

# Economics 101A

## (Lecture 23)

Stefano DellaVigna and Nancy Tellem

November 18, 2009

## Outline

1. Empirical Economics: Intro
2. Economics of The Media
3. Violent Movies and Violent Crime
4. Television Pricing

# 1 Empirical Economics: Intro

- So far we have focused on economic models
- For each of the models, there are important empirical questions
- **Consumers:**
  - Savings decisions: Do Americans under-save?
  - Attitudes toward risk: Should you purchase earthquake insurance?
  - Self-control problems: How to incentive exercise to address obesity 'epidemics' ?
  - Preferences: Does exposure to violent media change preferences for violent behavior?

- **Producers:**

- When do market resemble perfect competition versus monopoly/oligopoly?
- Also, what if market pricing is more complicated than just choice of price and quantity  $p$ ?

- Example of the latter: Television market model

- Viewers purchase cable and satellite subscription
- They do not pay the network
- How does the network make money?

- Today's lecture provides two examples on how to apply economics
  1. **Example 1.** Estimating the impact of violent media on violent crime
    - Focus here is on creative and careful use of data
    - Econometrics 140-141-142 to get started + 'Freakonomics' for examples
    - What do economists add to other social sciences?
  2. **Example 2.** Discussion of pricing in the television industry
    - How do you go from textbook examples to (complicated) reality?
    - Nancy Tellem's insights as an insider

## 2 Economics of the Media

- Economic Recession: '*a significant decline in [the] economic activity spread across the economy*'
  - Consumption
  - Investment
- Recessions always have factors causing them — in this case, housing bubble and mortgage debacle
- However, an *animal spirits* factor is always crucial:  
If consumers expect a recession, they will cut spending and may cause a recession if there is none, or worsen one
- So, what affects consumer confidence?

- Important factor is the media: How does media cover the economy?
- Difficult to study because of chicken and egg problem:
  - Media reflects consumer confidence
  - Consumer confidence reflects media coverage
- Recent research on Media Economics analyzes cases where one can estimate role of media

- Two main effects of the media
- First effect: **Content** (information + role models + emotions)
  - Monitoring of politicians (Besley-Burgess QJE, Stromberg REStud)
  - Telenovelas and fertility choices in developing countries (Jensen-Oster, La Ferrara et al.)
  - Turnout and voting (Gentzkow QJE, DellaVigna-Kaplan QJE)
- Second effect: **Time**
  - Americans spend 3+ hours per day spent with TV
  - Even no direct impact of media, impact from substitution
  - TV and radio reduce social gatherings in Indonesia (Olken)
  - Effect of violent movies on violent crime (Dahl-DellaVigna QJE)

### 3 Effect of Violent Movies

- Key policy question: Is media violence a determinant of violent crime?
  - FTC: Report in 2000 at request of President and Congress
  - AMA in 2000: Statement on risks of exposure to media violence
- What is the available evidence? (Table 11)
  1. Psychology experiments (from Lovaas, 1961; Bandura et al., 1963).  
Exposure to violent video significantly increases lab *aggression*
  2. Psychology survey studies (Johnson et al, *Science* 2002).  
Media exposure positively *correlated* with self-reported violence
- This paper: Exploit timing of release of blockbuster violent movies →  
Causal evidence on short-run effect of exposure to media violence on violent crime

**Table 12. Examples of Studies of Media Effects on Violence in Psychology**

Paper	Exposure to violence (Type of movie) (1)	Control Group (2)	Subjects (3)	Measure of Violence $t$ (6)	Treatment Group $t_T$ (7)	Control Group $t_C$ (8)
<b>Laboratory Experiments</b>						
<b>Lovaas (1961)</b>	5-min. Extract from "Rassling Match" -- cartoon violence	5-min. Non-Violent Clip from "Bear Facts"	Children of Nursery Sch.	Time Spent Playing with Aggressive Doll (hits other doll)	98.2	58.6
<b>Bandura et al. (1963)</b>	10-min. Scenes of Aggression of Doll	No Movie	Children of Nursery Sch.	Aggression toward Doll	91.5	54.3
<b>Geen and O'Neal (1969)</b>	7-min. Prizefight Scene from "Champion" + 2 min. White Noise	7-min. Scenes Non-violent Sport + 2 min. White Noise	College Students	Intensity Electric Shock Inflicted on Other Subject	22.2	10.3
<b>Bushman (1995)</b>	15-min. Violent Scenes from "Karate Kid III"	15-min. non-violent scenes from "Gorillas in The Mist"	College Students	Level of Noise Inflicted On Other Subject For Slow Answer	4.6	3.9
<b>Josephson (1987)</b>	14-min. Scenes of Killing of Police Officer and SWAT team	14-min. Scenes Motorcross Bike-Racing Team	Grades 2-3, Boys	Aggression in 9 Min. of Floor Hockey Game	6.6	3.6
<b>Leyens et al. (1975)</b>	Showing of 5 Violent Movies On 5 Consecutive Days	5 Non-Violent Movies On 5 Consecutive Days	Juvenile Detention	Physical Aggression In Evening After Movie	4.0	0.2
				Physical Aggression At Noon Day After Movie	2.1	1.5
<b>Surveys</b>						
<b>Johnson et al. (2002)</b>	High (Self-reported) Television Viewing at Age 14 (>=3 hrs./day)	Low TV Viewing at Age 14 (<1 hrs./day)	Random Sample	% Committing Assaults Causing Injury, at Age 16-22	25.3%	5.7%

**Notes:** Calculations of effects on violence are by the authors based on data from the papers cited. Columns (7) and (8) report the level of violence in the Treatment and Control group. The difference is always significant at the 5% level, except for the second comparison in the Geen and O'Neal (1969) paper and the second comparison in Leyens et al. (1975).

- **Movie data**

- Revenue data: Weekend (top 50) and Day (top 10) from *The Numbers*
- Violence Ratings from 0 to 10 from *Kids In Mind* (Appendix Table 1)
- Strong Violence Measure  $A_t^v$ : Audience with violence 8-10 (Figure 1a)
- Mild Violence Measure  $A_t^m$ : Audience with violence 5-7 (Figure 1b)

- **Assault data**

- Source: National Incident-Based Reporting System (NIBRS)
- All incidents of aggravated assault, simple assault, and intimidation from 1995 to 2004
- Sample: Agencies with no missing data on crime for  $> 7$  days

- Sample: 1995-2004, days in weekend (Friday, Saturday, Sunday)

**Figure 1a. Weekend Theater Audience of Strongly Violent Movies**

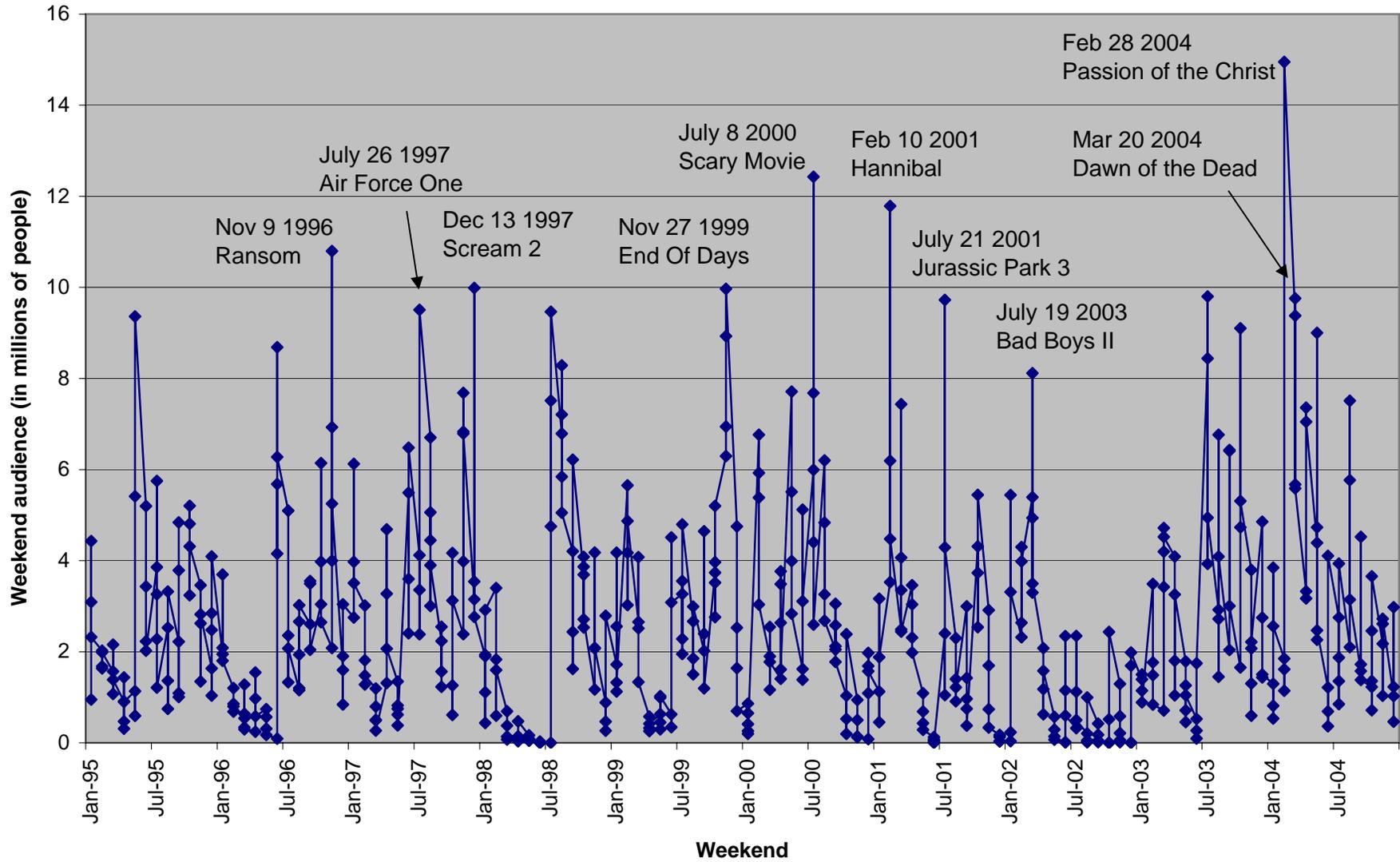


Figure 1b. Weekend Theater Audience of Mildly Violent Movies

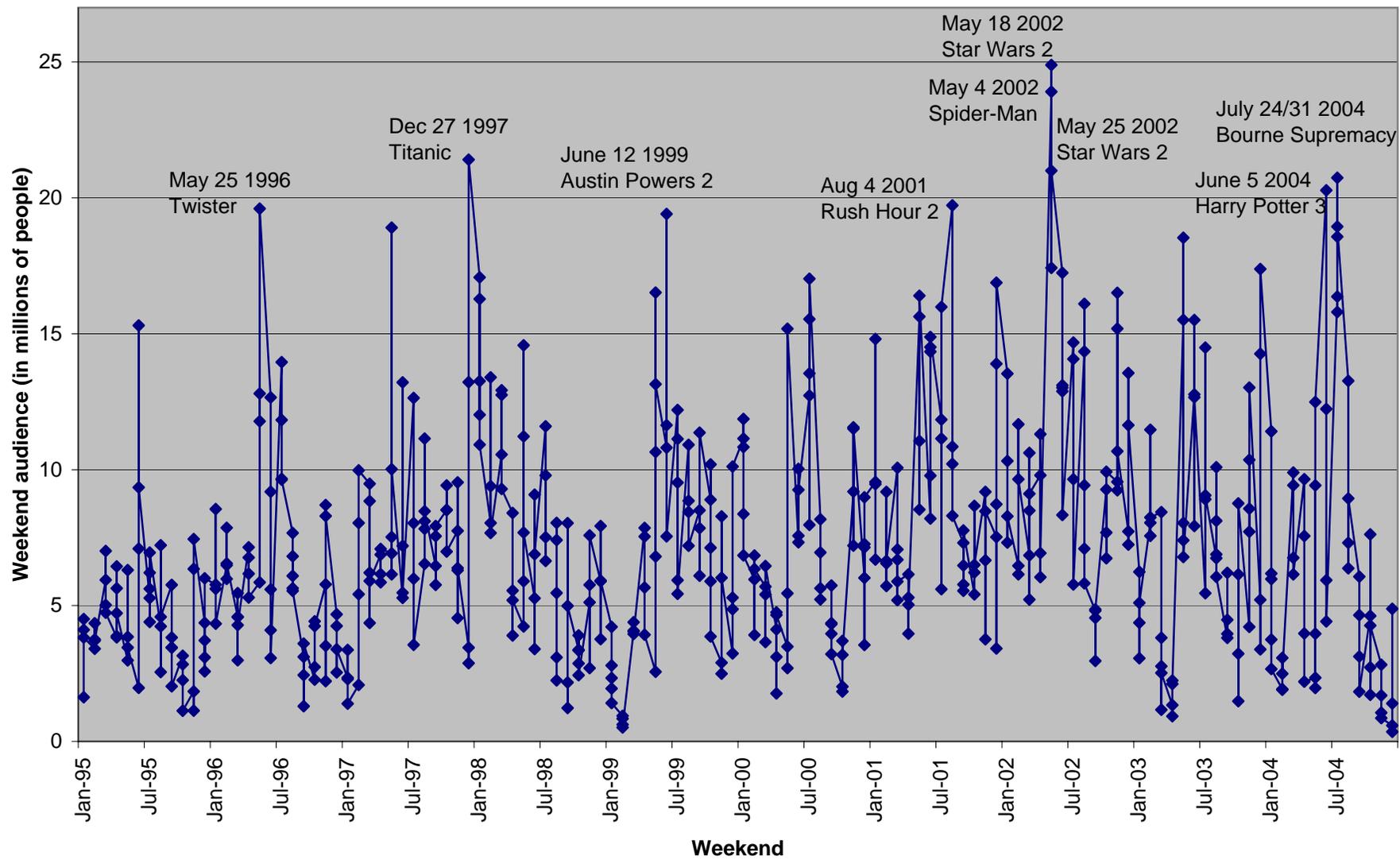
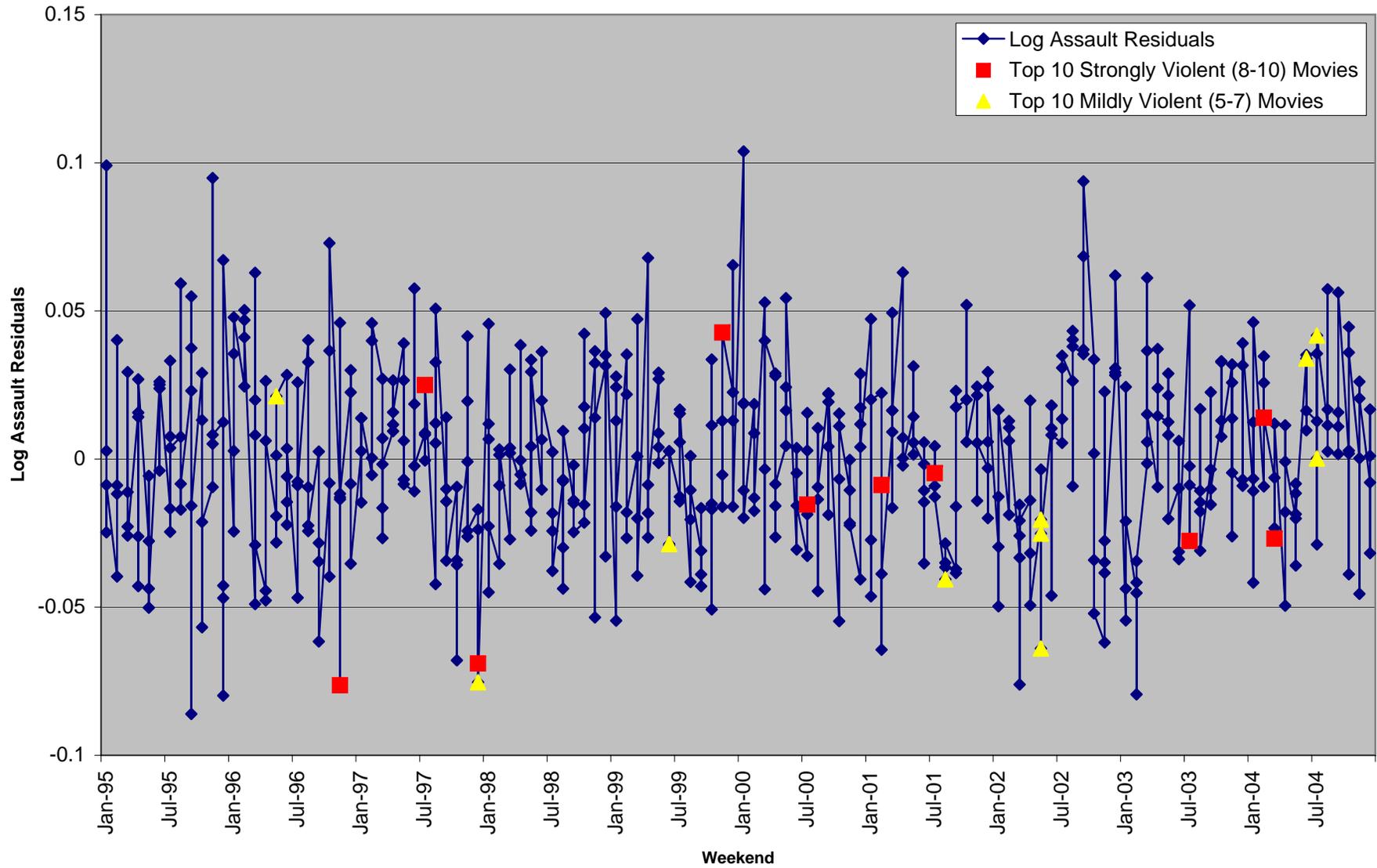


Figure 1d. Residuals of Regression of Log Assault on Seasonality Controls



**Table 3. The Effect of Movie Violence on Same-Day Assaults by Time of Day.**  
**Panel A. Benchmark Results**

Specification:	Instrumental Variable Regressions			
Dep. Var.:	Log (Number of Assaults in Day t in Time Window)			
	(1)	(2)	(3)	(4)
<b>Audience Of Strongly Violent Movies</b> (in millions of people in Day t)	-0.005 (0.0066)	-0.003 (0.0050)	-0.013 (0.0049)***	-0.0192 (0.0060)***
<b>Audience Of Mildly Violent Movies</b> (in millions of people in Day t)	-0.0106 (0.0060)*	-0.0001 (0.0045)	-0.0109 (0.0040)***	-0.0205 (0.0052)***
<b>Audience Of Non-Violent Movies</b> (in millions of people in Day t)	-0.0033 (0.0060)	0.0016 (0.0046)	-0.0063 (0.0043)	-0.006 (0.0054)
<b>Time of Day</b>	6AM-12PM	12PM-6PM	6PM-12AM	12AM-6AM next day
<b>Control Variables:</b>				
<b>Full Set of Controls</b>	X	X	X	X
<b>Predicted Audience Using Next Week's Audience</b>	X	X	X	X
<b>N</b>	N = 1563	N = 1563	N = 1563	N = 1562

- **Results.**

- No effect of movie exposure in morning or afternoon (Columns 1-2)
- Negative effect in the evening (Column 3)
- Stronger negative effect the night after (Column 4)
- Effect larger for more violent movies in evening, but not in night
- Smaller, not significant impact of non-violent movies

- **Summary of Findings:**

1. Violent movies lower same-day violent crime in the evening (incapacitation!)
2. Violent movies lower violent crime in the night after exposure (less consumption of alcohol in bars)
3. No lagged effect of exposure in weeks following movie attendance →  
No intertemporal substitution

- Differences from laboratory evidence: Exposure to violent movies is

- Less dangerous than alternative activity (Natural Experiment)
- More dangerous than non-violent movies (Laboratory Experiments)

**Table 8. Test of Sobriety: Effect of Alcohol Consumption**

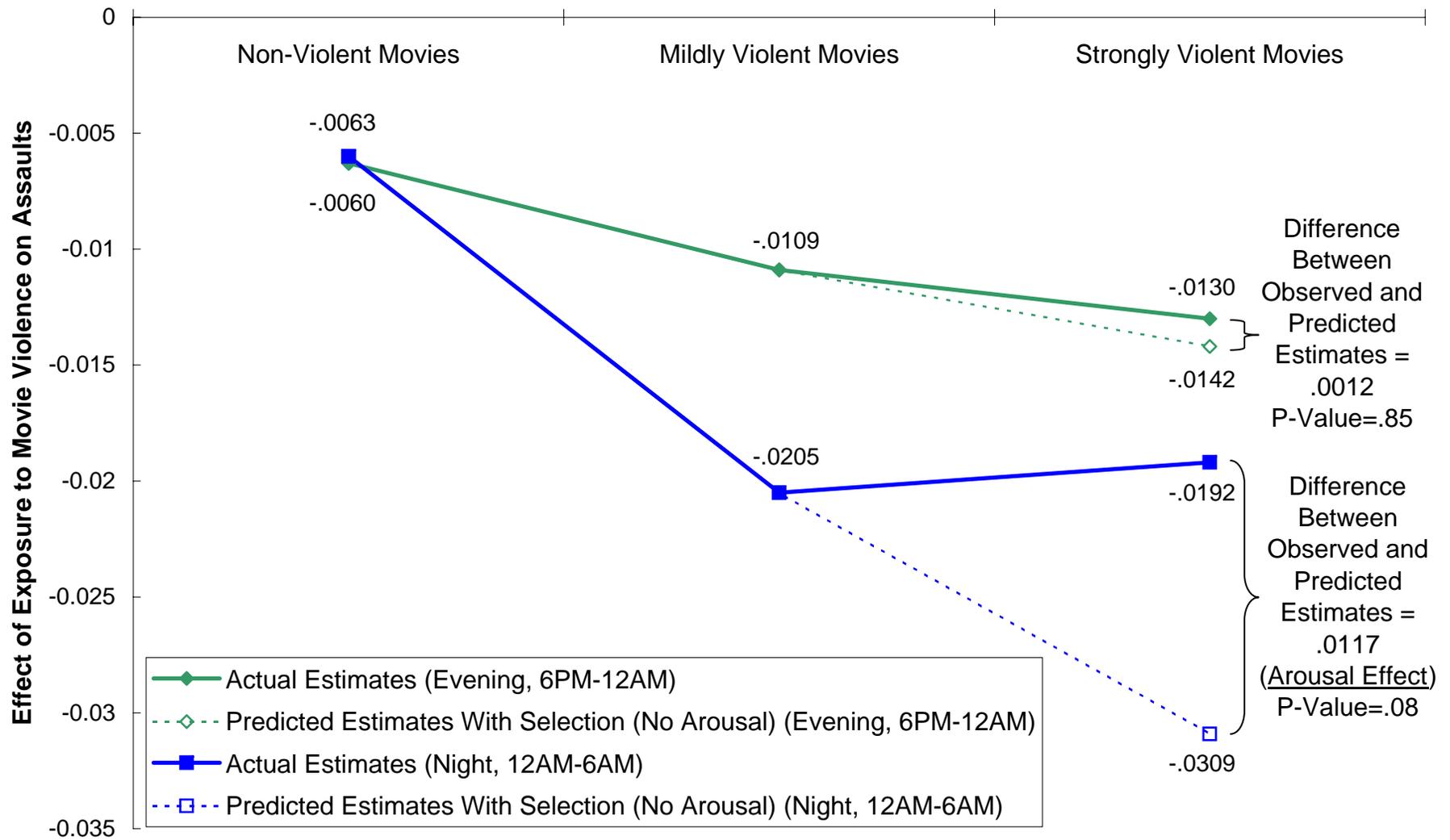
Specification:				
Dep. Var.:	(5)	(6)	(7)	(8)
<b>Audience Of Strongly Violent Movies</b> (millions of people in day t)	-0.0239 (0.0103)**	-0.0376 (0.0115)***	-0.0125 (0.0114)	-0.0058 (0.0149)
<b>Audience Of Mildly Violent Movies</b> (millions of people in day t)	-0.0229 (0.0084)***	-0.0338 (0.0107)***	-0.0112 (0.0100)	-0.0171 (0.0133)
<b>Audience Of Non-Violent Movies</b> (millions of people in day t)	-0.02 (0.0089)**	-0.0213 (0.0110)*	0.0065 (0.0106)	0.0011 (0.0139)
<b>Type of Crime</b>	Assault with Offender Aged 21-24 (Over Drinking Age)		Assault with Offender Aged 17-20 (Under Drinking Age)	
<b>Time of Day</b>	6PM-12AM	12AM-6AM next day	6PM-12AM	12AM-6AM next day
<b>Control Variables:</b>				
<b>Full Set of Controls</b>	X	X	X	X
<b>Audience Instrumented With Predicted Audience Using Next</b>	X	X	X	X
<b>N</b>	N = 1563	N = 1562	N = 1563	N = 1561

**Notes:** The specifications in are IV regressions for specific types of assaults using NIBRS data in columns 1-6. The arrest data in column 7 is not available by time of day, and also comes from NIBRS. Column 8 uses the CEX data used in Table 7, where the dependent variable is the share of the households in the diary CEX sample that reported consuming alcohol away from home. See also notes to Table 2

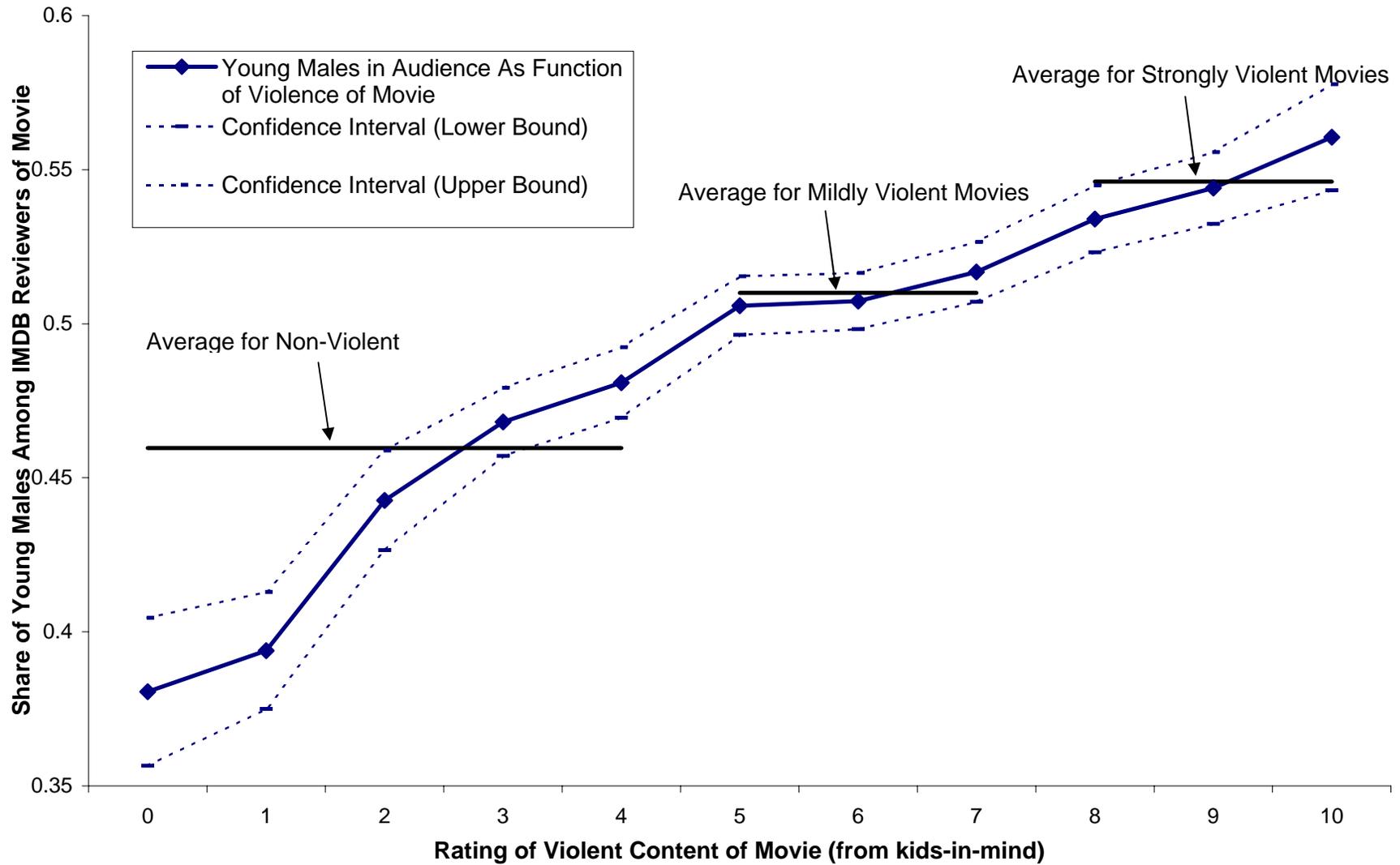
1%

- **Conclusion.** Does media violence affect violent crime in the short-run?
- Movie violence lowers violent crime over same day
  - Debate on media violence overlooked economically important incapacitation effect: 1,000 fewer assaults per weekend
  - Negative effects on movie violence:
    - \* Voluntary Incapacitation (Evening)
    - \* Substitution from More Volatile Activities + Sobriety (Night)
    - \* Self-Selection (Evening and Night)
- Can reconcile apparent differences with laboratory findings of arousal → Need to consider carefully differences in design for field-lab comparisons (Levitt-List JEP 2007)
- Policy implication: Subsidize activities for youth such as Midnight Basketball (Clinton)

**Figure 3. Effect of Movie Violence on Assaults: Selection and Arousal Effects**



**Figure 2. Share of Young Males in Audience As Function of Violence (Internet Movie Database Data)**



## 4 Television Pricing

- Basics:
  - Television networks (like CBS) provide content: news/movies/shows
  - Consumers do not pay for individual movies/shows, but pay monthly subscription to cable/satellite
  - How do networks make money then?

- And what happens as more viewers use the Internet to view movies/shows?