

Preisgestaltung von Online-Werbung

Prof. Dr. Bernd Skiera

ITeG-Ringvorlesung
"Digitale Gesellschaft – Eine Gestaltungsaufgabe"

Universität Kassel

7.12.2016

Who is involved in Online Advertising?

At Least 3 Parties in Online Advertising



What makes Online Advertising Unique?

Ability to Target Individual User

Ability to Track Reactions of Each User to Online Advertising

Availability of Information about Each User

Unique Traits of Online Advertising and Its Consequences

- **Unique Traits**
 - Ability to target individual users
 - Ability to track reactions of each user to online advertisements
 - Availability of information about each user
- **Consequences**
 - ?

Unique Traits of Online Advertising and Its Consequences

- **Unique Traits**
 - Ability to target individual users
 - Ability to track reactions of each user to online advertisements
 - Availability of information about each user
- **Consequences**
 - Ability to assign different values to each user

Unique Traits of Online Advertising and Its Consequences

- **Unique Traits**
 - Ability to target individual users
 - Ability to track reactions of each user to online advertisements
 - Availability of information about each user
- **Consequences**
 - Ability to assign different values to each user
 - Different prices of an online advertisement for each user (i.e, impression)

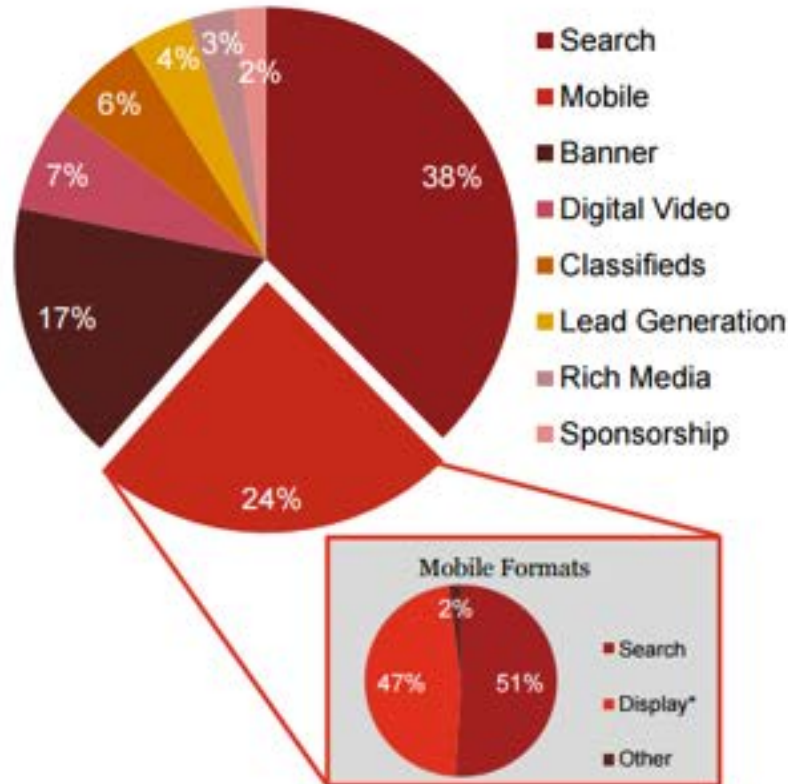


Where is Online Advertising spent?

Distribution of Online Advertising Expenditures

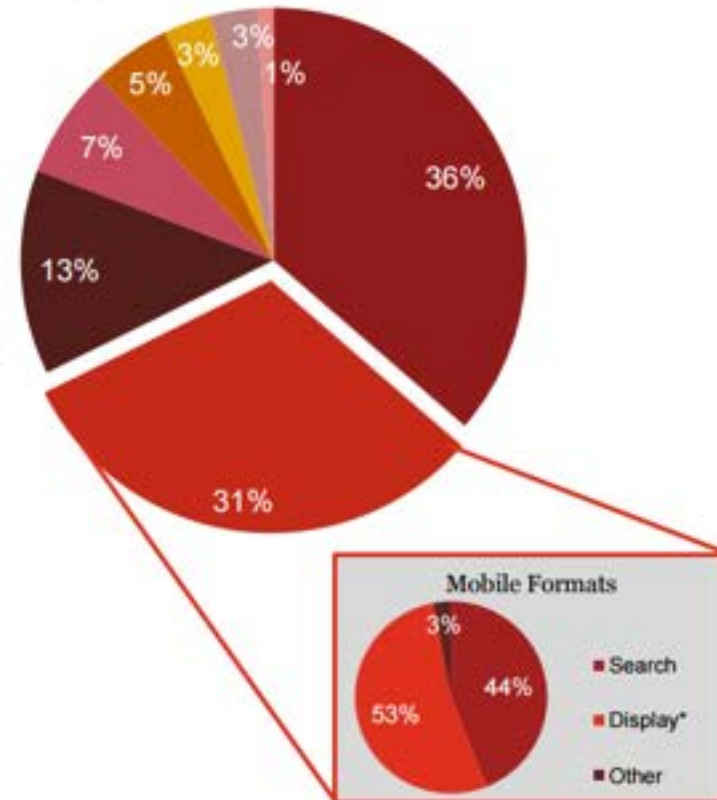
Ad formats – Q2 2014

Total - \$11.7 billion**



Ad formats – Q2 2015

Total - \$14.3 billion**



Source: IAB/PwC Internet Ad Revenue Report, HY 2015

* Mobile Display includes: banner ads, digital video, digital audio, sponsorships, and rich media advertising served to mobile devices.

** Amounts may not equal 100% due to rounding and omission of minor categories.

Programmatic Advertising

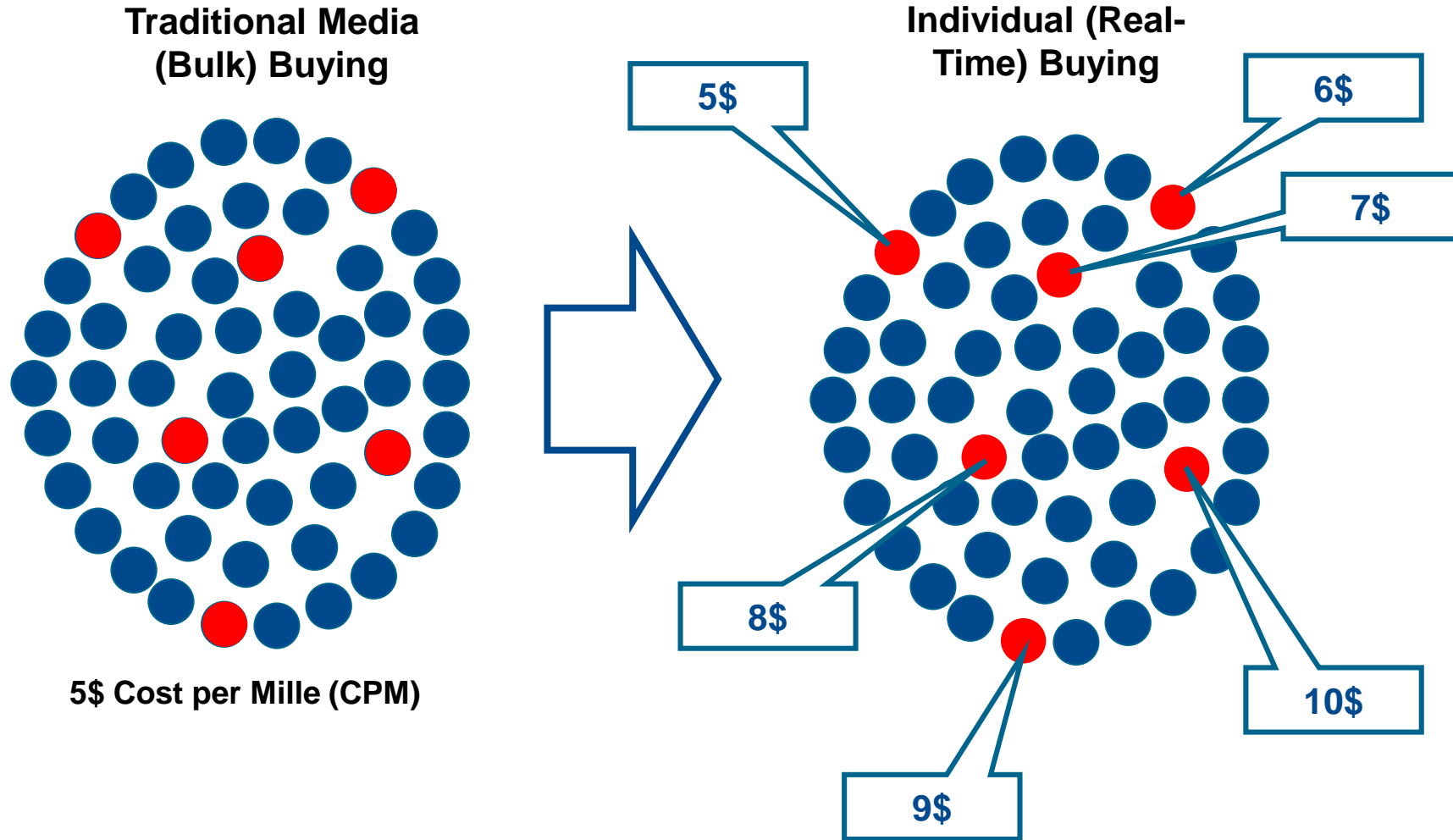
Programmatic Advertising



What is Programmatic Advertising?

- **Programmatic Advertising is...**
 - selling an individual ad impression
 - in real-time
 - [in an auction]
- **Also referred to as...**
 - Real-time bidding (RTB)
 - Real-time advertising (RTA)
 - Programmatic buying

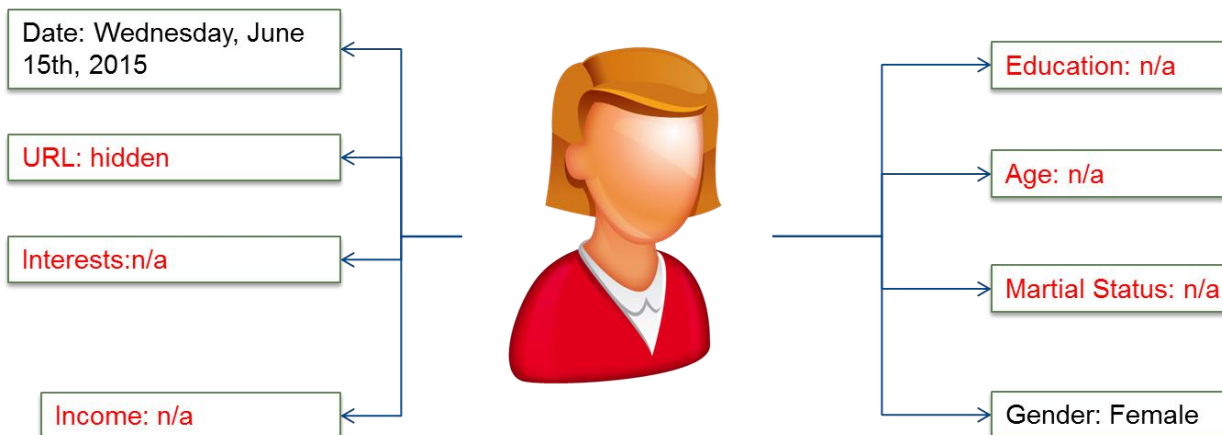
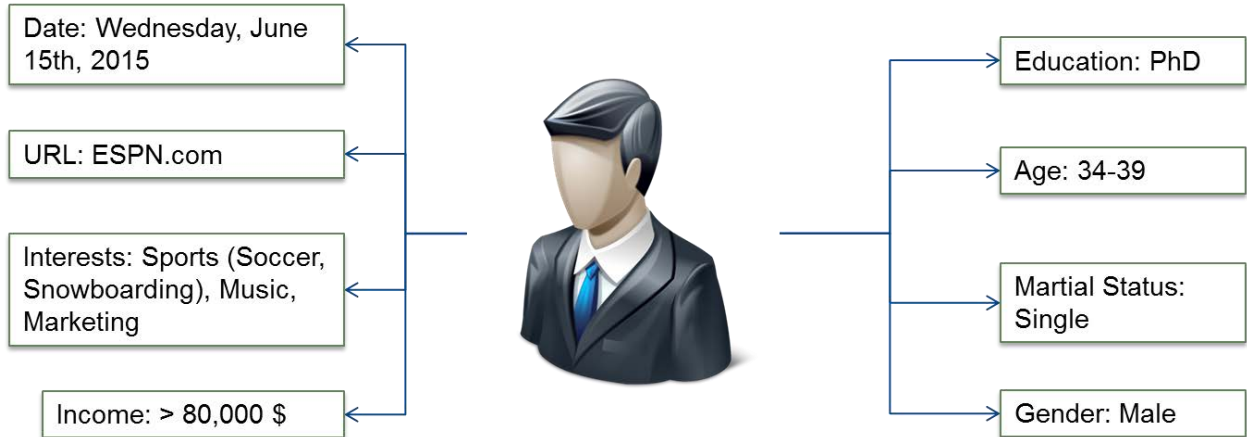
Differences between Bulk Buying and Individual Buying



Publishers as Information Providers in Online Advertising

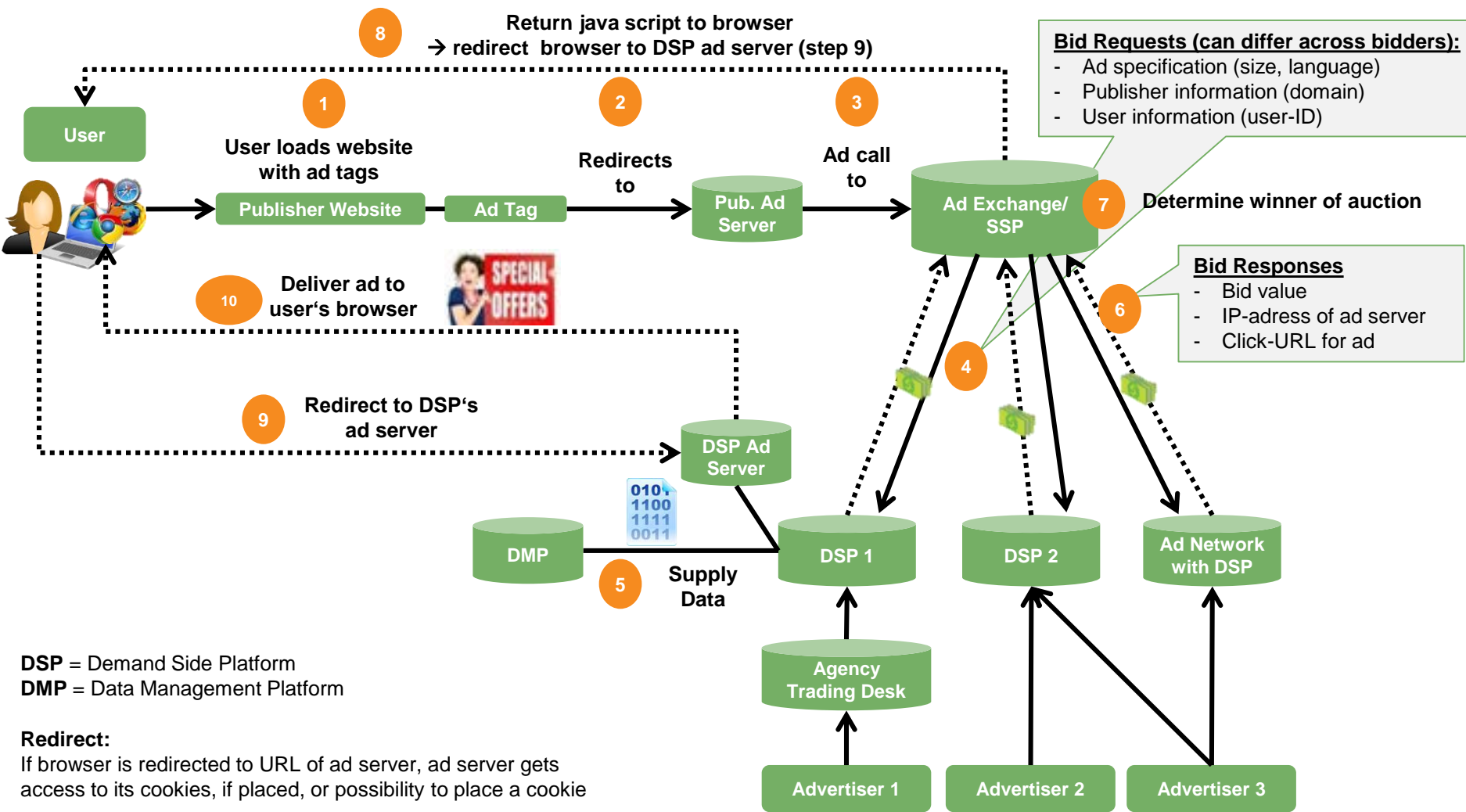


Programmatic Advertising: User Data



How are Online Display Advertisements Sold in Real-Time Auctions?

Process to Sell Online Display Ads



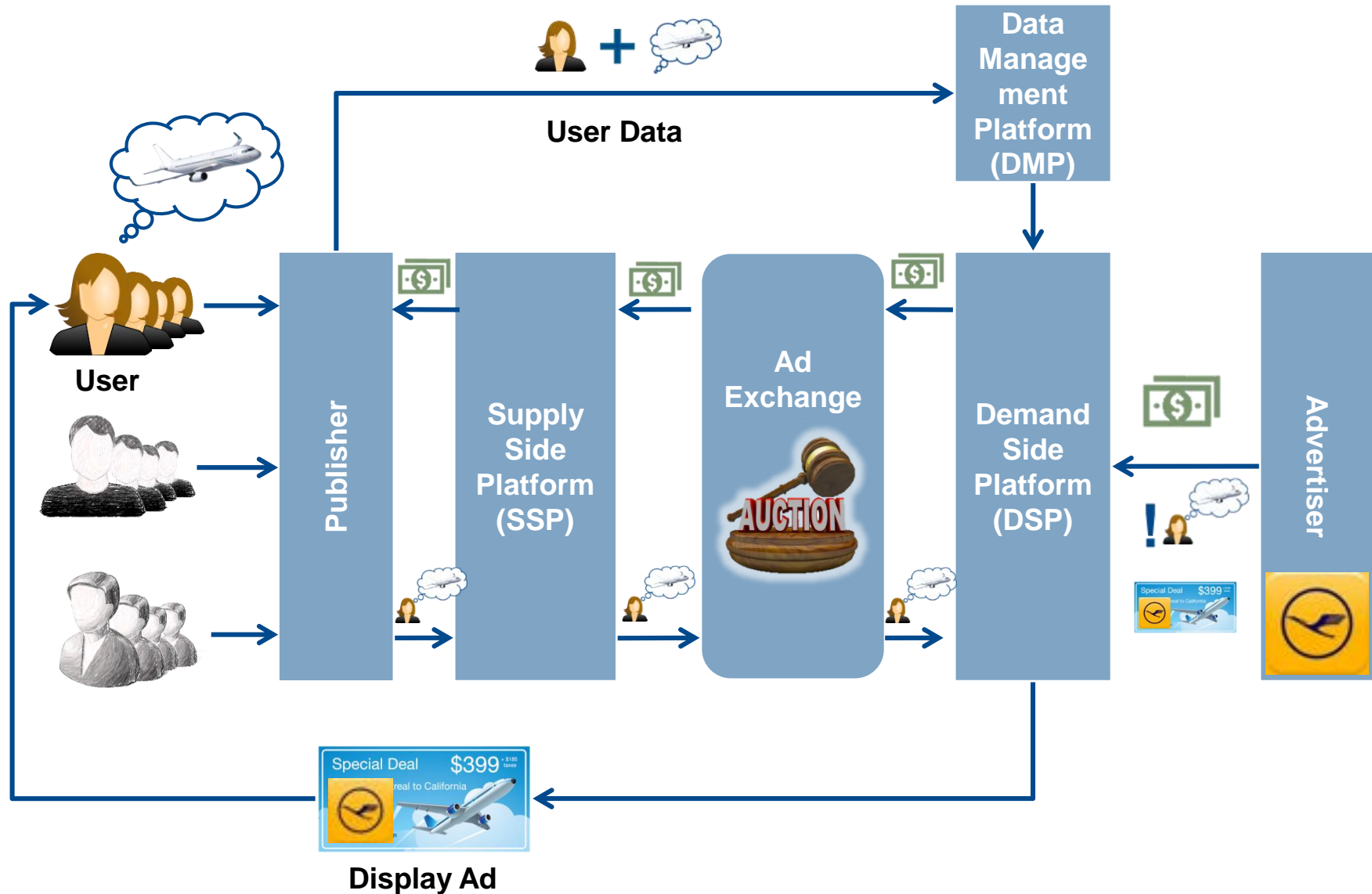
DSP = Demand Side Platform
DMP = Data Management Platform

Redirect:
If browser is redirected to URL of ad server, ad server gets access to its cookies, if placed, or possibility to place a cookie

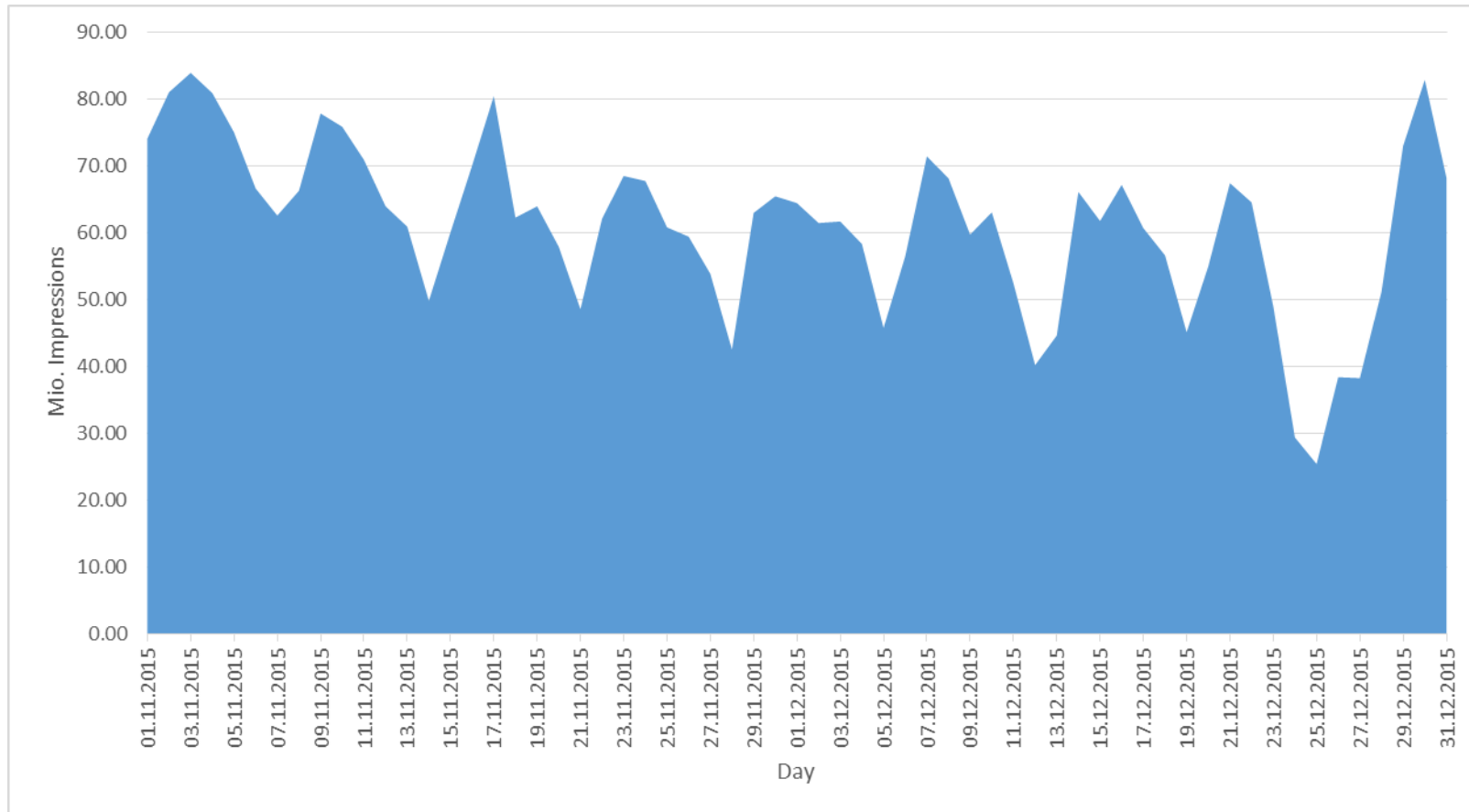
Ad Tag

```
<script src=„ib.adnxs.com/ttj?id=„123“ type=text/javascript />
```

Different Parties in Online Advertising



Daily Number of Auctions to Sell Online Display Advertisements



Project:
How to Bid in Auctions?
(with Marc Heise & Nadia Abou Nabout)

Campaign Setup in Programmatic Advertising (1/3)

1. Campaign duration

2. Campaign budget

1. Unlimited budget
2. Impression budget
3. Monetary budget

3. Pacing

1. Even Pacing
2. As fast as possible

4. Targeting

5. Minimum/maximum bid

Flight Dates

Start Date
04/01/2015 12:00 AM Europe/Berlin

End Date
 06/30/2015 11:59 PM Europe/Berlin
 Run Indefinitely

Budget

Unlimited
 Impression
 Media Cost

Lifetime Custom Budget
\$

Daily Custom Budget
\$

Pace evenly throughout day
 Spend as fast as possible

Budget

Unlimited
 Impression
 Media Cost

Lifetime Custom Budget
imps

Daily Custom Budget
imps

Pace evenly throughout day
 Spend as fast as possible

Campaign Setup in Programmatic Advertising (2/3)

1. Campaign duration

2. Campaign budget

3. Pacing

4. Targeting

5. Minimum/maximum bid

Inventory	<input type="button" value="Edit"/>	<input checked="" type="checkbox"/> Targeting Set <i>(click edit for details)</i>
Geography	<input type="button" value="Edit"/>	Any area
Segment	<input type="button" value="Edit"/>	Any segment
Frequency	<input type="checkbox"/> Show <input type="text"/> imps over lifetime	
	<input type="checkbox"/> Show <input type="text"/> imps per user per day	
	<input type="checkbox"/> Show 1 impression per user per <input type="text"/> <input style="border: none; background-color: #f0f0f0; padding: 2px 5px; font-size: 0.9em; font-weight: normal; text-decoration: none; vertical-align: middle;" type="button" value="minutes"/> <input style="border: none; background-color: #f0f0f0; padding: 2px 5px; font-size: 0.8em; font-weight: normal; text-decoration: none; vertical-align: middle;" type="button" value="▼"/>	
	<input type="checkbox"/> Limit campaign to serve once per page <input style="font-size: 0.8em; vertical-align: middle;" type="button" value="?"/>	
Daypart	<input type="button" value="Edit"/>	Any time
System	<input type="button" value="Edit"/>	Any system settings
Page Properties	<input type="button" value="Edit"/>	Any query string; any tag position
Demographics	<input type="button" value="Edit"/>	Any age; any gender

Campaign Setup in Programmatic Advertising (3/3)

1. Campaign duration

2. Campaign budget

3. Pacing

4. Targeting

5. Minimum/maximum bid

Base CPM €

Bid CPM: max € CPM
min € CPM

Huge Popularity of Even Pacing



Standard Pacing

With standard pacing, we enter your ad into every relevant auction and adjust your bid over the course of the day in order to produce smooth, optimal delivery relative to your objective and budget. This is the default pacing mechanism.



- o Standard Delivery: Spend daily budgets evenly throughout the day
- o Accelerated Delivery: Spend daily budgets as fast as possible

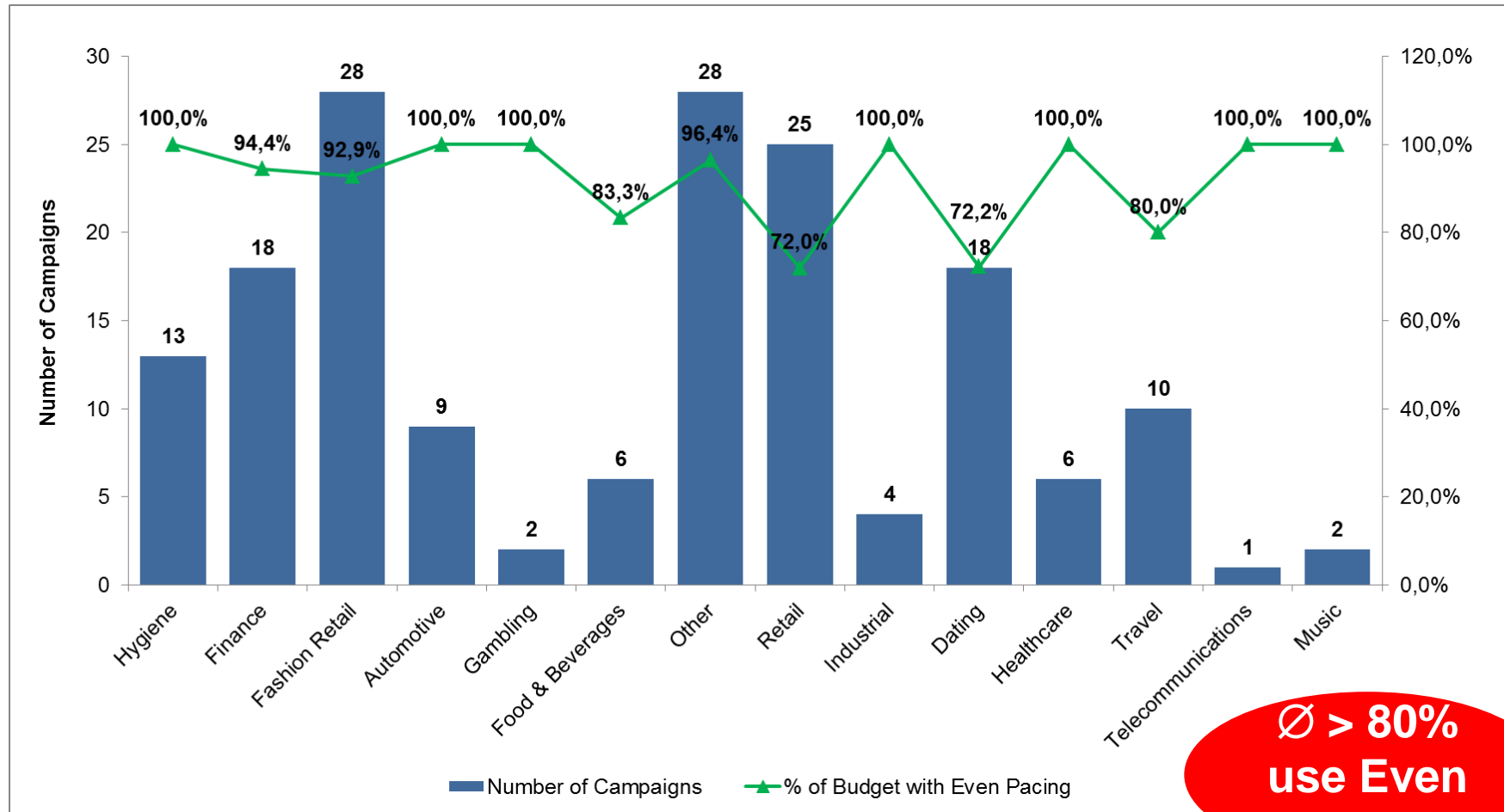
1. BASE BID AUTO-OPTIMIZATION



Finds the sweet spot for your base bid to fulfill budget at the lowest bid price.

- Increases the base bid if you're pacing behind. Decreases the base bid if you're pacing well.
- Max bid will never increase or be exceeded.

Popularity of Even Pacing by Industry

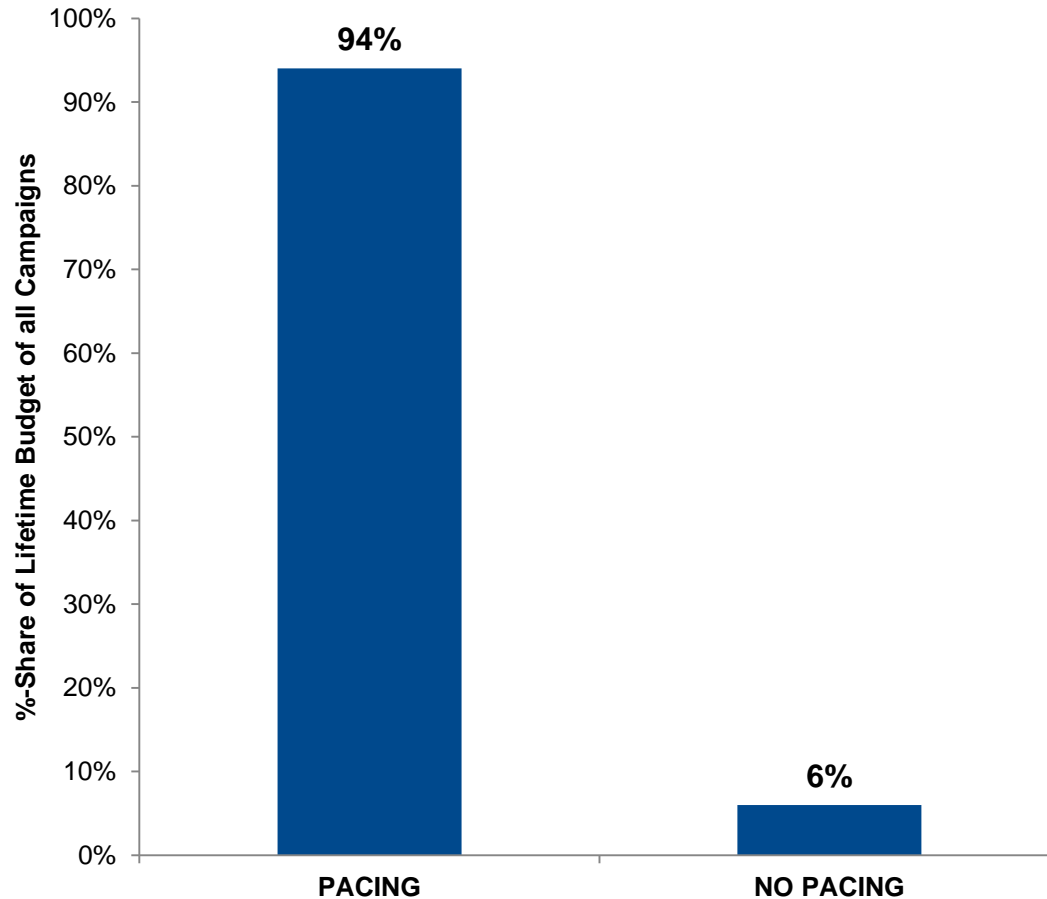


**Ø > 80%
use Even
Pacing!**

Heise, Marc / Abou Nabout, Nadia / Skiera, Bernd (2016), "An Analysis of the Profitability of Pacing Heuristics in Real-Time Online Advertising", Working paper.

Share of Lifetime Budget for all Campaigns

% of Budget spent with Even Pacing

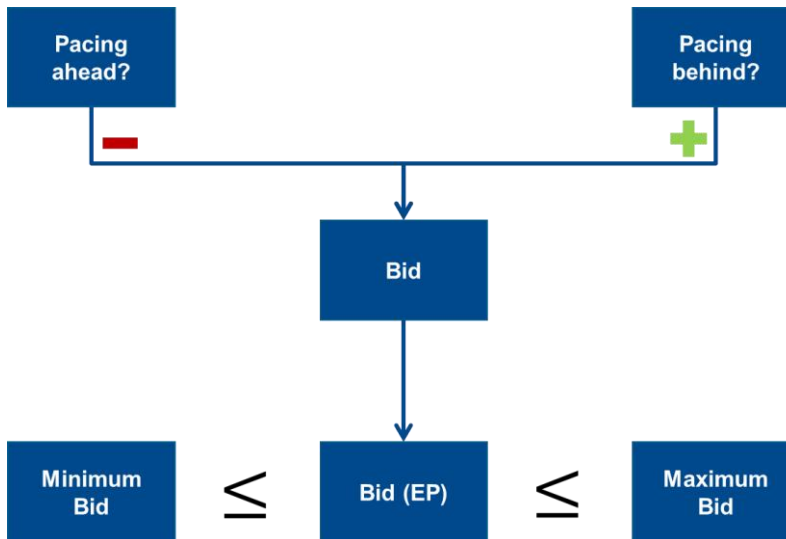


Even Pacing
>94%
of all budgets!

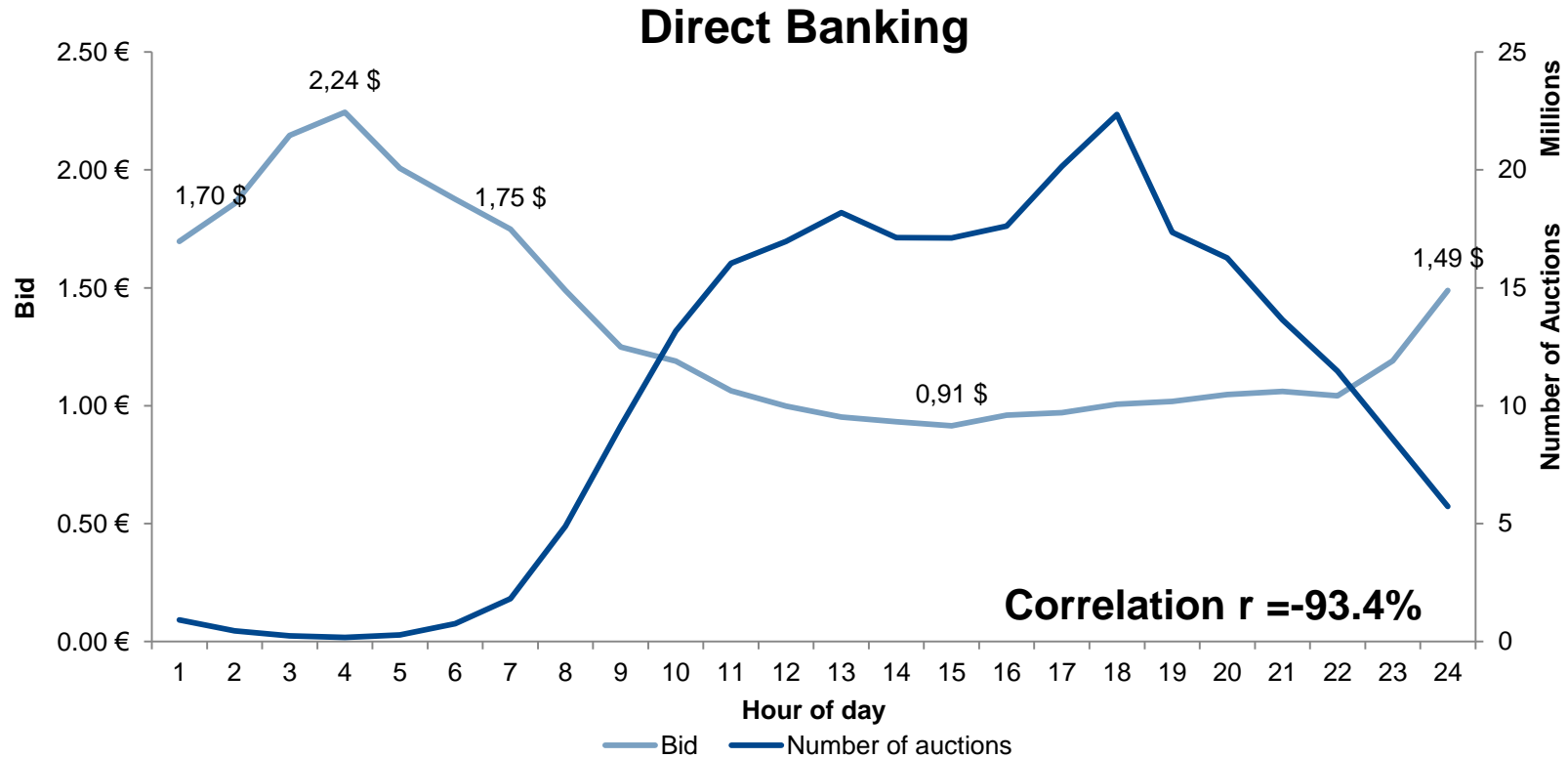
Basic Idea of "Even Pacing" Heuristic

Spend budget evenly across time

- Increase bid if budget spent is too low (pacing behind)
- Decrease bid if budget spent is too high (pacing ahead)



Correlation of Number of Auctions and Bid unde Even Pacing over a Day

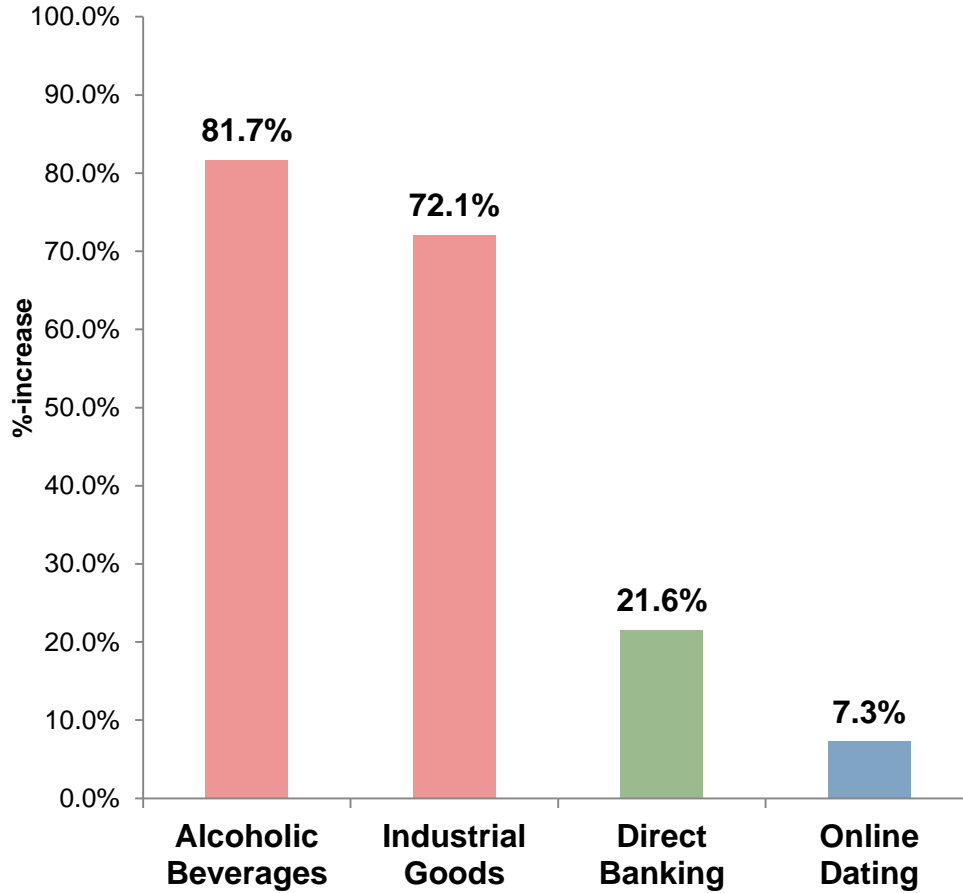


Even pacing ends up bidding high when number of auctions is low

Bid: hourly average over the course of 30 days (November 2014); Number of auctions: total number of auctions over 30 days (November 2014)

Comparison of Profit of Even Pacing (EP) and Profit-Maximizing Pacing (PMP)

Profit-Increase for PMP vs. EP



- Avg. Increase in profit of PMP is 23.5%
- Increase in profit much higher if optimal budget is exceeded (red)
- Increase in profit lower if budget is optimal (green) or lower than optimal (blue)

Thank you for your attention!



Bernd Skiera
skiera@wiwi.uni-frankfurt.de