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Determinants of Broadway Theatre Demand

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Abstract

This research identifies many reasons why a theatregoer may choose to attend one Broadway show over another and focuses on the role of familiarity on demand. In response to recent trends, specifically movies produced as stage musicals, this research estimates how classification as an adaptation affects grosses and capacity. Using data from The Broadway Theatre League and the Internet Broadway Database, the author completes an econometric analysis of the drivers of demand for different shows within the 2018-2019 Broadway season. When controlling for previously studied drivers of demand such as revivals and actor popularity, this analysis identifies significant and positive effects on play and musical grosses when a show is an adaptation based on a book, movie, or play. The positive marginal effect on grosses could provide justification for the popularity of adaptations on Broadway.

Overview of Theatre Demand

The neon lights on Broadway illuminate the largest theatre center in the United States. In the 2018-2019 season, 14.77 million people attended Broadway productions and theatre companies produced $1.83 billion grosses (The Broadway League, 2020). With a variety of shows to choose from in different categories and with unique characteristics, theatregoers may be drawn to their chosen performances for a multitude of reasons. With 34 new productions contributing to the 68 shows offered in the 2018-2019 season, the decision of a theatregoer to select what show to see can be overwhelming.

Previous studies looking at theatre demand have examined the relationship between income and frequency of attendance and have assessed demographic information of theatregoers by looking at audience surveys (Moore, 1966, 1968). Instead of evaluating what draws audiences to the Broadway theatre scene, other literature considers how different variables such as show type, critic reviews, and Tony awards guide audiences to select certain shows (Reddy et al., 1998; Simonoff & Nygren, 2003; Nygren & Simonoff, 2007).

Demand decisions for theatre productions differ from those for typical physical goods. Broadway theatre is an experiential good, meaning that its consumption is unique and limited to one experience. This leads to a lack of complete internal knowledge about the product (Reddy et al., 1998). Because theatre as a good is not durable or reusable and consumers must allocate both time and money to the experience, there is more risk in this type of purchase (Simonoff & Nygren, 2003). In effort to reduce risk, theatregoers could look to other informative variables to assess the level of quality. Previous research looks to the movie industry for explanations of demand because both movies and theatre productions are experimental products with increased risk (Simonoff & Nygren, 2003; Reddy et al., 1998). Different demand drivers and potential indicators of quality analyzed in previous research include ticket price, show type, recognizable names of artists, popular

celebrities, Tony awards and nominations, and familiar content (Reddy et al., 1998, Gates, 2013; Nygren & Simonoff, 2007; Boyle & Chiou, 2009; Levy-Garboua & Montmarquette, 1996).

While many studies draw a distinction between whether a play or musical is a revival (Simonoff & Nygren, 2003; Gates 2013; Nygren & Simonoff, 2007), literature lacks differentiation on whether the play uses content from other media and is categorized as an adaptation. Plays can be split into different categories based on genre or time period (Grisolia & Willis, 2011; Abbe-Decarroux, 1994), but the presence of recognizable source material has not been specifically analyzed as a reason for selecting a certain production. A French study about demand for performing arts assesses the role of familiarity through past consumption and the role of experience (Levy-Garboua & Montmarquette, 1996). It proposes that familiarity through the role of experience influences consumer choice by either forming habits or aiding the process of learning by consuming. The authors explore the second answer and emphasize the view that any new experience of a good reveals to the consumer an unexpected positive or negative increment of taste (Levy-Garboua & Montmarquette, 1996). While positive theatre experiences generate new possibilities for repeated pleasant surprises, I will apply the concept that positive experiences with theatre lead to the pursuit of more experiences and suggest that positive experiences with source content lead to more interest in repeatedly experiencing that content even in a different medium.

In terms of consumer behavior, a recognized brand is preferred to an unknown brand (Reddy et al., 1998). It may be applied that in theatre a show with a familiar title generates more interest than one without a mass media counterpart. To reduce risk, people may select the show that is associated with a previous positive experience. Furthermore, one would expect that if a show is an adaptation based on a previous work, someone is more likely to choose it because they enjoyed the previous work and have a favorable view of the show. Adaptations may also be significant because of their connection to nostalgia and an emotional interest in show content.

Broadway blog writer Kimberly Kaye (2010) wrote that two of the biggest trends of that decade were stage-to-screen musicals and jukebox musicals. Over the last decade, this trend of shows based on adaptations has grown. In the 2018-2019 Broadway season, 79% of musical performance weeks and 32% of play performance weeks were some type of adaptation. Furthermore, almost half (46.7%) of the sought-after musical productions on the Broadway stage were musicals based on a movie. This research focuses on the adaptation trend by considering the following question: Do adaptations generate more Broadway theatre demand than original works? This research considers the relationship between categorization as an adaptation and success of a production measured by grosses and percentage of capacity.

Conceptual Framework

Once a theatregoer decides that they will attend a Broadway production, they must then select one production to invest their time and money. Before evaluating each and every show offered, people may first divide productions by show type to narrow their search. There may be personal tendencies to select a play or musical for reasons outside of quality. Plays and musicals may be examined differently for similar reasons put forth by Sam Gates (2013) which include number of performances, size of cast, and size of theater. Gates's separation also comes from the conclusion by Simonoff and Nygren (2003) that type of show is an important predictor of longevity. Plays and musicals may be evaluated separately because of different quantities of each and how this impacts the number of choices available. For example, in the 2018-2019 season, the number of weekly observations of all musicals is more than triple the number for plays.

Quality is important because of the concept of risk aversion. Broadway productions are held in high regard because of their expected quality. If risk avoidance is a main driver when consuming experiential goods and goods with the highest quality have the lowest risk, then the theatregoer will find ways to estimate quality based on known characteristics. Information can be divided into three categories: talent, familiarity, and objective. Talent considers the excellence of actors based on previous and current roles. Familiarity points out recognizable characteristics of the show and its actors. Objective includes additional information about the show that describes the show rather than directly contributes quality to it. Furthermore, information about a production can be divided into information about the show and about the actors.

Talent in theatre is usually associated with the artists involved. For example, people assign talent to playwrights, composers, lyricists, directors, actors, and designers. To common audiences, actors are the most obvious observation of talent. Broadway productions are considered high-caliber partly because of the professional actors. Actors receive recognition of their talent as nominees or winners of Tony Awards. One would expect a theatregoer to choose the show with more Tony nominations and awards for its actors because more professional recognition translates to higher quality. Talent can also be seen when an actor is casted in multiple productions since this signals that the actor is highly skilled. This idea suggests that theatregoers would prefer a show if its actors have more years of experience because they believe more experience indicates more value.

Adaptations showcase the element of familiarity because the show title, main characters, and even central plot can be the same as another work. For familiarity, in addition to status as an adaptation, shows can be familiar if they are revivals since they have previously been performed on Broadway. Plus, because performance rights are later released it is likely that someone has knowledge of the show outside of Broadway. For that same reason, shows that opened before the 2018-2019 are more familiar. Since they have received more attention on and off Broadway, the chance of hearing audience reviews from

different information sources is greater. One would expect if a show is long-running, someone is more likely to choose it because it has received good reviews and feedback over time. Familiar actors can also encourage audience interest. Past experience of actors is part of familiarity because a theatregoer may recognize an actor's name from a previous theatre experience or from public reviews and become interested in the actor's current work. Actors with more experience have more opportunity to generate direct or indirect exposure to theatregoers. Actors may also be familiar for reasons outside of stage performance. For example, many celebrities in television or movie acting, athletics, and music have made a shift to Broadway acting. Though their performance in other areas may not directly correlate, the popularity of an actor may still interest audiences in a certain production.

Outside of these two categories is objective, or other general information, which describes the show's content or actors. This information includes demographic information, such as race and gender, about the actors or other contributors, cast size, performance space type and size, music genre, and ticket price. These variables could drive decisions to favor one show over another and are included as control variables in this analysis.

Figure 1: Conceptual Model of Determinants of Broadway Theatre Demand
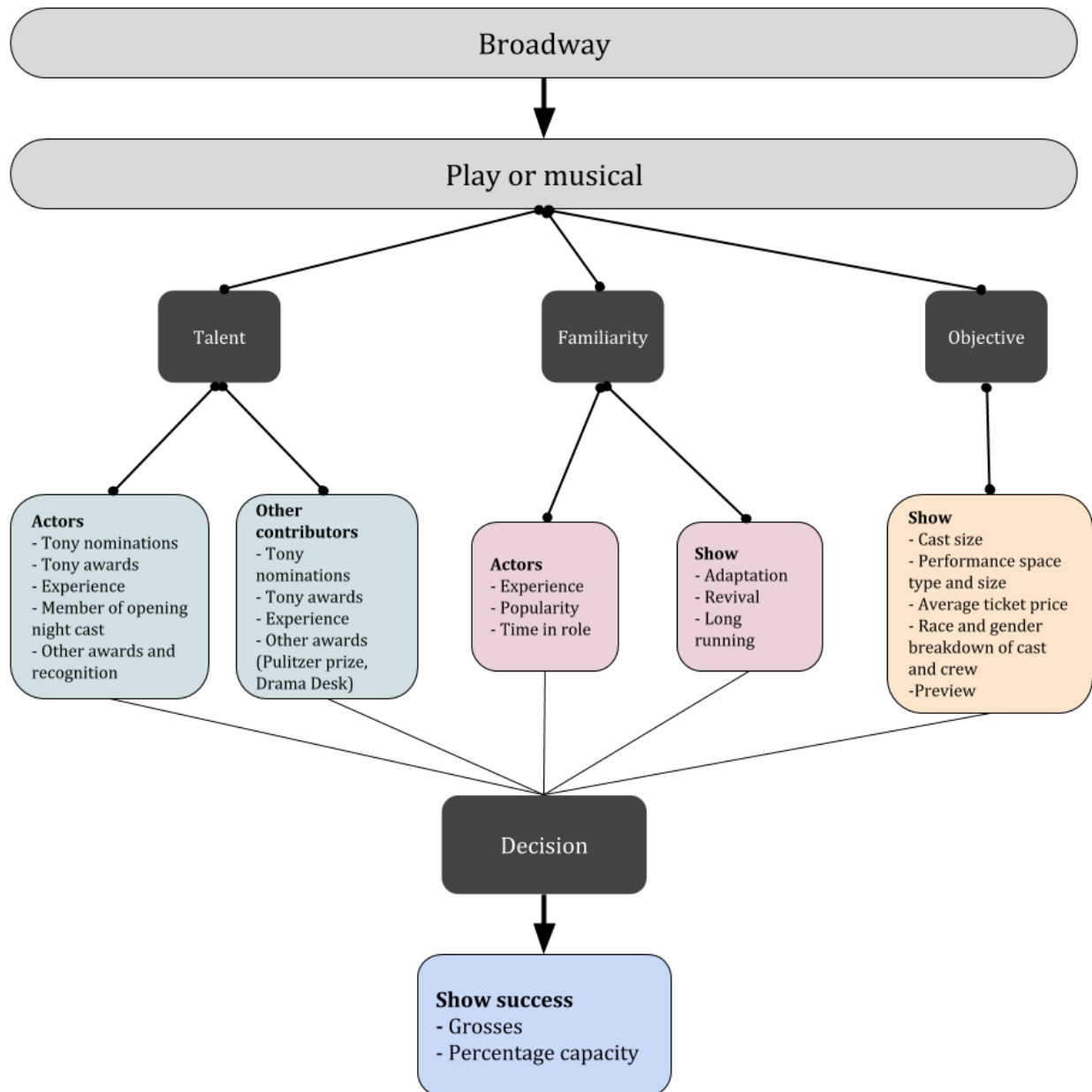
First a theatregoer must decide to see a Broadway show. Then they may limit their selection by choosing to consider only plays or only musicals. Whether or not a distinction is made between plays and musicals, the quality assessment of known characteristics is the same. While searches for information can be divided into facts about the show and facts about the people involved, the types of information can be arranged into the three categories described above. These talent, familiarity, and objective characteristics influence

the decision to see a show. Selection of one show over another leads to success of the chosen show. This success can be measured by grosses and percentage of capacity for a show in a given week in the season.

Data

I collected the data from online theatre database sources. The Broadway League provides weekly data about grosses, attendance, and capacity for each Broadway show. According to their home webpage, the Broadway League is the national trade association for the commercial theatre industry. It has provided weekly statistical information about Broadway theatre production starting from the 1984-1985 season until now. This source was used to track left-hand variables throughout the 2018-2019 season[1].

The Internet Broadway Database (IBDB) provided through The Broadway League is a searchable database for show and people information. I used it to determine actor information like experience, award history, and gender. It also provided show data such as opening and closing dates, cast lists for opening and current casts, and notes of replacements. IBDB was also used to determine a show's status as a play/musical[2], original/revival, and adaptation/non adaptation.

I acquired data from the vault section of the Playbill website to view character lists to identify significant characters for actor research and discover weekly casting changes for replacements. For information about actors, I selected the top five significant characters[3] for each show and researched those actors.

To determine levels of popularity for actors, I utilized Google Trends to explore web searches for actors. It was used to create two levels of popularity with starpower capturing a higher interest through searches.

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[1] Based on the Tony eligibility cut-off date and data given in weekend totals, to be included in the 2018-2019 season, a show must have had at least one week of performances between May 6, 2018 and April 28, 2019.

[2] In this research, only productions labeled as plays and musicals are considered in the analysis. This excludes four shows labeled as "specials" by IBDB: *Springsteen on Broadway, The Illusionists - Magic of the Holidays, Celebrity Autobiography,* and *Ruben & Clay's First Annual Christmas Carol Family Fun Pageant Spectacular Reunion Show*. Specials were removed because they do not fit the traditional idea of a Broadway show experience and have reasons separate from my conceptual framework. For example, specials usually focus on celebrity entertainers, concert-style performances, and variety acts.

[3] Research by Reddy, et al. (1998) uses the lead actor and lead actress of each show to assemble a variable for creative talent. In my analysis, five actors were utilized to recognize the influence of actors on the audience experience and their decision. Data for shows with casts smaller than five actors include the full cast. The top five significant characters were determined by the order of the character list on the Stage Agent website. If the show is not included on Stage Agent, the Playbill cast list, obtained from Playbill.com vault, was used. If the Playbill cast list was organized in order of appearance rather than order of importance, the order of the featured actor headshots was applied to determine significance.

Descriptive Statistics

Table 2: Summary of averages or totals from data set

Variable	Plays	Musicals	Both
Number of weekly observations	411	1,278	1,689
Number of shows per season	30	38	68
Number of shows new to the 2018-2019 season	21	13	34
Average number of shows per week	7.9	24.6	32.5
Adaptation, any	32.1%	79.0%	67.6%
Adaptation, movie	6.1%	46.7%	36.8%
Adaptation, book	23.1%	19.3%	20.2%
Adaptation, recording artist	n/a	12.5%	9.5%
Adaptation, play	2.9%	12.6%	10.2%
Revival	23.6%	15.2%	17.2%
Number of revivals	11	7	18
Number of revivals new to the 2018-2019 season	7	2	9
Show week number since opening, range	0-92	0-1630	0-1630
Show week number since opening, average	14.5	199.2	117.7
Previews	18.5%	3.9%	7.5%
Total acting experiences, average	15.41	19.48	18.49
Total actor Tony nominations, average	3.07	1.86	2.15
Total actor Tony awards, average	0.70	0.30	0.40
Trending actors, average	2.36	1.14	1.44
Starpower actors, average	0.58	0.16	0.27
Average grosses per week	$813,556	$1,126,046	$1,050,005
Average attendance per week	6,911	9,153	8,607
Average % capacity per week	89.6%	89.8%	89.7%
Ticket price, average	$106.24	$118.86	$115.79
Ticket price, range	$26.90-$194.66	$36.00-$375.39	$26.90-$375.39

Table 2 identifies key descriptive statistics from the data. For the 2018-2019 season, the data represent 1,689 weekly records of all play and musical performances. While about two-thirds of weekly observations are for musicals, when looking at the number of shows per year, musicals only make up just over half. This means that musicals make up a larger portion of shows offered throughout the season. The average number of shows per week in the chart gives an idea of how many shows of each type would be available to a consumer when making a selection in a given week. While there are 68 shows in the season, based on the weekly average there are 33 shows available in a given week. Musicals make up 75% of average available shows per week. Because this study is constrained by time, the musicals that are open every week in the season like *Hamilton, Wicked, The Lion King, and The Phantom of the Opera* carry more weight than shows that opened and closed in different parts of the season. Out of the 16 shows that were open the whole season, only two of them are plays.

More show weeks for musicals are based on adaptations than for plays. Musical adaptations may be so popular because they are related to other entertainment trends. Elements of the musical theatre experience have been replicated in common media through

televised "live" musicals like *Peter Pan Live!*, movies which include original music like *La La Land*, biographical movies with music from popular artists like *Bohemian Rhapsody*, and TV shows that use original or popular music like *Smash* and *Glee.* Because of this increased competition for musical performances from home, Broadway musicals may attempt to reclaim theatrical performance as a superior form of entertainment. By converting musical movies into stage musicals, Broadway can seize popular content to bring attention back to the stage. Broadway shows are known for their high caliber of production elements like costumes, set, lighting, sound, and special effects and so can emphasize the value of a theatrical experience over just seeing generated effects on screen. Since variations on musical theatre appear in common media, Broadway companies may use that trend to bring stories and songs from pop culture to the stage, hence the large number of adaptations based on movies and recording artists.

Adaptations may be especially popular when the production companies own the source material. According to Gordon and Jubin (2015), screen-to-stage adaptations from movies are often produced by media corporations that own the rights to the film. One example of this is musicals produced by Disney Theatrical Group. Disney's current musical options, *The Lion King*, *Aladdin*, and *Frozen* are examples of how media corporations can repackage stories to create new products.

As mentioned earlier in regards to show weeks, a majority (79.0%) of musicals and a lower amount (32.1%) of plays were based on some kind of adaptation. Adaptations can come from one or more outside sources including movies, books, recording artists, and plays. As seen in Table 2, the largest source of adaptations is from movies for musicals and from books for plays.

While musicals are more likely to be an adaptation, plays are more likely to be a revival. A show is a revival if it is produced again on Broadway after the original run has closed. Considering the origins of theatre and development of drama over history, plays have existed as a dramatic form longer than the style of musical theatre that we know today. Because more plays than musicals have been performed in earlier years of Broadway, they can return more often over a period of time. As an example, plays by American 20th century playwright Arthur Miller have been performed as originals 13 times and revivals 23 times over 75 years (IBDB). For Broadway theatre it seems that more plays have been performed throughout history than musicals so when a show is revived it is more likely to be a play.

According to Table 2, show weeks include more revivals of plays than revivals of musicals. Looking at the number of shows, 23.6% of plays were revivals and 15.2% of musicals were revivals. The popularity of play revivals over musical revivals has been seen over the last few Broadway seasons. For new shows in the 2018-2019 season, out of the 21 new plays, one-third were revivals. According to The Broadway League (2019), for plays in the previous four seasons, about one-half of new shows were revivals until the decrease in

the 2018-2019 season. New musicals do not have as much focus on revivals. In 2018-2019, 2 out of 13 new musicals were revivals, and in the previous four seasons about one-third of new musicals were revivals (The Broadway League, 2019). For both plays and musicals, the number of revivals opening this season was lower compared to previous years.

In addition, plays usually have shorter run times, with an average of 14.5 weeks, while musical runs average 199.2 weeks. The longest running play in the season, *The Play that Goes Wrong*, was on its 92nd week when the season ended. For musicals, *The Phantom of the Opera*, ended the season on its 1630th week. While musicals like *The Phantom of the Opera*, *The Lion King*, and *Wicked* have been open for over a decade, a play may open and close in one season and then reopen and close a few years later. Long-running shows have the familiarity of revivals without ever closing and getting revived. Also partly because of long-running musicals, the number of new plays in a season is usually higher than the number of new musicals. In the 2018-2019 season, there were 1.6 times more new plays than new musicals.

Depending on the stage of longevity of a show, the presence of previews for that show will also influence grosses and capacity. Previews contribute to the number of shows available, and though the appeal can be different they still fit the general decision model of selecting a Broadway show. In order to recognize previews' divergence, they are identified as an objective variable which influences grosses and capacity. Shows that opened in this season have between one to six weeks of previews before their opening night. Since there are more new plays than new musicals in the season, a higher percentage of observed weeks are made up of previews for plays than for musicals.

Table 2 also highlights actor information such as awards and popularity. Actors for significant characters in plays have more Tony nominations and awards on average than those in musicals. Since shows can only be eligible for Tony consideration within the season they open, this higher chance of getting nominated or awarded for being a play actor may be attributed to the higher number of new plays. Plays also utilized more famous actors in their main cast, possibly because famous people from other trades may have performance skills that are more applicable and easily transferable to plays (ie. comedic or dramatic acting), while significant musical roles would require singing and dancing talent. It is also possible that Tony recognition adds to an actor's popularity. On average, plays have one more trending actor than musicals. While the averages are smaller for starpower level of popularity, plays include 3.5 times more starpower actors.

In the 2018-2019 season, plays and musicals have similar percentage capacity and average price but a gap between grosses and attendance. Grosses may be higher for musicals because musicals have high-priced outliers in the season and plays do not have a comparable item. For example, *Hamilton* and *Dear Evan Hansen* consistently had average ticket prices over $200, and while open for the entire season *Hamilton*'s lowest average ticket price was $262.30. If consumers expect higher production costs for musicals because

of larger casts and crews, more extravagant effects, and live pit musicians, they may perceive higher quality and be willing to pay a higher price. Percentage of capacity for plays may be lower because plays are performed in buildings with a lower number of seats.

Regression Model

      To estimate the effects of these determinants, I used ordinary least squares (OLS) analysis with robust standard errors to estimate the impact on grosses and capacity. This model is a representation of the conceptual framework in Figure 1 and captures the categorization of potential determinants as familiarity, talent, and objective variables.

$\text{Demand}_{\text{show}} = f(\text{familiarity, talent, objective})$

$$Y_i = \alpha_0 + \alpha_1 V_i + \sum_{j=1}^{4} \boldsymbol{\alpha}_2 A_{ij} + \sum_{j=1}^{2} \boldsymbol{\alpha}_3 N_{ij} + \sum_{j=1}^{3} \boldsymbol{\alpha}_4 T_{ij} + \alpha_5 X_i + \sum_{j=1}^{2} \boldsymbol{\alpha}_6 P_{ij} + \sum_{j=1}^{2} \boldsymbol{\alpha}_7 C_{ij} + \varepsilon_i$$

and

$$Z_i = \beta_0 + \beta_1 V_i + \sum_{j=1}^{4} \boldsymbol{\beta}_2 A_{ij} + \sum_{j=1}^{2} \boldsymbol{\beta}_3 N_{ij} + \sum_{j=1}^{3} \boldsymbol{\beta}_4 T_{ij} + \beta_5 X_i + \sum_{j=1}^{2} \boldsymbol{\beta}_6 P_{ij} + \sum_{j=1}^{2} \boldsymbol{\beta}_7 C_{ij} + \nu_i$$

Where
Y_i = grosses
Z_i = capacity
V_i = zero-one variable that equal one if show i is a revival
A_{ij} = zero-one variables that equal one if show i is an adaptation in any of four categories
N_{ij} = show week number (simple and squared)
T_{ij} = actor talent (Tony nominations, Tony awards, Opening night cast)
X_i = actor experience
P_{ij} = actor popularity (trending, starpower)
C_{ij} = objective show characteristics (female cast, previews)

ε_i, ν_i = error variables

      The variables are defined as follows. *Grosses* and *capacity* are the dependent variables. Grosses indicate a revealed demand for the show. Profit could be a measure of success, but because cost information is not made public, I use grosses as a best estimate of the financial benefit of producing a certain show. Even if cost data were available, it would be challenging to allocate fixed costs in weekly results and accurately measure profit. Revenue may be preferred to profit since it reflects the perceived value of the show to the consumer. To further estimate the effects of adaptations on theatre demand, I use capacity

as a second dependent variable. I used percent capacity instead of attendance to control for theatre size and prevent a show from appearing more successful just because it has more seats. With the assumption that theatre size and prices are selected based on the expectation of how many people will attend a show, capacity measures the influence of adaptations on the ability to meet those expectations.

Revival is a zero-one dummy variable that equals one for a show if it is a revival.

Adaptation is a combination of being adaptations based on any of the four types of outside sources: movie, book, recording artist, or play. A show is determined to be an adaptation based on information in the production staff section of IBDB show search or researched through broadway.com show descriptions.

Show week counts the number of weeks since opening night of the show. This estimates longevity and demonstrates a range between shows new to the season and shows that have been open for many previous seasons. A squared variable is also included to identify potential diminishing effects.

Actor talent information for each show uses totals from the top five most significant characters in that show. Tony nominations and Tony awards are variables representing the totals[4] of Tony awards or Tony nominations for those top five actors. The number of nominations and awards varies throughout the season. As this season begins in late April, more nominations are added from the May announcement, and new awards come out of the June ceremony. Opening night cast is a zero-one dummy variable that equals one if an actor was in the original opening night cast of the current show. *Actor experience* comes from a total of Broadway acting credits[5] of the top five most significant characters in each show.

Actor popularity represents the general fame and celebrity status of actors based on google searches for the actors' names as determined by Google Trends. Popularity is determined by Google Trends comparisons of average searches of the selected actor's name against the average searches for stage and film actor Nathan Lane. Nathan Lane was selected as a standard of popularity because his name is recognizable from and beyond his famous Broadway stage performances. He has been active in the entertainment industry for over 30 years, so he would have a strong and consistent search history. Based on averages, two thresholds of popularity were established with "trending" for actors with a minimum level of interest of time and "starpower" for actors with more significant fame. For example, Sarah Bareilles, Adam Driver, Bryan Cranston, and Tiki Barber were determined to be starpower actors, and Samantha Barks, Patrick Kerr, and Alex Newell qualify as trending actors. By definition, a starpower actor would also be counted as a trending actor.

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[4] Toals for Tony nominations and awards only count recognition in acting categories.
[5] This total includes Broadway credits only (ie. no national tour) and does not count roles as a swing, understudy, or alternate. It refers to original and replacement cast performances. If an actor has multiple credits for the same show in the same role over different seasons, the experience counts as 1.

Objective show characteristics incorporate descriptive information of the show that do not necessarily demonstrate quality. Female cast refers to the gender distribution of the top five most significant characters with values of the percentage of these five roles performed by a female. Previews is a zero-one variable where one represents that the performance occurs before opening night of the show.

Results

Table 3: Estimates of Determinants on Grosses and Capacity for Plays and Musicals

Variables	Plays Grosses (000s)	Musicals Grosses (000s)	Plays Capacity	Musicals Capacity
Revival	7.66 (38.73)	-815.53*** (51.09)	-3.47** (1.43)	-2.20* (1.30)
Adaptation, Movie	421.29*** (58.19)	121.68*** (34.72)	7.92*** (1.36)	-6.94*** (0.90)
Adaptation, Book	917.93*** (61.71)	684.10*** (65.45)	7.07*** (1.61)	-2.53* (1.50)
Adaptation, Recording artist	n/a	-448.75*** (46.91)	n/a	-19.97*** (1.56)
Adaptation, play	68.57* (35.38)	197.09*** (69.19)	-5.60** (2.29)	-6.70*** (1.96)
Show weeks since opening	22.25*** (2.83)	2.20*** (0.18)	0.23*** (0.08)	0.02*** (0.00)
Show weeks since opening, squared	-0.23*** (0.03)	-0.00*** (0.00)	-0.00 (0.00)	-0.00*** (0.00)
Trending	-22.80 (18.13)	-111.86*** (15.00)	-0.92 (0.61)	0.32 (0.44)
Starpower	62.39*** (21.77)	208.05*** (38.02)	5.56*** (0.74)	1.65 (1.08)
Experience	-20.75*** (2.59)	-5.92*** (2.29)	0.22** (0.09)	-0.19*** (0.05)
Opening night cast	102.43*** (15.87)	29.82** (11.79)	4.06*** (0.54)	0.07 (0.26)
Tony nominations	62.19*** (12.64)	47.67*** (12.47)	0.20 (0.43)	1.25*** (0.27)
Tony awards	-27.84 (21.34)	299.97*** (48.19)	-1.98*** (0.60)	-1.81* (1.01)
Preview	-66.98* (40.13)	-325.42*** (68.12)	2.29* (1.19)	7.51*** (1.55)
Female	-300.89*** (86.57)	-180.38** (71.01)	5.88 (3.62)	-1.35 (2.29)

Note: Standard errors are shown in parentheses below the estimated coefficients. The following key indicates levels of significance: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Revivals and adaptations both contribute to familiarity but have contrasting effects on grosses and capacity. For musicals, if a show is a revival, there is a strong negative

impact on grosses. The impact of revivals on play grosses is not significant, and the impact on capacity is negative. This finding is consistent with the 2003 paper by Simonoff and Nygren that showed that revivals were an insignificant determinant for survival, or longevity, of a show. Revivals are not a main factor to increase grosses, contrary to my expectation of a significant positive impact based on their feature of familiarity. The diluted response may come from a mix of interest because of previous positive experience and disinterest because of a lack of excitement for a repeat show. Generally, revivals have a negative or minimal impact on grosses and capacity.

Comparatively, adaptations increase grosses for plays and musicals for all types besides adaptations based on recording artists. The adaptation story is split into four types of content sources. For adaptations of movies there was a positive relationship with grosses for both plays and musicals. The positive increase for grosses was even higher for adaptations based on books. This may be because while all adaptations contribute to familiarity, adaptations based on books also add newness. By staging an adaptation based on a book compared to a movie or play, the way the content is received is more drastically different because books do not include a visual element until performed. While similarities between movies and musicals can be directly charted, adaptations based on books come from a more varied range of source content. Shows in this dataset use young adult novels, pastoral romance prose, mythic tales, and historical biographies.

In addition, book adaptations and movie adaptations increased play capacity by similar percentages, and movie adaptations and play adaptations decreased musical capacity by similar degrees. Adaptations based on plays do have a positive impact on musical grosses, though an insignificant effect on play grosses.

Adaptations that use music from famous recording artists cause lower musical grosses and capacity. I would suggest that demand for recording artist adaptations is limited because adaptations can only appeal to audiences already familiar with the artist and may not add enough additional value to select a musical over a concert or music album directly from that artist. Furthermore, there are more close substitutes and not enough variance created to move from one musical form to another.

There were also some notable talent results. Actor talent appears to be a positively significant driver of theatre demand, but due to the potential multicollinearity of the actor talent variables, the individual talent variables' effects should be considered as a set of effects. Their effects of experience, popularity, and Tony nominations and awards support the idea that the presence of a star performer can boost grosses and capacity for both plays and musicals because the positive marginal effect of starpower is greater than the negative marginal effect of trending. Research by Simonoff and Nygren (2003) says the number of Tony awards decreases the risk of a show closing, and my results support this positive effect as Tony awards increased musical grosses in my analysis. Boyle and Chiou (2009) say that Tony nominations increase demand in the weeks leading up to the awards and demand

increases and decreases based on the winners. In my analysis, Tony nominations generally increase grosses for both plays and musicals. Notably, Tony nominations appear more beneficial for play grosses, and Tony awards appear more beneficial for musical grosses.

Longevity as seen by the number of show weeks since opening is also significant and positive, especially for play grosses. Because longevity is sometimes used as a measure of success as opposed to a determinate (Simonoff & Nygren, 2003; Nygren & Simonoff, 2007), I expected a positive relationship between show week number and my dependent variables, and this relationship came through in the results. This variable has a diminishing effect as the gains from being a familiar long-running show decrease after higher numbers of weeks.

Conclusion

Adaptations of all types except recording artist are shown to increase grosses for plays and musicals. The positive impact on adaptations matches the expectations put forth in the conceptual framework and are consistent with current trends in entertainment. The determinants with the highest positive effect to increase play grosses were adaptations based on books or movies, star actors, Tony nominations, and actors from the opening night cast. For musicals, book adaptations, star actors, and Tony awards increased grosses the most. Musical grosses were also positively affected by adaptations based on plays and adaptations based on movies. Out of the various adaptation types, adaptations based on books had the greatest effect on grosses for both plays and musicals. For play capacity, the highest increases came from adaptations based on movies and books and actors from the opening night cast. For musical capacity, the highest increases came from being a preview or having Tony nominations. Overall, the regression model expresses a positive impact of a show being an adaptation.

The significant impact of adaptations and limited effect of revivals on grosses supports a claim that the most effective way to utilize familiarity in Broadway theatre is through adaptations. Because adaptations are so common, their production does more than apply a strategy; it creates a new genre. A new category emerges for original shows that attempt to capture unique and familiar show characteristics, and if this new show type continues to grow in prevalence then a new official awards category may be required. The magnitude of this new genre may be of interest to the theatre community because it changes the competitive relationship between theatre and other entertainment forms by establishing a give-and-take relationship.

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