# Google Auction Mechanisms

gTrade AdX summit February 5, 2014

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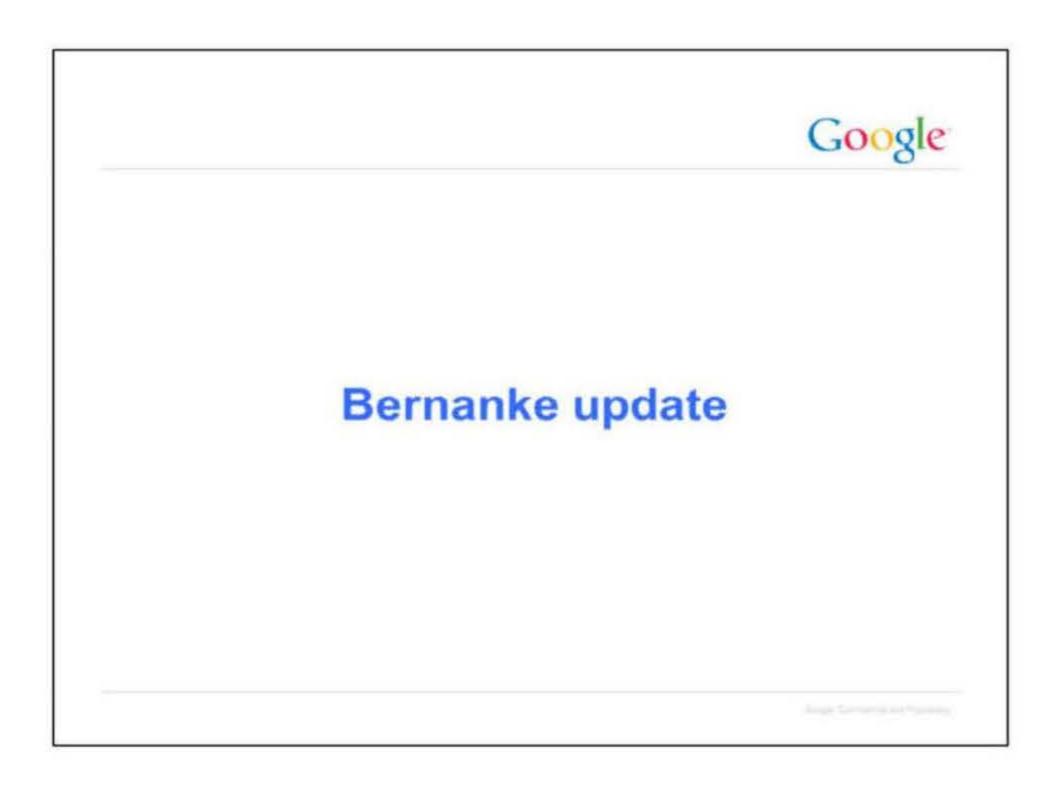
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# **Outline**



- Discussions about Bernanke, mobile, CPM vs Revenue
- Consequences of changing auction mechanisms
- Impact of changing AdX margin from 20% to 10%/5%
- Impact of GDN's participation on AdX

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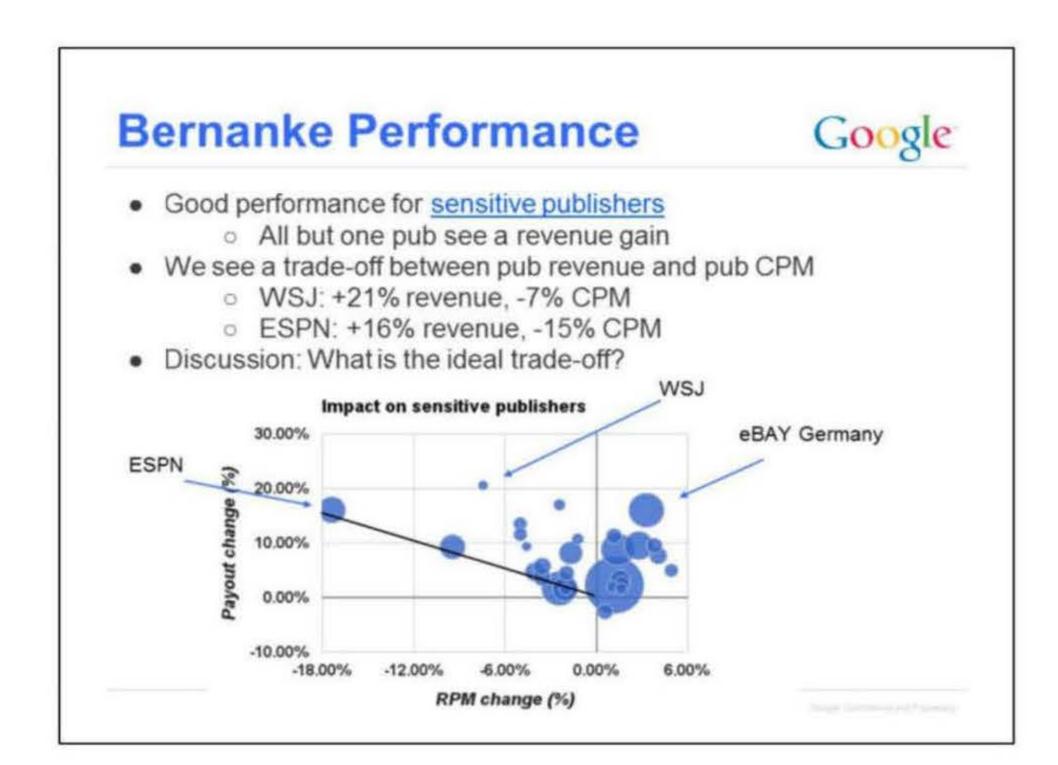


## **Bernanke Performance**



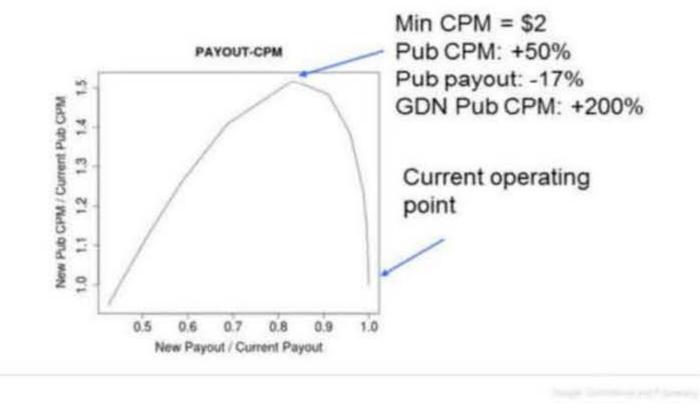
- Bernanke: Increase first bid, decrease second bid while retaining margin and maximizing GDN profit/ revenue
- Launched on Nov, 2013
- Stats: +6.5% revenue, +8.8% publisher payout, +8.8% matched queries, neutral publisher CPM overall.

Auge Samerana Pantag



# Discussion - CPM vs revenue Google

- GDN could improve CPM by only bidding on high CPM queries
- This comes at the expense of revenue



## Discussion - CPM on segments Google

- CPM impact on segments
  - With the earlier launch, on mobile traffic, pub revenue dropped 2.3% and CPM dropped 10.5%
  - Mobile CPM dropped after launching Bernanke because of lack of competition
  - At least 1 pub (NBC) complained about CPM on mobile
- Regardless, we can improve CPM and payout on segments at the expense of overall payout
- FindTheBest.com
  - Total revenue: -8%
  - Mobile revenue: +49%, mobile CPM: +56%

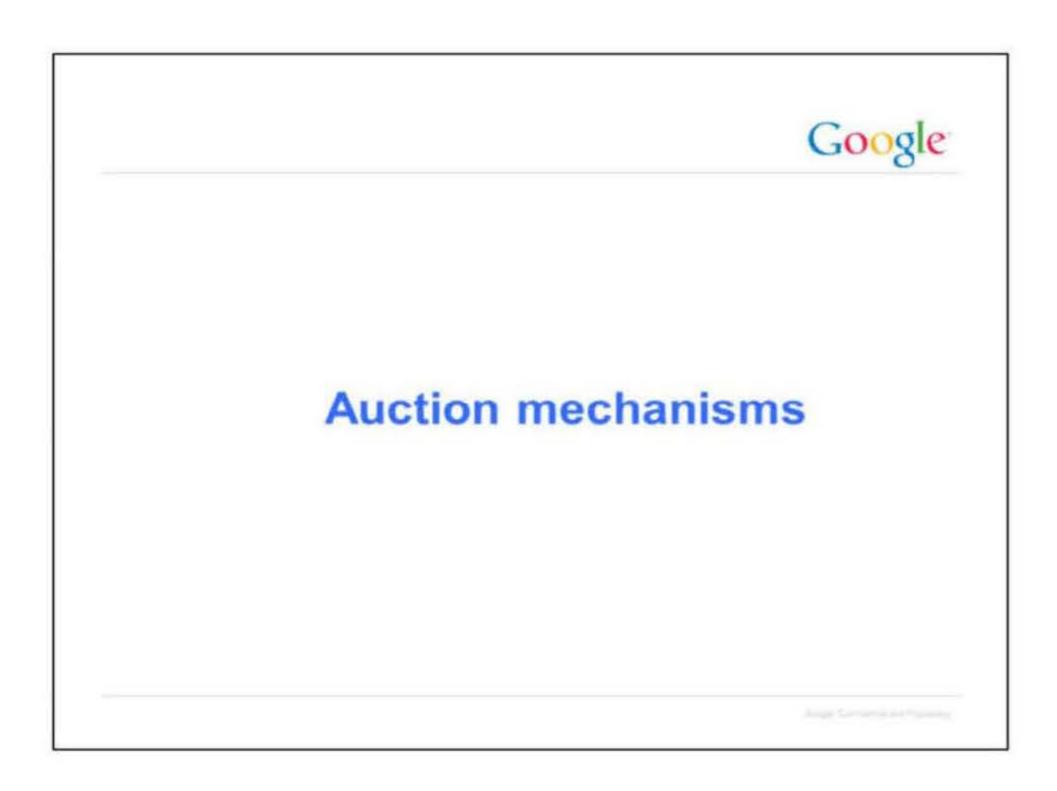
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# **Mobile Experiment Results**



- In the <u>mobile constrained version</u> of Bernanke, we improve mobile CPM, payout, but reduce total payout
- Should we launch mobile "fix" that drops revenue?
- Slicings other than mobile (e.g. geo)?

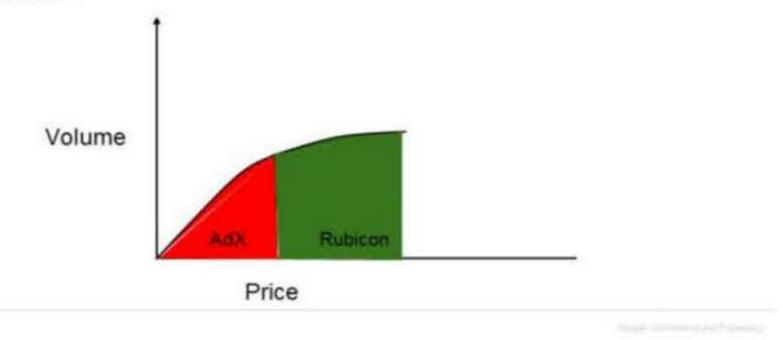
	Total revenue	Mobile revenue	Total payout	Mobile payout	Total CPM	Mobile CPM
Change %	-1.5%	-2.5%	-1.5%	+7%	+0.5%	+8.5%



#### Price - Volume curve



- For advertisers, AdX provides cheaper inventory than other exchanges such as Rubikon
- Once advertisers exhaust AdX inventory (marginal cost too expensive), they purchase incremental inventory from Rubikon
- Buyers don't mind paying extra for this inventory as long as it is profitable



# First price auctions?



- Moving towards first pricing by
  - Multiple callouts
  - Dynamic floors
  - Reserve price optimization
- Why not move all the way to first price auctions?
  - Transparent
  - End goal
  - Buyer response may carry over to other exchanges, benefitting AdX - level playing auction field

# First pricing: Optimistic scenario Google

No buyer response

Suppose GDN bids 0.86 \* bid for a 14% margin,

Adwords ROI drops 40%; revenue, payout, CPM more than double

	Queries	Revenue	Payout	Profit	Pub CPM
Overall	0%	114%	116%	107%	119%
GDN	0%	84%	84%	86%	85%
AdX buyers	0%	163%	163%	163%	162%

AdX buyers have higher auction discount, so this increase is not entirely surprising

#### **GDN ROI**



- Currently, ROI for GDN on AdX pubs (as measured using conversions per Dollar) is 6% worse than on Adsense pubs
- GDN has to respond to auction changes (reserve price optimization, dynamic floors, first pricing) to maintain ROI
- Will pubs see a net improvement if GDN (the majority buyer) responds?
- Log simulations to test the impact. Details of the methodology and the analysis summary are available <u>here</u> and <u>here</u>

Strape Services and Paper

# Only GDN responds



GDN advertiser multiplier: 0.6, conversion volume -8%

	Queries	Revenue	Payout	Profit	Pub CPM
Overall	-9%	62%	69%	47%	86%
	0%	114%	116%	107%	119%
GDN	-23%	-8%	-8%	-8%	19%
	0%	84%	84%	86%	85%
AdX	19%	178%	178%	178%	134%
buyers	0%	163%	163%	163%	162%

# AdX buyer response



- AdX buyers may respond as well
  - o How many will?
  - What will be the extent?
- Even if all AdX buyers respond to keep ROI and margin the same, it might benefit AdX if they extend this bidding behavior to other exchanges
- We consider simplified scenarios where AdX buyers reduce their bid uniformly

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# AdX buyers respond



GDN advertiser multiplier: 0.6, AdX buyer multiplier: 0.7

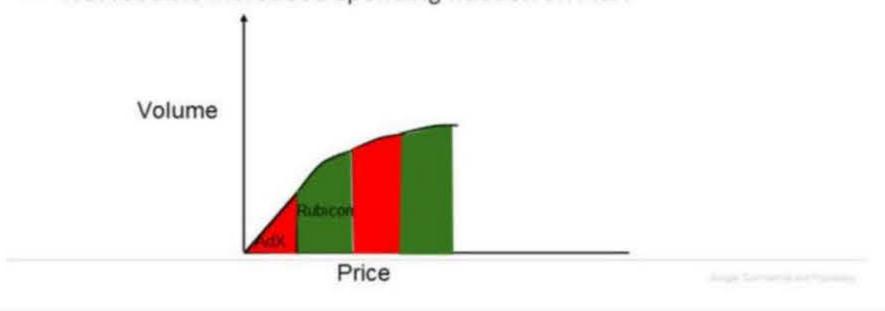
	Queries	Revenue	Payout	Profit	Pub CPM
Overall	-12%	30%	32%	22%	52%
GDN	-18%	-4%	-4%	-4%	17%
AdX buyers	0%	84%	84%	84%	83%

GDN advertiser multiplier: 0.6, AdX buyer multiplier: 0.4

	Queries	Revenue	Payout	Profit	Pub CPM
Overall	-16%	-3%	-2%	-7%	15%
GDN	-10%	-1%	1%	-7%	13%
AdX buyers	-26%	-6%	-6%	-6%	27%

# Interaction with other exchanges Google

- Suppose advertiser spends \$X on AdX and \$Y on Rubicon
- With no advertiser response, 1st pricing causes spend to increase to \$2X on AdX and \$Y
- To bring spend back to \$X + \$Y, advertiser scales back spending on both exchanges
  - CPMs comparable
  - Naive bidding
- Net result is increased spending fraction on AdX

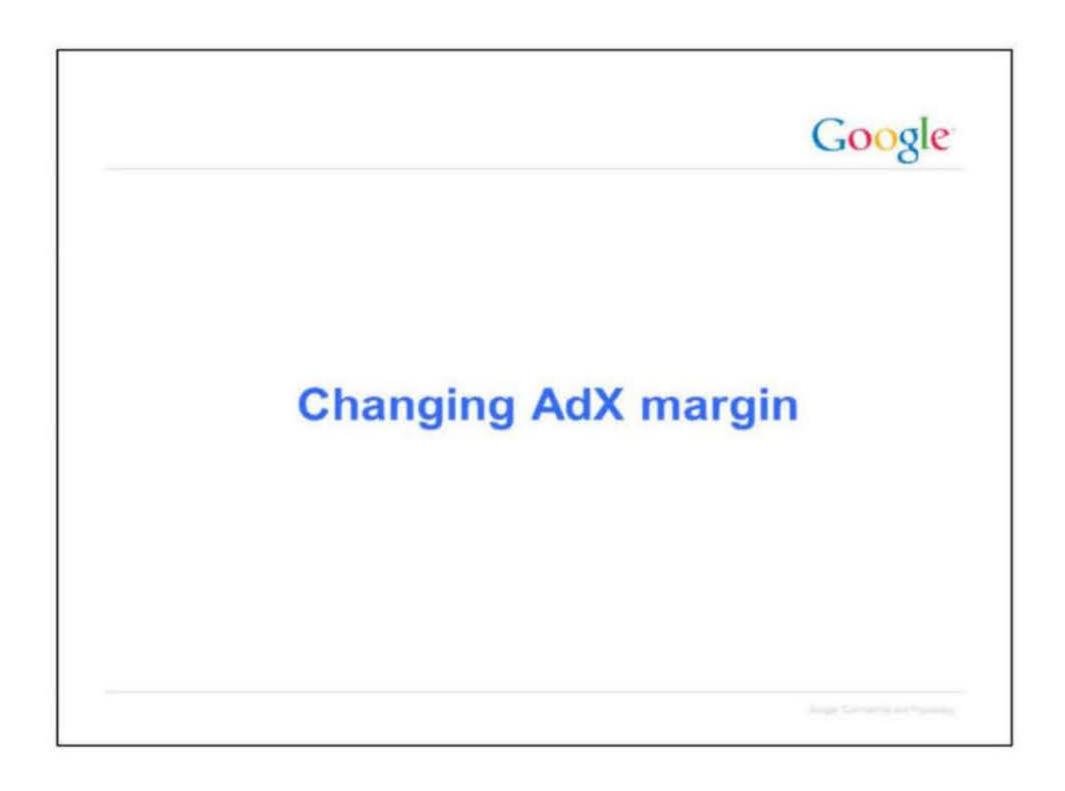


# Conclusions



- We originally believed that publishers will not gain from a first price auction
- Even if GDN responds, it's likely that we do see a benefit, at least in the short term
- First price auctions may make the playing field uniform with other exchanges, providing benefit in the long term

Augus Samura and Papalan



# Changing AdX margin



- The objective of this <u>analysis</u> is to understand the impact of changing the AdX margin from the typical 20% to 10% or 5%
- Total margin on Adwords ads is still 32%
- Caveat: Bernanke multipliers and throttling rates don't change

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# **Major implications**



- AdX buyers are now slightly more competitive (except when DRS/ Bernanke is in effect). GDN loses 1% queries to AdX buyers.
- Match rate increases because of smaller margin
- Payout increases because of smaller margin
- Slight drop in revenue when AdX buyers win because of the decrease in margin
- Google profit drops

Jugo Samon and Spenie

# Impact of changing AdX margin Google

New margin = 10%, target adw margin = 31.2%

Winner	Queries	Revenue	Payout	Google Profit
Any		-0.6%	5.1%	-14.4%
GDN	+0.2%	-0.3%	1.9%	-4.7%
AdX buyer	+3.2%	-1.2%	10.9%	-50%

New margin = 5%, target adw margin = 31.2%

Winner	Queries	Revenue	Payout	Google Profit
Any		-0.8%	7.7%	-21.0%
GDN	+0.3%	-0.4%	2.9%	-7.1%
AdX buyer	+4.8%	-1.7%	16.4%	-75%

# GDN margin = 14%



#### New margin = 10%, target adw margin = 22.6%

Winner	Queries	Revenue	Payout	Google Profit
Any		-1.0%	9.7%	-27.2%
GDN	1.8%	-0.3%	9.7%	-20.9%
AdX buyer	1.1%	-2.3%	9.7%	-50.0%

#### New margin = 5%, target adw margin = 18.3%

Winner	Queries	Revenue	Payout	Google Profit
Any		-1.4%	14.4%	-40.0%
GDN	2.5%	-0.5%	14.4%	-30.8%
AdX buyer	1.1%	-3.3%	14.4%	-75.0%



#### Queries won currently by AdX Google buyers Metric With GDN Without bids (won by GDN bids AdX buyer) (won by AdX buyer) Daily Queries 2.17B 2.17B \$1,609,225 Daily Google \$1,325,312 Revenue \$0.611 RPM (revenue / \$0.742 1000 queries) Daily Publisher \$1,287,380 \$1,060,249 Payout

# Queries won currently by Adwords buyers

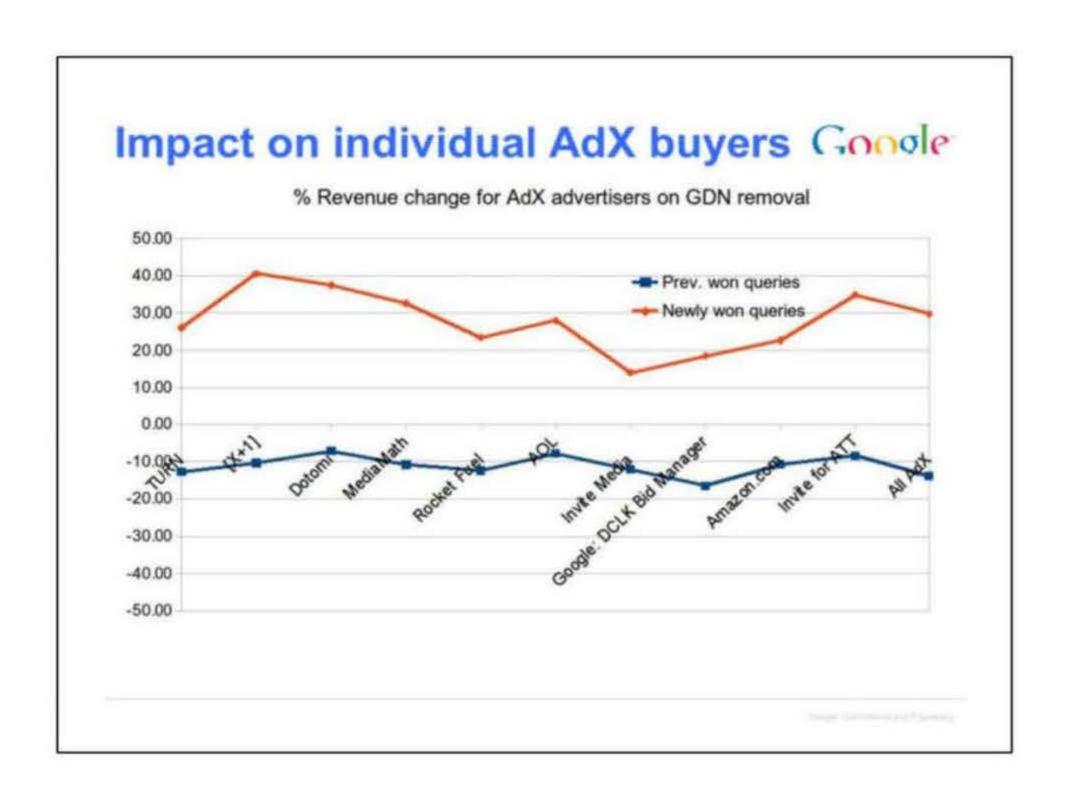


Metric	With GDN bids (won by GDN)	Without GDN bids (won by AdX buyer)	
Daily Queries	5.32B	\$1.47B	
Daily Google Revenue	\$3,795,826	\$321,087	
RPM (revenue / 1000 queries)	\$0.714	\$0.218	
Daily Publisher Payout	\$2,611,289	\$256,870	

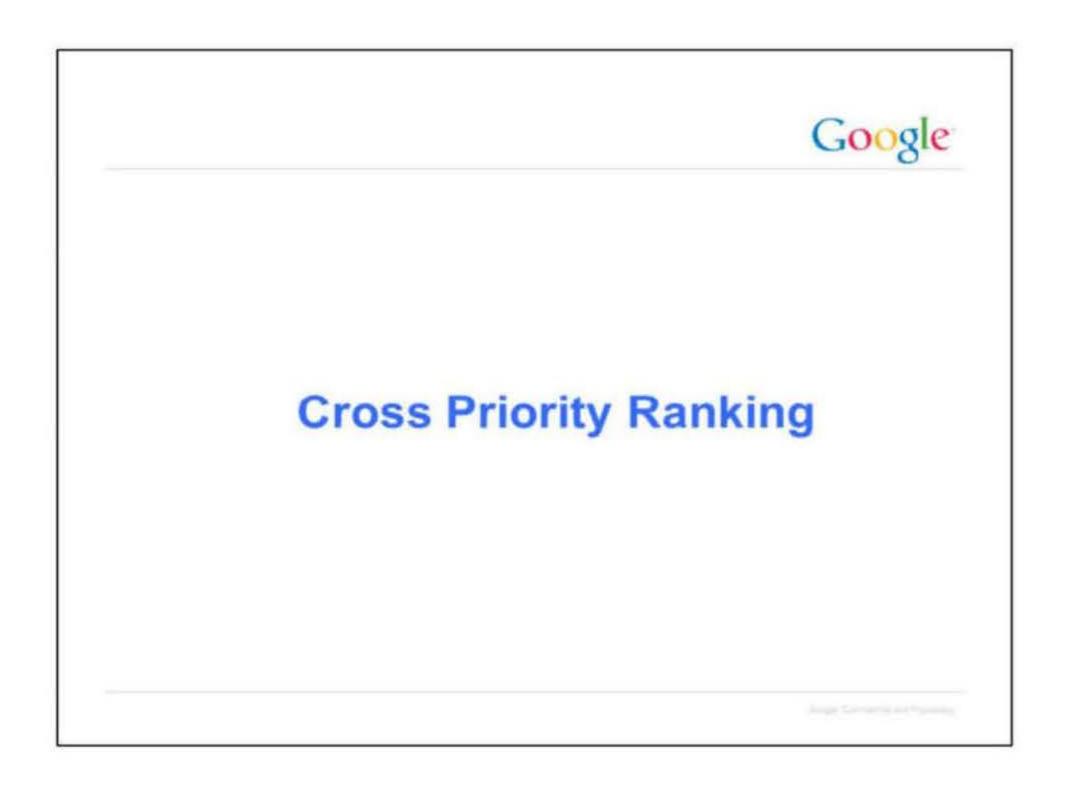
# **Overall impact**



Metric	With GDN bids	Without GDN bids	
Daily Queries	7.49B	3.64B	
Daily Google Revenue	\$5,405,051	\$1,646,399	
RPM (revenue / 1000 queries)	\$0.651	\$0.452	
Daily Publisher Payout	\$3,898,669	\$1,317,119	







# **Cross Priority Ranking**



- Detailed results <u>here</u>
- Interested in understanding ROI change for adwords buyers because of CPR

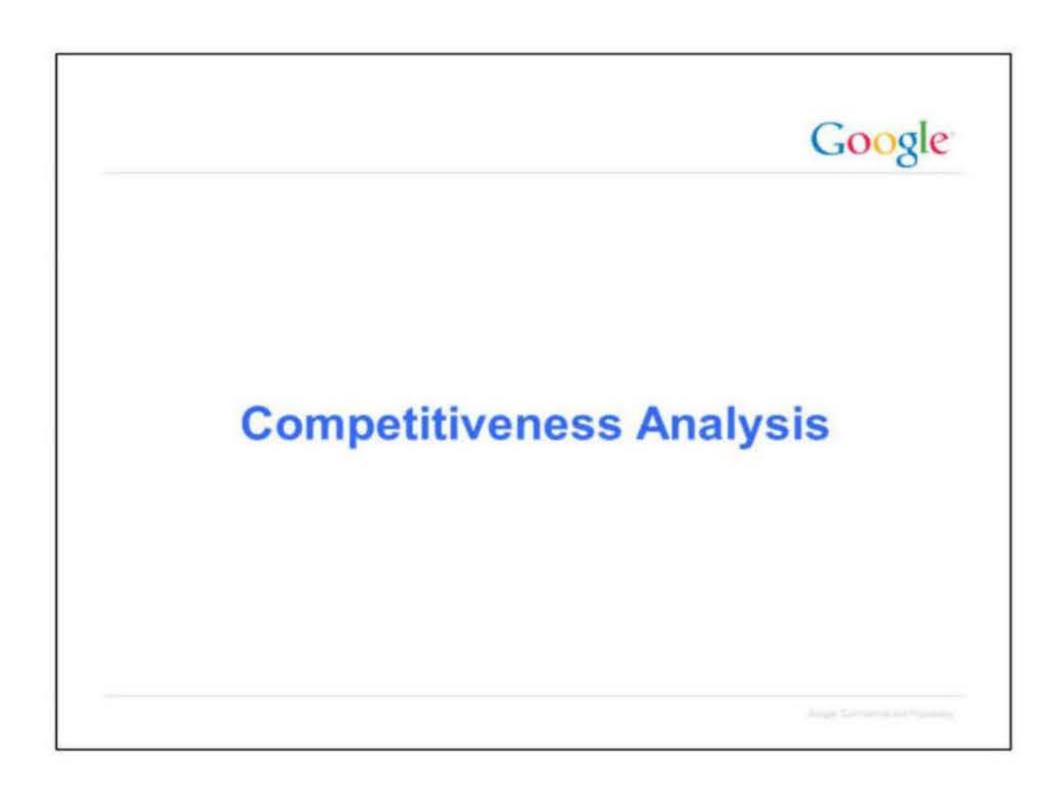
Mh-CPD	Mh-CVR	Mh-CTR
1.18%	0.73%	1.88%

 Because of concerns about the interaction between Bernanke and CPR, interested in CPR's impact on Bernanke gains

#### Impact of Bernanke

	GDN revenue	GDN payout
CPR	+13.8%	+14.5%
No CPR	+13.0%	+14.2%

Augus Samura and Proposition



# Competitiveness analysis



#### Post Bernanke second pricing mechanisms

Second pricing mechanism	% queries, GDN wins	% queries, AdX buyer wins
GDN	34%	26%
AdX buyers	16%	33%
Reserve	50%	41%

<sup>\*</sup> Difference was even starker pre-Bernanke

Second pricing mechanisms indicate that GDN second prices itself a lot and AdX buyers second price themselves a lot

# Competitiveness landscape



- GDN does not seem to have <u>competitive bids</u> when AdX buyers win the auction
  - When GDN wins, AdX buyers bid above reserve on 35% queries on Desktop, 19% on mobile
  - When AdX buyers win, GDN bids above reserve on 55% queries on Desktop, 59% on mobile
- AdX buyers get much higher auction discount (1 winner paid / bid)
  - AdX buyers: auction discount = 0.70
  - GDN: auction discount = 0.45

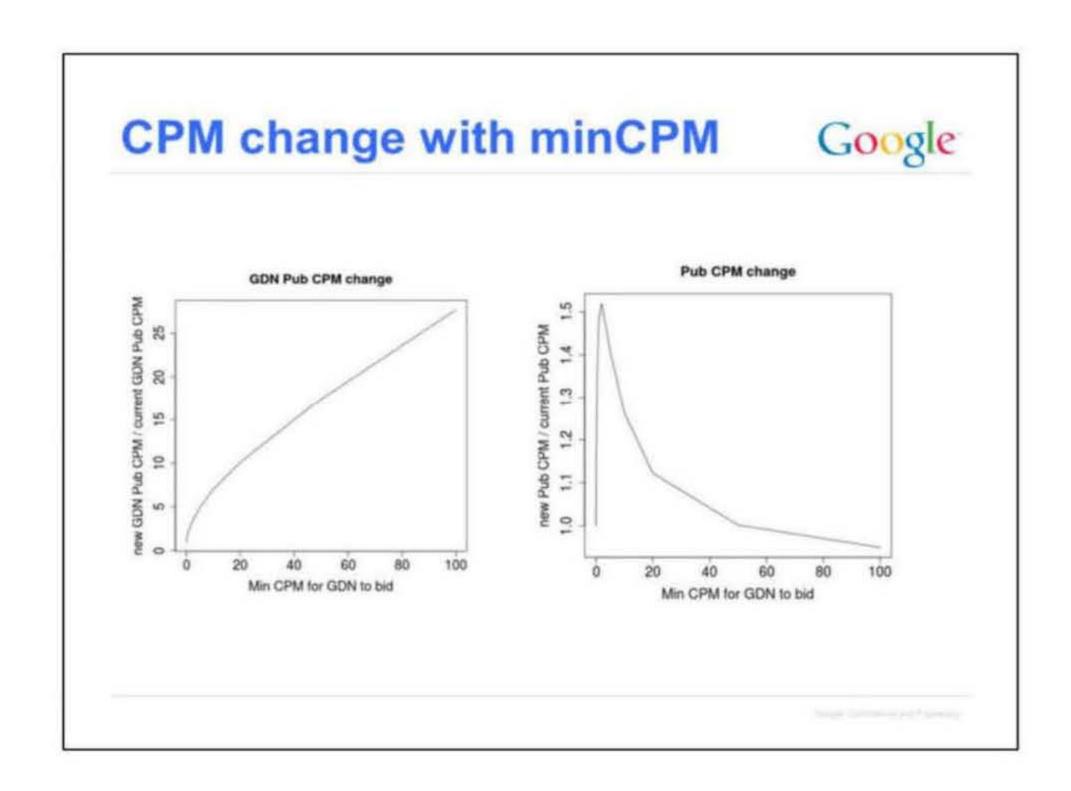
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# Low overlap



Why do we have low overlap?

- Hypothesis 1: Disjoint cookie spaces
  - But GDN should still have contextual ads...?
  - Multiple callouts with high reserve that AdX buyer matches but GDN's contextual ad does not?
- Hypothesis 2: Missing signals?
- If the auction discount was 45% for AdX buyers (same as for GDN), their spend will go up 80%!



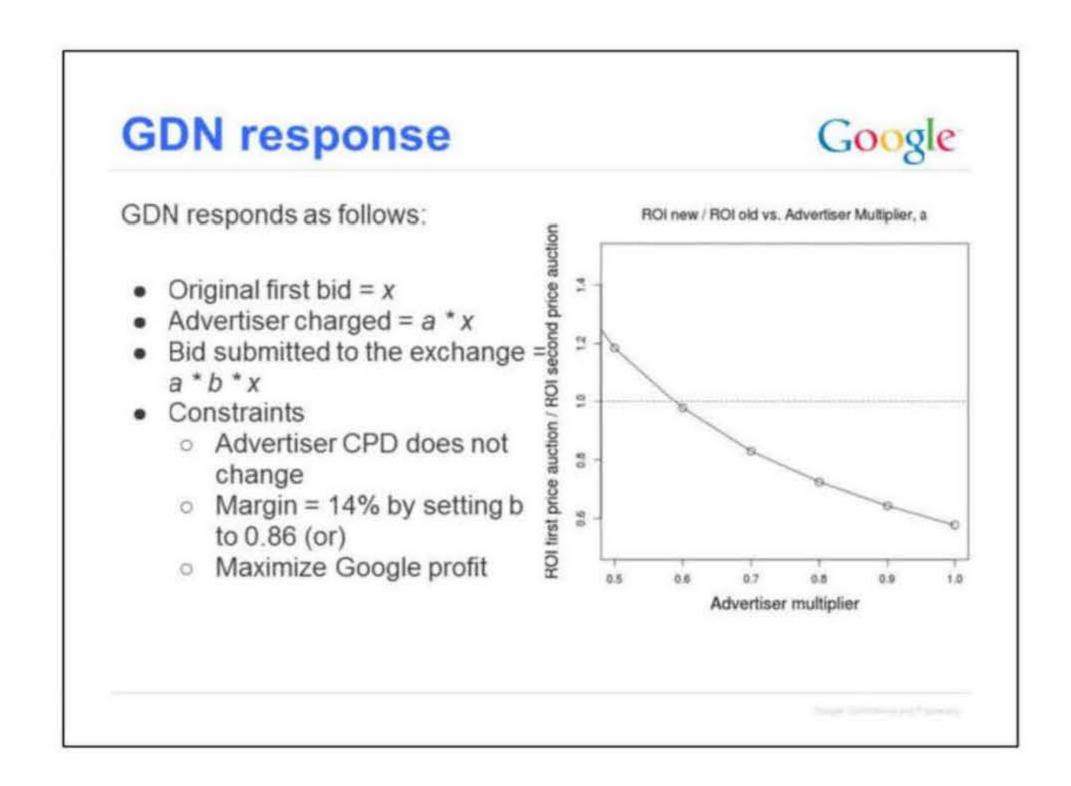
# Sensitive pub impact



29 Sensitive publishers: Payout +6.5%

- 1 pub had small payout drop (-2%), all other pubs had payout increase (max of 21% for WSJ)
- Only 2 pubs had considerable CPM drop WSJ: -7%, ESPN: -15% (but payout + 16%)

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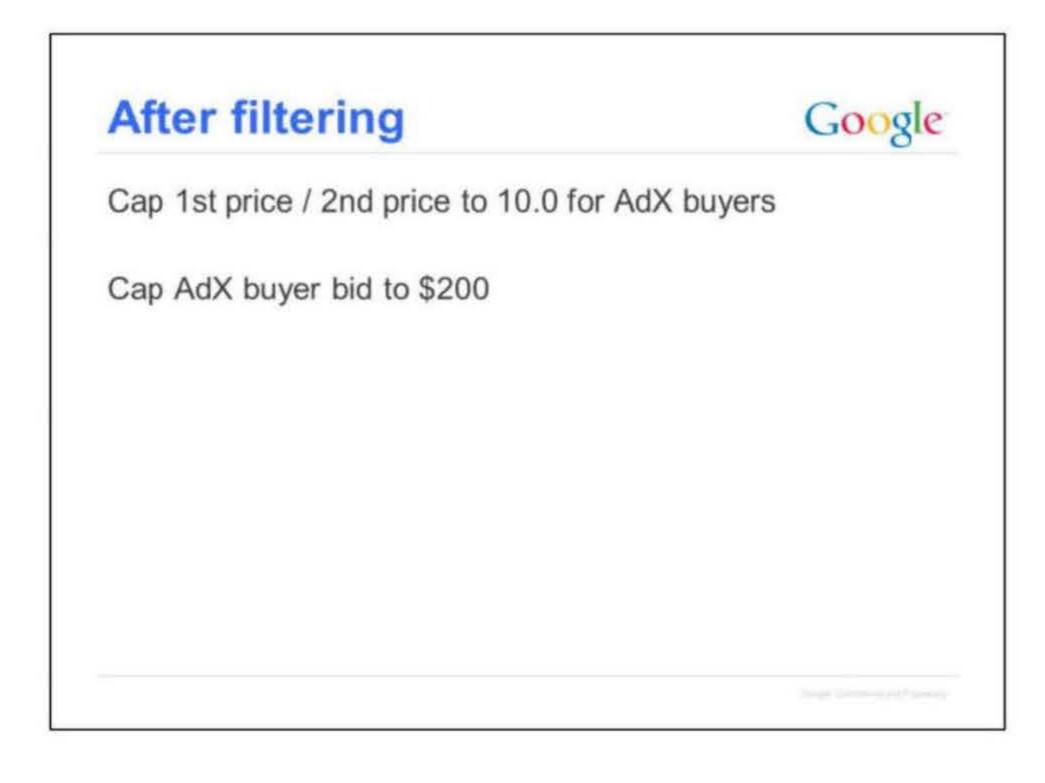
# If GDN aims to maximize profit Google

No AdX buyer response, GDN bid multiplier = 0.6 \* 0.3 (new margin = 70%)

Queries	Revenue	Payout	Profit	Pub CPM
-23%	57%	40%	101%	0.55 -> 1
-55%	-35%	-76%	58%	0.49 -> 0.25
50%	233%	233%	233%	0.69 -> 1.52
	-23% -55%	-23% 57% -55% -35%	-23% 57% 40% -55% -35% -76%	-23% 57% 40% 101% -55% -35% -76% 58%

AdX buyer multiplier: 0.3, GDN bid multiplier = 0.6 \* 0.2 (new margin = 80%)

	Queries	Revenue	Payout	Profit	Pub CPM
Overall	-30%	17%	-6%	80%	0.55 -> 0.74
GDN	-61%	-38%	-85%	65%	0.49 -> 0.19
AdX buyers	40%	123%	123%	123%	0.69 -> 1.1



# No response + 1st pricing



Suppose GDN bids 0.86 \* bid for a 14% margin, Adwords ROI drops 40%; revenue, payout, CPM double

	Queries	Revenue	Payout	Profit	Pub CPM
Overall	0%	101%	102%	96%	0.57 -> 1.14
GDN	0%	84%	84%	86%	0.51 -> 0.94
AdX buyers	0%	129%	129%	129%	0.70 -> 1.57

Even without GDN demand, pubs experimenting on other exchanges may see such high CPMs from other buyers

Augus Commission Processor

# Only GDN responds



GDN advertiser multiplier: 0.6

	Queries	Revenue	Payout	Profit	Pub CPM
Overall	-9%	47%	51%	34%	0.57 -> 0.94
	0%	101%	102%	96%	0.57 -> 1.14
GDN	-23%	-7%	-7%	-7%	0.51 -> 0.60
	0%	84%	84%	86%	0.51 -> 0.94
AdX buyers	19%	140%	140%	140%	0.70 -> 1.39
	0%	129%	129%	129%	0.51 -> 1.57

# AdX buyers respond



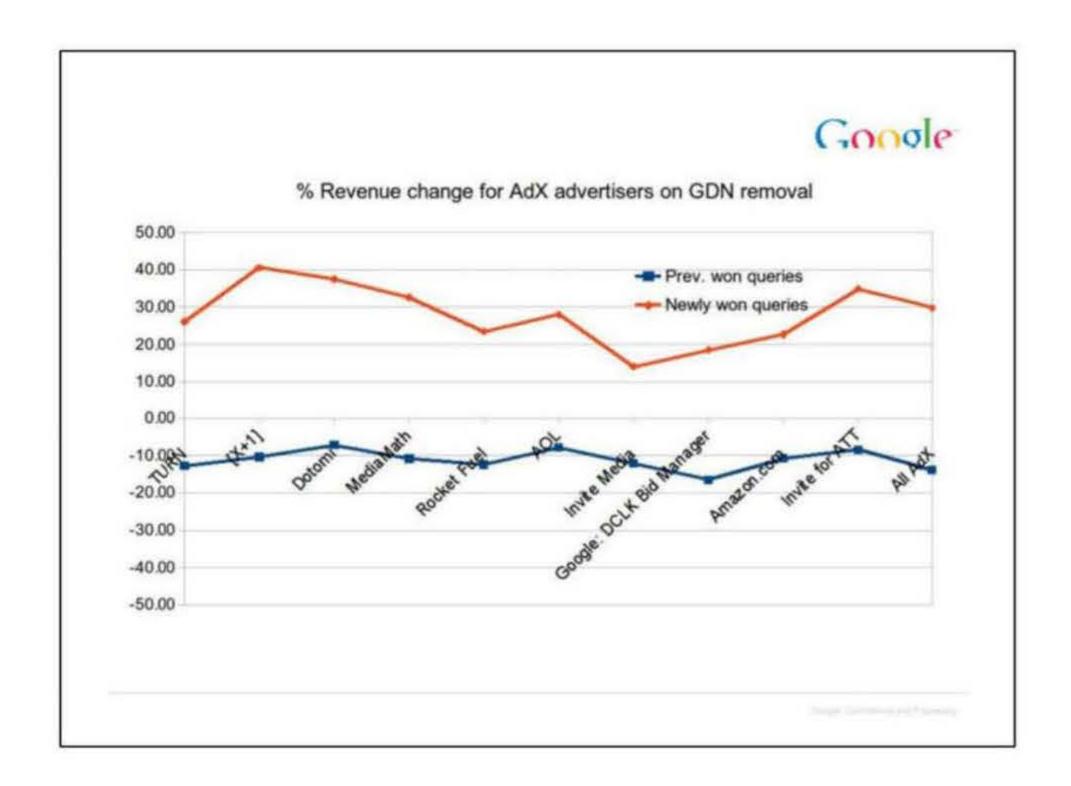
GDN advertiser multiplier: 0.6, AdX buyer multiplier: 0.8

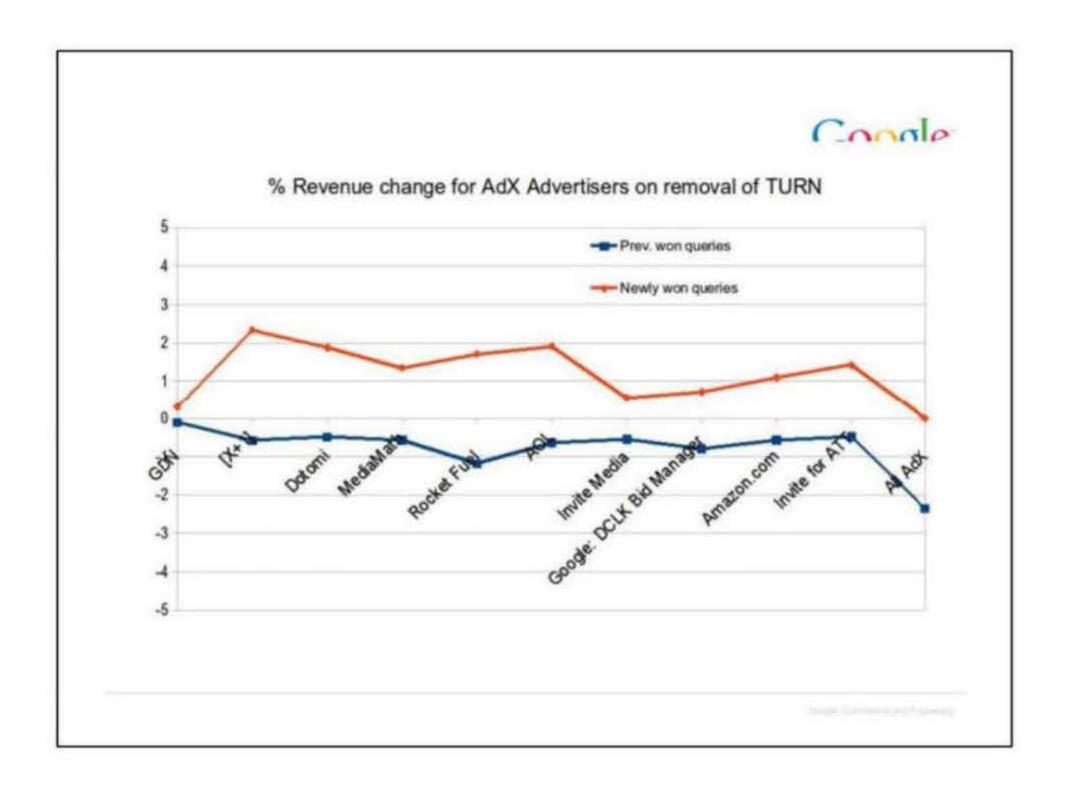
	Queries	Revenue	Payout	Profit	Pub CPM
Overall	-11%	28%	31%	20%	0.57 -> 0.83
GDN	-20%	-5%	-5%	-5%	0.51 -> 0.60
AdX buyers	7%	85%	85%	85%	0.70 -> 1.19

GDN advertiser multiplier: 0.6, AdX buyer multiplier: 0.5

	Queries	Revenue	Payout	Profit	Pub CPM
Overall	-14%	1%	2%	-1%	0.57 -> 0.67
GDN	-13%	-1%	0%	-4%	0.49 -> 0.57
AdX buyers	-15%	5%	5%	5%	0.69 -> 0.86

Sugar Surviva and Proposition





# Interaction with other exchanges Google



- Suppose advertiser spends \$X on AdX and \$Y on Rubikon
- With no advertiser response, 1st pricing causes spend to increase to \$2X on AdX and \$Y
- To bring spend back to \$X + \$Y, advertiser scales back spending on both exchanges
  - CPMs comparable
  - Naive bidding
- Net result is increased spending fraction on AdX

