Econ 219B
Psychology and Economics: Applications
(Lecture 7)

Stefano DellaVigna

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Outline

1. Framing: Coherent Arbitrariness
2. Framing: Menu Effects
3. Framing: eBay Shipping Costs
4. Framing: Fly-paper effect
5. Framing: Summary

1 Framing: Coherent Arbitrariness

- Claudia

“Coherent Arbitrariness”: Stable Demand Curves without Stable Preferences

Dan Ariely, George Loewenstein and
Drazen Prelec

presentation by Claudia Sitgraves
UC-Berkeley

Abstract

- Initial valuations of goods and services strongly influenced by arbitrary anchors
- Subsequent valuations of these and similar goods and services are coherent with respect to the initial valuation
- Thus, consumer preferences are arbitrary, yet also coherent.
- 6 laboratory experiments demonstrate this phenomenon

Characteristics of “coherent arbitrariness”

- In situations where valuations are not constrained by prior precedents, valuations will be highly sensitive to arbitrary anchor values.

- Initial choices and anchor values will exert an “inappropriately” large effect on subsequent choices and valuations.

- A series of choices will exhibit an orderly, coherent pattern with respect to pricing, quantity, quality, etc., satisfying usual axioms of rationality.

Characteristics of “coherent arbitrariness”

- The effect of the anchor value on pricing does not influence the individual’s preferences for the good versus other *dissimilar* goods
- Market forces do not reduce the effects of an arbitrary anchor
- Subjects react to anchor values much more than to subsequent information/signals
- Individuals use both monetary and non-monetary anchor values

Experiment 1: Coherently Arbitrary Valuation of "Ordinary Products"

- 55 students shown 6 products
- Students asked if they would buy the product for a dollar amount equal to the last 2 digits of their SSN
- After yes/no response, students stated maximum willingness-to-pay (WTP) for each product

Experiment 1: Results

TABLE I

AVERAGE STATED WILLINGNESS-TO-PAY SORTED BY QUINTILE OF THE SAMPLE'S SOCIAL SECURITY NUMBER DISTRIBUTION

Quintile of SS# distribution	Cordless trackball	Cordless keyboard	Average wine	Rare wine	Design book	Belgian chocolates
1	$ 8.64	$16.09	$ 8.64	$11.73	$12.82	$ 9.55
2	$11.82	$26.82	$14.45	$22.45	$16.18	$10.64
3	$13.45	$29.27	$12.55	$18.09	$15.82	$12.45
4	$21.18	$34.55	$15.45	$24.55	$19.27	$13.27
5	$26.18	$55.64	$27.91	$37.55	$30.00	$20.64
Correlations	.415	.516	0.328	.328	0.319	.419
	$p = .0015$	$p < .0001$	$p = .014$	$p = .0153$	$p = .0172$	$p = .0013$

The last row indicates the correlations between Social Security numbers and WTP (and their significance levels).

- Students with higher SSNs were willing to pay more for the objects
- Students were willing to pay more for "better" objects (keyboard, rare wine)

Experiment 2: Valuation of Pain

- At beginning, all subjects listened to 30-second annoying sound
- 3 groups: high-anchor, low-anchor, no anchor
- Subjects in the high (low) anchor group answered the following:
    - "…Immediately after you hear the tone, we are going to ask you whether you would be willing to repeat the same experience in exchange for a payment of 50¢ (10¢)."
- In 9 subsequent trials, subjects provided minimum willingness-to-accept (WTA) for sounds of varying length (10, 30, 60 seconds)
- Sound durations were presented in increasing or decreasing order
- In each trial, if a randomly determined price (5¢ - 100¢) was higher than the WTA, then subjects received the price as payment and were subjected to the sound
- If the randomly determined price was lower than the WTA, then the subject continued directly to the next round

Experiment 2: Results

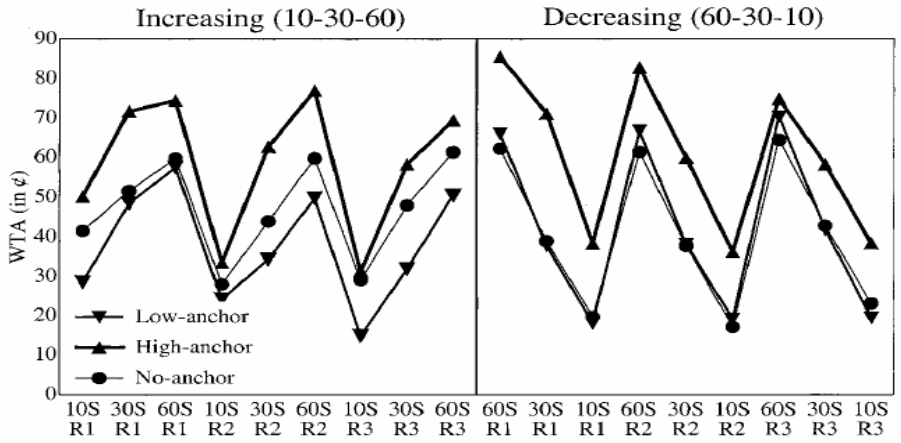


FIGURE I
Mean WTA for the Nine Trials in the Three Anchor Conditions
The panel on the left shows the increasing condition (duration order of 10, 30, and 60 seconds). The panel on the right shows the decreasing condition (duration order of 60, 30, and 10 seconds).

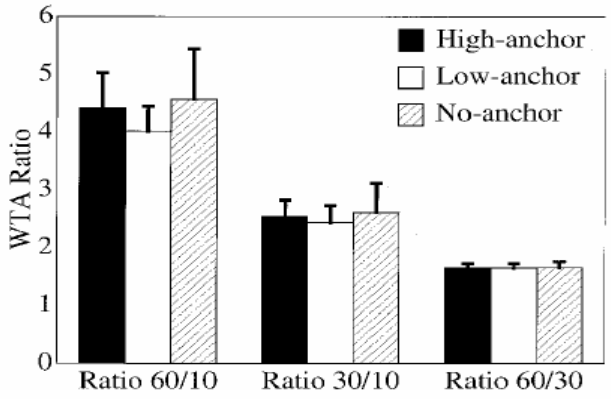


FIGURE II
Mean of Individual WTA Ratios for the Different Durations across the Different Conditions
Error bars are based on standard errors.

- Mean WTAs persistently higher for high-anchor group
- Ratios of WTAs are stable across groups

Experiment 3: Raising the Stakes

- All quantities in Experiment 2 (payments, random prices, duration of sound) increased by a factor of 10
- First 3 digits of subject's SSN used as anchor value (in cents)
    - To eliminate subjects' potential belief that anchor is informative
- Fewer trials (3 instead of 9)
- After 3 trials, subjects ranked a list of events in order of annoyance
    - Result: Anchor did not affect ranking of 300 seconds of sound in list

Experiment 3: Results

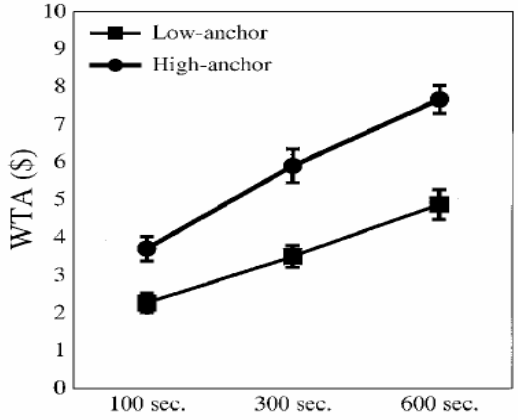


FIGURE III
Mean WTA (in Dollars) for the Three Annoying Sounds
The data are plotted separately for subjects whose three-digit anchor was below the median (low anchor) and above the median (high anchor). Error bars are based on standard errors.

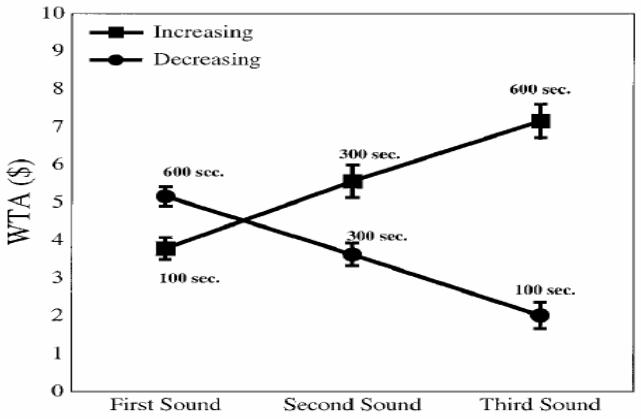


FIGURE IV
Mean WTA (in Dollars) for the Three Annoying Sounds
The data are plotted separately for the increasing (100 seconds, 300 seconds, 600 seconds) and the decreasing (600 seconds, 300 seconds, 100 seconds) conditions. Error bars are based on standard errors.

- Subjects' mean WTA is lower for those with lower SSNs
- Initial valuations close to subjects' SSNs, independent of duration of sound

Experiment 4: Auctioning the Sound

- Quantities similar to Experiment 2 levels, but high anchor increased to $1.00
- Subjects bid their WTA in groups of 6 – 8
- Auction mechanism: Second price auction with 3 lowest bidders receiving payment equal to the fourth lowest bid

Experiment 4: Results

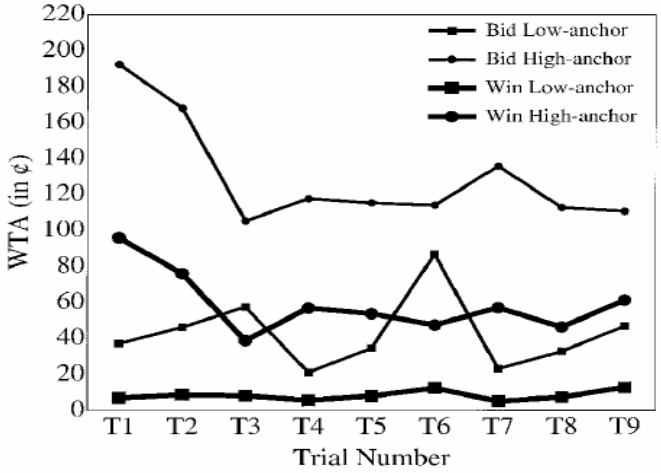


FIGURE V
Mean Bids (WTA) and Mean Payment as a Function of Trial and the Two Anchor Conditions

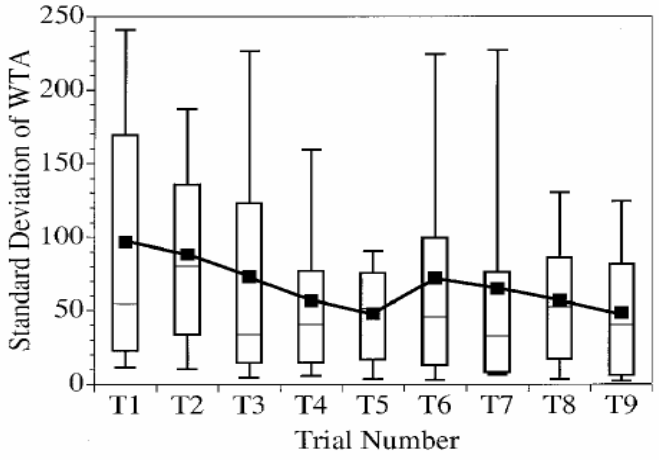


FIGURE VI
The within-Group Standard Deviations of the Bids (WTA), Plotted as a Function of Trial

- Subjects with low anchors have lower mean bids and lower mean winning bids
- Bids *between groups* do not converge with length of market participation
- Bids *within groups* converge with length of market participation

Experiment 5: Multiple Anchor Values

- Three trials with three different sounds, each lasting 30 seconds
- Subjects in the increasing (decreasing) group were given an anchor value of 10¢ in the first round, 50¢ in the second round, and 90¢ in the third round (90¢, 50¢, and 10¢)
- After answering each hypothetical question, subjects were asked their WTA in each round

- Subjects then had their finger placed in a vice and squeezed painfully, given an anchor value equal to their first-round anchor value, and asked whether they would prefer 30 seconds of the noise or the vice

Experiment 5: Results

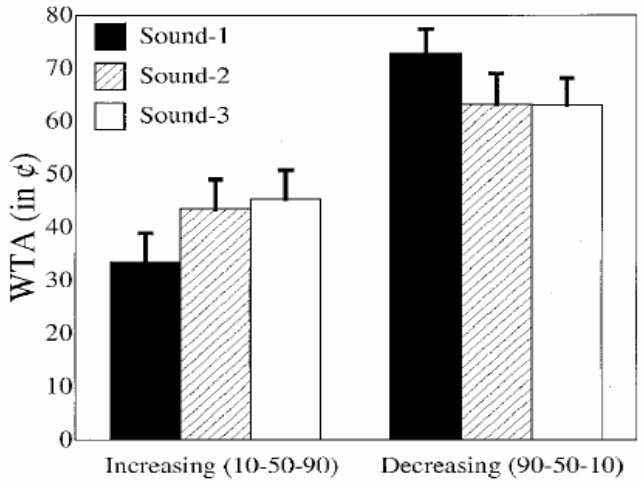


FIGURE VII
Mean WTA (in Cents) for the Three Annoying Sounds
In the Increasing condition the order of the hypothetical questions was 10¢, 50¢, and 90¢, respectively. In the Decreasing condition the order of the hypothetical questions was 90¢, 50¢, and 10¢, respectively. Error bars are based on standard errors.

- Mean WTAs are increasing (decreasing) for the increasing (decreasing) anchor group
- Mean WTAs are influenced by the initial anchor value

- Anchor value does not significantly affect tradeoff between sound and vice

Experiment 6: Non-monetary Anchors

- Subjects determine the “price” of drinking bad-tasting Vinegar-ade in terms of seconds of listening to the annoying sound
- Subjects first taste the drink and listen to the sound
- In the low (high) anchor group, they are asked whether they would prefer 2 oz. of the drink or 1 minute (3 minutes) of the sound
- After the anchoring question, subjects in each group determine their maximum tone duration (in 10 second increments, up to 8 minutes) for 1 oz., 2 oz., and 4 oz. of the drink

Experiment 6: Results

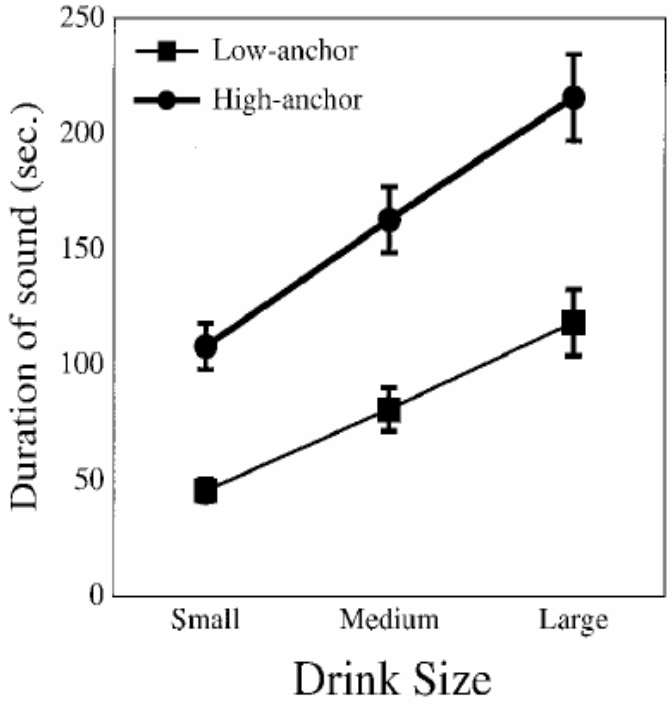


FIGURE VIII
Mean Maximum Duration at Which Subjects Prefers Tone to Drink
Error bars are based on standard errors.

- Subjects in the low-duration anchor have lower mean maximum tone durations
- Anchoring to arbitrary values is not specific to monetary prices, nor to valuing the duration of an unpleasant sound

Coherent Arbitrariness in the non-experimental environment

- Contingent Valuation and insensitivity to scale
  - Valuing one lake vs. valuing all the lakes
- Financial Markets and fundamental valuation
  - Valuing the stock market vs. valuing changes in the market
- Labor Markets
  - Setting a worker's initial salary vs. changing that salary
- Criminal Deterrence
  - Setting a penalty vs. increasing a penalty

Are these real-world applications reasonable?

- Only first experiment involves valuing consumption goods
- No clear anchor manipulations in most real-world situations
- Contingent valuation and financial markets: framing effects?
- Labor markets: Habituation?
    - also, it's unclear whether "workers are relatively insensitive to absolute levels or levels relative to what comparable workers make in other firms".
- Criminal deterrence: A good example

1.1 Housing markets

- Loewenstein-Simonsohn, 2002

- Individual A moves from Boston to Pittsburgh

- Individual B moves from Phoenix to Pittsburgh

- Who pays more for housing?

- Depends on previous anchor

- Issues with unobseved heterogeneity

Table 3

Housing Demand Estimations for Renters

Dependent Variable: log(dollar amount of monthly rent)							
	(1) Baseline	(2) Adds Costs in Previous City	(3) Adds Selection Adjustment	(4) Adds Fixed Effects	(5) Adds Relative Ex-penditure (t-1)	(6) Adds e(t-1)	(7) Excludes Housing Motivated Moves
constant	-0.631	-1.621	-1.376	-1.466	-1.260	-0.757	-1.853
	(0.606)	(0.697)	(0.705)	(0.712)	(0.908)	(1.223)	(0.785)
log(income)	0.284	0.284	0.252	0.254	0.248	0.232	0.294
	(0.029)	(0.029)	(0.030)	(0.030)	(0.045)	(0.074)	(0.039)
Number of children in household	0.044	0.045	0.040	0.040	0.053	0.062	0.056
	(0.017)	(0.017)	(0.017)	(0.018)	(0.020)	(0.021)	(0.018)
Number of adults in household	0.145	0.146	0.125	0.126	0.139	0.149	0.123
	(0.044)	(0.044)	(0.044)	(0.043)	(0.055)	(0.054)	(0.048)
Age of head of household	0.006	0.004	-0.001	0.001	0.006	0.003	0.000
	(0.007)	(0.007)	(0.007)	(0.007)	(0.011)	(0.010)	(0.009)
(Age squared)/100	-0.003	-0.002	0.001	-0.001	-0.680	-0.003	0.000
	(0.007)	(0.007)	(0.007)	(0.007)	(0.011)	(0.010)	(0.000)
Attended college (1 or 0)	0.131	0.132	0.116	0.119	0.108	0.137	0.117
	(0.036)	(0.036)	(0.036)	(0.036)	(0.042)	(0.041)	(0.039)
Head of household is female (1 or 0)	0.026	0.021	0.036	0.034	0.093	0.111	0.053
	(0.048)	(0.047)	(0.048)	(0.049)	(0.053)	(0.062)	(0.051)
log(median rent destination city)	0.536	0.494	0.527	0.537	0.421	0.427	0.550
	(0.083)	(0.087)	(0.085)	(0.085)	(0.097)	(0.103)	(0.093)
log(median rent origin city)	--	0.203	0.197	0.192	0.286	0.209	0.182
	--	(0.079)	(0.079)	(0.080)	(0.096)	(0.101)	(0.089)
Inverse of Mill's Ration	--	--	0.198	0.187	-0.046	0.214	0.089
	--	--	(0.061)	(0.076)	(0.219)	(0.263)	(0.080)
Rent to Median Ratio in t-1	--	--	--	--	0.188	--	--
	--	--	--	--	(0.045)	--	--
Residual from t-1	--	--	--	--	--	0.136	--
	--	--	--	--	--	(0.051)	--
Yearly Fixed Effects	no	no	no	yes	yes	yes	yes
Number of observations	646	646	646	646	461	461	490
R-square	29.88%	30.64%	31.55%	32.20%	34.67%	34.65%	35.09%

notes: Robust standard errors are presented below parameter estimates in parenthesis.

Table 4

Readjustment of Consumption on Year Following Inter-city Move

Dependent Variable:	(1) *Dlog(rent[t+1])* Baseline	(2) *Dlog(rent[t+1])* Adds (P*-P)	(3) *Dlog(rent[t+1])* Adds year fixed effects
Intercept	0.072	0.057	0.101
	(0.040)	(0.040)	(0.101)
Change in log(income)	0.199	0.170	0.157
	(0.075)	(0.076)	(0.081)
Change in # of Adults	0.206	0.231	0.253
	(0.140)	(0.140)	(0.144)
Change in # of Children	0.047	0.064	0.059
	(0.071)	(0.072)	(0.073)
log (median rent t) - log (median rent (t-1))	--	0.287	0.286
	--	(0.163)	(0.171)
Number of Observations	140	140	140
Year Fixed Effects	no	no	yes
R-square	9.50%	11.54%	12.87%

notes: Robust standard errors are presented below parameter estimates in parenthesis.

1.2 Other markets

- Marketing: sales, advertising

- Compensation:
  - Across jobs: Executives ($150k senator, $10m CEO)
  - Homogeneity within area, differences across areas if local comparisons

- Under perfect competition:
  - prices driven to marginal cost
  - coherent arbitrariness afffects quantities purchased

2 Framing: Menu Effects

2.1 Environmental Valuations

- Kahneman, Ritov, Schkade (CVF)

- Elicitation of WTP for environmental goods

- *Insensitivity to levels* (between-subjects)
  - WTP for saving 2,000 (20,000 or 200,000) migrating birds?
  - $80 ($78, $88)
  - WTP to protect 57 wilderness areas vs. one area
  - 28% more

- Reflects flakiness of preferences

- Completely different if run within-subject

- *context effects* (within subjects)
  - Rate importance of problem and satisfaction from contributing to solve:
    * Coral reef problems
    * Multiple myeloma among elderly

	Import.		Moral sat.	
	CR first	M First	CR first	M First
CR	3.54	3.24	3.78	3.62
M	4.18	2.84	4.26	3.24

	WTP	
	CR first	M First
CR	$45	$69
M	$109	$59

- First evaluation: best guess given flaky preferences
- Second evaluation: rationalization

- *preference reversal* between vs. within
  - Kahneman, Schkade and Sunstein (1998)
  - 114 subjects decide on punitive damages
  - Background:
    * Child hurt beacause of flaw ($500,000 personal injury)
    * Business fraud ($10,000,000 personal injury)

	Punitive damage award	
	Between treatment	Within treatment
Child	$2,000,000	$2,500,000
Business	$5,000,000	$500,000

- Between: anchoring on personal injury amounts
- Within: Rational part of bran shouts: "Human life first!"

- *anchoring effects* (between-subjects)
  - As in coherent arbitrariness paper effect of SSN on answer to questions

- Flaky preferences: use anchor

- Issues:
  - Where is the budget set? Quite hard to make this realistic
  - Emotional reaction in immediate response
- Implications:
  - elicitation of environmental preferences?
  - scope for lobbies and politicians to manipulate preferences

- Example of field data decision on value of human life
- Ashenfelter and Greenstone (2004)
- Politicians can increase speed limit in 1987 in rural interstate streets
- Benefits: faster travel time
- Costs: more deaths
- Budget constraint: here reelection probability

Table 1: Sample Statistics for States that were Eligible to Raise the Speed Limit on Rural Interstates in 1987

	States Included in the Analysis		Excluded States
	Adopted 65 Mph	Retained 55 Mph	Adopted 65 Mph
	(1)	(2)	(3)
Number of States	21	7	19
Entire Period (1982-93)			
Rural Interstates			
Fatalities	57.3	24.3	55.6
Fatality Rate	1.390	0.839	1.529
Speed (Mph)	62.4	60.4	Unavailable
Urban Interstates			
Fatalities	41.0	53.5	41.9
Fatality Rate	0.748	0.747	0.992
Speed (Mph)	57.5	58.8	58.3
Rural Arterials			
Fatalities	228.5	168.9	215.8
Fatality Rate	3.357	2.844	3.411
Speed (Mph)	56.5	54.4	55.8
Statewide Totals			
Fatalities	988.5	948.8	838.9
Fatality Rate	2.289	1.922	2.331
Pre-Period (1982-1986)			
1986 Hourly Wage (1997$)	$12.33	$13.97	$12.33
1986 Rural Int. Traffic Density	0.0604	0.0929	0.0597
Rural Int. Fatality Rate	1.423	0.957	1.592
Rural Int. Speed (Mph)	59.5	59.3	60.2

Notes: The Fatality Rate is calculated as the number of fatalities per 100 million vehicle-miles of travel. Both the Fatality Rate and Speed entries are calculated as the weighted mean within each of the three categories of states, where the weight is the vehicle miles of travel on the relevant road(s). Traffic Density is vehicle miles of travel per miles of paved road lanes. The mean hourly wage in 1986 is calculated from the 1986 *Current Population Survey Outgoing Rotation Group*. It is calculated from all workers that report an hourly wage greater than $2.50. The survey top-codes the hourly wages of workers that are paid on an hourly basis at $99.99. We constructed an hourly wage for workers that are not paid hourly and also top-coded it at $99.99. The Fatalities, Hourly Wage and Traffic Density entries are the mean across states within each category. See the text and Figure 2 for the identity of the states in each category.

Table 2B: Difference in Differences Estimates of 65 Mph Speed Limit on Fatality Rates and Speeds

	DD of Levels Normalized by Pre-Period Level in Adopting States (1)	DD of Natural Logarithms (2)
Rural Interstates (Affected Roadtype)		
Fatality Rate	13.0%	0.311
Speed	4.7%	0.045
Urban Interstates (Unaffected Roadtype)		
Fatality Rate	-5.9%	-0.063
Speed	-0.9%	-0.009
Rural Arterials (Unaffected Roadtype)		
Fatality Rate	-3.2%	0.005
Speed	0.9%	0.008

See Notes to Tables 1 and 2A. The entries in this table represent two different difference in differences estimates of the effects of the 65 mph speed limit on fatality rates and speeds. The column (1) entries are the raw DD estimates from Table 2A, normalized by the pre-period level in adopting states. The column (2) entries are calculated with the mean of ln (fatality rate) and ln (speed) for adopters and non-adopters in the pre and post periods. The entries are equal to the post - pre difference of weighted means among adopters minus the post - pre difference of weighted means among non-adopters, where the weight is vehicle miles of travel.

Table 6A: Estimates of the Monetary Value of the Time Saved per Marginal Fatality

Sample	(1)	(2)	(3)
Functional Form I: Ln Transformation			
Rural Interstates	---------	-0.113**	---------
Only		(.037)	
		[$1.64 million]	
Rural Interstates &	-0.095*	-0.076*	-0.076**
Urban Interstates	(.040)	(.034)	(.031)
	[$1.38 million]	[$1.11 million]	[$1.11 million]
Rural Interstates &	-0.166**	-0.146*	-0.122*
Rural Arterials	(.057)	(.066)	(.051)
	[$2.42 million]	[$2.12 million]	[$1.78 million]
All Three	-0.128**	-0.103**	-0.099**
	(.042)	(.041)	(.034)
	[$1.86 million]	[$1.50 million]	[$1.44 million]
Year Indicators	Yes	No	No
Year-Roadtype Indicators	No	Yes	Yes
State-Roadtype Indicators	Yes	Yes	Yes
State-Year Indicators	No	No	No

Notes: See Notes to Table 5. The entries report the results from regressions of ln (Hours of Travel) on ln (Fatalities), where an indicator for whether the 65 mph speed limit was in force is an instrumental variable for ln (Fatalities). Ln (vmt) is a control and its effect is allowed to vary by roadtype. The entries are the parameter estimates and heteroskedastic consistent standard errors (in parentheses) on ln (Fatalities) and the implied monetary value of the time saved per marginal fatality, V, [in square brackets]. * indicates significance at 5% level; ** indicates significance at 1% level.

2.2 Menu effects

- Choice between A, B, C, and D

- Availability of C and D affects references between A and B

- Three effects:

  1. Emphasis of trade-off

  2. Dominated option increases attractiveness

  3. Preference for middle ground

- *Emphasis of trade-off.* (Simonson and Tversky, 1992)

- Table 29.1 and Figure 29.2 in CVF

- Conjecture: All of this depends on rational size of brain trying to find 'best' choice
  - Uncertainty about tradeoff
  - Use background trade-off to infer indifference curves
  - (could be rational information story)

- *Dominated option.* (Simonson and Tversky, 1992)

	$6 cash	Nice Cross pen	So so pen
Group A (N=106)	64%	36%	
Group B (N=115)	52%	46%	2%

- Preference for dominance

- Rational part of brain finds easier to prefer pen

- *Preference for middle ground.*

	Minolta $170	Min.+ $240	Min.++ $470
A:N=106	50%	50%	
B:N=115	22%	57%	21%

- Absence of dominance

- Brain looks for cues, such as middle ground

- Field avenues:

- Clear implictions for marketing

- Field experiments:
  - charities
  - car washing
  - health insurances
  - credit card contracts

- Consumer welfare?

3 Framing: eBay shipping costs

- Individual may adopt frame because it costs effort to do otherwise

- Morgan and Hossain (2004)

- Auction off CD and XBox in eBay with variation of:
  - opening bid O
  - shipping cost K

- Examine if people neglect shipping cost

- Treatments:
  - Treatment A: O=$4, K=0
  - Treatment B: O=$.01, K=3.99
  - Treatment C: O=$6, K=$2
  - Treatment D: O=$2, K=$6

- Low-shipping cost raises more revenue

Table 3. Revenues from Low Reserve Treatments

CD Title	Revenues under Treatment A	Revenues under Treatment B	B - A	Percent Difference
Music	5.50	7.24	1.74	32%
Ooops! I Did it Again	6.50	7.74	1.24	19%
Serendipity	8.50	10.49	1.99	23%
O Brother Where Art Thou?	12.50	11.99	-0.51	-4%
Greatest Hits - Tim McGraw	11.00	15.99	4.99	45%
A Day Without Rain	13.50	14.99	1.49	11%
Automatic for the People	**0.00**	9.99	9.99	
Everyday	7.28	9.49	2.21	30%
Joshua Tree	6.07	8.25	2.18	36%
Unplugged in New York	4.50	5.24	0.74	16%
Average	*7.54*	*10.14*	*2.61*	*35%*
Average excluding unsold	*8.37*	*10.16*	*1.79*	*21%*

Xbox Game Title	Revenues under Treatment A	Revenues under Treatment B	B - A	Percent Difference
Halo	34.05	41.24	7.19	21%
Wreckless	44.01	33.99	-10.02	-23%
Circus Maximus	40.99	39.99	-1.00	-2%
Max Payne	36.01	36.99	0.98	3%
Genma Onimusha	41.00	32.99	-8.01	-20%
Project Gotham Racing	37.00	38.12	1.12	3%
NBA 2K2	42.12	42.99	0.87	2%
NFL 2K2	26.00	33.99	7.99	31%
NHL 2002	36.00	37.00	1.00	3%
WWF Raw	33.99	40.99	7.00	21%
Average	*37.12*	*37.83*	*0.71*	*2%*

Table 4. Revenues from High Reserve Treatments

CD Title	Revenues under Treatment C	Revenues under Treatment D	D - C	Percent Difference
Music	9.00	8.00	-1.00	-11%
Ooops! I Did it Again	**0.00**	**0.00**	0.00	
Serendipity	12.50	13.50	1.00	8%
O Brother Where Art Thou?	11.52	11.00	-0.52	-5%
Greatest Hits - Tim McGraw	18.00	17.00	-1.00	-6%
A Day Without Rain	15.50	16.00	0.50	3%
Automatic for the People	**0.00**	**0.00**	0.00	
Everyday	10.50	13.50	3.00	29%
Joshua Tree	8.00	11.10	3.10	39%
Unplugged in New York	8.00	**0.00**	-8.00	-100%
Average	*9.30*	*9.01*	*-0.29*	*-3%*
Average excluding unsold	*12.15*	*12.87*	*0.73*	*6%*

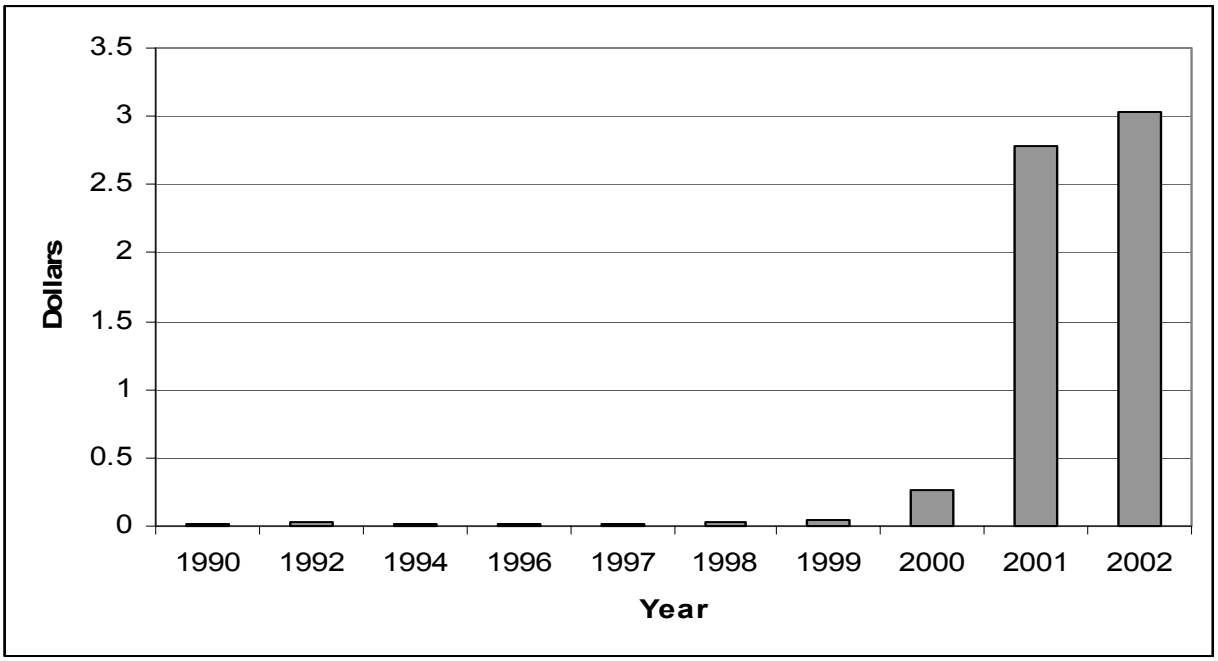
Game Title	Revenues under Treatment C	Revenues under Treatment D	D - C	Percent Difference
Halo	40.01	43.00	2.99	7%
Wreckless	35.00	36.00	1.00	3%
Circus Maximus	39.00	42.53	3.53	9%
Max Payne	37.50	42.00	4.50	12%
Genma Onimusha	36.00	37.00	1.00	3%
Project Gotham Racing	35.02	40.01	4.99	14%
NBA 2K2	41.00	45.00	4.00	10%
NFL 2K2	33.00	40.10	7.10	22%
NHL 2002	36.00	41.00	5.00	14%
WWF Raw	37.00	44.00	7.00	19%
Average	*36.95*	*41.06*	*4.11*	*11%*

4 Framing: Fly-paper Effect

- Fly-paper effect: source of funding affects how funding is spent
- Singhal (2004)
- Settlement of tobacco companies with States in 1998
- $7billion payment in perpetuity
- Funding spending unrestricted

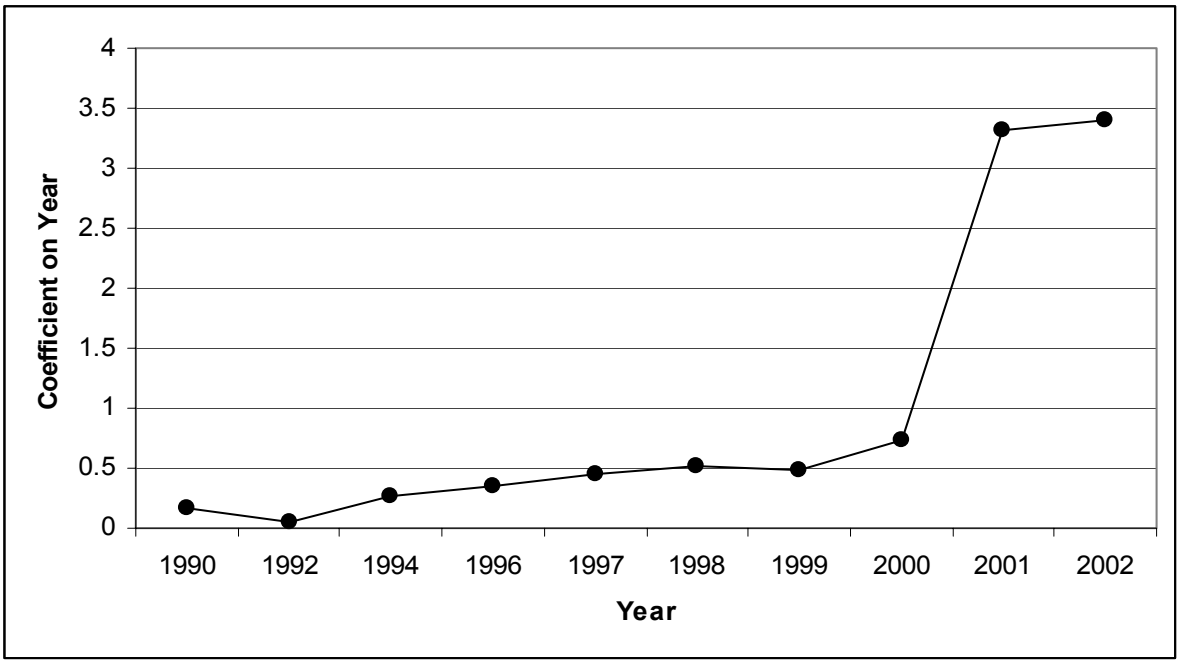
- Results:
  - Huge increase in spending on tobacco prevention and control
  - 20% of tobacco funds spent on tobacco
  - Effect appears to be permanent

FIGURE 2
Mean Per Capita Spending on Tobacco Control Programs
(excluding states with large pre-existing programs)



Notes: All figures given in 2002 dollars. Excludes Arizona, California, Maine, Massachusetts and Oregon. Data for 1990, 1992 and 1994 come from surveys conducted by the American State and Territorial Health Officials (ASTHO). Data for 1996-2000 were collected by author. Data for 2001-2002 come from the CDC.

FIGURE 3
Test of *After* Coefficient Identification Assumption
Regression of Per Cap Tobacco Control Spending on Year Dummies with State Fixed Effects



Notes: All figures given in 2002 dollars. Data for 1990, 1992 and 1994 come from surveys conducted by the American State and Territorial Health Officials (ASTHO). Data for 1996-2000 were collected by author. Data for 2001-2002 come from the CDC.

TABLE 1
Settlement Payments Through 2025

Type of Payment	Amount	Total
1998	$2,400,000,000	$2,400,000,000
2000		$6,411,750,000
Initial	$2,472,000,000	
Annual	$3,939,750,000	
2001		$6,923,660,000
Initial	$2,546,160,000	
Annual	$4,377,500,000	
2002		$8,313,294,800
Initial	$2,622,544,800	
Annual	$5,690,750,000	
2003		$8,391,971,144
Initial	$2,701,221,144	
Annual	$5,690,750,000	
2004-2007		$28,016,000,000
Annual	$7,004,000,000	
2008-2017		$80,040,000,000
Annual	$7,143,000,000	
SCF	$861,000,000	
2018-2025		$64,031,999,976
Annual	$8,003,999,997	
TOTAL		**$204,528,675,920**

Notes: Figures reported are without any adjustments other than the Previously Settled States reduction. Source: National Governors' Association. www.nga.org/cda/files/TOBDETAIL.pdf.

TABLE 6
Per Capita Spending on Tobacco Control

	(1)	(2)	(3)	(4)
Settlement rev per capita	**0.184****	**0.210****	**0.187****	**0.214****
	(0.042)	**(0.045)**	**(0.043)**	**(0.046)**
State income per capita	2.87e-05	-4.80e-04	2.73e-05	-4.93e-04
	(5.02e-05)	(3.42e-04)	(5.05e-04)	(3.45e-04)
After	**2.927****	**3.071****		
	(0.409)	**(0.318)**		
FY=1999			-0.031	-0.031
			(0.572)	(0.442)
FY=2001			3.107**	3.174**
			(0.583)	(0.456)
FY=2002			2.720**	2.943**
			(0.579)	(0.449)
Constant	0.507		0.523	
	(0.285)		(0.405)	
State Fixed Effects	No	Yes	No	Yes
Observations	180	180	180	180
R-squared	0.274	0.447	0.276	0.448

Notes: Settlement revenue per capita and income per capita are de-meaned. * significant at 5%; ** significant at 1%.

5 Framing: Summary

- Ingredients:

1. Flaky preferences:
    - "Arbitrariness" in coherent arbitrariness
    - Slope of indifference curves varies within a range
    - Slope is affected by context, menu, behavior of others
    - WTP-type questions (good vs. money): hard
    - Choices across different goods (house vs. dinners, work vs. family, sport card A vs. sport card B, mug vs. chocolate): also hard
    - Choice within good (more or less money): easy

2. Narrow frame:

    - Experiments: set by experimenter (gain/losses, whose welfare is relevant)
    - Field: memory constraints and attention (stocks vs. other risk, housing vs. other goods)
    - We rarely challenge the frame set for us (obedience, simplify problem, memory)

3. Within frame, drive for consistency / good decisions:

    - "Coherence" in coherent arbitrariness
    - Rational side of brain wants 'rational' choices (no Dutch books)

5.1 Implications

1. When does 'coherent arbitrariness' occurs?

    - 'Arbitrariness':
        - Flakyness of preferences
        - Products not so easy to evaluate (true for most!)

    - 'Coherence': Within-subject manipulation:
        - comparability
        - purchases temporally close to each other
        - salience (memory)

2. Psychological components:

   - People evalutate changes from context or recent past.

   - Inability to give precise evaluation of utility level (hard-wired?)

   - Context matters (framing), comparison to other alternative, to market price

   - (Trick here: find instrument for context)

   - Subjects need to think that anchor can be the answer

   - Not enough to write down SS number

   - Need to ask: "Is you WTP higher than SS no.?"

3. Debiasing:

   - In experiment no alternative use of money
   - Value of $1?

   - Variant of experiment:
     - ask people to write down uses of $1
     - best alternative activity
     - Prediction: get less effect of anchor
     - Hard to know value of Lagrangean multiplyer