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The Full Forecast: A Gender and Racial Analysis of Broadcast TV Weathercasters

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THE FULL FORECAST:
A GENDER AND RACIAL ANALYSIS OF BROADCAST TV WEATHERCASTERS

by
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ABSTRACT

THE FULL FORECAST IS NEXT:
A GENDER AND RACIAL ANALYSIS OF BROADCAST TV WEATHERCASTERS

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Bachelor of Arts

This thesis analyzes the representation of women and minorities working as broadcast television weathercasters by examining eight randomly selected television markets. Individual biography web pages from each of the four local syndicate station websites (ABC, CBS, FOX, NBC) were used for data collection. Information was collected about gender, race, number of twitter followers, chief meteorologist position, certificate type (AMS Seal of Approval or Certificate of Broadcast Meteorology) and the show shift for each individual meteorologist. Results indicate that while white males still dominate the majority of positions in smaller markets, women are more equally represented in larger markets. Minorities are still largely underrepresented in the broadcast meteorology industry.

iv

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TABLE OF CONTENTS

LIST OF FIGURES

Introduction

The purpose of this study is to examine gender and race in the local television broadcast weather industry. A quantitative analysis of the genders, races, positions, and social media followers of weathercasters was performed. In this research, quantitative data from a sample selection was collected and analyzed to determine if the weathercasting field lacks diversity in gender or race. This study also explored the implications of geographic region on the representation of weathercasters. The data collected in this study helped form an understanding of the current gender and racial makeup of weathercasters across the United States In essence, this study aimed to forecast the potential future of the weathercasting industry. Is gender equality in weathercasting a total downpour? Are minorities in weathercasting finally seeing the sunshine? The *full* forecast is next.

Literature Review

"On the shelf of quintessential American phenomena, weathercasting fits quite comfortably next to jazz, baseball, and ice cream cones. Weather presentations on TV are universal, of course, and the weather itself knows no geographic boundaries. However, the roots of weathercasting are firmly planted in a nation that's populous, highly mobile, plugged into mass media, and blessed (or cursed) with hundreds of different climatic regimes, including some of the most violent weather on earth. Even as U.S. broadcast meteorologists have served as the target of innumerable jokes over the years about their accuracy—or presumed lack of it—they have also saved thousands of lives. Somehow,

frivolity and serious information manage to coexist in the world of TV weather" (Henson 2010).

Thousands of weathercasters across the United States stand in front of green screens and transform the complicated, unpredictable science of weather into bright and engaging graphics. These weathercasters vary in experience, with some holding advanced atmospheric science degrees and some who hold no degree or certification. Yet, weathercasters at any level can connect with the home viewer in ways that an anchor or reporter cannot. As a force of nature, weather is a natural part of everyday life that humans cannot ignore. The messenger of the local weather – the local weathercaster – plays a vital role connecting the viewer to their outside surroundings. Many news companies rely on the weathercaster to bring in profits, because the weather segment continues to be the most watched part of a newscast (Waltz 2017). Newsroom producers often structure newscasts to give immediately necessary weather information at the top of the show, with the main weather segment timed perfectly to hit around the second quarter hour of a show, keeping viewers long enough to achieve consistent ratings for the newscast (Nix-Crawford 2017). Without an engaging weathercast and engaging weathercaster, local newsrooms ratings drop. The success of local broadcast television news relies heavily on the weathercaster.

With increased media attention on natural disasters and their effects, weathercasters continue to be a source of valuable information for the general public. In the United States, phrases like "here's what's happening in your neck of the woods" are heard in homes across the nation. When people turn on the local broadcast station to watch the forecast, they invite the weathercaster into their home and start a conversation

about how to plan for the commute to work or when to buy a few extra batteries before the storm rolls in.

The History of Forecasting

Weather presentations on local television screens began evolving after World War II, when television sets became more popular in the average American home. Before the increase in household television sets, radio was the most popular way to communicate weather events to the general public. While the medium of radio broadcasting requires energy in the voice, the medium of broadcast TV requires energy of the whole body. When weather broadcasting turned to the TV set, meteorologists (who were often trained from service in WWII) sat in a small office space, typing up a forecast for the main anchor to read.

Soon, "weathermen" started appearing on television with the anchors, standing in front of stationary maps, explaining high- and low-pressure systems to an audience that loved the tools of polish, appearance, and gimmicks (Henson 2010). The advent of weather forecasts on national television acted as the catalyst for competitive and entertaining local forecasts. In order to get ahead of the competition, some stations began using "weathergirls" for their sex appeal. Carol Reed, the first woman hired as a weathercaster in 1952, "had no qualifications aside from a cheerful manner and a knack for communication" (Laskin 1996). Consequently, more local TV stations started hiring "weathergirls" to increase viewership. The "weathergirl" stereotype halted the increase of qualified, female meteorologists for much of the prior century. Famous broadcasters like Barbara Walters, "refused to take on an initial weathercaster role because of the degrading antics associated the field" (Perryman and Theiss 2014).

The TV weather industry has moved on from the hypersexualized weathercasts, where women were sometimes required to wear bathing suits during their forecasts, but female weathercasters are still fighting residual stigmas and stereotypes of the 1950's (Henson 2010). The use of the term "weathergirl" suggests that a female weathercaster is inexperienced or childlike, and that she must be "dolled-up" to report the weather (Gruber 2012). An internet search of "female weather reporters" results in top articles titled: "The 15 Hottest Male and Female Weather Forecasters", "The Hottest Weather Girls on TV", "These Beautiful Weather Girls Are Sure To Brighten Up Your Day", "Ranking The 20 Most Attractive Weather Girls on TV", and "Bad Weather Hotties: Incredibly Sexy Weatherwomen". If the top Google search results today are emphasizing the physical aspects of female weathercasters, then stigmas that began earlier in the history of weathercasting are still present in broadcast culture.

Minorities in Weather Broadcasting

Along with women, minorities are often underrepresented in the meteorology field. In comparison to the U.S. industry as a whole, the local broadcast television industry under-performs in attracting minorities into the work force (Brooks, et al. 2003). For example, a study that analyzed 596 local television news stories found that 73% of news reporters in the stories were White, 16% were Black, and 3% were Latino (Poindexter, et. Al 2003). There were no Asian American or Native American reporters and the race or ethnicity could not be determined for 8% of the reporters (Poindexter, et. Al 2003). While these percentages only represent news reporters, the total number of weathercasters at one station is usually lower than the total number of reporters, which means there is a lack of minority weathercaster in the overall industry. Thus, the lack of

racially diverse weathercasters is blatant. To help increase the numbers of minorities in the meteorology field, the American Meteorological Society's Board on Women and Minorities offers substantial scholarships to high school students entering college. The AMS hopes that scholarships to students will encourage and foster racial diversity in the meteorology field.

Existing literature on the representation of women and minorities in local television broadcasting shows a general lack of gender and racial diversity among weathercasters. Some studies indicate a rising number of women in the field, with one study showing that the female population of weathercasters rose from 19% to 21% from 1999 to 2005 (Malone 2011), and another showing an increase from 25% women to 29% in 1997 to 2017 (Cranford 2018). Studies investigating the representation of female weathercasters is common, but studies concerning the diversity of races within local television broadcasting are not.

One factor concerning gender that's been heavily researched is the lack of trust among women newscasters in comparison to men newscasters. A study in 2010 revealed that (with controls for physical attractiveness), men were perceived as more competent, composed, and extroverted (Brann and Himes 2010). The same study by Brann and Himes indicated the widespread belief that women are more emotional than men, and thus cannot keep their deliveries of news or weather as composed as men. However, no differences between the genders were found in terms of character, sociability, virtuosity, or friendliness (Brann and Himes 2010). The biggest difference found between the male and female newscasters was simply – credibility. Male newscasters continue to be rated

higher in perceived credibility, perhaps indicating a stagnant mindset of television news viewers (Brann and Himes 2010).

Published studies analyzing racial representation for television meteorologists appear to be dated. For instance, the last study specifically about Black meteorologists was published by one of the trailblazers for Black female meteorologists, June Bacon-Bercey, in 1978. However, the AMS does have a website with online resources about a 1999 demographic survey conducted by the society to gather information about its' society members. Results from the survey suggest that the most common age of members ranges between 35 – 49 and that the "growth in minority populations has remained miniscule over the last 25 years" (AMS 1999). Blacks only represented 1% (42 individuals) of the total population of the AMS members surveyed, while whites made up 90.6% (4,126 individuals) of the member population (AMS 1999).

Despite the lack of research on minority groups in meteorology, there is some literature which examines the racial diversity in generalized media platforms such as radio and television. The 1968 Report of the National Advisory Committee on Civil Disorders, which is often referenced as the Kerner Commission Report, initiated the beginning of federal involvement in encouraging racial and gender diversity in broadcast employees. The Kerner Report argued that diversity in media personnel, particularly at the managerial levels, was necessary to ensure that minority populations were accurately represented in, and served by, the American media (Brooks, et al. 2003). After the findings of the Kerner Report, the Federal Communications Commission (FCC) requested in 1971 that all U.S. broadcast stations file annual employment reports listing the racial and gender employee composition in every job category (Brooks, et al. 2003).

The effort of the FCC to oversee demographic data collection was the first effort in understanding the gender and racial makeup of the broadcast industry. In 1977, the FCC began reviewing the licenses of broadcast stations if minorities were not employed at the station with a ratio of 50% of their overall availability in the labor force. This quantitative standard encouraged broadcast stations to use Equal Employment Opportunity (EEO) programs to recruit racial minorities and women (Napoli 2001). A more recent data analysis of the reports collected by the FCC showed that Blacks had the strongest representation in the local broadcast industries, making up 10.9% of the television work force in 1997; Hispanics were the second most prevalent group, with 7.4% of the work force, Asian-Pacific Islanders represented 2.1% of total industry employees, and Native American Indians made up only 0.6% of the industry's work force (Brooks, et al. 2003). Additionally, the recent data analysis showed that the representation of all four racial categories grew exponentially between 1971 and 1997 (Brooks, et al. 2003). The reasoning behind sharp growth is partially due to the lack of individuals who were included in the industry at the beginning of the data collection in 1971 (Brooks, et al. 2003).

Other studies that researched the representation of female and minority weathercasters found that the number of females who graduated with atmospheric science degrees in the U.S. reached a peak between 2000 – 2007 at 38% (Wilson 2013). This peak percentage dropped in 2008 to 20% and did not return to the peak by 2013 (Wilson 2013). The number of traditionally underrepresented groups (Black, Hispanic, Native American, Asian-Pacific Islanders) who graduated with atmospheric science degrees rose only from 6% in 2005 to 8.5% in 2015 (Burt 2015). With the number of female and

minority atmospheric science graduates not reaching the peak in recent years, this study aimed to examine if the number of female and minority weathercasters are similar.

Research Questions

The slow increase of women participating in weathercasting and the sheer lack of literature on minorities in weathercasting prompted this study. Thus, the research questions of this study were:

Research Question 1: If female weathercasters are equally represented in local television markets

Research Question 2: If geographic regions are correlated to the representation and positions of female and minorities weathercasters

Research Question 3: If female and minority individuals are equally represented in the "Chief Meteorologist" position and other desirable positions (Weekday or Evening weathercaster)

Research Question 4: If a weathercaster's gender plays a role the number of Twitter followers

Research Question 5: If certification levels (Certificate of Broadcast Meteorology from the AMS, the AMS Television Seal of Approval) correlate to Chief Meteorologist positions for female and minority weathercasters

Research Question 6: If minority groups (Black, Hispanic, Asian-Pacific Islanders and Native American) are underrepresented within the same television markets

Methods

The local U.S. broadcast television markets where weathercasters are employed were selected by using a random generator for different selection groups: #1 – 10, 11 – 25, 26 – 50, 51 – 75. Market rating lists were obtained through the Nielsen ratings websites. Two markets from each selection group were used for data collection:

#1 – 10:

1. Philadelphia, PA – the #4 market.

2. New York City, NY – the #1 market.

#11 – 25:

3. Orlando, FL – the #18 market.

4. Detroit, MI – the #14 market.

#26 – 50:

5. Columbus, OH – the #34 market.

6. Birmingham, AL – the #44 market.

#51 – 75:

7. Fresno, CA – the #55 market.

8. Memphis, TN – the #51 market.

Using the randomly selected markets, data on local weathercasters were collected from the local television station websites. Most markets within this study had all four network stations – ABC, CBS, FOX, and NBC. A select few of the markets had television stations that combined two networks together (i.e. Columbus, OH combines ABC/FOX). Biographies of each individual weathercasters provided the majority of information needed for this study – name, gender, position, race, and education. Local

television stations usually list the current weather team biographies and information on their website for the sake of promotion and viewer connection. Genders were categorized by evaluation of a headshot photo posted on the station website along with pronouns used in describing the individual. Races were determined by photos and information within the bio. For example, if a bio explicitly mentioned the weathercaster was a Latina/Latino or part of a national association for Black meteorologists, then the race was recorded. Any race that was not clear upon photo or biography was verified by emails and phone calls to the individual weathercasters. If weathercasters could not be reached or a conclusion made, then the data was recorded as unknown.

In addition to the website biographies, a weathercaster's meteorology recognitions were verified on the American Meteorological Television Seal of Approval/AMS Certified Broadcast Meteorology lists, as well as their Twitter following based on each weathercaster's Twitter page. If the weathercaster had not paid their dues or was retired from their membership in the AMS, information was still collected and counted towards the number of weathercasters with certifications for this study. Data from the bios and these other websites were recorded onto a Google Drive spread sheet where percentages and totals were calculated.

Results

The first research question asked whether female weathercasters are equally represented in local television markets. Of the total number of 108 weathercasters analyzed in this study, 41 were female and 67 were male. The overall percentage of female to male weathercasters was 38% to 62%, respectively. Figure 1 shows the total

number of weathercasters divided by gender.

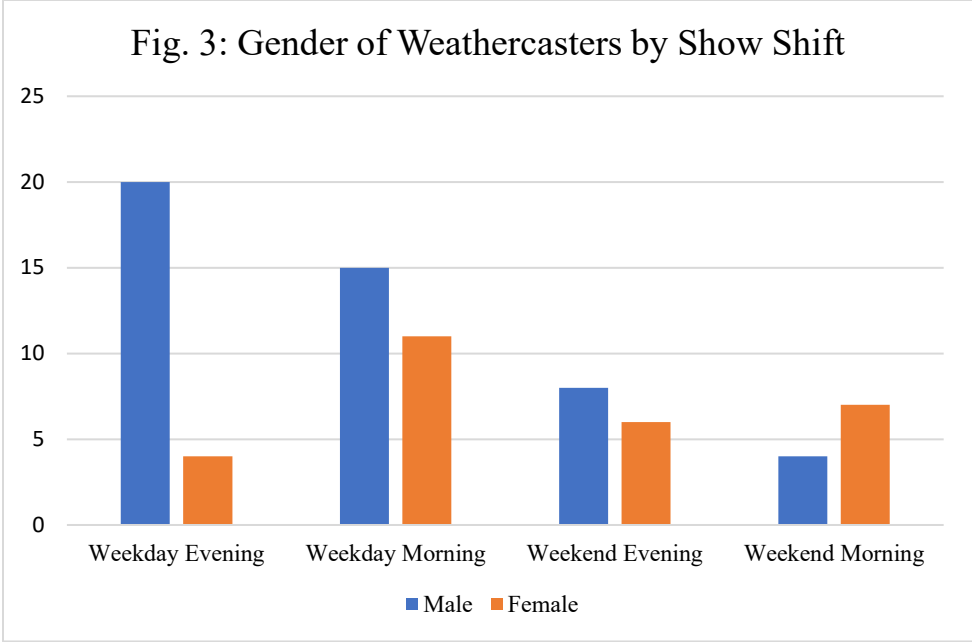## Fig. 1: Weathercasters by Gender
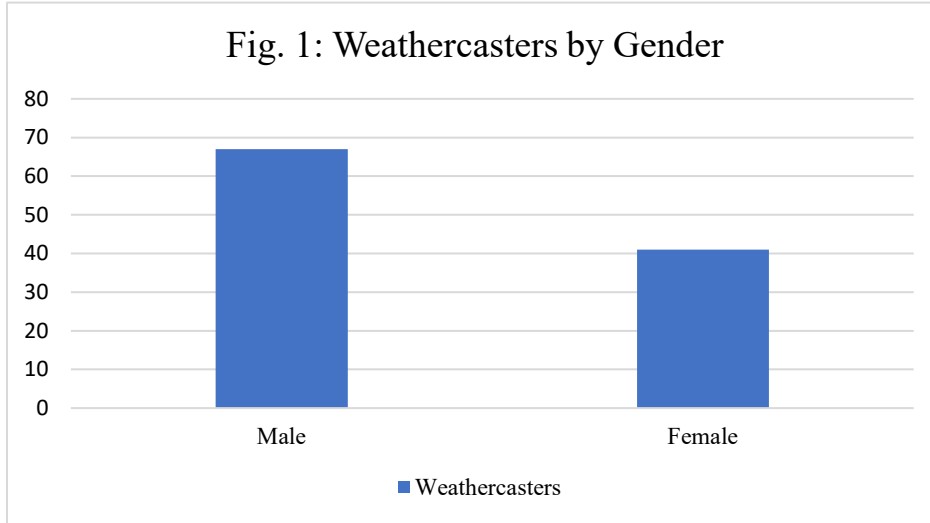
The second research question asked whether geographic regions are correlated to the representation and positions of female and minorities weathercasters. Results also showed that more equal numbers of male and female weathercasters are employed in the larger markets (New York, Philadelphia), while the smaller markets employed more male weathercasters than female weathercasters. The market by market comparison, as depicted in Fig. 2, shows the correlation of larger markets and better female representation. Philadelphia is the only market with an equal ratio of female to male weathercasters (9:9) and none of the markets employ more female weathercasters than

male weathercasters.

Fig. 2: Weathercasters by Gender in Sample Markets
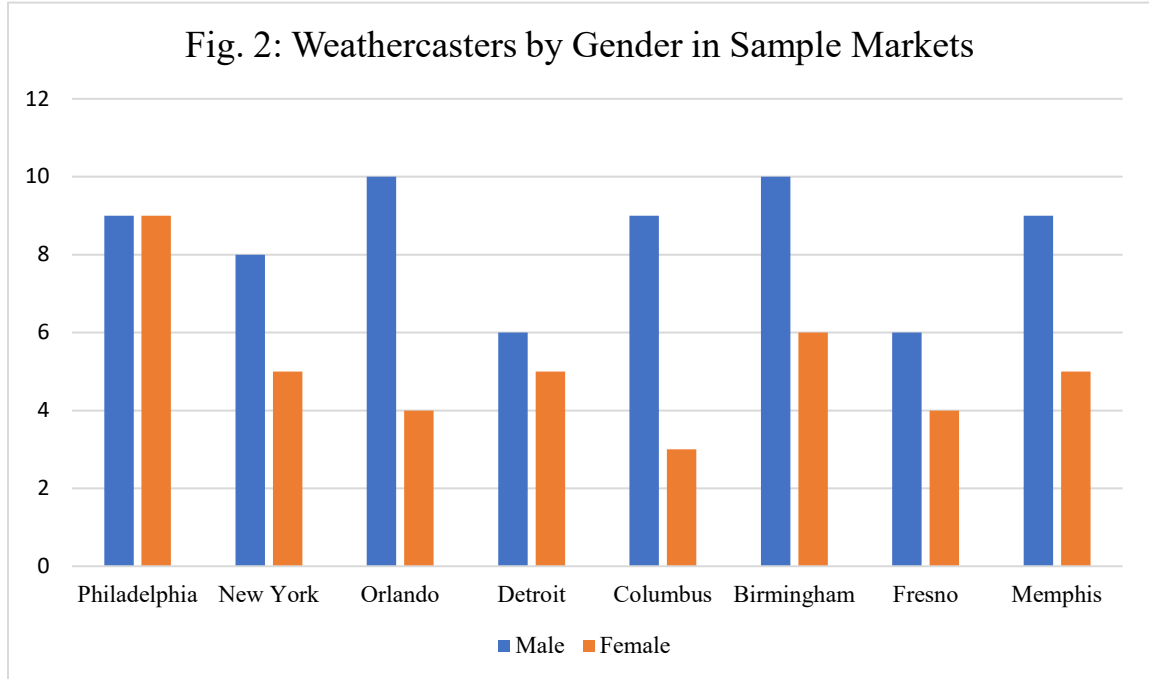
The third research question asked whether female and minority individuals are equally represented in the "Chief Meteorologist" position and other desirable positions. In total, male weathercasters held more of the desirable show shift positions (Weekday Evening, Weekday morning). One of the shifts, Weekend Morning, is the only shift that features more female than male weathercasters, with all of the other shifts are more commonly given to male weathercasters. The ratio of male to female weathercasters represented on the Weekend Evenings shift is 20:4, the Weekend Morning is 15:11, the Weekend Evening is 8:6, and the Weekend Morning is 4:7 (Fig. 3).

Fig. 3: Gender of Weathercasters by Show Shift

Show Shift	Male	Female
Weekday Evening	20	4
Weekday Morning	15	11
Weekend Evening	8	6
Weekend Morning	4	7

Now, the fourth research question asked whether a weathercaster's gender plays a role the number of Twitter followers. Male weathercasters had 64% of the total twitter followers. Women had 36% of the total twitter followers (Fig. 4).

Fig. 4: Total Social Media Followers by Gender (%)

■ Male ■ Female
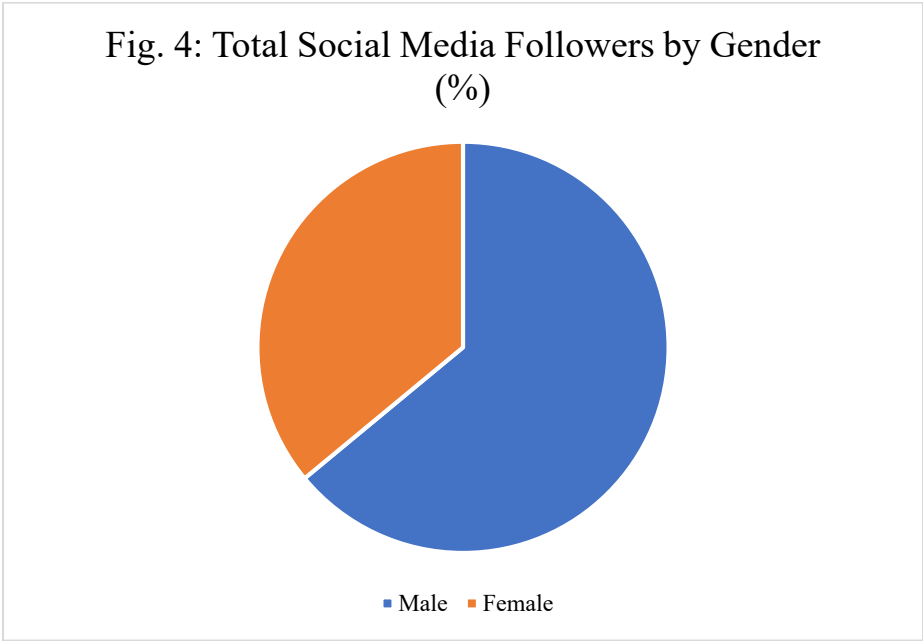
The fifth research question asked whether certification levels (Certificate of Broadcast Meteorology from the AMS, the AMS Television Seal of Approval) correlate to Chief Meteorologist positions for female and minority weathercasters. The position of "Chief Meteorologist" is overwhelmingly held by men, as represented in Figure 5. However, the Philadelphia market had only female Chief Meteorologists, and the Fresno market had an equal number of male and female Chief positions. The Memphis and Orlando markets had only male Chief Meteorologists.

Fig. 5: Chief Meteorologists per Sample Markets
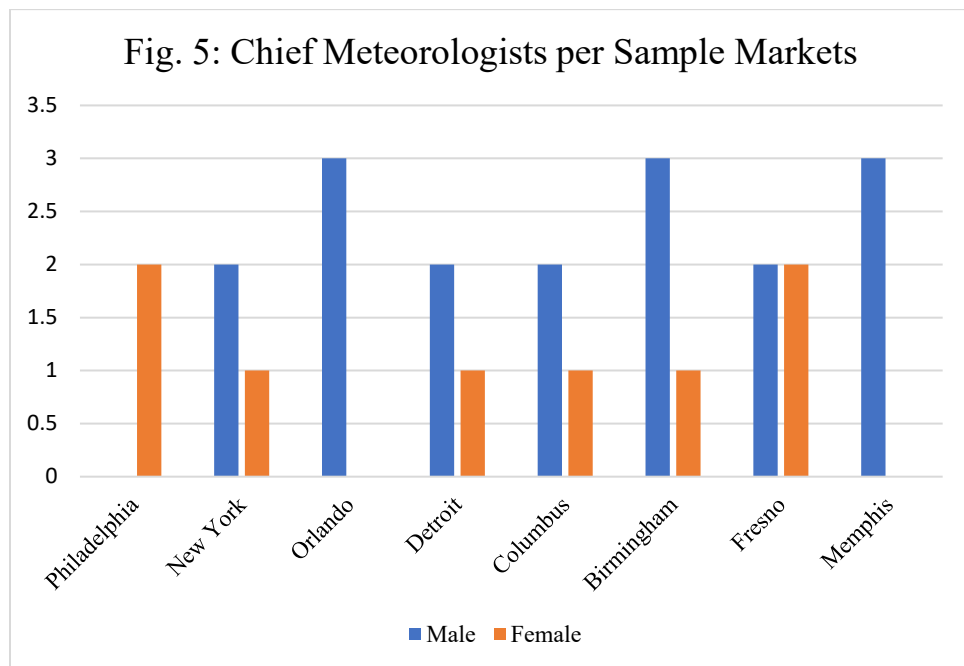
In total, the ratio of male Chief Meteorologists to female Chief Meteorologists is 17:8, meaning that 68% of the Chief Meteorologists included in this study are male, and 32% of the Chief Meteorologists are female.

A majority of the Chief Meteorologists from this study hold one or more certificates that indicate high achievement in the meteorological industry, either the Certificate of Broadcast Meteorology (CBM) from the American Meteorological Society, or the AMS Television Seal of Approval. As a total, the Chief Meteorologists held 9

AMS seals and 10 CBM certificates among the group (Fig. 6). Three of the 25 Chief

Meteorologists did not have an AMS seal, the CBM, or the National Weather Association

seal. Two of the three Chief Meteorologists were female, leaving only one male without a

distinction.

Fig. 6: Chief Meteorologist Certificate Types

■ CBM   ■ AMS Seal   ■ None
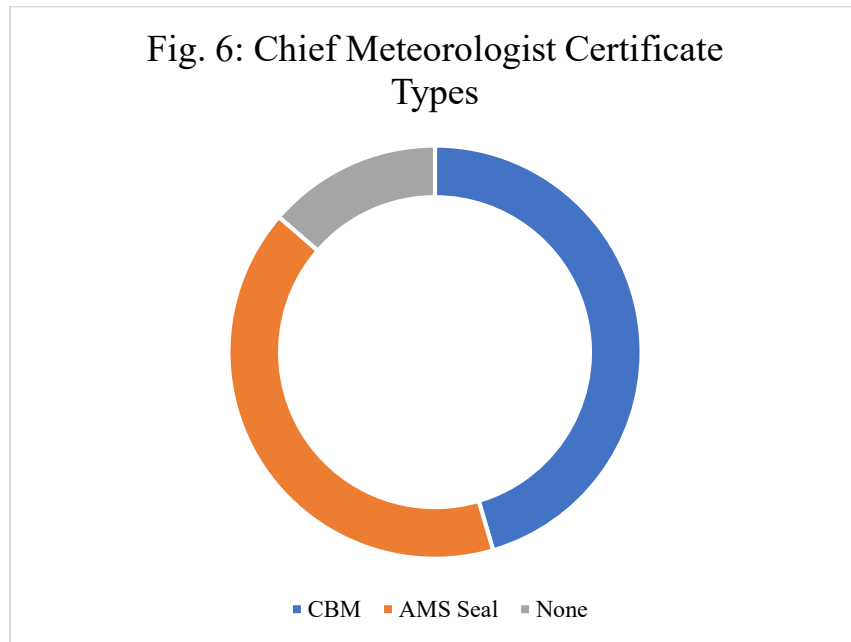
There were only two minority Chief Meteorologists represented, one Black

meteorologist, Janice Huff (NBC New York City) and one Hispanic, Ron Childers (NBC

Memphis). Overall, the minority Chief Meteorologists represented 8% of the total Chief

Meteorologists and Whites represented 92%.

Finally, the sixth research question asked if minority groups (Black, Hispanic,

Asian-Pacific Islanders and Native American) are underrepresented within the same

television markets. Out of the total 108 weathercasters analyzed, 89 were White, 11 were

Black, 5 were Hispanic, and 0 were Asian-Pacific Islander or Native American (Fig. 7).

The percentage of total White weathercasters equaled 82%, Blacks equaled 10%, and

Hispanics equaled 5%, with the remaining percentage given to the unknown races of seven individual weathercasters.

Fig. 7: Weathercasters by Race in Sample Markets
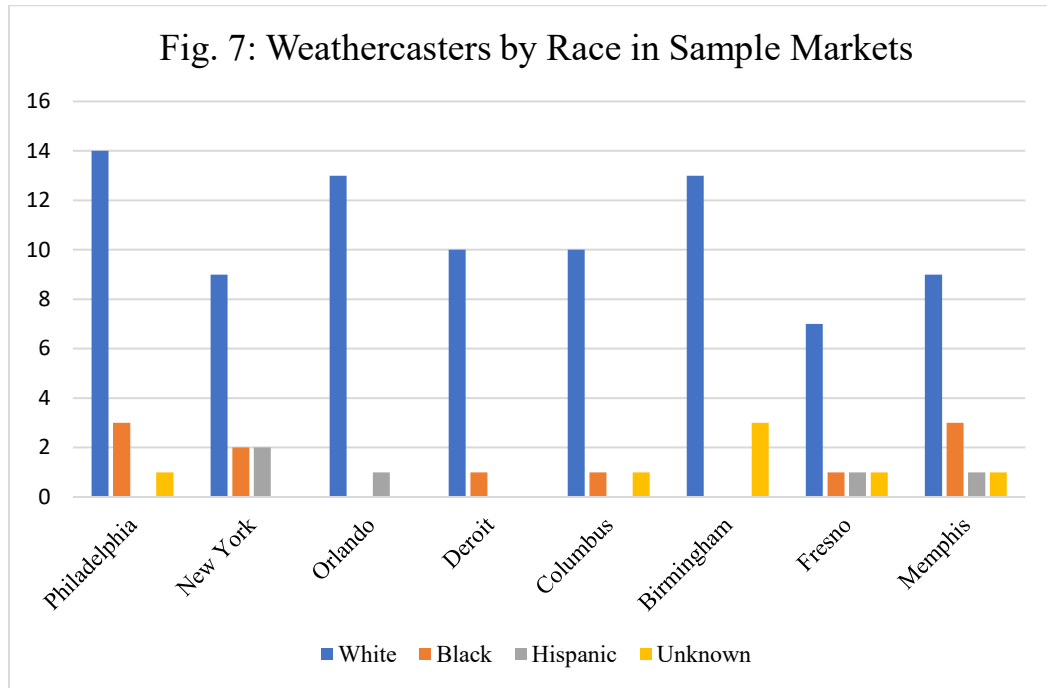
Discussion

Looking at the forecast based on this study, the industry of weathercasting shows partly cloudy skies ahead. This study indicates some general improvement in numbers of female and minority weathercasters that were historically not very high, which suggests that a brighter future is in store for the forecast. However, there is still a troubling lack of equal representation between the genders and races of weathercasters. Thus, some improvements need to be made to clear the cloudy skies for those who are underrepresented.

Genders within Weathercasting

While not surprising, the most interesting finding of this study is a general dominance of white males in weathercasting. The recent "Me Too" movement was

centralized by women in the media industry, which includes broadcast weathercasters. This study is just a few years into the "Me Too" era, meaning that even though white males dominate the local markets today, we may see a general rise in equality for the underrepresented female and minority groups. Female experiences in becoming equally represented in weathercasting would be a noteworthy, qualitative companion study to this research. In this particular study, the percentage of female weathercasters is higher than averages in previous analyses of the genders in weathercasting. During a prior study, Cranford (2018) collected data on all 210 U.S. television markets and indicated a 4% increase towards equality between the genders. Furthermore, the percentages in this study are consistent with the general upward trend for female representation in weathercasting. There is a greater number of women in the field than in earlier years of television meteorology. However, the number of female weathercasters is low compared to the number of male weathercasters, which is consistent with the findings of this study.

Another interesting finding in this study is the impact of geographic regions in determining the location and number of female and minority weathercasters across the United States. In the larger markets analyzed for this study, Philadelphia and New York, there were more female weathercasters compared to the smaller markets. There were still high numbers of males in these markets, but the female population was equal to, or close behind the male populations. Larger market sizes are based on population of the broadcast television reach and the population of cities. This population factor helps explain why the larger markets are more gender diverse. In top tier markets the weather teams are more diverse in gender because they broadcast to a more diverse audience. Thus, in larger markets, it appears that there is more upward mobility for female

weathercasters whereas in lower-level markets that are confined to less diverse audiences, there appear to be fewer female weathercasters. If female weathercasters want better opportunities to be seen in the industry, working in a large market is best solution to counteract underrepresentation.

The smaller markets, Birmingham and Memphis, lacked a representation of women in general. There is a high discrepancy between the show shifts that male and female weathercasters appear on as well. More men appear on the weekday/evening hours and more women appear on the weekend/morning hours. This finding is consistent with the stereotypes addressed by previous literature. Because women are often perceived by audiences as energetic and peppier, women are placed on the early morning shows to get higher viewer engagement. Because men are considered more level-headed and trustworthy, they are placed on the evening shows, when severe weather is more likely to occur. Another reason that may explain the higher number of women on the weekend shows is if the female weathercaster plays the traditional role of child care-taker within her family organization. It may be easier for a working mother with children (if she is single or her partner works during the week) to work her hours on a weekend, when friend or familial help may be more available for child-care. This study did not collect data on the number of weathercasters with children, but in review of the biographies, many female weathercasters did state information about their children in their bios. However, many of the male weathercasters also mentioned their children in their bios.

The main reason for researching the number of Twitter followers by weathercaster was to see if the physical features of gender impacted social media presence. Based on previous notions, it could be assumed that women will have more

followers if they are considered more physically attractive by television audiences. However, that was not the finding in this study, with male weathercasters receiving a higher percentage of total Twitter followers. Compared to the percentages of total male to female weathercasters (62% to 38%), the percentage of twitter followers for male weathercasters was 64% and the percentage of twitter followers for female weathercasters was 36%. Essentially, the total number of genders is similar to the number of twitter followers. To calculate these percentages, the median was used rather than the mean for to ensure a more accurate picture of current gender and racial trends within the local broadcast television weather industry. For example, in the local New York City TV market, Sam Champion previously held the position of meteorologist for ABC's popular Good Morning America show. With that position, he gained national media recognition and popularity that other weathercasters could not within local forecasting positions.

There are also discrepancies in the number of Twitter followers between male and female Chief Meteorologists. The Chief Meteorologist is the most qualified or tenured weathercaster, which is likely why they generally have more Twitter followers than their fellow team weathercasters. Nevertheless, the data shows fluctuation. In some cases, when there are female Chief Meteorologists, men on the same team will have more Twitter followers. Vice-Versa, it is much easier for women who are considered 'attractive' to gain social media following than most, meaning that on many stations in many markets, there are 'attractive' women who yield more followers than their male Chief Meteorologist. Thus, based on this study, Twitter is not an accurate reflection of the way audiences interact with the weathercasting population.

Although more female weathercasters are appearing in markets overall, this trend does not reflect the inequality in women who hold Chief Meteorologist positions. In 32 markets, only 5 Chief Meteorologists were female. Traditionally, the Chief Meteorologist is either the most qualified weathercaster based on certification and training, or the Chief is a long-term, well-respected weather authority that local viewers in the area trust. The Chief Meteorologist usually receives the coveted 10:00 PM show position, but often forecasts on the 5:00 or 6:00 PM show as well. Largely, the two factors that determine whether a weathercaster receives the Chief Meteorologist position is trust/longevity with local viewers, and qualifications. However, a few examples in this study prove otherwise. For example, one female weathercaster in New York, Amy Freeze (ABC), holds all three of the major certifications in the industry – the CBM, the AMS seal, and the NWA seal as well. Yet, she is a weekend weathercaster. Males with less certifications on her weather team occupy the weekend evening shift, weekday morning, and Chief Meteorologist position. Similarly, two female weathercasters at CBS in New York who are the only weathercasters at their station to hold certifications do not hold the Chief Meteorologist position or any weekday positions. The two male weathercasters at CBS in New York forecast for the weekdays, without certifications. But, the two male weathercasters may have longevity or another factor to their credentials that would not be evident in their twitter profile or station website biographies.

Race within Weathercasting

The geographic location of markets directly correlates with race in this study. As with gender, there are more diverse weathercasters in large markets which reflect more diverse audiences, such as New York and Philadelphia. New York and Philadelphia are

both in the top 10 market sector because of their larger population. A larger population would naturally suggest greater diversity. Yet, in smaller markets, less diversity exists. For example, one network in Birmingham, Alabama employs six weathercasters – five of the six are White males. In general, this study proved the lack of diversity within the broadcast meteorology field. Bacon-Bercey's study (1978) explained that in order for Black meteorologists to reach parity in the United States, Blacks would eventually need to makeup 11% of the meteorologist population. When comparing the 11% from 1978 study to the 10% of Black weathercasters represented in this study, the numbers of Black weathercasters are still behind in equal representation. No existing literature attempts to explain why Black weathercasters are not as prominent in the broadcast industry, which is a topic recommended for further study.

Another interesting lack of diversity was shown with Hispanic weathercasters. The data collected showed only five Hispanic weathercasters out of 108 weathercasters. This number of Hispanic weathercasters represents only 5% of the racial makeup within this study. Again, based on geographic location, the Orlando market would be the market with the highest potential for Hispanic weathercasters, as Florida is home to many Hispanic individuals and families due to proximity of the Latin American geographic region. Yet, there was only one Hispanic weathercaster in all of the markets examined in the Orlando media market. This Hispanic weathercaster was also female, but her role is a "digital meteorologist". She does not appear regularly on a television show for the station. Rather, she complies forecasts and creates weather content specifically for Facebook and other social media platforms. She uses both the English language and

Spanish in her digital content, reaching a wide audience, but not an audience who gets to watch her on television.

A potential reason for the lack of Hispanic weathercasters in this study is the popularity of Hispanic broadcast television stations like Telemundo and Univision. Telemundo and Univision are media companies that entertain and inform U.S Hispanic audiences with news, sports, and other content that includes daily weather forecasts in Spanish. According to a press release by Univision in 2019, the Univision's weeknight evening newscast, "Noticiero Univision" finished the July 2019 Sweeps period as the No. 1 evening news program on broadcast television with more Hispanic viewers than the combined audience of "ABC World News Tonight", "CBS Evening News" and "NBC Nightly News" among adults 18-49 years of age. Moreover, Univision Networks delivered 57 of the top 100 general television programs among Bilingual Hispanic Adults 18-49, the most of any network, regardless of language. Univision alone operates 65 television stations in major U.S. Hispanic markets. There are only 210 markets overall in the U.S., so Univision has a large reach to the Hispanic audience of weather forecast viewers. Meteorologists and weathercasters of Latin heritage may prefer to work in these markets that are successful in the media industry.

From the sample markets of this study, there was a concerning and complete absence of Asian-Pacific Islander weathercasters in the data. The lack of Asian-Pacific Islander weathercasters may be partially attributed to the geographic location of the randomly selected markets. The majority of the markets, with the exception of Fresno, were in the eastern half of the United States. Nearly half (45%) of U.S. Asians live in the West, with about one-third in California alone (Lopez, et al. 2017). Still, the New York

City broadcast market houses all of the nine Chinatowns within the New York metropolitan area. This area contains the largest ethnic Chinese population outside of Asia (United States Census Bureau 2017). Another potential reason why an absence of Asian weathercaster was present in this study is due to the success frames of Asian Americans within the Asian Achievement Paradox (AAP). The AAP is the generalized reasoning behind an A- grade being coined the Asian 'F'. The AAP explains that because of a complicated history in the United States, Asian Americans felt that the only way to find success in the United States where other minorities had failed was to be better educated. This mentality of early Asian American immigrants heavily encouraged Asian American children into a STEM field: Science, Technology, Engineering, and Math. The AAP also includes fields of medicine and law, which consequently started to funnel this racial group to desiring a select few occupations. Fields in the arts and social sciences, such as broadcast journalism, were typically ignored. Meteorology is a STEM field, but when a meteorologist works on-air for a broadcasting network, science of forecasting must also become an art. Though there are some Asian weathercasters in the U.S. local broadcast television industry, the number is disproportionally low, and is in part due to the distaste for careers in the "arts" among this minority. Unfortunately, this study reflects that disproportionally low number of Asian weathercasters across the U.S, and it is an alarming fact.

For this study, no data on Native Americans was found. The biographies and photographs of the weathercasters are often generalized, so a weathercaster that may have a percentage of Native American ancestry that isn't reflected in their biography. Similar to Hispanics, Native Americans have also worked to develop their own media outlets in

an effort to retain their culture rather than working in mainstream media (Brooks, et al. 2003). The Native American Journalists Associate is one example of a group within the race that teaches, trains, and emphasizes better journalism by Native Americans and for Native Americans.

One limitation of this analysis is the locations of the randomly selected markets. Out of all the television markets included in this study, one market was selected from the west coast - Fresno, California. All of the other markets randomly selected are in the Midwest, south or east coast areas of the United States. Consequently, a complete picture of the current makeup of U.S. weathercasters could not be identified for this study. Rather, this study uses totals and medians to understand patterns that may apply broadly to the industry. Though there was a simple comparison of geographic regions, there was not enough information from the eight random sample markets to potentially correlate every single market or region.

A second limitation in this study is the potential for error with the biographies from the broadcast station websites. Because the biographies on websites often contain broad information, some information for this study could not be collected. Some stations may not update their website frequently with changes to weathercasters' positions or may have biased information included. For instance, weathercasters may choose to leave out their particular show shift because it is not prominent, or they did not receive a meteorology degree. However, much of this limitation was resolved by double-checking weathercasters with their online Twitter profiles, which shows the dates of recent activity and acts as a better indicator of the weathercaster's current position within the industry.

The certifications of weathercasters were verified as well by using lists provided by the AMS, not the individual biographies.

The totals and medians from this study show that while genders are better represented equally in the local broadcast television weather industry, female weathercasters are still not as well-represented in Chief Meteorology or weekday positions as male weathercasters. An overall lack of racial diversity within the industry is concerning as well.

Recommendations for further investigation on this topic would include research-based explanations for the lack of minority weathercasters, especially Black weathercasters, as well as how to recruit and welcome more diverse weathercasters into the industry. A long-term study of Nielsen ratings might also provide greater insight into why certain genders and minorities are placed on particular show shifts. By comparing ratings with educational levels and the longevity of weathercasters at a station, more explanations of the lack of gender and racial diversity in weathercasting may arise. The pay salaries of genders and races in weathercasters may provide additional information.

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