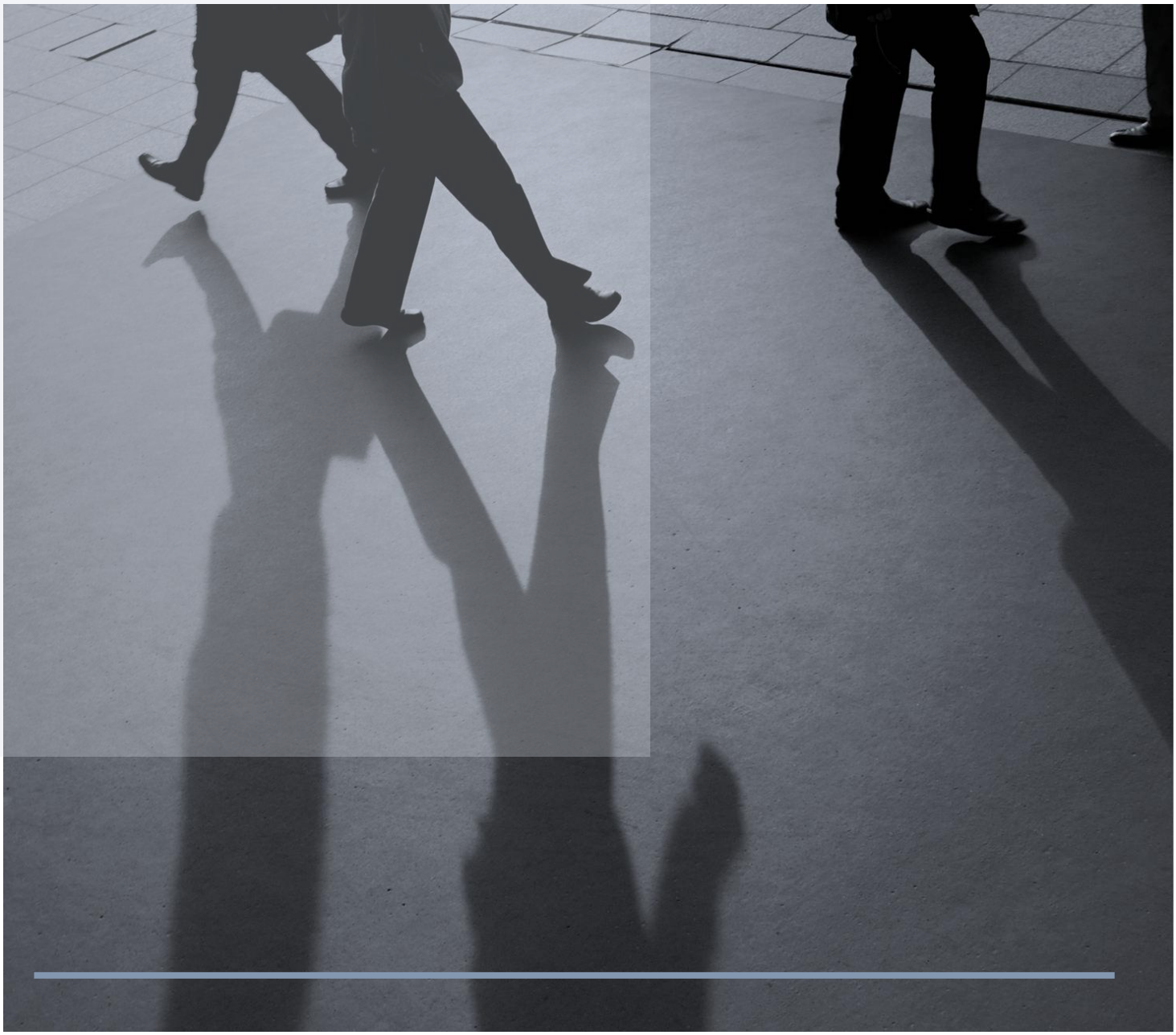
GEOGRAPICAL VS

AGE_SEX_HEIGHT_WEIGHT

RONAK SINGH



INTRODUCTION

This report analyzes and segments Olympic athlete data based on geographic distribution, sex, age, height, and weight. The aim is to uncover demographic patterns, regional trends, and insights into physical attributes of athletes across different cities and countries.

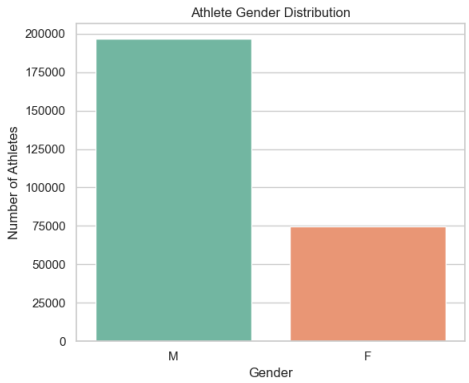
DATASET OVERVIEW

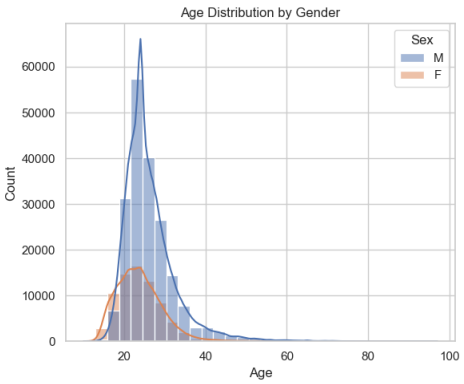
The dataset includes Olympic athlete records with features such as ID, Name, Sex, Age, Height, Weight, Team, NOC, Games, Year, Season, City, Sport, Event, and Medal. For this analysis, we focus on Sex, Age, Height, Weight, and geographic information (City, Team/NOC).

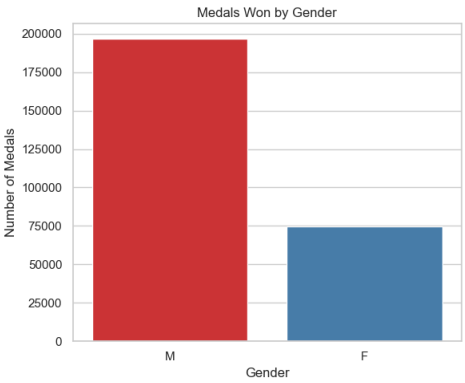
Entries	*271116*
Winners	39783
Gold	13372
Silver	13116
Bronze	13295

DATA PREPARATION

All records with missing values in the Sex, Age, Height, or Weight fields were removed to ensure data accuracy. Sex was encoded numerically (Male: 0, Female: 1) for clustering and analysis.







GEOGRAPIC SEGMENTAION

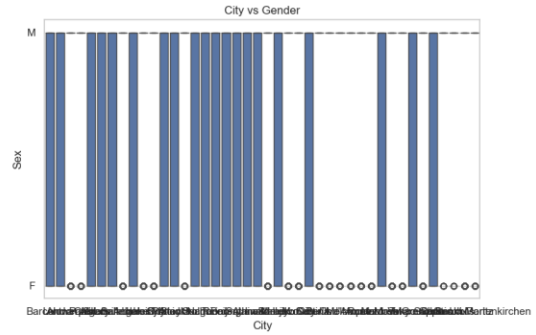
Athletes were grouped by City and NOC (country). The geographic analysis revealed that cities with a higher athlete count tend to have a wider range of physical attributes, indicating diverse participation. NOC-based segmentation helped identify regional strengths and participation patterns in different sports disciplines.

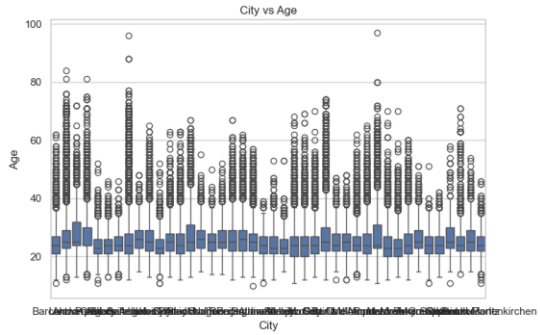
DEMOGRAPIC SEGMENTAION

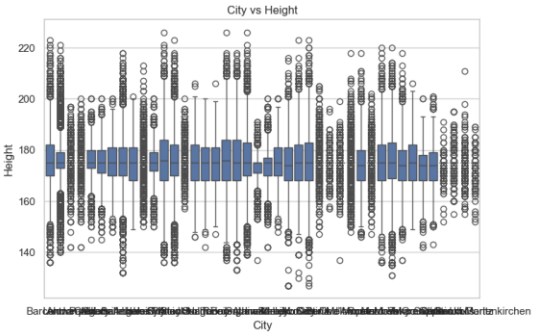
Sex, Age, Height, and Weight were used to segment the athlete population. Descriptive statistics and visual exploration revealed common trends such as:

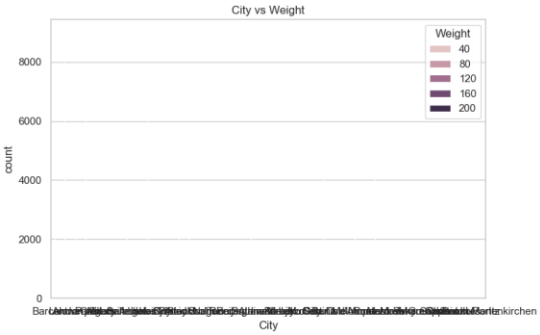
- Males generally had higher average height and weight than females.
- Most athletes were between 20-30 years of age.
- Weight and height distribution varied significantly by sport and region.

Age	F	M	Age	F	M	Age	F	M	Age	F	M
10	0	1	**30**	2314	7174	**50**	30	248	**70**	10	18
11	12	1	**31**	1780	5779	**51**	16	183	**71**	0	33
12	32	7	**32**	1420	4826	**52**	29	215	**72**	3	21
13	151	36	**33**	1064	3736	**53**	25	175	**73**	1	7
14	744	93	**34**	856	3129	**54**	14	148	**74**	4	8
15	1911	292	**35**	602	2531	**55**	10	94	**75**	0	4
16	3024	828	**36**	469	2034	**56**	9	122	**76**	0	7
17	3462	1914	**37**	345	1608	**57**	3	66	**77**	0	2
18	4136	4016	**38**	262	1350	**58**	9	75	**80**	0	3
19	4427	7216	**39**	186	1219	**59**	3	84	**81**	0	2
20	4831	10427	**40**	156	1054	**60**	4	84	**84**	0	1
21	5511	13653	**41**	125	828	**61**	4	64	**88**	0	3
22	5416	15398	**42**	117	749	**62**	5	57	**96**	0	1
23	5447	16428	**43**	91	702	**63**	10	46	**97**	0	1
24	5715	25479	**44**	67	616	**64**	0	30			
25	4950	14757	**45**	54	530	**65**	6	78			
26	4293	13382	**46**	57	372	**66**	3	28			
27	3971	12054	**47**	43	365	**67**	1	24	**Sex**		**Total_Medals**
28	3344	10699	**48**	31	376	**68**	7	18	**F**		11253
29	2838	8625	**49**	46	316	**69**	16	44	**M**		28530







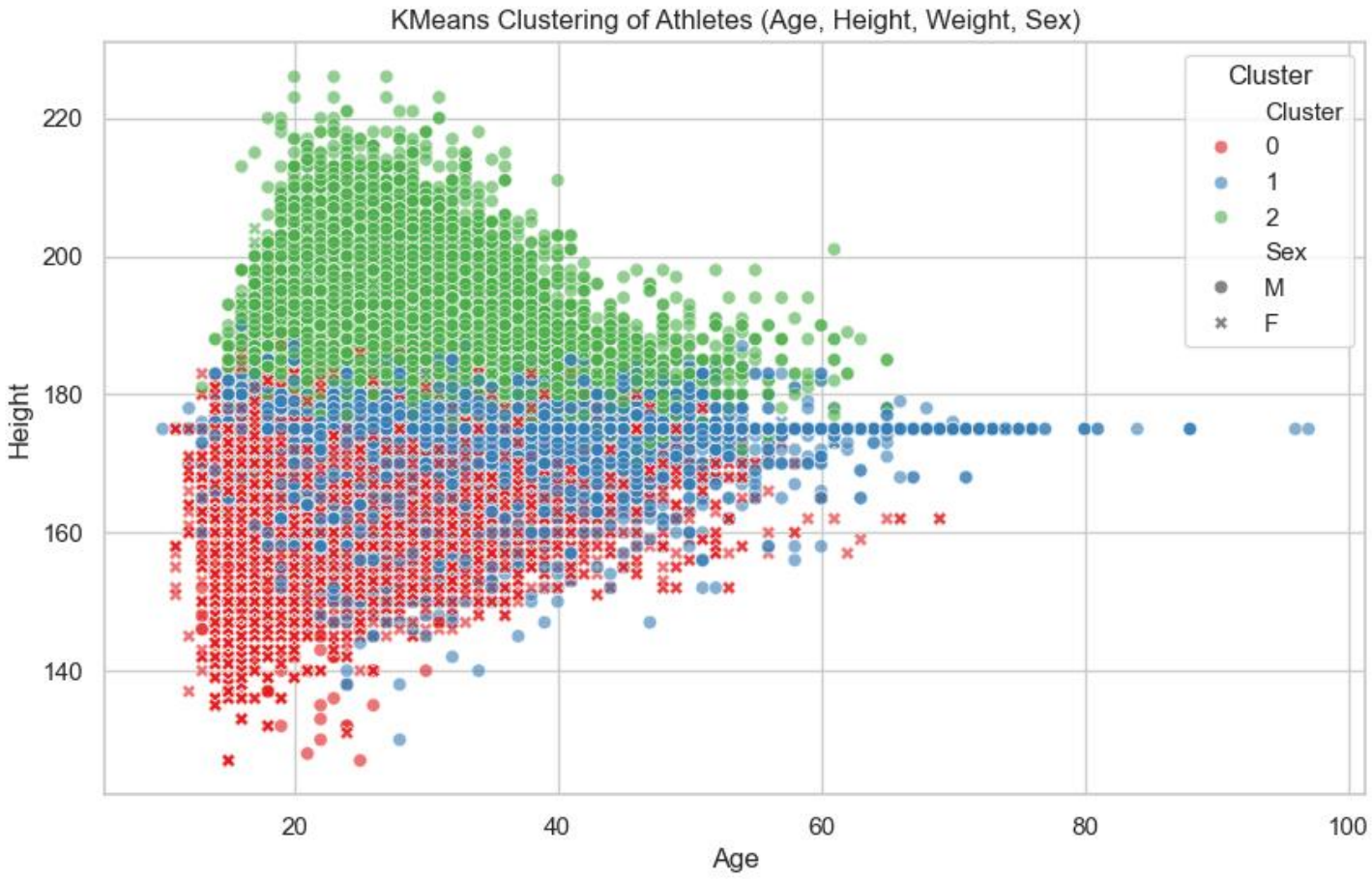


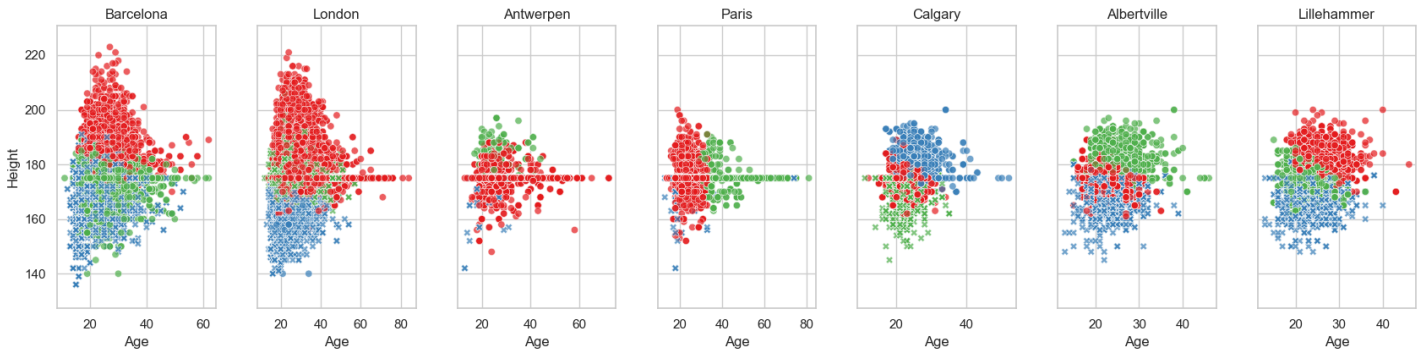
CLUSTRING ANALYSIS

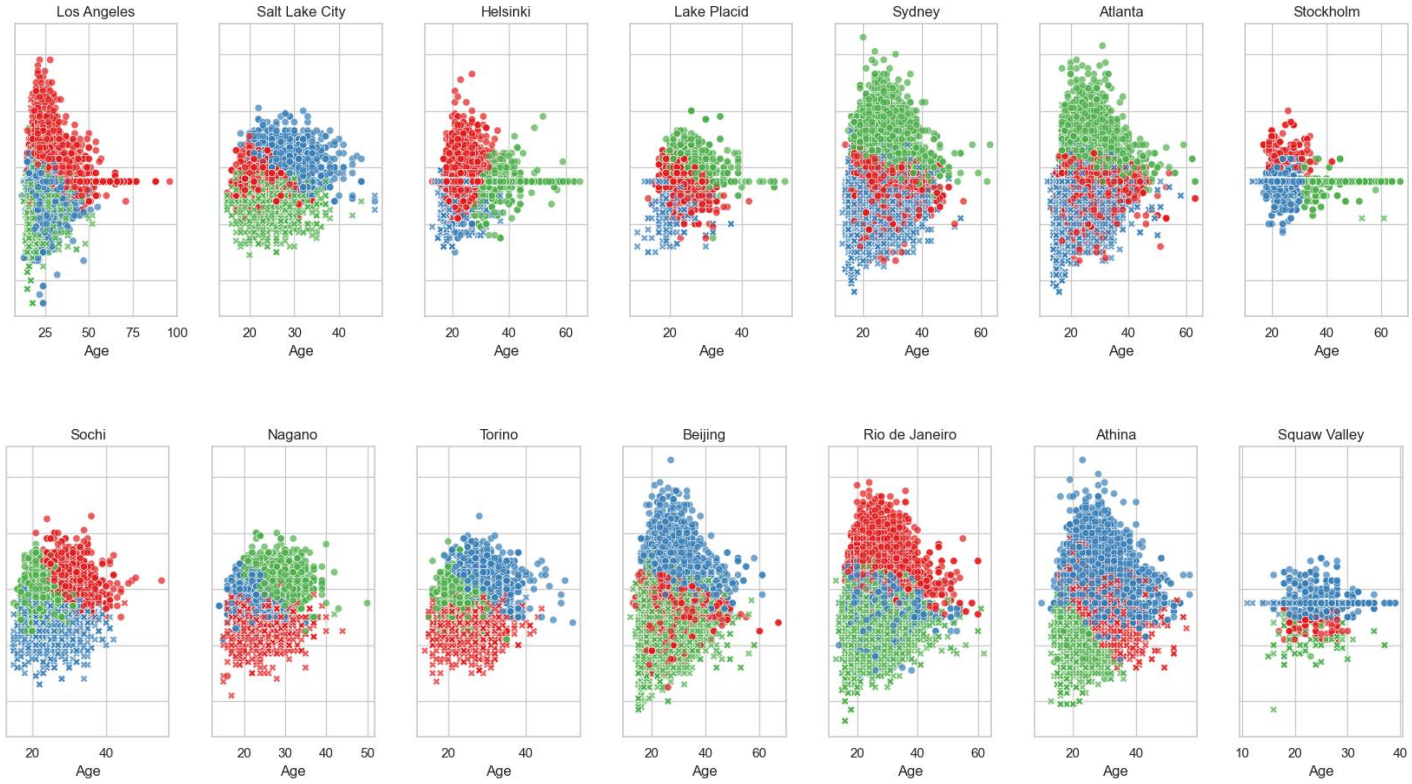
K-Means clustering was used to segment athletes based on Age, Height, Weight, and Sex. The model grouped athletes into distinct profiles, such as:

- Cluster 1: Young, lightweight males
- Cluster 2: Tall, heavyweight females
- Cluster 3: Mid-aged athletes with average build

This helped reveal common physical profiles within each city.







Correlation Matrix:

	Age	Height	Weight	Sex
Age	1.000000	0.098195	0.139615	-0.149095
Height	0.098195	1.000000	0.785382	-0.461667
Weight	0.139615	0.785382	1.000000	-0.476374
Sex	-0.149095	-0.461667	-0.476374	1.000000

KEY INSIGHTS

- Certain cities have consistent athlete body types, suggesting localized training norms.
- Female participation is increasing over time and across more cities.
- Height and weight distributions tend to cluster around specific age ranges.

Most common city	London
Average Age	25.81
Average Height	175.61 cm
Average Weight	70.82 kg

Sex ratio (0=Male, 1=Female): Sex

0	0.686846
1	0.313154

City	Participation_Count	City	Participation_Count
London	22426	*Vancouver*	4402
Athina	15556	*Torino*	4382
Sydney	13821	*Stockholm*	4338
Atlanta	13780	*Antwerpen*	4292
Rio de Janeirovvvvvvvvvvv	13688	*Salt Lake City*	4109
Beijing	13602	*Innsbruck*	3639
Barcelona	12977	*Nagano*	3605
Los Angeles	12423	*Albertville*	3436
Seoul	12037	*Lillehammer*	3160
Munich	10304	*Calgary*	2639
Montreal	8641	*Sarajevo*	2134
Mexico City	8588	*Lake Placid*	2098
Helsinki	8270	*Grenoble*	1891
Roma	8119	*Sankt Moritz*	1657
Tokyo	7702	*Sapporo*	1655
Moskva	7191	*Cortina d'Ampezzo*	1307
Paris	7169	*St. Louis*	1301
Berlin	6506	*Squaw Valley*	1116
Amsterdam	4992	*Oslo*	1088
Sochi	4891	*Garmisch-Partenkirchen*	895
Melbourne	4829	*Chamonix*	460