

Market Movers: Travel, Cities, and the Network of Male Sex Work¹

INTRODUCTION

Prices in a market are only a piece in economic analysis. Economists are primarily interested in overall market structure – the ways that firms in a market interact with one another and how that interaction influences the way the market functions. Interaction in a market for sex workers is, essentially, the way that sex workers compete with one another for clients. Competition is key to consumer welfare – without firm competition, monopolistic or oligopolistic prices would be seen in the market. These prices would be higher than those seen in direct competition, and consumer welfare would suffer as a result. The open question is how competition in the market for male sex work influences the prices in the market. Prices are key for analyzing how competitive the market is, which is related to how much consumer and producer surplus exists. Now that the primitives of market prices have been confirmed to reflect market fundamentals such as the quality of escort services, the effects of competition can be explored.

The basic structure of online male escorting sets it apart from the most common type of sex work practiced. Escorts craft advertisements of their services and directly compete with other escorts on websites. This is rare for a service such as sex work, where usually a client can only choose between the sex workers who are actively seeking clients at the same time that a client is searching for sex workers. For example, given the use of the Internet, it is not possible for a male sex worker to appear on the market only at times of day when demand is high or low – his advertisement is visible at all times.² Sex workers are constantly in competition with every other advertisement in

their local area – they cannot choose times where the supply is low or demand is high in order to gain an advantage in the market.

This is a very different structure from street-based sex work, in which initial transactions among sex workers and clients (i.e., solicitations) occur in a public setting. Increasing access to and use of the Internet has provided clients with unique opportunities to secure meetings with sex workers outside of public scrutiny for both male and female sex workers. Street-based work is likely the most widespread form of prostitution across the globe and is also the most widely studied form of prostitution among health scholars and social scientists.³ Findings from a recent study in the United States suggest that online solicitation of female prostitutes is displacing street-based prostitution among certain population subgroups, particularly highly educated female sex workers. Through the analysis of FBI crime statistics, researchers have found evidence of a decreasing prevalence of street-based sex work among younger women (under age 40), which has been attributed to the increasing Internet-savvy client base for sex work.⁴

There are a number of additional differences between online and street-based sex work.⁵ The first difference is the scheduling of appointments for sex work as opposed to immediate transactions with clients. Sex workers who solicit clients online have greater control over the pace of their work and its parameters – they can arrange schedules to avoid fatigue, ensure timely appointments, and discuss the terms of the transaction in advance in a way that avoids the rush or pressure of immediate negotiations. This does include the potential downside of clients changing their minds or of finding another sex worker more amenable to their demands between the time of arrangement for a meeting and the time of the actual transaction. Movement to online simultaneously brings more potential clients to the market and increases the scope of market competition among sex workers for clients.

Another significant difference between Internet escorts and street workers is that the former are far more likely than the latter to travel long distances to different cities to meet clients. This is for several reasons. First, it is easier for clients to search for sex workers both inside and outside of their local market. If a client desires a particular sex worker, they can offer to compensate the sex worker to travel to them. Second, the Internet allows sex workers to advertise their services in several different markets – noting one as the “home” location and other areas as “travel” destinations. In other words, the online market expands the number of potential client/escort interactions and the scope of competition. Third, the Internet offers sex workers the ability to change their availability and willingness to serve other local areas quickly and at little cost. This not only allows escorts to

change locations as they travel, but also to “test” locations to see if placing advertisements in a given area will be met with client demand in that area.

This type of traveling creates a unique type of competitive structure in the market for male sex work. While street-based and online sex workers compete against local competitors in a spot market, in the online-market sex workers also compete against those in other locations who can enter their market and serve clients. This makes the study of competition among male sex workers one in which traveling adds to the industrial organization of the market. Certain types of escorts may be more prone to travel and, conditional on their traveling, more prone to travel farther distances based on the services provided. The extent to which male sex workers serve multiple markets, how far these markets are from each other, and whether serving multiple markets is related to prices – all of these are unknown. While researchers have investigated the travel patterns of clients of male sex workers, there is very little research on the travel patterns of male sex workers themselves.⁶

Since male sex work does not use intermediaries such as pimps, each sex worker is an independent firm that competes against a number of different firms – other sex workers – for clients. In traditional analysis, the location of firms is quite important: firms should place themselves nearest to their consumers. When analyzing male sex work, the unique feature is that the firm is mobile and so is the competition. Economists usually study firm location as a one-time decision, and for good reason. Firms locating in an establishment do not move often. Sex workers, however, are inherently mobile, and therefore travel is critical in the study of competition in this market.

In the current online structure, sex workers cannot list different prices in different cities. For example, while escort prices may be higher in New York City, an escort serving New York City, a high-priced city, and Philadelphia, which has lower average prices, can only list one price, which applies to both markets. That is, sex workers cannot price-discriminate based on the markets they are serving. This means that the prices and propensity for travel among escorts in one city can influence the prices of male sex workers who do not travel and those who, if they travel, serve different markets than others who travel to different sets of cities. This effect would be a price spillover effect of sex worker travel – the prices of sex workers who do not travel could be influenced by the prices of those who do travel. The extent to which traveling has an effect on prices also shows how mature the market is – price differences between locations would tend to diminish as the market became more integrated. In a completely integrated market,

the geographic price differences would disappear and the law of one price would hold.

Travel patterns also have implications for the sexual networks of male sex workers and clients.⁷ There are two effects of sexual networks. First, the travel of sex workers and clients has the potential to be a key factor in disease transmission.⁸ Second, sexual networks (serving cities with higher or lower prevalence rates for sexually transmitted infections – STIs) may influence the prices that sex workers charge if city-level risk factors affect prices.⁹ The ways in which escort travel influences the density of the sexual networks is important in both economical and epidemiological terms.

Differences in travel propensities by sexual behavior have particularly significant implications for sexual disease transmission. If male sex workers who participate in higher or lower risk behavior are more or less likely to travel, such differences could help us determine the transmission propensities for STI epidemics. For example, the relative risk of contracting HIV for receptive versus penetrative anal sex is 7.69, which suggests that penetrative (“top”) male sex workers could act as prominent vectors of transmission if they are more likely to travel, as their partners (receptive partners – “bottoms”) would be significantly more likely to contract HIV for a given sexual event.¹⁰ We do not know if travel propensity or the distance between travel locations is related to characteristics, sexual behaviors, or prices.

Furthermore, travel among sex workers creates a network of cities that are more or less linked to other cities due to the travel propensities of escorts and the similarity of travel destinations. The centrality of cities has implications for the prices that sex workers charge, for the potential spread of disease, and for the identification of cities in which efforts would be more effective in reaching a large number of sex workers through interventions. At a basic level, the identification of key cities tells us a great deal about the market for male sex work – where sex work is prominent and where there are more service providers. For example, cities that are popular travel destinations for sex workers may be cities where a larger number of sex workers can be reached, and the potential impact on other sex workers could be large.

Traveling is therefore a key component to male sex work. Economically, travel may have direct and indirect effects on the prices observed in the market. To the extent that travel reflects geographic variations in demand, travel may also provide clues to which markets are most lucrative for sex workers. Similarly, the effects that this travel has on the prices in the market are important for understanding market structure. As a result, traveling

may create economic and sexual links between cities. Describing those links is critical to understanding how this market works at a national level.

In order to shed more light on this side of male sex work, this chapter examines the travel patterns and economic returns to travel among Internet-based male escorts. This chapter not only provides a description of male escort travel patterns, but also identifies the conditions under which male sex workers are most likely to travel (and thus to serve as potential vectors for STI transmission across cities and to influence the prices of multiple markets) and which travel patterns are most economically rewarding for the escort himself. In this chapter, the online advertisements of male sex workers are combined with city-level measures to derive network measures for the centrality of cities in the market for male sex work in the United States. A central city is a city that is not only popular among sex workers as a home location, but also one to which sex workers who live in other areas are likely to travel.

I begin by noting the traveling frequency of male escorts, which is substantial. In fact, the majority of escorts serve multiple markets. I then find that escort home location is only weakly correlated with the gay male population distribution, which implies that male escorts either see a large number of heterosexually identified clients or that escorts travel to locations with more demand for male sex work services. Building upon this groundwork, the chapter then proceeds with a detailed exploration of male sex worker travel, its network effects, and the price implications of travel. First, analysis of the travel patterns of male sex workers in the United States is used to estimate the degree to which propensities to serve multiple markets are correlated with advertised personal characteristics and sexual behaviors. The question here is whether particular types of escorts are more likely to serve multiple markets. Second, analysis of what factors specific to particular metropolitan areas lead them to be popular travel destinations for escorts is explored. The question here is whether there are particular city characteristics that make particular cities popular destinations for traveling male sex workers, and whether those characteristics are proxies for client demand. Third, I estimate the relationship between the frequency of travel among other male escorts to the home city and male sex workers' travel patterns. This is an attempt to see if a given sex worker's traveling behavior is influenced by the traveling behavior of competitors in the home market. Fourth, I estimate the economic returns to travel among the escorts and the price spillover effects of male sex worker travel.

The impact of sex worker location and travel patterns is shown to have a large impact on the way that this market works. First, sex worker sexual

behaviors are related to the likelihood of traveling. Male sex workers who advertise submissive sexual services are more likely to travel than others, for example. Second, sex workers in cities with large gay populations are less likely to travel. This suggests that cities with larger gay populations have sex workers who are less likely to leave the area in search of work, likely because there is higher demand for their services since they are located in cities with substantial gay populations. Third, sex workers who live in cities popular as travel destinations for other sex workers (whether that city has a large gay population or not) are less likely to travel. This implies that cities where the sex work market is thick are cities where sex workers set up and from which they do not travel. Fourth, sex workers who serve multiple markets charge higher prices than others, rates are higher in cities that are central to the network created by sex worker travel (central cities in the network have higher prices overall than other cities), and the spillover effects on the prices of non-traveling male sex workers are significant.¹¹ The market prices of traveled-to and traveled-from cities are brought closer together through the competition that traveling escorts create by serving areas with high demand.

Taken together, these results imply that the movement of sex workers does impact the market for male sex work in a meaningful way. The movement of sex workers acts to increase prices in the market. This is because sex workers who are likely to travel, travel to cities where prices are higher. This then causes the average price of their home cities to be higher as well. The traveling of sex workers also shows that overall market prices are partially driven by the high demand for male sex work in cities with large gay populations. Indeed, one of the key findings here is that sex worker home locations are not well correlated with the gay population distribution, but sex worker movement is correlated with gay population density. Consistent with the travel patterns, the key cities in the sex worker network are cities with large gay populations. Because of this, the connectedness of a city in the network is related to the prices in the male sex work market. The competition between male sex workers is more complex than the spot market faced by street sex workers, and the market is more integrated and sophisticated as a result.

(GAY) LOCATION, TRAVEL, AND MALE SEX WORK

Given the use of online markets for male sex work and the disappearance of street-sex work, there are new incentives and economic opportunities for sex workers and clients. In the past, male sex work was highly concentrated

in cities with large gay populations, where male sex workers could easily secure clients from the local area. If a client lived in a smaller city it may have proved difficult to secure the services of a sex worker. Searches of national print advertisements in earlier periods from the *Advocate Classifieds* show that few escorts were located in cities outside of the twenty largest in the United States as of 1990. Contrast that with today, where literally dozens of cities are served by at least ten male escorts. From Missoula, Montana to Sioux City, Iowa, clients can find sex workers who serve their local area.

The question for the market is the relationship between the size of the gay population and the concentration of male sex workers. It is important to note that the relationship between the size of the gay population and the concentration of male sex workers hinges on identification of the gay population itself. Since the work of Hooker (1956, 1957), psychologists have noted that there is little to distinguish the homosexual and heterosexual, other than self-identification. Men who partake in homosexual acts are not distinguishable from the general male population.¹² While early studies of male sex work focused on particular cities with large gay populations, later qualitative research revealed that a significant portion of the clientele of male escorts is heterosexually identified.¹³ Indeed, the “breast-plate of righteousness” that Humphries (1970) saw in heterosexually identified men who took part in homosexual behavior has recently resurfaced in the public lexicon as prominent men, many of whom have been active in anti-gay organizations, have been embroiled in controversies regarding their sexual orientation.¹⁴ In the market for male sex work, such behavior may be common – male escorts regularly note that a significant percentage of their clientele is heterosexually identified, and many such clients are married to women. Since these men are hidden from the most common analysis of sexual minorities, the open question is how their presence in the market influences market function and composition.

This is not to say that there are not social distinctions based upon public affirmation of homosexual orientation. There are now a number of studies by demographers and economists that look at the population trends of the gay-identified population. The empirical studies show that openly gay and lesbian individuals do appear to be different on a range of outcomes, from earnings, to partnership status, to general socioeconomic position.¹⁵ It is still difficult to identify all sexual minorities in the data, but it is now possible to identify same-sex couples.¹⁶ Those population trends have been used to note that the geographic distribution of male same-sex couples is different from that of the general population in the United States.¹⁷ Two factors that seem to be related to gay location patterns are city amenities and the ability

to congregate and socialize with a critical mass of other gay people, although alternative explanations that emphasize economic factors have been offered by Collins (2004). Whatever the reason for these location differences, this research poses interesting questions into the demography and geography of male sex work, as we know very little about the population size, demographic characteristics, and geographic distribution of male sex workers in the United States.

Given that heterosexually identified men may have much to lose if their same-sex sexual behavior is exposed, it could be the case that male escorts are more prone to locate in places where there are fewer opportunities for men interested in sexual encounters with other men to meet one another. Self-identified heterosexual men are unlikely to frequent gay bars, coffeehouses, or community groups where they would be more likely to encounter gay men for socialization or sex. This would suggest that male escort location might differ from that of the gay-identified population. Conversely, researchers note that gay communities do not attach the same level of stigma to sex work as do heterosexuals, and if gay communities are seen as safer havens for sex workers we would expect their geographic distribution to closely mirror that of the openly gay population.¹⁸

Research has shown that the geographic distribution of male same-sex couples is different from that of the general US population, and studies of male sex work in the United States focus on cities with large gay populations.¹⁹ If male sex workers can be thought of as independent businesses, they would need to take the market into account when deciding where to set up shop. For example, locating in a place where there are relatively few men seeking sexual services for hire would make little sense. It would be more profitable to locate in an area where there are more clients. On the other hand, every *other* sex worker is making a similar decision. This could lead to a situation where cities with high demand have a large number of sex workers to serve the market. Assuming that clients do not choose to move based on the number of sex workers in the local market, we would expect sex workers to locate optimally – cities with more client demand would have larger numbers of sex workers, but some sex workers would locate in less-popular markets because their services would be dearer to consumers. In the long run, the market would reach an equilibrium and sex workers would have a price that would correspond to the local demand, but since sex workers move in response to local demand (places with too many sex workers would have lower prices than places with too few), in the end there could be few differences in local prices for sex work.

To see how this would work, imagine a sex worker in a given area where there is a fixed number of clients and a fixed number of sex workers. Given this supply of sex workers and number of clients, the market would set the price of sex work at a given level. It could be the case that another sex worker in a different city would move to that city if the prices were higher there. This would serve to increase the number of sex workers, which would increase the supply and, all else being equal, would result in lower prices in the market. Now, if the sex worker were to see that another city had higher prices (because of a local undersupply of sex workers), he would move to that location if the moving cost were sufficiently low. The movement of sex workers would continue until the prices of sex work were no different in one location than in another – that is, there would be no incentive for sex workers to move due to price differences.

Theoretically, the movement of sex workers would correspond to the size of the client base. The location model of Hotelling (1929) predicts that, since the proposed client base is not uniformly distributed, distribution of service providers would be non-uniform; sex workers would need to be located close to the largest mass of potential clients. Tests of this theory for male sex workers are lacking. The unanswered question is whether the openly gay population constitutes the vast majority of the client base, or whether the number of heterosexually identified clients of male sex workers influences location patterns. If heterosexually identified clients are a significant portion of the customer base and if their location patterns are different from those of gay men, male sex workers' location patterns could also differ from those of the gay male population to the extent that the patterns would be related to the non-gay clients they serve. Given that heterosexually identified men may have much to lose if their same-sex sexual behavior were to be exposed, it could be the case that male sex workers are more prone to locate in places where there are fewer opportunities for men interested in sexual encounters with other men. Conversely, researchers note that gay communities in the United States do not attach the same level of stigma to sex work as heterosexuals, and if gay communities are seen as safer havens for sex workers we would expect male sex workers' geographic distribution to closely mirror that of the openly gay population.²⁰ Therefore, the first area of interest is the home location of male sex workers.

Empirically, we would need to account for the city's gay population in order to analyze the issue. Unfortunately, data limitations make generating reliable estimates of gay population difficult. The most widely used estimate for a gay population is the Gay Concentration Index (GCI). Since

1990, the US Census has included an “unmarried partner” category on the household roster. By examining the genders of primary respondents and their unmarried partners, households that are headed by two male partners can be identified. The proportion of two-male-headed households is traditionally used to estimate the concentration of gay men within cities.²¹ I estimate the GCI for each city in the advertisement data. For each city, I divide the number of households that are headed by two unmarried men by the number of two-person headed households (both married or unmarried) within the city. The resulting number represents the proportion of two-person-headed households within the city that are headed by two unmarried men. That number is then divided by the proportion of two-person-headed households that are headed by two unmarried men across the entire United States. The resulting measure, which can be used to measure each city’s gay concentration, equals 1 if the city’s Gay Concentration Index is equal to the national average, is greater than 1 if the GCI is above the national average, and is less than 1 if the GCI is below the national average.²² This proxy for the city’s gay population can therefore be used to investigate the location of male sex workers and the relationship of their location to gay population distribution.

SEX WORKER HOME LOCATION AND GAY CONCENTRATION

What is the relationship between the size of the gay population and the concentration of male sex workers? Table 3.1 shows the geographic distribution of male escorts who advertise online, where I count the actual number of escorts by the home location given in their advertisements.²³ The size of the escort population varies considerably – there are more than 300 escorts in only one city, New York City, which has long been known in the media to have the largest male escort market.²⁴ Atlanta, Los Angeles, Miami, and San Francisco each has more than 100 escorts, but most cities have considerably fewer. I also include the rank and size of the populations of each Metropolitan Statistical Area (MSA) as well as the Gay Concentration Index (GCI) to compare the location of escorts with gay male location patterns. To provide a broader picture of the distribution of male sex workers, I list randomly selected cities.

In terms of location patterns, there is a striking trend – the number of gay escorts more closely follows the size of an MSA than it follows gay location patterns. For example, Detroit is the eleventh-largest MSA in the United States, and its gay concentration is 42nd, but there are 51 percent

Table 3.1 *Geographic distribution of escorts – selected cities*

City	MSA		Gay concentration		Number of escorts
	Rank	Population	Rank	Index	
New York City, NY	1	18,815,988	13	1.49	309
Los Angeles, CA	2	12,875,587	6	2.11	126
Chicago, IL	3	9,524,673	18	1.31	93
Miami, FL	7	5,413,212	14	1.46	119
Washington, DC	8	5,306,565	2	2.68	99
Atlanta, GA	9	5,278,904	7	1.96	108
Boston, MA	10	4,482,857	9	1.67	53
Detroit, MI	11	4,467,592	42	0.6	50
San Francisco, CA	12	4,203,898	1	4.95	124
Seattle, WA	15	3,309,347	5	2.21	33
Minneapolis, MN	16	3,208,212	10	1.61	33
St. Louis, MO	18	2,808,611	37	0.69	18
Tampa, FL	19	2,723,949	24	1.05	47
Denver, CO	21	2,464,866	12	1.53	41
Portland, OR	23	2,175,113	15	1.45	15
Sacramento, CA	26	2,091,120	8	1.71	17
Kansas City, MO	29	1,985,429	25	1.04	9
Columbus, OH	32	1,754,337	27	0.99	30
Indianapolis, IN	33	1,695,037	19	1.12	19
Charlotte, NC	35	1,651,568	45	0.49	19
Austin, TX	37	1,598,161	3	2.44	26
Nashville, TN	39	1,521,437	32	0.85	14
Oklahoma City, OK	44	1,192,989	34	0.83	3
Buffalo, NY	46	1,128,183	49	0.35	5
Rochester, NY	50	1,030,495	29	0.89	4
Albany, NY	57	853,358	31	0.85	5
Correlation of number of escorts with Gay Concentration Index:					0.39
Correlation of per capita escorts with Gay Concentration Index:					0.69
Correlation of number of escorts with MSA population:					0.92

Counts of number of unique escort advertisements. Gay concentration is the fraction of the Metropolitan Statistical Area (MSA) identified as same-sex male partners in the 1990 Census divided by the national average. See Black, Sanders, and Taylor (2007) for further details. MSA population counts from the Census Bureau. Cities with MSA rank >12 were selected at random from the fifty cities listed in Black, Sanders, and Taylor (2007). The correlations in the lower panel are for all fifty cities listed in Black, Sanders, and Taylor (2007).

more escorts in Detroit than in Seattle, a city with the fifth-highest GCI. A similar finding pertains to other cities such as Chicago and St. Louis. Indeed, the correlation of the number of escorts with MSA population is quite strong ($r = 0.92$), but the correlation with the GCI is much weaker

($r = 0.39$). Also, the correlation of per capita escorts with the GCI ($r = 0.69$) is weaker than the correlation of escorts with MSA.

This result is consistent with the claims that the market for male sex work is national in scope and that it is not driven exclusively by gay-identified participants. If escort services were primarily demanded by self-identified gay men, we would expect the geographic distribution of male escorts to mirror the geographic distribution of self-identified gay men – male escorts would locate in places that have a higher concentration of those potential customers. The results in Table 3.1 imply that male escorts tend to concentrate in cities with substantial populations, as opposed to cities with substantial gay populations. This result holds even when considering mid-sized and smaller cities – it is not driven by cities that have large populations and large gay populations, such as Los Angeles. Overall, the evidence is consistent with the hypothesis that male escorts serve a market that includes a substantial number of heterosexually identified men.

Such analysis, however, is limited. The online market for male sex work is not a spot market and home locations paint an incomplete picture of the market and the locations for male sex work. Since sex workers may serve multiple markets it is possible that the results in Table 3.1, which only apply to home locations, do not describe the entire market and the provision of services more generally. Given the ease of traveling, a full study of the market, which allows for and investigates the likelihood of travel, is needed.

ESCORT TRAVEL AS AN ECONOMIC DECISION

Treating escort travel formally requires that one accept the proposition that escorts would be motivated by pecuniary benefits to travel. This is not to say that other factors could not enter into the decision, but in the case of sex work the economic benefits of travel would be most important when the traveling involved would be for the purposes of sex work. A formal approach would begin with the framework of economic models of migration.²⁵ The models begin with the idea that migration (as an economic decision) is related to the cost and benefits of migrating. A standard migration model considers the wage that a potential migrant would earn in the current and potential new destination. For male sex workers, this must be modified to reflect the price they charge for their services. An additional factor is that escorts cannot discriminate in their pricing by charging different prices in different markets. This is consistent with the data, in which escorts can only post one advertised price that is seen by all online clients, irrespective of the

client's location. The key is the expected wage due to traveling. When sex workers travel to another city, they increase the supply of sex workers in that location, and therefore drive down prices unless demand is perfectly elastic. This implies that the city to which an escort travels has demand that is sufficiently inelastic to cause a wage gap that would still induce them to travel, thus allowing them to charge higher prices overall.

Travel could also be a signal of desirability among clients. To the extent that an escort serves multiple markets, it could be taken as a positive signal of demand for their services or a negative signal that they are very active in the sex work market. This would naturally vary at the individual client level, but how this would aggregate to the market price that a sex worker could charge as a function of travel is unknown. Ultimately, this is an empirical question.

This simple conceptual framework has several implications. First, the wages in the city traveled to must be greater (in expectation) than the wages in the current city.²⁶ Considering the simple dynamics of supply and demand for escorts, the cities traveled to must be cities where the existing supply of escorts would be sufficiently low relative to demand so that the wages of escorts in those cities would be bid up. This implies that cities that are traveled to will be cities that, on average, have higher wages for male sex workers. In other words, popular cities for travel are hypothesized to be relatively high-wage cities for escorts and, given their higher wages, would make the escorts who travel to those cities higher-priced in their home locations.

Second, the potential for high wages in popular cities (cities escorts are likely to travel to) will cause escorts whose home location is that city to be less likely to travel to other cities. Indeed, to the extent that the wage in popular cities is related to that city's popularity, escorts with those locations as a home base will be less likely to travel to other cities, as they have fewer economic incentives to do so. Third, we would also predict that the wages of escorts in cities that are popular travel destinations earn higher wages on average, since their locations are in cities with relatively higher demand (or less supply). Fourth, those escorts who serve multiple locations will have higher wages, on average, than those who serve only one location. Indeed, the fact that these escorts travel implies that the wage differential they see is large enough to induce them to serve multiple locations.²⁷

THE MALE SEX WORKER TRAVEL NETWORK

While the migration framework derives implications for an individual sex worker's travel, it does not speak to the network that is formed when some

cities are more popular than other locations. This network would imply that some cities would have stronger links than others since they would “share” more sex workers. For example, cities that are well connected by travel may be more uniform in their pricing than cities that share fewer escorts. In other words, cities that are popular, and the escorts who service those cities, would be more likely to have similar prices than an escort picked at random from a city that was not well linked to other cities. Consideration of the network created by sex worker movement requires some new measures that go beyond prices. Below, I define the key network measures that I incorporate into the empirical analysis to better describe the network created by escort travel.

A network perspective is useful for measuring dimensions of male escort travel patterns as it provides a formal means for measuring influential properties of both city- and individual-level characteristics that are theoretically linked to an escort’s likelihood of travel and their economic returns to travel. For instance, the Hotelling model predicts that sex workers would need to be located close to the largest mass of potential clients. Thus, I hypothesize that escorts are less likely to travel to other cities to meet clients when they are situated within cities that have high demand for the services of male sex workers. The question is, how to measure such a characteristic.

A city’s degree, which is the number of escorts who are residing or willing to travel to the particular city to meet clients, is indicative of its overall supply of male sex work, both home-based and traveling to that location. It should be the case that escorts who live in cities with high degrees are less likely to travel to other cities for work, as demand for their services is already high, as noted earlier. It should also be the case that travel is associated with higher prices. However, not all travel is equally rewarding. More specifically, escorts who travel to cities where demand for their services is high will experience greater returns to their work than men who travel to less-popular cities. In essence, a network approach captures the features of the extent of network travel in an empirically compact way.

MEASURES OF NETWORK CENTRALITY

In order to measure features of both city and escorts’ positions within the travel network, I used the escort advertisement data and the locations noted in the advertisements to link escorts to cities and cities to escorts. In the network literature this is referred to as a two-mode (i.e., affiliation) travel network.

The two-mode travel network consists of escorts who are tied to particular cities through their residence or willingness to travel to the particular city. For instance, one-mode networks are frequently employed in the study of cash transfers between individuals and organizations or in the transfer of information and resources. Conversely, two-mode networks consist of ties between opposing node sets.²⁸ Within this network, a tie exists between an escort and a city if the escort indicates in his advertisement that he is residing in or traveling to that city. Importantly, escorts are only *directly* tied to cities, and vice versa. This type of network allows for two different notions of centrality, where “centrality” is the network terminology for what we would consider “popularity.” An escort can be central to the network and a city can be central to the network. Escorts are central if they travel to several cities. Conversely, cities are central if they are visited by several escorts.

In particular, there are three measures of network centrality. The first measure is degree centrality. An escort’s degree centrality is measured by the number of cities he travels to, normalized by the number of cities in the total network. A city’s degree centrality is measured by the number of escorts who reside or travel to that particular city, normalized by the total number of escorts in the data.

The second measure of centrality reflects the fact that being tied to other escorts who are themselves tied to several other escorts through their links implies that popularity should incorporate the popularity of those to whom (escorts) or to which (cities) you are linked. Consider two cities that are visited by the same number of escorts. One city should be more central than the other if it is visited by escorts who travel to more places. Similarly, an escort is central if he travels to many cities. However, an escort who is relatively inactive in traveling (say, serving only two cities) could also be important if he should build ties between two or more cities that otherwise would not be connected. This second measure, eigenvector centrality, simultaneously captures the extents to which escorts travel to cities that are popular work and travel destinations among other escorts and the extent to which cities are visited by escorts who travel to other popular cities.²⁹

The third measure of centrality is betweenness. Escorts and cities may also be central if it is possible to connect two cities (through an escort) or two escorts (through a city). In other words, a city can be thought of as central if it is the easiest path through which two escorts can be connected (relative to other cities) and an escort can be central if he is the easiest path through which two cities are connected. This means that a city or escort lies on several of the shortest paths that link other cities and escorts.

Another interesting feature to explore in the male sex worker travel network is the diversity of cities' links with escorts. Escorts who travel to a city may be from the same city or from different cities. The former case may imply a special relationship between two cities (e.g., geographical proximity), while the latter case generally implies that the visited city is attractive to escorts. When considering travel it is important to distinguish between these two effects. We can evaluate how diverse a city's links are by the measure of their entropy, that is, the geographic diversity of the escorts who travel to that particular city. Here, the diversity of city links with escorts is hypothesized to be highly correlated with the economic condition of the male sex worker market. A city with higher diversity should sustain higher service rates.

MEASURING THE EFFECTS OF TRAVEL IN MALE SEX WORK

I use two dependent variables related to traveling patterns and one dependent variable for price to estimate the empirical relationships described above. The two dependent variables for traveling are extensive travel and intensive travel. Extensive travel is a binary variable indicating whether the escort is traveling to other cities to meet clients to provide his services (0 = no, 1 = yes). Intensive travel measures the mean travel distance (in miles) between the geographic central point of the city of an escort's home location and the center of the city or cities that he visits. Because this value is highly skewed by escorts with cities far apart from one another, I take the log of the distance to measure distance traveled. It is important to note that the cities are standardized in the data – escorts choose the location from a drop-down menu that best corresponds to their location and travel destinations. This produces a range of distances in a tractable way as opposed to having an escort list a city or area of a city that would be difficult to identify. The third dependent variable is the wage, which is the escort's outcall price. The outcall price represents the hourly rate (in US dollars) that the escort charges his clients for an hour of his services. As noted earlier, the escort can only post one outcall price in his advertisement.

INDEPENDENT VARIABLES

As described earlier, escorts are also able to list a number of personal characteristics through drop-down menus in their advertisements. These

might affect the prices charged in a number of ways. Here, these characteristics are used as controls so that the effect of networks on travel is estimated while including the effects that these characteristics may have. In particular, escort race, height, weight, body type, the escort's advertised sexual behaviors, and whether the escort provides massage services in addition to escorting.

City-specific factors related to male sex work would be those related to local demand, the local sexually transmitted infection (STI) rate, and other factors that could influence both ease of access and the escort's ability to provide services. As discussed above, the GCI gives a proxy for demand. For the local disease environment, accurate reporting is difficult, but the reporting for specific diseases is done at the city level. When looking at disease environments, however, it is important to note that STI prevalence itself works through sexual networks. Epidemiologists have noted that syphilis and HIV occur at greater proportions than other STIs among men who have sex with men. As such, syphilis and HIV have been used to measure the underlying STI prevalence of men who have sex with men. Since the two are strongly correlated, I chose the HIV rate as a proxy for the underlying STI environment. Calculation of the HIV rate is the number of HIV-positive individuals in an MSA per 1,000 people in the population. This is calculated by the Centers for Disease Control and Prevention (<http://www.cdc.gov>).

Lastly, cities may have properties that would structurally make them easier to serve as central locations. For example, a city that serves as a hub for a major airline, by definition, is easier to reach, as there will be a large number of direct flights to that location. I use information provided by 2012 US Bureau of Transportation Statistics to define a city to be an air traffic hub if its largest airport serves at least 0.25 percent of all enplaned passengers in the United States. This is the measure of the degree to which a city serves as a traveling pass-through, which implies a relatively large stream of potential clients for that location, as hub cities are popular business travel destinations as well.

EMPIRICAL RESULTS

Summary Statistics

Table 3.2 provides the summary measures of travel for the network at the escort level. Slightly more than half of the escorts in the data, 55.6 percent, serve multiple markets, which suggests that travel is an important element

Table 3.2 *Summary travel and network measures, individual escorts*

Variable	Mean	Standard deviation
Escort travels?	0.556	0.497
Log travel distance	5.466	1.227
Escort degree	0.009	0.005
Escort eigen centrality	0.011	0.012
Escort betweenness	0.001	0.001

Note: Total sample size is 2,022 for traveling and distance. Sample size for network measures is 1,926.

Table 3.3 *Correlation of escort-level network measures*

	Escort degree	Eigen centrality	Betweenness centrality
Escort degree	1.000		
Eigen centrality	0.359	1.000	
Betweenness centrality	0.653	0.451	1.000

N = 1,926

in online male sex work. Conditional on traveling, the average distance traveled is approximately 240 miles. This implies that escorts are not merely serving other nearby cities, but are traveling relatively long distances when they serve other markets. Given the distance traveled, on average, it would seem likely that the choices of destinations would not simply be matters of convenience but explicit choices about which markets to serve.

Table 3.3 shows the correlations between three measures of network centrality for escorts. The correlations between them are relatively slight, except the correlation between degree and betweenness centralities. Recall that degree centrality measures the number of cities that an escort visits while eigen centrality measures the popularity of those with which an escort is connected. The low correlation between the two implies that the propensity of escorts to travel (which is high, given that roughly half serve multiple markets) is only weakly related to the popularity of the links formed by that travel. This is intuitive: since most escorts travel, only a small fraction could reasonably be expected to be key in terms of popularity. The correlation of betweenness centrality and degree centrality is greater, and reflects the fact that the more connections an escort has, the more likely

Table 3.4 Summary statistics – city level

Variable	Mean	Standard deviation
Airline hub?	0.359	0.481
Gay Concentration Index	1.019	0.336
HIV rate	13.163	8.163
City degree	0.015	0.028
City eigen centrality	0.018	0.059
City betweenness	0.015	0.038
City diversity	1.146	0.832

Note: 131 cities are used in calculations

Table 3.5 Correlation of city-level network measures

	City degree	City Eigen centrality	City betweenness centrality	City diversity
City degree	1.000			
City eigen centrality	0.918	1.000		
City betweenness centrality	0.983	0.930	1.000	
City diversity	0.716	0.548	0.682	1.000

he is to be a conduit that connects those in the network. The correlations also imply that the measures of connectivity provide different information about the travel network, and each piece of information may play a different role in the market to the extent that escorts play different roles in the travel network under different definitions of centrality.

The summary statistics at the city level are given in Table 3.4. Around a third of the cities in the data, 35.9 percent, serve as air traffic hubs. The average city in the data has a Gay Concentration Index of 1, which should be the case as the GCI measures the number of same-sex male households relative to the national average. On average, each city has an HIV rate of 13.2 per 1,000 people in the population. There is wide variation in the measures of GCI and HIV rate, however.³⁰

Table 3.5 shows the correlations between the centrality measures at the city level. Unlike the escort-level measures of centrality, the city measures of centrality are well correlated with each other. The high correlations (between 0.92 to 0.98) among network centralities at the city level suggest that central cities are consistently identified by different network measures. This is intuitive – a city that is well-traveled-to by escorts is highly likely to

be a popular city and a city that would be linked to other popular cities. Also, a city's popularity would make it a pathway through which two cities would be linked.³¹ Figure 3.1 shows maps of US cities in the male sex worker travel network. In each panel, the relative size of a city represents the corresponding network centrality or characteristics. The figure shows that the major cities in the East and West Coasts, plus Chicago, are central cities in the travel network for all measures of centrality. Detailed information of the top fifteen cities with the highest degree of centrality is provided in Table 3.6. The table shows that nearly all of the popular cities have many sex workers, once travelers are accounted for. In addition, every city in Table 3.6 has a GCI greater than 1, which shows that the city has more gay households than the national average.³² In general, all of the cities have relatively high HIV rates as well. The national HIV rate is 4.2 per 1,000 persons, and all of the cities in Table 3.6 have higher HIV rates.

THE TRAVEL OF MALE SEX WORKERS

The Likelihood of Sex Worker Travel

To describe the relationship between the *extensive* measure of travel, which is whether an escort travels or not, and personal characteristics, local market competition, and network measures of centrality, I use regression analysis. In particular, the regression analyzes the decision to travel as a function of the escort's individual characteristics and the network measures of their home location.³³ Since the city-level measures of centrality are well correlated with each other, I estimate the relationship between the city centrality measures in separate regressions.

Figure 3.2 reports results without the city-level measures of centrality as a benchmark. From the results, we see that Asian sex workers are less likely to travel than their White counterparts (the excluded race). Indeed, Asians are 10 percent less likely to serve multiple markets. Those with athletic and muscular bodies are 12 percent more likely to travel than thin sex workers (the reference group). Both top and bottom sex workers are more likely to travel, but bottom sex workers are much more likely to travel than tops.³⁴ While top escorts are 8 percent more likely to travel, bottom escorts are 20 percent more likely to travel. Indeed, in nearly all specifications, the coefficient on bottom sex workers is more than twice the size as that for top sex workers.

The greater likelihood of traveling for bottom sex workers has implications for the spread of STIs. The traditional view among public health

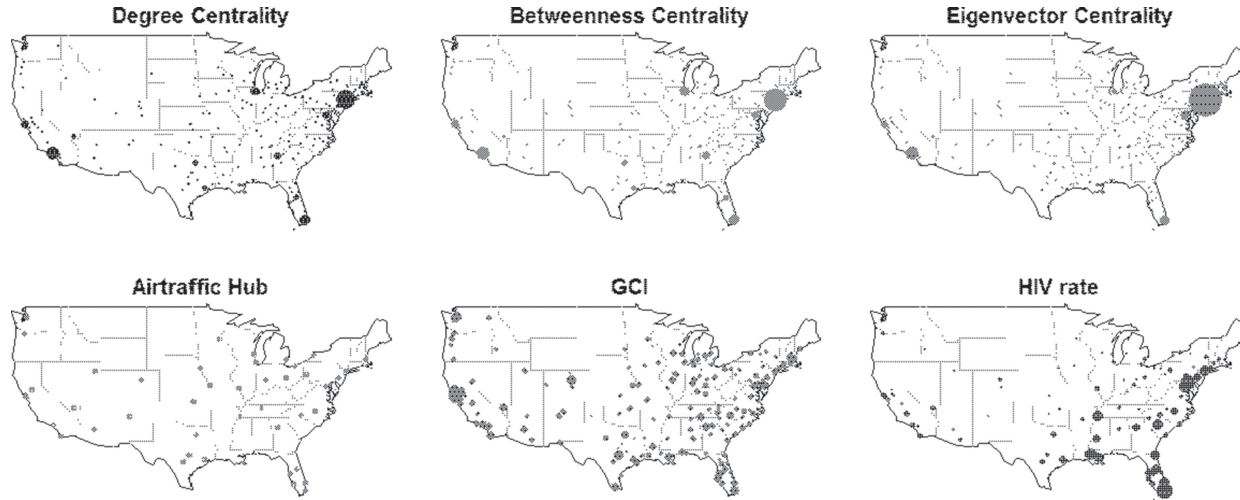


Figure 3.1 City characteristics and network centrality measures

Table 3.6 *Top fifteen US cities visited by male sex workers*

City	Links	Average degree	Eigen centrality	Betweenness centrality	Airline hub	Gay Concentration Index	HIV rate
New York, NY	374	0.203	0.571	0.297	Yes	1.308	29.2
Los Angeles, CA	252	0.137	0.231	0.175	Yes	1.512	13.0
Miami, FL	197	0.107	0.160	0.139	Yes	1.742	41.9
San Francisco, CA	175	0.095	0.123	0.112	Yes	2.414	16.5
Washington, DC	155	0.084	0.168	0.093	Yes	1.404	31.8
Chicago, IL	147	0.080	0.009	0.120	Yes	1.130	12.0
Atlanta, GA	141	0.076	0.058	0.114	Yes	1.590	20.0
Orlando, FL	124	0.067	0.048	0.076	Yes	1.121	26.0
Dallas, TX	118	0.064	0.051	0.080	Yes	1.295	16.0
Houston, TX	107	0.058	0.044	0.072	Yes	1.224	19.7
Las Vegas, NV	100	0.054	0.058	0.049	Yes	1.445	14.5
Boston, MA	90	0.049	0.088	0.046	Yes	1.147	8.0
Philadelphia, PA	80	0.043	0.082	0.036	Yes	1.060	23.1
Riverside, CA	77	0.042	0.055	0.022	No	1.282	7.6
San Diego, CA	74	0.040	0.047	0.022	Yes	1.411	13.1

Note: “Links” includes escorts listing the city as a location they serve.

Gay Concentration Index defined from 2010 Census.

HIV rate defined per 1,000 individuals.

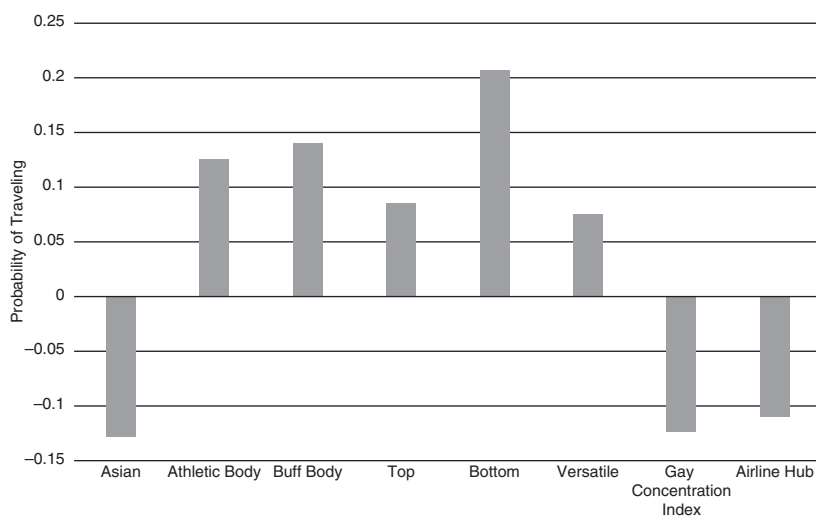


Figure 3.2 Escort characteristics and the probability of traveling

researchers is that sex workers can act as a vector of infection because they could potentially spread diseases to their clients. In the case of male sex work a key element in such an argument would hinge on whether sex workers, should they be infected, would participate in sex acts that would place their clients at greater risk of disease transmission. Those who are receptive in intercourse face a higher likelihood of being infected with STIs from their sexual partners, but this also implies that clients seeing those sex workers would be less likely to be infected. At a basic level, this travel pattern implies that traveling sex workers would be less likely to spread disease, as those who are bottoms are more likely to travel.

In all specifications, the Gay Concentration Index is negatively related to the likelihood that an escort serves multiple locations. A one-standard-deviation increase in the GCI decreases the probability of traveling by more than 3 percent. This is consistent with the idea that cities that have large gay populations have a larger client base for escorts located there, leaving the sex workers who live there less likely to travel to other cities to provide services. The city HIV rate does not have a significant effect on the likelihood of traveling. The indicator for city air traffic hub has a negative effect for traveling, but it is not statistically significant once city network measures are included.

For the centrality measures, displayed in Figure 3.3, the results are somewhat mixed. In the figure, the city centrality results are presented

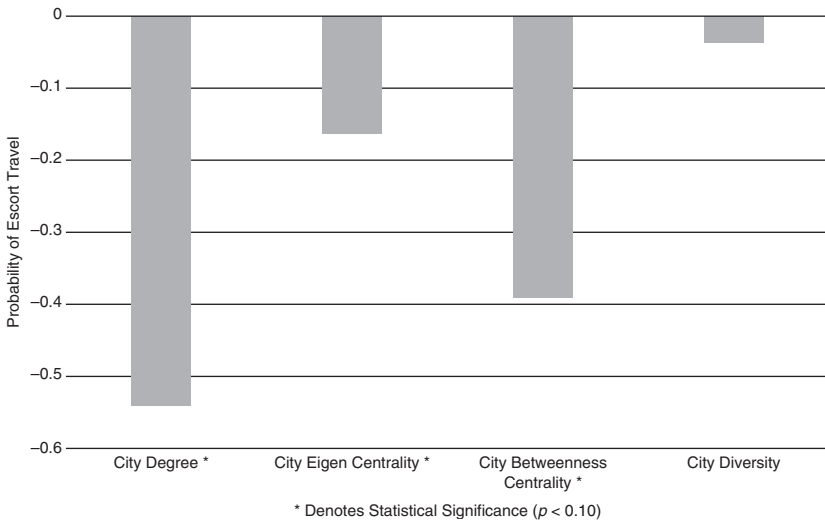


Figure 3.3 City centrality measures and the probability of escort travel

from their separate specifications for comparison. City degree centrality is not found to have a significant influence on a worker’s traveling decision. The insignificance of city degree centrality is largely due to its correlation with the Gay Concentration Index.³⁵ This is intuitive to the extent that cities with a high gay concentration would have relatively larger numbers of gay men (potential clients) and therefore would be cities that would be linked to more escorts, to the extent that escorts travel to those cities where demand is relatively high. The city eigenvector and betweenness centralities do exert a significant and negative effect on the likelihood of traveling.

Recalling that city network centralities reflect cities’ popularity in this travel network, they are also proxies for the demand for male work in a city, so male sex workers who live in particular cities with high centralities will have less incentive to travel. In other words, when a worker is located in a city that is central to the network, that condition acts as a disincentive to travel (to serve additional locations). The diversity of city link, measured by entropy, is also found have no significant effect on traveling.

Overall, some personal characteristics are related to the likelihood of traveling, and they run counter to the idea that sex workers would serve as vectors of transmission of diseases. Also, the concentration of gay men in a city is negatively related to the likelihood of travel. The network measures suggest that cities central to the network created by gay travel are correlated with lower travel propensities. That is, cities that are popular among sex

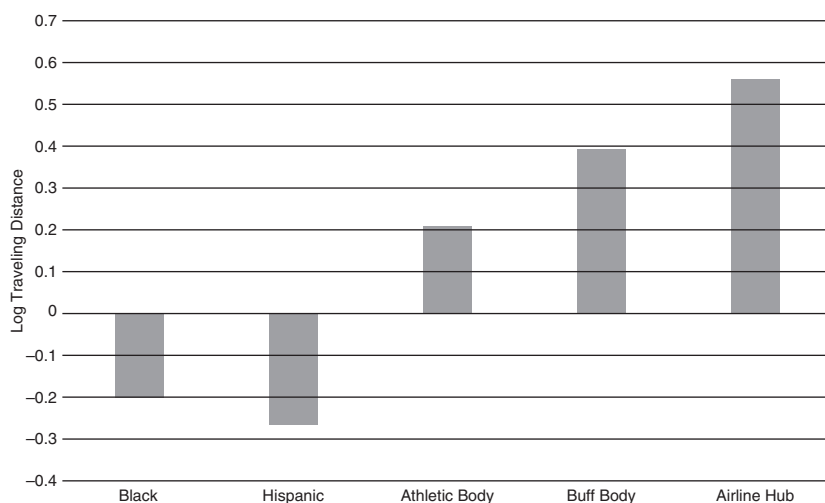


Figure 3.4 Escort characteristics and traveling distance

workers as travel destinations are also cities from which the resident sex workers are unlikely to travel.

The Distance of Sex Worker Travel

Knowledge of the determinants of travel is only one aspect of understanding the decision to serve multiple markets. There is also the question of how far the markets are from each other. For example, the traveling and the results of the previous section could be driven by escorts serving nearby locations. Here, I replace the extensive measure of travel with the intensive measure of travel, the log of the average distance traveled between the home location and the cities visited.

In these results I exclude the sex workers who do not travel. As before, I report results for the characteristics that excluded the city centrality measures, and then compare the effects of the city centrality measures. From the results in Figure 3.4, I find that Black and Hispanic workers travel shorter distances than their White counterparts. Sex workers with athletic and muscular body builds travel longer distances than thin workers. No sexual behaviors have a significant relationship with traveling distance (and they are excluded from the figure). While the behaviors did predict travel, they do not predict the distance traveled.

Similarly, the Gay Concentration Index of the home location does not have a significant effect on traveling distance of sex workers. The HIV rate

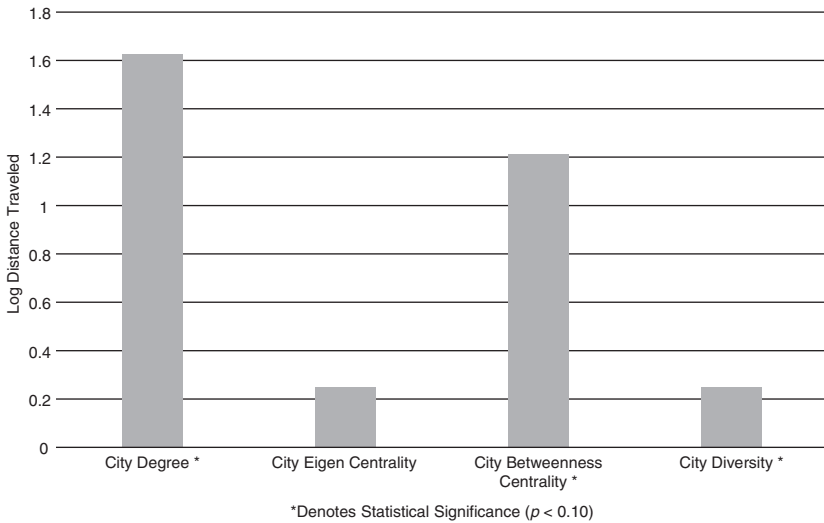


Figure 3.5 City centrality and the distance traveled by escorts

in the home location has no significant effects on male sex workers' travel distance, either. The most significant environmental influence is whether or not the city is an air traffic hub. The positive coefficient for city hub suggests that air traffic convenience significantly contributes to longer traveling distance for workers in those cities. Given that the average sex worker who travels goes a distance greater than 300 miles, the use of air travel (and the ease of air travel when being located in a hub city) does have a positive influence on the distance traveled.

All of the centrality measures have a positive effect on the distance traveled. These are reported in Figure 3.5. Degree and betweenness centralities have statistically significant effects on travel distance. The implication is that traveling workers who live in central cities of the travel network travel longer distances, on average, than workers who live in peripheral cities. The city network diversity is also found to have a positive effect on workers' traveling distance. These results, when combined with the results for the extensive measure of travel, suggest that sex workers in cities central to the network are less likely to travel, but when they do travel, they travel farther distances.

This is intuitive. Imagine two escorts who are similar in every aspect except that one lives in a city that is a popular travel destination and the other does not. The escort who does not live in a popular travel destination is likely to travel to his nearest popular city. The escort who lives in

a popular travel destination, is likely to travel a greater distance than the other escort, who is closer to a popular destination but does not live in a popular destination. That is, if living in a popular city and traveling to another popular city, those escorts by definition will travel greater distances than those who are not in popular cities, as escorts whose home location is not popular can select the nearest popular city to serve.

Travel and the Prices of Male Sex Work

While the previous results analyzed the determinants of travel, traveling should be related to remuneration in some way if escorts are indeed acting as business operators. As described earlier, the wages of escorts should be related to the popularity of the cities they live in and their own propensity to travel. Also, the cities that are popular should have higher wages for escorts, which would reflect the fact that traveling by escorts is due to the demand for escort services in those cities. When demand outstrips supply, prices should be higher.

First, I analyze the relationship between the extensive measure of travel and wage rates in Figure 3.6. I find that the effect of travel (extensively measured) on the wage rate is significant and positive, which shows the economic return to travel for male escorts. It is the case that traveling escorts charge higher prices than escorts who do not travel. On average, sex

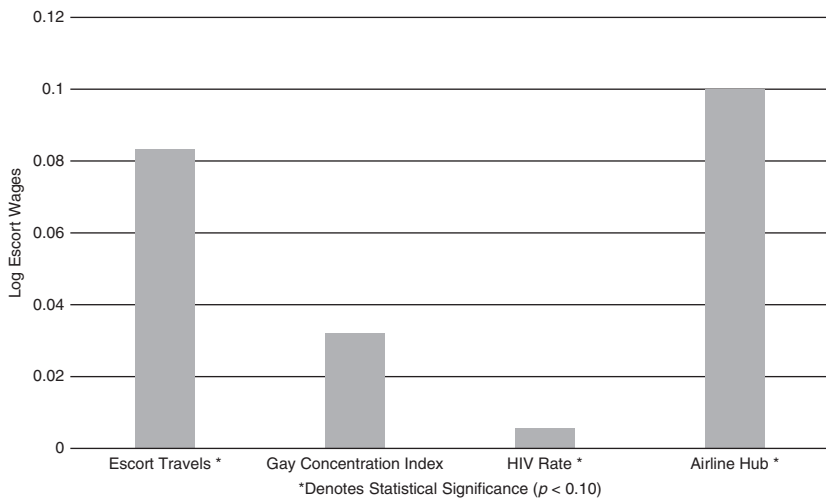


Figure 3.6 Escort travel, city properties, and escort wages

workers who travel charge 8 percent more than sex workers who do not travel.

In some specifications, I interact the traveling indicator with other measures to investigate the possibility that the returns to travel differ by other characteristics.³⁶ In that model, traveling sex workers charge 20 percent more than non-traveling sex workers. Part of this difference is due to the existence of heterogeneity within the travel premium. For example, Black and Asian escorts who travel do charge more than black and Asian non-traveling escorts, but they charge 2 and 8 percent less, respectively, than white escorts who travel. On the whole, traveling workers of non-White races receive lower wages than Whites. The results show that traveling indeed is one way in which a sex worker can earn more, but even here some differences remain.

At the individual level, sex workers who are muscular charge 18 percent more than thin escorts (the excluded group). No other personal characteristic is shown to have a relationship to the wages of travelers. Regarding environmental influences, city GCI does not have a significant effect on rates charged. However, Figure 3.6 shows that city HIV rate shows a significantly positive correlation with wage, which reflects the wage premium for job risk that varies across geographic areas. The results for HIV rates are similar to the wage effects seen for female sex workers, whose wages are positively correlated with STI prevalence.³⁷ When the risk of HIV infection is greater, the rates for sex work increase. This is consistent with higher disease prevalence being an implicit part of sex worker compensation and the disease risk in the market. A city's traveling convenience, captured by the airport hub indicator, also has a significantly positive effect on wage.

Second, traveling should be related to the centrality measures of the locations traveled to, if those centrality measures are related to the demand for sex work services. These results look at how wages are affected by individual and city network centralities. The results are reported in Figure 3.7. It is important to note that both sex-worker- and city-specific measures are used in these specifications to investigate the relationship between a sex worker's network position and wages in addition to the relationship that being in a city of a given network level has with wages. The city-level network measures have consistent correlations with the rates charged by male sex workers. All three city network centralities have significant positive effects on wages, which implies that male sex workers charge more when they live in central cities of this travel network. For example, a one-standard-deviation increase in city degree or city

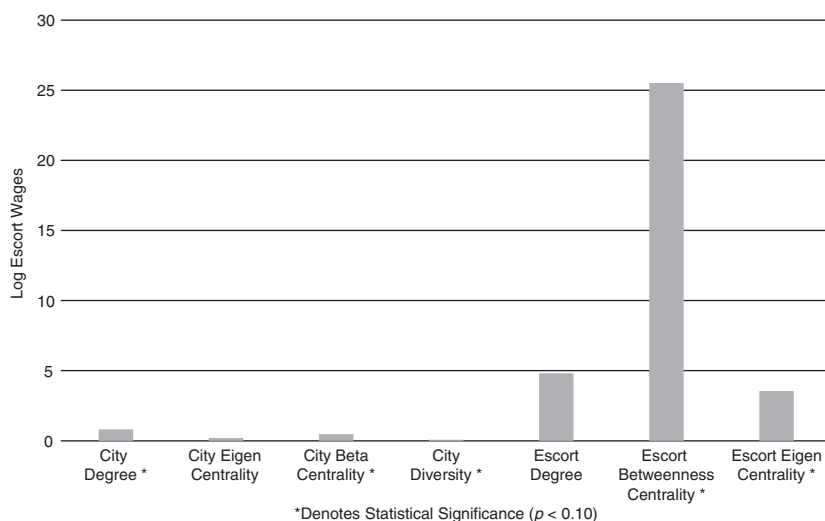


Figure 3.7 Escort and city centrality and escort wages

betweenness increases the wage rate by 2.3 and 1.79 percent, respectively. The result implies that the position of the city of residence for a male sex worker matters in terms of price. The more central a position a city has, the higher the wage rate he charges. I note that this holds for sex workers who travel and those who do not – as such, it is an effect of being in a central location itself, and not of their own propensity to travel. This is consistent with more popular cities being more expensive cities for sex work. As such, these cities have higher wages than others for sex work.

Finally, I focus on male sex workers who travel. There, the centrality of the cities they visit and its relationship to wages is presented.³⁸ However, after I control city network centralities, the effect of the airline hub seen in Figure 3.6 becomes statistically insignificant. This suggests that the hub acts as a proxy for network centrality, such that the inclusion of network centrality reduces the effect of a hub. The interaction terms of travel indicator with city GCI and HIV rate show that travelers from cities with high HIV and GCI may ask for a lower wage rate, but the estimates are only marginally significant.

I use the result to answer an additional question – travel to cities where demand for services is high results in greater return than travel to less popular cities. The return of traveling to popular cities is captured by including average network centralities and characteristics of destination cities in the wage equation for travelers. The results for destination-city

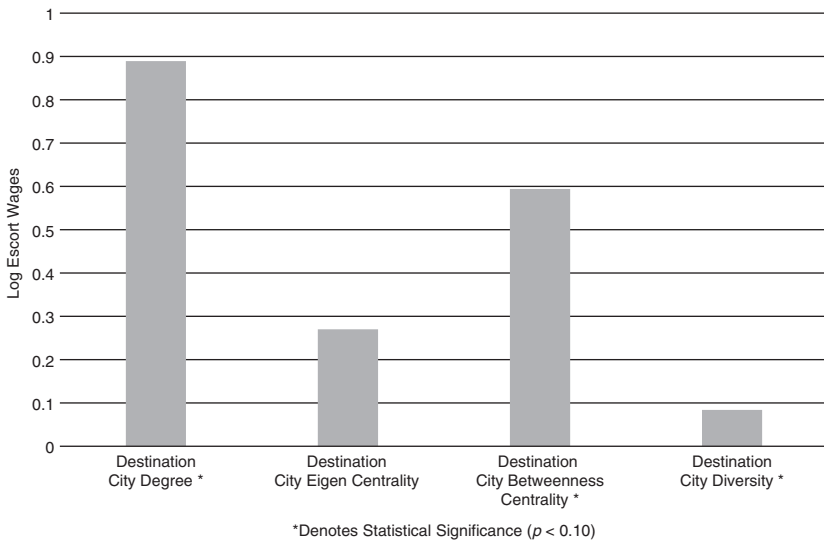


Figure 3.8 Destination city centrality and traveling escort wages

network measures are reported in Figure 3.8. The results show that the GCI and HIV rate of destination cities do not affect wage rate. However, all three network centralities and network diversity of destination cities have significant positive effects on the wage rate of travelers. For example, a one-standard-deviation increase in the degree centrality and betweenness centrality of the destination city increases wages by 2.5 and 2.3 percent, respectively. The result provides empirical evidence to support the hypothesis that escorts travel to cities with high demand for male escort services.

There is an additional implication of traveling that can be tested. Cities that are popular destinations for escorts are cities where the average price for escort services is higher than in other cities. Also, the previous results have established that escorts are less likely to travel when their home location is in a popular city. This implies that cities that are not popular contain sex workers who travel (and therefore charge higher rates) and those who do not (and so charge lower rates), while popular cities have escorts who are less likely to travel. Taking both of these into account, there is an implication that there will be less dispersion of prices in cities that are popular, because escorts in those cities are less likely to travel. Using the interquartile range of prices (the difference between the 25th and 75th percentile of prices in a given city) for a city as the measure of price dispersion, I find that network centralities and link diversity are negatively

related to price dispersion. The more connected a city is by network, the less dispersion there is in prices. This is consistent with the phenomenon of price dispersion in a city decreasing with a city's centrality – this means that popular cities are high-price cities where a client is less likely to find a low-priced escort. The lack of price dispersion would be consistent with the law of one price, where the price of a good in a market is invariant if the market is competitive. It is also a fact that price dispersion is negatively related to the gay concentration, which implies that in cities with a larger number of potential clients there is less price dispersion. This is consistent with a competitive market in which sex workers lose their ability to price discriminate. Clients in less-popular cities will be more likely to find escorts at a variety of price points, owing to the presence there of both stationary and traveling escorts.³⁹

CONCLUSION

This chapter presented the first empirical analysis of male sex worker competition in the form of travel. Serving multiple markets increases the number of potential clients for a given sex worker, and as such this chapter concentrated on travel patterns and their effects on prices in the market. Even more, it adopted a network approach to assess the interlinks that cities have due to the travel of male sex workers. The market for male sex work involves a great deal of movement, and this movement is related to market demand, as opposed to non-market factors. Male sex workers travel to locations where demand is high (and prices are high). I also showed that the movement of male sex workers, a measure of market competition and incentives in the market, has an effect on the price of male sex worker services. The first key finding is that male sex workers who advertise on the Internet have a propensity to serve multiple markets. Traveling escorts are more common than stationary ones. Overall, male sex workers are highly mobile. This mobility causes market prices to be linked through the traveling of male sex workers, since escort travel is related to market demand. The market for male sex work is not a spot market, but rather a mature market with key cities that nationalize the male sex worker market by serving as hubs for male sex workers.

The relationship between the home locations of male sex workers is not strongly related to the location patterns of gay men. It does not appear that male sex workers are concentrated in areas that have relatively dense populations of gay men. At a basic level, this suggests either that a significant portion of the client base is not gay-identified or that the ease of

traveling allows male escorts to locate at home bases that are not correlated with gay location trends. Intuition would suggest that sex workers would locate or serve the markets where there is significant demand, which would presumably come from gay-identified men. Given the high degree of traveling, however, the lack of a relationship between home location and gay population distribution necessitates an analysis of the traveling decisions of male escorts.

While overall location patterns were not related to gay population density, male sex workers in cities with large gay concentrations are less likely to travel than other escorts. Intuition suggests that the reason these escorts do not travel is that their home location is one where demand is reasonably high. This suggests that male sex workers in cities with large gay populations would be less likely to form links between cities, as they are less likely to travel. It is the escorts in low-gay-concentration cities who travel to high-gay-concentration cities. It is these escorts that drive the links between cities that create the network of male sex work in the United States.

I also showed that travel was not equally likely among all types of escorts. Certain personal characteristics of male sex workers are correlated with an escort's willingness to serve multiple locations. Escorts who advertise submissive sexual services are more likely to travel. This traveling behavior has implications for the sexual network inherent in male sex work, which has been the largest area of research since it has implications for disease transmission. As the likelihood of receiving the transmission of certain STIs is more likely for submissive sexual partners, the results would imply that submissive male sex workers who travel could simultaneously be more likely to have an STI and less likely to transmit the STI to clients. This result runs counter to the idea that sex workers could act as vectors of transmission of disease, as the sex workers traveling more are those who are less likely to transmit disease.

Lastly, male sex workers who serve multiple markets charge higher prices than others and rates are higher in cities that are central to the network created by sex worker travel. This suggests that the returns to travel are significant for escorts, that travel is related to demand, and that the market prices overall are connected due to the fact that traveling escorts serve high-priced cities. Sex worker movement is related to market incentives in the form of higher prices. The popular cities appear to be those with high demand for sex work services, and as such the incentive to travel to these cities is that they are lucrative options for sex workers, as the wage differential is significant.

In all instances, the market is broadly consistent with relatively simple models of economic agents responding to incentives provided by the market. Male escorts travel to markets that are high-priced markets, where the demand for their services is high. This leaves the market with a relatively small number of popular cities that escorts travel to provide services. For the escorts who live in these cities, the high wages they enjoy give them fewer incentives to travel. Indeed, when they do travel they travel farther distances as they must seek out more lucrative markets, which are at a greater distance. Beyond this, the cities that are popular from centrality-based measures of sex work are high-priced cities where there are fewer low-priced sex workers working.

It appears that escorts make reasonable economic decisions about their location patterns. They remain in and travel to cities that are high priced, and these cities appear to be cities where demand for their services is high. In particular, the results here suggest that the inclusion of network measures is important to understanding the economic incentives involved in the returns to traveling and sex worker service provision. The market for male sex work is not only a sexual network, but an economic one as well. The connectedness of the market is evidence of the maturity of the male sex work market. Sex workers appear to be aware of the geographic price differences and they respond to them. While the price differential remains between markets, the effects show a degree of market integration that has never been empirically observed for male sex work before. While not a national market with one price, which would occur in a fully integrated market, this integration shows a level of market development and maturity that cautions against treating male sex work as an economic anomaly or as an institution with few market features.

