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ECONOMIC MODEL SHOWS USA FIRST, BRITAIN FOURTH IN 2012 LONDON OLYMPIC GAMES

Economist's formula has 93 percent accuracy rate

COLORADO SPRINGS, Colo. – March 12, 2012, tables revised July 17, 2012 –A Colorado College economist who has predicted Olympic medals with a 93 percent accuracy rate over six consecutive Olympic Games has made his predictions for the 2012 Summer Olympic Games in London. He uses a model that, surprisingly, does not include athletic ability as one of its factors.

Daniel K.N. Johnson, a professor of economics at Colorado College, predicts that the U.S. will top the podium most often, followed by China, second, and Russia, third, with the host country, Great Britain, placing fourth.

Johnson's model of Olympic success has shown uncanny accuracy time and again. He first constructed the model with an undergraduate student co-author before the 2000 Summer Games in Sydney, Australia. Since then, the model has proven itself over six consecutive Olympics, averaging a correlation of 93 percent with actual medal counts, and 85 percent for gold medals specifically. This year, Johnson re-calibrated the model, with the assistance of another undergraduate student, Rafael Alonso-Arenas. It now matches 60 years of historical data with a correlation of 96 percent for all medals, and 95 percent for gold medals.

Surprisingly, Johnson's model uses only non-athletic data to make forecasts--- per capita income, population and the advantage of hosting the Games (or of living nearby). In the past, the formula also included political structure and climate, but the team discarded those characteristics this year in favor of two different attributes—a host nation advantage that pre-dates and post-dates the Games actually hosted, and a “cultural specific factor” that helps to correct the model's historical under-predictions for nations like Australia and China.

Johnson treats the model's predictions as ‘benchmarks’ to help set national expectations at realistic levels. “We all have expectations about how our own nation, or other nations, will perform so we attempt to quantify those expectations, so that each nation can celebrate victory if they exceed the model's predictions. For a small nation, winning three medals is an amazing accomplishment. For the U.S. or Germany or Russia, it's appropriate to expect a lot more,” he said. “How much more? That's where the model comes in.”

As a Canadian-born economist, Johnson is not a sports enthusiast, and in fact focuses on the economics of innovation and technological change. However, he is a self-proclaimed Olympophile, always hoping that his model will be dramatically incorrect. “The Olympics are a celebration of the exceptional,” he says, “and the fact that an economic model can predict medal counts so accurately simply points to the fact that there are underlying patterns that favor certain nations over others. I watch for excellence, wherever it occurs, and I cheer most loudly where it is unpredicted.”

During the last Summer Games, in Beijing in 2008, Johnson's model forecast that the U.S. would top the medal count, and it did, winning 110 medals (seven more than predicted). He also correctly predicted that China would top the gold medal count, and it did, winning 51 gold medals (seven more than predicted). During the last Winter Games, in Vancouver in 2010, the model predicted 27 medals for Canada (they won 26 instead), but the American and German teams both vastly outperformed expectations and topped the podium more often.

Historical precision for the Summer Games has been equally startling. Before the 2004 Athens Olympics, Johnson predicted the U.S. team would win 103 medals, including 37 gold; the U.S. team won precisely 103 with 35 gold. He said Russia would win 94 medals; it won 92. For the 2000 Sydney games, he predicted 90 medals for the U.S., with 33 gold. The Americans won 97, with 39 gold. For Australia, the host, he predicted 54 medals. Australia won 56.

Johnson's paper, "A Tale of Two Seasons: Participation and Medal Counts at the Summer and Winter Olympics," was written in 1999 with Ayfer Ali while she was an undergraduate student and Johnson was on sabbatical at Harvard University. It was published in *Social Science Quarterly* in December 2004. Since then, Johnson has collaborated with students at Colorado College to make Olympic predictions based on that original model. This year, they decided to re-calibrate the model as well.

Johnson is the Gerald L. Schlessman Professor of Economics at Colorado College – located a stone's throw from the U.S. Olympic Committee headquarters in Colorado Springs. But if Johnson has his choice, he will be in London during the Games.

Johnson received his Bachelor of Social Science degree in Economics from the University of Ottawa in 1991; his Master's degree in Economics from the London School of Economics in 1992; and his Ph.D. in Economics from Yale University in 1998. He has been a professor at Colorado College since 2004, teaching and researching public policy and the economics of technological change.

This year, Johnson decided to report predictions for all 130 nations with available data. A full table of predictions is attached, in alphabetical order by nation, and a second table ranks all nations predicted to win five or more medals, in the standard Olympic order (ranked by gold medals first, then by total medal count).

About Colorado College

Colorado College is a nationally prominent, four-year liberal arts and sciences college that was founded in Colorado Springs in 1874. The College operates on the innovative Block Plan, in which its approximately 2,000 students study one course at a time in intensive 3½-week segments. For more information, visit www.ColoradoCollege.edu

NOTE TO EDITORS: Charts and graphics showing Johnson's current and past predictions, as well as Johnson and Ali's published paper, are available at <http://faculty1.coloradocollege.edu/~djohnson/Olympics.html>. Updates and new graphics will be posted when available. Johnson may be contacted directly at 001-719-389-6654 (office) or 001-719-304-4410 (mobile).

2012 Olympic medal predictions by Dan Johnson, assisted by Rafael Alonso-Arenas

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Alphabetical listing of predictions for all 134 nations with available data

Nation	All medals			Gold medals		
	Predicted 2012	Predicted 2008	Actual 2008	Predicted 2012	Predicted 2008	Actual 2008
Algeria	2	2	2	0	0	0
Angola	0	0	0	0	0	0
Argentina	6	6	6	2	2	2
Australia	38	42	46	8	12	14
Austria	4	4	3	1	1	0
Bahamas	2	2	2	1	1	0
Bahrain	1	0	0	0	0	0
Bangladesh	2	1	0	0	0	0
Barbados	0	0	0	0	0	0
Belgium	5	4	2	1	1	1
Belize	0	0	0	0	0	0
Benin	0	0	0	0	0	0
Bolivia	0	0	0	0	0	0
Botswana	0	0	0	0	0	0
Brazil	23	13	15	7	3	3
Bulgaria	12	12	5	3	3	1
Burkina Faso	0	0	0	0	0	0
Cameroon	3	1	1	1	1	1
Canada	17	17	18	4	4	3
Central Africa	0	0	0	0	0	0
Chad	0	0	0	0	0	0
Chile	2	2	1	1	1	0
China	67	79	100	33	40	51
Colombia	2	2	2	0	0	0
Congo	0	0	0	0	0	0
Cote D'Ivoire	0	0	0	0	0	0
Cyprus	0	0	0	0	0	0
Czech Republic	7	7	6	2	2	3
Democratic Republic of the Congo (Zaire)	1	0	0	0	0	0
Denmark	7	7	7	2	2	2
Djibouti	0	0	0	0	0	0
Dominican Republic	1	1	2	1	0	1
Ecuador	1	1	1	0	0	0
Egypt	3	2	1	0	0	0
El Salvador	0	0	0	0	0	0
Estonia	2	2	2	1	1	1

Nation	All medals			Gold medals		
	Predicted		Actual	Predicted		Actual
	2012	2008	2008	2012	2008	2008
Ethiopia	8	7	7	3	3	4
Fiji	0	0	0	0	0	0
Finland	4	4	4	1	1	1
France	37	36	41	11	11	7
Gabon	0	0	0	0	0	0
Gambia	0	0	0	0	0	0
Germany	60	53	41	19	19	16
Ghana	1	1	0	0	0	0
Great Britain	45	36	47	20	12	19
Greece	7	7	4	3	3	0
Guatemala	0	0	0	0	0	0
Guinea	0	0	0	0	0	0
Guyana	0	0	0	0	0	0
Haiti	0	0	0	0	0	0
Honduras	0	0	0	0	0	0
Hong Kong	1	1	0	0	0	0
Hungary	19	19	10	7	8	3
Iceland	1	1	1	0	0	0
India	7	7	3	5	5	1
Indonesia	7	6	5	2	2	1
Iran	5	5	2	1	1	1
Iraq	0	0	0	0	0	0
Ireland	4	2	3	1	1	0
Israel	2	1	1	0	0	0
Italy	31	26	27	10	10	8
Jamaica	7	7	11	3	3	6
Japan	31	22	25	9	9	9
Jordan	0	0	0	0	0	0
Kenya	12	12	25	3	3	9
Korea	29	29	31	9	9	13
Kuwait	0	0	0	0	0	0
Laos	0	1	0	0	0	0
Latvia	3	3	3	1	1	1
Lesotho	0	0	0	0	0	0
Liberia	0	0	0	0	0	0
Lithuania	4	4	5	1	1	0
Luxembourg	1	1	0	0	0	0
Madagascar	0	0	0	0	0	0
Malawi	0	0	0	0	0	0
Malaysia	1	1	1	0	0	0
Mali	0	0	0	0	0	0

Nation	All medals			Gold medals		
	Predicted		Actual	Predicted		Actual
	2012	2008	2008	2012	2008	2008
Malta	0	0	0	0	0	0
Mauritania	0	0	0	0	0	0
Mauritius	1	0	1	0	0	0
Mexico	4	4	3	1	1	2
Mongolia	2	3	4	1	1	2
Morocco	3	3	2	1	1	0
Mozambique	1	1	0	0	0	0
Namibia	1	1	0	0	0	0
Nepal	0	1	0	0	0	0
Netherlands	19	18	16	5	4	7
New Zealand	7	7	9	2	2	3
Nicaragua	0	0	0	0	0	0
Niger	0	0	0	0	0	0
Nigeria	6	5	4	1	1	0
Norway	8	8	9	3	3	3
Oman	0	0	0	0	0	0
Pakistan	3	2	0	0	0	0
Panama	1	0	1	0	0	1
Paraguay	0	0	0	0	0	0
Peru	1	1	0	0	0	0
Philippines	0	2	0	0	0	0
Poland	14	14	10	5	5	3
Portugal	3	3	2	0	0	1
Qatar	0	1	0	0	0	0
Romania	14	14	8	6	6	4
Russia	82	84	73	25	26	23
Rwanda	0	0	0	0	0	0
Saudi Arabia	0	0	0	0	0	0
Senegal	0	0	0	0	0	0
Seychelles	0	0	0	0	0	0
Sierra Leone	0	0	0	0	0	0
Singapore	1	1	1	0	0	0
South Africa	4	4	1	1	1	0
Spain	13	13	18	2	2	5
Sri Lanka	0	0	0	0	0	0
Sudan	1	1	1	0	0	0
Suriname	0	0	0	0	0	0
Swaziland	0	0	0	0	0	0
Sweden	9	9	5	2	2	0
Switzerland	6	6	7	2	2	2
Syria	1	1	0	0	0	0
Taiwan	0	0	0	0	0	0

Nation	All medals			Gold medals		
	Predicted		Actual	Predicted		Actual
	2012	2008	2008	2012	2008	2008
Tanzania	0	0	0	0	0	0
Thailand	4	4	2	1	1	0
Togo	0	0	1	0	0	0
Trinidad and Tobago	2	2	2	0	0	0
Tunisia	1	1	1	0	0	1
Turkey	8	7	8	3	3	1
Uganda	1	1	0	0	0	0
United Arab Emirates	1	1	0	0	0	0
United States	99	98	110	34	34	36
Uruguay	1	0	0	0	0	0
Vanuatu	0	0	0	0	0	0
Venezuela	1	1	1	0	0	0
Yemen	0	0	0	0	0	0
Zambia	1	0	0	0	0	0
Zimbabwe	1	1	4	0	0	1

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Rankings of nations predicted to win 5 or more medals in 2012
according to Olympic tradition (gold medals ranked first, then totals)

Predicted Ranking 2012	Nation	All medals			Gold medals		
		Predicted 2012	2008	Actual 2008	Predicted 2012	2008	Actual 2008
1	United States	99	98	110	34	34	36
2	China	67	79	100	33	40	51
3	Russia	82	84	73	25	26	23
4	Great Britain	45	36	47	20	12	19
5	Germany	60	53	41	19	19	16
6	France	37	36	41	11	11	7
7	Italy	31	26	27	10	10	8
8	Japan	31	22	25	9	9	9
9	Korea	29	29	31	9	9	13
10	Australia	38	42	46	8	12	14
11	Brazil	23	13	15	7	3	3
12	Hungary	19	19	10	7	8	3
13	Romania	14	14	8	6	6	4
14	Netherlands	19	18	16	5	4	7
15	Poland	14	14	10	5	5	3
16	India	7	7	3	5	5	1
17	Canada	17	17	18	4	4	3
18	Bulgaria	12	12	5	3	3	1
18	Kenya	12	12	25	3	3	9
20	Ethiopia	8	7	7	3	3	4
20	Norway	8	8	9	3	3	3
20	Turkey	8	7	8	3	3	1
23	Greece	7	7	4	3	3	0
23	Jamaica	7	7	11	3	3	6
25	Spain	13	13	18	2	2	5
26	Sweden	9	9	5	2	2	0
27	Czech Republic	7	7	6	2	2	3
27	Denmark	7	7	7	2	2	2
27	Indonesia	7	6	5	2	2	1
27	New Zealand	7	7	9	2	2	3
31	Argentina	6	6	6	2	2	2
31	Switzerland	6	6	7	2	2	2
33	Belgium	5	4	2	1	1	1
33	Iran	5	5	2	1	1	1