

# Threats and Opportunities in Media: Piracy and Pricing

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# New Challenges and Opportunities for Media Products

- Piracy as threat to appropriability
- Pricing to the rescue?

# New Technologies

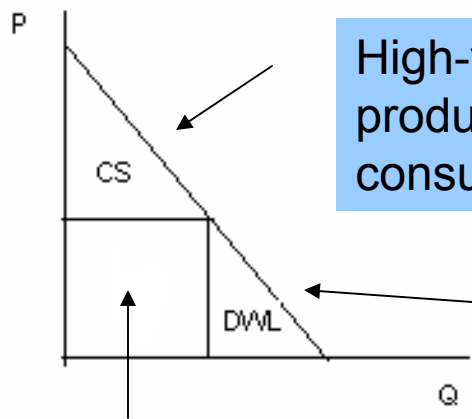
- Service flow from media at all-time high
- But it's hard to control distribution
  - Music, movies, TV, games,...
- How can sellers appropriate consumers' valuation?
- Threats to all media

# Unauthorized Distribution and Sales

- Not obvious whether “file sharing” is a friend or a foe
  - Substitution or stimulation
- Interesting differences across media
  - Music
  - Movies
  - Television

# Conceptual Framework

Prior to unauthorized access, single-price monopolists:



Each point represents somebody's willingness to pay for something

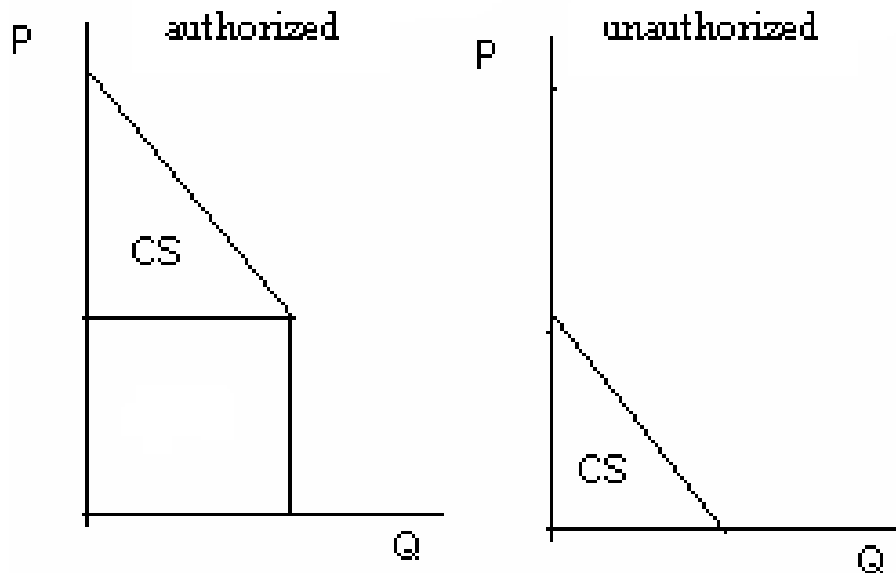
High-valuation situations produce "bonus" for consumers

Low-valuation situations are lost opportunities

Rectangle is revenue

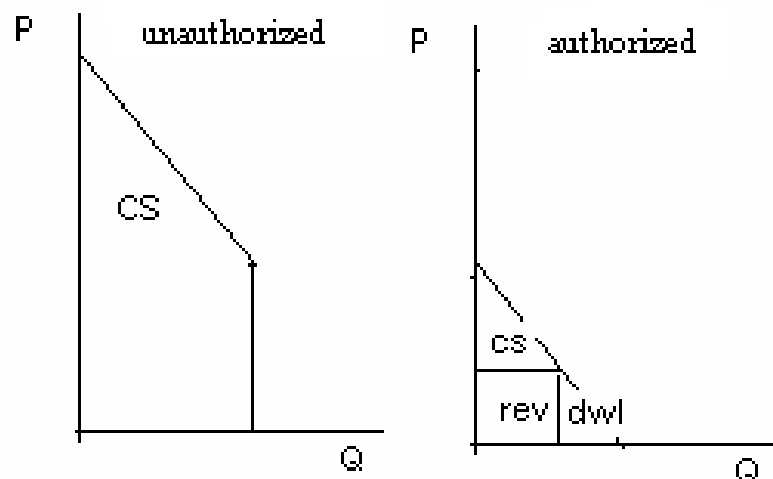
# Unauthorized use segments demand

One possibility: unauth'd users are low-value demanders



- Win-win stealing
  - no lost revenue
  - consumers get IP they would have skipped

## Or maybe: unauth'd users are high-valuation demanders



Then CS increases, and revenue and deadweight loss decrease

**Key point:** effects of unauthorized use hinge on whether material *would have been used through authorized channels absent the unauthorized use*

## But: Sharing Might Simulate Buying

- Collectively we might buy stuff we wouldn't buy alone
- Sampling as inducement to buy
- Plausibility of mechanisms varies across media



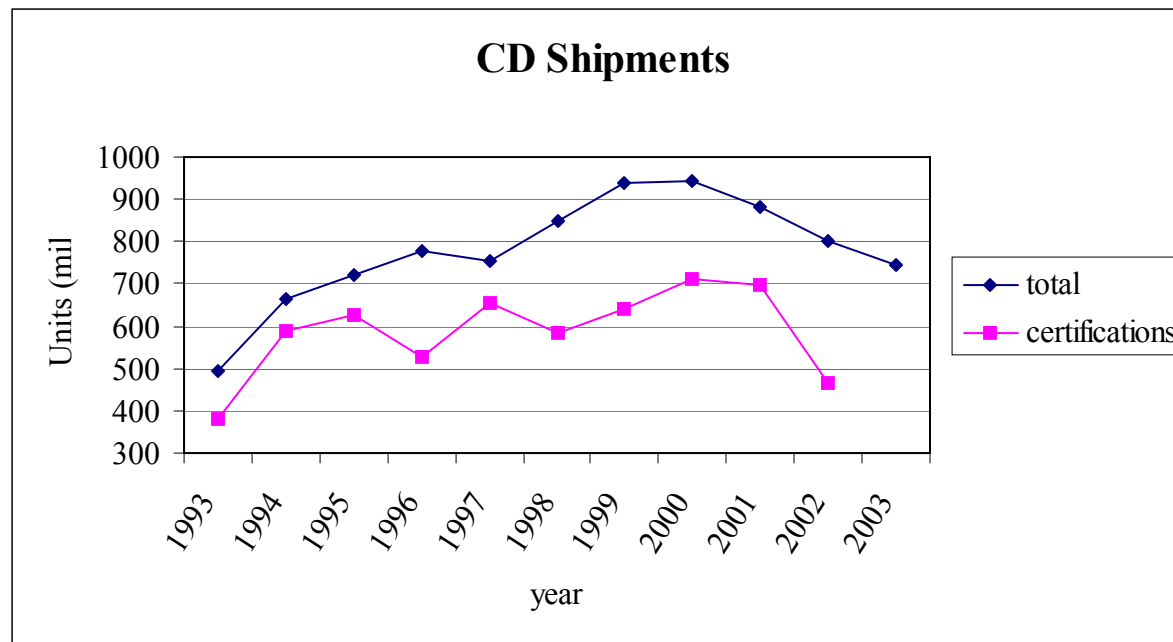


# Differences across Media

- Music
  - Close substitute, quick and easy to get
  - Divided attention
- Movies
  - Web offers poor substitute, DVD copying better
  - Undivided attention
- TV different?
  - Episodes complements
  - Demand stimulation plausible

# Pressure from Events

## Music industry in crisis

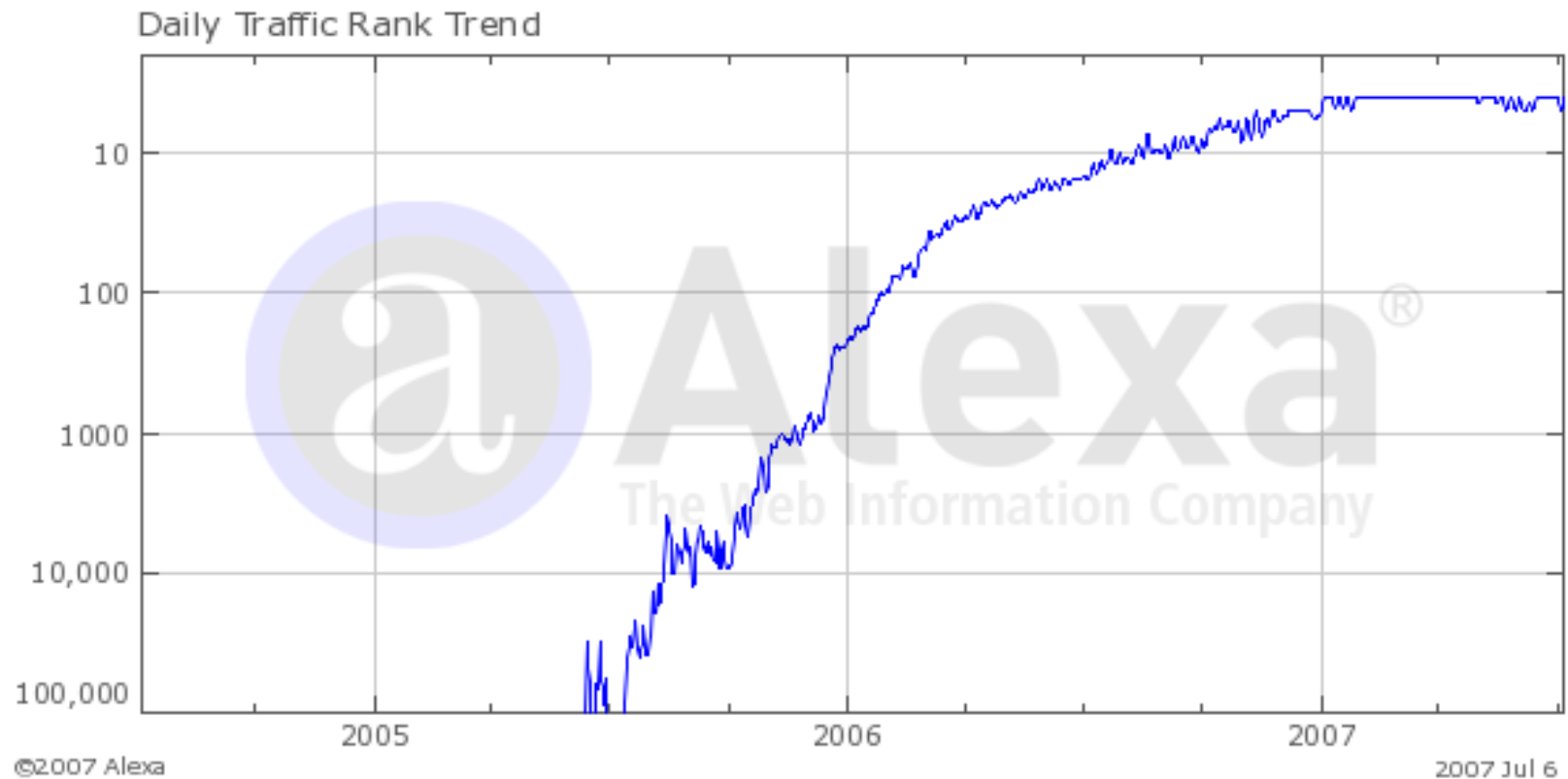


Source: RIAA

Is downloading the cause?



# YouTube Growth



We've been living through an "experiment"

# Networks huffy about unauthorized content

**You Tube**  
Broadcast Yourself™

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Search: "daily show"

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**Search Results for "'daily show'"** 1 - 20 of about 7,560

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	<b>Ron Paul on The Daily Show (6/4/2007)</b> Ron Paul on The Daily Show with John Stewart. <a href="#">www.ronpaul2008.com...ron paul 2007 president honest integrity</a> Time: 07:32 <a href="#">More in <u>News &amp; Politics</u></a>	★★★★★ From: <a href="#">Gaines</a> Views: 14,377 Added: 1 month ago
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	<b>This Week in God on Left Behind video game</b> The Daily Show's Rob Corddry takes a look at the violent religious video game Left Behind: Eternal Forces on the show's This Week in God segment. Classic. Time: 01:47 <a href="#">More in <u>Gadgets &amp; Games</u></a>	★★★★★ From: <a href="#">pixie</a> Views: 238,338 Added: 11 months ago
	<b>Jon Stewart vs Gary England</b> and warnings. First Warning is now used nationwide...Jon Stewart Daily Show Comedy Central Gary England Tornado KWTU Local News Oklahoma City funny comedy <a href="#">(more)</a> Time: 03:42 <a href="#">More in <u>Entertainment</u></a>	★★★★★ From: <a href="#">woxntox</a> Views: 52,640 Added: 1 month ago



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## Hard to get data, so **survey-based** micro data on movies, music, TV

- How much do you consume through authorized channels?
  - CDs purchased
  - Movie rental, purchase
  - Watching traditional TV (or authorized)
- How much do you consume through unauthorized channels?
  - Unpaid song downloading
  - DVD copying
  - Unauthorized web viewing
- Same questions retrospectively to create panel

# Findings Differ across Media

# Music Findings

- Lots of unpaid consumption
- Significant sales displacement, *but far less than 1:1*
  - Consumers download low-value music
- Downloading's benefit to consumers
  - 1/3 from sellers
  - 2/3 from heaven (reduced DWL)

# Movies: Hollywood Ending

- *Amount* of unpaid consumption low, but *rate* of displacement high
- Large, almost 1:1
  - Gains to consumers are mostly transfers from sellers rather than reduced DWL, as in music
  - Why so high?
    - Copying still cumbersome
    - Even when faster, movies require undivided attention
- Ominous, as copying gets easier



# TV Results

- Overall, TV viewing almost flat, web viewing up 4 hours per week
- Implied change in weekly hours
  - Half authorized, half unauthorized
- Effect on networks depends on value of viewers on TV vs authorized web
- Less displacement than in movies and music
  - Movies (1:1) ... music (less) ...TV ( none?)

# Pricing to the Rescue?

# Pricing to the Rescue?

- How much revenue is foregone by uniform pricing at \$0.99, relative to other pricing schemes:
  - another uniform price, component pricing, pure bundling, (& more)
  - Person-specific pricing (“3<sup>rd</sup> degree”)
- How much of surplus is appropriable with “fancy pricing”?

# Managerial Motivation

- Could sellers make more money?
- Important Aside:
  - Apple sells songs and hardware
    - 2007 iTunes revenue = \$1.7 billion
    - 2007 iPod revenue  $\approx$  \$8 billion
  - More on this later
- Could sellers make more money, *holding consumers harmless?*

# Direct Elicitation

- Ask 500 students how highly they value 50 songs
  - Top songs at iTunes, early January 2008
- “You can observe a lot just by watching”



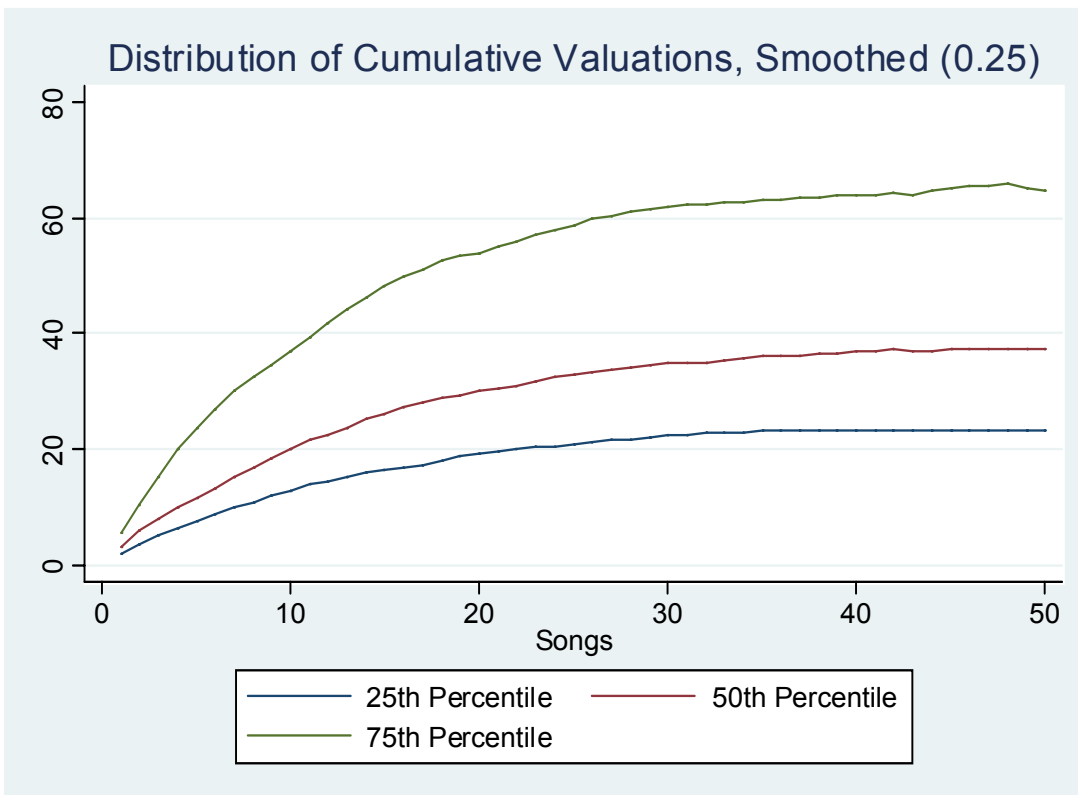
(Yogi Berra,  
Yankee catcher and philosopher)

# Survey Songs and their Valuations

Song name	mean	25 <sup>th</sup> pctl	median	75 <sup>th</sup> pctl
Apologize (feat. OneRepublic) - Timbaland	\$2.37	\$0.59	\$1.39	\$2.67
Big Girls Don't Cry (Personal) – Fergie	\$1.16	\$0.08	\$0.53	\$1.22
Bubbly - Colbie Caillat	\$1.47	\$0.08	\$0.68	\$1.73
Clumsy - Fergie	\$0.78	\$0.04	\$0.29	\$1.01
Crank That (Soulja Boy) - Soulja Boy Tell 'Em	\$2.00	\$0.28	\$1.01	\$2.10
Crushcrushcrush - Paramore	\$0.58	\$0.01	\$0.13	\$0.71
Cyclone (feat. T-Pain) - Baby Bash	\$1.29	\$0.08	\$0.56	\$1.45
Don't Stop the Music - Rihanna	\$1.40	\$0.11	\$0.63	\$1.44
Feedback - Janet	\$0.63	\$0.01	\$0.11	\$0.57
Hate That I Love You (feat. Ne-Yo) - Rihanna	\$1.30	\$0.10	\$0.55	\$1.47
Hero/Heroine (Tom Lord-Alge Mix) - Boys Like Girls	\$0.77	\$0.02	\$0.26	\$1.00
Hey There Delilah - Plain White T's	\$2.02	\$0.15	\$0.94	\$2.02
How Far We've Come - Matchbox Twenty	\$1.41	\$0.10	\$0.69	\$1.47
Hypnotized (feat. Akon) - Plies	\$1.15	\$0.06	\$0.48	\$1.12
I Don't Wanna Be In Love (Dance Floor Anthem) - Good Charlotte	\$1.06	\$0.06	\$0.47	\$1.20
Into the Night (feat. Chad Kroeger) - Santana	\$1.49	\$0.09	\$0.71	\$1.53
Kiss Kiss (feat. T-Pain) - Chris Brown	\$1.45	\$0.12	\$0.85	\$1.70
Love Like This - Natasha Bedingfield	\$1.04	\$0.06	\$0.43	\$1.06
Love Song - Sara Bareilles	\$1.02	\$0.05	\$0.37	\$1.07
Low (feat. T-Pain) - Flo Rida	\$1.60	\$0.11	\$0.88	\$1.93

variation

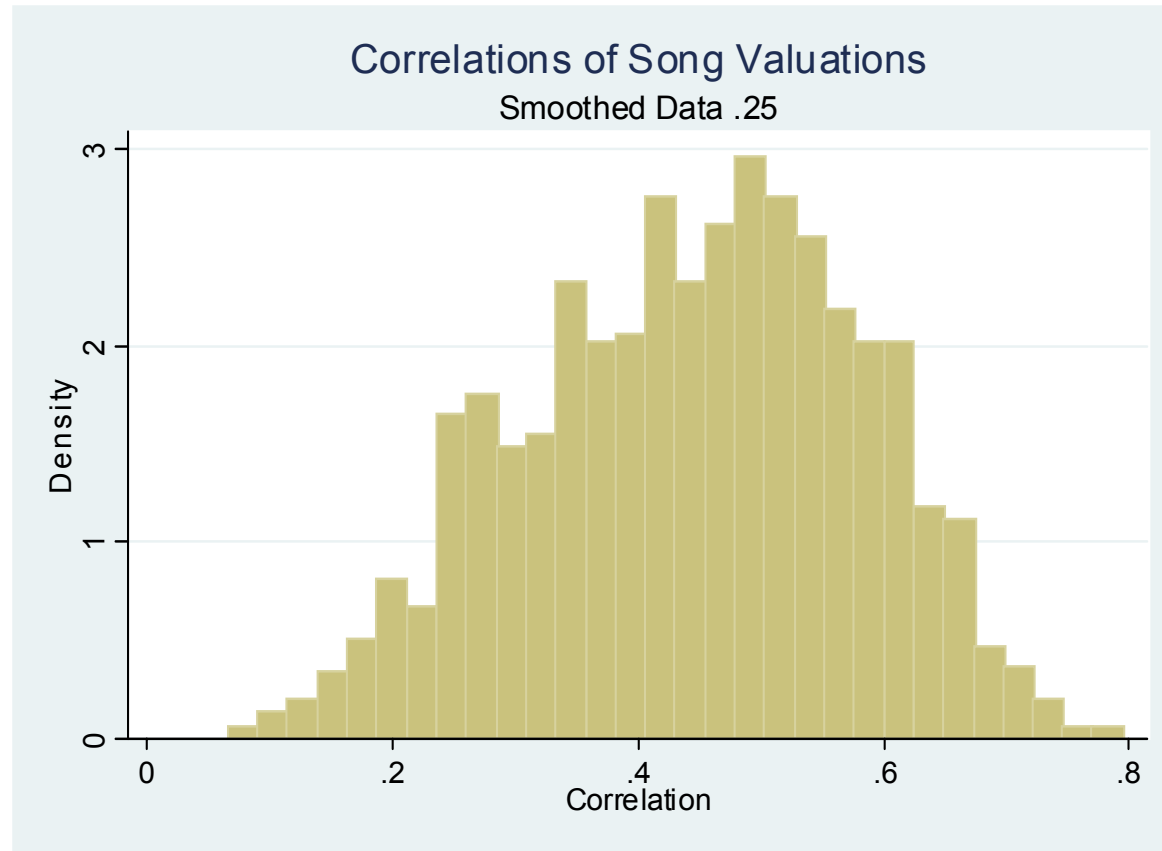
# Variation across songs and respondents



Median respondent is willing to pay \$20 for his/her top 10 songs. vs \$40 for 75<sup>th</sup> p'ctile, and \$12 for 25<sup>th</sup> p'ctile

Related fact: songs explain 4 percent of variation, individuals explain 40 percent

# Correlation of Valuations

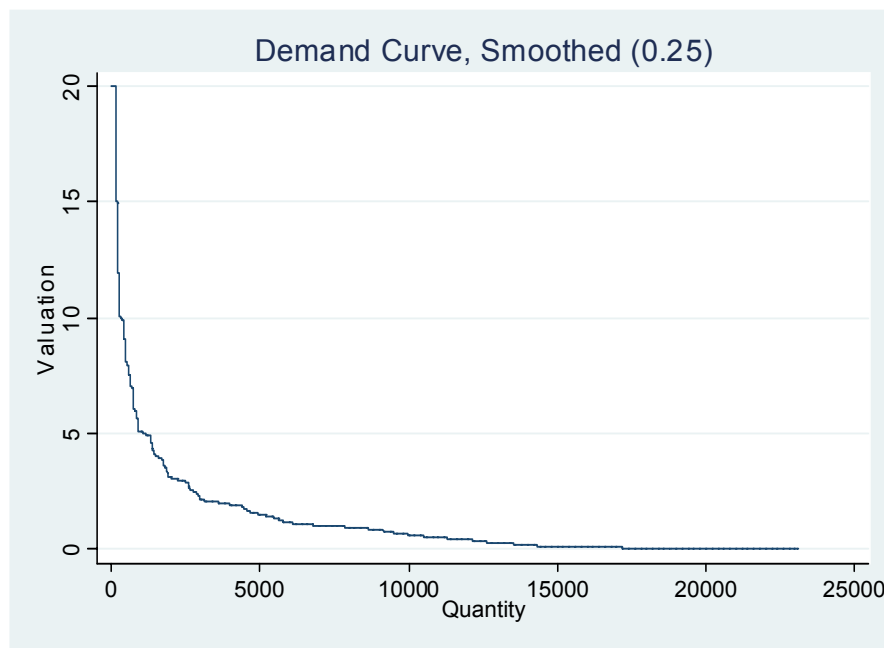


Relevant to whether bundling will enhance revenue:  
Less so as song valuations are more positively correlated



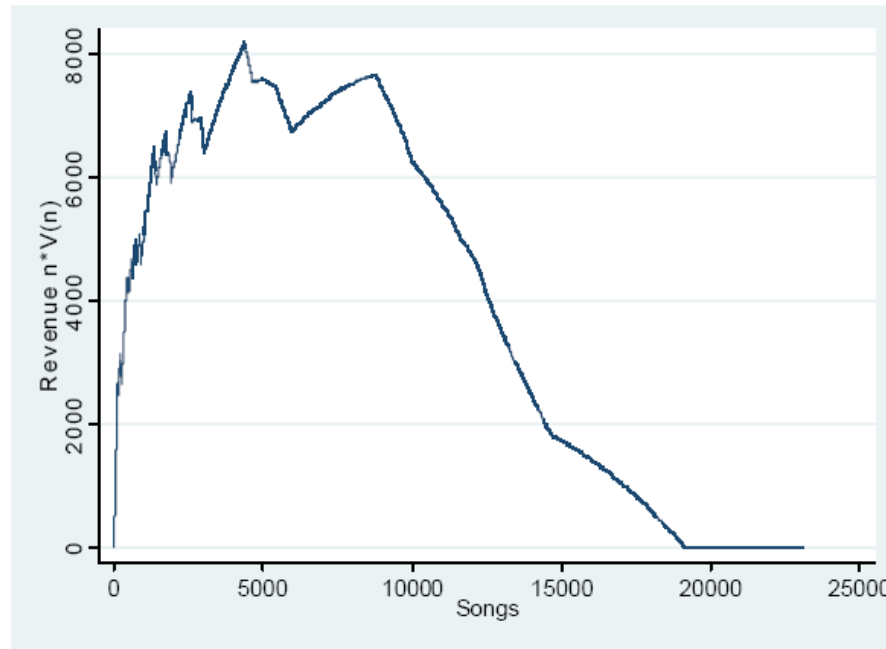
# Resulting demand curve

- ...ordering valuations from highest to lowest



# Revenue Function

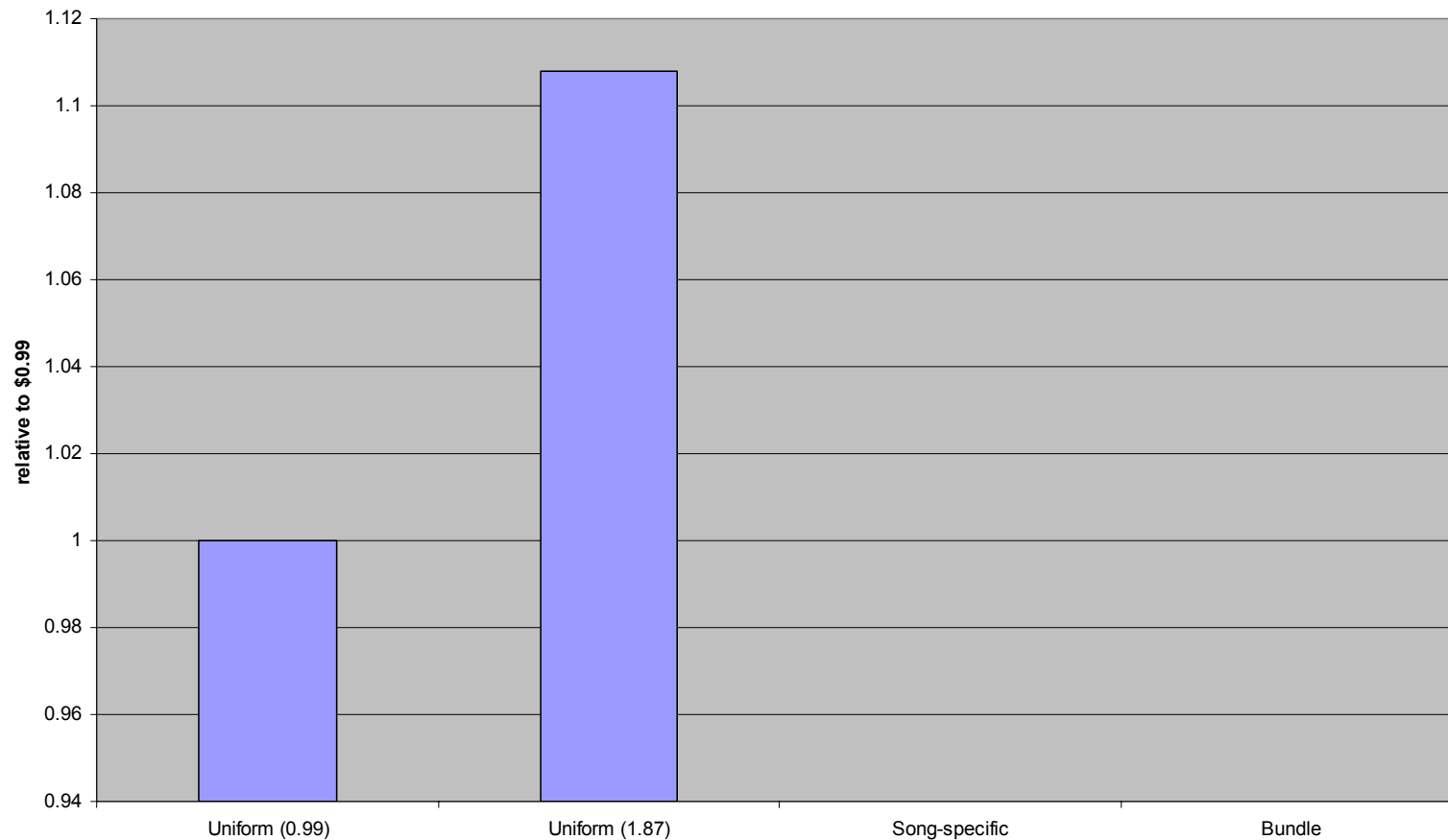
- Find revenue-maximum, associated price, etc. ( $MC=0$ )



# Revenue Maximizing Uniform Pricing

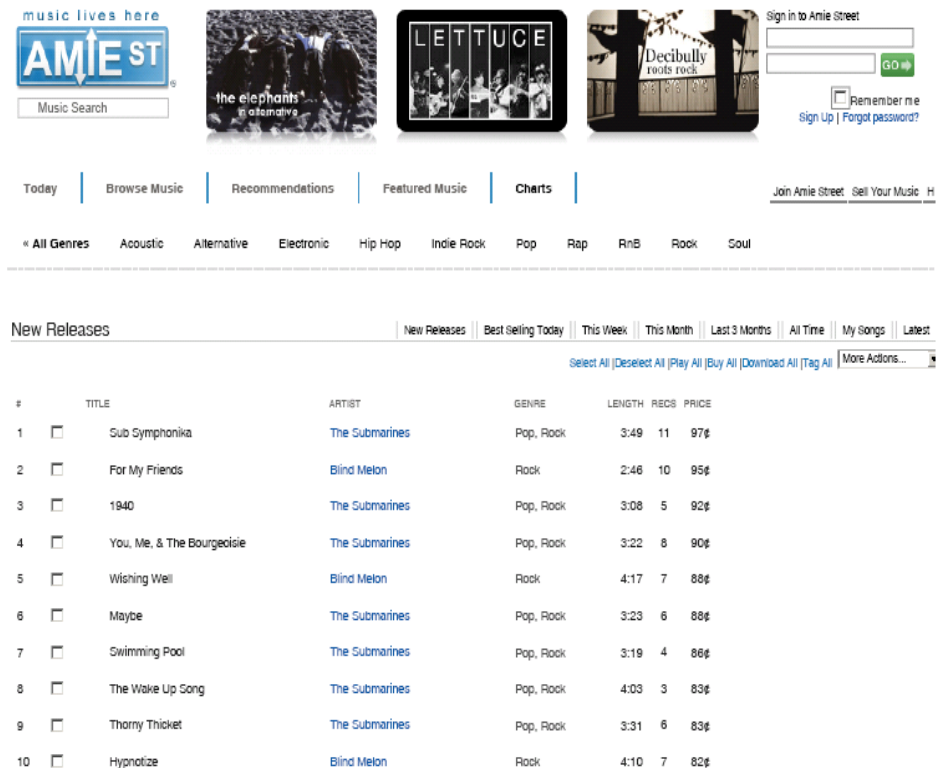
- Current: 99 cents
  - (revenue = \$7,364 in sample)
- Revenue maximizing: \$1.87
  - (revenue = \$8,158)
  - 12 percent increase

# Revenue relative to current pricing



# Song-Specific (Component) Pricing

- Calculate demand curve for each song
- Currently in use at
  - Amazon (a little)
  - Amie Street



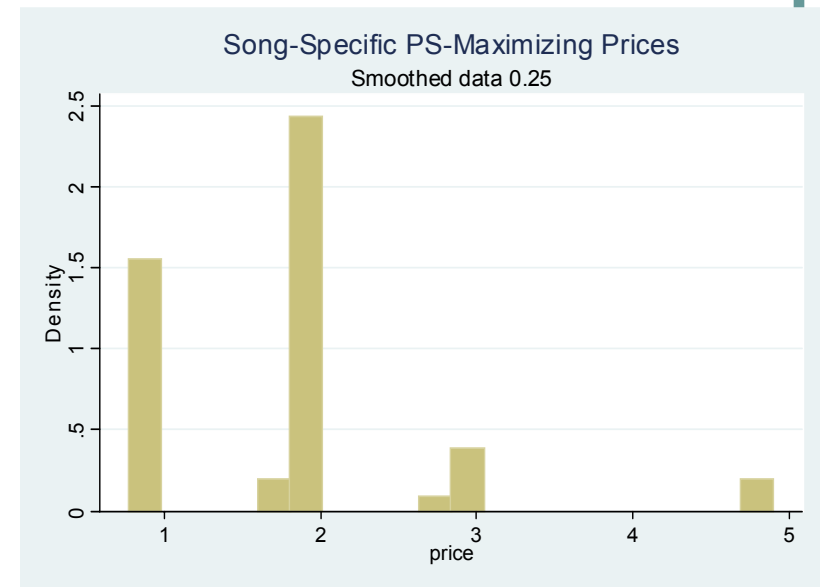
The screenshot displays the Amie Street music website. At the top, there's a navigation bar with links like 'Today', 'Browse Music', 'Recommendations', 'Featured Music', and 'Charts'. Below this is a horizontal menu for various music genres: All Genres, Acoustic, Alternative, Electronic, Hip Hop, Indie Rock, Pop, Rap, RnB, Rock, and Soul. The main content area is titled 'New Releases' and includes a table of 10 new releases. The table has columns for rank, title, artist, genre, length, release count, and price. The first release is 'Sub Symphonika' by The Submarines, priced at 97¢. Other releases include 'For My Friends' by Blind Melon, '1940' by The Submarines, and 'You, Me, & The Bourgeoisie' by The Submarines.

#	TITLE	ARTIST	GENRE	LENGTH	RECS	PRICE
1	<input type="checkbox"/> Sub Symphonika	<a href="#">The Submarines</a>	Pop, Rock	3:49	11	97¢
2	<input type="checkbox"/> For My Friends	<a href="#">Blind Melon</a>	Rock	2:46	10	95¢
3	<input type="checkbox"/> 1940	<a href="#">The Submarines</a>	Pop, Rock	3:08	5	92¢
4	<input type="checkbox"/> You, Me, & The Bourgeoisie	<a href="#">The Submarines</a>	Pop, Rock	3:22	8	90¢
5	<input type="checkbox"/> Wishing Well	<a href="#">Blind Melon</a>	Rock	4:17	7	88¢
6	<input type="checkbox"/> Maybe	<a href="#">The Submarines</a>	Pop, Rock	3:23	6	88¢
7	<input type="checkbox"/> Swimming Pool	<a href="#">The Submarines</a>	Pop, Rock	3:19	4	86¢
8	<input type="checkbox"/> The Wake Up Song	<a href="#">The Submarines</a>	Pop, Rock	4:03	3	83¢
9	<input type="checkbox"/> Thorny Thicket	<a href="#">The Submarines</a>	Pop, Rock	3:31	6	83¢
10	<input type="checkbox"/> Hypnotize	<a href="#">Blind Melon</a>	Rock	4:10	7	82¢

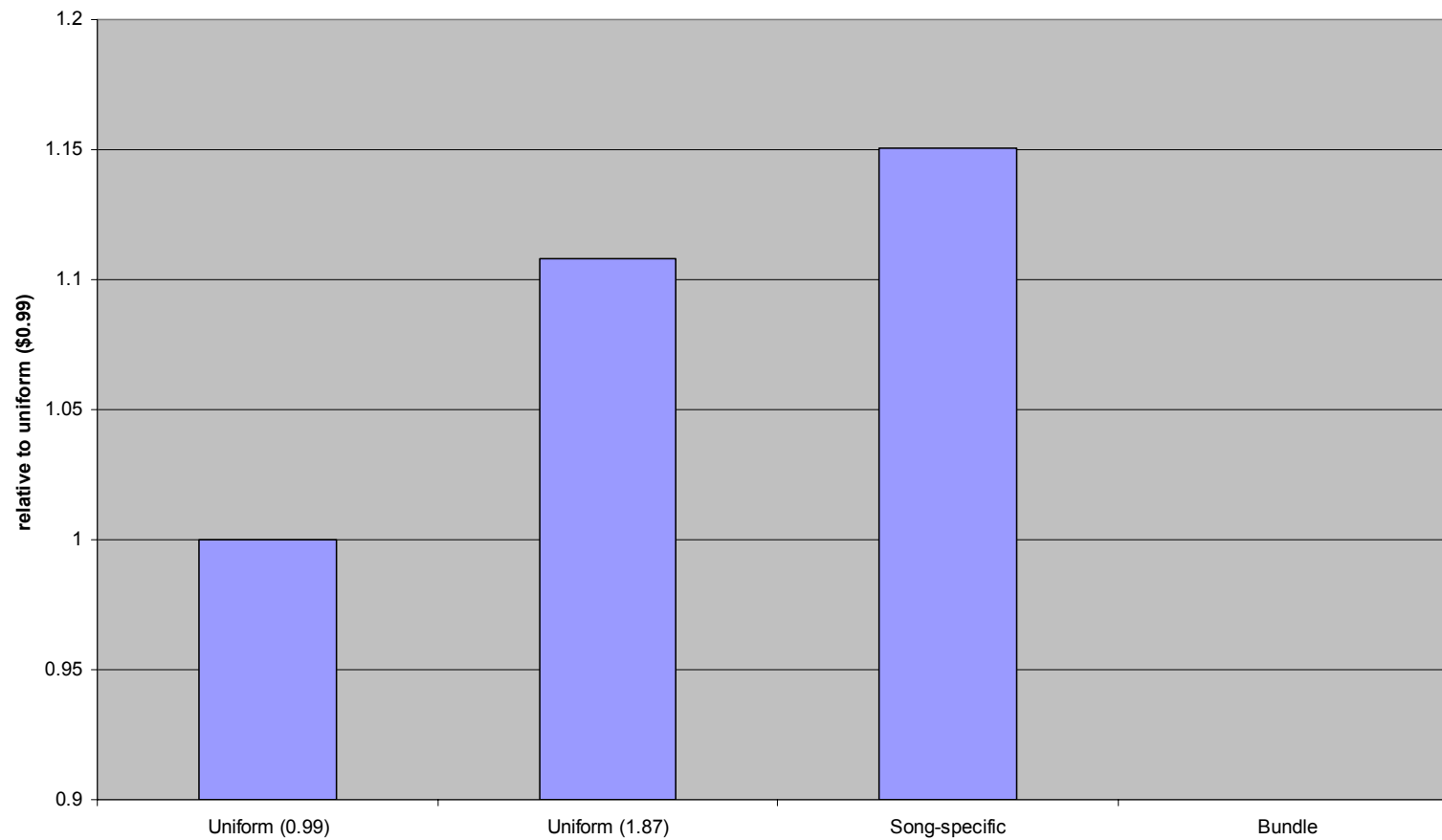
# Song-Specific Pricing

**Table 2: Song-Specific Revenue Maximizing Prices**

<i>song</i>	<i>Price (smoothed Data)</i>
Apologize (feat. OneRepublic) - Timbaland	\$1.88
Big Girls Don't Cry (Personal) - Fergie	\$1.84
Bubbly - Colbie Caillat	\$1.72
Clumsy - Fergie	\$0.90
Crank That (Soulja Boy) - Soulja Boy Tell 'Em	\$1.88
Crushcrushcrush - Paramore	\$0.85
Cyclone (feat. T-Pain) - Baby Bash	\$1.93
Don't Stop the Music - Rihanna	\$2.88
Feedback - Janet	\$1.90
Hate That I Love You (feat. Ne-Yo) - Rihanna	\$1.82
Hero/Heroine (Tom Lord-Alge Mix) - Boys Like Girls	\$0.93
Hey There Delilah - Plain White T's	\$4.88
How Far We've Come - Matchbox Twenty	\$0.88
Hypnotized (feat. Akon) - Plies	\$0.88
I Don't Wanna Be In Love (Dance Floor Anthem) - Good Charlotte	\$0.87
Into the Night (feat. Chad Kroeger) - Santana	\$2.86
Kiss Kiss (feat. T-Pain) - Chris Brown	\$1.83
Love Like This - Natasha Bedingfield	\$1.88
Love Song - Sara Bareilles	\$0.88
Low (feat. T-Pain) - Flo Rida	\$1.86
Misery Business - Paramore	\$0.86



# Revenue relative to current pricing

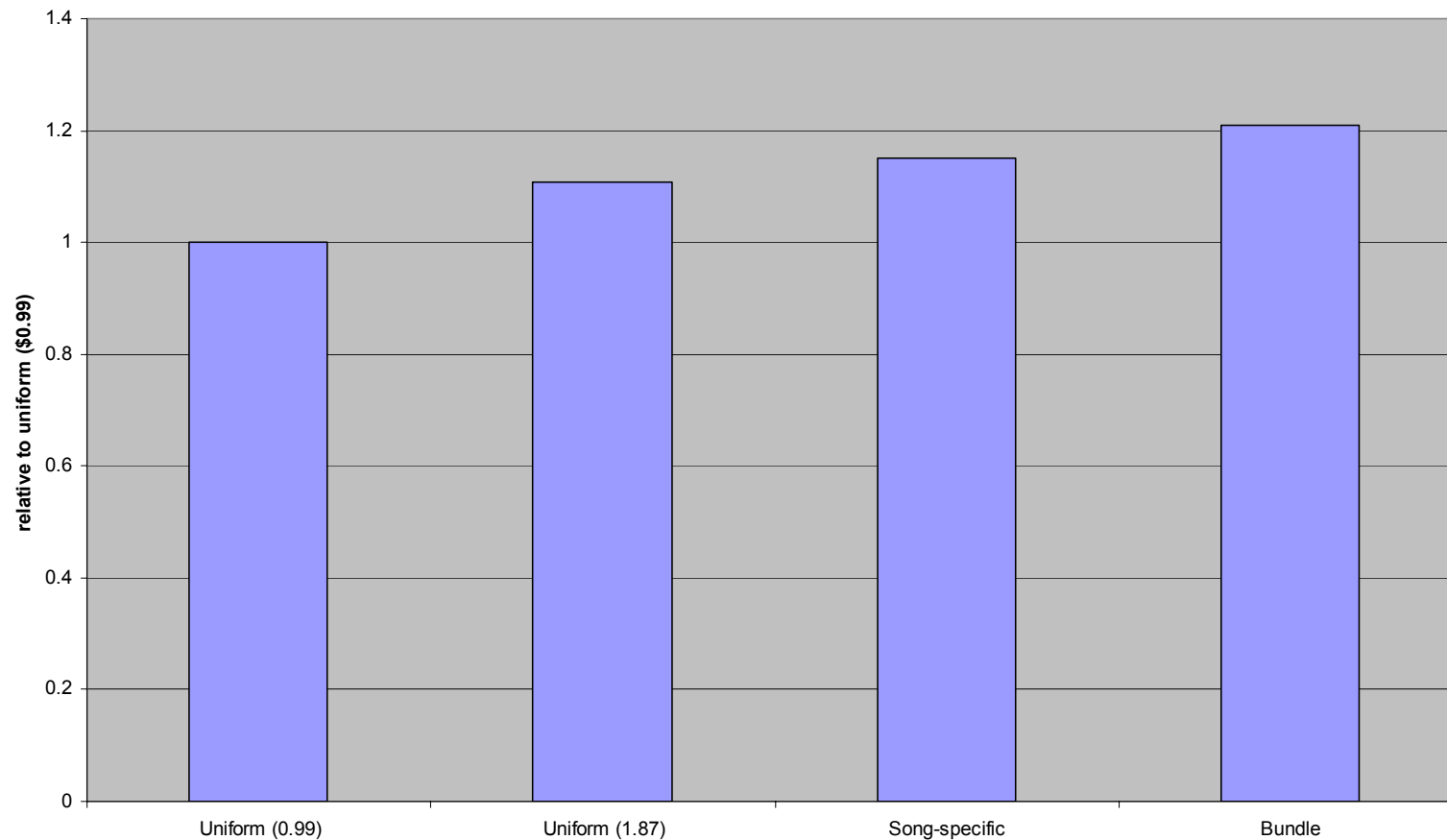


# Selling songs as a bundle

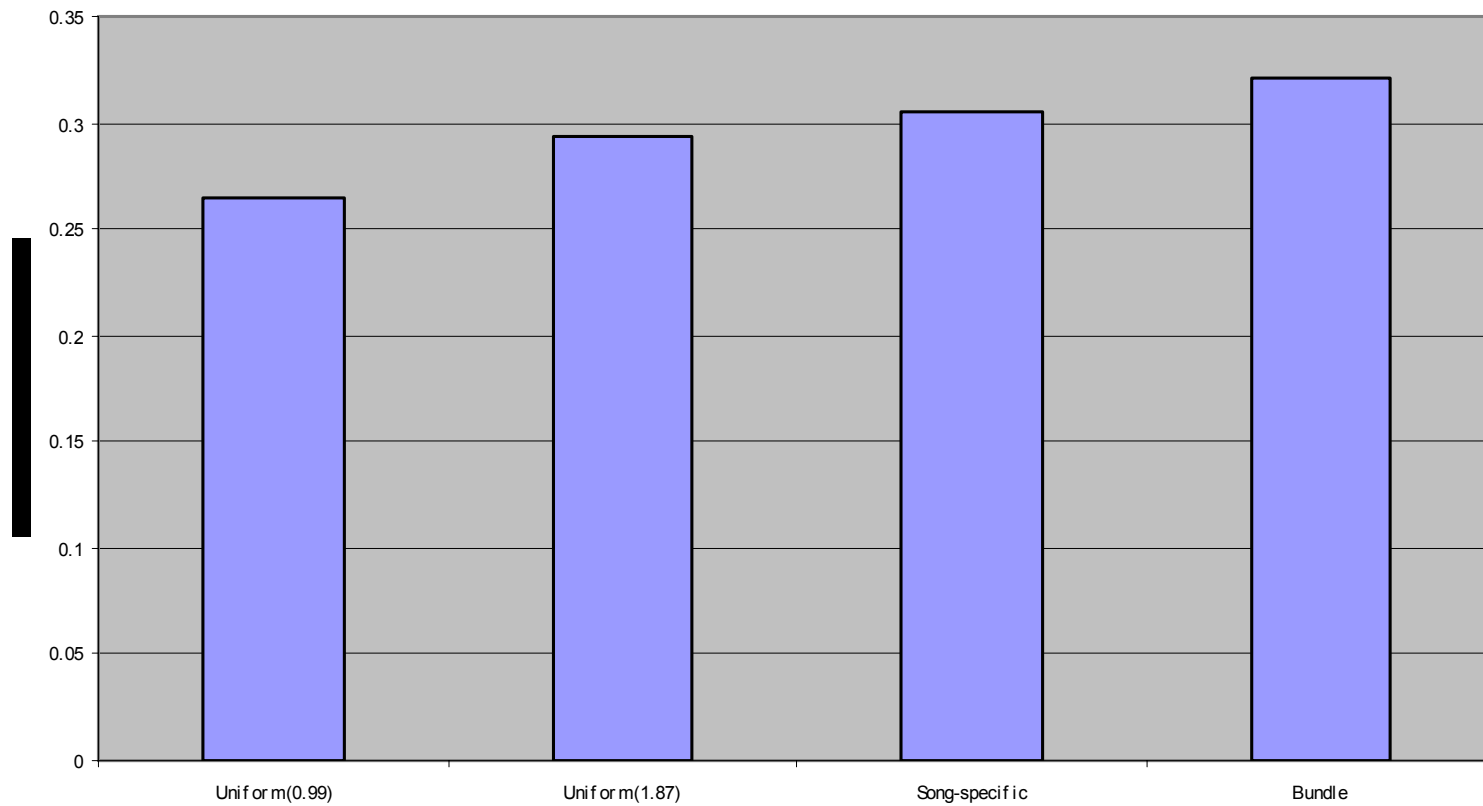
- Can increase revenue even when correlations are positive
- Should increase revenue more as bundle size increases
- Optimal price for these 50 songs is \$36.08.



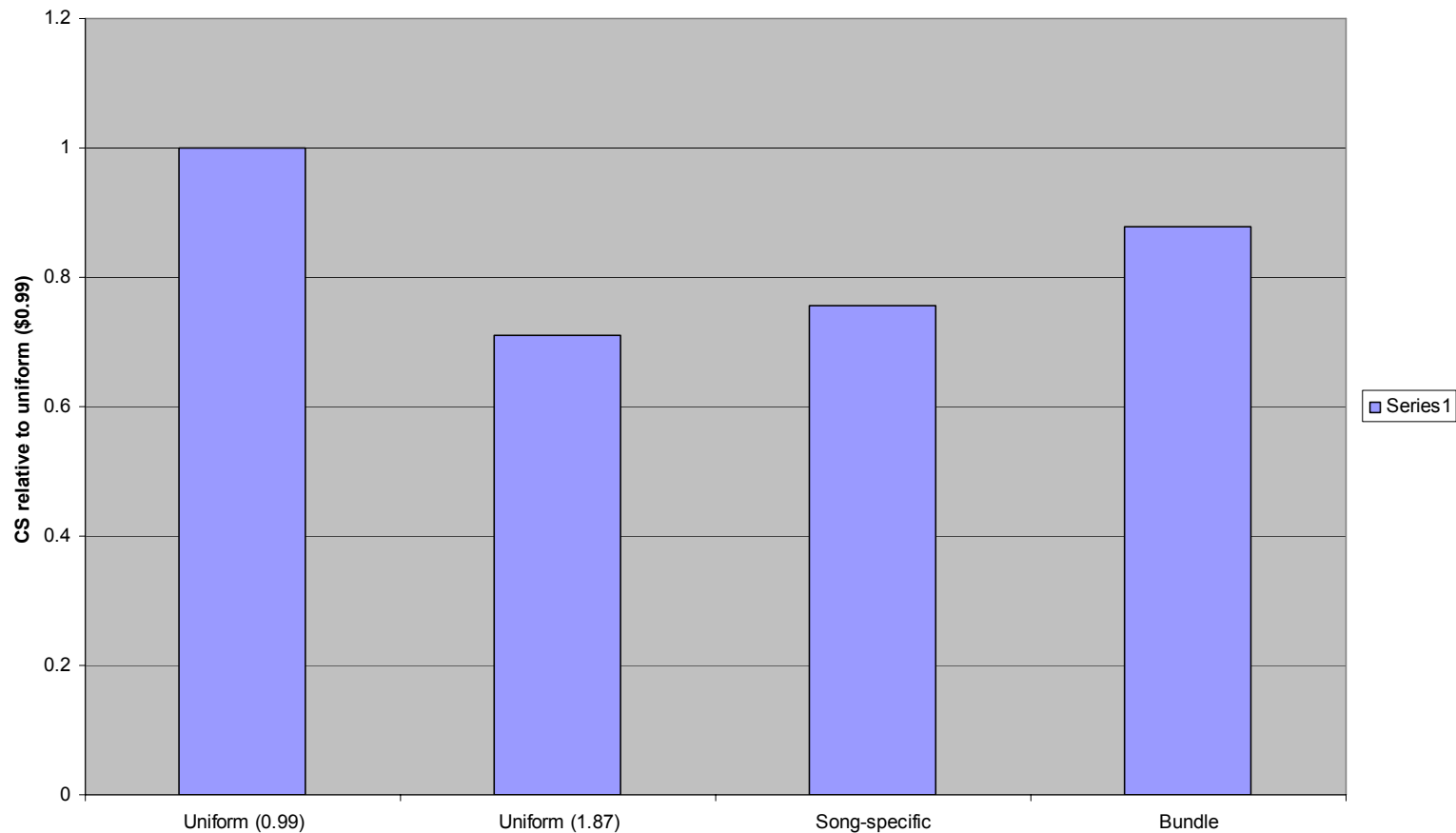
# Revenue relative to current pricing



# ...and little surplus is appropriated



# Consumers Fare Worse under Alternatives to Uniform 99



## But it's possible

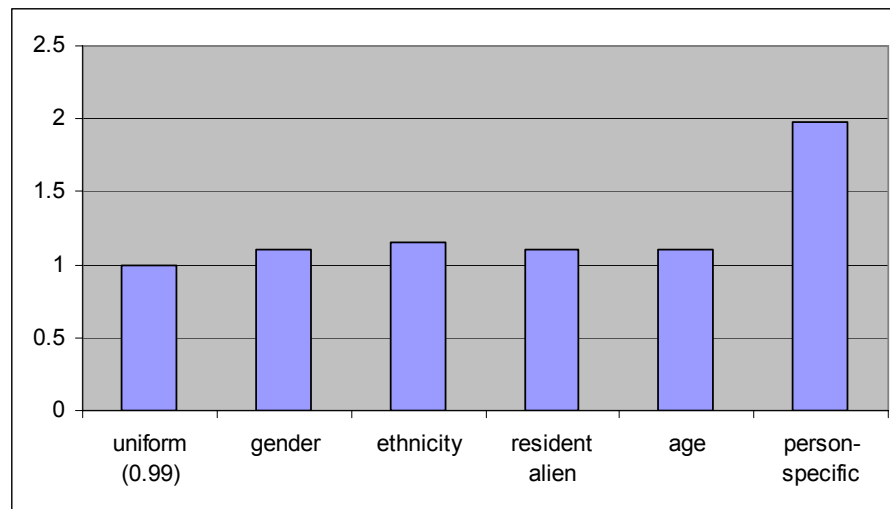
- ...to raise revenue, holding consumers harmless
- Can keep CS at its 99 cent level, raise revenue by 10 percent
- (Keep the hardware valuable)

## So Far...

- We've raised revenue by nearly 10 percent
  - ...but not above  $\frac{1}{3}$  of surplus
- We haven't tried the heavy artillery – mixed bundling – yet
- MB does better, but still delivers only a third of surplus as revenue

# Discriminatory Pricing

- So far, we've gotten PS only up to 1/3.
- How about 3<sup>rd</sup> degree?



Person-specific pricing raises revenue substantially

But more feasible discrimination does little.

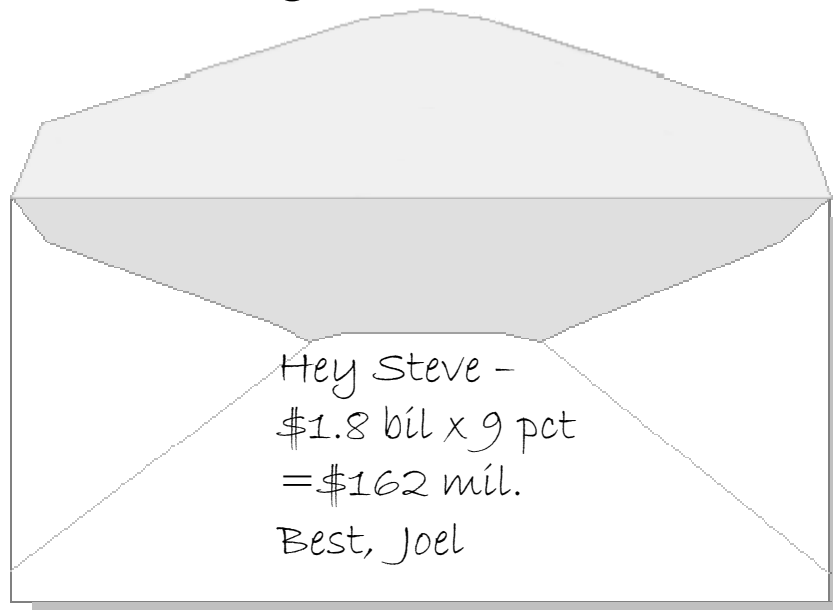
# Summing up fancy pricing

- Is the glass half empty or half full?



# Summing up fancy pricing

- Glass half full:
  - More revenue is available
  - Even holding consumers harmless





# Summing up fancy pricing

- Glass half full:
  - More revenue is available (10 percent)
    - Even holding consumers harmless
- Glass half empty:
  - Relatively small share of surplus available as revenue, even with feasible fancy pricing schemes

# Finally

- Music industry hurting from piracy even as service stream historically high
  - need clever ways to appropriate value
- It's happening
  - Nokia and Apple (reportedly) currently contemplating bundling
- Additional challenge:
  - How to share revenue with bundle pricing

# I'd love to hear from you

- Email me at  
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