

# Gender Differences in Bargaining: A Field Experiment

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# Motivation

- Gender differences in willingness to compete: while men embrace competition women shy away from it
- Effect driven largely by gender differences in confidence and in differences in attitudes toward competition
- What are the implications for negotiated outcomes?

# Gender and negotiation

- Evidence very much in line with that on competition
- Babcock and Lascever (2003), *Women Don't Ask*
  - 2.5 times more women report that they feel a great deal of apprehension about negotiating
  - When asked to pick metaphors for the process of negotiating:
    - Men: “winning a ballgame”/ Women: “going to the dentist”
  - Women have a lower propensity to initiate negotiations
  - Women more pessimistic about how much is available when they do negotiate – and typically ask for less
  - Men graduating from Heinz, CMU were 8 times more likely to negotiate first salary
  - Asking increased starting salary by 7.4%

# Gender and negotiation

- Gender differences in willingness and ability to negotiate may help explain the persistent gender wage gap
- Explanations for the gender wage gap
  - Discrimination
    - Taste-based
    - Statistical
  - Underlying ability
  - Willingness to negotiate/compete

# Gender and negotiation

- Question: Will individuals who are more willing to negotiate or more willing to compete necessarily achieve superior outcomes when bargaining?
- Walters et al (1998) and Stuhlmacher and Walters (1999), Stuhlmacher et al (2007) :
  - Meta analyses of gender on bargaining suggest that men earn more in negotiations than women
- Difficulty when examining field outcomes is that factors such as taste based and statistical discrimination may weigh so heavily that it is difficult to identify the effect of gender differences in, say, competitive attitudes

# Field studies on bargaining

- Ayres (1991) and Ayres and Siegelman (1995)
  - Male and female test buyers use identical and scripted bargaining strategies to purchase a new car
  - Male buyers quoted lower prices
  - Questions the likelihood that competitive forces will eliminate gender discrimination
- List (2004)
  - Bargaining over sports cards
  - Women receive inferior initial and final offers
  - Evidence of statistical discrimination
- Statistical discrimination may be substantial in both environments

# Lab studies on bargaining

- Of particular interest is whether more competitive males may be less likely to reach agreements
- Lab studies:
  - Eckel and Grossman (2001)
    - Ultimatum game bargaining
    - Offers coming from women more likely to be accepted
  - Sutter, Bosman, Kocher, and van Winden (2009)
    - Power to take game (squishy game)
    - One person takes share of pie, second person shrinks pie
    - Men paired with men (versus with women):
      - Claim larger share of pie
      - Retaliate more by shrinking the pie

# Our Objective

- Do these results hold up in the field?
- Do they hold when we examine negotiated outcomes for men and women who use a simple and common bargaining script in a *competitive* market where statistical and taste based discrimination should play a small role?
- Environment: negotiation for taxi fare in Lima Peru

# Why taxi market in Lima?

- Foremost: Taxis not metered. All prices negotiated
- Very competitive market
  - Deregulation early 1990's gave rise to a very competitive market: large reduction in public employment, influx of reconstituted cars.
  - Fleet of taxis:
    - 85% no government license, 50% no insurance
    - 200,000 taxis in Lima (1 in 12 of the working population).
  - Traffic composition: 39% cars, 28% taxis, 26% buses.
  - When a taxi is hailed – other taxi's will pull up behind and wait for negotiation to fail (2/3 of the cases we examined)
  - Less likely that taste based discrimination plays a major role



# Lima taxi market



# Why taxi market in Lima?

- Passengers very experienced
  - 81.4% of households in Lima do not have a car (in U.S.< 10%)
  - Both men and women take taxis regularly
  - Between 1.5 and 2 million rides taken per day (metropolitan Lima has 1.8 million people)
  - Trip purpose: 42% work, 54% other, 4% school
  - Statistical discrimination less likely to play a role
- Nature of Negotiation
  - Quick
  - Does not reflect on individual ability
  - Not ambiguous
  - Less likely to see differences in negotiated outcomes
  - Can provide complete gender-neutral script.
  - Can get lots of observations

# Negotiations



# Why taxi market in Lima?

- Outside option after failed negotiation with man and woman the same
- Stakes small, but important
  - Passenger:
    - 9% of a household's budget spent on transportation services
  - Drivers:
    - Main occupation for 90% of taxi drivers
    - 50-65% rent cars: cost \$10-\$20/ day, earn \$10-\$18 /day
    - Avg. number of rides per day 20
    - Drivers work 13 hours/day (empty taxi half the time)
    - Average distance travelled a day (GPS): 105-113 miles

# A day in the life of Carlos (Sept 4, 2008)

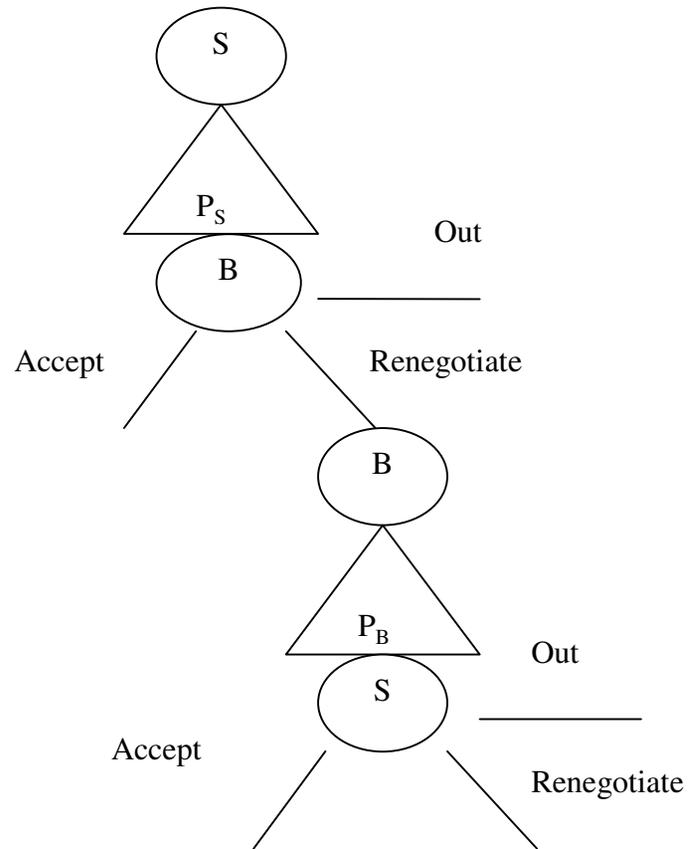
8h20m, 82.72 miles



# Research questions

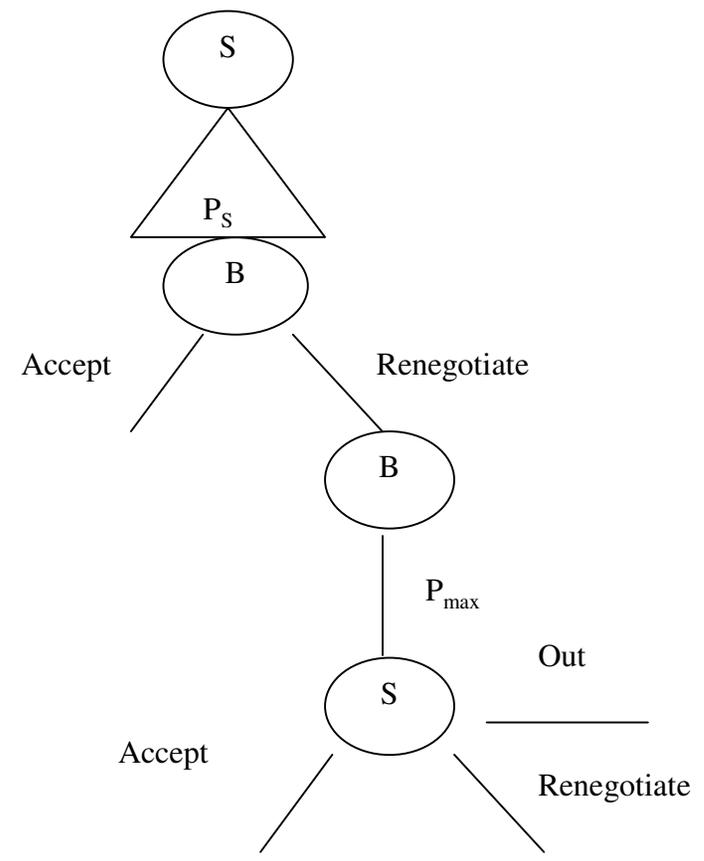
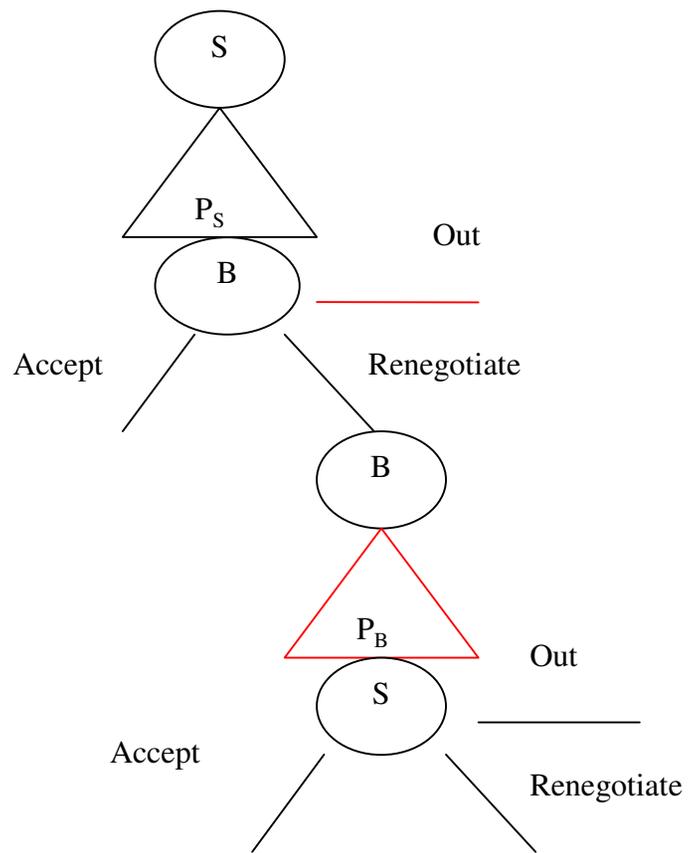
- In this very competitive market, do men and women who use the same bargaining strategy get treated the same?
- Do they get
  - same initial offers?
  - same final offers?
  - same probability of acceptance?
- If not – what may explain the differences?
  - Four additional studies

# Negotiations



# Experimental design

- Confederate passengers used a fixed bargaining protocol:
  - Hail taxi at random (no Tico's)
  - Ask for a price for a pre-determined route
  - Respond by saying the “maximum acceptable price” (e.g. “3”). Maximum acceptable price low enough to generate rejections
  - Respond by repeating the same “maximum acceptable price” until driver either accepts or leaves. Trained to be as neutral as possible.
  - *Confederate lets driver end the negotiation*
  - Each confederate had a recorder that was kept on all the time
  - Each confederate kept a log of prices, car characteristics, market conditions, etc.
  - If negotiation failed, waited for traffic to clear before attempting another negotiation (pretended to answer cell phone)

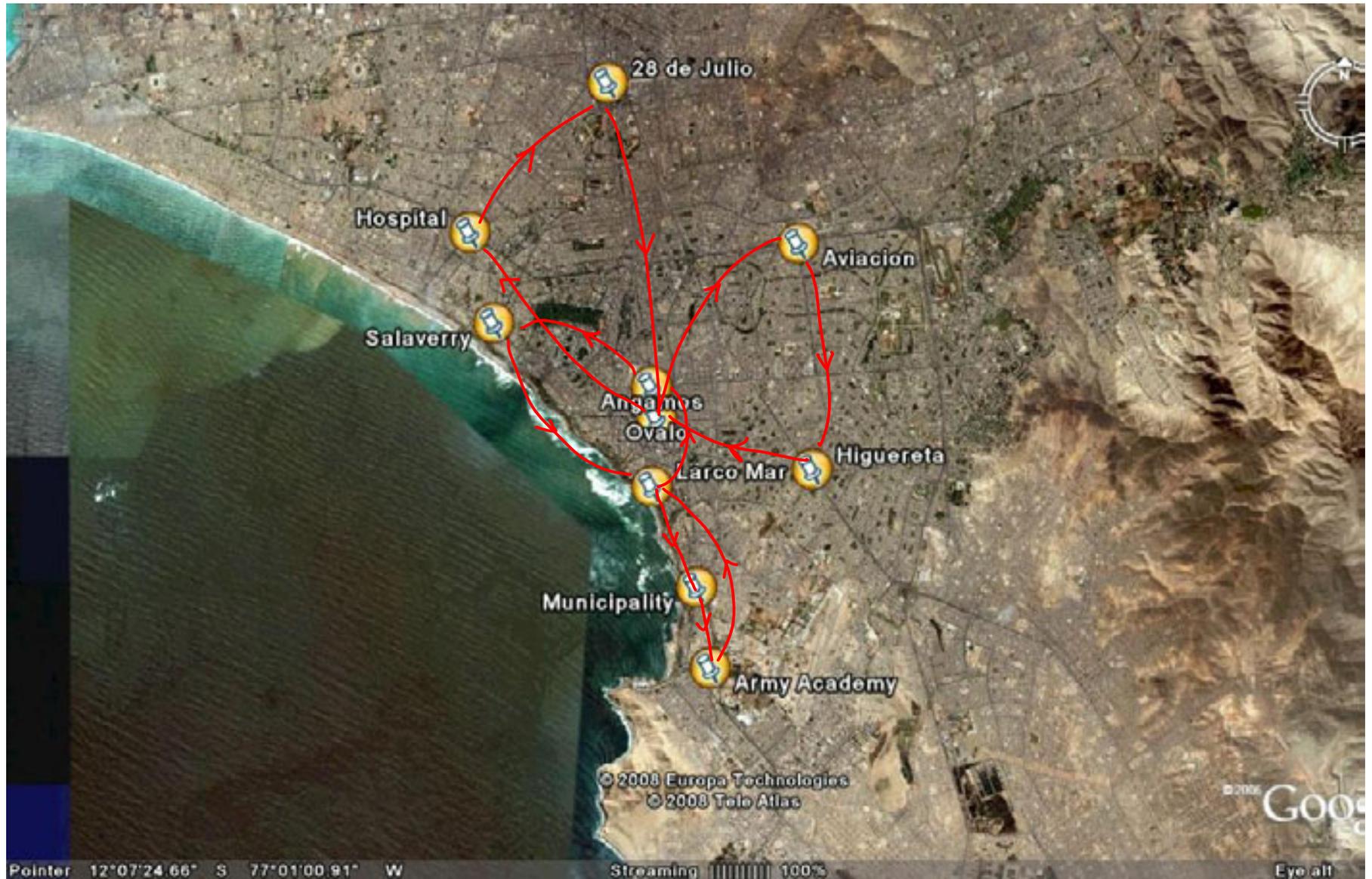


- Example 1:
  - R: to point A?
  - Taxi: to point A? 5 soles, ok?
  - R: 4
  - Taxi: ok
  
- Example 2:
  - R: to point B?
  - Taxi: to point B? ok, ok,...7?
  - R: 4
  - Taxi: it can be 5, Miss
  - R: 4
  - Taxi: 4, ok, let's go
  
- Example 3:
  - S: to point C?
  - Taxi: to point C? 6 soles
  - S: 4
  - Taxi: 5
  - S: 4
  - Taxi: No, I can do it for 5
  - S: 4
  - Taxi: **VROOOMMM**, car leaves...

# Experimental Design

- Given “maximum acceptable prices” our design allows us to see if the dynamics of negotiations vary by gender
- Confederates: 3 men, 3 women (20-24 yrs). Dressed and looked alike
- 786 negotiations
- From 8am till 12pm (busiest working hours)
- 67.6% reported having at least one other taxi waiting for the customer in case of disagreement
- Pre-established routes: Moved from point to point and tried to get a taxi, if unsuccessful moved to next point
- Duration of ride: mean 11.86 min, sd = 6.41 min

# Travel Sites



## Were maximum acceptable prices low enough?

Initial Offer	Maximum acceptable price				
	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>All</b>
3	7	0	0	0	7
4	17	7	0	0	24
5	44	73	7	0	124
6	18	131	28	5	182
7	19	74	39	52	184
8	4	35	93	66	198
9	1	4	14	13	32
10	0	3	17	11	31
12	0	0	1	1	2
13	0	0	0	1	1
15	0	0	0	1	1
Mean (s.d.)	5.4 (1.3)	6.2 (1.1)	7.7 (1.2)	7.9 (1.2)	6.8 (1.5)
Total	110	327	199	150	786

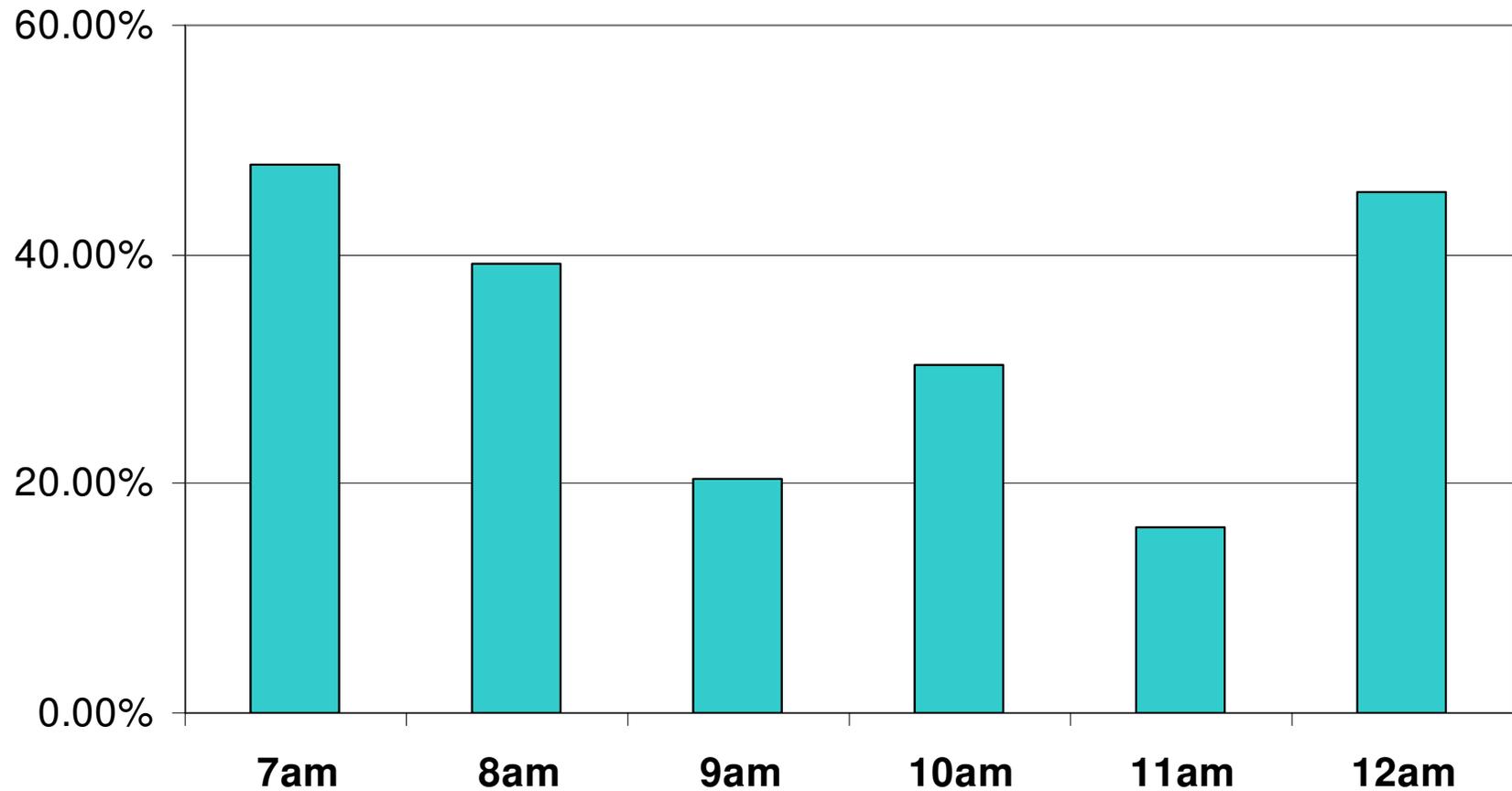
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15	0	0	0	1	1
Mean (s.d.)	5.4 (1.3)	6.2 (1.1)	7.7 (1.2)	7.9 (1.2)	6.8 (1.5)
<b>Rejections</b>	<b>62 (56%)</b>	<b>208 (64%)</b>	<b>147 (74%)</b>	<b>70 (47%)</b>	<b>487 (62%)</b>
Total	110	327	199	150	786

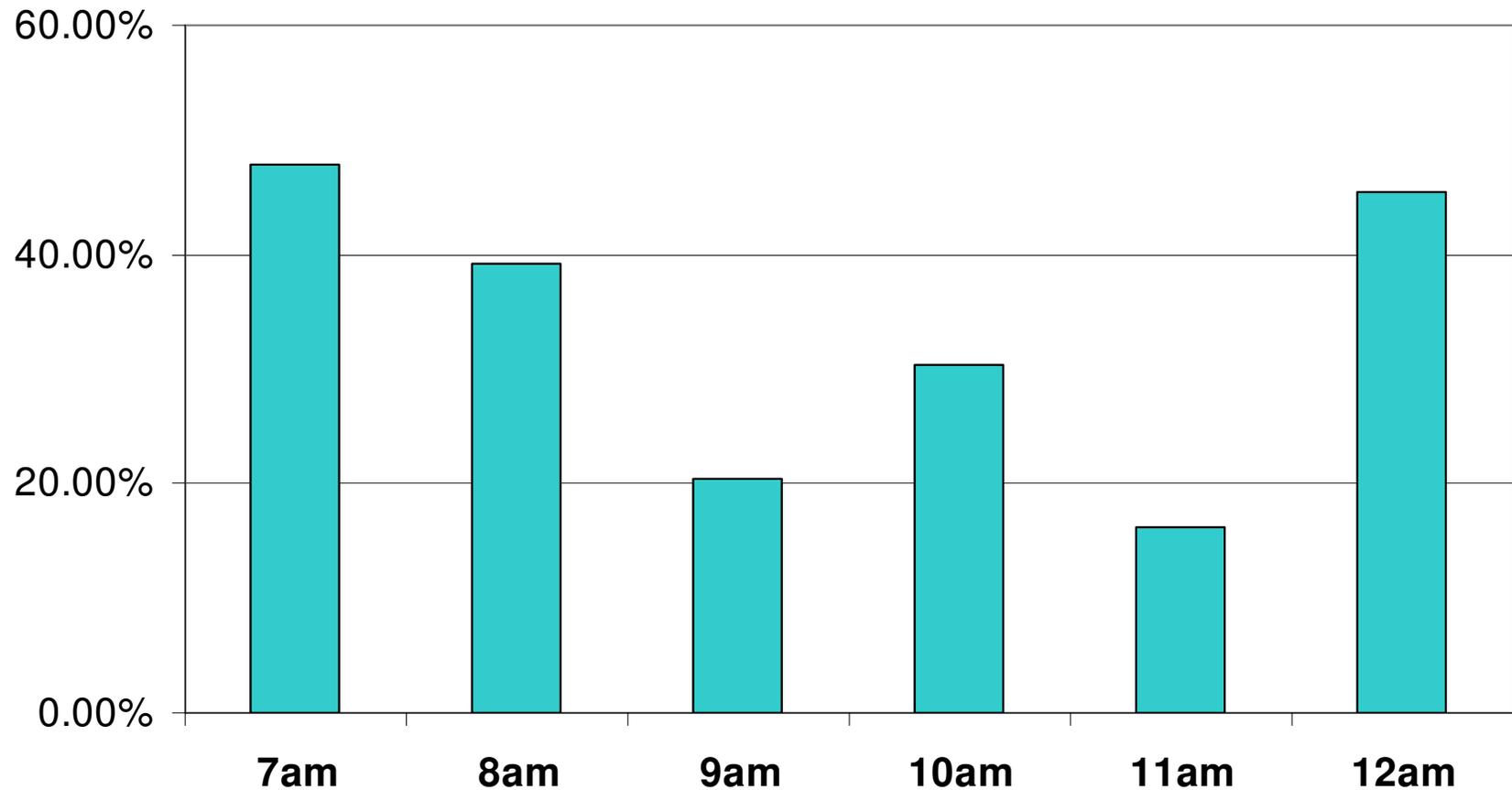
# Studies

- Study 1: Confederate passenger approach taxi negotiate
- Study 2: Confederate passenger reject first taxi move to second taxi and follow protocol of study 1
- Study 3: Observe market rejection rates
- Study 4: Confederate driver
- Study 5: Taxi driver survey

# Study 3: "On the Street" Observed Disagreements (N = 234, 4 sites)



## Study 3: “On the Street” Observed Disagreements (N = 234, 4 sites)



Our rejection rates are higher than those seen in actual negotiations

# Study 1: Distribution of negotiations (*percent*)

	Acceptances	Rejections	Renegotiation	Total
Round 1	162 (21)	212 (27)	412 (52)	786 (58)
Round 2	94 (23)	184 (45)	134 (33)	412 (30)
Round 3	34 (25)	76 (57)	24 (18)	134 (10)
Round 4 and more	9 (31)	15 (52)	5 (17)	29 (2)

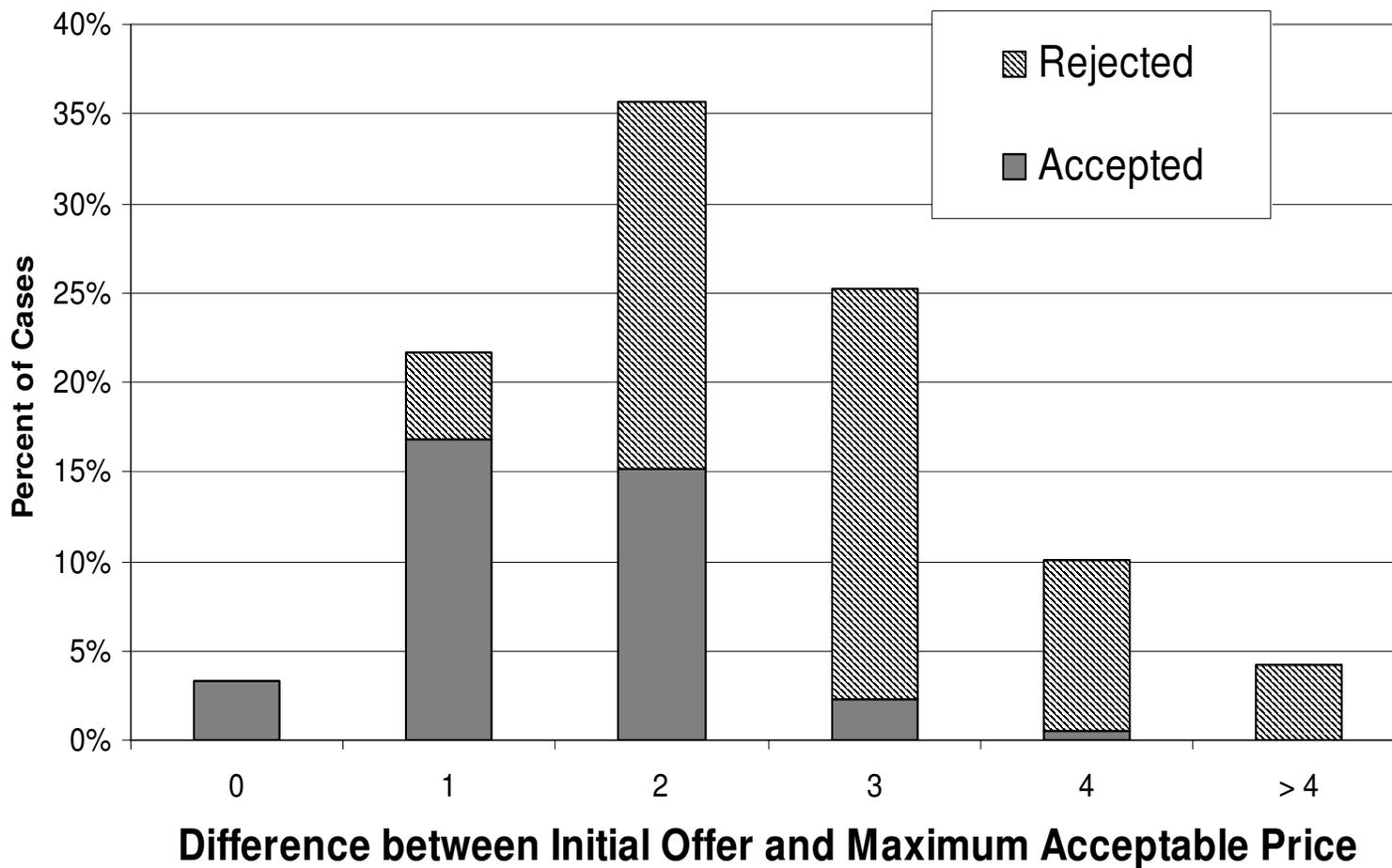
## Study 1: Price by Round

Variable	1st Round	2nd Round	3rd Round
Initial Offer	-	0.627 (0.000)	0.394 (0.000)
Constant	6.988 (0.000)	1.585 (0.000)	3.127 (0.001)
Observations	786	412	134
R2	0.034	0.527	0.500

p-values in parentheses

**Controls: Route x Direction of Traffic, Hour of the Day, Day of the Week**

# All



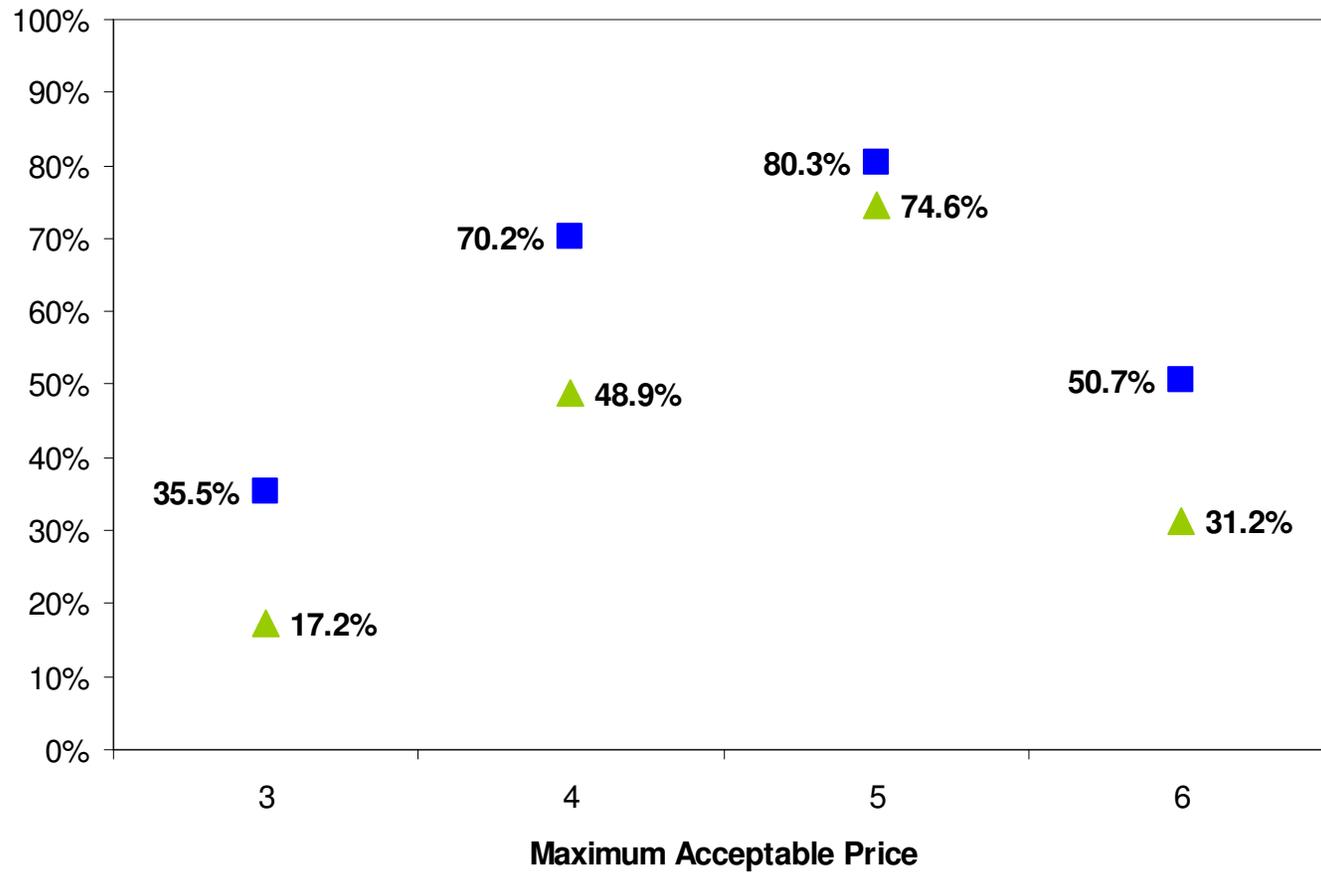
# Gender differences (OLS)

	Initial Offer		
Male	0.126 (.104)		
Initial Offer	-		
Constant	6.894 (.000)		
Route & Flow	<i>Yes</i>		
Day	<i>Yes</i>		
Hour of the Day	<i>Yes</i>		
Observations	786		
P-values in parentheses			

# Gender differences (OLS)

	Initial Offer	Last Offer	
Male	0.126 (.104)	0.172 (.008)	
Initial Offer	-	0.898 (.000)	
Constant	6.894 (.000)	-0.473 (.073)	
Route & Flow	<i>Yes</i>	<i>Yes</i>	
Day	<i>Yes</i>	<i>Yes</i>	
Hour of the Day	<i>Yes</i>	<i>Yes</i>	
Observations	786	786	
P-values in parentheses			

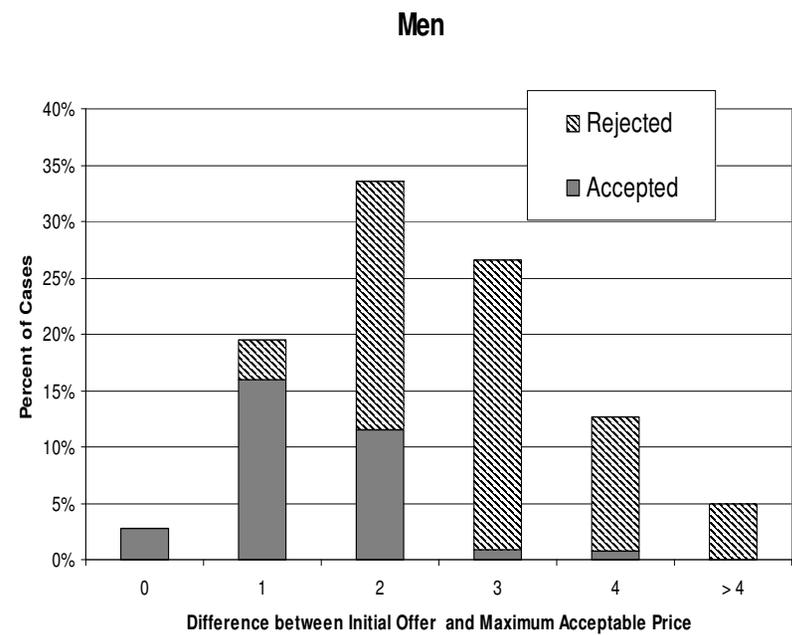
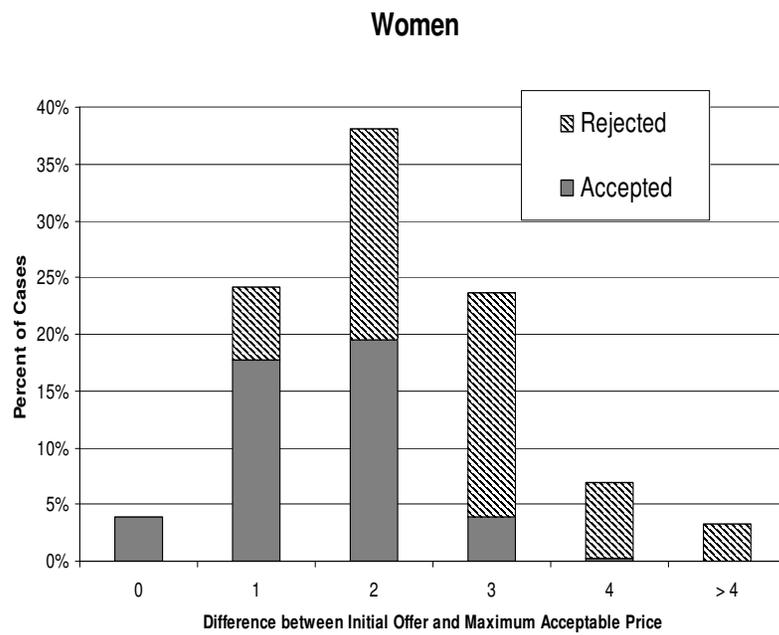
# Rejection Rates



# Gender differences (OLS)

	Initial Offer	Last Offer	Rejections
Male	0.126 (.104)	0.172 (.008)	0.074 (.014)
Initial Offer	-	0.898 (.000)	0.183 (.0000)
Constant	6.894 (.000)	-0.473 (.073)	-0.703 (.000)
Route & Flow	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Day	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Hour of the Day	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Observations	786	786	786
P-values in parentheses			

# Gender differences



## Price by Round

Variable	1st Round	2nd Round	3rd Round
Initial Offer		0.581 (0.000)	0.397 (0.000)
Male	0.126 (0.104)	-0.351 (0.224)	-0.040 (0.920)
Initial Offer x Male		0.065 (0.118)	0.008 (0.885)
Constant	6.983 (0.000)	1.853 (0.000)	3.173 (0.000)
Observations	786	412	134
R2	0.038	0.535	0.500

p-values in parentheses

**Controls: Route times Direction of Traffic, Hour of the Day, Day of the Week**

# Findings

- **Result 1:** Overall, initial prices are 15¢ (2%) higher and final prices are 30¢ (5%) higher for men than women
- **Result 2:** Overall, men are rejected at a 10 percentage point higher rate than women.
- **Result 3:** Conditional on initial offers, final prices are 17¢ (3%) higher for men than women.
- **Result 4:** Conditional on initial offers, men are rejected at a 6 percentage point higher rate than women.
- What can explain these differences?

# Explanations

- Chivalry: want to be nice to women
- Preference for female passengers
  - women nicer
  - men dangerous
- Men perceived to be willing to pay more than women
  - Impatience
  - wealth
- Driver more aggressive when competing with men

# Explanations

- To investigate the possible explanations we conducted a follow-up signaling study
- Study 2
  1. Hail a taxi ask how much to go to point A?
  2. Once price stated – step back from cab – shake head and proceed to cab waiting behind.
  3. Behave as described in Study 1
- Rejection of first taxi may serve as signal on
  - Willingness to pay
  - Competitive attitude

## Study 2: Gender differences in offers (OLS)

	Initial Offer (Cab1)	
Male	0.530 (.000)	
Initial Offer	-	
Constant	6.622 (.000)	
Route & Flow	<i>Yes</i>	
Day	<i>Yes</i>	
Hour of the Day	<i>Yes</i>	
Observations	289	
P-values in parentheses		

## Study 2: Gender differences in offers (OLS)

	Initial Offer (Cab1)	Initial Offer (Cab2)
Male	0.530 (.000)	-0.055 (0.64)
Initial Offer	-	
Constant	6.622 (.000)	6.748(.000)
Route & Flow	<i>Yes</i>	<i>Yes</i>
Day	<i>Yes</i>	<i>Yes</i>
Hour of the Day	<i>Yes</i>	<i>Yes</i>
Observations	289	277
P-values in parentheses		

# Probability of Acceptance

- Study 1:
  - Men: 32.6%
  - Women: 45.2%
- Study 2:
  - Men: 37.0%
  - Women: 37.6%
- In study 1 we find a significant difference in acceptance rates, that is not the case in study 2
- While we cannot reject that the acceptance rate is the same for men in the two studies, we can reject that it is the same for women

# Study 2 Findings

- After rejecting the first offer
  - Men given the same initial offer as women, and the same offers as women in study 1.
  - Women face the same rejection rate as men and the same rejection rate as men in study 1
- Explanation of inferior male outcomes in study 1
  - unlikely to be explained by chivalry or preference for female passengers

# Explanations

- Rejection of cab seen as signal of
  - Smaller willingness to pay
  - Willingness to compete
- Prior beliefs
  - Men greater willingness to pay and willing to compete
  - Women smaller willingness to pay and unwilling to compete
- Rejection of first cab causes an updating of beliefs
  - Men smaller willingness to pay
  - Women competitive
- May explain why
  - Male offers drop to that for females
  - Female rejection rate increases to that for males

# Conclusion

- Examine market where taste based and statistical discrimination is likely to play a small role
- Nonetheless men and women receive different responses to the same bargaining strategy
- Women receive lower initial offers, lower final offers, and lower rejection rates
- Gender differences consistent with men being perceived as having a greater willingness to pay and being more competitive

Thank you

# ADDITIONAL SLIDES

# Wanting to spend time with women

- Prediction: lower offers more likely to accept
- Favor:
  - Negotiation with women more friendly
- Opposed:
  - Study 2 – in presence of signal no gender difference
  - Length of cab drive no different for women
  - Beauty penalty – more beautiful people get a worse deal than less beautiful ones (higher initial offer, higher rejection)
  - No age difference in the driver that drives a

# Are men willing to pay more?

- Confederate driver study:
- Design
  - Small, unregistered car and a registered taxi cab (same driver). Drove in commuter areas. Not at night.
  - Stopped when any individual standing alone hailed the taxi.
  - Passenger quoted a pre-established price based on distance and high enough to prompt negotiations.
  - Prices were initially randomly drawn, later we used a minimum acceptable price.
  - Collected information on passenger reaction to initial offer (accept, reject, renegotiate) and market conditions.
  - Rides were given if the price was accepted.
  - Negotiations were discretely filmed and route recorded (GPS).

## Confederate Driver Sample

- 286 observations.
- No evidence that prices (treatments) vary with the characteristic of the passenger.
- Expected time of trip 6.7 minutes (s.d. 4.04). Men take trips that are 12% longer. Calculated using GPS devices.
- 49% male passengers
- Average age of passengers: 35.2 years (s.d. 10.6)

## Interval Regression on Willingness to Pay

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Male	1.061 (0.028)
Age	0.030 (0.188)
Est. Duration of Trip	0.817 (0.000)
Est. Duration of Trip Sq.	-0.027 (0.007)
Other Free Taxi Present	-1.181 (0.027)
Constant	3.840 (0.276)

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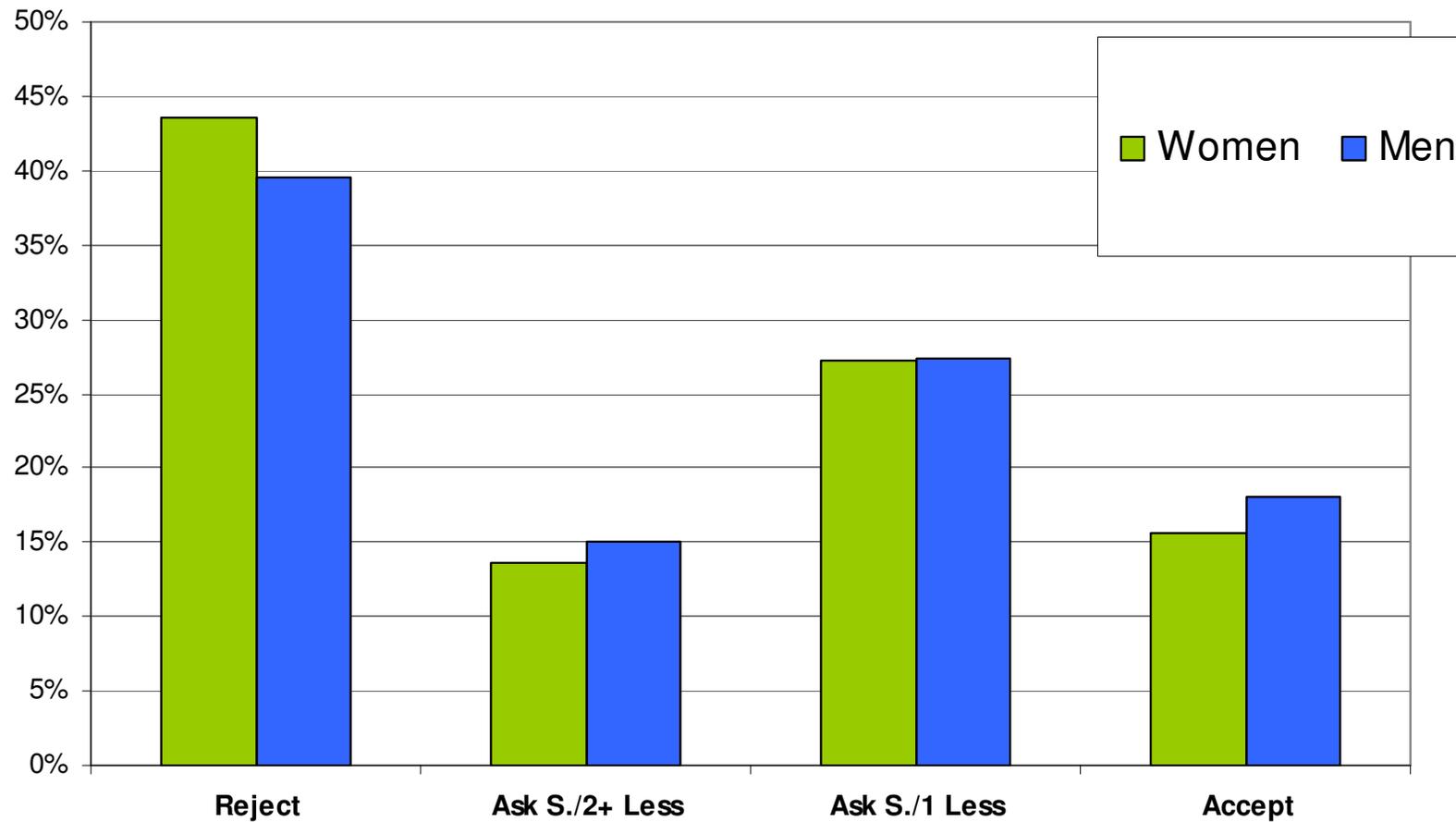
N = 278, log-L = -126.650

p-values in parentheses

Controls: day, hour.

# Response to Initial Offer

(N = 286, p-value = 0.794)



## Multinomial Logit Model of First Action Taken by Passengers

	<i>Accept</i>	<i>Reject</i>
Male	0.220 (0.587)	-0.702 (0.035)
Initial Price	-0.026 (0.843)	0.573 (0.000)
Est. Duration of Trip	0.031 (0.684)	-0.196 (0.003)
Constant	-22.458 (0.000)	-23.650 (0.000)

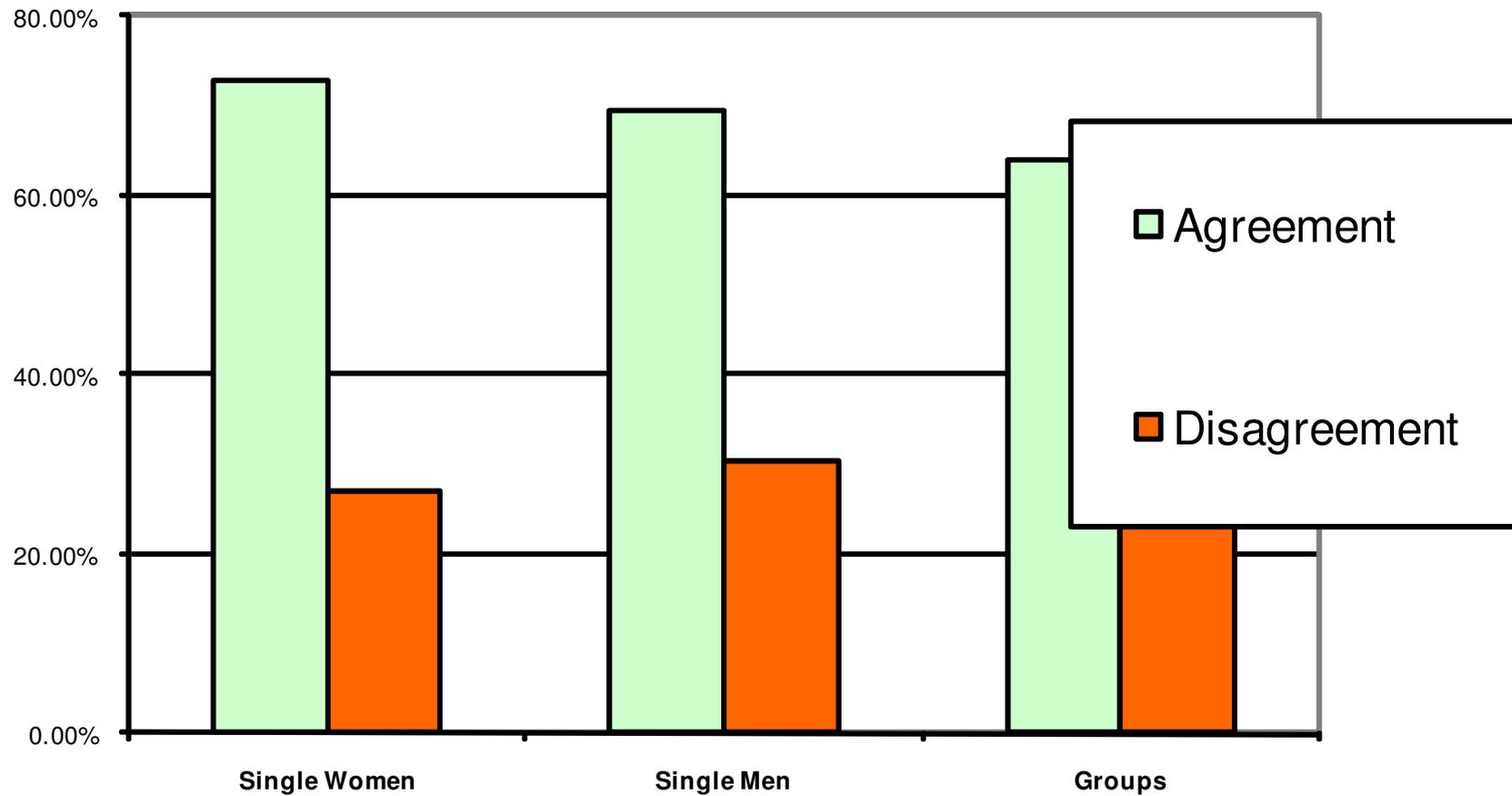
*“Renegotiation”* is the comparison group

N = 282, log-L = -225.785

p-values in parentheses

Controls: round, day, hour, age of passenger, presence of other free taxis. Errors clustered on negotiations.

# “On the Street” Observed Bargaining Outcomes (N = 234, 4 sites)



# Bargaining theory

- Seller makes all offers sequentially
- Buyer accepts or rejects
- Buyer valuation is private information,  $v \sim F(v) = v^r$ ,  $r > 0$ ,  $v$  in  $[0,1]$
- Buyers and sellers are impatient (or negotiations end randomly)
- Offers decrease exponentially
- Buyers are screened (high valuation buyers agree sooner)

# Insights from bargaining theory – dynamics of prices

$$F(v) = v^r; r = 1, 2; v \text{ in } [0,1]$$

