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„Dissecting the Pay Gap: Gender and Other Influences on Actors' Salaries in the US Film Industry“

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Xheraldina Gërvalla

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Zusammenfassung

Das anhaltende Lohngefälle zwischen den Geschlechtern in verschiedenen Branchen wurde bereits eingehend untersucht, doch die Filmindustrie sticht durch ihre erheblichen Unterschiede bei der Bezahlung von Männern und Frauen hervor, insbesondere in Hollywood. Dieses Thema ist wegen des weitreichenden Einflusses der Filmindustrie auf kulturelle und gesellschaftliche Einstellungen von entscheidender Bedeutung. Der begrenzte Zugang zu Informationen über die Gehälter von Schauspielern hat es schwierig gemacht, dieses Lohngefälle vollständig zu verstehen und zu beseitigen. In meiner Dissertation untersuche ich das Ausmaß des geschlechtsspezifischen Lohngefälles bei Spitzenschauspielern und ermittle die wichtigsten Faktoren, die dazu beitragen. Die Analyse von zwei Datensätzen zeigt, dass das Geschlecht ein entscheidenderer Faktor bei Gehaltsentscheidungen ist als andere üblicherweise berücksichtigte Faktoren. Die Ergebnisse unterstreichen, wie wichtig es ist, die Vergütungspraktiken in Hollywood neu zu bewerten, um geschlechtsspezifische Gehaltsunterschiede zu beseitigen.

Abstract

The persistent gender wage gap across industries has been widely studied, yet the film industry stands out for its significant differences in how men and women are paid, especially in Hollywood. This issue is critical because of the film industry's broad impact on cultural and societal attitudes. Limited access to information about actors' salaries has made it difficult to fully understand and address this wage gap. My thesis explores the extent of the gender wage gap among top-performing actors and identifies the main factors that contribute to it. Analyzing two datasets, the research uncovers that gender is a more decisive factor in salary decisions than other commonly considered factors. The results underscore the importance of re-evaluating payment practices in Hollywood to address gender-based pay differences.

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Introduction

The discourse on gender disparities in remuneration has garnered significant attention over the past decades, manifesting across various professional realms, yet few are as conspicuous and publicly scrutinized as the film industry. This research aims to dissect the multifaceted nature of the gender wage gap in Hollywood, scrutinizing its extent, evolution, and the underlying determinants that perpetuate its existence.

Primary Research Question:

-What is the extent of the gender pay gap in actors' salaries in the US film industry?

Secondary Research Questions:

-How do factors such as age, experience, race, and awards impact actors' salaries?

-Is the gender pay gap consistent across different age groups and experience levels in the US film industry?

By anchoring the analysis in the context of top-performer actors within the U.S. film industry, this thesis seeks to illuminate the idiosyncratic challenges and systemic inequities that contribute to wage discrepancies between male and female actors. Historically, the film industry has served as a microcosm of broader societal trends, mirroring the gender wage gap observed in numerous other sectors. Blau and Kahn's seminal work on the gender wage gap provides a foundational understanding of its extent and the multifactorial reasons contributing to its persistence, including occupational segregation, labor market discrimination, and variance in human capital. Applying these lenses to Hollywood, we confront a domain where compensation ostensibly reflects market-driven demand yet is mired by opaque negotiation practices and the nebulous valuation of star power. In the luminous yet unforgiving world of Hollywood, the gender wage gap remains a stark reality, often overshadowed by the industry's glamour. The unsettling account from Julia Deply, who was reported by Variety during the Zurich Film Festival to have earned a fraction of her male co-star's salary, casts a long shadow on the industry's compensation practices. This instance is emblematic of a broader systemic issue that transcends individual negotiations, reflecting deep-rooted industry norms that perpetuate inequality. Further compounding the issue is the industry's ageist undercurrent, succinctly articulated by Jennifer Jason Leigh: "It's the nature of the business. People equate success with youth." Broderick et al. (2014). Her observation underscores the dual hurdles faced by female

actors - wage and age discrimination - both of which are exacerbated when interlinked. This thesis aims to unravel these complex threads by examining how such disparities are quantified and rationalized, pulling back the curtain on an industry that, while creating narratives of fantasy, is itself ensnared by the harsh realities of gender-based economic inequity. Through a blend of quantitative data and qualitative insights, the following pages will explore the magnitude, determinants, and implications of the persistent pay gap between male and female top-performers in the U.S. film industry. In an industry where celebrity culture is both a commodity and a measure of influence, the disparity in remuneration between male and female movie stars is not just a matter of financial inequity but a reflection of deeper societal narratives. Hollywood, a dominant force in mass culture, not only mirrors but also molds societal views, thus making the persistent gender wage gap a significant cultural concern. Research by Pater and Scott (2014) demonstrates a stark contrast in earning trajectories with age between genders, highlighting systemic biases. Taylor Milana (2019) further quantifies this disparity, illustrating that despite women's proven critical success, they earn substantially less than their male counterparts and have less financial backing. This wage gap is not merely a reflection of individual industry practices but indicative of broader societal valuations of gendered work. The pressing need to address and ameliorate this gap is underscored by its potential to reshape cultural perceptions and contribute to a more equitable valuation of women's contributions both within and beyond Hollywood. Such evidence provides compelling justification for an in-depth exploration in this thesis of the gender wage gap in an industry that has a profound impact on societal norms and values. In this thesis, the determinants of the gender pay gap will be meticulously examined, with a particular emphasis on gender and age. To achieve a comprehensive understanding, a dual of quantitative and qualitative approach will be employed: a critical review of the existing literature and econometric analysis. This analysis will be conducted on two distinct datasets—one encompassing yearly income, gender, experience, and age – collected from Forbes 100 through the years of 2005 to 2020, and another containing detailed records of salaries per movie, budget per movie, gender, age, experience, awards and race – collected from IMDb through the 60s to 2025. By applying regression techniques to these datasets, the research aims to untangle and illuminate the impact of each variable on actors' incomes and salaries over

time, providing concrete insights into the evolution of the pay gap within the film industry. The methodology involves a comprehensive analysis using both Ordinary Least Squares (OLS) and Fixed Effects (FE) regression models to examine the determinants of actors' salaries, focusing on gender disparities. The hypothesis for the study is that female actors earn significantly less than their male counterparts, even after controlling for factors such as age, experience, race, and awards. This analytical journey will not only quantify the extent of the disparity but also highlight the nuanced interplay between an actor's gender, the arc of their career, and their earning potential. Through this process, the thesis will contribute to a deeper understanding of the economic forces at play in the gender wage gap in Hollywood, setting the stage for informed discussions and potential industry reform.

Literature Review

The decline of the gender wage gap in the United States was significant between 1980 and 1989, with this trend of convergence proceeding at a more modest pace until 2010. Examination of PSID microdata reveals that advancements in women's education, professional experience, occupation, and parity in union representation were crucial contributors to this narrowing gap. By 2010, the median earnings of women working full-time were 81% of their male counterparts' median weekly earnings (Blau & Kahn, 2017). Women frequently occupy different job roles, often at lower organizational levels, resulting in lower compensation than men (UN Development Programme, 2009; U.S. Department of Labor, 2011). Claudia Goldin's investigation using data from the LEHD-2000 Census indicates that from 1995 to 2008, the gender earnings gap widened with age but remained consistent across years. The gap expanded notably in the 15 years post-education, especially for college-educated individuals, those in certain industries, and ever-married women (Goldin et al., 2017). Over 40 percent of the growing earnings gap can be attributed to men moving into higher-paying positions, while about 60 percent is due to women's lesser ability to progress earnings within their companies. The literature on the gender wage gap varies widely in its estimates of the gap's size, indicating a lack of consensus on its precise extent. The case of Hollywood's leading actors presents a unique context for studying this gap since productivity factors can be excluded (Pater et al.,

2014). Top male and female movie stars typically have similar levels of work experience and time investment in film projects. Additionally, the likelihood of gender disparities in salary negotiations is minimal since these stars are often represented by skilled agents and managers in deal-making (Vogel, 2007). In Hollywood, entrenched stereotypes and invisible barriers—often referred to as the 'celluloid ceiling'—continue to limit women's roles in creative capacities. Jennifer Lawrence has recently used her media presence to highlight the ongoing issue of the gender pay gap. Berg discusses the unequal compensation of female stars in the less glamorous aspects of Hollywood (Berg, 2015). In 2015, Lawrence earned $52 million from her roles in major films like 'The Hunger Games' and 'Silver Linings Playbook.' However, this figure pales in comparison to the $80 million earned by Robert Downey Jr., the highest-paid actor at that time. Lawrence, among other actresses, has previously suggested that the pay disparity might be due to women not negotiating as aggressively as their male counterparts for their salaries. However, this rationale doesn't seem to fully explain the widespread wage gap experienced by many actresses in the industry (Pires, 2017). Whereas a study examining the impact of network closure on women discovered that in tightly knit projects, women often face a "closure penalty." This occurs because the connections women form, often with others of the same gender, tend to be with individuals of lower status, unlike men who typically form ties with higher-status individuals. Women, being "unbound" by such networks, gain advantages from diverse environments as they have the freedom to utilize these diverse connections. Unlike men, who often benefit from internal sponsorship within networks, women usually lack such support. This absence of internal backing compels women to be more deliberate and tactical in their decision-making processes (Lutter, 2015). Negotiation and managerial policies might have an underlying effect to the gender pay gap as well. In Hollywood, the process of decision-making by management is especially complex due to the inherent ambiguity, risk, and uncertainty that characterize the early stages of developing new film and television projects. When it comes to financing, producing, marketing, and distributing these projects, there's often a reliance on short-term contracting. Lacking formal evaluation standards, those in charge frequently depend on tight-knit social networks and subjective assessments to judge the contributions of writers. Such an environment is ripe for decision-making influenced by stereotypes, particularly as there

are no established mechanisms to ensure unbiased choices by decision-makers. Moreover, many companies in the industry have yet to implement reforms in their personnel practices to reduce bias in assessing creative talent. This inertia is partly because Hollywood executives see cultural stereotypes about age, race, and gender as commercially viable, reflecting and capitalizing on societal norms. These stereotypes are not only ingrained in the industry's products and marketing tactics but also serve as informal guidelines in decisions regarding writers and other creative professionals (Bielby, 2009). The most lucrative 'above-the-line' roles such as acting, directing, writing, producing, and composing are often contract-based, while 'below-the-line' roles, which are typically unionized or hourly, include positions like camera assistants and makeup artists. Stephen Follows' 2014 study highlighted that out of 2,000 top-grossing U.S. films from 1994 to 2013, a mere 22% of production roles were filled by women, with men dominating 78% of these positions (Pires, 2017). Despite the stark data, Follows initially refrained from labeling the industry as "institutionally sexist," suggesting instead that there might be a lack of awareness of the gender imbalance. His findings also indicated that women constituted only 22% of film crews over the two decades studied. The highest representation of women was in the Costume and Wardrobe department (68.8% women), Casting (66.5% women), and Makeup (57.2% women). Contrastingly, in better-paid Camera/Electrical departments, women's representation plummeted to just 5.1% (Pires, 2017). Sociological research points to several factors that perpetuate workplace discrimination, such as the influence of stereotypes related to gender, race, and age on hiring decisions. These factors, coupled with Hollywood's focus on reputation, market demographics, and culturally influenced products, embed discrimination into standard industry practices (Bielby, 2009). Female directors often employ more women in principal roles and offer more positive representations of women compared to their male counterparts. Films directed by women are more likely to feature female leads and pass the Bechdel test. However, 'Black Panther' stands as an example that male directors can also significantly contribute to gender representation in film, showcasing women in key roles both on screen and behind the scenes, akin to female-directed projects. The commercial triumph of 'Black Panther' underscores the viability of diverse cinematic works in the American market. Nonetheless, films helmed by male directors continue to garner more substantial budgets, despite often featuring less gender

diversity both in their casts and crews (Kunsey, 2018). The stark gender disparity within the industry is further evidenced by the fact that among the next four highest-grossing live-action films directed by men, a scant 9% of vital off-screen roles were occupied by women. In 2019, women accounted for 20% of the major creative roles in the top 100 grossing films—a modest rise from 16% the previous year. This upward trend was mirrored, albeit slightly, in the top 250 grossing films, where the presence of women in these roles nudged from 20% to 21%. However, in the broader spectrum of the top 500 films, women's participation held steady at 23% (M. Lauzen, 2019). A notable pay disparity exists in the film industry, where female actors earn roughly 55% of their male counterparts' income. Men in the study were more likely to be employed in films with budgets that exceeded those of films featuring women by about 10%. Yet, the female actors in the study often outshone the men in key areas of critical acclaim (Milana, 2019). Age appears to be a demographic factor influencing earnings among movie stars, with signs pointing to age-related gender biases. For example, women typically begin their acting careers six years earlier than men and often achieve accolades at younger ages. Opportunities for older female actors are not only scarcer but also less prestigious compared to those for older male actors (Pater, Judge, Scott, 2014). Research indicates findings that align with a widespread trend in media: an aging female struggles to effectively promote products, whether it's lingerie, beauty products, or movies. This is evident in instances where older, famous women are featured in magazines, and their images are often digitally modified to make their 60-year-old appearance seem closer to that of someone aged 45 (Bazzini et al., 1997). The impact of attractiveness and age on career trajectories seems to be more pronounced for women, as exemplified by the younger average age of female Oscar winners compared to males (Markson & Taylor, 2000). The media often amplifies ageist and sexist stereotypes, particularly portraying older women more negatively than men. This bias can manifest in films where older women, if present, are ascribed undesirable characteristics. Films seem to propagate the notion that women's worth is tied to their youth and attractiveness by associating aging in women with adverse attributes (Bazzini et al., 1997). Female movie stars see a marked decline in average earnings per film after the age at which they peak, typically around 34. In contrast, male actors' earnings per film stabilize post-50, indicating a longevity in earning power not afforded to their

female peers (Pater, Judge, Scott, 2014). Another important discussion regarding the gender pay gap in actor's salaries in the US, is the minimum salaries that actors are provided and their or their managements skills to negotiate above it. When it comes to gender pay gap, we raise the question, of whether the hypothesis that men get paid more than women is due to the negotiation skills. For a high number of actors of the union of SAG-AFTRA, representation, including setting the minimum salary and negotiation is covered by them. SAG-AFTRA, which stands for the Screen Actors Guild-American Federation of Television and Radio Artists, is a labor union representing over 160,000 professionals working in the entertainment industry in the United States. The union negotiates and enforces contracts for its members, ensuring fair wages, working conditions, and benefits in various sectors of the entertainment industry, including film, television, radio, and digital media. Additionally, SAG-AFTRA provides its members with resources and support for professional development, health insurance, retirement benefits, and protection of their rights in the workplace. It also advocates for the interests of performers in legislative and policy matters affecting the entertainment industry. However, being an artist in the United States doesn't automatically grant you membership in SAG-AFTRA. Membership in SAG-AFTRA is voluntary, and there are specific eligibility requirements that artists must meet to join the union. Generally, to become a member of SAG-AFTRA, an artist needs to have worked on a project that falls under a SAG-AFTRA contract. This could include acting in a film, television show, commercial, or other media production that is produced under a SAG-AFTRA agreement. Once an artist has performed work covered by such a contract, they are eligible to apply for membership. In summary, while being an artist in the US provides opportunities to work in SAG-AFTRA-covered projects, actual membership in the union requires meeting specific eligibility criteria and going through the application process. When it comes to setting minimum salaries and negotiating, in the United States, minimum salaries for actors and actresses are typically established through collective bargaining agreements negotiated between entertainment industry labor unions, such as SAG-AFTRA, and employers, such as production companies, studios, and networks. These agreements outline the terms and conditions of employment, including minimum compensation rates, working hours, benefits, and other important provisions. Additionally, some states and municipalities may have their own

minimum wage laws that apply to all workers, including actors and actresses, regardless of whether they are covered by a union contract. However, in the entertainment industry, union-negotiated contracts typically establish higher minimum pay rates than the legal minimum wage. Overall, the minimum salary an actor or actress should receive in the US is largely determined by the terms of the collective bargaining agreements negotiated by their union and the employers in the entertainment industry (SAG-AFTRA, n.d.). In the study conducted by Nina Roussille on the ask gap in gender pay inequality, the analysis revealed that men tend to ask for higher salaries compared to women during job negotiations. While the specific percentage difference in salary requests between men and women may vary depending on the dataset and context, it's common to observe a substantial gap. Nina Roussille's study examined how a website feature change impacted gender disparities in salary negotiation outcomes within an online job platform. Initially, women tended to ask for lower salaries than men, resulting in a noticeable ask gap. However, following the reform, women began to request higher salaries, consequently reducing the ask gap. In contrast, men's asking behavior remained largely unchanged. The change specifically involved how candidates input their desired salary on the platform. Before the reform, candidates had to manually enter their desired salary in an empty text entry box when creating or updating their profiles. However, starting in mid-2018, the platform pre-filled this answer box with the median bid salary on the platform over the past 12 months, specific to the candidate's desired location, job title, and experience. This change aimed to provide candidates with more information and context regarding salary expectations. This shift in asking behavior contributed to a decrease in the bid gap, with companies offering higher salaries to women and slightly lower salaries to men. The extent of these changes varied across candidates' experience levels, with more experienced individuals experiencing more significant shifts in negotiation outcomes. Crucially, the study found no indication of women receiving fewer interview offers or facing penalties for demanding wages comparable to men. These findings underscore the positive impact of changes in women's asking behavior on salary negotiation outcomes, highlighting the potential for narrowing gender pay disparities without adverse consequences.

Forbes 100 - Model

Results will be presented from two comprehensive datasets. The first one is a collection of highest paid actors through the years, a list collected from Forbes 100 (www.forbes.com), which includes 278 samples, through the years 2005 – 2020, with variables of gender, yearly Income (USD), age, and experience calculated from movies made until that point of year. The model used is:

$$\ln Income_{it} = \beta_0 + \beta_1 Gender_i + \beta_2 Age_{it} + \beta_3 Experience_{it} + \epsilon_{it}$$

A linear regression model is incorporated to understand the relationship between income as a dependendet variable and gender, age and experience as independent variable. $\beta_1 Gender_i$ term captures the effect of gender on the natural logarithm of income. β_1 quantifies the change in the logged income attributed to the gender variable for individual i. Since gender is a binary variable (0 for male and 1 for female), β_1 represents the difference in logged income between genders, holding other factors constant. $\beta_2 Age_{it}$ term includes the age of the individual i at time t as a predictor. The dataset is augmented by incorporating information about their respective ages at the specified point in time. The coefficient β_2 measures the association between age and the logged income. It indicates how income tends to increase or decrease with age, perhaps due to factors like experience, seniority, or life cycle earnings patterns. β_3 Experience represents the experience level of the individual, which could be a continuous variable indicating the number of years in the industry or a specific field. In order to gauge the accumulated experience of actors, number of movies that each individual has participated in up until the current year, is tallied and compiled. The number of movies has been collected and the total number has been calculated from IMDb and Wikipedia. This comprehensive approach allows for a quantitative measurement of their career trajectory and provides valuable insights into the breadth of their professional experience in the film industry. The coefficient β_3 shows how changes in experience levels are associated with changes in logged income. Typically, more experience is expected to correlate with higher income, reflecting accumulated human capital and productivity. The error term ϵ_{it} for individual i at time t, captures all other factors that affect the logged income but are not included in the model. These could be unobserved characteristics or random shocks.

Forbes 100 - Data

I've collected pooled cross-sectional data on the annual income of the highest-paid actors listed in Forbes 100 from 2005 to 2020. The dataset comprises 278 observations, with 106 representing female actors and 172 representing male actors. Each entry includes information about the actor's gender, income in USD (millions), age at a specific point in time, and their accumulated experience, measured by the number of movies they've made up to that point. This dataset provides insights into the earnings, gender distribution, and career trajectories of the top actors over the specified years. Summary statistics for male observation, and summary statistics for female observation are shown on Table 1 and Table 2:

Variable	Mean	Std. Dev	Min	Max
Income	42.45	26.44	5.8	239
Age	44.66	8.79	17	72
Experience	38.08	40.09	1	180

Table 1. Summary Statistics for Male Subset - Forbes 100

Variable	Mean	Std. Dev	Min	Max
Income	19.35	11.72	1.5	56
Age	35.76	9.6	13	64
Experience	20.32	12.56	3	63

Table 2. Summary Statistics for Female Subset in - Forbes 100

The provided tables show summary statistics for a subset of data segmented by gender, with key metrics including mean, standard deviation, minimum, and maximum values for income, age, and experience.

Female Income Mean: $19.35 million. This is the average income for females in the dataset.

Male Income Mean: $42.45 million. This is the average income for males in the dataset.

The mean income for males is more than double that for females, suggesting a significant gender income gap in this particular dataset.

Female Income Standard Deviation: $11.72 million. This suggests that most female incomes vary by about $11.72 million above or below the mean income for females.

Male Income Standard Deviation: $26.44 million. This is higher than that for females, indicating a greater variability in male incomes compared to female incomes.

The ratio of women's to men's earnings implies that on average, females earn about 45.6% of what males earn. This means that there is a 54.4% wage gap between the genders, with females earning less than males on average. The larger standard deviation for males could be due to a variety of factors, including but not limited to more diverse job roles, a greater presence in high-paying industries, or other socioeconomic factors.

Additionally, I have computed the median and average income for both male and female actors, presenting the results in separate tables (Figure 1 for males and Figure 2 for females). This analysis offers a comparative view of the earnings distribution within each gender category across the specified years.

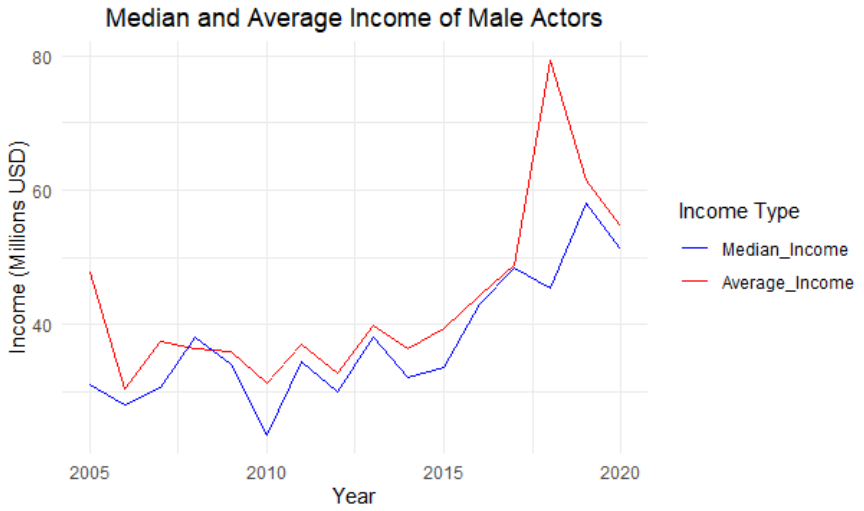

Figure 1. Median and Average Income of Male Actors – Forbes 100

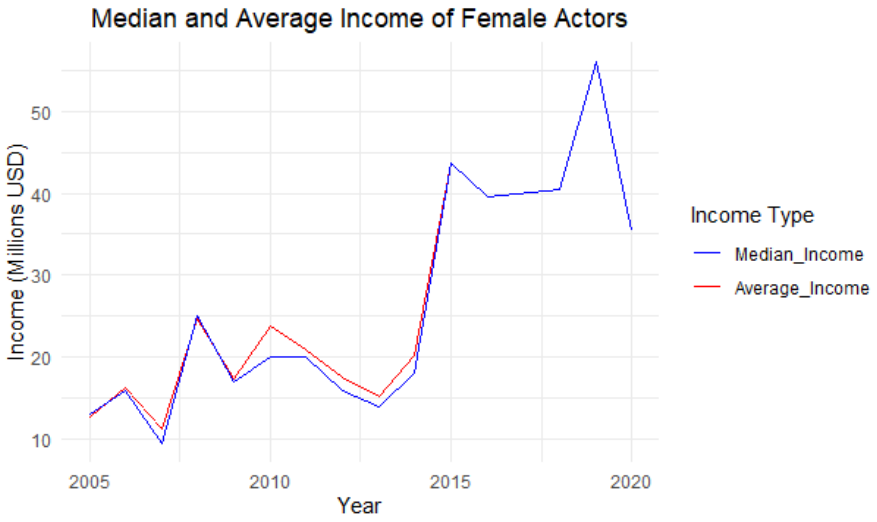

Figure 2. Median and Average Income of Female Actors – Forbes 100

The graphs provided display the median and average yearly incomes for male and female actors over a time span that covers approximately 15 years from the Forbes dataset. The blue line represents median income, and the red line represents average income for each gender. For both male and female actors, the average

income tends to be higher than the median income. This suggests that for both genders, there are actors with incomes that are much higher than what the majority earns, pulling the average up.

Both graphs show fluctuations over the years, with peaks and troughs. The difference between the median and average income appears to be more pronounced for male actors, particularly in years where the average income spikes. This implies that the highest-paid male actors have exceptionally large incomes compared to their peers. For female actors, while there is still a gap between the median and average incomes, it's not as pronounced, suggesting a slightly more equitable distribution of income among the top earners. However, the top female earners still earn less than their male counterparts. The trends show that while all actors' incomes can vary widely from year to year, top male actors have the potential to achieve higher earnings than female actors.

The consistent gap between median and average incomes across both genders underscores the presence of outliers with extremely high incomes in the acting profession. In summary, these graphs illustrate the distribution and disparity of incomes among actors and suggest that while both male and female actors experience variability in income, male actors have the potential for higher peak earnings.

Forbes 100 - Results

	Dependent Variable
	Income
Gender	-0.711***
	(0.076)
Age	0.012***
	(0.004)
Experience	0.001
	(0.001)
Constant	3.042***
	(0.178)
Observations	278
R2	0.369
Adjusted R2	0.362
Residual Std. Error	0.555 (df = 274)
F Statistic	53.425*** (df = 3; 274)
Note:	*p<0.1; **p<0.05; ***p<0.01

Table 3. Effect of Independent Variables on Income – Forbes 100

The result of each variable that tested the effects of each variable on the complete set of observation reveals that two out three independent variables are statistically significant. Being female is associated with a statistically significant decrease in income compared to being male, as indicated by the negative and highly significant coefficient for Gender. The negative value -0.711) suggests that, on average, being female is associated with a decrease of approximately 0.711 units in the logarithm of income compared to being male. We find that being female is associated with earning approximately 50.82% less than being male. The coefficient for Age is 0.012, indicating that for each additional year in age, the estimated logarithm of

income increases by approximately 0.0123 units. This suggests a positive association between age and income. Interestingly, experience did not show a significant effect on the dependent variable. This means that, within our dataset and model, we do not have enough evidence to say that experience influences the dependent variable income. From the literature, Blau and Kahn (2017) noted that women's advancements in education, professional experience, and occupation contributed significantly to narrowing the gender wage gap over time. This trend of increasing wages with age can be seen in Hollywood as well, where older actors, having built substantial portfolios and reputations, command higher salaries. Claudia Goldin's research further supports this by highlighting that the earnings gap widens with age, particularly in the 15 years following education. This suggests that as actors age, their value in the industry increases due to their experience and established reputation. However, the positive effect of age on salaries must also be considered alongside gender-specific challenges. Women often face a dual hurdle of wage and age discrimination. As noted by Pater, Judge, and Scott (2014), opportunities for older female actors are scarcer and less prestigious compared to their male counterparts.Our model explains approximately 36.9% of the variation in the dependent variable, which is a substantial amount but also indicates that there are other factors not included in the model that may account for the remaining variability. Our model is statistically valid and provides insight into the factors that influence income. The understanding of gender pay gap is looked deeper through studying salaries through a dataset collected from IMDb which is further explained below.

IMDb - Model

To conduct results from the IMDb dataset have been conducted by the following regression models:

A fixed effect model was employed was performed twice: once to see the effect on salaries and once to see the effect on adjusted salaries. This model allows us to control for unobserved heterogeneity by accounting for individual-specific characteristics that remain constant over time.

$$\ln(salary_{it}) = \beta_0 + \beta_1 Gender_i + \beta_2 Age_{it} + + \beta_3 AgeSquared_{it} + \beta_4 AdjustedBudget_{it} + \beta_5 Experience_{it} + \beta_6 AwardNomOnly_{it} + \beta_7 AwardsBoth_{it} + \beta_8 RaceBlack_{it} + \beta_9 RaceHispanic_{it} + \beta_{10} RaceAsian_{it} + \alpha_{it} + \epsilon_{it}$$

In the study, we aim to analyze the factors influencing actor salaries, particularly examining the impact of gender and other variables such as age, experience, awards, budget, and race. To achieve this, we utilized a fixed effects model, which is particularly suited for panel data where we have multiple observations over time for the same actors. Below, we discuss the motivations for employing a fixed effects model in our analysis. One of the primary advantages of the fixed effects model is its ability to control for unobserved heterogeneity. In the context of our dataset, there are actor-specific traits that significantly influence salaries but are not directly observable or measurable (e.g., innate talent, charisma, industry reputation). The fixed effects model emphasizes within-entity (within-actor) variation over time. This approach allows us to investigate how changes in independent variables affect salaries for the same actor over different periods.

$\ln salary_{it}$: The natural logarithm of the salary of actor i at time t. This transformation helps stabilize the variance and linearize the relationship between salary and the predictors. The salaries have been adjusted based on the Consumer Price Index (CPI) to account for inflation over time. This adjustment ensures that salaries is comparable across different years by reflecting the real purchasing power of the salaries in today's terms. The CPI data used for this adjustment was sourced from (bls.gov/cpi/data.htm).

$\beta_1 Gender_i$: A binary variable where 1 represents female and 0 represents male. It captures the average difference in salary due to gender, within individuals over time.

$\beta_2 Age_{it}$: The age of actor i at time t. It captures the effect of age on salary within individuals over time.

$\beta_3 Age\ Squared_{it}$: The square of the age of actor i at time t. This allows for a non-linear relationship between age and salary, capturing potential diminishing or increasing returns to age.

$\beta_4 AdjustedBudget_{it}$: The adjusted budget of the film (in millions) that actor iii is involved in at time ttt. This captures the impact of the film's budget on the actor's salary. The budget has been adjusted based on

the Consumer Price Index (CPI) to account for inflation over time. The CPI data used for this adjustment was sourced from (bls.gov/cpi/data.htm).

$\beta_5 Experience_{it}$: The number of years of experience of actor i at time t. Experience is calculated as the number of years between an actor's first and last movie. The observations are collected from each actor's listed movies on their personal page on IMDb.

$\beta_6 AwardsNomOnly_{it}$: A binary variable indicating whether actor i has been nominated for an Academy Award but has not won any awards at time t. The reference group for this variable is those with no nominations or awards. The data has been sourced from (awardsdatabase.oscars.org).

$\beta_7 AwardsBoth_{it}$: A binary variable indicating whether actor i has at least been once nominated and/or has won an Academy Awards at time t. The reference group for this variable is those with no nominations or awards. The data has been sourced from (awardsdatabase.oscars.org).

$\beta_8 RaceBlack_{it}, \beta_9 RaceHispanic_{it}, \beta_{10} RaceAsian_{it}$: are binary variables indicating whether individual *i* at time *t* is Black, Hispanic or Asian. The coefficient $\beta_8, \beta_9, \beta_{10}$, measures the impact of being Black, Hispanic or Asian on salary. The coefficients for Race Black, Race Hispanic, and Race Asian are compared to the reference category (Race White).

To further conduct the results from the IMDb the following log-linear regression model was performed twice: once to see the effect on salaries and once to see the effect on adjusted salaries::

$$\ln salary_{it} = \beta_0 + \beta_1 Gender_i + \beta_2 Age_{it} + + \beta_3 AgeSquared_{it} + \beta_4 AdjustedBudget_{it} + \beta_5 Experience_{it} + \beta_6 AwardNomOnly_{it} + \beta_7 AwardsBoth_{it} + \beta_8 RaceBlack_{it} + \beta_9 RaceHispanic_{it} + \beta_{10} RaceAsian_{it} + \epsilon_{it}$$

$\ln salary_{it}$: Represents the natural logarithm of *na* individuals' salary at time t. The model includes nine components: ln(salary): which is the dependent variable, indicating the salary of an individual at time t. The salaries have been adjusted based on the Consumer Price Index (CPI) to account for inflation over time. This adjustment ensures that salaries are comparable across different years by reflecting the real purchasing power of the salaries in today's terms. The CPI data used for this adjustment was sourced from

(bls.gov/cpi/data.htm).

$\beta_1 Gender_i$: Is a binary variable indicating the gender of the individual. It takes the value 1 for females and 0 for males. The coefficient β_1 captures the effect of being female on the logarithm of salary.

$\beta_2 Age_{it}$: The age of individual *i* at time *t*. The coefficient β_2 represents the linear effect of age on the logarithm of salary.

$\beta_3 Age\ Squared_{it}$: The squared age of individual *i* at time *t*. Including the squared term allows for capturing non-linear effects of age on salary, where β_3 indicates whether the effect of age diminishes or increases at higher ages.

$\beta_4 AdjustedBudget_{it}$: The inflation-adjusted budget of the movie in which individual *i* participated at time *t*. The coefficient β_4 measures the impact of the movie budget on the logarithm of salary.

$\beta_5 Experience_{it}$: The number of years of experience of actor i at time t. Experience is calculated as the number of years between an actor's first and last movie. The observations are collected from each actor's listed movies on their personal page on IMDb.

$\beta_6 AwardsNomOnly_{it}$: A binary variable indicating whether actor i has been nominated for an Academy Award but has not won any awards at time t. The reference group for this variable is those with no nominations or awards. The data has been sourced from (awardsdatabase.oscars.org).

$\beta_7 AwardsBoth_{it}$: A binary variable indicating whether actor i has at least been once nominated and/or has won an Academy Awards at time t. The reference group for this variable is those with no nominations or awards. The data has been sourced from (awardsdatabase.oscars.org).

$\beta_8 RaceBlack_{it}, \beta_9 RaceHispanic_{it}, \beta_{10} RaceAsian_{it}$: are binary variables indicating whether individual *i* at time *t* is Black, Hispanic or Asian. The coefficient $\beta_8, \beta_9, \beta_{10}$, measures the impact of being Black, Hispanic or Asian on salary. The coefficients for Race Black, Race Hispanic, and Race Asian are compared to the reference category (Race White).

IMDb - Data

To further research my topic, I've collected pooled cross-sectional data on the salaries of the highest-paid actors listed in IMDb (www.IMDb.com) from the 60s to 2024. The dataset comprises 1311 observations, with 558 representing female leading actors and 753 representing male leading actors. Each entry includes information about the actor's gender, salary in USD (millions), age at a specific point in time when they participated in the move and received the salary particularly, and the budget, collected from the website (www.boxofficemojo.com).

For the variable experience, the data has been collected from IMDb (www.IMDb.com), counting for experience the years between the first and last movie for each actor on the dataset. For the variable awards, the data has been collected data from the Award Databases - Oscars (www.oscars.org/oscars/awards-databases), which indicates and shows actors that have been nominated or have won an oscar in the best. The variable categorizes actors into three groups: those who have won an Oscar at least once, those who have been nominated at least once but have not won, and those who have neither been nominated nor won an Oscar. This classification allows the study to examine whether winning an Oscar, being nominated, or having no Oscar-related recognition impacts an actor's salary.

Both the salaries and budgets have been adjusted based on the Consumer Price Index (CPI) to account for inflation over time. The CPI data used for this adjustment was sourced from (bls.gov/cpi/data.htm).

To further conduct whether race has an affect on salaries, I have added the variable race, which shows the affect of being white, black, asian or hispanic on the overall salary for each actor.

Summary statistics for male observation, and summary statistics for female observation are shown on Table 4 and Table 5:

Variable	Mean	Std. Dev	Min	Max
Age	33.8	9.19	12	82
Budget (Million)	56	60.3	0.0614	365
Adjusted Budget (Million)	55.2	51.0	0.0614	335
Salary (Million)	5.70	7.35	0.005	75
Adjusted Salaries (Million)	5.50	6.22	0.0059	50.9
Experience (Years)	32.1	12.6	1	70
Race: Black	0.0215	0.145	0	1
Race: Hispanic	0.0896	0.286	0	1
Race: Asian	0.00896	0.0943	0	1
Race: White	0.880	0.325	0	1

Table 4. Summary Statistics for Female Subset - IMDb

Table 4 presents the summary statistics for the female subset of the IMDb dataset. The average age of female actors is 33.8 years, with a diverse range from 12 to 82 years. Film budgets vary significantly, with a mean of 56 million dollars and an adjusted mean of 55.2 million dollars, indicating substantial financial variability. Salaries for female actors average 5.70 million dollars, dropping slightly to 5.50 million dollars when adjusted for inflation, with a wide range from $5,000 to 75 million dollars. On average, female actors have 32.1 years of experience, ranging from 1 to 70 years. Racially, the dataset consists of 2.15% Black, 8.96% Hispanic, 0.896% Asian, and 88% White actors. These statistics highlight the diversity and disparities within the female subset.

Variable	Mean	Std. Dev	Min	Max
Age	42.1	12.3	8	84
Budget (Million)	73.5	67.7	1	400
Adjusted Budget (Million)	70.2	52.7	0.629	310
Salary (Million)	11.9	13.9	0.006	125
Adjusted Salaries (Million)	11.8	13	0.0081	144.2
Experience (Years)	38.8	12.8	3	68
Race: Black	0.109	0.312	0	1
Race: Hispanic	0	0	0	0
Race: Asian	0.00133	0.0364	0	1
Race: White	0.890	0.313	0	1

Table 5. Summary Statistics for Male Subset – IMDb

Table 5 presents the summary statistics for the male subset of the IMDb dataset. The average age of male actors is 42.1 years, ranging from 8 to 84 years. Film budgets for male actors average 73.5 million dollars, with an adjusted mean of 70.2 million dollars, showing significant financial variability. Male actors' salaries average 11.9 million dollars, slightly decreasing to 11.8 million dollars when adjusted, with a range from $6,000 to 125 million dollars. Male actors have an average of 38.8 years of experience, with a range from 3 to 68 years. The racial composition includes 10.9% Black, 0% Hispanic, 0.133% Asian, and 89% White actors, indicating a lack of Hispanic representation.

Comparing the summary statistics between female and male actors, male actors are, on average, older (42.1 years vs. 33.8 years) and have more years of experience (38.8 years vs. 32.1 years). Film budgets for male actors are generally higher, both in actual and adjusted terms. Salaries for male actors also surpass those of female actors, with a mean of 11.9 million dollars compared to 5.70 million dollars for females. Racially, there is a noticeable difference in representation, particularly with Hispanic actors, who are absent in the male subset but present in the female subset. These comparisons highlight significant

disparities in age, experience, financial backing, and racial representation between male and female actors in Hollywood.

Below, the distribution of salaries for both males and females is visualized in two separate graphs. This exploration aims to provide a visual understanding of the gender pay gap within the IMDb dataset. By examining the distribution of salaries, I seek to identify any disparities in earnings between genders and to illustrate the extent of the gap visually. These graphs will complement the numerical analysis by offering a clear depiction of the distribution patterns, allowing for a more comprehensive assessment of gender-based salary discrepancies. Through this visual representation, I aim to enhance the clarity and impact of my findings on gender disparities in the entertainment industry.

Figure 3 and Figure 4 shows the salaries distribution for both of genders:

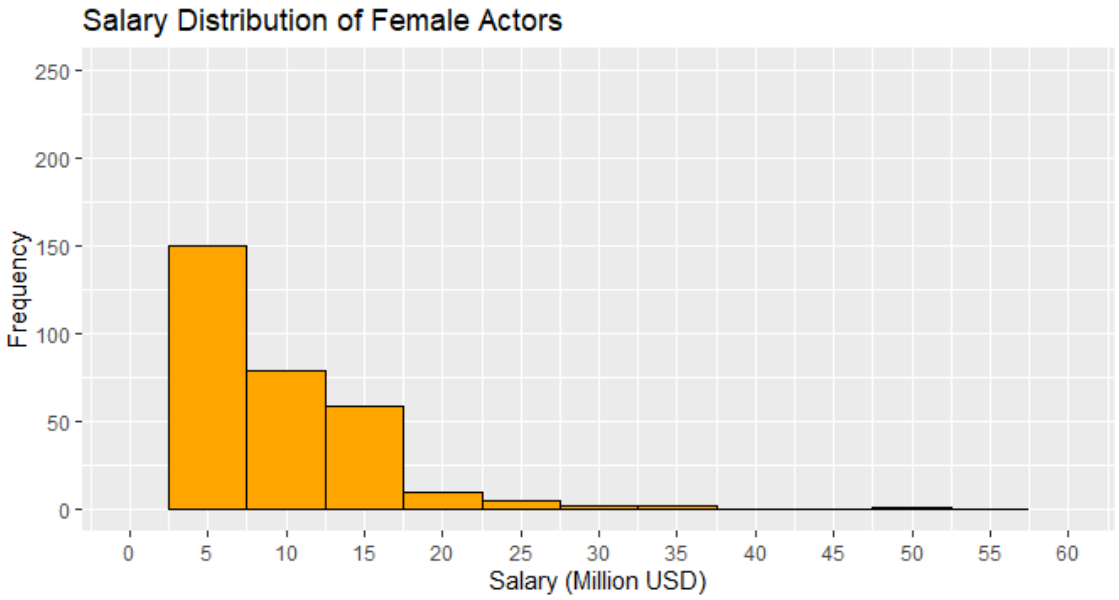

Figure 3. Salary Distribution of Female Actors - IMDb

Here we are depicting the frequency distribution of salaries in USD million for female actors. The axis shows us the range of salaries from 0 to 60 million and over. The y shows us the frequency of occurrence of each salary range. Most female actors seem to earn less than 20 million USD, the frequency of female actors earning higher salaries decreases. We have a left-skewed distribution meaning that the majority of

the female actors are earning on the lower end of the spectrum. This result suggests several key insights regarding the salary distribution among female actors in the IMDb dataset. Firstly, the left-skewed distribution implies that there is a concentration of salaries towards the lower end of the spectrum, with fewer observations having higher salaries. This could indicate potential disparities in pay within the entertainment industry, where a significant portion of female actors may be earning lower salaries compared to their counterparts. Additionally, the frequency distribution provides a quantitative understanding of the distribution pattern, allowing for a more precise analysis of the salary landscape. The potential areas of concern could be an indication of gender pay disparities, limited opportunities depending on age, representation and diversity.

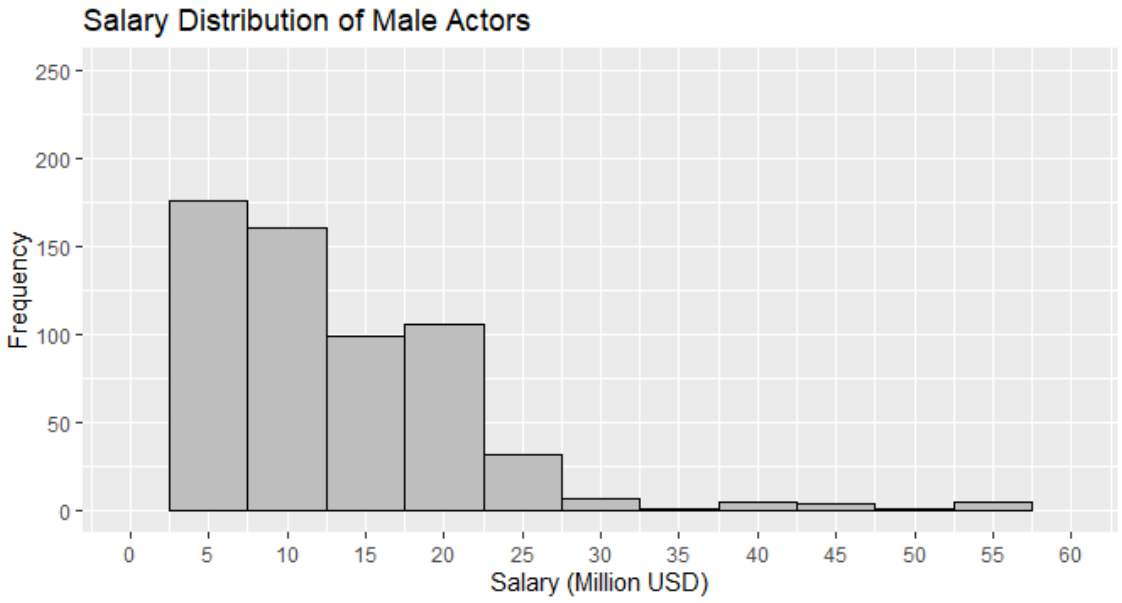

Figure 4. Salary Distribution of Male Actors – IMDb

The frequency distribution for male actors seems to have more occurrences in the higher salary ranges compared to the female histogram. Although both histograms are left skewed, the male histogram might be less skewed toward lower salaries compared to the female histogram, indicating a larger proportion of male actors in the higher salary brackets. This distribution pattern mirrors the findings from the female salary distribution, indicating a prevalent trend of unequal pay within the entertainment industry. The

concentration of salaries towards the lower end of the spectrum underscores potential disparities in pay and highlights the challenges faced by male actors in securing higher-paying roles or negotiating equitable compensation.

Figure 5 shows the median and average income for both genders on the IMDb Dataset:

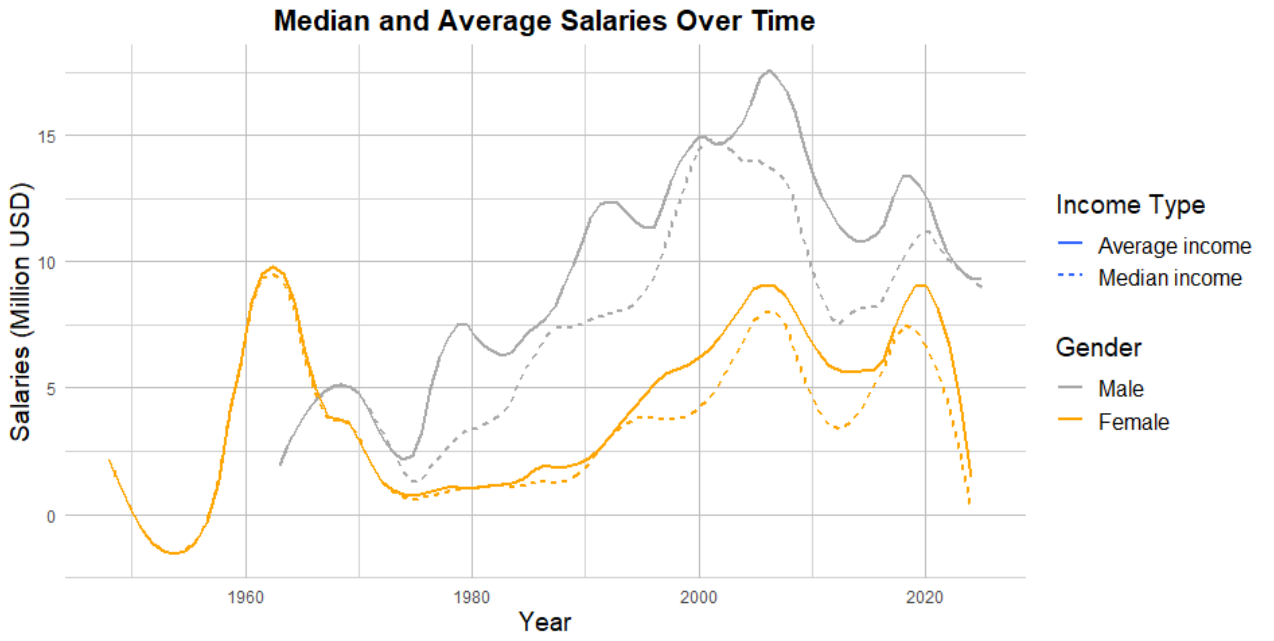

Figure 5. Median and Average Income – IMDb

It appears that for both genders, the median and the average income is in a similar range, with median being a little more above the average, indicating that the distribution of salaries is negatively skewed, or left-skewed. In other words, there are relatively fewer high earners compared to low earners in the dataset. The income for both genders shows fluctuations over the years but exhibits a general upward trend. Notably, the lines corresponding to females are consistently below those of the males, indicating a persistent income gap. The divergence between median and average income also suggests greater income variability, potentially hinting at inequality within each gender group.

Figure 6 and Figure 7 captures further the income trends separately for male and female actors.

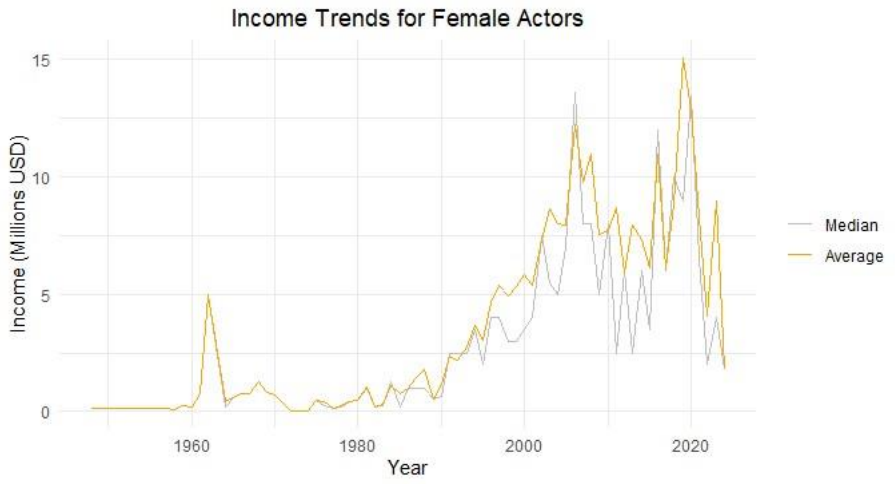

Figure 6. Income Trends for Female Actors – IMDb

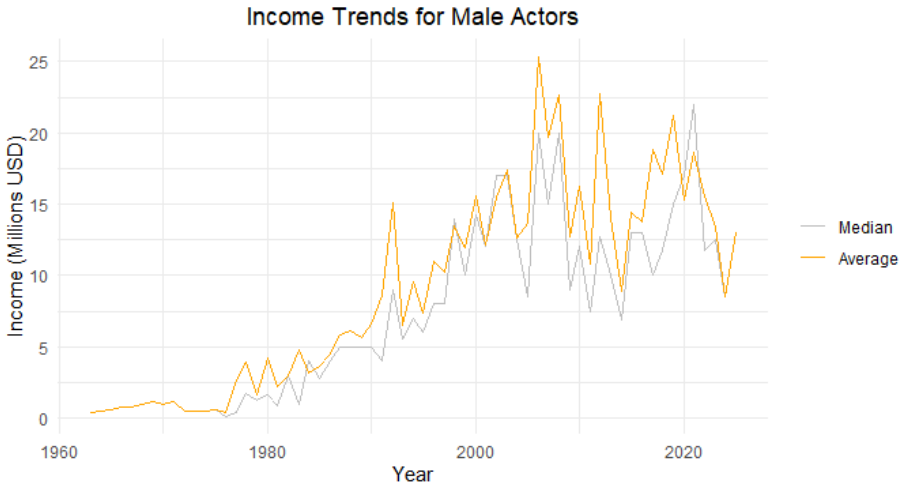

Figure 7. Income Trends for Male Actors - IMDb

The income levels for male actors, both median and average, are generally higher than for female actors. Male actors' incomes show greater volatility and higher peaks, which could imply that male leads have access to more lucrative opportunities or that their earnings are more sensitive to blockbuster hits. Both genders show an upward trend in incomes, but the gap between median and average incomes is consistently larger for male actors, indicating a broader range of salaries with more extreme high earners. The income trends for male and female actors exhibit notable differences, as illustrated in the two graphs. For female actors, the median and average incomes show a steady rise from the 1960s to the early 2000s, with

significant peaks around the late 1990s and early 2020s. The highest income levels for female actors appear to have been achieved around 2020, with the average income peaking at approximately 15 million USD. Conversely, the income trends for male actors indicate a more pronounced increase in both median and average incomes over the decades. Starting from the 1960s, male actors' incomes steadily rise, with significant jumps in the 1980s, 1990s, and early 2000s. The peak for male actors' incomes is higher compared to females, with the average income reaching around 25 million USD, particularly noticeable in the late 2010s.

Below, Figure 8. depicts the relationship of salaries and budget for the whole dataset. The primary motivation for this scatter plot is to identify patterns, trends, and potential correlations that can inform our understanding of how budgetary considerations impact actor salaries.

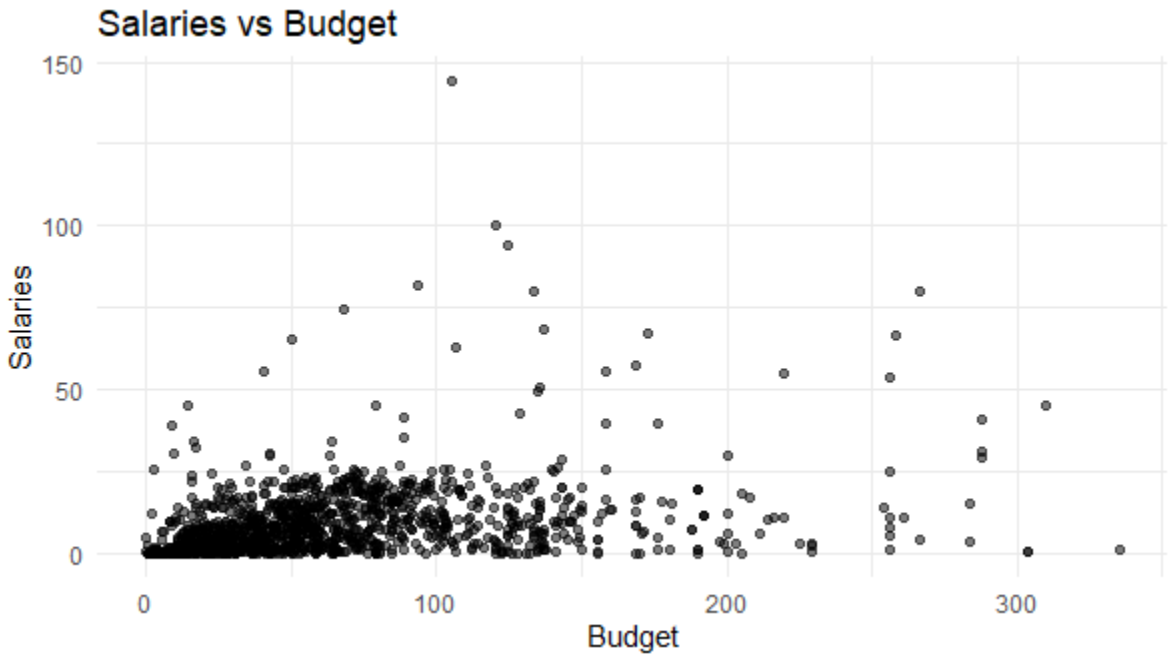

Figure 8. Relationship between Budget and Salaries - IMDb

The horizontal axis represents the adjusted budget in millions of dollars. This variable is a scaled measure of the budgets for the projects in which the actors have participated. The vertical axis represents the adjusted salaries of the actors, also in millions of dollars. This variable is a scaled measure of the salaries that actors received for their roles in these projects. Each dot in the scatter plot represents an individual actor's salary

for a particular project, plotted against the corresponding project budget. Regarding the general distribution we can say that there is a large cluster of data points at lower budget and salary levels, indicating that most projects have relatively modest budgets and correspondingly modest salaries for actors. The data points are more densely packed towards the lower end of both scales, with fewer observations as we move towards higher budgets and higher salaries. While there is no clear, strong linear relationship observable in the scatter plot, there appears to be a slight positive trend where higher budgets are associated with higher actor salaries. This trend is more noticeable at the higher end of the budget scale. There are a few notable outliers where very high salaries are associated with moderately high budgets, suggesting that in some cases, actors may receive exceptionally high compensation regardless of the budget scale. The slight positive trend suggests that, generally, higher project budgets tend to afford higher actor salaries. However, the relationship is not strong enough to draw definitive conclusions without further statistical analysis.

The presence of high-salary outliers in lower-budget projects may indicate scenarios where top-tier actors negotiate substantial salaries due to their star power or specific contractual agreements, irrespective of the overall project budget.

Below the summary statistics of awards is depicted for each gender:

Variable	Female	Ave. Wage	Male	Ave. Wage
Oscar and Nomination	40.86%	$5.45M	36.79%	$10.77M
Nomination Only	16.85%	$4.10M	31.08%	$13.14M
None	42.29%	$6.11M	32.14%	$11.75M

Table 6. Summary statistics of awards for each gender – IMDb Dataset

The table provides a comparative analysis of the average wages of male and female actors, segmented by their achievements in terms of Oscars and nominations. For actors who have both an Oscar and a nomination, 40.86% of female actors earn an average wage of $5.45 million, whereas 36.79% of male actors earn a significantly higher average wage of $10.77 million. Despite a higher percentage of female actors receiving both an Oscar and a nomination, their average wage is less than half that of their male

counterparts, indicating a substantial gender wage gap favoring male actors even at the highest levels of recognition. Among those who have only received a nomination, 16.85% of female actors earn an average wage of $4.10 million, while 31.08% of male actors earn an average wage of $13.14 million. This shows that a larger percentage of male actors have received only a nomination compared to female actors and that the average wage for males is over three times higher, highlighting a significant earnings disparity. For actors without any nominations or Oscars, 42.29% of female actors earn an average wage of $6.11 million, compared to 32.14% of male actors who earn an average wage of $11.75 million. This suggests that even without any nominations or Oscars, male actors earn almost twice as much as female actors.

IMDb Results – FE Models

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Full Model	Full Model Adjusted Salaries	(1) Interaction Effects	(2) Interaction Effects Adjusted Salaries	(3) Interaction Effects	(4) Interaction Effects Adjusted Salaries	Model with excluded top earners	Model with excluded top earners - Adjusted Salaries	Model Females	Model Female - Adjusted Salaries	Model Males	Model Males - Adjusted Salaries
Gender	-0.646***	-0.646***	0.102	0.099	-0.434	-0.439	-0.619***	-0.619***				
	(0.083)	(0.083)	(0.226)	(0.226)	(0.294)	(0.294)	(0.083)	(0.083)				
Age	0.162***	0.162***	0.165***	0.165***	0.168***	0.168***	0.153***	0.153***	0.259***	0.255***	0.176***	0.162***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.017)	(0.017)	(0.015)	(0.015)	(0.035)	(0.032)	(0.019)	(0.018)
Age^2	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.003***	-0.003***	-0.001***	-0.001***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0005)	(0.0005)	(0.0002)	(0.0002)
Adjusted Budget	0.007***	0.007***	0.007***	0.007***	0.007***	0.007***	0.007***	0.007***	0.006***	0.006***	0.010***	0.009***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Experience	0.011**	0.011**	0.023***	0.023***	0.011**	0.011**	0.010**	0.010**	0.069	-0.085	-0.187	-0.673
	(0.005)	(0.005)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.739)	(0.685)	(1.285)	(1.213)
Award: Nom Only	-0.049	-0.048	-0.062	-0.061	-0.052	-0.051	-0.052	-0.051	-0.283	-0.303	-0.297**	-0.206*
	(0.099)	(0.099)	(0.098)	(0.098)	(0.099)	(0.099)	(0.099)	(0.100)	(0.211)	(0.196)	(0.126)	(0.119)
Award: Both	0.013	0.014	-0.0003	0.001	0.012	0.013	0.016	0.017	0.122	0.211	-0.349***	-0.314***
	(0.091)	(0.091)	(0.090)	(0.090)	(0.091)	(0.091)	(0.092)	(0.092)	(0.169)	(0.157)	(0.128)	(0.121)
Race: Black	0.033	0.033	0.111	0.111	0.032	0.032	0.027	0.028	-0.040***	-0.015***	-0.016***	0.009*
	(0.144)	(0.144)	(0.145)	(0.145)	(0.144)	(0.144)	(0.147)	(0.147)	(0.006)	(0.006)	(0.005)	(0.005)

Race: Hispanic	0.216	0.217	0.126	0.128	0.211	0.212	0.178	0.179	-0.235	-0.273	0.333**	0.347**
	(0.196)	(0.196)	(0.196)	(0.197)	(0.196)	(0.196)	(0.147)	(0.198)	(0.468)	(0.434)	(0.165)	(0.156)
Race: Asian	-0.594	-0.589	-0.662	-0.657	-0.583	-0.579	-0.551	-0.546	0.325	0.269		
	(0.527)	(0.527)	(0.525)	(0.525)	(0.528)	(0.528)	(0.523)	(0.523)	(0.254)	(0.235)		
Gender:Experience			-0.022***	-0.022***								
			(0.006)	(0.006)								
Gender:Age			-0.022***	-0.022***	-0.006	-0.006						
			(0.006)	(0.006)	(0.008)	(0.008)						
Observations	1,311	1,311	1,311	1,311	1311	1311	1258	1258	558	558	753	753
R2	0.286	0.287	0.294	0.294	0.287	0.287	0.268	0.269	0.255	0.205	0.364	0.296
Adjusted R2	0.239	0.240	0.246	0.247	0.239	0.239	0.218	0.218	0.159	0.107	0.300	0.224
Residual Std. Error												
F Statistic	49.296***	49.418***	46.383***	46.483***	44.850***	44.958***	43.103***	43.217***	18.793***	14.085***	48.833***	35.835***

Note: *p<0.1; **p<0.05; ***p<0.01

Table 7. Results Fixed Effect Model - IMDb

The regression table of fixed effect model shows result of the full model used, results with interaction terms, results with excluding the top 5% earners of the observations, and two separate models for both genders, with a comparison of the effect on salaries and adjusted salaries. The full model results indicate a significant gender wage gap, with the coefficient for the gender variable being -0.646. This translates to an approximate 47.7% decrease in income for female actors compared to their male counterparts. When looking at adjusted salaries, the gender coefficient remains significant and similar in magnitude (-0.646), indicating that the gender pay gap persists even when accounting for inflation-adjusted earnings. This finding is consistent with Blau and Kahn (2017), who noted persistent gender wage gaps across various sectors. The similar impact on both salaries and adjusted salaries underscores the systemic nature of the gender pay gap in Hollywood. The third and fourth models introduce interaction effects between gender and experience. The results show that while experience generally increases salaries, the positive impact is significantly less for female actors compared to males. The coefficient for the interaction term between gender and experience is -0.022, indicating that for every additional year of experience, female actors see a 2.2% smaller increase in income compared to male actors. This suggests that female actors do not benefit equally from their experience, reflecting findings by Goldin et al. (2017), who highlighted the widening earnings gap with age, particularly for women. The interaction effect is consistent across both salaries and adjusted salaries, indicating that the disparity in returns to experience is a persistent issue, unaffected by inflation adjustments. In the interaction models considering gender and age, the results reveal that age has a positive effect on salaries up to a certain point, beyond which it starts to decline (as indicated by the positive coefficient for age and negative coefficient for age squared). However, the interaction term between gender and age is -0.022, suggesting that the positive impact of age on salaries is 2.2% less for female actors compared to males. This finding is consistent with the literature on age-related biases in Hollywood, where older female actors often face more significant challenges in securing high-paying roles compared to their male counterparts (Pater, Judge, Scott, 2014). The pattern remains consistent when considering adjusted salaries, indicating that the age-related gender disparity persists even after accounting for inflation. To account for potential outliers, the top 5% of earners were excluded

from the analysis. This exclusion helps to mitigate the impact of exceptionally high earnings by actors like Tom Cruise, which could skew the results. The adjusted models still show a significant gender wage gap, though slightly reduced in magnitude, with a gender coefficient of -0.619, translating to a 45.9% decrease in income for female actors compared to male actors. This persistent gap even after excluding top earners aligns with broader findings on the gender wage gap, indicating systemic issues beyond outliers (Pires, 2017). Analyzing the female subset reveals that age, experience, and budget positively influence salaries, but the magnitude of these effects is generally smaller compared to the overall model. The results show that while female actors benefit from higher budgets and more experience, their returns are not as high as those for male actors. For instance, the coefficient for age is 0.259, indicating that each additional year of age corresponds to a 29.5% increase in salary. Additionally, the negative coefficient for age squared (-0.003) suggests that the positive effect of age on salary diminishes over time. This aligns with research by Pater et al. (2014) on the age and wage disparities faced by female actors, further emphasizing the compounded effects of gender and age on earnings. The male subset analysis shows that age, experience, and budget have a stronger positive effect on salaries compared to the female subset. The coefficient for age is 0.176, indicating that each additional year of age corresponds to a 19.2% increase in salary for male actors. Similarly, the negative coefficient for age squared (-0.001) indicates a diminishing return to age over time, though less pronounced than in the female subset. When comparing the effects of age on salaries for male and female actors, it becomes evident that while both benefit from increasing age, female actors experience a significantly higher return. Specifically, female actors see a 29.5% increase per year of age compared to a 19.2% increase for male actors. This may reflect the higher variance in career trajectories for female actors, where those who continue to secure roles as they age tend to achieve substantial increases in their salaries, possibly due to their established star power or niche roles. This 10.3 percentage point difference in the returns to age suggests that age impacts female actors' salaries more significantly, likely due to the fewer but highly rewarding roles available to older female actors, compared to a more consistent but less steep increase in earnings for male actors as they age. The negative coefficients for age squared in both models reinforce the notion that while age initially boosts earnings,

the effect weakens as actors grow older. This observation aligns with literature indicating that older female actors often face more significant barriers, but those who succeed can command higher wages due to their established reputation and experience (Pater, Judge, Scott, 2014).

The negative coefficient for the gender variable in the Full Model and the models with excluded top earners highlights a significant gender wage gap. Specifically, the coefficient of -0.646 indicates that, on average, being female is associated with a 47.8% decrease in salary compared to males, even after controlling for other variables. This finding is consistent with the literature, which documents a persistent gender wage gap in various industries, including Hollywood. Interestingly, the experience variable shows a positive coefficient, indicating that more years of experience are associated with higher salaries, with each additional year of experience increasing salaries by approximately 1.1%. However, when considering the interaction between gender and experience, the results indicate that the positive impact of experience on salaries is less pronounced for female actors compared to their male counterparts. The positive coefficients for age and the negative coefficients for age squared suggest a concave relationship between age and salary, with each additional year of age increasing salaries by approximately 16.2%, but the positive effect diminishes over time. This age-related disparity underscores the combined effect of ageism and sexism in the film industry, where older female actors are often sidelined in favor of younger talent. The consistently significant positive coefficients for the adjusted budget variable across all models indicate that higher film budgets are associated with higher salaries for actors, with each million-dollar increase in budget correlating with a 0.7% increase in salary. The variables for awards, particularly the nomination-only and awards-both categories, provide insights into the importance of critical recognition in determining salaries. The negative coefficient for "Nomination Only" in some models suggests that merely being nominated for awards might not significantly boost earnings, while winning awards (both nominations and wins) has a mixed impact. This nuanced finding aligns with the argument by Pires (2017) that while recognition is important, the ability to negotiate and capitalize on such recognition is crucial. Men, who are often more aggressive in negotiations, might leverage nominations and awards more effectively than women. The coefficients for race variables indicate mixed effects. The variable for

Black actors shows a small positive or insignificant effect, suggesting limited impact on salary, while the coefficients for Hispanic and Asian actors are inconsistent across models. This finding is somewhat surprising given the broader literature indicating significant racial disparities in earnings (UN Development Programme, 2009; U.S. Department of Labor, 2011). The limited impact observed here might be due to the relatively small representation of minority actors in the dataset or the unique dynamics of Hollywood, where star power can sometimes transcend racial biases.

IMDb Results – OLS Models

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Full Model	Full Model Adjusted Salaries	(1) Interaction Effects	(2) Interaction Effects Adjusted Salaries	(3) Interaction Effects	(4) Interaction Effects Adjusted Salaries	Model with excluded top earners	Model with excluded top earners - Adjusted Salaries	Model Females	Model Female - Adjusted Salaries	Model Males	Model Males - Adjusted Salaries
Gender	-0.698***	-0.651***	0.189	0.142	0.551*	0.156	-0.659***	-0.609***				
	(0.091)	(0.084)	(0.245)	(0.228)	(0.312)	(0.291)	-0.091	-0.085				
Age	0.171***	0.170***	0.175***	0.173***	0.205***	0.192***	0.161***	0.160***	0.257***	0.252***	0.164***	0.152***
	(0.016)	(0.015)	(0.016)	(0.015)	(0.018)	(0.017)	(0.016)	(0.016)	-0.034	-0.031	(0.018)	(0.017)
Age^2	-0.001***	-0.002***	-0.001***	-0.002***	-0.002***	-0.002***	-0.001***	-0.002***	-0.003***	-0.003***	-0.001***	-0.001***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0004)	(0.0004)	(0.0002)	(0.0002)
Adjusted Budget	0.008***	0.008***	0.008***	0.008***	0.008***	0.007***	0.008***	0.007***	0.006***	0.005***	0.010***	0.009***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Experience	-0.026***	-0.002	-0.014***	0.009**	-0.028***	-0.003	-0.026***	-0.003	-0.042***	-0.016***	-0.014***	(0.114)
	(0.004)	(0.003)	(0.005)	(0.005)	(0.004)	(0.003)	(0.004)	(0.004)	(0.006)	(0.005)	(0.005)	0.011**
Award: Nom Only	-0.283***	-0.149	-0.221**	-0.161	-0.211**	-0.152	-0.210*	-0.135	-0.245	-0.258	-0.252**	-0.165
	(0.097)	(0.100)	(0.107)	(0.100)	(0.107)	(0.100)	(0.109)	(0.102)	(0.199)	(0.184)	(0.121)	(0.113)
Award: Both	0.331**	-0.020	-0.095	-0.034	-0.085	-0.023	-0.069	-0.012	0.162	0.249*	-0.322***	-0.286**
	(0.158)	(0.093)	(0.099)	(0.092)	(0.099)	(0.092)	(0.101)	(0.094)	(0.160)	(0.148)	(0.122)	(0.114)
Race: Black	0.101	0.112	0.188	0.189	0.096	0.109	0.103	0.141	-0.037	-0.101	0.230	0.267*
	(0.158)	(0.147)	(0.159)	(0.148)	(0.157)	(0.147)	(0.161)	(0.150)	(0.459)	(0.426)	(0.155)	(0.145)
Race: Hispanic	0.359*	0.287	0.252	0.191	0.318	0.260	0.336	0.269	0.312	0.255		
	(0.215)	(0.201)	(0.216)	(0.201)	(0.214)	(0.200)	(0.218)	(0.203)	(0.245)	(0.228)		

Race: Asian	-0.231	-0.333	-0.311	-0.404	-0.179	-0.299	-0.172	-0.259	-0.247	-0.321	-0.110	-0.511
	(0.582)	(0.542)	(0.579)	(0.540)	(0.578)	(0.541)	(0.577)	(0.537)	(0.702)	(0.652)	(1.267)	(1.187)
Gender:Experience			-0.025***	-0.023***								
			(0.007)	(0.006)								
Gender:Age			-0.025***	-0.023***	-0.035***	-0.022***						
			(0.007)	(0.006)	(0.008)	(0.008)						
Constant	11.578***	11.221***	11.096***	10.791***	10.741***	10.681***	11.719***	11.340***	10.207***	9.802***	11.156***	11.070***
	(0.358)	(0.333)	(0.376)	(0.351)	(0.408)	(0.381)	(0.357)	(0.333)	(0.647)	(0.601)	(0.412)	(0.386)
Observations	1311	1311	1311	1311	1,311	1,311	1258	1248	558	558	753	753
R2	0.333	0.287	0.341	0.295	0.342	0.292	0.307	0.262	0.246	0.191	0.342	0.277
Adjusted R2	0.328	0.282	0.335	0.289	0.336	0.286	0.302	0.256	0.234	0.178	0.335	0.269
Residual Std. Error	1.415	1.318	1.407	1.311	1.406	1.314	1.403	1.302	1.555	1.443	1.259	1.180
F Statistic	64.947***	52.392***	61.072***	49.375***	61.385***	48.660***	55.322***	43.226***	19.899***	14.381***	48.306***	35.641***

Note: *p<0.1; **p<0.05; ***p<0.01

Table 8. Results OLS Model - IMBb

The regression tables for the OLS model and fixed effect model provide a comprehensive analysis of the determinants of salaries for actors in the U.S. film industry, highlighting the significant gender wage gap and the effects of various factors such as age, experience, budget, awards, and race. Comparing these results with the fixed effect model reveals nuanced insights into the dynamics at play. Both models indicate a significant gender wage gap. In the OLS full model, the gender coefficient of -0.698 translates to an approximate 50% decrease in salary for female actors compared to their male counterparts. For adjusted salaries, the gender coefficient is -0.651, indicating a 47.9% decrease. These findings align with Blau and Kahn (2017), who noted persistent gender wage gaps across various sectors. The fixed effect model similarly shows a significant gender wage gap, with a coefficient of -0.646, translating to a 47.7% decrease in income for female actors. The consistency across both models underscores the systemic nature of the gender pay gap in Hollywood. The OLS model reveals a significant negative coefficient for experience (-0.026), indicating that each additional year of experience is associated with a 2.6% decrease in salary. However, the fixed effect model shows a positive coefficient for experience (0.011), indicating a 1.1% increase in salary for each additional year of experience. This discrepancy suggests that while the OLS model captures the broader industry trend, the fixed effect model accounts for individual actor-specific factors that might positively influence salaries with increased experience. The interaction effects between gender and experience in the OLS model indicate that while experience generally increases salaries, the positive impact is significantly less for female actors. The interaction term between gender and experience is -0.025, indicating that each additional year of experience yields a 2.5% smaller increase in salary for female actors compared to males. In the fixed effect model, the interaction term is -0.022, showing a consistent pattern. This suggests that female actors do not benefit equally from their experience, reflecting findings by Goldin et al. (2017), who highlighted the widening earnings gap with age, particularly for women. In the OLS model, the interaction term between gender and age is -0.025, indicating that the positive impact of age on salaries is 2.5% less for female actors compared to males. The fixed effect model shows a similar interaction term of -0.022, suggesting a 2.2% lesser positive impact for female actors. These findings are consistent with the literature on age-related biases in Hollywood, where older female actors

often face more significant challenges in securing high-paying roles compared to their male counterparts (Pater, Judge, Scott, 2014). The pattern remains consistent when considering adjusted salaries, indicating that the age-related gender disparity persists even after accounting for inflation. The variables for awards provide insights into the importance of critical recognition in determining salaries. In the OLS model, the coefficient for "Nomination Only" is -0.283, indicating a 28.3% decrease in salary for actors with only nominations compared to those with no awards. For "Awards Both," the coefficient is 0.331, indicating a 33.1% increase in salary for actors who have won both nominations and awards. In the fixed effect model, the coefficients for awards are less pronounced, suggesting that while recognition is important, the ability to negotiate and capitalize on such recognition is crucial. This aligns with Pires' (2017) argument that men, who are often more aggressive in negotiations, might leverage nominations and awards more effectively than women. The adjusted budget variable consistently shows significant positive coefficients across both models. In the OLS model, each million-dollar increase in budget correlates with an 0.8% increase in salary, while the fixed effect model shows a 0.7% increase. This indicates that higher film budgets are associated with higher salaries for actors, reflecting the trend that big-budget films typically have more resources to allocate towards star salaries. The coefficients for race variables indicate mixed effects. In the OLS model, Black actors have a small positive or insignificant effect on salary, while the effects for Hispanic and Asian actors are inconsistent. The fixed effect model shows similar patterns, suggesting that the limited impact observed might be due to the relatively small representation of minority actors in the dataset or the unique dynamics of Hollywood. Excluding top earners slightly reduces the gender wage gap, with a coefficient of -0.619, translating to a 45.9% decrease in salary for female actors. The fixed effect model shows a similar reduction, with a coefficient of -0.619. The female subset analysis in the OLS model shows that age, experience, and budget positively influence salaries, but the magnitude of these effects is generally smaller compared to the overall model. The coefficient for age is 0.259, indicating a 29.5% increase in salary for each additional year of age, while the negative coefficient for age squared (-0.003) suggests that the positive effect diminishes over time. The male subset analysis in the OLS model shows stronger positive effects of age, experience, and budget on salaries compared to the female subset. The coefficient for age is 0.176,

indicating a 19.2% increase in salary for each additional year of age, while the negative coefficient for age squared (-0.001) indicates diminishing returns over time. The fixed effect model shows similar patterns, suggesting that while both male and female actors benefit from increasing age, the returns are higher for female actors due to fewer but more rewarding roles available to older female actors. Both the OLS and fixed effect models highlight the persistent gender wage gap, the diminishing returns to age, and the differential impact of experience on male and female actors. While the fixed effect model provides a more nuanced view by controlling for individual-specific factors, the OLS model captures broader industry trends. Both models underscore the need for continued efforts to address gender and racial inequalities in Hollywood, reflecting the findings of Blau and Kahn (2017), Pires (2017), and Pater et al. (2014).

Limitations

Limitations of this study include the reliance on IMDb for salary data, which sometimes lacked information for certain top-performing actors. Ideally, a comprehensive dataset covering all Hollywood actors would have been used, but the scope was limited to those listed on IMDb. Additionally, data for supporting role actors was scarce on IMDb, prompting a focus on top-performing actors. A complete dataset encompassing both top-performing and lower-performing actors would provide a larger sample, offering more detailed insights into race, age, and other variables, leading to more thorough results. There is a potential for measurement errors and biases inherent in self-reported or third-party reported data such as IMDb. These errors can stem from outdated information, estimation inaccuracies, or intentional misreporting. Such biases can skew the results and limit the reliability of the conclusions drawn. The limited diversity within the dataset also poses a constraint. With relatively small representations of minority actors, the study might not fully capture the racial disparities in salaries. A more diverse dataset would allow for a more comprehensive analysis of racial influences on salary discrepancies.

Another limitation is the inability to account for non-quantifiable factors such as individual negotiation skills, which can significantly impact salaries. Negotiation dynamics often vary widely and can influence earnings independently of observable factors like experience or budget. Moreover, the analysis does not consider the influence of personal networks, agency representation, and marketability, which can also play crucial roles in determining salaries but are challenging to quantify.

Furthermore, the study does not capture the potential effects of industry trends and market conditions, which can fluctuate and affect actor salaries over time. The exclusion of these variables might limit the understanding of external factors influencing the gender wage gap. Lastly, the cross-sectional nature of the data limits the ability to observe long-term career trajectories and the evolution of salary disparities over an actor's career. Addressing these limitations in future research would provide a more comprehensive analysis of the determinants of actor salaries and the persistence of the gender wage gap in Hollywood.

Conclusion

This thesis has explored the determinants of actor salaries in Hollywood, focusing on the persistent gender wage gap and other influencing factors such as age, experience, budget, awards, and race. The analysis was conducted using both fixed effect and ordinary least squares (OLS) regression models, with data sourced from IMDb. Despite methodological and data limitations, the findings provide significant insights into the salary disparities and the systemic nature of the gender wage gap in Hollywood. The gender wage gap in the United States has seen considerable changes over the decades, narrowing significantly between 1980 and 1989 and then progressing at a slower pace until 2010. Advancements in women's education, professional experience, occupation, and union representation have been crucial contributors to this narrowing gap (Blau & Kahn, 2017). However, significant disparities persist, particularly in Hollywood. Studies indicate that women often occupy lower-paid roles and face systemic barriers to higher compensation, resulting in a persistent gender wage gap. This phenomenon, often referred to as the 'celluloid ceiling,' is influenced by entrenched stereotypes and invisible barriers limiting women's roles in creative capacities (Berg, 2015). Both the OLS and fixed effect models highlight the persistent gender wage gap, with the OLS model showing a 50% decrease in salary for female actors compared to males, while the fixed effect model shows a 47.7% decrease. The Forbes 100 dataset further underscores this disparity, indicating that being female is associated with a 50.8% decrease in income. For experience, the OLS model reveals a significant negative coefficient (-0.026), indicating a 2.6% decrease in salary per additional year of experience, whereas the fixed effect model shows a positive coefficient (0.011), indicating a 1.1% increase. Age shows a concave relationship with salary in both models; the OLS model indicates a 16.2% increase in salary per year of age, compared to 16.2% in the fixed effect model. Race variables present mixed effects; in the OLS model, the coefficients for Black, Hispanic, and Asian actors are inconsistent, while the fixed effect model shows a similar pattern, suggesting limited impact due to small representation. The Forbes 100 analysis also highlights that age positively impacts income, with each additional year increasing income by approximately 1.23%. Both models underscore the need for continued efforts to address gender and racial inequalities in Hollywood, reflecting the findings of Blau and Kahn (2017), Pires

(2017), and Pater et al. (2014). Addressing these disparities requires policy reforms, industry initiatives, and continued research to understand and mitigate the factors contributing to wage inequalities. The limitations of this study, including data inconsistencies, the exclusion of non-quantifiable factors such as negotiation skills and qualitative aspects of experience, and the reliance on IMDb as the primary data source, highlight areas for future research. A more comprehensive dataset, including actors from supporting roles and lower-performing actors, would provide a more complete picture of the wage disparities in Hollywood. In conclusion, while significant progress has been made in narrowing the gender wage gap, systemic issues persist, particularly in Hollywood. Addressing these disparities requires a multifaceted approach, including policy reforms, industry-wide initiatives to promote diversity and inclusion, and continued research to better understand and mitigate the factors contributing to wage inequalities.

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