...	350000	955	Henry Fonda,Lee J. Cobb,Martin Balsam,John Fie...	Sidney Lumet	Reginald Rose

Data Preprocessing

資料清理

- 移除不符合欄位定義的值
- 驗證欄位資料是否合理



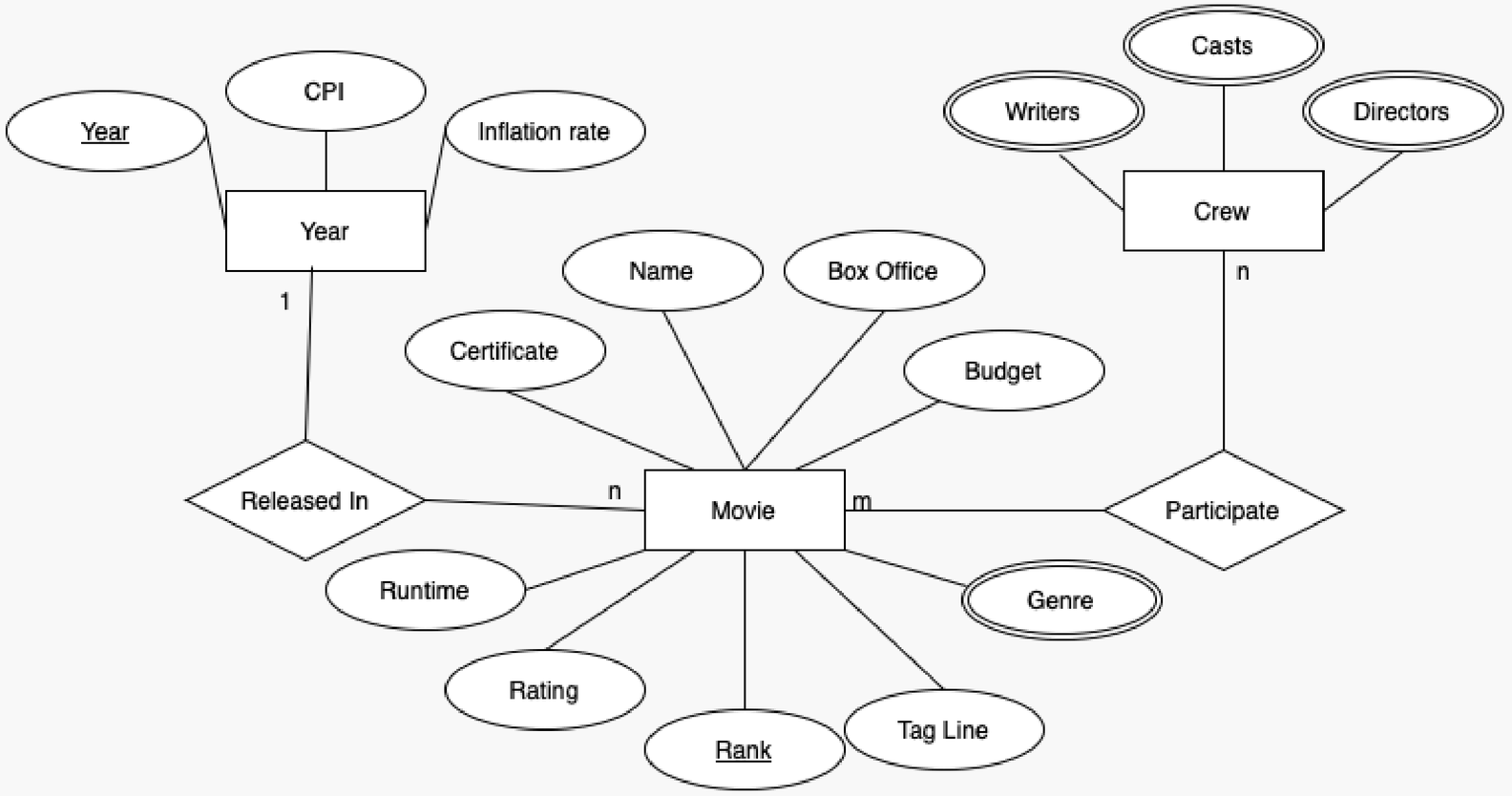
資料合併

- 引入CPI 資料
- 將更新資料引入至資料集

資料轉換

- 將文字資料編碼使資料容易分析、利用
- 轉換時間格式，並採用Bining建立相關性

ER Model



- **Movie**
  - 為主要的Instance，有一個電影的主要屬性。
- **Crew**
  - 為一部電影的團隊，包含演員、導演、編劇等。
  - 透過Participate 關係與Movie聯繫。
- **Year**
  - 電影的上映年份。
  - 部分電影年代較久遠，因此引入CPI 來提供比較依據。

SQL

- **查詢特定年份間，票房表現最佳的電影:**

```
SELECT m.name, m.year, m.box_office
FROM movies m
WHERE m.year >= 2000 AND m.year <= 2020
ORDER BY m.box_office DESC
LIMIT 5;
```

	name	year	box_office
1	Avengers: Endgame	2019	2799439100.0
2	Avengers: Infinity War	2018	2052415039.0
3	Harry Potter and the Deathly Hallows: Part 2	2011	1342359942.0
4	The Lord of the Rings: The Return of the King	2003	1146457748.0
5	The Dark Knight Rises	2012	1081169825.0

- **查詢特定導演的作品:**

```
SELECT m.name, m.year, m.rating, cd.directors
FROM movies m
JOIN cast_and_directors cd ON m.rank = cd.rank
WHERE cd.directors LIKE '%Christopher Nolan%'
AND m.rating >= 8.0
ORDER BY m.rating DESC;
```

	name	year	rating	directors
1	The Dark Knight	2008	9.0	Christopher Nolan
2	Inception	2010	8.8	Christopher Nolan
3	Interstellar	2014	8.6	Christopher Nolan
4	The Prestige	2006	8.5	Christopher Nolan
5	Memento	2000	8.4	Christopher Nolan
6	The Dark Knight Rises	2012	8.4	Christopher Nolan
7	Batman Begins	2005	8.2	Christopher Nolan

SQL

- **查詢特定類型電影的平均評分與上映數量:**

```
SELECT m.genre,
       COUNT(*) AS movie_count,
       ROUND(AVG(m.rating), 2) AS
average_rating FROM movies m
WHERE m.genre LIKE '%Action%'
GROUP BY m.genre
HAVING movie_count >= 2
ORDER BY average_rating DESC
LIMIT 5;
```

	genre	movie_count	average_rating
1	Action,Adventure,Drama	5	8.7
2	Action,Drama,Mystery	2	8.5
3	Action,Sci-Fi	3	8.47
4	Action,Crime,Drama	5	8.44
5	Action,Drama	3	8.43

- **查詢高投資回報率的電影:**

```
SELECT m.name, m.year, m.budget, m.box_office,
       ROUND((m.box_office / m.budget), 2) AS
return_on_investment
FROM movies m
WHERE m.budget > 0 AND m.box_office IS NOT NULL
ORDER BY return_on_investment DESC
LIMIT 10;
```

	name	year	budget	box_office	return_on_investment
1	Rocky	1976	960000.0	117250402.0	122.14
2	Gone with the Wind	1939	3977000.0	402382193.0	101.18
3	Star Wars: Episode IV - A New Hope	1977	11000000.0	775398007.0	70.49
4	Jaws	1975	7000000.0	476512065.0	68.07
5	A Separation	2011	500000.0	22926076.0	45.85
6	The Intouchables	2011	9500000.0	426588510.0	44.9
7	The Godfather	1972	6000000.0	250341816.0	41.72
8	The Exorcist	1973	11000000.0	441306145.0	40.12
9	Psycho	1960	806947.0	32052925.0	39.72
10	The Lives of Others	2006	2000000.0	77356942.0	38.68

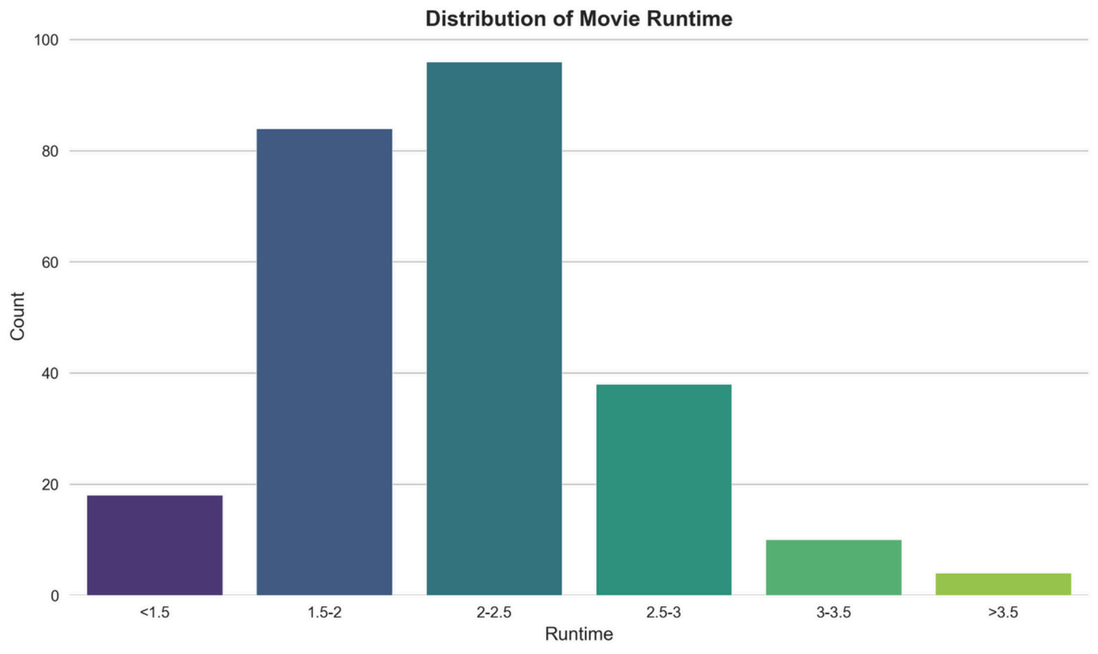
SQL

- **計算電影的實際票房收入（考慮通貨膨脹）：**

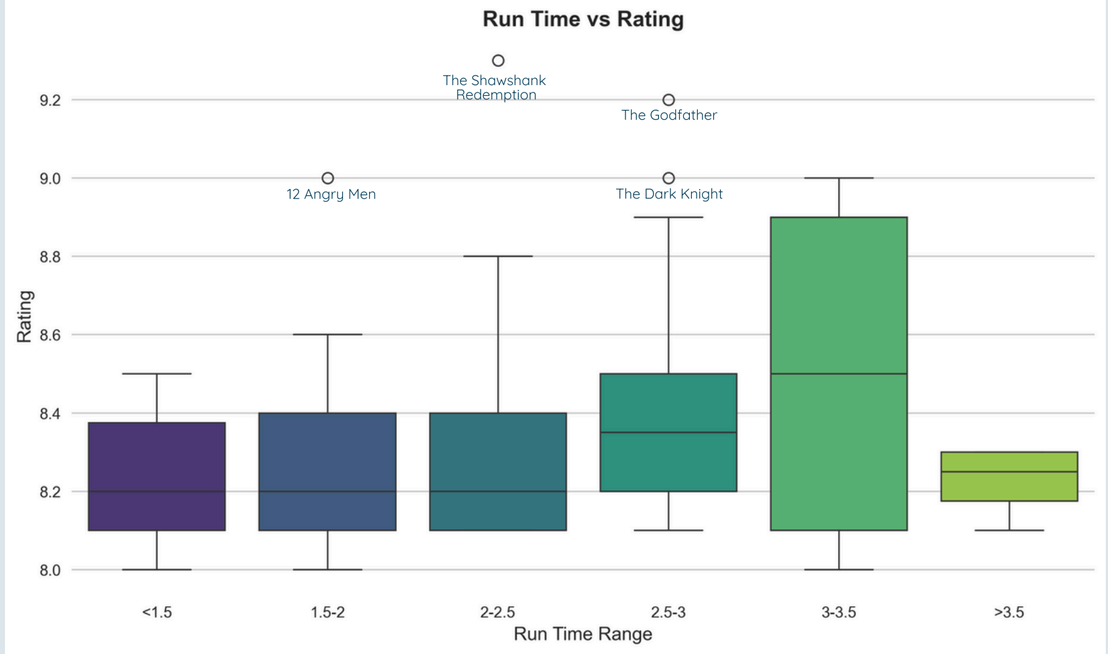
```
SELECT m.name, m.year, m.box_office,
        (m.box_office * (SELECT c2."Annual Average CPI(-U)"
                         FROM cpi c2
                         WHERE c2.year = 2024) / c."Annual Average CPI(-U)") AS adjusted_box_office
FROM movies m
JOIN cpi c ON m.year = c.year
WHERE m.box_office IS NOT NULL
ORDER BY adjusted_box_office DESC
LIMIT 10;
```

	name	year	box_office	adjusted_box_office
1	Gone with the Wind	1939	402382193.0	9101364135.19424
2	Star Wars: Episode IV - A New Hope	1977	775398007.0	4022856986.81188
3	Avengers: Endgame	2019	2799439100.0	3442094849.58936
4	The Exorcist	1973	441306145.0	3124924594.32432
5	Jaws	1975	476512065.0	2784672736.72862
6	Avengers: Infinity War	2018	2052415039.0	2569809989.09438
7	Jurassic Park	1993	1109802321.0	2414684081.12388
8	Spider-Man: No Way Home	2021	1921847111.0	2229626316.23026
9	The Lion King	1994	968511805.0	2054656622.75304
10	Star Wars: Episode V - The Empire Strikes Back	1980	538375067.0	2054188362.43689

Data Visualisation

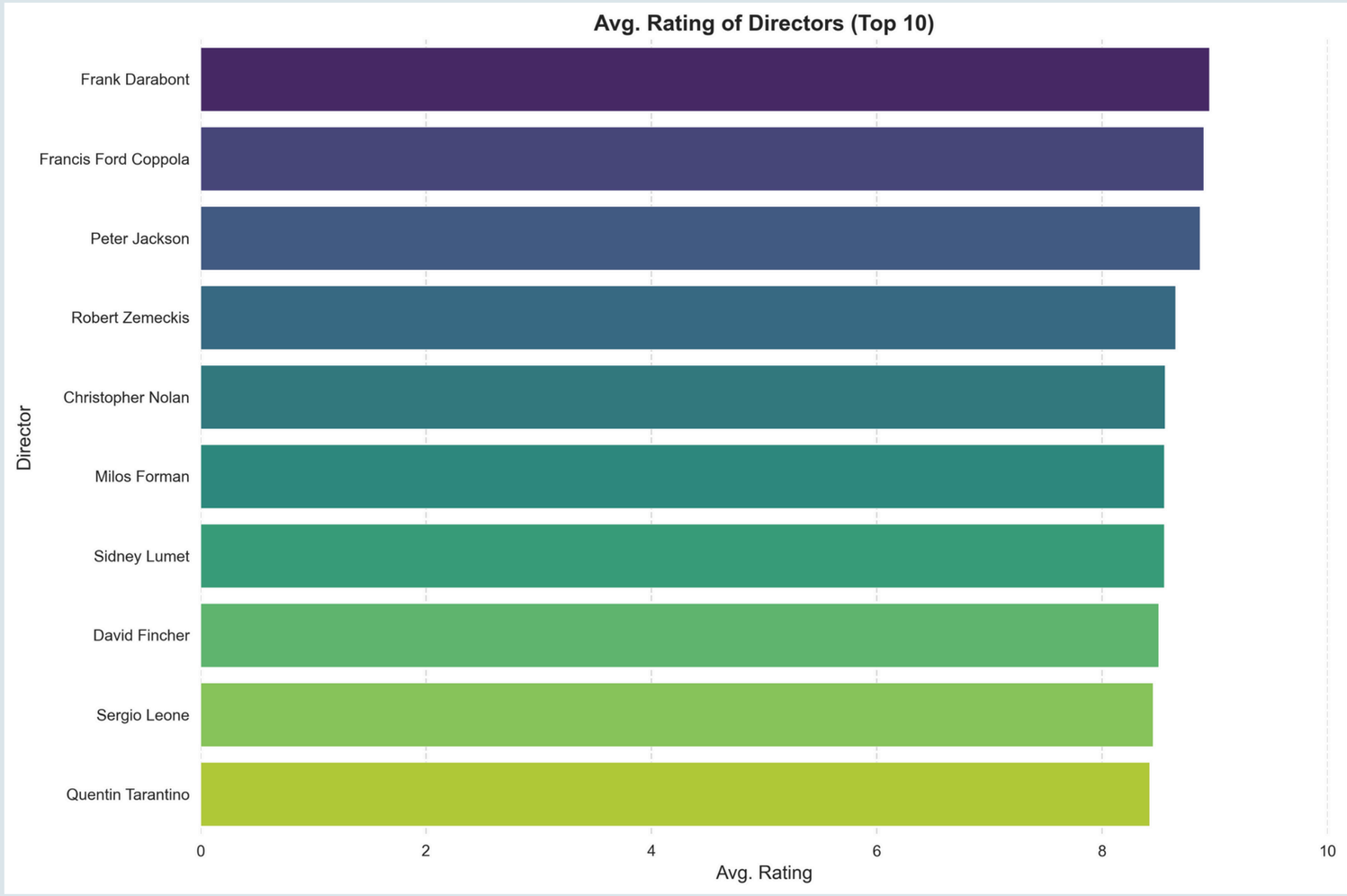


- 透過分群，可以發現大多數電影時長介於 1.5 ~ 2.5 小時



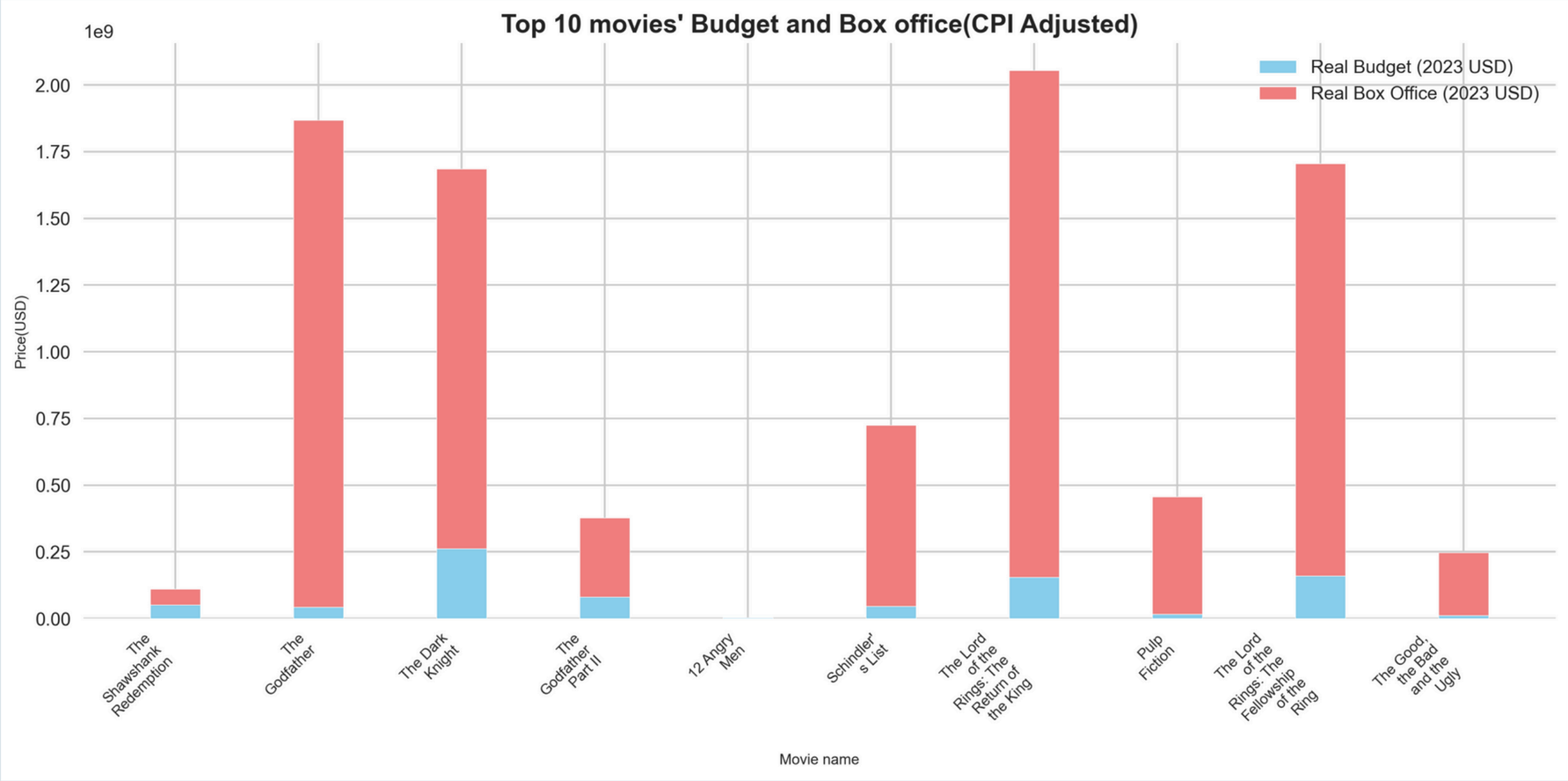
- 片長評分箱型圖。可以得到評分特別高的電影。

Data Visualisation



- 透過平均分數，計算排名前10的導演

Data Visualisation



- 排名前10電影，其預算與票房關係

Thank you