



# The Digital Sin City: An Empirical Study of Craigslist's Impact on Prostitution Trends

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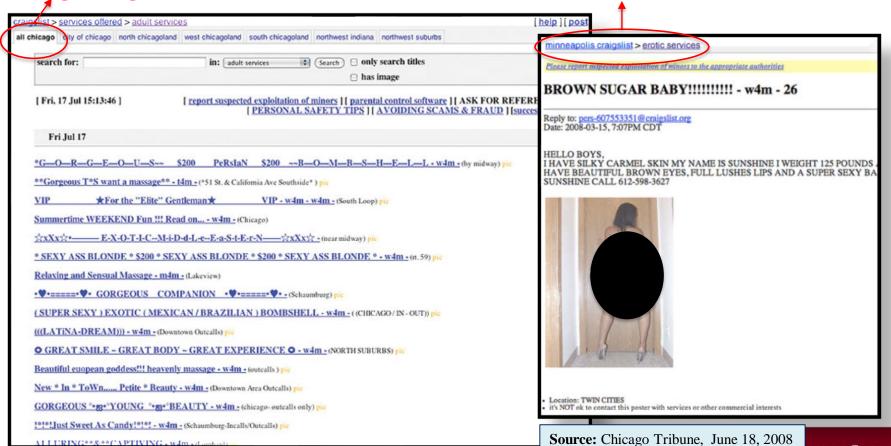
23<sup>rd</sup> June 2016 @ SCECR 2016

### **Craigslist and Prostitution Advertisements**



#### **Chicago Craigslist > Adult Services**

#### **Minneapolis Craigslist > Erotic Services**



Source: Online Media Daily, July 17, 2009

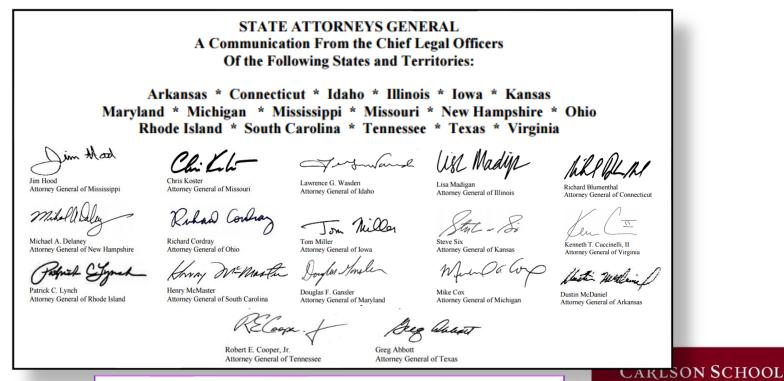
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# Community and Government Protest against Prostitution Related Posts

☐ In August 2010, seventeen state attorneys general sent an open letter to the founder and CEO of Craigslist, and requested the immediate take down of the Adult Services section of Craigslist.



Link - https://www.texasattorneygeneral.gov/newspubs/releases/2010/082510craigslist\_signon.pdf

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### **Main Research Question**



☐ Our research studies the Economic Impact of Craigslist's entry on Prostitution Incidences.

**Question 1a:** Does Craigslist leads to more prostitution incidences?

**Question 1b:** If yes, how big is the impact size?



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# Rational Choice Theory and Prostitution



- Based on Becker's (1974) framework on the economics of crime, the decision to engage in a criminal act is a rational process in which individuals make choices that maximizes their utility.
- Accordingly, in making a choice to participate in the prostitution market, the providers and clients alike would weigh the relative benefits and costs when deciding whether to engage in paid sexual transactions.

	Benefits	Costs
For Prostitutes	Financial gains	Legal punishments
For Clients	Sexual desires	Legal punishments



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# How Can Online Platforms Influence Prostitution Market?



#### □ Studies Supporting Increase In Prostitution Incidence

- Bring about **reduced search costs** (Bakos 1997, Il-Hann and Terwiesch 2003) by facilitating **communication across spatial and temporal boundaries** (Bailey and Bakos 1997, Jin and Robey 1999), and
- Provide a **broader base of product offerings** (Brynjolfsson et al. 2003, Jin and Robey 1999).

#### □ Studies Supporting Market Failure

- Presence of **high levels of uncertainty** (Dimoka et al. 2012) can **reduce consumer trust** due to the presence of information overload and equivocality (Grover et al. 2006).
- Allows users to assume **false identities** easily (Cao et al. 2012), thus law enforcement can do sting operations.
- Craigslist **do not have reputation systems** like ads rating and review system to guarantee trust.

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# **Study Highlights**



Main Findings: Craigslist increases prostitution incidence.

☐ We also find four underlying Market Mechanisms of Craigslist's impact on prostitution trends.

**Mechanism 1:** Craigslist **creates a new market for prostitution** on top of the existing market operated by the traditional sector.

**Mechanism 2:** Craigslist facilitated prostitution mainly **operates in** counties with no past history of prostitution.

Mechanism 3: Craigslist causes spillover of prostitution to a neighboring county without Craigslist.

Mechanism 4: Craigslist leads to a true increase in prostitution, and not merely causes increase in policing efficacy.



#### **Data Sources**



#### ☐ FBI's Uniform Crime Reports (UCR)

- **Prostitution**<sub>iy</sub>, which is the number of prostitution arrests. It is constructed by summing the number of prostitution arrests across all the reporting ZIP codes in a county for a given year.
- > Other crime trends, like Commercialized Vice, Driving Under the Influence (DUI), and Vandalism.

#### ☐ Craigslist's Website

**Craigslist Entry**<sub>iv</sub>, which is a dummy variable indicating the entry of Craigslist in county i in year y.

#### ☐ U.S. Census Bureau

Population size,

- ➤ Individuals below the poverty level
- ➤ Age-group proportions,
- > Employment level
- > Racial proportions, and
- > Annual Income

#### ☐ FBI's Law Enforcement Officers Killed and Assaulted Dataset

Number of police employees



### **Empirical Model: Difference in Difference Estimator**

☐ We rely on Craigslist's expansion in the United States in a **natural experiment setup**, and apply **difference-in-difference estimation** with county and time fixed effects.

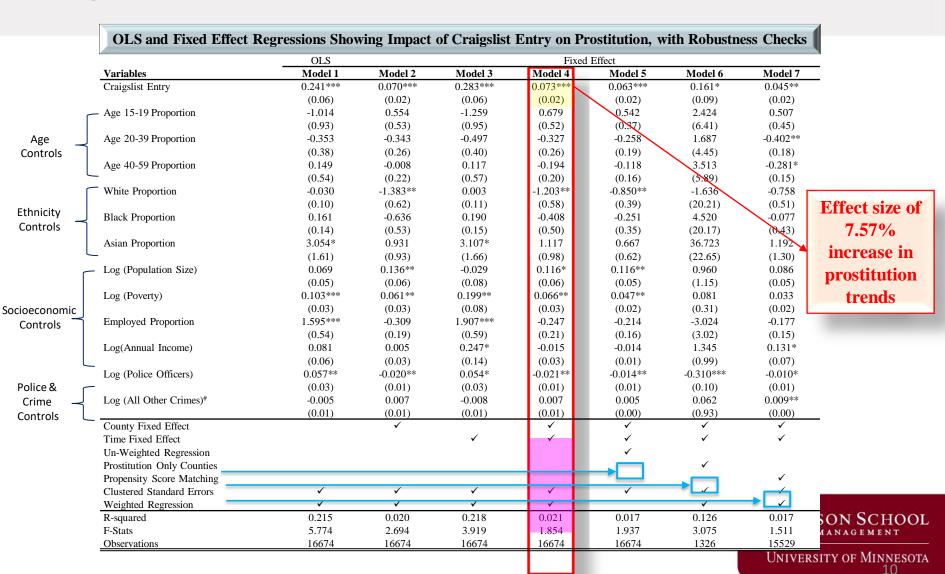
$$\ln(Prostitution_{iy}) = \alpha_i + \beta_y + g \cdot \gamma_{iy} + p \cdot Craigslist_{iy} + e_{iy}$$

#### Where,

- $y \text{ refer to year, } y = 1999, \dots, 2008$
- **Prostitution**<sub>iv</sub> is the number of prostitution arrests for county i in year y
- $\alpha_i$  is a vector of county fixed effects
- $\beta_{\gamma}$  is a vector of year fixed effects
- $\gamma_{iy}$  is a vector of county-year demographics features, socioeconomic indicators, and crime-related factors
- $Craigslist_{iy}$  is the binary indicator for Craigslist entry
- $e_{iv}$  is error term



### **Craigslist Leads to Increase in Prostitution Trends**



### **No Effect on Alternative Crimes**



Falsification Test Using Alternative Crimes				
	DV = Log (DUI)	DV = Log (Vandalism)		
Variables	Model 1	Model 2		
Craigslist Entry	0.010 (0.03)	-0.033 (0.03)		
N-4 A111	No	Effect No Effect		
Note: All control variables are included.				
County Fixed Effect	✓	✓		
Time Fixed Effect	✓	<b>√</b>		
R-squared	0.041	0.016		
F-Stats	14.840	5.721		
Observations	16674	16674		



### **Craigslist Creates a New Market for Prostitution**



☐ The observed Craigslist-related prostitution trends constitute as a new market on top of the prevailing market operated by organized prostitution rings.

Impact of Commercialized Vice a			
Variables	Model 1	Model 2	-
Log (Commercialized Vice)	0.743*** (0.04)	0.740*** (0.04)	Similar
Craigslist Entry		0.047*** (0.02)	Coefficient Sizes
Note: All control variables are included.			
R-squared	0.398	0.400	-
F-Stats	24.080	23.826	
Observations	16674	16674	

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# Craigslist Creates a New Market for Prostitutes in Age Group 41-50



 $\square$  The new market primarily consist of sex workers in age group 41-50.

Impact of both Craigslist Entry and Commercialized Vice on Prostitution by Age					
Break-Down					
Age 0-17 Age 18-30 Age 31-40 Age 41-50 Age 5					
Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Craigslist Entry	-0.000	0.016	0.002	0.029**	-0.003
	(0.00)	(0.02)	(0.02)	(0.01)	(0.00)
Log (Commercialized Vice)	0.020**	0.228***	0.167***	0.088***	0.006
	(0.01)	(0.04)	(0.05)	(0.03)	(0.00)
Note: All control variables are included.					
R-squared	0.009	0.043	0.019	0.016	0.002
F-Stats	0.876	3.588	2.048	2.024	0.497
Observations	16674	16674	16674	16674	16674



# **Craigslist Introduces Prostitution in Counties with No Prior History of Prostitution**



☐ The new market for prostitution primarily occurs at counties with no prior history of prostitution before site entry.

Impact of Craigslist Entry over Sample Split based on Presence of Past Prostitution				
	No Cases of Prostitution before	re Had Cases of Prostitution before		
_	Craigslist Entry	Craigslist Entry		
Variables	Model 3	Model 4		
Craigslist Entry	0.042***	0.070		
		ffect size of 4.29% increase in rostitution trends		
Note: All control variables are included.				
R-squared	0.019	0.106		
F-Stats	0.931	2.313		
Observations	15484	1190		



# **Craigslist Entry Causes Prostitution to Spillover** to a Neighboring County



☐ We identify nearest county-pairs, where at least one county has Craigslist entry.

Spillover Effect of Craigslist Entry			
	County with site entry	Neighboring county without site entry	out
Variables	Model 1	Model 2	
Craigslist Entry  Log (Commercialized Vice)	0.201*** (0.05) 0.734*** (0.03)	1.003***	5.13% increase in own county prostitution due to Craigslist entry in
Note: All control variables are included. R-squared F-Stats Observations	0.521 28.639 756	0.711 67.694 791	neighboring county



# Is It True Increase in Prostitution Or Increase in Police Efforts?



- We use newspaper reports to locate counties and years in which police departments used sting operations over Craigslist to make prostitution arrests.
- □ For this, we amassed over 600 news articles from four disparate news databases, like Access World News, LexisNexis Academic, ProQuest Newsstand, and Factiva.
- Later, we hired online workers from Upwork website to read and label the articles from these databases.







# After Removing Counties With Police Efforts, We Yet Again Get Increase in Prostitution Trends

Impact of Craigslist Entry on Prostitution after Removing County-Year with Police Stings As  Reported in News Articles				
	No County-Year Removed	Removing Exact County- Year with Police Stings	Removing Exact County- Year with Police Sting, and Any Following County-Years	
Variables	Model 1	Model 2	Model 3	
Craigslist Entry	0.073***	0.057***	0.058***	
	(0.02)	(0.02)	Effect size of 5.86% increase in	
	variables are included.		prostitution	
R-squared	0.021	0.016	trends	
F-Stats	1.854	1.823	1.00	
Observations	16674	16619	16605	



## **Research Implications**



- ☐ There was **actual increase in prostitution** due to Craigslist's entry.
- ☐ Our estimate is like a tip of an iceberg, as **true effect can be** larger.
- ☐ Our results **can add to similar classified ads websites** since they carry prostitution advertisements even to this day!
- ☐ Finally, online platform also help to facilitate market clearing for illicit markets.







### **Thank You**

**Questions?** 

