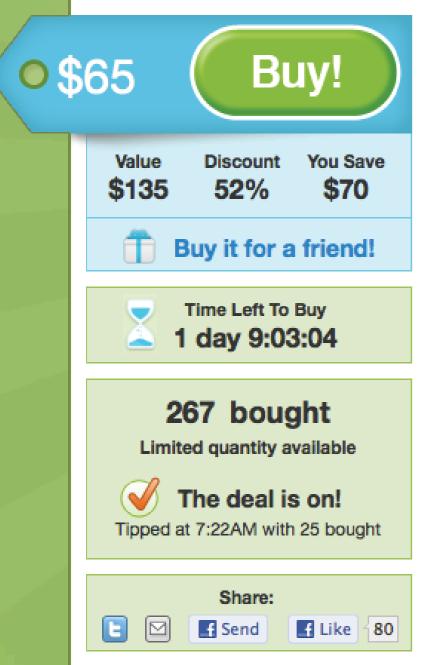


Daily deal? "Never heard of it!"

South Bay Sailing – Redondo Beach

\$65 for Hour of Sailing for Up to Four (\$135 Value)





The Fine Print

Expires Jun 16, 2012
Limit 3 per visit. Must reserve by
5/16/12. 2-week cancellation notice or
fee up to Groupon price may apply.
Subject to weather. Must sign waiver.
Valid only from 9am to sunset. Children
must be able to fit into life vest.
See the rules that apply to all deals.

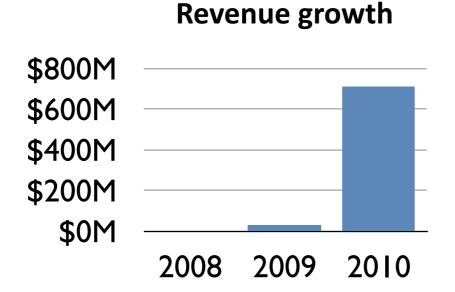
Highlights

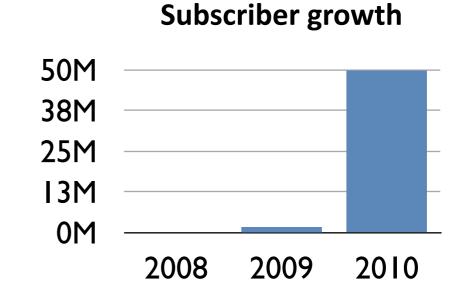
- Sail aboard a 26' J/80 boat
- · Learn sailing basics
- Certified instructors
- No experience needed

What attracts us to Groupon?

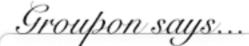


"Groupon is a local e-commerce marketplace that connects merchants to consumers by offering goods and services at a discount."



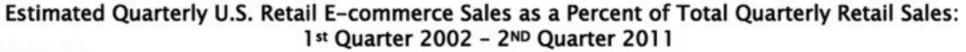


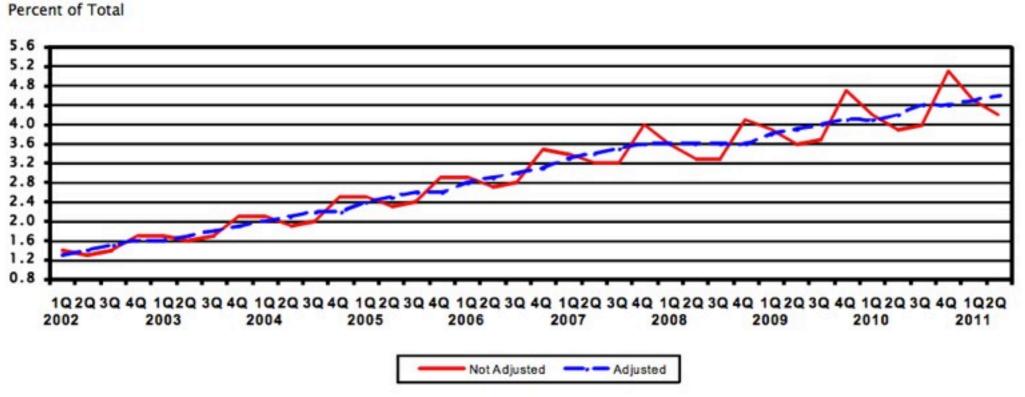




We have experienced rapid growth over a short period in a new market that we have created and we do not know whether this market will continue to develop or whether it can be maintained.

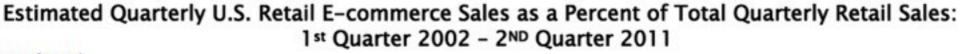
Groupon taps into a previously untapped market

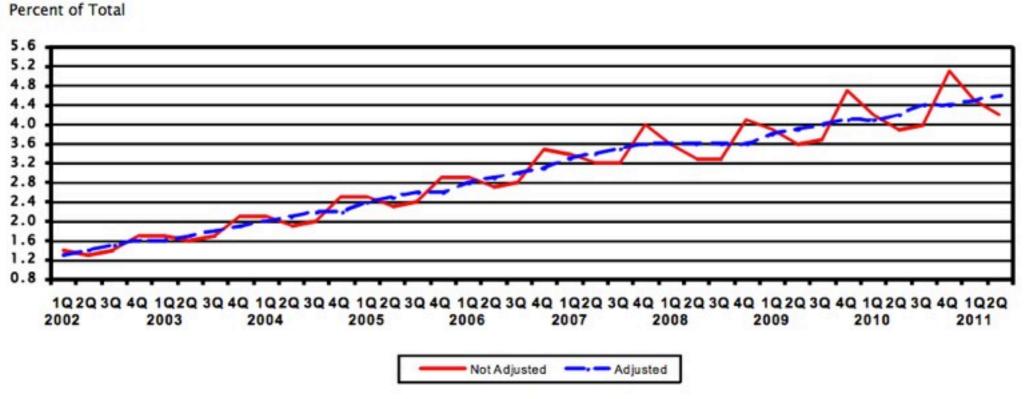




- Q2 2011 electronic commerce sales: \$47Bn
- Percentage of overall commerce still small
- Large untapped opportunity!
- Daily deal sites tap exactly into this market

Groupon taps into a previously untapped market





"We depend on the continued growth of online commerce." [Groupon S-1]

How does Groupon make money?

Groupon sell coupons, retains ~50% of coupon value, passes the rest to the merchant.

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How does a merchant make money?

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- (?) From existing customers with coupons
- (+) From existing customers without coupons
- (-) Pays revenue share to Groupon

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Complicated calculation!

Some of the above components vary over time.

How many existing customer will use Groupons?

How many new customers will the deal attract?

How many will be **loyal** customers?

Side-effects of deals? Quality of service vs. increased volume

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Groupon identifies failure to retain existing subscribers & merchants and to acquire new ones as risk factors. [Groupon S-1]

Research Questions



Can we predict the outcomes of Groupon deals?

- Groupon wants to pick and feature popular deals
- Merchants need to know the cost and potential of a Groupon deal
 How many customers to expect? Manage customer volume, hire additional workers?
 How much will the deal cost?
 Is there a better customer acquisition strategy?

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Can Groupon please both customers & merchants?

- Groupon promises: "Valuable new customers, guaranteed"
- Is this the case? Can Groupon attract loyal customers?
- What is the impact of Groupon on merchant reputation?

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What drives sales? Are Groupons "social"?

- Groupon has more than **115M** email subscribers
- Cost of subscriber acquisition in the first half of 2011: \$345M
- Is this subscriber database the only driving force behind coupon sales?
- To what extent sales propagate via social networks?

Question 1: Outcome prediction



Can we predict the outcomes of Groupon deals?

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Regression model using data from daily deal sites



Monitored Jan 3rd to July 3rd

Collected 16,692 deals

Combination of Groupon API and scraping

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Monitored Mar 21st to July 3rd

Collected **2,609** deals

Scraping

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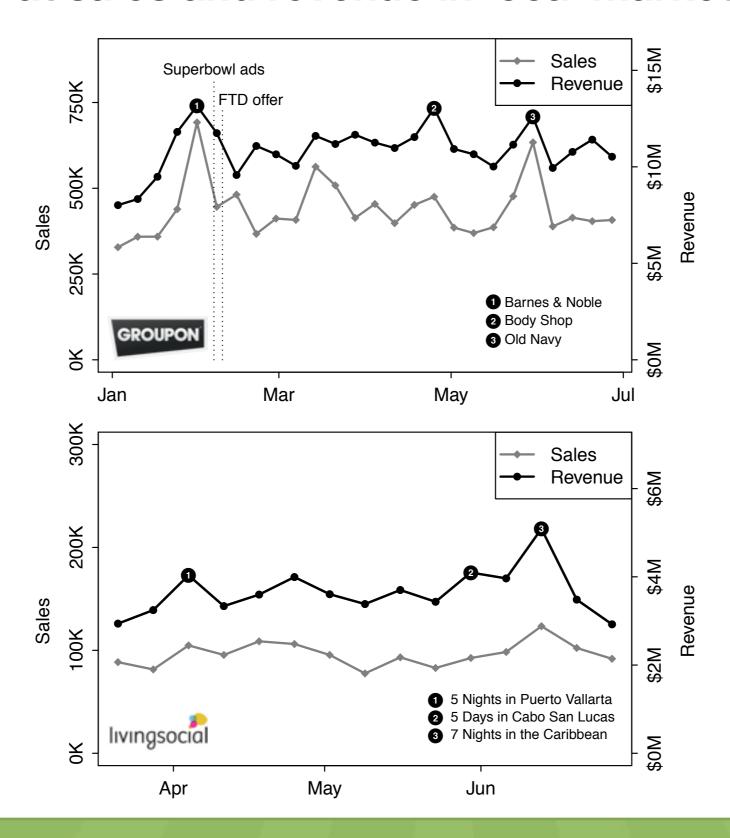
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Scraping

200GB of compressed data

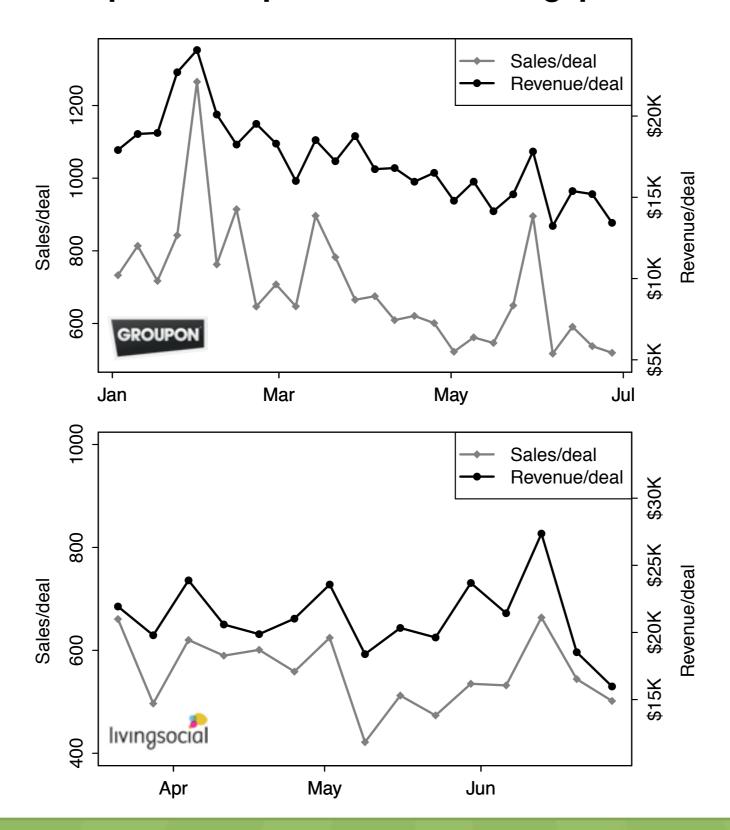
Warmup: Basic operational insights

Flat sales and revenue in local markets.



Warmup: Basic operational insights

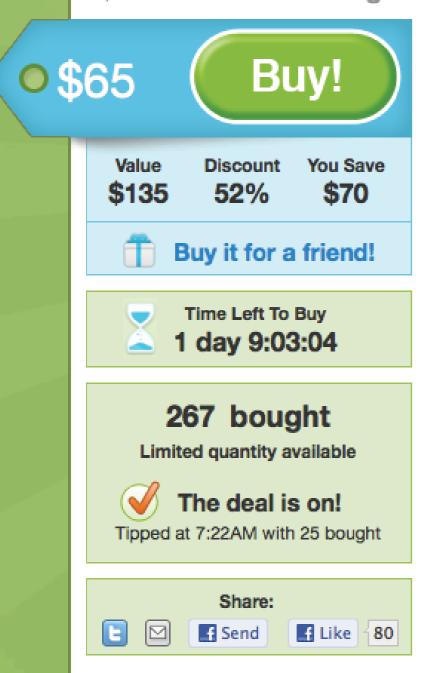
The number of Groupons sold per deal is declining: personalization strategy



Basic features of a Groupon deal

South Bay Sailing – Redondo Beach

\$65 for Hour of Sailing for Up to Four (\$135 Value)





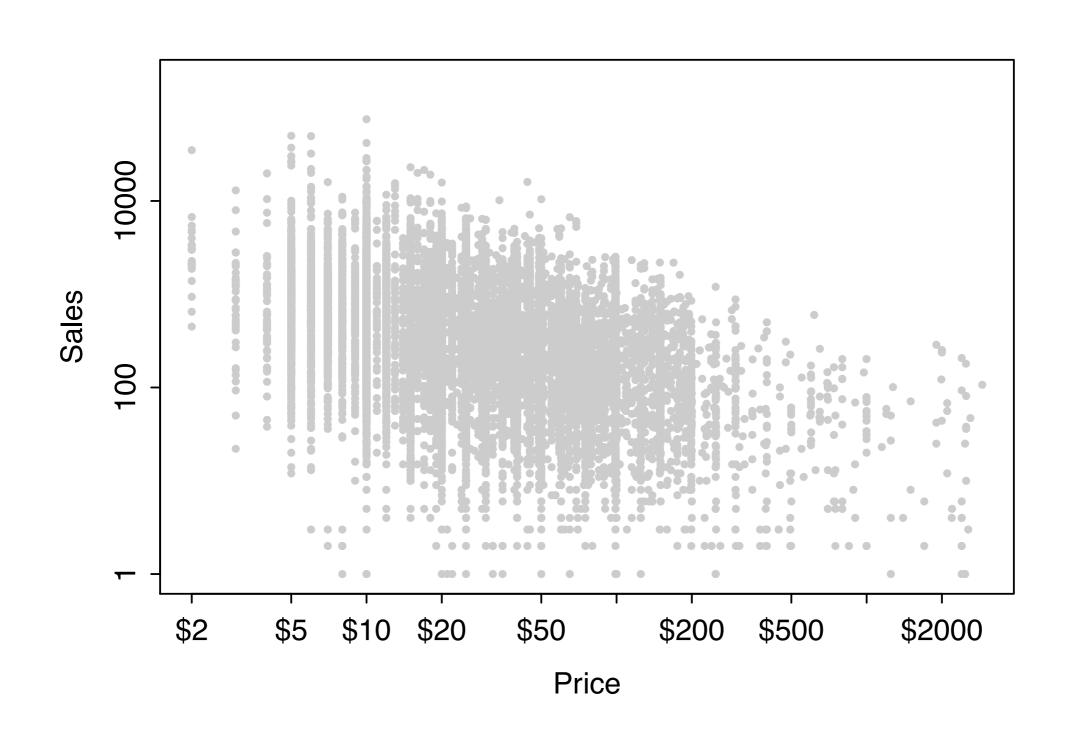
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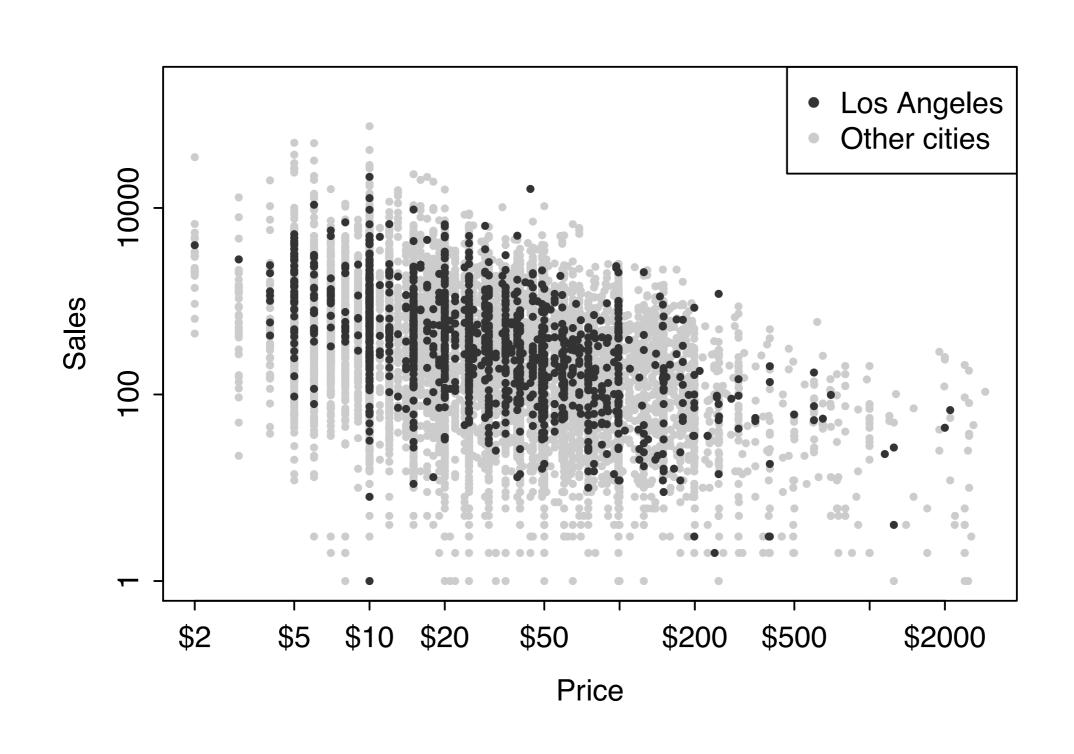
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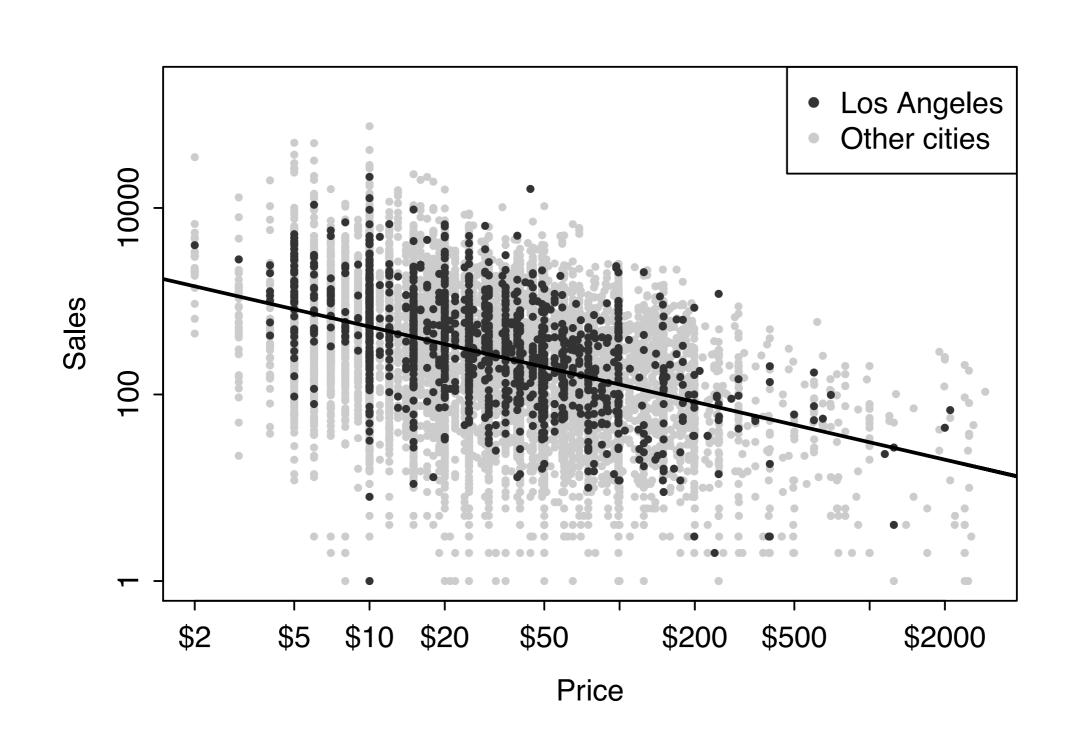
Parameters of Groupon deals: Price



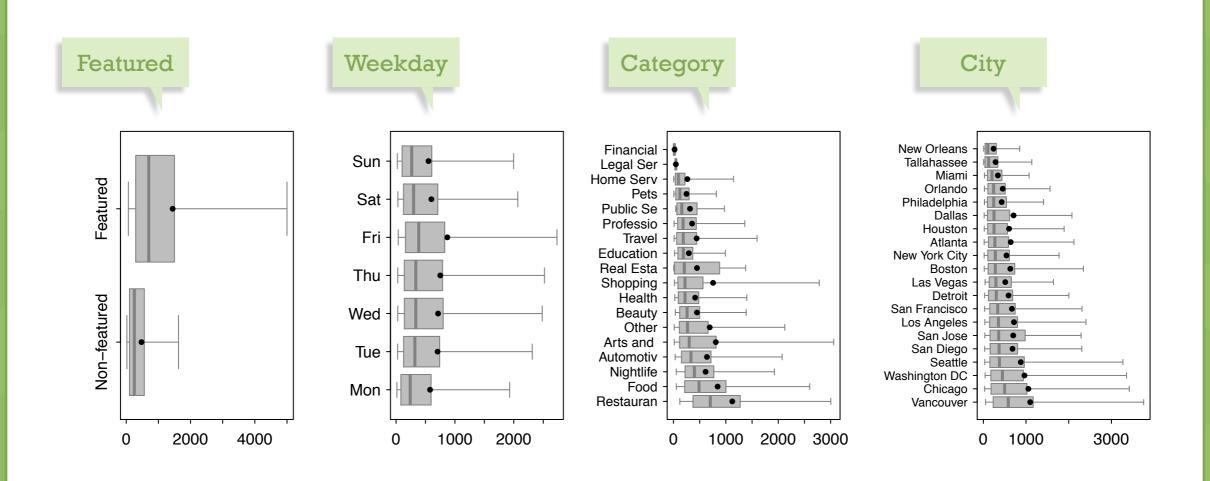
Parameters of Groupon deals: Price



Parameters of Groupon deals: Price



But Groupon has other means to affect sales...



Linear regression model of Groupon deals

Sales

Price

Threshold

Featured

Weekday

Category

$$\log q = \beta_0 + \beta_1 \log p + \beta_2 \log t + \beta_3 d + \beta_4 f + \beta_5 l + \beta_6 \mathbf{w} + \beta_7 \mathbf{c} + \beta_8 \mathbf{g}$$

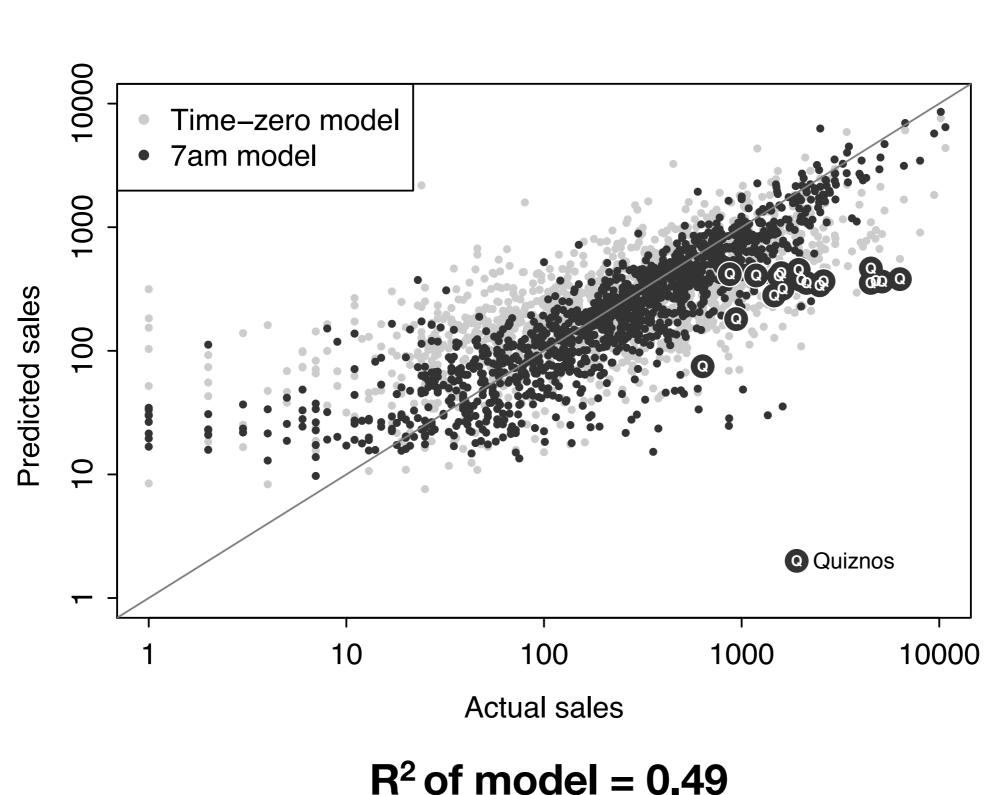
Intercept

Multi-day

Limited

City

How well can we predict Groupon deals?



 h^- of inode: = 0.49

How do various deal parameters impact its outcome?

Price

Point price elasticity of coupons is **0.48**, demand is **inelastic**.

1% increase in price leads to 0.48% decrease in sales.

Groupon and merchants have room for price-based optimization.

"Soft incentives"

For example, in expectation a **featured** deal produces **141**% more sales.

In expectation Friday deals produce 27% more sales than Monday deals.

There are means other than price to control sales.

Can merchants put this to good use?

Consider merchants whose deals sell out.

If they could predict sales they could control customer volume through price and hence optimize profit.

Question 2: Reputation ramifications



Can Groupon please both customers & merchants?

- Groupon promises: "Valuable new customers, guaranteed"
- Is this the case? Can Groupon attract loyal customers?
- What is the impact of Groupon on merchant reputation?



Methodology

Merge datasets to quantify customer satisfaction with Groupon merchants

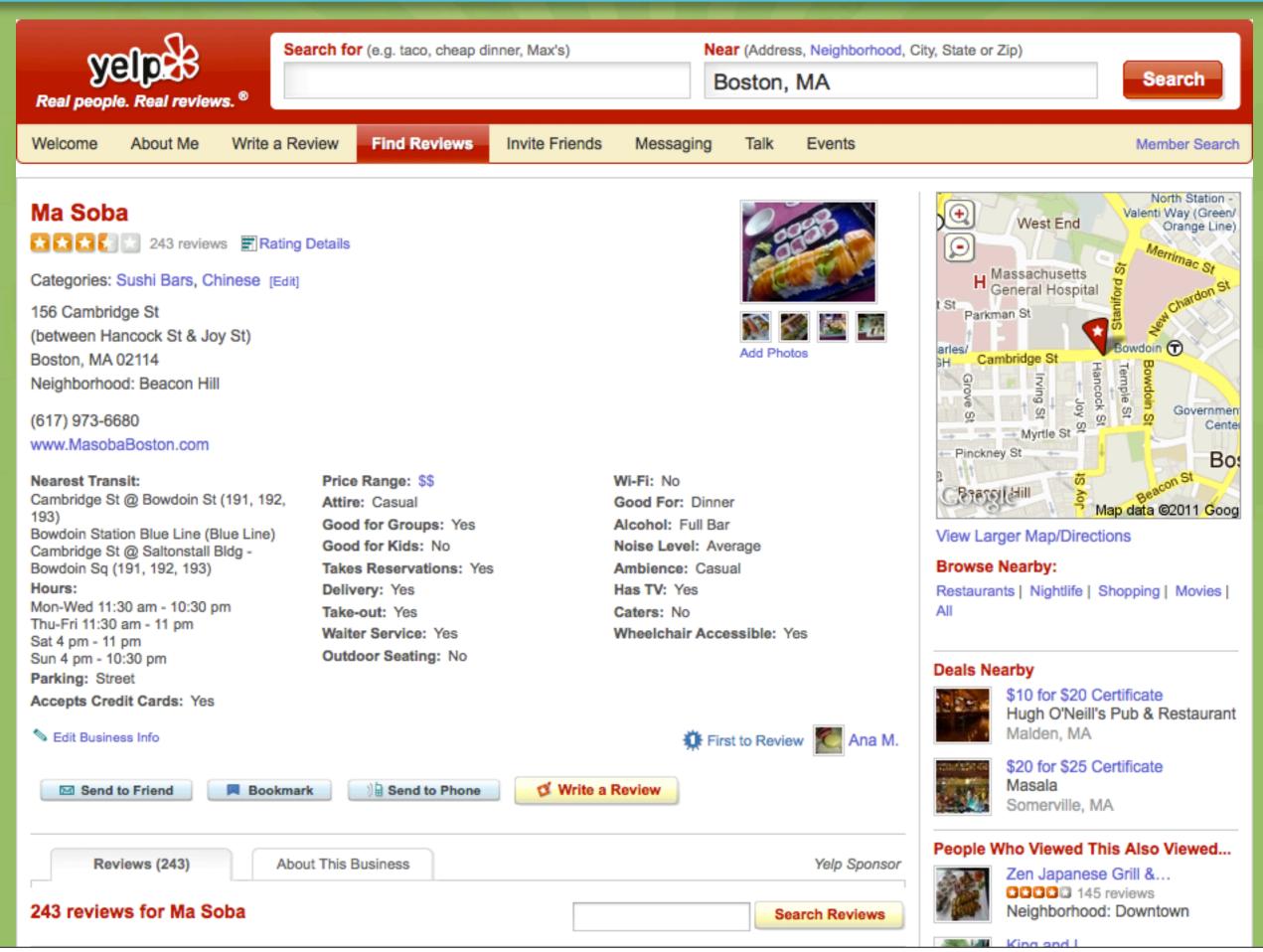


Collected 56,048 reviews for 2,332 merchants

Dataset spans 2,496 deals

Scraped Yelp website

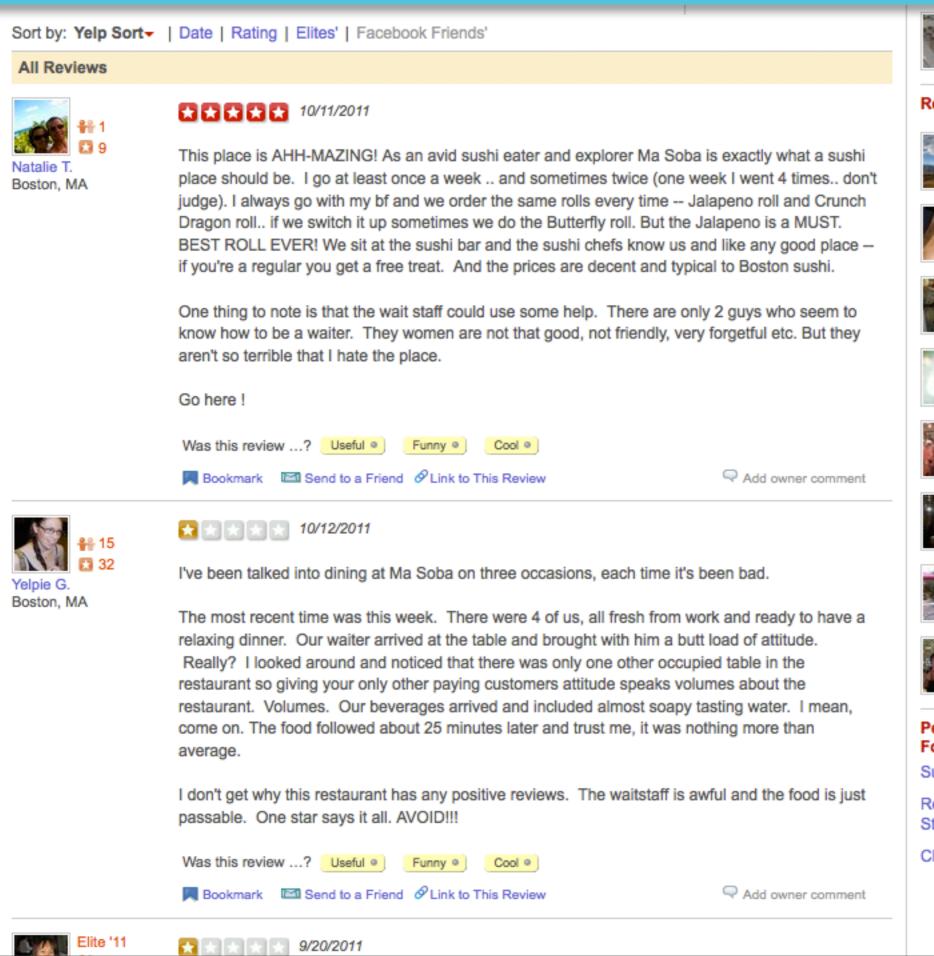
What about the reputation of Groupon merchants?



Sunday, October 23, 11

27

What about the reputation of Groupon merchants?





Billy Tse Restaurant □□□□□ 74 reviews Neighborhood: North End

Related Lists

More »



And I Would Walk 500... Even though I moved away, I know I'm gonna be I'm...



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28

People Viewed This After Searching For...

Sushi Boston

Restaurants On Cambridge Street Boston

Chinese Restaurant Boston

What about the reputation of Groupon merchants?

come on. The food followed about 25 minutes later and trust me, it was nothing more than average.

I don't get why this restaurant has any positive reviews. The waitstaff is awful and the food is just passable. One star says it all. AVOID!!!

Was this review ...? Useful ◎ Funny ◎ Cool ◎

■ Bookmark ■ Send to a Friend Ø Link to This Review

Add owner comment



₩ 35 ₩ 60

Anne W. Boston, MA 9/20/2011

I convinced some of my friends to come here because I bought a Groupon here a week ago and some work colleagues who also agreed to buy the Groupon.. never did. So I went with some other friends.. thinking it has to be okay. So.. if you're a picky sush eater (which means you value thick slices, freshness, and innovation).. this is not the place for you.

It has a good spot in Beacon Hill.. it has a nice ambience.. if you're handicap, I have no idea how you use the bathroom because it's in the basement. The service isn't that great or bad... and the place isn't that crowded or filled with expert sushi eaters.

Tried a bunch of specialty rolls.. which were all okay to bad. The coveted crunch dragon roll is good.. and that was eaten up first... but everything else was just a dissapointment.

Don't go.. save your money.. even if it's a Groupon.

Was this review ...? Useful ● Funny ● Cool ●

■ Bookmark ■ Send to a Friend ● Link to This Review

Add owner comment





We were pleasantly surprised with the service, food, ambience and being in the neighborood.

- Our waiter was courteous, came at the right times and was always smiling.
- The food was much better than we had expected we had sushi which was delicious and a crispy beef which was very good.
- The restaurant had a pleasant feeling to it, not overly formal but not totally casual. Having a window seat was especially nice.

We'll definitely return.

Was this review ...? Useful • Funny • Cool •

People Viewed This After Searching For...

Sushi Boston

Restaurants On Cambridge Street Boston

Chinese Restaurant Boston

Why do Yelp reviews matter?

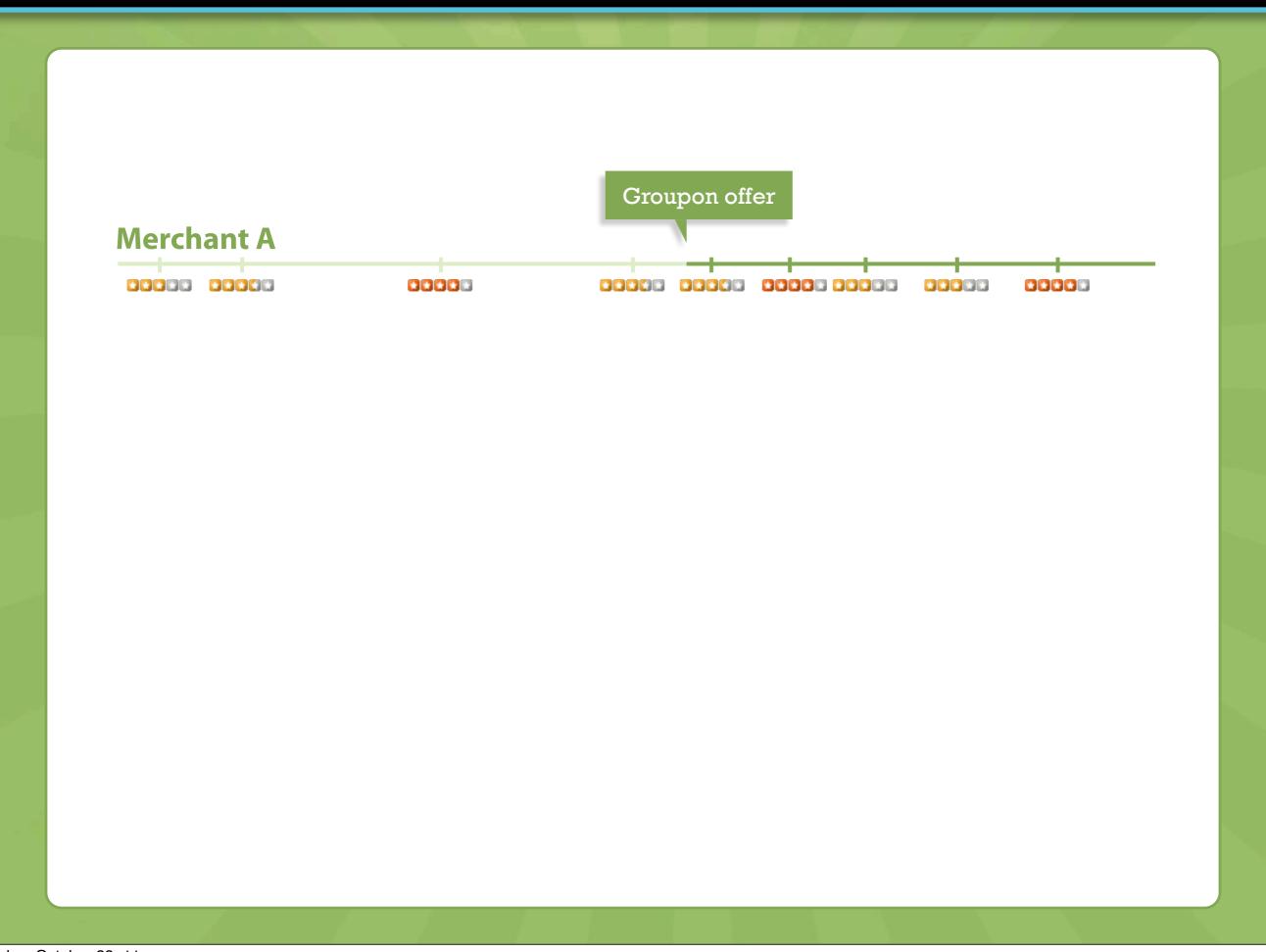
- Yelp reviews are forever!
 - Reviews persist for future potential customers to peruse
- Yelp drives merchant traffic
 - Merchants with higher ratings get more visibility on Yelp
- Yelp ratings affect merchant revenues
 - 1-star increase leads to 9% increased revenue. [Luca'11]
 - Merchants care about Yelp
 - They care enough to spam it (25% of Yelp reviews filtered)

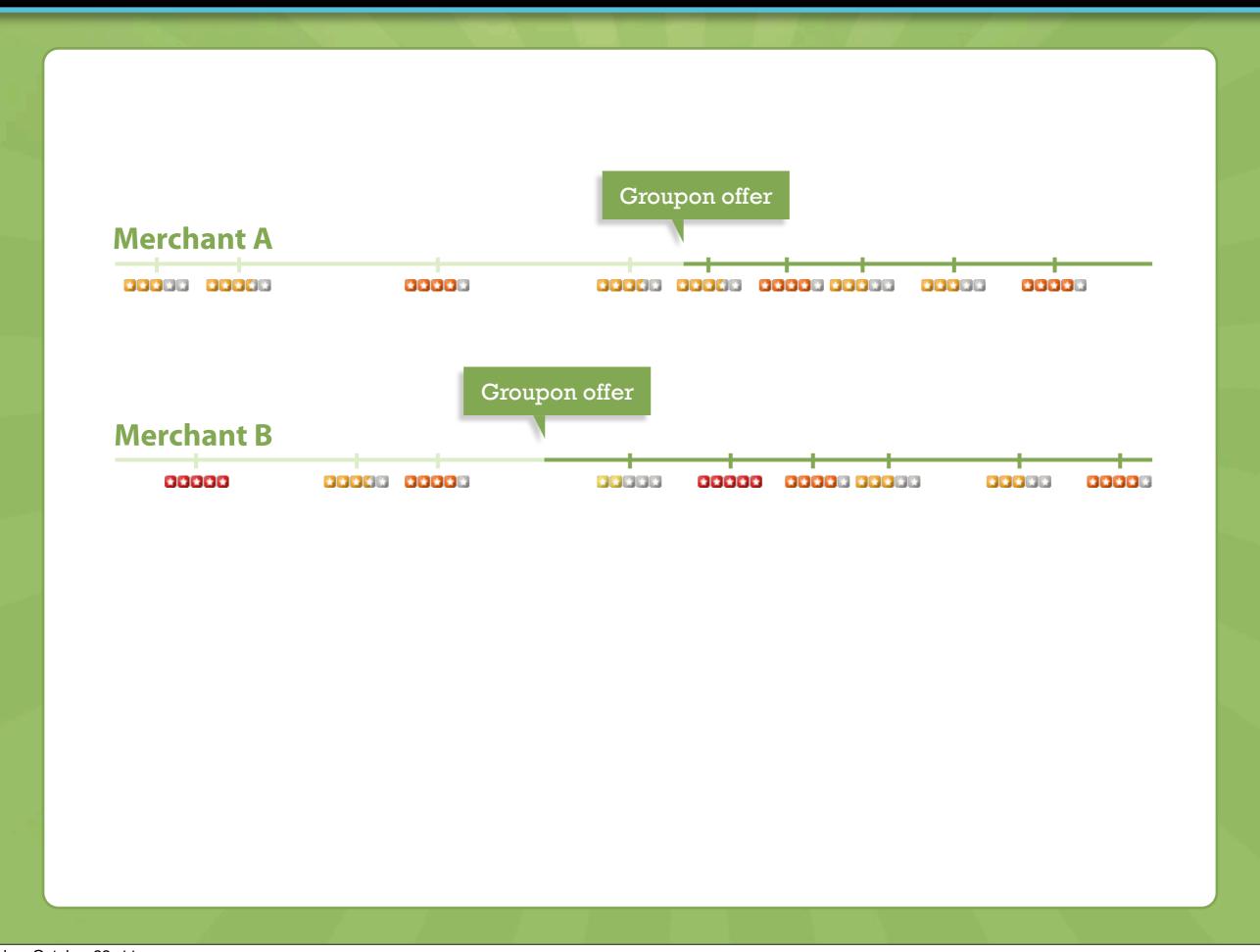
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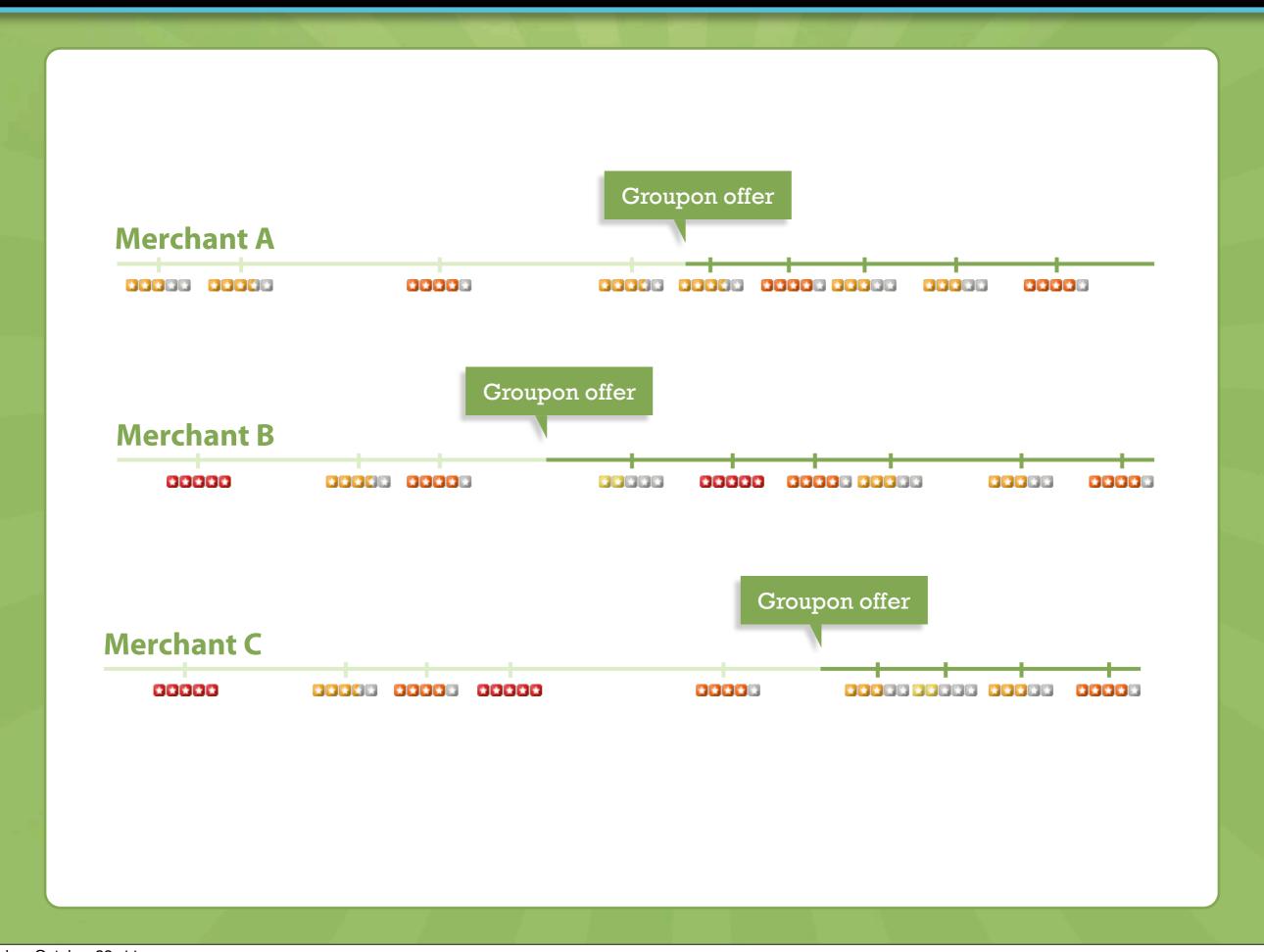
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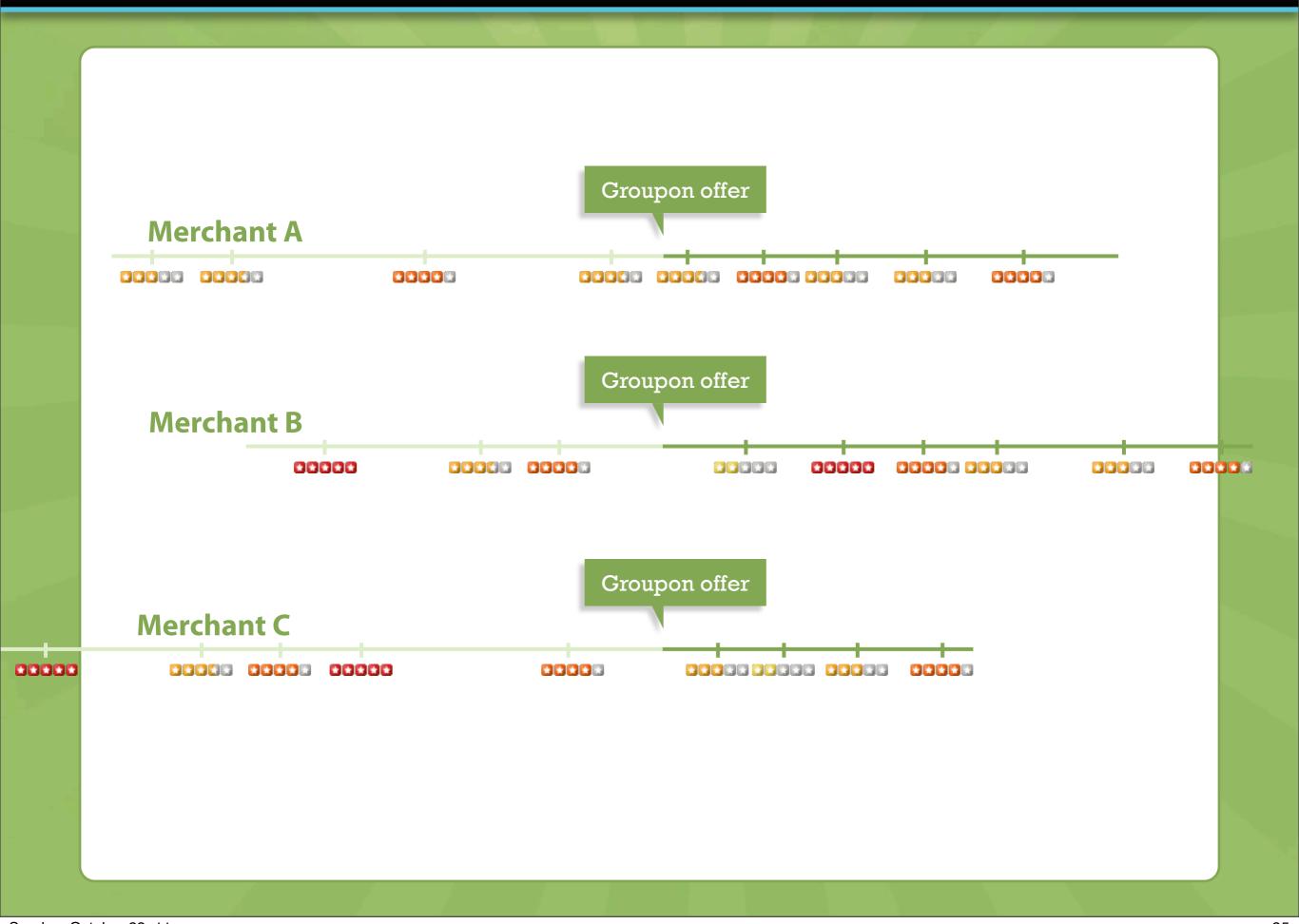
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In the long run, Groupon can benefit from pleased customers and merchants.

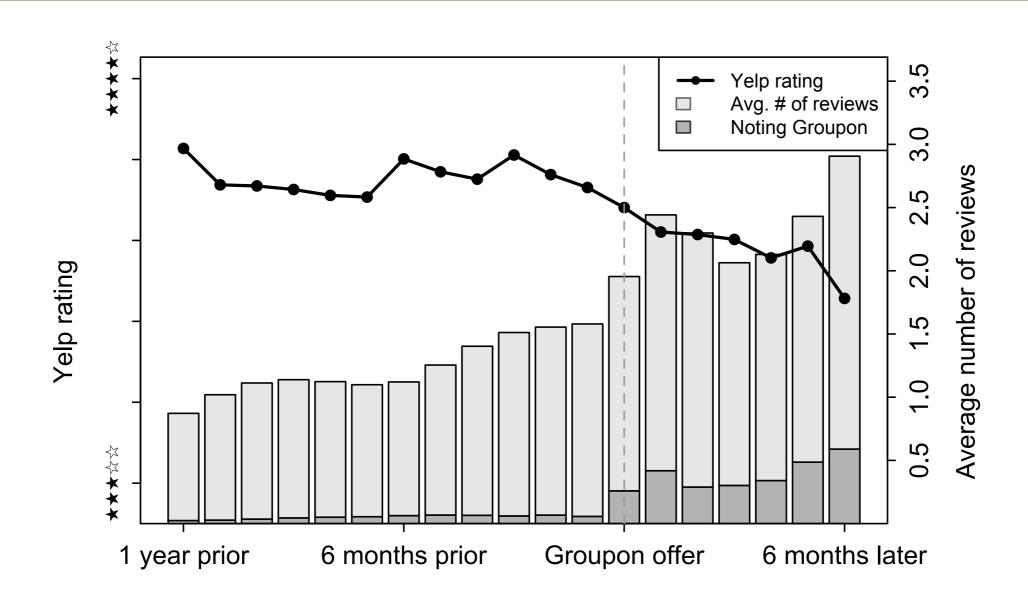








Yelp ratings before & after Groupon



	Avg. Rating	Reviews
Before period (12 months)	3.71	39,042
After period (6 months)	3.59	17,006

More insights into Yelp ratings

0

Breakdown of reviews by mentions of keywords "Groupon" and "coupon"

Coupon mentioned		
	Yes	No
		3.36 (4,315) 3.71 (50,213)

More insights into Yelp ratings

0

This analysis struck a popular nerve...

The consumers were being told: You will never pay full price again. The merchants were hearing: You are going to get new customers who will stick around and pay full price. Disappointment was inevitable.

The New York Times

...by providing some quantification of what was already on people's mind.

Groupon says...

It's been documented that anytime an influx of customers visits a business their online reviews tend to see a decrease in quality. This effect holds true for online as well as traditional advertising such as print, broadcast, radio.

Groupon is still the most effective and guaranteed marketing method for reaching hundreds of thousands of new customers and getting them into your business and engaged.





Question 3: Social diffusion



What drives sales? Are Groupons "social"?

- Groupon has more than 115M email subscribers
- Cost of subscriber acquisition in the first half of 2011: \$345M
- Is this subscriber database the only driving force behind coupon sales?



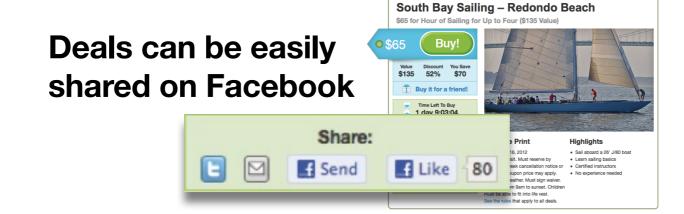
Methodology

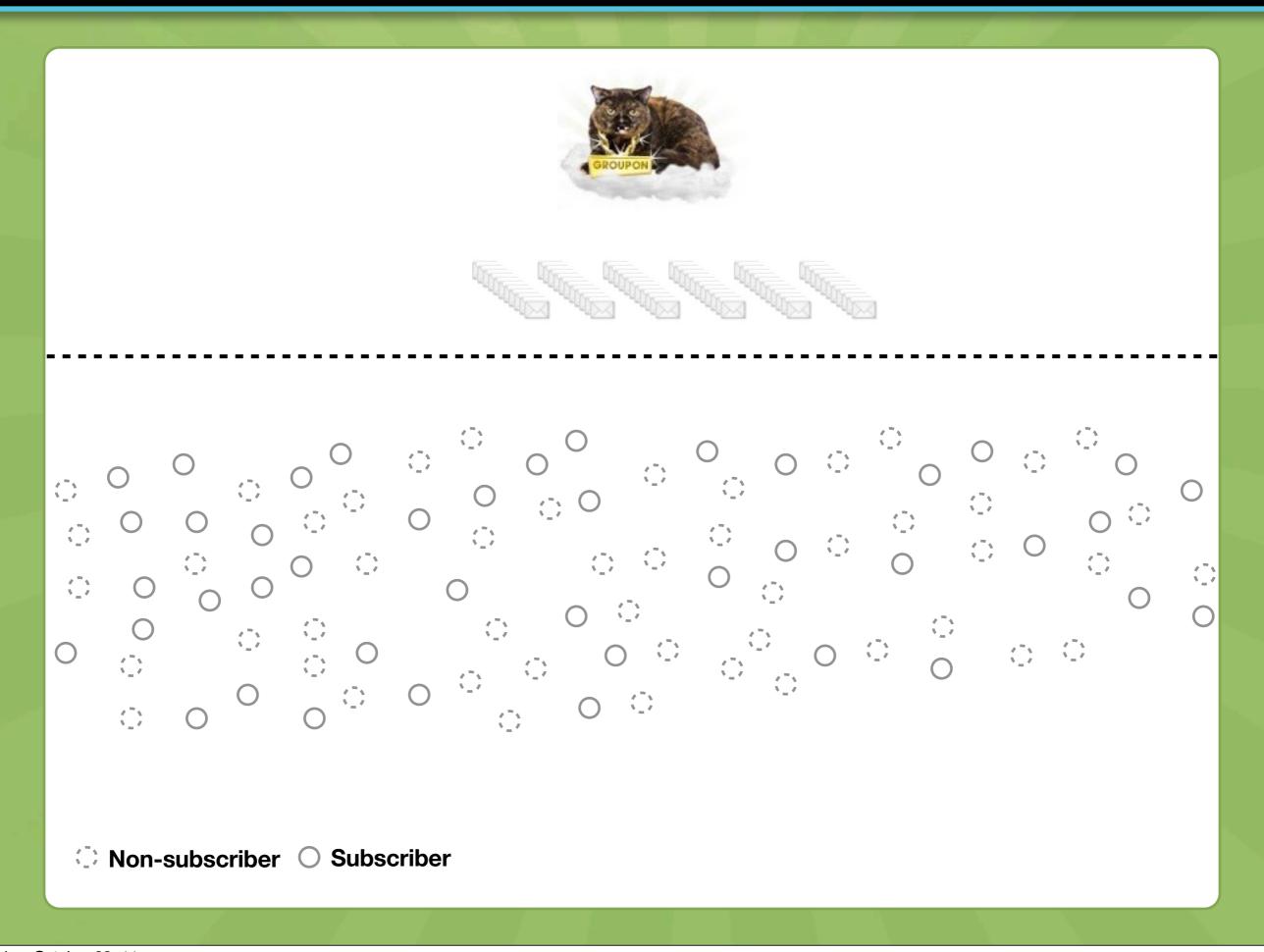
Merge datasets to look for evidence of diffusion of deals on social networks

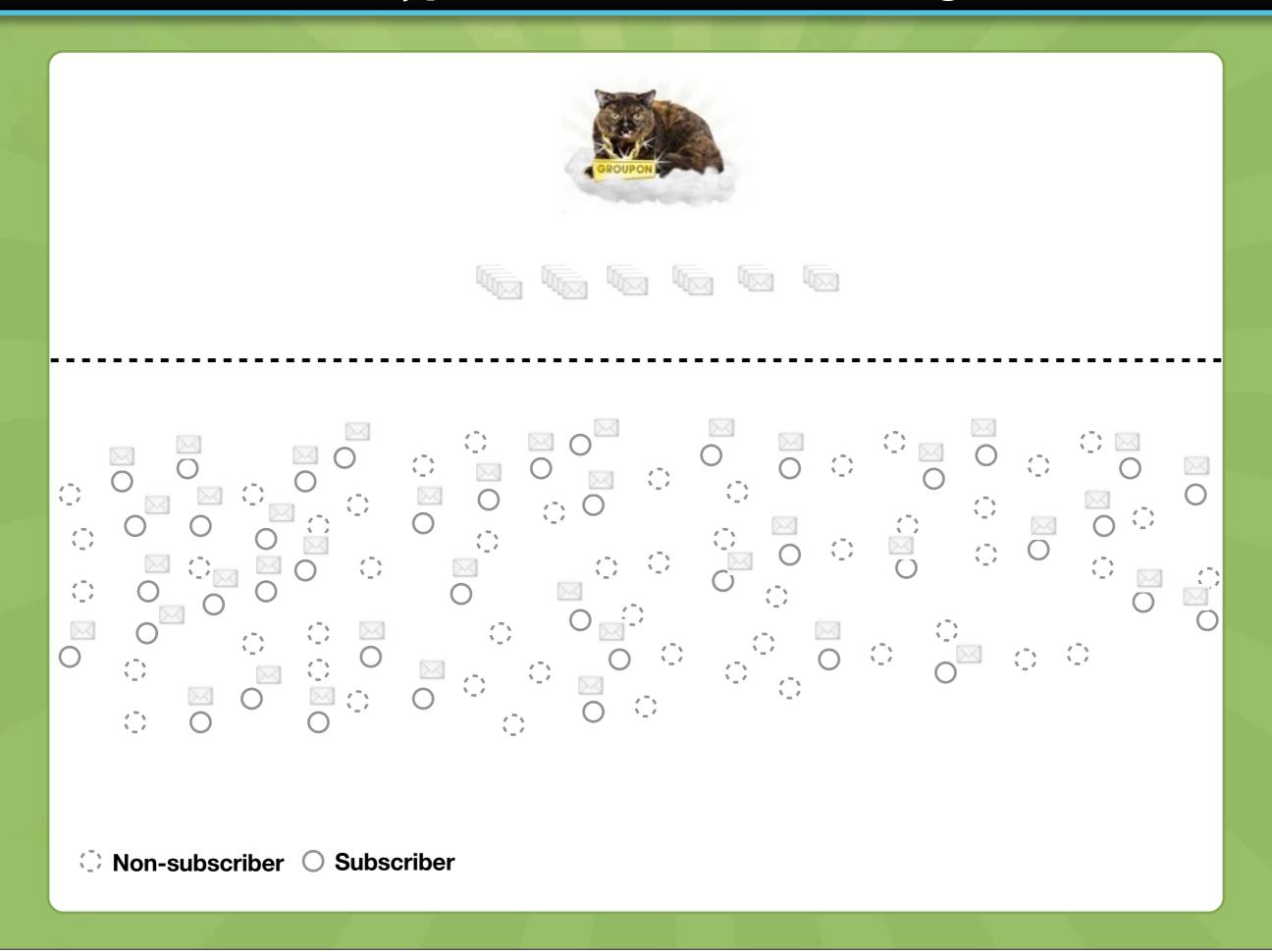


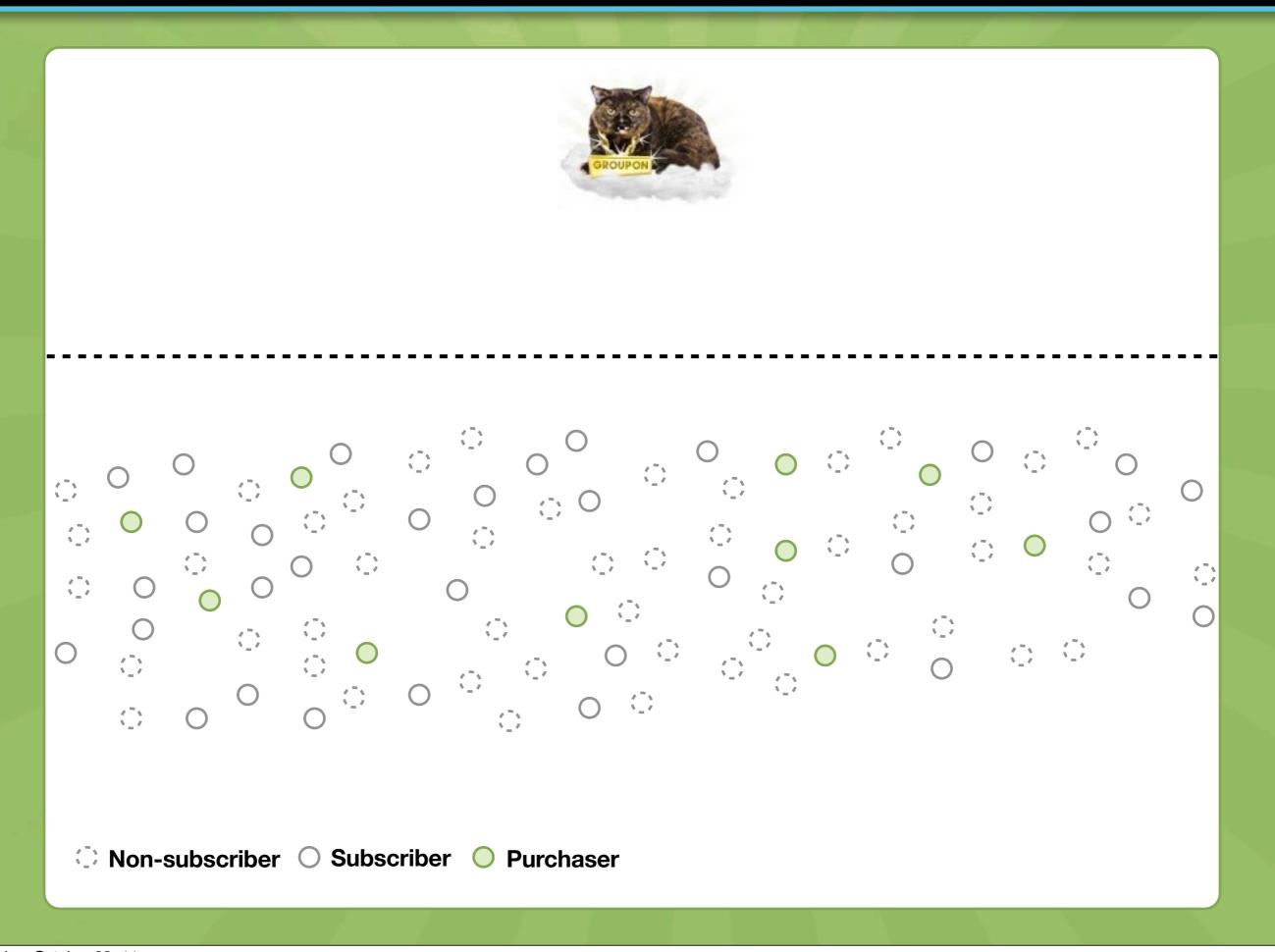
Monitored Jan 3rd to July 3rd

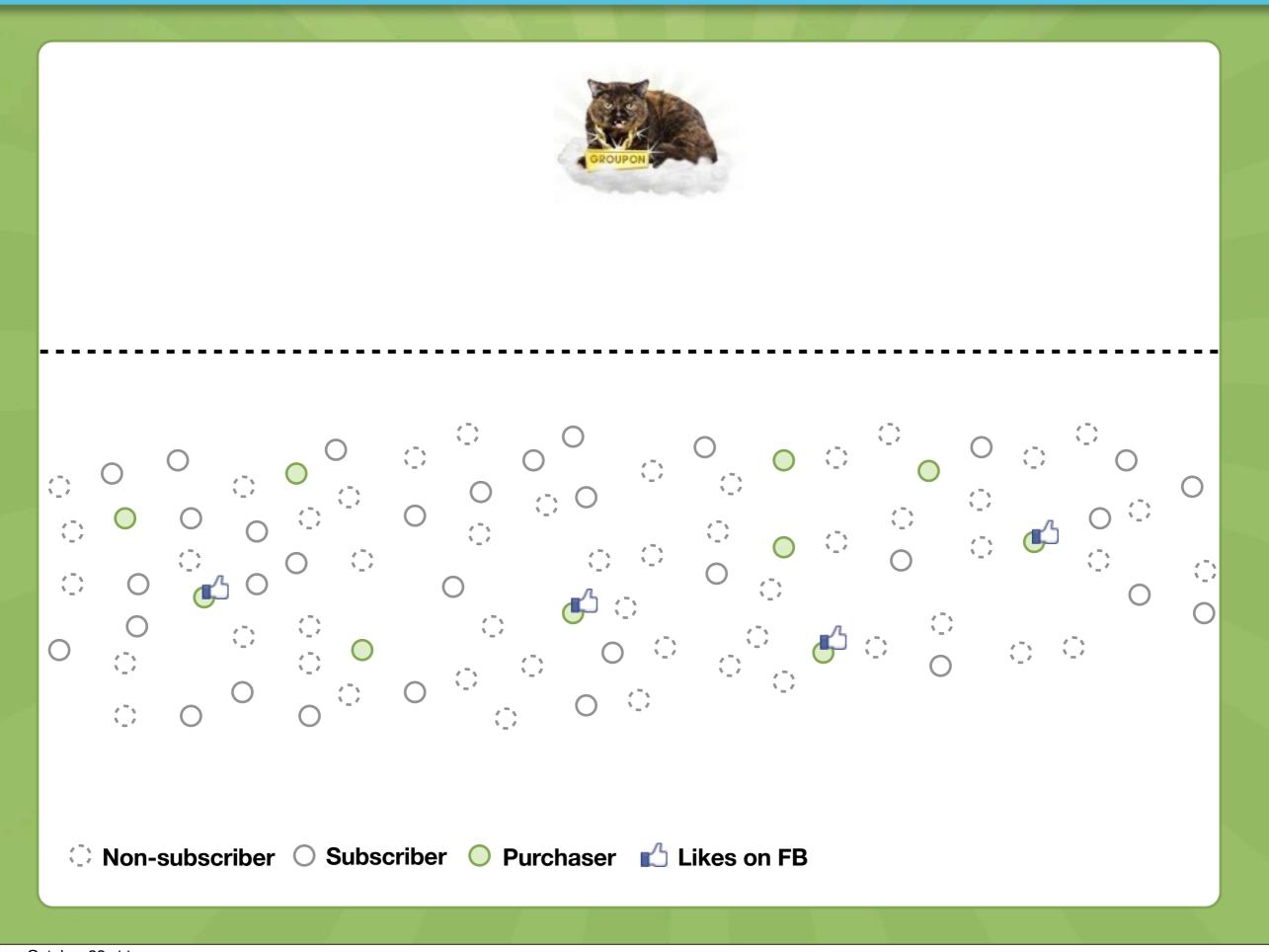
Collected Facebook "Likes" for **16,692** deals in our dataset Utilized Facebook API



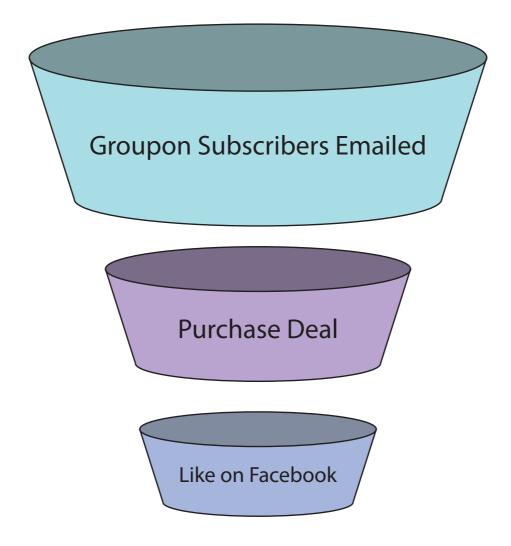




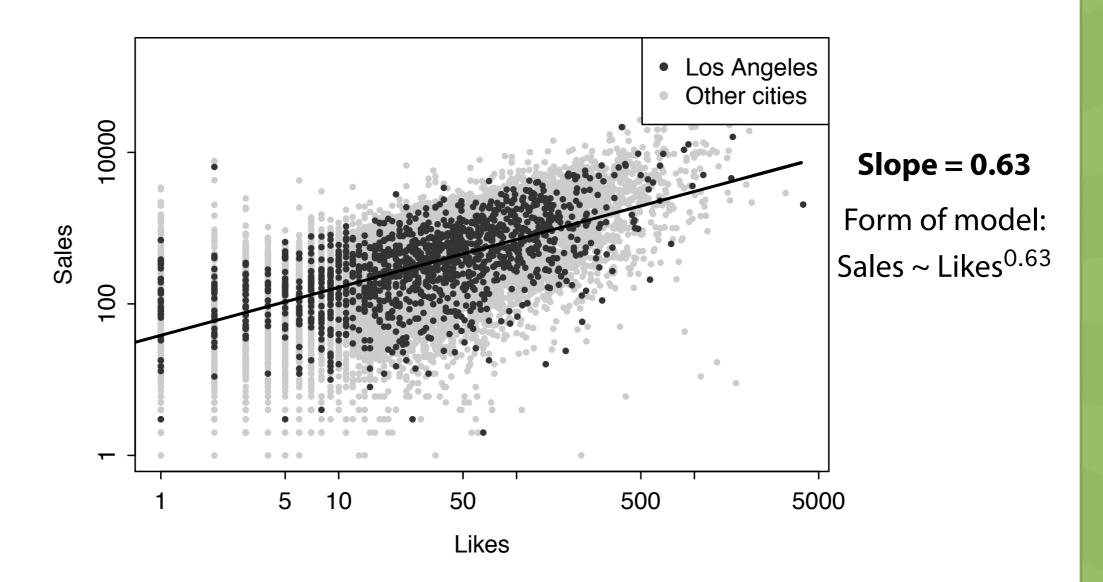




This hypothesis suggests linear relationship between likes and sales



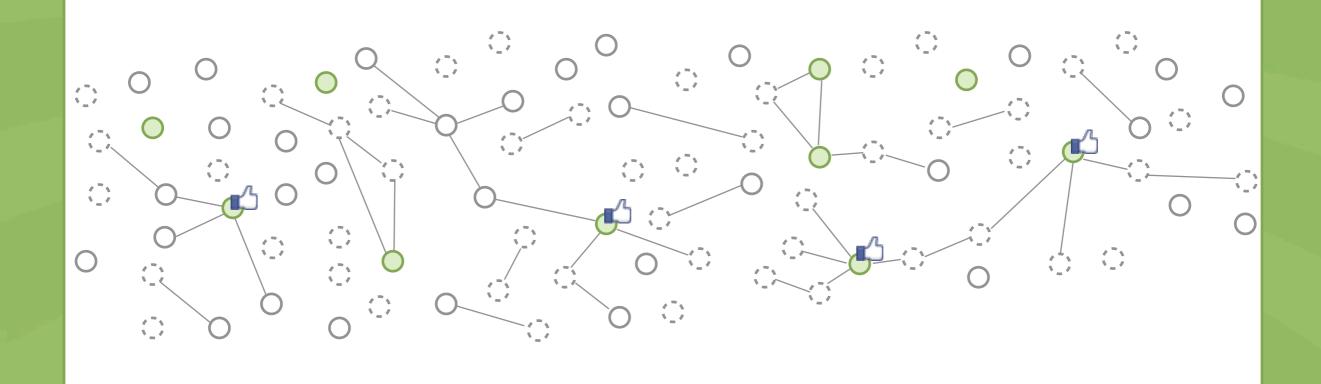
Groupon × **Facebook**



- Sales not linear in likes, reject hypothesis
- We observe diminishing marginal gains of sales in likes



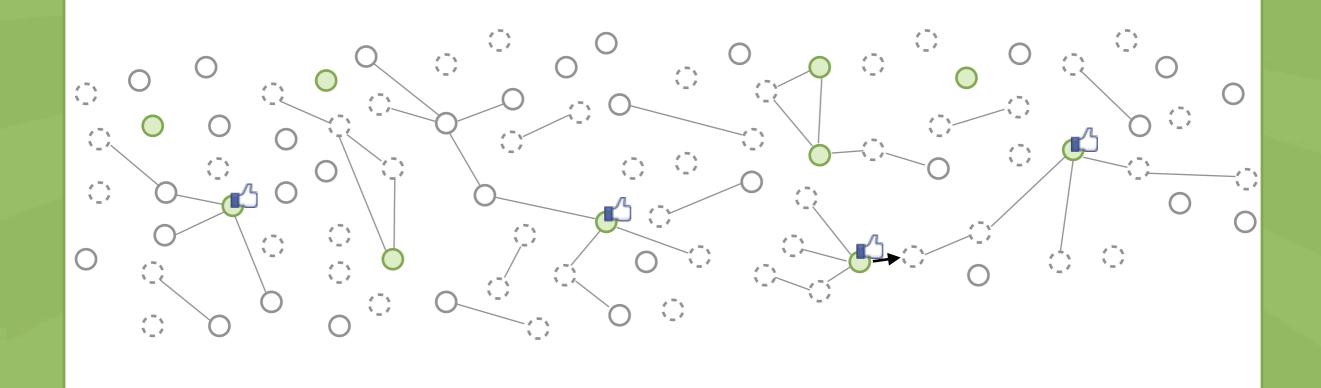
Likes cascade on the social network



○ Non-subscriber ○ Subscriber ○ Purchaser 🖒 Likes on FB



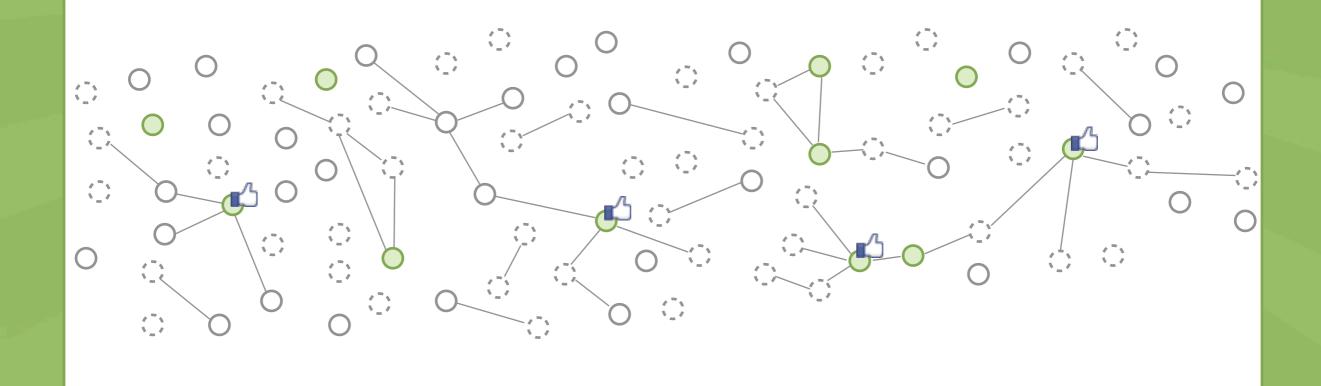
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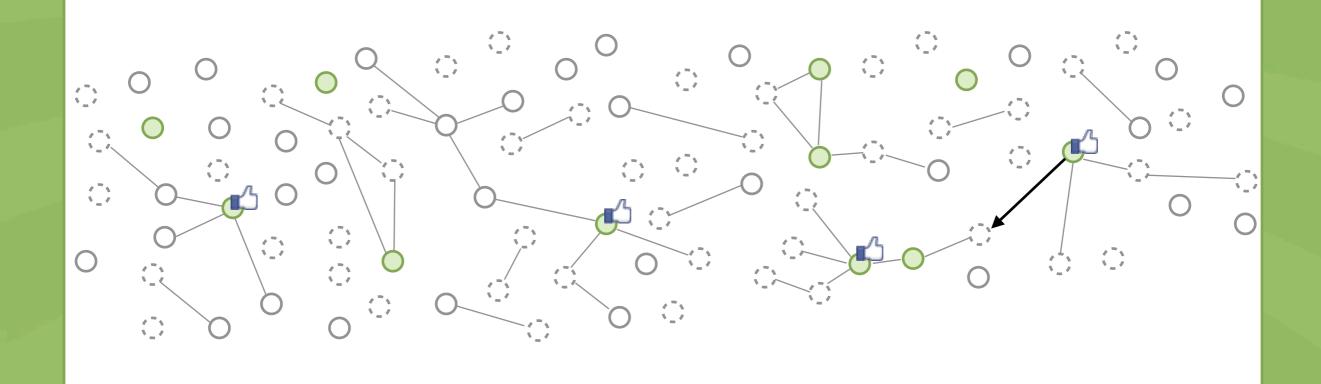
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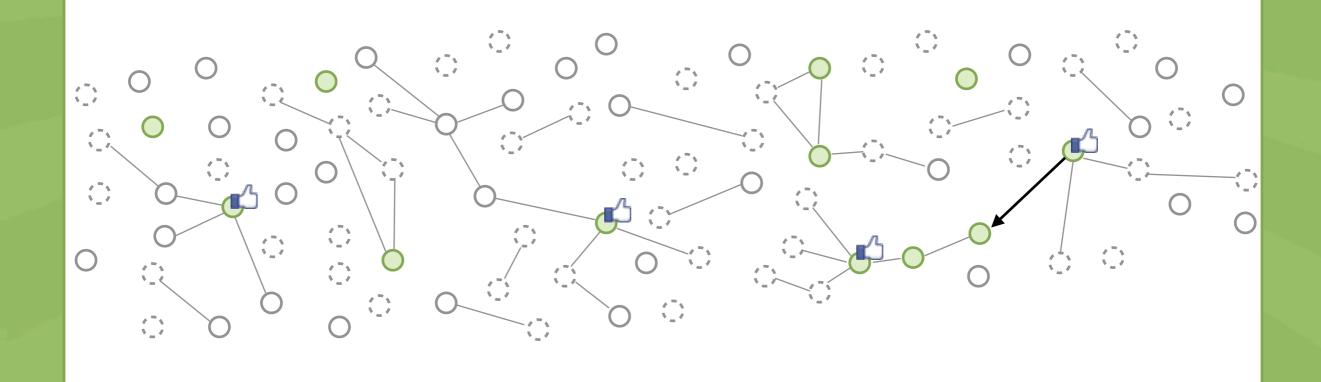
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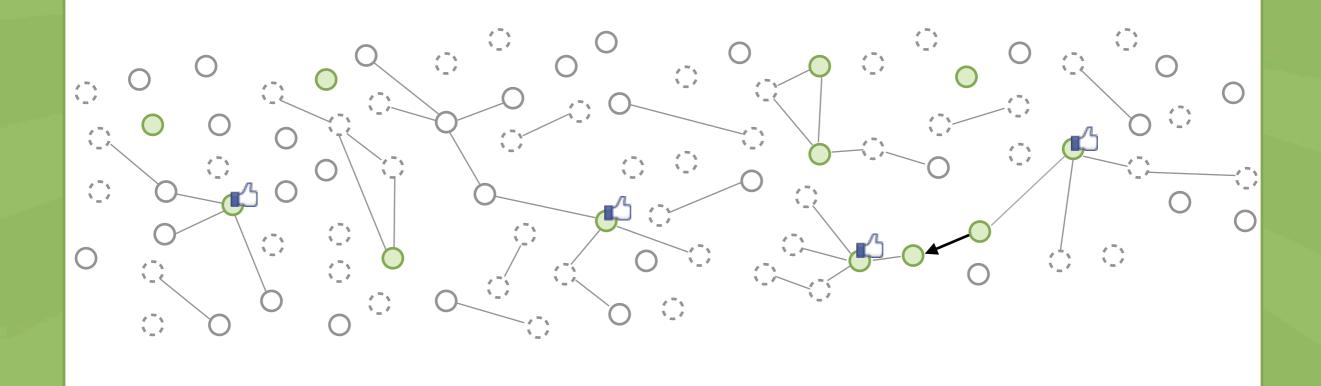
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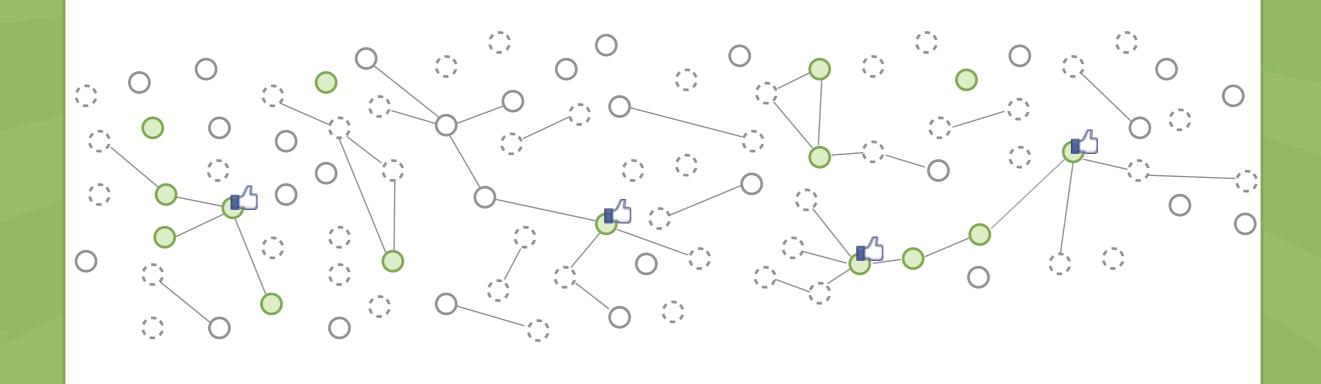
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Is our data consistent with theoretical cascade models?



Need to consider two key features of cascade models

1. How is the seed set selected?

Our dataset does not answer this, but...

Top 50% of FB users by degree responsible for most social interaction. [Wilson et al. '09]

2. How do likes propagate? [Kempe et al. '03]

Independent Cascade

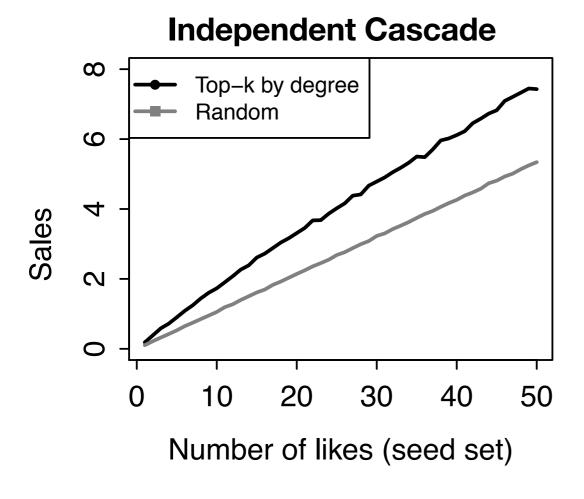
Fixed probability of activation *p* by each active neighbor

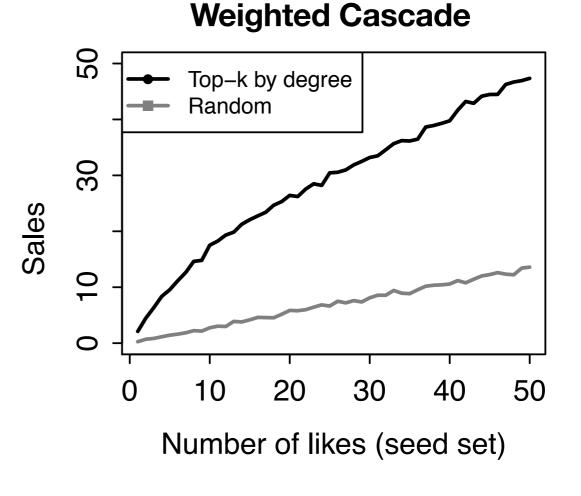
Weighted Cascade

User activated with probability 1/own-degree by each active neighbor



Yes, under previous two assumptions





Conclusions

- Study "turned corner" when we used multiple data sources rather than looking head-on.
- Great opportunity to test well studied theoretical social diffusion models.
- Groupon sustainability: reviews go up, ratings go down. Is this a net win or loss for merchants?
 What happens in the longer run?
- Computer Scientists well placed to do these studies, but rich in interdisciplinary aspects.

Does reputation really matter?

At least according to Twitter....

