

THE REP PROJECT'S

#RESPECTHERGAME

REPORT



GENDER & MEDIA COVERAGE OF
THE BEIJING WINTER OLYMPICS



EXECUTIVE SUMMARY

This report examines representations of gender in primetime media coverage of the first week of the 2022 Winter Olympics held in Beijing, China. Here are our major findings:

- Women constitute 54.8% of athletes shown in primetime Olympic coverage, continuing a positive upward trend of the last decade.
- Even though more women athletes are featured in primetime coverage, they only receive 41.1% of actual screen time (i.e., "face time") during primetime Olympic coverage.
- Eight-in-ten Olympic commentators are men (79.7%).
- The majority of on-the-ground reporters/interviewers are men (54.2%).
- Commentators are nearly twice as likely to focus on women athletes' families than men athletes' families (11.3% compared with 6.4%).
- Commentators/reporters are nearly three times as likely to discuss women athletes' emotions as men athletes' emotions (3.7% compared to 1.3%).
- Women athletes are twice as likely to appear in revealing outfits than men athletes (12.5% compared with 5.4%).
- Men athletes are referred to as "male [athlete]" 1.3% of the time compared to 5.0% of women athletes who are referred to as "female [athlete]." This reinforces the idea that men are "real" athletes while women are secondary.
- Women athletes are seven times more likely to be referred to using a gender diminutive (e.g., "girl") than men athletes.

REPORT

This report examines representations of gender in primetime media coverage of the first week of the 2022 Winter Olympics held in Beijing, China. We are interested in knowing whether women athletes receive the same amount and type of coverage as men athletes. More specifically, we examine whether media coverage centers men athletes and whether it degrades or sexualizes women athletes. Research studies have documented decades of sexism in media coverage of women athletes. We find that while some progress has been made towards gender equity, sexism in primetime Winter Olympics coverage



persists. We begin this report with details about our methodology, followed by an overview of previous studies, our major findings, and action steps for media and Olympic executives based on these findings.

METHODOLOGY

The methodology we use for this study is content analysis, a systematic analysis of communications; in this case, primetime Olympic coverage. Social scientists use content analysis to quantify representations of different identity groups and themes. We conducted two types of content analysis for this study: 1) automated coding and 2) human coding.

AUTOMATED CODING

Using a multi-stage face detection and classification algorithm, we are able to use machine learning to analyze Olympic coverage for screen time by gender. The algorithm we used in this study consists of two distinct parts, the first being a YOLOv5 convolutional neural network integrated with a Deep SORT object tracker to both detect and track faces in video. We fine-tuned this model on a publicly available dataset, WIDER FACE,¹ as well as a collection of hand-annotated data to be able to recognize a diverse set of faces in televised content. We then use each cropped face output from the object detection model as input into a multi-task classification network that aims to classify each face. We trained this model on refined sets of publicly available data, including both FairFace² and UTKFace³ datasets, and another hand-coded dataset of faces collected from past Olympic coverage. We ran all primetime Olympic coverage through the algorithm and analyzed the quantity of coverage by segment for faces with high enough detection and classification confidence. For more information about how we conducted this automated analysis, please see Appendix A.

HUMAN CODING

Three researchers coded the primetime Olympic coverage in this study. Prior to fielding the study, the team engaged in 46 hours of training on general coding procedures and for this specific project. At the end of the training period, the team achieved interrater reliability to ensure that the coding was uniform. The coders analyzed 700 Olympic competitors (74%), commentators (22.6%), and reporters/interviewers (3.4%) in 25 hours of primetime Olympic coverage during the first week of the games (from Saturday, February 5th - Friday, February 11th). We analyzed Olympic coverage on NBC, the official US channel for the Beijing Winter Olympics.

1. Yang, S., Luo, P., Loy, C. C., & Tang, X. (2016). *WIDER FACE: A Face Detection Benchmark*. IEEE Conference on Computer Vision and Pattern Recognition (CVPR).
2. Karkkainen, K., & Joo, J. (2021). FairFace: Face Attribute Dataset for Balanced Race, Gender, and Age for Bias Measurement and Mitigation. *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision*, 1548-1558.
3. Zhang, Z., Song, Y., & Qi, H. (2017). Ageprogression/regression by conditional adversarial autoencoder. *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, 5810-5818.

PREVIOUS STUDIES

Previous research finds gender biases in media coverage of athletes. We summarize these major findings in terms of the quantity of coverage women athletes receive and the quality of their coverage.

QUANTITY OF COVERAGE

Women athletes have historically been persistently under-represented in sports coverage. In the past 25 years, only 2% of ESPN coverage and 2% of local news coverage has focused on women athletes.⁴ Over 90% of sports hosts, anchors, and editors are men,⁵ so a lack of women behind the scenes translates into gender-biased coverage.

Despite women's virtual erasure in sports coverage in general, we have seen significant strides when it comes to women's coverage in the Olympics. The Summer games in particular have seen a decade of progress with women athletes receiving 55% of primetime coverage in the 2012 London Olympics⁶ and 58% of primetime coverage in the 2016 Rio de Janeiro Olympics.⁷ The Winter Olympics have had a slower climb towards gender equity in primetime coverage, with the 2018 PyeongChang Olympics marking the first time women athletes were well represented in Winter Olympic history (52.2%).⁸ The gender gap in Olympic coverage has closed in the past two decades, but women athletes continue to be misrepresented through overt sexism in coverage and more subtle sexism through the type of coverage they receive.

QUALITY OF COVERAGE

Women athletes have made tremendous gains when it comes to primetime media coverage in the Olympics, but they continue to be covered in sexist ways. Research has long identified that women athletes are covered in specific ways that diminish their athleticism and value as competitors.⁹ We present previous studies on four themes of sexist coverage: the centering of men as "true" athletes, the infantilization of female athletes, a focus on traditional gender roles for women, and the sexualization of women athletes.

Media coverage of sports has long centered male athletes as the only "true" athletes while diminishing female athleticism. Sports coverage presents women athletes as more emotional with less physical prowess than male athletes.¹⁰ Reporters often refer to men as "athletes" and to women as "female athletes," which establishes men as the "true" athlete and women as the "other."¹¹ Not only is their



4. Cooky, Cheryl, Michael Messner, and Michela Musto (2015). "It's Dude Time!": A Quarter Century of Excluding Women in Televised News and Highlight Shows. *Communication & Sport*, 3(3): 261-287.
5. Serazio, Michael (2019). "I Still Get Tweets to Go Back in the Kitchen." *The Conversation*, June 13, <https://www.pri.org/stories/2019-06-13/i-still-get-tweets-go-back-kitchen-enduring-power-sexism-sports-media>
6. Rogers, Katie (2016). Sure, These Women are Winning Olympic Medals, But Are They Single? *The New York Times*, August 16, <https://www.nytimes.com/2016/08/19/sports/olympics/sexism-olympics-women.html>
7. Ibid.
8. MacArthur, Paul J. and James R. Angelini. 2022 "Will Women Dominate NBC's Primetime Broadcast Coverage of 2022 Beijing Winter Olympic Games? UC Prof, Author MacArthur Watches Closely." *Utica Stories*, February 11, <https://www.utica.edu/college-community/utica-stories/will-women-dominate-nbcs-primetime-broadcast-coverage-2022-beijing-winter-olympic-games-uc-prof>
9. See Kane, Mary. J. and Heather D. Maxwell. 2011. "Expanding the Boundaries of Sport Media Research: Using Critical Theory to Explore Consumer Responses to Representations of Women's Sports." *Journal of Sport Management* 25: 202-216.
10. Serazio, Michael (2019). "I Still Get Tweets to Go Back in the Kitchen." *The Conversation*, June 13, <https://www.pri.org/stories/2019-06-13/i-still-get-tweets-go-back-kitchen-enduring-power-sexism-sports-media>
11. Wasserman, Sarah (2019). Sexism at the Olympics and Why It Matters. *FairyGodBoss*, <https://fairygodboss.com/articles/sexism-at-the-olympics-and-why-it-matters>

athleticism diminished in subtle but powerful ways, when women lose they are framed as less athletes and committed to their sport, whereas losing men are framed as momentarily lacking concentration.¹² The more common words used to describe male athletes during the 2012 London Summer Olympics were “fastest” and “strongest” whereas the top words for female athletes were “married” or “unmarried.”¹³ The presumption of male athleticism as the only “true” athleticism means that even the most celebrated women athletes take a secondary position. For example, when Katie Ledecky won gold and broke a world record, she got second billing in headlines behind Michael Phelps’s silver medal win. Similarly, the Olympic accomplishments of Venus and Serena were diminished when a reporter stated that Andy Murray was the first person to ever win two Olympic gold medals for tennis. Murray thankfully responded, “I think Venus and Serena have won about four each.”¹⁴

The athleticism of women athletes is also diminished by commentators who infantilize them, meaning they treat them as children in a way that denies their age and maturity. Women athletes are routinely infantilized by calling them “young ladies,” “girls,” or using their first names as opposed to their last names. For example, one study finds that women tennis players are referred to by their first names 52.7% of the time compared to 7.8% of the time for men.¹⁵ Infantilizing women athletes “tempers the symbolic threat posed by successful adult sportswomen by representing them as ‘girls’ in a domain— sports— that is a primary space for constructing and defining masculinity.”¹⁶ The infantilization of women athletes was on full display in 2016 when an NBC commentator who saw balance beam competitor Sanne Wevers writing in a notebook after a routine surmised that Wevers was writing in her diary. Another (woman) commentator was quick to correct him that Wevers was using the notebook to calculate scores. Perhaps the most common form of infantilization, though, is frequent references to women athletes as “girls.”¹⁷ Viewers have been calling out this overt sexism since the inception of social media in the 2000s.

Another way that women athletes are diminished as competitors is to discuss them in terms of their roles as girlfriends, wives, and mothers. While there is nothing inherently wrong in discussing family or relationship status, the stark double standard with male and female athletes indicates that there is more to the story here. Women framed in more traditional ways related to gender roles makes them less threatening in a space where their very presence challenges notions of strength and physical prowess as inherently and exclusively male. For example, when US Olympic trap shooter Corey Cogdell-Unrein won a bronze medal, *The Chicago Tribune* failed to use her name, instead describing her only as the wife of a Bears football player.

As noted above, women athletes are most commonly described as “married” or “unmarried” whereas male athletes are most commonly described as “strongest” and “fastest.”¹⁸ In other words, male athletes are described in

12. Feeney, Nolan (2014). A Brief History of Sexism in TV Coverage of the Olympics. *The Atlantic*, February 21, <https://www.theatlantic.com/entertainment/archive/2014/02/a-brief-history-of-sexism-in-tv-coverage-of-the-olympics/284003/>
13. Rogers, Katie (2016). Sure, These Women are Winning Olympic Medals, But Are They Single? *The New York Times*, August 16, <https://www.nytimes.com/2016/08/19/sports/olympics/sexism-olympics-women.html>
14. Sweeney, Mark (2016). “BBC Stands by John Inverdale, Saying Olympic Tennis Gaffe was ‘Simple Error.’” August 15, <https://www.theguardian.com/media/2016/aug/15/bbc-john-inverdale-olympic-tennis-steve-redgrave>
15. Duncan, Margaret Carlisle and Michael A. Messner. 1998. “The Media Image of Sport and Gender”. In *Mediasport*, 170-185, edited by Lawrence A. Wenner. New York: Routledge.
16. Wensing, Emma. H. and Toni Bruce. 2003. “Bending the Rules: Media Representations of Gender during an International Sporting Event.” *International Review for the Sociology of Sport* 38(4): 387-396.
17. Feeney, Nolan (2014). A Brief History of Sexism in TV Coverage of the Olympics. *The Atlantic*, February 21, <https://www.theatlantic.com/entertainment/archive/2014/02/a-brief-history-of-sexism-in-tv-coverage-of-the-olympics/284003/>
18. Rogers, Katie (2016). Sure, These Women are Winning Olympic Medals, But Are They Single? *The New York Times*, August 16, <https://www.nytimes.com/2016/08/19/sports/olympics/sexism-olympics-women.html>

terms of their skills and performance while women athletes are described in relation to men.

Coverage of women athletes also persistently sexualizes them in ways that suggests the most important thing about them is the way they look.¹⁹ For example, during the 2014 Winter Olympics in Sochi, an NBC analyst discussed the extremely dangerous courses for skiers, noting that female athletes do “all of that while in a Lycra suit, maybe a little bit of makeup— now that is grace under pressure.” One study finds that 97% of women’s primetime Olympic coverage features them in swimsuits or revealing leotards.²⁰ In some instances, women athletes are even penalized for choosing to compete in less revealing uniforms. In 2021, the Norway women’s beach handball team was fined by the European Handball Federation for wearing shorts as opposed to the required bikini bottoms,²¹ which led to public outrage that ultimately pressured the federation into ending the sexist uniform requirement.²² Revealing clothing is common attire for athletes who are trying to gain an edge in competition, but the discrepancy becomes obvious when women athletes are required to compete in revealing uniforms that their men colleagues can opt out of.

Researcher Emily Wughalter noticed the persistent reference to women athletes’ boyfriends, husbands, children, and appearance in the 1970s — a “feminine apologetic” to balance out their “violation” of feminine societal norms as athletes.²³ A more recent study of depictions of women athletes on the cover of *Sports Illustrated* finds that one-third (32%) of women athletes are sexualized when they appear and half (48%) are shown engaging in feminine or sexualized attire and poses that have nothing to do with their sport.²⁴ Additionally, 88% of women on the cover of *Sports Illustrated* are shown smiling whereas men are typically shown competing. This “feminine apologetic” reinforces the idea that women athletes violate gender expectations simply by engaging in highly competitive physical activities.

To summarize previous studies on coverage, women athletes are diminished in sexist and gendered ways— using language to establish men as “true” athletes and othering women athletes; discussing men in terms of their physical prowess and women in terms of their relationships to men (as girlfriends, wives, and mothers); infantilizing female athletes; and sexualizing female athletes. Women may have caught up with men in terms of the amount of media coverage in the Olympics, but the quality of their coverage still shows stark sexism.

19. Serazio, Michael (2019). “I Still Get Tweets to Go Back in the Kitchen.” *The Conversation*, June 13, <https://www.pri.org/stories/2019-06-13/i-still-get-tweets-go-back-kitchen-enduring-power-sexism-sports-media>
20. Feeney, Nolan (2014). A Brief History of Sexism in TV Coverage of the Olympics. *The Atlantic*, February 21, <https://www.theatlantic.com/entertainment/archive/2014/02/a-brief-history-of-sexism-in-tv-coverage-of-the-olympics/284003/>
21. Gross, Jenny (2021). Women’s handball players are fined for rejecting Bikini uniforms. *The New York Times*, July 20, <https://www.nytimes.com/2021/07/20/sports/norway-beach-handball-team.html>.
22. Gross, Jenny (2021). Handball federation ends bikini bottom requirement for women. *The New York Times*, November 1, <https://www.nytimes.com/2021/11/01/sports/women-beach-handball-bikini.html>
23. Wughalter, Emily (1978). Ruffles and Flounces: The Apologetic in Women’s Sports. *Frontiers: A Journal of Women’s Studies*, 3(1): 11-13, <https://doi.org/10.2307/3345983>
24. Nallira, Kaleinani (2021). *Apologizing for Nothing: The Reinforcement of the Feminine Apologetic by Sports Media*. Senior Comprehensives Project, Occidental College, 2021.

ANALYSIS

In this section, we present our major findings. Only differences that achieve a statistical threshold of .05 level are included in this study. We find several significant gender gaps in coverage that reflect lingering sexism in media coverage of the Olympics.

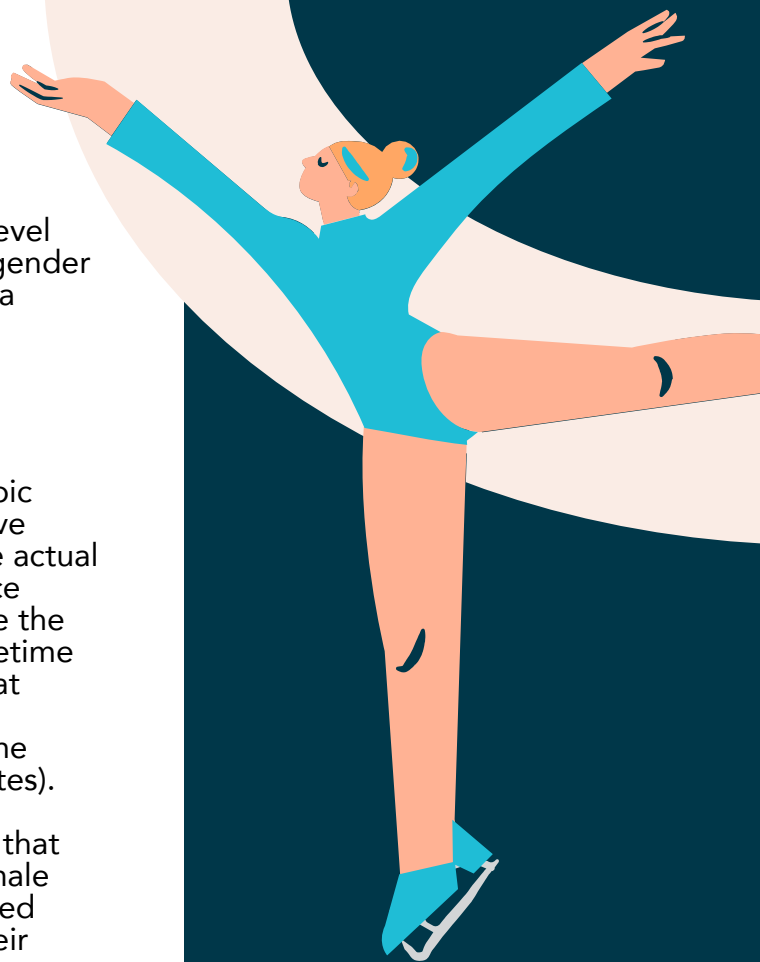
QUANTITY OF COVERAGE

Over half of the athletes included in primetime Olympic coverage are women (54.8%), which confirms a positive trend from the past decade. But when it comes to the actual second-by-second time received by athletes (i.e., “face time”), we find a significant gender gap. To determine the percentage of screen time by gender, we ran all primetime Olympic coverage segments through an algorithm that detects discernible faces and classifies them. Women athletes receive only 41.1% of “face time” in primetime Olympic coverage (compared to 58.9% for men athletes).

Our qualitative analysis of the “face time” gap shows that this was driven by coverage of two male athletes. A male snowboarder and a male figure skater received outsized coverage, with extended interviews and replays of their performances later in the week. Also, even when women athletes are featured or competing, we noticed that screen time was often also dedicated to male coaches, fathers, boyfriends, and husbands. While it was heartening to see so many women competing during primetime Olympic coverage, they simply were not covered in the same ways as men athletes.

We also examined the gender breakdown of primetime commentators (people providing live analysis of events) and reporters/interviewers (people interviewing athletes after their races). We find that a majority of reporters who interview athletes on the ground (54.2%), and the vast majority of commentators (79.7%) are men. This means that men dominate the most important aspects of understanding what is unfolding in each competition for viewers and how athletes are featured throughout their competition segments.

We also measured for gender differences in whether athletes were interviewed and if their backstories were featured going into an event, but did not find significant gaps in the amount of coverage. This means that primetime Olympic coverage is just as likely to center women and men athletes in ways that elevate the athlete’s profile. With that said, we do see gender differences in the type of in-depth coverage received. Women athletes have more of a focus on their family than men athletes (11.3% compared with 6.4%), and are nearly three times as likely as men athletes to have their emotions commented on or discussed by analysts and reporters (3.7% compared with 1.3%). For example, the camera focused for over 20 minutes on a woman alpine skier



who was crying after her competition while commentators discussed her being “clearly emotional” (this continued even while half of the screen cut to commercial break). In contrast, when a man athlete was shown crying after his snowboard competition, the camera did not linger, and the commentators made no mention of his tears.

We find no gender differences when it comes to a focus on romantic relationships in athlete backstories, however, there are qualitative differences in how partners are discussed. For example, women athletes’ significant others were often named right off the bat (e.g., three-time Olympic medalist, Mikaela Shiffrin, being introduced as “Kilde’s girlfriend” before her race), while men athletes’ significant others were mentioned towards the end of their competition segment (e.g., Shiffrin is mentioned as Alexander Aamodt Kilde’s girlfriend several minutes into his race). Women athletes’ relationships were also discussed for an extended period of time, while men athletes’ relationships were mentioned in passing or not at all (e.g., commentators discuss Olympic alpine skier Marie-Michelle Ganong’s relationship to fellow Olympic alpine skier Travis Ganong for the entire duration of her race, but never mention Marie-Michelle during Travis’ race in the same sport).

QUALITY OF COVERAGE

When it comes to quality of coverage, we examine athlete sexualization and gendered language using human coding and automated coding. We find some significant gender gaps in quality of coverage for women and men athletes.

Sexualization

Previous research has identified large gender gaps in the sexualization of women athletes versus men athletes. We find no gender differences in commentator mention of athlete appearance, body shaming, verbally objectifying comments, or visually objectifying camera angles. However, we find a sizeable gender gap in revealing clothing by athlete gender:

- Men and women athletes are equally likely to have commentators speak about their appearance.
- Only one man athlete, and no women athletes, were the subject of body shaming by a commentator. (Body shaming is when an analyst makes a negative comment about an athlete’s physical fitness, body shape, or size.)
- No athletes were verbally objectified (reduced to a sex object with commentary about their bodies) by commentators or reporters.
- Men and women athletes are equally likely to be visually objectified. (Visual objectification occurs when a camera pans an athlete’s body and/or focuses on specific body parts in a sexualizing way.)
- Revealing clothing could serve to gain an edge in competition for some sports, but women athletes are twice as likely to be shown in revealing outfits than men athletes (12.5% compared with 5.4%).

Gendered Language

We used automated analysis to examine the ways in which athletes were described by commentators and reporters in primetime Olympic coverage. We analyzed three specific aspects of gendered language use pertaining to athletes:

- 1. How often "athlete" and other variants of the word have a gendered prefix in front of it to describe an athlete (i.e., "female athlete," "female skater," etc.)
- 2. Gendered diminutive language used to describe women and men athletes (e.g., "girls" and "boys.")
- 3. The top adjectives used to describe women and men athletes.

Women are referred to as "female athlete" (as opposed to just "athlete") 3.1% of the time, while men are referred to as "male athlete" 1.8% of the time. When we expand this analysis to include other variants like "skater," "skier," "competitor," etc., the gender gap is even more pronounced. As shown below, women athletes are referred to as "female [sport here]" 5.0% of the time compared to only 1.3% of the time for men athletes. This reinforces the idea that men athletes are the norm for the sport while women athletes are secondary or "other" athletes.

TABLE 1: GENDERED REFERENCES FOR "ATHLETE"

GENDER	% OF GENDERED REFERENCES
MEN	1.3%
WOMEN	5.0%

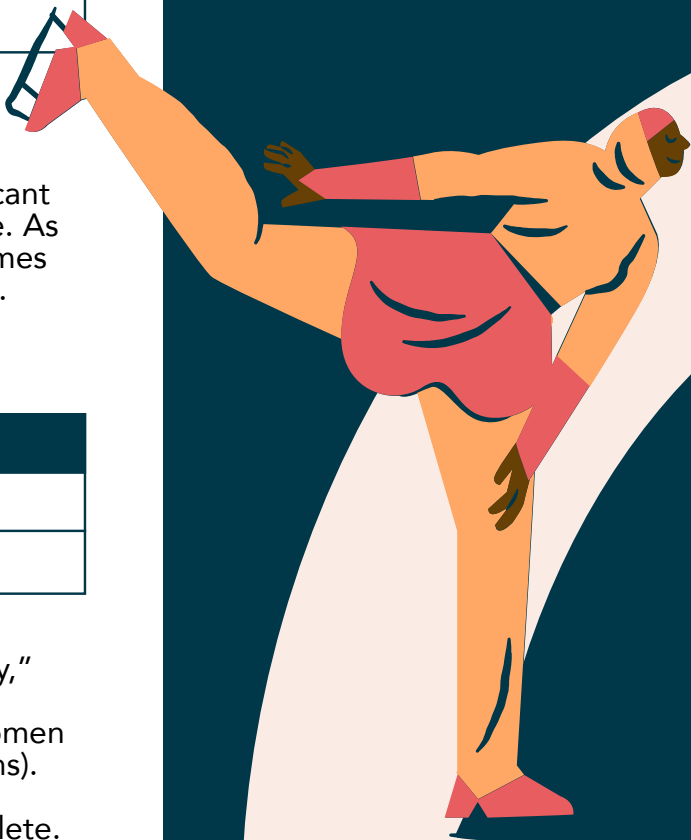
We also measured for gender diminutive language, meaning women athletes were referred to as "girls" or other infantilizing or dismissive terms. We find a significant gender gap when it comes to this type of language use. As shown in Table 2 below, women athletes were seven times more likely to be referred to using a gender diminutive.

TABLE 2: GENDER DIMINUTIVE LANGUAGE USE

GENDER	# OF GENDER DIMINUTIVES
MEN	3
WOMEN	21

The most popular diminutive for men athletes was "boy," with three total mentions during primetime Olympic coverage. The most popular gender diminutives for women athletes was "girl" (17 mentions) and "lady" (4 mentions).

We also analyzed all adjectives used to describe an athlete. It is important to note that this analysis does not include adjectives used to describe an athlete's actual performance,





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COMPARISON TO SUMMER 2020

In this section we compare our findings from this report with the findings from our previous study on the 2020 Tokyo Summer Olympics (which took place in 2021). We find that women winter olympians received less coverage than women summer olympians, and no major progress has been made when it comes to the quality of that primetime coverage.

- Over half of the athletes included in both Winter and Summer Olympic primetime coverage are women (54.8% and 55.1% respectively), which confirms a positive trend from the past decade.
- Women in the Winter Olympics accounted for significantly less second-by-second “face time” during primetime coverage than women competing in the Summer Olympics (41.1% compared with 59.1% of screen time).
- While both the Summer and Winter Olympic commentators were overwhelmingly men, the summer games featured more women interviewers than the winter games (54.2% compared with 45.8%)
- We found no gender differences when it came to analysts and reporters focusing on an athlete’s emotions in the Summer Olympics. However, women athletes in the Winter Olympics were nearly three times as likely as men athletes to have their emotions commented on or discussed (3.7% compared with 1.3%).
- In both the Summer and Winter Olympics, women are more likely than men to be shown in revealing clothing, referred to as “female athletes” instead of just “athletes,” and described with gender diminutive terms, such as “girls,” than men athletes.

CONCLUSION

Women athletes have long been erased and diminished in sexist and gendered ways in sports media coverage. From language establishing men as “true” athletes to discussing women in terms of their relationships to men, numerous studies have documented sexist media coverage. We observe both positive and negative findings for the Beijing Olympics.

On a positive note, over half of the athletes included in primetime coverage are women. We find women athletes are not more likely to be visually or verbally objectified while competing, and there are no gender gaps in discussions of parenting, appearance, or body shaming.

On a negative note, we find some persistent gender differences that require action: men athletes receive more second-by-second “face time” than women athletes, commentators and interviewers are overwhelmingly men, women athletes are shown in more revealing clothing than men athletes overall, and women athletes are more likely to have their emotions discussed by commentators. Also, women athletes are more likely to be referred to as “female athletes” instead of just “athletes,” and they continue to be described with gender diminutive terms, such as “girls” and “ladies.”



ACTION STEPS

FOR MEDIA EXECUTIVES:

- Give women athletes more screen time during competition segments, highlights, replays, interviews, and other athlete features.
- Hire more women analysts and on-the-ground interviewers.
- Direct commentators to use “athlete” when referring to men and women athletes instead of gendering the term.
- Direct commentators and interviewers to avoid focusing on women athletes’ emotions and describing women athletes in emotional terms.
- Direct commentators to avoid referring to women athletes as “girls,” “ladies,” or other language that diminishes them.

FOR OLYMPIC EXECUTIVES:

- Allow women, men, and gender non-conforming athletes to wear the clothing of their choice (instead of mandating sexually revealing outfits for women competitors).

ABOUT THE ORGANIZATION

The Representation Project is a leading global gender justice non-profit organization. We use films, education, research, and activism to challenge harmful gender norms and stereotypes. In 2011, Jennifer Siebel Newsom founded The Rep Project in response to the overwhelming public demand for ongoing education and social action in support of her first film, *Miss Representation*. Since then, Siebel Newsom has released two more acclaimed films, *The Mask You Live In* (2015) and *The Great American Lie* (2019). The organization also runs a global youth filmmaker program to train the next generation of change agents. The Rep Project is also known for its impactful social activism campaigns, including #NotBuyingIt, #AskHerMore, and #RepresentHer.

APPENDIX A

SCREEN TIME ANALYSIS

The automated calculations done for the screentime analysis fit into two separate categories:

1. **Frame-level analysis.** We divide the video into frames, and scan each frame individually to see if we detect a face in the frame. If so, we keep the frame and analyze it to see if any face with a desired identity is present. As an example, if we have a frame with one woman compared with a frame with ten women, they will both be counted as the same—a frame with at least one woman.
2. **Face-level analysis.** We find all faces that are shown throughout every frame of the video, and do analysis on all faces at once. As an example, if we have a frame with one woman compared with a frame with ten women, they will both be counted differently—the first as one female face and the second as ten female faces.

These two groups are further broken up into three separate ways to count a face detection:

1. **Any face.** Relative size of the face does not matter—all faces are counted as equal in the calculations.
2. **Non-background faces.** Here, we use a predetermined size of 5,776 pixels as the smallest size a face can be before being considered a background character (i.e. someone sitting in the stands, an athlete in the background warming up while another athlete plays, etc.). For these calculations, we only consider faces larger than this threshold.
3. **Prominent faces.** Of the non-background faces analyzed, we take the largest box size, and only consider faces that are within 80% of this box size. The goal here is that while many faces may be on a screen, only some should be prominent faces. This is a refined way of excluding background characters and only focusing on the largest (and thus most prominent) faces in a frame.

TEXT ANALYSIS

We transcribe all audio from the coverage using Amazon Transcribe and then manually review all text to study three areas:

1. How often “athlete” (and other variants of the word) have a gendered prefix in front of it to describe an athlete (i.e. “female athlete,” “female skater,” etc.), by gender.
2. Gendered diminutive language used for athletes, by gender.
3. The top words used to describe athletes, by gender.



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