View metadata, citation and similar papers at core.ac.uk

brought to you by CORE

provided by DigitalCommons@Pace

Pace University

DigitalCommons@Pace

Honors College Theses

Pforzheimer Honors College

5-2020

How Much Do You Love Grey's Anatomy?

Katherine Baldwin

Follow this and additional works at: https://digitalcommons.pace.edu/honorscollege_theses

 Part of the Economics Commons

How Much Do You Love *Grey's Anatomy*?

Does the prominence of medical Television Shows impact people's decision to pursue a medical career?

Katherine Baldwin

Pace University

Major: Economics

Thesis Advisor:Professor Todd Yarbrough, Ph.D

Pforzheimer Honors College Senior Thesis, May 5, 2020

Graduation: May 20, 2020

Abstract

We are constantly told that the things we see in media and entertainment influences how we think about things, but not much research has been done regarding its ability to impact major life choices such as career choice. This paper investigates this by examining the causal relationship between television and interest in the pursuit of a medical career. An ordinary least squares model, created using time series data over the last 24 years, tested specifically the effect of the number and quality of medical television shows both on the rate of change in medical school applications for men and women and the proportion of female applicants. This study found that while medical tv shows don't have a statistically significant impact on application rates for men or women, female-driven shows cause a larger proportion of the applicant pool to be female.

Table of Contents

List of Tables

Introduction

Some of the most important decisions we make in our lives are about our education, and there are a lot of things that can impact how we make these choices. There are some obvious factors that have an effect (what we like to do, what we value, potential income), but one factor that we are often told is affecting our day to day lives more and more is entertainment and media. One good example of this is the "Jurassic Generation", a generation of paleontologists that attribute their decision to study paleontology to the popular movie *Jurassic Park* released in 1993 (McKie 2018). The movie's release made it "cool" to like dinosaurs and science and helped to generate interest in the academic field. I am interested in investigating whether this relationship between entertainment and our education and career path exists in other fields, specifically if there is any relationship between medical shows on television and people's choice to pursue medicine as a career.

There has been little academic research into whether media and entertainment impact how we make decisions about our education and career. I am interested in investigating whether television can impact these areas of life. It's safe to say the television and movies often glamorize their subjects, including things like medicine, making them seem especially interesting with life and death situations, medical miracles, and tons of interpersonal drama between the beautiful actors. Could this depiction of the medical field alter the perceptions of students enough to affect their career path? Another interesting layer can be added when you consider how the gender of the figures we see on TV could lead characters to be seen as role models. Medical TV shows are, again, a good example of this, with some of the most popular like *Grey's Anatomy* featuring women as intelligent doctors at the forefront of their fields. Does gender

representation really matter? Could seeing women as doctors inspire other women to pursue fields like medicine that are typically dominated by men?

I will be using medical school application rates to investigate whether the prevalence of these medical shows does lead people, specifically women, to pursue a medical career. I will be quantifying the prominence of these shows using the number of medical shows broadcasting within a given academic year and the average rating of all the shows in that year. I will include additional variables to control for other factors that could impact the rate of medical school applications to create a model to estimate any relationship between television and people's career decisions. Other researchers who have investigated how people make choices like this regarding their education, primarily use a cross-sectional approach, looking at individual preferences and demographic features to understand their individual decision-making process. I instead will be using a time series model to look at national data to see how the increasing number of medical shows over the last few years to discover its influence on medical school. The model estimates that while medical tv shows don't have a statistically significant impact on application rates for men or women, female shows cause a larger proportion of the applicant pool to be female.

To provide background information, this paper will start with a literature review, which will discuss other researcher's investigations into factors that affect decisions about education and other ways that entertainment can impact people's decision making. Additionally, information will be provided on the historical changes to the medical school applicant field. I will go on to discuss the data used in this study, including the source of the data and why I chose to include it. Then there will be a discussion of the models that I created to investigate this relationship, followed by the results of these models and a discussion interpreting these results.

Literature Review

Decision making is a complicated process, especially when it is as important as picking the start to your career path with the choices you make about your education. Although there is not much literature specifically investigating students' decisions to attend medical school or how TV impacts this choice, there is research regarding a similar decision process for young adults: choosing their undergraduate major. Additionally, there is research investigating the role that television and other entertainment can have in people's decision making of other areas of life and their understanding of the medical field.

Determinants of Major Choice

In terms of decisions regarding one's undergraduate major, Walls (2009) confirms the general understanding that decisions about post-secondary education are greatly impacted by both the student's potential earnings and job satisfaction. However, it is still relatively unclear exactly how students make these choices. There are two factors that have been consistently found to play a major role in the decision-making process: future earnings and preferences regarding the field of study. Researchers have approached these two variables differently in order to understand the student's decision making.

Potential earnings are one of the easiest factors to understand. Generally, people want to make money, so it stands to reason that majors that result in higher-paying careers would be commonly selected. As such, it is a standard variable when investigating major selection. Altonji, Arcidiancono and Maurel (2015) point out that this relationship between major choice and earnings goes both ways. Your major choice affects your future earnings and as such, those potential earnings affect how you decide on your major. Generally, STEM and business majors

were the highest-earning majors. While this clearly is an incentive towards these disciplines, it doesn't necessarily deter students from studying the lower-paying areas such as the humanities. The popularity of these other, lower-paying fields makes it clear that there are other factors compensating for any potential loss of income. These factors are student preferences and tastes whether in school during the education (does the student enjoy the coursework) or in the following career (are they satisfied in their workplace). Unfortunately it is hard to account for these preferences in research as they are difficult to quantify or understand.

Wiswall and Zafar (2015) have similar results regarding the prevalence of preferences and tastes for different fields of study in their research. They investigated the role of beliefs about outcomes of those major decisions by creating an experiment that presented data to students to generate beliefs about various majors in the survey. They found that expectations of future earnings and students' perceptions of their abilities played the most significant role in their major choice. The most significant factor they found was the differing tastes of students. They did find some factors that could help indicate what an individual's preferences might be. For example, students who had high math SAT scores or who were male tended to have a stronger distaste for fields in the humanities than others. Additionally, things like length of time within a major strengthen their preferences for it: the more time and effort you have put into one field of study, the more it would cost to switch to something else. Wiswall and Zafar discussed the lack of information they really had regarding where these tastes develop from. It could be determined endogenously (because of inherent differences in character or biology) or exogenously (due to family expectations or interactions with peers). It is interesting to consider what other exogenous factors could have an impact and whether external factors could ultimately become internal motivations for the pursuit of a certain field of study.

Zafar (2013) in a different paper further investigated the role of preferences specifically relating to gender. He discusses the common belief that women are more inclined to certain types of work and education, like the humanities, and had some interesting results. Generally, these differences are explained by innate variations in the genders or women in the workforce having less confidence in their abilities or concerns regarding equal pay. Zafar, however, found that these factors weren't all that significant. The main reason for the different career paths of many men and women are caused by different preferences in coursework and the workplace.

Turner and Bowen (2011) had similar findings which suggested that differences in math and science abilities as measured by the SAT don't explain the major gender gap. They attribute these varied preferences to people's expectations of the labor market and gender-specific effects in college as important forces in one's major choice. Zafar (2013) did find that expected earnings were still relevant, particularly in men, who tended to consider the financial outcomes of their decisions more than women, who instead focused on the non-pecuniary factors, such as enjoyment of the coursework. Zafar suggests that historical gender discrimination may have been a contributing factor to these differing preferences between men and women. He mentions that one potential treatment for this situation would be an increase in the number of female professors in these male-dominated fields. Seeing female professors as role models in STEM fields could lead to changes in young women's perceptions of the fields and in following alter their preferences and tastes. This begs the question, is viewing actual academics as role models the only way to generate this effect, or could seeing women in science fields in entertainment or pop culture have the same effect?

Walls (2009) also investigated these preferences and their role in the decision making process. Specifically, he focused on the psychological power of self-determination theory in

developing preferences for fields and in major selection. This investigates the relationship between a student's internal and external motivations by investigating how factors like interpersonal, future outcomes, and personal experiences played into a student's decision, although he did have some difficulty assigning some of these variables as internal or external, making his model more complex than he had expected. Walls however felt that this complexity likely reflected the real complexity of the decision for students. He did find that overall self-determination wasn't entirely necessary in all of the determinants of major choice however it was essential regarding two commonly mentioned variables in other papers: future outcomes and satisfaction.

Although most of these studies have suggested that preferences and tastes are the main deciding factor in major selection, another study by Montmarquette, Cannings, and Mahseredijan (2001) finds that the most significant factor is in fact the expected earnings. Montmarquette, Cannings, and Mahseredijan point out that many other studies of this subject make certain assumptions like that all majors have an equal probability of success and that there would be constant earnings across majors. Here, when discussing the potential earnings, the authors account for the probability of student success in their program, the expected earnings after graduation, and the alternate earnings for those students who don't succeed and drop out of or don't attend college. They still acknowledge that preferences can play a major role, but they also discuss the role of other information about the individuals such as their family's socioeconomic background. They mention that many factors associated with one's socioeconomic standing could greatly impact the type of education available to them. However, overall, they still found that expected earnings were the major deciding factor, although they also found, similar to Zafar (2013) that women are less influenced by these financial variables than men.

In summary, it is clear that the two primary factors that impact what type of education and career people pursue are the potential earnings in the field and the preferences for the type of work or workplace environment. The majority of researchers found that the tastes and preferences was the stronger of these two factors often overpowering the effect of earnings and leading people to pursue lower-earning careers. It is clear that there is still a lot to be understood about these key variables, particularly preferences. There seems to be little information on exactly where the preferences stem from or why they present themselves so strongly.

Impact of Television in Perceptions

While there hasn't been much research regarding television's impact on choosing a medical career, studies have looked into the role television plays in our perception of the workplace and specific professions, normally looking at cultivation effects, which refers to the long-term impact of television on viewers. For example, Waldeck (2009) investigated the role that television shows featuring a variety of professions had on the public perception of people in those professions. The exposure to television influences their individual work expectations in regard to things like access to resources and management in the workplace. Television can also greatly influence how we perceive people of certain statuses and positions, and it can start building these perceptions at a very young age. In a study by Potts and Martinez (1994), they found that even children aged six to 10 years old had been influenced by the depiction of certain careers like police officers and scientists. In this study, the children viewed scientists quite positively as a result of their exposure to them on television. Although this isn't always the case. A study by Chory-Assad & Tamborini (2010) suggests that depictions of physicians in current fictional programming portray doctors poorly, with questionable ethics and trustworthiness. This

resulted in negative relationships between the exposure to these representations of physicians and the viewers' perceptions of them.

One study by Daniel Kelly (2016) actually looked at how medical tv shows (both reality and drama) influence the perceptions of aspiring doctors. Rather than looking at whether these shows led them to pursue their career, it looked at how they perceive their careers, specifically looking at the sources of motivation, and how they view the health conditions that they see. Kelly found that viewing medical television shows had a relationship with the intrinsic motivations of these aspiring doctors.

Kelly (2016) also found that television viewing had varied relationships with the perceptions of many medical conditions, such as believing cancer to be more common than it actually is. Chung (2014) also had interesting results when investigating cultivation effects on viewers' perception of medical health. She found that frequently viewing medical dramas could lead people to underestimate the seriousness of dangerous health issues like cardiovascular disease and cancer and may even fail to recognize the importance of dealing with these health problems. Another study by Quick, Morgan, Lavoie, and Bosch (2014) had similar findings in terms of the ability of medical shows to impact the perceptions of the medical profession. They suggest that the show *Grey's Anatomy* leads to the patient's inability to trust and believe in the integrity of organ donation. This can lead them to be quite reluctant to register to become organ donors.

It is clear that what we see on TV, including depictions of doctors and medicine, can have a significant impact on the public's understanding and perception of the profession and the understanding of medical conditions. While there are conflicting reports on whether this

perception is negative or positive, there is no doubt that the shows help to form our opinions about this field and those who work in it.

Discussion

Over the last few decades, there have been many fluctuations in medical school attendance and the number of practicing physicians (Cooper 2003). This has resulted in periodic shortages in physicians, requiring several attempts to resolve this problem. These attempts have included pushing more responsibility to nonphysician clinicians, relying more on medical graduates from other countries, and expanding the training capacity of the US medical schools. This can be done by increasing the capacity of the existing schools or adding new schools. Emphasis has alternated between these two strategies, with some decades focusing on enlarging schools and others working to expand the number of them. Along with these efforts to increase the training capacity, the number of qualified applicants had also dramatically increased, paralleling the growth in those receiving undergraduate education. This means that there has been an increase both in the people eligible to enter the field and spaces to train them. However, these expansion efforts are expensive. Efforts to expand the training capacity also helped to reduce the rate of attrition, meaning that more medical students are finishing their education, resulting in an increase in the number of physicians practicing today.

Cooper (2003) also discusses the changing applicant pool mentioning that the number of female recipients of bachelor's degrees has been consistently increasing for a long time. These numbers actually surpassed the number of male recipients of bachelor's degrees in 1982, which has been in decline since the end of the draft for the Vietnam War in the mid-1970s. This trend holds true specifically for white men, which used to be the predominant group studying

medicine. Additionally, of the men who received a bachelor's, a smaller percentage was applying to medical school. This sharp decline in white male applicants would have resulted in a severe shortage of physicians had it not been for the sharp increase in female applicants. The white paper, *Women in Medicine* (2015), also references this increase in female medical school attendance following the introduction of the Title IX Education Amendments in 1972 which prohibited discrimination based on sex in educational programs that received funding from the federal government. This helped women gain access to the male-dominated environment. Although there were still barriers, specific efforts were made to increase the number of women admitted to medical education programs. These efforts were clearly successful as the percentage of medical school entrants who were women increased from 22.4% in 1974 to 47% in 2013. This will likely result in the continuation of the decline in the gap between male and female physicians.

Janbu (2000) discusses the importance of women as medical professionals. While women are becoming much more common the change is slow and they are still a minority within the field, especially in certain fields like general surgery. Janbu suggests that increasing the equality of the genders within this field would benefit the overall profession, resulting in better patient care, work environment, and potential improvement in the shaping of healthcare politics. At the time of this publication, 50% of medical students are women, suggesting that these future professionals will help to develop and expand the role of doctors. Janbu suggests that changes in attitudes and role models would help this change.

Other researchers such as Cruickshank (2018) suggest that women may even be more effective as medical professionals. She discusses the fact that women are underrepresented as faculty and role models in medical school. Women made up only 39% of full-time faculty and

16% of departmental chairs in 2015. Female doctors also are less likely to present their research as speakers, which means they don't have the opportunity to be a part of keeping physicians up to date on the newest information in the field. Despite these examples of inequality, female doctors generally have patient outcomes that are as good as or better than the outcomes of their male peers. Some investigations cited by Cruickshank even suggest that female doctors have better results than male doctors, with lower mortality and readmission rates. Another improvement that female physicians bring to medicine is their focus on the patient. In addition to a greater tendency to follow clinical guidelines and perform preventative procedures, female doctors are better at communicating with their patients. They spend longer amounts of time with the patients, asking more questions of the patient to ensure their understanding and offer more counsel regarding the more psychological and mental sides of health. This combined with their increased empathy helps patients feel at ease with female doctors, which makes it easier to understand the treatment and diagnoses they receive from their doctors.

This understanding of the growth of interest in the medical profession and women's position in it raises some interesting questions. Specifically, the discussion of the importance of female role models in the education of aspiring female doctors leads me to wonder whether these role models could appear on television. If so, could the prevalence of these figures on television, also help to spread some of the behaviors that apparently make women better doctors, although that is outside the scope of this paper's investigation.

Data

For this model, I used time series data from 1996 to 2019 to perform multivariate linear regression analysis. The American Association of Medical Colleges (AAMC) provides

information about the population of applicants and matriculants from 1980 through 2019. I used this data for my dependent variables, specifically using the total number of applicants, the number of male applicants, the number of female applicants. I chose to use the number of applicants because it reflected the number of people who wished to pursue an education in medical school. This and other data used in this investigation is outlined in the following summary table.

Table 1: Summary Statistics

	mean	sd	min	max
Total Applicants(totapp)	43402.04	6386.284	33623	53371
Male Applicants (mapp)	22693.79	3437.936	17067	27927
Female Applicants (fapp)	20703.13	3336.128	16556	27848
Total Seasons of Medical Shows (totdoctv)	3.625	1.46888	1	5
Average Rating of Year's Medical Shows (avrate)	7.879167	.396703	7.1	8.3
Number of Female-Driven Medical Shows (fdoctv)	1.708333	1.573674	0	5
Average Rating of Female-Driven Medical Shows (favrate)	5.379167	3.894029	0	8.6
Average Cost of Medical School (fees)	18972.35	5514.896	11731.55	29756.43
Number of Medical Schools in US (medsch)	152.8333	10.84141	142	172
Total Bachelor's Recipients (totdeg)	1569532	274237.5	1172879	1963000
Male Bachelor's Recipients (mdeg)	671914.5	115092.8	519956	838000
Female Bachelor's Degree (fdeg)	897574.3	159283.1	652364	1125000
Acceptance Rate (accept)	.4256027	.0328986	.344959	.4903786
Male Acceptance Rate (maccept)	.3060648	.0228201	.2651002	.3450897
Female Acceptance Rate (accept)	.3918022	.056099	.2568215	.4797009
Percent of Applicants Female(propfapp)	.4766667	.0259877	.42	.52
N	24			

For control variables, I looked at the number of recipients of bachelor's degrees in the previous year, the number of medical schools one could apply to, the average cost of attendance of medical school, and the acceptance rate from the previous year. For the number of bachelor's

degree recipients, I used data from the National Center of Education Statistics (NCES) which had data on the total number of degree recipients, the number of male recipients, and the number of female recipients from 1979 to 2018. I used this to represent the size of the potential applicant field. In a similar vein, I collected data on the number of open medical schools to account for the options and the spots available to potential applicants. Data for the average cost of attendance was also retrieved from the AAMC data. I also used the previously mentioned AAMC data on the applicant and matriculant rates to calculate the acceptance rate. I included this as a measure of the competitiveness of the field.

For the explanatory variable, I wanted to look at the prominence of television medical dramas. This involved accounting for the number of shows on air and the quality of said shows. I limited my investigation to scripted medical shows on broadcast channels that take place primarily in hospitals or other medical facilities. Again, I limited my scope to shows featuring professionals who would have attended medical school, excluding shows like *Emergency!* that focused on paramedics. I also excluded shows without clearly defined seasons as they couldn't resulted in twenty-two shows within the time range defined by the other data, although two of these were excluded because of the lack of available ratings data. The shows used can be seen below in Table 2.

Table 2: Medical TV Shows Used in Model

Show Title	Ran During Academic Years	Number of Seasons Relevant in Model
New Amsterdam*	2018-	2
The Good Doctor	2017-	3
The Resident	2017-	3
Chicago Med*	2015-	5
Code Black*	2015-2018	3
The Night Shift	2013-2016	4
Emily Owens M.D.*	2012	1
Mob Doctor*	2012	1
Saving Hope*	2011-2016	5
A Gifted Man	2011	1

Combat Hospital*	2010	1
Miami Medical	2009	1
Private Practice*	2007-2012	6
Greys Anatomy*	2004-	16
House	2004-2011	8
Medical Investigation	2004	1
Scrubs	2001-2009	9
ER	1994-2008	15
Chicago Hope	1994-1999	6
Doogie Howser, M.D.	1989-1992	1

**Female led*

For ratings, I hand collected data from the Internet Movie Database (IMDb) which allows viewers to rate episodes of shows. I wanted viewer ratings because the viewers are the ones whose decision making could be affected by the show. I used episode ratings to find the average rating for each season of each show and used that value to find the average rating of all medical tv shows on television in the given year. (A year refers to the academic year defined by the medical school application data.)

Additionally, since I wanted to look at whether the prominence of female doctors on television made the medical profession more popular with young women I needed to identify shows which were female-driven. I defined a female-driven medical show as one in which the lead character or approximately half of the ensemble cast were women. These women needed to be doctors of a similar rank to men on the show. This excluded shows like *House* and *ER* in which many of the female characters were nurses or hospital administrators. I also used the average ratings for these shows by season as an indicator of the quality of these female-driven shows.

Unlike previous studies investigating similar decision making, I was unable to use cross-sectional data looking at specific students, as I had to account for the prominence of the medical dramas on television, which could only be measured by year. This prevented me from accounting

for the individual's demographics and preferences. There were also some variables that I couldn't take into account due to the lack of availability of the data. This included data on viewership of the shows during the broadcast which would have helped give insight into the reach of the depictions of doctors in a given show. There also was no data available about these shows' popularity on streaming services which was unfortunate as streaming has become one of the primary ways to view these shows. Additionally, the sample size was small due to the relatively recent introduction of television and specifically medical dramas and a lack of availability for certain other data, with only twenty-four years with sufficient information.

Methodology

As mentioned before, I used ordinary least squares on a time series data set with data gathered from a variety of sources. The goal of the models I created was to investigate the potential relationship between the doctors and hospitals depicted on television with a person's desire to pursue medicine as a career. As previously discussed, I included control variables that would also impact the number of applicants to medical school such as the number of bachelor's degree recipients the previous year, the number of medical schools that existed, the average cost of these schools, and the acceptance rate.

For the dependent variable, I used the applicant data, running models for the percent change in the total number of applicants, the number of male applicants, and the number of female applicants. I chose to use the percent change for these values to see the effects on the already relatively significant rate of change in applications. For each of these dependent variables, I included the relevant control variables (if looking at female applicants, I would include the number of bachelor's degrees awarded to women the previous year). I additionally

ran models with the proportion of the applicant field that was female to see if the shows lead women to become more prominent in the field. I then accounted for the prominence of the medical dramas. For this variable, I used the sum of the number of seasons and the sum of the average ratings over the course of five years. I used a lag of four years on this variable so that it would reflect the amount and quality of the shows that they could watch in the 5 years before their undergraduate education, as this is likely when they would have had to have seen the shows for them to impact their desire to pursue a medical education. (Watching a medical drama in their senior year of college wouldn't really allow time for them to decide to pursue medical school and at younger ages, the shows wouldn't really be appropriate due to mature subject matter).

I created models for the percent change in the total number of applicants (1), the number of male applicants (2), and the number of female applicants, (3) which looked at all of the medical shows and their average ratings.

(1) $lntotapp_t=\beta_0+\beta_1 L4.L5totdoctv_t+\beta_2 L4.L5avrate_t+\beta_3 L.lntotapp_t+\beta_4\ fees_t+\beta_5 medsch_t+\beta_6 L.totdeg_t+\beta_7 L.accept_t+\epsilon_t$

(2) $lnmapp_t=\beta_0+\beta_1 L4.L5totdoctv_t+\beta_2 L4.L5avrate_t+\beta_3 L.lnmapp_t+\beta_4\ fees_t+\beta_5 medsch_t+\beta_6 L.mdeg_t+\beta_7 L.maccept_t+\epsilon_t$

(3) $lnfapp_t=\beta_0+\beta_1 L4.L5totdoctv_t+\beta_2 L4.L5avrate_t+\beta_3 L.lnfapp_t+\beta_4\ fees_t+\beta_5 medsch_t+\beta_6 L.fdeg_t+\beta_7 L.faccept_t+\epsilon_t$

I then made an additional model to look at the relationship of female applicants (4) to the female-driven shows, to see if that had more of an impact.

(4) $lnfapp_t = \beta_0 + \beta_1 L4.L5fdoctv_t + \beta_2 L4.L5favrate_t + \beta_3 L.lnfapp_t + \beta_4\ fees_t + \beta_5 medsch_t + \beta_6 L.fdeg_t + \beta_7 L.faccept_t+\epsilon_t$

Finally, I created models looking at the relationship between the percent of applicants that were female and the prominence and quality of all medical shows (5) and female-driven (6) medical shows.

(5) $propfapp_t=\beta_0+\beta_1 L4.L5totdoctv_t+\beta_2 L4.L5avrate_t+\beta_3 L.lnfapp_t+\beta_4\ fees_t+\beta_5 medsch_t+\beta_6 L.fdeg_t+\beta_7 L.faccept_t+\epsilon_t$

(6) $propfapp_t=\beta_0+\beta_1 L4.L5fdoctv_t+\beta_2 L4.L5favrate_t+\beta_3 L.lnfapp_t+\beta_4\ fees_t+\beta_5 medsch_t+\beta_6 fdeg_t+\beta_7 L.faccept_t+\epsilon_t$

Since I was using time series data, I had run the Durbin Watson test for autocorrelation on each model. It tested positive so I included a lag for the dependent variable.

Results and Discussion

Table 3a and Table 3b (on the next page) report the results of each of these models. The models, for the most part, indicate that there isn't a statistically significant causal relationship between the prominence of medical television shows and the number of applicants to medical school. Additionally, these models all had quite a high R and R^2; however, these values were certainly greatly inflated by the small sample size.

The one finding that was statistically significant suggested a causal relationship between the number of seasons and the average ratings of female-driven shows and the proportion of applicants that are female (Table 3b: Model 6). The number of seasons of female-driven medical shows that were available in the years leading up to undergraduate school had a small but positive effect on this proportion while the average ratings of these shows had a negative relationship. I was surprised to see this negative coefficient for the average ratings since it indicates that higher rated female-driven shows result in a smaller proportion of female

Table 3: Regression Estimates (1)

	(1) lntotapp	(2) lnmapp	(3) lnfapp
L4.L5totdoctv	-0.00505 (0.00304)	-0.00365 (0.00770)	-0.00441 (0.00604)
L4.L5avrate	-0.00156 (0.00463)	-0.00276 (0.00580)	-0.00258 (0.00552)
L4.L5fdoctv			
L4.L5favrate			
fees	-0.0000106 (0.00000687)	-0.00000536 (0.00000789)	-0.00000807 (0.00000775)
medsch	-0.00996 (0.00585)	-0.00645 (0.00428)	0.00538 (0.00546)
L.lntotapp	2.383*** (0.760)		
L.lntotdeg	0.485 (0.284)		
L.accept	3.855* (1.949)		
L.lnmapp		0.868*** (0.147)	
L.lnmdeg		0.899* (0.424)	
L.maccept		-0.479 (1.281)	
L.lnfapp			0.752*** (0.289)
L.lnfdeg			0.401 (0.305)
L.faccept			0.134 (0.323)
L.propfapp			
_cons	-21.42*** (7.775)	-9.328 (6.306)	-3.579 (3.800)
N	24	24	24
R^2	0.974	0.972	0.970
adj. R^2	0.963	0.959	0.956

Standard errors in parentheses
* $p < 0.10$, *** $p < 0.05$, *** $p < 0.01$

Table 4- Regression Estimates (2)

	(4) lnfapp	(5) propfapp	(6) propfapp
L4.L5totdoctv		-0.00134 (0.00126)	
L4.L5avrate		-0.00144 (0.00133)	
L4.L5fdoctv	0.00572 (0.00563)		0.00257*** (0.00109)
L4.L5favrate	-0.00118 (0.00192)		-0.00124*** (0.000384)
fees	-0.00000244 (0.00000829)	-0.00000177 (0.00000187)	0.00000190 (0.00000152)
medsch	-0.000379 (0.00635)	0.00269*** (0.000974)	0.000969 (0.00115)
L.lntotapp			
L.lntotdeg			
L.accept			
L.lnmapp			
L.lnmdeg			
L.maccept			
L.lnfapp	0.852*** (0.226)		
L.lnfdeg	0.228 (0.171)	-0.00124 (0.0720)	-0.0312 (0.0323)
L.faccept	0.110 (0.306)	0.443*** (0.121)	0.413*** (0.0867)
L.propfapp		0.0499 (0.324)	-0.160 (0.252)
_cons	-1.579 (2.423)	-0.00622 (0.899)	0.646 (0.392)
N	24	24	24
R^2	0.970	0.936	0.962
adj. R^2	0.957	0.908	0.945

Standard errors in parentheses
* $p < 0.10$, *** $p < 0.05$, *** $p < 0.01$

applicants. It is unclear why this relationship exists; however, I would suggest that the fact that these values remained relatively constant while the proportion of female applicants is constantly increasing results in what appears as a sort of downward drag on the proportion of female applicants.

These positive coefficients in models 4 and 6 indicate to me that the female doctors featured in the female-driven tv shows can impact people's interest in a medical career. One key example of this would be the ability of seeing female doctors on television to normalize their position in the traditionally male-dominated field. This results in altered perceptions of the career, potentially making a medical career seem to be a more realistic and attainable aspiration. Additionally, the women in these shows are depicted with many positive traits such as intelligence and talent that young girls may want to emulate. These characters can act as the role models that many women interested in medicine may lack considering the disproportionate number of female professors in male-dominated fields like medicine and STEM.

For all of the other models, the coefficients of the explanatory variables were not significant. This means that according to this model, there isn't a causal relationship between the prominence of medical shows (female-driven or otherwise) on the rate of change in the applications overall or for specifically men and women. It is interesting to note that while models 1, 2, and 3, which looked at the total number of tv shows, have negative coefficients, while model 4 which instead considered female shows had a positive coefficient for the number of shows. This indicates that although not statistically significant, the number of female-driven shows had a positive relationship. Additionally, the total number of medical shows (including those that centered on male characters) had a negative impact on the proportion of female applicants in a year, although the coefficient was statistically insignificant.

Despite the statistical insignificance of the coefficients in the other models, it is possible that there is still a relationship between the representations of medical professionals on television and interest in the medical field. It is possible that the effect, however, is greatly delayed, beyond the scope of these models. Additionally, it is possible that as streaming services become more and more popular as a way to view television shows such as these, that the number of shows broadcasting within a year isn't a good indicator of their prevalence in society. However, without data on the viewership of these shows, it won't be possible to understand whether those who watch on streaming services are impacted by the stories and characters they see in the shows. Additionally, the rate of change in the number of applications to medical school may not entirely reflect the level of interest in the field. Application to medical schools is a regulated process that requires a lot of those interested. There are many people who may have aspirations of working in medicine but lack the resources to receive the required undergraduate degree or take the entrance exams. These people could also have been influenced by depictions of physicians on television; however, since they aren't included in the number of applicants, the television's impact couldn't be reflected.

Conclusion

This paper aimed to investigate the relationship between medical television shows and interest in pursuing a medical career. These findings suggest that although representations of doctors on television don't impact the rate of change for applicants, depictions of women as doctors on television can result in women being a larger proportion of all applicants pursuing a medical career. This is interesting in that it indicates that while the shows may not actually create interest in the field, the shows that feature female doctors make it seem more normal to see

women in the medical field overall. This effect can help to counter existing perceptions of the gendered nature of many professional and academic fields.

There are several limitations to these estimations. One key limitation is the size of the sample, which was limited by the availability of relevant data. Additionally, there are several other pieces of data that would be interesting to consider such as viewership. Access to viewership data on the medical shows would allow for a better understanding of the popularity and reach of the shows which would have an impact on the effect those shows have. In this vein, the lack of data on the viewership of these shows on streaming services also likely underestimates the reach of the shows and in turn their potential impact on viewers' career choices. Additionally, some variables may not be the best indicators of their subject. For example, as previously mentioned, the number of applicants to medical school wouldn't reflect people who would like to pursue a career in medicine but are unable to due to a lack of appropriate resources.

Despite the limitations, the findings indicate the impact of the representation of women in male-dominated careers in the media, such as medicine. It would be interesting to see if this applied to other disciplines. Could representing women in STEM or financial fields in entertainment have the same effect, normalizing their position and encouraging them to pursue these careers? If the depiction of women in these careers normalizes their existence in these fields and encourages women to enter said fields, attempts to increase the representation of women in these careers would have a great impact on narrowing the gender gap in many industries. There are many other fields that are popular on television and in other entertainment such as law enforcement in cop shows and lawyers in legal dramas. It would be interesting to investigate whether similar relationships exist in encouraging women to enter these fields.

Additionally, it would also be interesting to see if television can help to normalize minority groups within professional fields. For example, to investigate whether racial diversity in television and film could similarly reduce the racial gaps in professional fields like medicine.

References

Altonji, J.G., Archidiacono P., Maurel, A. (2015) The Analysis of Field Choice in College and Graduate School: Determinants and Wage Effects. Retrieved from https://www.tandfonline.com/doi/abs/10.1207/s15506878jobem4702_3

Chung, J.E. (2014). Medical Dramas and Viewer Perception of Health: Testing Cultivation Effects. Retrieved from https://www.semanticscholar.org/paper/Medical-Dramas-and-Viewer-Perception-of-Health%3A-Chung/2af69bd24724c7f7688aeb31d52135546eff602e

Chory-Assad, R. M. & Tamborini, R. (2010) Television Exposure and the Public's Perceptions of Physicians *Journal of Broadcasting & Electronic Media.* 47(2) 197-215. Retrieved from https://www.tandfonline.com/doi/abs/10.1207/s15506878jobem4702_3

Cooper, R. (2003, April 9) Medical Schools and Their Applicants: An Analysis, Health Affairs, 22(4). Retrieved from https://www.healthaffairs.org/doi/full/10.1377/hlthaff.22.4.71

Cruickshank, H. (2018) Are Women Better Doctors Than Men? *Healthline.* Retrieved from https://www.healthline.com/health-news/women-doctors-better-patient-interactions#1

Janbu, T. (2000, Jan 10) More Women in the Medical Profession- A Benefit? *Lovisenberg Diakonale Sykehus* 120(1) 85-7. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/10815495

Kelly, D.E. (2016). Cultivation Effects of Medical Television Viewing on Aspiring Doctors. Retrieved from https://www.semanticscholar.org/paper/Cultivation-Effects-of-Medical-Television-Viewing-Kelly/0aa331a2c9ff496529eee4a0a58e24f50826a621

McKie, R. (2018, Dec 23) How Jurassic Park ushered in a golden age of dinosaurs. *The Guardian*. Retrieved from https://www.theguardian.com/science/2018/dec/23/jurassic-park-film-inspires-new-era-of-dinosaur-discoveries

Montmarquette, C., Cannings, K., & Mahseredjian, S. (2002). How Do Young People Choose College Majors?. *Economics of Education Review*. 21 (6). 543-556. 10.1016/S0272-7757(01)00054-1.

Potts, R, Martinez I. (1994) Television viewing and children's beliefs about scientists. *Journal of Applied Developmental Psychology*. 15(2) 287-300 https://www.sciencedirect.com/science/article/pii/0193397394900183

Staff Care. (2015) Women in Medicine: A Review of Changing Physician Demographics, Female Physicians by Specialty, State and Related Data. Retrieved from https://www.amnhealthcare.com/uploadedFiles/MainSite/Content/Staffing_Recruitment/Staffcare-WP-Women%20in%20Med.pdf

Quick, B.L., Morgan, S.E., LaVoie, N.R., & Bosch, D. (2014). Grey's Anatomy Viewing and Organ Donation Attitude Formation. Communication Research, 41, 690-716. Retrieved from https://www.semanticscholar.org/paper/Grey's-Anatomy-Viewing-and-Organ-Donation-Attitude-Quick-Morgan/001c055f194b68f930a88f0fbf144c1f0565dc87

Turner, S.J., & Bowen, W.G. (1999). Choice of Major: The Changing (Unchanging) Gender Gap. Retrieved from https://www.semanticscholar.org/paper/Choice-of-Major%3A-The-Changing-(Unchanging)-Gender-Turner-Bowen/0dfd8d1d213fbb29ac9925d3e934bf0776f18a84

Waldeck, N. E. (2009) The Relationship Between Television Exposure and Individual Work Expectations: An Empirical Study. *Journal of Applied Psychology*. 39(1) 208-234.

Retrieved from https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1559-1816.2008.00436.x

Walls, S.M. (2009). Determinants influencing college major choice and their relationship to self-determined motivation, achievement, and satisfaction. Retrieved from https://www.semanticscholar.org/paper/Determinants-influencing-college-major-choice-and-Walls/ff9dc0af7c059f374b7d736b4e7b76d5696fc6be

Wiswall, M., & Zafar, B. (2015). Determinants of College Major Choice: Identification using an Information Experiment. *The Review of Economic Studies*, 82(2 (291)), 791-824. Retrieved from www.jstor.org/stable/43551547

Zafar, B. (2013). College Major Choice and the Gender Gap. *The Journal of Human Resources*, 48(3), 545-595. Retrieved from www.jstor.org/stable/23799096