

# Request that you should not refuse

- PLEASE SWITCH OFF AND PUT AWAY YOUR CELL PHONES
- LAPTOPS OK IF WORK IS ACADEMIC
- REMOVE BAGS AND OTHER MATERIALS THAT CAN CAUSE DISTRACTION
- STOP HAVING SIDE CONVERSATIONS
- PARTICIPATE IN CLASS

# Class 15

Completing Discrimination, Economics of Crime,  
Domestic Violence and & NFL Games

- Read for Wednesday's Class (Class 16)

Work on Problem Set 2 Answers, Turn them in on  
Wednesday in Class, Exam Review on Wed

Class 16 lecture notes are already posted

**For Weekend after MT 2 Exam**

Grade Inflation Paper, Mixed Strategy Equilibrium  
Paper, Thesis of Duke student on Tennis

TABLE 1—MEAN CALLBACK RATES BY RACIAL SOUNDINGNESS OF NAMES

	Percent callback for White names	Percent callback for African-American names	Ratio	Percent difference ( <i>p</i> -value)
Sample:				
All sent resumes	9.65 [2,435]	6.45 [2,435]	1.50	3.20 (0.0000)
Chicago	8.06 [1,352]	5.40 [1,352]	1.49	2.66 (0.0057)
Boston	11.63 [1,083]	7.76 [1,083]	1.50	4.05 (0.0023)
Females	9.89 [1,860]	6.63 [1,886]	1.49	3.26 (0.0003)
Females in administrative jobs	10.46 [1,358]	6.55 [1,359]	1.60	3.91 (0.0003)
Females in sales jobs	8.37 [502]	6.83 [527]	1.22	1.54 (0.3523)
Males	8.87 [575]	5.83 [549]	1.52	3.04 (0.0513)

*Notes:* The table reports, for the entire sample and different subsamples of sent resumes, the callback rates for applicants with a White-sounding name (column 1) an an African-American-sounding name (column 2), as well as the ratio (column 3) and difference (column 4) of these callback rates. In brackets in each cell is the number of resumes sent in that cell. Column 4 also reports the *p*-value for a test of proportion testing the null hypothesis that the callback rates are equal across racial groups.

TABLE 4—AVERAGE CALLBACK RATES BY RACIAL SOUNDINGNESS OF NAMES AND RESUME QUALITY

Panel A: Subjective Measure of Quality (Percent Callback)				
	Low	High	Ratio	Difference ( <i>p</i> -value)
White names	8.50 [1,212]	10.79 [1,223]	1.27	2.29 (0.0557)
African-American names	6.19 [1,212]	6.70 [1,223]	1.08	0.51 (0.6084)
Panel B: Predicted Measure of Quality (Percent Callback)				
	Low	High	Ratio	Difference ( <i>p</i> -value)
White names	7.18 [822]	13.60 [816]	1.89	6.42 (0.0000)
African-American names	5.37 [819]	8.60 [814]	1.60	3.23 (0.0104)

*Notes:* Panel A reports the mean callback percents for applicant with a White name (row 1) and African-American name (row 2) depending on whether the resume was subjectively qualified as a lower quality or higher quality. In brackets is the number of resumes sent for each race/quality group. The last column reports the *p*-value of a test of proportion testing the null hypothesis that the callback rates are equal across quality groups within each racial group. For Panel B, we use a third of the sample to estimate a probit regression of the callback dummy on the set of resume characteristics as displayed in Table 3. We further control for a sex dummy, a city dummy, six occupation dummies, and a vector of dummy variables for job requirements as listed in the employment ad (see Section III, subsection D, for details). We then use the estimated coefficients on the set of resume characteristics to estimate a predicted callback for the remaining resumes (two-thirds of the sample). We call “high-quality” resumes the resumes that rank above the median predicted callback and “low-quality” resumes the resumes that rank below the median predicted callback. In brackets is the number of resumes sent for each race/quality group. The last column reports the *p*-value of a test of proportion testing the null hypothesis that the callback percents are equal across quality groups within each racial group.

# Limitations

- Is a call back a good measure of discrimination?
- Newspaper articles versus other sources of job advertisement
- Call back – what happens if you miss a call?
- Reverse causality? What causes non white sounding names (Roshanda by any other name)?

# Economics of Double Parking

- Last Ticket in a show: \$44 (consumer surplus/value)
- Fine for Double Parking: \$36
- 50% chance of getting caught or not
- Value of successful crime= \$44
- The value of unsuccessful crime = \$44-\$36
- $.5*44 + .5 * 8 = 26 > 0$

# Utility of Expectation: Happiness from the Average Value

- Utility (x) =  $x^{1/2}$
- $U(E(x)) = E(x)^{1/2}$
- $U(E(x)) = \{(1/2) * x^{\text{Good}} + (1/2)x^{\text{Bad}}\}^{1/2} =$
- $U(E(x)) = \{50\% * (44) + 50\%(44-36)\}^{1/2}$
- $U(E(x)) = 26^{1/2}$
- $U(E(x)) = 5.09902$

# Expected Utility: Happiness on an Average

- $EU(x) = P * U(x^{\text{good}}) + (1-P)U(x^{\text{bad}})$
- $EU(x) = 50\% * (x^{\text{good}})^{1/2} + (1-P) (x^{\text{bad}})^{1/2}$
- $EU(x) = 50\% * (44)^{1/2} + 50\% (8)^{1/2}$
- $EU(x) = 50\% * (6.6325) + 50\% (2.828427)$
- $EU(x) = 4.730838$



**TABLE 12-3** The Expected Utility of Crime

	Baseline	Higher Probability of Prison	Longer Prison Term	Less Loot	Higher Income	Lower Probability of Prison
Lawful income (\$)	100	100	100	100	400	100
Loot (\$)	44	44	44	21	44	44
Probability of prison	0.5	0.75	0.5	0.5	0.5	0.25
Prison time	0.36	0.36	0.51	0.36	0.36	0.36
<b>Lawful utility = (legal income)<sup>1/2</sup></b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>20</b>	<b>10</b>
Utility from successful crime						
Net income = Legal income + Loot	144	144	144	121	444	144
Utility = (Net income) <sup>1/2</sup>	12	12	12	11	21	12
Utility from failed crime						
Prison cost = prison time • legal income	36	36	51	36	144	36
Net income = Legal income – prison cost	64	64	49	64	256	64
Utility = (Net income) <sup>1/2</sup>	8	8	7	8	16	8
<b>Expected utility from crime (utils)</b>	<b>10</b>	<b>9</b>	<b>9.5</b>	<b>9.5</b>	<b>18.5</b>	<b>11</b>

# Domestic Violence and NFL Games

# The main theoretical variables

- Probability of disagreement :  $q$
- Probability that disagreement escalates to violence:  $h$
- The agent can choose whether or not to watch a locally televised NFL game
- Outcome of the game  $y$
- $p=P(y=1)$  probability of a home team win
- After the game Emotions if home team wins :
- $y-E(y)=y-p$
- Assumption: this emotion affects (negatively) disagreements that turn violent i.e.

# Main theoretical result - Who watches the game?

- Theory says as the probability of a home team victory increases, men with a higher risk of violence are drawn to watch the game
- The basic idea is more people who watch the game, chances are that violent types will watch the game.
- Gives us a reason to get data and find out empirically if watching the games & home team loss creates a negative emotional cue, which leads to a domestic disturbance!

# Summarizing the theory

- Certain types of violence prone men watch NFL games
- If there is a loss of the home team, it leads to a negative emotional cue
- Then disagreements with intimate partners by violence prone men turns ugly and a domestic violence is reported

# Main Variables

- Outcome Variable: number of domestic violence cases by police agencies at the level of (cities/municipalities)
- Main X Variable: Upset loss of a home team, Close Loss of a Home Team and Upset Win of a Home Team
- Controls: Weather, Day, Time

# Story

- Emotional cues make a disagreement go out of hand
- Emotional cues are affected by a variety of incidents – one of them is loss of home teams

# Randomization Mechanism

- After controlling for the spread, The win or loss by a sports team is given to chance
- Therefore the randomization mechanism makes some agencies (cities/ municipalities) treatment and others control based on if the home team wins or loses



How are the Outcome, Predictor,  
and Control variables measured ?

# Measurement: Incident Report

- Each incident report includes information on the victim (age, gender, etc.), the offender (gender, relationship to the victim), and the nature of the incident (including date, time of day, location, and whether the victim was injured).
- # intimate partner violence (IPV) experienced by women age 18-54 in the NIBRS
- Loss by home team : Dummy Variable
- NIBRS is that it only includes police-reported family violence
- NIBRS data is that participation by individual police agencies is voluntary
- Only 6 teams in our sample can be matched to 993 regular season football games and 53 playoff games
- Only focused on Sunday games

# Las Vegas Point Spreads (controlling for the expected outcome of the game)

- If the point spread is -3 for one team against another, the team must win by 3 points or more in order for a bet on that team to pay off.
- The market assessment of the outcome of a game is contained in the closing value of the point spread (the “closing line”).
- Point spreads are a little different compared to odds of winning used in theory

# Nielsen Data on TV Coverage

- We **purchased** data on local television viewership from Nielsen Media Research (“Nielsen”) for the six television markets that match the teams in our sample
- each rating point represents 1% of all television households in a local market (whether or not a household’s television is turned on)
- Link to Tim’s presentation of attendance in sports events

# Poisson Regression with Fixed Effects

- The  $y$  variable is count variable
- Generally use poisson
- There is a limitation of poisson called over dispersion
- To correct for it, people use negative binomial models

Table 4. Emotional Shocks from Football Games and Male-on-Female Intimate Partner Violence Occurring at Home, Poisson Regressions.

	Intimate Partner Violence, Male on Female, at Home				
	Baseline Model				
	(1)	(2)	(3)	(4)	(5)
<u>Coefficient Estimates</u>					
Loss * Predicted Win ( <i>Upset Loss</i> )	.083 (.026)	.077 (.027)	.080 (.027)	.074 (.028)	.076 (.028)
Loss * Predicted Close ( <i>Close Loss</i> )	.031 (.023)	.034 (.024)	.036 (.024)	.024 (.025)	.026 (.025)
Win * Predicted Loss ( <i>Upset Win</i> )	-.002 (.027)	.011 (.027)	.021 (.028)	.013 (.029)	.011 (.029)
Predicted Win	-.004 (.022)	-.019 (.032)	-.015 (.032)	.000 (.033)	-.068 (.044)
Predicted Close	-.012 (.023)	-.017 (.032)	-.016 (.032)	-.007 (.034)	-.074 (.044)
Predicted Loss	-.000 (.022)	-.004 (.031)	-.011 (.031)	.006 (.033)	-.057 (.042)
Non-game Day	---	---	---	---	---
Nielsen Rating					.009 (.004)
Municipality fixed effects	X	X	X	X	X
Year, week, & holiday dummies		X	X	X	X
Weather variables			X	X	X
Nielsen Data Sub-sample				X	X
Log likelihood	-42,890	-42,799	-42,784	-39,430	-39,428
Number of Municipalities	765	765	765	749	749
Observations	77,520	77,520	77,520	71,798	71,798

Notes: Standard errors in parentheses. Predicted win indicates a point spread less than -3 (negative spreads indicate

Table 5. Timing of Shocks and Violence.

<b>Intimate Partner Violence, Male on Female, at Home</b>				
<u>Assaults Occurring Between (Eastern Time):</u>				
	12 PM to 3 PM	3 PM to 6 PM	6 PM to 9 PM	9 PM to 12 AM
	(1)	(2)	(3)	(4)
<u>Games starting at 1 PM</u>				
Loss * Predicted Win	.024	.142	.042	.049
( <i>Upset Loss</i> )	(.071)	(.066)	(.060)	(.060)
Loss * Predicted Close	.004	-.022	.010	.094
( <i>Close Loss</i> )	(.061)	(.060)	(.052)	(.051)
Win * Predicted Loss	-.018	-.018	.055	.004
( <i>Upset Win</i> )	(.075)	(.069)	(.061)	(.060)
Predicted Win	-.031	-.107	.096	-.180
	(.107)	(.103)	(.088)	(.090)
Predicted Close	.011	-.098	.077	-.154
	(.104)	(.100)	(.086)	(.087)
Predicted Loss	-.057	-.020	.057	-.107
	(.098)	(.093)	(.080)	(.081)
Nielsen Rating	.000	.021	-.005	.020
	(.011)	(.011)	(.009)	(.009)
<u>Games starting at 4 PM</u>				
Loss * Predicted Win	-.066	.182	.347	.108
( <i>Upset Loss</i> )	(.189)	(.163)	(.130)	(.139)
Loss * Predicted Close	-.003	.120	.007	.031
( <i>Close Loss</i> )	(.141)	(.136)	(.113)	(.117)
Win * Predicted Loss	.085	-.008	-.245	.029
( <i>Upset Win</i> )	(.140)	(.142)	(.127)	(.120)
Predicted Win	-.311	.019	-.027	.008
	(.182)	(.172)	(.144)	(.147)
Predicted Close	-.323	-.069	-.044	-.085
	(.185)	(.176)	(.147)	(.151)
Predicted Loss	-.150	-.001	-.019	-.113
	(.156)	(.150)	(.128)	(.131)
Nielsen Rating	.019	-.002	.013	.006
	(.017)	(.017)	(.014)	(.014)
Non-game Day	---	---	---	---

Table 6. Shocks from Emotionally Salient Games.

Intimate Partner Violence, Male on Female, at Home				
	Game Type = Still in Playoff Contention (1)	Game Type = Traditional Rivals (2)	Game Type = Sacks $\geq$ 4, Turnovers $\geq$ 4, or Penalties $>$ 80 yds (3)	Game Type = Highly Salient: (1) & [(2) or (3)] (4)
<u>More Salient Games (Game Type = 1)</u>				
(a) Loss * Predicted Win ( <i>Upset Loss</i> )	.102 (.030)	.138 (.062)	.152 (.046)	.154 (.041)
Loss * Predicted Close ( <i>Close Loss</i> )	.062 (.030)	.047 (.056)	.016 (.040)	.063 (.043)
Win * Predicted Loss ( <i>Upset Win</i> )	.022 (.039)	.145 (.067)	.068 (.045)	.015 (.053)
Predicted Win	-.019 (.033)	-.040 (.046)	-.060 (.045)	-.038 (.040)
Predicted Close	-.041 (.035)	-.030 (.048)	-.014 (.043)	-.057 (.045)
Predicted Loss	-.017 (.035)	-.051 (.054)	-.019 (.034)	.017 (.040)
<u>Less Salient Games (Game Type = 0)</u>				
(b) Loss * Predicted Win ( <i>Upset Loss</i> )	-.031 (.069)	.067 (.023)	.032 (.038)	.007 (.038)
Loss * Predicted Close ( <i>Close Loss</i> )	-.011 (.040)	.032 (.027)	.056 (.032)	.030 (.030)
Win * Predicted Loss ( <i>Upset Win</i> )	.022 (.040)	-.007 (.031)	-.007 (.036)	.023 (.032)
Predicted Win	-.001 (.049)	-.009 (.033)	-.006 (.033)	-.010 (.034)
Predicted Close	.033 (.041)	-.013 (.034)	-.017 (.034)	-.005 (.034)
Predicted Loss	-.002 (.035)	-.005 (.032)	-.002 (.035)	-.023 (.033)
Non-game Day	---	---	---	---



Table 7. Alcohol Use and Assault Severity.

	<b>Intimate Partner Violence, Male on Female, at Home</b>		
	Alcohol Involved	Minor Assault	Serious Assault
	(1)	(2)	(3)
Loss * Predicted Win ( <i>Upset Loss</i> )	.127 (.063)	.096 (.040)	.063 (.099)
Loss * Predicted Close ( <i>Close Loss</i> )	.045 (.057)	-.017 (.035)	.099 (.034)
Win * Predicted Loss ( <i>Upset Win</i> )	.015 (.065)	-.011 (.040)	.068 (.038)
Predicted Win	-.063 (.074)	-.020 (.047)	-.053 (.044)
Predicted Close	-.065 (.076)	.048 (.047)	-.098 (.045)
Predicted Loss	-.074 (.073)	.008 (.046)	-.040 (.044)
Non-game Day	---	---	---
Groups	527	633	657
Observations	61,543	71,142	72,859

Notes: Standard errors in parentheses. Alcohol involved indicates the reporting officer noted that either alcohol or drugs were a contributing factor in the incident. Minor assault is defined as simple assault or intimidation without injury; serious assault is defined as aggravated assault or any assault with a physical injury.

Table 8. Location and Victim-Offender Relationship.

	Intimate Partner Violence, Male on Female, at Home					
	At Home, Male on Female (M-F)	Away from Home, M-F	Total Male on Female (M-F)	Female on Male, at Home	Spouse, at Home, M-F	Girlfriend, at Home, M-F
	(1)	(2)	(3)	(4)	(5)	(6)
Loss * Predicted Win ( <i>Upset Loss</i> )	.080 (.027)	-.114 (.063)	.049 (.025)	.0162 (.0585)	.126 (.044)	.075 (.040)
Loss * Predicted Close ( <i>Close Loss</i> )	.036 (.024)	-.028 (.055)	.026 (.022)	-.0513 (.0506)	.037 (.030)	.042 (.035)
Win * Predicted Loss ( <i>Upset Win</i> )	.022 (.028)	.004 (.063)	.018 (.025)	-.0356 (.0596)	-.031 (.046)	.041 (.040)
Predicted Win	-.015 (.032)	.111 (.074)	.005 (.029)	.0648 (.0694)	-.015 (.048)	-.040 (.046)
Predicted Close	-.016 (.032)	.087 (.075)	.001 (.030)	.0960 (.0698)	.032 (.046)	-.053 (.047)
Predicted Loss	-.011 (.031)	.075 (.073)	.003 (.029)	.0528 (.0679)	.025 (.048)	-.057 (.045)
Non-game Day	---	---	---	---	---	---
Groups	765	583	775	607	551	670
Observations	77,520	68,498	77,985	69,830	57,561	73,608

Notes: Standard errors in parentheses. At home indicates the incident occurred at a residence/home; away indicates all other locations. Spouse is defined as the victim being a current spouse, a common-law spouse, or an ex-spouse; girlfriend is defined as the victim being the offender's girlfriend.

# Limitations

- Who reported the domestic assault?
- If it was not reported by the victim and the attack was severe then something bad really happened
- Timing of police showing up – police also watch the NFL games (more so in smaller cities) – may be that is why the incidents are reported after the game was completed.