

Citius, Altius, Fortius

Parts I, II and III

TOKYO 2020





While you were away

Imagine you had been stuck on a desert island for the past two years

When you return to civilization you ring up your analyst for what you think will be quick check-down on what you (and, your trusty pal Wilson) missed while lost at sea

Towards the end of your analysts' narrative, which details:

- A deadly pandemic that paralyzed the globe and changed how we live, work and socialize
- One of the greatest economic collapses since the Great Depression, followed by the fastest economic recovery in American history
- A turbulent election left institutions with cracked foundations
- A wave of social unrest both at home and abroad catalyzed by social media
- The death of Kobe Bryant
- Bitcoin tapping \$64,000

they mention the 2020 Olympics ended last week and there are a few things you should know about it

A few things you should know about it

- Because of virus-related concerns there were no spectators. Stadiums meant to house thousands of boisterous fans were silent – oddly symbolic of both the progress made and the work still ahead
- Once again, Team USA finished atop the podium but lost ground in staple sports
- Russia was banned from the Olympics but allowed to compete under a “neutral” Olympic committee banner... and won more gold medals than in 2016 or 2012
- A thirteen year old won gold in women's skateboarding. Yes, skateboarding
- Japan had it's best Olympics ever
- It was hot. Like, milk would be a bad choice hot
- 20 world records were set

At this point you've zoned out

Your analyst clearly has a bias towards track and is now spending an unreasonable amount of time explaining the current virus situation in Japan. “Hey, can we wrap it up?” They email you an unpleasantly large PDF of slides to review on your own time. You delete the email and hang up. “What kind of nerd would make that many slides about the Olympics? I need a new analyst.” You return Twitter, reacclimating to a changed world

This is that PDF



Citius, Altius, Fortius: Part III

Arigatō gozaimashita, Nihon



01

Olympic results
(Athletics tilt)

02

Home field
advantage

03

COVID update

04

Follow up

Top moments (according to Twitter)

Based on all global Tweets between July 23 and Aug 8

Most Tweeted Events

1. **Brazil's Rayssa Leal wins silver in Women's Street Skateboarding**
2. Japan wins gold in Men's Baseball, defeating USA
3. Japan wins gold in Table Tennis mixed doubles, defeating China
4. Japan wins gold in Women's Softball defeating USA
5. Brazil wins gold in Men's Football, defeating Spain

Most Mentioned Athletes

1. **Rayssa Leal (@rayssaleal) – Skateboarding, Brazil**
2. Simone Biles (@Simone_Biles) – Gymnastics, USA
3. Neeraj Chorpа (@Neeraj_chorpa1) – Athletics, India
4. Kim Yeon-koung (@kimyk10) – Volleyball, South Korea
5. Greysia Polii (@GreysPolii) – Badminton, Indonesia

Most Mentioned Sports



Volleyball



Football



Basketball



Skateboarding

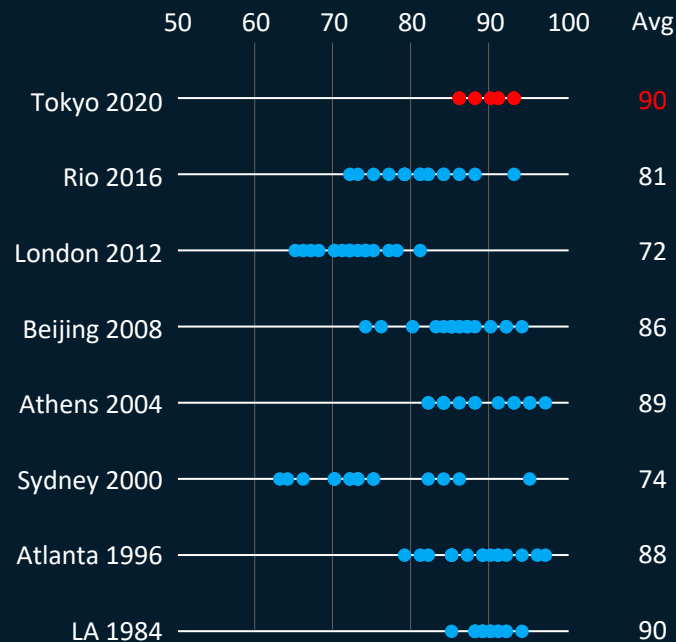


Gymnastics



Don't forget to insert Land of the Rising Sun pun here

Daily high temperatures during Olympics in Degrees *F



Note: Weather data for 1988-1992 not readily available; Most temps sourced from city national airports and may not reflect true highs at Olympic venues; Temps do not account for factors such as humidity
Source: IOC, WeatherUnderground, NOAA, The Guardian, Reuters, BBC

Despite prior reassurances, oppressive heat took toll on athlete performance

Don't worry about it...

- Tokyo committee promised “many days of mild and sunny weather... an ideal climate for athletes to perform their best”
- Issue: Olympics coincides with hottest period in Japan with heat waves resulting in 1k+ deaths in 2018 alone

...whoops...

- “Feels like” temps consistently hovered near or in the triple digits
- Beach volleyball players protested that sand was too hot, tennis players succumbed to heat exhaustion, the marathon moved 100s of miles north, start times pushed earlier into the morning, etc.

...could you push it later?

- Tokyo 1964 moved to October due to this exact issue
- IOC requires Olympics be held between Jul-15 and Aug-31 due to broadcasting agreements
- Last time held after Aug-31 (2000) Olympics saw lowest TV ratings since 1980s. Good for athletes but bad for networks and advertisers
- Few global professional leagues in season to compete against during Jul / Aug. This changes come Sep / Oct (e.g. football in US / EU)

And the crowd goes wild

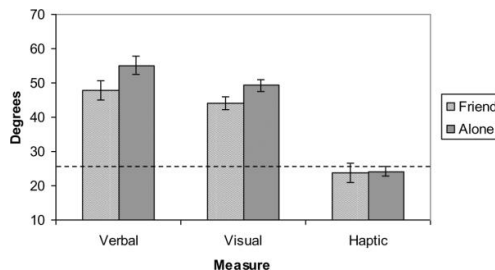
Lack of spectators, friends and family may have taken larger toll on individual athletes

Social Facilitation

The improvement in an individual's performance of a task that often occurs when others are present. This effect tends to occur with tasks are uncomplicated or have been previously mastered through practice
– APA Dictionary of Psychology

Empirical evidence

- Research shows when we have support nearby we can not only persist through challenges, but it lessens the perceived stress load
- Study in UK reported subjects perceived a hill to be less steep if had friend by their side while estimating. Similar result when subjects lifted heavy boxes. When friend there, total weight seemed lighter



- Verbal and visual estimates were lower for those who estimated with friend
- Haptic (blind estimate using hand on adjustable slant board) instructions given to subjects in writing, eliminating cues from friends, reducing bias vs. other measures
- Dotted line represents actual degree of hill

- In another study, subjects put through painful shock while lying on fMRI scanner, to see brain activity when facing threat. When subjects lying down in machine allowed to hold hand of spouse it was noted areas of brain associated with threat and distress faded. Moreover, the better the subject felt about their marriage the smaller their fearful brain activation




Phenomenon points to very real “feel like a family” aspect of elite teams and how lack of crowd / family may not have impacted athletes participating in team oriented events to same degree as athletes participating in individual events

The Fast and The Furious 3: Tokyo Sprint

Jamaica sweeps the Women's 100m, again

Break out the broom, again


















The Women's 100m has been contested 22 times but only swept twice, both by Jamaica

			
2020	Thompson-Herah	Fraser-Pryce	Jackson
2008	Fraser-Pryce	Simpson Stewart	n/a

Fraser-Pryce vs. Thompson-Hera

- Shelly-Ann Fraser-Pryce turned 34 in December, yet she was a favorite for gold in Tokyo. It's not common for an athlete to be at the top of their given sport so late into their careers, but Fraser-Pryce is an anomaly
- With golds in Beijing and London and a bonus bronze in Rio, Fraser-Pryce was on the cusp of the unknown, winning three individual track golds
- Standing in her way was teammate Elaine Thompson-Hera, the Rio 100m and 200m Olympic champion
- When the clock stopped in Tokyo, it would be the younger Thompson seizing gold. But a silver for Fraser-Pryce, 13 years after her Olympic debut, is inspiring

The spectacle of Usain Bolt overshadowed just how incredibly consistent Jamaica's women have been over 100m

100m Medals	Jamaica Women				Jamaica Men			
	Gold	Silver	Bronze	Total	Gold	Silver	Bronze	Total
Sydney 2000				2				
Athens 2004				1				
Beijing 2008		 		3				1
London 2012				2				2
Rio 2016				2				1
London 2020				3				
Total	4	4	5	13	3	1	0	4

If the Jamaican men are All-Stars the Jamaican women are juggernauts

Note: Two silvers awarded in Beijing due to identical 2nd place times



Miracle over hurdles

Warholm vs. Benjamin

Wait...

45.94

Norway's Karsten Warholm's
Tokyo final 400m Hurdle time



Please excuse me
while I pick my jaw
up off the floor

Rivalry for the ages

- For 29 years Kevin Young's 46.78 400m Hurdle record stood unthreatened. Then, in June, Norway's Karsten Warholm (25) soloed 46.70 in front of a home crowd in Oslo to sneak under Young's long-standing mark
- Across the Atlantic two weeks later, USA's Rai Benjamin (24) blitzed a 46.83 at the US Olympic Trials to become the third fastest ever over the distance
- It's rare to witness two all-time greats, in their prime, duking it out on the biggest stage. It's no wonder the Tokyo Olympic 400mH final is being considered the greatest race ever run
- When Warholm stopped the clock at 45 seconds many, including the analyst, wondered, "Surely, there was a timing malfunction". There was not. A man had just run under 46 seconds over hurdles
- For perspective, Rai Benjamin ran 46.17, more than half a second under the Young's prior record. Brazil's Alison dos Santos ran 46.72 for bronze, just under Young's prior record. In one race, three men did what no one else could for nearly three decades. The analyst is not capable articulating what occurred. You just need to watch it

Rai Benjamin

Q: Before the race, what would you have done if somebody said you would run 46.17 for silver?

A: *If you would have told me I was going to run 46.1 and lose, I would probably beat you up and told you to get out of my room... but I'm happy to be a part of history*

Karsten Warholm

Q: Before the race, what would you have done if somebody told you Rai Benjamin would run 46.17?

A: *I would have put myself on the first flight home*



Rumble young man, rumble

Jakob Ingebrigtsen, 20, takes gold in greatest 1,500m final ever run¹

The title card

- Kenya's Timothy Cheruiyot, the defending world champion, had owned the 1,500m (3 ¾ laps) since 2019. Prior to the 2020 Olympic final, Cheruiyot had lost just three times in his last 24 races
- Norway's Jakob Ingebrigtsen, only 20, already had the accolades of an accomplished athlete approaching retirement. Multiple European championships and records, multiple world junior championships and records but no medals at a senior global event
- Olympics hyped as Cheruiyot vs. Ingebrigtsen duel. Cheruiyot viewed as favorite with field running for bronze. The two had raced each other 12 times prior to Olympic final with Cheruiyot emerging victorious in all 12 meetings

August 7th, 2021: 7:40pm local time

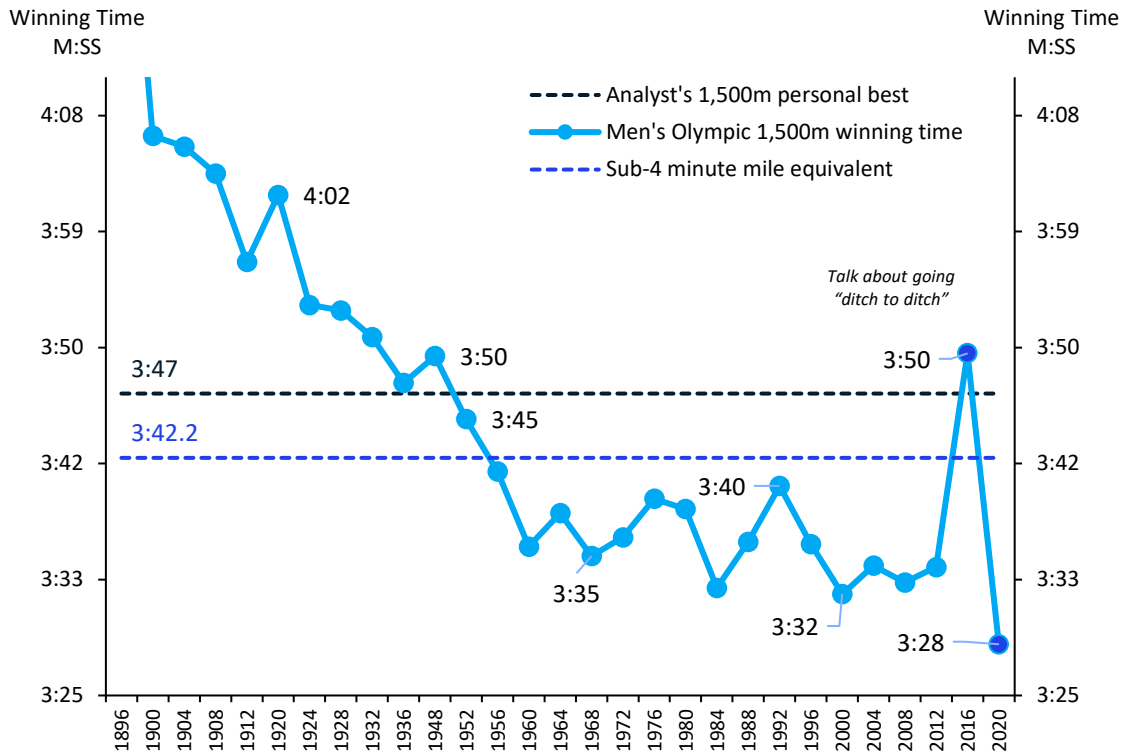
- Some hesitancy to lead at the start. Cheruiyot straight to the back while Ingebrigtsen took it upon himself to drag field through 400m in 56 seconds. Fast, much faster than the opening lap in Rio but not reckless
- By the start of the second lap, Cheruiyot had worked through the crowd to take command. A true front-runner, a rarity, Cheruiyot feels more comfortable in the lead. Accelerating off Ingebrigtsen's honest pace, he brought the field through 800m in 1:51.7, a 55.6 second lap. A gap was forming. Cheruiyot, Ingebrigtsen and Australia's Stewart McSweyn began to drift away from the field, now in single file, the visual cue of a blistering pace
- Cheruiyot gradually pressed on the gas. McSweyn dropped from Ingebrigtsen's heels and began to fade, victim of a brutal 55.4 third lap, the quickest of the night. A stride behind, the Norwegian lurked just off the right shoulder of the Kenyan. 300 meters, less than a lap to go, the anticipated duel was materializing
- The pair charged down the back stretch and around the bend. 150 meters to go. Cheruiyot's compatriot Abel Kipsang and Great Britain's Josh Kerr zeroing in from behind. A move was coming. Just before the straightaway Ingebrigtsen stepped wide, downshifted and sailed past Cheruiyot who had no answer. Two meters clear, five meters clear, ten meters. Ingebrigtsen had at last defeated Cheruiyot when it mattered most. This was his time
- Ingebrigtsen crossed the line in an Olympic and European record time (3:28, equivalent of a 3:45 mile). Cheruiyot held on for silver. Josh Kerr (2017 NCAA 1,500m Champion / New Mexico alum) took the bronze

Note: ¹ The opinion of the analyst but Olympic Record is hard to argue against

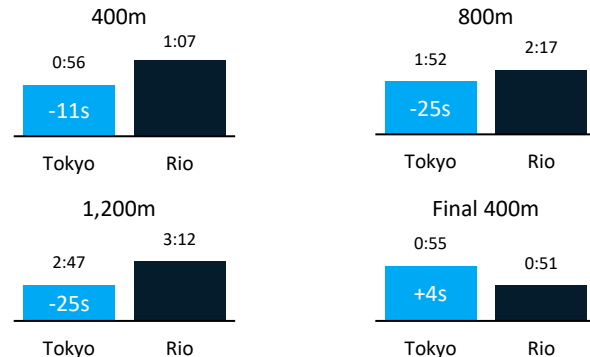
“80% of the 1,500m is strategy. The other half is physical” – Yogi Berra, maybe

Tokyo may have signaled the 1,500m is moving from the age of “sit and kick” to the age of “full send”

Men's Olympic 1,500m Final winning times



Lap splits, Tokyo vs. Rio Olympic 1,500m finals (M:SS)



- Tokyo's 1,500m winning time 22 seconds faster than Rio's due to stark difference in race tactics
- In Rio, USA's Matthew Centrowicz took early lead and slowed pace to pedestrian levels. If 67 second initial 400m split did not confirm a tactical affair the near 70 second split that followed certainly did. 4:33 mile pace through 800m is, in Olympic terms, *dumb slow*
- Pace continued to dawdle, no competitor wanting to strike out alone to serve as de facto pace setter. An injection of speed by Centrowicz with 500m to go signaled his intent to win in wire-to-wire fashion. A 50.6 second final 400m split, possibly the quickest in Olympic history, secured USA's first 1,500m gold in a century
- The Rio to Tokyo strategy 180 highlights range of approaches and outcomes to middle distance racing. Variety begets excitement

A thing of brilliance

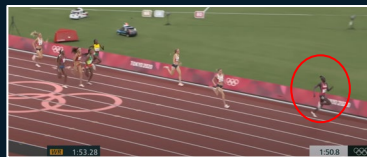
Athing Mu, 19, caps perfect season with perfect 800m

- If the analyst had to distill Athing Mu's Tokyo performance to a single word it would be "brilliance". But, it looked so simple. She just outran everybody else, what's so brilliant here? [That's the point. She made it look simple. That's brilliance](#)
- Mu was the best of the field, but championship 800m races put even the greatest athletes to the test. The 800m is unforgiving. Chess at a sustained sprint. If there is a race in which the "favorite" is defeated most often, the analyst has a strong feeling the 800m would be it
- With the physical ability in check, Mu's 'go it alone' approach to the final is nothing less than courageous. Mu took the race out quickly, 57.9 through lap one. Chasing no one, chased by everyone, Mu powered down the backstretch for the final time. Broadcast announcers stressed we were witnessing something special – the gap to second wasn't closing
- A 28 second final 200m closed the door on any doubt. Mu crossed the line unchallenged in a negatively split (57.9 / 57.3) American Record of 1:55.21
- With 800m gold Mu joins a surprisingly small club. Mu is just the third American woman to win a gold medal at any distance over 400m. At just 19, there is more to come from the Texas A&M sophomore
- Mu's Olympics weren't over. Four days later [she anchored USA's golden 4x400m relay](#)

Echoes of Rudisha



Rudisha en route to gold / World Record, London 2012



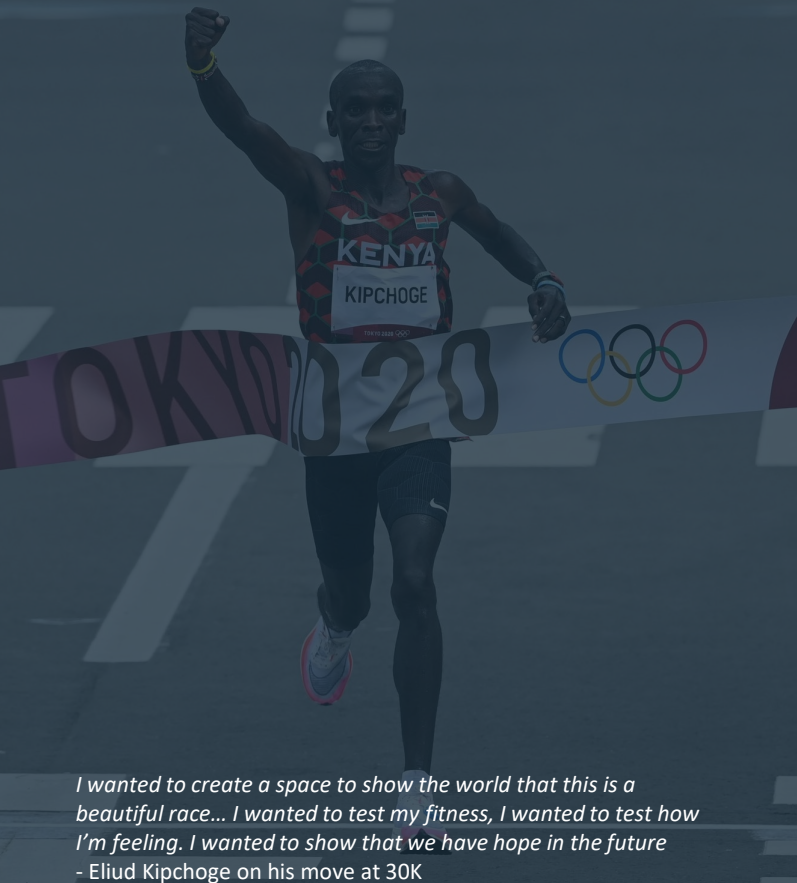
Mu en route to gold / American Record, Tokyo 2020

Mu's run in Tokyo induced callbacks to David Rudisha's paradigm shifting performance in 2012

A wire-to-wire 800m victory in a global championship is a feat reserved for those in a class of their own. It takes courage and raw physical ability to forge ahead, alone, and say, "You want it? Come and take it."

Where the streets are paved with gold

Eliud Kipchoge makes it look easy, dominates men's marathon



I wanted to create a space to show the world that this is a beautiful race... I wanted to test my fitness, I wanted to test how I'm feeling. I wanted to show that we have hope in the future
- Eliud Kipchoge on his move at 30K



In Part II, the analyst devoted a slide to Kipchoge admiring the fusion of philosopher and competitor. A final point stated a victory here would cement his legacy as one of the greatest athletes in history. **Mission accomplished**

While others withered, Kipchoge thrived

- Initial pace slow due to Sapporo's 76 degree + 90% humidity at start. Pace yoyoed within comfortable range but began to slow considerably after 20 kilometers (marathon is 42.2 kilometers). Many contenders still at the front
- Gradually, Kipchoge floated away from the pack. Subtle in optics but decisive in action, a 14:28 5k split after 30km opened a 27-second lead that would continue to expand over the final miles. The effortlessness exuded by Kipchoge in the final 12km summarized what we already knew; There's Eliud and then there's everybody else
- Meters from the finish, Kipchoge took a glance back to see an empty street. No challengers in sight. King Kipchoge had conquered the field by 80 seconds, a margin 10 seconds wider than his victory in Rio five years earlier

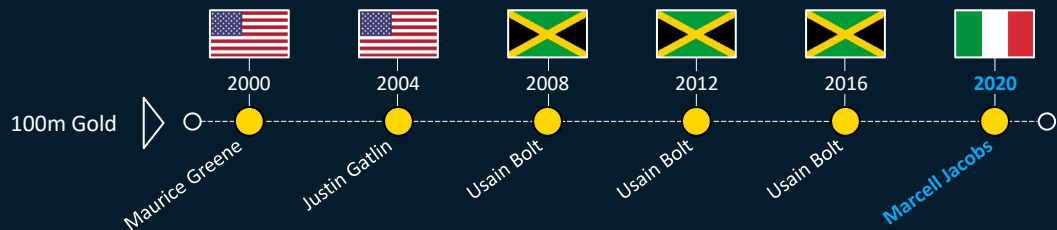
The analyst believes

- In an era of sophisticated doping it can be difficult to be truly excited about incredible athletic feats. No matter how seemingly good the person may be, no matter how many drug tests they pass, no matter how transparent the process is, doubt inevitably creeps. Fool me once...
- Kipchoge's unparalleled performances and consistency has undoubtedly raised eyebrows. However, everything about Kipchoge, other than the performances/consistency, seems at odds with the classic doper profile, if such a profile were to exist. Also, he is likely one of the most drug tested athletes on the planet.
- A Kipchoge doping bust would be a reckoning of Lance Armstrong-like proportions and would extinguish running's brightest flame leaving the hopes of many in the cold
- The analyst believes we truly are witnessing a once in a life-time talent. An individual who embodies being a champion with stunning performance, gravitas and sharp ethic

Sede Vacante

Italy's Marcell Jacobs elevated to sprint pacapcy in post-Bolt era

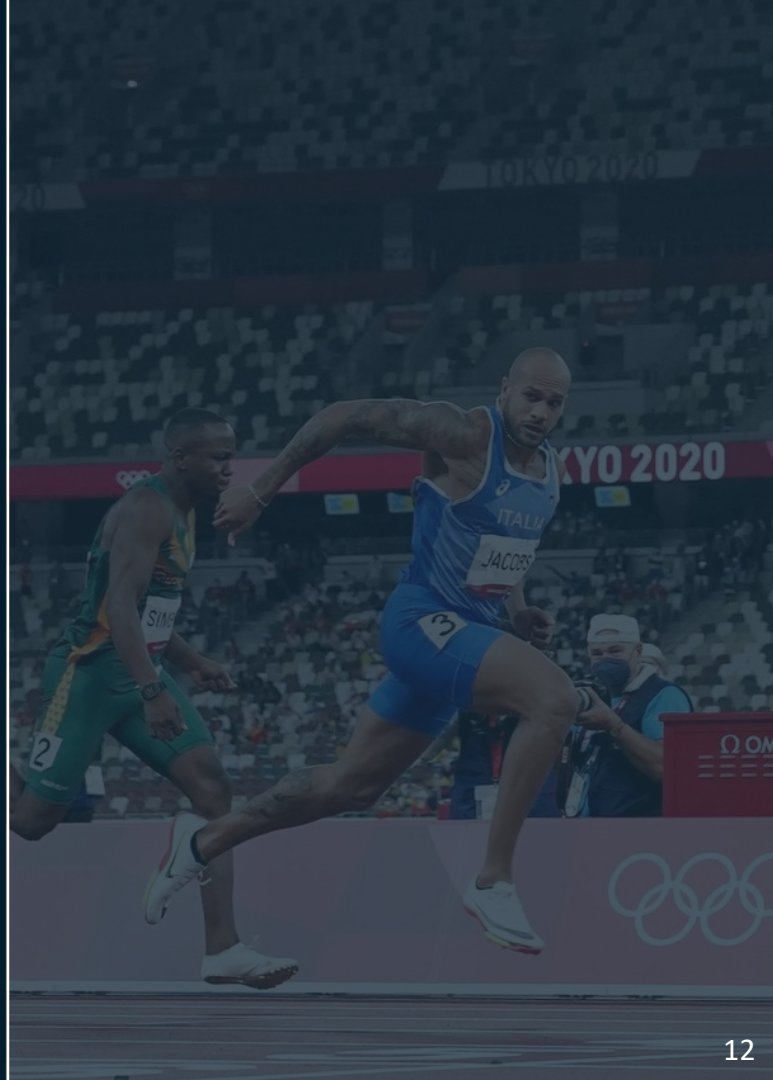
Jacobs becomes first non-Jamaican / American to win 100m gold in 21st century



- Unphased by a false start (only athlete to not leave blocks), Jacobs captured lead in last 20 meters from USA's Fred Kerley, stopping the clock at 9.80
- Jacobs' victory was unexpected. Prior to 2020, Jacobs had primarily been a long jumper and had never broken 10 seconds for 100m
- Jacobs first Italian to qualify for final let alone win the 100m dash and became only the second Italian to win a sprint Olympic gold (Livio Berruti, 200m gold – 1960 Rome)












Jacobs' gold campaign continued in the 4x100m relay where Italy out leaned Great Britain for gold in a thrilling anchor leg comeback



The Dressel Show

Top Athletes by weighted medal count

	Athlete	Sport	Tokyo Medal Count	Share of Country Gold	Olympic Appearances	Cumulative Medal Count
	Caeleb Dressel	Swimming	●●●●●	12%	2	G: 7 S:0 B:0
	Emma McKeon	Swimming	●●●●●●●●	24%	2	G: 5 S:2 B:4
	Kaylee McKeown	Swimming	●●●●	18%	1	G: 3 S:0 B:1
	An San	Archery	●●●	50%	1	G: 3 S:0 B:0
	Lisa Carrington	Canoe (Sprint)	●●●	43%	3	G: 5 S:0 B:1
	Elaine Thompson	Athletics (Track)	●●●	75%	2	G: 5 S:1 B:0
	Katie Ledecky	Swimming	●●●●	5%	3	G: 7 S:3 B:0
	Zhang Yufei	Swimming	●●●●	5%	2	G: 2 S:2 B:0
	Ariarne Titmus	Swimming	●●●●	11%	1	G: 2 S:1 B:1

Whole lotta World Records (20)



Swimming

- Men's 100m butterfly – Caeleb Dresel (USA) – 49.45 sec
- Men's 4x100m medley – USA – 3 min 26.8 sec
- Women's 4x100m freestyle relay – Australia – 3 min 29.7 sec
- Women's 4x200m freestyle relay – China – 7 min 40.3 sec
- Women's 200m breaststroke – Tatjana Schoenmaker (South Africa) – 2 min 18.0 sec
- Mixed 4x100m medley – Great Britain – 3 min 37.6 sec



Athletics

- Women's triple jump – Yulmar Rojas (Venezuela) – 15.67 meters
- Women's 400m hurdles – Sydney McLaughlin (USA) – 51.46 sec
- Men's 400m hurdles – Karsten Warholm (Norway) – 45.94 sec



Track Cycling

- Women's team pursuit – Germany – 4 min 04 sec
- Women's team sprint – China – 31.8 sec
- Men's team pursuit – Italy – 3 min 42.2 sec



Weightlifting

- Men's 73 kg total – Shi Zhiyong (China) – 365kg
- Men's +109 kg snatch – Lasha Talakadze (Georgia) – 223kg
- Men's +109 kg clean and jerk – Lasha Talakadze (Georgia) – 264kg
- Men's +109 kg total – Lasha Talakadze (Georgia) – 488kg



Shooting

- Mixed 10-meter air rifle team – China
- Women's trap – Zuzana Rehak-Stepeckova (Slovakia)
- Men's 50-meter rifle three positions – Zhang Changhong (China)



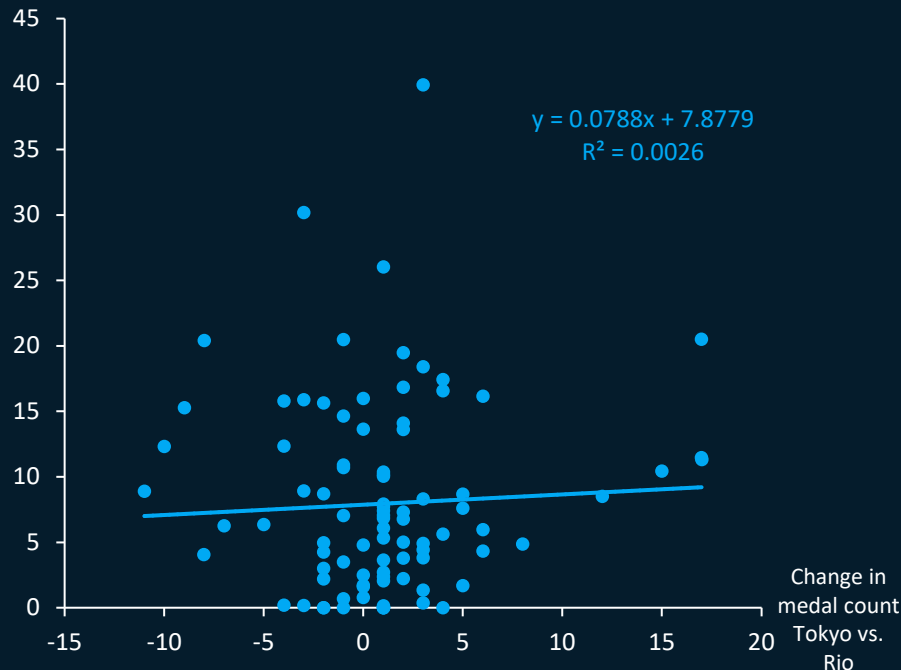
Sport Climbing

- Women's speed climbing – Aleksandra Mirosław (Poland) – 6.84 sec

More jabs = more medals?

Vaccine momentum did not translate into medal gains :/

Change in % of pop. fully vaccinated July 1-Aug 8

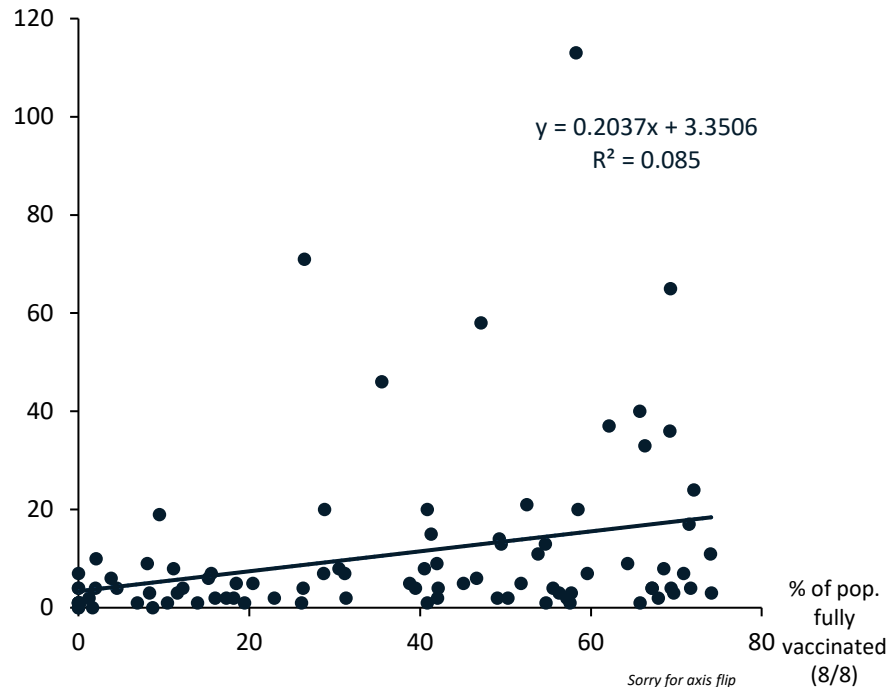


Note: Countries that do not report vaccination data not included; 7/1 and 8/9 or closest date available

Source: International Olympic Committee, Our World in Data

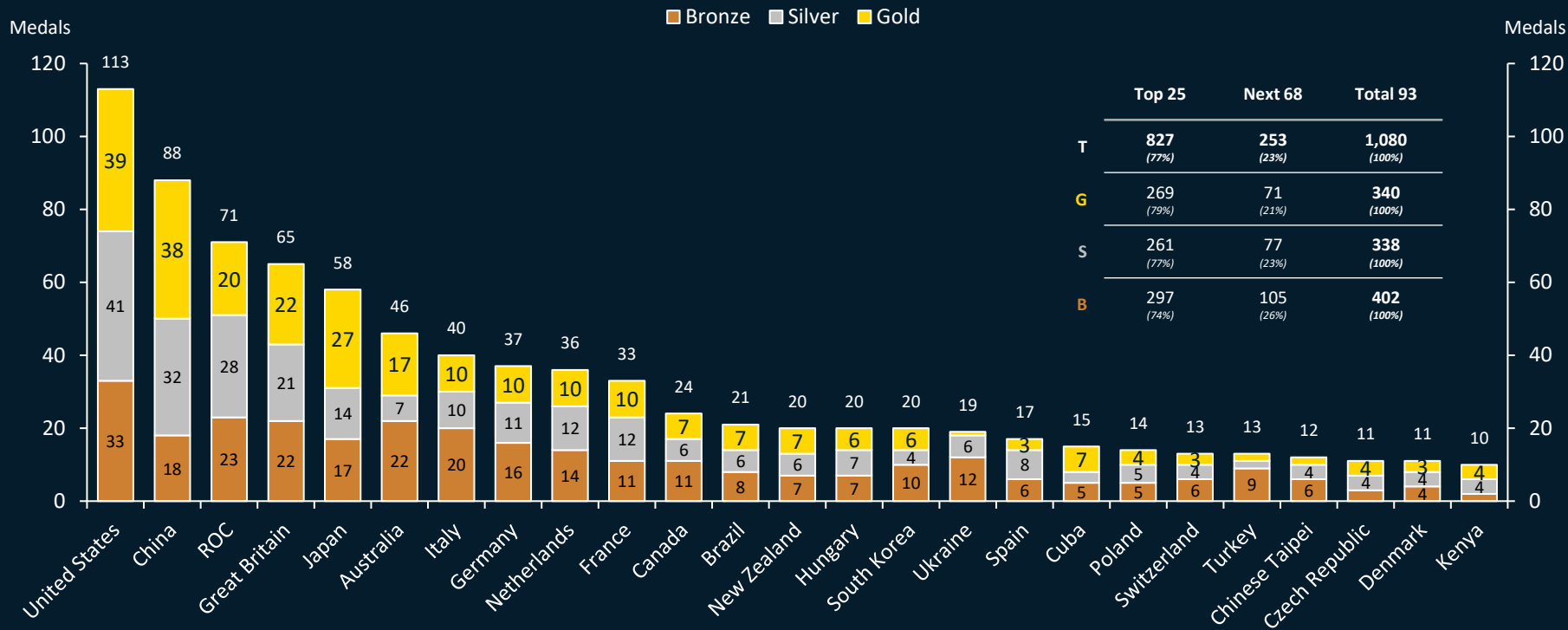
Although, countries with larger medal hauls at end of games tended to have higher vaccination rates

Tokyo
total medals



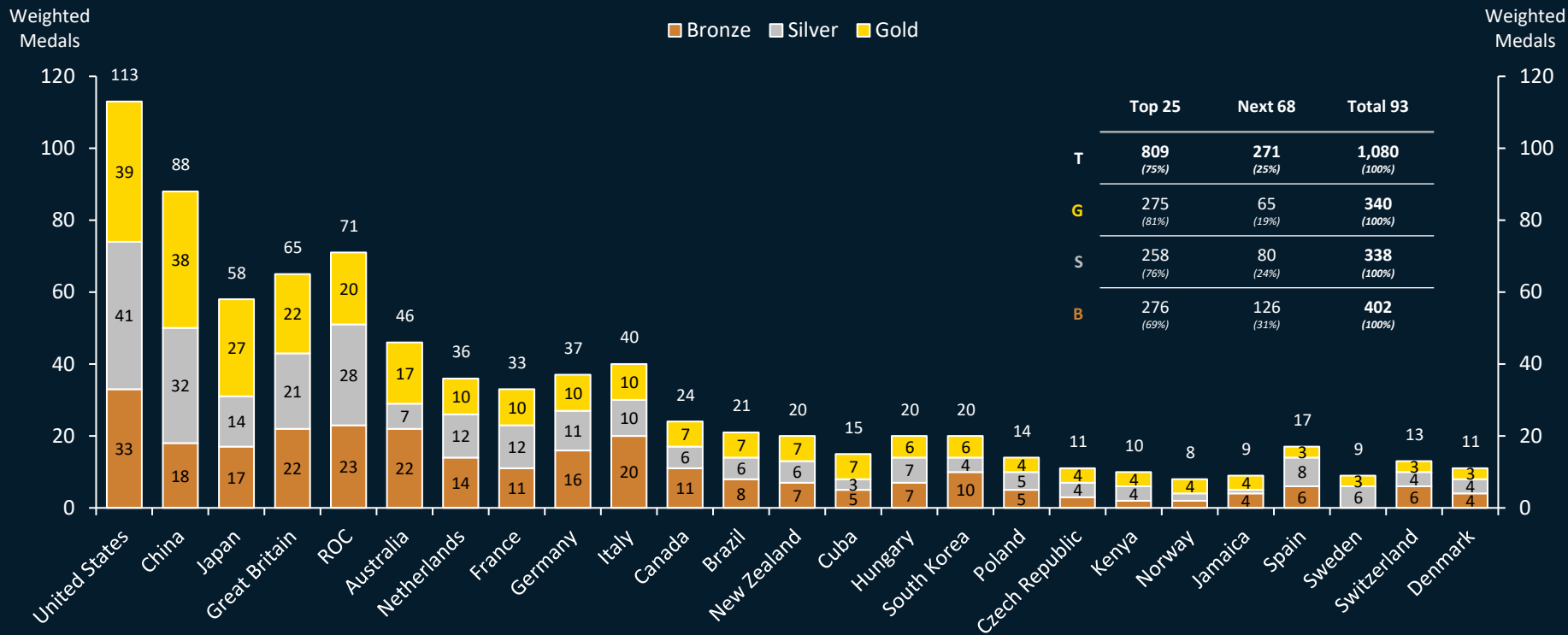
Plenty of bronze, silver and gold for the red, white and blue (1/2)

Unweighted top-25 medaling countries at the Tokyo Olympics



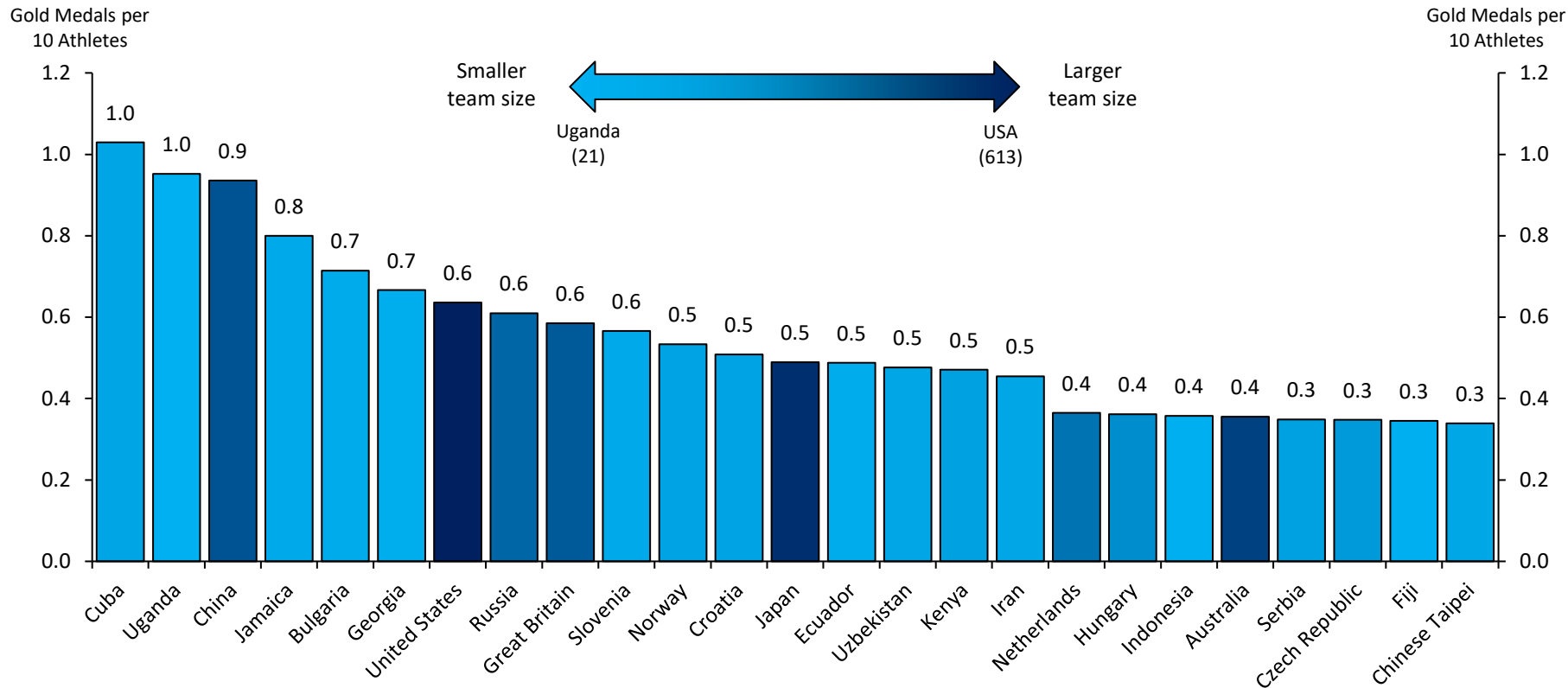
Plenty of bronze, silver and gold for the red, white and blue (2/2)

Weighted top-25 medaling countries at the Tokyo Olympics



Some teams very efficient in pursuit of gold

Top-25 countries ranked by gold medals for every 10 athletes sent

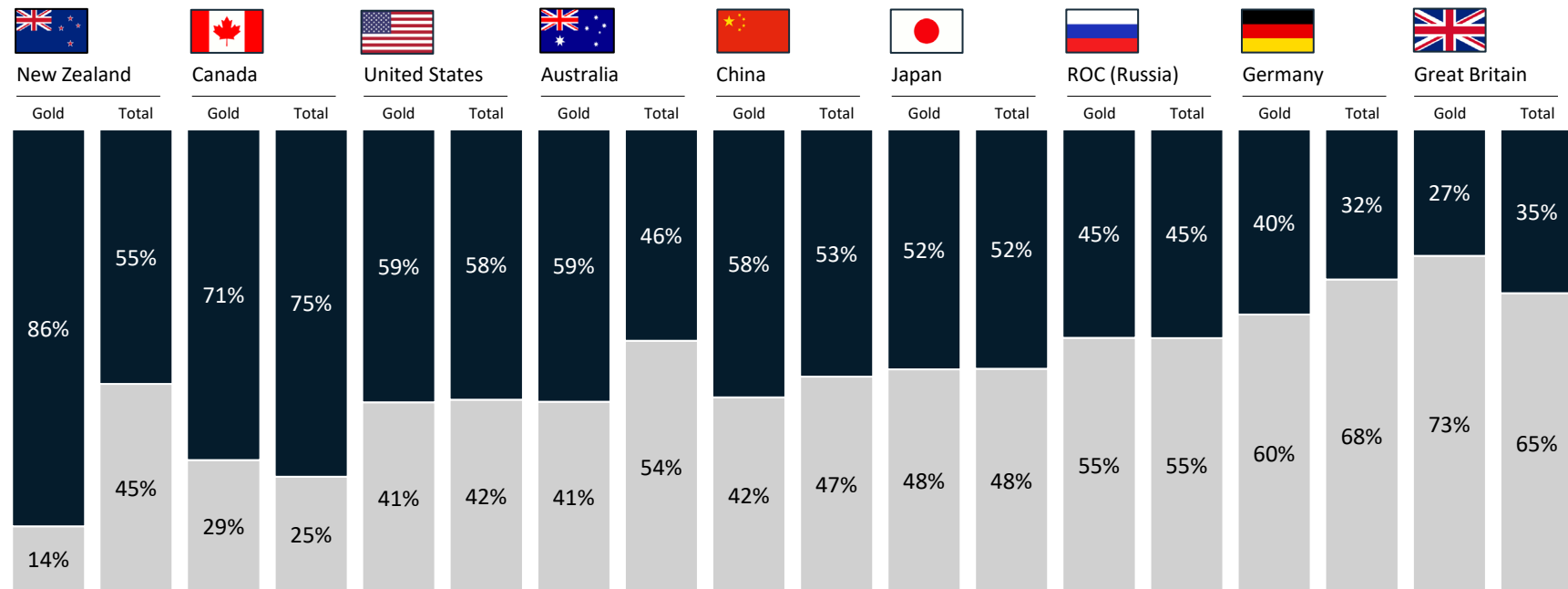


Sample of top medaling countries highlights strong contribution from female athletes for North American, Oceanian and Asian teams

Female share of medal count
 Non-Female share of medal count¹

Avg. Female Share of Gold (below)
53%

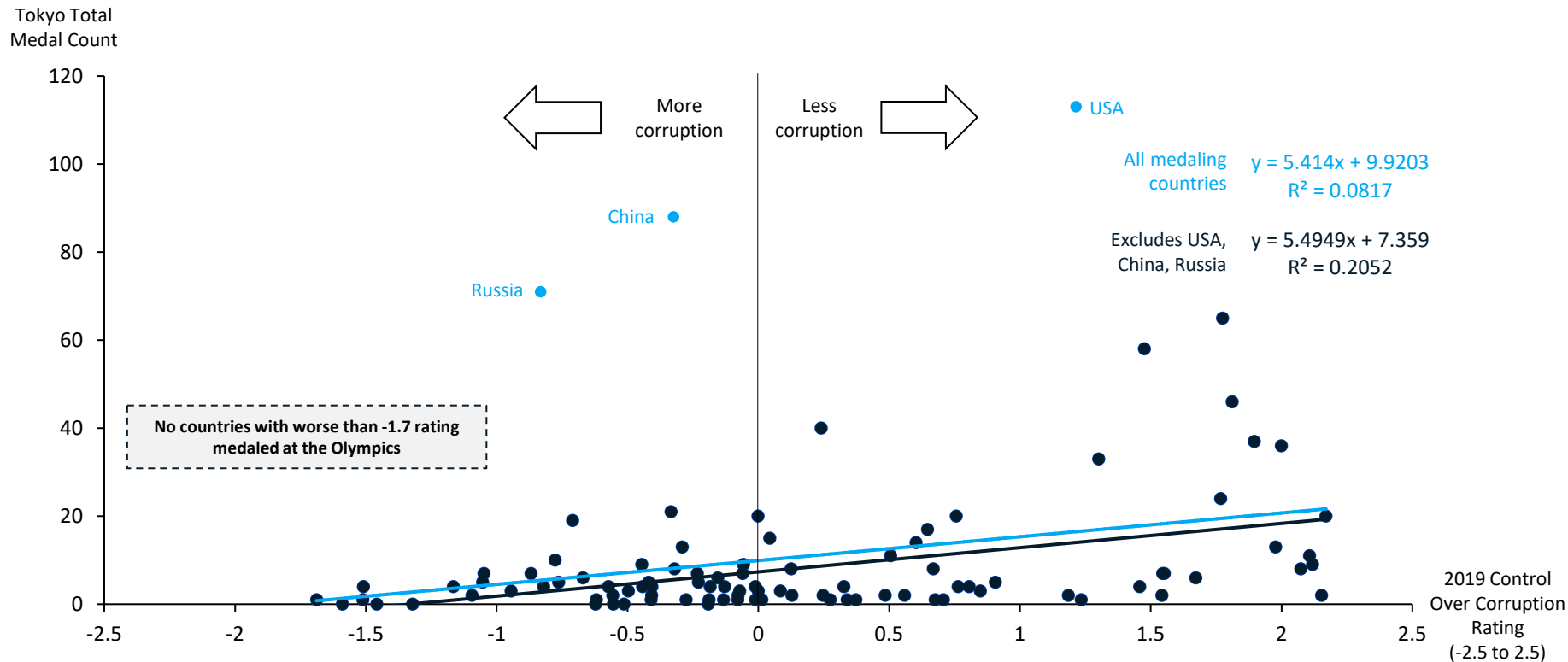
Avg. Female Share of Total (below)
50%



Note: ¹ Non-female classification includes male and mixed gender relay medals

Source: International Olympic Committee medal tables

Tokyo medal counts had very slight correlation with World Bank's 2019 Control of Corruption governance ratings

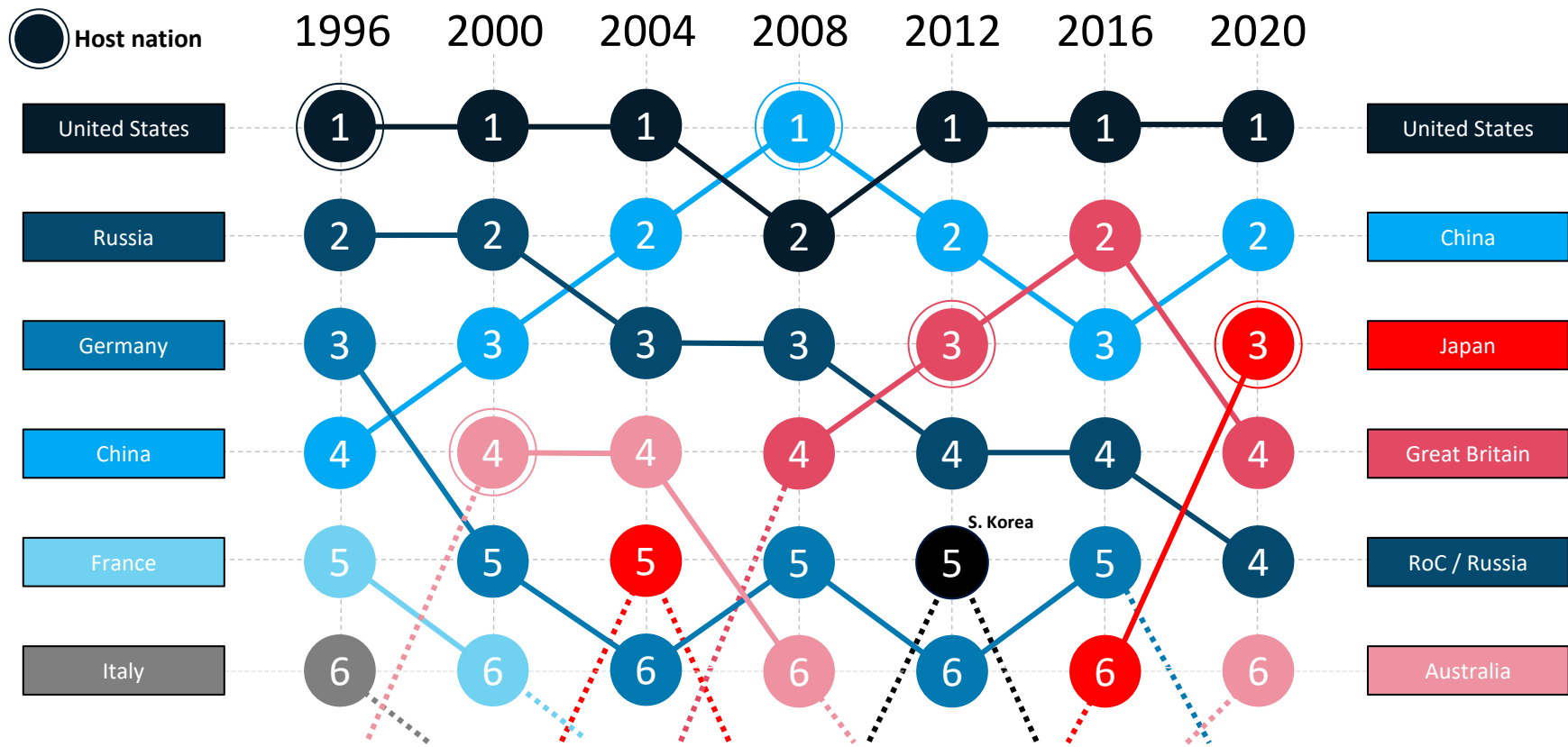


Note: On a scale of -2.5 (most corrupt) to +2.5 (least corrupt), control of corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests

Source: World Bank, International Olympic Committee

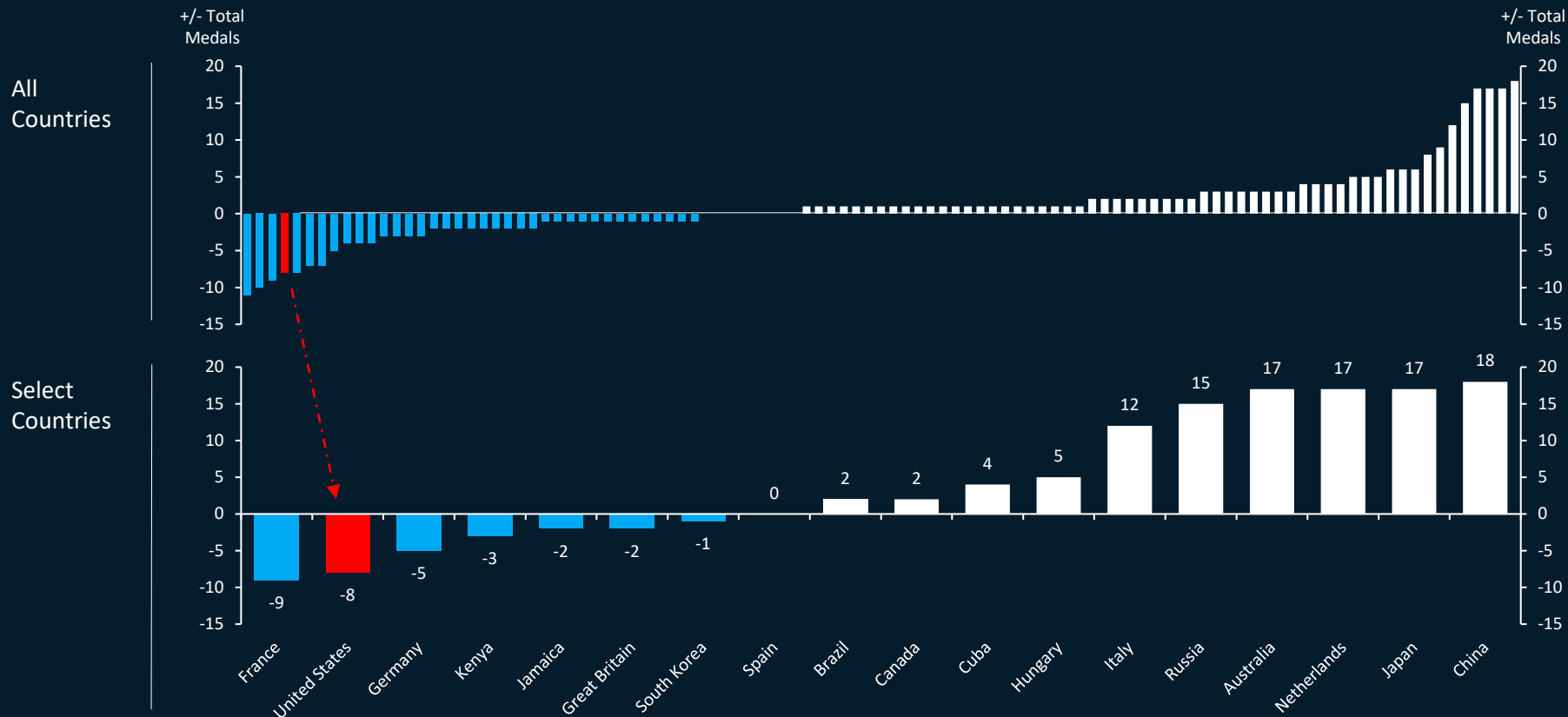
Team USA topped the medal podium for the third time in a row

Top 6 countries by weighted medal count from 1996 to 2020



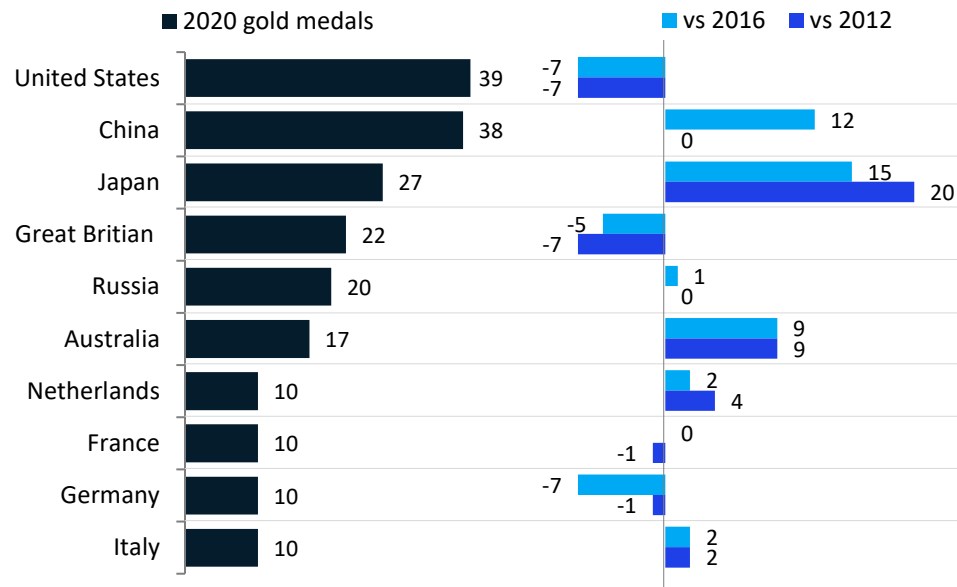
However, USA saw relatively large decline in total medal count...

Δ between Tokyo 2020 and Rio 2016 total medal counts. Additional 107 medals awarded in Tokyo for new sports

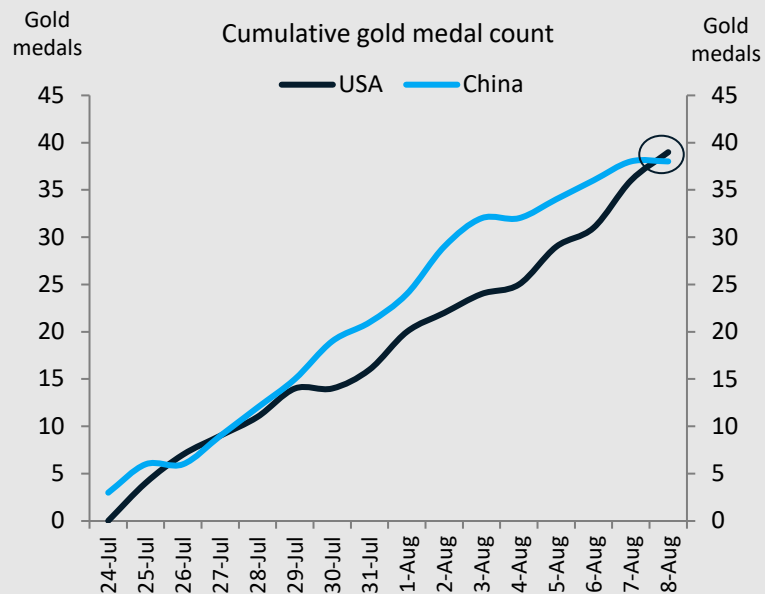


...losing substantial gold medal share to China, Japan and Australia

USA saw worst relative performance vs. Rio 2016 and London 2012 compared to other top medaling countries

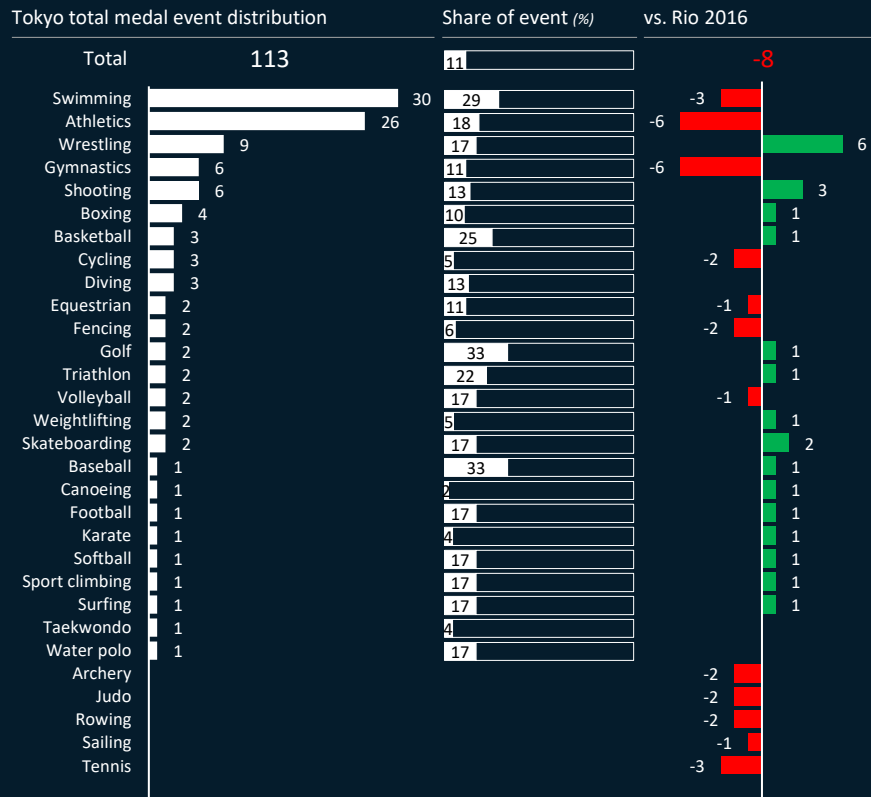


USA overcame deficit in back half of games to out lean China on final day of competition

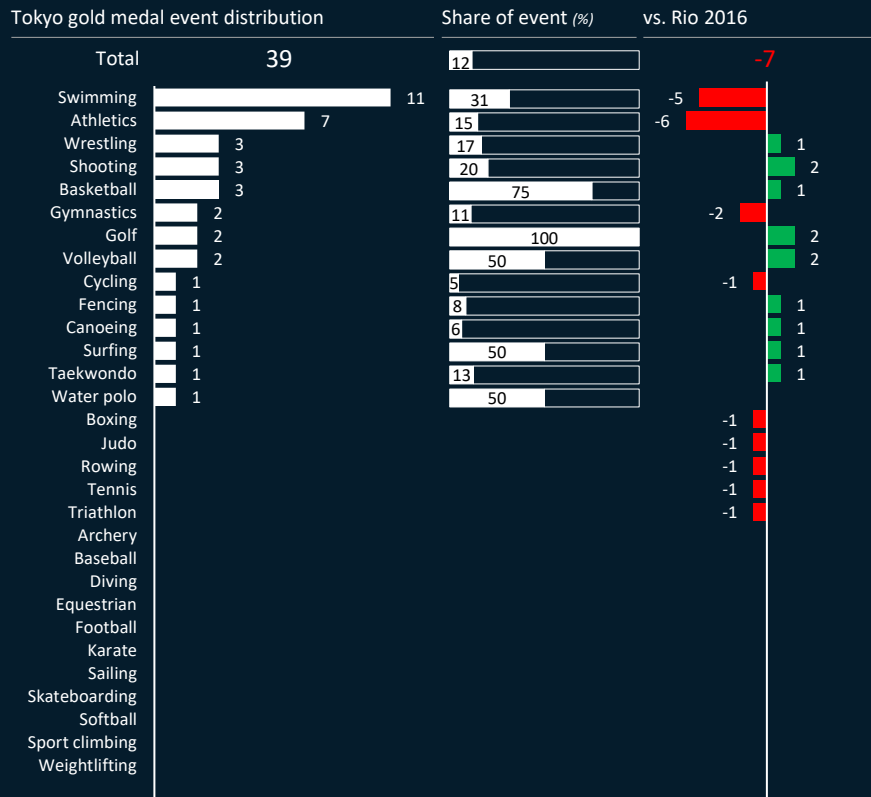


USA medal decline vs. Rio primarily driven by underperformance in Swimming, Athletics and Gymnastics

USA total medals

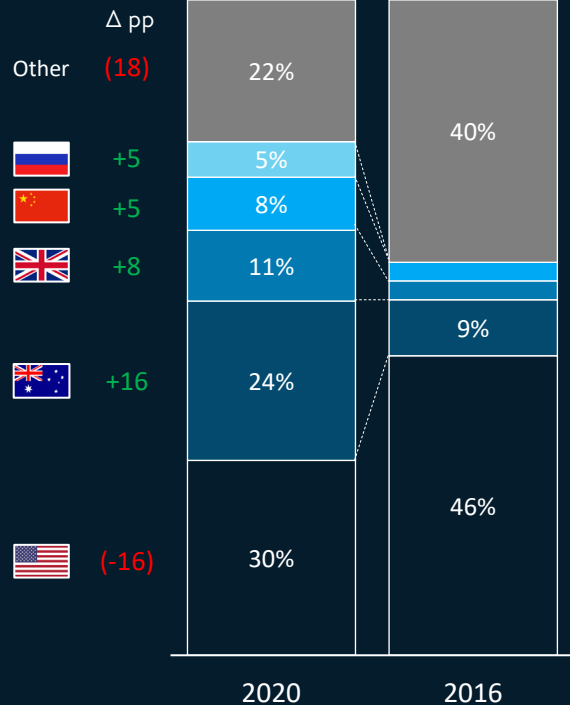


USA gold medals



Swimming: USA ceded 16% of gold medal share...

Tokyo vs. Rio swimming **gold medal** share

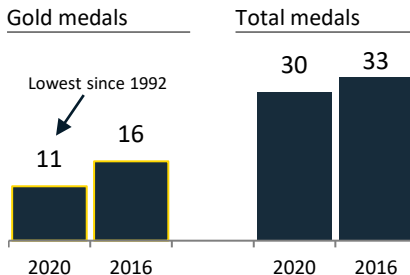


Source: International Olympic Committee, SwimSwam, USA Swimming

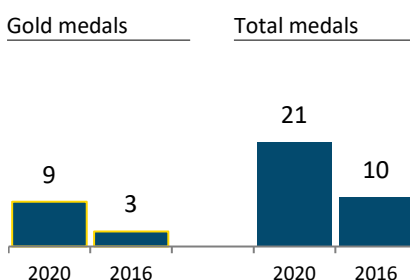
...attempting to fend off a revamped Australia program



USA Swimming



Australia Swimming



Notable Drivers

- Katie Ledecky (2) and Caeleb Dressel (3) contributed 5 individual golds, 45% of team total
- New distance freestyle events (won by Ledecky and Bobby Finke) netted 3 total medals not contested in 2016

Tailwinds

Headwinds

- Relays:
 - Men: Missed podium in 800 free
 - Women: No relay wins, finishing behind victorious Australia in two (100 free 100 medley)
 - Mixed: Failed to podium
- Individual:
 - Ledecky upended by Australia's Ariarne Titmus in 200 and 400 free
 - 2-3 finishes in both IMs but no golds
 - No Murphy backstroke win
 - Losing Michael Phelps from roster doesn't help

Notable Drivers

- After two-straight Olympic flops, Australia launched full review of swim program to change culture and leadership resulting in key leadership changes
- New tone at the top invigorated program looking to return to winning ways
- Women's team carried day with 8 of team's 9 gold medals and 14 of total 21 medals
- Australia Swimming put 3 women on the Tokyo top-10 medal count leaderboard (slide 10)
- The McKeon / McKeown (I know, right?) duo combined for 8 golds and four bronze medals, taking 2nd and 3rd in top-10 medal count. Note overlapping medals due to relays

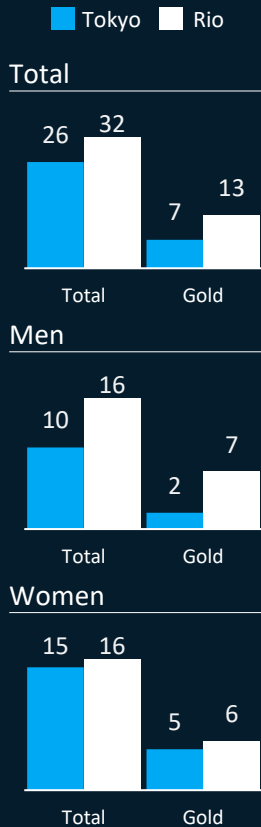
Swimming: Worth noting that USA Swim athletes only 9% of total team yet contributed 28% of total gold. Good ROI.

Sport	Team USA		Event			Contribution		Gold % > Team %
	Team Size	% of Total Team Size	Contested	USA Gold	% of Contested	% of Total USA Gold		
Swimming	53	9%	37	11	30%	28%		●
Athletics	128	21%	48	7	15%	18%		●
Basketball	28	5%	4	3	75%	8%		●
Shooting	20	3%	15	3	20%	8%		●
Wrestling	15	2%	18	3	17%	8%		●
Volleyball	32	5%	4	2	50%	5%		●
Gymnastics	20	3%	18	2	11%	5%		●
Golf	8	1%	2	2	100%	5%		●
Cycling	27	4%	22	1	5%	3%		●
Water polo	26	4%	2	1	50%	3%		●
Fencing	18	3%	12	1	8%	3%		●
Canoeing	4	1%	16	1	6%	3%		●
Surfing	4	1%	2	1	50%	3%		●
Taekwondo	2	0%	8	1	13%	3%		●
Other	230	37%	132	0	0%	0%		
Total	615	100%	340	39	avg. 32%	100%	9/14	

Athletics: USA medal decline due to men's inability to secure single individual gold on the track, among other problems

Across board, USA men missed both matching Rio performances and achieving lofty Tokyo expectations

Team USA Athletics
Tokyo vs. Rio



Event ¹	Rio 2016 Result	Tokyo 2020 Result	Consensus Expectation ²	Met Expectation?	What Happened (abridged)
100m				✗	Gold hopeful, Trayvon Brommell, out leaned for spot in final. Former 400m star, Fred Kerley, surprises for silver
200m	6 th			✗	'19 world champion, Noah Lyles, falters but manages seasons best for 3rd. Kenny Bednarek, 2 nd , runs personal best
400m		4 th		✗	Shocking upset as indoor WR holder, Michael Norman, finishes nearly full second off personal best for 5 th
800m		9 th		✗	'16 bronze medalist and gold hopeful, Clayton Murphy, found self in bad tactical position in final, finishes last
1,500m		6 th		✗	'16 champion, Matt Centrowitz, fails to qualify for final. Regardless, USA medal unlikely given 3:28 winning time
5,000m				✗	Given competitive field, Paul Chelimo's bronze is great result, but many hoping Rio silver medalist would repeat
10,000m	5 th	5 th	Top 10	✓	'12 silver medalist Galen Rupp's focus on marathon and strong field (incl. WR holder) left low shot of USA medal
110m H	5 th			✗	Rare deceleration off final hurdle cost gold favorite, Grant Holloway, a title won in time slower than his season best
400m H				✗	In what has been described as "the greatest race ever run", Rai Benjamin runs under prior WR... to finish 2 nd
3,000m S		11 th		✗	'16 silver medalist, Evan Jager, sidelined due to injury. Longshot medal hopeful, Hillary Bor, fails to advance to final
4x100m	DQ	6 th		✗	Streak of 4x100m disasters continues. See next slide
4x400m				✓	Strong performance from relay members who missed 400m podium and 400mH gold. 43.0x split from Rai Benjamin
Marathon		8 th		✗	'16 bronze medalist, Galen Rupp, struggles in Sapporo heat
Discus				✓	'16 champion and world record holder, Ryan Crouser, put on shotput clinic setting Olympic record on final throw
Decathlon		4 th	Top 5	✓	'16 champion, Ashton Eaton, retired after Rio
Long Jump		5 th	Top 5	✓	'16 champion, Jeff Henderson, did not qualify for Tokyo. LSU star JuVaughn Harrison manages 5 th
Triple Jump		4 th		✗	'16 champion, Christian Taylor, out due to injury. 2x silver medalist Will Claye just misses podium

Note ¹ Select events; ² Rough summation of world rankings, publication predictions and analyst expectations

Source: International Olympic Committee, USA Track and Field, Letsrun, World Athletics

Athletics: More like 11xDQ, USA men's 4x100 has been disqualified 11 times since 1988

In Tokyo, loss of momentum due to bungled second handoff left team USA with 6th place finish in qualifying heat – one spot out of the final. Disastrous performance merely continuation of relay struggles

Recent Team USA men's 4x100m results

○ Handoff problem

✗ Disqualification

Olympics
(last 9 shown)

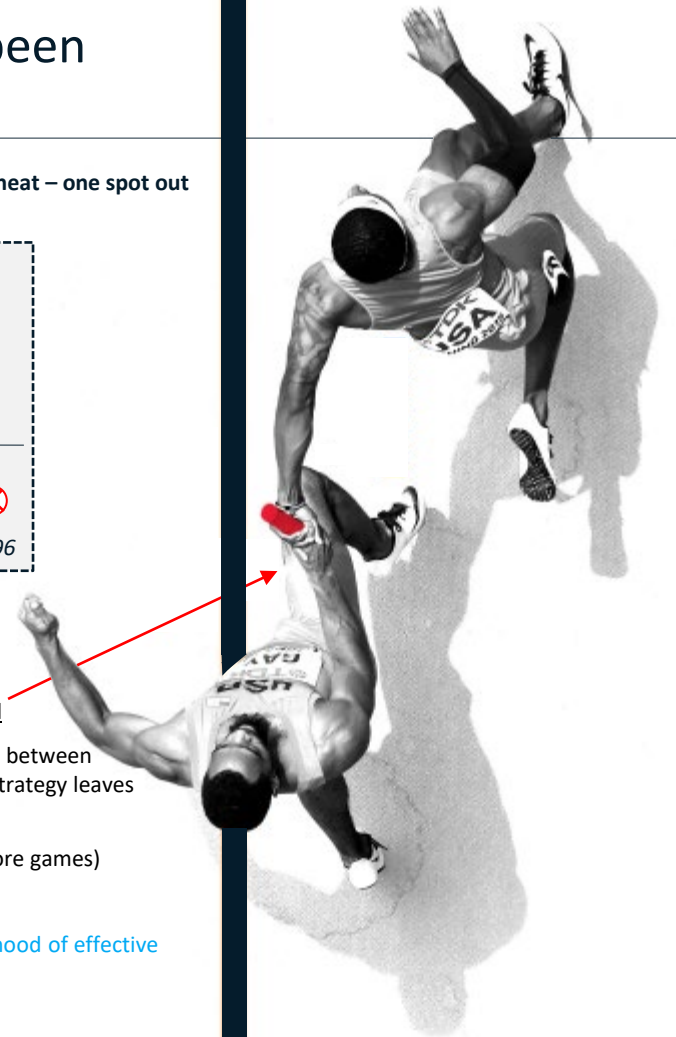


World
Championships
(last 14 shown)



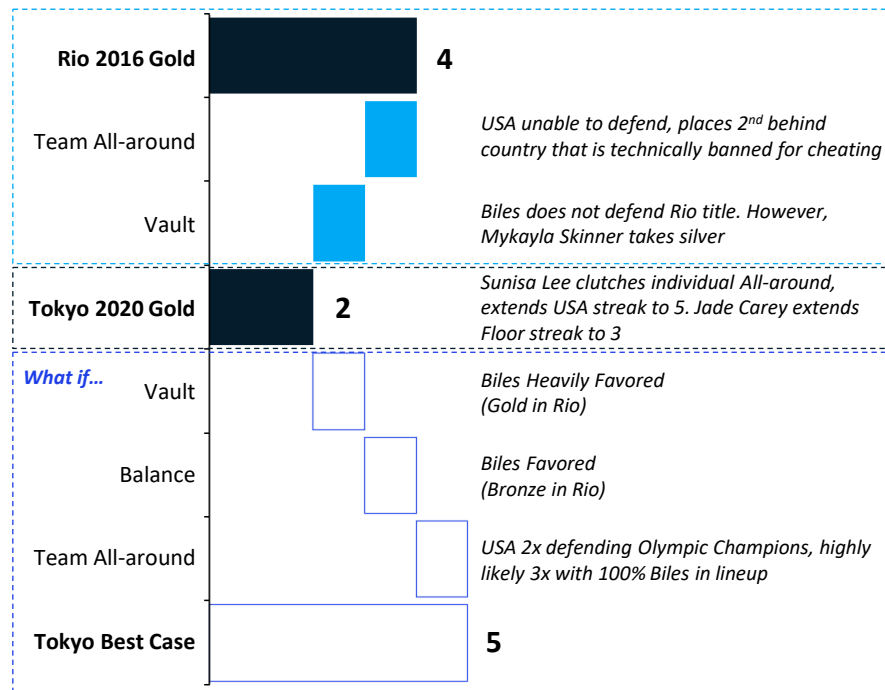
Why is the handoff so hard?

- Unlike longer relays (4x400), 4x100 handoff occurs when both runners are **at or near top speed**
- Handoff is blind.** Runner receiving baton is not looking at runner handing off, making communication critical
- Elite teams **try hand off toward end of exchange zone** (marked distance in which baton can legally transition between runners), **so receiver near top speed when baton passed** thereby keeping baton momentum around track. Strategy leaves little room for error as late exchange outside zone will lead to DQ
- USA typically assembles relay teams **last minute** based on Olympic Trials performance (less than month before games) whereas other countries practice with same team for months
- Ad hoc approach to relay rosters, whether due to hubris or logistics, hurts team chemistry, **decreasing likelihood of effective communication in exchange zones and increasing likelihood of baton fumble, early / late exchange, DQ, etc.**



Gymnastics: Decline undoubtably due to Simone Biles' withdrawal. However, believe value of Biles' contribution to games/USA should not be measured in gold

Withdrawal from competition put end to media narrative of five gold medals for USA, four individual + team all-around



Biles' withdrawal and return for beam bronze was another catalyst for public conversation on athlete mental health

- Acute cause for withdrawal due to "twisties", psychological issue related to losing air / special awareness during rotating / inversion movements
- Lurking was greater enemy - unparalleled stress, anxiety and loneliness that comes with expectations of impossible perfection in front of millions

...it's OK sometimes to even sit out the big competitions to focus on yourself, because it shows how strong of a competitor and a person you really are
- Simone Biles

- Teammates applauded decision and other athletes commented they too struggled to navigate Olympic pressures spotlighting side of sport fans typically don't see

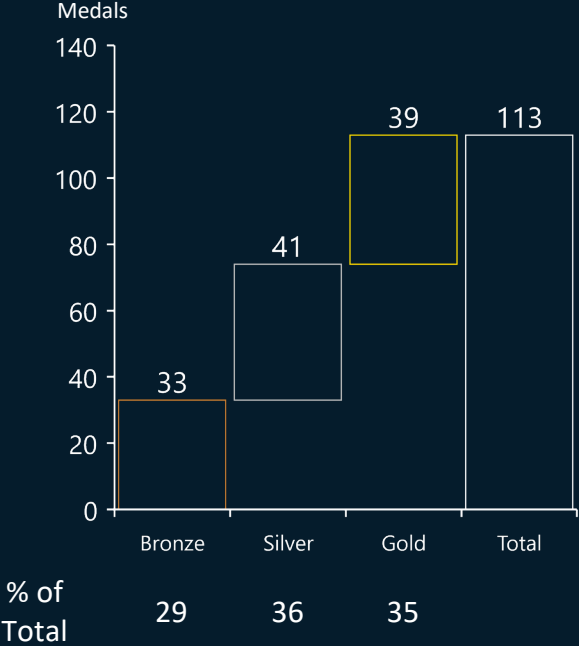
The camera follows you around, and you can feel like a lot of people are watching you, and every move you make is being watched and judged
- Katie Ledecky

- Too often stoicism viewed as synonymous with bravery / courage whereas awareness of self and one's limits viewed as weakness. Superhuman is still human
- A return for repeat bronze in balance beam after navigating these issues, at least temporarily, is more impressive than the five golds that were expected, in the analyst's view. Furthermore, a public discussion on the pressures elite athletes face and associated repercussions will make a longer lasting impact than any gold medal

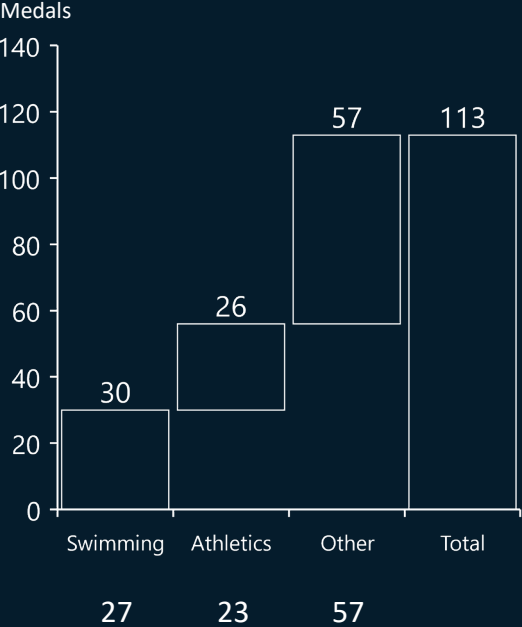
Team USA medal breakdown (1/2)

Event contribution

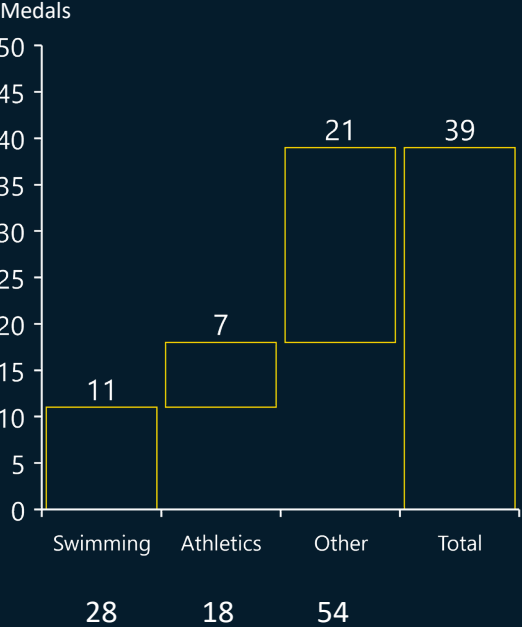
Medals by color



Total

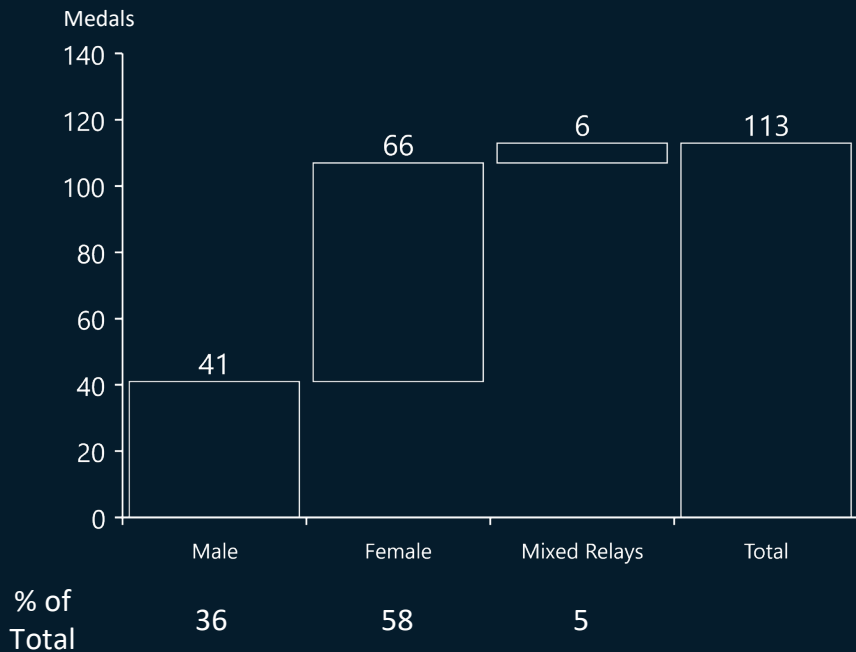


Gold

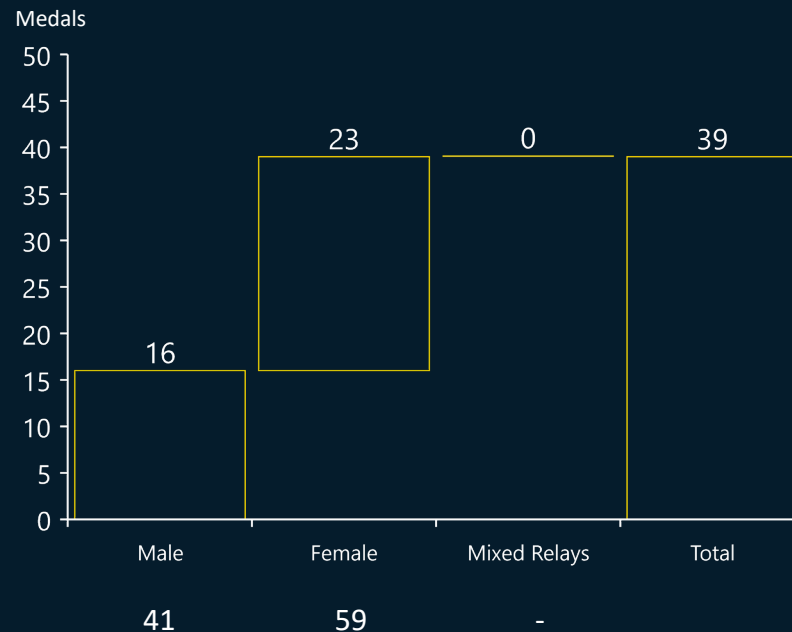


Team USA medal breakdown (2/2)

Total medals by gender



Gold medals by gender

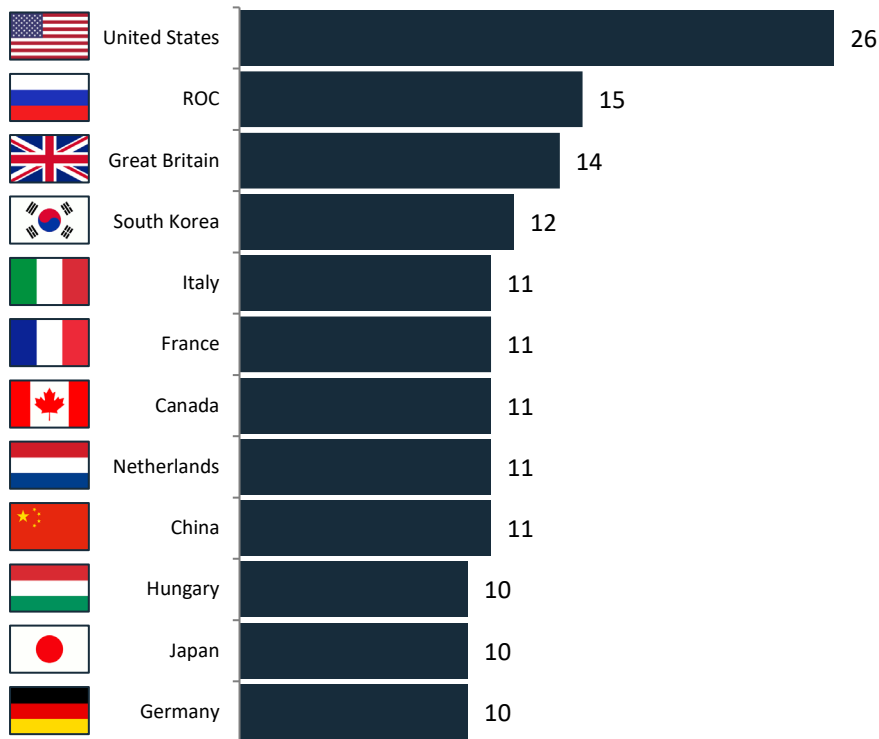


Note: Percentages will not tie to slide 15 due to breakout of mixed relay medals; percentages may not total 100 due to rounding

Source: International Olympic Committee, Wikipedia

Team USA had number of close calls finishing just off podium 26 times

Number of fourth place finishes in Tokyo Games



Source: International Olympic Committee, Wikipedia, NBC

Tangentially related, other countries had some big Ws in Tokyo

First Golds

	Event	Appearances
Bermuda	Triathlon	19
Philippines	Weightlifting	22
Qatar	Long Jump	10

First Medals

Burkina Faso	Triple Jump	10
Turkmenistan	Weightlifting	7
San Marino	Shooting	15

See Part I
slide 16 for
context



01

Olympic results
(Athletics tilt)

02

Home field
advantage

03

COVID update

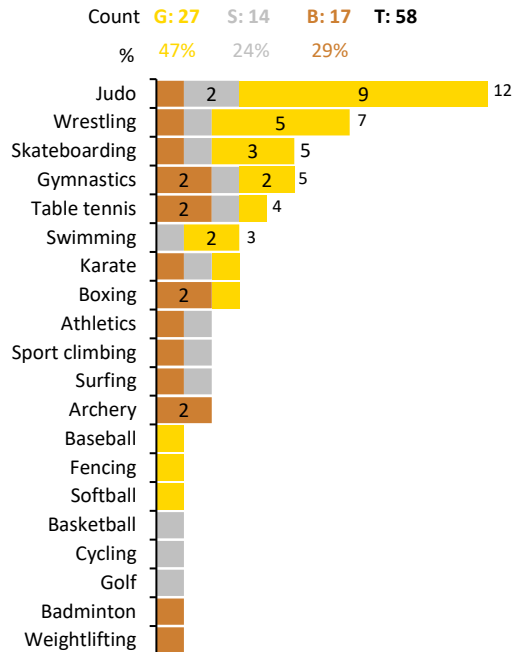
04

Follow up

Japan had a very nice Olympics thanks for asking

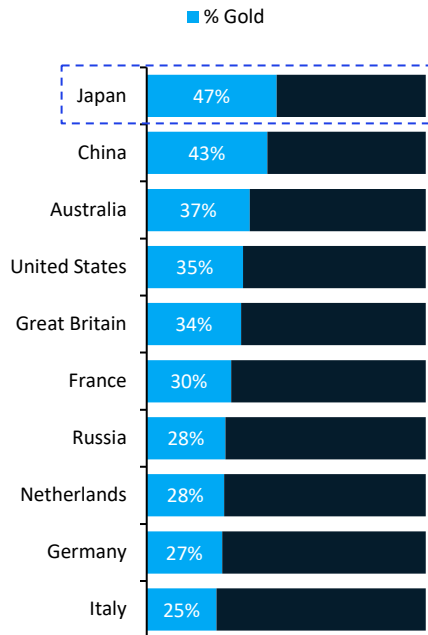
27 golds not bad, third most across teams

Japan 2020 medal count, by sport



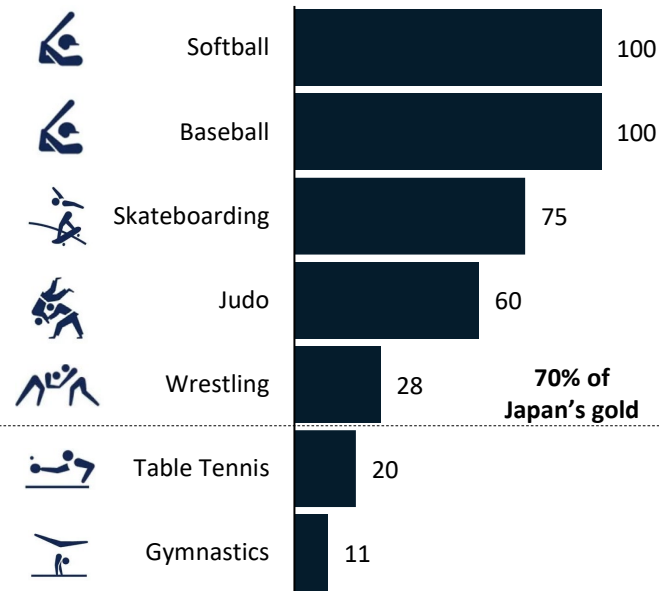
As % of total medals, nobody out 'golded' Japan

Gold medal share of total for teams with > 10 gold medals



Gold medal acquisition concentrated in select sports

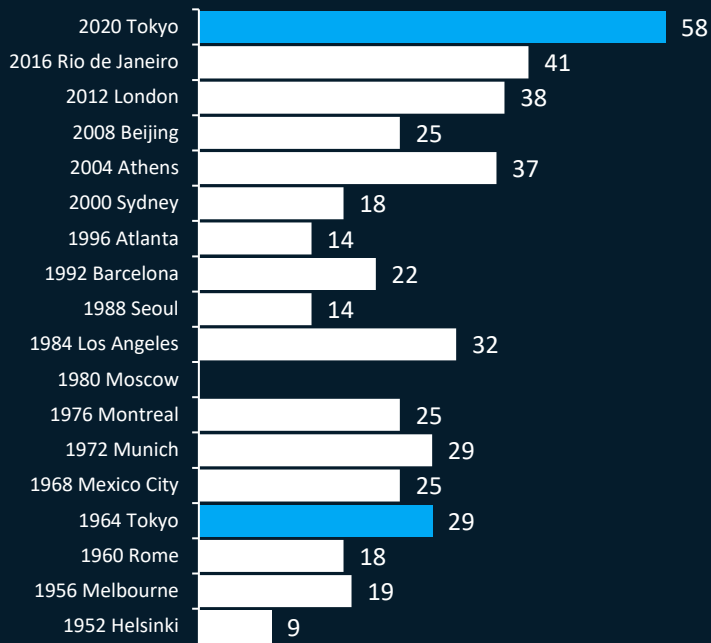
Japan share of gold medals for select events, %



Japan's performance in historical context highlights a home field advantage

Tokyo 2020 strongest performance to date for both total medals...

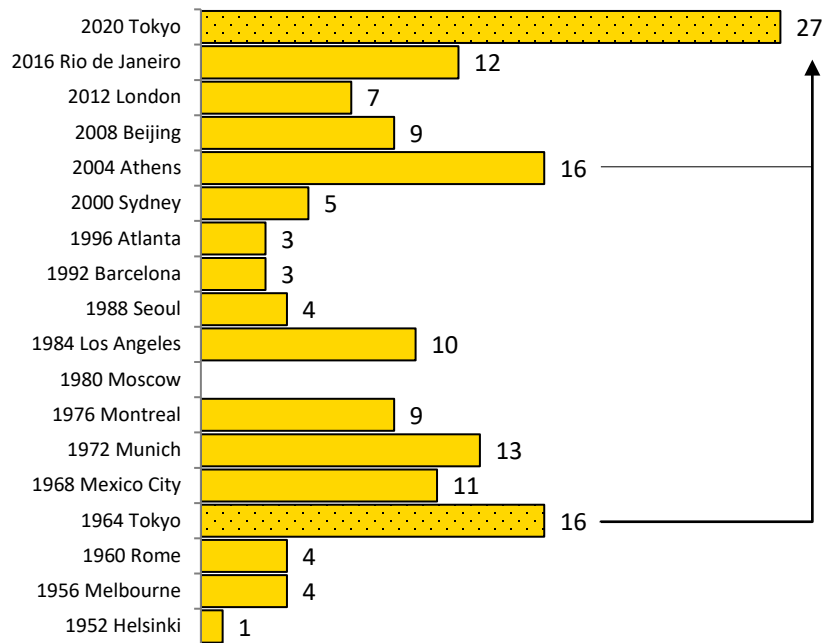
Total medals won



Note: Post-WWII games shown, Japan first competed at 1912 Stockholm Games, winning zero medals
Source: International Olympic Committee, Wikipedia

...and total golds, breaking record set at 1964 Tokyo Games

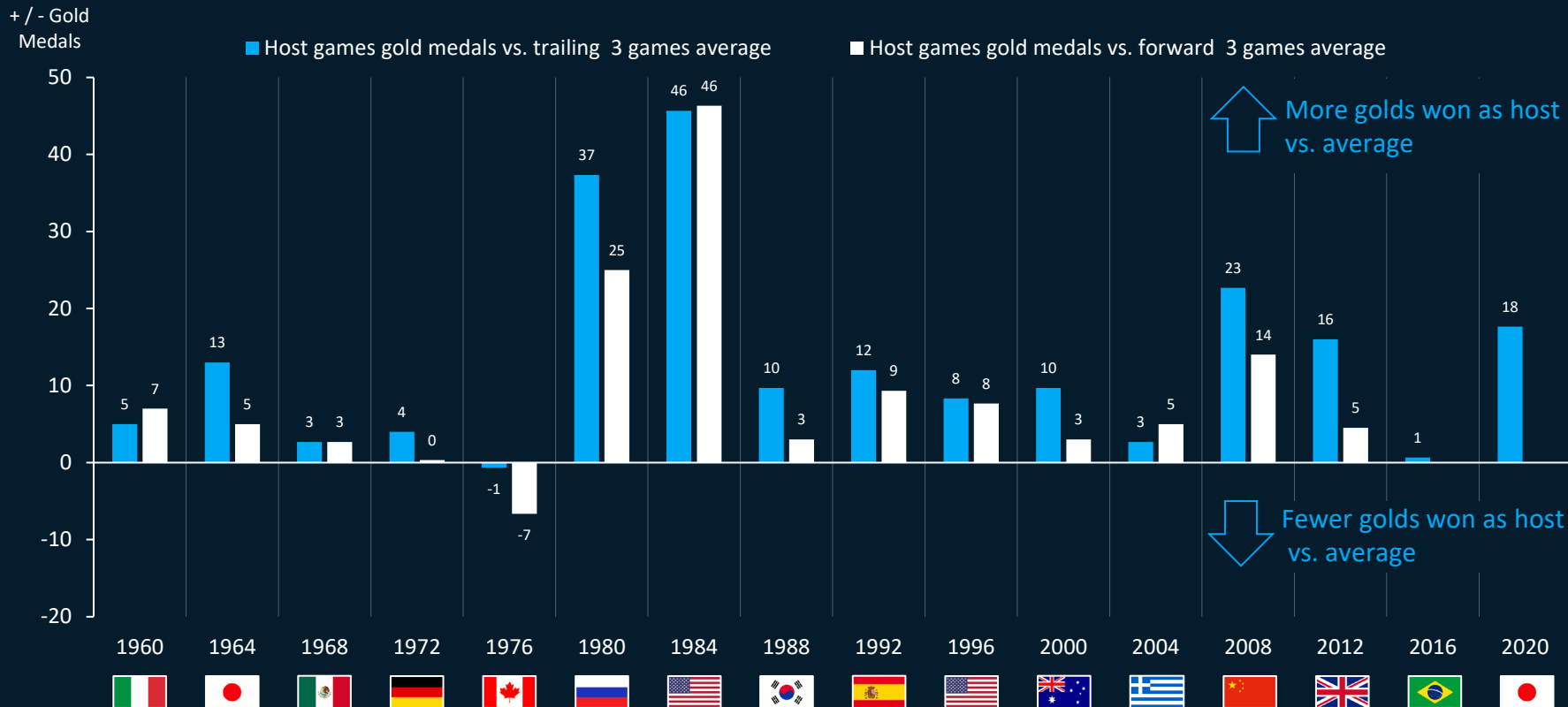
Total gold medals won



Achieving higher gold medal count when hosting is not unique to Japan

Most countries outperform when hosting Games...

Gold medals won when host vs. trailing and forward three games average

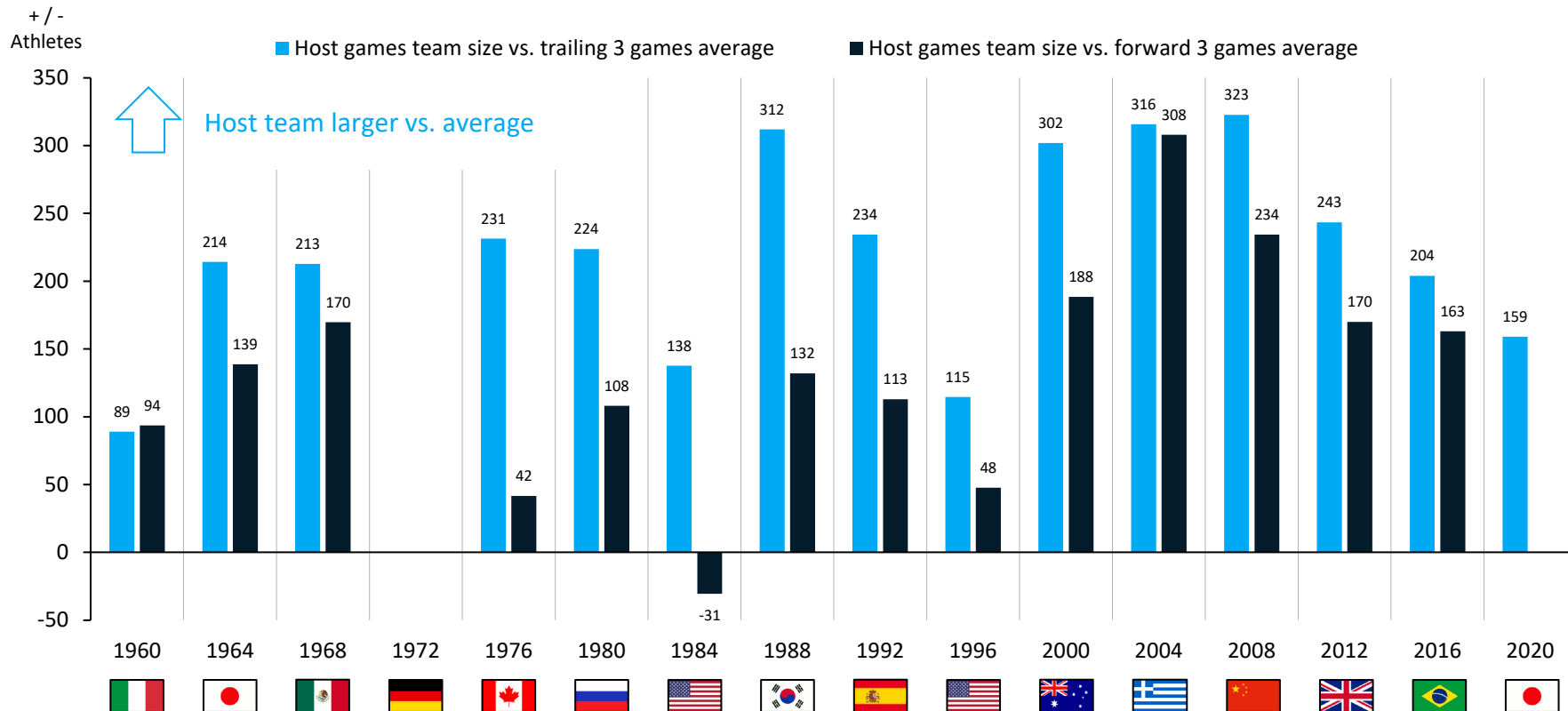


Note: 1972 considers West Germany only; 1984 uses 2000 (Games +4) for forward average; 1996 uses 1972 (Games -5) for trailing average; no forward averages for 2016 and 2020

Source: International Olympic Committee, Wikipedia

...but important to note that team sizes typically larger when hosting...

Team size when host vs. trailing and forward three games average

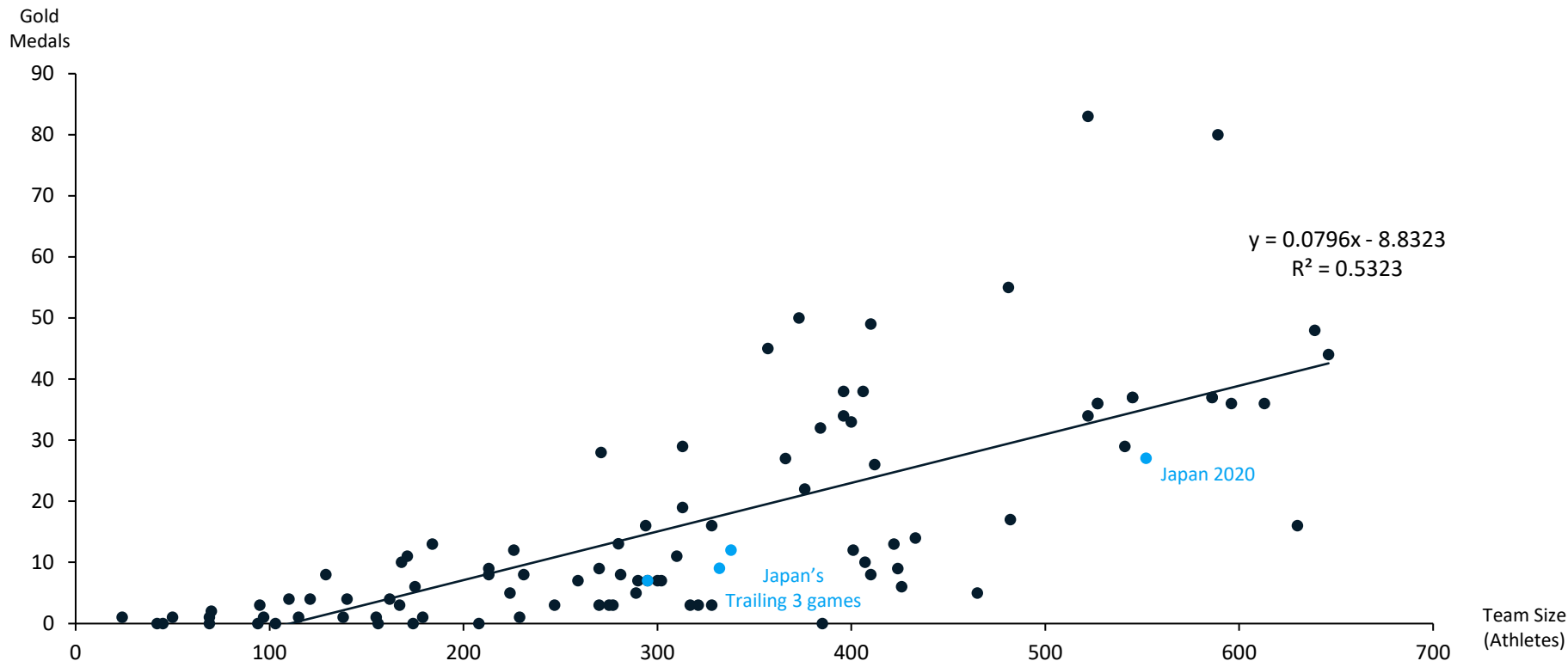


Note: West Germany (1972) team sizes unavailable; 1984 uses 2000 (Games +4) for forward average; 1996 uses 1972 (Games -5) for trailing average; no forward averages for 2020

Source: International Olympic Committee, Wikipedia

...with larger team sizes strongly correlating with higher gold medal count...

Host countries gold medal performance and team size across host, trailing three and forward three games





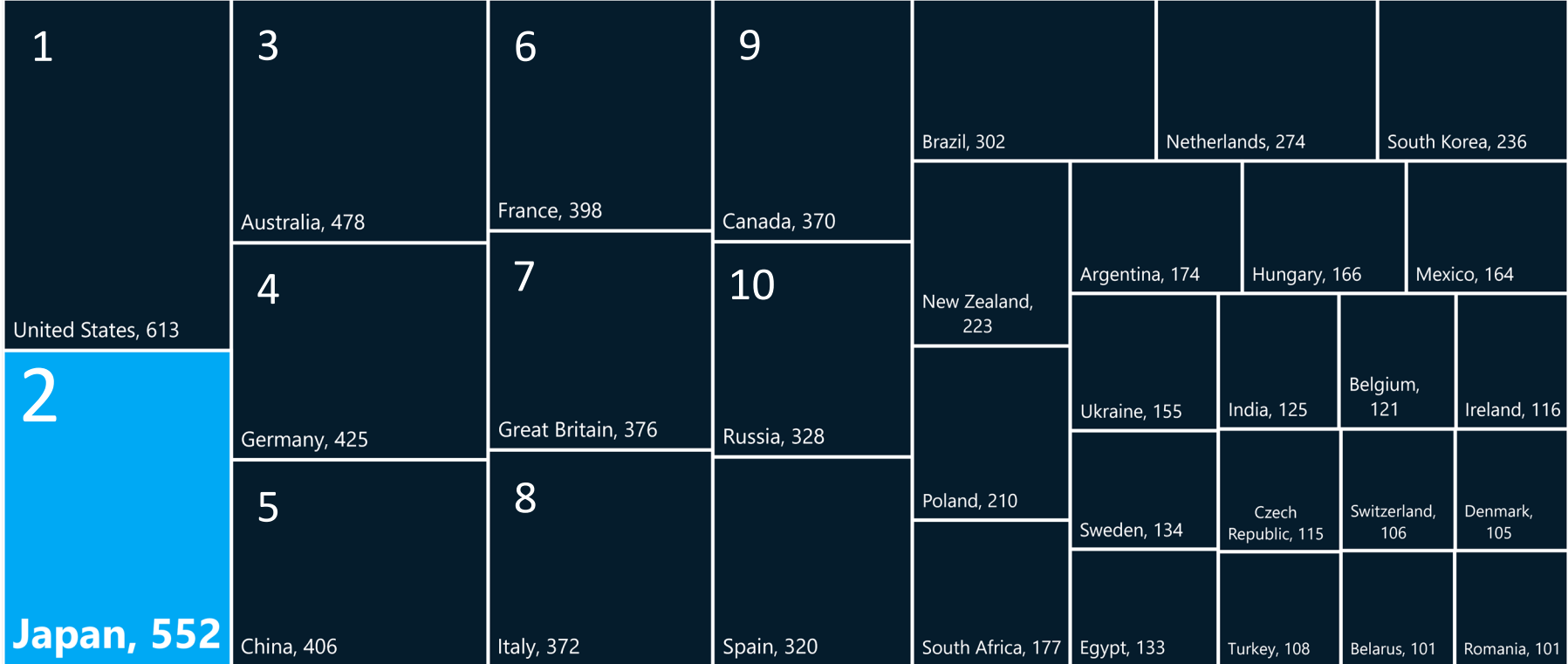
...and Japan had really big team and they needed some really big [Olympic] rings

Above title meant to be read in an extreme Drake voice

Tokyo 2020 team sizes, teams exceeding 100 athletes

Total Teams: 206
Below teams: 32
% of total: 15%

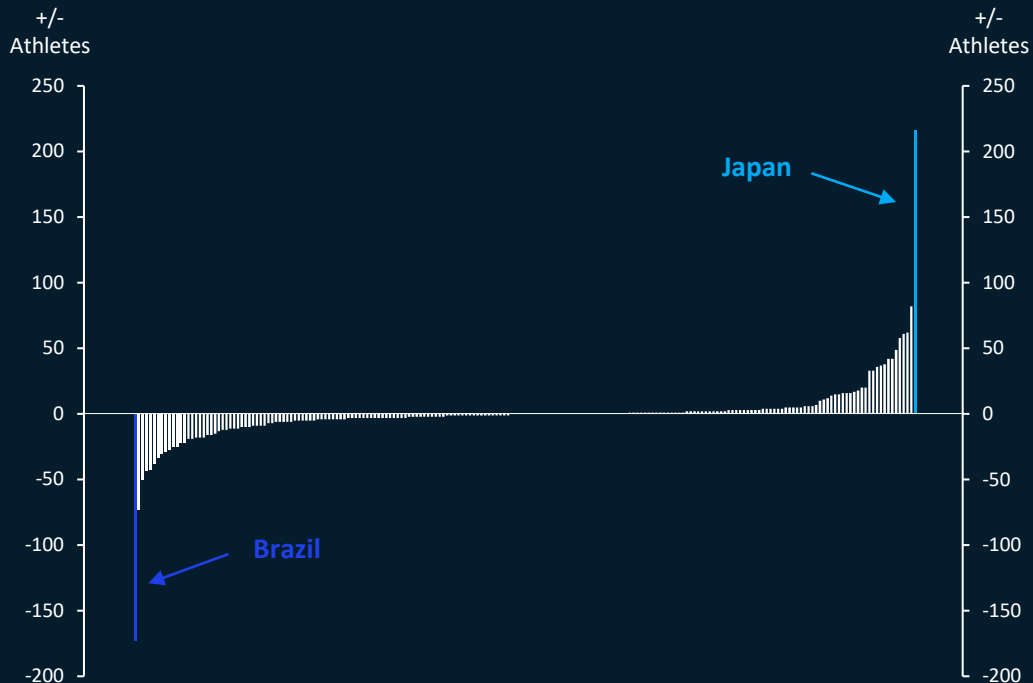
Total Athletes: 11,239
Below athletes: 7,984
% of total: 71%



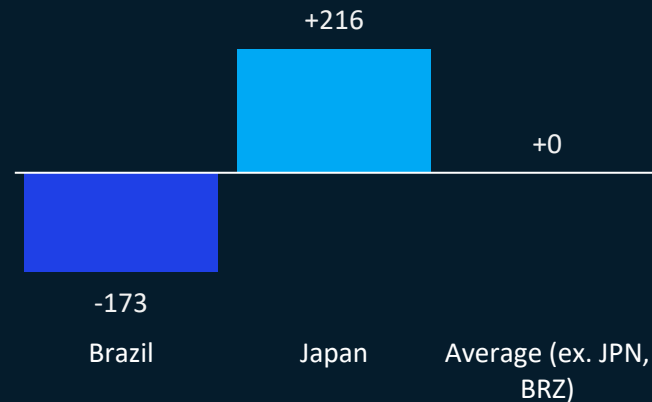
Source: International Olympic Committee, Wikipedia

Japan pulled up with much larger squad thanks to shorter commute, probably

Change in team size vs. Rio 2016, all countries



Change in team size vs. Rio 2016, Brazil and Japan

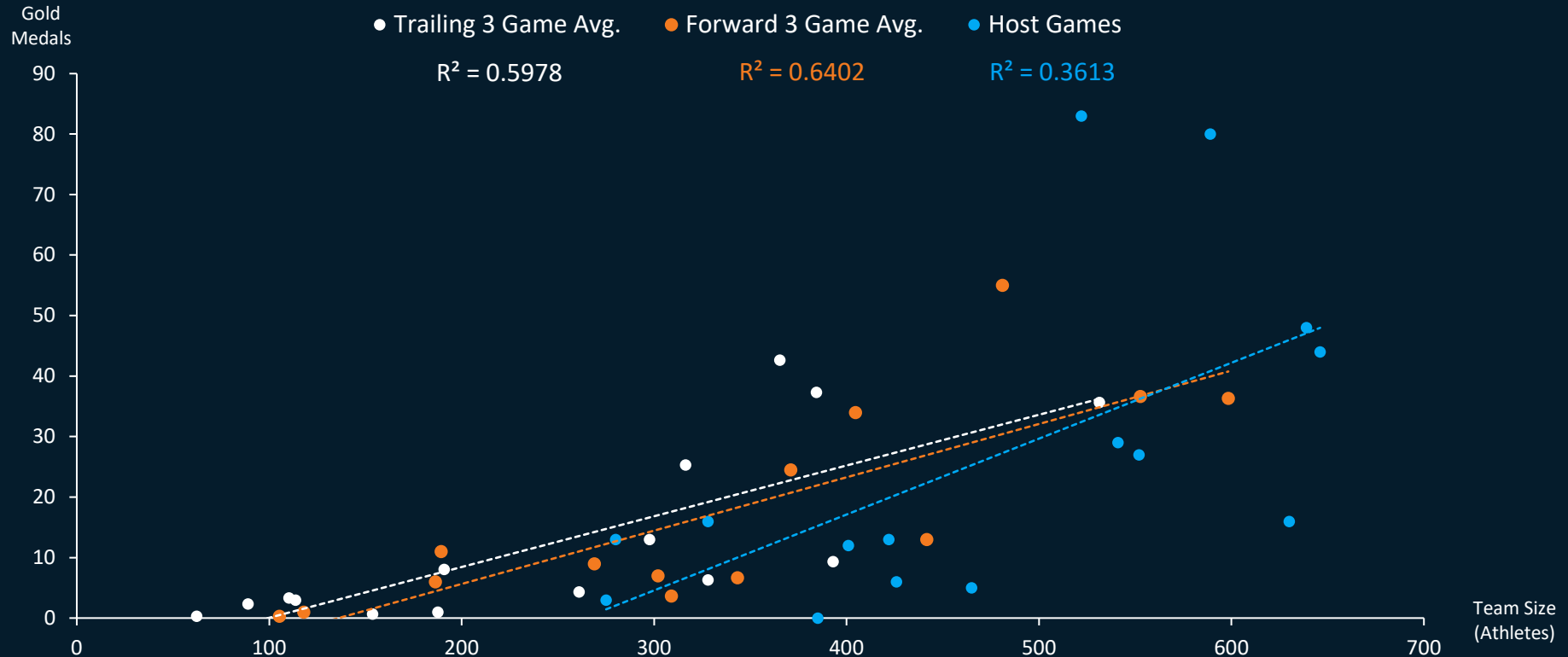


- Two largest changes in team size function of host country dynamics
- Despite additional events, changes to team sizes netted to almost zero

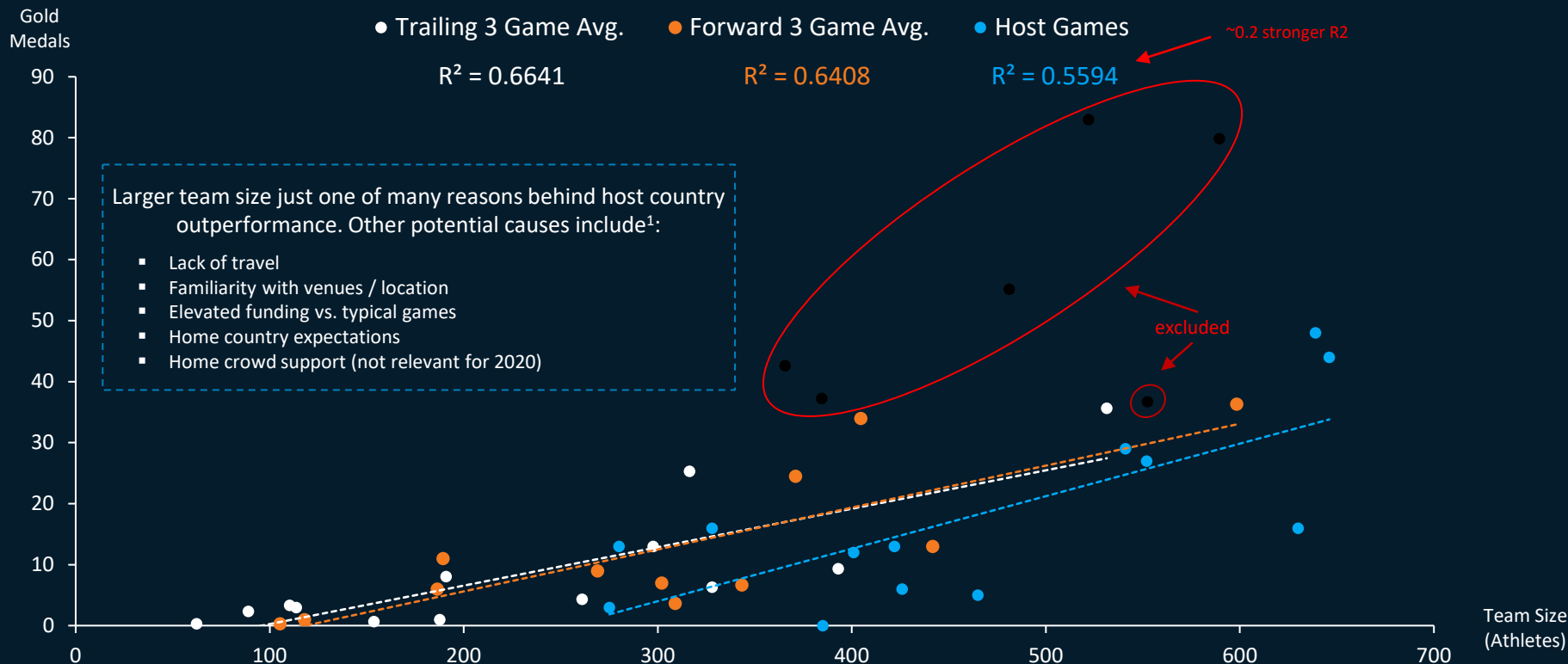
Note: Team sizes vary depending on source of data, believe discrepancies due to inclusion/exclusion of alternates, athletes that did not compete, etc.

Source: International Olympic Committee, MapsoftheWorld

Lower correlation for host games implies not all countries receive similar performance boost...



...but, host benefit more equitable after excluding Moscow 1980 and Atlanta 1984, eliminating boycott-driven medal count obfuscation

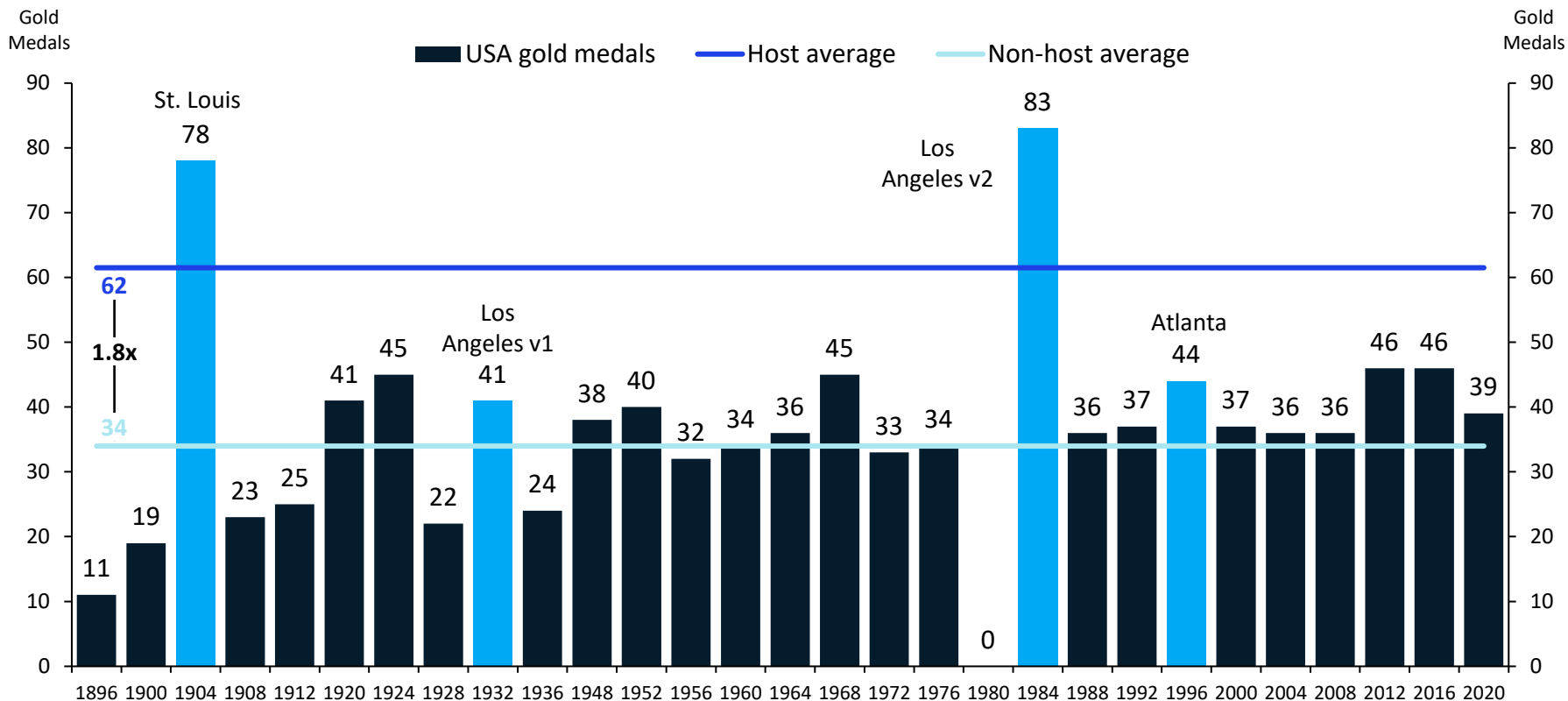


Note: Excludes 1980 Moscow and 1984 Atlanta Games along with corresponding trailing and forward averages;¹ Not exhaustive

Source: International Olympic Committee, Wikipedia



USA goes hard at home. Albeit, the Olympics have changed materially since earliest host duties and 1984 has boycott tailwind¹

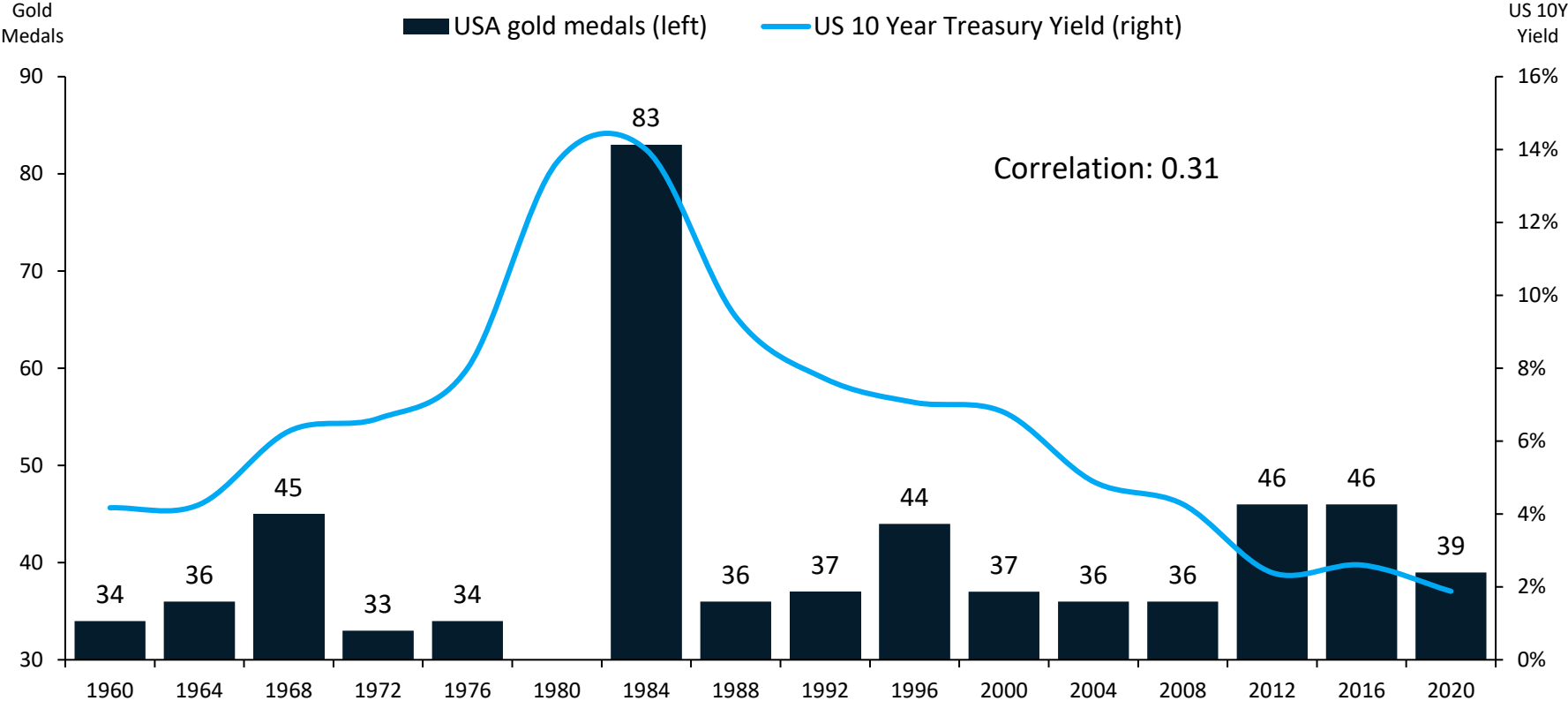


Note:¹ See Part I slide 7 for details; Non-Host average excludes 1980's 0 gold

Source: International Olympic Committee



Federal Reserve should raise interest rates if want more gold in Los Angeles



Source: International Olympic Committee, Macrotrends

The 2028 Los Angeles Olympics start in
2,516 days

Will the proceeding two weeks produce
the strongest Team USA performance in a
century¹? History says yes

Then again, it's tough to make predictions,
especially about the future²

Note: ¹ Excluding Los Angeles 1984; ² The second Berraism of the deck



01

Olympic results
(Athletics tilt)

02

Home field
advantage

03

COVID update

04

Follow up

Japan's COVID cases are rising, especially in Tokyo, but severe cases and deaths remain low relative to infection levels, and share of population vaccinated has risen substantially in recent weeks

That said, spread of Delta variant makes it increasingly likely that normalization will be delayed

Current Situation

>1.3M

Total confirmed cases

>15.7k

Total deaths

>217k

Total cases requiring hospitalization

>323k

Total confirmed cases in Tokyo

>2k

Total deaths in Tokyo

~23k

Current average daily new cases

>122k

Total vaccine doses administered

~43%

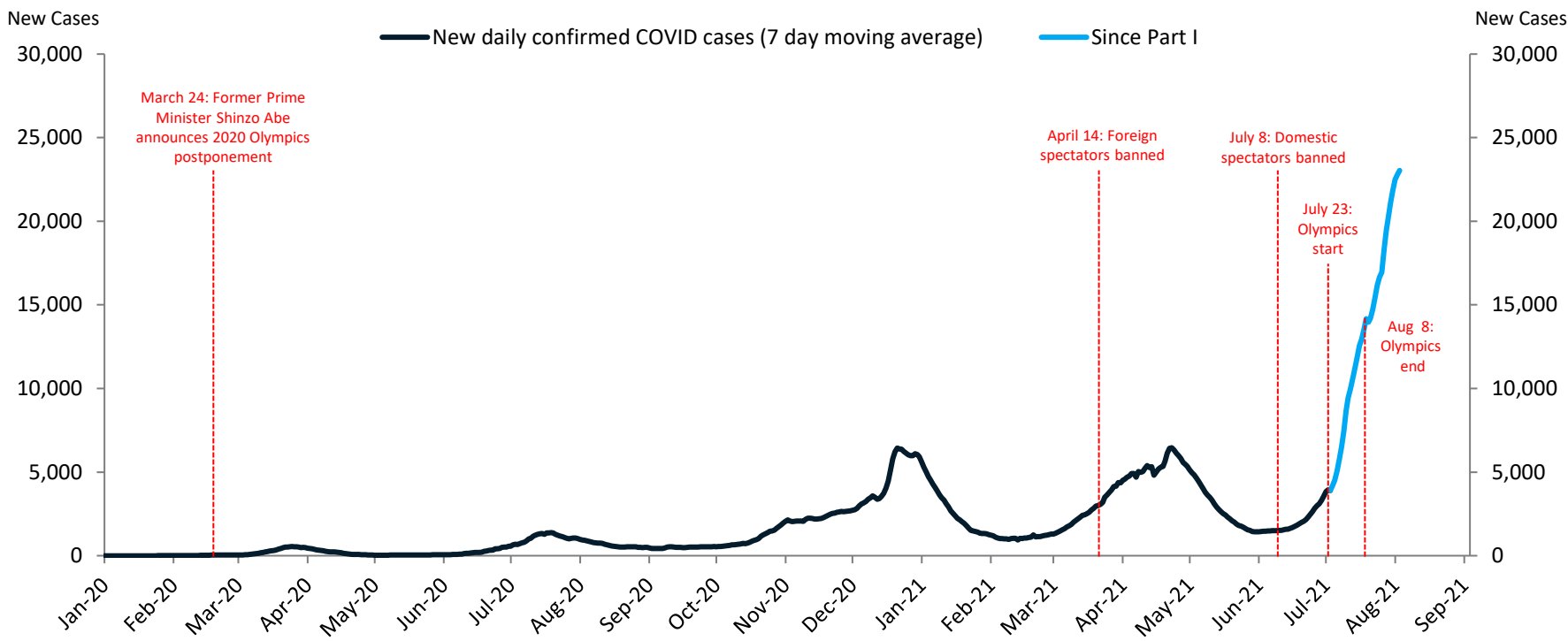
Percent of population fully vaccinated

102

Days for total cases to double (since May 15)

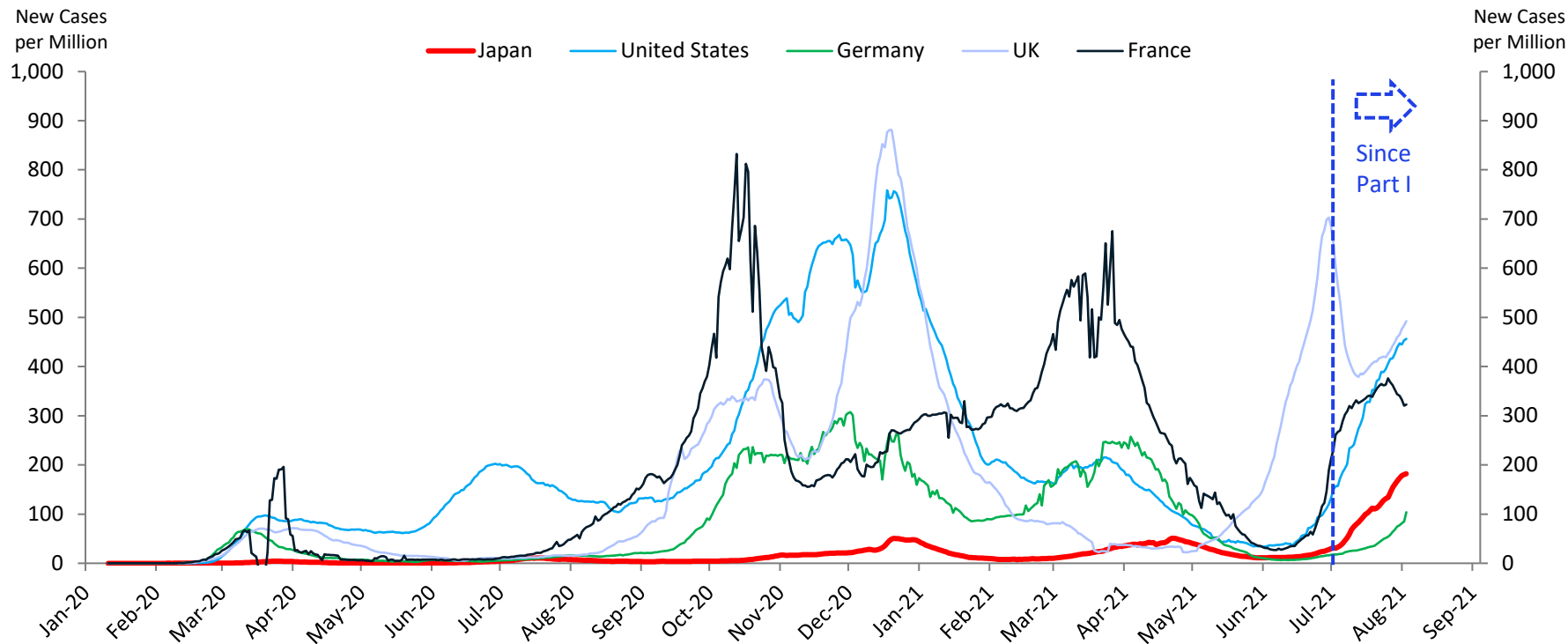


Japan's new daily COVID cases have exploded. Currently 3.5x higher than prior peak.
Consider, Y-axis for this chart in pre-read stopped at 7,000, now 30,000



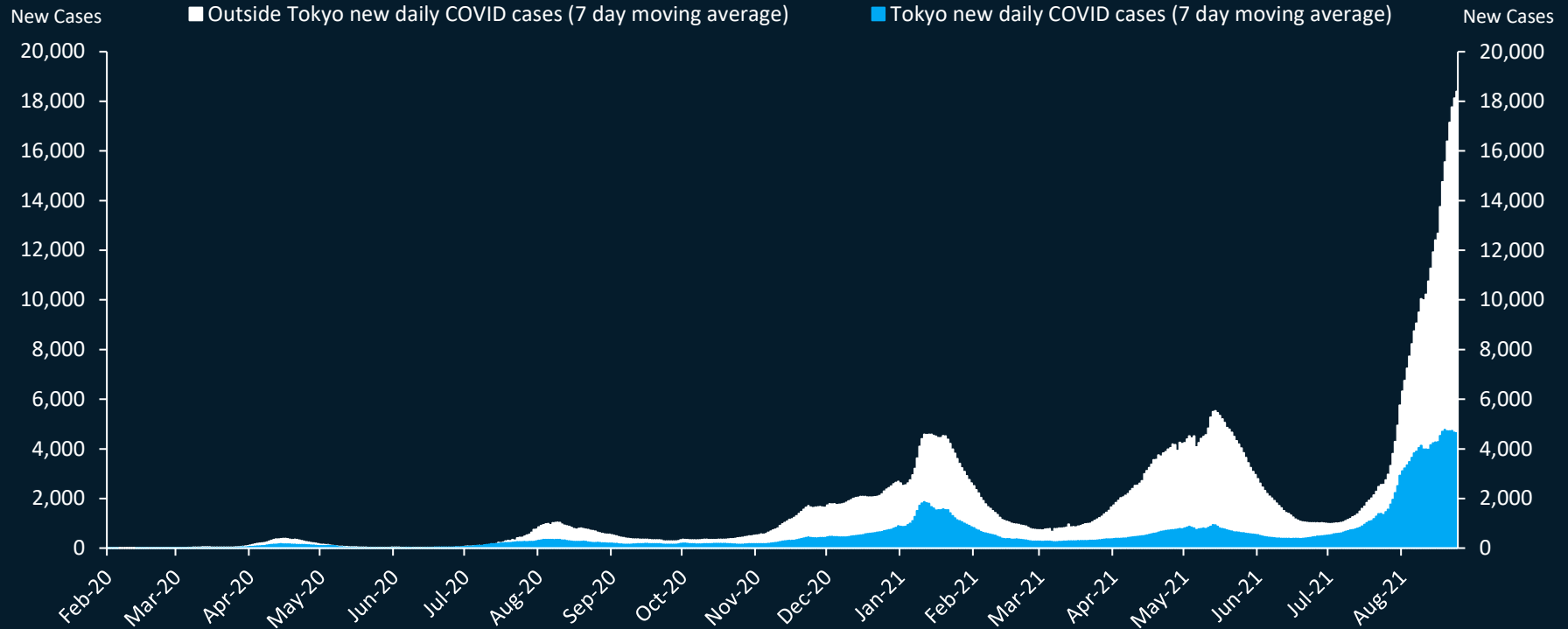
Note: As of August 25
Source: Our World in Data; NBC

Cases lower on population adjusted basis but, unfortunately, trending in line with other developed countries





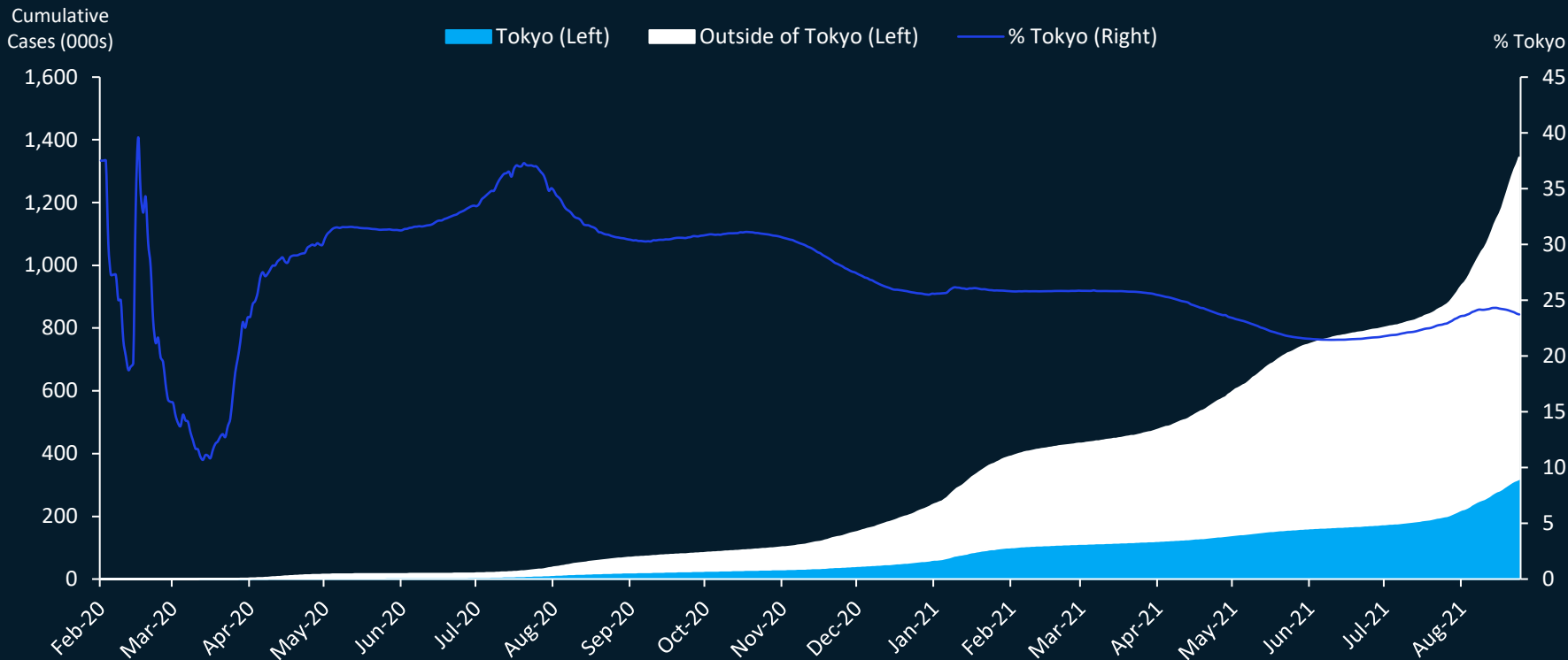
Tokyo's new case count at all-time high post Olympics, rest of country following



Note: As of July 21; Tokyo population 14M

Source: Tokyo Metropolitan Government, Google Translate, Our World in Data

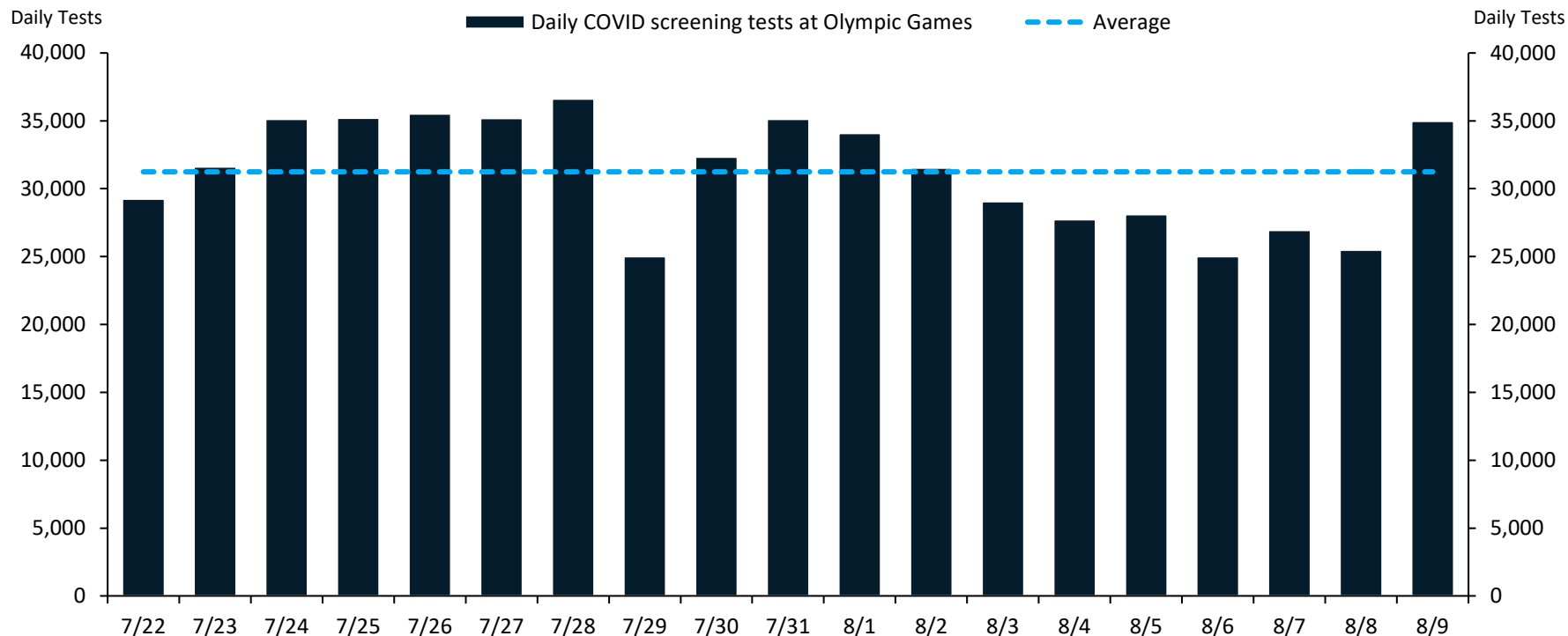
Tokyo's share of total COVID Cases had been steadily dropping since last summer but began to creep higher as Olympics began



Note: As of July 21; Tokyo population 14M

Source: Tokyo Metropolitan Government, COVID-19 Tracking Project, Google Translate

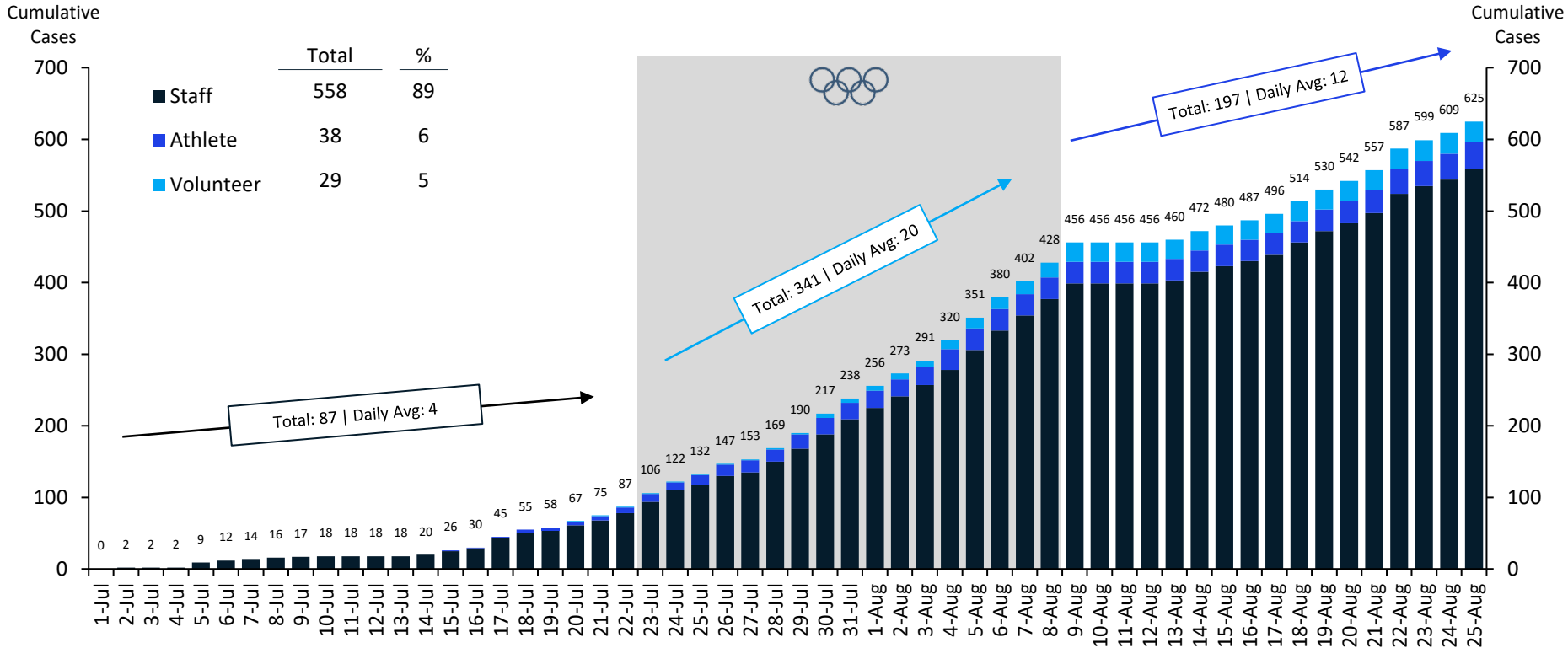
Average of 31k COVID screening tests were given each day to athletes, staff, media and other personnel. Nearly 600k tests administered between Jul-22 and Aug-9



Note: Does not include tests conducted at airports during arrival / departures

Source: Tokyo 2020 MED Public Health Daily Report

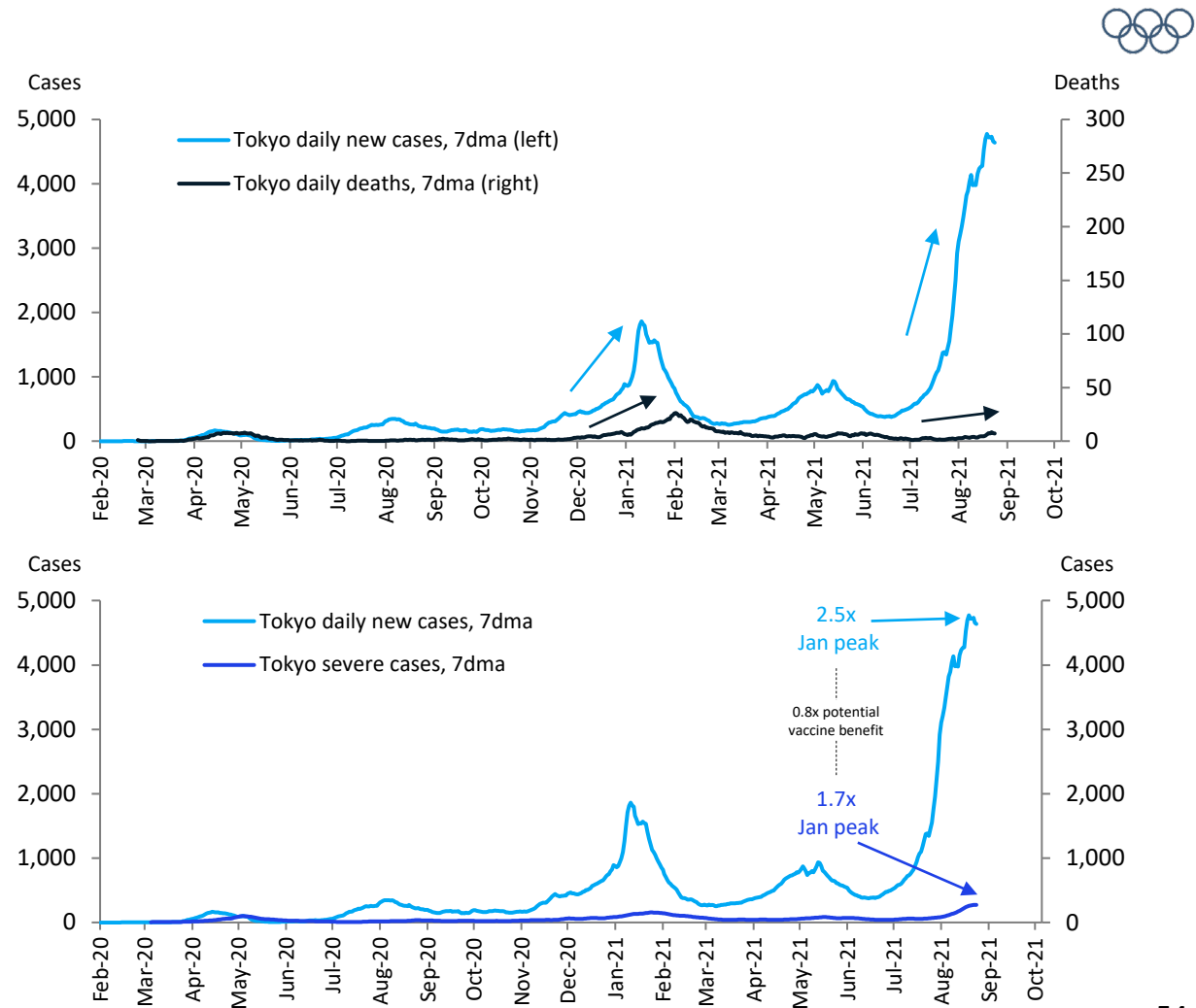
Remarkable that fewer than 500 cases discovered among Olympic personnel through end of games but cases reaccelerating as Paralympics takes stage



Note: As of August 25

Source: Tokyo 2020 MED Public Health Daily Report, International Olympic Committee

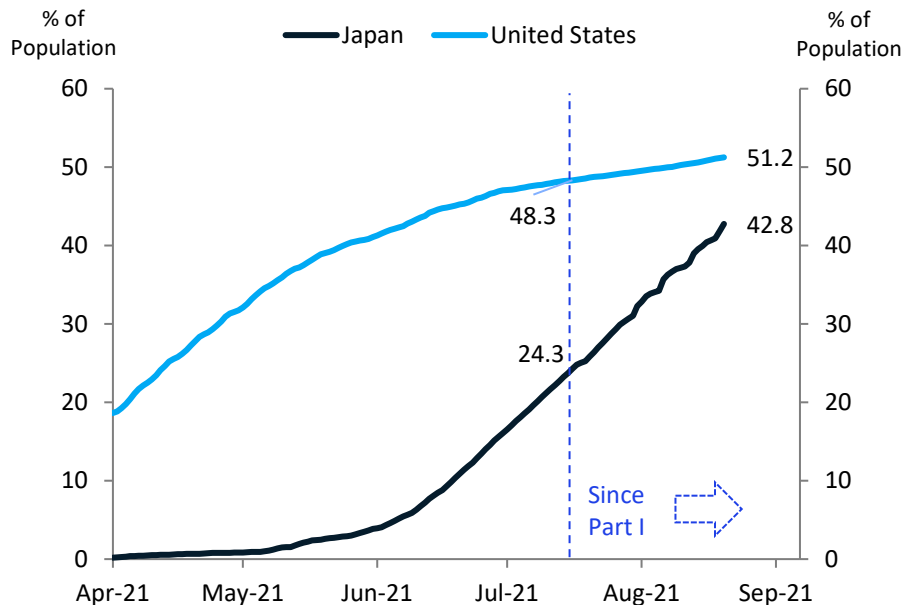
Notable decoupling
between new cases and
severe cases and deaths.
Although, severe cases
and deaths may start to
gradually rise with a lag,
early sharp divergence
indicates vaccine
fulfilling primary role of
preventing severe illness



Note: As of August 25; Tokyo population 14M
Source: Tokyo Metropolitan Government

Vaccine progress has increased substantially in past month...

% of population fully vaccinated

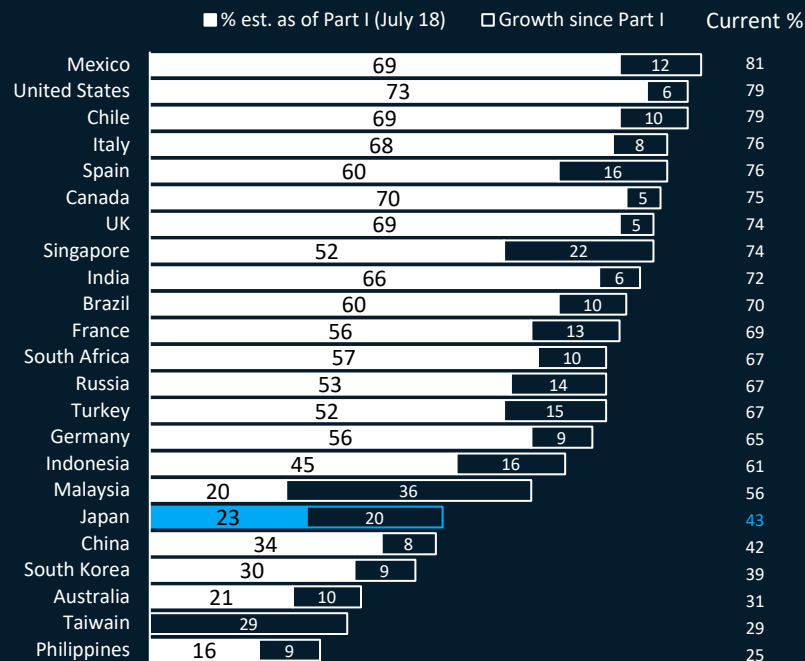


Note: As of August 24

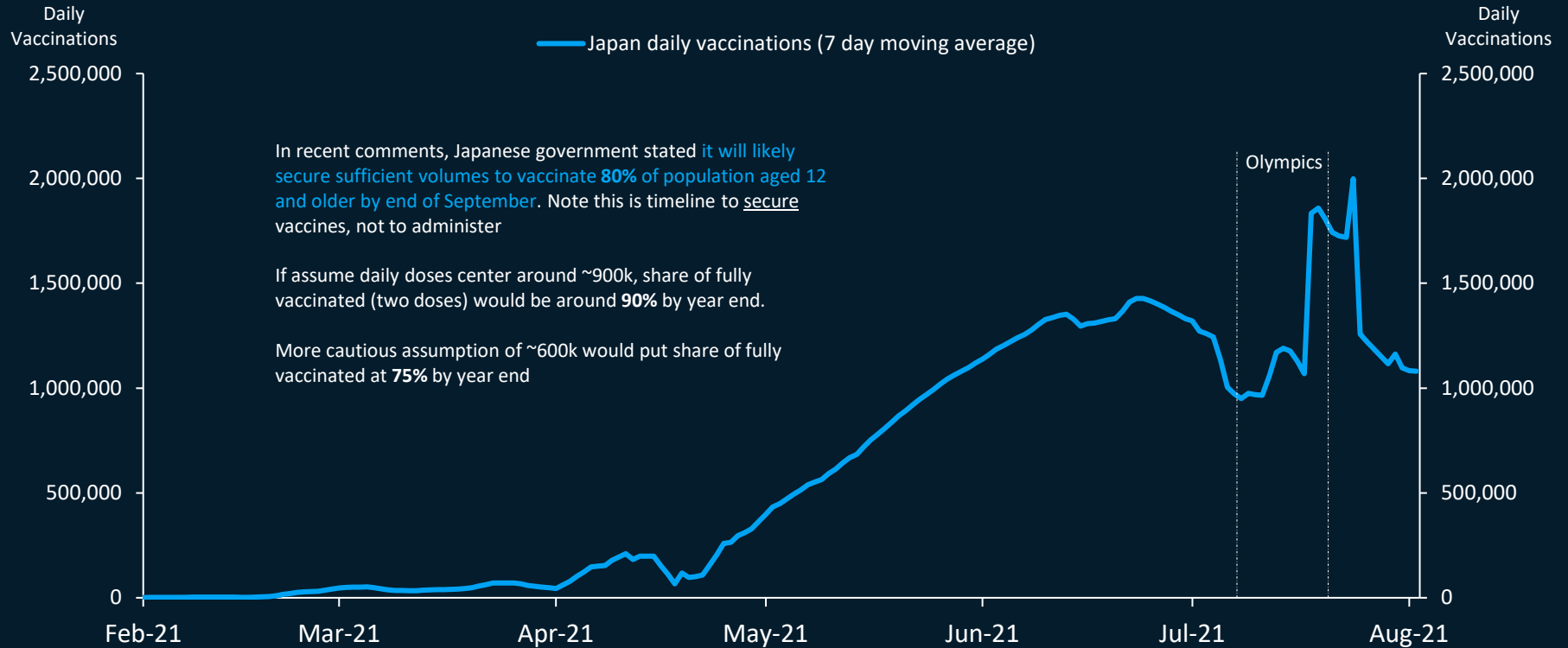
Source: JHU CSSE; Our World in Data; Goldman Sachs GIR

...but Japan still lagging on total immunity estimates

Estimated % of population with immunity



COVID Vaccinations troughed at the start of the Olympics, materially accelerated ahead of Japan's typical **vacation**¹ season, then plummeted



Note: As of August 25; ¹ Bolded to emphasize difference between VACCINATION and VACATION

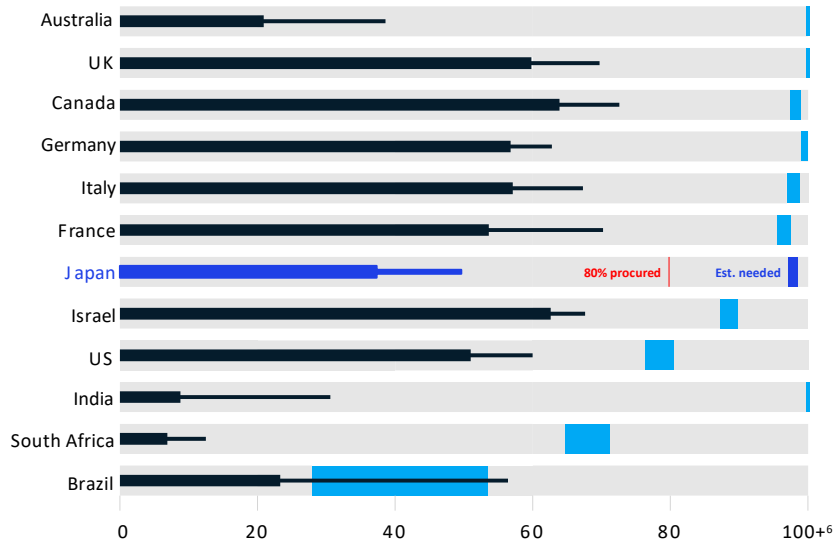
Source: Our World in Data, Japanese government releases, Morgan Stanley

Highly transmissible Delta variant may require higher vaccination rates to achieve herd immunity. Japan's 80% procurement likely not enough

Vaccine coverage¹ and potential level for herd immunity² % of population (as of Aug 15)

Vaccine coverage %

■ Full (2 doses) ■ 1 dose ■ Potential coverage for herd immunity (Delta variant only)



Factors that raise/lower coverage that may be needed for herd immunity

VoC effect³ Vaccine efficacy⁴ Natural immunity⁵



¹ Population that has received vaccine, independent of vaccine efficacy

² McKinsey's key assumptions for simplicity: no additional cases of natural infection occur, natural immunity is close to 100% effective and lasts long enough to reach herd immunity, and no new variants of concern emerge. Herd-immunity threshold calculated as $1 - (1/R_0)$. McKinsey's modeled estimates also assume that each member of a population mixes randomly with all other population members (in reality, people mix mostly with others whose patterns of interaction are similar to their own). Subpopulations with fewer interactions have lower thresholds for herd immunity than do those with more interactions. Potential range required to reach herd immunity based upon range of estimated natural immunity; this is based on available data and actual ranges may be higher or lower. Some individuals who already have natural immunity will also receive vaccinations

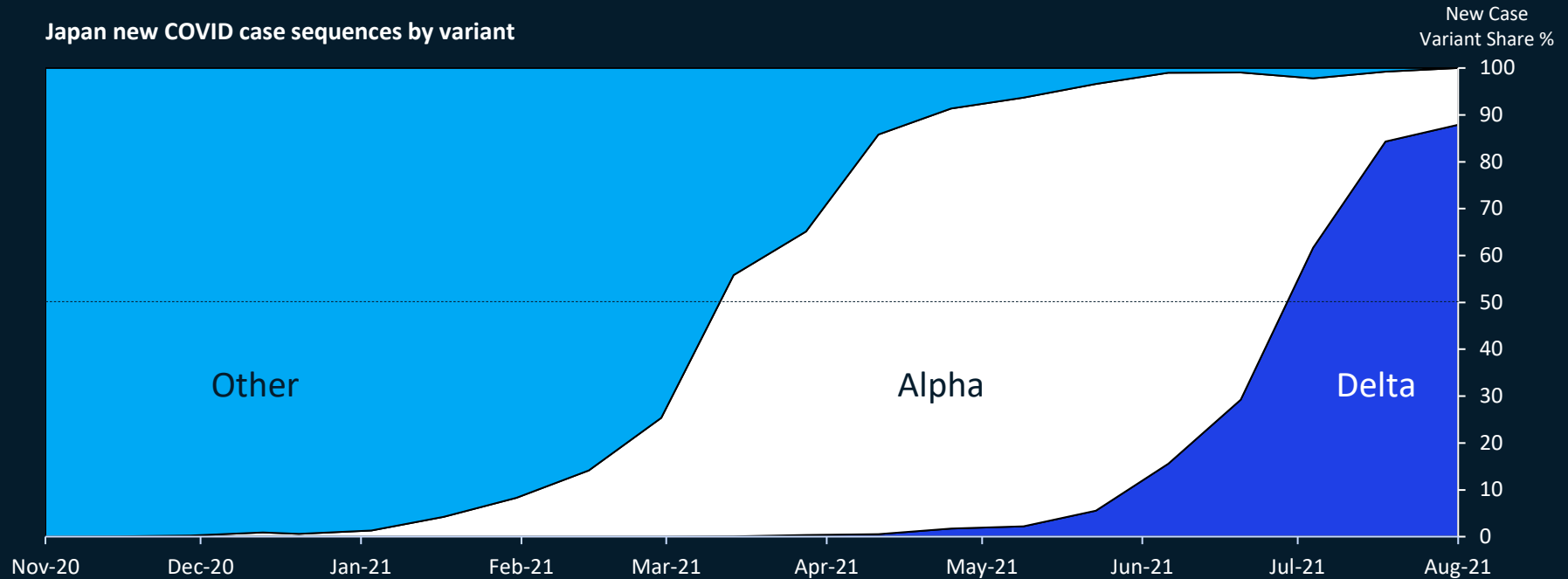
³ Variant of concern effect, based on reported mix of variants of concern in the past 28 days and published estimates of their increased transmissibility

⁴ Effective population-level vaccine immunity, based on type(s) and volume of vaccines distributed

⁵ Natural immunity estimates based on reported age-stratified deaths and age-stratified infection mortality rates

⁶ Mathematical estimates of potential vaccine-coverage levels for herd immunity may exceed 100%, because vaccines are not 100% effective

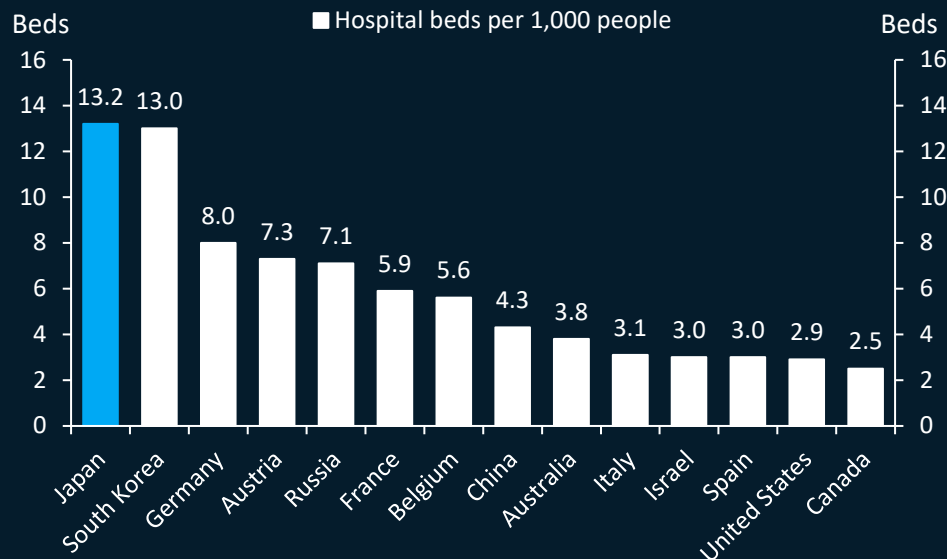
Delta variant accounts for nearly 90% of Japan's new sequenced cases.
Delta's R_0 estimated to be 6-8 vs. 2-3 for initial strain (i.e. 2-3x more contagious)



Delta variant growth will likely delay normalization of economic activity.
Primarily due to structural limitations on hospital space for COVID patients in Japan

Japan's hospital bed puzzle point of concern for citizens and could have been contributing factor for most recent lockdowns and expected normalization delays

Japan has largest number of beds per capita among developed countries...

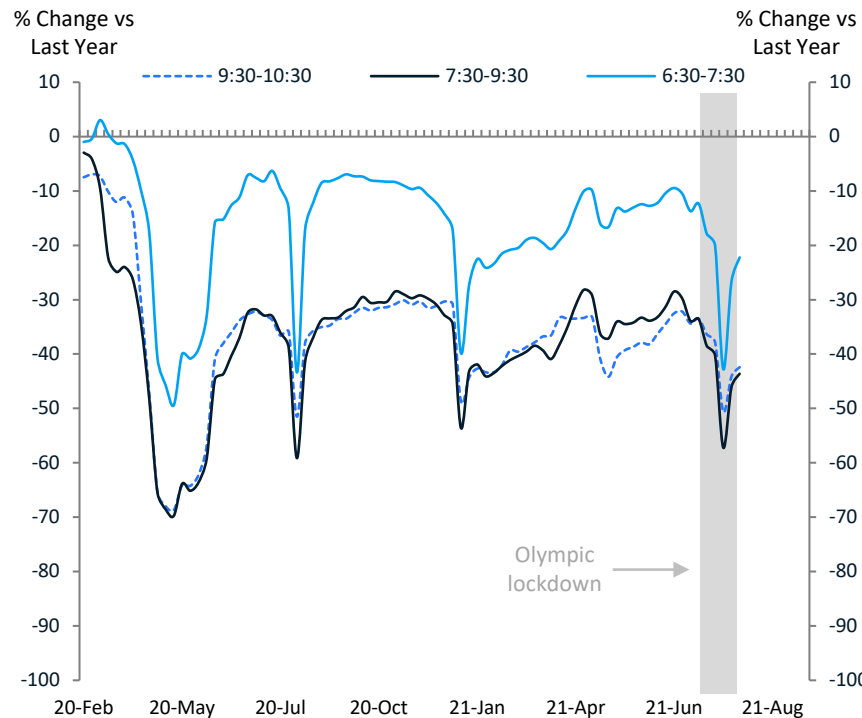


....yet, structural nuances have made that statistic irrelevant

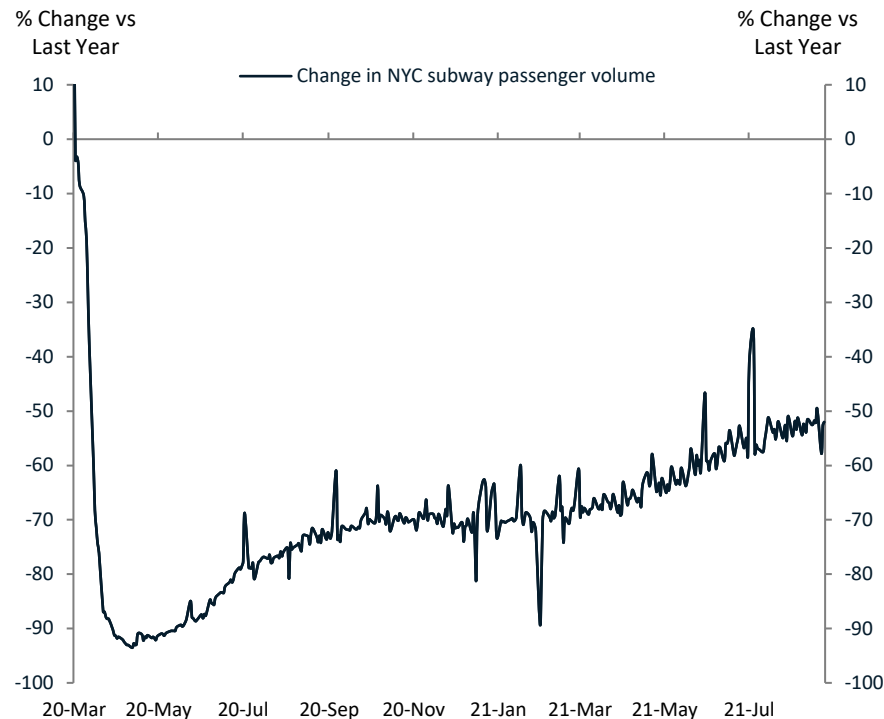
- Yomiuri Shimbun, a newspaper, reported on March 21st that Japan's prefectural governors are legally allowed to give instructions to hospitals only in very limited cases, while state governors in the US have stronger legal authority in emergency situations
- Privately-run hospitals that are less affected by administrative authority account for 80% of total hospitals in Japan, and there is large number of small hospitals with relatively few doctors and nurses
- As result, prefectures had only arranged 3.4% of all hospital beds as COVID-19 patient beds as of March 2021
- If infection volume climbed again (which it has) there was substantial risk of political pressure for renewed issuance of state of emergency declaration (which has occurred)

Subway data compares show contrasting lockdown approaches. Several rounds of lockdowns for Tokyo vs. NYC with one followed by gradual easing of restrictions

Tokyo subway weekly passenger volume change vs. LY by time of day



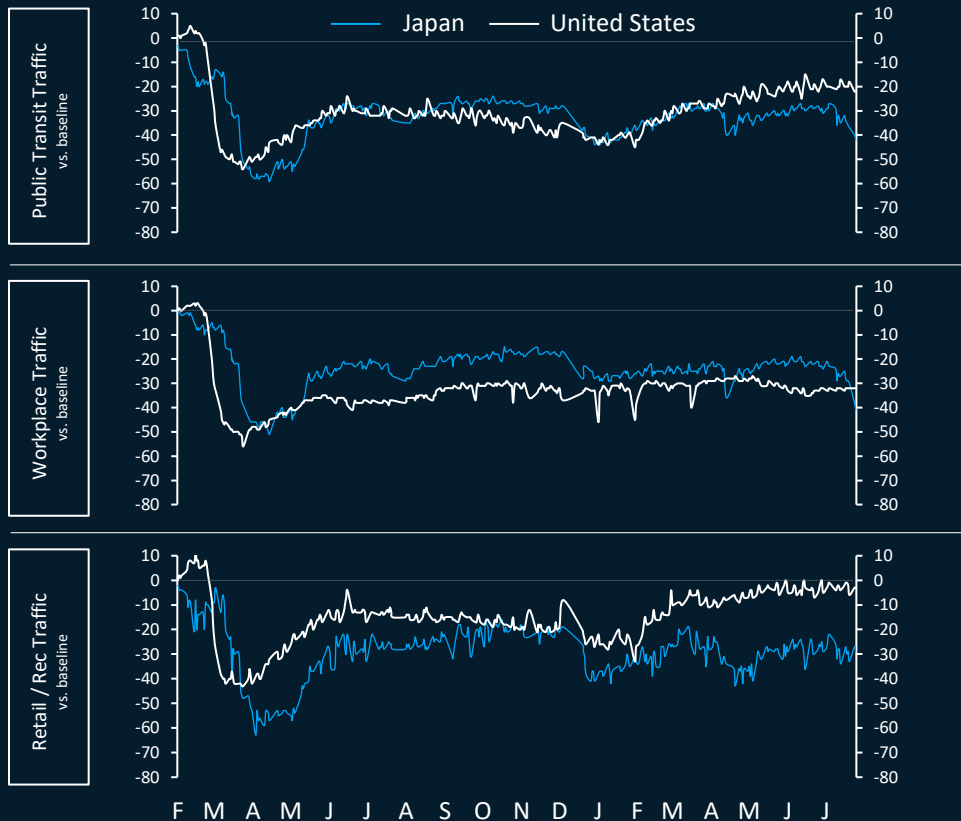
New York City subway daily passenger volume change vs. LY



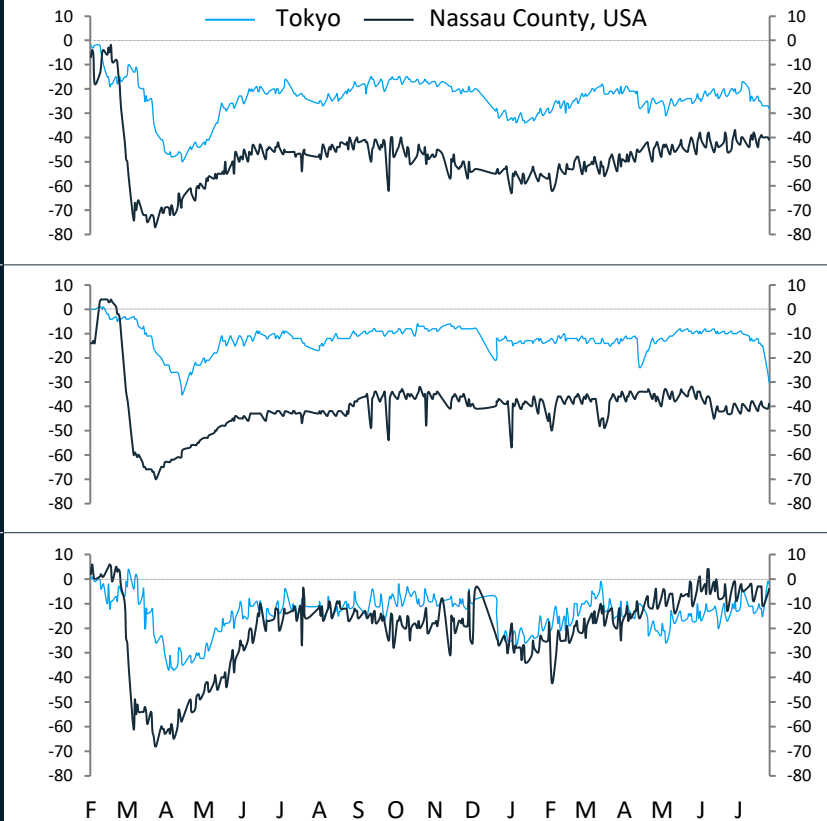
Note: Tokyo data as of August 25; New York City data as of August 25; Weekends have been removed from NYC data for normalization

Source: Tokyo Metropolitan Government; Google Translate; Metropolitan Transportation Authority

High frequency data points show Japan / US similarities at country level



Local Differences: Tokyo vs. Nassau County (NYC proxy)



Note: Figures measured as relative metrics vs. a base rate; Data normalized to remove weekends and key holidays (for Japan and United States)

Source: Google Mobility data



01

Olympic results
(Athletics tilt)

02

Home field
advantage

03

COVID update

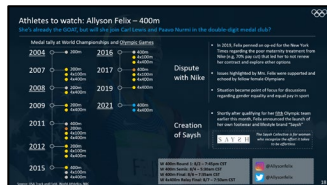
04

Follow up

Follow up (1/3)

The slide

Part II, 18



The *just*

- Allyson Felix is the GOAT for women's athletics on medal count (9) but needs to capitalize on two Tokyo opportunities medals to overtake Carl Lewis as most decorated US Athletics athlete (and 2nd all time all genders)

The follow up

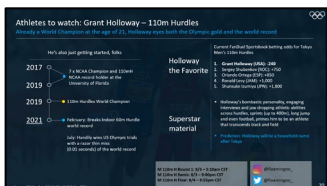
- Felix surprised for a bronze medal in the 400m dash (medal #10) and ran second leg on women's 4x400 relay, which smashed the competition with near world record setting performance for gold (medal #11). She's the GOAT
- There is no good argument against this

Part II, 19



- Sydney McLaughlin is a rising star and world record holder in the 400m hurdles. Her in-country rival, Dalilah Muhammad, the former record holder and defending Olympic and world champion is looking to cap off an incredible career
- McLaughlin vs. Muhammad battle did not disappoint as the two raced well ahead of the field in a thrilling final
- Muhammad's slight lead over the final hurdle evaporated in the final meters as McLaughlin found one last surge. In a world record performance, the youngster prevailed over the veteran

Part II, 20



- It's Grant Holloway's world, we're just living in it
- The 110m hurdles is an unforgiving event. Any slight misstep, hurdle clip, studder, etc. is the difference between gold and last. You must be perfect for 13 seconds. Grant Holloway was perfect for 11 seconds. With two hurdles to go, it was all Holloway until suddenly it wasn't
- An awkward final hurdle denied Holloway the necessary momentum for a final charge to the finish. To his right, Jamaica's Hansel Parchment closed an early deficit and had the final hurdle Holloway needed
- Holloway walks away with a silver. Hansel Parchment wasn't even in top 5 of sport betting odds for event

Part II, 21

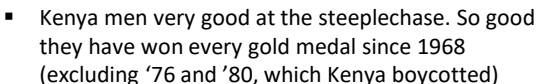


- Defending 1,500m champion Matthew Centrowitz had rocky few years due to coaching changes and injuries. However, track and field has learned to never count out Centro, a competitor who often puts on masterclass performances in middle distance tactics (See Rio 2016). However, with the depth of the 2020 field so strong, there was doubt the veteran had one more gold performance left

The follow up

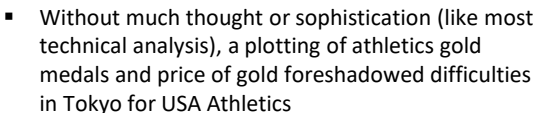
- Centrowitz failed to make the final. His compatriot, and fellow Oregon Duck (Centro graduated in 2011), Cole Hocker, ran a brilliant 3:31 in the final for 6th. It would have taken a US record to medal in the Tokyo 1,500. With Centrowitz's six year old personal best more than a second off the record, it is highly unlikely he would have been competitive for a medal

Part II, 22



- Kenya's long-running (no pun intended) winning streak was finally snapped by Soufiane El Bakkali of Morocco. Kenya manages to keep podium streak alive with Benjamin Kigen securing bronze

Part II, 25

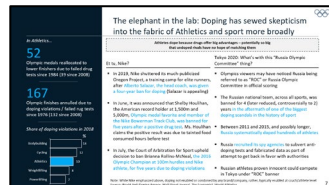


- Turns out, Team USA Athletics faced number of challenges and finished with six fewer gold medals vs. Rio 2016
- The brilliance of this tactical trade and use of alternative data leaves the analyst wondering why their stocks are red while indexes are at all-time highs

Follow up (3/3)

The slide

Part II, 7



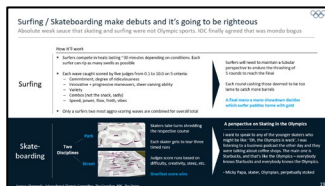
The *jist*

- Doping (cheating) highly prevalent in sport. The increased sophistication of doping programs has led to increased uncertainty of legitimate performances despite testing protocols.
- Russia's state sponsored doping program, while likely most egregious example, crystalizes concerns
- Russian athletes allowed to compete in Tokyo under ROC (Russian Olympic Committee) banner

The follow up

- Despite cheating ban, Russian athletes *deemed* innocent allowed to compete had their best Olympics in past two cycles: **Tokyo – 20 gold and 71 total**, Rio – 19 gold and 56 total, London – 20 gold and 68 total
- Great Britain sprinter on silver medal 4x100m relay already provisionally banned due to failed test for an anabolic agent. If confirmed, GB's silver medal will be revoked. Canada would be elevated to silver and China to bronze

Part I, 17



- Skateboarding makes Olympic debut and its going to be awesome

- Skateboarding ushered in youngest generation of Olympians with the average age of women's street podium just 14 vs. avg. 2012 Olympian age of 27
- Team Japan showed up (Japan requested skateboarding's inclusion in Tokyo Games) and captured 75% of available gold with 13 year old Momiji Nishiya leading charge in women's street
- Team USA's gold medal hope, Nyjah Houston, failed to podium

Part I, 19



- shoes. oh my god, shoes.

- While a more diligent analysis required beyond the analyst's capabilities, Tokyo saw numerous National, Olympic and World records. While not all wearing Nike's specific super shoes, nearly all involved a particular brand's newest model designed specifically to compete with Nike's advancements

You know the song

Track only:

- World Records: 2
- Olympic Records: 6
- National / Area Records: 12



Fin

Rendez-vous à Paris 07.26.2024

Analyst Certification

The views expressed in this report accurately reflect the personal views of the analyst and only the analyst. In addition, the analyst has not and will not receive any compensation for providing a specific view in this report.

Disclosures

Though the information herein is believed to be reliable and has been obtained from public sources believed to be reliable, the analyst has no representation as to its accuracy or completeness. Source references to third-parties in this report are provided for reader convenience only. The analyst neither endorses the content nor is responsible for the accuracy or security controls of those websites.

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This report is provided for informational purposes only and should not be used as basis for decision making

8/29/2021



following sections out of date

The background of the slide features three athletes in USA uniforms. On the left, a male athlete in a blue USA singlet with 'CENTROWITZ' on his bib is running. In the center, a female athlete in a red USA singlet with 'REED' on her bib is running. On the right, a male athlete in a blue USA singlet is shouting with his mouth open. The entire image is overlaid with a dark blue semi-transparent filter.

Citius, Altius, Fortius: Part II

Tokyo 2020 Athletics Pre-Read



Wait, Athletics...you mean track and field, right?

Yeah, basically

Athletics

noun

A group of sporting events that involves competitive running, jumping, throwing and walking

Olympic Athletics program includes:



Track and Field



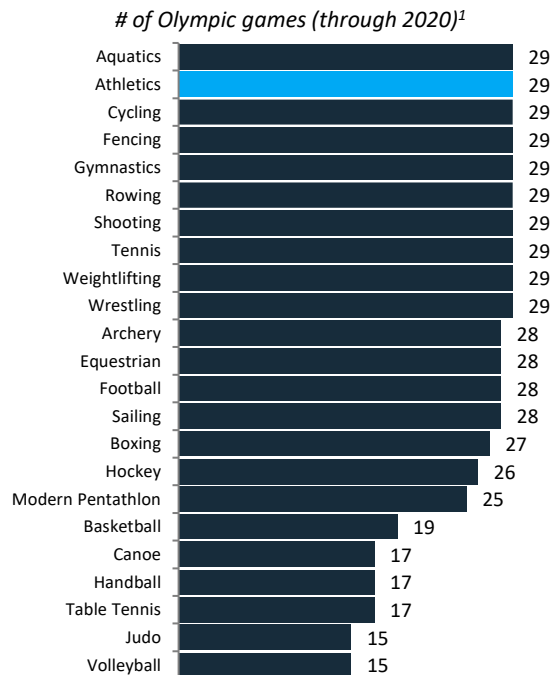
Road Running



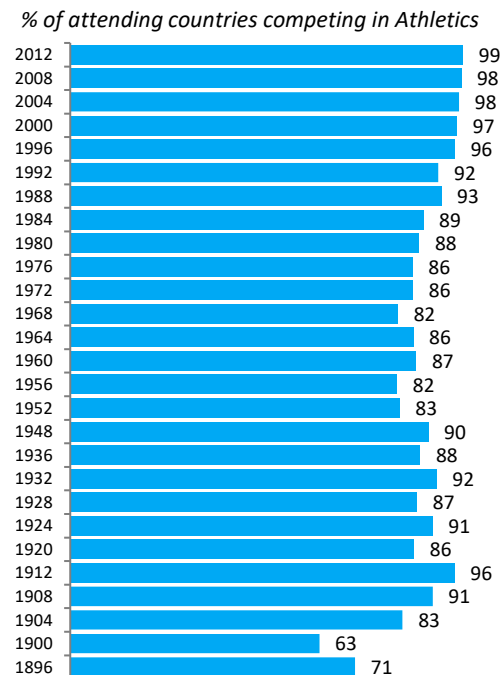
Racewalking

Athletics is...(1/2)

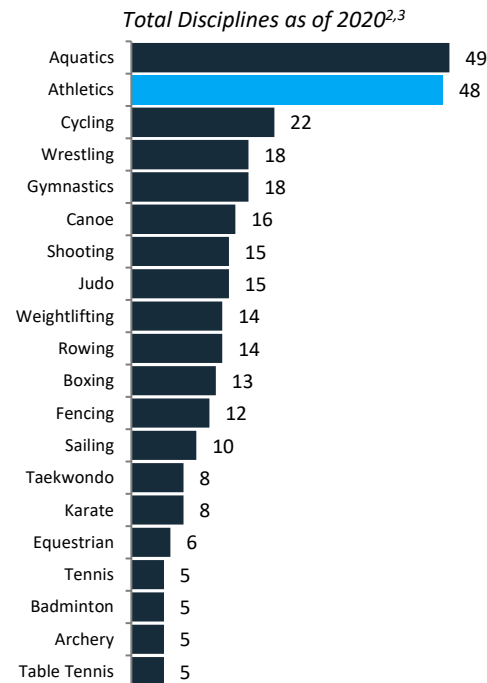
One of the oldest...



...most contested...



...and broadest Olympic Sports...



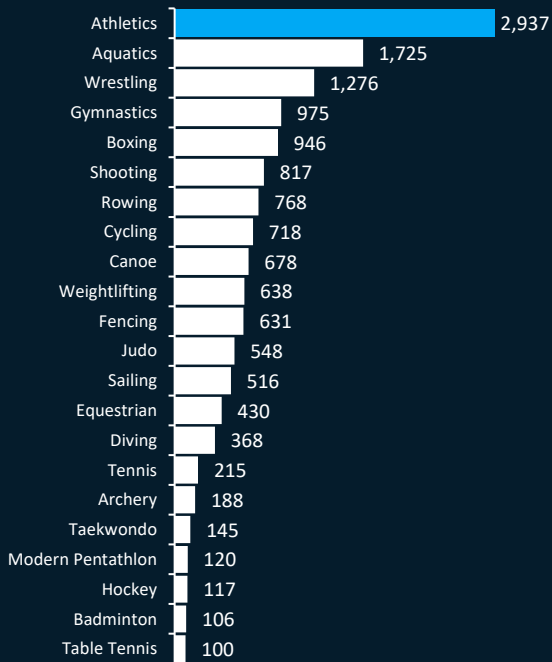
Note: ¹ Sports with less than 15 appearances not shown; ² Sports with less than 5 disciplines not shown; ³ Male and Female Disciplines separate (e.g. Men's and Women's 100m are 2 Disciplines)

Source: Olympedia, Wikipedia, International Olympic Committee

Athletics is... (2/2)

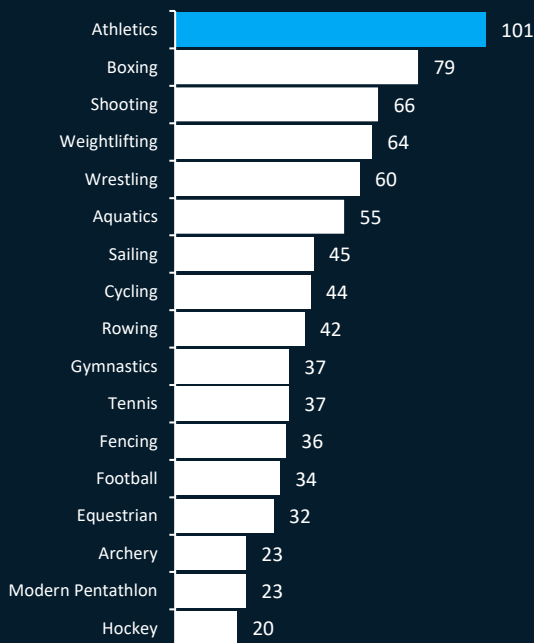
...with nearly 3,000 medals awarded...

Cumulative medals awarded (through 2016)^{1,2}



...across 100+ countries

of countries³ w/ medals for sports w/ >25 games



Note: ¹ Sports with less than 100 cumulative medals awarded not shown; ² Includes defunct event medals; ³ Includes defunct nations
Source: Olympedia; Wikipedia; International Olympic Committee

Why is Athletics so accessible?

Individual vs. Team

- 90% of Athletic Disciplines do not require the formation of a team. Other 10% only need 4 athletes
- Ability to send single athlete (vs. entire football team) gives smaller countries opportunity to compete and podium

Discipline Diversity

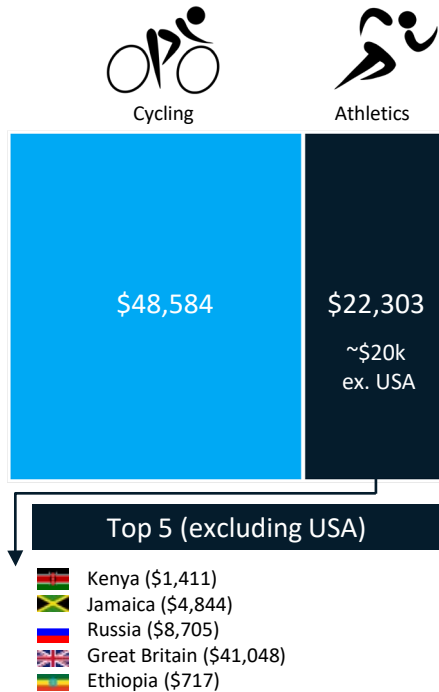
- Array of opportunities in Athletics is unmatched
- Increases odds that individual from smaller country may have skillset to compete at the games

Discipline Simplicity

- Many disciplines do not require expensive facilities, infrastructure or equipment, reducing advantage of developed countries
- Olympic sports such as cycling require expensive gear (bikes) and sound infrastructure (safe / paved roads), aquatics requires abundance of clean water, etc.

Doing more with less

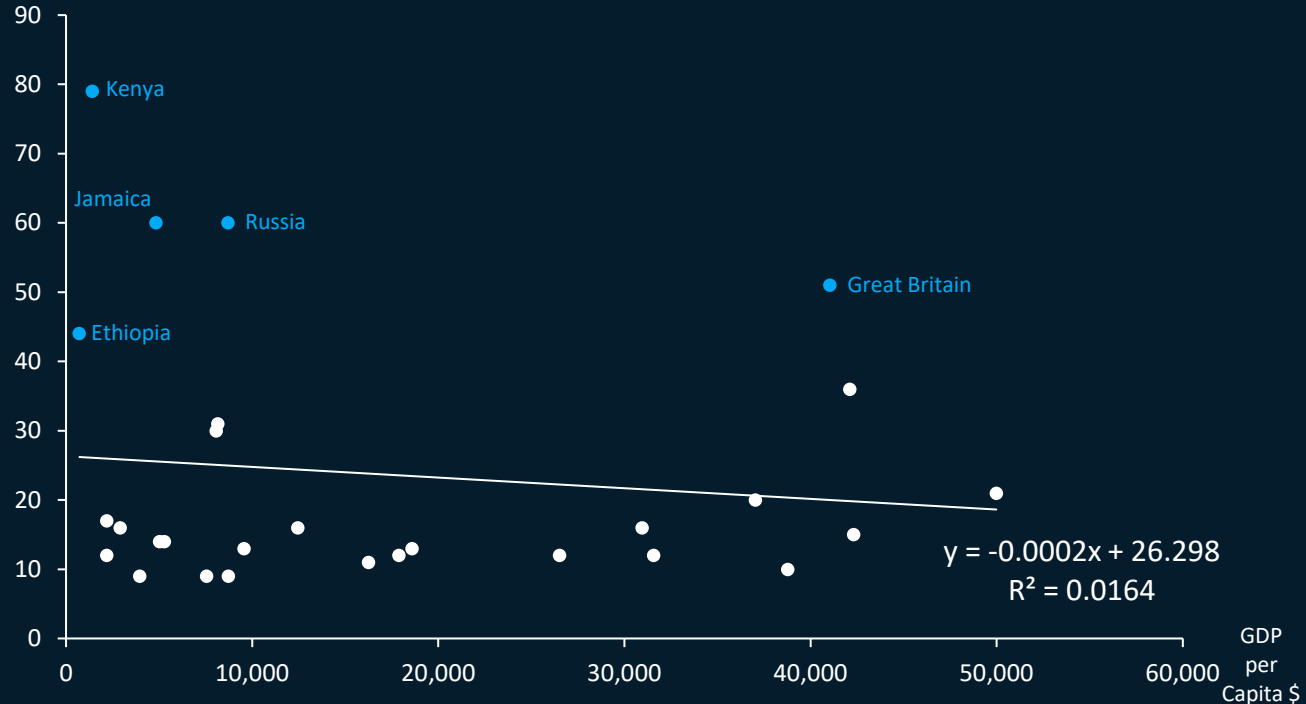
Avg. per capita GDP top-10 medaling countries since 1988



Athletics is an equalizer: Medal count actually has very slight negative correlation with per capita GDP

Medals Won Since 1988

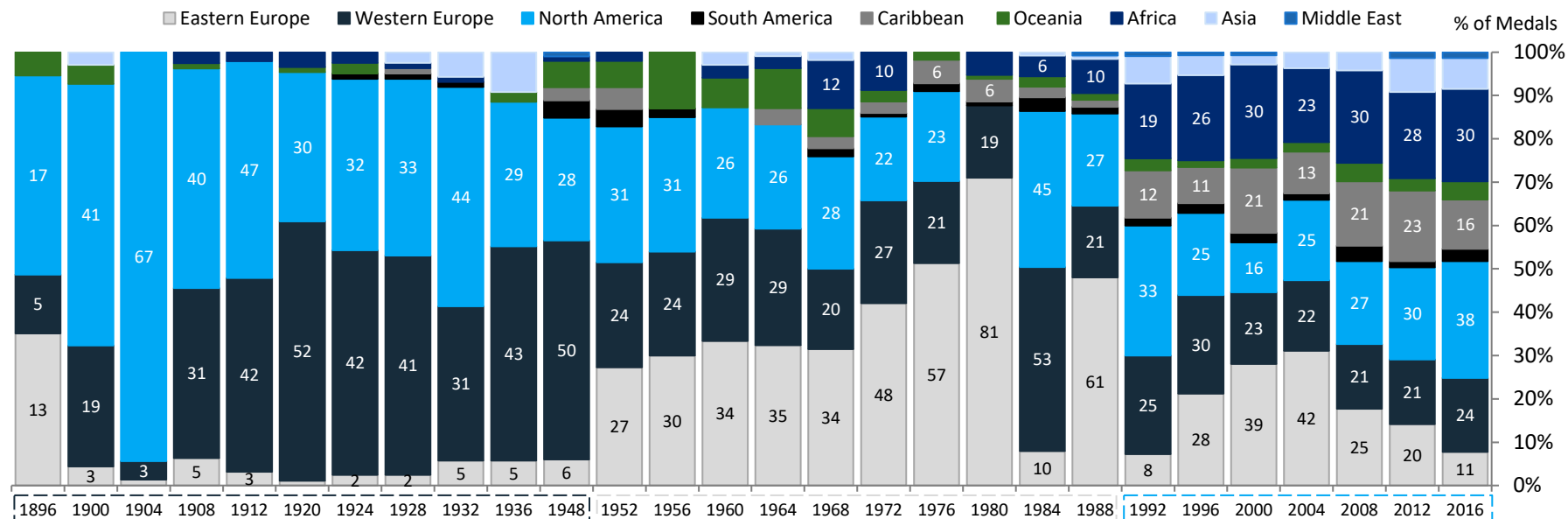
USA excluded (outlier)¹



Note: Using 2016 GDP per capita; Countries with more than 10 medals shown ¹ My deck my rules
Source: International Olympic Committee, World Bank

Three recent geopolitical phases in world history as told by Athletics medals

Bar height % of total Athletics medals, labels absolute Athletics medal count



World War Powers

- North America / Western Europe hold dominant positions
- Gap between developed/undeveloped countries is vast with many still under colonial control

Rise of USSR / Cold War

- Eastern Europe share of medals explodes culminating in heavily boycotted 1980 Moscow Games as countries begin using sport as both a propaganda and a political tool
- The flip-flop of medal share from 1980 to 1988 illustrates that the link between sports and politics is not new

Post Cold War / Globalization

- USSR disintegrates and Eastern European medals plummet, with resurgence questionable given recent doping revelations (see next slide)
- Large share gains by Caribbean, Africa and Asia highlight a more connected world

Note: East Germany substantial driver of medal shifts in 2nd/3rd phase

Source: Olympedia

The elephant in the lab: Doping has sewed skepticism into the fabric of Athletics and sport more broadly

In Athletics...

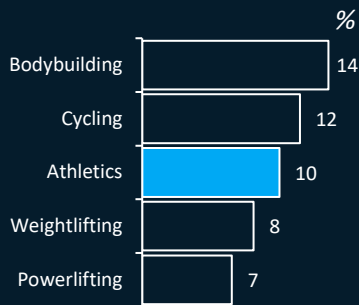
52

Olympic medals reallocated to lower finishers due to failed drug tests since 1984 (39 since 2008)

167

Olympic finishes annulled due to doping violations / failed drug tests since 1976 (132 since 2008)

Share of doping violations in 2018



Athletes dope because drugs offer big advantages – potentially so big that undoped rivals have no hope of matching them

Et tu, Nike?

- In 2019, Nike shuttered its much-publicized Oregon Project, a training camp for elite runners, after [Alberto Salazar, the head coach, was given a four-year ban for doping](#) (Salazar is appealing)
- In June, it was announced that Shelby Houlihan, the American record holder at 1,500m and 5,000m, [Olympic medal favorite and member of the Nike Bowerman Track Club, was banned for five years after a positive drug test](#). Ms. Houlihan claims the positive result was due to tainted food consumed hours before test
- In July, the Court of Arbitration for Sport upheld decision to ban Brianna Rollins-McNeal, [the 2016 Olympic Champion at 100m hurdles and Nike athlete, for five years due to doping violations](#)

Tokyo 2020: What's with this "Russia Olympic Committee" thing?

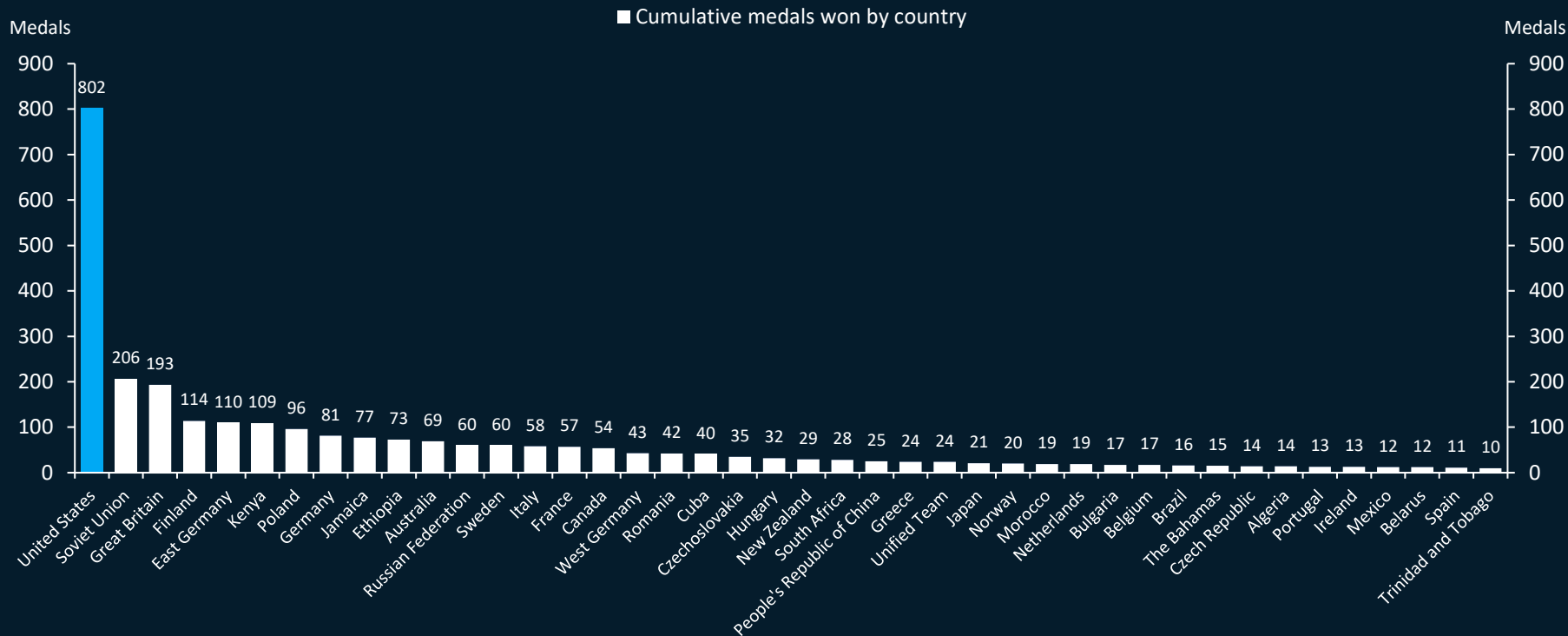
- Olympics viewers may have noticed Russia being referred to as "ROC" or Russia Olympic Committee in official scoring
- The Russian national team, across all sports, was banned for 4 (later reduced, controversially to 2) years [in the aftermath of one of the biggest doping scandals in the history of sport](#)
- Between 2011 and 2015, and possibly longer, [Russia systematically doped hundreds of athletes](#)
- Russia [recruited its spy agencies](#) to subvert anti-doping tests and fabricated data as part of attempt to get back in favor with authorities
- Russian athletes proven innocent could compete in Tokyo under "ROC" banner

Note: While Nike emphasized above, doping not enabled or condoned by any brand/company, rather, typically enabled at coach/athlete level
Source: World Anti-Doping Agency, Wall Street Journal, The Economist, World Athletics



“As I look around, they don’t do it like my clique” – *Big Sean, American Poet / Intellectual*

USA's medal haul to date is 4x larger than its closest competitor...

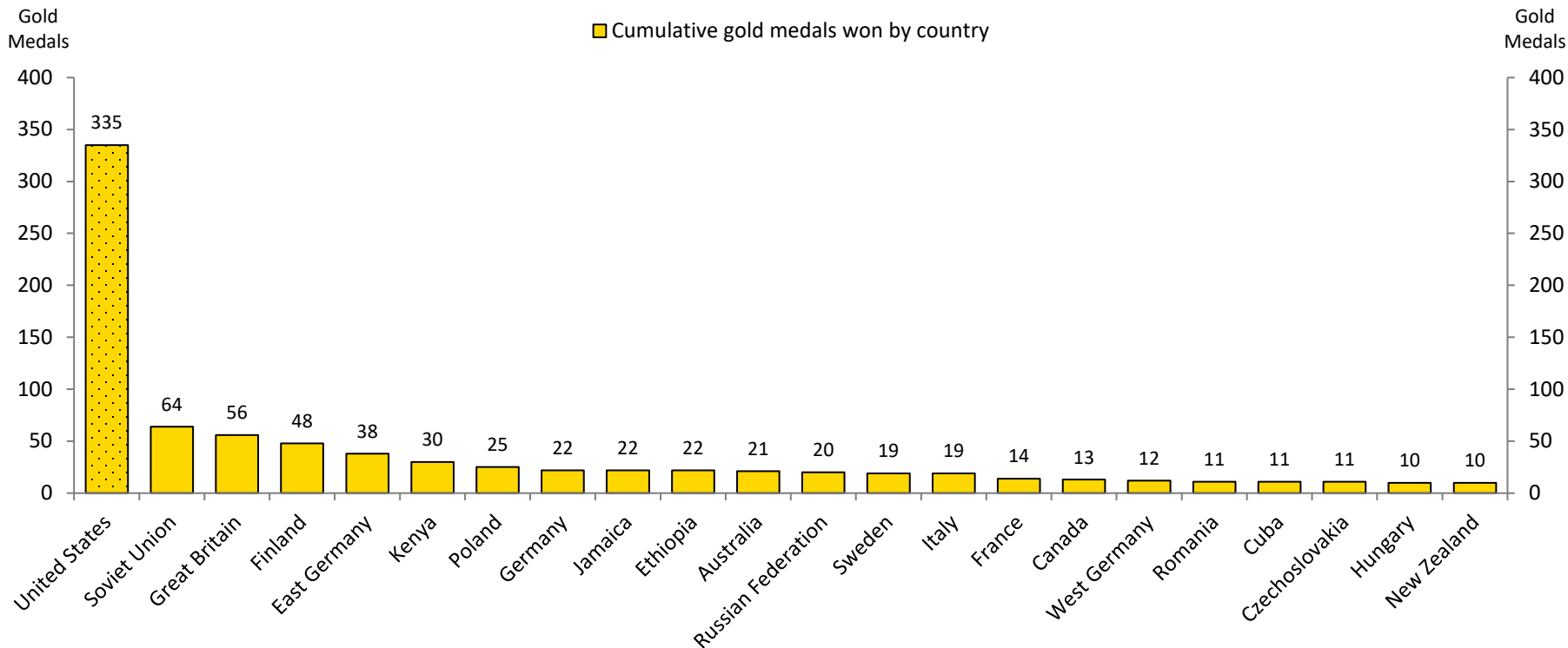


Note: Includes defunct events; Includes defunct countries; Only countries with more than 10 medals shown

Source: International Olympic Committee, Wikipedia

USA Athletics has Fort Knox on speed dial

...and its gold medal collection is ~6x



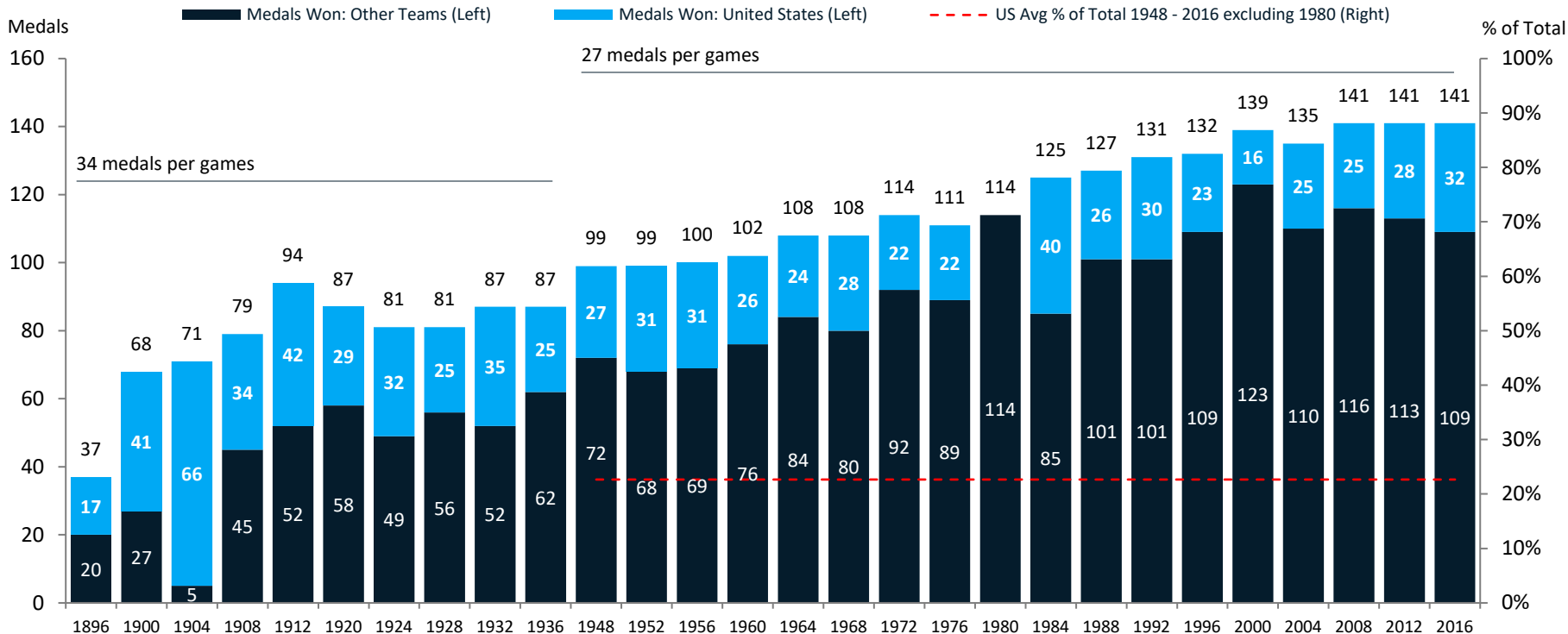
Note: Includes defunct events; Includes defunct countries; Only countries with 10 or more gold medals shown

Source: International Olympic Committee



Team USA has averaged 27 Athletics medals per games since 1948 (ex. 1980)

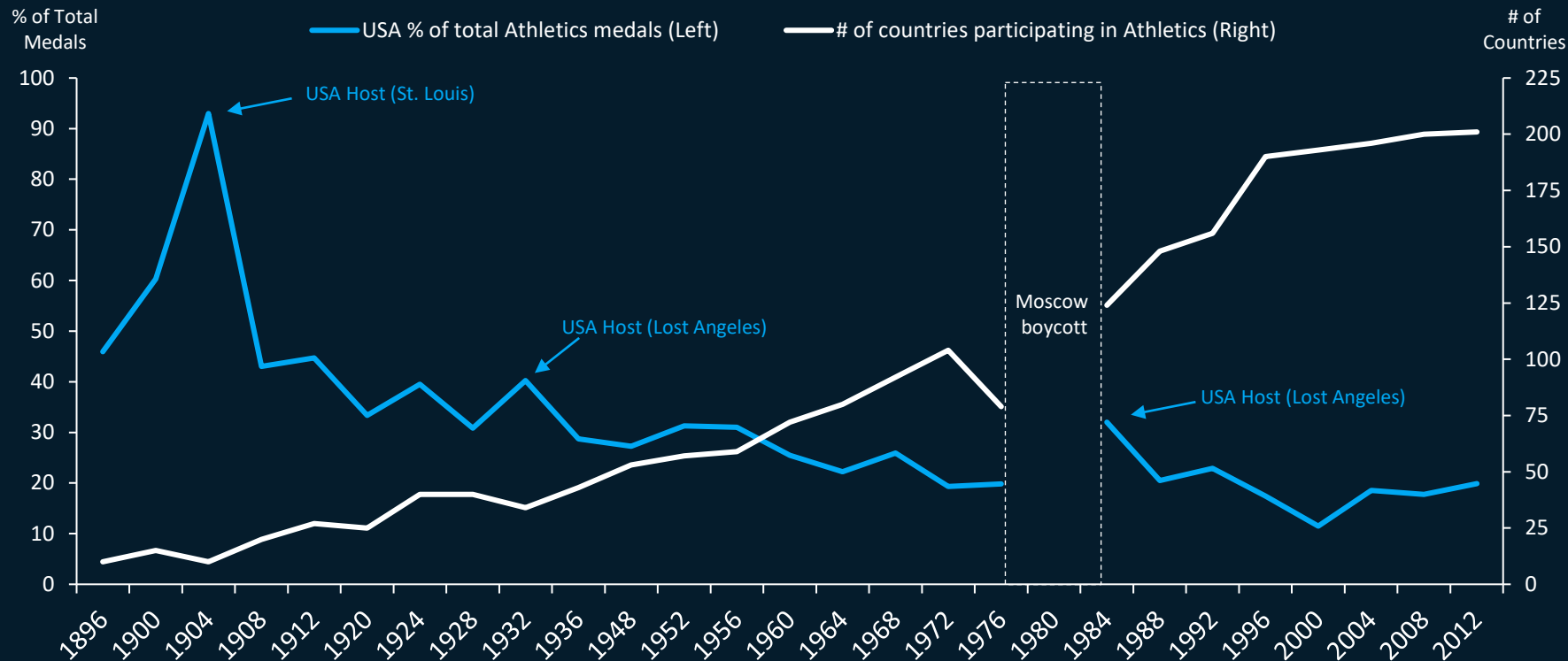
Athletics medals awarded by Olympic Games



Note: United States boycotted 1980 Moscow Games

Source: International Olympic Committee, USA Track and Field

Unsurprisingly, USA's share of Athletics medals declined as participation grew. Some deviation from trend when host country





With long history of participation, USA takes top spot for 18 out of 24 current events. Would lose top spot in several if totaled 21st century Olympics only

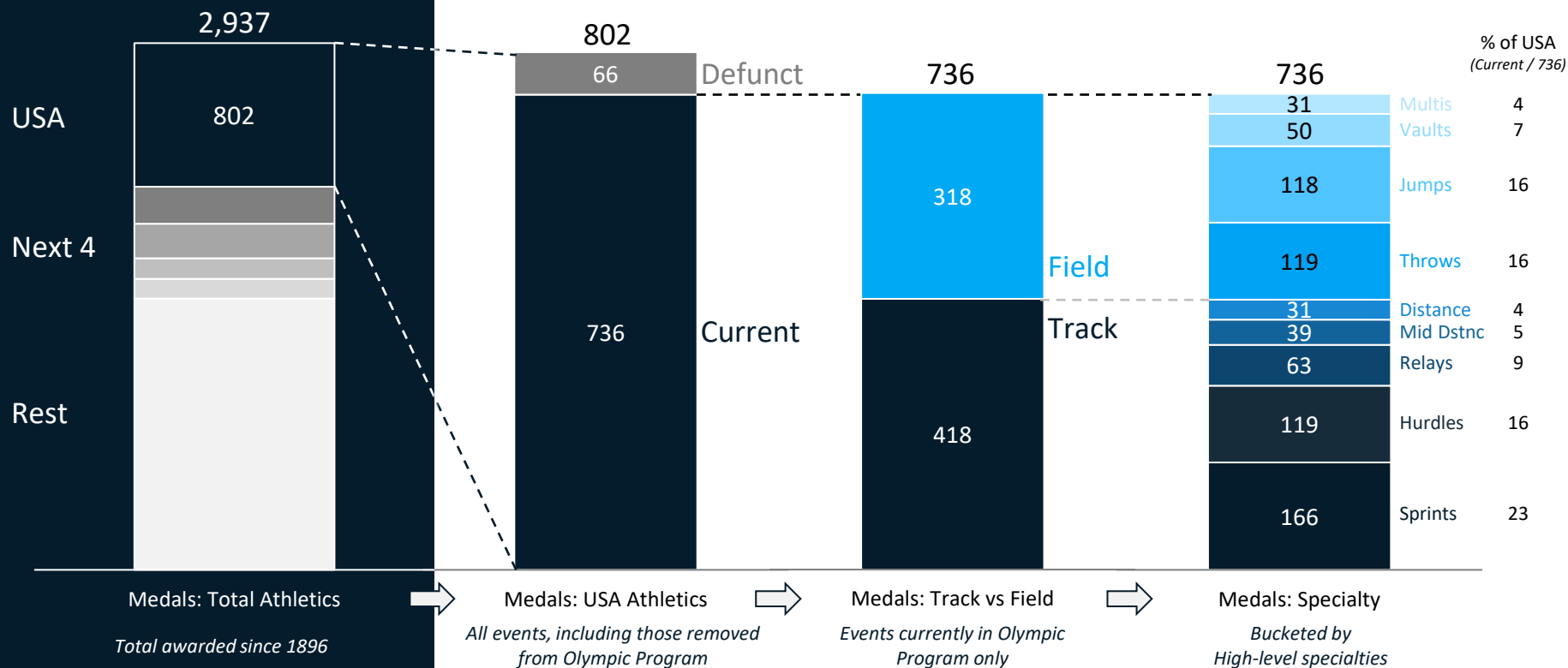
Top Countries by Event Since 1896				Top Countries by Event Since 1896			
Event	Top Country	Medal Count	Top Country % of Total Medals	Event	Top Country	Medal Count	Top Country % of Total Medals
100m	United States	57	39%	High Jump	United States	44	29%
200m	United States	51	43%	Long Jump	United States	56	41%
400m	United States	51	41%	Triple Jump	United States	18	18%
800m	United States	24	18%	Pole Vault	United States	50	47%
1,500m	United States	15	13%	Shotput	United States	52	38%
5,000m	Tie: Kenya / Ethiopia	15 each	67%	Hammer Throw	United States	19	20%
10,000m	Ethiopia	24	25%	Discus	United States	40	27%
110m Hurdles	United States	68	57%	Javelin	Finland	25	19%
400m Hurdles	United States	51	49%	Multi ¹	United States	31	31%
3,000m Steeple	Kenya	25	32%	20km Racewalk	China	9	14%
Marathon	United States	13	12%	50km Racewalk	Italy	6	11%
4x100m Relay	United States	32	24%				
4x400m Relay	United States	31	29%				

Note: ¹ Multi includes Decathlon and Pentathlon; Due to time commitments, I cannot do same table for 21st Century Olympics only, sorry

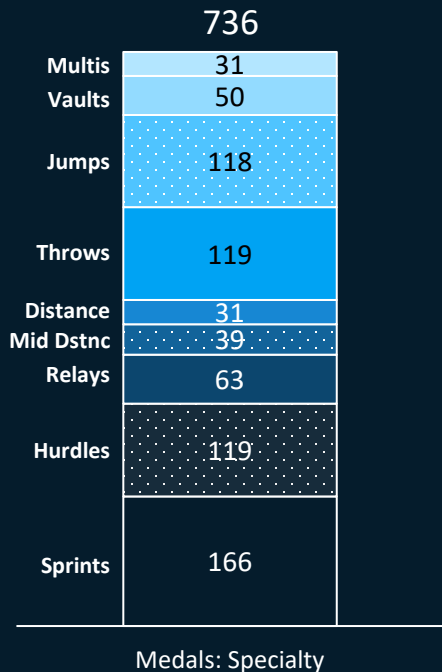
Source: Olympedia, International Olympic Committee



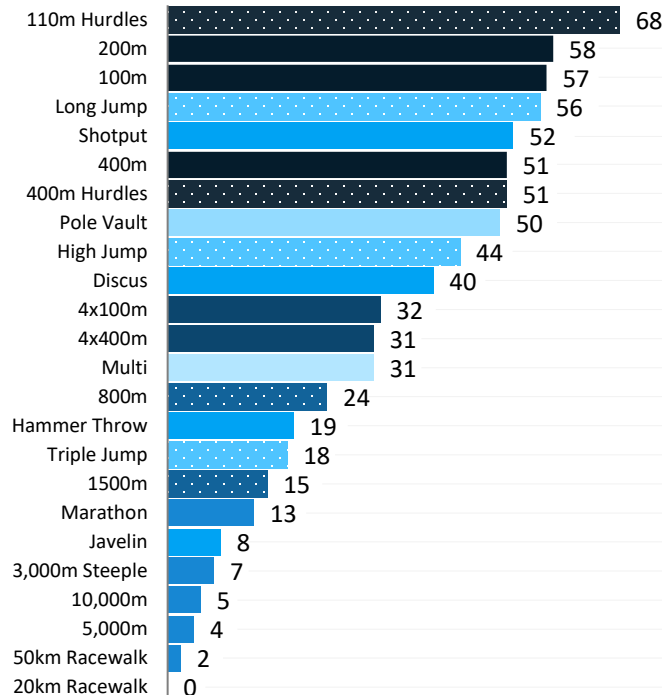
Prolific and versatile: USA has won 27% of total Athletics medals with healthy split across track and field (56/43%)



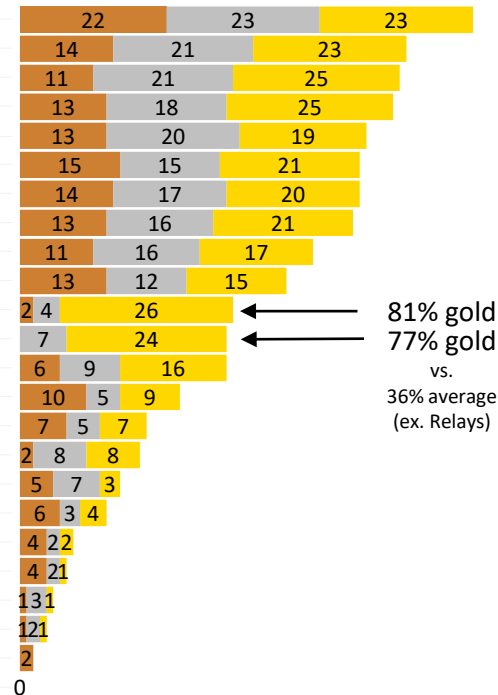
Specialty double click



30% of USA medals come from events 200 meters or less, including relays



































Gold as a % of total relays notable, implies deeper rosters vs. other teams



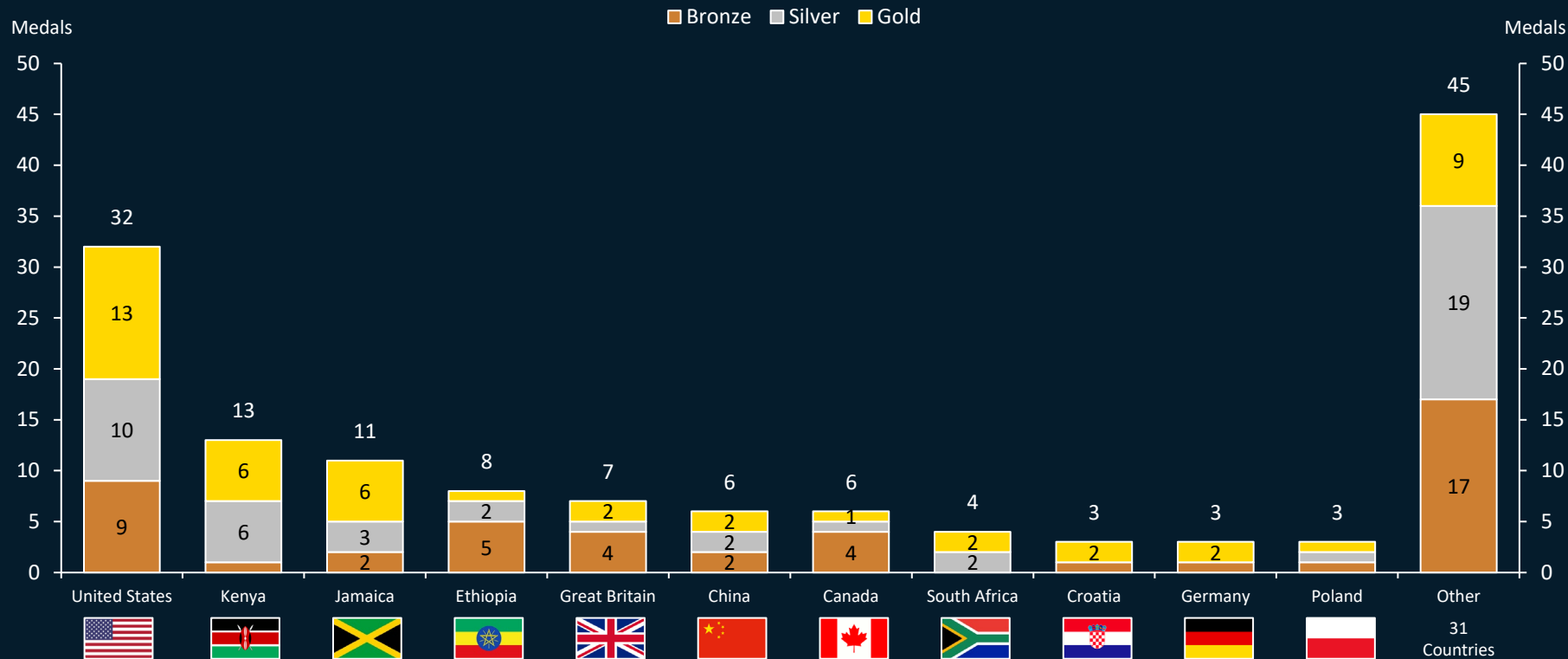
81% gold
77% gold
vs.
36% average
(ex. Relays)

Athletics typically accounts for ~20% of total team members and ~25% of total gold implying above average return for each Athletics athlete sent

Games	Team Members			Gold Medals			Gold % > Athlete % (outperformance)
	Total USA	USA Athletics	Athletics % of Total USA Members	Total USA	USA Athletics	Athletics % of Total USA Gold	
2016	554	130	23% 	46	13	28% 	✓
2012	530	123	23% 	46	9	20% 	
2008	596	121	20% 	36	7	19% 	
2004	613	116	19% 	36	9	25% 	✓
2000	586	116	20% 	37	7	19% 	
1996	646	121	19% 	44	13	30% 	✓
1992	545	117	21% 	37	12	32% 	✓
1988	527	114	22% 	36	13	36% 	✓
1984	522	110	21% 	83	16	19% 	
1976	396	92	23% 	34	6	18% 	
1972	400	95	24% 	33	6	18% 	
1968	357	91	25% 	45	15	33% 	✓
1964	346	86	25% 	36	14	39% 	✓
1960	292	81	28% 	34	12	35% 	✓
1956	297	81	27% 	32	16	50% 	✓
1952	286	71	25% 	40	15	38% 	✓

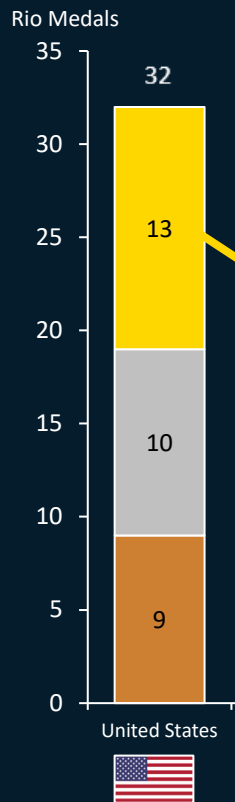
How'd Rio go?

Athletics medals by country by color in Rio





USA had unbelievable 2016 with podium sweep (W 100m hurdles) and three 1,2 finishes (M Triple, M Shotput, W Long) but many won't defend



Member of 2020 Olympic Team

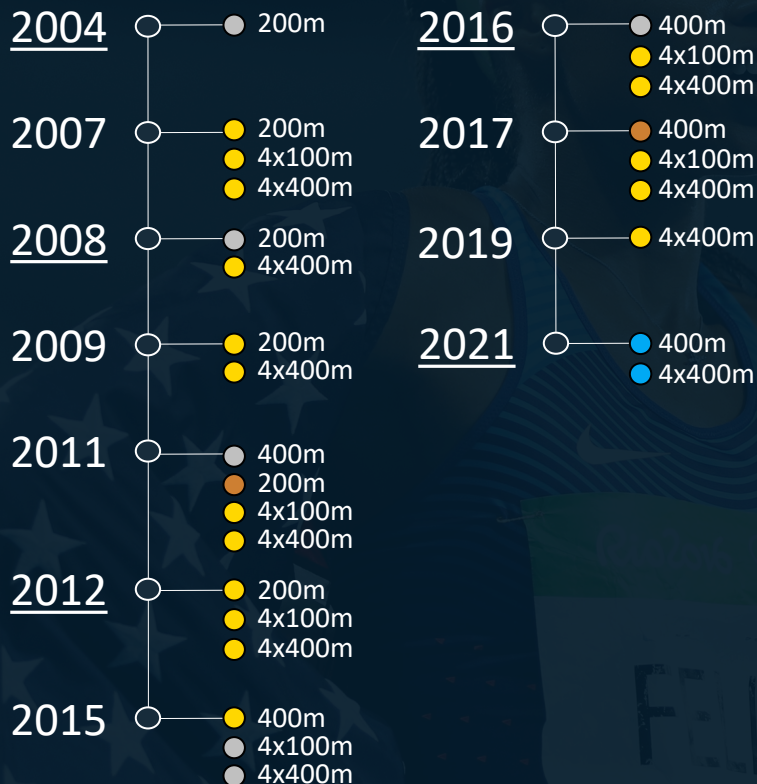
Event	Athlete	Competing in Tokyo?
100m Hurdles	Brianna Rollins-McNeal	No (banned for doping violations)
400m Hurdles	Dalilah Muhammad	Yes
400m Hurdles	Kerron Clement	No (did not compete at trials)
1,500m	Matt Centrowitz	Yes
4x100m Relay	Tianna Bartoletta, Tori Bowie, Allyson Felix, English Gardner	No, No, Yes, Yes
4x400m Relay	Allyson Felix, Phyllis Frances, Natasha Hastings, Courtney Okolo	Yes, No, No, No
4x400m Relay	Arman Hall, Tony McQuay, Lawshawn Merrit, Gil Roberts	No, No, No, No
Long Jump	Tianna Bartoletta	No (did not make team)
Long Jump	Jeff Henderson	No (did not make team)
Triple Jump	Christian Taylor	No (injury)
Shotput	Michelle Carter	No (illness)
Shotput	Ryan Crouser	Yes
Multi (Decathlon)	Ashton Eaton	No (retired)

Only 5 out of 22 Rio gold medalists are returning for Tokyo

Athletes to watch: Allyson Felix – 400m

She's already the GOAT, but will she join Carl Lewis and Paavo Nurmi in the double-digit medal club?

Medal tally at World Championships and Olympic Games



Dispute with Nike

- In 2019, Felix penned an op-ed for the New York Times regarding the poor maternity treatment from Nike (e.g, 70% pay cut) that led her to not renew her contract and explore other options
- Issues highlighted by Mrs. Felix were supported and echoed by fellow female Olympians
- Situation became point of focus for discussions regarding gender equality and equal pay in sport

Creation of Saysh

SAYSH

The Saysh Collective is for women who recognize the effort it takes to be effortless

W 400m Round 1: 8/2 – 7:45pm CST
 W 400m Semis: 8/4 – 5:30am CST
 W 400m Final: 8/6 – 7:35am CST
 W 4x400m Relay Final: 8/7 – 7:50am CST

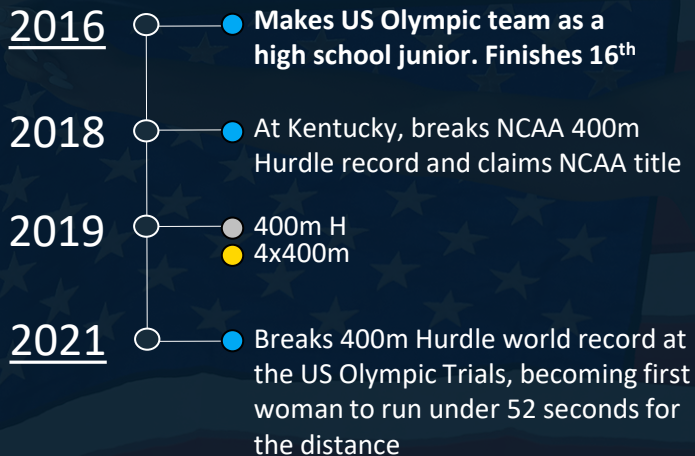
@Allysonfelix

@Allysonfelix

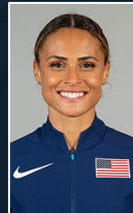
Athletes to watch: Sydney McLaughlin – 400m Hurdles

Now the world record holder, McLaughlin looks to set tone for the next generation of USA hurdling

She's just getting started, folks



McLaughlin



VS.



Muhammad

- McLaughlin defeated defending Olympic and World Champion, Dalilah Muhammad, at the US Olympic trials
- In the process, McLaughlin shattered Muhammad's standing world record of 52.16 running an eye-popping 51.90
- The world record grab at the Trials has set the stage for a highly anticipated rematch and championship defense in Tokyo
- Muhammad soundly defeated McLaughlin at the 2019 World Championships in Doha and has a significant experience edge but McLaughlin's record-breaking momentum may tilt the balance in her favor
- We'll find out August 3rd

W 400m H Round 1: 7/29 – 8:55pm CST
W 400m H Semis: 8/2 – 6:35am CST
W 400m H Final: 8/3 – 9:30pm CST



@SydneyMcLaughlin16



@GoSydgo

Athletes to watch: Grant Holloway – 110m Hurdles

Already a World Champion at the age of 21, Holloway eyes both the Olympic gold and the world record

He's also just getting started, folks



July: Handily wins US Olympic trials with a razor thin miss (0.01 seconds) of the world record

Holloway the Favorite

Superstar material

Current FanDuel Sportsbook betting odds for Tokyo Men's 110m Hurdles

1. **Grant Holloway (USA): -240**
2. Sergey Shubenkov (ROC): +750
3. Orlando Ortega (ESP): +850
4. Ronald Levy (JAM): +1,000
5. Shunsuke Izumiya (JPN): +1,800

- Holloway's bombastic personality, engaging interviews and jaw dropping athletic abilities across hurdles, sprints (up to 400m), long jump and even football, primes him to be an athlete that transcends track and field
- **Prediction: Holloway will be a household name after Tokyo**

M 110m H Round 1: 8/3 – 5:10am CST
M 110m H Semis: 8/3 – 9:00pm CST
M 110m H Final: 8/4 – 9:55pm CST



@flaamingoo_

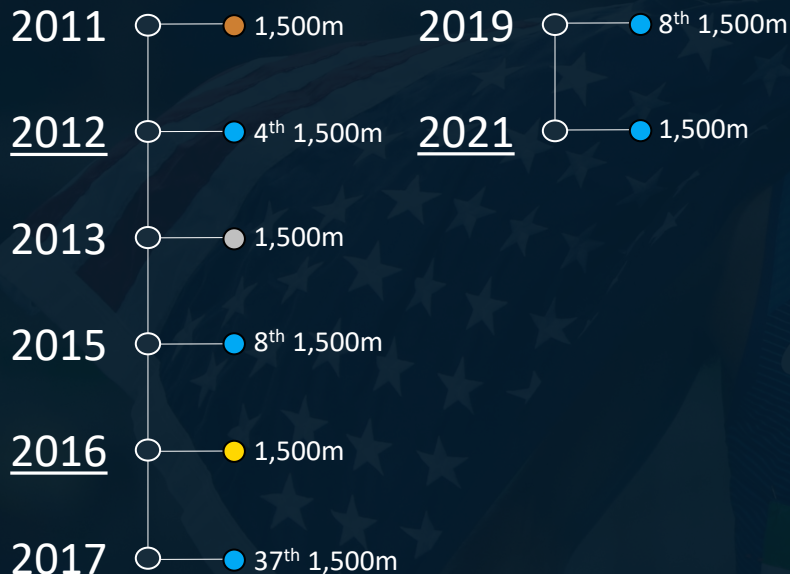


@flaamingoo_

Athletes to watch: Matt Centrowitz – 1,500m

Coaching changes, an Olympic trials defeat, the Rio champion enters Tokyo as an underdog

Medal tally at World Championships and Olympic Games



Coaching changes

Olympic Trials concerns

- From 2012 and 2018, Centrowitz was coached by Alberto Salazar as a member of the Oregon Project, Nike's elite running team
- Centrowitz amicably left the Oregon Project, prior to Salazar's ban, and began pinballing around the country working with different coaches, a less than ideal situation for an Olympic champion
- Centro would finally find a home on the Bowerman Track Club, another Nike outfit, in early 2019
- Centrowitz's defeat at the hands NCAA phenom Cole Hocker left running fans wondering if the Rio champion would be able to successfully defend his title
- A 3:49 mile (#6 all-time in the USA) last Saturday may have brightened prospects to a degree but many note the primary Tokyo contenders likely won't lose sleep over such a result; several have run the equivalent of 3:48 or faster in recent weeks

M 1,500m Round 1: 8/2 – 7:05pm CST
M 1,500m Semis: 8/5 – 6:00am CST
M 1,500m Final: 8/7 – 6:50am CST



@mgcentro



@MattCentrowitz

...but in this world nothing can be said to be certain, except death, taxes [and Kenya winning the men's 3,000m steeplechase] – Benjamin Franklin

....Steeplechase?



- 3,000 meters (7.5 laps)
- 28 barriers
- 7 water jumps
- ~8 minutes of *fun*

Kenya's dominance...at risk?

- Kenya has not lost a men's steeplechase at the Olympic Games since 1968 and has swept podium three times
- Winning streak looks vulnerable this year as Kenya's stable of steepers has remained quiet this season and defending champion was left off team

Steeplechase Final: 8/2 7:15am CST

Kenya's steeplechase medal performance since 1968

	G	S	B
2016	●		
2012	●		●
2008	●		●
2004	●	●	●
2000	●	●	
1996	●	●	
1992	●	●	●
1988	●	●	
1984	●	●	●
1980	Did not send team		
1976	Did not send team		
1972	●	●	
1968	●	●	

Ezekiel Kemboi, 2004 and 2012 Steeplechase gold medalist

The brilliance of Eliud Kipchoge

The greatest marathoner in history will defend his title and his legacy

Kipchoge's monk-like approach to thought bleeds into his spartan-like approach to training.
The mix of these two ingredients have yielded results that are simply inspiring

The Philosopher

- Kipchoge is described as “a DRI-FIT wearing Yoda” due to a unique communication style laced with profundities and methodical word choices

Personally, I don't believe in limits... I'm sending a message to every individual in this world that when you work hard, when you actually concentrate, when you set your priorities high, when you actually set your goals, and put them in your heart and in your mind, you will accomplish, without any question.

The reason for running 1:59 is not the performance. The reason for running 1:59 is to tell the farmer that he is not limited.

We have made history together and together we can make this world a beautiful world.

- Kipchoge on his sub-2 hour marathon (2019)

The Competitor

- Kipchoge is not new to the spotlight: he captured his first world championship title on the track in 2003 at 5,000m. He would go on to win bronze and silver in Athens and Beijing
- Kipchoge's range is unparalleled, boasting personal bests of 3:50 for the mile and 12:46 for 5,000m (7th fastest man in history) to tag along with his marathon world record
- His 10 major marathon win streak, including the Rio Olympics, more than doubles his next closest competitor. Until a highly unusual off-day at the London 2020 marathon, [Kipchoge had won 11 of his 12 marathons](#)¹
- A defeat in Tokyo will not void any of Kipchoge's mystique or accomplishments, but [a victory would cement his legacy as one of the greatest athletes in history](#)

Eliud Kipchoge, 2016 gold medalist and world record holder

M Marathon: 8/7 – 5:00pm CST

Note: ¹ Kipchoge's lone defeat had been to Wilson Kipsang (Berlin 2013). Kipsang would receive a four-year ban for doping in 2020
Source: Time, New York Times, World Athletics, Wikipedia

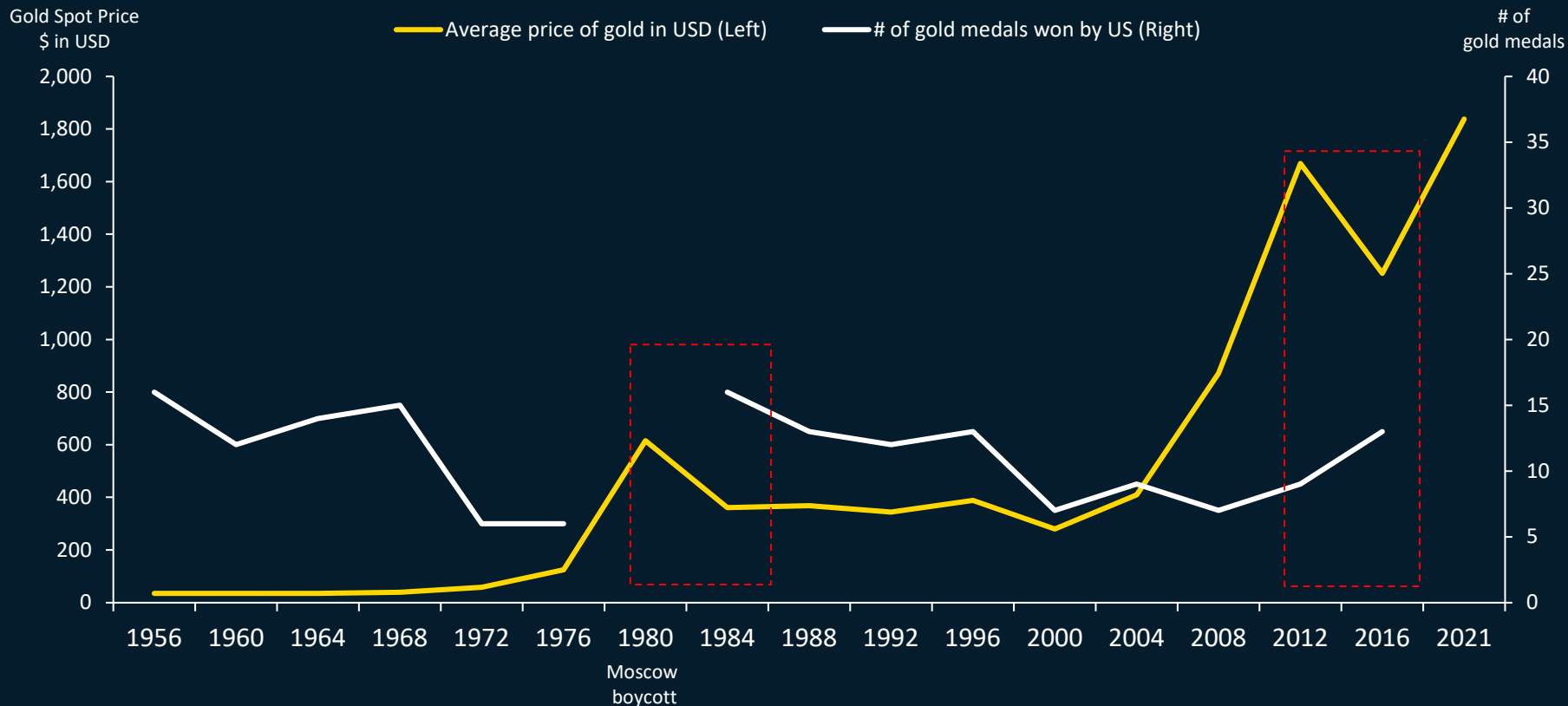
A photograph of four female sprinters from the United States celebrating their victory at the Tokyo 2020 Olympics. They are standing on a track, holding the American flag behind them. The athlete on the far left is holding a gold medal. They are all wearing blue and white USA Olympic singlets. The background is dark and out of focus, showing stadium lights and a 'Gold Medal' sign.

Appendix

Tokyo 2020: Athletics Pre-Read

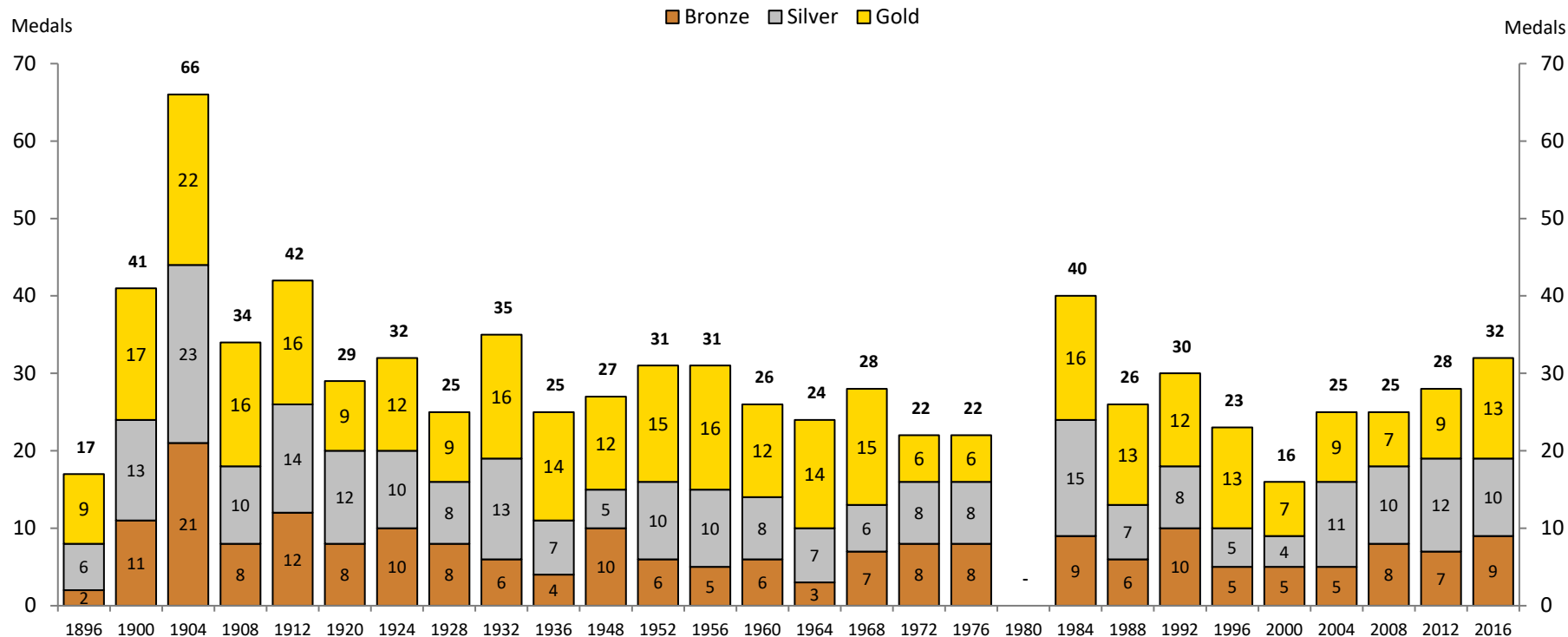
It's called technical analysis

USA appears to accumulate more gold during price corrections. Pretty savvy but foreshadows Tokyo difficulties





Team USA Athletics medal count by color by Olympic Games













Note: United States boycotted 1980 Moscow Games

Source: Olympedia



Top-10 all-time Athletic Medalists

Bronze? I don't know who that is

Rank	Olympian	Country	Event(s)	Years Active	Medal Counts			Total
					Bronze	Silver	Gold	
1	Paavo Nurmi	 Finland	1500, 3k steeple, 5k, 10k, cross country	1920 – 1928	0	3	9	12
2	Carl Lewis	 United States	100, 200, 4x100, long jump	1984 – 1996	0	1	9	10
3	Ray Ewry	 United States	Long jump, triple jump, high jump	1900 - 1908	0	0	8	8
4	Usain Bolt	 Jamaica	100, 200, 4x100	2008 - 2016	0	0	8	8
5	Allyson Felix	 United States	200, 4x100, 4x400	2004 - present	0	3	6	9
6	Ville Ritola	 Finland	3k steeple, 5k, 10k, cross country	1924 - 1928	0	3	5	8
7	Hannes Kolehmainen	 Finland	5k, 10k, cross country, marathon	1912 – 1920	0	1	4	5
8	Emil Zatopek	 Czechoslovakia	5k, 10k, marathon	1948 - 1952	0	1	4	5
9	Evelyn Ashford	 United States	100, 4x100	1984 – 1988	0	1	4	5
10	Mel Sheppard	 United States	800, 1500, 4x400, medley relay	1908 – 1912	0	1	4	5

Total 0 14 61 **75**

Note: Apologies for low quality flag images; Allyson Felix will compete in the 400m dash in Tokyo

Source: Olympedia, International Olympic Committee



Some numbers

22,093

of athletes who have competed in Athletics since 1896

2,271

Largest # athletes to compete in Athletics in a single games (Rio 2016)

5

of countries that have competed in all 29 Athletics contests¹

12

of Athletics medals won by Paavo Nurmi of Finland, all-time leader

90

Minutes between Nurmi's 1,500 and 5,000m winning performances in 1924

42

Age of oldest male Athletics gold medalist, thrower Pat McDonald (USA) - 1920

39

Age of oldest female Athletics gold medalist, thrower Ellina Zverva (Belarus) - 2000

17

Age of youngest male Athletics gold medalist, sprinter Bob Mathias (USA) - 1948

15

Age of youngest female Athletics gold medalist, sprinter Barbara Jones (USA) - 1952

89

of podium sweeps by a single team, most recently 2016 USA 100m Hurdles

53

of races run at the Olympics by Merlene Ottey (JAM), most all-time

2

of women who have opportunity to be first three-peat champions in Tokyo²

9

of medals won by Allyson Felix (USA), most of any female Athletics competitor

7

of Olympic games attended by Merlene Ottey (1980-2004), most all-time

167

of athletes who have had their Olympic results annulled due to doping violations since 1976

67

of podium sweeps completed by Team USA (1 women, 66 men), 75% of total sweeps

311

of gold medals won by Team USA in currently contested Athletics events

4:34

2020 Marathon favorite Eliud Kipchoge's mile pace for his sub-two hour performance

Note: ¹ Australia, France, Great Britain & NI and Greece. United States, Sweden and Denmark have missed one year; ² Sandra Perkovic (Discus) and Anita Wlodarczyk (Hammer Throw)

Source: International Olympic Committee, World Athletics, Olympedia



Outdoor Track Record Book: How do you stack up?

American and World track records by contested event. Events over 400m rounded down to second

Athlete competing in Tokyo

Event	Women			Event	Men		
	United States	World	2021 World Lead		United States	World	2021 World Lead
100m	10.49 Florence Griffith Joyner (1988)	10.49 Florence Griffith Joyner (1988)	10.63 Shelly-Ann-Fraser-Price (JAM)	100m	9.69 Tyson Gay (2009)	9.58 Usain Bolt (2009)	9.77 Trayvon Bromell (USA)
200m	21.34 Florence Griffith Joyner (1988)	21.34 Florence Griffith Joyner (1988)	21.61 Gabby Thomas (USA)	200m	19.32 Michael Johnson (1996)	19.19 Usain Bolt (2009)	19.74 Noah Lyles (USA)
400m	48.70 Sanya Richards-Ross (2006)	47.60 Marita Koch (1985)	48.54 Christine Mboma (NAM)	400m	43.18 Michael Johnson (1999)	43.03 Wayde van Niekerk (2016)	43.85 Randolph Ross (USA)
800m	1:55 Ajee Wilson (2017)	1:53 Jamila Kratochvilova (1983)	1:56 Athing Mu (USA)	800m	1:42 Donovan Braizer (2019)	1:40 David Rudisha (2012)	1:42 Nijel Amos (BOT)
1,500m	3:54 Shelby Houlihan (2019)	3:50 Genzebe Dibaba (2015)	3:51 Faith Kipyegon (KEN)	1,500m	3:27 Bernard Lagat (2004)	3:26 Hicham El Guerrouj (1998)	3:28 Timothy Cheruiyot (KEN)
1 Mile	4:16 Mary Slaney (1985)	4:12 Sifan Hassan (2019)	4:27 Kate Grace (USA)	1 Mile	3:46 Alan Webb (2007)	3:43 Hicham El Guerrouj (1999)	3:48 Stewart McSweyn (AUS)
5,000m	14:23 Shelby Houlihan (2020)	14:06 Latesenbet Gidey (2020)	14:13 Gudaf Tsegay (ETH)	5,000m	12:53 Bernard Lagat (2011)	12:35 Joshua Cheptegei (2020)	12:48 Jakob Ingebrigtsen (NOR)
10,000m	30:13 Molly Huddle (2016)	29:01 Latesenbet Gidey (2021)	29:01 Latesenbet Gidey (ETH)	10,000m	26:44 Galen Rupp (2014)	26:11 Joshua Cheptegei (2020)	26:33 Jacob Kiplimo (UGA)
100m Hurdles	12.20 Keni Harrison (2016)	12.20 Keni Harrison (2016)	12.32 Jasmine Camacho-Quinn (PUR)	110m Hurdles	12.80 Aries Merritt (2012)	12.80 Aries Merritt (2012)	12.81 Grant Holloway (USA)
400m Hurdles	51.90 Sydney McLaughlin (2021)	51.90 Sydney McLaughlin (2021)	51.90 Sydney McLaughlin (USA)	400m Hurdles	46.78 Kevin Young (1992)	46.70 Karsten Warholm (2021)	46.70 Karsten Warholm (2021)
3,000m Steeplechase	9:00 Courtney Frerichs (2018)	8:44 Beatrice Chepkoech (2018)	9:00 Norah Jeruto (KEN)	3,000m Steeplechase	8:00 Evan Jager (2015)	7:53 Saif Saaeed Shaheen (2004)	8:07 Lamecha Girma (ETH)
Marathon	2:19:36 Deena Kastor (2005)	2:14:04 Brigid Kosgei (2019)	2:19:35 Hiwot Gebrekidan (ETH)	Marathon	2:05:38 Khalid Khannouchi (2002)	2:01:39 Eliud Kipchoge (2018)	2:02:57 Titus Ekiru (KEN)
4x100m Relay	40.82 (2012)	40.82 (2012)	42.38 (GER)	4x100m Relay	37.10 (2019)	36.84 (2012)	38.27 (GBR)
4x400m Relay	3:15.51 (1988)	3:15.17 (1988)	3:22 (UAS / Texas A&M)	4x400m Relay	2:54.29 (1993)	2:54.29 (1993)	2:59.29 (USA / North Carolina A&T)

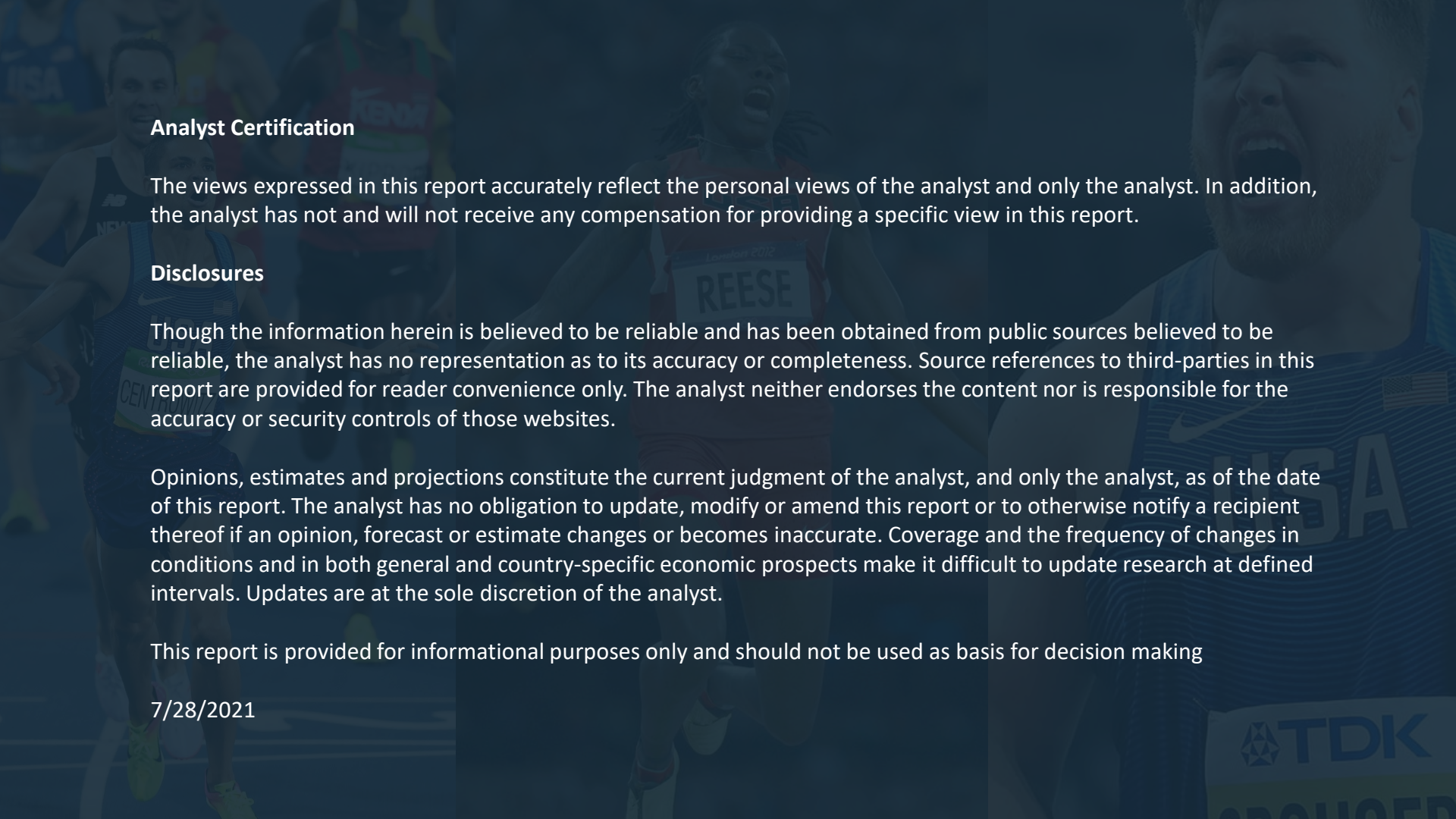
Note: The 1 Mile distance is not raced internationally or at the Olympic Games outside of specific exhibitions. 1,500 meters is considered “metric mile” and is run in all global championship events.

1 Mile converts to 1,609 meters

Source: World Athletics



End



Analyst Certification

The views expressed in this report accurately reflect the personal views of the analyst and only the analyst. In addition, the analyst has not and will not receive any compensation for providing a specific view in this report.

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7/28/2021

Citius, Altius, Fortius... Tutius?

Part I: Tokyo 2020 Pre-Read



Some context

Prior to COVID, the Olympics had been canceled only three times

1916 Games awarded to Berlin.
Cancelled due to World War I

1940 Games awarded to Tokyo,
then awarded to Helsinki.
Cancelled due to World War II

1944 Games awarded to London.
Cancelled due to World War II.
London would host 1948
Olympic Games

Source: Yomiuri Shimbun, The Economist, Wikipedia, Nikkei

More than sport: Why the Tokyo Olympics means so much

1964

- 1964 Tokyo Olympics came to encapsulate both Japan's rise from the ashes of its WWII defeat and [its re-entry into the global community](#)
- [The excitement and national pride left a lasting impression on a generation](#) including Prime Minister Shinzo Abe, who invoked his childhood memories of 1964 when Tokyo won 2020 bid

There was a feeling in the 1960s that everyday life was becoming richer: today is better than yesterday, and tomorrow will be better than today – and the Olympics became a symbol of this

- Togo Kazuhiko, former Japanese Ambassador

2020

- Emotional and economic precedent set by 1964 Games [generated a new wave of energy and optimism](#). Upon Japan's selection to host, Mr. Abe said he was happier than he had been when he became Prime Minister
- There was [hope the games could snap Japan out of its gloom](#) from decades of economic stagnation, demographic decline and devastating natural disasters

[The Games were seen as a source of] a commodity that was in scarce supply: hope for the future

- Taniguchi Tomohiko, Special Advisor to PM Shinzo Abe



Sport

COVID

Business

A few ways to watch

					NBC Channels Olympic Channels Available					
Method	Service	Free? ¹	Monthly Price	Free trial?						
Cable	NBC	No	Varies	n/a	Varies by cable provider and plan					
	Peacock	Yes	\$4.99 for Premium (no ads)	n/a	✓	✓	✓	✓	✓	✓
Streaming	fuboTV	No	\$64.99	Yes 7 Days	✓	✓	✓	✓	✓	✓
	AT&T TV Now	No	\$69.99 ²	No	✓	✓	✓	✓	✗	✗
	Hulu Plus Live TV	No	\$64.99	Yes 7 Days	✓	✓	✓	✓	✓	✓
	YouTube TV	No	\$64.99	Yes 14 Days	✓	✓	✓	✓	✓	✓
	Sling TV	No	\$35.00 ³	No \$10 First Month	✓	✓	✗	✓	✗	✗

Note: ¹ Not considering the “borrow your parent’s login” approach ² Minimum bundle for 65+ channels, Olympic Channel and NBC Golf require \$94.99 “Ultimate” package ; ³ Sling Blue price; likely not exhaustive

Source: Company websites



Some numbers (1/2): Tokyo 2020...2021?

206

of countries represented

11,091

of athletes competing

53,000

Olympic officials, staff and press attending

339

of events contested

5,000

medals made from 79,000 tons of recycled electronics

100

% of venues powered by renewable energy

4

sports making Olympic debuts (karate, sport climbing, surfing and skateboarding)

2

sports making return to Olympics (baseball and softball)

42

of athletic venues (33 in Tokyo, 9 other)

\$28 billion

Japan's estimated cost of hosting 2020 Olympics

\$1.45 billion

Amount NBCUniversal spent to secure 2020 media rights

61

% of US adults planning to watch

0

spectators

4.5 million

of tickets that had been sold to Japanese residents prior to spectator ban

~1 million

of Tokyo hotel room cancelations

80

% of Japanese against letting games begin according to recent polls

\$112 - 2,808

Ticket prices in USD for Opening Ceremony prior to spectator ban

\$15-22 billion

Estimated economic \$ loss from foreign spectator ban, now higher with domestic ban



Some numbers (2/2): Team USA

621

of athletes representing USA¹

193

of repeat Olympians (31% of total)

100

of returning medalists (55 gold)

57

Age of oldest US Olympian Phillip Dutton (Equestrian, 7th Olympics)

15

Age of youngest US Olympian Katie Grimes (Swimming)

11

of US Olympic team members under 18 years of age

3rd

Consecutive US team with more women (329) than men (284)²

9

of top-10 leading medalists who are women

6

Sets of siblings competing

126

of athletes from California (most represented state)

2,531

Total medals won by Team USA since 1896

1,127³

Total gold medals won by team USA since 1896 (49% of USA medals)

4

of times United States has hosted the Olympic Games⁴

802

medals won by team USA in Athletics⁵ – USA's winningest discipline (35% of USA medals)

**Sue Bird
Eddy Alvarez**

Team USA Tokyo Flagbearers (basketball and baseball, respectively)

44

Average # of gold medals won by team USA since 1984 Olympics

21

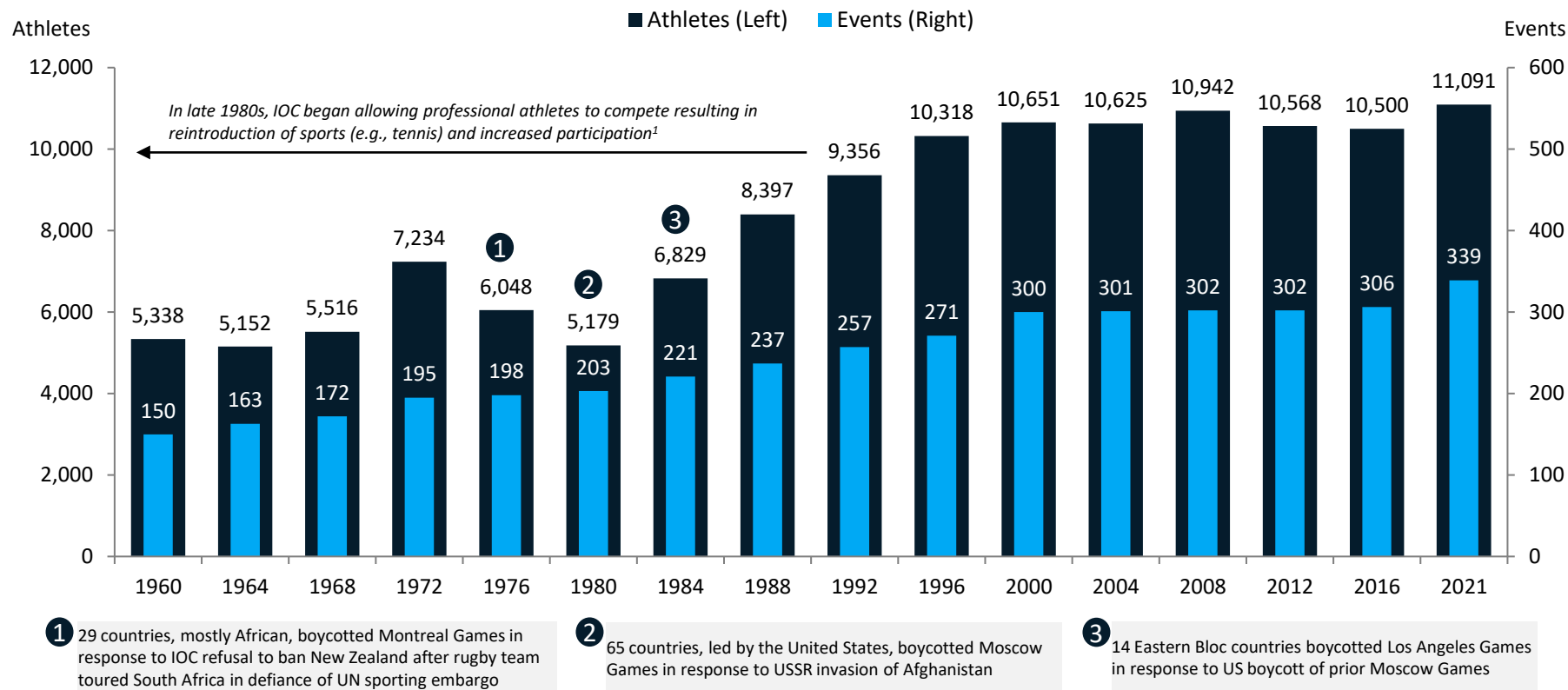
of years since games not featuring Michael Phelps

10

of medals won between married cyclists, and current Team USA members, Laura and Jason Kenny

Note ¹ Includes alternates; ² Does not include alternates; ³ Includes duplicative relay medals; ⁴ Does not include LA 2028; ⁵ Includes Track and Field and Marathon
Source: NBC, USAtoday

Number of athletes and events have more than doubled since 1960. Most growth occurring in 80s/90s as boycotting fell out of fashion and pros allowed to compete

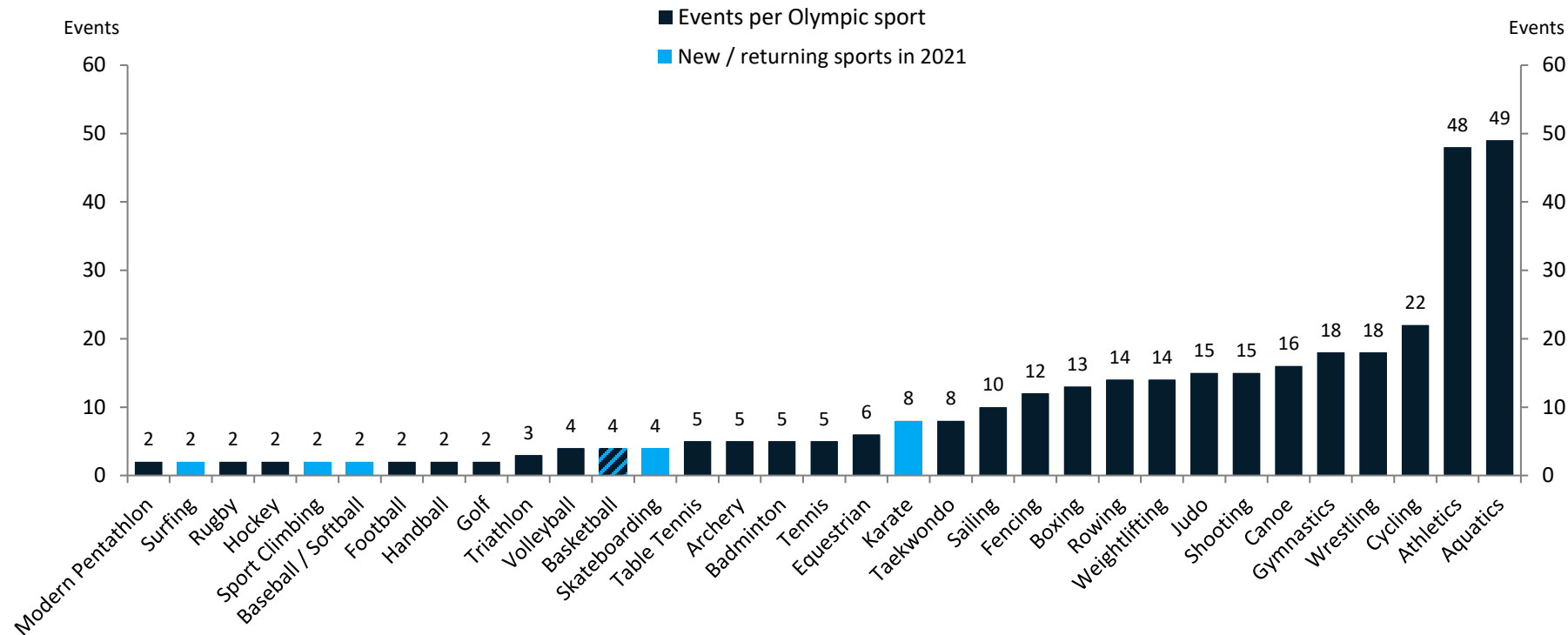


Note: ¹No 1992 Basketball "Dream Team" without the removal of professional athlete restrictions

Source: Said Business School, University of Oxford, Flyvbjerg et. Al, International Olympic Committee

Something for everybody: 33 sports 330 events

Distribution of Tokyo Olympics' 330 events

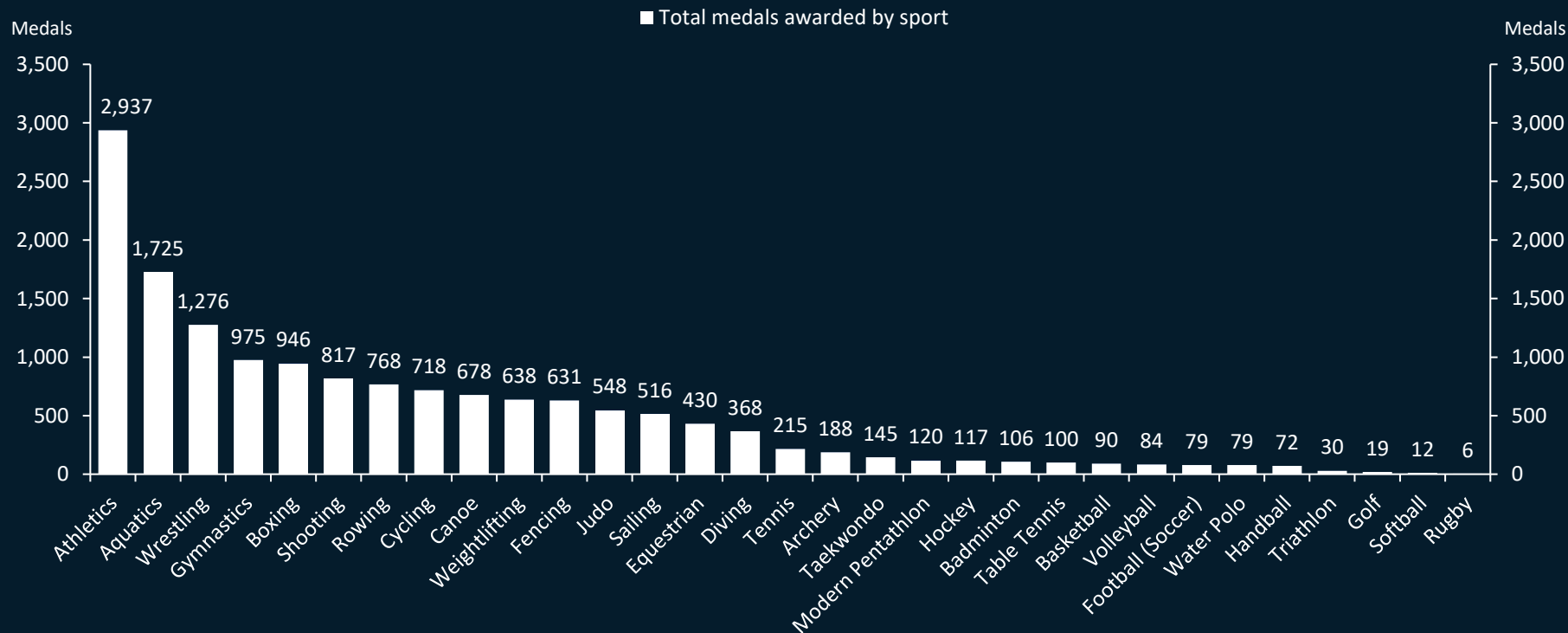


Note: Basketball has added 3v3

Source: International Olympic Committee

Over 15,500 medals awarded since 1896

Distribution of total medals awarded by sport



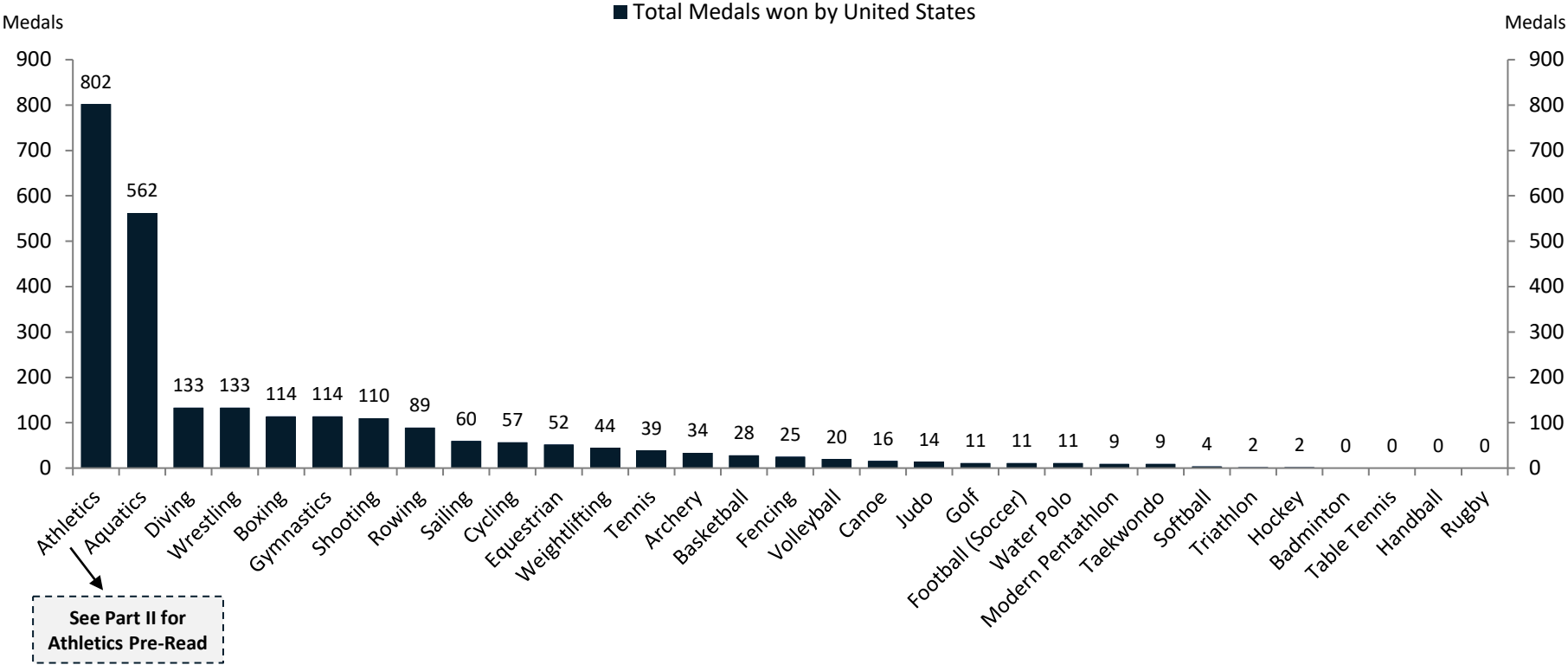
Note: Includes defunct events in current sports

Source: International Olympic Committee, Olympedia, Wikipedia



Team USA has won +2,500 medals (16% of total) since 1896

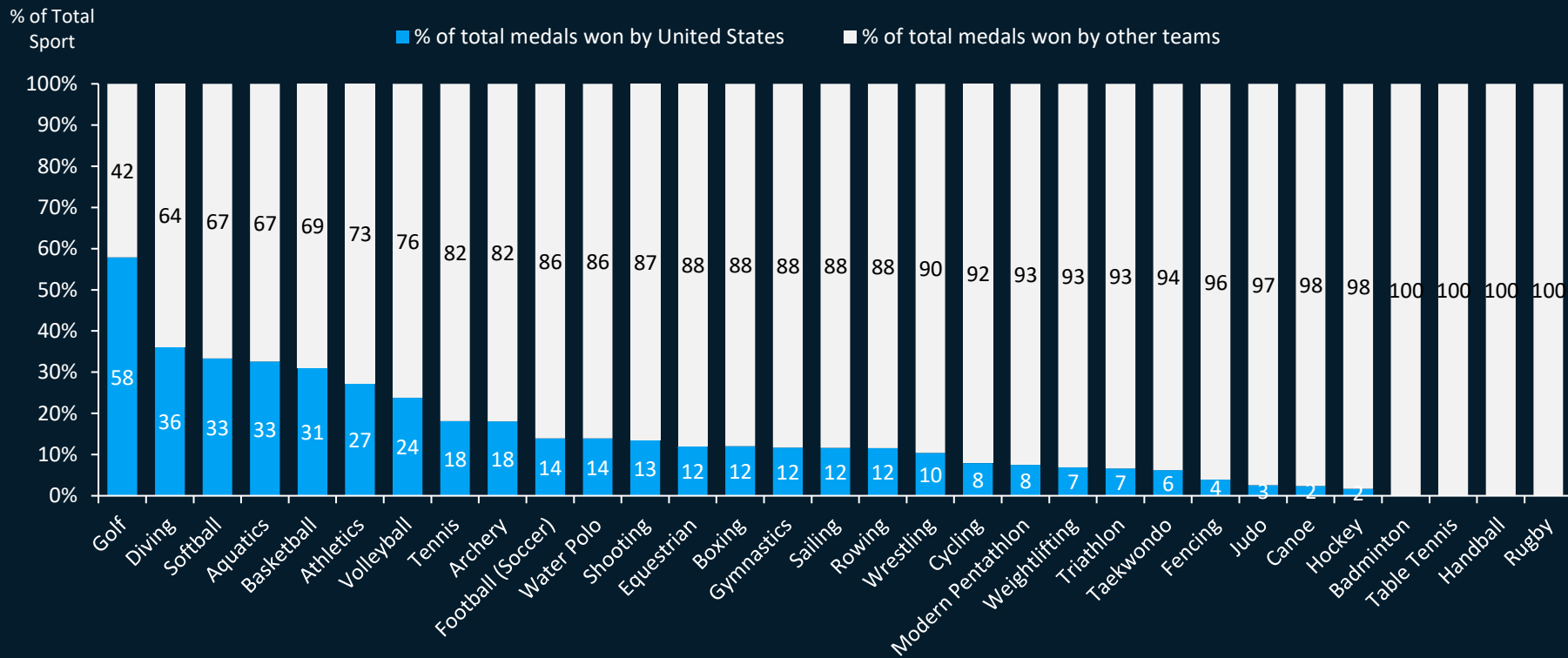
Distribution of Team USA's total medal count by sport



Note: Includes defunct events within current sports
Source: International Olympic Committee, Olympedia



United States share of medals varies across sports. Aquatics share impressive given total medal count but no presence in Badminton, Table Tennis, Handball or Rugby



Note: Includes defunct events in current sports

Source: International Olympic Committee, Wikipedia, Olympedia

Renaissance men and women: Team USA leads 10 sports on medal count

Winningest countries by total medal count, by sport

Sport	Winningest Country	% of Total Medals
Archery	South Korea	21%
Artistic Swimming	Russia	20%
Athletics	United States	27%
Badminton	China	39%
Basketball	United States	31%
Boxing	United States	12%
Canoe	Germany	10%
Cycling	France	13%
Diving	United States	38%
Equestrian	Germany	12%
Fencing	Italy	20%
Football (Soccer)	Hungary	6%
Gymnastics	Soviet Union	19%
Golf	United States	58%
Handball	France	5%
Hockey	India	9%

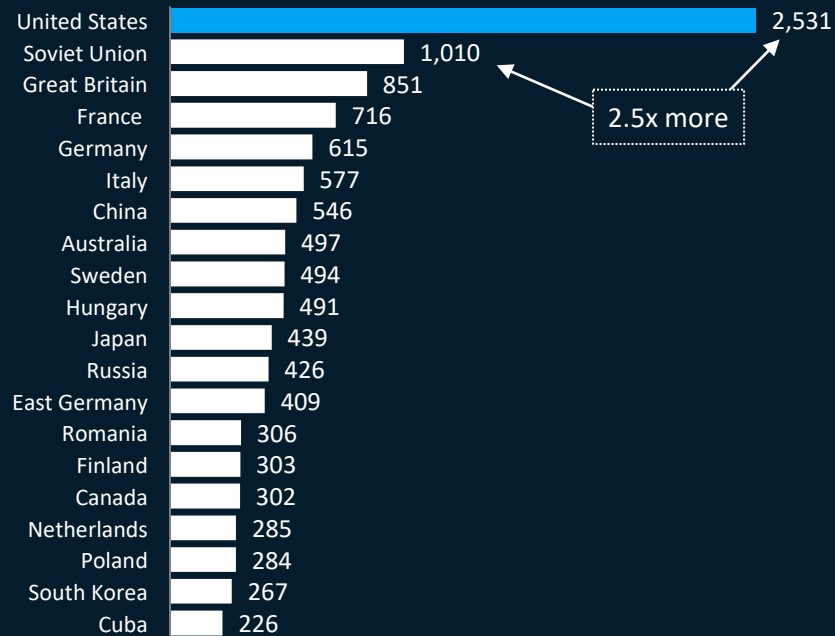
Sport	Winningest Country	% of Total Medals
Judo	Japan	15%
Modern Pentathlon	Hungary	18%
Rowing	United States	12%
Rugby	Australia	17%
Sailing	Great Britain	11%
Shooting	United States	13%
Softball	United States	33%
Swimming	United States	33%
Table Tennis	China	53%
Taekwondo	South Korea	13%
Tennis	United States	18%
Triathlon	Great Britain	17%
Volleyball	Soviet Union	14%
Water Polo	Hungary	19%
Weightlifting	Soviet Union	10%
Wrestling	Soviet Union	9%

Note: Does not account for revoked medals (DQ); Forgot to add baseball, sorry

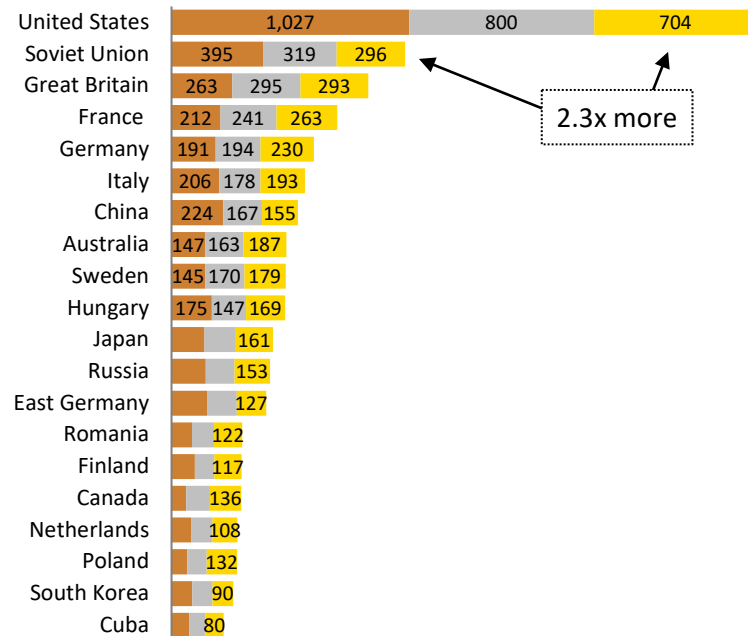
Source: Olympedia, International Olympic Committee

Team USA has a winning problem

Top 20 countries by cumulative medal count...



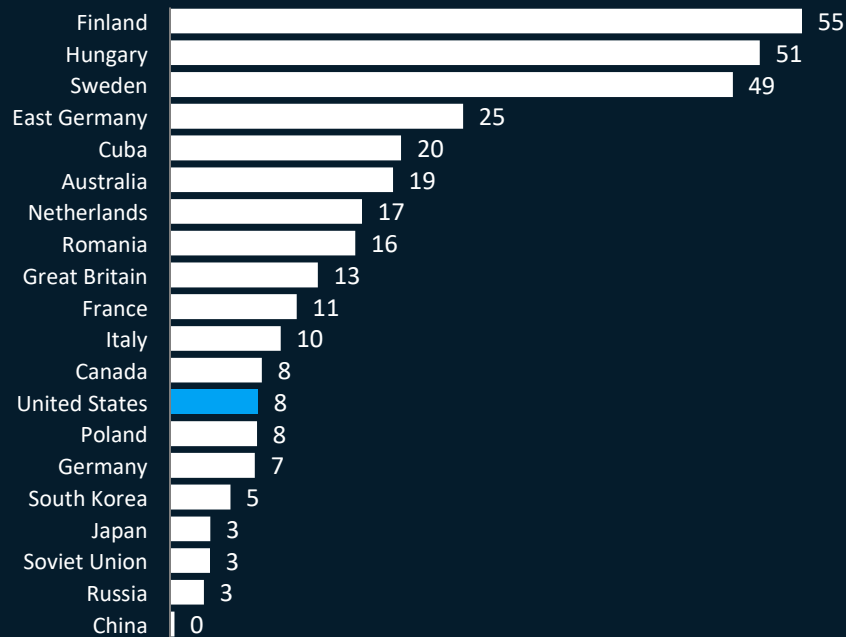
...broken down by color. USA with more gold than most have total



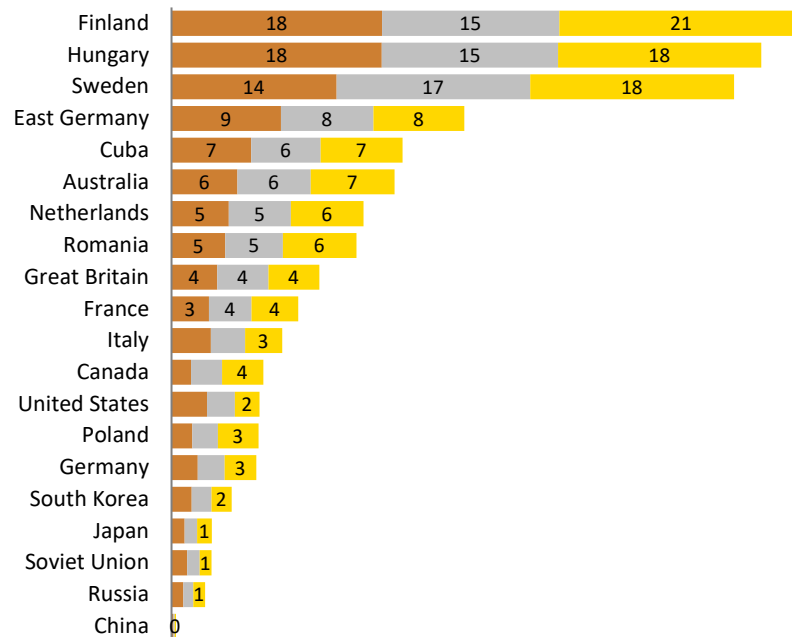
Efficiency: Medals per million population

Using most recent population data

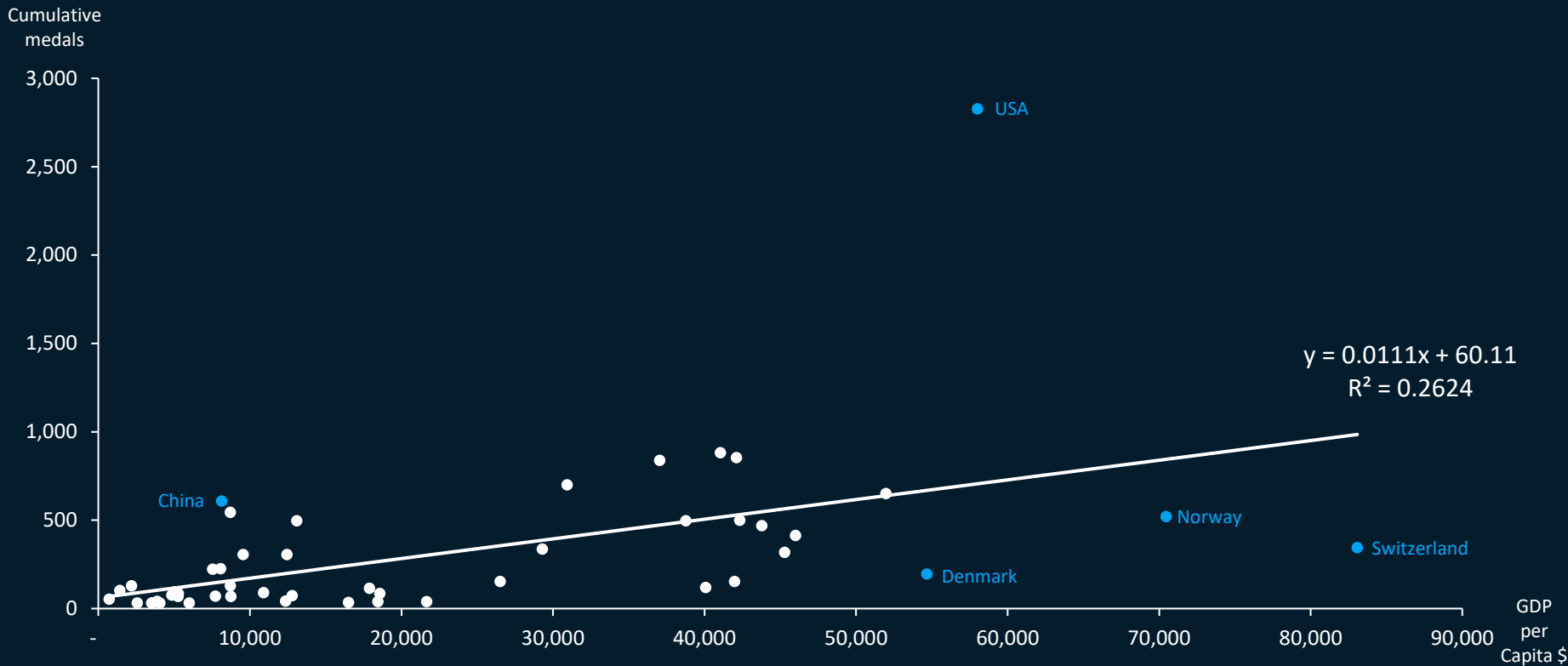
Top 20 countries by cumulative medal count per million population



...broken down by color



Mild relationship between cumulative medal count and GDP per capita mostly due to USA. Countries with more than 30 medals at Summer Games sampled below¹



Note: ¹ N = 49; GDP per capita uses 2016 levels in fixed USD; Does not account for revoked medals (DQ)

Source: International Olympic Committee, World Bank

Next time it's going to be different

Despite 10+ appearances, these 28 countries have never won an Olympic medal

	Country	Appearances
	Monaco	20
	Myanmar	17
	Malta	16
	Bolivia	14
	San Marino	14
	Mali	13
	Nepal	13
	Belize	12
	Chad	12
	Republic of Congo	12
	Liberia	12
	Madagascar	12
	Nicaragua	12
	Andorra	11
	Benin	11
	El Salvador	11

	Country	Appearances
	Guinea	11
	Honduras	11
	Lesotho	11
	Sierra Leone	11
	Antigua and Barbuda	10
	Cayman Islands	10
	Central African Republic	10
	Dem. Rep. of Congo	10
	Eswatini	10
	Libya	10
	Malawi	10
	Papua New Guinea	10

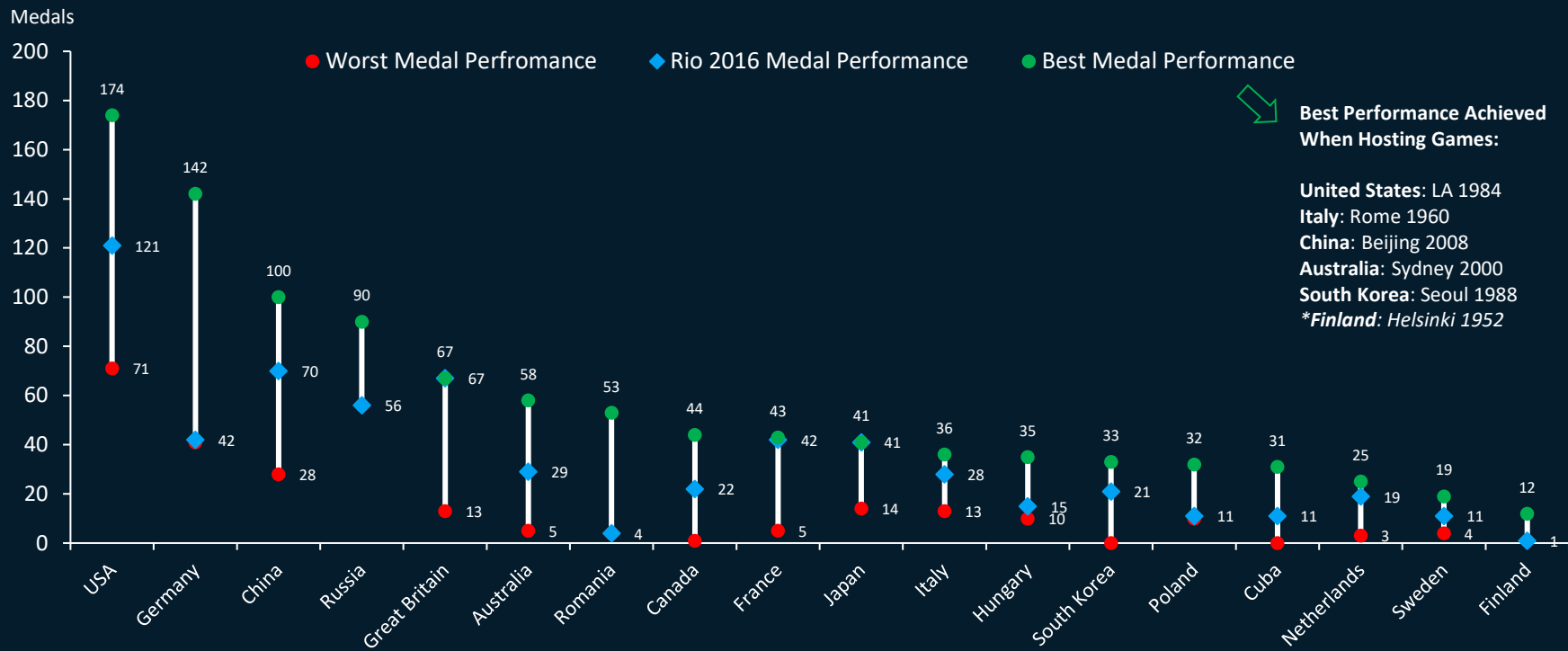
In total, 71 countries with an appearance have never won a medal

Will one of these teams snag their first medal in Tokyo?

I'm rooting for Nepal because their flag is cool and they got Mt. Everest which is this really big mountain. Like, you'll need to pack multiple Cliff bars

Placing Rio 2016 performances into historical context

Best, worst and most recent (Rio) team performance by select countries since Rome 1960



Note: Germany count combines East and West Germany when applicable

Source: International Olympic Committee

Surfing / Skateboarding make debuts and it's going to be righteous

Absolute weak sauce that skating and surfing were not Olympic sports. IOC finally agreed that was mondo bogus

Surfing

How it'll work

- Surfers compete in heats lasting ~30 minutes depending on conditions. Each surfer can rip as many swells as possible
- Each wave caught scored by five judges from 0.1 to 10.0 on 5 criteria:
 - Commitment, degree of ridiculousness
 - Innovative + progressive maneuvers, sheer carving ability
 - Variety
 - Combos (not the snack, sadly)
 - Speed, power, flow, froth, vibes
- Only a surfers two most aggro-scoring waves are combined for overall total

Surfers will need to maintain a tubular perspective to endure the thrashing of 5 rounds to reach the Final

Each round cashing those deemed to be too lame to catch more barrels

A final mano a mano showdown decides which surfer paddles home with gold

Skateboarding

Two Disciplines

Park



Street



Skaters take turns shredding the respective course

Each skater gets to tear three timed runs

Judges score runs based on difficulty, creativity, steez, etc.

Gnarliest score wins

A perspective on Skating in the Olympics

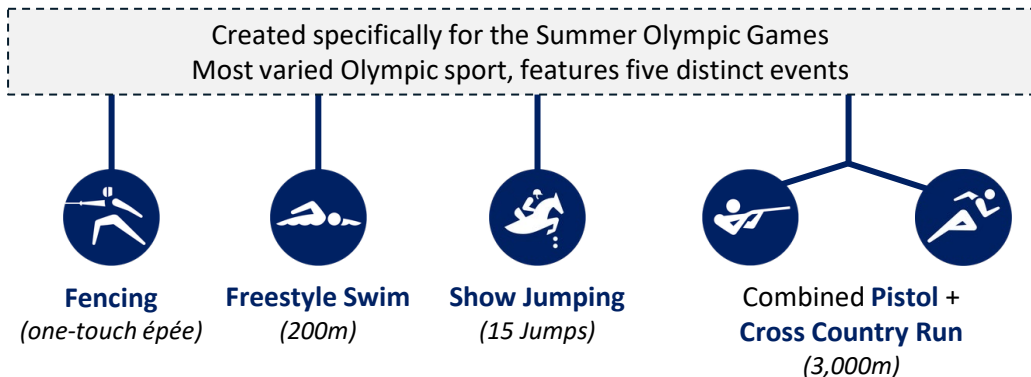
I want to speak to any of the younger skaters who might be like: 'Oh, the Olympics is wack'. I was listening to a business podcast the other day and they were talking about coffee shops. The main one is Starbucks, and that's like the Olympics – everybody knows Starbucks and everybody knows the Olympics.

- Micky Papa, skater, Olympian, perpetually stoked

Need to address this Modern Pentathlon thing

How have I not heard about this?

What



How

- Pentathletes earn points in fencing, swimming and equestrian events. Each event scored differently
- The **higher a Pentathlete's score from first three events the greater the "head start" they are given** at the final combined Pistol + Cross Country event
- Pentathletes must hit target five times with laser pistol. Upon completion they must complete a 1,000m cross country run. **This is repeated 3 times**
- Pentathlete **who crosses finish line first** is declared the winner

Why

The modern pentathlon simulates the experience of a 19th-century cavalry soldier behind enemy lines¹. In ancient Olympics, event used to ID best soldier

Note: ¹ Literally word for word on Modern Pentathlon Wikipedia page
Source: Britannica, International Olympic Committee, Wikipedia

Who

Countries Top 3

	G	S	B
Hungary	9	8	5
Sweden	9	7	5
USSR	5	5	5

Rio Podium

	W	M
G	Australia	Russia
S	France	Ukraine
B	Poland	Mexico

When

August 5-7

It's gotta be the shoes: Nike's super shoes may rewrite Olympic Athletics records

Long standing world records are being routinely erased at the hands(feet) of athletes sporting Nike's new footwear

The Situation: Step changes in shoe technology are changing the game

- Running shoemakers have spent decades attempting to boost athletic performance. In the past, [an advancement in shoe tech that could improve running economy¹ by 1% was substantial](#)
- In 2016, Nike released the first "Vaporfly" shoe model, which claimed to [improve running economy by 4%](#)
- 4% improvement implies a five-minute reduction in an elite marathoner's time. In practice, evidence suggests improvement closer to **90 seconds** – still material
- The Vaporfly and its successors, both on the roads (Alphafly) and on the track (Dragonfly, Maxfly), [have helped athletes smash line of longstanding records and barriers](#) - see table at right
- Scientists puzzle over exactly how the shoes work:
 - Soles made of new foam offering unprecedented mix of resilience / energy return (up to 80% of each foot strike)
 - Carbon-fiber plate stiffens midsole, altering gait and adding spring-like effect
- In January 2020, World Athletics passed new rules limiting certain features of super shoes (Nike's current models squeaked under new thresholds)
- Athletes sponsored by rival shoe companies have a predicament: [Ask for permission to wear a rival brand or risk competing at a steep disadvantage](#). Gudaf Tsegay, an Adidas athlete, wore Nike shoes for her 1,500m world record

The Evidence: Records broken in Nike 'Fly' shoes/spikes since 2018⁴

All athletes below will be participating in Tokyo

Event	Record Breaker (Country)	Time h:mm:ss	Prior Record / Improvement	Age of Prior Record in days
Men's Marathon	Eliud Kipchoge (Kenya)	2:01:39 1:59:40 ⁵	2:02:57 (1.1%) (2.7%) ⁴	1,449 (4 years)
Women's Marathon	Brigid Kosgei (Kenya)	2:14:04	2:17:01 (2.6%)	5,292 (14 years)
Women's Half Marathon	Ruth Chepngetich (Kenya)	1:04:02	1:04:31 (0.7%)	408 (1 year)
Women's 10,000m	Sifan Hassan (Netherlands)	29:06	29:17 (0.6%)	1,579 (4 years)
Women's 10,000m	Latesenbet Gidey (Ethiopia)	29:01	29:06 (0.3%)	2
Men's 10,000m	Joshua Cheptegei (Uganda)	26:11	26:17 (0.4%)	5,886 (16 years)
Women's 5,000m	Latesenbet Gidey (Ethiopia)	14:06	14:11 (0.6%)	4,506 (12 years)
Men's 5,000m	Joshua Cheptegei (Uganda)	12:35	12:37 (0.3%)	5,919 (16 years)
Women's Mile	Sifan Hassan (Netherlands)	4:12	4:12 (0.0%)	8,367 (22 years)
Women's 1,500m (indoor)	Gudaf Tsegay (Ethiopia)	3:53	3:55 (0.9%)	1,449 (4 years)

Note: ¹ Defined as the energy taken to travel a given distance; ⁴ Not exhaustive ⁵ Eliud Kipchoge's sub two-hour marathon performance not eligible for world record certification

Source: The Economist, Nike, Flotrack, World Athletics



Winners win: Top-10 all-time Summer Olympic medalists

Only three of the top ten have competed at an Olympic Games in the 21st century

Rank	Olympian	Country	Sport	Years Active	Medal Counts			Total
					Bronze	Silver	Gold	
1	Michael Phelps	 United States	Swimming	2004 – 2016	2	3	23	28
2	Larisa Latynina	 Soviet Union	Gymnastics	1956 – 1964	4	5	9	18
3	Nikolai Andrianov	 Soviet Union	Gymnastics	1972 – 1980	3	5	7	15
4	Boris Shankhlin	 Soviet Union	Gymnastics	1956 – 1964	2	5	7	13
5	Edoardo Mangiarotti	 Italy	Fencing	1936 – 1960	2	5	6	13
6	Takashi Ono	 Japan	Gymnastics	1952 – 1964	4	4	5	13
7	Paavo Nurmi	 Finland	Athletics / Track	1920 – 1928	0	3	9	12
8	Brigit Fischer	 Germany	Canoeing	1980 – 2004	0	4	8	12
9	Sawao Kato	 Japan	Gymnastics	1968 – 1976	1	3	8	12
10	Jenny Thompson	 United States	Swimming	1992 – 2004	1	3	8	12

Total 19 40 90 **158**



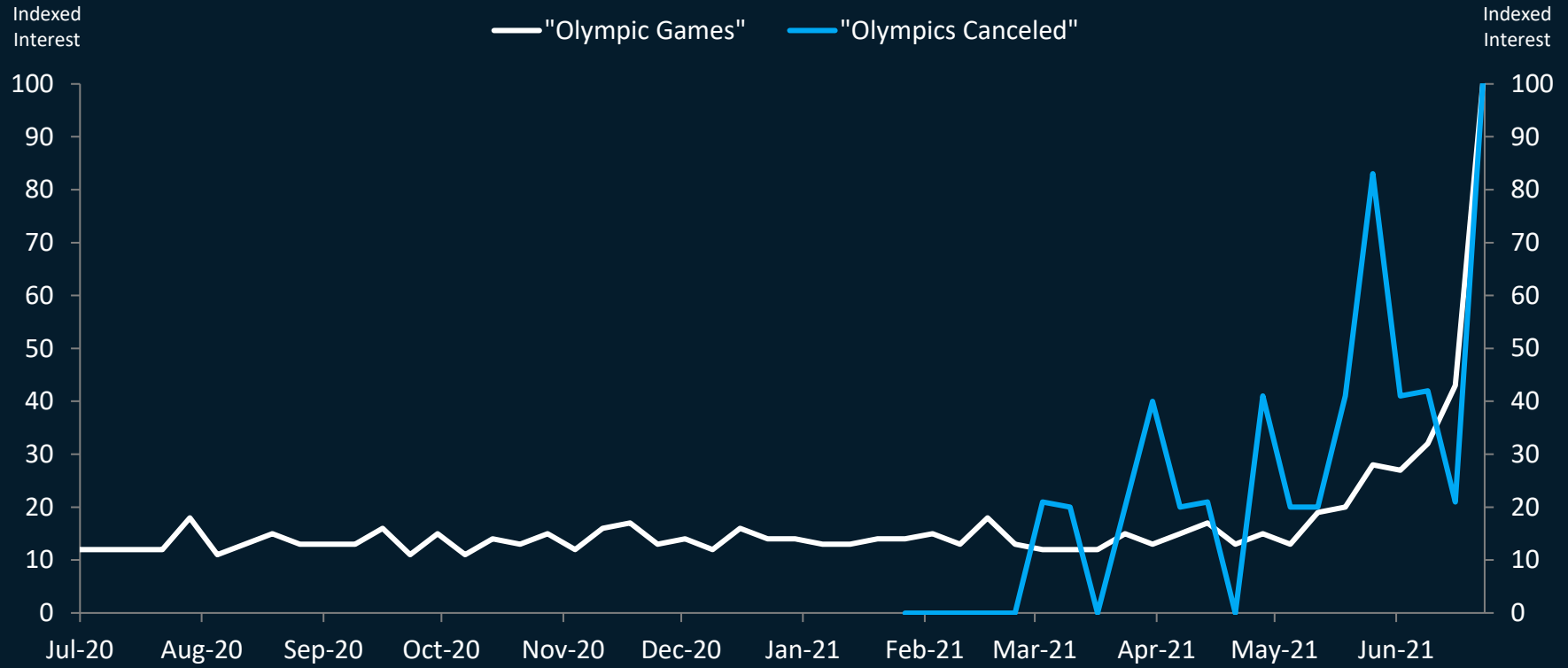
Just keep swimming: Team USA Top-10 all-time Summer Olympic medalists

Swimming one of few sports in which single athlete can compete for medal >2-3 times per games

Rank	Olympian	Sport	Years Active	Medal Counts			Total	# of Teams w/ Fewer Total
				Bronze	Silver	Gold		
1	Michael Phelps	Swimming	2004 – 2016	2	3	23	28	167
2	Jenny Thompson	Swimming	1992 – 2004	1	3	8	12	149
3	Ryan Lochte	Swimming	2004 – 2016	3	3	6	12	
4	Dara Torres	Swimming	1984 – 2008	4	4	4	12	
5	Natalie Coughlin	Swimming	2004 – 2012	5	4	3	12	
6	Mark Spitz	Swimming	1968 – 1972	1	1	9	11	148
7	Matt Biondi	Swimming	1984 – 1992	1	2	8	11	
8	Carl Osburn	Shooting	1912 – 1924	2	4	5	11	
9	Carl Lewis	Track & Field	1984 – 1996	0	1	9	10	145
10	Gary Hall Jr.	Swimming	1996 – 2004	2	3	5	10	
Total				21	28	80	129	

Note: Source: Olympedia, International Olympic Committee

Google Search trends highlight interest / anticipation but also concern



Note: "Olympics Canceled" trend shows greater degree of volatility due to lower number of total searches vs. "Olympic Games"

Source: Google Trends

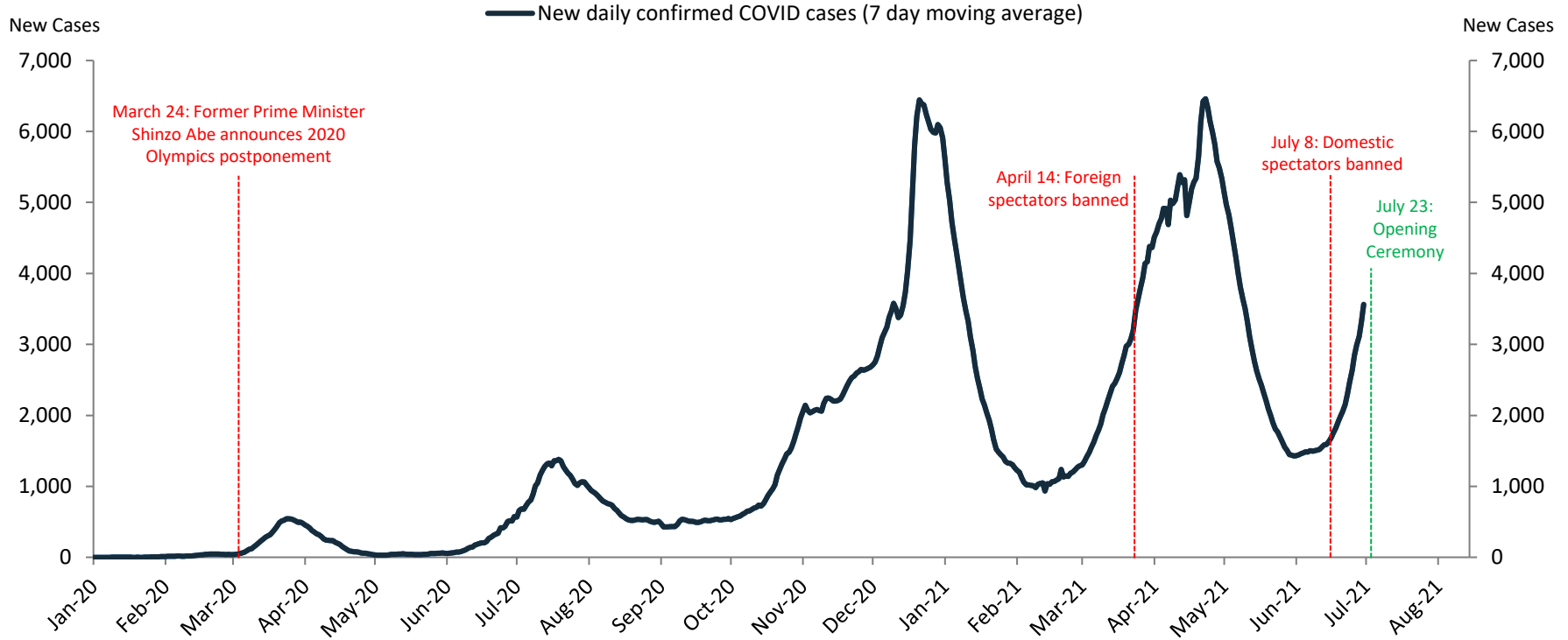


Sport

COVID

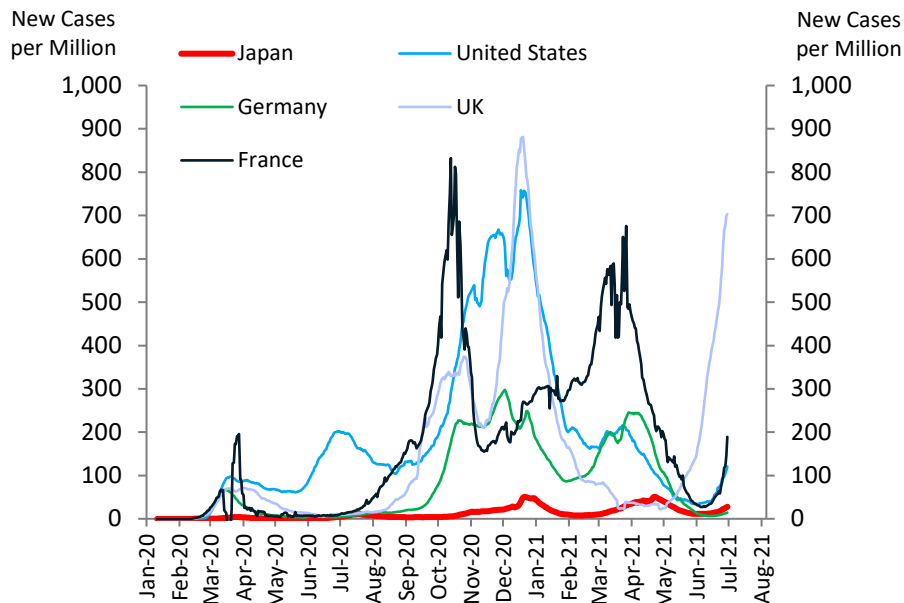
Business

Japan's new daily confirmed COVID cases surging into Opening Ceremony

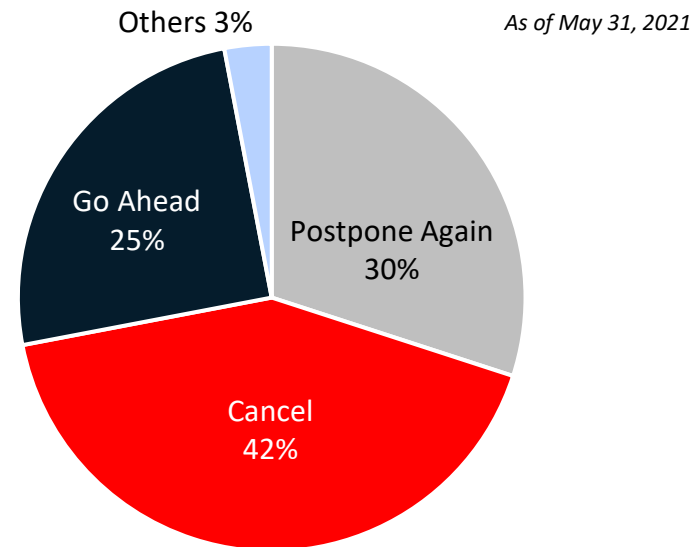


Lower case count than other developed countries, but public health concerns have stood at odds with Olympic plans

Fewer new confirmed cases than most developed countries on absolute and per capita basis (7 day moving average below)



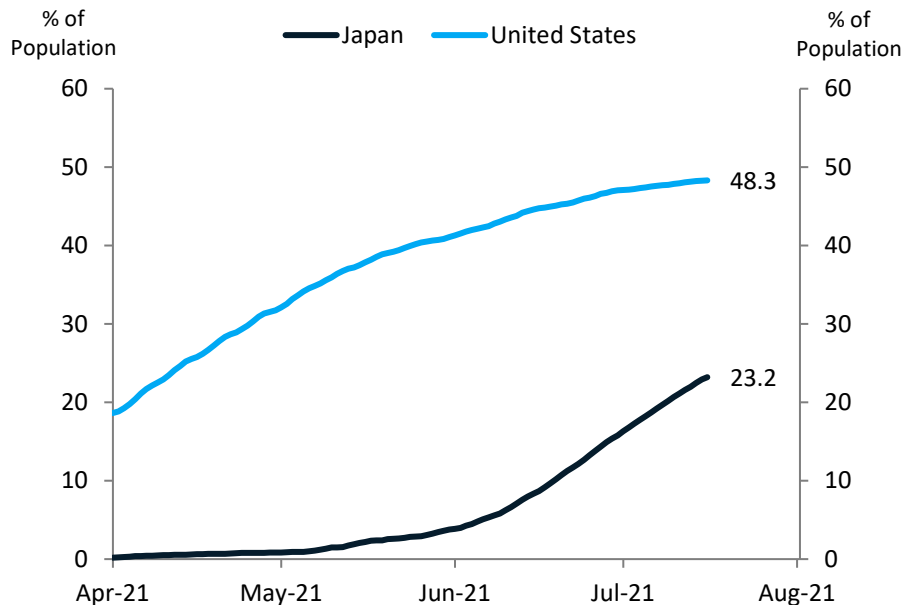
Key polls earlier in year showed average of +70% of respondents wanting at least postponement. Now 80% as of Jul 21



Based on simple average of responses to polls by five media outlets that asked similar questions to survey respondents regarding their view on whether the Olympics should be held

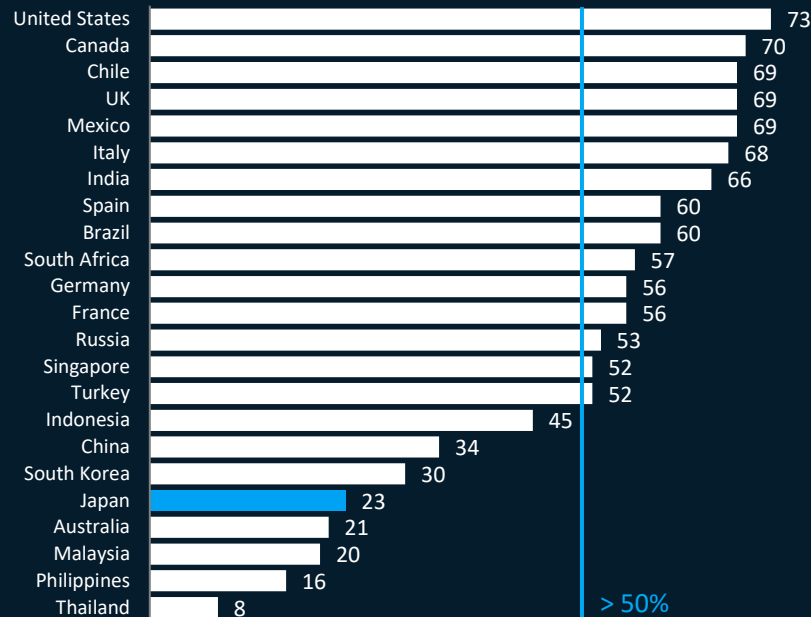
Public concern primarily driven by vaccination program delays...

% of population fully vaccinated as of July 20

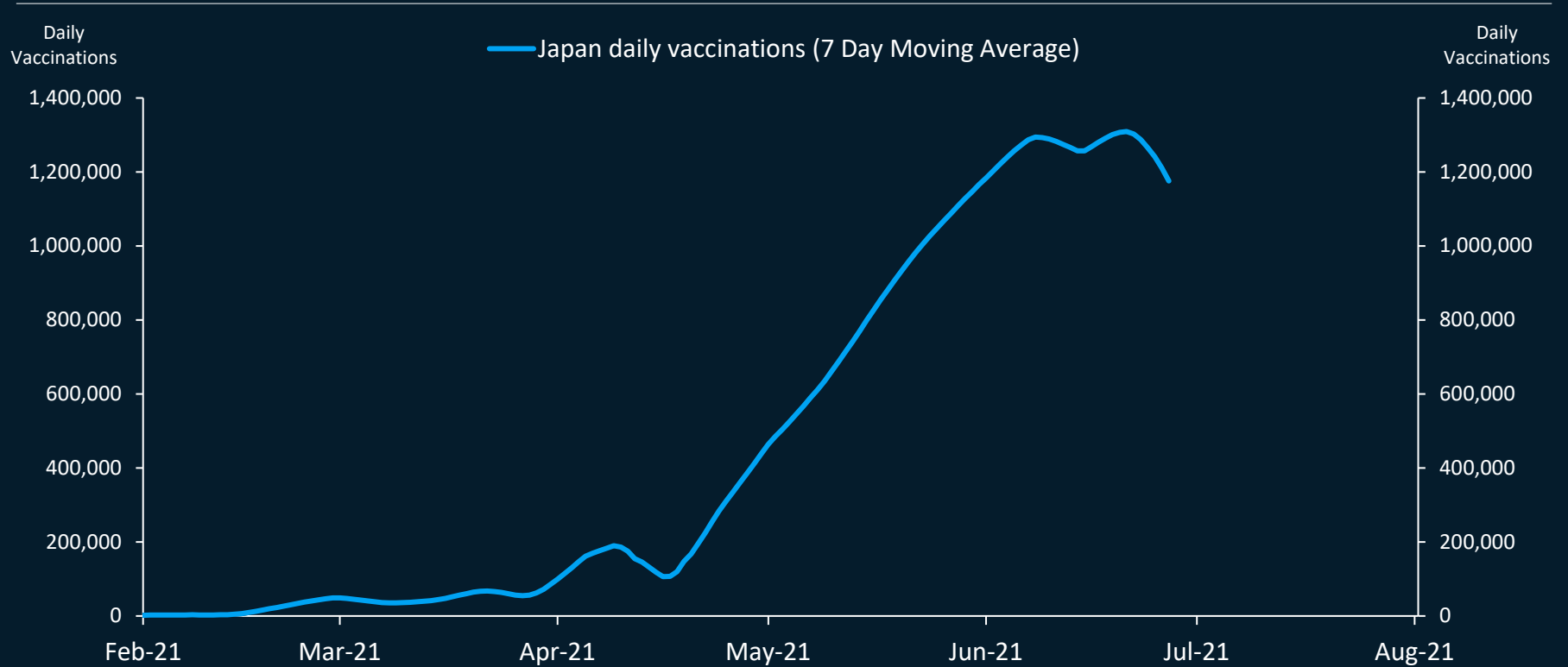


... as population still highly vulnerable vs. rest of world

Estimated % of population with immunity as of July 18

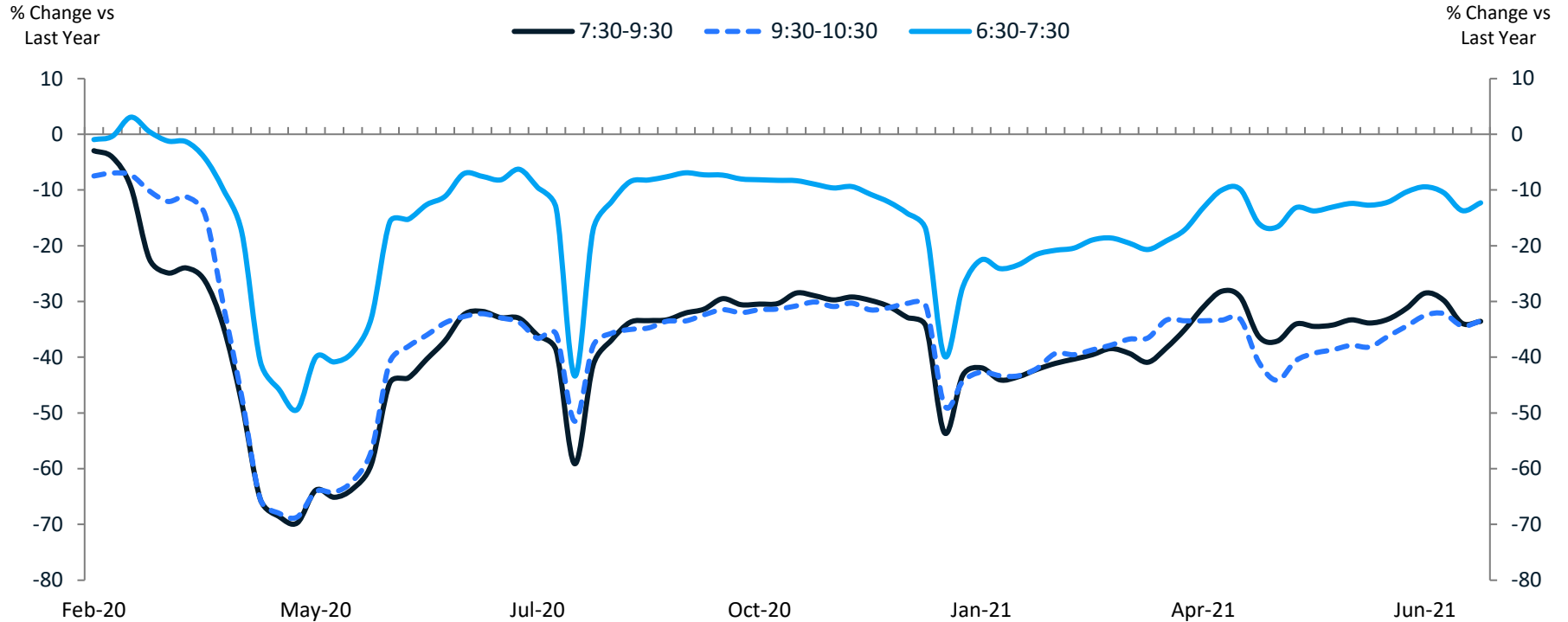


Japan's daily vaccination growth stalled and is now trending lower

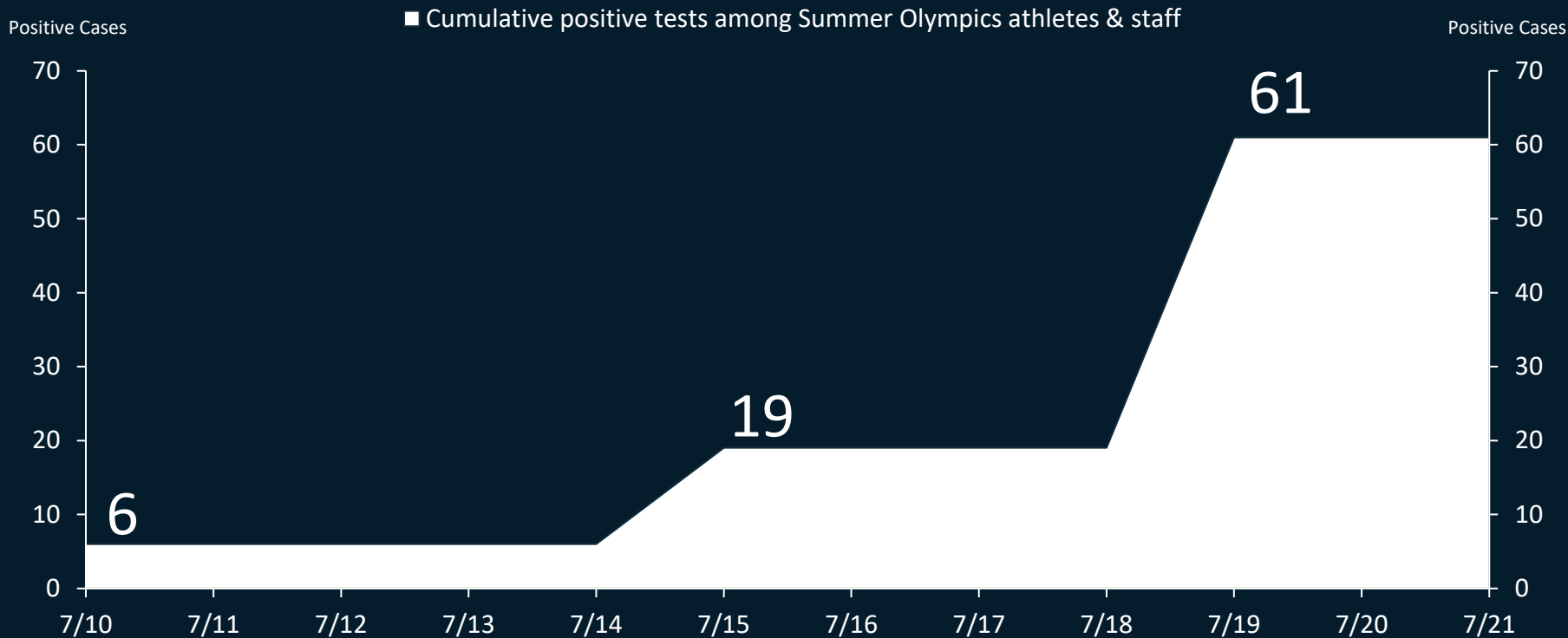


High frequency data shows Tokyo has oscillated between reopening / lockdown

Annual change in passenger volumes on Tokyo Toei subway by time of morning prior to most recent Olympic lockdown



Positive cases among Olympic athletes and staff growing despite rigid testing and social distancing protocols



Sport

COVID

Business



I'd like to speak to the manager of the Olympics

The International Olympic Committee (IOC) at a glance, sort of



International
Olympic
Committee

1) Ensures full collaboration between all Olympic stakeholders (e.g., NOCs, Federations)

2) Coordinates and manages revenue sources to fuel investment in sport

3) Promotes ethics in sport, fair play, women in sport, Olympic legacy, youth initiatives

4) Leads fight against doping in conjunction with World Anti-Doping Authorities

5) Governs and financially supports all 206 National Olympic Committees (NOCs)

NOCs Responsible For:

- Organizing respective people's participation in Summer and Winter Olympic Games
- Nominating cities within respective areas as candidates for future games
- Promoting development of athletes and training of coaches and officials at the national level within their geographies

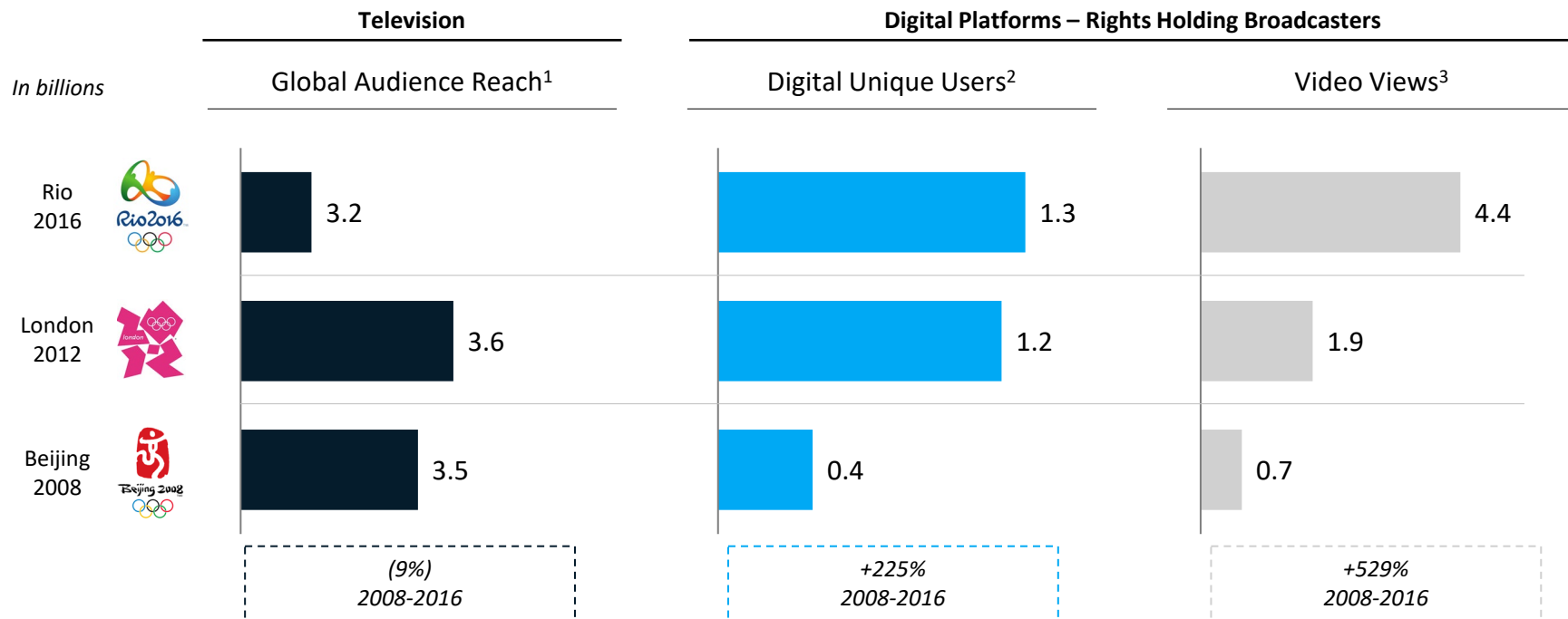
Sources of Olympic Marketing Revenues

Managed by	2013-2016 Revenues (\$ millions)
International Olympic Committee	 Olympic Partner Program + \$1,003
	 Broadcast Partnerships + \$4,157
Organizing Committees for the Olympic Games	 Domestic Sponsorships \$2,037 – included in \$ above
	 Ticketing + \$527
	 Licensing within host country + \$74
Total IOC Revenue	= \$5,761

Note: Revenues will not tie to following slides as they are cumulative for 2013-2016 (e.g., include winter Olympics)

Source: International Olympic Committee filings, Wikipedia

If you stream it, they will watch: Broadcast audience data of last three Olympics highlight global digital growth



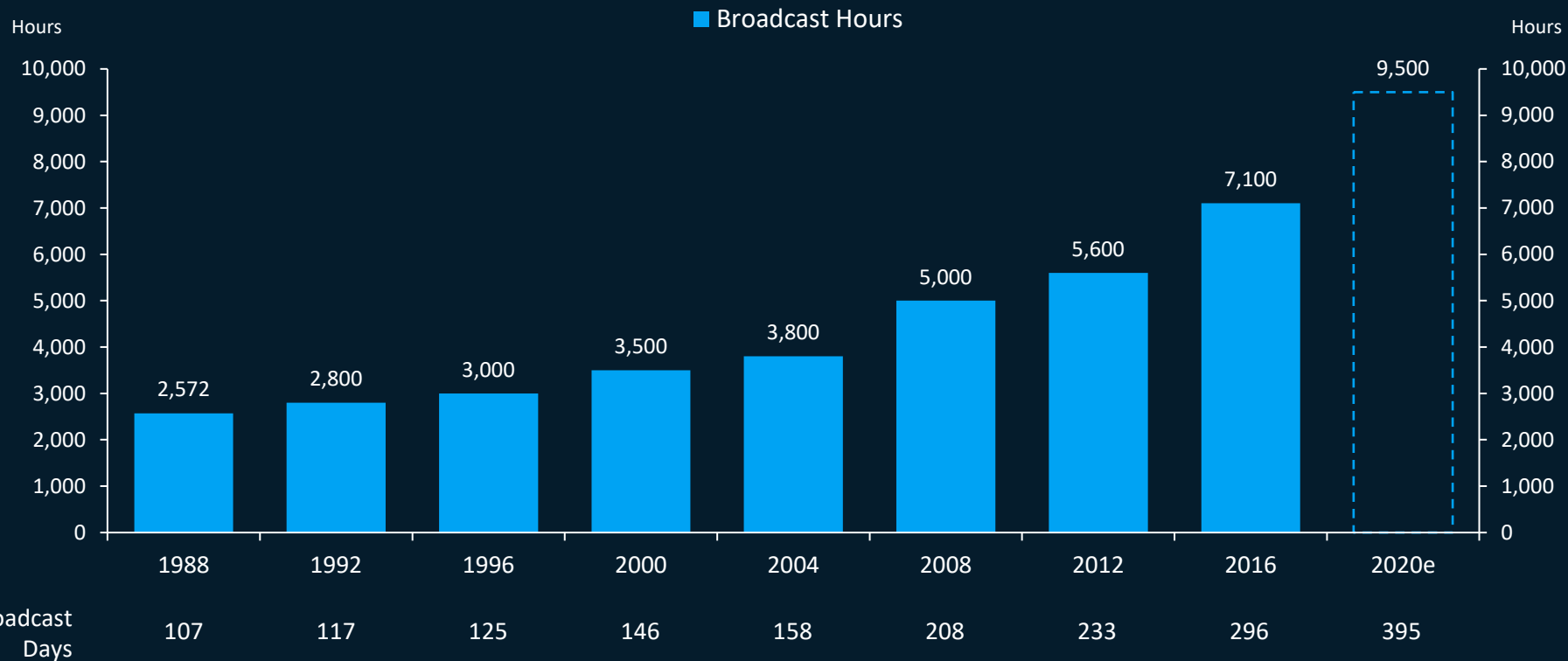
Note: ¹ Net number of people who viewed at least one minute of Olympic Games coverage on television; ² Number of different individuals who visited a RHB website within a specific time period;

³ Number of times a video of Olympic coverage was viewed on a RHB website

Source: International Olympic Committee

Where there's competition there's content...

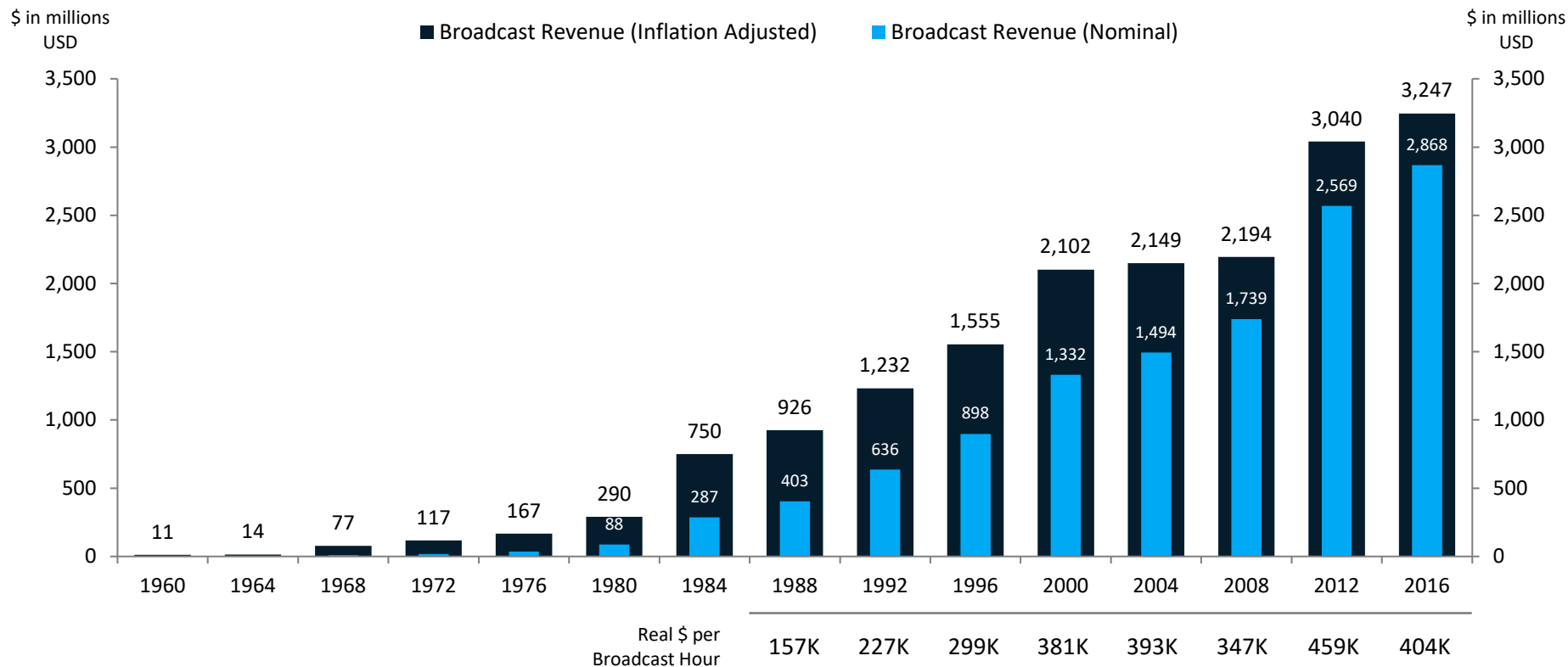
Olympic broadcast content hours 1988-2020e





...and where there's content there's currency...

Olympic broadcast revenue from 1960-2016

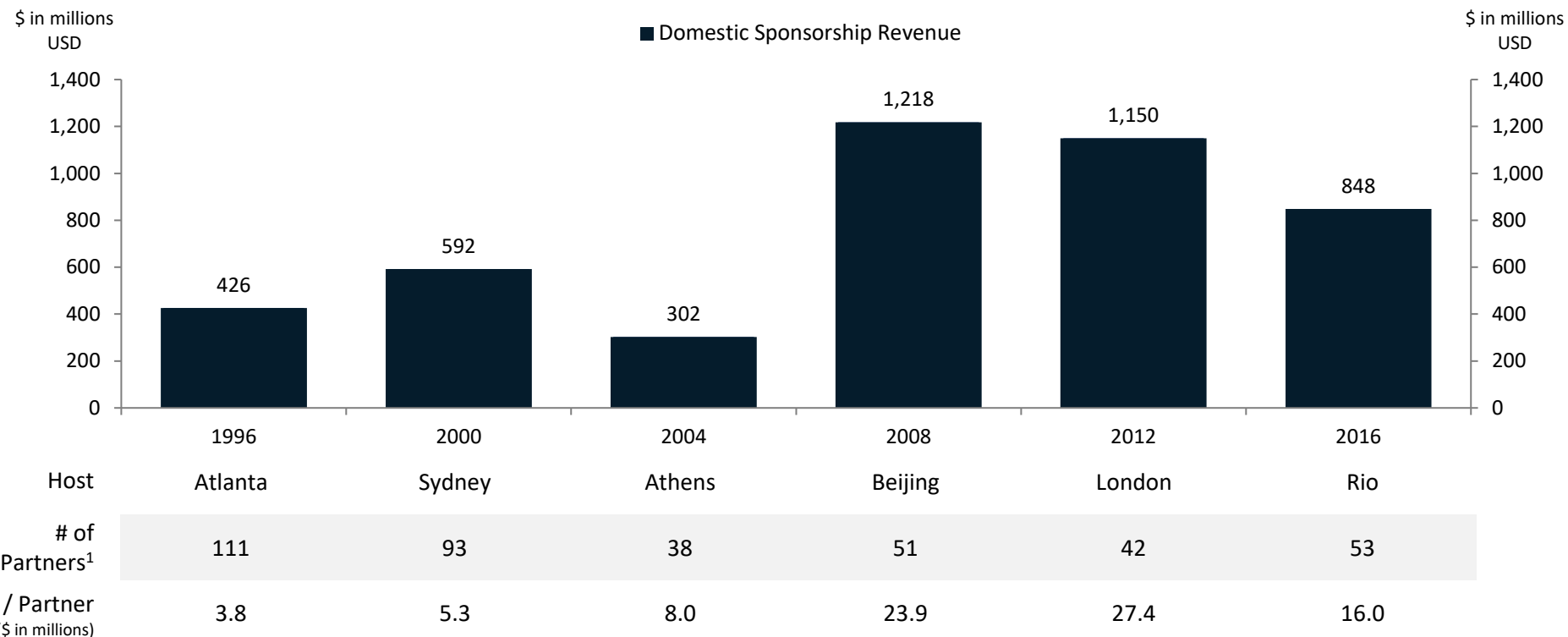


Note: Inflation numbers shown in 2020 dollars

Source: International Olympic Committee, US Federal Reserve

...and where there's currency there's commerce

Olympic domestic sponsorship revenues 1996-2016



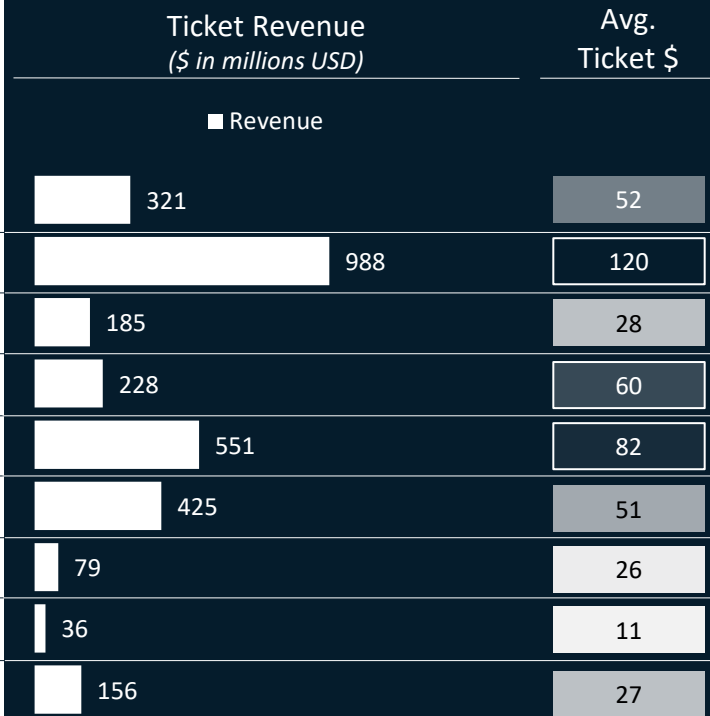
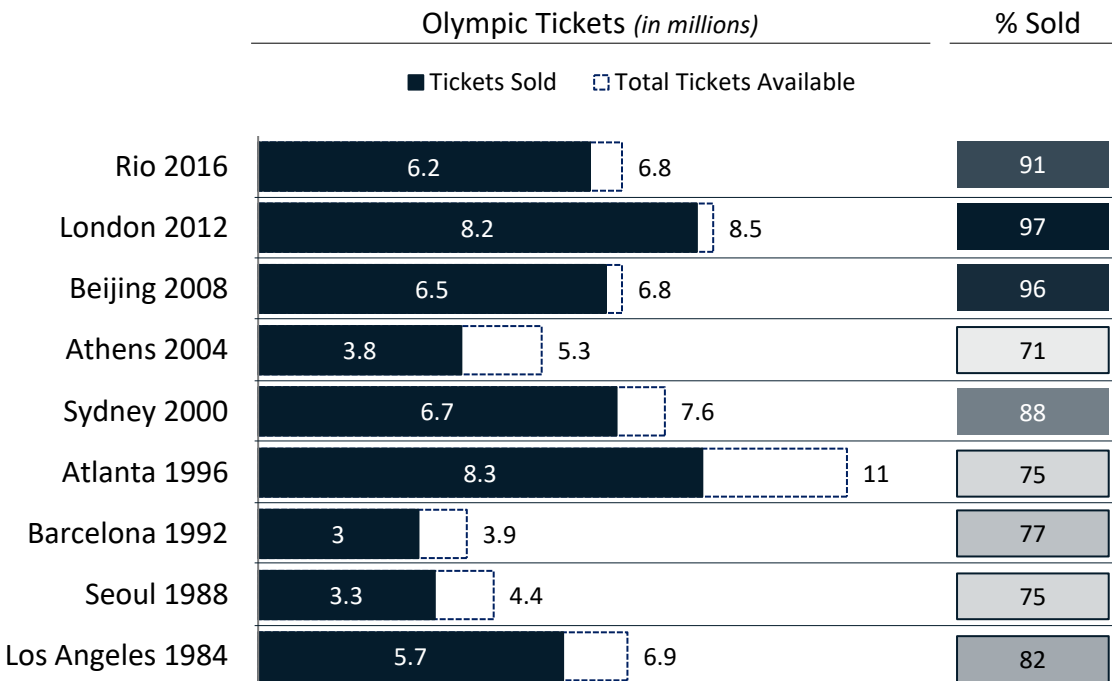
Note: Managed by Organizing Committees for the Olympic Games (OCOG) under direction of Int'l Olympic Committee (IOC); Olympic Games domestic sponsorship program grants marketing rights within the host country or territory only; Host country National Olympic Committee (NOC) participates in OCOG sponsorship program per IOC Marketing Plan Agreement to centralize and coordinate all marketing initiatives; ¹ Programs typically include several tiers of partnership, which may include sponsors, suppliers and providers

Source: Organizing Committees for the Olympic Games; International Olympic Committee



Six million tickets available on average with significant jump in demand since 2004

Range in revenues driven by ticket prices...

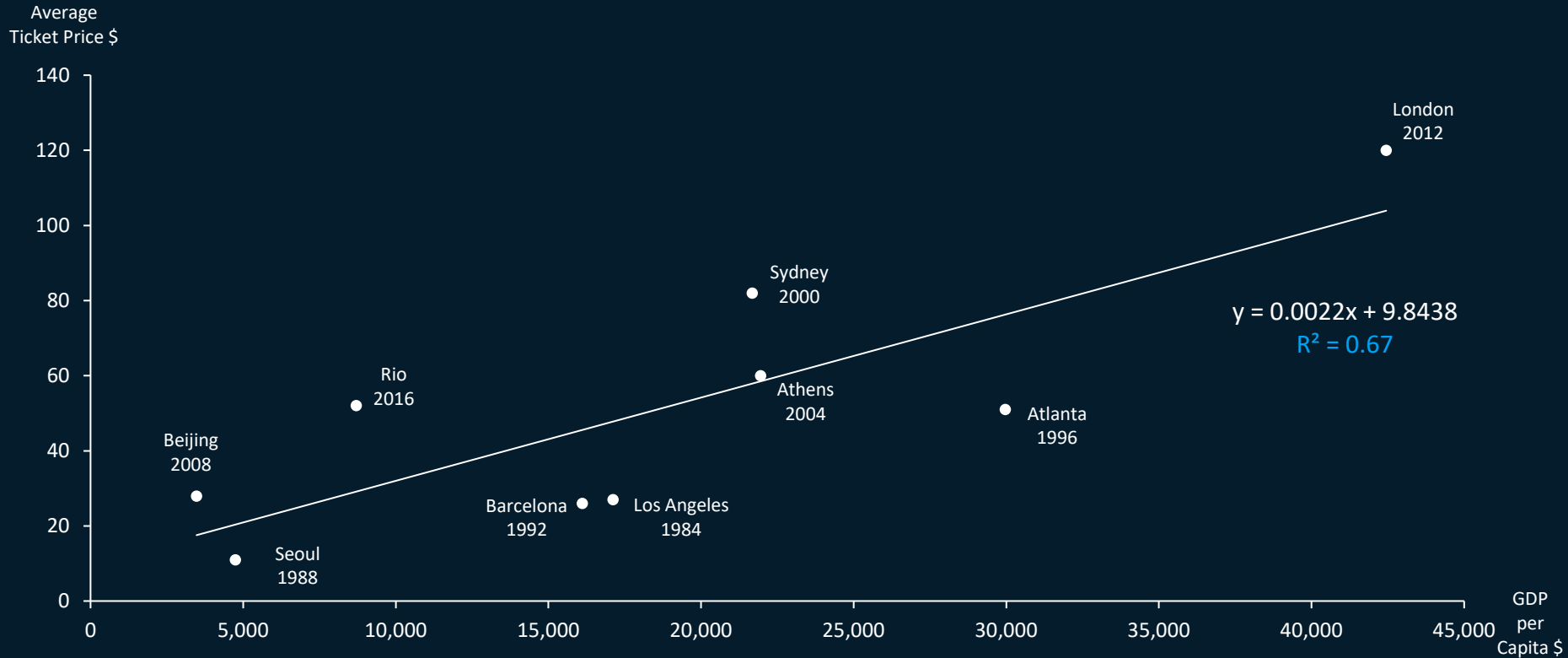


Note: There is possibility that governments / local NOCs will subsidize (give away) tickets to residents in order to boost crowd sizes

Source: International Olympic Committee



...that are strongly correlated with GDP per capita of host nation reflecting desire for ticket prices to be affordable for local residents

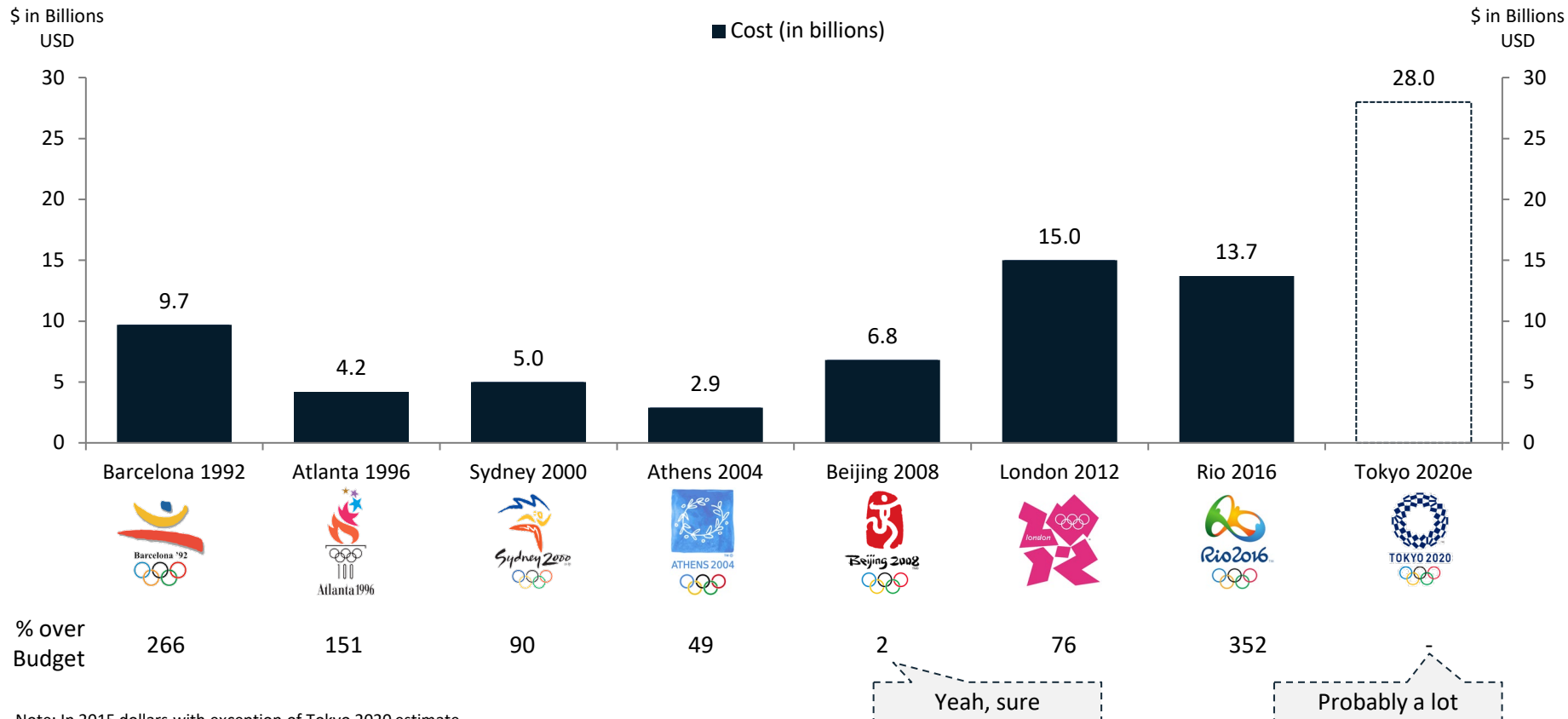


Note: GDP per capita taken from year of respective Olympic Games

Source: International Olympic Committee, World Bank

It ain't cheap and budgets don't matter

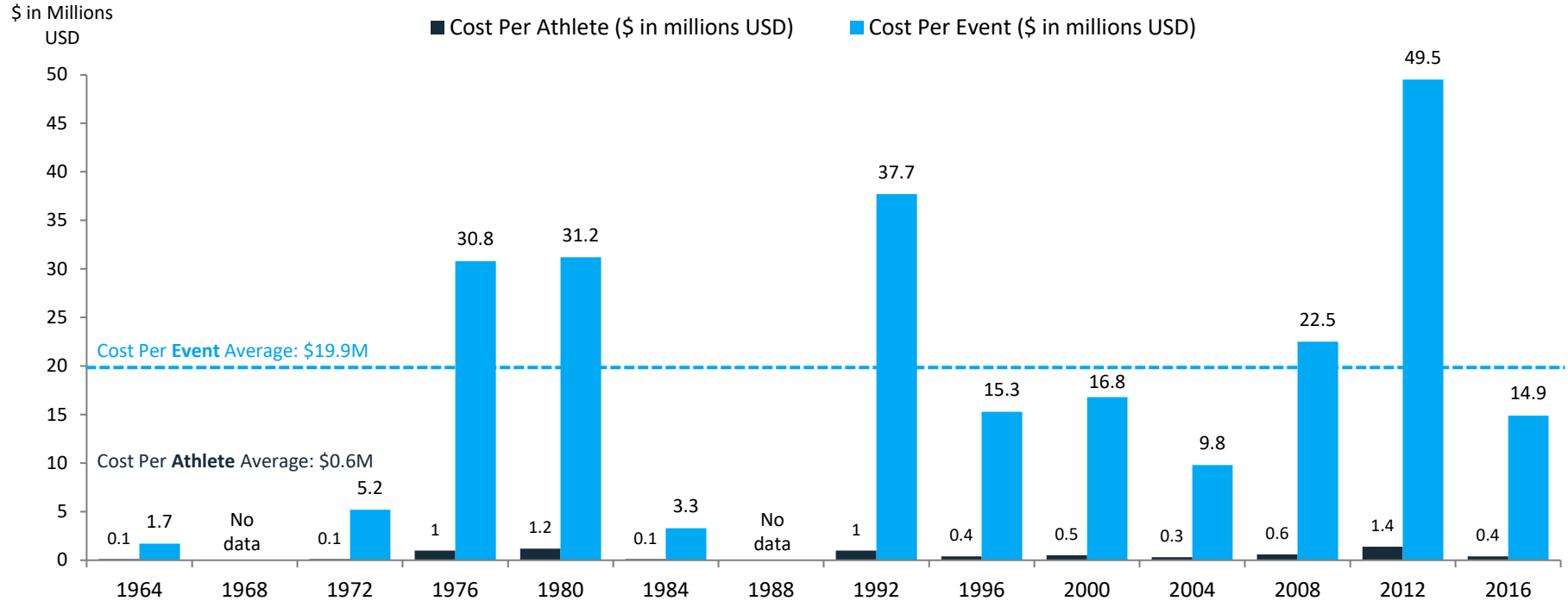
Cost of hosting Olympic Games since 1992



Note: In 2015 dollars with exception of Tokyo 2020 estimate

Source: Nikkei, Forbes, Flyvbjerg et al.

Olympic Games cost on per athlete and per event basis



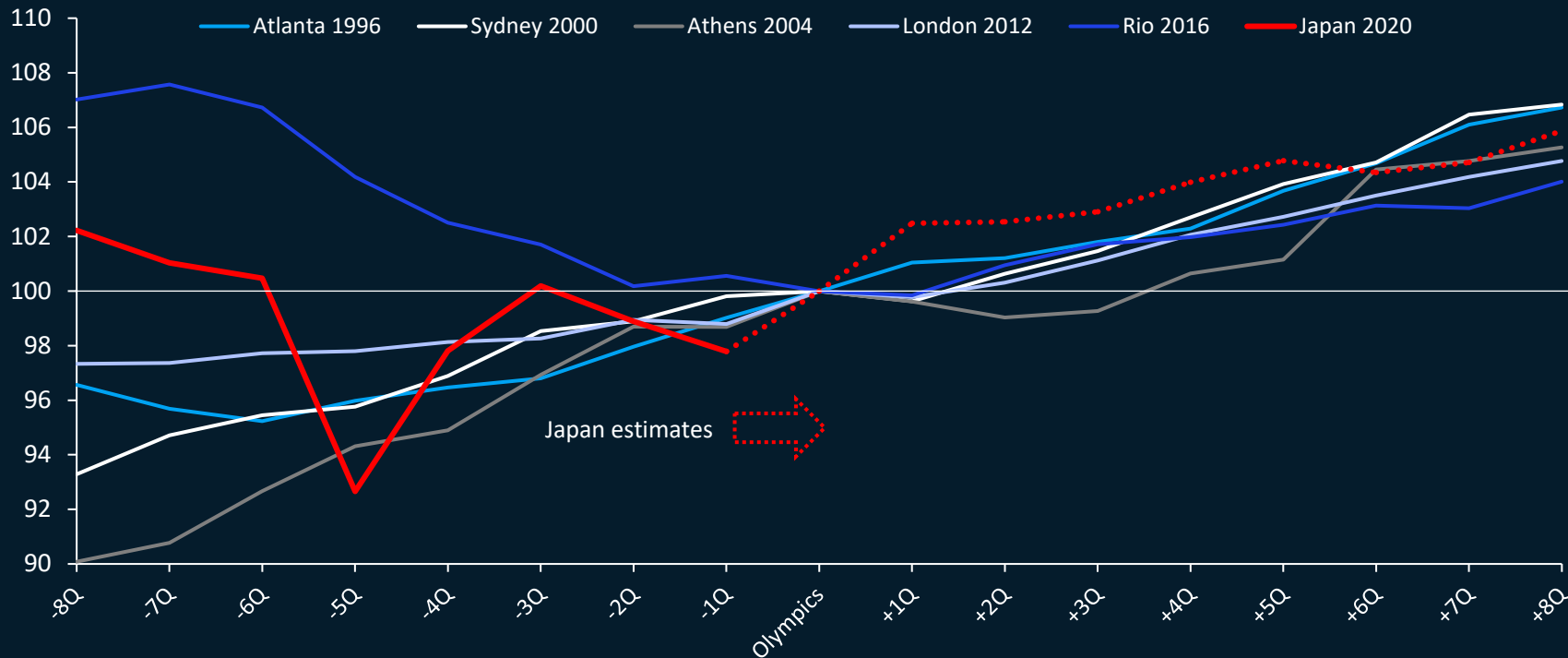
Note: In 2015 dollars

Source: Said Business School, University of Oxford, Flyvbjerg et. al

Despite turbulence, Japan's economy expected to grow in line with past hosts

Host countries indexed quarterly GDP growth for 8 quarters before and after Olympics

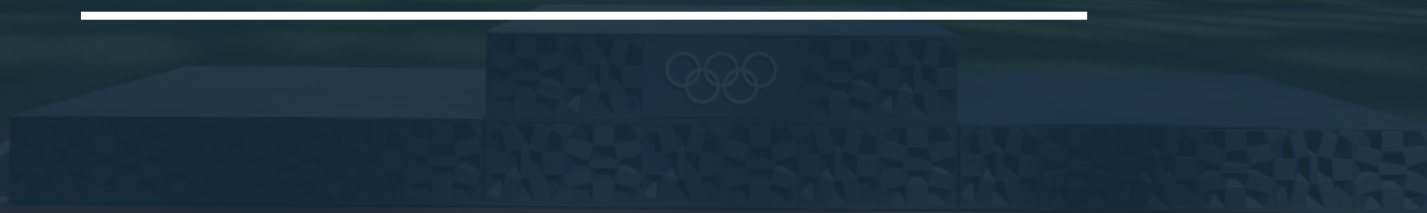
Real seasonally adjusted quarterly GDP growth, in local currency units, indexed to quarter in which Olympics occurred (e.g., Olympic quarter = 100)



Note: Japan using current prices and 2021 Q3 estimates for Olympic quarter benchmark; Source year of constant prices varies by country; GDP calculated using expenditure approach; I took two economics classes in college

Source: Organization for Economic Co-Operation and Development, Oxford Economics, Bloomberg, International Olympic Committee

End



Analyst Certification

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7/28/2021

Citius, Altius, Fortius

Parts I, II and III

TOKYO 2020

