

Height and weight in Judo: an analysis of Olympic athletes*

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Abstract

Judo, in its sporting form, includes different weight categories for competition, and the discussion about the most common height for each category is of interest. Based on available data for the Paris 2024 Olympics we determine the mean height for each category, as well as the possible relationship with ranking. The preliminary results do not seem to indicate any strong relation between height and competitive success that can be applied to all weight categories, but additional venues for investigation based on the dataset exist.

1 INTRODUCTION

The relation between the height of *judoka* and their corresponding weight category is a topic that sparks some curiosity (brazofuerte 2022), and can also be of competitive interest for athletes deciding on a specific weight category.

Some existing literature (Franchini, Sterkowicz-Przybycień, and Takito 2014) has covered the topic from different perspectives. Here we specifically focus on the height of Judo athletes in different categories and how it relates to competitive success.

2 MATERIAL AND METHODS

Information on the Judo athletes was obtained from several sources, including the the JudoTV site (IJF 2024b) which lists the athletes scheduled for participation in the Olympic Games Paris 2024 with their height, and the official reports from the Paris 2024 Summer Olympics, namely the weigh-in reports (Paris 2024 Olympic Organizing Committee 2023). Relevant data was collected from the individual pages through manual and automatic methods, and gender was determined by the corresponding weight class. The height information present in the IJF sources (which is used, for example, by JudoTV, the European Judo Union, and some national federations) was initially used as a basis, but validation through sampling showed that the data was highly inconsistent with known athlete heights; as such, height information was collected from multiple sources (including official reports from Judo competitions, interviews, and sports magazines) and added to the data set: while it's still possible that the height information contains outdated or erroneous information (especially in younger athletes), validation by sampling and comparing known height information was robust.

All statistical analysis was done with SAS ("SAS: Data and AI Solutions" 2014) .

3 ANALYSIS AND RESULTS

3.1 CATEGORIES, WEIGHT, AND HEIGHT

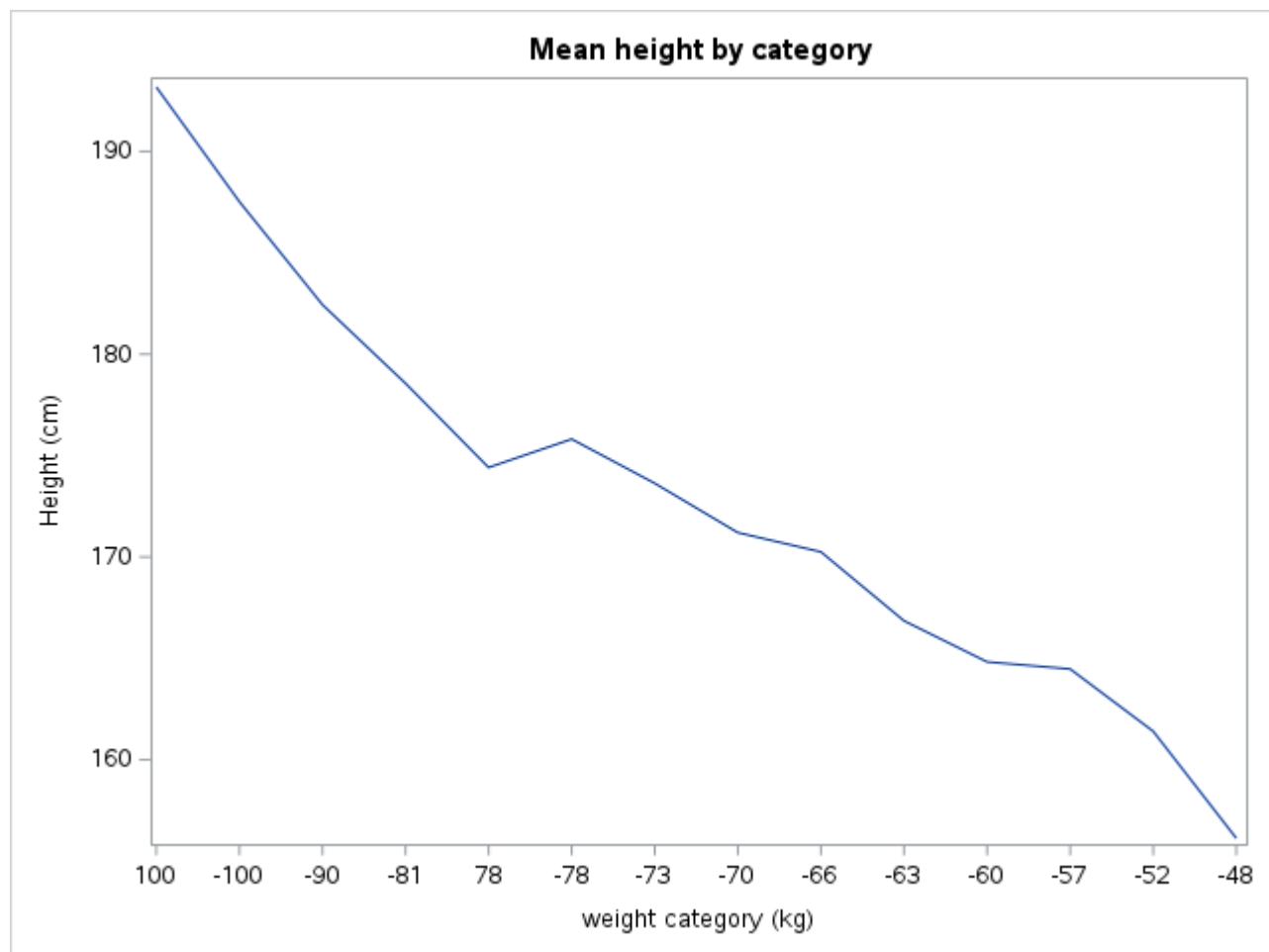
We start by obtaining a description of the `height` and `weight` variable for each weight category, with the categories ordered in descending order. The average height is, unsurprisingly, higher in heavier weight classes.

order	gender1	category1	N Obs	Variable	N	Mean	Std Dev	Minimum	Maximum
1	M	100	17	height_cur	17	193.2	6.5	178.0	204.0
				weight	17	135.1	19.4	113.5	172.8
2	M	-100	21	height_cur	21	187.5	6.3	174.0	202.0
				weight	21	99.6	0.4	97.8	99.9
3	M	-90	25	height_cur	25	182.4	4.8	170.0	190.0
				weight	25	89.7	0.2	89.1	90.0
4	M	-81	25	height_cur	25	178.6	4.1	170.0	185.0
				weight	24	80.7	0.1	80.3	80.9
5	W	78	17	height_cur	17	174.4	6.8	160.0	183.0
				weight	17	114.3	15.0	92.1	138.3
6	W	-78	16	height_cur	16	175.8	5.2	168.0	186.0
				weight	16	77.6	0.3	77.0	77.9

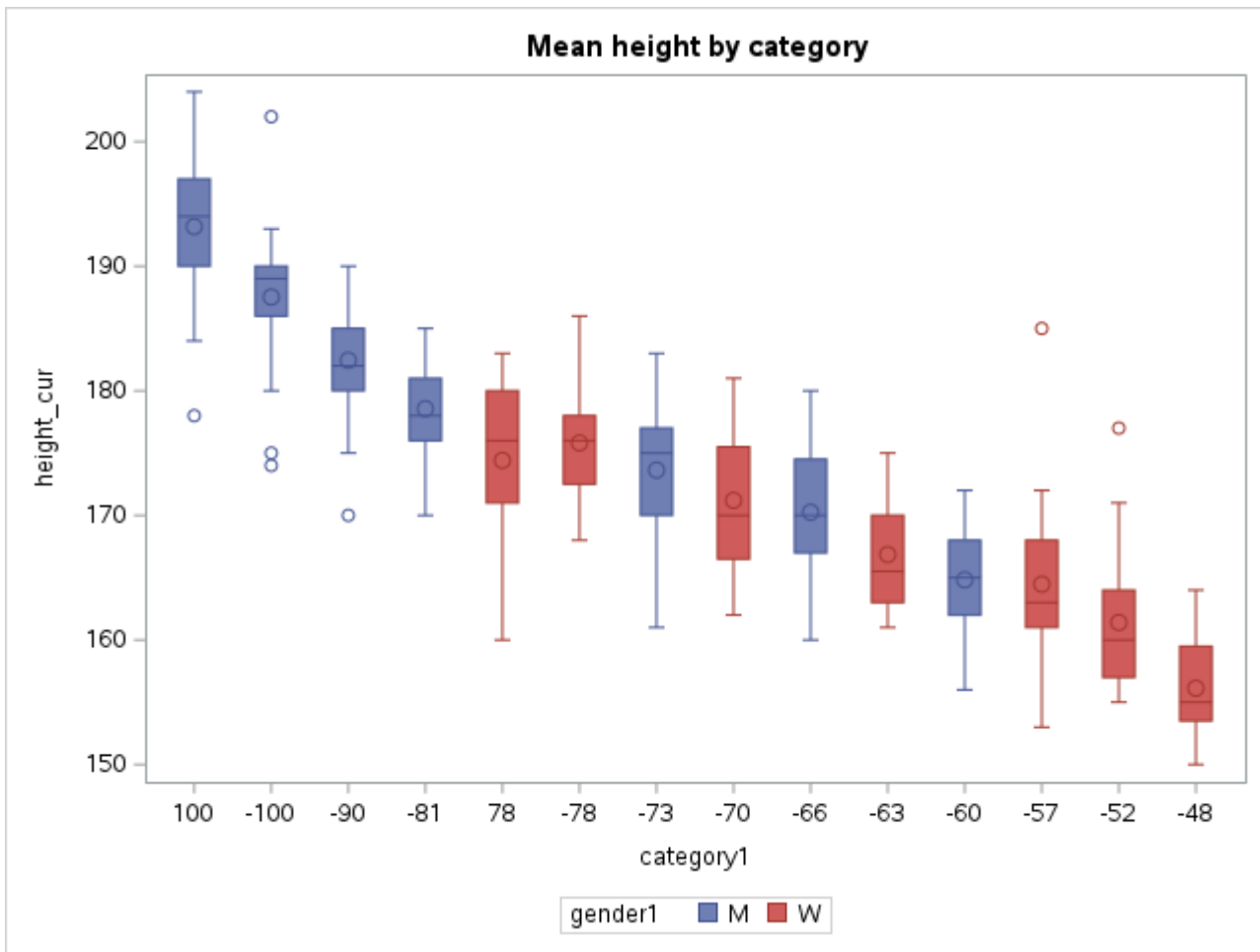
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order	gender1	category1	N Obs	Variable	N	Mean	Std Dev	Minimum	Maximum
7	M	-73	19	height_cur	19	173.6	5.5	161.0	183.0
				weight	19	72.8	0.2	72.6	73.4
8	W	-70	20	height_cur	20	171.2	5.7	162.0	181.0
				weight	20	69.6	0.5	67.5	70.0
9	M	-66	20	height_cur	20	170.3	5.0	160.0	180.0
				weight	20	65.8	0.1	65.6	66.0
10	W	-63	20	height_cur	20	166.9	4.3	161.0	175.0
				weight	20	62.6	0.3	61.7	62.9
11	M	-60	17	height_cur	17	164.8	4.4	156.0	172.0
				weight	17	59.8	0.1	59.7	60.0
12	W	-57	19	height_cur	19	164.5	6.6	153.0	185.0
				weight	19	56.8	0.1	56.6	56.9
13	W	-52	15	height_cur	15	161.4	6.4	155.0	177.0
				weight	15	51.8	0.2	51.3	52.0
14	W	-48	24	height_cur	24	156.1	3.9	150.0	164.0
				weight	24	47.8	0.1	47.5	48.0

Plotting the average height makes it clearer that the only exceptions are +78 (W) and -78 (W): the first is heavier, but shorter in average than the latter.



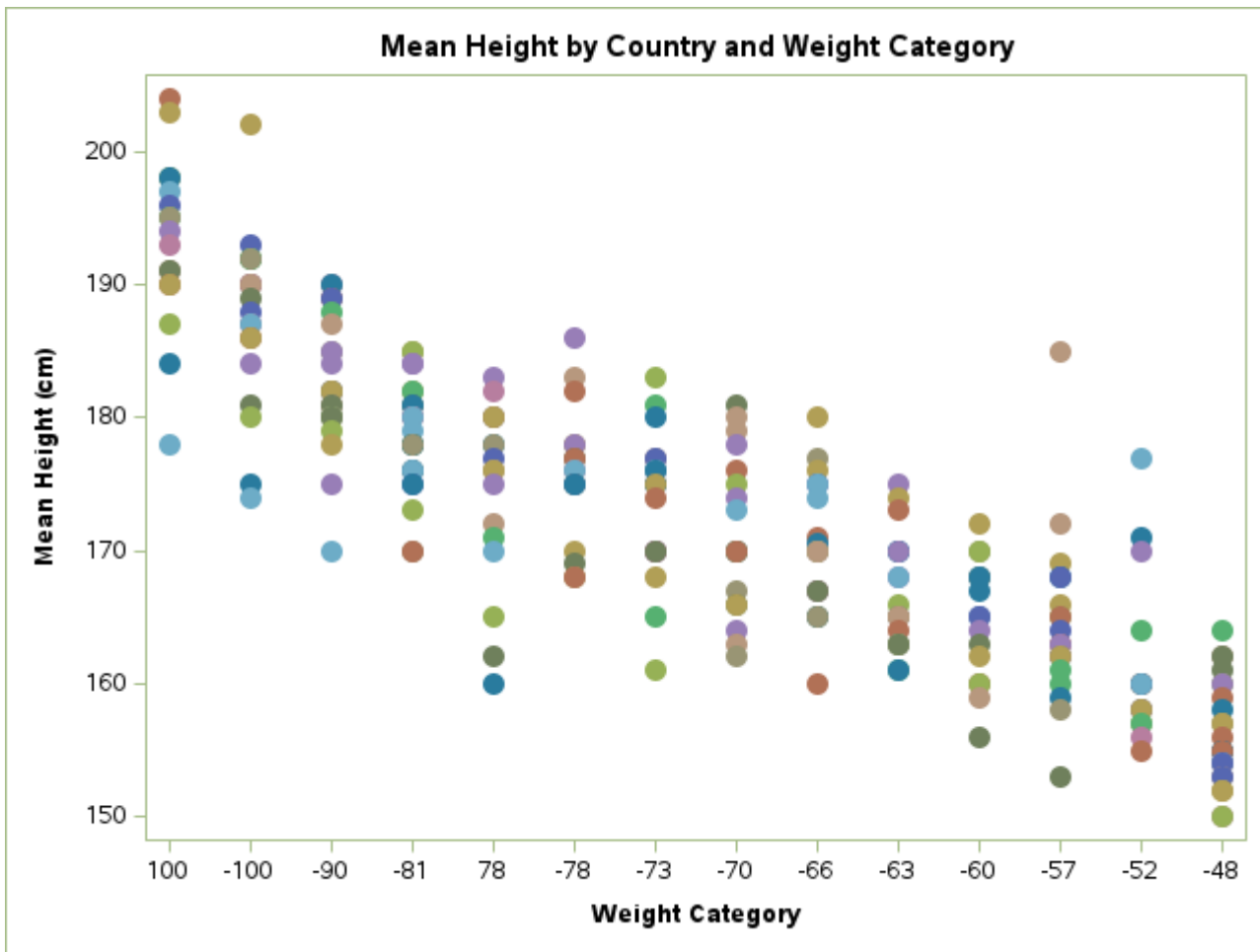
The number of athletes in each weight category is reasonably similar (15 – 25). The height distribution is different in each category, with the box plot showing the interquartile distribution and the spread.



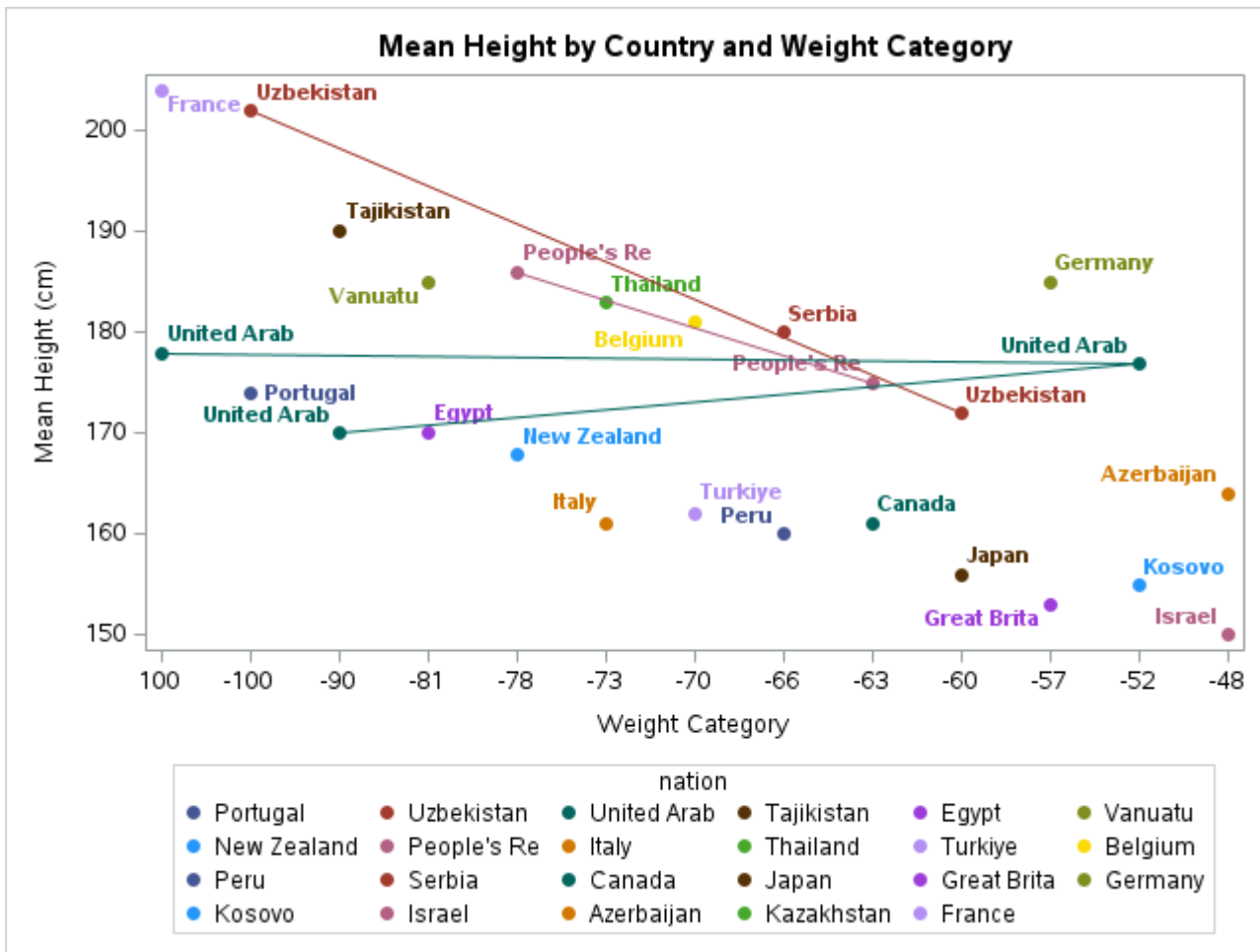
3.2 THE HEIGHT OF NATIONS

Going into each weight category, we can analyse how different countries measure up. Each category has a different number of participating athletes, which belong to different countries: some countries are present in all categories (for example, Japan and France), while many others are absent in one or more categories.

Here we display the mean height of each nation, in each weight category, ordered from highest to lowest.



The table at Section 5.2 complements this chart by showing the ordered list of countries, per category. Selecting only the highest and lowest means per category allows us to have an idea about how consistently do nations rank in terms of height, albeit limited to the top and bottom spots only.



3.3 HEIGHT, CATEGORY, AND RANKING

Is there a relation between relative height and success in a specific weight category? This is not something that can be easily answered, and for now, we will remain within the scope of descriptive analytics to at least shed some light on the topic.

This analysis shows every athlete mapped into two dimensions: their height, and their position in the Judo [World Ranking List](#) (IJF 2024a) (as present in the source).

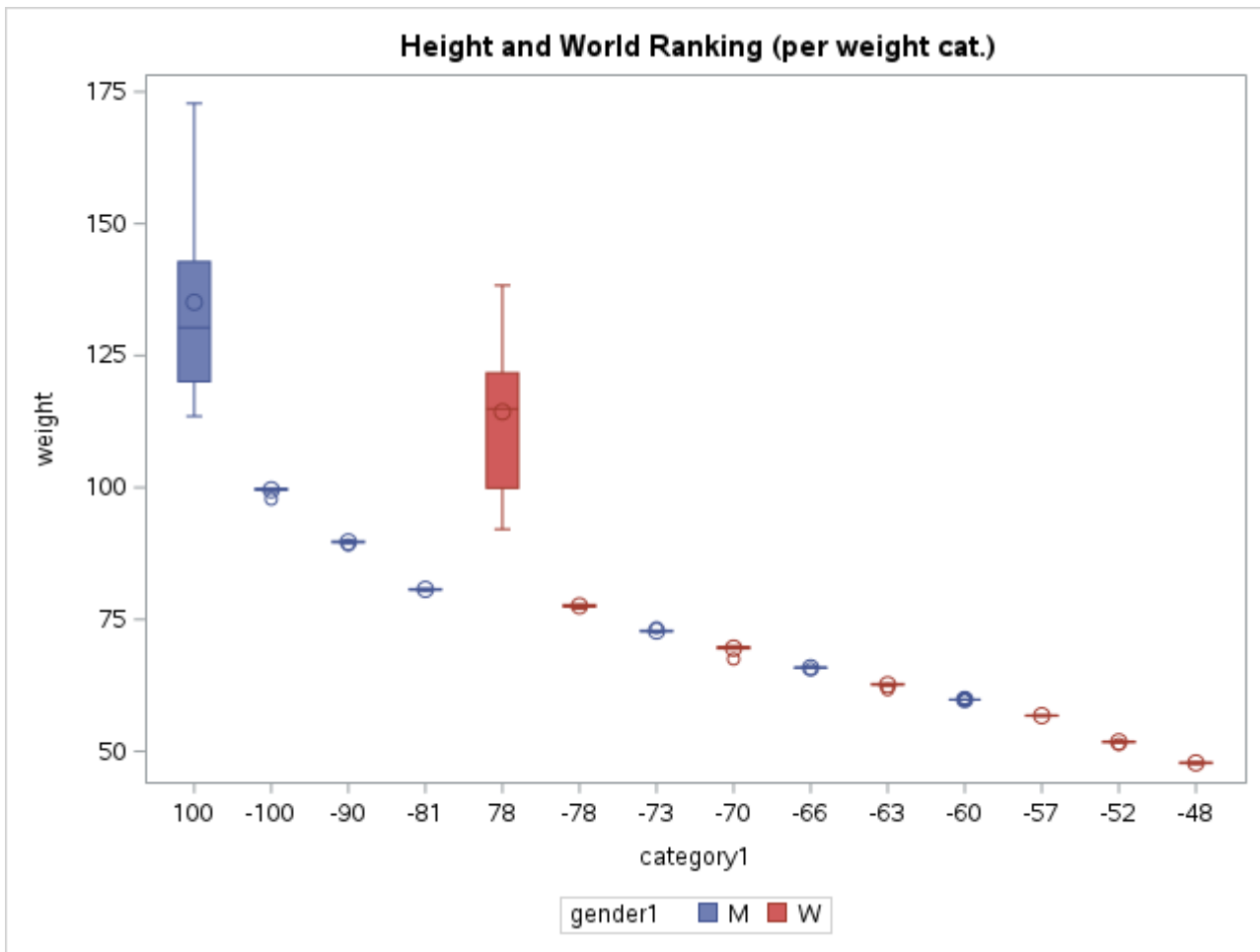
A lower vertical position means a better spot in the list. The regression line helps identifying the general trend for the category.



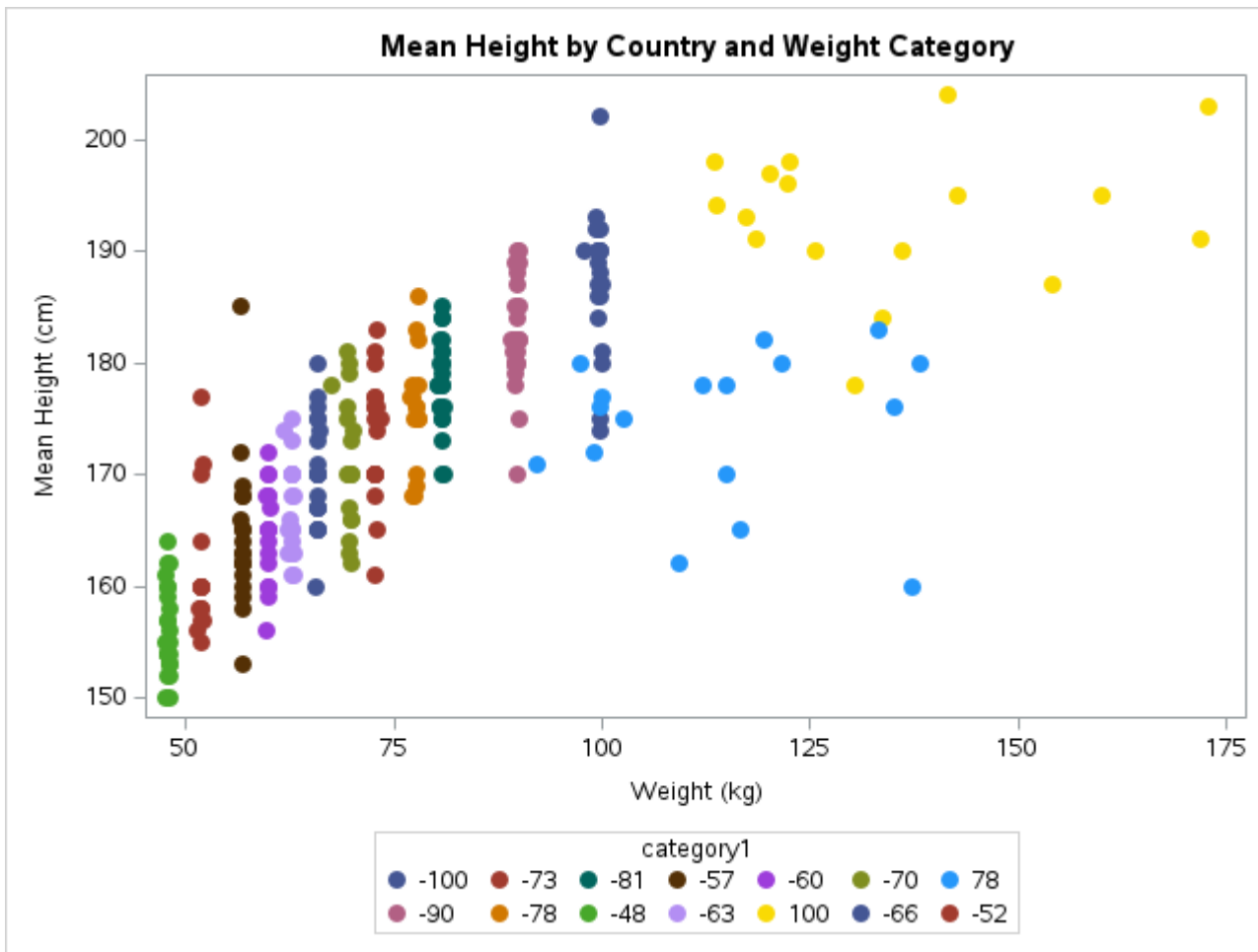
3.4 WEIGHT VARIATION

Weight, unsurprisingly, shows little variance around the category limit: athletes attempt to be as close as possible to the category limit, with most values deviation less than 1kg¹, with the exception of the open classes (+100 and +78 kg), which being unconstrained by weight limits present much more variation.

¹The -73 kg category shows a maximum weight of 73.4 kg, which is oddly above the limit: this is correct and would be reflected in the disqualification of Algerian judoka Messaoud Redouane Dris ("La "parade" d'un judoka algérien pour boycotter un concurrent israélien : arriver en surpoids" 2024).



A scatter plot using height and weight as the axis shows this clearly: most categories have very little horizontal variance and show up as vertical lines along the category limit, with the open weight classes being the only ones with significant spread.



4 CONCLUSION

The results are consistent with previous analysis in terms of heavier weights corresponding with increased height, as expected (Franchini, Sterkowicz-Przybycień, and Takito 2014 , p. 41). We have determined the mean height for all categories with a reasonable sample size ($n \geq 15$), a result that can be useful as a reference for future discussions.

In terms of competitive success, the results are varied and do not show any obvious relation between success and relative height: if in some it appears to exist (-73 kg), it others it shows an inverse relationship (-57 kg), while many do not show any significant relation at all. A more detailed analysis of variance, and other statistical methods, remain viable venues for enhancing this preliminary study.

5 APPENDIX

5.1 DATASET

Obs	name	nation	gender1	age	wrl1_num	category1	height_cur	weight
1	Ushangi KOKAURI	Azerbaijan	M	32	17	100	195	142.8
2	Rafael SILVA	Brazil	M	37	14	100	203	172.8
3	Andy GRANDA	Cuba	M	32	5	100	197	120.1
4	Lukas KRPALEK	Czechia	M	33	11	100	198	113.5
5	Teddy RINER	France	M	35	7	100	204	141.5
6	Guram TUSHISHVILI	Georgia	M	29	4	100	193	117.4
7	Erik ABRAMOV	Germany	M	25	18	100	191	118.4
8	Tatsuru SAITO	Japan	M	22	6	100	191	172
9	Marvin GADEAU	Monaco	M	23	112	100	187	154
10	Tsetsentsengel ODKHUU	Mongolia	M	24	19	100	196	122.4

Obs	name	nation	gender1	age	wrl1_num	category1	height_cur	weight
11	Jelle SNIPPE	Netherlands	M	25	13	100	194	113.7
12	Minjong KIM	Republic of	M	23	1	100	184	133.8
13	Enej MARINIC	Slovenia	M	25	31	100	190	136.1
14	Temur RAKHIMOV	Tajikistan	M	27	3	100	198	122.5
15	Ibrahim TATAROGLU	Turkiye	M	18	23	100	195	160
16	Magomedomar MAGOMEDOMA	United Arab	M	23	15	100	178	130.3
17	Alisher YUSUPOV	Uzbekistan	M	25	9	100	190	125.6
18	Aaron FARA	Austria	M	27	21	-100	193	99.3
19	Zelym KOTSOIEV	Azerbaijan	M	25	1	-100	192	99.7
20	Toma NIKIFOROV	Belgium	M	31	22	-100	189	99.5
21	Leonardo GONCALVES	Brazil	M	28	12	-100	190	99.7
22	Shady ELNAHAS	Canada	M	26	3	-100	192	99.2
23	Thomas BRICENO	Chile	M	30	46	-100	186	99.6
24	Zlatko KUMRIC	Croatia	M	30	24	-100	192	99.5
25	Aurelien DIESSE	France	M	26	50	-100	190	97.8
26	Ilia SULAMANIDZE	Georgia	M	23	2	-100	187	99.9
27	Zsombor VEG	Hungary	M	22	25	-100	190	99.8
28	Peter PALTCHIK	Israel	M	32	11	-100	190	99.6
29	Gennaro PIRELLI	Italy	M	23	17	-100	180	99.9
30	Aaron WOLF	Japan	M	28	13	-100	181	99.9
31	Nurlykhan SHARKHAN	Kazakhstan	M	24	23	-100	175	99.8
32	Gonchigsuren BATKHUYAG	Mongolia	M	24	10	-100	188	99.7
33	Michael KORREL	Netherlands	M	30	7	-100	184	99.4
34	Jorge FONSECA	Portugal	M	31	9	-100	174	99.8
35	Aleksandar KUKOLJ	Serbia	M	32	16	-100	186	99.7
36	Nikoloz SHERAZADISHVIL	Spain	M	28	8	-100	190	99.5
37	Dzhafar KOSTOEV	United Arab	M	25	18	-100	187	99.6
38	Muzaffarbek TUROBOYEV	Uzbekistan	M	24	4	-100	202	99.8
39	Rafael MACEDO	Brazil	M	29	11	-90	180	89.6
40	Ivaylo IVANOV	Bulgaria	M	29	13	-90	180	89.6
41	Ivan Felipe SILVA MORA	Cuba	M	28	10	-90	180	89.6
42	David KLAMMERT	Czechia	M	30	22	-90	180	89.7
43	Robert FLORENTINO	Dominican R	M	27	30	-90	182	90
44	Maxime-Gael NGAYAP HAM	France	M	23	38	-90	189	89.5
45	Lasha BEKAURI	Georgia	M	23	1	-90	190	89.8
46	Eduard TRIPPEL	Germany	M	27	29	-90	187	89.7
47	Theodoros TSELIDIS	Greece	M	27	15	-90	181	89.3
48	Krisztian TOTH	Hungary	M	30	5	-90	175	90
49	Christian PARLATI	Italy	M	26	9	-90	179	89.5
50	Sanshiro MURAO	Japan	M	23	3	-90	180	89.7
51	Erlan SHEROV	Kyrgyzstan	M	26	4	-90	185	89.5
52	Caramnob SAGAIPOV	Lebanon	M	27	31	-90	184	89.8
53	Remi FEUILLET	Mauritius	M	31	49	-90	181	89.8
54	Noel VAN T END	Netherlands	M	33	19	-90	185	89.9
55	Juyeop HAN	Republic of	M	25	24	-90	182	89.9
56	Nemanja MAJDOV	Serbia	M	27	2	-90	178	89.6
57	Tristani MOSAKHLISHVIL	Spain	M	26	14	-90	182	89.1
58	Marcus NYMAN	Sweden	M	33	27	-90	189	89.9
59	Komronshokh USTOPIRIYO	Tajikistan	M	31	20	-90	190	90
60	Mihael ZGANK	Turkiye	M	30	8	-90	182	89.6
61	Aram GRIGORIAN	United Arab	M	26	34	-90	170	89.8
62	John JAYNE	United Stat	M	27	32	-90	188	89.8
63	Davlat BOBONOV	Uzbekistan	M	27	7	-90	182	89.5
64	Wachid BORCHASHVILI	Austria	M	25	19	-81	175	80.7

Obs	name	nation	gender1	age	wrl1_num	category1	height_cur	weight
65	Askerbii GERBEKOV	Bahrain	M	28	25	-81	178	80.6
66	Matthias CASSE	Belgium	M	27	1	-81	178	80.4
67	Guilherme SCHIMIDT	Brazil	M	23	4	-81	182	80.8
68	Francois GAUTHIER DRAP	Canada	M	26	5	-81	182	80.6
69	Abdelrahman ABDELGHANY	Egypt	M	25	40	-81	170	80.8
70	Alpha Oumar DJALO	France	M	27	26	-81	170	80.9
71	Tato GRIGALASHVILI	Georgia	M	24	2	-81	180	80.7
72	Timo CAVELIUS	Germany	M	27	21	-81	176	80.6
73	Attila UNGVARI	Hungary	M	35	20	-81	184	80.7
74	Sajjad SEHEN	Iraq	M	28	248	-81	185	.
75	Saji MUKI	Israel	M	32	18	-81	180	80.5
76	Antonio ESPOSITO	Italy	M	29	13	-81	173	80.8
77	Takanori NAGASE	Japan	M	30	8	-81	181	80.7
78	Abylaikhan ZHUBANAZAR	Kazakhstan	M	24	10	-81	175	80.8
79	Achraf MOUTII	Morocco	M	27	29	-81	180	80.7
80	Frank DE WIT	Netherlands	M	28	16	-81	184	80.7
81	Edi SHERIFOVSKI	North Maced	M	22	309	-81	181	80.8
82	Fares BADAWI	Palestine	M	27	342	-81	178	80.3
83	Joao FERNANDO	Portugal	M	24	24	-81	179	80.8
84	Joonhwan LEE	Republic of	M	22	3	-81	176	80.6
85	Somon MAKHMADBEKOV	Tajikistan	M	25	7	-81	178	80.8
86	Vedat ALBAYRAK	Turkiye	M	31	11	-81	178	80.8
87	Nugzari TATALASHVILI	United Arab	M	34	17	-81	176	80.9
88	Hugo CUMBO	Vanuatu	M	28	258	-81	185	80.8
89	Larisa CERIC	Bosnia and	W	33	26	78	176	99.7
90	Beatriz SOUZA	Brazil	W	26	5	78	176	135.2
91	Ana Laura PORTUONDO IS	Canada	W	28	56	78	171	92.1
92	Idalys ORTIZ	Cuba	W	34	19	78	180	138.3
93	Romane DICKO	France	W	24	1	78	180	121.7
94	Renee LUCHT	Germany	W	25	24	78	172	99.1
95	Tulika MAAN	India	W	25	36	78	182	119.4
96	Asya TAVANO	Italy	W	22	9	78	165	116.6
97	Akira SONE	Japan	W	24	18	78	162	109.3
98	Kamila BERLIKASH	Kazakhstan	W	24	15	78	160	137.3
99	Adiyasuren AMARSAIKHAN	Mongolia	W	24	23	78	177	99.9
100	Marit KAMPS	Netherlands	W	23	16	78	175	102.5
101	Shiyan XU	People's Re	W	27	6	78	183	133.3
102	Rochele NUNES	Portugal	W	35	13	78	170	114.9
103	Hayun KIM	Republic of	W	24	4	78	178	112.1
104	Milica ZABIC	Serbia	W	30	14	78	180	97.4
105	Kayra OZDEMIR	Turkiye	W	36	3	78	178	115
106	Mayra AGUIAR	Brazil	W	32	12	-78	178	77.1
107	Madeleine MALONGA	France	W	30	6	-78	182	77.8
108	Anna-Maria WAGNER	Germany	W	28	2	-78	183	77.6
109	Emma REID	Great Brita	W	29	14	-78	177	77.2
110	Inbar LANIR	Israel	W	24	3	-78	176	77.7
111	Alice BELLANDI	Italy	W	25	1	-78	175	77.9
112	Rika TAKAYAMA	Japan	W	29	9	-78	169	77.7
113	Loriana KUKA	Kosovo	W	27	29	-78	177	77
114	Khuslen OTGONBAYAR	Mongolia	W	19	28	-78	175	77.8
115	Guusje STEENHUIS	Netherlands	W	31	8	-78	178	77.8
116	Moirra DE VILLIERS	New Zealand	W	34	30	-78	168	77.4
117	Zhenzhao MA	People's Re	W	26	5	-78	186	77.9
118	Patricia SAMPAIO	Portugal	W	25	13	-78	176	77.7

Obs	name	nation	gender1	age	wrl1_num	category1	height_cur	weight
119	Hyunji YOON	Republic of	W	30	18	-78	175	77.5
120	Metka LOBNIK	Slovenia	W	23	19	-78	168	77.3
121	Iriskhon KURBANBAEVA	Uzbekistan	W	22	23	-78	170	77.6
122	Messaoud Redouane DRIS	Algeria	M	22	14	-73	175	73.4
123	Samuel GASSNER	Austria	M	23	77	-73	170	72.8
124	Hidayat HEYDAROV	Azerbaijan	M	26	1	-73	165	72.9
125	Daniel CARGNIN	Brazil	M	26	6	-73	168	72.8
126	Arthur MARGELIDON	Canada	M	30	9	-73	181	72.7
127	Joan-Benjamin GABA	France	M	23	35	-73	170	72.8
128	Lasha SHAVDATUASHVILI	Georgia	M	32	8	-73	170	72.7
129	Igor WANDTKE	Germany	M	33	25	-73	177	72.8
130	Tohar BUTBUL	Israel	M	30	22	-73	176	72.8
131	Manuel LOMBARDO	Italy	M	25	4	-73	161	72.7
132	Soichi HASHIMOTO	Japan	M	32	2	-73	170	72.7
133	Daniyar SHAMSHAYEV	Kazakhstan	M	22	19	-73	175	72.9
134	Akil GJAKOVA	Kosovo	M	28	17	-73	174	72.9
135	Erdenebayar BATZAYA	Mongolia	M	24	26	-73	177	72.6
136	William TAI TIN	Samoa	M	39	187	-73	180	72.6
137	Hasan BAYAN	Syrian Arab	M	22	281	-73	176	72.9
138	Behruzi KHOJAZODA	Tajikistan	M	29	11	-73	176	72.7
139	Masayuki TERADA	Thailand	M	28	62	-73	183	72.9
140	Murodjon YULDOSHEV	Uzbekistan	M	28	7	-73	175	72.8
141	Aoife COUGHLAN	Australia	W	28	12	-70	164	69.6
142	Michaela POLLERES	Austria	W	27	3	-70	170	69.7
143	Gabriella WILLEMS	Belgium	W	27	21	-70	181	69.4
144	Aleksandra SAMARDZIC	Bosnia and	W	26	34	-70	180	69.7
145	Barbara MATIC	Croatia	W	29	1	-70	170	69.8
146	Song Hui MUN	Dem. Peop.	W	22	37	-70	170	69.4
147	Marie Eve GAHIE	France	W	27	7	-70	176	69.4
148	Miriam BUTKEREIT	Germany	W	30	8	-70	179	69.7
149	Katie-Jemima YEATS-BRO	Great Brita	W	29	16	-70	166	69.9
150	Elisavet TELTSIDOU	Greece	W	28	2	-70	170	69.8
151	Szabina GERCSAK	Hungary	W	28	22	-70	178	67.5
152	Kim POLLING	Italy	W	33	15	-70	175	69.4
153	Saki NIIZOE	Japan	W	28	6	-70	170	69.6
154	Sanne VAN DIJKE	Netherlands	W	28	5	-70	174	70
155	Tais PINA	Portugal	W	19	24	-70	173	69.8
156	Maria PEREZ	Puerto Rico	W	35	14	-70	167	69.5
157	Anka POGACNIK	Slovenia	W	32	18	-70	170	69.5
158	Ai TSUNODA ROUSTANT	Spain	W	22	10	-70	163	69.6
159	Fidan OGEL	Turkiye	W	22	28	-70	162	69.9
160	Gulnoza MATNIYAZOVA	Uzbekistan	W	29	17	-70	166	69.9
161	Edmilson PEDRO	Angola	M	27	58	-66	170	65.9
162	Willian LIMA	Brazil	M	24	8	-66	165	65.9
163	Luukas SAHA	Finland	M	26	23	-66	167	65.7
164	Walide KHYAR	France	M	29	16	-66	171	65.8
165	Vazha MARGVELASHVILI	Georgia	M	30	2	-66	167	65.9
166	Baruch SHMAILOV	Israel	M	29	24	-66	170	65.9
167	Matteo PIRAS	Italy	M	30	10	-66	170	65.9
168	Hifumi ABE	Japan	M	26	6	-66	167	65.8
169	Gusman KYRGYZBAYEV	Kazakhstan	M	31	26	-66	165	65.8
170	Kubanychbek AIBEK UULU	Kyrgyzstan	M	23	33	-66	165	65.9
171	Baskhuu YONDONPERENLEI	Mongolia	M	30	5	-66	175	65.9
172	Abderrahmane BOUSHITA	Morocco	M	26	28	-66	175	65.8

Obs	name	nation	gender1	age	wrl1_num	category1	height_cur	weight
173	Juan POSTIGOS	Peru	M	35	47	-66	160	65.6
174	Baul AN	Republic of	M	30	13	-66	168	65.7
175	Denis VIERU	Republic of	M	28	1	-66	173	65.9
176	Strahinja BUNCIC	Serbia	M	28	30	-66	180	65.8
177	Muhammed DEMIREL	Turkiye	M	21	31	-66	177	65.9
178	Bogdan IADOV	Ukraine	M	27	15	-66	170	65.9
179	Narmandakh BAYANMUNKH	United Arab	M	24	14	-66	174	66
180	Sardor NURILLAEV	Uzbekistan	M	29	12	-66	176	65.7
181	Amina BELKADI	Algeria	W	31	20	-63	170	62.7
182	Katharina HAECKER	Australia	W	31	5	-63	168	62.8
183	Lubjana PIOVESANA	Austria	W	27	10	-63	165	62.6
184	Ketleyn QUADROS	Brazil	W	36	25	-63	165	62.8
185	Catherine BEAUCHEMIN-P	Canada	W	30	2	-63	161	62.7
186	Katarina KRISTO	Croatia	W	22	12	-63	163	62.7
187	Maylin DEL TORO CARVAJ	Cuba	W	29	21	-63	170	62.6
188	Renata ZACHOVA	Czechia	W	24	17	-63	166	62.5
189	Clarisse AGBEGNENOU	France	W	31	6	-63	164	62.6
190	Szofi OZBAS	Hungary	W	22	13	-63	163	62.9
191	Savita RUSSO	Italy	W	19	39	-63	163	62.3
192	Miku TAKAICHI	Japan	W	30	8	-63	163	62.8
193	Esmigul KUYULOVA	Kazakhstan	W	22	37	-63	170	62.6
194	Laura FAZLIU	Kosovo	W	23	3	-63	173	62.7
195	Joanne VAN LIESHOUT	Netherlands	W	21	1	-63	170	62.7
196	Jing TANG	People's Re	W	29	22	-63	175	62.7
197	Barbara TIMO	Portugal	W	33	15	-63	168	62.9
198	Jisu KIM	Republic of	W	23	16	-63	161	62.9
199	Cristina CABANA PEREZ	Spain	W	31	26	-63	165	62.3
200	Anriquelis BARRIOS	Venezuela	W	30	31	-63	174	61.7
201	Joshua KATZ	Australia	M	26	37	-60	165	59.8
202	Jorre VERSTRAETEN	Belgium	M	26	19	-60	163	59.8
203	Michel AUGUSTO	Brazil	M	19	25	-60	162	59.8
204	Yung Wei YANG	Chinese Tai	M	26	1	-60	168	59.7
205	Youssry SAMY	Egypt	M	21	28	-60	168	59.8
206	Luka MKHEIDZE	France	M	28	3	-60	160	59.8
207	Andrea CARLINO	Italy	M	27	32	-60	160	59.8
208	Ashley MCKENZIE	Jamaica	M	35	57	-60	165	59.8
209	Ryuju NAGAYAMA	Japan	M	28	6	-60	156	59.7
210	Yeldos SMETOV	Kazakhstan	M	31	22	-60	167	60
211	Ariunbold ENKHTAIVAN	Mongolia	M	28	13	-60	165	59.8
212	Tornike TSJAKADOEA	Netherlands	M	27	21	-60	164	59.9
213	Won Jin KIM	Republic of	M	32	23	-60	168	59.9
214	Francisco GARRIGOS	Spain	M	29	5	-60	159	59.9
215	Salih YILDIZ	Turkiye	M	23	10	-60	170	59.8
216	Doston RUZIEV	Uzbekistan	M	28	18	-60	172	59.8
217	Simon ZULU	Zambia	M	22	50	-60	170	59.8
218	Rafaela SILVA	Brazil	W	32	4	-57	169	56.9
219	Christa DEGUCHI	Canada	W	28	1	-57	161	56.7
220	Chen-Ling LIEN	Chinese Tai	W	36	21	-57	168	56.8
221	Sarah Leonie CYSIQUE	France	W	26	5	-57	163	56.7
222	Pauline STARKE	Germany	W	26	15	-57	185	56.6
223	Lele NAIRNE	Great Brita	W	26	28	-57	153	56.7
224	Mariana ESTEVES	Guinea	W	28	25	-57	164	56.7
225	Veronica TONIOLO	Italy	W	21	12	-57	165	56.8
226	Haruka FUNAKUBO	Japan	W	25	6	-57	162	56.8

Obs	name	nation	gender1	age	wrl1_num	category1	height_cur	weight
227	Nora GJAKOVA	Kosovo	W	31	8	-57	165	56.9
228	Enkhriilen LKHAGVATOGO	Mongolia	W	25	13	-57	168	56.8
229	Manita SHRESTHA PRADHA	Nepal	W	25	111	-57	160	56.8
230	Julie BEURSKENS	Netherlands	W	20	31	-57	163	56.8
231	Kristine JIMENEZ	Panama	W	28	46	-57	158	56.8
232	Qi CAI	People's Re	W	29	22	-57	162	56.7
233	Mimi HUH	Republic of	W	21	3	-57	159	56.9
234	Marica PERISIC	Serbia	W	24	9	-57	162	56.8
235	Daria BILODID	Ukraine	W	23	14	-57	172	56.6
236	Shukurjon AMINOVA	Uzbekistan	W	21	23	-57	166	56.6
237	Larissa PIMENTA	Brazil	W	25	10	-52	157	51.8
238	Kelly DEGUCHI	Canada	W	25	34	-52	164	51.7
239	Amandine BUCHARD	France	W	29	4	-52	160	51.9
240	Maryam March MAHARANI	Indonesia	W	24	52	-52	156	51.3
241	Odette GIUFFRIDA	Italy	W	29	3	-52	160	51.9
242	Uta ABE	Japan	W	24	9	-52	158	51.9
243	Distria KRASNIQI	Kosovo	W	28	2	-52	155	51.7
244	Sosorbaram LKHAGVASURE	Mongolia	W	23	13	-52	160	51.8
245	Soumiya IRAOUI	Morocco	W	28	15	-52	160	51.9
246	Jacira FERREIRA	Mozambique	W	26	72	-52	170	51.9
247	Yeqing ZHU	People's Re	W	26	14	-52	158	51.6
248	Yerin JUNG	Republic of	W	28	21	-52	171	52
249	Khorloodoi BISHRELT	United Arab	W	26	11	-52	177	51.9
250	Angelica DELGADO	United Stat	W	33	19	-52	157	52
251	Diyora KELDIYOROVA	Uzbekistan	W	26	1	-52	158	51.7
252	Katharina TANZER	Austria	W	28	40	-48	154	47.8
253	Leyla ALIYEVA	Azerbaijan	W	26	22	-48	164	47.8
254	Natasha FERREIRA	Brazil	W	25	26	-48	152	48
255	Mary Dee VARGAS LEY	Chile	W	27	21	-48	154	47.9
256	Chen-Hao LIN	Chinese Tai	W	26	35	-48	155	47.6
257	Shirine BOUKLI	France	W	25	5	-48	156	48
258	Katharina MENZ	Germany	W	33	25	-48	153	47.9
259	Ka Lee WONG	Hong Kong,	W	26	57	-48	162	47.9
260	Shira RISHONY	Israel	W	33	24	-48	150	48
261	Assunta SCUTTO	Italy	W	22	1	-48	160	47.8
262	Natsumi TSUNODA	Japan	W	31	4	-48	161	47.5
263	Abiba ABUZHAKYNOVA	Kazakhstan	W	27	3	-48	158	47.9
264	Katryna ESPOSITO	Malta	W	23	55	-48	162	47.7
265	Baasankhuu BAVUUDORJ	Mongolia	W	24	2	-48	153	48
266	Zongying GUO	People's Re	W	25	20	-48	160	47.7
267	Catarina COSTA	Portugal	W	27	7	-48	154	47.8
268	Hyekyeong LEE	Republic of	W	28	10	-48	155	47.9
269	Marusa STANGAR	Slovenia	W	26	19	-48	159	47.8
270	Geronay WHITEBOOI	South Afric	W	28	39	-48	152	47.7
271	Tara BABULFATH	Sweden	W	18	18	-48	154	47.7
272	Oumaima BEDIQUI	Tunisia	W	26	38	-48	155	47.7
273	Tugce BEDER	Turkiye	W	24	12	-48	157	47.8
274	Khalimajon KURBONOVA	Uzbekistan	W	22	27	-48	157	47.7
275	Thi Tinh HOANG	Vietnam	W	30	86	-48	150	47.6

5.2 MEAN HEIGHTS PER CATEGORY

Obs	category1	nation	mean_height
1	100	France	204
2	100	Brazil	203
3	100	Czechia	198
4	100	Tajikistan	198
5	100	Cuba	197
6	100	Mongolia	196
7	100	Azerbaijan	195
8	100	Turkiye	195
9	100	Netherlands	194
10	100	Georgia	193
11	100	Germany	191
12	100	Japan	191
13	100	Slovenia	190
14	100	Uzbekistan	190
15	100	Monaco	187
16	100	Republic of	184
17	100	United Arab	178
18	-100	Uzbekistan	202
19	-100	Austria	193
20	-100	Azerbaijan	192
21	-100	Canada	192
22	-100	Croatia	192
23	-100	Brazil	190
24	-100	France	190
25	-100	Hungary	190
26	-100	Israel	190
27	-100	Spain	190
28	-100	Belgium	189
29	-100	Mongolia	188
30	-100	Georgia	187
31	-100	United Arab	187
32	-100	Chile	186
33	-100	Serbia	186
34	-100	Netherlands	184
35	-100	Japan	181
36	-100	Italy	180
37	-100	Kazakhstan	175
38	-100	Portugal	174
39	-90	Georgia	190
40	-90	Tajikistan	190
41	-90	France	189
42	-90	Sweden	189
43	-90	United Stat	188
44	-90	Germany	187
45	-90	Kyrgyzstan	185
46	-90	Netherlands	185
47	-90	Lebanon	184
48	-90	Dominican R	182
49	-90	Republic of	182
50	-90	Spain	182
51	-90	Turkiye	182
52	-90	Uzbekistan	182
53	-90	Greece	181
54	-90	Mauritius	181

Obs	category1	nation	mean_height
55	-90	Brazil	180
56	-90	Bulgaria	180
57	-90	Cuba	180
58	-90	Czechia	180
59	-90	Japan	180
60	-90	Italy	179
61	-90	Serbia	178
62	-90	Hungary	175
63	-90	United Arab	170
64	-81	Iraq	185
65	-81	Vanuatu	185
66	-81	Hungary	184
67	-81	Netherlands	184
68	-81	Brazil	182
69	-81	Canada	182
70	-81	Japan	181
71	-81	North Maced	181
72	-81	Georgia	180
73	-81	Israel	180
74	-81	Morocco	180
75	-81	Portugal	179
76	-81	Bahrain	178
77	-81	Belgium	178
78	-81	Palestine	178
79	-81	Tajikistan	178
80	-81	Turkiye	178
81	-81	Germany	176
82	-81	Republic of	176
83	-81	United Arab	176
84	-81	Austria	175
85	-81	Kazakhstan	175
86	-81	Italy	173
87	-81	Egypt	170
88	-81	France	170
89	78	People's Re	183
90	78	India	182
91	78	Cuba	180
92	78	France	180
93	78	Serbia	180
94	78	Republic of	178
95	78	Turkiye	178
96	78	Mongolia	177
97	78	Bosnia and	176
98	78	Brazil	176
99	78	Netherlands	175
100	78	Germany	172
101	78	Canada	171
102	78	Portugal	170
103	78	Italy	165
104	78	Japan	162
105	78	Kazakhstan	160
106	-78	People's Re	186
107	-78	Germany	183
108	-78	France	182

Obs	category1	nation	mean_height
109	-78	Brazil	178
110	-78	Netherlands	178
111	-78	Great Brita	177
112	-78	Kosovo	177
113	-78	Israel	176
114	-78	Portugal	176
115	-78	Italy	175
116	-78	Mongolia	175
117	-78	Republic of	175
118	-78	Uzbekistan	170
119	-78	Japan	169
120	-78	New Zealand	168
121	-78	Slovenia	168
122	-73	Thailand	183
123	-73	Canada	181
124	-73	Samoa	180
125	-73	Germany	177
126	-73	Mongolia	177
127	-73	Israel	176
128	-73	Syrian Arab	176
129	-73	Tajikistan	176
130	-73	Algeria	175
131	-73	Kazakhstan	175
132	-73	Uzbekistan	175
133	-73	Kosovo	174
134	-73	Austria	170
135	-73	France	170
136	-73	Georgia	170
137	-73	Japan	170
138	-73	Brazil	168
139	-73	Azerbaijan	165
140	-73	Italy	161
141	-70	Belgium	181
142	-70	Bosnia and	180
143	-70	Germany	179
144	-70	Hungary	178
145	-70	France	176
146	-70	Italy	175
147	-70	Netherlands	174
148	-70	Portugal	173
149	-70	Austria	170
150	-70	Croatia	170
151	-70	Dem. Peop.	170
152	-70	Greece	170
153	-70	Japan	170
154	-70	Slovenia	170
155	-70	Puerto Rico	167
156	-70	Great Brita	166
157	-70	Uzbekistan	166
158	-70	Australia	164
159	-70	Spain	163
160	-70	Turkiye	162
161	-66	Serbia	180
162	-66	Turkiye	177

Obs	category1	nation	mean_height
163	-66	Uzbekistan	176
164	-66	Mongolia	175
165	-66	Morocco	175
166	-66	United Arab	174
167	-66	France	171
168	-66	Republic of	170.5
169	-66	Angola	170
170	-66	Israel	170
171	-66	Italy	170
172	-66	Ukraine	170
173	-66	Finland	167
174	-66	Georgia	167
175	-66	Japan	167
176	-66	Brazil	165
177	-66	Kazakhstan	165
178	-66	Kyrgyzstan	165
179	-66	Peru	160
180	-63	People's Re	175
181	-63	Venezuela	174
182	-63	Kosovo	173
183	-63	Algeria	170
184	-63	Cuba	170
185	-63	Kazakhstan	170
186	-63	Netherlands	170
187	-63	Australia	168
188	-63	Portugal	168
189	-63	Czechia	166
190	-63	Austria	165
191	-63	Brazil	165
192	-63	Spain	165
193	-63	France	164
194	-63	Croatia	163
195	-63	Hungary	163
196	-63	Italy	163
197	-63	Japan	163
198	-63	Canada	161
199	-63	Republic of	161
200	-60	Uzbekistan	172
201	-60	Turkiye	170
202	-60	Zambia	170
203	-60	Chinese Tai	168
204	-60	Egypt	168
205	-60	Republic of	168
206	-60	Kazakhstan	167
207	-60	Australia	165
208	-60	Jamaica	165
209	-60	Mongolia	165
210	-60	Netherlands	164
211	-60	Belgium	163
212	-60	Brazil	162
213	-60	France	160
214	-60	Italy	160
215	-60	Spain	159
216	-60	Japan	156

Obs	category1	nation	mean_height
217	-57	Germany	185
218	-57	Ukraine	172
219	-57	Brazil	169
220	-57	Chinese Tai	168
221	-57	Mongolia	168
222	-57	Uzbekistan	166
223	-57	Italy	165
224	-57	Kosovo	165
225	-57	Guinea	164
226	-57	France	163
227	-57	Netherlands	163
228	-57	Japan	162
229	-57	People's Re	162
230	-57	Serbia	162
231	-57	Canada	161
232	-57	Nepal	160
233	-57	Republic of	159
234	-57	Panama	158
235	-57	Great Brita	153
236	-52	United Arab	177
237	-52	Republic of	171
238	-52	Mozambique	170
239	-52	Canada	164
240	-52	France	160
241	-52	Italy	160
242	-52	Mongolia	160
243	-52	Morocco	160
244	-52	Japan	158
245	-52	People's Re	158
246	-52	Uzbekistan	158
247	-52	Brazil	157
248	-52	United Stat	157
249	-52	Indonesia	156
250	-52	Kosovo	155
251	-48	Azerbaijan	164
252	-48	Hong Kong,	162
253	-48	Malta	162
254	-48	Japan	161
255	-48	Italy	160
256	-48	People's Re	160
257	-48	Slovenia	159
258	-48	Kazakhstan	158
259	-48	Turkiye	157
260	-48	Uzbekistan	157
261	-48	France	156
262	-48	Chinese Tai	155
263	-48	Republic of	155
264	-48	Tunisia	155
265	-48	Austria	154
266	-48	Chile	154
267	-48	Portugal	154
268	-48	Sweden	154
269	-48	Germany	153
270	-48	Mongolia	153

Obs	category1	nation	mean_height
271	-48	Brazil	152
272	-48	South Afric	152
273	-48	Israel	150
274	-48	Vietnam	150

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