Olympic Games Home Field Advantage

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This paper presents evidence on whether Olympic host country athletes experience a home field advantage. Olympedia's comprehensive data set spanning Athens 1896 to PyeongChang 2018 is used. An Olympic team with 100 athletes tends to win 4.4 more medals, including 2.6 more gold medals, if it competes at home. The home field advantage is stronger for subjective sports.

1   Introduction

Home-field advantage has been well-documented across sports. A 2010 meta-analysis finds a 95% confidence interval of [0.590, 0.618] for the win rate of the home competitor Jamieson (2010). Higher pressure competition tends to increase the home-field advantage.

Past studies of the home field advantage in the Olympic context report mixed results. Balmer, Nevill and Williams (2001) find a home field advantage in the Winter Olympic Games, which is stronger for subjective sports. Balmer, Nevill and Williams (2003) analyzes individual events and find a home field advantage for only subjective sports. A recent contribution suggests previous country level research designs may be unreliable due to omitting time-varying economic confounders in single country analysis, not accounting for relaxed host country athlete qualification, or including countries that have never hosted the Olympics in the non-host comparison group Pettigrew and Reiche (2016). Pettigrew & Reiche address these issues by restricting their sample to only countries that have hosted the Olympics. They pair outcomes of each host country in the host year with outcomes in the immediately preceding games, limiting the extent to which time

varying confounders can change. No host advantage is found for winning medals. Only host athlete attendance is found to increase, which can be attributed in part to automatic qualifications for host athletes. Another recent contribution by Wilson and Ramchandani (2018) measures the host advantage in terms of "market share", which is a country's medal count relative to the total number of medals awarded that Olympics. In the "market share" calculation medals have different weights (gold=3, silver=2, bronze=1). There is a statistically significant host country advantage for both the Olympic and Paralympic Games.

I reassess the home field advantage using a larger data set, and new methodology that allows me to eliminate more confounding variables.

2   Data Source

The main data used comes from Olympedia, a website backed by the International Olympic Committee (IOC). Athlete results are available from the 1896 Athens Summer Olympics to the 2018 PyeongChang Winter Olympics. 28 Summer Olympic Games and 23 Winter Olympic Games are included in this time span. There are 275,808 results across 132,283 athletes. Information on athlete biological sex, nationality, and date of birth are available. Delayed disqualifications due to violations such as doping are reflected in the results.

3   Host Countries

3.1   Threats to Validity

The first threat to validity arises when defining treatment and comparison countries. To identify a host country effect, both the treated country and counterfactual, comparison countries need to have the possibility of being assigned to either group. That is to say, it would be inaccurate to include comparison countries that have not hosted the Olympics, and are unlikely to ever do so given geographical size or climate constraints. As a result, I limit my analysis to only countries

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that have hosted the Olympics at least once.

The second threat concerns how a country's performance is measured. Using a country's total medal count or medals per athlete could seem like obvious choices for measurement. Yet, both measures have drawbacks. The size of Olympic country teams has trended upwards over time as the Olympic Games expands with new events. In addition, Olympic host nations have automatic qualification for their athletes in both individual and team events (Pettigrew and Reiche, 2016), inflating host athlete attendance. Only the medals per athlete measure accounts for growing teams, yet it does not address omitted variables bias introduced by relaxed host qualification rules. Automatic qualification may permit extra host athletes of lower ability to compete, creating a downwards bias in the medals per athlete measure during a host year.

The third threat to validity also relates to how a country's performance is measured. The Olympic context is unique in that home field and away field observations are separated by four years due to the Olympic cycle. Four years provides ample time for athlete turnover on a country's Olympic roster. This turnover must be addressed. After all, how can one assess home field advantage if a team's players are different when playing away and at home.

To address both the second and third threats to validity, I adopt what I call a country cohort approach. I first create exhaustive pairs of consecutive Olympic Games of the same season. Then, for each country in my sample, I identify athletes spanning both Olympic Games in a given pair. These spanning athletes for a given country for a country cohort. An example cohort would be United States athletes who compete in both London 2012 and Rio 2016. The country cohort athletes are fixed between two Olympic Games by definition. This resolves the third threat to validity since turnover is nullified, though age is now even more important to control for. The two main cohort performance measures are change in medals per athlete and change in medals per event contested. Change is defined over the two Olympic Games the cohort spans. Only results from individual events will be used for performance measurement, as team events are still vulnerable to confounding due to turnover. The second threat to validity is now also addressed. Cohort size is fixed between two Olympic Games, so a one time influx of athletes due to hosting gets cut out

and does not downwards bias the performance measure. Any new athletes of high ability will be included in a country's next cohort, which starts in the hosted games and ends with a future away games.[1]

3.2 Sample Construction & Descriptive Analysis

I construct a data set of country cohorts for all countries that have hosted the Olympics.[2] Each cohort is uniquely identified using country, season of games, and the pair of Olympics the cohort spans. I create a time index called Distance to identify how far each cohort is from its country's hosted Olympic Games. One unit of Distance corresponds to one Olympic Games of relevant season. Distance zero is used when the cohort's second games is at home, and Distance one is used when the cohort's first games is at home. Distance is determined separately for a country's winter cohorts and summer cohorts.[3] When a cohort is located between two hosted Olympics, it is assigned the Distance of minimum absolute value. In other words, the cohort is assigned Distance based on the closer of two hosted Olympics.

Using a cohort's individual event results I create four outcome measures for this data set: change in medals per athlete, change in medals per event contested, change in gold medals per athlete, change in gold medals per event contested. The reason behind using per event contested is that a cohort's athletes may opt to compete in a different number of events during the first and second cohort Olympics, so events contested may be the preferable denominator.[4]

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[1]A country cohort that ends with a hosted Olympics typically has different athletes than the subsequent cohort that starts with the hosted Olympics. Yet, the home field advantage still has a clear interpretation and is testable in the context of changing cohort members. Suppose the home field advantage exists, then the cohort entering the hosted games would have a positive change in its performance measure, and the cohort leaving the hosted games would have a negative change in its performance measure.

[2]I consider Australia the sole host country for the Summer Olympic Games of 1956, since only equestrian events were held in Sweden.

[3]If a country has only been a summer host, then that county's winter cohorts have undefined Distance. For example, Australia is only a summer host. A similar argument applies to countries that have only been winter hosts. I remove all cohorts with undefined distance from my sample.

[4]Here is an example using the different denominators. Consider a two athlete summer cohort for country X defined on {Olympics 1, Olympics 2}. In Olympics 1 athlete "A" competes in two events and athlete "B" which competes in three events, "A" wins 1 medal and "B" wins 2 medals. Then in Olympics 2 athlete "A" competes in three events and athlete "B" competes in four events, again "A" wins 1 medal and "B" wins 2 medals. $\triangle Medals/Athlete = \frac{3}{2} - \frac{3}{2} = 0$ and $\triangle Medals/Event = \frac{3}{7} - \frac{3}{5} = \frac{-6}{35}$

Figure 1 plots change in medal outcomes for all summer host nations, and Figure 2 does the same for winter host nations. Country cohort trends appear to exhibit volatility over time and are centered at zero change. Figure 3 zooms in on the host time period, using Distances -1, 0, and 1. Visually, there appears to be little evidence of a strong home field advantage. Few countries have cohort trends exhibit a large spike at Distance 0 and a decrease at Distance 1, which would indicate a home field advantage. Figures 4, 5, and 6 tell the same visual story using change in gold medal outcomes. It is important to note that these visual depictions do not incorporate control variables or account for differing cohort sizes, which contribute to uneven volatility among country cohort series.

3.3 Country Cohorts

Home-Field Effect

I estimate the host country, home field advantage using an event study approach, pooling summer and winter cohorts.

$$Outcomes_{cst} = \alpha_c + \sum_k \beta_k I(Distance = k)_t + X_{cst}\gamma + \varepsilon_{cst} \tag{1}$$

c is an index for country, s is an index for season, and t is an index for Distance. $Outcomes_{cst}$ can be either $\triangle Medals/Athlete_{cst}$, $\triangle Medals/Event_{cst}$, $\triangle Golds/Athlete_{cst}$, or $\triangle Golds/Event_{cst}$. Country fixed effects α_c account for country differences in mean outcomes. X_{cst} is a vector of controls including $Summer_s$, $MaleRatio_{cst}$, $MeanAge_{cst}$ and $MeanAge_{cst}^2$. $Summer_s$ is a dummy for the cohort's season being summer, $MaleRatio_{cst}$ is the number of males athletes divided by total number of athletes, and both age controls are constructed using athlete age in the cohort's first Olympics.

I limit my sample to Distance -2 through Distance 2. This allows me to use Distance -2 as a benchmark in comparisons. There are two additional reasons for this restriction. First, not all

countries have Distance values beyond this range, since availability of Distance values depends on how long a country has been participating in the Olympics. Second, larger ranges of Distance would make country fixed effects less reliable. Countries tend to undergo political and economic changes over long spans of time. For example, athlete cohorts for Germany before WWI, around WWII, and today differ greatly in circumstances.

Table 1 presents results for medal outcomes, and Table 2 does the same for gold medal outcomes. Columns (1), (2), (3), and (4) present weighted regressions using $CohortSize_{cst}$ as weights. Columns (5) and (6) are unweighted. The odd columns use adjusted clustered standard errors.[5] This particular type of clustered standard errors is vulnerable to bias when the number of clusters is small. Cameron, Gelbach and Miller (2008) find bootstrap standard errors lead to more reliable inference when the number of clusters is small. Since I only have 25 country clusters, I present Rademacher wild bootstrap standard errors, generated using country blocks and 1000 repetitions, for even columns. The bootstrap standard errors are consistently smaller than the clustered standard errors, leading to t-statistics with higher magnitude for even columns. With either type of standard errors, inference is performed using the t-distribution with no more degrees of freedom than the number of clusters. I present critical values in the table notes.

My preferred estimates are in columns (3) and (4). Trends in the Distance coefficients are consistent with a home field advantage. Since Distance -2 is left out, the remaining Distance coefficients represent difference in means relative to it. Distance -1 has cohorts competing in away games, and does not differ significantly from Distance -2. Distance 0 has a positive coefficient, indicating that cohorts entering a host Olympics experience positive changes in medals won per athlete and medals won per event. Distance 1 has a negative coefficient with a relatively large magnitude, indicating that cohorts leaving a host Olympics lose a home boost when transitioning to an away games. Distance 2 has a negative coefficient of smaller magnitude compared to Distance 1, indicating a slight return to the Distance -2 outcome mean. Statistical significance depends on the type of standard errors used. Bootstrap standard errors lead to Distance 0 and Distance

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[5]The adjustments are the finite cluster correction G/(G-1) and degrees of freedom (N-1)/(N-K) correction.

1 coefficients significant at the one percent level, while clustered standard errors have just the Distance 0 coefficient significant at the ten percent level.

Table 2 also exhibits gold medal outcome trends consistent with the home field advantage. Bootstrap standard errors indicate significance at the one percent level for all Distance coefficients, while clustered standard errors only have significance at the one percent level for Distance 1.

Shocks to Olympic Attendance

Due to factors including economic hardship, boycotts, and stricter qualification rules, several Olympic Games exhibit major decreases in attendance. Figure 7 plots the total number of individual event athlete debuts over time.[67] Trends in debut athletes mirror trends for athletes overall. Explanations for major shocks follow.

Lake Placid 1932 and Los Angeles 1932 were hosted in the United States. Amid the Great Depression, several nations were unable to sponsor athletes. Soviet Union military action during the Hungarian Revolution of 1956 led to political tension before the Summer Olympic Games concluded in Melbourne. The International Olympic Committee (IOC) refused to suspend Soviet Union Olympic participation, leading a number of nations to boycott events. Montreal 1976 was boycotted by 29 countries when the IOC did not punish New Zealand for defying a sporting embargo against apartheid South Africa. In 1980, 66 nations boycotted the Summer Olympic Games in Moscow, protesting the Soviet–Afghan War. Lillehammer 1994 introduced stricter qualification rules for the Winter Olympic Games, reducing the number of athletes from countries with warmer climates.

These negative shocks to Olympic Games attendance are problematic for identifying a home field advantage. When there is weaker competition than usual, it is easier for host country athletes to earn medals regardless of whether a home field advantage exists. As a result, I now drop cohort observations that span these specific Olympic Games. However, I keep Lillehammer 1994 since

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[6]Olympic Games occur on a four year cycle. The first ever Winter Olympic Games was Chamonix 1924. Up through 1992, the Winter and Summer Olympics were conducted during the same year, in that order. The Winter Olympic Games has since been staggered by two years beginning with Lillehammer 1994.

[7]The Olympic Games were cancelled in 1916 due to WWI, and in 1940 and 1944 during WWII.

limiting the number of lower ability athletes does not make it any easier for host country athletes to win medals. The number of countries in my sample decreases from 25 to 24 as Germany gets removed.[8]

Tables 3 and 4 present results. Signs and magnitudes for Distance coefficients are similar to those in Tables 1 and 2. Column (3) clustered standard errors scarcely lead to statistically significant Distance coefficients. Only Distance 1 coefficients in Table 4 are significant. Column (4) bootstrap standard errors continue to indicate that Distance 0 and Distance 1 coefficients are significant at the one percent level. Once again the choice of standard errors matters.

To continue to test the robustness of the empirical specification, I place one more limit on my sample. Barring the postponement of Tokyo 2020, since 1948 the Olympic Games has occurred every four years without fail. Prior to 1948, the games were not as consistently attended or even held. 1948 saw Japan and Germany banned from Olympic competition. Both nations were allowed to return in 1952.

Tables 5 and 6 present results using only Olympic Games cohorts from 1952 onwards. Belgium, Finland, Netherlands, and Sweden are removed due to the time restriction, leaving 20 countries. There is now slightly stronger evidence of a home field advantage for gold medal outcomes in Table 6. For gold medal outcomes, column (3) clustered standard errors now have Distance 1 significant at the five percent level.

Subjective vs. Objective Sports

I now test for whether the home field advantage differs between subjective and objective sports. I define subjective sporting events as events where some number of points must be awarded by a judge. Everything else is considered objective for the purposes of this paper. Recall that only individual athlete events are being used. A full list of subjective individual sports and objective individual sports in my sample can be found at the end of the Appendix.[9] All sample restrictions

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[8]For Distances relevant to my analysis, German cohorts span the Olympics removed.

[9]You may notice some very unique individual events that were contested in past Olympic editions. These events end up getting dropped after my sample restrictions.

accumulated thus far are kept.

Results for medal outcomes are presented in Tables 7 and 9, for subjective and objective sports respectively. Table 5 has both types pooled together. Subjective sports have Distance 0 and Distance 1 coefficients higher in magnitude compared to those when the sports are pooled. This suggests a greater home field effect for athletes in subjective sports. Objective sports have corresponding coefficients with lower magnitudes than when the sports are pooled. The home field advantage is weaker for objective sports. Nonetheless, column (4) using bootstrap standard errors shows statistical significance for Distance 0 and Distance 1 coefficients around the one percent level for both types of sports. Column (3) clustered standard errors are not reliably statistically significant, however.

Results for gold medal outcomes are presented in Tables 8 and 10 for the two types of sports, with Table 6 pooling. The same patterns appear. The home field advantage is stronger for subjective sports compared to objective sports. Statistical significance still depends on the standard errors used, though clustered standard errors now result in significant coefficients in several cases.

4   Conclusion

Suppose a country's Olympic team has 100 athletes. If that Olympic team competes at home, it will win about 4.4 more medals, including 2.6 more gold medals.[10] If the team's athletes compete in more subjective sports as opposed to objective sports, this home field advantage will be greater. Nothing beats a home crowd.

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[10]Computed using coefficients from Tables 5 and 6.

Appendix

Figure 1: Summer Cohort Medal Change by Distance

Change Medals Per Athlete

Change Medals Per Event

Distance

Distance

Figure 2: Winter Cohort Medal Change by Distance

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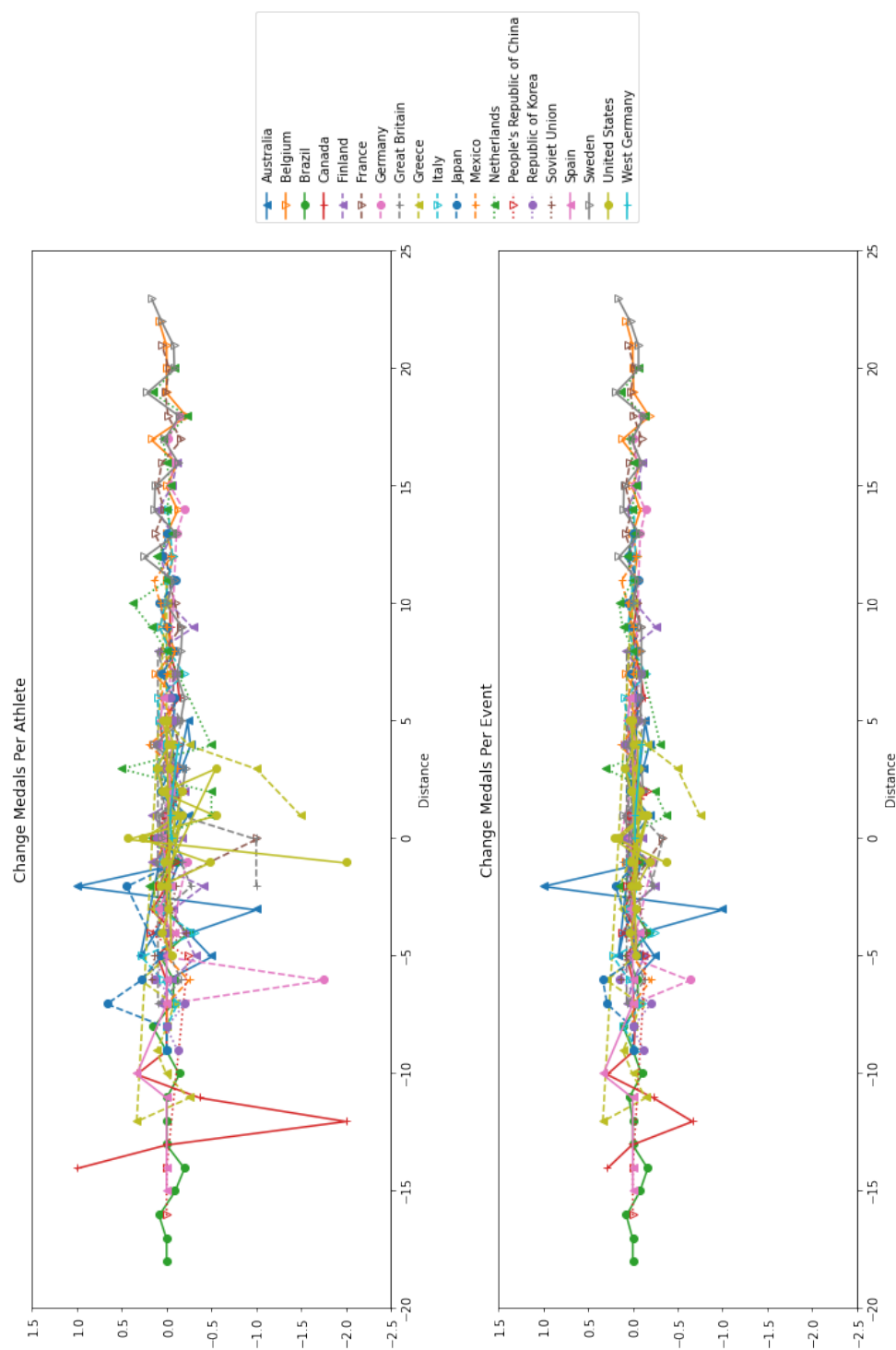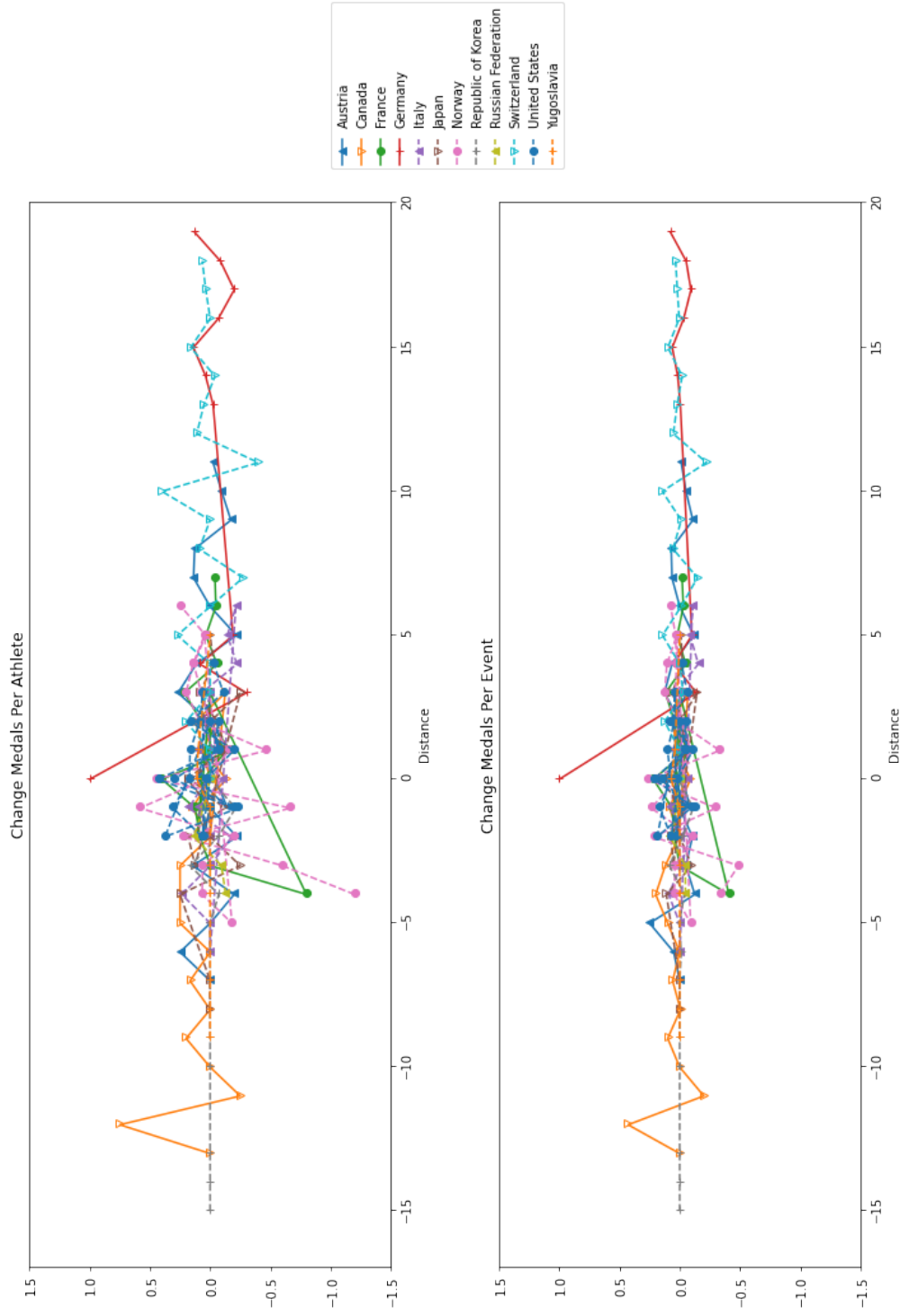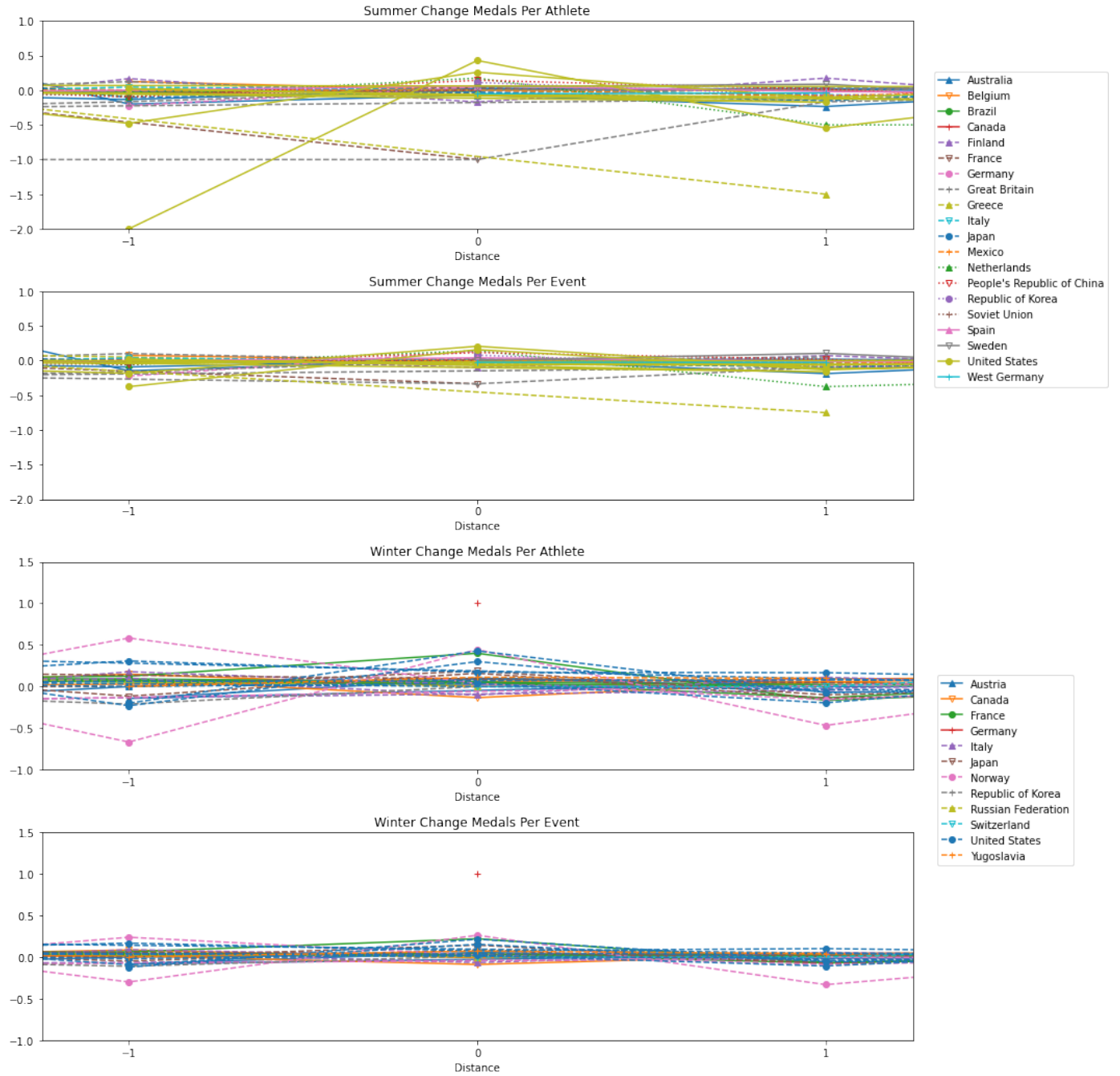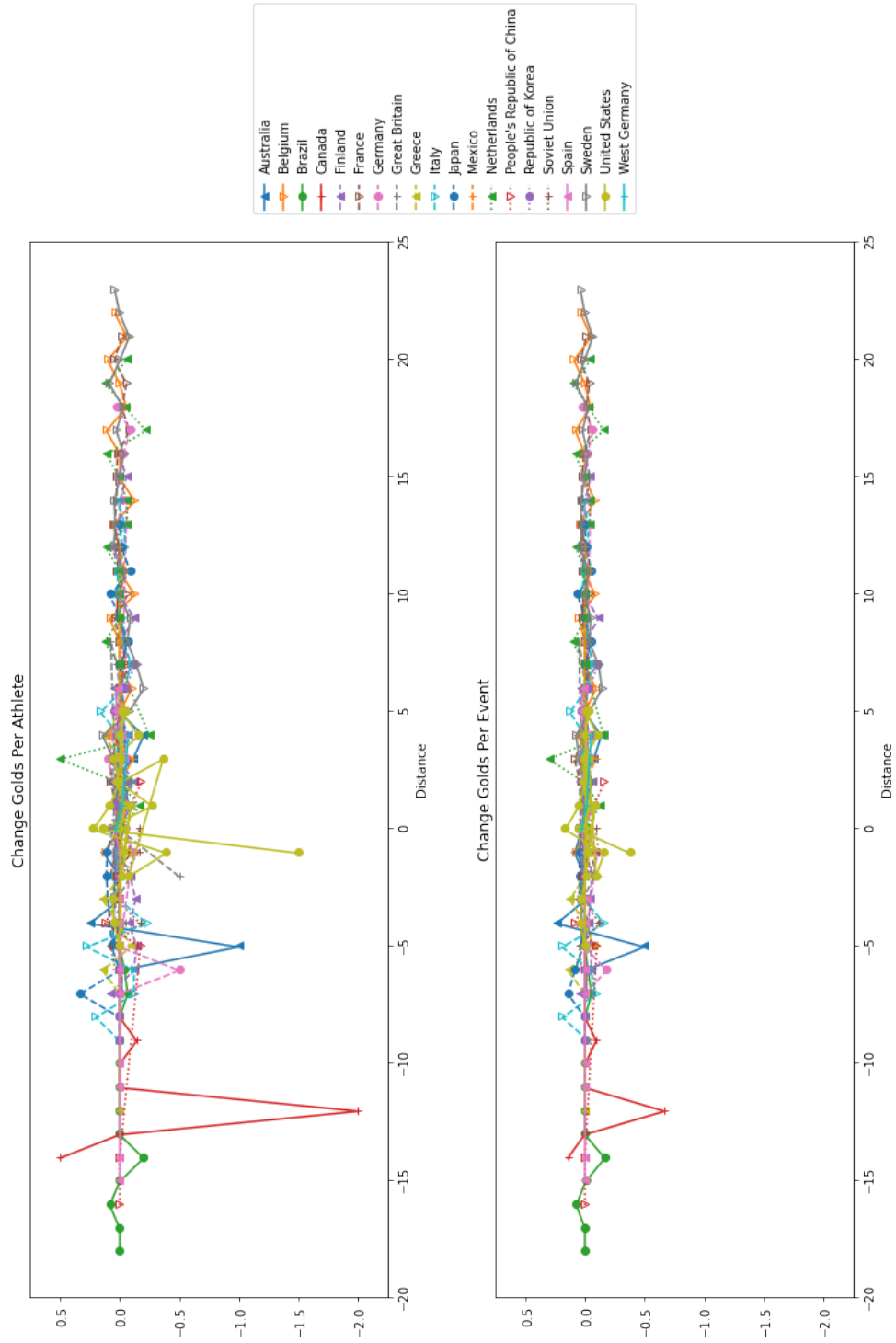Figure 3: Cohort Medal Change Near Host Distance

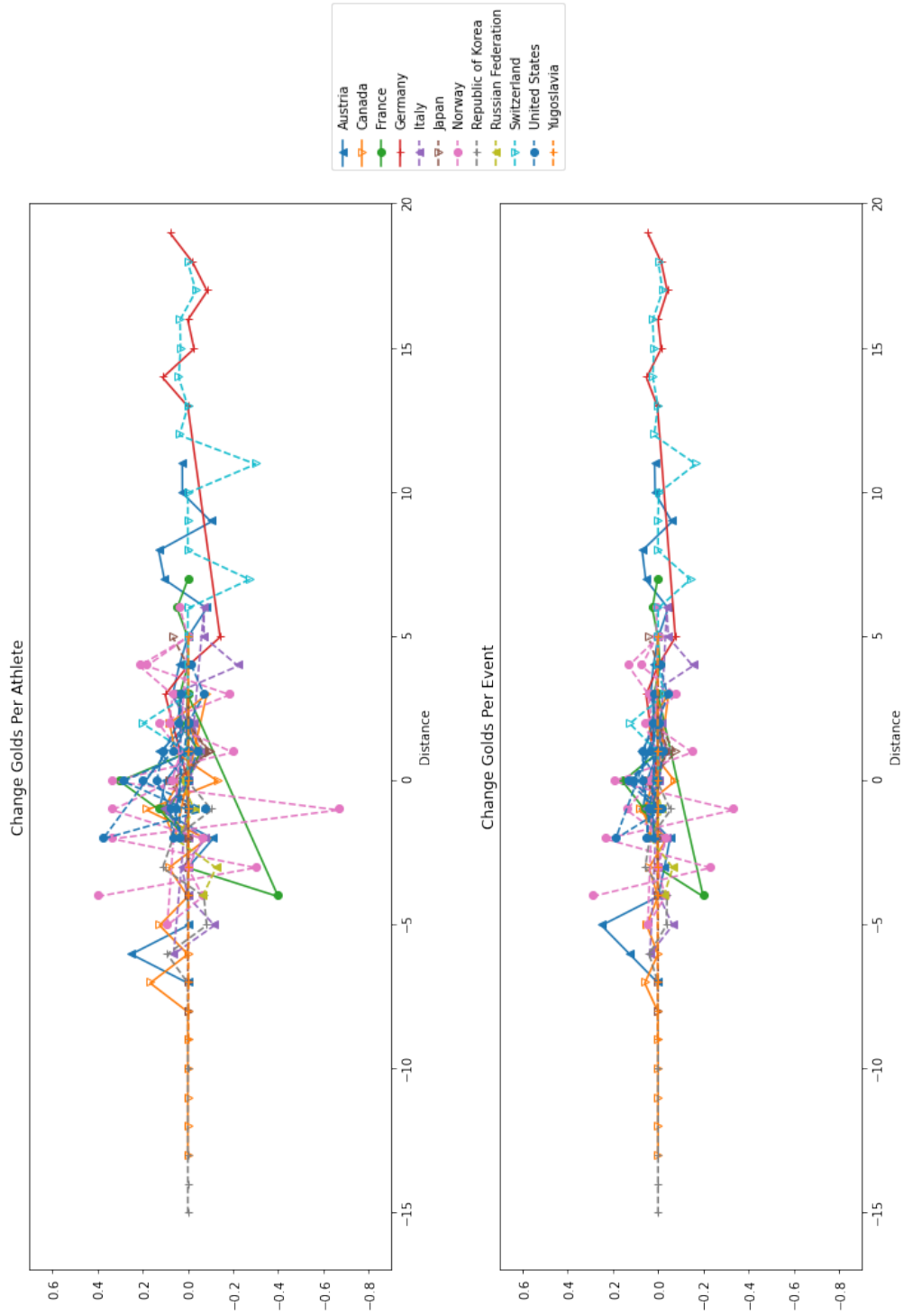Figure 4: Summer Cohort Gold Medal Change by Distance
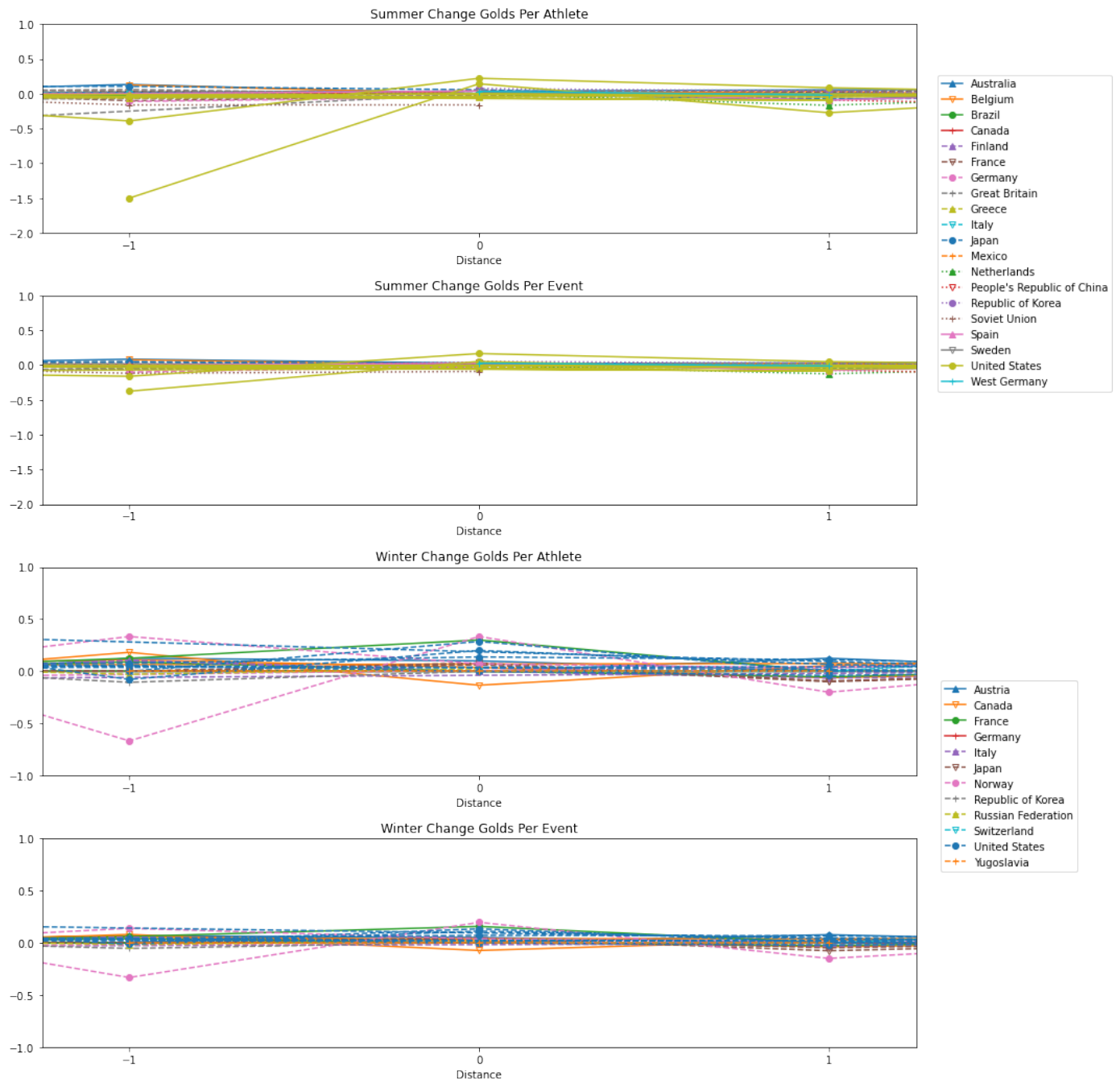
Figure 5: Winter Cohort Gold Medal Change by Distance
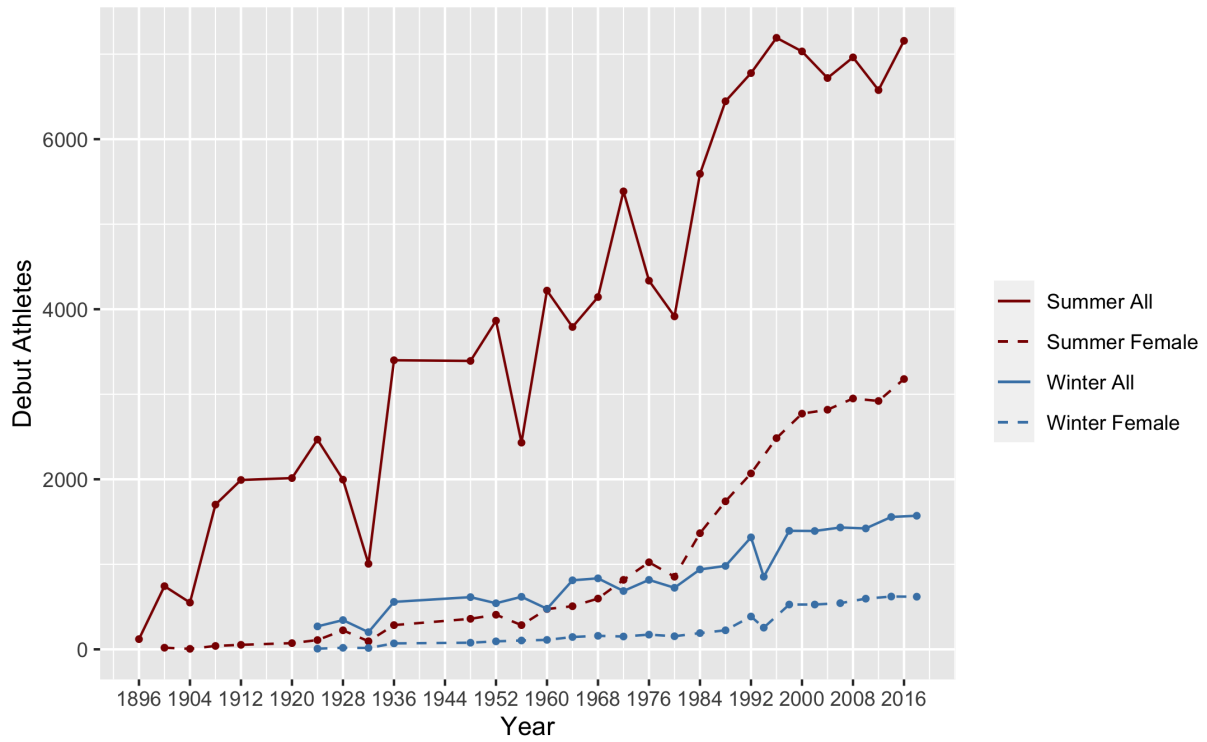
Figure 6: Cohort Gold Medal Change Near Host Distance

Figure 7: Individual Event Debut Athletes

Table 1: Home Field Effect Medals (-2 to 2)

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Change Medals/Athlete						
Distance -1	−0.017	−0.017	−0.019	−0.019	−0.129	−0.129
	[−0.416]	[−1.675]	[−0.432]	[−1.698]	[−1.445]	[−1.640]
Distance 0	0.041	0.041	0.040	0.040	−0.004	−0.004
	[1.925]	[8.355]	[1.720]	[7.365]	[−0.081]	[−0.092]
Distance 1	−0.059	−0.059	−0.065	−0.065	−0.145	−0.145
	[−1.238]	[−6.236]	[−1.270]	[−6.017]	[−1.815]	[−2.039]
Distance 2	−0.011	−0.011	−0.016	−0.016	−0.073	−0.073
	[−0.391]	[−1.798]	[−0.505]	[−2.294]	[−1.358]	[−1.556]
Summer	−0.049	−0.049	−0.061	−0.061	−0.172	−0.172
	[−4.358]	[−15.126]	[−3.339]	[−9.526]	[−2.372]	[−2.622]
MaleRatio	−0.030	−0.030	0.015	0.015	−0.100	−0.100
	[−0.524]	[−1.806]	[0.154]	[0.506]	[−0.470]	[−0.528]
MeanAge	0.115	0.115	0.174	0.174	0.536	0.536
	[1.181]	[3.570]	[1.277]	[4.241]	[2.634]	[3.064]
MeanAgeSquared	−0.002	−0.002	−0.004	−0.004	−0.010	−0.010
	[−1.247]	[−3.786]	[−1.337]	[−4.484]	[−2.628]	[−3.053]
N	199	199	199	199	199	199
Adjusted R^2	0.083	0.083	-0.013	-0.013	0.077	0.077
Panel B. Change Medals/Event						
Distance -1	−0.007	−0.007	−0.008	−0.008	−0.075	−0.075
	[−0.328]	[−1.413]	[−0.369]	[−1.631]	[−1.790]	[−1.995]
Distance 0	0.030	0.030	0.029	0.029	−0.003	−0.003
	[2.068]	[9.297]	[1.848]	[8.455]	[−0.074]	[−0.085]
Distance 1	−0.036	−0.036	−0.040	−0.040	−0.101	−0.101
	[−1.231]	[−6.319]	[−1.299]	[−6.620]	[−2.090]	[−2.387]
Distance 2	−0.014	−0.014	−0.017	−0.017	−0.067	−0.067
	[−0.686]	[−3.761]	[−0.727]	[−3.938]	[−1.869]	[−2.168]
Summer	−0.026	−0.026	−0.037	−0.037	−0.106	−0.106
	[−4.086]	[−14.450]	[−3.811]	[−8.980]	[−2.197]	[−2.493]
MaleRatio	−0.009	−0.009	0.026	0.026	0.090	0.090
	[−0.295]	[−1.057]	[0.531]	[1.655]	[0.694]	[0.779]
MeanAge	0.064	0.064	0.102	0.102	0.235	0.235
	[1.106]	[4.041]	[1.234]	[4.587]	[2.655]	[2.956]
MeanAgeSquared	−0.001	−0.001	−0.002	−0.002	−0.004	−0.004
	[−1.223]	[−4.482]	[−1.343]	[−5.029]	[−2.644]	[−2.933]
N	199	199	199	199	199	199
Adjusted R^2	0.093	0.093	0.010	0.010	0.136	0.136
Country fixed effects	No	No	Yes	Yes	Yes	Yes

Notes: t-statistics in brackets. (1), (2), (3), and (4) weight by CohortSize. (5) and (6) are unweighted. Standard errors for odd columns are clustered at the Country level. Standard errors for even columns are wild bootstrap, using Country blocks and 1000 repetitions. There are 25 Country clusters. Critical values for the t-distribution with 24 degrees of freedom: 1.71 (10% level), 2.06 (5% level), 2.80 (1% level).

Table 2: Home Field Effect Golds (-2 to 2)

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Change Golds/Athlete						
Distance -1	−0.018	−0.018	−0.017	−0.017	−0.044	−0.044
	[−0.823]	[−2.900]	[−0.761]	[−2.936]	[−0.712]	[−0.810]
Distance 0	0.014	0.014	0.011	0.011	0.035	0.035
	[1.256]	[7.007]	[0.709]	[4.524]	[2.073]	[2.412]
Distance 1	−0.042	−0.042	−0.054	−0.054	−0.038	−0.038
	[−4.292]	[−16.348]	[−3.818]	[−17.999]	[−1.624]	[−1.846]
Distance 2	−0.012	−0.012	−0.019	−0.019	−0.003	−0.003
	[−0.767]	[−4.684]	[−0.934]	[−6.069]	[−0.115]	[−0.130]
Summer	−0.041	−0.041	−0.025	−0.025	−0.070	−0.070
	[−2.991]	[−15.114]	[−2.082]	[−6.989]	[−1.629]	[−1.853]
MaleRatio	0.021	0.021	−0.003	−0.003	−0.032	−0.032
	[0.467]	[2.028]	[−0.066]	[−0.239]	[−0.330]	[−0.358]
MeanAge	−0.046	−0.046	−0.073	−0.073	0.014	0.014
	[−0.606]	[−2.267]	[−0.695]	[−2.725]	[0.104]	[0.114]
MeanAgeSquared	0.001	0.001	0.001	0.001	−0.0004	−0.0004
	[0.558]	[2.079]	[0.641]	[2.511]	[−0.145]	[−0.160]
N	199	199	199	199	199	199
Adjusted R^2	0.086	0.086	0.082	0.082	-0.062	-0.062
Panel B. Change Golds/Event						
Distance -1	−0.009	−0.009	−0.009	−0.009	−0.016	−0.016
	[−0.855]	[−3.871]	[−0.746]	[−3.784]	[−0.706]	[−0.778]
Distance 0	0.010	0.010	0.009	0.009	0.017	0.017
	[1.374]	[7.616]	[0.848]	[5.399]	[1.971]	[2.204]
Distance 1	−0.026	−0.026	−0.034	−0.034	−0.027	−0.027
	[−3.907]	[−17.519]	[−3.328]	[−18.431]	[−2.171]	[−2.350]
Distance 2	−0.010	−0.010	−0.013	−0.013	−0.009	−0.009
	[−0.717]	[−5.084]	[−0.798]	[−5.734]	[−0.784]	[−0.871]
Summer	−0.024	−0.024	−0.013	−0.013	−0.031	−0.031
	[−2.683]	[−15.915]	[−2.183]	[−7.245]	[−1.886]	[−2.094]
MaleRatio	0.022	0.022	0.007	0.007	0.017	0.017
	[0.799]	[4.727]	[0.321]	[1.233]	[0.480]	[0.538]
MeanAge	−0.033	−0.033	−0.049	−0.049	−0.018	−0.018
	[−0.760]	[−3.484]	[−0.785]	[−3.716]	[−0.403]	[−0.468]
MeanAgeSquared	0.001	0.001	0.001	0.001	0.0003	0.0003
	[0.706]	[3.251]	[0.717]	[3.415]	[0.346]	[0.401]
N	199	199	199	199	199	199
Adjusted R^2	0.112	0.112	0.165	0.165	0.001	0.001
Country fixed effects	No	No	Yes	Yes	Yes	Yes

Notes: t-statistics in brackets. (1), (2), (3), and (4) weight by CohortSize. (5) and (6) are unweighted. Standard errors for odd columns are clustered at the Country level. Standard errors for even columns are wild bootstrap, using Country blocks and 1000 repetitions. There are 25 Country clusters. Critical values for the t-distribution with 24 degrees of freedom: 1.71 (10% level), 2.06 (5% level), 2.80 (1% level).

Table 3: Home Field Effect Medals, Drop Games (-2 to 2)

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Change Medals/Athlete						
Distance -1	−0.016	−0.016	−0.026	−0.026	−0.151	−0.151
	[−0.369]	[−1.374]	[−0.570]	[−2.317]	[−1.642]	[−1.931]
Distance 0	0.028	0.028	0.022	0.022	−0.046	−0.046
	[1.148]	[5.690]	[0.795]	[3.762]	[−0.732]	[−0.802]
Distance 1	−0.065	−0.065	−0.076	−0.076	−0.152	−0.152
	[−1.421]	[−7.059]	[−1.500]	[−7.673]	[−1.727]	[−2.015]
Distance 2	−0.014	−0.014	−0.021	−0.021	−0.085	−0.085
	[−0.503]	[−2.524]	[−0.604]	[−3.158]	[−1.175]	[−1.327]
Summer	−0.041	−0.041	−0.061	−0.061	−0.168	−0.168
	[−2.990]	[−12.234]	[−2.577]	[−9.196]	[−1.916]	[−2.192]
MaleRatio	−0.039	−0.039	−0.018	−0.018	−0.193	−0.193
	[−0.569]	[−2.119]	[−0.162]	[−0.598]	[−0.786]	[−0.867]
MeanAge	0.089	0.089	0.147	0.147	0.614	0.614
	[0.872]	[2.932]	[1.097]	[3.427]	[2.083]	[2.304]
MeanAgeSquared	−0.002	−0.002	−0.003	−0.003	−0.012	−0.012
	[−0.918]	[−3.136]	[−1.145]	[−3.657]	[−2.113]	[−2.336]
N	168	168	168	168	168	168
Adjusted R^2	0.071	0.071	-0.029	-0.029	0.049	0.049
Panel B. Change Medals/Event						
Distance -1	−0.002	−0.002	−0.009	−0.009	−0.086	−0.086
	[−0.094]	[−0.406]	[−0.356]	[−1.673]	[−1.757]	[−1.984]
Distance 0	0.018	0.018	0.013	0.013	−0.040	−0.040
	[1.166]	[5.680]	[0.797]	[3.660]	[−0.913]	[−1.070]
Distance 1	−0.035	−0.035	−0.042	−0.042	−0.110	−0.110
	[−1.363]	[−7.297]	[−1.557]	[−8.814]	[−2.188]	[−2.502]
Distance 2	−0.016	−0.016	−0.018	−0.018	−0.082	−0.082
	[−0.713]	[−4.287]	[−0.691]	[−4.249]	[−1.602]	[−1.871]
Summer	−0.019	−0.019	−0.034	−0.034	−0.081	−0.081
	[−2.264]	[−12.145]	[−3.074]	[−9.955]	[−1.956]	[−2.245]
MaleRatio	−0.011	−0.011	0.009	0.009	0.025	0.025
	[−0.359]	[−1.469]	[0.189]	[0.682]	[0.154]	[0.174]
MeanAge	0.047	0.047	0.085	0.085	0.306	0.306
	[0.805]	[3.396]	[1.082]	[3.890]	[2.236]	[2.569]
MeanAgeSquared	−0.001	−0.001	−0.002	−0.002	−0.006	−0.006
	[−0.907]	[−3.879]	[−1.203]	[−4.413]	[−2.313]	[−2.655]
N	168	168	168	168	168	168
Adjusted R^2	0.080	0.080	0.020	0.020	0.057	0.057
Country fixed effects	No	No	Yes	Yes	Yes	Yes

Notes:　t-statistics in brackets. (1), (2), (3), and (4) weight by CohortSize. (5) and (6) are unweighted. Standard errors for odd columns are clustered at the Country level. Standard errors for even columns are wild bootstrap, using Country blocks and 1000 repetitions. There are 24 Country clusters. Critical values for the t-distribution with 23 degrees of freedom: 1.71 (10% level), 2.07 (5% level), 2.81 (1% level).

Table 4: Home Field Effect Golds, Drop Games (-2 to 2)

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Change Golds/Athlete						
Distance -1	−0.011	−0.011	−0.008	−0.008	−0.035	−0.035
	[−0.434]	[−1.522]	[−0.332]	[−1.275]	[−0.542]	[−0.604]
Distance 0	0.016	0.016	0.018	0.018	0.046	0.046
	[1.713]	[8.027]	[1.557]	[8.547]	[2.375]	[2.786]
Distance 1	−0.046	−0.046	−0.048	−0.048	−0.016	−0.016
	[−4.140]	[−17.744]	[−3.765]	[−17.833]	[−0.717]	[−0.804]
Distance 2	−0.016	−0.016	−0.012	−0.012	0.018	0.018
	[−0.872]	[−5.580]	[−0.662]	[−4.202]	[0.785]	[0.903]
Summer	−0.037	−0.037	−0.032	−0.032	−0.095	−0.095
	[−2.521]	[−12.596]	[−2.030]	[−6.955]	[−1.723]	[−1.919]
MaleRatio	0.017	0.017	−0.030	−0.030	−0.061	−0.061
	[0.318]	[1.251]	[−0.425]	[−1.680]	[−0.560]	[−0.623]
MeanAge	−0.020	−0.020	−0.080	−0.080	−0.002	−0.002
	[−0.262]	[−0.903]	[−0.733]	[−2.755]	[−0.009]	[−0.010]
MeanAgeSquared	0.0004	0.0004	0.001	0.001	−0.0001	−0.0001
	[0.234]	[0.805]	[0.680]	[2.574]	[−0.020]	[−0.022]
N	168	168	168	168	168	168
Adjusted R^2	0.090	0.090	0.024	0.024	-0.077	-0.077
Panel B. Change Golds/Event						
Distance -1	−0.003	−0.003	−0.001	−0.001	−0.009	−0.009
	[−0.248]	[−0.991]	[−0.095]	[−0.437]	[−0.408]	[−0.469]
Distance 0	0.010	0.010	0.011	0.011	0.020	0.020
	[1.715]	[9.011]	[1.662]	[9.468]	[2.018]	[2.301]
Distance 1	−0.028	−0.028	−0.029	−0.029	−0.016	−0.016
	[−4.397]	[−25.727]	[−3.773]	[−23.083]	[−1.838]	[−2.082]
Distance 2	−0.013	−0.013	−0.009	−0.009	0.001	0.001
	[−0.825]	[−6.423]	[−0.548]	[−4.120]	[0.082]	[0.092]
Summer	−0.021	−0.021	−0.016	−0.016	−0.040	−0.040
	[−2.137]	[−12.306]	[−1.774]	[−6.600]	[−1.760]	[−2.062]
MaleRatio	0.022	0.022	−0.008	−0.008	−0.004	−0.004
	[0.763]	[4.545]	[−0.286]	[−1.479]	[−0.120]	[−0.137]
MeanAge	−0.015	−0.015	−0.053	−0.053	−0.024	−0.024
	[−0.368]	[−1.646]	[−0.858]	[−4.091]	[−0.385]	[−0.443]
MeanAgeSquared	0.0003	0.0003	0.001	0.001	0.0004	0.0004
	[0.323]	[1.448]	[0.781]	[3.770]	[0.343]	[0.395]
N	168	168	168	168	168	168
Adjusted R^2	0.126	0.126	0.115	0.115	-0.046	-0.046
Country fixed effects	No	No	Yes	Yes	Yes	Yes

Notes: t-statistics in brackets. (1), (2), (3), and (4) weight by CohortSize. (5) and (6) are unweighted. Standard errors for odd columns are clustered at the Country level. Standard errors for even columns are wild bootstrap, using Country blocks and 1000 repetitions. There are 24 Country clusters. Critical values for the t-distribution with 23 degrees of freedom: 1.71 (10% level), 2.07 (5% level), 2.81 (1% level).

Table 5: Home Field Effect Medals, Drop Games 1952+ (-2 to 2)

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Change Medals/Athlete						
Distance -1	0.031	0.031	0.028	0.028	0.034	0.034
	[0.763]	[4.176]	[0.637]	[3.649]	[0.645]	[0.762]
Distance 0	0.041	0.041	0.044	0.044	0.063	0.063
	[1.695]	[10.494]	[1.557]	[9.800]	[2.068]	[2.387]
Distance 1	−0.047	−0.047	−0.045	−0.045	−0.052	−0.052
	[−1.321]	[−8.306]	[−0.988]	[−6.437]	[−1.144]	[−1.261]
Distance 2	0.019	0.019	0.027	0.027	0.024	0.024
	[0.547]	[3.653]	[0.755]	[5.259]	[0.695]	[0.802]
Summer	−0.031	−0.031	−0.042	−0.042	−0.031	−0.031
	[−2.606]	[−14.905]	[−1.163]	[−7.010]	[−0.912]	[−1.049]
MaleRatio	−0.070	−0.070	0.030	0.030	−0.024	−0.024
	[−1.222]	[−6.218]	[0.260]	[1.543]	[−0.226]	[−0.259]
MeanAge	−0.013	−0.013	−0.067	−0.067	0.130	0.130
	[−0.102]	[−0.539]	[−0.313]	[−1.871]	[0.569]	[0.640]
MeanAgeSquared	−0.00003	−0.00003	0.001	0.001	−0.003	−0.003
	[−0.012]	[−0.062]	[0.214]	[1.280]	[−0.630]	[−0.709]
N	124	124	124	124	124	124
Adjusted R²	0.094	0.094	-0.001	-0.001	-0.015	-0.015
Panel B. Change Medals/Event						
Distance -1	0.019	0.019	0.015	0.015	0.008	0.008
	[0.777]	[4.564]	[0.575]	[3.635]	[0.314]	[0.351]
Distance 0	0.024	0.024	0.023	0.023	0.027	0.027
	[1.507]	[9.204]	[1.236]	[7.881]	[1.462]	[1.732]
Distance 1	−0.034	−0.034	−0.035	−0.035	−0.045	−0.045
	[−1.377]	[−8.899]	[−1.139]	[−8.275]	[−1.709]	[−1.976]
Distance 2	0.003	0.003	0.007	0.007	0.002	0.002
	[0.118]	[0.834]	[0.240]	[1.823]	[0.071]	[0.081]
Summer	−0.014	−0.014	−0.022	−0.022	−0.019	−0.019
	[−1.710]	[−9.473]	[−1.088]	[−6.792]	[−1.101]	[−1.291]
MaleRatio	−0.061	−0.061	−0.005	−0.005	−0.020	−0.020
	[−1.456]	[−8.501]	[−0.064]	[−0.412]	[−0.344]	[−0.406]
MeanAge	0.072	0.072	0.042	0.042	0.161	0.161
	[0.790]	[4.593]	[0.303]	[1.922]	[1.173]	[1.362]
MeanAgeSquared	−0.002	−0.002	−0.001	−0.001	−0.004	−0.004
	[−0.898]	[−5.239]	[−0.402]	[−2.557]	[−1.214]	[−1.409]
N	124	124	124	124	124	124
Adjusted R²	0.108	0.108	0.029	0.029	0.038	0.038
Country fixed effects	No	No	Yes	Yes	Yes	Yes

Notes: t-statistics in brackets. (1), (2), (3), and (4) weight by CohortSize. (5) and (6) are unweighted. Standard errors for odd columns are clustered at the Country level. Standard errors for even columns are wild bootstrap, using Country blocks and 1000 repetitions. There are 20 Country clusters. Critical values for the t-distribution with 19 degrees of freedom: 1.73 (10% level), 2.09 (5% level), 2.86 (1% level).

Table 6: Home Field Effect Golds, Drop Games 1952+ (-2 to 2)

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Change Golds/Athlete						
Distance -1	0.012	0.012	0.021	0.021	0.049	0.049
	[0.556]	[2.827]	[0.873]	[4.699]	[1.527]	[1.749]
Distance 0	0.019	0.019	0.026	0.026	0.049	0.049
	[1.637]	[8.424]	[1.781]	[9.902]	[2.534]	[2.976]
Distance 1	−0.043	−0.043	−0.036	−0.036	−0.014	−0.014
	[−3.521]	[−19.816]	[−2.288]	[−13.629]	[−0.731]	[−0.834]
Distance 2	−0.008	−0.008	0.004	0.004	0.020	0.020
	[−0.339]	[−2.256]	[0.168]	[1.081]	[0.820]	[0.954]
Summer	−0.031	−0.031	−0.027	−0.027	−0.021	−0.021
	[−2.523]	[−16.079]	[−2.546]	[−12.107]	[−1.507]	[−1.694]
MaleRatio	0.061	0.061	0.037	0.037	0.009	0.009
	[1.386]	[8.343]	[0.982]	[5.149]	[0.188]	[0.223]
MeanAge	−0.061	−0.061	−0.170	−0.170	−0.034	−0.034
	[−0.646]	[−2.938]	[−1.157]	[−5.496]	[−0.197]	[−0.230]
MeanAgeSquared	0.001	0.001	0.003	0.003	0.0004	0.0004
	[0.612]	[2.840]	[1.100]	[5.246]	[0.118]	[0.138]
N	124	124	124	124	124	124
Adjusted R^2	0.166	0.166	0.181	0.181	0.115	0.115
Panel B. Change Golds/Event						
Distance -1	0.004	0.004	0.009	0.009	0.022	0.022
	[0.315]	[1.651]	[0.736]	[4.141]	[1.412]	[1.577]
Distance 0	0.010	0.010	0.014	0.014	0.024	0.024
	[1.548]	[7.703]	[1.693]	[9.423]	[2.236]	[2.485]
Distance 1	−0.033	−0.033	−0.028	−0.028	−0.016	−0.016
	[−3.894]	[−24.707]	[−2.647]	[−17.472]	[−1.404]	[−1.604]
Distance 2	−0.011	−0.011	−0.002	−0.002	0.006	0.006
	[−0.573]	[−4.178]	[−0.124]	[−0.873]	[0.418]	[0.473]
Summer	−0.018	−0.018	−0.016	−0.016	−0.012	−0.012
	[−1.983]	[−13.699]	[−2.268]	[−10.392]	[−1.231]	[−1.453]
MaleRatio	0.037	0.037	0.013	0.013	0.003	0.003
	[1.008]	[7.116]	[0.493]	[2.732]	[0.097]	[0.112]
MeanAge	−0.033	−0.033	−0.097	−0.097	−0.006	−0.006
	[−0.470]	[−2.619]	[−0.985]	[−4.961]	[−0.059]	[−0.066]
MeanAgeSquared	0.001	0.001	0.002	0.002	−0.0001	−0.0001
	[0.430]	[2.460]	[0.920]	[4.640]	[−0.026]	[−0.030]
N	124	124	124	124	124	124
Adjusted R^2	0.176	0.176	0.211	0.211	0.145	0.145
Country fixed effects	No	No	Yes	Yes	Yes	Yes

Notes: t-statistics in brackets. (1), (2), (3), and (4) weight by CohortSize. (5) and (6) are unweighted. Standard errors for odd columns are clustered at the Country level. Standard errors for even columns are wild bootstrap, using Country blocks and 1000 repetitions. There are 20 Country clusters. Critical values for the t-distribution with 19 degrees of freedom: 1.73 (10% level), 2.09 (5% level), 2.86 (1% level).

Table 7: Subjective Event Home Field Effect Medals

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Change Medals/Athlete						
Distance -1	−0.014	−0.014	−0.047	−0.047	−0.020	−0.020
	[−0.257]	[−0.655]	[−0.769]	[−2.019]	[−0.290]	[−0.351]
Distance 0	0.076	0.076	0.059	0.059	0.038	0.038
	[1.641]	[4.815]	[1.055]	[3.294]	[0.724]	[0.859]
Distance 1	−0.132	−0.132	−0.143	−0.143	−0.124	−0.124
	[−1.966]	[−5.297]	[−1.849]	[−5.005]	[−1.348]	[−1.622]
Distance 2	0.035	0.035	0.050	0.050	−0.001	−0.001
	[0.490]	[1.513]	[0.664]	[2.031]	[−0.015]	[−0.018]
Summer	−0.020	−0.020	−0.058	−0.058	−0.088	−0.088
	[−0.759]	[−1.960]	[−2.070]	[−5.713]	[−2.487]	[−2.904]
MaleRatio	0.055	0.055	0.263	0.263	0.162	0.162
	[0.836]	[2.454]	[1.975]	[4.785]	[1.245]	[1.419]
MeanAge	0.068	0.068	0.010	0.010	0.088	0.088
	[0.705]	[1.547]	[0.076]	[0.184]	[0.735]	[0.824]
MeanAgeSquared	−0.002	−0.002	−0.001	−0.001	−0.003	−0.003
	[−0.975]	[−2.221]	[−0.294]	[−0.735]	[−0.925]	[−1.036]
N	122	122	122	122	122	122
Adjusted R²	0.112	0.112	0.057	0.057	0.006	0.006
Panel B. Change Medals/Event						
Distance -1	0.008	0.008	−0.010	−0.010	0.006	0.006
	[0.241]	[0.555]	[−0.272]	[−0.600]	[0.105]	[0.121]
Distance 0	0.041	0.041	0.035	0.035	0.018	0.018
	[1.160]	[3.080]	[0.795]	[2.393]	[0.375]	[0.438]
Distance 1	−0.080	−0.080	−0.085	−0.085	−0.085	−0.085
	[−1.601]	[−3.877]	[−1.467]	[−3.714]	[−1.128]	[−1.261]
Distance 2	0.023	0.023	0.040	0.040	0.012	0.012
	[0.457]	[1.550]	[0.745]	[2.251]	[0.215]	[0.252]
Summer	−0.010	−0.010	−0.051	−0.051	−0.068	−0.068
	[−0.582]	[−1.383]	[−3.074]	[−8.179]	[−3.498]	[−3.904]
MaleRatio	0.028	0.028	0.187	0.187	0.124	0.124
	[0.625]	[2.033]	[1.784]	[4.454]	[1.218]	[1.443]
MeanAge	0.006	0.006	−0.023	−0.023	0.045	0.045
	[0.085]	[0.178]	[−0.249]	[−0.546]	[0.439]	[0.530]
MeanAgeSquared	−0.001	−0.001	0.0001	0.0001	−0.001	−0.001
	[−0.358]	[−0.770]	[0.035]	[0.080]	[−0.601]	[−0.725]
N	122	122	122	122	122	122
Adjusted R²	0.055	0.055	-0.019	-0.019	-0.040	-0.040
Country fixed effects	No	No	Yes	Yes	Yes	Yes

Notes: t-statistics in brackets. (1), (2), (3), and (4) weight by CohortSize. (5) and (6) are unweighted. Standard errors for odd columns are clustered at the Country level. Standard errors for even columns are wild bootstrap, using Country blocks and 1000 repetitions. There are 20 Country clusters. Critical values for the t-distribution with 19 degrees of freedom: 1.73 (10% level), 2.09 (5% level), 2.86 (1% level). Games with major declines in attendance dropped. Distance [-2, 2] Years 1952+

Table 8: Subjective Event Home Field Effect Golds

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Change Golds/Athlete						
Distance -1	0.007	0.007	0.012	0.012	−0.002	−0.002
	[0.118]	[0.336]	[0.177]	[0.565]	[−0.035]	[−0.040]
Distance 0	0.065	0.065	0.073	0.073	0.072	0.072
	[2.062]	[5.149]	[2.075]	[5.430]	[1.815]	[2.110]
Distance 1	−0.080	−0.080	−0.065	−0.065	−0.025	−0.025
	[−1.531]	[−4.368]	[−1.213]	[−3.506]	[−0.525]	[−0.610]
Distance 2	−0.001	−0.001	0.025	0.025	0.017	0.017
	[−0.015]	[−0.040]	[0.449]	[1.237]	[0.293]	[0.342]
Summer	−0.030	−0.030	−0.033	−0.033	−0.048	−0.048
	[−1.217]	[−2.955]	[−1.114]	[−2.487]	[−1.118]	[−1.304]
MaleRatio	0.048	0.048	0.080	0.080	0.030	0.030
	[0.720]	[2.223]	[0.932]	[2.607]	[0.415]	[0.472]
MeanAge	−0.043	−0.043	0.016	0.016	0.076	0.076
	[−0.438]	[−0.721]	[0.123]	[0.249]	[0.502]	[0.574]
MeanAgeSquared	0.001	0.001	−0.001	−0.001	−0.002	−0.002
	[0.312]	[0.523]	[−0.308]	[−0.634]	[−0.672]	[−0.771]
N	122	122	122	122	122	122
Adjusted R^2	0.096	0.096	0.077	0.077	0.071	0.071
Panel B. Change Golds/Event						
Distance -1	0.027	0.027	0.027	0.027	0.017	0.017
	[0.592]	[1.685]	[0.497]	[1.637]	[0.421]	[0.486]
Distance 0	0.046	0.046	0.049	0.049	0.056	0.056
	[2.075]	[4.553]	[1.794]	[4.573]	[1.715]	[1.967]
Distance 1	−0.045	−0.045	−0.037	−0.037	−0.013	−0.013
	[−1.366]	[−3.719]	[−1.073]	[−3.001]	[−0.376]	[−0.432]
Distance 2	0.023	0.023	0.040	0.040	0.034	0.034
	[0.669]	[1.745]	[0.991]	[2.764]	[0.823]	[0.942]
Summer	−0.021	−0.021	−0.025	−0.025	−0.036	−0.036
	[−0.992]	[−2.367]	[−0.947]	[−2.117]	[−0.923]	[−1.057]
MaleRatio	0.042	0.042	0.069	0.069	0.028	0.028
	[0.955]	[2.929]	[1.208]	[3.014]	[0.533]	[0.612]
MeanAge	−0.004	−0.004	0.025	0.025	0.077	0.077
	[−0.064]	[−0.111]	[0.260]	[0.553]	[0.710]	[0.805]
MeanAgeSquared	−0.0001	−0.0001	−0.001	−0.001	−0.002	−0.002
	[−0.095]	[−0.168]	[−0.468]	[−1.009]	[−0.894]	[−1.012]
N	122	122	122	122	122	122
Adjusted R^2	0.083	0.083	0.054	0.054	0.074	0.074
Country fixed effects	No	No	Yes	Yes	Yes	Yes

Notes: t-statistics in brackets. (1), (2), (3), and (4) weight by CohortSize. (5) and (6) are unweighted. Standard errors for odd columns are clustered at the Country level. Standard errors for even columns are wild bootstrap, using Country blocks and 1000 repetitions. There are 20 Country clusters. Critical values for the t-distribution with 19 degrees of freedom: 1.73 (10% level), 2.09 (5% level), 2.86 (1% level). Games with major declines in attendance dropped. Distance [-2, 2] Years 1952+

Table 9: Objective Event Home Field Effect Medals

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Change Medals/Athlete						
Distance -1	0.036	0.036	0.040	0.040	0.029	0.029
	[0.790]	[3.704]	[0.791]	[4.075]	[0.464]	[0.541]
Distance 0	0.029	0.029	0.034	0.034	0.061	0.061
	[1.093]	[5.279]	[1.065]	[5.369]	[1.298]	[1.486]
Distance 1	−0.031	−0.031	−0.025	−0.025	−0.030	−0.030
	[−0.938]	[−5.113]	[−0.576]	[−3.403]	[−0.627]	[−0.741]
Distance 2	0.011	0.011	0.022	0.022	0.027	0.027
	[0.292]	[1.482]	[0.543]	[2.900]	[0.536]	[0.621]
Summer	−0.029	−0.029	−0.038	−0.038	−0.012	−0.012
	[−2.609]	[−10.465]	[−1.039]	[−5.366]	[−0.354]	[−0.413]
MaleRatio	−0.087	−0.087	−0.034	−0.034	−0.097	−0.097
	[−1.075]	[−4.538]	[−0.215]	[−1.047]	[−0.677]	[−0.778]
MeanAge	−0.025	−0.025	−0.163	−0.163	−0.006	−0.006
	[−0.232]	[−1.165]	[−0.886]	[−4.858]	[−0.033]	[−0.038]
MeanAgeSquared	0.0004	0.0004	0.003	0.003	−0.0002	−0.0002
	[0.156]	[0.810]	[0.770]	[4.366]	[−0.063]	[−0.073]
N	124	124	124	124	124	124
Adjusted R^2	0.017	0.017	-0.078	-0.078	-0.067	-0.067
Panel B. Change Medals/Event						
Distance -1	0.023	0.023	0.020	0.020	0.004	0.004
	[0.893]	[4.678]	[0.729]	[4.181]	[0.130]	[0.148]
Distance 0	0.017	0.017	0.013	0.013	0.020	0.020
	[0.945]	[5.114]	[0.673]	[3.688]	[0.794]	[0.904]
Distance 1	−0.025	−0.025	−0.027	−0.027	−0.035	−0.035
	[−1.145]	[−6.706]	[−0.989]	[−6.125]	[−1.385]	[−1.595]
Distance 2	−0.004	−0.004	−0.003	−0.003	−0.004	−0.004
	[−0.153]	[−0.963]	[−0.095]	[−0.600]	[−0.144]	[−0.167]
Summer	−0.020	−0.020	−0.035	−0.035	−0.023	−0.023
	[−2.577]	[−11.653]	[−1.389]	[−8.111]	[−1.154]	[−1.375]
MaleRatio	−0.071	−0.071	−0.034	−0.034	−0.049	−0.049
	[−1.466]	[−7.092]	[−0.354]	[−2.021]	[−0.709]	[−0.824]
MeanAge	0.054	0.054	−0.037	−0.037	0.041	0.041
	[0.593]	[3.647]	[−0.273]	[−1.772]	[0.394]	[0.450]
MeanAgeSquared	−0.001	−0.001	0.001	0.001	−0.001	−0.001
	[−0.651]	[−4.083]	[0.180]	[1.189]	[−0.463]	[−0.530]
N	124	124	124	124	124	124
Adjusted R^2	0.064	0.064	-0.005	-0.005	-0.014	-0.014
Country fixed effects	No	No	Yes	Yes	Yes	Yes

Notes: t-statistics in brackets. (1), (2), (3), and (4) weight by CohortSize. (5) and (6) are unweighted. Standard errors for odd columns are clustered at the Country level. Standard errors for even columns are wild bootstrap, using Country blocks and 1000 repetitions. There are 20 Country clusters. Critical values for the t-distribution with 19 degrees of freedom: 1.73 (10% level), 2.09 (5% level), 2.86 (1% level). Games with major declines in attendance dropped. Distance [-2, 2] Years 1952+

Table 10: Objective Event Home Field Effect Golds

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Change Golds/Athlete						
Distance -1	0.014	0.014	0.018	0.018	0.045	0.045
	[0.468]	[2.066]	[0.539]	[2.621]	[1.019]	[1.179]
Distance 0	0.010	0.010	0.012	0.012	0.032	0.032
	[0.790]	[3.560]	[0.762]	[3.748]	[1.468]	[1.685]
Distance 1	−0.034	−0.034	−0.034	−0.034	−0.013	−0.013
	[−2.777]	[−15.714]	[−2.114]	[−12.041]	[−0.944]	[−1.092]
Distance 2	−0.006	−0.006	−0.003	−0.003	0.019	0.019
	[−0.235]	[−1.114]	[−0.112]	[−0.556]	[0.570]	[0.668]
Summer	−0.028	−0.028	−0.017	−0.017	0.00004	0.00004
	[−2.473]	[−12.542]	[−1.565]	[−5.802]	[0.003]	[0.003]
MaleRatio	0.018	0.018	−0.017	−0.017	−0.075	−0.075
	[0.444]	[1.747]	[−0.321]	[−1.224]	[−1.013]	[−1.197]
MeanAge	−0.006	−0.006	−0.114	−0.114	−0.003	−0.003
	[−0.080]	[−0.304]	[−0.844]	[−3.434]	[−0.020]	[−0.023]
MeanAgeSquared	0.0001	0.0001	0.002	0.002	−0.0001	−0.0001
	[0.038]	[0.147]	[0.799]	[3.255]	[−0.041]	[−0.046]
N	124	124	124	124	124	124
Adjusted R^2	0.054	0.054	0.026	0.026	0.011	0.011
Panel B. Change Golds/Event						
Distance -1	0.004	0.004	0.005	0.005	0.015	0.015
	[0.244]	[1.232]	[0.323]	[1.637]	[0.778]	[0.902]
Distance 0	0.005	0.005	0.004	0.004	0.013	0.013
	[0.709]	[3.619]	[0.549]	[2.730]	[1.119]	[1.358]
Distance 1	−0.027	−0.027	−0.028	−0.028	−0.017	−0.017
	[−3.583]	[−22.444]	[−2.884]	[−16.475]	[−2.025]	[−2.386]
Distance 2	−0.011	−0.011	−0.010	−0.010	0.001	0.001
	[−0.612]	[−3.778]	[−0.529]	[−3.184]	[0.080]	[0.092]
Summer	−0.018	−0.018	−0.017	−0.017	−0.009	−0.009
	[−2.279]	[−13.891]	[−1.836]	[−9.025]	[−0.790]	[−0.901]
MaleRatio	0.012	0.012	−0.011	−0.011	−0.032	−0.032
	[0.436]	[2.211]	[−0.330]	[−1.540]	[−1.011]	[−1.172]
MeanAge	0.002	0.002	−0.070	−0.070	0.003	0.003
	[0.035]	[0.163]	[−0.918]	[−4.094]	[0.038]	[0.043]
MeanAgeSquared	−0.0001	−0.0001	0.001	0.001	−0.0002	−0.0002
	[−0.079]	[−0.382]	[0.860]	[3.872]	[−0.107]	[−0.121]
N	124	124	124	124	124	124
Adjusted R^2	0.096	0.096	0.111	0.111	0.043	0.043
Country fixed effects	No	No	Yes	Yes	Yes	Yes

Notes: t-statistics in brackets. (1), (2), (3), and (4) weight by CohortSize. (5) and (6) are unweighted. Standard errors for odd columns are clustered at the Country level. Standard errors for even columns are wild bootstrap, using Country blocks and 1000 repetitions. There are 20 Country clusters. Critical values for the t-distribution with 19 degrees of freedom: 1.73 (10% level), 2.09 (5% level), 2.86 (1% level). Games with major declines in attendance dropped. Distance [-2, 2] Years 1952+

Subjective Individual Sports

Boxing
- Light-Middleweight, Men
- Featherweight, Men
- Lightweight, Men
- Light-Heavyweight, Men
- Bantamweight, Men
- Super-Heavyweight, Men
- Middleweight, Men
- Welterweight, Men
- Light-Welterweight, Men
- Flyweight, Men
- Heavyweight, Men
- Light-Flyweight, Men
- Lightweight, Women
- Flyweight, Women
- Middleweight, Women

Wrestling
- Heavyweight, Greco-Roman, Men
- Heavyweight, Freestyle, Men
- Lightweight, Freestyle, Men
- Lightweight, Greco-Roman, Men
- Heavyweight, Freestyle, Women
- Welterweight, Freestyle, Men
- Featherweight, Freestyle, Men
- Middleweight, Freestyle, Men
- Bantamweight, Freestyle, Men
- Featherweight, Greco-Roman, Men
- Welterweight, Greco-Roman, Men
- Light-Heavyweight, Freestyle, Men
- Flyweight, Freestyle, Men
- Flyweight, Greco-Roman, Men
- Middleweight, Greco-Roman, Men
- Light-Heavyweight, Greco-Roman, Men
- Super-Heavyweight, Freestyle, Men
- Bantamweight, Greco-Roman, Men
- Middleweight B, Greco-Roman, Men
- Middleweight A, Greco-Roman, Men
- Super-Heavyweight, Greco-Roman, Men
- Light-Flyweight, Greco-Roman, Men
- Light-Flyweight, Freestyle, Men
- Unlimited Class, Greco-Roman, Men
- Flyweight, Freestyle, Women
- Lightweight, Freestyle, Women
- Featherweight, Freestyle, Women
- Middleweight, Freestyle, Women
- Light-Heavyweight, Freestyle, Women

Judo
- Half-Middleweight, Women
- Lightweight, Women
- Heavyweight, Women
- Half-Heavyweight, Women
- Middleweight, Women
- Half-Lightweight, Women
- Extra-Lightweight, Women
- Lightweight, Men
- Extra-Lightweight, Men
- Half-Middleweight, Men
- Heavyweight, Men
- Open Class, Men
- Half-Lightweight, Men
- Half-Heavyweight, Men
- Middleweight, Men

Taekwondo
- Flyweight, Women
- Featherweight, Women
- Welterweight, Men
- Flyweight, Men
- Featherweight, Men
- Welterweight, Women
- Heavyweight, Men
- Heavyweight, Women

Art Competitions
- Literature, Open
- Painting, Paintings, Open
- Painting, Drawings And Water Colors, Open
- Painting, Graphic Arts, Open
- Painting, Applied Arts, Open
- Literature, Unknown Event, Open
- Sculpturing, Open
- Architecture, Designs For Town Planning, Open
- Sculpturing, Statues, Open
- Music, Compositions For Orchestra, Open
- Sculpturing, Unknown Event, Open

Artistic Gymnastics (Gymnastics)
- Individual All-Around, Women
- Floor Exercise, Women
- Horse Vault, Women
- Uneven Bars, Women
- Balance Beam, Women
- Individual All-Around, Men
- Floor Exercise, Men
- Horse Vault, Men
- Parallel Bars, Men
- Horizontal Bar, Men
- Rings, Men
- Pommelled Horse, Men
- Individual All-Around, Field Sports, Men
- Individual All-Around, Apparatus Work, Men
- Rope Climbing, Men
- Side Horse, Men
- Club Swinging, Men
- Individual All-Around, 4 Events, Men
- Tumbling, Men

Rhythmic Gymnastics (Gymnastics)
- Individual, Women

Diving (Aquatics)
- Plain High, Men
- Plain High, Women

Nordic Combined (Skiing)
- Individual, Men
- Sprint, Men
- Normal Hill / 10 km, Individual, Men
- Large Hill / 10 km, Individual, Men

Artistic Swimming (Aquatics)
- Solo, Women

Ski Jumping (Skiing)
- Normal Hill, Individual, Men
- Large Hill, Individual, Men
- Normal Hill, Individual, Women

Figure Skating (Skating)
- Singles, Women
- Singles, Men
- Special Figures, Men

Freestyle Skiing (Skiing)
- Moguls, Women
- Aerials, Women
- Moguls, Men
- Aerials, Men
- Slopestyle, Women
- Halfpipe, Women
- Slopestyle, Men
- Halfpipe, Men

Trampolining (Gymnastics)
- Individual, Women
- Individual, Men

Snowboarding (Skiing)
- Halfpipe, Men
- Halfpipe, Women
- Slopestyle, Women
- Slopestyle, Men
- Big Air, Women
- Big Air, Men

Objective Individual Sports

Shooting
- Free Pistol, 50 yards, Men
- Free Rifle, Three Positions, 300 metres, Men
- Military Rifle, Prone, 600 metres, Men
- Military Rifle, Standing, 300 metres, Men
- Running Target, Single Shot, Men
- Running Target, Double Shot, Men
- Military Pistol, 25 metres, Men
- Military Rifle, 200 metres, Men
- Rapid-Fire Pistol, 25 metres, Men
- Air Pistol, 10 metres, Women
- Sporting Pistol, 25 metres, Women
- Air Rifle, 10 metres, Men
- Small-Bore Rifle, Three Positions, 50 metres, Men
- Air Rifle, 10 metres, Women
- Small-Bore Rifle, Three Positions, 50 metres, Women
- Small-Bore Rifle, Prone, 50 metres, Open
- Double Trap, Women
- Trap, Women
- Free Pistol, 50 metres, Men
- Air Pistol, 10 metres, Men
- Running Target, Single And Double Shot, Men
- Small-Bore Rifle, Three Positions, 50 metres, Open
- Small-Bore Rifle, Prone, 50 metres, Men
- Trap, Men
- Skeet, Open
- Skeet, Men
- Trap, Open
- Double Trap, Men
- Free Pistol, 50 metres, Open
- Rapid-Fire Pistol, 25 metres, Open
- Running Target, 50 metres, Men
- Running Target, 10 metres, Men
- Dueling Pistol, 30 metres, Men
- Military Rifle, Three Positions, 300 metres, Men
- Military Rifle, Any Position, 600 metres, Men
- Free Rifle, Prone, 600 metres, Men
- Small-Bore Rifle, Standing, 50 metres, Men
- Free Rifle, Kneeling, 300 metres, Men
- Free Rifle, Prone, 300 metres, Men
- Free Rifle, Standing, 300 metres, Men
- Military Pistol, 30 metres, Men
- Free Rifle, 1,000 Yards, Men
- Running Target, 50 metres, Open
- Skeet, Women
- Free Rifle, Three Positions, 300 metres, Open
- Military Rifle, Prone, 300 metres, Men
- Small-Bore Rifle, Prone, 50 and 100 yards, Men
- Small-Bore Rifle, Disappearing Target, 25 metres, Men
- Small-Bore Rifle, Disappearing Target, 25 yards, Men
- Small-Bore Rifle, Moving Target, 25 yards, Men
- Small-Bore Rifle, Any Position, 50 metres, Men
- Muzzle-Loading Pistol, 25 metres, Men
- Free Pistol, 30 metres, Men
- Unknown Event, Men

Triathlon
- Olympic Distance, Women
- Olympic Distance, Men

Canoe Sprint (Canoeing)
- Kayak Singles, 500 metres, Women
- Kayak Singles, 1,000 metres, Men
- Canadian Singles, 1,000 metres, Men
- Kayak Singles, 500 metres, Men
- Canadian Singles, 500 metres, Men
- Kayak Singles, 200 metres, Women
- Kayak Singles, 200 metres, Men
- Canadian Singles, 200 metres, Men

Weightlifting
- Unlimited, Two Hands, Men
- All-Around Dumbbell Contest, Men
- Featherweight, Men
- Light-Heavyweight, Men

- Middle-Heavyweight, Men
- Lightweight, Men
- Middleweight, Men
- Bantamweight, Men
- Super-Heavyweight, Men
- Flyweight, Men
- Heavyweight, Men
- Heavyweight II, Men
- Heavyweight I, Men
- Unlimited, One Hand, Men
- Heavyweight, Women
- Lightweight, Women
- Middleweight, Women
- Super-Heavyweight, Women
- Light-Heavyweight, Women
- Featherweight, Women
- Flyweight, Women

Racquets
- Singles, Men

Canoe Slalom (Canoeing)
- Kayak Singles, Slalom, Women
- Canadian Singles, Slalom, Men
- Kayak Singles, Slalom, Men

Short Track Speed Skating (Skating)
- 500 metres, Women
- 1,000 metres, Women
- 1,500 metres, Women
- 1,000 metres, Men
- 500 metres, Men
- 1,500 metres, Men

Modern Pentathlon
- Individual, Men
- Individual, Women

Swimming (Aquatics)
- 100 metres Freestyle, Men
- 500 metres Freestyle, Men
- 1,200 metres Freestyle, Men
- 400 metres Freestyle, Men
- 200 metres Breaststroke, Men
- 400 metres Breaststroke, Men
- 100 metres Butterfly, Women
- 100 metres Breaststroke, Women
- 200 metres Breaststroke, Women
- 400 metres Freestyle, Women
- 800 metres Freestyle, Women
- 100 metres Freestyle, Women
- 200 metres Freestyle, Women
- 300 metres Freestyle, Women
- 100 metres Backstroke, Women
- 200 metres Backstroke, Women
- 200 metres Individual Medley, Women
- 400 metres Individual Medley, Women
- 50 metres Freestyle, Women
- 200 metres Butterfly, Women
- 1,500 metres Freestyle, Men
- 200 metres Freestyle, Men
- 50 metres Freestyle, Men
- 100 metres Butterfly, Men
- 200 metres Individual Medley, Men
- 200 metres Butterfly, Men
- 100 metres Backstroke, Men
- 400 metres Individual Medley, Men
- 200 metres Backstroke, Men
- 100 metres Breaststroke, Men
- 1,000 metres Freestyle, Men
- 200 metres Obstacle Course, Men
- 440 yard Freestyle, Men
- 880 yard Freestyle, Men
- One Mile Freestyle, Men
- 4,000 metres Freestyle, Men
- Underwater Swimming, Men
- 50 yard Freestyle, Men
- 100 Yard Backstroke, Men
- 440 Yard Breaststroke, Men
- 100 yard Freestyle, Men

220 yard Freestyle, Men
100 metres Freestyle For Sailors, Men
Plunge For Distance, Men

Cycling BMX Racing (Cycling)
BMX, Women
BMX, Men

Fencing
Épée, Individual, Men
Sabre, Individual, Men
Foil, Individual, Women
Épée, Individual, Women
Foil, Individual, Men
Sabre, Masters, Individual, Men
Foil, Masters, Individual, Men
Épée, Masters, Individual, Men
Épée, Masters and Amateurs, Individual, Men
Single Sticks, Individual, Men
Sabre, Individual, Women

Cycling Mountain Bike (Cycling)
Mountainbike, Cross-Country, Women
Mountainbike, Cross-Country, Men

Golf
Individual, Men
Individual, Women

Croquet
Singles, One Ball, Open
Singles, Two Balls, Open

Table Tennis
Singles, Men
Singles, Women

Badminton
Singles, Men
Singles, Women

Speed Skating (Skating)
3,000 metres, Women
5,000 metres, Women
1,500 metres, Women
500 metres, Women
1,000 metres, Women
Mass Start, Women
500 metres, Men
1,000 metres, Men
1,500 metres, Men
5,000 metres, Men
10,000 metres, Men
Allround, Men
Mass Start, Men

Biathlon
20 kilometres, Men
15 kilometres, Women
7.5 kilometres Sprint, Women
10 kilometres Pursuit, Women
12.5 kilometres Mass Start, Women
10 kilometres Sprint, Men
12.5 kilometres Pursuit, Men
15 kilometres Mass Start, Men

Sailing
Windsurfer, Women
One Person Dinghy, Women
One Person Dinghy, Men
One Person Heavyweight Dinghy, Men
Windsurfer, Open
Windsurfer, Men
20+ Ton, Open

Cycling Road (Cycling)
Road Race, Individual, Men
Road Race, Individual, Women
Individual Time Trial, Women
Individual Time Trial, Men

Cross Country Skiing (Skiing)
18 kilometres, Men
50 kilometres, Men
15 kilometres, Men
30 kilometres, Men
5 kilometres, Women

10 kilometres, Women
20 kilometres, Women
30 kilometres, Women
5/10 kilometres Pursuit, Women
15 kilometres, Women
5/5 kilometres Pursuit, Women
15 km Skiathlon, Women
10 kilometres, Men
10/15 kilometres Pursuit, Men
10/10 kilometres Pursuit, Men
30 km Skiathlon, Men

Rowing
Single Sculls, Women
Single Sculls, Men

Athletics
100 metres, Men
400 metres, Men
800 metres, Men
110 metres Hurdles, Men
Long Jump, Men
Triple Jump, Men
1,500 metres, Men
Marathon, Men
Triple Jump, Women
Decathlon, Men
3,000 metres, Women
400 metres, Women
200 metres Hurdles, Men
Discus Throw, Men
Shot Put, Men
High Jump, Men
56-pound Weight Throw, Men
Hammer Throw, Men
Javelin Throw, Men
Javelin Throw, Both Hands, Men
200 metres, Men
Standing Long Jump, Men
Pole Vault, Men
Long Jump, Women
Javelin Throw, Women
Marathon, Women
800 metres, Women
1,500 metres, Women
5,000 metres, Women
200 metres, Women
High Jump, Women
100 metres, Women
10 kilometres Walk, Women
Shot Put, Women
80 metres Hurdles, Women
100 metres Hurdles, Women
Discus Throw, Women
Heptathlon, Women
400 metres Hurdles, Women
Pentathlon, Women
10,000 metres, Women
20 kilometres Walk, Women
20 kilometres Walk, Men
50 kilometres Walk, Men
10 kilometres Walk, Men
5,000 metres, Men
10,000 metres, Men
3,000 metres Steeplechase, Men
400 metres Hurdles, Men
Pentathlon, Men
3,000 metres Walk, Men
60 metres, Men
5 mile, Men
10 mile Walk, Men
Cross-Country, Individual, Men
Discus Throw, Both Hands, Men
Discus Throw, Greek Style, Men
2,500 metres Steeplechase, Men
3,200 metres Steeplechase, Men
Standing High Jump, Men

Javelin Throw, Freestyle, Men
3,500 metres Walk, Men
4,000 metres Steeplechase, Men
3,000 metres Steeplechase, Women
Shot Put, Both Hands, Men
2,590 metres Steeplechase, Men
All-Around Championship, Men
Standing Triple Jump, Men
Pole Vault, Women
Hammer Throw, Women

Jeu De Paume
Singles, Men

Tennis
Singles, Men
Singles, Covered Courts, Men
Singles, Covered Courts, Women
Singles, Women

Skeleton (Bobsleigh)
Skeleton, Men
Skeleton, Women

Alpine Skiing (Skiing)
Slalom, Women
Downhill, Women
Giant Slalom, Women
Super G, Women
Combined, Women
Slalom, Men
Combined, Men
Downhill, Men
Super G, Men
Giant Slalom, Men

Equestrian Driving (Equestrian)
Four-In-Hand Competition, Open

Equestrian Vaulting (Equestrian)
Vaulting, Individual, Men

Cycling Track (Cycling)
20 kilometres, Men
Individual Pursuit, 4,000 metres, Men
Individual Pursuit, 3,000 metres, Women
Points Race, Women
500 metres Time Trial, Women
1,000 metres Time Trial, Men
Points Race, Men
50 kilometres, Men
5,000 metres, Men
100 kilometres, Men
¼ mile, Men
½ mile, Men
5 mile, Men
25 mile, Men
333⅓ metres Time Trial, Men
⅓ mile, Men
1 mile, Men
2 mile, Men
Keirin, Men
Omnium, Men
25 kilometres, Men
10,000 metres, Men
12-Hours Race, Men
Keirin, Women
Omnium, Women

Archery
Individual, Women
Individual, Men
Pole Archery, Small Birds, Individual, Men
Pole Archery, Large Birds, Individual, Men
Sur La Perche À La Herse, Men
Au Chapelet, 33 metres, Men
Au Chapelet, 50 metres, Men
Au Cordon Doré, 33 metres, Men
Au Cordon Doré, 50 metres, Men
Championnat Du Monde, Men
Target Archery, 28 metres, Individual, Men
Target Archery, 33 metres, Individual, Men
Target Archery, 50 metres, Individual, Men

Continental Style, Men
Double York Round, Men
Sur La Perche À La Pyramide, Men
Double National Round, Women
Double Columbia Round, Women
Double American Round, Men
Unknown Event, Men

Canoe Marathon (Canoeing)
Kayak Singles, 10,000 metres, Men
Canadian Singles, 10,000 metres, Men
Folding Kayak Singles, 10 kilometres, Men

Luge
Singles, Women
Singles, Men

Marathon Swimming (Aquatics)
10 kilometres Open Water, Men
10 kilometres Open Water, Women

Roque
Singles, Men

Freestyle Skiing (Skiing)
Ski Cross, Women
Ski Cross, Men

Snowboarding (Skiing)
Giant Slalom, Men
Parallel Giant Slalom, Men
Giant Slalom, Women
Boardercross, Men
Parallel Slalom, Men
Boardercross, Women
Parallel Giant Slalom, Women
Parallel Slalom, Women

References

Balmer, Nigel J, Alan M Nevill, and A Mark Williams. 2001. "Home Advantage in the Winter Olympics (1908-1998)." *Journal of Sports Sciences*, 19(2): 129–139.

Balmer, Nigel J, Alan M Nevill, and A Mark Williams. 2003. "Modelling Home Advantage in the Summer Olympic Games." *Journal of sports sciences*, 21(6): 469–478.

Cameron, A Colin, Jonah B Gelbach, and Douglas L Miller. 2008. "Bootstrap-Based Improvements for Inference with Clustered Errors." *The Review of Economics and Statistics*, 90(3): 414–427.

Jamieson, Jeremy P. 2010. "The Home Field Advantage in Athletics: A Meta-Analysis." *Journal of Applied Social Psychology*, 40(7): 1819–1848.

Pettigrew, Stephen, and Danyel Reiche. 2016. "Hosting the Olympic Games: An Overstated Advantage in Sports History." *The International Journal of the History of Sport*, 33(6-7): 635–647.

Wilson, Darryl, and Girish Ramchandani. 2018. "A Comparative Analysis of Home Advantage in the Olympic and Paralympic Games 1988–2018." *Journal of Global Sport Management*, 1–15.