

Expert Witness Report: *Campbell vs. Facebook, Inc.*

Catherine Tucker

January 15, 2016

REDACTED VERSION OF DOCUMENT(S) SOUGHT TO BE SEALED

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION	1
II. ASSIGNMENT.....	2
III. SUMMARY OF CONCLUSIONS.....	3
IV. BACKGROUND TO THE SPECIFIC FACTS IN THIS CASE	5
V. THE USE OF BEHAVIORAL INFORMATION TO ORGANIZE THE INTERNET.....	7
VI. MANY PROPOSED CLASS MEMBERS WERE UNAFFECTED, SOME BENEFITED, AND QUANTIFYING BENEFITS OR LACK THEREOF REQUIRES INDIVIDUALIZED INQUIRY	11
A. Some potential class members were unaffected by the challenged practices	11
1. Potential class members were unaffected if the website did not have a relevant social plugin.....	11
2. Potential class members were unaffected due to the aggregate and anonymous nature of the data used.....	16
B. Some potential class members benefited from the challenged practices	18
1. Some proposed class members benefited directly from incremental publicity	18
2. Some proposed class members benefited indirectly from incremental publicity	21
C. It is difficult to determine the effect of the at-issue practices on some potential class members	23
1. A “Like” button does not necessarily imply endorsement.....	25
2. Due to the use of aggregate counts it is very unlikely any single increment of the social plugin counter had a negative effect for that individual	26
3. It is difficult to determine potential negative effects of any sharing of a URL without intrusive inquiry.....	27
VII. REBUTTAL TO MR. TORRES’S REPORT	32
A. Mr. Torres estimated “benefits” to Facebook, not “damages” suffered by putative class members	33
B. It is not clear what the proposed methodology relating to the Social Graph is or why the alleged practices are being related to advertising	34
1. Summary of Mr. Torres’s method for estimating the alleged benefit to Facebook of enhancing the “Social Graph”	34
2. Mr. Torres’s method is based on a false assumption	35

TABLE OF CONTENTS

(continued)

	<u>Page</u>
3. The parts of the proposed methodology where Mr. Torres does give details have several flaws.....	38
C. It is not clear how the proposed methodology related to allegedly inflated social plugin counters is linked to the disputed practice.....	43
1. Summary of Mr. Torres’s method for estimating the alleged benefit to Facebook related to allegedly “inflated” social plugin counters	43
2. The analysis focuses on the value of “Likes” to website owners, which has no reliable link to Plaintiffs’ allegations of harm	43
3. The analysis fundamentally misunderstands or distorts why website owners value “Likes”	46
D. Mr. Torres’s two potential methodologies cannot be reconciled with each other	49
E. Rebuttal to Mr. Torres’s analysis as it pertains to statutory damages	51
1. Factor 1: Actual damage to the victim.....	52
2. Factor 2: Whether the Defendant profited from the alleged violation	52
VIII. CONCLUSION.....	53

I. INTRODUCTION

1. I am the Sloan Distinguished Professor of Management Science and Professor of Marketing at MIT Sloan at the Massachusetts Institute of Technology (“MIT”) in Cambridge, Massachusetts. I received an undergraduate degree in Politics, Philosophy and Economics from Oxford University in the United Kingdom. I received a PhD in Economics from Stanford University in 2005. I have been at MIT since completing my PhD.
2. My academic specialty lies at the intersection between the economics of the new digital economy and advertising. I have conducted multiple studies on the diffusion of new advertising technologies and have published various papers which examine how marketing communications, in the form of advertising, perform, and which delineate the factors that relate to their performance.
3. I am Co-Editor of the Journal of Quantitative Marketing and Economics. I was an Associate Editor at Management Science and a Co-Editor of the recent National Bureau of Economics Research volume on the Economics of Digitization. I am also Associate Editor for the Information Systems Research Special Issue on Social Media and Business Transformation and Co-Editor of the Information Economics and Policy Special Edition on the Economics of Digital Media Markets. I have published multiple academic papers in leading marketing journals, including Marketing Science, the Journal of Marketing Research, Management Science and the Journal of Marketing. I received a National Science Foundation CAREER Award, which is the National Science Foundation’s most prestigious award in support of junior faculty who “exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations.” I teach the core class on “Strategic Marketing” to our Executive MBAs at MIT Sloan, as well as being the lead faculty for marketing of the MIT Sloan specialized executive education offerings on marketing, where senior executives come in for one or two day courses to refresh their skills and discuss the current state of the art in marketing. I also teach a specialized class on “Platform Strategy: Building and Thriving in a Vibrant Ecosystem” which discusses strategies for building data-rich digital platforms.

4. I have received a Paul Green Award for the paper “most likely to influence marketing practice” for research I did on new kinds of online targeting. I also received the 2015 Erin Anderson Award for the most notable Female Emerging Marketing Scholar and Mentor.
5. I have testified on factors influencing privacy regulation before Congress and have presented my research on privacy to the Federal Trade Commission, the Federal Communications Commission, the European Commission, and the OECD.
6. Further details of my experience are in my curriculum vitae, which I attach as Exhibit DDD to my report. A list of my prior testimony is attached as Exhibit EEE.
7. I am being compensated for my services in this matter at my customary hourly rate of \$1,050. While preparing this report, I have been assisted by certain employees of Analysis Group. I receive compensation based on the professional fees of Analysis Group. No compensation is contingent on the nature of my findings or on the outcome of this litigation.
8. Since my work on this matter is ongoing, I may review additional materials produced subsequent to the issuance of this report, and/or conduct further analysis. I reserve the right to update, refine, or revise my opinions, or form additional opinions, including in response to further information from Plaintiffs’ experts, further clarification of Plaintiffs’ requested relief, and any additional information I may receive.
9. A list of the materials I have considered to date in developing the opinions contained in this report is attached as Exhibit FFF.

II. ASSIGNMENT

10. I have been asked by counsel for Facebook to:
 - a. Use my knowledge of the economics of digitization to lay out the appropriate economic framework for analyzing the use of aggregate behavioral information on Internet link-sharing behavior.
 - b. Assess whether proposed class members were commonly affected by the practices challenged in the operative Complaint and the Motion for Class Certification, the use of counts of URL links that are formed as URL message attachments to

provide “recommendations” to people who use Facebook, to provide analytics to third-party websites and developers, as well as to increment the “Like” social plugin counter.¹

- c. Assess the framework for potential damages put forward in the Expert Report of Fernando Torres submitted in support of Plaintiffs’ Motion for Class Certification.²

III. SUMMARY OF CONCLUSIONS

11. Below is a summary of my opinions as of the date I submit this report. If additional documents or information become available after I submit this report, I will review the material and update my opinions as appropriate.
12. The use of popularity information to organize content on the Internet is both ubiquitous and helpful. It leads to a democratizing process, where content that may not usually have been highlighted is brought to potential readers’ attention.
13. The alleged practices, including the incrementing of the social plugin counter next to the “Like” button, affected potential class members in a variety of ways. Though many of the proposed class members were unaffected, some may have benefited, and in a few cases some may have been harmed, individual inquiry is necessary to determine in which group individual class members belong.
14. Many potential class members were unaffected by the alleged practices. The fact that many websites did not have social plugins that display counters limits the effects of the practices. Furthermore, the aggregate and anonymous nature of the data means that any of the incremental data stored may have had no practical effect even if a social plugin

¹ See Plaintiffs’ Consolidated Amended Complaint ¶¶ 2, 4, 31, 38; Plaintiffs’ Motion for Class Certification at 2, 5-10.

² I understand that Mr. Torres has filed a second report in this case; however, I received it only two days prior to the filing of this report and my references and responses in this report are to his first report.

displaying a counter was present because these also relied on many potential other sources of activity which potentially dwarfed those associated with this practice.³

15. Many potential class members may have benefited from the alleged practices. Potential class members would benefit if they viewed the URL they shared in a message positively, and there was a chance – however remote - that the share boosted subsequent site visitation. This is especially true if the potential class member had a financial interest in the website associated with the URL.
16. Although it is theoretically possible that a few potential class members may not have benefited, such cases are hard to identify without individual inquiry. For example, there may be cases where class members may not have wished the website they shared in their message to receive an incremental boost to its social plugin count. However, to identify such cases requires knowledge of the motivations of the potential class member for including that URL in a message, which cannot be achieved without individual inquiry.
17. Mr. Torres’s Report does not consider whether individuals were affected by the alleged practices. Instead the focus of the report is on estimating the *benefits* of the alleged practices to Facebook. Many third party websites never pay for advertising. However, the two methodologies proposed by Mr. Torres do not actually relate to the ways that Facebook could have benefited from the alleged practices:
 - a. The first methodology proposed by Mr. Torres suggests that a measure of benefits could be the incremental enhancement in advertising revenue attributable to the increase in links in a “Social Graph” due to the alleged practices. However, none of the alleged practices was associated with enhancing advertising. So the assumed link between the alleged practices and an increase in Facebook’s advertising revenue does not exist. There are also other technical and numerical flaws in Mr. Torres’s analysis.

³ See January 15, 2016, Declaration of Alex Himel (“Declaration of Alex Himel”) ¶¶ 34 [REDACTED]

- b. The second methodology proposed by Mr. Torres covers the period where social plugin counters were potentially incremented if a URL was included in a message. The proposed methodology, however, is disconnected from actual benefits to Facebook. Instead, it tries to use data on the price that a third-party website would have paid for a “Like” in a different context. However, this ignores again the fact that many websites did not have a social plugin displaying a counter so did not receive the benefits of the potential increment to the counter. Even in the limited circumstances that websites may have been willing to pay for additional “Likes” to be displayed on a social plugin counter, there is no evidence that their savings on “Like”-getting expenditures would have been diverted to Facebook in the form of advertising revenue as claimed by Mr. Torres in his Report.

IV. BACKGROUND TO THE SPECIFIC FACTS IN THIS CASE

18. I understand from the Plaintiffs’ Motion for Class Certification that the behavior in dispute is that Facebook allegedly “scanned” messages containing URLs and used the counts of URL links that are formed as URL message attachments “to provide ‘recommendations’ to people who use Facebook, to provide analytics to third-party websites and developers, as well as to increment the ‘Like’ social plugin counter.”⁴
19. Therefore, in this report, I consider the ways that people who use Facebook could be affected by each of these challenged practices.
- a. First, I consider the ways in which someone who uses Facebook could be affected if a URL he or she shared in a message were used to help identify relevant websites to highlight in recommendations if a website had a Facebook social plugin that reported such recommendations. I understand that such use of the

⁴ Plaintiffs’ Motion for Class Certification at 2. *See also* page 31 of the Expert Report of Jennifer Golbeck [REDACTED]; Plaintiffs’ Consolidated Amended Complaint ¶ 2 (“[W]hen [Plaintiffs’] ostensibly private messages contained links to other websites, also known as ‘URLs,’ Facebook scanned those messages and then analyzed the URL in the link. If the website contained a Facebook ‘Like’ button, Facebook treated the content of Plaintiffs’ private messages as an endorsement of the website, adding up to two ‘Likes’ to the page’s count.”).

aggregate and anonymous data only occurred when the primary system of providing such recommendations failed and that the practice ceased in 2014.⁵

b. Second, I consider the ways in which someone who uses Facebook could be affected if his or her gender, language, country, and age were part of the aggregate statistics that Facebook offered on URL-sharing behavior to website owners who accessed Insights or related APIs, as a consequence of the person sharing a URL in a message between December 2011 and October 2012.⁶

c. Third, I consider whether someone who used Facebook to share a URL in a message, and did not modify the associated attachment, would be affected by the possibility that between December 2011 and December 2012, Facebook may have incremented a counter for a website that had that specific social plugin counter by up to two “Likes”.

20. I also understand from the Plaintiffs’ Motion for Class Certification that the proposed class is defined as follows:

All natural-person Facebook users located within the United States who have sent, or received from a Facebook user, private messages that included URLs in their content (and from which Facebook generated a URL attachment), from within two years before the filing of this action [December 30, 2011] up through the date of the certification of the class.⁷

21. In the next sections of this report I systematically consider whether these proposed class members were unaffected, affected positively, or affected negatively by these practices. By way of background, I first discuss the use of behavioral information to aid social discovery from an economics perspective.

⁵ See January 15, 2016, Declaration of Dan Fechete (“Declaration of Dan Fechete”) ¶¶29, 34

⁶ I understand from the Declaration of Alex Himel that this practice ended in October 2012. ¶61 “

⁷ Plaintiffs’ Motion for Class Certification at 10-11.

V. THE USE OF BEHAVIORAL INFORMATION TO ORGANIZE THE INTERNET

22. Over the past two decades, consumption of information has been revolutionized by the Internet. The Internet has, of course, directly reduced the cost of disseminating and receiving information, as digital data is virtually costless.⁸ However, another key advance has been the use of user behavioral information to ease the process of social discovery of content.
23. Prior to the Internet, curation and recommendations were usually done by specialized experts in the field. For example, newspaper editors decided what stories to feature on the front page in order to attract occasional purchasers. Similarly, department store managers decided which products to highlight in a store entry display that would appeal most and induce browsing customers to purchase. Even in the non-digital world, organizations used popularity information to help them connect with customers. For example, musicians vied to make sure their songs ranked highly on the Billboard Hot 100 so they would receive more exposure.⁹ National Public Radio (NPR Books) ranked books on the basis of anonymous sales counts at independent booksellers.¹⁰ Similarly, toy shops would examine sales data to identify a “hot toy” and feature it more prominently on their display.¹¹

⁸ Greenstein, Shane M., Avi Goldfarb, and Catherine E. Tucker, editors, *The Economics of Digitization*, Edward Elgar Publishing, 2013.

⁹ As described here, the Billboard chart uses anonymized counts of streaming, sales and air-play to determine its rankings. See Trust, Gary, “Ask Billboard: How Does the Hot 100 Work?” *Billboard*, September 29, 2013, <http://www.billboard.com/articles/columns/ask-billboard/5740625/ask-billboard-how-does-the-hot-100-work>, viewed December 11, 2015.

¹⁰ The NPR Bestseller Lists are compiled from weekly surveys of close to 500 independent book-stores nationwide in collaboration with the American Booksellers Association. See, e.g., “NPR Bestseller List: Week of Oct. 1, 2015,” *NPR*, <http://www.npr.org/books/bestsellers/2015/week40/>, viewed December 11, 2015.

¹¹ An evolution of this is Kmart’s website: “2015 Fab 15 Toys,” *Kmart*, http://www.kmart.com/en_us/dap/fab-15-toys.html, viewed January 3, 2016. For a discussion, see “Behind Kmart’s Fab 15 List: How We Identify Hot Toy Trends,” *SEARS HOLDINGS: SHC Speaks*, September 24, 2014, <http://blog.searsholdings.com/inside-shc/behind-kmarts-fab-15-list-how-we-identify-hot-toy-trends/>, viewed on January 15, 2016.

24. However, the Internet has both automated and further democratized this process of social discovery. Media websites can now organize their content based on popularity.¹² Recommendation systems on websites such as Amazon now display automated suggestions of products that might interest consumers based on other customers' purchasing behavior.¹³
25. Partly responding to and partly facilitating this general shift online in using digital behavioral data to organize the Internet and facilitate social discovery, has been the advent of electronic lists automatically recommending Internet content. A similar evolution has taken place in the form of "counters" of social media website activity surrounding a particular website. These counters take a variety of forms. The simplest form they might take is as a simple counter at the bottom of the webpage. Figure 1 depicts such a counter for a fetal health charity that I support.¹⁴ Sadly, the Fetal Health Foundation is a small charity which does not receive much publicity or support from the general public, so its counts of social media support are negligible. However, if I shared the link on my Facebook page, retweeted the link using Twitter, shared the link on Google Plus or posted the website on my Pinterest page, I might be able to build interest and support for this charity, and also potentially inform those who are pregnant or who know people who are pregnant who may face such conditions.
26. I can achieve the aim of increasing interest and readership of this website from my sharing the URL through a Facebook message in two ways. The first way is the direct effect I would have from sharing the URL with my friends and relatives. The second way is the indirect effect I would have from an increment of the social plugin counter from "Likes" from three to four, should I have sent the email in the limited period such a share would have affected the count. Though individually my share is unlikely to have any

¹² Even news websites which stick to the traditional curation model also feature browsing and sharing information to help customers identify news articles. For example, the *New York Times* lists the ranking of the top ten most shared articles: "New York Times Most Popular Articles," *The New York Times*, <http://www.nytimes.com/most-popular>, viewed December 11, 2015. For more details, see Berger, Jonah, and Katherine L. Milkman, "What Makes Online Content Viral?," *Journal of Marketing Research*, Vol. 49, No. 2, April 2012, pp. 192-205.

¹³ See Resnick, Paul, and Hal R. Varian, "Recommender Systems," *Communications of the ACM*, Vol. 40, No. 3, March 1997, pp. 1-3.

¹⁴ The Fetal Health Foundation is focused on advances in technology that help prevent babies dying *in utero*.

effect, if one hundred thousand people also shared this website it would help it gain more general prominence as visitors may take the website more seriously upon observing the high count when visiting the website.

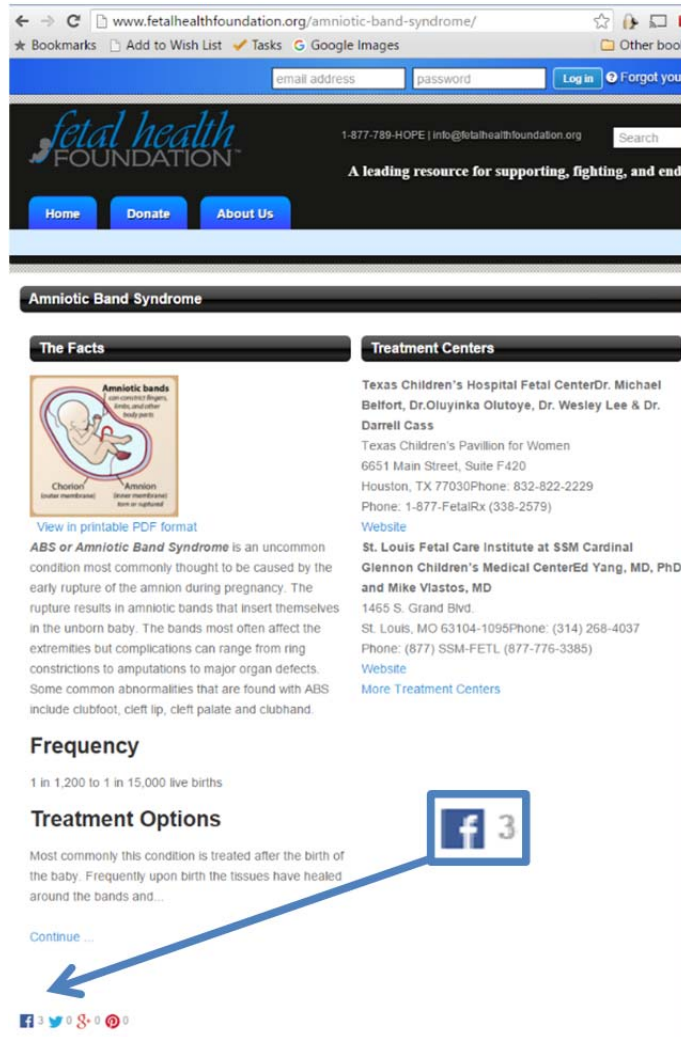


Figure 1: Snapshot of Social Media Counters from Charity Website¹⁵

¹⁵ “Amniotic Band Syndrome,” *Fetal Health Foundation*, <https://web.archive.org/web/20150910004526/http://www.fetalhealthfoundation.org/amniotic-band-syndrome/>, viewed January 6, 2016. Interestingly, I initially viewed the image for this URL on October 29, 2015. When I returned to the website in January 2016, the site had experienced a redesign – quite unrelated to anything to do with this case – and there was no longer this visible social plugin counter. This change illustrates the extent to which it can be problematic to identify whether or not a particular social plugin was or was not on a website over time, which I discuss below.

27. In general, this personal example shows three things:
28. First, the use of data and anonymous counts on the sharing of content online is ubiquitous. Social media platforms such as Facebook, Twitter, Google and other websites such as Pinterest all offer such data. Second, behavioral data relating to the sharing of website URLs is useful for identifying which websites may be of most interest. Third, the process is somewhat democratizing. Websites or niche causes such as the Fetal Health Foundation find it hard to attract attention, but if they can achieve shares and signal their popularity and relevance on social media this can help them spread their message. Indeed, my own research shows that the release of popularity information benefits niche products or less common websites most. Everyone expects a major website such as CNN.com to be visited, shared, and “Liked” a great deal; information that a smaller or unusual website is also visited, shared, and “Liked” a great deal is more surprising and can therefore attract more notice.¹⁶
29. This research builds on an older (and growing) economic literature about the effects of popularity information on people’s behavior. This literature uses the insight that when quality of a product or service or piece of Internet content is uncertain, people may use others’ behavior as a guide to quality.¹⁷ Other academic papers have subsequently also noted the usefulness of such information for improving users’ browsing experience online and decision making.¹⁸ Other work has emphasized that such algorithmic rankings may improve a user’s experience by reducing the potential for information overload.¹⁹

¹⁶ See Tucker, Catherine, and Juanjuan Zhang, “How Does Popularity Information Affect Choices? A Field Experiment,” *Management Science*, Vol. 57, No. 5, 2011, pp. 828-842.

¹⁷ The canonical academic works in this area are Bikhchandani, Sushil, David Hirshleifer, and Ivo Welch, “A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades,” *Journal of Political Economy*, Vol. 100, No. 5, 1992, pp. 992-1026, and Banerjee, Abhijit V., “A Simple Model of Herd Behavior,” *Quarterly Journal of Economics*, Vol. 107, No. 3, August 1992, pp. 797-817.

¹⁸ See Tucker, Catherine, and Juanjuan Zhang, “Growing Two-Sided Networks by Advertising the User Base: A Field Experiment,” *Marketing Science*, Vol. 29, No .5, 2010, pp. 805-814.

¹⁹ See Ghose, Anindya, Panagiotis G. Ipeirotis, and Beibei Li, “Designing Ranking Systems for Hotels on Travel Search Engines by Mining User-Generated and Crowdsourced Content,” *Marketing Science*, Vol. 31, No .3, May–June 2012, pp. 493-520.

Still more have shown explicitly that users make inferences from many different types of user behavior once that information is available online.²⁰

VI. MANY PROPOSED CLASS MEMBERS WERE UNAFFECTED, SOME BENEFITED, AND QUANTIFYING BENEFITS OR LACK THEREOF REQUIRES INDIVIDUALIZED INQUIRY

30. In order to assess whether the effect of the challenged practices was common across proposed class members, I evaluate how different types of proposed class members were affected. I conclude that many of the potential class members were unaffected by these practices and some may have benefited. However, identifying whether or not, and how, they are affected requires detailed individual inquiry.

A. Some potential class members were unaffected by the challenged practices

31. To understand whether a potential class member was affected, it is useful to understand and assess the likelihood of the set of coinciding circumstances that are necessary for there to be any concrete effect from the alleged practices.

1. Potential class members were unaffected if the website did not have a relevant social plugin

32. There are many potential circumstances where a URL attachment was created but where there was no actual effect on visible social plugin or visible data and therefore, there is no concrete effect on a proposed class member. To illustrate this it is useful to consider an example from one of the Named Plaintiffs. This example is shown in Figure 2, which is a

:

²⁰ See Tucker, Catherine, Juanjuan Zhang, and Ting Zhu, “Days on Market and Home Sales,” *The RAND Journal of Economics*, 2013.

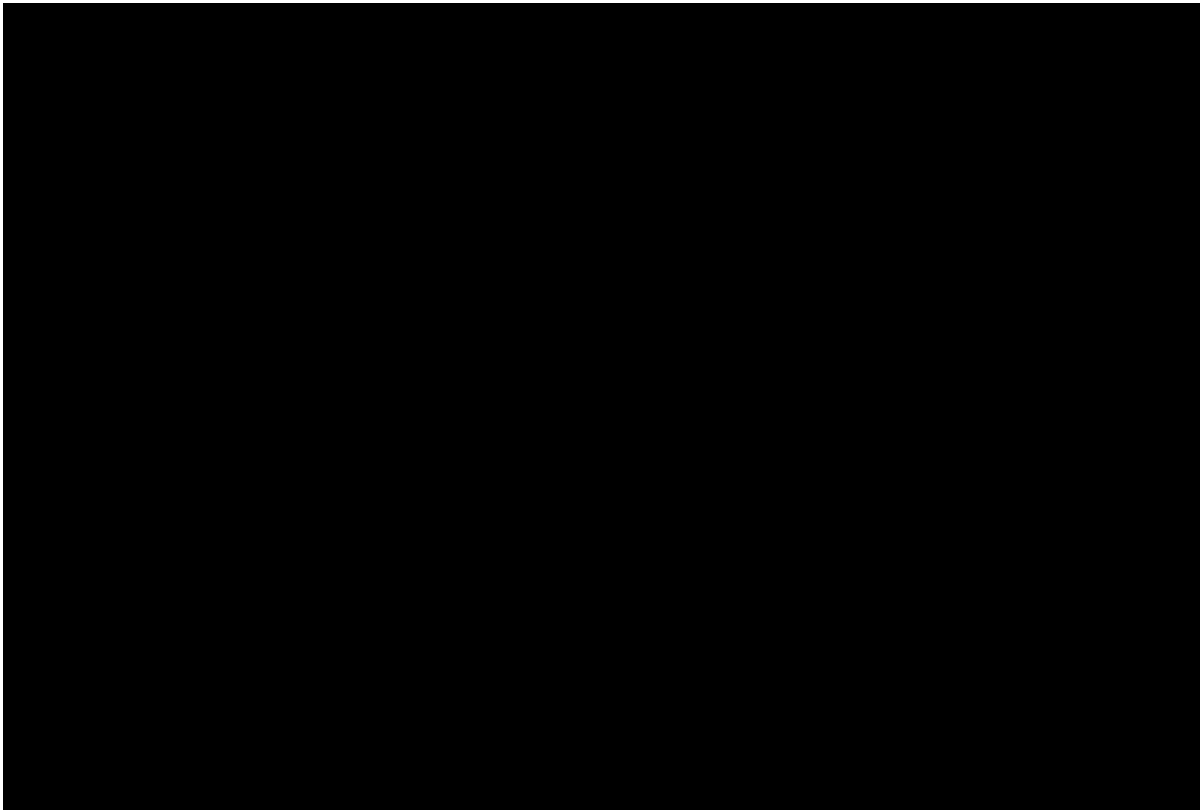


Figure 2: Message from Plaintiff Campbell, as produced by Plaintiffs²¹

33. In this example, [REDACTED], which is shown in Figure 3. The message [REDACTED]. However, when I visit the indicated URL in 2016, I see no social plugin counter or any evidence of the incremental “Like” generated by this share being used in any way. (See Figure 3.) I also see no social plugin which could have shown recommendations. This suggests that it is not the case that the “Like count [is] publicly displayed”²² on all websites for which a URL attachment was created as claimed in Plaintiff’s Motion for Class Certification. Similarly, when I visited the page as it was posted on August 25, 2011 through the

²¹ CAMPBELL000076-77.

²² Plaintiffs’ Motion for Class Certification at 9.

Wayback Machine,²³ no social plugin counter or plugin which could have shown recommendations was visible.²⁴

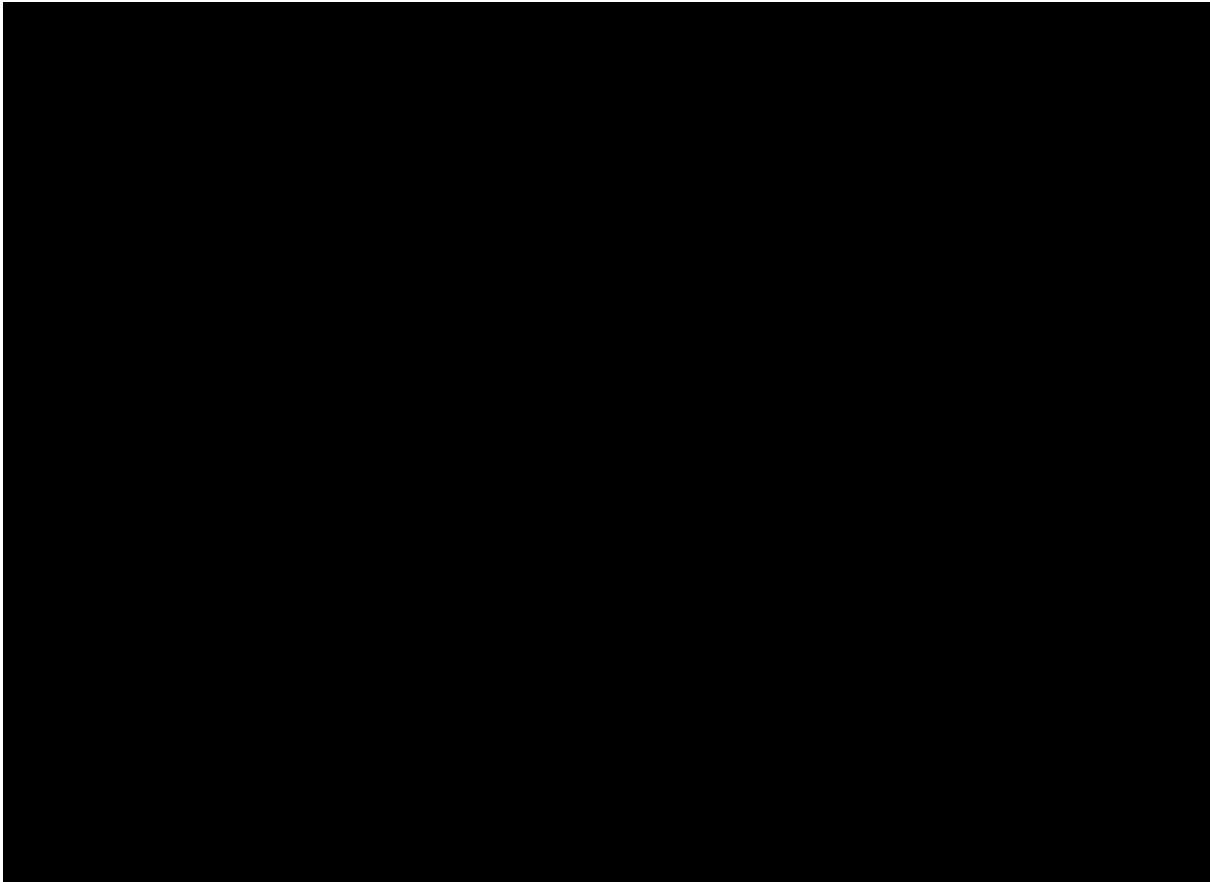


Figure 3: Not all websites had social plugins that featured a counter or Recommendations or Activity plugin²⁵

²³ A query on “<https://web.archive.org/web/20110825191937/http://www.nytimes.com/2011/07/27/us/politics/27fiscal.html>” returns a page with no Facebook social plugin counter (viewed Jan. 6, 2016). However, the Wayback Machine reports that “[a]rchived web sites in the Wayback Machine do not always appear as they did on the live web for reasons such as the previously mentioned difficulties in archiving web sites,” and further, “difficulties in archiving web sites include the use of JavaScript, server side image maps, orphan pages (web sites that are not linked to by any other web pages), and unknown sites.” This only underscores the difficulty in determining if putative class members were affected by the alleged practices. Steinhauer, Jennifer, and Carl Hulse, “Vote on Boehner Plan Delayed Amid Opposition,” *The New York Times*, July 26, 2011, <https://web.archive.org/web/20110825191937/http://www.nytimes.com/2011/07/27/us/politics/27fiscal.html>, viewed January 6, 2016.

²⁴ The *New York Times* already offers a ranking of its most emailed stories as a way of using popularity information to inform readers what story they might most enjoy. See “New York Times Most Popular Articles,” *The New York Times*, <http://www.nytimes.com/most-popular>, viewed December 11, 2015 for the current list. This *New York Times* list of most popular emailed articles was studied in research from 2012. See “New York Times Most Popular Articles,” *The New York Times*, <http://www.nytimes.com/most-popular>, viewed December 11, 2015.

34. I understand that [REDACTED] [REDACTED].²⁶ However, even making the assumption that the [REDACTED] [REDACTED] would not have received any new information from Mr. Campbell sharing the URL in a message. This is because if Mr. Campbell had already visited the [REDACTED] website – which seems likely, as he shared the story – his demographics would have already been visible and accessible to the [REDACTED] [REDACTED].²⁷ Obtaining information on whether proposed class members had already visited websites for which they included a URL in a message would be difficult, if not impossible, and determining whether or not such a potential class member had already visited the website requires individual inquiry regarding website visitation for the specific time period surrounding the sharing of the URL link.
35. This example illustrates that trying to determine whether or not a social plugin displaying a counter or recommendations is displayed, whether Insights or associated APIs was affected or how that has changed over time would require exhaustive effort at tracking down various permutations of a website’s display choices over time for each individual link and the individual’s own website visitation data. Such an inquiry may not even be possible,²⁸ and would inevitably result in a very time-consuming effort.
36. Moving from this example, motivated by one of the Named Plaintiffs, it seems important to understand how widespread such instances of lack of meaningful effects are. Though it is hard to obtain concrete retrospective data on how widespread such lack of visible social plugins containing counters or the Recommendations Feed are, one 2012 article

²⁵ [REDACTED]

²⁶ Declaration of Alex Himel ¶ 63.

²⁷ [REDACTED], viewed January 11, 2016.

²⁸ See Declaration of Dan Fechete ¶¶ 32-33, 43-44; Declaration of Alex Himel ¶¶ 42-43, 64-65, 78-79.

suggests that at that time the number of websites with any social plugin was small, and that of the top 10,000 websites, 75.7 percent of them were not integrated with Facebook.²⁹

37. One might conclude, therefore, that for approximately 75 percent of all Facebook messages with URL attachments sent in the December 2011-December 2012 period, there was no effect because there was no Facebook integration on the website, let alone a visible social plugin counter or Recommendations Feed. However, without actual data on site visitation and its relative spread over the 10,000 top websites (and websites not in this top 10,000), it is difficult to assess the extent to which the 75 percent figure applies to URLs shared in Facebook messages rather than simply the distribution of websites. Though it seems likely that smaller websites are less likely to have social plugins, it is worth noting too that many of the most popularly visited websites (as such Google, Twitter, Wikipedia, and YouTube) do not currently have Facebook integration.³⁰ The 75 percent figure may also understate the effect because there are many different types of social plugins, and if the website only had a “Like” button and not a counter next to the “Like” button, then obviously there would not have been the effects associated with counters.³¹ The number of websites featuring a counter or a Recommendations Feed has

²⁹ This website reports its methodology as follows: “We examined the HTML code of the home-pages of the top 10k sites in the world according to Alexa. To determine Facebook integration, we looked for the official ways of integrating Facebook on sites, with paths such as facebook.com/plugins, connect facebook net and graph facebook.com.” “How Many Sites Have Facebook Integration? You’d Be Surprised,” *Pingdom.com*, June 18, 2012, <http://royal.pingdom.com/2012/06/18/how-many-sites-have-facebook-integration-you-d-be-surprised/>, viewed December 11, 2015.

Of course since this 2012 survey, it is likely that these statistics have changed. For example as reported by He, Ray C., “Introducing New Like and Share Buttons,” *Facebook for Developers*, November 6, 2013, <https://developers.facebook.com/blog/post/2013/11/06/introducing-new-like-and-share-buttons/>, viewed December 11, 2015 by November 2013, the “Like” and “Share” buttons were being viewed over 22 billion times daily across more than 7.5 million websites.

³⁰ See “Top Sites in United States,” *Alexa*, <http://www.alexa.com/topsites/countries/US>, viewed on January 15, 2016 for current top websites. Based on my review on January 11, 2016, Google.com, Youtube.com, Wikipedia.org, and Twitter.com do not have Facebook integration.

³¹ “Social Plugins,” *Facebook for Developers*, <https://developers.facebook.com/docs/plugins>, viewed December 12, 2015. There are not only “Like” buttons but also “Share,” “Follow,” and “Send” buttons available. The “Like” button is displayed at “Like Button for the Web,” *Facebook for Developers*, <https://developers.facebook.com/docs/plugins/like-button>, viewed December 12, 2015. That is of course supposing I get the code from Facebook directly rather than using a template – as shown on “The Best WordPress Facebook Widgets,” *Elegant Themes Blog*, January 15, 2015, <https://www.elegantthemes.com/blog/resources/the-best-wordpress-facebook-widgets>, viewed December 12, 2015, there are many other potential ways of including Facebook interactions on a website that do not involve a social plugin counter.

likely changed over time; however, the direction and magnitude of this change during the relevant period is unclear, as is whether the number of URLs for such websites sent in Facebook messages would have changed in parallel.

2. *Potential class members were unaffected due to the aggregate and anonymous nature of the data used*

38. There is reason to think then there would have been no effect simply due to the lack of pertinent social plugin. However, even if a pertinent social plugin was present the nature of the data used limits the likelihood of any concrete effects. In general, the disputed practices use aggregate and anonymous statistics.³² This was confirmed by Plaintiffs' technical expert Dr. Jennifer Golbeck in her deposition.³³
39. Let's assume that, for a given URL shared in a message, there was a social plugin counter for the website where the URL attachment pointed. Even with this assumption it is not clear that each of the proposed class members would be adversely affected. In order to illustrate this, Figure 4 displays a message I shared through my personal Facebook account with an old friend who has reservations about the Halloween holiday. However, when I visit the actual webpage, it is unclear how I would have been adversely affected, or how this instance involves the challenged practices at issue in Plaintiffs' lawsuit.³⁴ In this example, there is no counter next to the "Like" button – but instead a social plugin displaying a share counter which is shown in Figure 5. Even if the share counter had been affected by the disputed practices it is not clear how an anonymous shift in the share

³² Furthermore, often URLs themselves were further anonymized by users. For example, Mr. Campbell [REDACTED]

³³ Dr. Golbeck testified as follows: [REDACTED]

[REDACTED] Golbeck Depo. Tr. at 311: 6-11. On page 312 of her deposition, there is clarification about what such an edge case could be: If I shared www.catherinetucker.com in a Facebook message and it had been shared elsewhere on Facebook, then it is possible that if it appeared in a friend's activity feed, they could guess that I was the person who had shared it, should the unusual combination of events occur which mean that it would ever actually appear in a Feed.

³⁴ Of course, this is a result of my visiting the site in late 2015. It is possible that in 2014, the website may have displayed different aspects of the social plugin and even an actual counter, but it is difficult for me to ascertain that without time-consuming inquiry, and perhaps impossible altogether.

counter from 765 to 766 would have affected me or influenced other's subsequent behavior.

40. Further, any analysis of whether there was any real effect of an increment in the social plugin counter is complicated by the set of technical circumstances that need to be met for a social plugin counter to have incremented. For example, I understand that if



Figure 4: Sharing a Story about Halloween with a Friend on Facebook



Figure 5: The story that I shared with my Friend (as of 2015)³⁶

41. For the Halloween story example depicted in Figure 4, it is difficult to imagine how I would have been adversely affected if the information were used, as alleged by the Plaintiffs, in a recommendation algorithm that tried to highlight interesting content in a

³⁵ Declaration of Alex Himel ¶¶ 28.

³⁶ Fisher, Max, "Why Australia Hates Halloween," *Vox*, October 31, 2014, <http://www.vox.com/2014/10/31/7137369/why-australia-hates-halloween>, viewed January 6, 2016.

social plugin displaying recommendations on the Vox website should the primary system for providing such recommendations have failed.

42. It is also unclear how I would be affected if Vox had accessed the Insights tool or associated APIs, as alleged by the Plaintiffs, had learned that their audience was slightly more female, closer in age to forty, and more English-speaking than before, especially as I have visited their website on other occasions, meaning that Vox would have presumably already accessed this information and there would be no new incremental information. Of course, as this happened in 2014, rather than prior to October 2012, this could not have happened in any case.
43. In general, this second example illustrates that even if one supposes a relevant social plugin was present on the website for which the URL attachment was created, trying to identify whether or not the potential for an increment on the social plugin counter had any meaningful effect on anyone is difficult (and sometimes impossible). Furthermore, the aggregate and anonymous nature of the data collected limits effects of the other disputed practices in the time periods when they occurred.

B. Some potential class members benefited from the challenged practices

44. Plaintiffs' Motion for Class Certification suggests that Facebook "monetizes the content of these private messages for its sole benefit."³⁷ However, my analysis suggests that many people who use Facebook benefit directly from the usage of URL share counts to allow them and others to identify relevant and useful websites. In this section, I lay out two potential ways that people who use Facebook may benefit.

1. Some proposed class members benefited directly from incremental publicity

45. First, Plaintiffs who shared URLs in which they had a direct financial or vested interest in publicizing may have benefited directly from this practice. For example, Mr. Campbell stated that [REDACTED]
[REDACTED].³⁸ As a consequence, [REDACTED]

³⁷ Plaintiffs' Motion for Class Certification at 1.

³⁸ Campbell Depo. Tr. at 45:1.

[REDACTED]

[REDACTED].³⁹ Therefore, any use of the sharing of URLs via Facebook messages which led to more prominence or publicity for [REDACTED] would have benefited him.⁴⁰ In terms of the other alleged practices, the potential benefit would be limited by the extent to which such a share incremented the likelihood of Facebook recommending the URL to other users on a Recommendations Feed, which in itself would have required a very fortuitous combination of events—indeed, since it seems [REDACTED] [REDACTED] this would be an impossible combination of events. It is not clear there would be any effect on the demographic information shared through Insights since, as it is [REDACTED].

46. Additionally, many class members may have been actively seeking publicity by sharing a URL. Again, I can use my personal Facebook account for an illustrative example, such as the one depicted in Figure 6. This message exchange is between myself and the owner of a website named Boston Events Insider, in a failed attempt on my part to obtain movie tickets for Kung Fu Panda 2 for my daughters. In order to win these tickets, the gentleman asked me to follow the steps on his website which were: “Like & comment on everything on the Facebook page,” “Retweet everything in the Twitter feed,” and share the URL on several websites (Facebook, Twitter, Google Plus, as well as others).

³⁹ [REDACTED]
[REDACTED].” Campbell Depo. Tr. at 63:7-9.

⁴⁰ For example, [REDACTED]
[REDACTED] It appears from his deposition that [REDACTED]
[REDACTED]. See Campbell Depo Tr. at 222:18-19 [REDACTED]
[REDACTED].”).

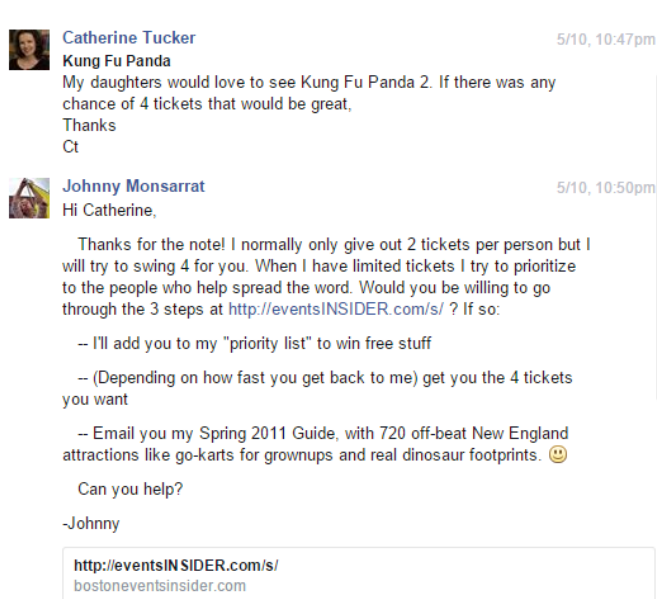


Figure 6: URL sender actively seeks Social Media Activity surrounding the URL

47. Given that the website owner was actively soliciting social media activity in order to boost the perceived popularity of his website, he would have directly (and unambiguously) benefited from any incrementing of the internal social plugin counter for the website as a result of sending me this message.⁴¹ In a case such as Figure 6, where the owner was actively seeking publicity, anything that would boost the likelihood of his website being recommended would benefit him though at this distance the website does not appear to have a social plugin displaying either the Recommendations or Activity Feed. Furthermore, since he is presumably already constantly visiting his own website, his own demographics being shared with him make no difference to him.
48. This is not an isolated example. For example, [REDACTED]
 [REDACTED]
 [REDACTED].⁴² Although [REDACTED]

⁴¹ See *Events Insider*, <http://bostoneventsinsider.com/subscribe.html/>, viewed December 17, 2015 for details. In this case it seems apparent that “Johnny” clearly benefited from the disputed practices by Facebook.

⁴² See Plaintiff Matthew Campbell’s Corrected Objections and Responses to Defendant Facebook, Inc.’s First Set of Interrogatories. This series of messages are summarized by rows messages 409, 411, and 412.

[REDACTED].⁴³ It seems likely that [REDACTED]
[REDACTED]
[REDACTED]. However, these messages would also qualify [REDACTED] to be part of the potential class.

2. *Some proposed class members benefited indirectly from incremental publicity*

49. Second, there is an even broader set of instances when a class member may have benefited from the incremental counting of URLs from Facebook messages when they shared a URL in a message in which they had an indirect interest in helping to publicize. For example, Figure 7 depicts a message I shared with my husband regarding the efforts our church was making regarding helping homeless people who had recently lost shelter due to the closure of Boston’s largest homeless shelter. As a result of my sharing this message, my husband publicly clicked “Like” on a posting about this mission on Facebook. It is worth noting, as an aside, that by the class definition, my husband would be a class member as a recipient of the message despite clicking on “Like” after receiving the message.
50. Though I shared this with my husband through a message, it is a website that I would in retrospect welcome publicity for. Many people in Boston were unaware of the negative effects of the closure of the Long Island Shelter, and I would welcome any incremental publicity my sharing of the URL could generate for this cause, though any benefits are clearly indirect.

⁴³ [REDACTED]

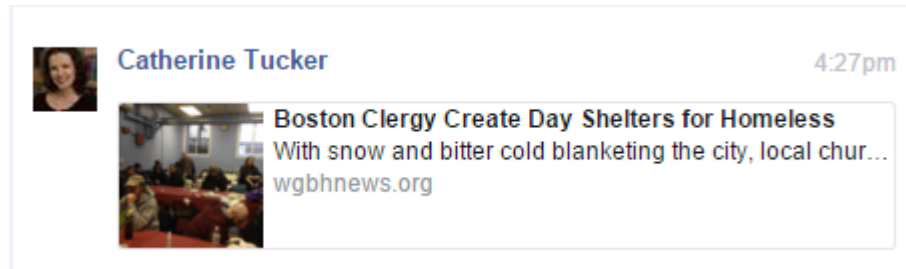


Figure 7: Message where I indirectly benefited

51. Since I shared this message depicted in Figure 7 too recently for it to benefit me by potentially incrementing the social plugin counter (because Facebook ceased this practice in 2012), the main avenue of benefit would be if [REDACTED].
- However, as of 2015, it does not seem that such a social plugin exists.⁴⁴ If my church accessed the Insights tool or associated APIs, there is a chance they would believe that their audience was (slightly) more female than before and perhaps closer to forty than before. Since I already provide far more detailed information to them as a member, and my gender and age are apparent to them every Sunday I attend, I am not sure how this would affect anything. Of course, because this is after October 2012, there is no possibility that this occurred.
52. In a similar spirit, there are examples among the Named Plaintiffs where there are potential indirect benefits. Plaintiff Hurley [REDACTED] which is shown in Figure 8.

⁴⁴ See *Home: Old South Church*, <http://oldsouth.org>, viewed January 11, 2016.

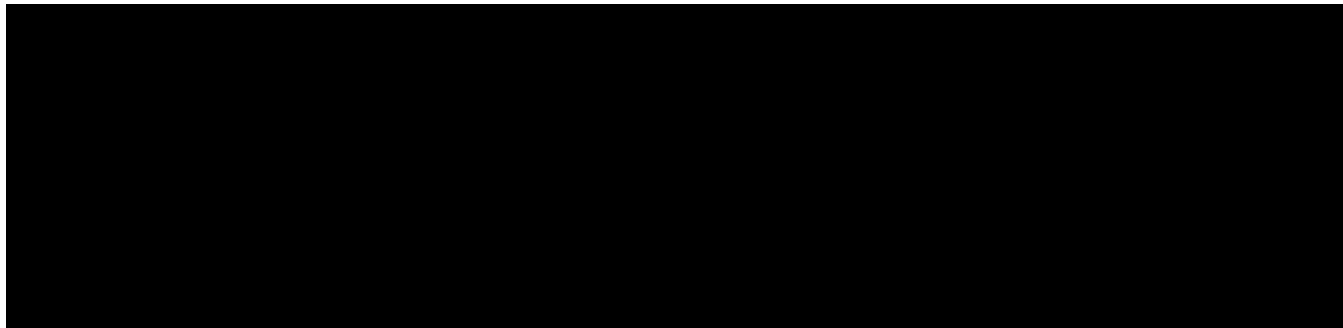


Figure 8: Message to Plaintiff Hurley, as produced by Plaintiffs⁴⁵

53. Although I cannot be sure without viewing the content of the message that was redacted, [REDACTED] [REDACTED]⁴⁶ [REDACTED]. Plaintiff Hurley's [REDACTED] [REDACTED].

54. Similarly, Mr. Campbell [REDACTED] [REDACTED] [REDACTED]⁴⁷ Again, it seems likely that Mr. Campbell [REDACTED] [REDACTED] e.

C. It is difficult to determine the effect of the at-issue practices on some potential class members

55. One issue for assessing whether proposed class members were negatively affected by the disputed practices in this case is that the Named Plaintiffs in their depositions revealed that they have divergent ideas of what negative effects they could potentially have suffered which also are not necessarily based on fact or the current class certification motion.

⁴⁵ HURLEY000001.

⁴⁶ See Hartner Depo. Tr. at 157:18-160:7.

⁴⁷ See Plaintiff Matthew Campbell's Corrected Objections and Responses to Defendant Facebook, Inc.'s First Set of Interrogatories, Exhibit 1.

56. For example, former Named Plaintiff David Shadpour said, “[REDACTED]”⁴⁸ However, the anonymous aggregate share count data at issue in this case was never sold for money.⁴⁹ Hurley states [REDACTED]⁵⁰ However, URL sharing behavior in Facebook messages was not used to refine targeted advertising.⁵¹ Plaintiff Campbell [REDACTED]⁵² Therefore, Mr. Campbell [REDACTED]⁵³ [REDACTED]⁵⁴ Similarly, Jeffrey Woodmansee stated [REDACTED]⁵⁵ [REDACTED]⁵⁶
57. Both Named Plaintiffs (Mr. Campbell and Mr. Hurley) stated that [REDACTED]⁵³ [REDACTED]⁵⁴ Similarly, Jeffrey Woodmansee stated [REDACTED]⁵⁵ [REDACTED]⁵⁶

⁴⁸ Shadpour Depo. Tr. at 91:2-3.

⁴⁹ Defendant Facebook, Inc.’s Supplemental Responses and Objections to Plaintiffs’ First Set of Interrogatories at 40, 44. (“During the relevant time period (December 30, 2011 to approximately December 20, 2012), data or information derived from messages (including URLs shared in messages) was not a criterion available to advertisers in choosing the audience for their ads, and Facebook did not use data or information derived from messages (including URLs shared in messages) to match ads to users.”)

⁵⁰ Hurley Depo. Tr. at 162:21-24.

⁵¹ Defendant Facebook, Inc.’s Supplemental Responses and Objections to Plaintiffs’ First Set of Interrogatories at 40, 44

⁵² Campbell Depo. Tr. at 194:5-8.

⁵³ Campbell Depo. Tr. at 192:5-9; Hurley Depo. Tr. at 153:20-24.

⁵⁴ Hartner Depo. Tr. at 171:2-8.

⁵⁵ Woodmansee Depo. Tr. at 248:16-17.

⁵⁶ Orsi Depo. Tr. at 157:20. [REDACTED] Orsi Depo Tr. at 36:9, 69:1-2, 17-19.

58. The above testimony demonstrates the difficulty in determining if potential class members have been harmed by the challenged behavior. In order to assess harm from an economics perspective, one must have a clear definition of what is harmful, which the Plaintiffs have failed to consistently provide.

1. *A “Like” button does not necessarily imply endorsement*

59. Let us start with the most concrete statement of harm which was Plaintiff Campbell stating that “ [REDACTED]

[REDACTED]”⁵⁷.

60. Underlying this argument appears to be the assumption that a “Like” is unambiguously an endorsement. However, it is not clear that Facebook or more general web users view it as such. Table 1 reports results from a marketing research survey conducted by ExactTarget where they asked people who use Facebook why they “Liked” a company’s webpage.⁵⁸ What is immediately striking is that there are many different reasons why people click “Like.” Table 1 shows that even in 2010, only 39 percent of users used the “Like” button to “show my support of the company to others.” Instead, there are a myriad of ways that the “Like” button was being used that do not necessarily imply endorsement.⁵⁹ This multi-purpose use of the “Like” button means that users already anticipate that a count of Likes does not necessarily imply multiple endorsements, but could derive either from users wanting discounts or offers from a particular website or because they wanted to stay informed (for whatever purpose).

⁵⁷ Campbell Depo. Tr. at 190:7-10.

⁵⁸ According to the webpage, the survey was fielded from April 9, 2010 through April 13, 2010. The survey was fielded through a MarketTools TrueSample online panel and completed by 1,506 U.S. respondents, aged 15 and older, and stratified by age so that each age bracket contained no less than 200 responses. Responses are weighted by age and gender according to U.S. Census Bureau population estimates and Pew Internet Project’s online activity data to reflect the online U.S. consumer population.

⁵⁹ A recent paper by researchers from Harvard found that consumers respond enthusiastically to invitations to Like brands – popular or unpopular, new or established – and that such indiscriminate “Liking” suggests that expressing a “Like” may not reflect deep preferences. John, Leslie et al., “What are Facebook ‘Likes’ Really Worth?,” *HBS Working Paper*, 2015, <http://rady.ucsd.edu/docs/events/lesliejohn.pdf>.

Table 1: Why do people click “Like” for a company, brand, or association?

Motivation	Percentage
To receive discounts and promotions	40%
To show my support for the company to others	39%
To get a ‘freebie (e.g., free samples, coupon)	36%
To stay informed about the activities of the company	34%
To get updates on future products	33%
To get updates on upcoming sales	30%
For fun or entertainment	29%
To get access to exclusive content	25%
Someone recommended it to me	22%
To learn more about the company	21%
For education about company topics	13%
To Interact (e.g., share ideas, provide feedback)	13%

Source: “The Thin Line between Liking a Brand and Liking Its Social Marketing,” *eMarketer*, September 8, 2010, <http://www.emarketer.com/Article.aspx?R=1007912>, viewed January 8, 2016.

61. Mr. Torres testified about one particularly clear example where a “Like” is not an endorsement: “Facebook has hinted at introducing other alternatives for people to express their response or reaction to posts and things like that” because, for example, “it’s always been a curious thing that if somebody posts a death or reports a death in the family, that the summary way to show your, your awareness of the message, or anything else, is to click on ‘[I]like.’”
62. Such variance makes it difficult to assess whether potential class members have been harmed and whether that harm is common across class members because the context in which URLs are shared varies across messages and that context cannot be known without individual inquiry.
 2. *Due to the use of aggregate counts it is very unlikely any single increment of the social plugin counter had a negative effect for that individual*
63. As well as a Like not necessarily implying endorsement, it is unlikely that a small perturbation in the number of “Likes” displayed on a social plugin counter due to the sharing of a URL by one individual will affect outcomes substantially and any potential effect will vary substantially by website and time. Indeed, Mr. Torres explained this in his deposition by pointing that a website with “[I]like counts of, in the order of one or two,

then it's a 100 percent increase" in the count. However, if the social plugin incremented was for "Coca Cola, and they already have 500,000 'Likes' on their third-party website, that is a miniscule less than a 1 percent, so, they won't be as influenced or as impressed by the increase."⁶⁰ In other words, even if there is an effect, the effect would not be common across potential class members and would depend on the nature of the URL shared and the date.⁶¹

64. Though this analysis focuses on the potential for negative effects of sharing, it also applies for the potential positive effects of sharing. In many cases, due to the small likely effects of any one potential increment of the social plugin counter, the potential for positive indirect benefits of the type discussed in Section VI.B is small. It seems more likely that there would be a positive effect in the cases described in Section VI.A, simply because an individual promoting their own website via messages is more likely to create the volume of URL attachments that could lead to a more sizable increase in the social plugin counter should it be in a context where that was a possibility.

3. *It is difficult to determine potential negative effects of any sharing of a URL without intrusive inquiry*

65. The facts that Likes are not necessarily interpreted as endorsements and that the potential marginal effects of any one Like on a counter is small, limit any potential negative effects from the alleged practices. However, even without these constraints, there are only very unusual and individualized circumstances where I can envisage harm. Indeed, the only circumstance I can identify when there could have been a potential negative effect on

⁶⁰ Torres Depo. Tr. at 174:3-175:4 ("Q. Why does it make it appear that the integration is more effective than it is? A. Because the like count is increasing, despite the fact that the person is not clicking on the like button on the third party website. Q. And does that opinion depend on how much the like counter is increasing, based on messages? A. Not necessarily. Q. Why not? A. Because it depends, it would depend on exactly what the proportion of the enhancement is. During some, at some point, according to some of the experiments reported on The Wall Street Journal, the like count was increasing twice, or, or, in a two-to-one ratio, to including the URLs in the messages. So, if that happens to a website, a third party website that has like counts organic like counts of, in the order of one or two, then it's a 100 percent increase. If it happens to Coca Cola, and they already have 500,000 likes on their third party website, that is a miniscule less than a 1 percent, so, they won't be as influenced or as impressed by the increase.").

⁶¹ This is further complicated by the fact that rather taking notice of absolute numbers of social plugin counts, consumers are more influenced by the location of the link on the homepage. This is something demonstrated with my research that shows the importance of website location relative to the influence of popularity information. Tucker, Catherine, and Juanjuan Zhang, "How Does Popularity Information Affect Choices? A Field Experiment," *Management Science*, Vol. 57, No. 5, 2011, pp. 828-842.

people who use Facebook would be if the proposed class member shares a URL with a friend that they wanted to alert their friend about, but they would prefer for other people to not visit the URL. It is difficult to imagine how to determine this rather nuanced and complex set of circumstances without a great deal of individual inquiry.

66. Indeed, I found it problematic to identify a straightforward example of a URL being shared in a message that the sender would prefer not to be publicized. The closest example I can find is as follows. My husband chairs a Fourth Amendment organization called “Restore The Fourth,” whose previous website was at www.restorethefourth.net, and whose current website is at www.restorethe4th.com. He shared a message over Facebook with a colleague in October 2015, regarding the former URL “restorethefourth.net”. In the message, he noted that [an unknown] someone was updating that URL. It could be argued that my husband would prefer traffic where possible to not be diverted to restorethefourth.net as a result of his message, as he was questioning whether having two parallel websites was potentially confusing. However, even in this case – supposing it was affected by the alleged practices, which it was not since the message was sent in October 2015 – it is not straightforward.



Figure 9: Example of a message where a social plugin count of the URL in the message did not necessarily benefit the sharer

67. Restorethefourth.net has no apparent social plugin. From its appearance, restorethefourth.net is not advertising-supported or linked to Facebook in any way. Of course, this would have to be verified, and one issue my husband faced in managing this issue is that he is not sure who has control of this website and has been unable to find this out from the domain registrar who hosts the website.

68. If there had been an operational social plugin displaying a counter or Recommendations Feed which led to the website content being somehow boosted, it is not clear that my husband is harmed. He is not averse to the content of the website, but wants to be able to coordinate messaging for the Restore the Fourth movement better across websites. Generally, he would prefer that more people actively contact their Congress member to express support for the Fourth Amendment, which is what the reactivated www.restorethefourth.net was trying to do. Indeed, he would prefer the URL to be recommended over any other URLs (such as celebrity gossip websites), with the sole exception of the more current and comprehensive URL for restorethe4th.com. Finally, the degree of harm, if any, is likely to change over time, as his organization may be able to contact and work with the individual who revived the old URL.

69. It seems unlikely that the website in question accesses the Insights tools or related APIs from Facebook, but if they do, again it seems immaterial whether or not my husband's demographic data is included in their data, since he is representative of many of their supporters and had visited the website before emailing the URL to his colleague. And again, because the message was sent in October 2015, there was no potential for any social plugin counter or Insights to be affected.

70. Another example of this ambiguity over the potential for negative effects is the instance of Mr. Campbell sharing the URL in Figures 10-11, which is a [REDACTED]. Given that [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED].

71. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]



Figure 10: Message sent by Plaintiff Campbell, as produced by Plaintiffs⁶²

⁶² CAMPBELL000075-77.

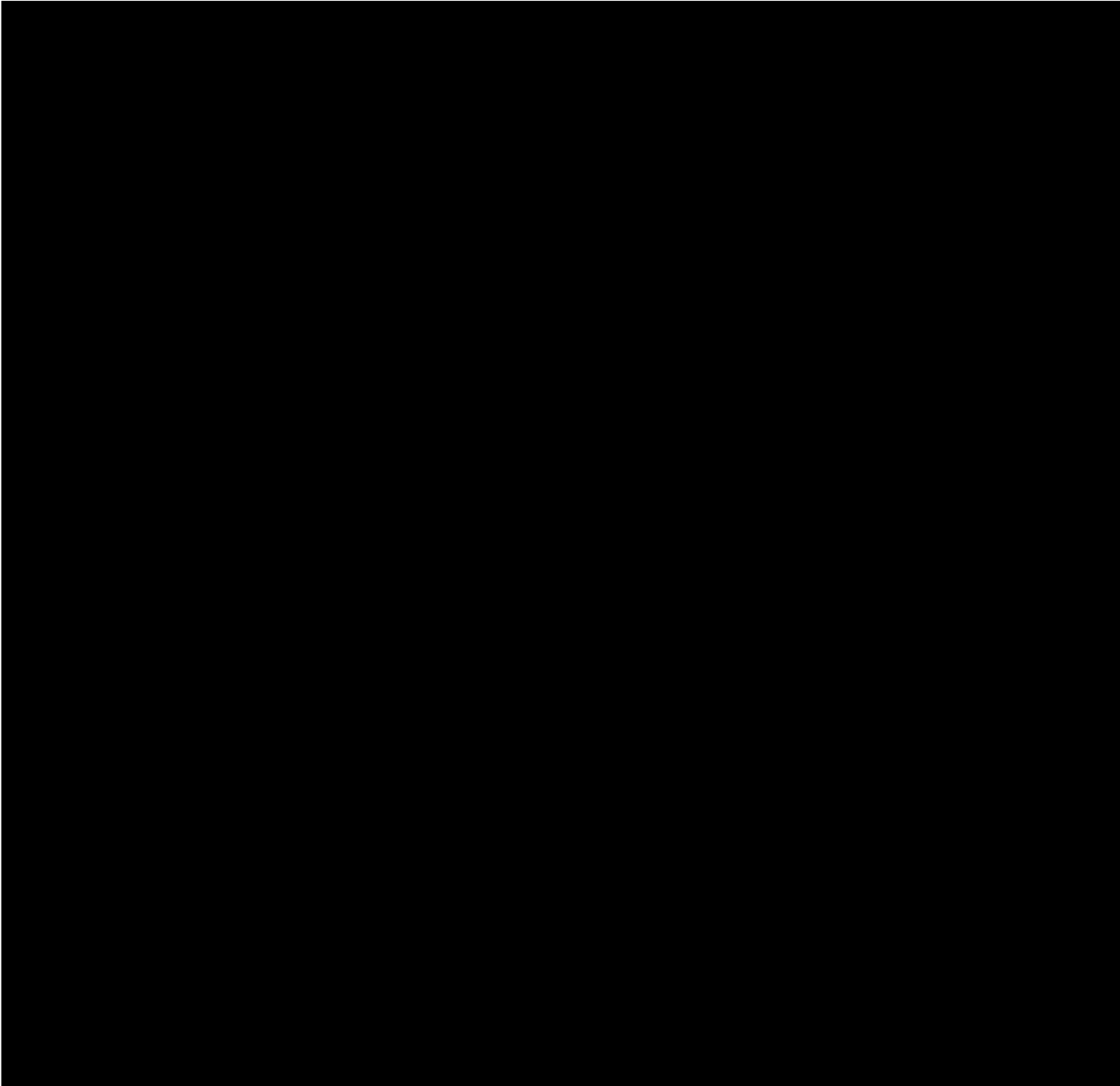


Figure 11: Example of a message where a share count of the URL in the message did not necessarily benefit the sharer (URL from message reflected in Figure 10)⁶³

⁶³

I understand that this website currently displays a “Recommend” button as opposed to a “Like” button. Nonetheless, the webpage remains illustrative as an example of the

72. In any case, as can be seen, this is a nuanced and complex analysis, which would be difficult to resolve without a great deal of intrusive and individualized inquiry. This can be seen by [REDACTED].^{64,65} Furthermore, as I discussed in the prior two sections, there are reasons to think even in these highly individualized circumstances the possibility for harm is limited.

VII. REBUTTAL TO MR. TORRES'S REPORT

73. Mr. Torres's Report describes two potential methodologies for calculating damages. The first is based on extrapolating the alleged benefits to Facebook of "enhancing the Social Graph by including data intercepted in private messages."⁶⁶ It is not clear how Mr. Torres proposes to extrapolate this value, or more importantly, why the methodology should be connected with advertising revenues.⁶⁷ Mr. Torres's second potential damages methodology is a more limited analysis that focused on benefits to Facebook connected

⁶⁴ Similarly, Mr. Hurley [REDACTED]

⁶⁵ See, e.g., Mr. Campbell's [REDACTED]

⁶⁶ Torres Report ¶ 35.

⁶⁷ The Plaintiffs' Motion for Class Certification explains Mr. Torres's first proposal as follows: "The unlawfully intercepted private message content contributes meaningful data to the Social Graph, increasing the quality of its ability to provide predictive value, and, consequently, increasing Facebook's advertising revenue and value... A reasonable value to Facebook of the intercepted content can be assigned on a per-URL basis, and can be allocated to class members on that basis." Plaintiffs' Motion for Class Certification at 22.

with increments to the social plugin counter. This methodology reflects a measure of the costs a URL owner may have faced of obtaining the “Likes” through other means or the benefits they may have obtained. This analysis is removed from any actual harm, and also highlights the huge degree of variation and lack of commonality in the proposed methodology.⁶⁸

74. Mr. Torres also opines in his Report that “Class membership [is] identifiable and ascertainable based upon Facebook’s records.”⁶⁹ However, Mr. Torres made clear during his deposition that he was not offering an opinion on ascertainability⁷⁰ and when asked about paragraph 11.a. of his Report, stated that the “technical issue as to what records to look at to identify the membership in the class, that’s not, that’s outside of my scope.”⁷¹ Therefore, my rebuttal of his report does not consider ascertainability; this is instead addressed in the technical Report of Dr. Benjamin Goldberg.
75. In my rebuttal to the Torres Report, I begin by observing that Mr. Torres has not calculated “damages” to putative class members, but rather alleged “benefits” to Facebook. I then consider each of the proposed methodologies in turn and whether these two methodologies can be reconciled with each other. Last, I consider whether this analysis informs underlying factors that relate to the appropriateness of statutory damages from an economics perspective.

A. Mr. Torres estimated “benefits” to Facebook, not “damages” suffered by putative class members

76. Although his report claims to describe the “Measure of Damages,”⁷² both of Mr. Torres’s methods for estimating damages purport to be related to the benefits received by

⁶⁸ The Plaintiffs’ Motion for Class Certification explains Mr. Torres’s second proposal as follows: “In addition, Facebook generated value from its inflation of third-party Like counters. The economic benefit derived by Facebook attributable to this conduct lies between two bounds: a higher bound represented by the cost that client websites saved by not having to acquire additional Likes; and a lower bound determined by the market value of artificially acquired Likes.” Plaintiffs’ Motion for Class Certification at 22.

⁶⁹ Torres Report, ¶ 11.a.

⁷⁰ Torres Depo. Tr. at 34:2-3 (“Q. [Are you offering an opinion on] [a]scertainability? A. No.”).

⁷¹ Torres Depo. Tr. at 93:7-14 (“Q. And are you offering an opinion in this case that class membership is identifiable and ascertainable based upon Facebook’s records? A. To the extent that’s a technical issue as to what records to look at to identify the membership in the class, that’s not, that’s outside of my scope.”).

⁷² Torres Report Section IV heading.

Facebook. This is confirmed in his deposition when Mr. Torres repeatedly noted that he estimated the benefits allegedly received by Facebook, not damages suffered by putative class members. For example, Mr. Torres stated: “So my report and methodology they developed was asked to analyze the benefits to Facebook. So that’s, so, it doesn’t calculate the detriment to the class members, or the potential class members, because it wasn’t meant to.”⁷³ Mr. Torres reiterated this several times in his deposition.⁷⁴

77. Therefore, Mr. Torres has not presented any method for estimating the actual damages or loss, if any, suffered by individual putative class members. Furthermore, there is no attempt to consider or evaluate any benefits enjoyed by putative class members and integrate these into an evaluation of net damages.

B. It is not clear what the proposed methodology relating to the Social Graph is or why the alleged practices are being related to advertising

1. Summary of Mr. Torres’s method for estimating the alleged benefit to Facebook of enhancing the “Social Graph”

78. Mr. Torres does not present a finalized methodology for estimating the benefit he alleges Facebook received from enhancing the “Social Graph.” Instead he has “[laid] out the methodology and the beginnings of the calculations that can be done with publicly-available information.”⁷⁵ He states that he has not “finalized the calculations because I haven’t received the precise data from Facebook.”⁷⁶

⁷³ Torres Depo. Tr. at 48:11-21 (“Q. Why doesn’t it examine, your methodology examine, instead of examining benefit to Facebook, why doesn’t it examine detriment to the putative class? A. So, my report and methodology that I developed was asked to analyze the benefits to Facebook, so that’s, so, it doesn’t calculate the detriment to the class members, or the potential class members, because it wasn’t meant to.”).

⁷⁴ See, e.g., Torres Depo. Tr. at 48:23-49:1 (“Q. So, you have not developed a methodology to calculate damages to putative class members[?] A. That, that was not my task, no.”); 108:11-17 (“Q. . . . [H]ave you attempted to calculate detriment to the putative class? A. As I said, that, that’s not part of my scope. My scope is to analyze the benefits to Facebook.”); 279:7-11 (. . . [T]he methodology is attributing, is not measuring the effect, the detriment, for example, to the class member, so it’s allocating to class members as a whole the benefits to Facebook as a whole.”).

⁷⁵ Torres Depo. Tr. at 107:2-9 (“Q. And do you lay out these calculations anywhere in your report? A. Well, in the body of the report, in section 4, I lay out the methodology and the beginnings of the calculations that can be done with publicly-available information. I haven’t finalized the calculations, because I haven’t received the precise data from Facebook.”).

⁷⁶ Torres Depo. Tr. at 107:2-9. I understand that Plaintiffs have not even requested most of this information from Facebook. Declaration of Christopher Chorba ¶ 8.

79. The methodology that Mr. Torres does present is premised on the assumption that Facebook used information gathered from messages to expand and enhance the “Social Graph,” and thereby allow Facebook to enhance the “value of its own social media advertising platform.”⁷⁷
80. The most concrete statement of his methodology appears in paragraph 51: “Therefore, the economic value of the benefits Facebook derives from the unlawfully gathered user URL links is proportional to the impact of this additional information on the total information on the Social Graph. In principle, the benefit to Facebook in this respect would be measured by attributing the corresponding portion of the incremental value of the Social Graph to the accretion of the unlawfully gathered links.” Mr. Torres then goes on to say that the value of the Social Graph is the “product of the number of links (L) in the Graph.”⁷⁸
81. In other words, Mr. Torres intends to calculate the *benefit* to Facebook by multiplying his estimate of the value of the Social Graph, multiplied by the percentage of links in the Social Graph obtained from Facebook messages as a percentage of all links in the Social Graph.

2. *Mr. Torres’s method is based on a false assumption*

82. Mr. Torres’s methodology is based on the assumption that Facebook uses information it obtained from Facebook messages to refine its targeting and increase advertising revenues.⁷⁹ However, Facebook did not incorporate any information from Facebook

⁷⁷ Torres Report ¶ 36.

⁷⁸ Torres Report ¶ 52. Mr. Torres also gives an equation for damages, D , which equal $(L_{t+1} - L_t)w_t$, where L_{t+1} is the next period’s number of links and L_t is today’s number of links. It is unclear what is meant by “next period” and “today” in this equation. These labels may actually be intended to contrast the actual world with the “but for” world where there was no counting of aggregate numbers of any URLs in messages. However, that is not specified or clear. w_t is the value of each link. It is also unclear what is meant by links or how they relate to the storage of aggregate URL counts.

⁷⁹ Torres Depo. Tr. at 45:3-13 (“Q. And what, based on your understanding of the allegations in the complaint, and your assumption that those allegations are true, what was the benefit to Facebook, as you understand it? A. Well, the accumulation of the information gleaned from the messages, basically, the edges between members and the marketers and entities identified by the URLs, is accessible through, as part of the social graph, it’s accessible to Facebook in developing the targeted advertising services that, that generate this revenue.”).

messages into the Social Graph to target advertising.⁸⁰ Indeed, Dr. Golbeck confirmed at her deposition that [REDACTED]

[REDACTED].⁸¹ However, in his deposition Mr. Torres reiterated his assumption that the data was used to generate targeted advertising revenue.⁸²

83. Because of the assumption that Facebook incorporated information from Facebook messages into the Social Graph to enhance targeted advertising, Mr. Torres's methodology is fundamentally flawed. In fact, Mr. Torres himself acknowledged that his opinion crucially depended on how Facebook actually used the information from these practices.⁸³
84. From a theoretical perspective, the value of a Social Graph⁸⁴ lies in using friendship data to help predict the relevance of products and services, as Mr. Torres notes when he cites my research in which I say that such advertising "efficacy seems to stem mainly from the ability of targeting based on social networks to uncover similarly responsive consumers."⁸⁵ This refers to the fact that if people are friends, they are more likely to

⁸⁰ Defendant Facebook, Inc.'s Supplemental Responses and Objections to Plaintiffs' First Set of Interrogatories at 40, 44 ("During the relevant time period (December 30, 2011 to approximately December 20, 2012), data or information derived from messages (including URLs shared in messages) was not a criterion available to advertisers in choosing the audience for their ads, and Facebook did not use data or information derived from messages (including URLs shared in messages) to match ads to users.")

⁸¹ Golbeck Depo. Tr. at 223: 3-6 (" [REDACTED] ")

⁸² Torres Depo. Tr. at 45:3-13. *See also* Torres Depo. Tr. at 102:1-2 "Q: So, the first part of your analysis works in conjunction with the second part of your analysis? A "Well they are related because, ultimately, the only benefits are from advertising.

⁸³ Torres Depo. Tr. at 47:12-14. "Q. And I'm saying, if the facts were as I described them, and not as you are assuming them, would it impact your expert opinion in this case?"...A. It would still depend on exactly how Facebook would be using the information in that hypothetical."

⁸⁴ This term was used before Facebook to describe the use of graph theory to apply to social networks. *See, e.g.*, Walsh, Toby, "Search in a Small World," *IJCAI*, Vol. 99, 1999.

⁸⁵ Tucker, Catherine, "Social Advertising," February 15, 2012, SSRN (<http://ssrn.com/abstract=1975897>); *see also* Torres Report, note 37. This reflects the concept of homophily discussed in the Golbeck deposition. Golbeck Depo. Tr. at 100-101.

share similar interests and be interested in similar products and services.⁸⁶ However, this research highlights that it is the social connections that make Social Graph data potentially valuable.

85. However, none of the disputed practices embedded any social relationships in connection with their use of URLs in messages. It was not the case that Facebook used or could have used URL aggregate counts to identify the nature or intensity of social relationships. Indeed, the inherent value of such aggregate URL share data is hugely diminished by the fact that aggregate counts of website visitation are broadly and freely (or at least inexpensively) available from many websites and providers such as Alexa, Compete, Hitwise and comScore.⁸⁷ Therefore, even supposing there was some link, which there is not, between the alleged practices and advertising, it is unclear why a Social Graph is relevant for Mr. Torres's analysis.
86. Indeed, more generally, the Social Graph does not drive all advertising revenue at Facebook and the extent to which drives advertising revenue has changed over time. as noted by AdAge in 2013, "Facebook has since introduced its ad exchange, FBX, and has shifted its focus from social ads to more traditional web-advertising models, such as re-targeting."^{88,89} that do not rely on social relations. Furthermore, since 2013, Facebook has also offered advertisers the potential to use custom audiences which offers access to an

⁸⁶ This is a point emphasized by Dr. Golbeck in her TEDxMidAtlantic talk at minute 4:40 – the technical term which she refers to in her talk for this idea is "homophily." Golbeck, Jennifer, "The Curly Fry Conundrum: Why Social Media 'Likes' Say More than You Might Think," TEDxMidAtlantic 2013, https://www.ted.com/talks/jennifer_golbeck_the_curly_fry_conundrum_why_social_media_likes_say_more_than_you_might_think, viewed December 11, 2015. Dr. Golbeck expanded on this in her deposition: "A. Yeah, so homophily, H-O-M-O-P-H-I-L-Y, is a concept from sociology actually that basically birds of a feather flock together that we tend to be friends with people who share our traits more than people randomly pulled from the general population would share our traits." Golbeck Depo. Tr. at 101:7-13.

⁸⁷ See my recent paper, "Can Big Data Protect a Firm from Competition?," jointly with Anja Lambrecht, for a richer discussion of this point. Tucker, Catherine, and Anja Lambrecht, "Can Big Data Protect a Firm from Competition?" December 18, 2015, SSRN (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2705530).

⁸⁸ Delo, Cotton, and Michael McCarthy, "GM Returns to Facebook Advertising after Public Split a Year Ago," *AdvertisingAge*, April 9, 2013, <http://adage.com/article/digital/gm-returns-facebook-advertising-public-split/240785/>, viewed January 3, 2016. This is the same trade publication noted by Mr. Torres's Report in Footnote 101.

⁸⁹ See, e.g., Delo, Cotton, "Facebook Launches New Retargeting Alternative to FBX: Targeting to Use Tracking Software That Marketers Can Attach to Websites and Mobile Apps," *AdvertisingAge*, October 15, 2013, <http://adage.com/article/digital/facebook-launches-retargeting-alternative-fbx/244746/>, viewed January 3, 2016. This describes an advertising platform that is based on behavior outside of the Social Graph.

audience based on the audience the advertiser already has, such as email addresses or phone numbers.⁹⁰ Such analysis is further complicated by the fact that for any one click there may be several drivers which interlink in complicated ways, making identifying what drives any one piece of advertising revenue problematic. This is unsurprising given literature in economics which highlights the difficulty of measuring the economic drivers of advertising effectiveness.⁹¹

3. *The parts of the proposed methodology where Mr. Torres does give details have several flaws*

87. As discussed, Mr. Torres's proposed methodology is unrelated to how Facebook benefited from the challenged behavior, as it did not use the aggregate stores of anonymous social plugin count data to target advertising, which is the fundamental assumption of his methodology. However, even supposing that the data collected was related to advertising (which it was not), issues remain with Mr. Torres's three calculations.
88. The first calculation in Mr. Torres's description of this methodology is a table of estimated messages (Table 2 in his Report, at page 19). However, the total number of messages seem irrelevant to the key aspect of the data which is needed, which is how many of these messages had URLs that created attachments.⁹² Crucially, even a count of URLs that generated a URL attachment does not reflect whether they were used in any disputed practice—that is, whether the data was used as part of a social plugin counter between 2011 and 2012, or used in the background in the provision of aggregate

⁹⁰ "More Matching Capabilities with Custom Audiences," *Facebook Marketing Partners*, November 30, 2015, <https://facebookmarketingpartners.com/partner-news/more-matching-capabilities-with-custom-audiences/>, viewed January 3, 2016. Facebook offers potential advertisers a number of ways of targeting customers beyond relationships. Specifically, on its business website, Facebook offers that advertisers can target users not only through location variables such as country, state, zip code, or local area but also through demographics, user selected interests, and shopping or use behavior. See "Facebook Advertising Targeting Options," *Facebook for Business*, <https://www.facebook.com/business/products/ads/ad-targeting/>, viewed January 6, 2016.

⁹¹ Lewis, Randall A., and Justin M. Rao, "The Unfavorable Economics of Measuring the Returns to Advertising," *The Quarterly Journal of Economics*, first published online July 6, 2015 doi:10.1093/qje/qjv023.

⁹² Torres Report ¶ 45. In his deposition he appeared to restate this to say, "[t]he data that I would need is mainly the number of those messages that were intercepted that contained URLs, and the total number of messages for the same time periods." Torres Depo. Tr. at 27:20-23.

demographic data to website owners, or used as part of a recommendation. Individual enquiry is necessary to make these determinations.

89. The second set of calculations surrounds the alleged presence of 15.9 billion friendship ties on the Social Graph.⁹³ These data come from May 2011. Mr. Torres states, “I would estimate the value of the enhancement to the Social Graph as commensurate with the ratio of (1) intercepted URLs in private messages during the Class period to (2) the total number of links on the Social Graph.” However, these second set of calculations does not make sense as a denominator in Mr. Torres’s proposed ratio for two reasons. First, the value of friendship ties that are used to target advertising is completely distinct from aggregate URL counts, which are not used to refine targeted advertising. Second, even supposing the aggregate link counts were used to produce advertising revenue, which they were not, the number of friendship ties would be the wrong denominator. The correct denominator, which would be orders of magnitude larger, would include not just friendship ties but every interaction between friends on Facebook—every “Like,” every “share,” every piece of demographic information, and the content of every public posting. Further complicating the analysis, each of these different drivers of the potential for Facebook to generate advertising revenues have different efficacy in different circumstances and at different times.⁹⁴
90. The third set of calculations surrounds the value of the Social Graph. However, Mr. Torres has also overestimated the value of the Social Graph for at least five reasons.
91. First, there is an error in the calculation of the value of the Social Graph. The average quarterly revenue Mr. Torres based his estimate on was *total* revenue, not advertising revenue.⁹⁵ This means that the estimates also include revenues from Facebook’s activities

⁹³ Torres Report ¶ 49.

⁹⁴ See, e.g., Tucker, Catherine E., “Social Networks, Personalized Advertising, and Privacy Controls,” *Journal of Marketing Research*, Vol. 51, No. 5, 2014, pp. 546-562, where I show that different undergraduate institutions have different values for advertisers, as does the rarity of information - for example, liking Oprah Winfrey may be less informative than liking an obscure 1970s poet.

⁹⁵ Looking at slide 9, 2015 Q2 Results PowerPoint, the average of total revenues over the past four quarters equals the \$1,771 figure noted by Mr. Torres in footnote 66 of his report. The average of total advertising revenues could potentially be estimated from Slide 10 of the same document, at \$1,622.25.

including payments in online games.⁹⁶ Correcting this error (which Mr. Torres acknowledged in his deposition) reduces Mr. Torres's estimate of the Social Graph's value by \$1.267 billion dollars.⁹⁷

92. Second, the choice of revenue numbers appears selective and problematic. The equations in Mr. Torres report suggest that the change in value was contemporaneous with the alleged practice, suggesting the use of revenue from the span of years governed by the class definition. However, the Torres report instead uses just the most recent four quarters in 2014 and 2015 as a basis for advertising revenue. Using the span of years covering the class definition as a basis for average revenue, suggests a valuation of the Social Graph that is \$7 billion lower than the one suggested in the Torres report.⁹⁸
93. Third, Mr. Torres's allocation of costs is as follows: "the additional information collected through the accused activities has arguably zero incremental cost. Therefore, from an economic perspective, virtually all of the incremental advertising revenue generated from the enhancement can justifiably be considered incremental profit to Facebook."⁹⁹ This seems arbitrary, as it is not clear from this description to what incremental part of

⁹⁶ This led the estimates in Table 1 in his report to be off by \$1.2 billion. This error was confirmed in his deposition. Torres Depo. Tr. at 195:10-204:9.

⁹⁷ Mr. Torres initially estimated the value of the Social Graph to be \$15.087 billion. Torres Report ¶ 43, Table 1. In his deposition, he stated that he intended the valuation to be \$13.820 billion. Torres Depo. Tr. at 204:4-9 ("Q. So, those three corrections on page 15, is that all, Mr. Torres? A. Yes. And then that feeds into the table 1, where the annual profit numbers would be 3,459,000,000, and the discounted values in that line, for the whole line, for the full column, would be 2915, 2457, 2070, 1745, 1470, 1239, 1044, and 880, for a total of 13,820,000,000."). I understand that Mr. Torres has made corrections to the report to rectify this error but these corrections were submitted too close to the deadline for the submission of my report for me to be able to review them.

⁹⁸ The actual amount of the overstatement is \$7.056 billion (\$7.056 billion = \$15.087 billion - \$8.031 billion (see Exhibit HHH)). While it does not affect his estimate of the value of the Social Graph, Mr. Torres made yet another error related to his revenue estimate. He claims his revenue estimate is based on "quarterly advertising revenue from the activities of users located in the U.S. and Canada during the four quarters between April 2014 through June 2015." Torres Report ¶ 39 note 66). The period April 2014 to June 2015, however, contains *five* quarters, not four. A review of his calculations, after taking into account the \$1.267 billion error identified above, indicates Mr. Torres is using quarterly advertising revenue for the four quarters between July 2014 and June 2015. Torres Report ¶ 39, n. 66, and Facebook, Inc.'s 2015 Q2 Earnings Report (July 29, 2015), slide 10.

⁹⁹ Torres Report ¶ 44.

Facebook's revenue-generating functions Mr. Torres thinks Facebook's considerable costs should be allocated.¹⁰⁰

94. Fourth, Mr. Torres excludes research and development costs from Facebook's expenses when calculating Facebook's profit margin. His argument is that expenditures for research and development are intended to yield benefits in the future and are therefore not appropriate to be accounted for today to determine current period profits. Mr. Torres claims this is consistent with "accepted valuation standards."¹⁰¹ However, though Mr. Torres is correct that valuation practitioners often exclude current period research and development from current period calculations of profit, they still include research and development expenses from prior periods that are resulting in benefits today.¹⁰² In fact, the text that Mr. Torres cites as the basis for his Income Valuation Approach¹⁰³ includes research and costs as an expense in a sample income valuation case study.¹⁰⁴ Moreover, Mr. Torres assumes that the benefit to Facebook related to the Social Graph will accrue over eight years. In order for the Social Graph to remain a valuable asset to Facebook, it will need to continue to invest in the Social Graph. To the extent that this has historically required Facebook to invest in research and development to support and develop the Social Graph, this need will continue into the future and through Mr. Torres's eight-year time horizon. By failing to account for research and development expenses, Mr. Torres is biasing Facebook's profit margin up, which then biases his estimate of Facebook's benefits up as well. Including research and development expenses for the years Mr. Torres considered in his valuation as a proxy for historical research and development

¹⁰⁰ Considerable costs as defined by Mr. Torres (cost of revenue, marketing and sales, and general and administrative expenses) and outlined in Exhibit GGG have ranged from 35 percent (Q2' 14) to 103 percent (Q2' 12) as a percentage of revenue. Torres Report ¶ 39 and Exhibit 1.

¹⁰¹ Torres Report ¶ 39, note 67.

¹⁰² See, e.g., Damodaran, Aswath, "Research and Development Expenses: Implications for Profitability Measurement and Valuation," *NYU Stern School of Business*, <http://people.stern.nyu.edu/adamodar/pdfiles/papers/R&D.pdf>, in which he argues that research and development expenses should be capitalized and amortized as opposed to being charged to the quarter in which they are incurred. Importantly, in both positions it is assumed that research and development costs will be accounted for somewhere in the valuation.

¹⁰³ See Torres Report note 63 in which he cites Smith, G.V. and R.L. Parr, *Valuation of Intellectual Property and Intangible Assets*, John Wiley & Sons, 2000; Reilly, R. F. and R.P. Schweihs, *Valuing Intangible Assets*, McGraw Hill, 1999. Mr. Torres also cites Smith and Parr in footnotes 64 and 96.

¹⁰⁴ See Smith and Parr, Table 18.3 on pages 510 and 511.

expenses would reduce the Social Graph valuation by over \$7 billion down from the number presented in the report.¹⁰⁵ In combination with the correction to the selectivity of the years used, the Social Graph valuation would drop from the \$15 billion figure stated by \$10 billion.¹⁰⁶

95. Fifth, at a more conceptual level, Mr. Torres's decision to give the Social Graph a lifetime of eight years based on geographical mobility misses a critical fact: The nature of Internet advertising makes geography not that relevant as a targeting variable relative to friendship ties or expressed interests.¹⁰⁷ Furthermore, the history of social networks has shown the vulnerability of any social network site to turmoil and displacement and users leaving the site.¹⁰⁸ For example, it would have been wrong to assume that the Social Graph embedded in MySpace in 2008 would have a lifetime value of eight years, given that within less than a year its users had left the site in droves.¹⁰⁹ Mr. Torres was in fact posed with this hypothetical in his deposition and stated that in order to value the MySpace Social Graph he would have to "perform a series of due diligence and preliminary analyses."¹¹⁰

¹⁰⁵ The actual amount of the overstatement is \$7.456 billion ($\$7.456 \text{ billion} = \$15.087 \text{ billion} - \7.631 billion (see Exhibit III)).

¹⁰⁶ The actual amount of the overstatement is \$10.704 billion ($\$10.704 \text{ billion} = \$15.087 \text{ billion} - \4.383 billion (see Exhibit JJJ)).

¹⁰⁷ Indeed, my own research emphasizes that geography becomes meaningful as a targeting variable only when offline advertising channels are not available to the advertiser. See Goldfarb, Avi and Catherine Tucker, "Advertising bans and the substitutability of online and offline advertising," *Journal of Marketing Research* 48.2 (2011): 207-227.

¹⁰⁸ Tucker, Catherine, and Alexander Marthews, "Social Networks, Advertising, and Antitrust," *George Mason Law Review*, Vol. 19, 2012, pp. 1211-1227.

¹⁰⁹ Torkjazi, Mojtaba, Reza Rejaie, and Walter Willinger, "Hot Today, Gone Tomorrow: On the Migration of MySpace Users," Proceedings of the 2nd ACM Workshop on Online Social Networks, 2009.

¹¹⁰ Torres Depo. Tr. at 211:21-212:5 ("Q. If you were tasked with valuing the social graph of Myspace in 2007, would you have used a similar methodology as one that you've used here? A. Well, in that hypothetical situation, I would have to, to perform a series of due diligence and preliminary analyses. I'm not sure that Myspace had the same revenue mode, so I would have to reconsider the revenue model then, and, to see if that is sufficient.").

C. It is not clear how the proposed methodology related to allegedly inflated social plugin counters is linked to the disputed practice

1. Summary of Mr. Torres's method for estimating the alleged benefit to Facebook related to allegedly "inflated" social plugin counters

96. Mr. Torres's second proposed analysis, which is related to the "Like" button next to a social plugin counter, describes two potential bounds for damages related to each URL attachment created.¹¹¹ The first is to try and establish how much the website owner might benefit from additional "Likes." The second is to establish the market value of these "Likes" in order to determine what website owners would have needed to pay in order to acquire the "Likes." However, both of these proposed methodologies are unrelated to the claims made by Plaintiffs over the harm they suffered and seem to misunderstand the reasons why website owners value "Likes."

2. The analysis focuses on the value of "Likes" to website owners, which has no reliable link to Plaintiffs' allegations of harm

97. Mr. Torres's methodology for estimating the benefits from inflating the social plugin counter on third-party websites attempts to quantify the amount of money that third-party website owners either received from the allegedly inflated "Likes" or would have been willing to pay to acquire the allegedly inflated "Likes." Even if Mr. Torres were to measure these amounts accurately the benefit to the subset of third-party website owners willing to pay for Likes are not benefits received by Facebook.

98. Mr. Torres suggests that "In the Facebook environment, the number of 'Likes' measured is typically interpreted as an indicator of the reach of an advertising strategy and, given the particular brand/product combination, as a factor in generating sales."¹¹² However, since "Likes" incremented were never used on the Facebook advertising platform to measure the reach or success of a Facebook advertising strategy, this analogy is misguided. Mr. Torres then attempts to link the benefit to third-party website owners to Facebook by claiming that

¹¹¹ Torres Report ¶¶ 62-71.

¹¹² Torres Report ¶ 64.

“The amounts identified in this analysis – the cost savings to advertisers from the accrual of Likes from the intercepted messages – were, in principle, made available to spend on additional Facebook marketing campaigns. This would have been particularly true in light of the false appearance of increase [sic] Fan engagement that an inflated [social plugin] count would present. To that extent, a fraction of this benefit may have been converted to advertising revenue benefiting Facebook.”¹¹³

99. The link is tenuous. Mr. Torres provides no method for determining if the cost savings were actually spent on Facebook advertising or, if so, how much was spent. He does not even argue with certainty that any of it resulted in incremental revenue to Facebook, just that “in principle” it was available to be spent on Facebook marketing and that it “may have been converted.” In his deposition, Mr. Torres confirmed only “a fraction [of an advertiser’s cost savings] would have been converted,”¹¹⁴ to Facebook revenue, but was unable to state what fraction, stating, “I can’t tell you because I don’t have the information to determine it.”¹¹⁵
100. Instead, the argument in Mr. Torres’s Report is “this practice gave its clients, Marketers, an incremental impression of effectiveness of their Facebook marketing campaigns. Marketers perceiving an incremental return of their spending on Facebook campaigns were undoubtedly encouraged to allocate additional funds to these campaigns.”¹¹⁶ The argument is that when a third-party website observed an increase in a social plugin counter, they diverted the funds that they would have spent on incrementing the social plugin counter towards Facebook advertising. However, this argument is flawed for at least four reasons.
101. First, as discussed above, many third-party websites do not have social plugin counters. Second, among those third-party websites that have social plugin counters many do not pay to advertise on Facebook. Indeed, much advice on social media emphasizes the

¹¹³ Torres Report ¶ 73.

¹¹⁴ Torres Depo. Tr. at 295:6-13 (“Q. And does your report assume that advertisers would have passed 100 percent of their cost savings on to Facebook? A. Is that my assumption, that they would – Q. Yes. Is that your assumption? A. No. Q. What is your assumption, then? A. That a fraction would have been converted.”).

¹¹⁵ Torres Depo. Tr. at 295:14-22 (“Q. Which fraction? A. I don’t have the information to determine that fraction. W. Can you tell me it’s more than 50 percent? A. I can’t tell you, because I don’t have the information to determine it.”).

¹¹⁶ Torres Report ¶ 68.

extent to which it is desirable often to not spend money on advertising.¹¹⁷ In his deposition, Mr. Torres agreed that his definition of “Marketers” means that the focus is on third-party websites who purchase advertising.¹¹⁸ However, the class definition includes many URL messages where the website did not and would not spend money on advertising on Facebook. Indeed, some examples from Named Plaintiff Mr. Hurley

[REDACTED]
[REDACTED].¹¹⁹ Similarly, Mr. Campbell shared URLs for [REDACTED]

[REDACTED].¹²⁰ [REDACTED]

[REDACTED].¹²¹

102. Second, the mechanism by which Facebook allegedly benefited may in fact have had the opposite effect. Mr. Torres argues that Marketers would have concluded that Facebook marketing was more effective because of the incremental “Like” and devoted more money to Facebook advertising.¹²² If the social plugin counter incremented without any extra effort or expenditure on advertising from the firm itself, the firm may take this as suggestive that its organic (or non-paid) marketing efforts were successful and be less likely to divert money to advertising.
103. Third, there are many reasons to think that website owners understood the varied providence of “Likes” displayed on the social plugin counter, especially given that the

¹¹⁷ Edelman, David, and Brian Salsberg, “Beyond Paid Media: Marketing’s New Vocabulary,” *McKinsey&Company*, November 2010, http://www.mckinsey.com/insights/marketing_sales/beyond_paid_media_marketings_new_vocabulary, viewed January 11, 2016.

¹¹⁸ Torres Depo. Tr. at 98:2-8 (“Q. What do you mean by, marketers? A. In this report, I mean by marketers the same thing that Facebook defines as marketers, which are their clients, the people responsible for advertising, companies, entities, organizations, and whether they are direct entities or agencies in the advertising market.”).

¹¹⁹ See HURLEY000001 where the URL [REDACTED] was shared for example.

¹²⁰ See Plaintiff Matthew Campbell’s Corrected Objections and Responses to Defendant Facebook, Inc.’s First Set of Interrogatories.

¹²¹ For example, the IRS itself imposes a long list of restrictions on potential advertisements that anyone connected with the IRS can use. See “Advertising Standards,” *IRS*, last updated 07-Jan-2016, <https://www.irs.gov/uac/Advertising-Standards>, viewed January 15, 2016.

¹²² Torres Report ¶¶ 68, 73.

instructions for installing the counter explicitly stated it would include “Likes” created from URL attachments.¹²³

104. Without a bridge between the alleged “benefit” received by third-party website owner and any alleged “benefit” to Facebook, Mr. Torres’s damage theory for the allegedly inflated social plugin counter is divorced from the way that Plaintiffs described the harm they suffered.

3. *The analysis fundamentally misunderstands or distorts why website owners value “Likes”*

a. **The analysis focuses on the value of “Likes” that allowed a continuing relationship between the website and an individual rather than social plugin counters**

105. By themselves “Likes” have little value to third-party websites. Recent research broadly contradicts Mr. Torres’s assertion that “Likes can be profitable.”¹²⁴ Harvard researchers found in multiple experiments that “Liking” a brand has no effect on subsequent consumer attitudes or behavior, including advertisement choice and actual purchase.¹²⁵ Indeed, it appears likely that the study that Mr. Torres cites in Table 3 of his report¹²⁶ does not actually represent anything profitable that is causally connected with a “Like.” This table compares the cost of inducing a “conversion” between a “Fan” and a non-”Fan” for a variety of products.¹²⁷ However, people who have a greater tendency to become a Fan of a product are also easier to convert irrespective of whether they click a “Like” button. There is no causal relationship implied by this data or profitability that can be attributed to the “Like” button.

¹²³ See FB000000163 from March 2011 (captured by the Wayback Machine) for an example of the text available on Facebook’s developer website. The text explicitly says that the count includes “Likes” deriving from the creation of URL attachments in messages. See also FB000000166 from October 2012 (also captured by the Wayback Machine) with similar information.

¹²⁴ Torres Report ¶ 70.

¹²⁵ John, Leslie et al., “What are Facebook ‘Likes’ Really Worth?,” *HBS Working Paper*, 2015, <http://rady.ucsd.edu/docs/events/lesliejohn.pdf>. This is also illustrated by the wide variety of motivations for “Liking”, such as the desire to receive a discount or an offer, displayed in Table 1.

¹²⁶ Torres Report at 26.

¹²⁷ Note that this “Fan” language represents an earlier incarnation of Facebook, where users could be “Fans” of, rather than “Like” an organization, so it is not quite certain how relevant it is for an analysis of “Likes” in any case.

106. Instead, the “value” of a “Like” to a third-party website or to a Facebook page is that it enables that organization to form a relationship with that user and share communications with them. Indeed, research shows¹²⁸ that the only value of “Likes” to advertisers is that they allow the user to subscribe to the conventional marketing communications put out by that advertiser’s main Facebook page. This implies that the kind of “Like” that is an anonymous increment of a social plugin counter, and that does not allow a website to form a relationship with the user, has little worth. Therefore, trying to ascribe value to all “Likes” based on valuations of “Likes” that allowed or implied a continuing relationship between the organization and an individual is misguided.
107. In general, Mr. Torres’s Report fails to distinguish between users actually clicking on “Like” buttons on third-party websites with changes in the display of counters on those third-party websites. For example, Mr. Torres cites an internal Facebook email chain for the proposition that “from [the Like button’s] launch in April 2010, the impact of social plugins was significant, generating 815 million clicks on ‘Like’ buttons daily in the first few weeks.”¹²⁹ However, the document indicates that Facebook’s partners had a wide range of outcomes with respect to implementing social plugins – which are themselves broader than a social plugin counter. For example, traffic on the Rotten Tomatoes movie reviews website actually fell after implementing social plugins, suggesting that any effects are not straightforward or uniform.¹³⁰ Similarly, the document Mr. Torres uses to demonstrate “Benefits of Using Like Button Plugins” conflates the potential for anonymous incrementing of the social plugin counter with users clicking the “Like” button.¹³¹
108. Given this, any attempt to use a valuation for a “Like” that might include a meaningful and ongoing relationship between the website and website user is wrong.

¹²⁸ Mochon, Daniel, Karen Johnson, Janet Schwartz, and Dan Ariely, “How much is a like worth? A field experiment of Facebook pages,” *Tulane University Working Paper – Advances in Consumer Research*, vol. 42, 2015. This paper is under the review process so is not publicly available.

¹²⁹ Torres Report ¶ 29.

¹³⁰ “Partners: social plugins,” Internal Facebook Email Chain, FB000011715.

¹³¹ “Connecting Outside of Facebook,” PowerPoint Presentation at Slide 4, FB000026793.

109. Mr. Torres argues that “the average cost of advertising on Facebook to encourage a user to become a Fan – Like the advertiser’s Facebook page – was \$1.07. This cost also varies across sectors and over time. In 2012, the cost per acquired Fan (i.e., cost per click in Fan acquisition campaigns) averaged \$0.55.”¹³²
110. There are four things to note about these estimates. First, they refer to “Fans,” not “Likes.” Second, they refer to a situation where an organization will subsequently, as a result of the Fan relationship, be able to communicate with that audience via the Facebook platform and so do not reflect the market value of an anonymized +1 increase in a plugin counter on a third-party website. Third, these estimates themselves show the huge variability in potential estimates of the costs of obtaining a “Like” (which again, is distinguishable from the anonymous incrementation at issue here). Indeed, there are estimates that suggest a cost of obtaining a “Like” can via Facebook advertising is \$0.08.¹³³ Estimates which range, depending on the study used, from \$0.08 to \$1.07 are not a reliable guide for damages. Fourth, as shown in the earlier example of the promotion of the BostonEventsInsider website shown in Figure 6, there are many other ways of incentivizing users to give “Likes” which might even be cheaper than paying for them – in that particular case, the website had not paid money for the movie tickets it was using to incentivize customers to “Like” their website.
111. It might be supposed that the estimates of “phony” purchases of “Likes” cited by Mr. Torres, such as the case where “Likes” were sold for \$0.075, are therefore more relevant.¹³⁴ However, there are at least two issues with such numbers. First, “Likes” are often actually cheaper than the article cited.¹³⁵ One website test suggests that “Likes” can

¹³² Torres Report ¶ 70.

¹³³ Chieruzzi, Massimo, “Buying Facebook Likes Sucks, Here’s The Data To Prove It!,” *AdEspresso*, November 19, 2014, <https://adespresso.com/academy/blog/buy-facebook-likes/>, viewed December 12, 2015.

¹³⁴ National Public Radio, Planet Money: “For \$75, This Guy Will Sell You 1,000 Facebook ‘Likes,’” originally broadcast on May 16, 2012, <http://www.npr.org/sections/money/2012/05/16/152736671/this-guy-will-sell-you-sell-you-1-000-facebook-likes>, viewed December 12, 2015.

¹³⁵ For example, <http://www.buylikesandfollowers.net/buy-facebook-likes-cheap.html> suggests that it would cost \$0.03 a “Like” if you buy 10,000 “Likes.” “Buy Real Facebook Likes,” *Buylikesandfollowers.net*, <http://www.buylikesandfollowers.net/buy-facebook-likes-cheap.html>, viewed December 12, 2015.

be bought as cheaply as \$0.01.¹³⁶ Second, the market price of such “Likes” may reflect the potential belief among buyers (whether true or not) that “Likes” might actually translate into real people taking real actions. As such the price would be higher than for an anonymous increment of the social plugin counter where there was definitely not such a possibility.

b. The Proposed Methodology For Social Plugin Counters Does Not Address The Fact That Many Proposed Class Members Were Unaffected Or Benefited From These Practices.

112. Mr. Torres’s proposed methodology does not distinguish between the many cases where the user was unaffected as there was no counter or social plug-in that displayed counts. Indeed, it seems to presume the presence of a social plugin counter on the website for every message where an attachment was created. However, many websites do not have social plugins and many social plugins do not provide a counter.¹³⁷
113. Mr. Torres’s proposed methodology also does not consider the cases where a user was invested in the website, meaning they would have welcomed or benefited from the potential for an increment of the social plugin counter, supposing the website did indeed have a plugin that contained the counter.

D. Mr. Torres’s two potential methodologies cannot be reconciled with each other

114. Last, these two separate proposed methodologies cannot be reconciled with the different claims that proposed class members may have. In particular, it is not clear how the proposed methodology would avoid double-counting the benefits in instances where a message contained a URL during the period that such a share could have potentially incremented a social plugin displaying a counter. Mr. Torres has two competing suggestions for how to resolve this issue.
115. First, in his Report, Mr. Torres suggests: “the calculated effect from incremental advertising revenue during the time when the Like counters were being affected (through

¹³⁶ Chieruzzi, Massimo, “Buying Facebook Likes Sucks, Here’s The Data To Prove It!,” *AdEspresso*, November 19, 2014, <https://adespresso.com/academy/blog/buy-facebook-likes/>, viewed December 12, 2015.

¹³⁷ Declaration of Alex Himel ¶¶ 34-35, 37.

December 2012) . . . shall be deducted from the benefits calculated for this period under the methodology described in the previous section [the Social Graph method] for affected Class Members.”¹³⁸

116. This proposal leads to conflicts in the interests of different putative class members. The following thought experiment provides an example of possible conflicts, taking as given that these methodologies are capable of producing concrete numbers and that the numbers would be relevant.
117. Suppose that between 2011 and 2015, 50 million URLs in messages were affected. Suppose that in the first year of this period (2011-2012), 10 million URL messages were affected. Suppose that the Social Graph method produced a calculation of 1 cent per message-URL. Suppose also that the “Like”-counter valuation method produced a value of five cents per message-URL in the 2011-2012 period. Under Mr. Torres’s Social Graph method, the available damages to be split among class members would be \$500,000. Under the “Like”-counter valuation method, the available damages to be split among affected class members would also be \$500,000. However, under the reconciliation proposal in Mr. Torres’s Report, that “Like”-counter total of \$500,000 would need to be subtracted from the Social Graph method total of \$500,000, implying zero dollars available for any class members who sent messages containing URLs after December 2012. Now that might be correct, given the negligible effects of the URL counts after December 2012, but it does suggest a conflict of interest of the proposed class members inherent in the two methodologies. Any proposed class member who sent messages mainly prior to December 2012 would have an interest in maximizing the value calculated by the “Like”-counter valuation method; any proposed class member who only sent messages after December 2012 would prefer that the “Like”-counter valuation method provided very low valuations.
118. Second, in his deposition, Mr. Torres testified that ultimately his goal was to make sure the overlap was taken into account and that “when everything is said and done . . . only

¹³⁸ Torres Report ¶ 74.

one of the two calculations will prevail.”¹³⁹ In response to a thought experiment similar to the one in the previous paragraph, he said that ultimately, “you wouldn’t add them together. You would just have one.”¹⁴⁰ Similarly, Mr. Torres made clear that his methodology could not give rise to a negative number because “if the overlap overwhelms the situation, then only one of [the figures] would be appropriate.”¹⁴¹

119. Mr. Torres’s suggested solution during his deposition is fundamentally different than the solution proposed in his Report. Therefore, it is unclear how Mr. Torres would actually reconcile his competing damages methodologies. Further, his testimony suggests that he thinks that only one set of putative class members may recover and therefore, the conflicts in the interests of different Class Members remain unresolved.

E. Rebuttal to Mr. Torres’s analysis as it pertains to statutory damages

120. I understand that the Court has discretion regarding whether to award statutory damages and, if so, the amount. I also understand that the Court may consider several factors in this determination including, among others, the actual damage to the victim and whether the Defendant profited from the alleged violation. I have no opinion regarding whether statutory damages are appropriate or not, but I note where my analysis and rebuttal to the Torres report addresses these two factors. Mr. Torres explicitly stated in his deposition he was not offering an opinion relating to statutory damages, so I emphasize that these are

¹³⁹ Torres Depo. Tr. at 300:3-19 (“Q. But how would the net, if you are saying that you would deduct the amounts, the analysis in this section shall be deducted from the benefits calculated under the methods described in the previous section, okay, I’m saying, if the benefits were greater than the calculated – A. Now, what this means is that . . . what this means is that the overlap has to be taken into account. That overlap can be calculated, when everything is said and done, and that overlap means that only one of the two calculations will prevail. Q. One of the two, meaning A or B? A. So, if you add A and B, you would then have to take away the overlap.”).

¹⁴⁰ Torres Depo. Tr. at 299:4-8 (“So, if it were to be the case that benefits from one perspective are the same as the benefits from the other perspective, then, yeah, the overlap with, would mean that you wouldn’t add them together. You would just have one.”).

¹⁴¹ Torres Depo. Tr. at 299:10-23 (“Q. And what if the benefits were greater than the calculated effect from the incremental advertising revenue? That would result in a negative number? A. In, it would be a very strange hypothetical situation where that would even be the case, because of the length of the time period. Q. But, if it were the case, it would be a negative number? A. So, whatever the methodology determines for those two numbers would have to do the analysis of the overlap, and, if the overlap overwhelms the situation, then only one of them would be appropriate.”).

not critiques of his conclusions but instead critiques of his analysis in terms of how it informs statutory damages.¹⁴²

1. Factor 1: Actual damage to the victim

121. As discussed in Section VI.C, according to their depositions, several proposed class members that were deposed could not articulate the potential harms or losses they suffered as a result of the challenged behavior. Furthermore, some Named plaintiffs would have benefited directly, as in the case of Mr. Campbell when [REDACTED]. Mr. Torres has not provided an opinion related to the actual loss, if any, suffered by proposed class members.¹⁴³ In general, given the discussion in Sections VI.A and VI.B, there are reasons to believe that many potential class members suffered no damages or harm and in some cases as actually benefited from the alleged behaviors.

2. Factor 2: Whether the Defendant profited from the alleged violation

122. Mr. Torres claims to measure the benefit received by Facebook from the challenged behavior, but as I discuss in Sections VII.B and VII.C, he fails to do so. His first method is based on the false assumption that Facebook uses information shared in URLs contained Facebook message in the Social Graph for targeted advertising, which the plaintiff's own technical expert stated is not true.¹⁴⁴ His second method is based on the unsupported assumption that marketers may have shifted a fraction of their marketing budget to additional Facebook advertising, but he has no idea what fraction it would be if any. Therefore, for these and other reasons discussed above, neither of Mr. Torres's methods are a valid measure of Facebook's profits resulting from the challenged behavior.

¹⁴² Torres Depo. Tr., at 37:4-9 Q. And are you offering an opinion in this case as to whether or not statutory damages should be awarded? A "No. That would be a legal conclusion"

¹⁴³ Torres Depo Tr. at 48:11-21 ("Q. Why doesn't it examine, your methodology examine, instead of examining benefit to Facebook, why doesn't it examine detriment to the putative class? A. So, my report and methodology that I developed was asked to analyze the benefits to Facebook, so that's, so, it doesn't calculate the detriment to the class members, or the potential class members, because it wasn't meant to.").

¹⁴⁴ Golbeck Depo. Tr. at 223: 2-6 (" [REDACTED] .")

VIII. CONCLUSION

123. There are two flaws with the damages methodology laid out in Mr. Torres's Report. First, neither advertising revenues nor the price of incremental likes for advertisers are directly connected to the benefits that Facebook may have received from the alleged practices. Second, the proposed methodologies have technical issues which lead them to produce estimates that vary enormously in scope. In the case of the first methodology, a few simple (but reasonable) changes in assumptions lead to a reduction of \$10 billion in the value attributed to the Social Graph. In the case of the second methodology, the proposed market value of likes varies from the \$9.56 figure¹⁴⁵ cited in the Torres report to one cent.
124. Even if the second set of errors could be corrected, a central flaw remains—advertising revenues or the market value of a “Like” to an advertiser are unconnected with any profits or benefits enjoyed by Facebook.

Dated: January 15, 2016



Catherine Tucker, PhD.

¹⁴⁵ Torres Report ¶ 69.