Appier

Winning Price
Prediction

$$

supply   demand

Publishers   Ad Exchange   DSP   Advertiser

Other   Other
                          Advertiser

            Other   Other DSP

            Google $$

                                        Appier

            Other $$$

                                        Other DSP   Other
                                                          Advertiser
            Other $
                                                          Other
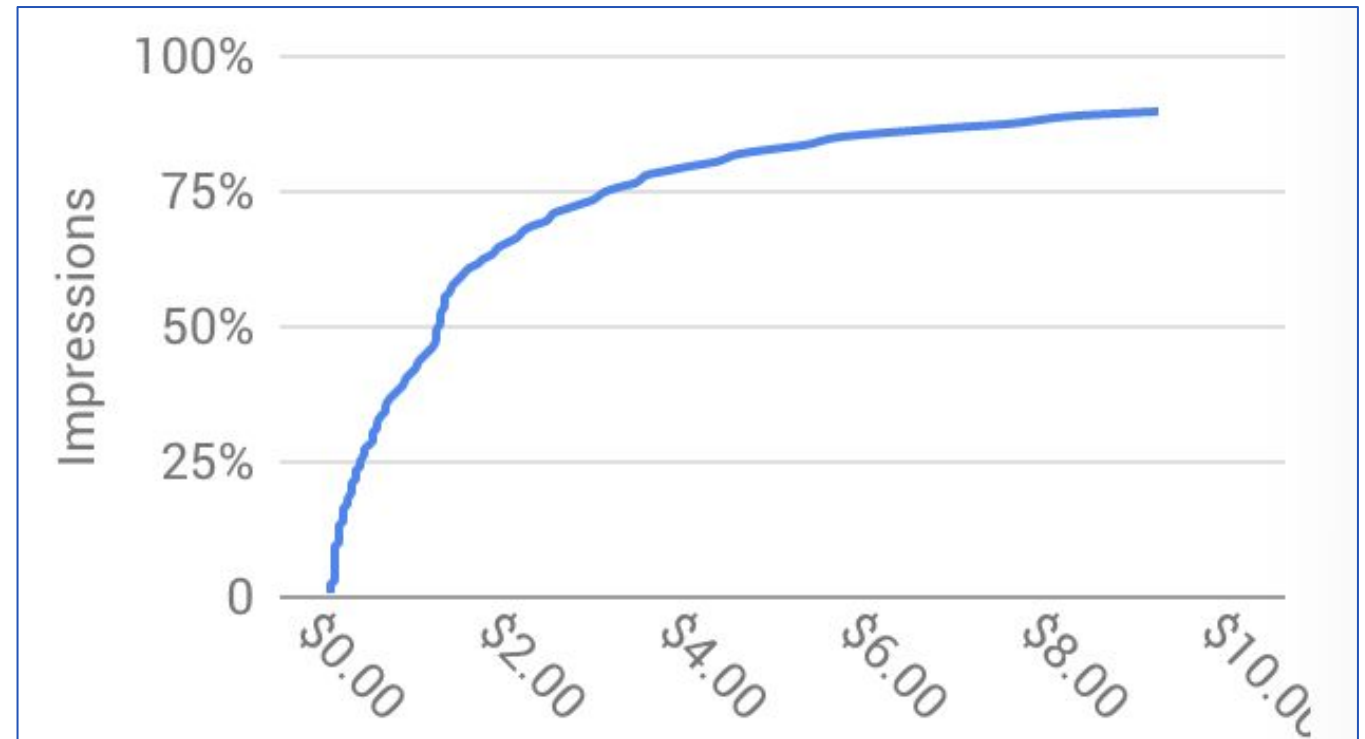   Advertiser

100 ms

Appier

Winning Price Estimation / Market rate estimation

• **How to estimate the highest bidding price of other DSP**

• **Benefit**

   - Traffic estimation

   - First price auction

   - Budget constraint
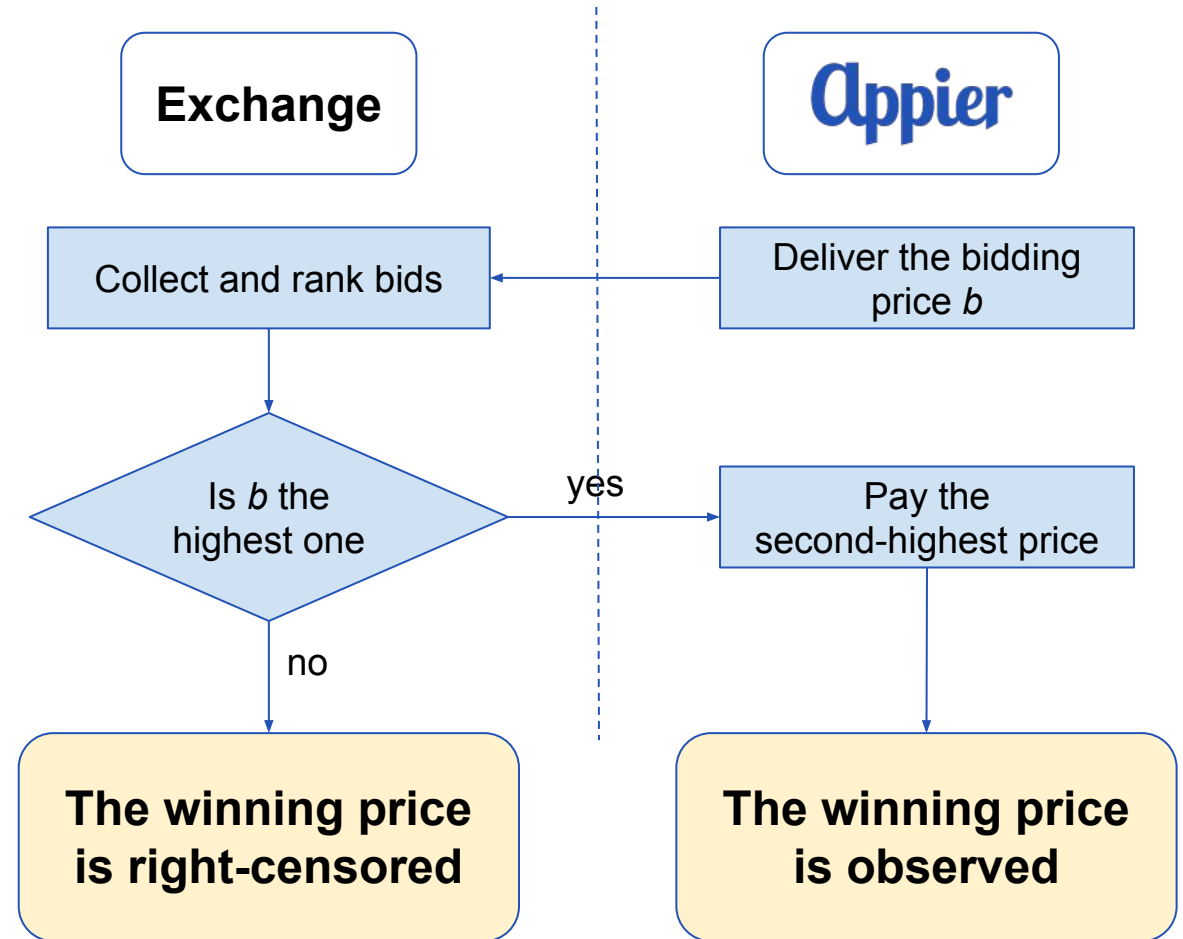
   - Market value estimation

Appier

Censored Data - Second price auction

1) **If win bid**
   - The highest bidding price of other DSP can be observed

2) **If lose bid**
   - Our bidding price is a lower bound of the winning price

Exchange

Deliver the bidding price b

Collect and rank bids

Is b the highest one

yes

Pay the second-highest price

no

The winning price is right-censored

The winning price is observed

Feature

idfa	device id* (hash)
exchange	exchange id* (hash)
app_id	publisher id
web_host	
width	the width of impression (-1 for native ad)
height	the height of impression (-1 for native ad)
imp_position	the position of impression
deal_id	deal identifier between publisher and advertiser
os	
device_type	Mobile/PC

app_type	app/web
imp_type	image/video/native/richmedia
imp_is_instl	full screen
carrier	
country	
categories	IAB content categories
impreq_time	
win_price	
bid_price	

OpenRTB Spec

Appier

Feature

exchange	app_id	web_host	width	height	imp_position	deal_id	imp_is_instl	carrier	idfa	categories	win_price
microad_jp	6431	itest.5ch.net	-1	-1	0		FALSE	70000		["IAB1"]	349
gadex_hk	1326609504	itunes.apple.com	-1	-1	1	549644393846677000	FALSE		0	["IAB1-6","IAB1-7","IAB19-6"]	3203

(-1, -1) ⇒ Native ad

0: unknown
1: above the fold

False: not full screen

IAB1: Art & Entertainment
IAB1-6: Music
IAB1-7: Telephone
IAB19-6: Cell phone

Data

• **Artificial generated data that simulate the situation**

• **Train: 2 weeks, Test: 1 week**

• **Feature can have missing value**

Appier

idfa	device id
exchange	exchange id
app_id	publisher id
web_host	web host
width	the width of the impression (-1: native ad)
height	the height of the impression (-1: native ad)
imp_position	0 Unknown 1 Above the Fold 2 DEPRECATED - May or may not be initially visible depending on screen size/resolution. 3 Below the Fold 4 Header 5 Footer 6 Sidebar 7 Full Screen
deal_id	A deal identifier between a publisher and an advertiser
os	os
device_type	1 Mobile/Tablet 2 Personal Computer 3 Connected TV 4 Phone 5 Tablet 6 Connected Device 7 Set Top Box
app_type	0: API buying all 1. app 2. web 3. pushad (push notification ad by airpush)

imp_type	0: unknown 1: image 2: video 3: richmedia (compatible with image) 4:native
imp_is_instl	1 = the ad is interstitial or full screen, 0 = not interstitial.
carrier	Carrier or ISP
country	
categories	IAB content categories of app/site ex: IAB5 Education IAB5-1 7-12 Education IAB5-2 Adult Education IAB5-3 Art History IAB5-4 College Administration IAB5-5 College Life https://developers.mopub.com/docs/ui/marketplace/iab-category-blocking/
impreq_time	request time (unix timestamp)
win_price	win price, if win
bid_price	bid price

appier