

Using Political Conventions to Estimate the Responsiveness of Prostitution Labor Supply

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Abstract

Approximately 100,000 visitors came to Denver, Colorado and Minneapolis, Minnesota to attend the 2008 Democratic and Republican National Conventions. Economic theory suggests that males in transit can cause a shift in demand for commercial sex work. We estimate the responsiveness of labor supply to these two conventions, focusing on a previously neglected but increasingly important segment of the prostitution market: professional escorts who advertise on local prostitution solicitation websites. We find that the conventions caused a 35%-195% increase in advertisements in the affected markets.

1 Introduction

Organizers estimated that between 45,000¹ and 50,000² outside visitors came to Denver and Minneapolis for the Democratic and Republican National Convention in 2008. We use these two events to estimate the responsiveness of prostitution labor supply to demand shocks. Non-residential, mass migrations of men may affect sex markets by increasing the demand for non-procreative sex. Our outcome variable is the number of advertisements posted at two widely used prostitution advertising websites compiled over a 35-day period for Denver and Minneapolis (our “treatment” group) and Seattle and Philadelphia (our “control” groups), and we estimate effects using a difference-in-difference (DD) framework. Our results provide evidence for the “males in transit” hypothesis. Specifically, we find a net increase of between 35%-195% in prostitution advertisements in Denver and Minneapolis due to the conventions.

2 Theoretical Background

Transient males can shift demand for for prostitution for several reasons. Edlund and Korn (2002) note that temporary residence lowers the value of women as marriage partners, thereby increasing the value of women as commercial sex partners (see Edlund and Korn 2002, p 206). Enforcement of social norms against solicitation of prostitutes may also lose its efficacy when males are transient. DellaGuista, Tommaso and Strom (2008) model prostitution consumption and supply as constrained by fears of being seen participating in these transactions. Transient males may face lower stigma since stigma can only be enforced if buyers are recognized during the transaction by a party they expect to meet again. Finally, reduced spousal monitoring, independent of any male surplus or stigma factors, may also explain the connection between men in transit and prostitution markets (Over, 1999).

Our paper makes several contributions. First, we test the males-in-transit hypothesis which has been suggested by epidemiologists to explain STD patterns (Ramjee and Gouws,

¹<http://www.gopconvention2008.com/features/numbersfactsheet.pdf> (Last checked 11/15/08).

²<http://www.demconvention.com/frequently-asked-questions\#4> (Last checked 11/15/08).

2002; Perrin, Kaiser and Yerly, 2003), as well as noted by theorists such as Edlund and Korn (2002). We are not aware of any research testing this hypothesis. Second, we study a different, and increasingly important, segment of the prostitution market: professional escorts who advertise on popular national prostitution solicitation websites. Most recent studies, in comparison, have focused on street prostitutes (Rao et al., 2003; Gertler, Shah and Bertozzi, 2005; Levitt and Venkatesh, 2007). Third, we illustrate the value of large meetings as instruments for demand in such markets³.

3 Empirical Methodology

3.1 Description of Data

While there are other sites that escorts use to advertise, Craigslist⁴ and Eros⁵ are among the largest and most commonly used for this purpose. Unlike other services, they also offer nationwide coverage, with comparable affiliated Craigslist and Eros posting boards in many cities, including the convention cities.

Craigslist is a centralized network of websites that feature free online classified advertisements. People use the site to buy and sell a variety of goods and services ranging from jobs, housing, furniture, pets and automobiles, to prostitution and other erotic services. Craigslist postings are localized on separate, city-specific posting boards. Historically, Craigslist's policy towards the use of the site as a clearinghouse for prostitution was one of minimal censorship⁶. Unlike Craigslist, Eros.com is a fee-based service.

Comparisons in daily advertisements counts by city are shown in Table 1. Through several ethnographic interviews with market participants, we learned that Eros generally represents a mid-price range in the market, while Craigslist represents a lower price range. Perusal of ads on each site tended to confirm this impression. Craigslist prostitutes appear

³Similar to this paper, Levitt and Venkatesh (2007) instrument for demand using a holiday (July 4th) in order to estimate the responsiveness of labor supply

⁴<http://www.craigslist.org>

⁵<http://www.eros.com>

⁶On November 6, 2008, Craigslist announced that it would soon implement a fee-based advertisement policy with the intention of eliminating use of the site for prostitution. See <http://www.nytimes.com/2008/11/07/technology/internet/07craigslist.html>.

to have higher risks of arrest, and take fewer precautions with clients⁷.

Figure 1 shows the distribution of advertisements across weekdays over the entire sample period (excluding those cities and dates of the convention). The obvious weekday dynamics suggest not only differences among advertisers, but also heterogeneity in clients. If Eros advertisers target primarily traveling businessmen, this could explain the spike that is observed on Mondays when business traveling begins for the week. If Craigslist services lower and middle class local men, then its peak on Friday may reflect increased leisure time on weekends.

3.2 Difference-in-Difference Model

Daily advertisements at Eros and Craigslist are observed for Denver, Minneapolis-St. Paul, Philadelphia and Seattle from August 16th to September 19th, 2008. During this 35-day period, Denver (Aug 25-29) and Minneapolis (Sept 1-4) held widely attended political conventions for the 2008 Presidential general election which resulted in roughly 50,000 people coming to each city for only a few days. The other two cities in our sample did not experience such shocks, and therefore function as controls. We observe all cities before, during and after the convention and use a simple difference-in-difference (DD) estimator to identify the effect of political conventions on the numbers of advertisements posted. We implement the DD estimator with the following regression model:

$$\mathbf{Y}_{it} = \beta_0 + \beta_1(\mathbf{City}_i) + \beta_2(\mathbf{Convention}_t) + \gamma(\mathbf{City}_i \times \mathbf{Convention}_t) + \beta_3 \mathbf{x}_{it} + \epsilon_{it} \quad (1)$$

where (\mathbf{Y}_{it}) is the log number of advertisements posted on a particular day (t) in a city (i) if estimated with OLS and the count if estimated with Poisson, \mathbf{City}_i is a dummy variable if the city is a convention city, $\mathbf{Convention}_t$ is an indicator for the days of the convention, $\mathbf{City}_i \times \mathbf{Convention}_t$ is an interaction indicating it is both a convention day and a city holding a convention, \mathbf{x}_{it} is a vector of weekday fixed effects (e.g., Monday-

⁷For instance, many prostitutes who advertise on the Internet require references from other providers, reducing the possibility that a client is violent or is a police officer. Advertisers on Craigslist are more likely to forego such screens and are thus more regularly arrested in sting operations. See <http://www.washingtonpost.com/wp-dyn/content/article/2008/07/27/AR2008072701906.html>, for instance.

Saturday) and city fixed effects, and ϵ is a disturbance term. The difference-in-difference estimate is equal to:

$$\hat{\gamma} = (\overline{Y_{T,W}} - \overline{Y_{T,OW}}) - (\overline{Y_{C,W}} - \overline{Y_{C,OW}}) \quad (2)$$

where subscripts T and C refer to the treatment cities (Minneapolis and Denver) and the control cities (Seattle and Philadelphia), and W and OW refer to the week of the convention and the off-week. Since these conventions were scheduled years in advance, it seems likely that the choice of convention week is uncorrelated with the underlying data generating process that produces advertisements, making $\hat{\gamma}$ a consistent estimate of the treatment effect.

In Table 2, we report the results of a simple DD exercise using sample means and no controls. We estimate an additional 100-140 Craigslist postings because of the convention using sample means, or between 41% and 145%. The effect of the convention on Eros ads is less clear. Minneapolis reports a small increase, but Denver does not.

In Table 3, we report our results from estimating equation 1. For Eros, we used a Poisson⁸ model with robust standard errors clustered at the city level to account for within-city serial correlation in the disturbances. Craigslist postings were estimated using OLS, transforming the dependent variable in natural log, and using the robust-cluster standard error correction at the city level⁹. Poisson coefficients have been converted to marginal effects for easier interpretation. McFadden’s pseudo R^2 are reported for the Poisson model, and R^2 for OLS.

We find no statistically significant effect of the DNC on Denver Eros advertisements (Table 3)¹⁰. The impact of the RNC on Minneapolis Eros postings, on the other hand, is positive and significant at the 1 percent level. Minneapolis Eros experienced a 50.8% increase in its postings the week of the RNC compared to the control cities. Craigslist postings experienced significant growth in both Denver and Minneapolis, with both sig-

⁸We also estimated the Eros regressions using a negative binomial specification, which did not change our results.

⁹We also estimated “wild cluster bootstrap-t” standard errors (Bertrand, Duflo and Mullainathan, 2004; Cameron, Gelbach and Miller, 2008). Wald tests reveal comparable statistical significance to that shown here.

¹⁰Eros is not as widely utilized in Denver compared to other cities and so finding no effect should not be surprising.

nificant at the 1% level. Each city experienced roughly 100 additional posts to Craigslist that week, and in percentages, Minneapolis postings increased roughly 35%, but nearly 200% in Denver.

To test for spurious correlation, we implement a simple placebo in which the dates of the two conventions and convention cities are switched. Table 4 presents these results. Finding positive effects of the conventions in these regressions would suggest spurious correlation. Although the placebo results are mixed, three of the four coefficients imply no positive effect from the placebo. Only the estimated effect on Denver Craigslist advertisements suggests a positive effect from the placebo.

4 Conclusion

In this paper, we tested the men-in-transit hypothesis (Edlund and Korn, 2002) using two widely attended political conventions held in Denver and Minneapolis during late August and early September of 2008. We show that these conventions increased the count of Craigslist ads between 40% and 195%. Eros ads increased 10% in Minneapolis, but did not change in Denver. Placebo tests provide additional support for these results.

To be sure, our measure of labor supply, advertisements, counts only “attempts” to increase business, not actual transactions; nevertheless, our results are substantially suggestive of the hypothesis, and reveal the importance of additional study of this under-researched segment of the prostitution labor market.

Table 1 Summary Statistics on Daily Advertisements

| | Mean | SD | Min | Max |
|---------------------|-------------|-----------|------------|------------|
| Denver | | | | |
| Craigslist | 109.461 | 82.32 | 0 | 255 |
| Eros | 1.77 | 1.97 | 0 | 9 |
| Seattle | | | | |
| Craigslist | 465.37 | 93.43 | 307 | 670 |
| Eros | 2.34 | 1.75 | 0 | 7 |
| Philadelphia | | | | |
| Craigslist | 248.09 | 53.63 | 143 | 342 |
| Eros | 5.6 | 4.59 | 0 | 17 |
| Minneapolis | | | | |
| Craigslist | 264.26 | 49.50 | 173 | 344 |
| Eros | 2.23 | 1.72 | 0 | 6 |

Table 2 Sample DD Estimates of Convention Effect on Advertisements

| Craigslist | | | | |
|----------------------|---------------|------------------------|-------------------------|-------------------------------------|
| Group | Period | Average Outcome | First Difference | Treatment Effect |
| Minneapolis | RNC Week | 296 | | |
| | Off-Week | 260.1613 | $D_t=35.84$ | |
| Seattle/Philadelphia | RNC Week | 293.75 | | $\mathbf{T}=D_t-D_c=106.94$ (+41%) |
| | Off-Week | 364.85 | $D_c=-71.10$ | |
| Denver | DNC Week | 226 | | |
| | Off-Week | 94.65 | $D_t=131.35$ | |
| Seattle/Philadelphia | DNC Week | 351.63 | | $\mathbf{T}=D_t-D_c=137.12$ (+145%) |
| | Off-Week | 357.3871 | $D_c=-5.76$ | |
| Eros | | | | |
| Minneapolis | RNC Week | 2.75 | | |
| | Off-Week | 2.16 | $D_t=0.59$ | |
| Seattle/Philadelphia | RNC Week | 4.375 | | $\mathbf{T}=D_t-D_c=0.28$ (+13%) |
| | Off-Week | 3.94 | $D_c=0.31$ | |
| Denver | DNC Week | 2 | | |
| | Off-Week | 1.74 | $D_t=0.26$ | |
| Seattle/Philadelphia | DNC Week | 5.38 | | $\mathbf{T}=D_t-D_c=-1.33$ (-76%) |
| | Off-Week | 3.79 | $D_c=1.59$ | |

Table 3 DD Estimate of Conventions on Prostitution Ads

| | Eros | | Craigslist | |
|-----------------------|-------------------|------------------|-------------------|------------------|
| Denver, Aug 25-29 | -0.519 (0.376) | | 1.950 (0.135) | |
| Minneapolis, Sept 1-4 | | 0.508 (0.175) | | 0.367 (0.061) |
| $N \times T$ | 105 | 105 | 105 | 105 |
| (Pseudo) R^2 | 0.205 | 0.197 | 0.473 | 0.799 |

Table 4 Placebo Test

| | Eros | | Craigslist | |
|------------------------|-------------------|-------------------|-------------------|------------------|
| Denver, Sept 1-4 | -1.392 (0.119) | | 1.700 (0.061) | |
| Minneapolis, Aug 25-29 | | -0.296 (0.448) | | 0.098 (0.135) |
| $N \times T$ | 105 | 105 | 105 | 105 |
| (Pseudo) R^2 | 0.209 | 0.199 | 0.450 | 0.755 |

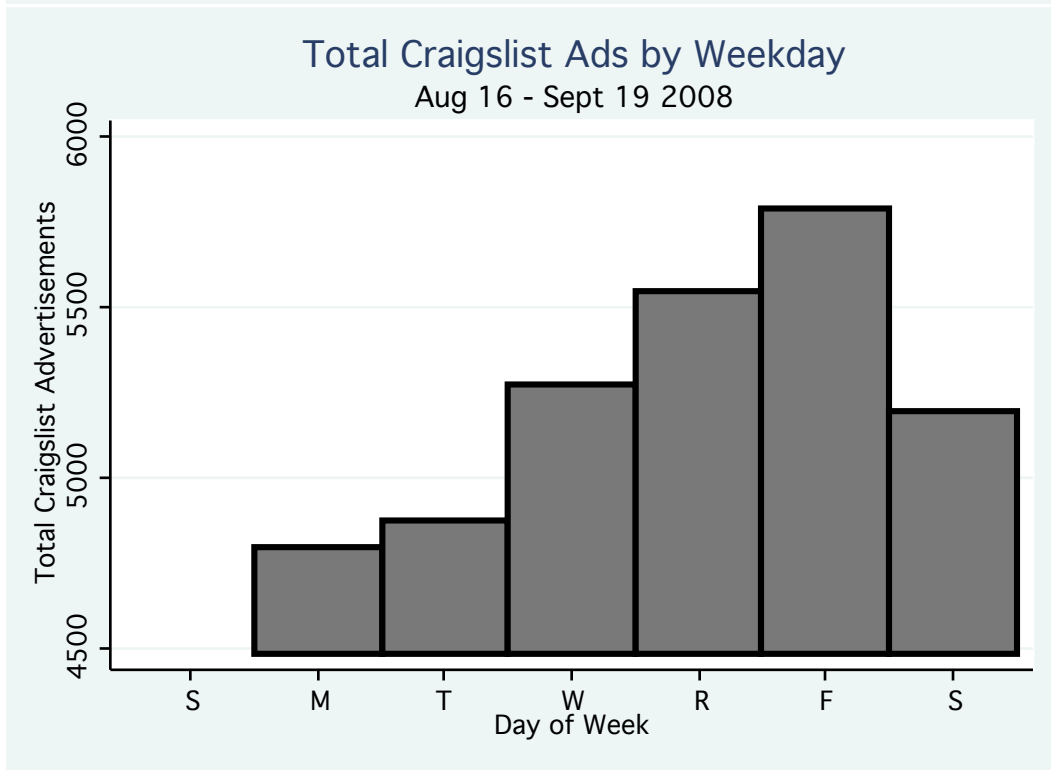
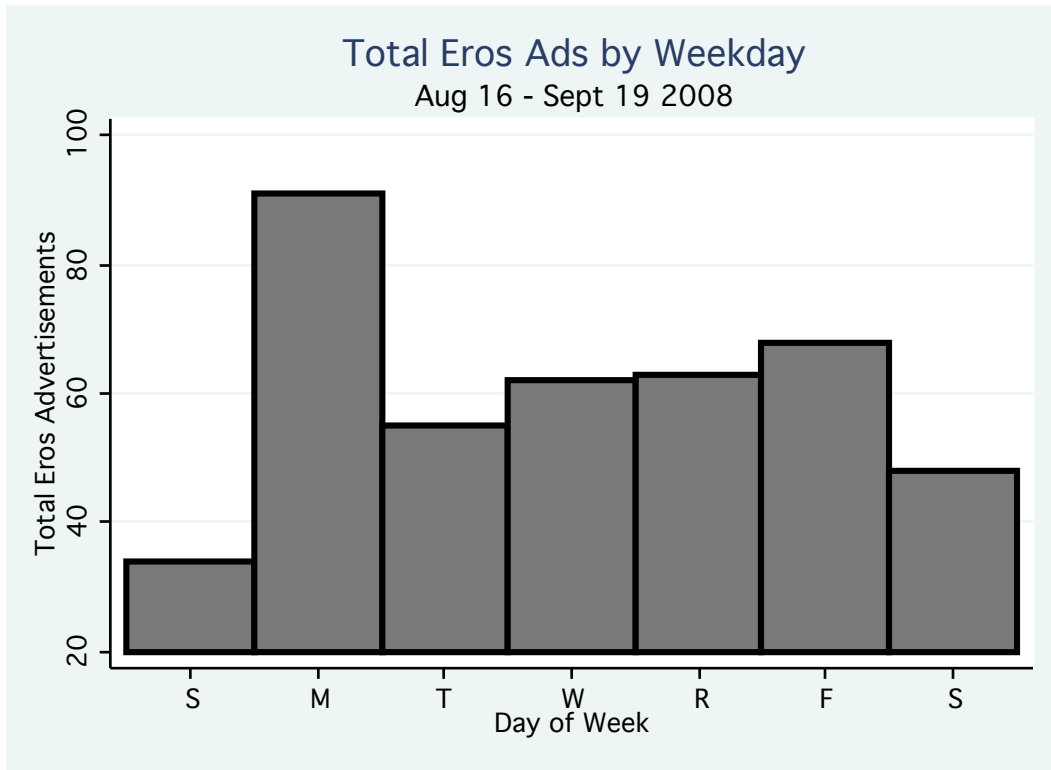


Figure 1 Distribution of ads by weekday (excluding conventions dates)

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