Prostitution, Education, and Moonlighting: A Demonstration of the Importance of Fixed and Variable Costs in Sex Worker Labor Supply

Scott Cunningham
Todd D. Kendall

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Abstract. We develop a model of prostitution labor supply using a model of dual job holding to show that differences in fixed and variable costs predict different patterns of labor supply. We document empirical regularities that are consistent with this model, focusing on college education as a source of cost differentiation. College-educated prostitutes receive 31% higher weekly earnings, but receive no hourly wage premium, except for very long client sessions. We demonstrate that college-educated prostitutes experience better "job amenities," like more desirable clients, work less frequently, service more clients and provide longer client sessions, conditional on working.

I. Introduction

Recent economic literature has examined factors determining the relatively high wages earned by commercialized sex workers, or prostitutes.[1]. Complementing this literature, we present, and provide descriptive empirical evidence consistent with, a model of prostitute labor supply based on dual job holding (also known as "moonlighting"). As we document, moonlighting appears to be an important aspect of prostitute labor supply in modern economies, with more than 43% of workers in our data holding another job simultaneous with sex work.

Building on the mechanism identified by Robinson and Yeh (2011), entry into prostitution is driven by shocks to a worker's budget constraint, reflecting, for instance, unemployment in the licit sector or unexpectedly high expenses (such as on car repair or medical bills).[2] Entry and labor supply decisions in the model depend on the principal costs identified by recent literature, including lost marital opportunities for prostitutes (Edlund and Korn 2002), social stigma associated with prostitution (Guista et al. 2009), disease risk (Rao, et al. 2003, Robinson and Yeh 2011), and arrest and violence risk (Gertler et al. 2005, Arunachalam and Shah 2008). We specifically distinguish between fixed costs of entry into sex work, such as reduced marriage market opportunities and social stigma, and costs that are primarily variable, such as disease, violence and arrest risks, as well as psychic disutility associated with commercial sex work.[3] The model predicts that sex workers who experience lower variable costs of sexual labor supply

[1] Edlund and Korn (2002), Giusta et al. (2009), Gertler et al. (2005), Arunachalam and Shah (2008), Robinson and Yeh (2010).

[2] Similarly, see Dupas and Robinson (2009), Porter and Bonilla (2010), Rosen and Venkatesh (2008), Miguel (2005), Thukral, et al. (2005), and Thukral and Ditmore (2003) for further evidence on the relationship between income shocks and prostitution entry.

[3] Psychological costs from prostitution activity, emphasized by a substantial sociological and anthropological literature (e.g., Young et al. 2000, Farley 2004), may have both fixed and variable aspects.

will, conditional on entry into the industry, provide more services.[4] Sex workers who have lower fixed costs of entry and more binding budget constraints will enter more frequently.

We then provide a range of descriptive evidence consistent with the model, focusing on heterogeneity in prostitution labor supply among sex workers of different education levels. Prostitution is widely considered to be an unskilled profession (at least in the common sense of "skill"), but we provide evidence of heterogeneity in labor supply by education indicating that education is an important factor. We document that college educated sex workers receive 31% larger weekly earnings (conditional on working in a given week). They do not, however, receive higher hourly wages, except for longer client sessions, where there is an approximately 15% higher wage for college-educated sex workers. This is consistent with bundling of non-sexual services (such as companionship), where education may be an important determinant of productivity, in these longer sessions.

We also document what appear to be better "job amenities" for college-educated sex workers in the form of a larger mix of "regular" (return) clients, more attractive clients, and lower perceived arrest risk. College-educated prostitutes also engage in sex work less frequently, but see more clients and offer longer average client sessions, conditional on working. We also find that college-educated sex workers demand higher compensating wage differentials for unprotected sex. To our knowledge, this is the first study to showcase these facts.[5]

[4] Lower variable costs also implies a greater willingness to enter.

[5] Our finding of higher earnings for educated sex workers is consistent with previous empirical exercises which include education as a covariate in wage analyses of prostitutes in Ecuador, Mexico, and India (see Rao et al. 2003, Gertler et al. 2005, Arunachalam and Shah 2008).

We demonstrate that these results are consistent with the model if, as seems plausible, college-educated sex workers face lower variable costs of providing sexual services due to the better "job amenities" described above, but higher fixed costs of entry and looser budget constraints, due to better licit labor market and marriage market opportunities, more reputational capital at stake, shorter and less frequent unemployment spells, and better access to credit markets.

Our empirical findings are based on data from a survey of almost 700 sex workers based in the U.S. and Canada, encompassing information on over 2,000 transactions. We use sample weights to address unobserved sampling bias constructed from the sample and the population of sex workers sampled. While all surveys have limitations, we believe ours to be the largest available on sex workers in modern economies, and one of the few surveys to extensively examine the labor market practices of prostitutes.

Besides emphasizing the role of both fixed and variable costs in determining prostitute earnings, our research also contributes by presenting new information on earnings and labor market practices among prostitutes in a developed country among sex workers who operate using modern information technology. In an extensive literature survey, Weitzer (2005) finds that street-based prostitution may constitute as little as 20% of the U.S. market for prostitution, while it has attracted upwards of 80% of academic research.[6] In examining earnings among indoor prostitutes, we build on a very recent literature that has begun to examine earnings in this important segment of the industry (Moffatt and Peters 2004, Logan and Shah 2009, Edlund et al. 2009, Cunningham and Kendall 2011). In finding systematic variation in labor supply by

[6] Similarly, Porter and Bonilla (2010) estimate that only about 20% of U.S. prostitution is street-based.

education status, we highlight heterogeneity as a key aspect of prostitution labor supply in North America. Also, in distinction with previous literature on prostitution, we examine and emphasize the importance of non-pecuniary job amenities as an important determinant of sex worker labor supply decisions.

Our paper also contributes to a better understanding of the general relationship between human capital and criminal labor supply (Raphael and Winter-Ebmer 2001, Lochner and Moretti 2004, Kreuger 2008). Our results suggest that there are different labor markets segmented by education, a result similar to that discovered by Lochner (2004) with respect to white-collar crimes, though in contradiction to the inverse relationship between general crime rates and educational levels (e.g., Gould et al. 2002).

Section II presents our labor supply model, while Section III describes the survey instrument and Section IV presents empirical results. Section V concludes.

II. A "moonlighting" model of prostitution labor supply

In this section, we adapt a canonical model of dual job holding, or "moonlighting" (Shisko and Rostker 1976, Conway and Kimmel, 1998) to the prostitution market, allowing for fixed and variable costs of supplying prostitute labor. We postulate that market wages are determined by marginal entrants into the prostitution industry, and that these workers are driven to enter by temporary budget constraint shocks (possibly heightened in their effects by credit market constraints), such as unemployment or unexpected expenses. This mechanism is a generalization

of that considered by Robinson and Yeh (2011), who postulate riskier behavior among existing prostitutes as a reaction to negative income shocks. Porter and Bonilla (2010), Rosen and Venkatesh (2009), Thukral and Ditmore (2003), and Thukral, et al. (2005) also provide evidence that temporary budget constraint shocks are an important factor leading to prostitution market participation.

Assume a marginal sex worker has an outside job that pays w_0, and that, in the short run, hours of work at the outside job are fixed at $\overline{H}$. The worker chooses the number of hours to supply prostitute labor, h, which earns wage rate w_p. Prostitute labor involves disutility which is potentially greater than that associated with the outside job. Let the disutility of prostitute labor be given by $D(h)$, where $D' > 0$ and $D'' > 0$. Write the worker's utility function as

[1] $$U = U(c, L) - \beta D(h) - R(h),$$

where *c* denotes consumption of a numeraire good, *L* denotes hours of leisure, $\beta > 0$ indicates the disutility of prostitution labor, and *R* is a fixed cost of entry into the prostitution labor market. In particular, let

$$R(h) = \begin{cases} R & if\ h > 0 \\ 0 & otherwise, \end{cases}$$

and $R > 0$. $R(h)$ could be interpreted as a reputational cost, in the sense that a worker must advertise whenever she offers prostitution services, which involves a probability of detection by family or police which is at least partially fixed with respect to the number of hours worked

(Giusta et al. 2005). Alternatively and similarly, $R(h)$ could represent lost marriage market opportunities (Edlund and Korn 2002).[7]

The worker's budget constraint can be written as

[2] $$w_0\bar{H} + w_p h \geq c + Y,$$

where *Y* indicates an unexpected expenses shock, such as unavoidable car repair or medical bills. The model is not intertemporal, so we abstract away from credit market conditions which could be used to smooth such expenses over time; nevertheless, to the extent a worker has better access to credit markets, we can model this as an exogenous reduction in *Y* at any given time.

In addition to the usual constraints that *c*, *h*, and *L* must be non-negative, the worker is also constrained by the total number of hours, *T*:

[3] $$T - \bar{H} - h - L \geq 0.$$

First, suppose that the worker decides to offer prostitute labor. Then she maximizes her utility as expressed in equation [1], subject to equations [2] and [3]. Substituting equations [2] and [3] into equation [1] and taking the first order condition implies

[4] $$U_L - w_p U_c + \beta D_h = 0,$$

[7] In addition, $R(h)$ could be a psychological cost associated with offering commercialized sex, or any other fixed cost of entry.

where subscripts denote derivatives with respect to the subscripted variable. For the second-order condition to hold, we assume $U_{CC} < 0, U_{LL} < 0$. Equations [2], [3], and [4] constitute a system of three equations in three unknowns (h, L, and c). One can implicitly differentiate each of the three equations and solve the resultant system to derive comparative statics. For instance, the relationship between the expense shock, Y, and leisure is

$$\frac{\partial L}{\partial Y} = -\frac{U_{CL} - w_p U_{cc}}{\psi},$$

where $\psi = 2w_p U_{CL} - w_p^2 U_{CC} - U_{LL} - \beta D_{hh} > 0$ by the second-order condition. We will assume that $\frac{\partial L}{\partial Y} < 0$, which is equivalent to assuming that leisure is a normal good (increases in Y reduce disposable income). Therefore, $U_{CL} - w_p U_{cc} > 0$.

Proposition 1: Conditional on entering the prostitution industry, increases in the outside job wage, or the disutility of prostitution labor, lead to lower hours worked. Large expense shocks lead to greater hours worked.

> Proof.
> The comparative statics relating outside job wages and labor disutility to prostitution labor supply are:
>
> $$\frac{\partial h}{\partial w_0} = -\frac{\bar{H}[U_{CL} - w_p U_{cc}]}{\psi}, \text{ and}$$
>
> $$\frac{\partial h}{\partial \beta} = -\frac{D_h}{\psi}.$$
>
> Both of these are negative, by the aforementioned assumption that leisure is a normal good. The comparative static relating the expense shock to prostitution labor is
>
> $$\frac{\partial h}{\partial Y} = \frac{U_{CL} - w_p U_{cc}}{\psi},$$
>
> which is positive by the same assumption. QED.

Now consider the decision of whether to enter the prostitution industry. As noted above, there is a fixed cost, R, associated with $h > 0$. Define h^* as the optimal prostitution labor supply, as

defined by equations [2], [3], and [4], conditional on offering prostitution services. Then a worker offers prostitution services if and only if

$$[5] \qquad U\left(w_0\overline{H} + w_p h^* - Y, T - \overline{H} - h^*\right) - \beta D(h^*) - R > U(w_0\overline{H} - Y, T - \overline{H}).$$

Suppose that workers vary in the level of *R*. For instance, if *R* represents reputation, then some workers could have more reputational capital than others, and so suffer more if detected engaging in prostitution (Giusta, et al. 2005). Alternatively, if *R* represents lost marriage market opportunities (Edlund and Korn 2002), then workers may vary in their preferences for marriage, such that some workers must give up a highly valued option in order to become prostitutes. Equation [5] can be rearranged to define a "reservation" level of *R*, below which a worker offers prostitution services:

$$[6] \qquad \bar{R} = U\left(w_0\overline{H} + w_p h^* - Y, T - \overline{H} - h^*\right) - \beta D(h^*) - U(w_0\overline{H} - Y, T - \overline{H}).$$

We can now examine the factors that drive entry into prostitution.

Proposition 2: Workers with higher fixed costs of entry into prostitution are less likely to enter, ceteris paribus. If consumption and leisure are neither strong complements nor strong substitutes in the utility function, then expense shocks and involuntary licit-market unemployment cause entry into prostitution, with bigger shocks needed to draw higher reputation workers into prostitution.

Proof: Differentiating equation [6] and employing the envelope theorem,

$$\frac{\partial \bar{R}}{\partial Y} = U_c(w_0\overline{H} - Y, T - \overline{H}) - U_c\left(w_0\overline{H} + w_p h^* - Y, T - \overline{H} - h^*\right).$$

Given $U_{CL} \approx 0$ (as assumed in the Proposition), and $U_{CC} < 0$, this implies $\frac{\partial \bar{R}}{\partial Y} > 0$. In other words, higher large expenses shocks raise the reservation level of R below which all workers offer prostitution services. Similarly, the same method implies

$$\frac{\partial \bar{R}}{\partial \bar{H}} = w_0\left[U_C\left(w_0\bar{H} + w_p h^* - Y, T - \bar{H} - h^*\right) - U_c(w_0\bar{H} - Y, T - \bar{H})\right] - \left[U_L\left(w_0\bar{H} + w_p h^* - Y, T - \bar{H} - h^*\right) - U_L(w_0\bar{H} - Y, T - \bar{H})\right].$$

Again using the aforementioned assumptions that $U_{CL} \approx 0$ and $U_{CC} < 0$, along with $U_{LL} < 0$, this implies that $\frac{\partial \bar{R}}{\partial \bar{H}} < 0$. In other words, lower employment in the non-prostitution sector raises the reservation level of R below which all workers offer prostitution services. QED.

III. Survey of Adult Service Providers

In this section, we describe our survey data, known as the Survey for Adult Service Providers ("SASP"). While other data sources exist providing information on observable characteristics and prices of prostitutes (Cunningham and Kendall 2010 present an overview of available data), surveys appear to be the only means by which education and other key background characteristics and business practices can be discerned.

Administering surveys to individuals involved in a socially-stigmatized (and usually illegal) activity presents a number of problems to the researcher. Our experience in implementing SASP indicated that assuring respondents' anonymity was a key factor leading to participation. In order to balance this desire for anonymity with the need to maintain the integrity of the survey, potential respondents received an invitation to take the survey by email which included a random string of characters and numbers generated by a third party inaccessible to the researchers (the information librarian at Baylor University). When surveys were returned, only the random string was observable by the researchers, and not the email address of the respondent.[8]

[8] The random string of characters did, however, allow the researchers to be sure that each survey response originated from a different email recipient. We described this procedure to respondents in the invitation email, and also invited participants to take the survey by telephone with one of us or our research assistants if they felt uncomfortable responding

A number of participants expressed concern that SASP was, in fact, an enforcement effort by tax authorities or police agencies (the former typically being the more serious concern). As additional signals that the purpose of SASP was entirely scientific, the online survey instrument was hosted on Baylor University servers, and a website was posted with answers to frequently asked questions along with links to the authors' personal websites, curricula vitae, institutional review board exemption letter, and research manuscripts. The office telephone number for one of us was also included in each email, and respondents were encouraged to contact via phone if they desired. Many respondents did, indicating that participants found this to be a useful means of verifying our authenticity. Additionally, early on in the study, the Las Vegas chapter of Sex Workers Outreach Project, a major advocacy group, publicly endorsed SASP and encouraged sex workers to participate in the study, thus providing some external verification that the study was scientific.

A fundamental issue in the construction of any survey, but which is exacerbated by the underground and frequently illegal nature of sex work, is the identification of a useful population from which to draw survey participants. For SASP, we based our population on the set of workers with email addresses listed on a large customer review website, TheEroticReview.com ("TER"). TER is a site that offers clients the opportunity to "review" sex workers, and while there are a number of similar sites, TER is by far the largest and most geographically-dispersed, providing reviews for over 100,000 sex workers in North America (Edlund, et al., 2009 and Cunningham and Kendall 2011 use TER as a direct source of data).

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electronically

We supplemented this set of sex worker email addresses from TER with an additional set of addresses from individuals listed on a popular national sex worker advertising website, Eros.com. In total, we attempted to contact 26,189 individuals to participate in the survey.

We believe this population includes a substantial share of all US-based indoor sex workers. However, SASP likely undersamples several subgroups. First, while workers employed in escort agencies, massage parlors, or brothels are commonly reviewed on TER and advertised on Eros.com, they frequently do not have personal email addresses listed; instead, only the agency or brothel manager's email is frequently available. Therefore, it seems likely that many of these workers were not reached. Second, sex workers who meet clients largely through pimps also may have been more difficult to reach through email.[9] Finally, we believe our population may miss some very high-priced workers who operate entirely through personal referrals and avoid reviews and advertisements.

After collecting all available contact information, the list of potential survey participants was organized by city (both TER and Eros.com organize listings geographically). We then randomly selected five cities per month, and attempted to contact individuals in those cities up to four times during the month. In addition to emailing participants with a link to the survey, we also contacted a random selection of workers by telephone to encourage them to take the survey. We put the SASP survey in the field in August 2008 and wrapped up data collection in early June 2009. The actual survey instrument (if completed online, and not over the telephone) was

[9] This implies that our survey participants are unlikely to include many international workers moving through human trafficking networks, a key interest to law enforcement.

distributed and published, and the responses collected and organized, using SNAP 9.2 software, and included approximately 267 questions.[10] The text of all questions may be found in Appendix A. Based on timestamps associated with participant answers, respondents took approximately 25 minutes on average to complete the survey.

Among the original 26,189 emails sent, 13,333 emails were successfully delivered, with the remainder "bouncing back" as undeliverable. The high number of invalid email addresses is unsurprising, given the fact that TER data stretches back to 1998, and many workers active in earlier years may have left the industry or changed contact information (similarly, imagine sending letters to all business listed in the last ten years of telephone directories for a city).[11]

While 13,333 emails were successfully delivered to an email account, some share of these accounts are likely abandoned or very irregularly checked.[12] Thus, this number represents an upper bound on the pool of potential participants, and the real response rate is likely much higher as a result. Nevertheless, between August 2008 and June 2009, 685 respondents answered our request to take the survey, giving us a lower bound response rate of 5.14%.

While the response rate was low in comparison with large-scale surveys of workers in other industries, given the illicit nature of sex workers' employment, infrequent response is

[10] We are indebted to Baylor University electronic librarian, Lance Grigsby, without whom this project could not have been conducted.

[11] Consistent with this hypothesis, for workers first reviewed in 1999, nearly 90% of the emails listed were inoperable, while less than 20% of emails sent to workers reviewed in 2009 were rejected.

[12] Many free email services, such as hotmail.com and yahoo.com, remain open for some period of time even after the account holder has abandoned them.

unsurprising. Moreover, to the best of our knowledge, no other survey of sex workers in modern economies has provided more survey responses, particularly on labor market issues such as those examined in this paper.

Nevertheless, we acknowledge the potential for our estimates to be biased due to selection in the propensity to respond to the survey invitation. We can partially generalize SASP to the larger population of indoor sex workers by probability weighting our sample of responses to be representative of the population we sought to reach. Specifically, we used the age and race distributions of SASP respondents and of all sex workers reviewed on TER during 2007 and 2008 in an attempt to generalize our results to the set of currently-operating indoor prostitutes.

To do this, we calculated the share of individuals reviewed on TER in each age-race category, and divided that share by the similarly-calculated share of SASP respondents in that same category. Thus for instance, there are 1,155 White workers between ages 31 and 35 reviewed on TER, which is 11% of all TER-reviewed workers. Likewise, there were 99 White SASP respondents aged 31-35, which is 15% of all SASP respondents.[13] The inverse probability of appearing in our sample is therefore 0.72 (= 0.11 / 0.15) for Whites aged 31-35. This process allows us to present estimates of means, regression coefficients, and linearized standard errors using these probability weights, which may be thought of as generalizable to the larger sample of indoor sex workers. While it could be argued that we undersample some subgroups of workers, and so our results may not be fully generalizable, we believe TER-reviewed workers represent a very large and important subset of sex workers in North America.

[13] In general, SASP appears to have been more successful in reaching older sex workers relative to younger, and white sex workers relative to non-whites.

SASP is structured to provide two distinct datasets: (a) a sex worker-level dataset with personal characteristics and general business practices, which we refer to as the "provider file", and (b) a transaction-level dataset with information on prices charged, sexual activities and client characteristics based on the worker's last five clients, which we refer to as the "client file". The provider file includes 685 respondents, while the client file contains information on 2,047 transactions. Table 1 presents probability-weighted summary statistics from the two datasets. Notably, we estimate that 37.8% of the U.S. indoor sex worker population is college-educated.

IV. Empirical Results

Table 2 presents estimates of the relationship between college education and weekly earnings. Column (1) is estimated using only observations for which the respondent worked last week, as defined by having at least one client during the last week. Included as covariates are a variety of individual characteristics, including age, race, and body mass index,[14] as well as business variables such as experience and an indicator for whether the worker is "independent" (does not work with a third-party manager such as an escort agency or a pimp).

Table 2 indicates that, conditional on working in the last week, college graduates earn roughly 31% more than non-graduates. Column (2) expands the data to include all observations, including those for which the respondent did not work during the last week. The result indicates that the unconditional effect of college is less than half as large as the conditional effect, and is statistically insignificant. This reflects a fact we will demonstrate below, that college-educated

[14] We find similar effects when we include finer race gradations, and when we include categorical BMI variables.

sex workers are substantially less likely to work in any given week, but when they do work, they see more clients and provide longer sessions.

While we cannot demonstrate that the relationship between earnings and education is causal with these data, a 31% earnings premium is consistent with the literature on the returns to education more broadly, which finds 5% - 12% annual returns from an additional year of schooling (Psacharopoulos and Patrinos 2004, Card 1999). That prostitutes, whose job is primarily physical, receive college premia similar to the labor force as a whole may initially be surprising, and indeed, we show below that hourly productivity is not much different between educated and uneducated sex workers. However, prostitution, like other jobs, involves complex problems of optimal labor supply, risk management, allocation of entrepreneurial and marketing skills, and other general issues where education may be productive. In the following tables, we examine more closely the sources of the college premium in order to illustrate this point.

First, Table 3 illustrates that college-educated sex workers do not earn higher hourly wages for most sessions. To calculate wages, we use the transaction-level data, and divide the payment associated with each transaction by the length of the session (in hours). We then use the natural log of this calculated hourly wage as the dependent variable.[15]

In the first three columns of Table 3, we regress (natural log of) calculated hourly wage against the college variable and various subsets of covariates, using the entire sample of survey transactions. Column (1) includes only the sex worker characteristics employed in Table 3, plus

[15] For this analysis, we exclude 53 outlier observations in which the calculated hourly wage was less than $50 or more than $1,500.

a quadratic term in session length. In column (2) we add controls for which sex acts the worker indicated took place during the transaction,[16] and in column (3) we also add a set of variables controlling for the characteristics of the client.[17] In none of the three specifications is there a significant relationship between college education and hourly wage. We therefore conclude that there is little evidence that college is associated with higher productivity. Columns (4) and (5) re-estimate the same regression,, using the specification in column (3), but using only data on sessions that lasted less than the modal length (60 minutes), and sessions that lasted exactly the modal length. Again, for these sessions, there is no evidence that college education is associated with higher productivity.

Table 4, however, shows that college is associated with higher wages for longer sessions. The three columns in Table 4 reproduce the specification in the first three columns of Table 4, but focusing only on sessions lasting more than 60 minutes. These findings suggest that college is associated with a roughly 15% wage premium for longer sessions. These results are consistent with a theory that longer sessions involve relatively more non-sexual services, such as companionship, and that college education may be productive in these services.

[16] These include indicators for whether each of the following took place: massage, vaginal sex with a condom, vaginal sex without a condom, fellatio with a condom, fellatio without a condom, anal sex with a condom, anal sex without a condom, and group sex. In general, the provision of anal sex is associated with a 15-20% wage premium; the other acts are not consistently associated with wages in a statistically significant manner. These results are available upon request from the authors.

[17] These include the client's age, age-squared, whether the client was a "regular" for the sex worker, the worker's subjective assessment of the client's attractiveness (on a 1-10 scale), indicators for the race of the client, and whether the assignation took place in a hotel. In general, regulars pay roughly 12% lower wages. The other client characteristics are not consistently associated with wages in a statistically significant manner. These results are available upon request from the authors.

In Table 5, we find that college-educated workers in fact supply more of these longer sessions. In the first three columns, the dependent variable is the natural log of session length, and the results indicate that, depending on whether client characteristics are included as covariates, college-educated workers provide 17% - 23% longer sessions. In columns (3) and (4), we examine specifically whether college graduation is associated with a session length greater than the modal session length, 60 minutes, for which we previously found a college wage premium. The results indicate that college graduation is associated with a nearly 13% increase in the likelihood of a session 60 minutes or longer.

These longer sessions, as noted above, likely involve bundling of sexual services with non-sexual services. This provides one means by which "job amenities" may be better, and therefore, variable costs associated with labor disutility lower, for college-educated sex workers. In Table 6, we present further evidence that college-educated workers may, to some extent, be able to avoid some of the psychological harms associated with prostitution.

The first two columns, which are based on the provider-file data, examine the effect of college education on the number of "regular," or repeat, clients, and the number of new clients, conditional on working. In particular, column (1) shows that college-educated providers appear to be able to attract 32.4% more regulars. The effect on new, never-before-seen, clients, as estimated in column (2) is smaller in magnitude and statistically insignificant. Regular clients generally involve lower violence and arrest risk; moreover, sex workers may be able to form warmer, less "transactional," relationships with regulars that may mitigate some of the disutility

associated with prostitution labor supply. Hence, a higher share of regular clients may represent a valued job amenity, which college-educated workers are better able to attain.

The remaining columns in Table 6 employ the transaction file to examine other job "amenities." Column (3) shows that college-educated sex workers rate the attractiveness of their clients higher, roughly 0.37 points higher on a 10 point scale, which corresponds to a 6.3% increase over the mean value. Column (4) indicates that college-educated sex workers are 6.7% more likely to kiss their clients, potentially reflecting a more intimate relationship. Column (5) examines the ability of college-educated sex workers to attract older, and presumably lower-risk, clients, but finds no statistically significant result. While older clients may involve lower risk, younger clients may represent more attractive, desirable sexual partners. Finally, column (6) examines the propensity of college-educated workers to travel out of their home state to meet clients, a measure which reflects the ability to attract high-quality, wealthy clients who demand a variety of non-sexual services, such as companionship. College-educated sex workers are 6.4% more likely to travel out of state to meet clients.

In Table 7, we examine job risks faced by prostitutes. In the first four columns, the dependent variable is a subjective assessment of a particular risk, measured on a 0 to 10 scale, with lower numbers representing lower risk. These results suggest that college-educated sex workers perceive significantly lower risk of arrest associated with their work. College-educated sex workers also perceive lower HIV infection risk, but this is not statistically significant. Interestingly, college does not seem to be correlated with client violence or discovery risks. The

final column in Table 7 shows that college-educated workers are not more likely to have been actually physically assaulted, either.

Table 8 addresses the questions of market participation and the number of clients. Specifically, we used the provider file to count the number of clients each worker indicated she saw during the last week. In column (1), the dependent variable is an indicator for whether the worker saw any clients during the last week, a measure of market participation. The regression is estimated with a probit specification. The result shows that college-educated workers appear to work roughly 12.2% fewer weeks in the prostitution market. In column (2), the dependent variable is an indicator for whether the worker has another (non-sexual) job. Likely reflecting better legal job market prospects, college-educated workers are 24.6% more likely to hold employment outside of sex work. Column (3) estimates that, conditional on having an outside job, college-educated workers also provide slightly more hours in licit employment, working 0.17 more hours on average.

The last column in Table 8 presents coefficients from a linear regression with the number of clients last week as the dependent variable (conditional on seeing at least one client). The results show that, conditional on working, college-educated workers see nearly 25% more clients. This result simply summarizes the disaggregated results between "regulars" and new clients presented in the first two columns of Table 6.

Propositions 1 and 2 in the model presented above can organize the results so far. As shown in Table 3 wages in prostitution (w_p in the model) are roughly the same between educated and non-

educated sex workers. Tables 4 – 7 show that college-educated workers can mitigate to some degree the disutility of sex work (β) by attracting higher-quality clients, reducing arrest risks, and bundling sexual services with companionship and other non-sexual activity. While it is also likely the case that college-educated prostitutes earn higher licit market wages (w_0), if the reduction in variable costs (i.e., β) associated with education is large enough, Proposition 1 implies that college-educated workers will supply more hours of prostitution labor than non-educated workers, conditional on working. This is consistent with our findings in Tables 4 and 8.

Proposition 2 may explain why college-educated workers, despite supplying more prostitution labor, conditional on working, nevertheless enter the industry less frequently. First, college-educated workers may have higher fixed costs of entry if their marriage market opportunities are better than those experienced by uneducated workers, or if they have higher reputational capital – more to lose. Even for a given level of fixed costs, education may reduce entry because college-educated workers generally suffer lower levels of unemployment (Ashenfelter and Ham 1979), and have shorter unemployment spells (Mincer 1991). In addition, college-educated workers may have better access to credit markets or savings which allow them to smooth out the effects of temporal increases in unavoidable expenses.[18]

One potential concern with our results is that college-educated sex workers may simply provide different sexual services than non-educated workers. In the transaction-level regressions presented in the tables above, we displayed results which controlled for sex acts performed

[18] See Abdukadir (1992) for evidence that liquidity constraints are an important factor in dual job holding generally.

during the transaction, which should mitigate this concern. However, in Table 9, we examined explicitly the relationship between college education and the provision of various sex acts using the transaction file. College-educated workers may be more risk-averse, perhaps owing to better outside opportunities, and therefore, less likely to engage in riskier behaviors. On the other hand, to the degree that college-educated workers are able to attract higher-quality clients who are less likely to carry sexually-transmitted infections, they may compensate for the lower risk profiles of their partners by engaging in riskier activities.

In each column of Table 9, we estimate the relationship between a particular sex act and college completion. The results suggest that college-educated workers provide fellatio, vaginal sex, and anal sex at similar rates to uneducated workers. However, college-educated workers appear to be 22.9% less likely to provide fellatio without a condom, perhaps reflecting a lower tolerance for risk behaviors. However, we find no significant relationship between college education and the provision of vaginal sex without a condom.[19]

Combining these data with our earlier analysis of educational heterogeneity, Table 10 presents estimated compensating wage differentials associated with various sex acts for college graduates and non-graduates. The dependent variable in each column is the calculated hourly wage, which we regress on an indicator variable for whether the specified sex act was included in the session, and an interaction of this variable with college completion. For instance, in column (1) we estimate a 6.0% compensating differential associated with fellatio for non-graduates, and a -7.0% (= 6.0% - 13.0%) compensating differential for graduates, although neither effect is statistically

[19] We also asked about anal sex without a condom, but there were too few transactions that involved unprotected anal sex to estimate a specification similar to those in Table 9.

significant. The only statistically significant effect we find is for the incidence of unprotected vaginal sex. College-educated prostitutes received a 14.8% premium associated with this type of service (= -29.2% + 44.0%). We believe this is the first evidence in the literature on prostitution markets of a skill-varying compensating differential.

V. Conclusion

The empirical evidence presented above we believe highlights the value of labor supply models with both fixed and variable costs in understanding sex worker labor supply decisions. We also emphasize for future literature the importance of non-pecuniary "job amenities." More generally, we wish to encourage future researchers to explicitly take account of the importance of skill and other forms of product differentiation in this market.

Specifically, we show that the systematic differences in earnings by education for contemporary US sex workers can be explained with a model in which entry into the prostitution labor market is associated with short-term financial distress, caused by unemployment or unexpected expenses and lack of access to credit markets. Since college-educated workers have fewer and shorter unemployment spells, better access to credit markets, and potentially higher fixed costs of entry, they are less likely to participate in the prostitution market at any given time. However, because college-educated workers appear to receive important non-pecuniary returns in the form of better job amenities, they provide more labor along the intensive margin, conditional on participation.

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Appendix A: SASP Survey Instrument

INTRODUCTION

Thank you for agreeing to participate in our Survey of Adult Service Providers, or SASP for short. Because we take your privacy seriously, we have undertaken a number of security precautions to ensure that your answers are kept confidential and anonymous. You will not be asked to record any information that could be used to identify you, nor will Baylor University keep records of respondent IP addresses. The only data we are recording is the data you give us when you voluntarily answer the survey. We ask only that you answer all questions truthfully whenever possible.

As of mid-2008, little to no survey data exists on Internet-based adult service providers. While writers from within the industry and observers of the industry have written numerous books and articles on service providers, and Internet forums, newsletters and trade magazines continually share this knowledge, systematic evidence on the determinants of your wages is missing. We also know very little about things like worker safety, work-related risks, or compensation you receive for exposing yourself to risk.

The primary purpose of our study is to better understand the determinants of your wages, and how the risks you face on the job affect those wages. To better understand this, we will be asking you to share with us information about your job experience, your personal characteristics, and the transactions themselves.

This survey is intended to be completed privately by individuals working as escorts, not by their friends, business associates, or others. If this survey was sent to you in error, please do not complete the survey. If you prefer to mail us your answers without your email, even though we pledge to destroy that information, please do so. If you prefer to have this survey conducted over the telephone, we can also accommodate that request. You can reach us whichever way is best at the contact information below.

SECTION ONE: BACKGROUND INFORMATION

In this section, we would like for you to share some information about your background. We ask these questions so that we can compare your answers to other providers with similar characteristics.

1. Are you male or female?
2. Which of the following best describes your race/ethnicity?
   - ❑ White
   - ❑ Black
   - ❑ Asian
   - ❑ Hispanic
   - ❑ Other
   - ❑ Multiracial

2b. If you answered "Other," please specify:
2c. Since you selected "Multiracial," please check all that apply:

- ❑ White
- ❑ Black
- ❑ Asian
- ❑ Hispanic
- ❑ Other

2d. Please list additional racial types below:
3. Are you transsexual?
4. Are you transgendered?
5. Were you born in the United States?
5b. Please indicate which country you were born in:
6. How old are you?
7. How tall are you?
Feet:

_____
Inches:

_____
8. Roughly speaking, how much do you weigh?
9. Have you completed high school or received a GED?
10. Have you attended college for any period of time?
11. Did you receive a college degree?
12. Are you currently a student in any formal educational program, such as a college degree?
13. What was your mother's highest level of education?

- ❑ Less than 12th grade
- ❑ High school graduate or GED equivalent
- ❑ Some college
- ❑ College graduate
- ❑ Post-graduate
- ❑ Don't know

14. What was your father's highest level of education?

- ❑ Less than 12th grade
- ❑ High school graduate or GED equivalent
- ❑ Some college
- ❑ College graduate
- ❑ Post-graduate
- ❑ Don't know

15. Which of the following best describes your marital status?

- ❑ Currently married and living with your spouse
- ❑ Married but not currently living with your spouse
- ❑ Single and never married
- ❑ Divorced and not remarried
- ❑ Widowed and not remarried
- ❑ Cohabitating (living with a partner) but unmarried

16. How many years have you been married?
17. How many years have you been married?

18. How many years were you married?
19. How many years have you been widowed?
20. How many years have you been living together? If less than one year, type "0."
21. Do you have any children?
22. What are the ages of your children? If you have more than one child, please separate each age by a comma. Also, if your child is 1 ½, just write 1.
23. How many brothers or sisters do you have? Include any step-brothers or step-sisters who lived in the same home with you for most of the time when you were growing up.
24. How many of these brothers or sisters are OLDER than you?

SECTION TWO: HISTORICAL EXPERIENCE QUESTIONS

We define "adult service provider" as an occupation in which companionship and/or intimacy is provided in exchange for money. I'd now like to ask you some questions about your career as a provider.

25. At what age did you first work as an adult service provider?
26. Have you ever stopped working as an adult service provider?
27. For how many months did you stop working as a provider the last time you quit?
28. We consider a provider to be "independent" if she runs her own advertisements and solicits her own customers. Do you work as an independent?

- ❑ Yes, I work as an independent.
- ❑ No, I work for a brothel.
- ❑ No, I work for an escort agency.
- ❑ No, I work for a massage parlor.
- ❑ No, I work for a man who solicits customers for me.

29. Have you ever worked as an independent?
30. How many years did you work as an independent?
31. How many years have you worked under your current management?
32. Were working conditions (other than pay) better or worse when you worked as an independent?
33. Was your take-home pay better or worse as an independent?
34. Did you feel better protected and safer when you worked as an independent?
35. Why did you discontinue working as an independent?
36. What keeps you from working as an independent?
37. Have you worked for a massage parlor?
38. How many different parlors have you worked for in your lifetime?
39. How many years did you work at a parlor?
40. Were working conditions (other than pay) better or worse with a parlor?
41. Was your take-home pay better or worse with a parlor?
42. Did you feel better protected and safer when you worked for a massage parlor?
43. Why did you discontinue working for a massage parlor?
44. Have you worked for a brothel?
45. How many different brothels have you worked for in your lifetime?
46. How many years did you work at a brothel?
47. Were working conditions (other than pay) better or worse with a brothel?
48. Was your take-home pay better or worse with a brothel?

49. Did you feel better protected and safer when you worked for a brothel?
50. Why did you discontinue working for a brothel?
51. Have you worked for an escort agency?
52. How many different escort agencies have you worked for in your lifetime?
53. How many years did you work at an escort agency?
54. Were working conditions (other than pay) better or worse with an escort agency?
55. Was your take-home pay better or worse with an escort agency?
56. Did you feel better protected and safer when you worked for an escort agency?
57. Why did you discontinue working for an escort agency?
58. Some adult service providers work for a man who solicits customers for them, usually in return for a share of their earnings. Have you ever worked for a man who fits this sort of description?
59. How many different men of this kind have you worked for in your lifetime?
60. How many years, total, were you employed by this kind of management?
61. Were working conditions (other than pay) better or worse with this man?
62. Was your take-home pay better or worse with this man?
63. Did you feel better protected and safer when you worked for this man?
64. Why did you discontinue working for this man?
65. Finally, have you ever solicited your customers from a public place, like a street, alley, highway, or parking lot?
66. How many years has it been since the last time you tried to solicit a customer from a public place, like a street?
67. Were working conditions (other than pay) better or worse when you worked in public places, like streets?
68. Was your take-home pay better or worse?
69. Did you feel better protected and safer when you worked in public places, like streets?
70. Why did you discontinue working from public places, like streets?

SECTION THREE, PART A: CURRENT BUSINESS QUESTIONS (NON SENSITIVE)

In the next section, we'd like you to tell us a little bit about your current business practices and environment, including your beliefs about the risks of your work, questions related to screening clients, and other questions related to your work and private life.

71. Did you see any clients in the last week?
72. How many clients did you see in the last week?
73. How many of them were regulars (customers you see frequently)?
74. How many days (including evenings) in the last seven days did you work?
75. About how much money did you make from working as an escort in the last week? Please indicate a dollar amount (example: 5.22, $5, or $5.00):
76. Besides being a provider, do you have another job?
77. On average, how many hours a week do you work at your other job?
78. Do you have medical or health insurance?
79. Do you have Medicaid insurance?
80. In what state do you conduct most of your business as an escort?
81. In the state you listed above, In which city do you conduct most of your business as an escort?

82. How far do you travel typically to meet with a client?

- ❑ 0-1 mile
- ❑ 1-10 miles
- ❑ 10-100 miles
- ❑ More than 100 miles

83. What's the farthest distance you've traveled to meet a client?
84. What's the farthest distance one of your current clients has traveled to meet with you?
85. Do you expect to be working as an adult service provider this time next year?
86. Do you expect to be working as an adult service provider in five years?
87. What do you plan to be doing after you stop working as an adult service provider?

SECTION THREE, PART B: CURRENT BUSINESS RISKS

I would now like to learn more about some of the risks you face in your work.

88. Do you usually undertake safety procedures--for example, conducting a background check, verifying client identification, or using a search engine to find the client's telephone number or e-mail address--before meeting a prospective client?
89. Which of the following safety procedures do you usually undertake before meeting a prospective client? Check all that apply.

- ❑ Insist on seeing a state-issued ID or other identifying information
- ❑ Use search engine to find the client's telephone number or e-mail address
- ❑ Require one or more references from other escorts
- ❑ Perform a background check
- ❑ Insist on membership in RS2K or other verification services
- ❑ None of the above
- ❑ Other

90. Since you selected "Other," please specify:
91. On a scale of 1 to 10, with 10 being very likely and 1 being not at all likely, what do you think is the chance you will ever be arrested by the police for anything you do in the course of your work as a provider?
92. On a scale of 1 to 10, with 10 being very concerned and 1 being not at all concerned, how concerned are you that your friends or family might find out that you are employed as a provider?
93. On a scale of 1 to 10 with 10 being very concerned and 1 being not at all concerned, how concerned are you that one of your clients will become violent towards you?
94. On a scale of 1 to 10, with 10 being very likely and 1 being not at all likely, how likely do you think it is that you will contract HIV from working as a provider?
95. Have you ever been physically assaulted by a client in a way that injured you?
96. Did you file a police report against him or seek to have him held legally accountable for his assault?
97. Have you ever been verbally assaulted by a client?

SECTION THREE, PART C: RECENT TRANSACTIONS, PRICE DATA (SENSITIVE)

The following questions are the most sensitive of all the questions asked so far. I will ask you about your experiences with the last five clients, and will specifically ask you about issues like vaginal sex, condom use and negotiations with clients on price and condom use. These are some of the most important questions in the survey. Please remember that all of your answers

are purely confidential. If you do not wish to answer any specific question, please simply skip it and move on to the next question. Even if you feel you can only answer some of the questions in the survey, please answer as many as you can.

In the following questions, I will ask you about events that happened between you and your most recent clients. For the sake of time, I am interested only in the last 5 clients, and so will list these clients from the most recent as Client #1 to the least recent as Client #5.

Client #1

98. Was client #1 a male, a female, or a couple/group of individuals?
99. What race was client #1?
100. If you answered "Other," please specify:
101. How old would you say client #1 was? (Guess if you don't know exactly. For instance, if between 20-30, say 25)
102. Indicate the race of the individual members of the group or couple. Check all that apply:
103. Since you also checked "Other," please specify:
104. Indicate the ages of each of the individuals involved. Separate each age with a comma.
105. On a scale of to 1 to 10, where 10 is "very attractive" and 1 is "extremely unattractive," how would rate client #1's overall appearance to you?
106. If client #1 represents a couple or group, rate each individual's overall appearance to you on a scale of 1 to 10, where 10 is "very attractive" and 1 is "extremely unattractive":
107. About how long, in minutes, did you spend with client #1?
108. How much did client #1 pay you, including any tips?
109. Was client #1 a regular client of yours?
110. How did client #1 first contact you?

- ❑ email/Internet
- ❑ word-of-mouth
- ❑ Telephone
- ❑ face-to-face
- ❑ referral from another provider
- ❑ Other

111. If you selected "Other," please specify:
112. What city and state did your meeting with client #1 take place?
113. Did your meeting take place in a hotel room?
114. Where did your meeting take place?
115. Did you provide a massage to client #1?
116. Did another provider assist you in your meeting with client #1?
117. Did you kiss client #1 on the mouth but without tongue?
118. Did you kiss client #1 on the mouth with your tongue (i.e., "French kiss")?
119. Did you and client #1 have vaginal sex?
120. Was a condom used?
121. Whose idea was it to wear a condom?
122. Did you perform oral sex on client #1?
123. Was a condom used?
124. Whose idea was it to wear a condom?
125. Did client #1 perform oral sex on you?

126. Did you have anal sex?
127. Was a condom used?
128. Whose idea was it to wear a condom?
129. Did client #1 ever physically assault you?
130. Were you verbally insulted or verbally assaulted?
131. If you have been assaulted in any way, do you plan to report these assaults to the authorities?

[Each questions was then repeated for Clients #2 - #5]

CONCLUSION

I want to thank you for agreeing to participate in this interview. As stated in the beginning, we want to assure you that your answers will be kept confidential. NO ATTEMPTS WILL BE MADE TO IDENTIFY OR CONTACT YOU AFTERWARDS.

Soon, after all the data is collected, we will begin analyzing the answers to this survey. We will send you an email telling you that the results are online. Until then, please feel free to contact me by email (scott_cunningham@baylor.edu <mailto:scott_cunningham@baylor.edu>) or by telephone (254-710-4753) if you have any questions regarding your participation in this study.

Table 1: Population-Weighted Survey Summary Statistics

Variable	Obs	Population Mean	Linearized Std. Error
Sex Worker-Level Variables (from "Provider File")			
College Graduate (0/1)	540	0.378	0.031
Weekly Earnings (Conditional on Working)	393	$2,616.72	447.483
Weekly Earnings (Unconditional)	532	$1,965.56	340.01
Any Clients (0/1)	539	0.754	0.030
# Clients Last Week	536	5.549	1.051
# Regular Clients	534	3.004	0.623
# New Clients	534	2.528	0.461
Have Other Job (0/1)	535	0.432	0.037
Hours at Other Job	237	28.224	1.202
Age	544	28.252	0.346
Years Prostitution Experience	539	5.518	0.277
BMI	529	23.271	0.415
Non-White (0/1)	544	0.407	0.043
Married/Cohabiting (0/1)	544	0.354	0.041
Independent of Manager	539	0.922	0.021
Have Children (0/1)	540	0.392	0.039
Ever Assaulted by Client (0/1)	533	0.129	0.025
Subjective Perception of Risk:			
Arrest (1- 10)	528	4.064	0.173
Family Detection (1 - 10)	530	3.889	0.225
Client Violence (1 - 10)	531	4.294	0.283
HIV Infection (1 - 10)	530	2.605	0.143
Transaction-Level Variables (from "Transaction File")			
Calculated Hourly Wage	1983	$325.47	6.329
Session Length	2036	118.316	10.970
Length < 60 min (0/1)	2047	0.642	0.019
Length > 60 minutes (0/1)	2047	0.360	0.019
Traveled out of state (0/1)	2047	0.138	0.012
White Client (0/1)	1970	0.808	0.018
Black Client (0/1)	1970	0.055	0.008
Asian Client (0/1)	2047	0.057	0.010
Hispanic Client (0/1)	1970	0.039	0.008
Other Race Client (0/1)	1970	0.030	0.006
Age of Client	1949	43.187	0.473
Client is regular (0/1)	2042	0.535	0.020
Client Attractiveness (1 - 10)	1986	5.781	0.093
Multiple Sex Workers (0/1)	2047	0.063	0.009
Physically Assaulted (0/1)	2040	0.010	0.004

Verbally Assaulted (0/1)	2038	0.020	0.006
Would File a Police Report if Assaulted (0/1)	1777	0.329	0.023
Sex Acts:			
Massage (0/1)	2037	0.352	0.019
No Fellatio (0/1)	1995	0.183	0.017
Fellatio / Condom (0/1)	1989	0.293	0.020
Fellatio / No Condom (0/1)	1989	0.522	0.021
No Vaginal Intercourse (0/1)	2007	0.244	0.015
Vaginal Intercourse / Condom (0/1)	2007	0.696	0.017
Vaginal Intercourse / No Condom (0/1)	2007	0.060	0.010
Anal Intercourse (0/1)	2047	0.059	0.008

Notes: Summary statistics reflect survey responses, probability-weighted as described in the text to correspond to the population of indoor sex workers in 2007 and 2008.

Table 2: Estimates of Effects of College Education on Weekly Earnings from Prostitution

Dependent Variable:	Ln(earnings | worked)	Ln(earnings)
College Graduate	0.312*	0.023
	(0.147)	(0.170)
Age	-0.093+	-0.018
	(0.050)	(0.065)
Age^2	0.001	0.000
	(0.001)	(0.001)
Years Experience	0.006	0.005
	(0.011)	(0.015)
Non-white	-0.143	-0.569*
	(0.173)	(0.248)
BMI	-0.034**	-0.048**
	(0.009)	(0.017)
Independent	0.938	0.611
	(0.615)	(0.416)
Married / Cohabiting	0.143	-0.140
	(0.141)	(0.229)
Have Children	0.333+	0.480*
	(0.171)	(0.195)
State fixed effects	Yes	Yes
Month-of-survey fixed effects	Yes	Yes
Observations	358	488
Estimation Procedure	OLS	Neg. Binomial
R^2	0.408	N/A

Notes: Coefficients reflect marginal effects at the mean. Heteroskedasticity-robust standard errors in parentheses below each coefficient. $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$. Observations are weighted by survey probabilities as described in the text.

Table 3: Estimates of Effects of College Education on Calculated Hourly Wage

	Dependent Variable: Ln(Calculated Hourly Wage)				
	All Sessions	All Sessions	All Sessions	< 60 min only	= 60 min only
College Graduate	0.071	0.066	0.061	-0.088	0.069
	(0.051)	(0.052)	(0.051)	(0.075)	(0.055)
Age	0.020	0.021	0.023	0.098*	0.052*
	(0.021)	(0.020)	(0.020)	(0.039)	(0.026)
Age^2	-0.000	-0.000+	-0.001+	-0.001*	-0.001*
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Years Experience	0.008*	0.008*	0.008*	-0.004	0.001
	(0.004)	(0.004)	(0.004)	(0.006)	(0.004)
Non-white	-0.114*	-0.096+	-0.125*	0.001	0.013
	(0.058)	(0.057)	(0.057)	(0.095)	(0.062)
BMI	-0.022**	-0.022**	-0.021**	-0.018**	-0.024**
	(0.003)	(0.003)	(0.003)	(0.006)	(0.005)
Independent	-0.140	-0.150	-0.146	-0.145	-0.184*
	(0.105)	(0.104)	(0.101)	(0.163)	(0.075)
Married / Cohabiting	-0.012	-0.006	-0.005	-0.089	-0.016
	(0.047)	(0.048)	(0.047)	(0.072)	(0.054)
Have Children	0.073	0.076	0.056	0.042	-0.033
	(0.051)	(0.051)	(0.050)	(0.090)	(0.054)
Session Length	-0.001**	-0.001**	-0.001**	-0.058**	
	(0.000)	(0.000)	(0.000)	(0.013)	
Session $Length^2$	0.000**	0.000**	0.000**	0.001**	
	(0.000)	(0.000)	(0.000)	(0.000)	
Sex act variables?	No	Yes	Yes	Yes	Yes
Client characteristics?	No	No	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes
Month-of-survey fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	1927	1927	1793	439	698
R^2	0.326	0.336	0.367	0.506	0.518

Notes: Heteroskedasticity-robust standard errors in parentheses. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Observations are weighted by survey probabilities as described in the text.

Table 4: Estimates of Effects of College Education on Calculated Hourly Wages for Long Client Sessions (> 60 minutes)

	Dependent Variable: Ln(Calculated Hourly Wage)		
College Graduate	0.150*	0.149*	0.146*
	(0.063)	(0.063)	(0.065)
Age	-0.007	-0.007	-0.006
	(0.024)	(0.023)	(0.025)
Age squared	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
Years Experience	0.005	0.003	0.005
	(0.006)	(0.006)	(0.006)
Non-white	-0.138+	-0.089	-0.143+
	(0.070)	(0.066)	(0.076)
BMI	-0.024**	-0.025**	-0.027**
	(0.005)	(0.005)	(0.005)
Independent	0.058	0.013	0.073
	(0.150)	(0.155)	(0.150)
Married / Cohabiting	0.022	0.033	0.035
	(0.069)	(0.070)	(0.074)
Have Children	0.203**	0.213**	0.228**
	(0.074)	(0.074)	(0.075)
Session Length	-0.001**	-0.001**	-0.001**
	(0.000)	(0.000)	(0.000)
Session Length^2	0.000**	0.000**	0.000**
	(0.000)	(0.000)	(0.000)
Sex Act Variables?	No	Yes	Yes
Client characteristics?	No	No	Yes
State fixed effects	Yes	Yes	Yes
Month-of-survey fixed effects	Yes	Yes	Yes
Observations	724	724	656
R^2	0.466	0.486	0.520

Notes: Heteroskedatisticity-robust standard errors in parentheses. $^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$. Observations are weighted by survey probabilities as described in the text.

Table 5: Estimates of Effect of College Education on Session Length

	Dependent Variable:			
	Ln(Length)	Ln(Length)	Ln(Length)	Length > 60 min
College Graduate	0.216**	0.231**	0.174*	0.129**
	(0.076)	(0.073)	(0.068)	(0.047)
Age	0.031	0.045	0.028	0.011
	(0.030)	(0.028)	(0.025)	(0.018)
Age^2	-0.000	-0.001	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Years Experience	-0.017**	-0.016**	-0.013**	-0.007+
	(0.006)	(0.006)	(0.005)	(0.004)
Non-white	0.184*	0.177*	0.183*	0.078
	(0.085)	(0.078)	(0.071)	(0.056)
BMI	-0.013*	-0.013*	-0.012**	-0.002
	(0.006)	(0.005)	(0.004)	(0.004)
Independent	0.220	0.167	0.139	-0.084
	(0.148)	(0.131)	(0.126)	(0.105)
Married / Cohabiting	0.029	-0.020	0.004	0.026
	(0.077)	(0.074)	(0.065)	(0.046)
Have Children	-0.149+	-0.148*	-0.124+	-0.119**
	(0.076)	(0.070)	(0.068)	(0.045)
Sex act variables?	No	Yes	Yes	Yes
Client characteristics?	No	No	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes
Month-of-survey fixed effects	Yes	Yes	Yes	Yes
Observations	1830	1830	1830	1817
Estimation Procedure	OLS	OLS	OLS	Probit
R^2	0.185	0.229	0.292	

Notes: Coefficients reflect marginal effects at the mean. Heteroskedasticity-robust standard errors in parentheses below each coefficient. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Observations are weighted by survey probabilities as described in the text.

Table 6: Estimates of Effect of College Education on Other Measures of Non-pecuniary Job Amenities

	Dependent Variable:					
	# Regular Clients	# New Clients	Client Attractiveness (0-10)	Kissed Client	Age of Client	Travel Out of State
College Graduate	0.324**	0.251	0.366*	0.067+	0.299	0.064+
	(0.121)	(0.172)	(0.181)	(0.035)	(0.743)	(0.040)
Age	-0.062	-0.079	0.224*	0.028	-0.012	-0.012
	(0.050)	(0.061)	(0.098)	(0.019)	(0.394)	(0.017)
Age^2	0.001	0.001	-0.002+	-0.000	0.005	0.000
	(0.001)	(0.001)	(0.001)	(0.000)	(0.005)	(0.000)
Years Experience	0.026*	-0.002	-0.006	-0.007*	-0.125+	0.002
	(0.011)	(0.014)	(0.015)	(0.003)	(0.066)	(0.003)
Non-white	-0.167	-0.013	0.512*	0.109**	0.836	-0.022
	(0.145)	(0.203)	(0.227)	(0.036)	(0.999)	(0.041)
BMI	-0.016	-0.002	-0.008	-0.005	-0.040	-0.000
	(0.010)	(0.014)	(0.015)	(0.003)	(0.092)	(0.003)
Independent	-0.328	-0.189	0.408	0.032	0.558	0.068
	(0.311)	(0.392)	(0.398)	(0.088)	(2.069)	(0.050)
Married / Cohabiting	0.170	0.172	-0.592**	-0.019	-0.209	-0.035
	(0.116)	(0.160)	(0.190)	(0.044)	(0.787)	(0.030)
Have Children	0.426**	0.373+	0.189	-0.057	-1.683*	-0.005
	(0.121)	(0.205)	(0.192)	(0.046)	(0.796)	(0.032)
Sex act variables?	Yes	Yes	Yes	Yes	Yes	Yes
Client characteristics?	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Month-of-survey fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	361	361	1867	1840	1867	1862

Notes: Coefficients represent marginal effects estimated at the mean. Heteroskedasticity-robust standard errors in parentheses. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Observations are weighted by survey probabilities as described in the text. First two columns are based on sex worker-level observations, while other columns are based on transaction-level observations. Variations in number of observations reflect minor differences in propensity of respondents to answer various questions.

Table 7: Estimates of Effects of College Education on Job Risks

	Dependent Variables:				
	Chance of Arrest	Likelihood of HIV Infection	Concern of Client Violence	Concern of Discovery	Ever Assaulted
College Graduate	-0.687*	-0.228	0.033	0.052	-0.014
	(0.320)	(0.287)	(0.328)	(0.369)	(0.053)
Age	0.164	0.096	0.013	0.005	0.033*
	(0.118)	(0.097)	(0.152)	(0.136)	(0.016)
Age^2	-0.003	-0.001	-0.000	-0.000	-0.000*
	(0.002)	(0.001)	(0.002)	(0.002)	(0.000)
Years Experience	0.039	-0.021	0.003	-0.068*	0.005
	(0.025)	(0.023)	(0.029)	(0.031)	(0.004)
Non-white	0.073	0.493	-0.101	-0.054	0.014
	(0.362)	(0.357)	(0.383)	(0.448)	(0.056)
BMI	0.033	-0.048	0.088*	-0.001	0.009
	(0.026)	(0.032)	(0.036)	(0.041)	(0.006)
Independent	-0.012	0.504	0.392	-2.134**	0.059
	(0.823)	(0.505)	(0.525)	(0.706)	(0.082)
Married / Cohabiting	0.150	0.257	-0.246	-0.315	-0.051
	(0.304)	(0.263)	(0.402)	(0.392)	(0.047)
Have Children	-0.271	-0.161	-0.455	-0.512	0.008
	(0.321)	(0.264)	(0.335)	(0.417)	(0.051)
State fixed effects	Yes	Yes	Yes	Yes	Yes
Month-of-survey fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	486	487	488	487	488
R^2	0.228	0.175	0.231	0.303	0.224

Notes: Coefficients represent marginal effects estimated at the mean. Heteroskedasticity-robust standard errors in parentheses. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Observations are weighted by survey probabilities as described in the text. Dependent variable in first four columns reflects a subjective assessment of risk on a 0-10 scale. Dependent variable in last column is an indicator for whether the worker has ever been physically assaulted by a client. Variations in number of observations reflect minor differences in propensity of respondents to answer various questions.

Table 8: Estimates of Effect of College Education on Market Participation and Clients Seen

Dependent Variable:	Any Clients Last Week	Have Other Job	Hours at Other Job	# Clients (Conditional on any clients)
College Graduate	-0.122*	0.246**	0.167+	0.249*
	(0.056)	(0.070)	(0.086)	(0.125)
Age	-0.023	-0.001	-0.001	-0.077+
	(0.025)	(0.000)	(0.001)	(0.046)
Age^2	0.000	-0.002	0.002	0.001
	(0.000)	(0.006)	(0.006)	(0.001)
Years Experience	-0.006	-0.229	-0.216	0.014
	(0.005)	(0.157)	(0.152)	(0.010)
Non-white	-0.147*	0.017	0.063	-0.090
	(0.071)	(0.085)	(0.092)	(0.151)
BMI	-0.009+	0.009	0.010	-0.009
	(0.005)	(0.007)	(0.006)	(0.011)
Independent	0.155	0.041	0.046	-0.256
	(0.158)	(0.034)	(0.040)	(0.323)
Married / Cohabiting	-0.097	0.033	0.004	0.177
	(0.067)	(0.076)	(0.103)	(0.113)
Have Children	0.013	-0.147+	-0.091	0.376**
	(0.063)	(0.079)	(0.086)	(0.132)
State fixed effects	Yes	Yes	Yes	Yes
Month-of-survey fixed effects	Yes	Yes	Yes	Yes
Estimation Procedure	Probit	Probit	Neg. Binomial	Neg. Binomial
Observations	465	473	221	363

Notes: Coefficients represent marginal effects estimated at the mean. Heterskedasticity-robust standard errors in parentheses. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Observations are weighted by survey probabilities as described in the text. Variations in number of observations reflect minor differences in propensity of respondents to answer various questions.

Table 9: Probit Estimates of College Education on Provision of Sex Acts

Dependent Variable:	Fellatio	Unprotected Fellatio	Vaginal Sex	Unprotected Vaginal Sex	Anal Sex
College Graduate	-0.008	-0.229**	0.009	-0.001	0.009
	(0.014)	(0.057)	(0.037)	(0.003)	(0.011)
Age	-0.006	-0.030	-0.033*	-0.004*	-0.010*
	(0.006)	(0.024)	(0.016)	(0.002)	(0.004)
Age^2	0.000	0.000	0.000+	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Years Experience	0.002	-0.008	0.006*	0.000	0.000
	(0.002)	(0.005)	(0.003)	(0.000)	(0.001)
Non-white	0.016	0.035	-0.051	0.006	-0.028**
	(0.018)	(0.074)	(0.047)	(0.005)	(0.009)
BMI	0.002	0.011*	-0.003	-0.000	0.001
	(0.002)	(0.005)	(0.003)	(0.000)	(0.001)
Independent	0.038	0.096	0.069	-0.000	-0.011
	(0.040)	(0.105)	(0.069)	(0.005)	(0.029)
Married / Cohabiting	0.014	0.104	0.018	0.013*	0.018
	(0.014)	(0.069)	(0.039)	(0.006)	(0.012)
Have Children	-0.005	0.044	-0.045	0.002	0.007
	(0.012)	(0.067)	(0.042)	(0.004)	(0.012)
Session Length	-0.000**	0.000+	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Session $Length^2$	0.000**	-0.000*	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Client characteristics	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes
Month-of-survey fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	1765	1779	1770	1533	1584

Notes: Coefficients represent marginal effects estimated at the mean. Heteroskedasticity-robust standard errors in parentheses. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Observations are weighted by survey probabilities as described in the text. Dependent variables are indicator variables for provision of specified sex act. Variations in number of observations reflect minor differences in propensity of respondents to answer various questions.

Table 10: Estimated Effects of College Education on Sex Act Compensating Differentials

Dependent Variable: Ln(Calculated Hourly Wage)

	Sex Act:				
	Fellatio	Unprotected Fellatio	Vaginal Sex	Unprotected Vaginal Sex	Anal Sex
College Graduate	0.169	0.076	0.053	0.044	0.066
	(0.123)	(0.069)	(0.104)	(0.050)	(0.053)
Sex Act	0.060	-0.007	0.020	-0.292*	0.156+
	(0.064)	(0.052)	(0.064)	(0.128)	(0.080)
College x Sex Act	-0.130	-0.027	0.010	0.440*	-0.071
	(0.121)	(0.081)	(0.106)	(0.173)	(0.132)
Provider characteristics?	Yes	Yes	Yes	Yes	Yes
Client characteristics?	Yes	Yes	Yes	Yes	Yes
Sex act characteristics?	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes
Month-of-survey fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	1793	1793	1793	1793	1793
R^2	0.369	0.367	0.363	0.373	0.367

Notes: Coefficients represent marginal effects estimated at the mean. Heteroskedasticity-robust standard errors in parentheses. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Observations are weighted by survey probabilities as described in the text.