

**SPRING 2017**  
**AEM 4550: Economics of Advertising**  
**Prof. Jura Liaukonyte**

**HW3**

**Ground rules for Homework 1-5:**

1. HW is due at the beginning of class on the due date designated for each homework (see course website for the list of dates).
2. You should turn in your homework 100% typed. I realize that for some students handwriting is more convenient or efficient, especially when it comes to writing out math equations. However, you should practice typing math formulas in MS Word or other word processing software of your choice.
3. Include a title page listing your name (or names if it is a group work) and homework number.
4. Please staple your sheets. Both your TA and I will look at each homework, so we don't want to lose any of your sheets.
5. If I have specific instructions or rules relating to any individual parts within homework assignments, I will list them there.

**Ground rules for HW3:**

1. HW3 is due on Thursday, **March 16** at the beginning of class
2. HW3 is group work. Please work in groups of 4.

**PART I**

*Objective: to analyze online advertising effectiveness.*

This question deals with the case “Air France Internet Marketing: Optimizing Google, Yahoo!, MSN, and Kayak Sponsored Search” by Mark Jeffery; Lisa Egli; Andy Gieraltowski; Jessica Lambert; Jason Miller; Liz Neely; Rakesh Sharma.

You will need the data that is posted on the course website in the spreadsheet “HW3\_spreadsheet”.

When dealing with a large amount of data, such as the data on search keywords and transactions provided by Double Click, it is very beneficial to use Pivot Tables in Excel.

1. Create and print a Pivot table of the following descriptive statistics grouped by “Publisher Name”.

- a. Sum of Number of Users Clicking
- b. Sum of Number of User Impressions
- c. Sum of Number of Transactions
- d. Sum of Total Revenue
- e. Sum of Total Cost (Click Charges)

2. Using the above totals grouped by the publisher name and generated by the Pivot table, calculate the following relevant campaign metrics for each publisher and overall\*:

\*Recommendation: once the pivot table is done, copy it (Ctrl + C) and do “special paste” to get only numeric values (this will minimize the hassle with subsequent calculations). To do a special Paste, right click the cell where you want your table to start, pick “Paste Special...” and then choose “Values”.

- Cost-per-Click (CPC) ( $\text{Total Cost} / \text{Number of Clicks}$ ) – this measures cost differences among publishers.
- Click-Through Rate (CTR) – this measures efficiency of generating clicks from delivered impressions.
- Transaction Conversion Rate (TCR) – this measures efficiency of generating sales from delivered clicks.
- Net Revenue (Revenue Amount - Cost) – this measures overall publisher contribution to marketing campaign.
- Return on Ad \$ Spent (ROA) ( $\text{Net Revenue} / \text{Cost}$ ) – this measures efficiency of generating net revenue from ad \$ spent.
- Average Revenue per Transaction or Booking ( $\text{Revenue Amount} / \# \text{ of Transactions}$ ) – this measures differences in revenue capture and may be indicative of differing customer segments captured by publishers.
- Probability of Booking ( $\text{CTR} * \text{TCR}$ ) – this measures the probability of generating a sale from a delivered impression.
- Cost per booking or transaction (total cost/number of transactions) – this measures incurred advertising costs per accomplished transaction.

Report the metrics in the following table (which is also found in the sheet “Summary Metrics” in the spreadsheet posted online:

Publisher Name	Average Cost Per Click (CPC)	Click Through Rate (CTR)	Transaction Conversion Rate (CTR)	Sum of Net Revenue	ROA	Average Revenue Per Transaction	Probability of Booking	Cost/Booking
Google - Global								
Google - US								
MSN - Global								
MSN - US								
Overture-Global								
Overture - US								
Yahoo - US								
Grand Total								

3. For each publisher, note three key metrics from your previous analysis:

1. CPC
2. Probability of Transaction
3. Total Aggregate Cost

Calculate, if you haven't done so already, the overall averages for (i) probability of booking and (ii) CPC across all publishers. Note that the overall averages should not be calculated by averaging the averages of all the publishers. For example, to get an overall average of CPC, you will have to divide the aggregate costs across all the publishers by the aggregate number of clicks (you get these numbers in the last row of the pivot table) NOT by averaging the calculated CPCs for each publisher. A similar calculation will need to be applied for the overall probability of booking).

4. Graphical analysis:

- Graph Publishers on a bubble chart (in Excel, pick Bubble Chart) using the following dimensions: X=Probability of Booking, Y=Cost Per Click, Bubble Size=Total Costs.
- Create four quadrants by drawing a line at the publisher average for CPC and another line at the publisher average for probability of booking.
- Observe the quadrant in which a publisher falls.

5. Comment on your findings.

## PART II.

1. Read the academic article *“The Unfavorable Economics of Measuring the Returns to Advertising”* by Lewis and Rao and answer the following questions:

1a. What is the main finding of this study? Why is measuring the effects of advertising difficult? Why is it easier to measure the effects of online advertising than the effects of traditional TV



### PART III.

Write a blog post. Blog assignment guidelines are on the course website. Also check the blog website [www.overtcollusion.com](http://www.overtcollusion.com) to see examples of good blog posts.

**Specific to HW3:** Your analysis must include a [Google Trends](#), [Google Insights for Search](#) or [Google Correlate](#) graph. In particular, take the following points into consideration:

- a) You will need to download raw data in .csv format. You can easily open this file format in Excel.
- b) Graph the downloaded data yourself. Make sure to customize the graph so it looks tidy, compact and clear (which most certainly is not the graph that Excel “spits out” by default). Use this assignment as practice for how to present data in the most coherent, neat and efficient way with Excel graphs (you will need this practice for the final presentation!). Please explore various Excel built-in options to arrive at a visual representation of a graph that has the most professional look. You can also find lots of tutorials and suggestions on how to improve the look of your graphs on the internet.
- c) Do not present just any graph, simply because it is a mandatory part of this assignment. Your graph needs to make a point, which needs to be directly related to your blog post content. Use this graph (or graphs) to illustrate or visually draw attention to the point that your analytical blog post is making.
- d) An ideal graph and blog post would “uncover” a really interesting pattern that is not necessarily obvious but it informs about aspects of consumer decision making that would be valuable to market research firms.

Potential topics of choice for this HW assignment:

1. Combative Advertising
2. Advertising Goodwill
3. Advertising Costs
4. Media scheduling
5. Advertising Effectiveness
6. Online Advertising
7. Search Engine advertising
8. Digital Advertising
9. Other topic that relates to issues we discussed in class.

**IMPORTANT:** You have to submit your blog post in two ways:

- 1) as part of your typed and printed HW3 and
- 2) emailed to your TA [mfm88@cornell.edu](mailto:mfm88@cornell.edu). Please make sure that the emailed post contains your name (or the names of group members).