FTC v. Meta

Professor C. Scott Hemphill

May 27, 2025

Roadmap

1. The flawed empirical studies of Meta's experts fail to address the monopoly power question and fail to correctly measure substitution.

2. Professor Carlton ignores and misreads evidence of price discrimination.

3. Professor Carlton wrongly dismisses the continued importance of friend content.

4. Professor Carlton is wrong to suggest that competition for unconnected content defeats the relevant market or Meta's exercise of monopoly power.

5. Professor List's "de-merger" analysis is unsupported and uninformative.

6. Professor Carlton is wrong to conclude that Meta's acquisitions of Instagram and WhatsApp were likely beneficial.

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1. The flawed empirical studies of Meta's experts fail to address the monopoly power question and fail to correctly measure substitution.

The Carlton and List Studies Fail to Answer the Relevant Monopoly Power Questions

- Would a single firm controlling Facebook, Instagram, and other PSN apps in the United States profitably set a lower quality, compared to competition?

- Does competitive pressure from non-PSN apps prevent Meta from exercising monopoly power over users?

- Do users shift time between PSN apps and non-PSN apps in response to a large, temporary change affecting one or more apps?

- Do users shift time to TikTok and YouTube more than to Snapchat in response to a large, temporary change affecting one or more apps?

Source: PX9007 (Hemphill Rebuttal) at ¶¶ 365-372.

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To Assess Market Definition in a Monopoly Maintenance Case, Prof. Carlton Urges the Wrong Approach

"[T]he market definition inquiry commonly looks first and often exclusively to qualitative evidence."

"Market definition is more often conducted without these types of systematic empirical analyses than with them. This should be no surprise: good data are not always available . . . . Moreover qualitative evidence can be compelling, at times more probative than quantitative evidence."

Baker & Bresnahan, *Economic Evidence in Antitrust* (2008)

"I think if you look across economist reports or presentations in cases, more normal than not that [an expert] doesn't do a full quantitative hypothetical monopolist test."

Israel Trial Testimony from *US v. Google* (Google Search) (Nov. 2, 2023)

Dr. Mark Israel
Google Expert
Compass Lexecon

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PDX0149-005

Prof. Carlton Ignores Extensive Evidence that Non-PSN Apps Are Poor Substitutes for PSN Apps

[Snapchat logo]

[Redacted text]
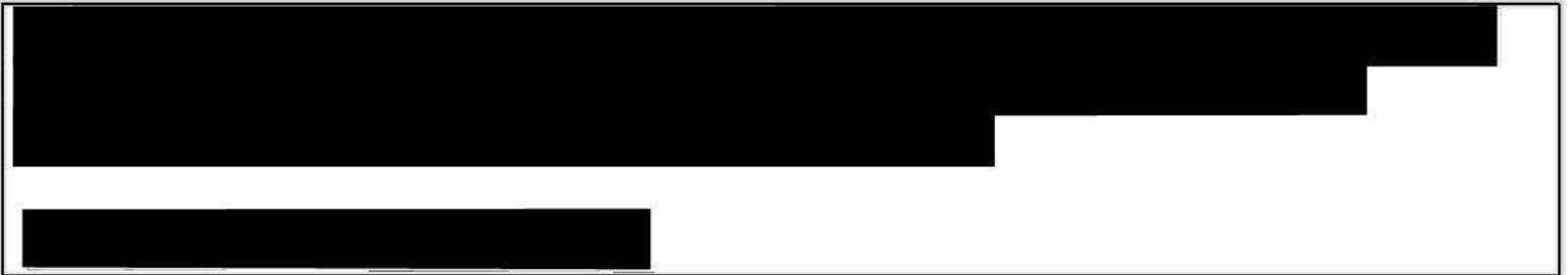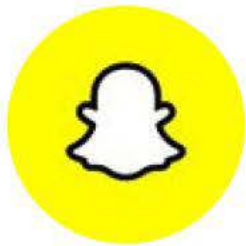
David Levenson (Snap) Trial Testimony (May 19, 2025)

[TikTok logo]

"Q. What features do you have in mind as core differentiated features that distinguish TikTok from Facebook and Instagram?

 A.   I think **TikTok has really been built on the concept of a content graph or an interest graph**. So a user will experience essentially their portfolio of interests . . . . I think of Instagram and Facebook as really being built on the social graph, really essentially having the foundation be the network of contacts or people that you know, and then content is essentially built on top of that."

Adam Presser (TikTok) Trial Testimony (Apr. 30, 2025)

The Carlton and List Studies Fail to Address the Monopoly Power Question and Fail to Correctly Measure Substitution

Price Increase Is . . .	2021 Meta Outage	List Pricing Experiment	2020 India Ban of Apps	List Switching Study	2025 TikTok Outage
Applied to products in market, starting from competitive level	❌	❌	❌	❌	❌
Small	❌	❌	❌	❌	❌
Non-transitory	❌	❌		❌	❌
Limited to products in market	❌		❌	❌	❌

Source: PX9007 (Hemphill Rebuttal) at ¶¶ 25, 28, 209-228.

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Prof. Carlton's Focus on Ranked Diversion Is the Wrong Question

"[T]he 1992 Guidelines, as revised in 1997, described a product market definition process that would begin with a single product and add substitutes one at a time, in order of their closeness of substitution, until the collection of products passed the hypothetical monopolist test. . . . **The 2010 Guidelines retain the use of the hypothetical monopolist test but do not contain a formal algorithm for constructing the group of products to be tested.** Instead, they emphasize that there may be more than one valid relevant market and that market definition is a means to an end."

Hatzitaskos, Hill & Howells, *Aetna-Humana and Algorithmic Market Definition in the Guidelines* (2017)

"We recommend that the Agencies *simplify* the HMT and shed the idea that the HMT is a precise algorithm that leads to a single, correct relevant market."

"This simplification includes eliminating the language in Section 4.1.1 [of the 2010 Guidelines] indicating that the Agencies 'normally' include products in a certain order based on the magnitude of revenue diversion, and Example 6."

Rose & Shapiro, *What Next for the Horizontal Merger Guidelines?* (2022)

Source: PX9007 (Hemphill Rebuttal) at ¶¶ 16-19, 29-30, 179-195; Kostis Hatzitaskos, Nicholas Hill & Brad T. Howells, *Aetna-Humana and Algorithmic Market Definition in the Guidelines*, Antitrust Source, 1-2 (October 2017); Nancy L. Rose & Carl Shapiro, *What Next for the Horizontal Merger Guidelines?*, 36 Antitrust 4, 6, n. 23 (Spring 2022).

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Prof. Carlton Is Not Fully Committed To the Ranked Diversion Approach

Diversion Rate Estimates from Facebook
List Experiment June 2023, United States
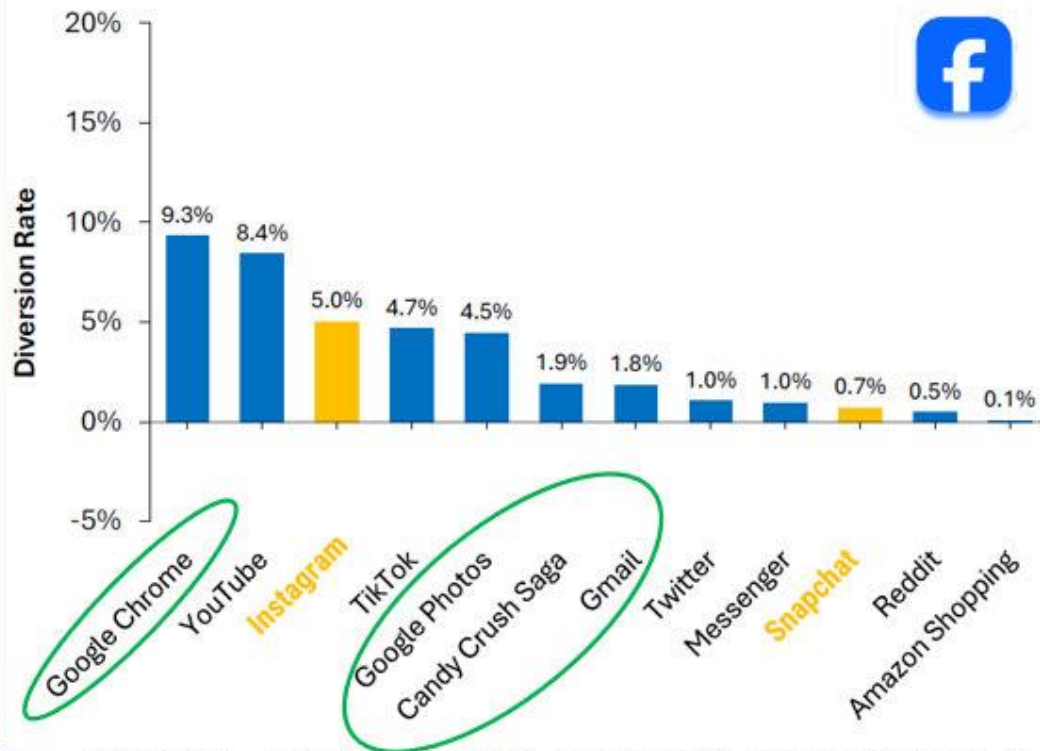
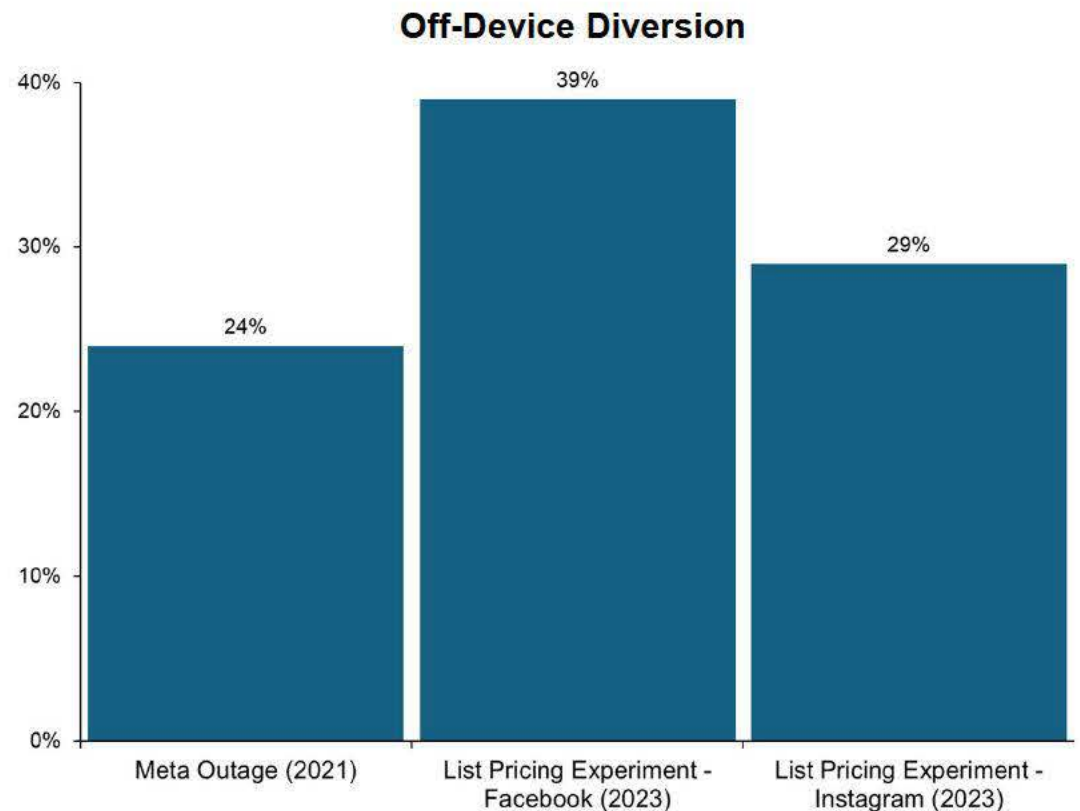## Share of Total Increase in Time Spent on Non-Meta Apps
Meta Outage October 2021, United States

Diversion to Off-Device Activity Underscores Users' Lack of Alternatives

Off-Device Diversion

2017 Facebook Outage
Internal Meta Analysis

- Of the decreased minutes on FB & IG, 67.8% of those minutes were "lost" and lead to the 7.1% fewer minutes on mobile
  - These minutes can be thought of as "non-substitutable"

Chart values: Meta Outage (2021): 24%; List Pricing Experiment - Facebook (2023): 39%; List Pricing Experiment - Instagram (2023): 29%

Note: Off-device diversion during the TikTok outage in January 2025 was approximately zero, based on Prof. Carlton's analysis.
Source: PX9007 (Hemphill Rebuttal) at ¶ 404; PX10659 at -025; PX9018 (List) at Tbls. II-9, II-10; PX9019 (Carlton) at Tbl. 1; Decl. of Dennis W. Carlton (Mar. 6, 2025) at Appendix A, Tbl. 3.

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Effects of a Large, Temporary Increase in Price

Transportation Alternatives During "Car Outage"

Experiments Do Not Account for the Impact of Network Effects or Switching Costs on Effective Substitution

"An experiment confirmed that randomized tests underestimate the impact of ad load on engagement."

"The impact of ad load is underestimated by randomized tests. There exists a 'network effect' that magnifies the impact to engagement when ad load changes are fully rolled out."

Meta Presentation: "Feed Ad Load: Estimated Network Effect" (Dec. 2018)

"How you use Facebook depends *entirely* on how your friends use Facebook. This is significantly less true for many other services (Google, Netflix), and it implies that an A-B test will *not* measure the full effect of a new feature. So we need to estimate the network effect of a change."

Meta Document: "Theory of Feed pt 6 – Estimating Network Effects" (June 16, 2017)

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Outages Do Not Meaningfully Inform Business Decisions

Adam Mosseri
Head of Instagram

"Q. And do you see Ms. Li's response?

A. Yes. . . . She says that the actual TikTok outage was short, **so the impact was not material** certainly in our Q1 either revenue or engagement metrics. Which makes sense because Q1 is 90 days, 14 hours is roughly half a day. So it's 180th of the quarter."

Adam Mosseri Trial Testimony
(May 8, 2025)
(discussing statement by Meta CFO Susan Li)

Evan Spiegel
Snap CEO

"I think, some of the changes with TikTok, they've sort of been **an imperfect experiment**. So, we're not trying to draw too many conclusions from some of the engagement lift we saw when the app went dark for that brief period of time."

Evan Spiegel, Snap Inc. Q4 Earnings Call Q&A Transcript
(Feb. 4, 2025)

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Outages Produce Usage Upticks Unrelated to Substitution

Tim Perzyk
(Twitter/X) Testimony
(May 12, 2023)

Exhibit 19
TikTok Trends Index for "#facebookdown," Dec. 2020 – Oct. 2023
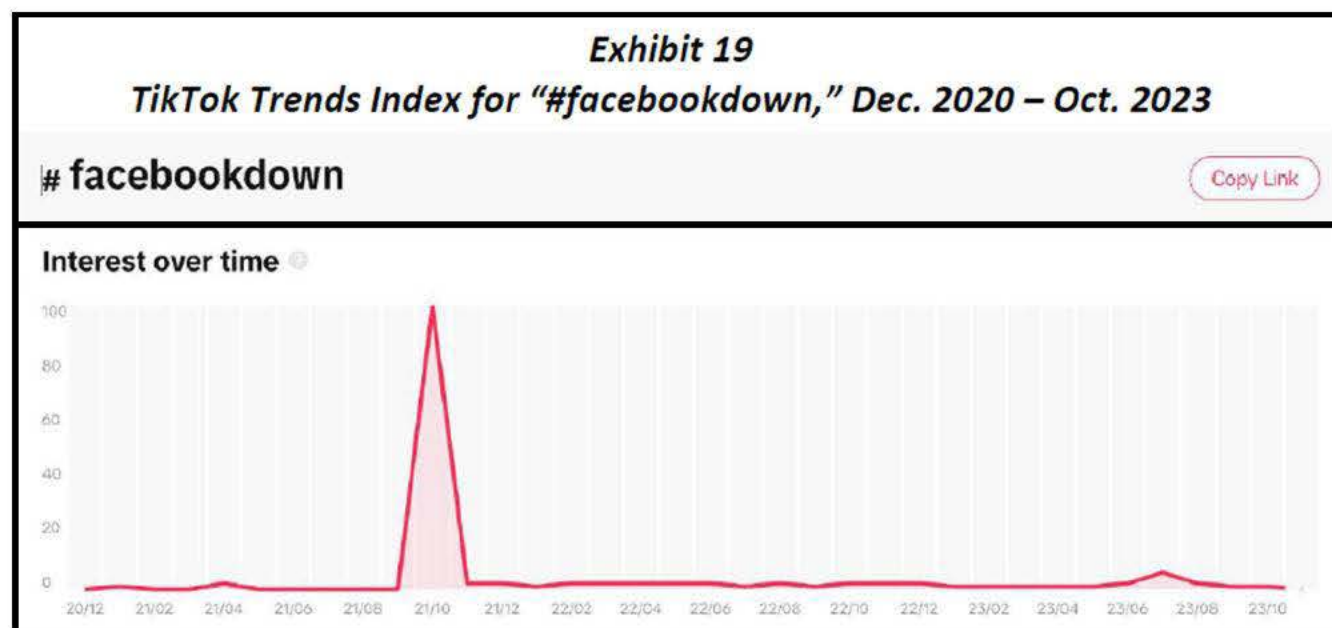
Source: PX9007 (Hemphill Rebuttal) at ¶ 401, Ex. 19; Perzyk (Twitter/X) Dep. Tr. (May 12, 2023) at 263:11-19; TikTok Creative Center, https://ads.tiktok.com/business/creativecenter/hashtag/facebookdown/pc/en?period=7 (last visited Nov. 6, 2023).

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The TikTok Outage and India Ban of Apps Are Particularly Uninformative
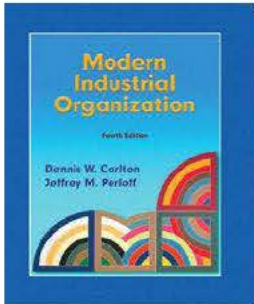
"To intelligently discuss a cross-elasticity, one must specify whether it is the cross-elasticity of Product A with respect to the price of Product B or vice versa. Although these two different cross-elasticities are usually not distinguished in court decisions, they are not equal in general."

Carlton & Perloff, Modern Industrial Organization (2005)

John List
Meta Expert

"It's almost a law in economics that if Instagram is a substitute of TikTok, TikTok will also be a substitute of Instagram. And you can use the same words with Facebook. You might remember my results. If you looked at the diversion rates between Facebook and Instagram, it was 5 percent from Facebook to Instagram. It was 13 coming back. So the numbers, themselves, will not necessarily be equal, but the sign of the relationship will be."

John List Trial Testimony
(May 19, 2025)

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The Carlton and List Studies Do Not Unsettle the Relevant Market or the Conclusion that Meta Exercises Monopoly Power

- Unremarkable that, in response to a large, temporary price change, some users temporarily increase usage of other apps

- Addressed to the wrong question: the observed shift to non-PSN apps tells us nothing about whether a PSN monopolist can suppress quality

- No basis for thinking that diversion is "too large" for Meta to exercise monopoly power

- "SSNIP" flaws overstate relative diversion to non-PSN apps, undercutting purported "ranked diversion" results

Source: PX9007 (Hemphill Rebuttal) at ¶¶ 365-392.

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2. **Professor Carlton ignores and misreads evidence of price discrimination.**

Prof. Carlton Ignores and Misreads Evidence of Price Discrimination

1. By age: Prof. Carlton conflates higher consumption of "friend" content with inelastic demand for friends and family sharing, leading him to attack a strawman.

2. By tenure: Uncontested.

3. By friend count: Prof. Carlton makes unwarranted and unsupported assumptions about how ad load "should" vary with friend count, leading him to attack another strawman.

4. By surface: Prof. Carlton makes unsupported assumptions about how ad load should vary across surfaces, and misses actual evidence of discrimination across surfaces

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PDX0149-018

Meta Varies Ad Load Based on User Inelasticity: Undisputed

Prof. Hemphill Has No Evidence of Relevant Price Discrimination

Competition Is Not Symmetric: Price Discrimination

Introducing "SALT" (Smart Ad Load Techniques)

	Technique	Technique Description	FB Status	IG Status
Personalized Ad Load	Sensitivity-based	Personalize ad load based on users' sensitivity towards ads (how much do we expect a user's topline organic metrics to regress if we increase their ad load) as predicted by an ads sensitivity model we trained and built. e.g. Decrease ad load for users who are very sensitive to ads and increase ad load for users who are less sensitive to ads.	FB found UDV to be strongly correlated with user ad sensitivity so implemented a version of sensitivity-based adload using UDV (see next row). We are continually looking into other user signals (e.g. ad engagement, content consumption, etc) that we can use to predict ad-sensitivity.	Launched engagement-positive version for Feed in Apr'20 to win back organic impressions and Feed TS while keeping EBR neutral. Revenue-positive versions are in testing for Feed.

"Personalize ad load based on users' sensitivity towards ads (how much do we expect a user's topline organic metrics to regress if we increase their ad load)"

Meta Document: "Introducing 'SALT' (Smart Ad Load Techniques)" (2020)

Source: PX9000 (Hemphill Report) at §3.3.2.4; PX15438 at -001.

PDX0090-023

DDX36.31

"Q. [T]his is taken from Professor Hemphill's report. The quote . . . refers to personalizing ad load based on users' sensitivity towards ads. Is that consistent with your understanding of how Meta sets individualized ad load?

A. Yes, it is. But I want to emphasize sensitivity towards ads does not mean friends and family sharing or the number of friends you have. It's what they call their sensitivity towards – the consumer's sensitivity towards ads."

Dennis Carlton Trial Testimony
(May 21, 2025)

Source: PX9007 (Hemphill Rebuttal) at ¶¶ 104-106; DDX 36.31; Carlton Trial Tr. (May 21, 2025) at 152:2-12.

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PDX0149-019

Price Discrimination by Age: The Correct Analysis

Facebook Feed Ad Load by Age
January 2025, United States

Age	Ad Load
13-17	4.3%
18-24	8.2%
25-34	16.3%
35-44	21.9%
45-54	22.0%
55-64	21.4%
65+	21.2%
TOTAL	**19.7%**

"FAM recently did an analysis of **sessions cost of ads** on critical cohorts. We observed that teens and Young Adults (YA) have a -6.1% and -3.7% hurt respectively on sessions in US/CA and WE (Western Europe), which is **disproportionately high**. . . . [B]y **reducing ad load by 80% for teens and 50% for YA**, we can recover +3.2% and +1.2% sessions for these cohorts respectively . . . ."

Email from Facebook App Monetization (FAM) Team Head to Mark Zuckerberg et al.
(Apr. 15, 2021)

"**[O]lder adults** are even more likely [than young adults] to say **connecting with family and close friends is the main reason** they use FB."

Meta Presentation: "US Young Adults and the Social Networking Ecosystem"
(2019)

Note: Ad load is calculated as the ratio of ad impressions to total impressions.
Source: PX9007 (Hemphill Rebuttal) at ¶¶ 107-108; FTC-META-014039755; PX12501 at -004; PX3389 at -017.

Price Discrimination by Age: Prof. Carlton's Claim

U.S. Ad Load Correlations Refute Prof. Hemphill – Age

DX1202

Note: Figures are Facebook, U.S. % time on "Friends and Family" ("F&F") content and ad load as of January 2023.
Ad load is calculated as ad impression/(ad+organic impressions).
Sources: DX1202.

DDX36.28

U.S. Ad Load Correlations Refute Prof. Hemphill – Age

DX1205

Note: Figures are Instagram, U.S. % time on "Friends and Family" ("F&F") content and ad load as of June 2022.
Ad load is calculated as ad impression/(ad+organic impressions).
Sources: DX1205.

DDX36.29

Source: DDX36.28, DDX36.29.

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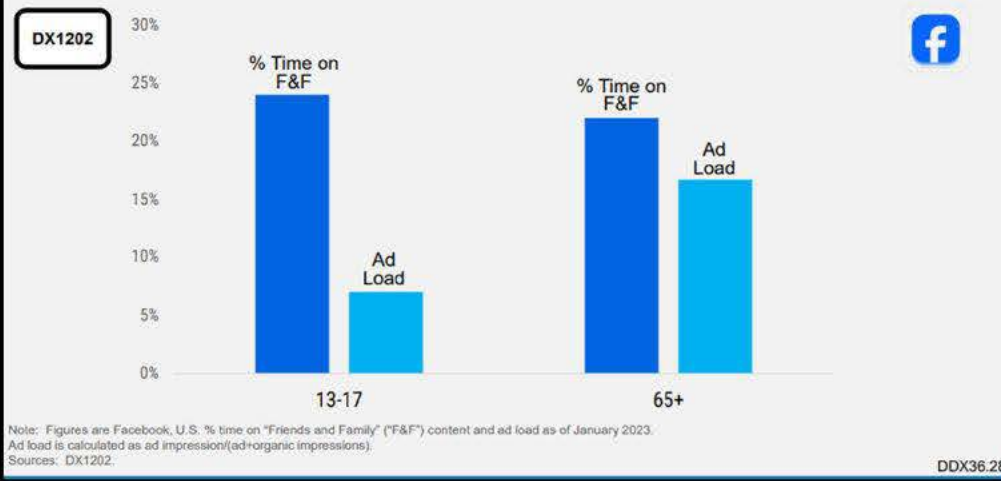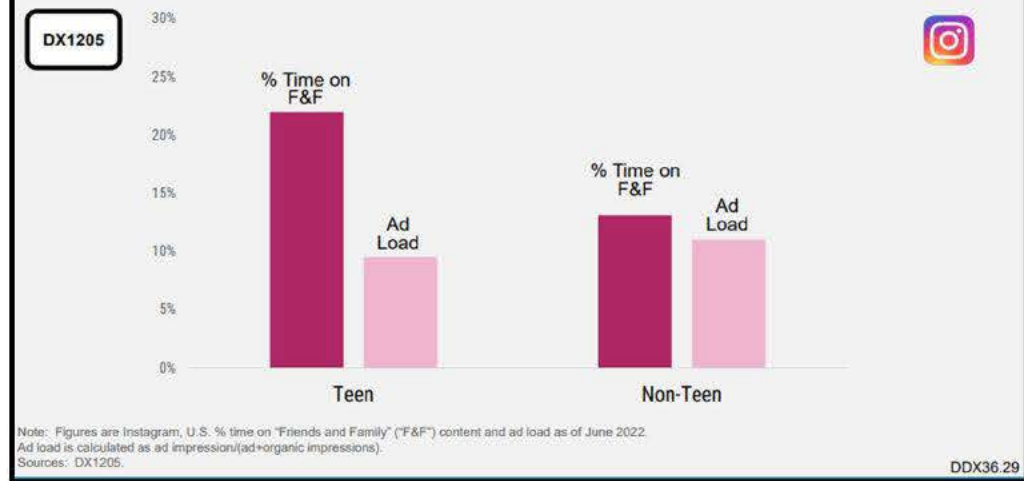
Price Discrimination by Tenure: Undisputed

Facebook Ad Load by Tenure and Year
2017–2022, United States

Legend: ■ 0-35 Days □ 36-90 Days ■ 3-12 Months ■ 1-2 Years ■ 2+ Years
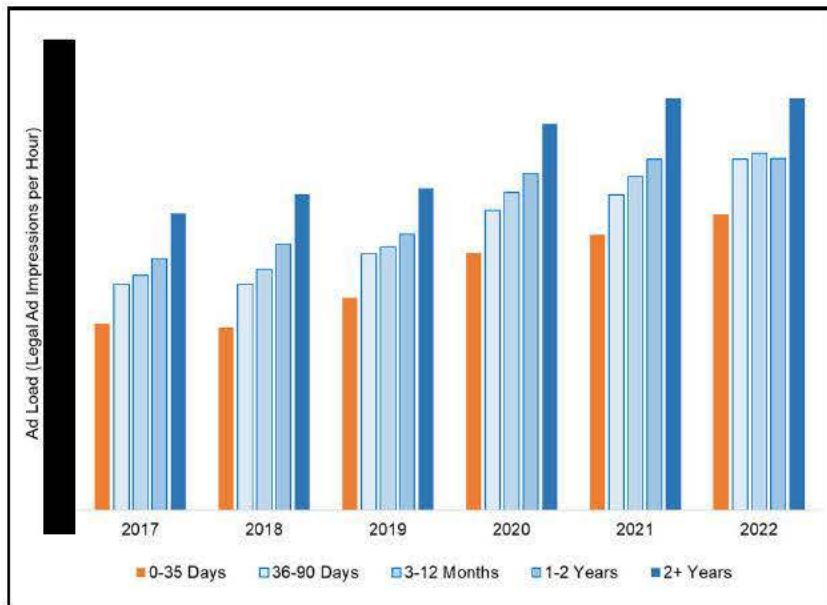
Instagram Ad Load by Tenure and Year
2021–2022, United States
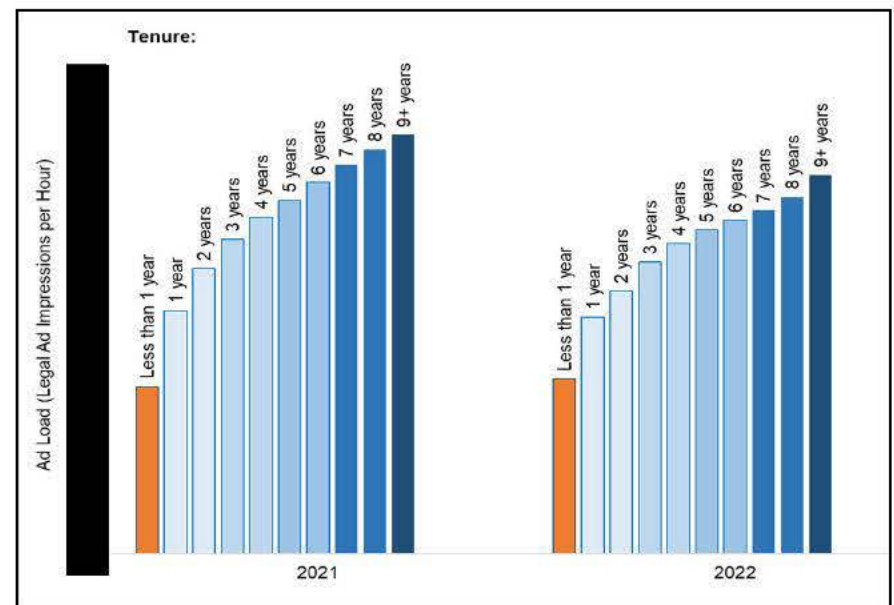
"Tenured cohorts users reports connecting with family/close friend, connecting with more distant friends, and sharing photos as **main reasons to use FB** more often than newer cohorts . . . ."

"Users newer to Instagram are less likely to report a 'Friends & Family' intent . . . ."

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Prof. Carlton's "Friend Count" Argument: Attacking a Strawman

Facebook Ad Load by Friend Count Category
2017-2022, United States

"[Y]ou'd asked about . . . **the current definition of 'needy users' for Facebook**. So I want to share definition is, account dates less than equal to 90 days. . . . **the number of friends that they have being less than or equal to 19**. And activity in terms of the number of days they have visited the app in the last 28 days being less than or equal to 26."

Nipoon Malhotra (Meta) Testimony
(May 19, 2023)

Chart y-axis: Ad Load (Legal Ad Impressions per Hour)
X-axis: 2017, 2018, 2019, 2020, 2021, 2022

Legend:
- 0 to 10 FB Friends
- 11 to 20 FB Friends
- 21 to 30 FB Friends
- 31 to 40 FB Friends
- 41 to 50 FB Friends
- 51 to 100 FB Friends
- 101 to 200 FB Friends
- 201 to 500 FB Friends
- 501+ FB Friends

Note: This chart shows the relationship between Facebook ad load and friend count category without controlling for user age, gender, and tenure. Ad load reflects ad impressions as a share of time spent.
Source: PX9000 (Hemphill Report) at ¶¶ 743-747, Ex. 61; PX9007 (Hemphill Rebuttal) at ¶¶ 110-120; Malhotra Dep. Tr. (May 19, 2023) at 129:11-20.

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Price Discrimination by Friend Count: Prof. Carlton's Claim

U.S. Ad Load Regressions

	2017	2018	2019	2020	2021	2022
Friend Count	-0.00238***	-0.00473***	-0.00457***	-0.00526***	-0.00569***	-0.00571***
	(0.000211)	(0.000203)	(0.000202)	(0.000238)	(0.000249)	(0.000292)
N	454,648	438,864	409,629	362,289	449,696	221,865
R-sq	0.023	0.040	0.040	0.048	0.040	0.042

Standard errors in parentheses: * $p<0.1$ ** $p<0.05$ *** $p<0.01$

Source: Carlton Rep., Table 20.

DDX36.26

Prof. Hemphill U.S. Ad Load Regressions
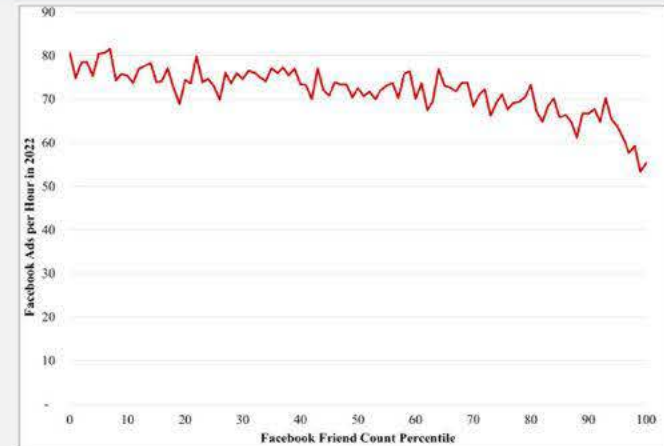
Note: Figures are U.S. only in April 2022.
Source: Hemphill Reply Backup (Paragraph 119-fb.xlsx).

DDX36.27

Source: DDX36.26; DDX36.27.

Price Discrimination by Surface: The Correct Analysis

	Percent of Ad Revenue 2022 H1	Ad Load 2022 Q2	Ad Load 2025 (January)	Intensity of Monetization 2022 H1
Facebook Feed	■	20.0%	19.7%	2.4
Instagram Feed	■	17.8%	Not Available	7.6
Instagram Stories	■	19.5%	Not Available	8.2

Note: See notes on PDX0090 at -079, -080, -081, -084, -085. All values are for North America except ad load in January 2025 which is for the U.S. Intensity of monetization reflects ad revenue per organic impression on Facebook Feed relative to other Facebook surfaces, and Instagram Feed or Stories relative to other Instagram surfaces.
Source: PX9000 (Hemphill Report) at ¶¶ 718-719, Ex. 52-55; PX0715 at -87, -101; FTC-META-012468454; FTC-META-014039755; FTC-META-011921400; FTC-META-003310472; FTC-META-005915454; PX9000 (Hemphill Report) "Exs. 7, 35-37, 52-58, 81-82, C-51-C-53.xlsx"; PX9007 (Hemphill Rebuttal) "Ex. 6.xlsx"; Carlton Report Production, "U.S. Digital Ad Revenues by Company.xlsx" and "U.S. Instagram Share of Imp and TS on Content from Non-Creator Reciprocal Follows.xlsx".

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Price Discrimination by Surface: Prof. Carlton's Claim
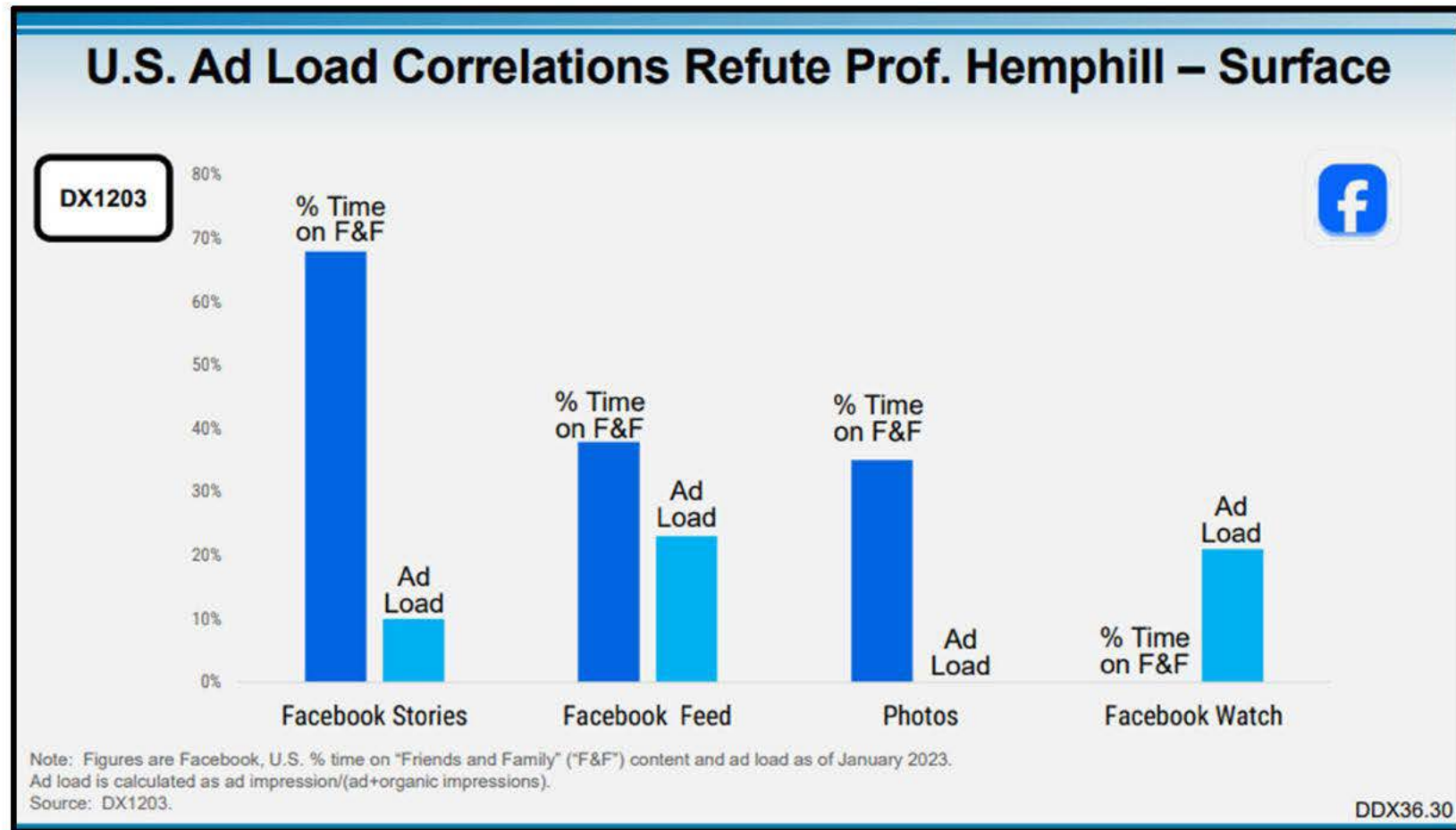
U.S. Ad Load Correlations Refute Prof. Hemphill – Surface

DX1203

Note: Figures are Facebook, U.S. % time on "Friends and Family" ("F&F") content and ad load as of January 2023. Ad load is calculated as ad impression/(ad+organic impressions).
Source: DX1203.

DDX36.30

Source: DDX36.30.

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PDX0149-026

3. **Professor Carlton wrongly dismisses the continued importance of friend content.**

Prof. Carlton's Claim: Declining Share of "Friend" Content Implies Friends and Family Sharing Is Not Important

Share of U.S. "Friends-and-Family" Time Continues To Decline

Percentage of Time Spent on "Friend" Content

DX1152-53
DX1169
DX1171

January 2023 — 22%

January 2025 — 17%

February 2023 — 11%

January 2025 — 7%

Sources: DX1152 (Carlton Decl., Table 1); DX1153 (Carlton Decl., Table 2); DX1169 (Carlton Rep., Table 10); DX1171 (Carlton Rep., Table 12).

DDX36.20

Source: DDX36.20.

PDX0149-028
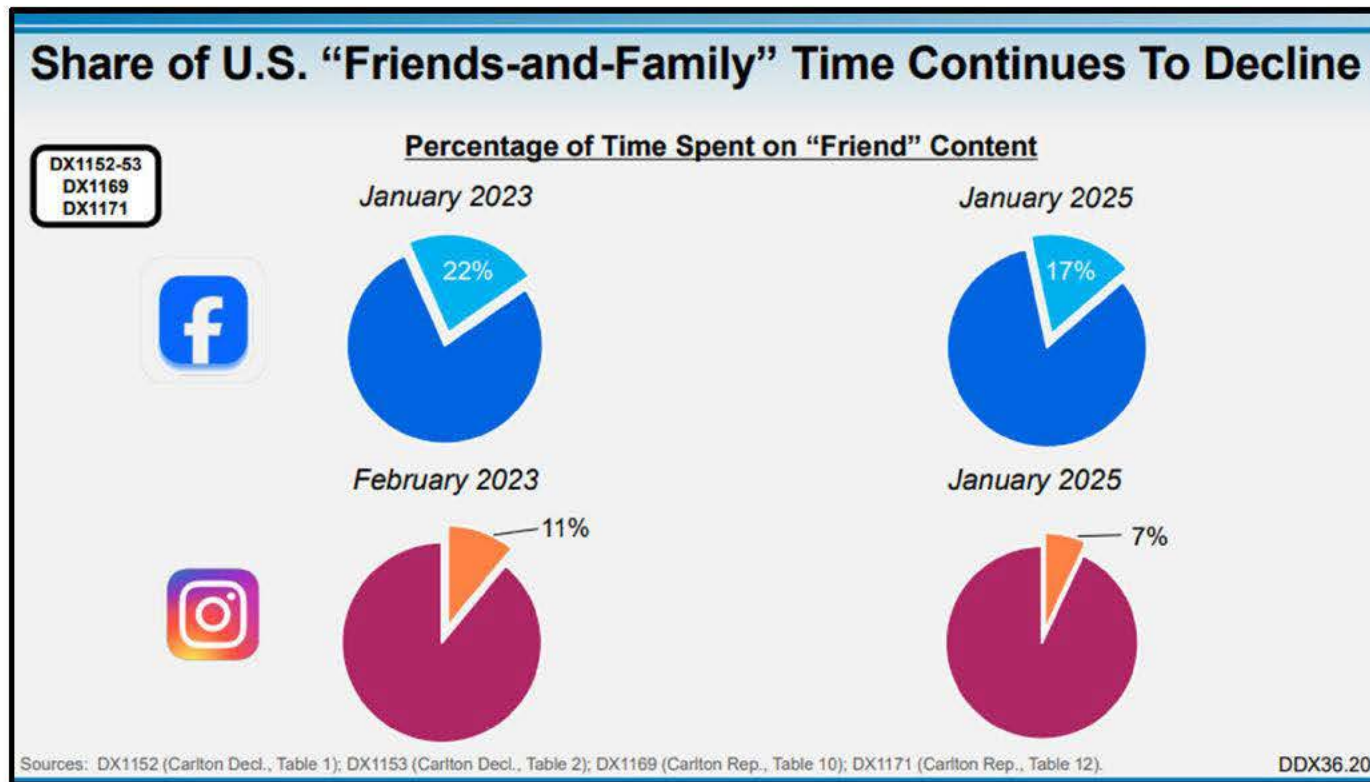
Prof. Carlton Is Wrongly Dismissive of the Continued Importance of Friend Content

- Level of "friend" content remains large

- "Friend" classifications understate importance of friend engagement because unconnected content on Facebook and Instagram feeds friends and family sharing

- Reels holdout, feed composition, and List pricing experiments do not indicate otherwise

- Consumption levels understate user demand for friends and family sharing

- Friend content levels suppressed by Meta's underinvestment in friends and family sharing

Source: PX9007 (Hemphill Rebuttal) at ¶¶ 234-254, 354-364, 439-446.

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Demand for Friends and Family Sharing Remains Large: Undisputed

Facebook Original Broadcast Post Sessions
April 2013 – June 2022, United States

Legend: Feed, Stories, Reels, Total
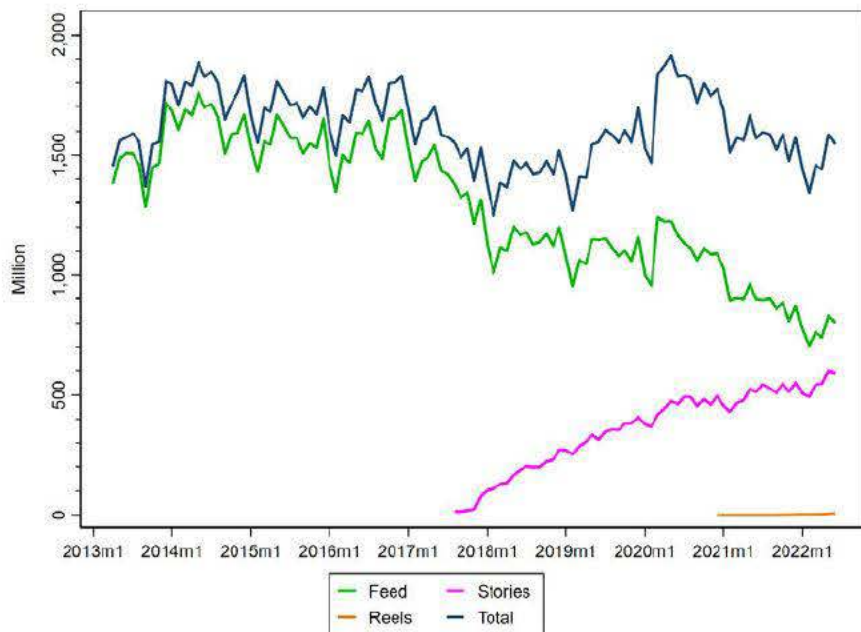
Instagram Feed and Stories Posts
March 2015 – June 2022, United States

Legend: Feed, Stories, Total (Feed + Stories)
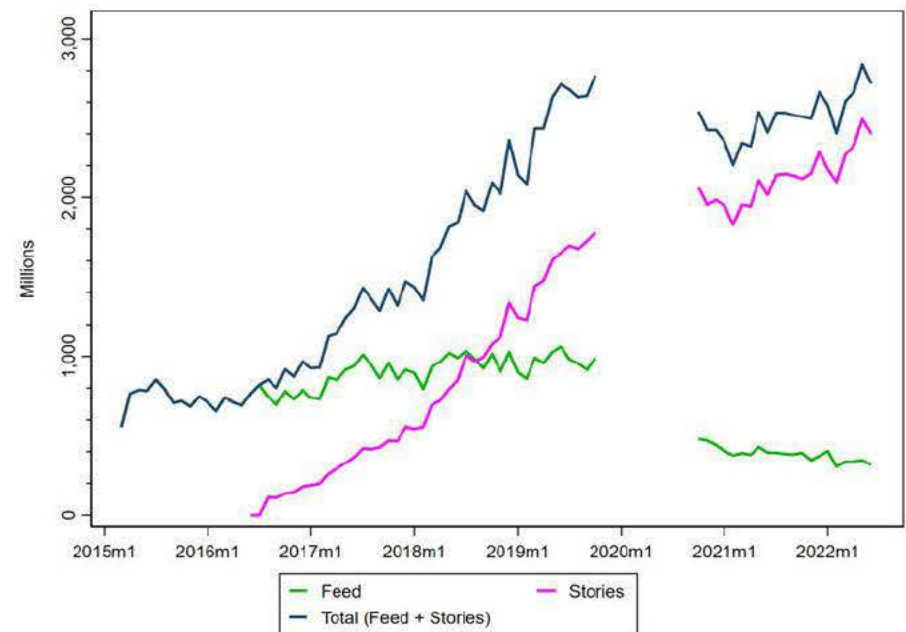
Note: Instagram Feed data are unavailable in the period December 2019 through August 2020, and incomplete in November 2019 and September 2020.
Source: PX9007 (Hemphill Rebuttal) at Exs. 7, 8.

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Prof. Carlton's "Friend" Content Remains Large: Undisputed

Impressions on "Friend" Content
January 2025, United States

	Impressions	Impressions per MAU	Impressions per DAU per Day
Facebook	320 billion	1334	57.9
Facebook Feed	191 billion	794	34.5
Instagram	88 billion	384	19.9
Instagram Stories	68 billion	294	15.2

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PDX0149-031

Prof. Carlton's New Data Shows that Reels Growth Is Not at the Expense of Feed and Stories
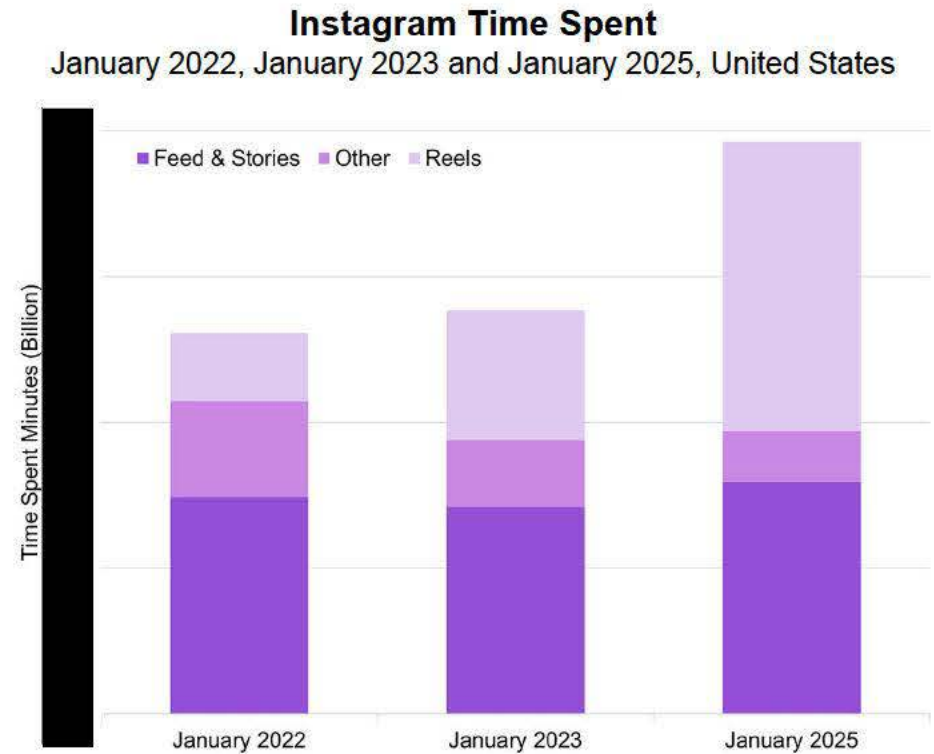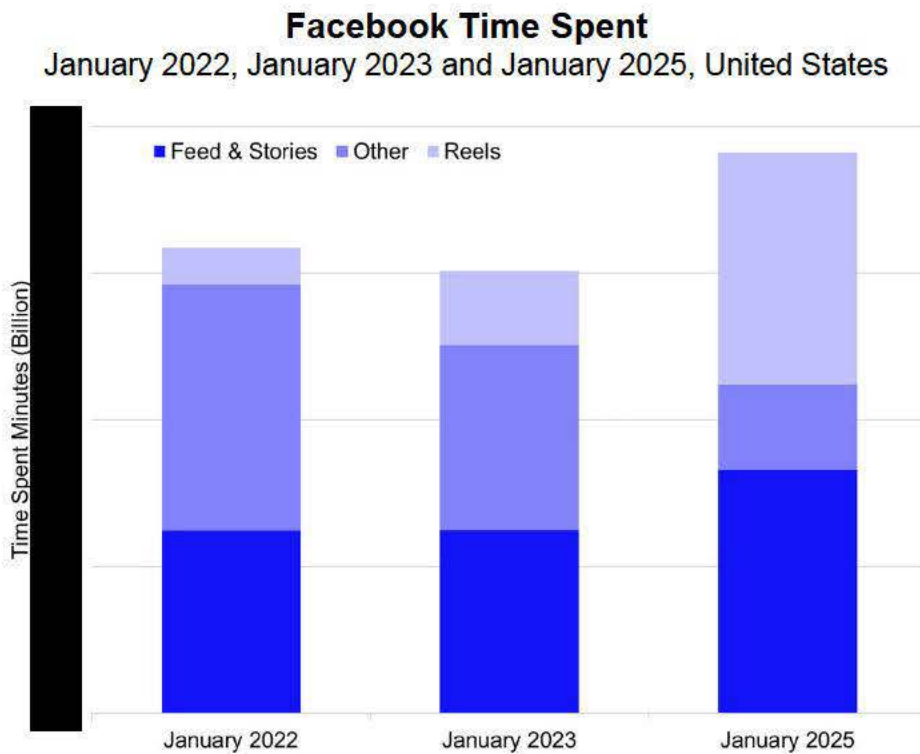
Facebook Time Spent
January 2022, January 2023 and January 2025, United States

Instagram Time Spent
January 2022, January 2023 and January 2025, United States

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PDX0149-032

Instagram Reels Holdout Experiment Does Not Show Substantial Substitution from Feed and Stories to Reels
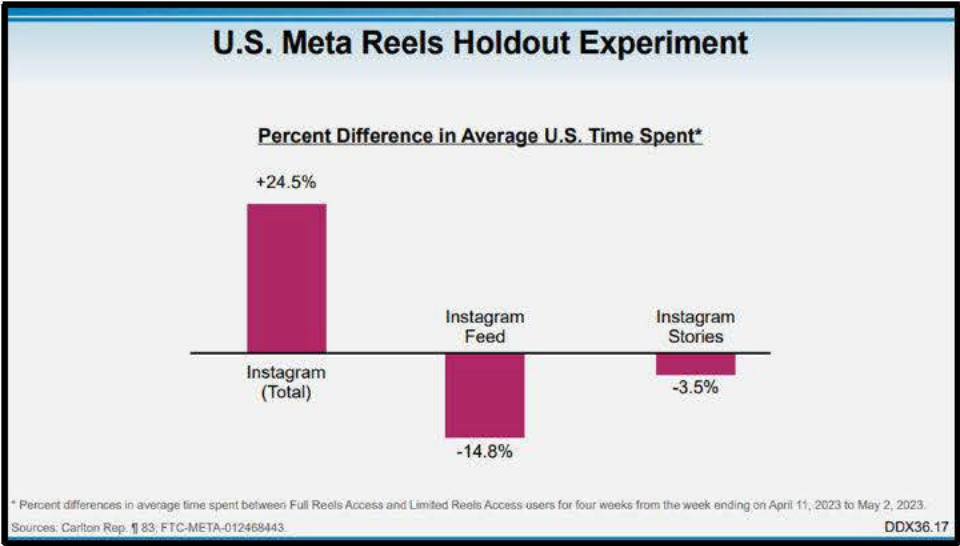
Absolute Differences in Average U.S. Time Spent
Minutes per User per Day

U.S. Meta Reels Holdout Experiment

Percent Difference in Average U.S. Time Spent*

+24.5%
Instagram (Total)
Instagram Feed: -14.8%
Instagram Stories: -3.5%

* Percent differences in average time spent between Full Reels Access and Limited Reels Access users for four weeks from the week ending on April 11, 2023 to May 2, 2023.
Sources: Carlton Rep. ¶ 83; FTC-META-012468443.

DDX36.17

Bar chart values:
- Instagram (Total): 4.1
- Instagram Reels: 4.9
- Instagram Feed: -1.2
- Instagram Stories: -0.1

Note: Differences in average time spent between Full Reels Access and Limited Reels Access users for four weeks from the week ending on April 11, 2023, to May 2, 2023.
Source: DDX36.17; FTC-META-012468443.

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Facebook Feed Composition Experiments Confirm Friend Content Remains Highly Valued

Meta U.S. Experiments with Feed Composition
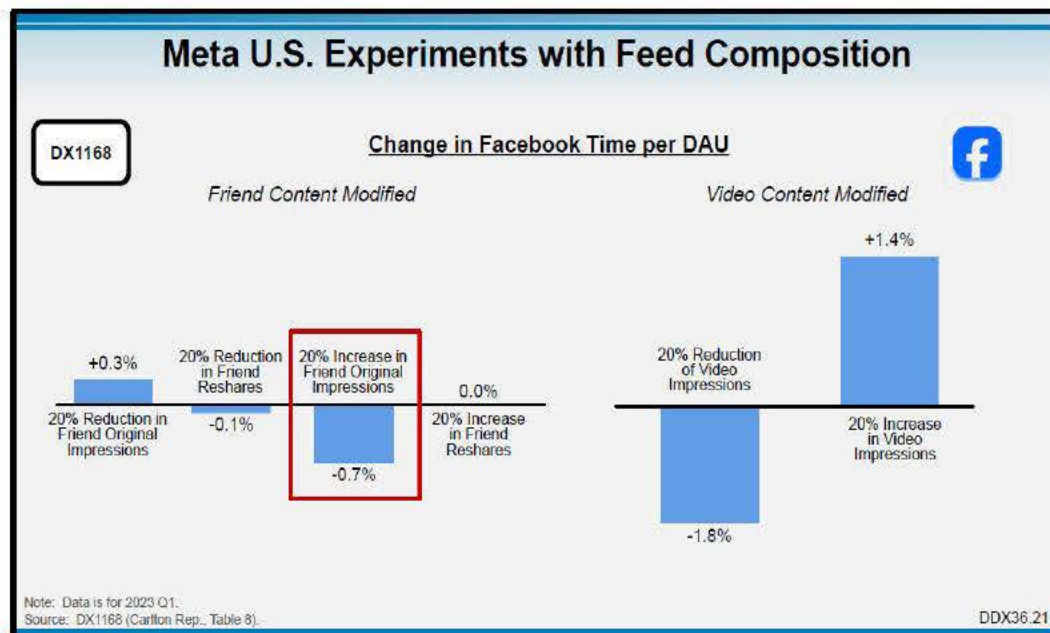
- A 2021 "Composition Experiment" boosted Friend Original Impressions by 20% on Facebook Feed.

- This Friend Original boost increased Original Broadcast Feed Posts (OBFP) and Original Broadcast Post Daily Participation (OBPD).

- The boost traded off Sessions and Time Spent for OBFP and OBPD.

Meta Presentation: "Feed & Ecosystems XFN" (Oct. 4, 2021)

Ordinary Course Evidence: Friend Content Remains Highly Valued

"**OBFP [Feed Posts] and OESP [Stories] remain the most incremental inventory types for Sessions.** Their impact on Cap15 Sessions are doubles after accounting for network effects, because original production **tends to encourage high-value interactions** (e.g. OBFP -> friend U2U comments and OESP -> Stories text replies) and therefore enjoys the **strongest network effects in the ecosystem**."

Meta Presentation: "Feed & Ecosystems XFN" (Oct. 7, 2022)

"At this time, we were still seeing that **friend original content had the highest viewer value with respect to sessions . . . and the highest, I believe, network value as well**."

Tom Alison Trial Testimony (May 15, 2025)

Tom Alison
Head of Facebook

Source: PX9007 (Hemphill Rebuttal) at ¶¶ 250-251; PX3390 at -062; Alison Trial Tr. (May 15, 2025) at 80:14-81:11.

In List Pricing Experiment, Time Spent Reduction on Reels Is Larger Than on Feed and Stories

Breaking Out "Other" Surfaces In List Analysis

Facebook Experiment					
Service Type	User-Weeks	Average Time in Baseline	Treatment effect	T-Stat	Average Impact as % Baseline
Feed and Stories	9,844	34.09	-23.67	-18.31	-69.4%
Videos	9,844	13.64	-9.64	-8.88	-70.6%
Reels	9,844	13.54	-10.74	-13.55	-79.3%
Profile	9,844	4.84	-2.42	-9.09	-50.0%
Total Time	9,844	79.11	-52.94	-22.87	-66.9%
Instagram Experiment					
Service Type	User-Weeks	Average Time in Baseline	Treatment effect	T-Stat	Average Impact as % Baseline
Feed and Stories	7,832	21.52	-14.09	-19.80	-65.5%
Reels	7,832	14.97	-12.55	-15.10	-83.8%
Comments	7,832	3.69	-2.55	-9.70	-69.0%
Grid	7,832	2.56	-1.28	-9.58	-49.8%
Total Time	7,832	49.57	-33.03	-18.83	-66.6%

Note: Statistically, one cannot reject the hypothesis that the estimated effect for Feed and Stories is smaller than the estimated effect for Reels.
Source: PX9007 (Hemphill Rebuttal) at Ex. 29.

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In List Pricing Experiment, Reduction in Active Users on Reels Is Larger Than on Feed and Stories

Impact on Active Users by Surface

Facebook Experiment					
Service Type	User-Weeks	Share with positive usage in Baseline	Treatment Effect	T-Stat	Average Impact as % Baseline
Feed	9,844	90.29%	-0.32	-19.79	-35.1%
Stories	9,844	44.52%	-0.13	-11.32	-29.1%
Reels	9,844	61.32%	-0.31	-21.82	-50.8%
Other	9,844	95.67%	-0.15	-12.77	-16.1%
Total Time	9,844	97.59%	-0.14	-11.77	-14.1%
Instagram Experiment					
Service Type	User-Weeks	Share with positive usage in Baseline	Treatment Effect	T-Stat	Average Impact as % Baseline
Feed	7,832	86.23%	-0.37	-22.35	-42.8%
Stories	7,832	64.52%	-0.24	-16.97	-37.5%
Reels	7,832	75.31%	-0.37	-24.39	-49.7%
Other	7,832	90.36%	-0.31	-19.63	-33.8%
Total Time	7,832	92.77%	-0.29	-18.65	-30.8%

Note: The dependent variable in the regressions is the weekly share of days with positive usage of the given surface (>30s for Feed). The average percentage impact for Reels is statistically different from Feed or Stories in both the Facebook and the Instagram experiment.

Source: List Report Backup Data (hashed_compass_clean_export_2023-08-17.csv, hashed_stage3_ts_fb_2023-08-17.csv, hashed_stage3_ts_ig_2023-08-17.csv, exp_users.dta, fb_weight_hash.dta, ig_weight_hash.dta).

4. **Professor Carlton is wrong to suggest that competition for unconnected content defeats the relevant market or Meta's exercise of monopoly power.**

Prof. Carlton Is Wrong to Suggest That Competition for Unconnected Content Defeats the Relevant Market or Meta's Exercise of Monopoly Power

- Prof. Carlton raises a theoretical possibility—that Meta's addition of unconnected content defeats the relevant market and Meta's exercise of monopoly power

- Evidence refutes Prof. Carlton's theory
  - Most people come to Facebook and Instagram for friends and family sharing
  - Meta has profitably reduced quality, notwithstanding presence of unconnected content

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Prof. Carlton's Theoretical Claim: Non-Friends and Family Users, If a Large Part of Usage, Will Discipline Meta's Market Power

Dennis Carlton
Meta Expert
Compass Lexecon

"So the [cookie] analogy is that, even though there are some people who, according to Professor Hemphill, may really value being on Meta, Meta's apps, **as long as there are a lot of people who have many uses of those apps, that have nothing to do with friends and family**, that will keep and protect those people who, according to Professor Hemphill, Meta has some power over, as long as you can't price discriminate between the two groups."

Dennis Carlton Trial Testimony (May 21, 2025)

Source: Carlton Trial Tr. (May 21, 2025) at 139:5-12.

Prof. List's Data Confirms Very Few "Reels Only" Users

Daily Active Reels Users Not Using Feed or Stories
May 2 - June 1, 2023, United States

1%

Facebook

3%

Instagram

< 2%

Facebook

4%
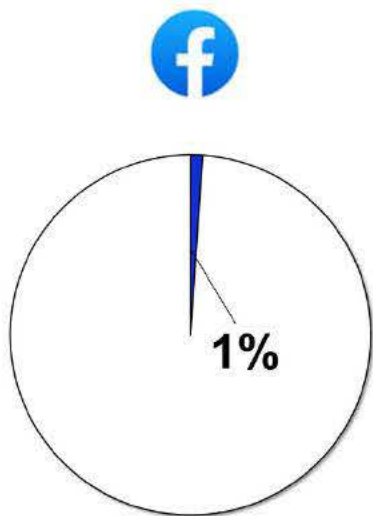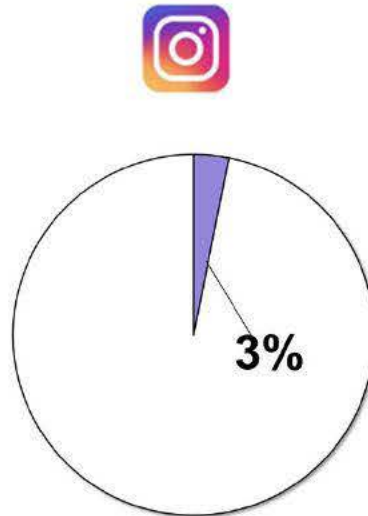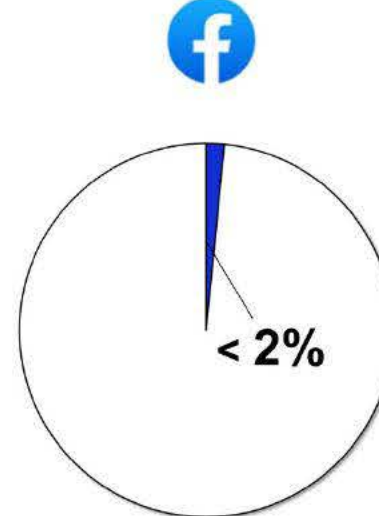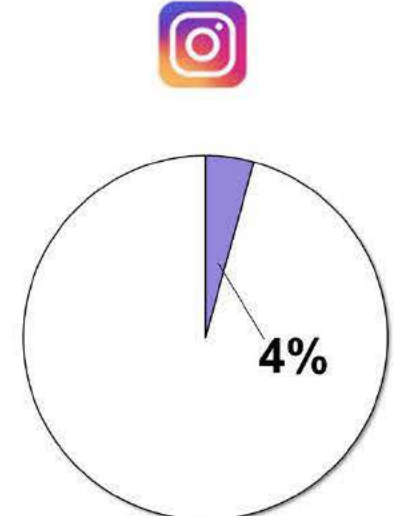
Instagram

Feed Time Spent of Less Than 30 Seconds Disregarded

Feed Time Spent of Less Than 1 Minute Disregarded

PDX0149-041

Prof. Carlton's Reels Holdout Experiment Confirms Very Few "Reels Only" Users

U.S. Meta Reels Holdout Experiment

Percent Difference in Average U.S. Time Spent*

+24.5% — Instagram (Total)

Instagram Feed: -14.8%

Instagram Stories: -3.5%

* Percent differences in average time spent between Full Reels Access and Limited Reels Access users for four weeks from the week ending on April 11, 2023 to May 2, 2023.
Sources: Carlton Rep. ¶ 83; FTC-META-012468443.

DDX36.17
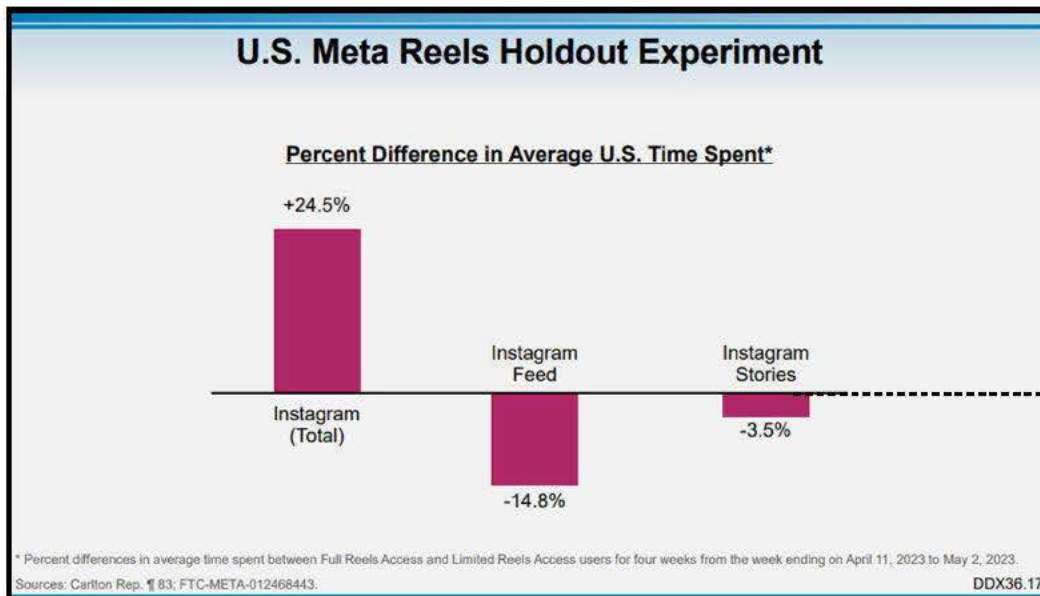
Percent Difference in Weekly Active Users:

0.2%

Note: Percent difference in the share of users that are weekly active between Full Reels Access and Limited Reels Access users for four weeks from the week ending on April 11, 2023, to May 2, 2023.
Source: DDX36.17; FTC-META-012468443.

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Price Discrimination by Surface: The Correct Analysis

	Percent of Ad Revenue 2022 H1	Ad Load 2022 Q2	Ad Load 2025 (January)	Intensity of monetization 2022 H1
Facebook Feed	▮	20.0%	19.7%	2.4
Instagram Feed	▮	17.8%	Not Available	7.6
Instagram Stories	▮	19.5%	Not Available	8.2

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Meta's Age-Based Ad Load Reductions Benefit Only a Minority of Users

Facebook Feed Ad Load by Age
January 2025, United States

Age	Ad Load
13-17	4.3%
18-24	8.2%
25-34	16.3%
35-44	21.9%
45-54	22.0%
55-64	21.4%
65+	21.2%
TOTAL	**19.7%**

These age groups account for:

███ of users
of organic impressions
of organic time spent

Note: Ad load is calculated as the ratio of ad impressions to total impressions. The percentage of users by age group reflects user-level data for April 2022 for Facebook in the U.S. for user-days for which information on user demographics, time spent, and ad impressions is available, and time spent is not zero; it excludes user-days for which ad load is greater than 5 ads per minute (1.5% of user-days). The percentage of organic impressions and time spent by age group reflects data for January 2025 for Facebook Feed in the US.
Source: FTC-META-014039755; FTC-META-012303883; FTC-META-012303884; FTC-META- 012303885; FTC-META-012303886; FTC-META-012309806; FTC-META-012516612; FTC-META-012303882.

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Meta Has Profitably Raised Ad Load, Lowering User Quality

User Sentiment for Facebook Ads vs. Facebook Feed Ad Load Indexed to Q1 2017

Facebook Mobile Feed Ad Load (index) — CACTUS Survey Response to "too many ads" (index)
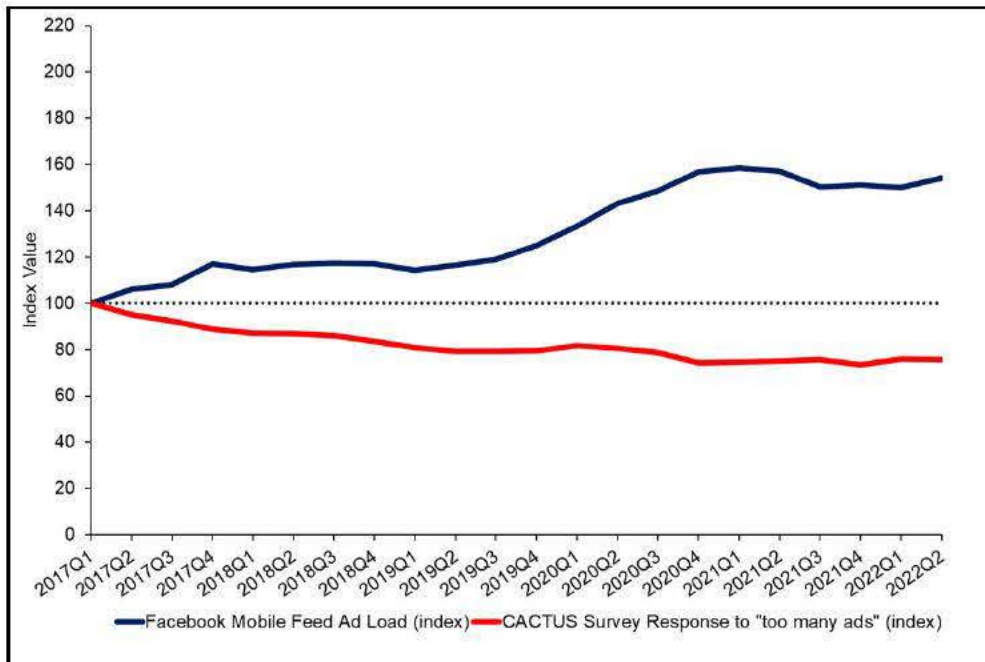
User Sentiment for Instagram Ads vs. Instagram Feed and Stories Ad Load Indexed to Q1 2019

Instagram Stories Ad Load (revised definition) (index)
Instagram Feed Ad Load (revised definition) (index)
Instagram Ad Sentiment Survey response to "too many ads" (index)

Source: PX9007 (Hemphill Rebuttal Report) at Exs. 3, 4.

45
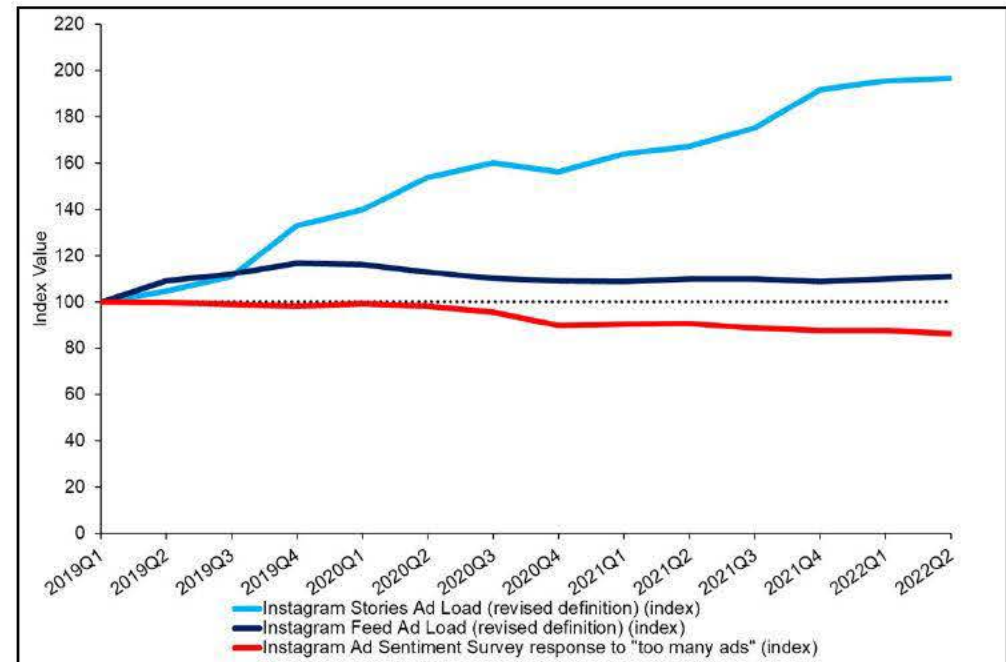
Meta Has Profitably Reduced Overall Quality

Main Tracking Survey: "Facebook Cares About Its Users"
April 2014–June 2022, United States
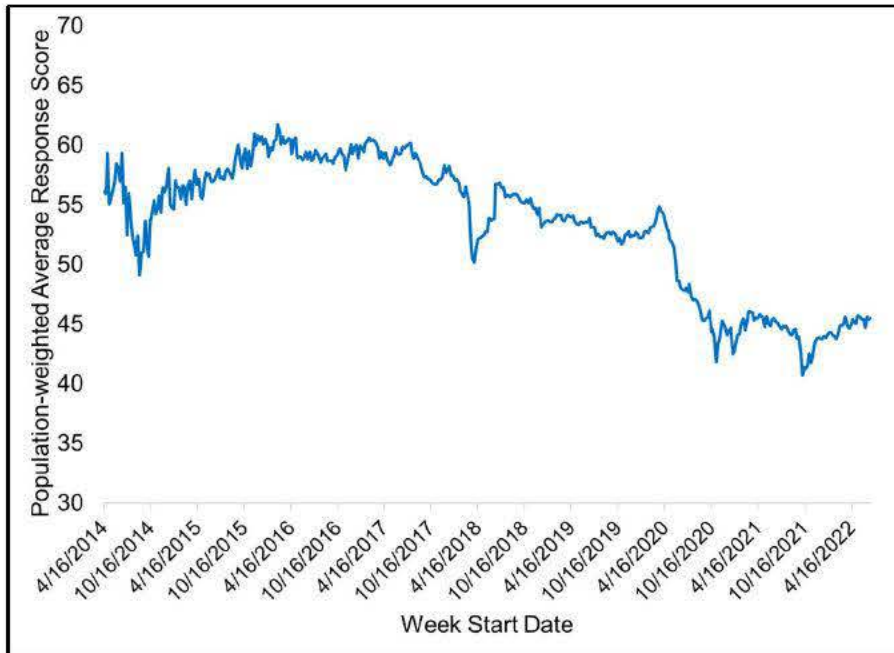
Main Tracking Survey: "Instagram Cares About Its Users"
November 2018–June 2022, United States
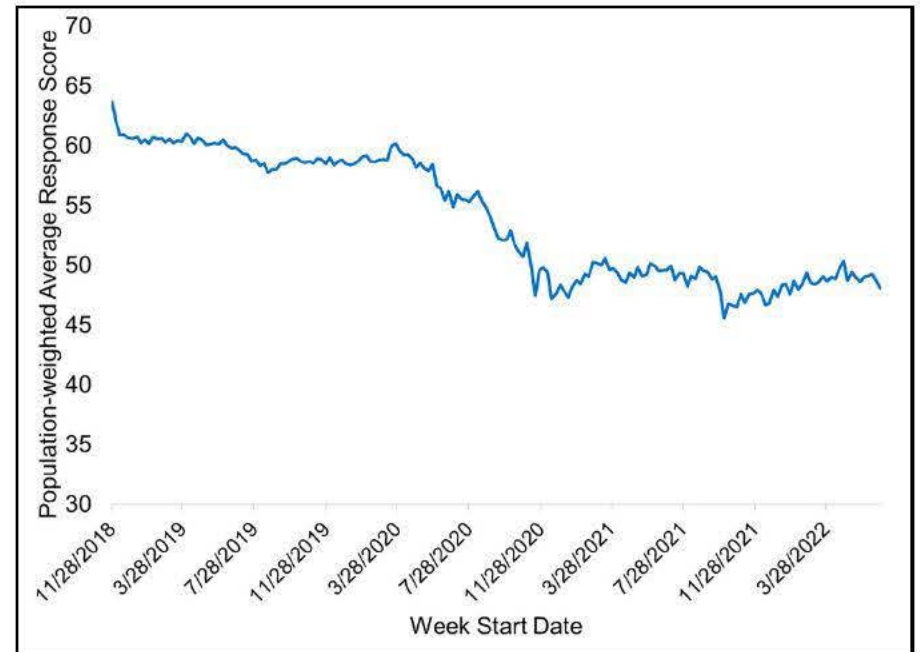
Market Share Sensitivities 2025

PSN Apps + TikTok from DDX36.3
Time Spent, 2022

Monthly Active Users   Daily Active Users   Time Spent
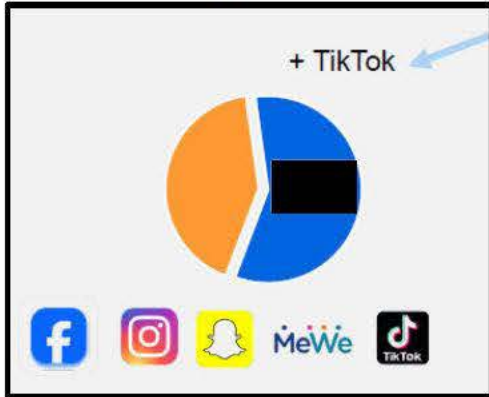
PSN Apps + TikTok

PSN Apps + TikTok:
weighted by
Malkiewicz Survey

PSN Apps + TikTok:
Feed & Stories +
Friends Tab
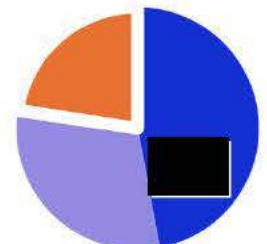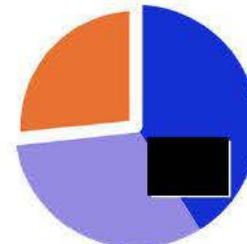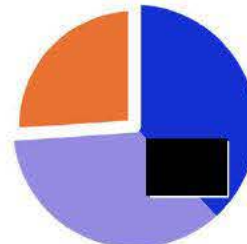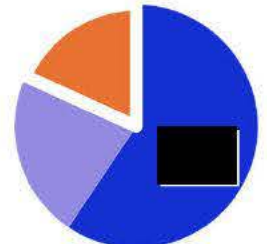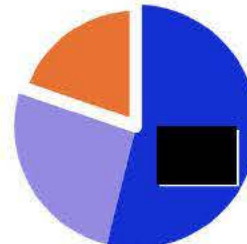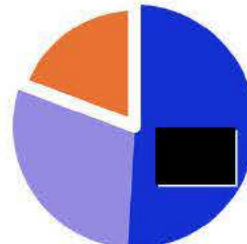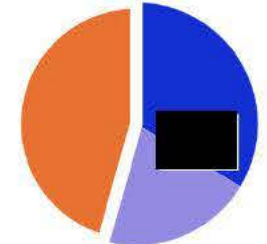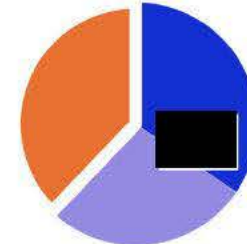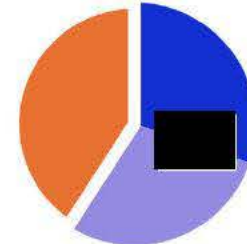
■ Facebook   ■ Instagram   ■ Snapchat, TikTok, Other

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5. Professor List's "de-merger" analysis is unsupported and uninformative.

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Prof. List's De-Merger Analysis is Unsupported and Uninformative

- The model is a theoretical exercise, not an empirical analysis.

- The model's premise is that a Facebook/Instagram merger confers market power: a greater ability to set ad load, compared to competition.

- First, the combined firm has the incentive to exercise market power over users by raising ad load. This effect is consistent with the real-world evidence.

- Second, the model posits a further potential effect on the advertiser side—that the combined firm has an offsetting incentive to decrease the quantity of ads and increase the price of ads. Users would benefit from fewer ads as an incidental effect.

- Prof. List offers no evidence that the second theoretical effect fits the real-world facts.

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"Robust," "Very Intense" Competition on the Ad Side Refutes Prof. List's Claim that a Merger Would Decrease Ad Load

Catherine Tucker
Meta Expert

> "Meta faces **intense competition** in the sales of ads."
>
> "The fluidity of digital advertising and the low switching costs for advertisers means that Meta **competes intensely** for advertising spend."

Tucker Report (Oct. 3, 2023)

> "Q. And going back to the ad side of Meta's business, how would you describe competition on that side?
>
> A. I would describe it as **robust**."

Catherine Tucker Trial Testimony (May 19, 2025)

Sheryl Sandberg
Former Meta COO

> "Q. At the time you left Meta, what was the status of competition for ad dollars?
>
> A. **Very intense**. I think it was always a very competitive market, and it got more and more competitive, I believe, over time."

Sheryl Sandberg Trial Testimony (Apr. 17, 2025)

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Prof. List's De-Merger Model Is Flawed and Uninformative

- Therefore, the model provides no reliable basis for the conclusion that a merger would decrease ad loads.

- Modifying the model to better account for market realities implies significant ad load increases from the merger.

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6. Professor Carlton is wrong to conclude that Meta's acquisitions of Instagram and WhatsApp were likely beneficial.

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Prof. Carlton's Claim that the Acquisitions Were Likely Beneficial Is Incorrect

- Prof. Carlton's focus on Instagram's size or "success" today is not the right question

- Relative to the but-for world, what matters is:
  - Market-wide measures—not just Instagram
  - Consumer surplus
  - Quality

- Prof. Carlton's discussion of procompetitive benefits is uninformative
  - Purchase price
  - Consumer surplus studies
  - R&D spending

- Prof. Carlton's insistence on a "competitive benchmark" is misguided

- Evidence answers Prof. Carlton's theoretical speculations about the but-for world

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Meta's Monopoly Power Lowers Quality, Output, and Consumer Surplus

FB US Long Term Themes

"Sentiment is at an all time low with no significant recovery, likely driving headwinds for deletes/deactivations and disengagement."

Meta Presentation: "FB US Long Term Themes"
(Apr. 16, 2021)

Lorax H1 2021: FAST pain points

TL;DR

- The Lorax survey measures users' pain points with the FB app. Pain points that are above the median in both severity and prevalence are considered priority areas for improvement.
- Within Feed and Stories (FAST), the top pain points that emerged for US users in H1 2021 were: (1) Missing posts from friends (2) receiving too many notifications; (3) seeing the same posts over and over again (4) seeing too many unconnected posts.
- Each of these pain points represent ongoing areas of investment within FAST. This note outlines the current and future work to improve these issues.

"This pain point has a long history . . . . UX research in H2 2020 and H1 2021 drew attention to friend diversity as an unattended issue in the US and CA: **Users are seeing fewer friends (distinct friend actors) than they want**."

Meta Presentation: "Lorax H1 2021: FAST Pain Points"
(Oct. 14, 2021)

H1 2022 Lorax: FB Home pain points

TL;DR

The Lorax is an on-platform survey that is run regularly to identify the most prevalent and severe pain points with FB. "Top" pain points are those that were above the median in both prevalence and severity (details). This document summarizes the top pain points that concern products within FB Home for US/CA users.

- Missing friends' posts and unbalanced feed composition continue to be top pain points.
- Repeated posts is a new top pain point for all US/CA users.
- Uninteresting posts is a new top pain point for YAs, but not older adults.
- Too much unconnected content continues to be a top pain point for older adults, but is no longer a top pain point for YAs.
- Unexpected app refresh is no longer a top pain point.

"Missing friends' posts and **unbalanced feed composition** continue to be top pain points."

Meta Presentation: "H1 2022 Lorax: FB Home Pain Points"
(Aug. 25, 2022)

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The WhatsApp Acquisition Eliminated the Prospective Benefits of Entry

"[W]e understand that Facebook's intention is to prioritize market share and user growth over monetization in the near term in order to capture market share . . . . Further, **we understand that the deal held certain defensive value for Facebook**."

KPMG Valuation of WhatsApp
for Facebook, Inc.
(Oct. 6, 2014)

Mobile Messaging Landscape in 2021, United States

Legend:
- Facebook Messenger
- WhatsApp

DAU: Facebook Messenger 100.9, WhatsApp 43.5
MAU: Facebook Messenger 182.1, WhatsApp 71.8
Messages Sent: Facebook Messenger 41.8, WhatsApp 31.6
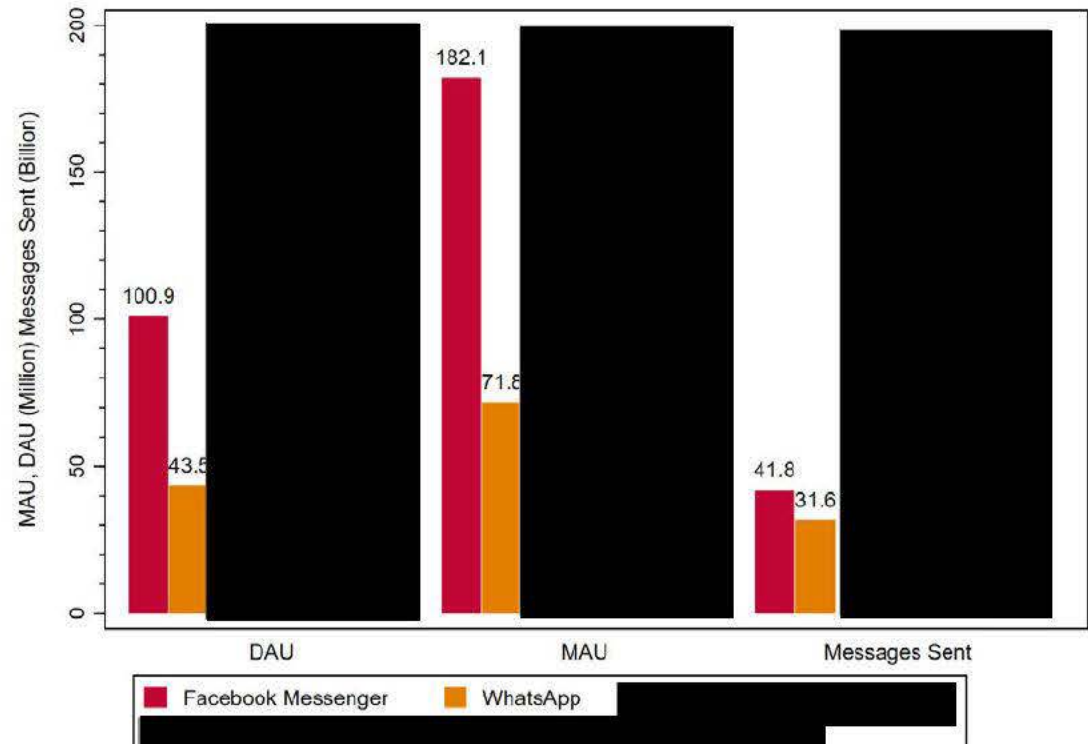
Prof. Carlton's Purchase Price Argument Is Unsound

If Instagram's Success Was Likely, Meta's Purchase Price Was Low

Actual Purchase Price
of Instagram in 2012

Amount Hypothetical Purchaser
Would Have Paid in 2012 for Asset
Worth Just $80 Billion in 2018

$1.0
Billion

$43.9
Billion (Using Meta Q1 2023 WACC)

$56.4
Billion (Using Meta Q2 2012 WACC)

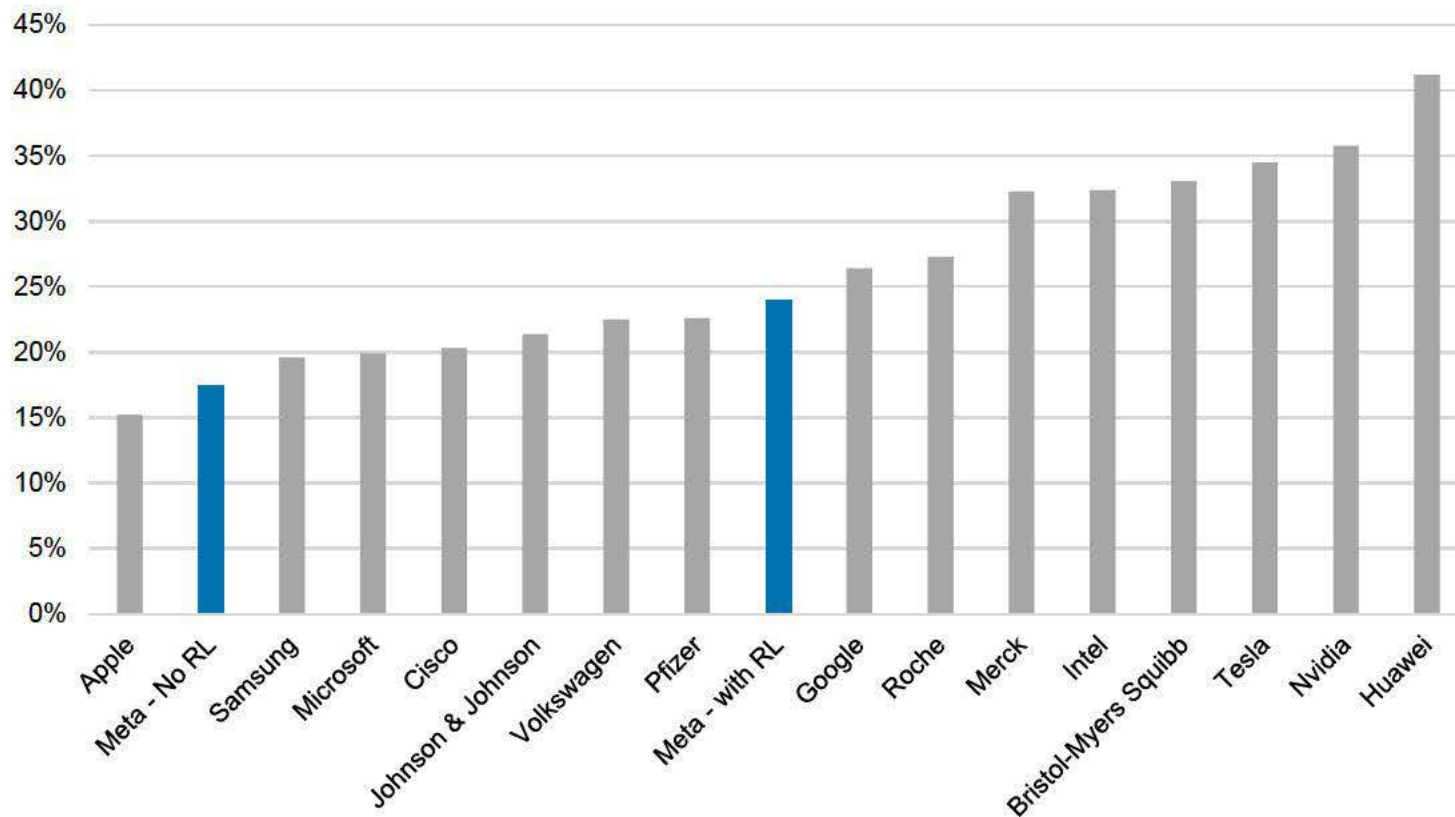Source: Carlton Rep., Table 29.

DDX36.40

Prof. Carlton's Consumer Surplus Claim Is Beside the Point

57
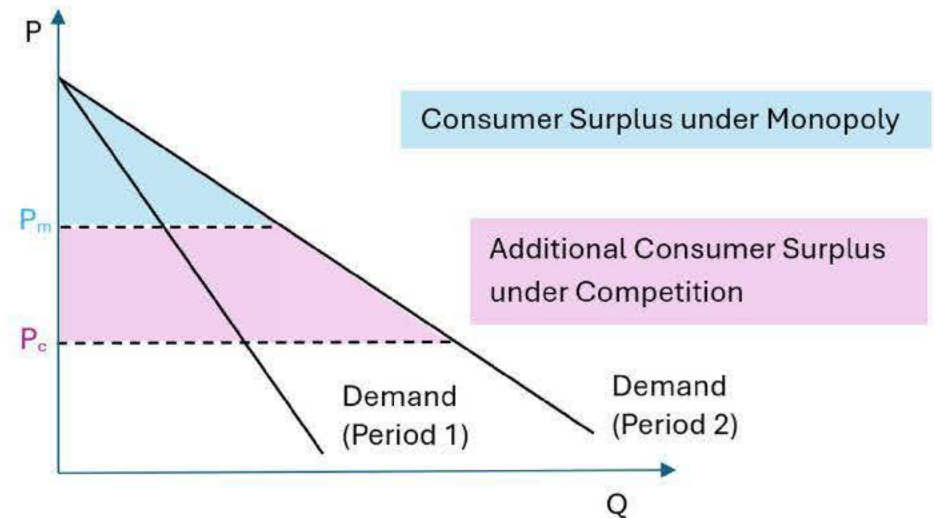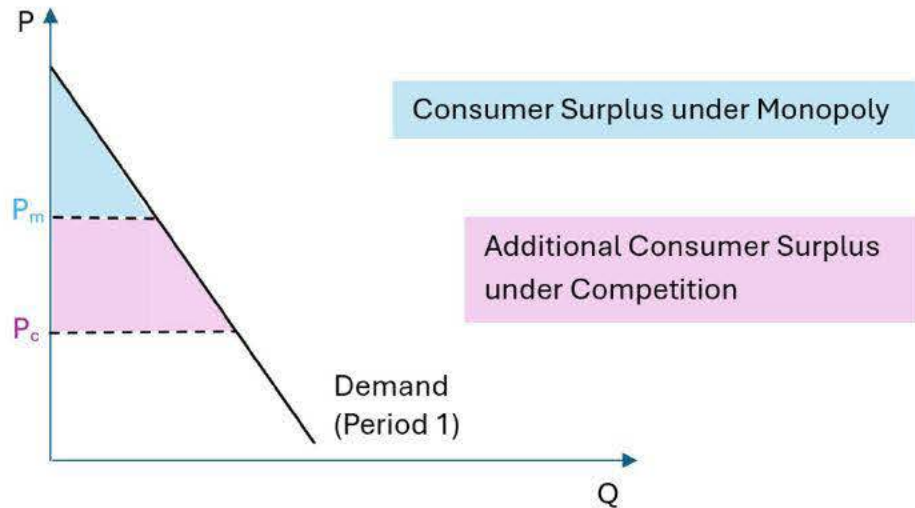
Prof. Carlton's R&D Analysis Overstates Meta's Position

R&D Spending as a Percentage of Gross Profit, FY2017-2021
Meta Internal Analysis, March 2022

Note: "RL" stands for Reality Labs.
Source: PX9007 (Hemphill Rebuttal) at ¶¶ 741-48, Ex. 37.

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Evidence Answers Prof. Carlton: PSN App Competition Benefits Users

Bradley Horowitz
(Google+)

"Q. Based on your experience working on Google+, did competition between Google+ and Facebook benefit users?
A. Yes.
Q. How is that the case?
A. I think competition created innovation and differentiation and generally drove the product experience forward."

Bradley Horowitz Trial Testimony
(May 15, 2025)

Sheryl Sandberg
Former Meta COO

"Q. But you don't have any reason to doubt, sitting here today, that those friend list, follow, elder launch was Facebook's competitive response to Google's entry on the market, do you?
A. It says that here.
Q. And in particular, Google was -- or, Facebook was providing additional features in order to combat a product gap in privacy; is that right?
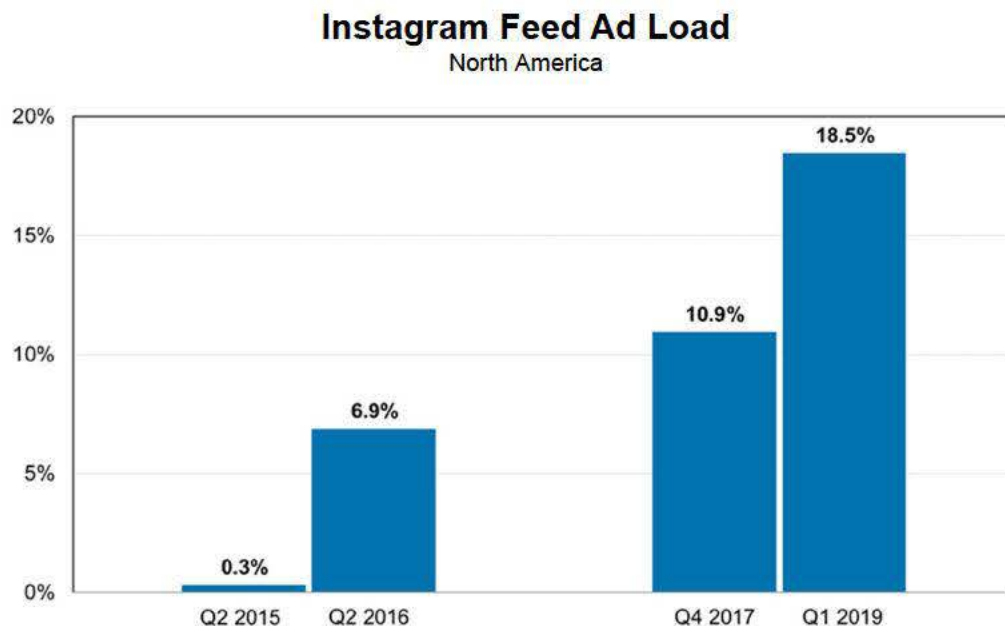A. Yes."

Sheryl Sandberg Trial Testimony
(Apr. 16, 2025)

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Source: Horowitz Trial Tr. (May 15, 2025) at 133:9-14; Sandberg Trial Tr. (Apr. 16, 2025) at 208:7-14.

Evidence Answers Prof. Carlton: Controlling Both Apps, Meta Lowered Quality on Instagram to Mitigate Cannibalization of Facebook

Instagram Feed Ad Load
North America

Year	Event
2014	Meta took away Instagram's growth team
2016	Meta refused to support early development of Instagram Stories
2017	Meta denied Instagram's requests for video engineers
2017	Meta denied Instagram's requests for integrity engineers
2018	Meta increased ad load on Instagram to boost engagement on Facebook

Note: Ad load is measured as the ratio of VPV ad impressions to VPV total (ad and organic) impressions.
Source: PX9000 (Hemphill Report) at ¶¶ 1090-1092, Exs. 81-82.

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