

ROBBINS GELLER RUDMAN
& DOWD LLP
AELISH M. BAIG (201279)
TAEVA C. SHEFLER (291637)
One Montgomery Street, Suite 1800
San Francisco, CA 94104
Telephone: 415/288-4545
415/288-4534 (fax)
aelishb@rgrdlaw.com
tshefler@rgrdlaw.com

Attorneys for Plaintiffs

[Additional counsel appear on signature page]

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
OAKLAND DIVISION

IN RE: SOCIAL MEDIA ADOLESCENT
ADDITION/PERSONAL INJURY
PRODUCTS LIABILITY LITIGATION

MDL Case No. 4:22-md-03047-YGR

This Document Relates to:

Case No. [Insert]

BUCKS COUNTY and COMMONWEALTH
OF PENNSYLVANIA, ACTING BY AND
THROUGH BUCKS COUNTY DISTRICT
ATTORNEY MATTHEW D. WEINTRAUB,

COMPLAINT FOR VIOLATIONS OF: (1)
PENNSYLVANIA PUBLIC NUISANCE
LAW; AND (2) PENNSYLVANIA UNFAIR
TRADE PRACTICES AND CONSUMER
PROTECTION ACT

Plaintiffs,

vs.

TIKTOK INC., BYTEDANCE INC., META
PLATFORMS, INC., FACEBOOK
HOLDINGS, LLC, FACEBOOK
OPERATIONS, LLC, META PAYMENTS
INC., FACEBOOK TECHNOLOGIES, LLC,
INSTAGRAM, LLC, SICULUS, INC.,
ALPHABET INC., GOOGLE LLC, XXVI
HOLDINGS INC., YOUTUBE, LLC, and
SNAP INC.,

Defendants.

DEMAND FOR JURY TRIAL

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. JURISDICTION AND VENUE	8
III. THE PARTIES.....	9
A. Plaintiffs.....	9
B. Defendants	10
1. TikTok and ByteDance Entities.....	10
2. Meta, Facebook, and Instagram Entities.....	10
3. Alphabet, Google, and YouTube Entities	12
4. Snap Inc.	13
IV. FACTUAL ALLEGATIONS	13
A. Social Media Addiction Is Prevalent Among America’s Youth.....	14
B. Social Media Has Widespread, Harmful, and Often Tragic Effects on Youth Mental Health.....	18
C. America’s Youth Are Facing a Mental Health Crisis	23
D. Social Media Has Had a Harmful Effect on Bucks County.....	26
E. Social Media Has Had a Harmful Effect on the Youth in Bucks County.....	28
F. Defendants Intentionally Design, Operate, and Market Their Social Media Platforms for Youth Users	31
G. Facebook and Instagram Have Substantially Contributed to the Youth Mental Health Crisis	38
1. The Facebook Platform.....	38
2. The Instagram Platform	40
3. Facebook and Instagram Design and Market Their Platforms to Appeal to a Youth Audience.....	41
4. Facebook and Instagram Intentionally Design Exploitative Features Aimed at Keeping Users on the Platforms for as Long as Possible	45
5. Facebook’s and Instagram’s Algorithms Are Manipulative and Harmful	47

	Page
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	

6.	Facebook and Instagram “Feeds” Are Designed to Enable Users to Scroll Endlessly	49
7.	For Years, Facebook and Instagram Have Been Aware that Their Platforms Harm Children	51
H.	YouTube’s Social Media Platform Has Substantially Contributed to the Youth Mental Health Crisis	54
1.	YouTube Designs and Markets Its Platform to Appeal to a Youth Audience	56
2.	YouTube Intentionally Designs Features to Keep Its Users on Its Platform for as Long as Possible	57
3.	YouTube’s Algorithms Are Manipulative and Harmful, Especially to a Youth Audience	58
4.	YouTube’s Conduct Has Harmed Youth Mental Health	62
I.	Snapchat’s Social Media Platform Has Substantially Contributed to the Youth Mental Health Crisis	66
1.	Snap Designs and Markets Its Platform to Appeal to a Youth Audience	68
2.	Snap Intentionally Designs Exploitative Features to Keep Users on Its Platform for as Long as Possible	70
3.	Snap’s Conduct in Designing and Operating Its Platform Has Harmed Youth Mental Health	73
J.	TikTok’s Social Media Platform Has Substantially Contributed to the Youth Mental Health Crisis	75
1.	TikTok Designs and Markets Its Platform to Appeal to a Youth Audience	77
2.	TikTok Intentionally Designs Features to Keep Users on Its Platform for as Long as Possible	80
3.	TikTok’s Conduct in Designing and Operating Its Platform Has Harmed Youth Mental Health	84
V.	THE COMMUNICATIONS DECENCY ACT EXPRESSLY ALLOWS INTERACTIVE COMPUTER SERVICE COMPANIES TO LIMIT HARMFUL CONTENT AND PROVIDES NO BLANKET IMMUNITY FOR THE ALLEGED MISCONDUCT HERE	94
VI.	CAUSES OF ACTION	95
COUNT I	95

	Page
1	
2	COUNT II100
3	PRAYER FOR RELIEF103
4	DEMAND FOR JURY TRIAL104
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	

1 **I. INTRODUCTION**

2 1. American adolescence is undergoing a dramatic change. Today, a staggering
3 number of our nation's children suffer from mental and behavioral health disorders. In 2019, 13%
4 of adolescents reported having a major depressive episode, a 60% increase from 2007. The
5 quantum change in such cases has been fueled in part by a profound technological transformation
6 deliberately designed by some of the country's most profitable social media¹ giants in ways that
7 exploit for profit the vulnerabilities of children's brain development.

8 2. Three decades ago, the gravest public health threats to teenagers in the United
9 States came from binge drinking, drunk driving, teen pregnancy, and smoking. With increased
10 education, these have since fallen significantly but have been replaced by a new public health
11 concern: soaring rates of mental health disorders, including depression, self-harm, and suicidal
12 ideation.² Twenty percent of American children aged 3 to 17 have a mental, emotional,
13 developmental, or behavioral disorder. The rising rates of emergency room visits for suicide and
14 self-harm leave little doubt that the physical nature of the threat has changed dramatically in the
15 last 15 years:³

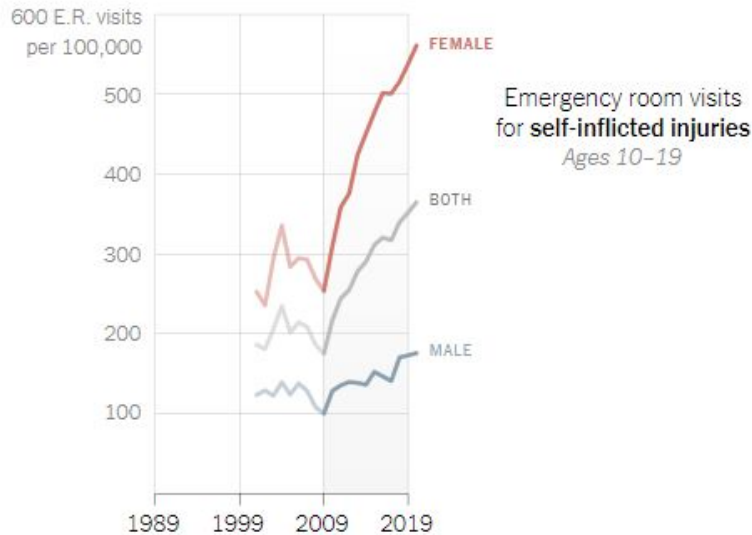
16
17
18
19
20
21
22
23

24 ¹ Social media can be defined as any form of interactive electronic communication through an
25 internet website or application by which a user creates a service-specific identifying user profile
to connect with other users of the internet website or application for the purpose of communicating
and sharing information, ideas, news, stories, opinions, images, and other content.

26 ² Matt Richtel, *'It's Life or Death': The Mental Health Crisis Among U.S. Teens*, N.Y. Times
27 (May 3, 2022), <https://www.nytimes.com/2022/04/23/health/mental-health-crisis-teens.html>.

28 ³ *Id.*

Emergency room visits for self-harm by children and adolescents rose sharply over the last decade, particularly among young women.



By The New York Times | Source: Centers for Disease Control and Prevention

3. For people aged 10 to 24, suicide rates, stable from 2000 to 2007, leapt nearly 60% by 2018 according to the Centers for Disease Control and Prevention (“CDC”).⁴ On December 7, 2021, the United States Surgeon General issued an advisory on the youth mental health crisis: “‘Mental health challenges in children, adolescents, and young adults are real and widespread. Even before the pandemic, an alarming number of young people struggled with feelings of helplessness, depression, and thoughts of suicide – and rates have increased over the past decade.’”⁵

4. Youth mental health problems have advanced in lockstep with the growth of social media platforms deliberately designed to attract and addict youth to the platforms by amplifying harmful material, dosing users with dopamine hits, and thereby driving youth engagement and advertising revenue. Defendants Facebook, Instagram, Snap, TikTok, and YouTube (all defined below) all design, market, promote, and operate social media platforms for which they have

⁴ *Id.*

⁵ Press Release, U.S. Dep’t Health & Hum. Servs., *U.S. Surgeon General Issues Advisory on Youth Mental Health Crisis Further Exposed by COVID 19 Pandemic* (Dec. 7, 2021), <https://www.njsba.org/news-publications/school-board-notes/december-14-2021-vol-xlv-no-18/surgeon-general-warning-mental-health-crisis-for-youths/>.

1 especially cultivated a young audience. They have successfully grown their platforms
 2 exponentially over the past decade, from millions to billions of users, particularly children and
 3 teens. According to an August 30, 2022 World Economic Forum, a Pew Research Study found
 4 that almost half of United States teenagers aged 13 to 17 say they are online “almost constantly.”⁶

5 5. There is a reason America’s youth is online “almost constantly,” which is that the
 6 primary metric of success for these social media giants is engagement. The companies’ success
 7 requires more users to be on their platforms for longer periods of time in order to maximize
 8 advertising revenue. Defendants deliberately employ strategies designed to maximize
 9 engagement, including: (a) using algorithms and endless scrolls that create harmful experiences
 10 for children and teens; and (b) using Intermittent Variable Rewards (“IVRs”) or dopamine hits to
 11 intentionally alter users’ behavior, creating habits and addiction.

12 6. Defendants have designed and structured their platforms to exploit multiple neuro-
 13 psychological traits in youth, including by inducing “flow state,” manipulating social comparisons
 14 and triggering dopamine “hits.” The algorithms are neither neutral nor benign but rather amplify
 15 the most polarizing, titillating, controversial, emotionally charged, and otherwise salacious
 16 material created by third parties and by defendants themselves. Distortions and divisiveness are
 17 not only tolerated but embraced.⁷ The longer a user is on, the more extreme the material required
 18 to keep that user on. It can, and often does, create an alternate reality defined by conspiracy and
 19 rage. The content promoted, often unhealthy or outright harmful for our children and teens, is
 20 deliberately engineered to exploit the frailties of their developing brains and maximize their
 21 engagement using many of the same techniques found in slot machines. However, instead of
 22 feeding money into machines, our youth are feeding Defendants’ platforms with their time and
 23 attention.

24 _____
 25 ⁶ Stefan Ellerbeck, *Half of U.S. teens use the internet ‘almost constantly.’ But where are they*
 26 *spending their time online?*, World Economic Forum (Aug. 30, 2022),
[https://www.weforum.org/agenda/2022/08/social-media-internet-online-teenagers-screens-](https://www.weforum.org/agenda/2022/08/social-media-internet-online-teenagers-screens-us/#:~:text=The%20number%20of%20teens%20using,from%202014%2D15%20to%202022.)
[us/#:~:text=The%20number%20of%20teens%20using,from%202014%2D15%20to%202022.](https://www.weforum.org/agenda/2022/08/social-media-internet-online-teenagers-screens-us/#:~:text=The%20number%20of%20teens%20using,from%202014%2D15%20to%202022.)

27 ⁷ Max Fisher, *The Chaos Machine: The Inside Story of How Social Media Rewired Our Minds*
 28 *and Our World* at 22-23 (2022) (“Chaos Machine”).

7. The platform designs have allowed defendants to grow not only their user bases but the frequency and time spent by users. In 2018, Facebook researchers warned of the dangers of systems designed to deliver users more and more divisive content to increase their time on the platform.⁸ A flicker of anger is amplified to wildfire because people pay attention to fire. Extreme and/or sensationalistic views, even if held by a small group, are algorithmically promoted, amplified, and perceived by users to be more popular and accurate than they are because controversy and confusion keep people paying attention for longer periods of time. Attention equals engagement, and engagement equals advertising revenue. Defendants' growth is a product of choices they made to design and operate their platforms in ways that exploit the psychology and neurophysiology of their users, particularly children and teens, into spending more and more time on their platforms.

8. Defendants also exploit the weakness of developing minds with continuous dopamine hits, akin to that experienced in a casino, with what is known as the "social-validation feedback loop." As former Napster founder and Facebook president Sean Parker ("Parker") explained:

"The thought process that went into building these applications . . . was all about, 'How do we consume as much of your time and conscious attention as possible?' To do that, he said, 'We need to sort of give you a little dopamine hit every once in a while, because someone liked or commented on a photo or a post or whatever. And that's going to get you to contribute more content, and that's going to get you more likes and comments.'"⁹

9. These manipulations were deliberately built into the platforms from the beginning, as further noted by Parker:

I mean, it's exactly the kind of thing that a hacker like myself would come up with because you're exploiting a vulnerability in human psychology. [chuckles] And I think that we . . . you know, the inventors, creators, and it's me, it's Mark, it's Kevin

⁸ Jeff Horwitz & Deepa Seetharaman, *Facebook Executives Shut Down Efforts to Make the Site Less Divisive*, Wall St. J. (May 26, 2020), <https://www.wsj.com/articles/facebook-knows-it-encourages-division-top-executives-nixed-solutions-11590507499>.

⁹ *Chaos Machine* at 24-25.

What makes adolescents especially vulnerable to the addictive nature of smartphones is that they are in a crucially pliable point of their mental and physical growth. “They’re incredibly socially sensitive”

“[They] are more vulnerable to risk taking, so the emotion centers of the brain drive behavior more than the future planning centers of the brain” . . . which is why teens are impulsive enough to take risks without recognizing future consequences. Their brains are pliable because adolescence is a time when neurons undergo pruning, fundamentally altering the shape and structure of the brain from one of a child’s into that of an adult’s.

11. The need to fit in and the desire to be popular and gain social points mean that children this age are especially vulnerable to falling for the “social media contagion effect,” the term Dr. Lembke uses to describe a child doing something just because a peer is doing it.¹² That reasoning is simply logical in an adolescent’s brain. Yet there is almost no limit to who can be targeted, or how viciously, on social media:

12 *Id.*

1 its own standards . . . but around the organizing profit-driving incentive of all social
2 media: attention – at significant cost to the mental health of America’s youth.¹³

3 12. Increasingly, experts who study the effects of social media on teenagers report on
4 the dangers, including: (a) social comparison (when everyone else’s life or body looks better
5 online); (b) displacement (social media replacing sleep, exercise, and real interaction); (c)
6 algorithms that prod children toward unhealthy content about eating disorders and the like; and (d)
7 pornography reaching children on social media at younger ages. These impacts disproportionately
8 affect girls. Jean Twenge (“Twenge”), a psychology professor at San Diego State University and
9 a leading expert on the subject, states: “‘There is a substantial link to depression, and that link
10 tends to be stronger among girls’” and “[t]he same is true for self-harm. . . . ‘The more hours a
11 day she spends using social media, the more likely she is to engage in self-harm behaviors – the
12 link is there for boys as well, it’s just not as large.’”¹⁴ Twenge further reports: “‘Most of the large
13 studies show that heavy users of social media are about twice as likely to be depressed as light
14 users.’”¹⁵ Similarly, young boys are “especially susceptible” to extremism and radicalization
15 online because, as reported by Cynthia Miller-Idris, the Director of Online Research at American
16 University’s Polarization and Extremism Innovation Lab in addressing on-line-mass-shooter-
17 radicalization, “[they spend] more time online and [around] more circulation of conspiracy theories
18 and hateful content created a kind of tinderbox . . . So, kids are being affected by this whether they
19 are . . . being drawn into hateful content as a perpetrator or [being] victimized.”¹⁶

20 13. Federal research shows that teenagers as a group are getting less sleep and exercise
21 and spending less in-person time with friends – all crucial for healthy development – at a period
22 in life when it is typical to test boundaries and explore one’s identity. The combined result for

23 ¹³ *The Chaos Machine* at 55.

24 ¹⁴ Jennifer A. Kingson, *Social media’s effects on teen mental health comes into focus*, Axios (Jan.
25 11, 2023), <https://www.axios.com/2023/01/11/social-media-children-teenagers-mental-health-tiktok-meta-facebook-snapchat>.

26 ¹⁵ *Id.*

27 ¹⁶ *Examining the warning signs of online extremism targeting young people*, YouTube,
28 <https://www.youtube.com/watch?v=AA4LqDeYQAQ>.

1 some adolescents is a kind of cognitive implosion: anxiety, depression, compulsive behaviors, self-
2 harm, vandalism, violence, and even suicide.

3 14. Bucks County residents have borne painful witness to all of this, firsthand, to
4 devastating effect. For instance, in October 2022, a 15-year old boy in Bucks County was arrested
5 after threatening to “shoot up” Central Bucks High School West via a Snapchat message.¹⁷ The
6 boy also used TikTok to share videos of other mass shootings.¹⁸

7 15. Youth in Bucks County, surveyed across the 2021-2022 school year, reported high
8 levels of depression and histories of suicide ideation.

9 16. Like virtually everywhere in the United States now, Municipal plaintiff Bucks
10 County’s youth suffer from a high degree of distraction, depression, suicidality, and other mental
11 disorders, caused or worsened by the overconsumption of social media on a daily basis, which
12 substantially interferes with the rights of health and safety common to the general public. Indeed,
13 Bucks County has funded the institution of mental health outpatient programs, mobile crisis units,
14 family-based mental health services, and extensive in-school mental health programming and
15 trainings to address youth mental health specifically. The need is that great.

16 17. This complaint does not seek to disparage, discipline or discourage technology.
17 Social media has the potential to be a useful tool for learning and growth for entrepreneurship and
18 showcasing one’s skills. However, these platforms increasingly define the world around our
19 youth, creating social realities and interactions. Safe and healthy social media use by children and
20 teens lies in stark contrast with the deliberate design of platforms to: (a) flood children and teens
21 with as much divisive and harmful content as possible, for as long as possible; and (b) ultimately
22 addict them, all for the sake of profit. This is having deep and dangerous ramifications on our
23 youth, our communities, and our schools that simply cannot be ignored. These social media giants
24

25
26 ¹⁷ Christopher Dornblaser, *Police: Teen arrested for threatening to ‘shoot up’ Central Bucks*
27 *West High School*, Bucks Cnty. Courier Times (Oct. 14, 2022),
<https://www.yahoo.com/news/police-teen-arrested-threatening-shoot.212209061.html>.

28 ¹⁸ *Id.*

1 can and should take measures to stem the tide of the mental health crisis afflicting America's social
2 media-addicted youth.

3 **II. JURISDICTION AND VENUE**

4 18. This Court has subject matter jurisdiction over this case under 28 U.S.C. §1332(a)
5 because the amount in controversy exceeds \$75,000 and because plaintiffs and defendants are
6 residents and citizens of different states.

7 19. This is a judicial district where defendants are subject to personal jurisdiction in
8 accordance with 28 U.S.C. §1391 and California Code of Civil Procedure §410.10, the California
9 long-arm statute. Defendants purposefully availed themselves of the benefits, profits, and
10 privileges deriving from their business activities in this state. Defendants Facebook and Instagram
11 maintain their principal places of business in Menlo Park, California. Defendants ByteDance Inc.,
12 Alphabet Inc., and Google LLC maintain their principal places of business in Mountain View,
13 California. Defendant YouTube, LLC maintains its principal place of business in San Bruno,
14 California.

15 20. The non-resident defendants regularly engage in business within the State of
16 California and within this District. Defendants have committed tortious acts that have caused
17 injury to plaintiffs. Defendants expect, or should reasonably have expected, those acts to have
18 consequences in the State of California. Moreover, defendants solicited business within this
19 District, engaged in persistent courses of conduct here, and derived substantial revenue from goods
20 used and services rendered in the State of California and this District through interstate commerce.

21 21. Defendants are regularly engaged in the business of designing, operating, and
22 marketing social network platforms, either directly or indirectly through third-party related
23 entities, in the State of California.

24 22. Venue is proper within this District and this Division pursuant to 28 U.S.C. §1391
25 and Civil L.R. 3-2(c) because a substantial part of the events or omissions giving rise to the claims
26 at issue in this Complaint arose in this District, and defendants are subject to the Court's personal
27 jurisdiction with respect to this action.

1 **III. THE PARTIES**

2 **A. Plaintiffs**

3 23. Municipal plaintiff Bucks County, Pennsylvania is a municipal corporation
 4 organized and existing under the laws of the Commonwealth of Pennsylvania and a home-rule
 5 county. It is located at 55 East Court Street, Doylestown, Pennsylvania 18901. It includes 31
 6 separate municipalities, has a population of approximately 646,538, and is the fourth-most
 7 populous county in Pennsylvania.¹⁹ There are approximately 35,721 children aged 5-17 residing
 8 in the county.²⁰

9 24. Municipal plaintiff Bucks County funds a wide range of services and programs
 10 which directly address the mental health of its youth, including emergency centers, outpatient
 11 service centers, mental health programs for children, youth, and families, other health and human
 12 services, law enforcement, and school-based programs. Municipal plaintiff Bucks County brings
 13 this action on its own behalf.

14 25. District Attorney for Bucks County, Matthew Weintraub (“DA Weintraub”), is an
 15 elected official of Bucks County. DA Weintraub is statutorily permitted to bring this action in the
 16 name of the Commonwealth of Pennsylvania (“Commonwealth”) to hold Defendants accountable
 17 for violations of the Pennsylvania Unfair Trade Practices and Consumer Protection Law
 18 (“UTPCPL”), 73 P.S. §201-1, *et seq.* DA Weintraub brings this action on behalf of all persons in
 19 interest, including Bucks County.

20 26. The District Attorney seeks to recover the amounts to which the Commonwealth is
 21 entitled on behalf of Bucks County pursuant to the statutory rights afforded him under the
 22 UTPCPL.

26 ¹⁹ *Census – Geography Profile: Bucks County, Pennsylvania*, United States Census Bureau,
 27 <https://data.census.gov/profile?g=0500000US42017> (2020 Census).

28 ²⁰ *Id.*

1 **B. Defendants**

2 **1. TikTok and ByteDance Entities**

3 27. Defendant TikTok Inc. was incorporated in the State of California on April 30,
4 2015, with its principal place of business in Culver City, California. TikTok Inc. transacts or has
5 transacted business in this District and throughout the United States. At all times material to this
6 Complaint, acting alone or in concert with others, TikTok Inc. has advertised, marketed, and
7 distributed the TikTok Inc. social media platform to consumers throughout the United States. At
8 all times material to this Complaint, acting alone or in concert with ByteDance (defined below),
9 TikTok Inc. formulated, directed, controlled, had the authority to control, or participated in the
10 acts and practices set forth in this Complaint.

11 Defendant ByteDance Inc. (“ByteDance”) is a Delaware corporation with its principal
12 place of business in Mountain View, California. ByteDance transacts or has transacted business
13 in this District and throughout the United States. At all times material to this Complaint, acting
14 alone or in concert with others, ByteDance has advertised, marketed, and distributed the TikTok
15 Inc. social media platform to consumers throughout the United States. At all times material to this
16 Complaint, acting alone or in concert with TikTok Inc., ByteDance formulated, directed,
17 controlled, had the authority to control, or participated in the acts and practices set forth in this
18 Complaint. TikTok Inc. and ByteDance are hereinafter collectively referred to as “TikTok.”

19 **2. Meta, Facebook, and Instagram Entities**

20 28. Defendant Meta Platforms, Inc. (“Meta”), formerly known as Facebook, Inc., is a
21 Delaware corporation with its principal place of business in Menlo Park, California. Defendant
22 Meta builds and maintains technologies for social media platforms, communication platforms, and
23 electronic devices that are widely available to users throughout the United States. The platforms
24 developed and maintained by Meta include Facebook (including its self-titled application,
25 Marketplace, and Workplace), Messenger (including Messenger Kids), Instagram, and a line of
26 electronic virtual reality devices and services called Meta Quest (formerly Oculus) (collectively,
27 “Meta platforms”).
28

29. Defendant Meta’s subsidiaries include defendants Facebook Holdings, Facebook Operations, Meta Payments, Facebook Technologies, Siculus (all defined below, and collectively, with Meta, “Facebook”), and Instagram.

30. Defendant Meta’s platforms, Facebook and Instagram, are among the most popular social networking platforms in the world, with more than 3.6 billion users worldwide.²¹

31. In addition to Meta maintaining its principal place of business within this District, Meta transacts or has transacted business in this District and throughout the United States. At all times material to this Complaint, acting alone or in concert with its subsidiaries, Meta has advertised, marketed, and distributed the Meta platforms to consumers throughout the United States. At all times material to this Complaint, Meta formulated, directed, controlled, had the authority to control, or participated in the acts and practices set forth in this Complaint.

32. Defendant Meta’s subsidiary, defendant Facebook Holdings, LLC (“Facebook Holdings”), was organized under the laws of the State of Delaware on March 11, 2020 and is a wholly-owned subsidiary of Meta. Facebook Holdings is primarily a holding company for entities involved in Meta’s supporting and international endeavors, and its principal place of business is in Menlo Park, California. Defendant Meta is the sole member of Facebook Holdings.

33. Defendant Meta’s subsidiary, defendant Facebook Operations, LLC (“Facebook Operations”), was organized under the laws of the State of Delaware on January 8, 2012 and is wholly owned by Meta. The principal place of business of Facebook Operations is in Menlo Park, California. Defendant Meta is the sole member of Facebook Operations.

34. Defendant Meta’s subsidiary, defendant Meta Payments Inc. (“Meta Payments”), was incorporated in the State of Florida on December 10, 2010 as Facebook Payments Inc. In July 2022, the entity’s name was amended to Meta Payments Inc. Meta Payments is a wholly-owned subsidiary of Meta. Meta Payments manages, secures, and processes payments made

²¹ Felix Richter, *Meta Reaches 3.6 billion People Each Month*, Statista (Oct. 29, 2021), <https://www.statista.com/chart/2183/facebook-mobile-users/>.

1 through Meta, among other activities, and its principal place of business is in Menlo Park,
2 California. Defendant Meta is the sole member of Meta Payments.

3 35. Defendant Meta's subsidiary, defendant Facebook Technologies, LLC ("Facebook
4 Technologies"), was organized under the laws of the State of Delaware as "Oculus VR, LLC" on
5 March 21, 2014 and acquired by Meta on March 25, 2014. Facebook Technologies develops
6 Meta's virtual and augmented reality technology, such as the Meta Quest line of services, among
7 other technologies related to Meta's platforms, and its principal place of business is in Menlo Park,
8 California. Defendant Meta is the sole member of Facebook Technologies.

9 36. Defendant Meta's subsidiary, defendant Instagram, LLC ("Instagram"), was
10 founded by Kevin Systrom and Mike Krieger in October 2010 and is a social media platform
11 designed for photo and video sharing. In April 2012, Meta purchased the company for
12 approximately \$1 billion. Meta reformed the limited liability company under the laws of the State
13 of Delaware on April 7, 2012, and its principal place of business is in Menlo Park, California.
14 Defendant Meta is the sole member of Instagram.

15 37. Defendant Meta's subsidiary, defendant Siculus, Inc. ("Siculus"), was incorporated
16 in the State of Delaware on October 19, 2011. Siculus is a wholly-owned subsidiary of Meta that
17 supports Meta platforms by constructing data facilities and other projects. Siculus' principal place
18 of business is in Menlo Park, California. Defendant Meta is the sole member of Siculus.

19 **3. Alphabet, Google, and YouTube Entities**

20 38. Defendant Alphabet Inc. ("Alphabet") is a Delaware corporation with its principal
21 place of business in Mountain View, California. Alphabet is the sole stockholder of
22 XXVI Holdings (defined below)

23 39. Defendant XXVI Holdings Inc. ("XXVI Holdings") is a Delaware corporation with
24 its principal place of business in Mountain View, California. XXVI Holdings is a wholly-owned
25 subsidiary of Alphabet and the managing member of Google (defined below).

26 40. Defendant Google LLC ("Google") is a limited liability company organized under
27 the laws of the State of Delaware, and its principal place of business is in Mountain View,
28 California. Google is a wholly-owned subsidiary of XXVI Holdings and the managing member

1 of YouTube, LLC. Google transacts or has transacted business in this District and throughout the
 2 United States. At all times material to this Complaint, acting alone or in concert with others,
 3 Google has advertised, marketed, and distributed its YouTube video sharing platform to consumers
 4 throughout the United States. At all times material to this Complaint, acting alone or in concert
 5 with YouTube, LLC, Google formulated, directed, controlled, had the authority to control, or
 6 participated in the acts and practices set forth in this Complaint.

7 41. Defendant YouTube, LLC is a limited liability company organized under the laws
 8 of the State of Delaware, and its principal place of business is in San Bruno, California. YouTube,
 9 LLC is a wholly owned subsidiary of Google. YouTube, LLC transacts or has transacted business
 10 in this District and throughout the United States. At all times material to this Complaint, acting
 11 alone or in concert with defendant Google, YouTube, LLC has advertised, marketed, and
 12 distributed its YouTube social media platform to consumers throughout the United States. At all
 13 times material to this Complaint, acting alone or in concert with Google, YouTube, LLC
 14 formulated, directed, controlled, had the authority to control, or participated in the acts and
 15 practices set forth in this Complaint.

16 42. Defendants Alphabet, XXVI Holdings, Google, and YouTube, LLC are hereinafter
 17 collectively referred to as “YouTube.”

18 **4. Snap Inc.**

19 43. Defendant Snap Inc. (“Snap”) is a Delaware corporation with its principal place of
 20 business in Santa Monica, California. Snap transacts or has transacted business in this District and
 21 throughout the United States. At all times material to this Complaint, acting alone or in concert
 22 with others, Snap has advertised, marketed, and distributed the Snapchat social media platform to
 23 consumers throughout the United States. At all times material to this Complaint, Snap formulated,
 24 directed, controlled, had the authority to control, or participated in the acts and practices set forth
 25 in this Complaint.

26 **IV. FACTUAL ALLEGATIONS**

27 44. The dawn of the social media era is generally considered to be approximately 2006
 28 to 2007, when, on the heels of Yahoo’s failed attempt to acquire Facebook for \$1 billion, Facebook

1 revamped its home page to launch a newsfeed that provided each user with a continuous
 2 personalized feed of what that user's friends were doing.²² The newsfeed drove engagement and
 3 thus advertising revenue as Facebook membership exploded by 600% to 700%, and suddenly
 4 "everyone had total unblinking visibility into the digital lives of everyone else." When the
 5 newsfeed launched in 2006, 11% of Americans were on social media (between 2% and 4% used
 6 Facebook).²³ By fall 2007, Facebook was valued at \$15 billion. By 2014, nearly two-thirds of
 7 Americans used social media platforms, with Facebook and YouTube being nearly universal.

8 **A. Social Media Addiction Is Prevalent Among America's Youth**

9 45. Social Media has been likened to a "casino that fits in your pocket," training us to
 10 "answer any dip in our happiness with a pull at the most ubiquitous slot machine in history."²⁴
 11 Researchers studying the effect social media has on the brain have shown that social media exploits
 12 "the same neural circuitry" as "gambling and recreational drugs to keep consumers using their
 13 platforms as much as possible." All are addictive because of the neurological chemical dopamine,
 14 which is released with the pulsing colorful notification sounds and vibrations associated with a
 15 "reward" – for example, a Snapchat with a friend.²⁵ "But when that dopamine reward system gets
 16 hijacked, it can compel you to repeat self-destructive behaviors. To place one more bet, binge on
 17 alcohol – or spend hours on apps even when they make you unhappy."²⁶

18 46. Defendants deliberately designed and marketed exploitative and addictive social
 19 media platforms specifically targeting youth. They have been extremely successful in their efforts.
 20 Ninety percent of children aged 13 to 17 use social media.²⁷ Younger children also regularly use

21 _____
 22 ²² *Chaos Machine* at 20-21.

23 ²³ *Id.* at 23.

24 ²⁴ *Id.* at 27.

25 ²⁵ *Id.* at 26.

26 ²⁶ *Id.*

27 ²⁷ *Social Media and Teens*, Am. Acad. Child & Adolescent Psych. (Mar. 2018),
 28 https://www.aacap.org/AACAP/Families_and_Youth/Facts_for_Families/FFF-Guide/Social-Media-and-Teens-100.aspx.

1 social media. One study reported 38% of children aged 8 to 12 used social media in 2021.²⁸ Other
 2 studies reveal numbers as high as 49% of children aged 10 to 12 use social media and 32% of
 3 children aged 7 to 9 use social media.²⁹

4 47. The most popular of these platforms is YouTube. A vast majority – 95% – of
 5 children aged 13 to 17 have used YouTube.³⁰

6 48. TikTok has skyrocketed in popularity with teenagers since its merger with
 7 Musical.ly in 2018. TikTok is now the second most popular social media platform, with over 67%
 8 of children aged 13 to 17 having used the app.³¹

9 49. Instagram’s numbers are comparable to TikTok, with 62% of children aged 13 to
 10 17 reporting they have used the app.³²

11 50. Snapchat also remains popular with youth, with 59% of children aged 13 to 17
 12 reporting they have used the app.³³

13 51. Facebook is the fifth most popular social media platform, with 32% of children
 14 aged 13 to 17 reporting they have used Facebook’s app or website.³⁴

15 52. Teenagers who use these social media platforms are also likely to use them
 16 continuously. One study estimates that 62% of children aged 13 to 18 use social media every
 17

18
 19 ²⁸ Victoria Rideout et al., *The Common Sense Census: Media Use by Tweens and Teens at 5*,
 20 Common Sense Media (2022), https://www.commonsensemedia.org/sites/default/files/research/report/8-18-census-integrated-report-final-web_0.pdf.

21 ²⁹ *Sharing Too Soon? Children and Social Media Apps*, 39(4) C.S. Mott Child.’s Hosp. Univ.
 22 Mich. Health (Oct. 18, 2021), https://mottpoll.org/sites/default/files/documents/101821_SocialMedia.pdf.

23 ³⁰ Emily A. Vogels et al., *Teens, Social Media and Technology 2022*, Pew Rsch. Ctr. (Aug. 10,
 24 2022), <https://www.pewresearch.org/internet/2022/08/10/teens-social-media-and-technology-2022/>.

25 ³¹ *Id.*

26 ³² *Id.*

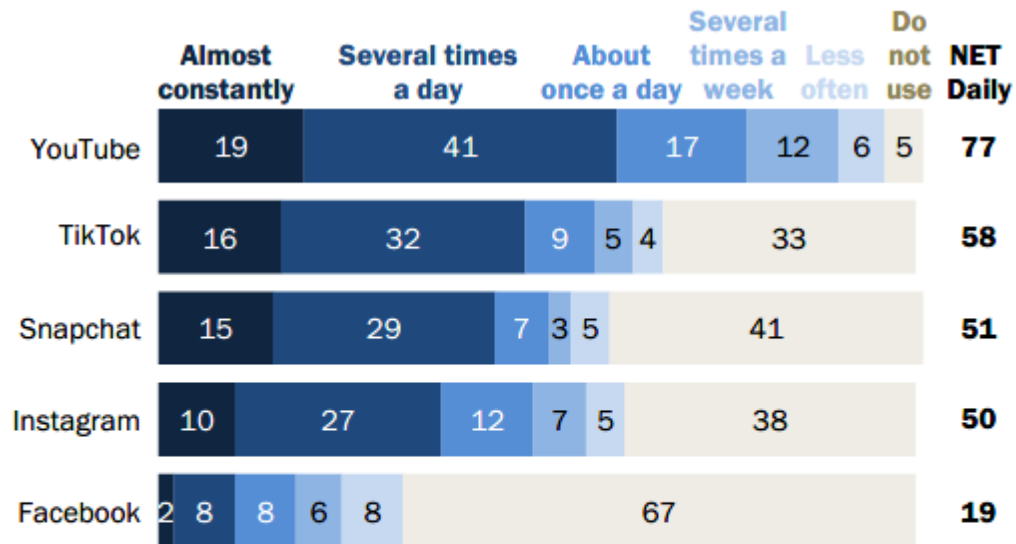
27 ³³ *Id.*

28 ³⁴ *Id.*

day.³⁵ An increasing number of younger children also use social media daily, with 18% of children aged 8 to 12 reporting using a social media site at least once a day.³⁶

53. Daily use for many teenagers does not consist of logging onto a platform just once. Rather, many teenage users check social media repeatedly throughout the day. In one study, teenage users reported checking Snapchat 30 times a day on average.³⁷

54. Even more alarming, some teenagers never stop looking at social media.³⁸



Note: Teens refer to those ages 13 to 17. Those who did not give an answer are not shown. Figures may not add up to the NET values due to rounding.

Source: Survey conducted April 14-May 4, 2022.

"Teens, Social Media and Technology 2022"

PEW RESEARCH CENTER

³⁵ Victoria Rideout et al., *The Common Sense Census: Media Use by Tweens and Teens* at 4, Common Sense Media (2022), https://www.commonsensemedia.org/sites/default/files/research/report/8-18-census-integrated-report-final-web_0.pdf.

³⁶ *Id.* at 5.

³⁷ Erinn E. Murphy et al., *Taking Stock with Teens: 21 Years of Researching U.S. Teens GenZ Insights* at 13, Piper Sandler (Fall 2021), https://piper2.bluematrix.com/docs/pdf/3bad99c6-e44a-4424-8fb1-e3adfcdbd1d4.pdf?utm_source=newsletter&utm_medium=email&utm_campaign=newsletter_axiosam&stream=top.

³⁸ Victoria Rideout et al., *The Common Sense Census: Media Use by Tweens and Teens* at 4, Common Sense Media (2022), https://www.commonsensemedia.org/sites/default/files/research/report/8-18-census-integrated-report-final-web_0.pdf; Emily A. Vogels et al., *Teens, Social Media and Technology 2022*, Pew Rsch. Ctr. (Aug. 10, 2022), <https://www.pewresearch.org/internet/2022/08/10/teens-social-media-and-technology-2022/>.

1 55. Nearly 32% of teens have declared YouTube the app they would not want to live
2 without almost constantly.³⁹ Nearly 16% and 15% of teens report that they constantly use TikTok
3 and Snapchat, respectively.⁴⁰ Meanwhile, 10% of teens use Instagram almost constantly.⁴¹ Thirty-
4 two percent of teens report using Facebook.⁴²

5 56. Teenagers are aware that social media has a significant hold on their lives, yet they
6 still cannot stop using it. Thirty-six percent of teenagers admit they spend too much time on social
7 media.⁴³ Over half of teens say that giving up social media would be somewhat hard, with nearly
8 one in five teens saying giving up social media would be very hard.⁴⁴ Of the subgroup of teenagers
9 who use at least one platform “almost constantly,” 71% said giving up social media would be hard,
10 with 32% saying giving up social media would be very hard.⁴⁵

11 57. Teenagers report symptoms of addiction disorders with regard to social media. For
12 instance, the more teenagers use social media, the harder it is for them to give it up. Teenagers
13 who acknowledge that they spend too much time on social media are almost twice as likely to say
14 that giving up social media would be difficult as teens who see their social media usage as about
15 right.⁴⁶

16
17
18
19
20 ³⁹ Emily A. Vogels et al., *Teens, Social Media and Technology 2022*, Pew Rsch. Ctr. (Aug. 10,
21 2022), <https://www.pewresearch.org/internet/2022/08/10/teens-social-media-and-technology-2022/>.

22 ⁴⁰ *Id.*

23 ⁴¹ *Id.*

24 ⁴² *Id.*

25 ⁴³ *Id.*

26 ⁴⁴ *Id.*

27 ⁴⁵ *Id.*

28 ⁴⁶ *Id.*

58. Despite using social media frequently, most youth do not enjoy it. Only 27% of boys and 42% of girls aged 8 to 18 reported enjoying social media “a lot” in 2021.⁴⁷

B. Social Media Has Widespread, Harmful, and Often Tragic Effects on Youth Mental Health

59. The dimensions of the youth mental health crisis are alarming by all accounts. There are many severe and broadly negative effects of social media use on youth mental health. Social media use is linked to increases in mental, emotional, developmental, and behavioral disorders. They include cyberbullying, eating disorders, cutting, depression, anxiety, sleep disorders, and suicide-related outcomes. These negative impacts have been demonstrated by both independent research and internal data from the social media platforms themselves.

60. In general, electronic screen use causes lower psychological well-being.⁴⁸ This link is especially apparent among adolescents. Those with high screen time are twice as likely to receive diagnoses of depression or anxiety or to need treatment for mental or behavioral health conditions compared to low screen time users.⁴⁹

⁴⁷ Victoria Rideout et al., *The Common Sense Census: Media Use by Tweens and Teens* at 34, Common Sense Media (2022), https://www.commonsensemedia.org/sites/default/files/research/report/8-18-census-integrated-report-final-web_0.pdf.

⁴⁸ Jean M. Twenge & W. Keith Campbell, *Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study*, 12 *Prev. Med. Rep.* 271-83 (2018), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6214874/>; Ariel Shensa et al., *Social Media Use and Depression and Anxiety Symptoms: A Cluster Analysis*, 42(2) *Am. J. Health Behav.* 116-28 (2018), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5904786/>; *Effects of Social Media on Children*, Cleveland Clinic (Dec. 3, 2021), <https://health.clevelandclinic.org/dangers-of-social-media-for-youth/>.

⁴⁹ Jean M. Twenge & W. Keith Campbell, *Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study*, 12 *Prev. Med. Rep.* 271-83 (2018), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6214874/>.

61. Social media specifically has a “detrimental effect on the psychological health of its users.”⁵⁰ One systematic review of 16 studies on the effects of social media on mental health found social media use increases levels of anxiety and depression.⁵¹

62. Social media also has detrimental effects on the mental health of adolescents specifically. High social media use increases depressive symptoms, suicide-related outcomes, and suicide rates among adolescents.⁵²

63. The harm to youth from social media use increases with the amount of time spent on these platforms. One study found that the investment of time in social media by adolescents is linked to higher levels of depression and lower self-esteem.⁵³ “U.S. teenagers who spend 3 hours a day or more on electronic devices are 35% more likely, and those who spend 5 hours or more are 71% more likely, to have a risk factor for suicide than those who spend less than 1 hour.”⁵⁴

64. One of the primary reasons the use of social media is associated with depressive symptoms among adolescents is that it encourages unhealthy social comparison and feedback-seeking behaviors.⁵⁵ Because adolescents spend a majority of their time on social media looking at other users’ profiles and photos, they are likely to engage in negative comparisons with their

⁵⁰ Fazida Karim et al., *Social Media Use and Its Connection to Mental Health: A Systemic Review*, 12(6) *Cureus* (June 15, 2020), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7364393/>.

⁵¹ *Id.*

⁵² Jean M. Twenge et al., *Increases in Depressive Symptoms, Suicide-Related Outcomes, and Suicide Rates Among U.S. Adolescents After 2010 and Links to Increased New Media Screen Time*, 6(1) *Clinical Psych. Sci.* 3-17 (2017), <https://doi.org/10.1177/2167702617723376>.

⁵³ Corey J. Blomfield Neira & Bonnie L. Barber (2014) *Social networking site use: Linked to adolescents' social self-concept, self-esteem, and depressed mood*, *Australian Journal of Psychology*, 66:1, 56-64, <https://www.tandfonline.com/doi/full/10.1111/ajpy.12034>.

⁵⁴ Anne Sheehan, *Letter from JANA Partners & CalSTRS to Apple, Inc.*, Harvard Law School Forum on Corporate Governance (Jan. 19, 2018), <https://corpgov.law.harvard.edu/2018/01/19/joint-shareholder-letter-to-apple-inc/> (citing Jean M. Twenge, PhD. *iGen*. New York: Atria Books (an imprint of Simon & Schuster), 2017).

⁵⁵ Jacqueline Nesi & Mitchell J. Prinstein, *Using Social Media for Social Comparison and Feedback-Seeking: Gender and Popularity Moderate Associations with Depressive Symptoms*, 43(8) *J. Abnormal Child Psych.* 1427-38 (Nov. 2015), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5985443/>.

1 peers.⁵⁶ Specifically, adolescents are likely to engage in harmful upward comparisons with others
 2 whom they perceive to be more popular.⁵⁷

3 65. Clinicians have also observed a clear relationship between youth social media use
 4 and disordered eating behavior.⁵⁸ The more social media accounts an adolescent has, the greater
 5 disordered eating behaviors they exhibit. Additionally, research shows the more time young girls
 6 spend on social media platforms, such as Instagram and Snapchat, the more likely they are to
 7 develop disordered eating behaviors.⁵⁹

8 66. Social media has created an environment where self-harm and suicidality is
 9 glorified, promoting youth to compete for who can cut the deepest or starve themselves the most.⁶⁰
 10 Experts say that sharing pictures of harmful practices encourages others to harm themselves by, in
 11 essence, normalizing the behavior.⁶¹

12 67. Social media has also caused an increase in cyberbullying. The more time an
 13 individual, especially males, spends on social media, the more likely they are to commit acts of
 14

15
 16 ⁵⁶ *Id.*; see also Nino Gugushvili et al., *Facebook use intensity and depressive symptoms: a*
 17 *moderated mediation model of problematic Facebook use, age, neuroticism, and extraversion* at
 18 3, BMC Psych. 10, 279 (Nov. 28, 2022), <https://doi.org/10.1186/s40359-022-00990-7> (explaining
 that youth are particularly vulnerable because they “use social networking sites for construing their
 identity, developing a sense of belonging, and for comparison with others”).

19 ⁵⁷ Jacqueline Nesi & Mitchell J. Prinstein, *Using Social Media for Social Comparison and*
 20 *Feedback-Seeking: Gender and Popularity Moderate Associations with Depressive Symptoms*,
 43(8) J. Abnormal Child Psych. 1427-38 (Nov. 2015), [https://www.ncbi.nlm.nih.gov/pmc/articles/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5985443/)
 PMC5985443/.

21 ⁵⁸ Simon M. Wilksch et al., *The relationship between social media use and disordered eating in*
 22 *young adolescents*, 53 Int’l J. Eating Disorders 96-106 (2020), [https://pubmed.ncbi.nlm.nih.gov/](https://pubmed.ncbi.nlm.nih.gov/31797420/)
 31797420/.

23 ⁵⁹ *Id.*

24 ⁶⁰ Cindy Krischer Goodman, *Hiding in plain sight: Inside the online world of suicidal teens*
 25 *anguished, armed and impulsive*, S. Fla. Sun-Sentinel (Jan. 12, 2020), [https://www.sun-](https://www.sun-sentinel.com/news/florida/fl-ne-teen-suicide-hidden-online-world-20200110-tj767jdoerh4jpw5zaomv26eum-story.html)
 26 [sentinel.com/news/florida/fl-ne-teen-suicide-hidden-online-world-20200110-tj767jdoerh4jpw](https://www.sun-sentinel.com/news/florida/fl-ne-teen-suicide-hidden-online-world-20200110-tj767jdoerh4jpw5zaomv26eum-story.html)
 5zaomv26eum-story.html.

27 ⁶¹ Kimberly Leonard, *Is Social Media Making Self-Harm Worse for Teens?*, U.S. News (May 29,
 28 2015), [https://www.usnews.com/news/articles/2015/05/29/is-social-media-making-self-harm-](https://www.usnews.com/news/articles/2015/05/29/is-social-media-making-self-harm-worse-for-teens)
 worse-for-teens.

cyberbullying.⁶² Cyberbullying is now so common that most American teens, 59%, have experienced some form of the behavior.⁶³ This number includes: (a) 42% of teens experiencing name calling; (b) 32% being subjected to false rumors; (c) 25% receiving an unsolicited explicit image; (d) 21% being subjected to online stalking; (e) 16% receiving physical threats online; and (f) 7% having had explicit images of them shared without their consent.⁶⁴ Exposure to cyberbullying on social media is more prevalent for youth identifying as LGBTQ, and is linked with increased reporting of depression and suicidality in the LGBTQ youth population.⁶⁵

68. Social media has also played a role in perpetuating youth violence by, for example, amplifying gang communications promoting and calling for violence or promoting fight compilations to millions of viewers. Continual exposure to such violence can have adverse effects on youth. Meta-analyses of the unhealthy effects of media violence have shown that youth who view violent content regularly are more likely to exhibit antisocial behavior, accept violent behavior, and experience increased feelings of hostility.⁶⁶

69. Social media use also contributes to sleep deprivation. Young adults who spend a lot of time on social media during the day or check it frequently throughout the week are more likely to suffer sleep disturbances than their peers who use social media infrequently.⁶⁷ In turn,

⁶² Amanda Giordano et al., *Understanding Adolescent Cyberbullies: Exploring Social Media Addiction and Psychological Factors*, 7(1) J. Child & Adolescent Counseling 42-55 (2021), <https://www.tandfonline.com/doi/abs/10.1080/23727810.2020.1835420?journalCode=ucac20>.

⁶³ Monica Anderson, *A Majority of Teens Have Experienced Some Form of Cyberbullying*, Pew Rsch. Ctr. (Sept. 27, 2018), <https://www.pewresearch.org/internet/2018/09/27/a-majority-of-teens-have-experienced-some-form-of-cyberbullying/>.

⁶⁴ *Id.*

⁶⁵ Cesar G. Escobar-Viera, et al., *For Better or for Worse? A Systematic Review of the Evidence on Social Media Use and Depression Among Lesbian, Gay, and Bisexual Minorities*, JMIR Mental Health (Mar. 23, 2018), <https://mental.jmir.org/2018/3/e10496>.

⁶⁶ Brittany Bostic, *Does Social Media Perpetuate Youth Violence?*, Mich. Youth Violence Prevention Ctr. (Feb. 20, 2024), <https://yvpc.sph.umich.edu/social-media-perpetuate-youth-violence/>.

⁶⁷ Jessica C. Levenson, et al., *The Association Between Social Media Use and Sleep Disturbance Among Young Adults*, 85 Preventive Med. 36-41 (Apr. 2016), <https://www.sciencedirect.com/science/article/abs/pii/S0091743516000025>.

1 disturbed and insufficient sleep is associated with poor health outcomes, such as weight gain and
 2 high blood pressure.⁶⁸ Sleep deprivation in youth is also linked to depressive symptoms and
 3 mood.⁶⁹

4 70. Teens who spend five or more hours a day on electronic devices are over 50% more
 5 likely to experience sleep deprivation than youth who spend less than one hour per day.⁷⁰
 6 Defendants exacerbate the disruption of sleep by sending push notifications and emails either at
 7 night when children should be sleeping or during school hours when they should be studying,
 8 thereby prompting children to reengage with defendants' platforms at times when using them is
 9 harmful to their health and well-being.⁷¹

10 71. Children are especially at risk of developing harmful behaviors because their
 11 prefrontal cortices are not fully developed.⁷² The prefrontal cortex is the part of the brain
 12 implicated in planning complex cognitive behavior, expressing one's personality, making
 13 decisions, and moderating social behavior. Consequently, they find it particularly difficult to
 14 exercise the self-control required to regulate their own use of defendants' platforms. In this regard,
 15 self-regulation allows people to delay gratification, postponing an immediate reward for a better
 16

17 ⁶⁸ *Id.*; see also Jean M. Twenge, PhD. *iGen*. New York: Atria Books (an imprint of Simon &
 18 Schuster), 2017.

19 ⁶⁹ Lynette Vernon, et al., *Tracking Effects of Problematic Social Networking on Adolescent*
 20 *Psychopathy: The Mediating Role of Sleep Disruptions*, Journal of Clinical Child & Adolescent
 21 *Psychology* (August 2016), https://www.researchgate.net/publication/305925717_Tracking_Effects_of_Problematic_Social_Networking_on_Adolescent_Psychopathology_The_Mediating_Role_of_Sleep_Disruptions.

22 ⁷⁰ Anne Sheehan, *Letter from JANA Partners & CalSTRS to Apple, Inc.*, Harvard Law School
 23 Forum on Corporate Governance (Jan. 19, 2018), <https://corpgov.law.harvard.edu/2018/01/19/joint-shareholder-letter-to-apple-inc/> (citing Jean M. Twenge, PhD. *iGen*. New York: Atria Books (an imprint of Simon & Schuster), 2017).

24 ⁷¹ See, e.g., Beatrice Nolan, *Kids are waking up in the night to check their notifications and are*
 25 *losing about 1 night's worth of sleep a week, study suggests*, Bus. Insider (Sept. 19, 2022),
 26 <https://www.businessinsider.com/social-media-costing-children-one-night-sleep-study-2022-9>
 (approximately 12.5% of children report waking up to check social media notifications).

27 ⁷² Nino Gugushvili et al., *Facebook use intensity and depressive symptoms: a moderated*
 28 *mediation model of problematic Facebook use, age, neuroticism, and extraversion* at 3, BMC
Psych. 10, 279 (Nov. 28, 2022), <https://doi.org/10.1186/s40359-022-00990-7>.

1 reward later. Adolescents' undeveloped capacity for self-regulation means they are particularly
 2 vulnerable to the immediately pleasurable, but ultimately harmful, effects of the repeated
 3 dopamine spikes caused by an external stimulus, such as "likes" that activate the reward system in
 4 the brain.⁷³

5 72. These reward-based learning systems "contribute to the maintenance of excessive
 6 usage patterns."⁷⁴ Researchers investigating the "directionality between . . . social networking
 7 [platforms] and problematic use" have found that "increases in the intensity of use . . . predict[]
 8 problematic use."⁷⁵ Empirical studies have found that problematic use is associated with
 9 "insomnia, stress, relationship dissatisfaction, anxiety, social anxiety, and depressive
 10 symptoms."⁷⁶

11 73. In this regard, adolescents are especially vulnerable to long-term harm from
 12 defendants' platforms because excessive and problematic use can disrupt their brains'
 13 development at a critical stage.

14 74. Indeed, studies have shown that the mental health challenges to emotional
 15 regulation and well-being caused by social media use continue on into young adulthood. For
 16 example, a nationally-representative sample of over 1,700 U.S. emerging adults (defined as aged
 17 18-29) found that problematic social media use was associated with depressive symptoms in those
 18 studied.⁷⁷

19 **C. America's Youth Are Facing a Mental Health Crisis**

20 75. The number of young people using defendants' social media platforms and the
 21 intensity with which they use them has increased significantly since 2008, which has contributed

22 ⁷³ *Id.*

23 ⁷⁴ *Id.*

24 ⁷⁵ *Id.*

25 ⁷⁶ *Id.* (collecting sources).

26 ⁷⁷ Ariel Shensam MA, et al., *Problematic Social Media Use and Depressive Symptoms among*
 27 *U.S. Young Adults: A Nationally-Representative Study*. Soc Sci Med. (Apr. 24, 2017),
 28 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5476225/>.

1 to a wide range of negative effects on youth mental health. The incidence of young people
 2 experiencing depression, contemplating suicide, seeking emergency room help for mental health
 3 issues, and – tragically – committing suicide has skyrocketed.

4 76. On December 7, 2021, these issues led the United States Surgeon General to issue
 5 an advisory on the youth mental health crisis.⁷⁸ In issuing the advisory, the Surgeon General noted:
 6 ““Mental health challenges in children, adolescents, and young adults are real and widespread.
 7 Even before the pandemic, an alarming number of young people struggled with feelings of
 8 helplessness, depression, and thoughts of suicide – and rates have increased over the past
 9 decade.””⁷⁹

10 77. While the report highlights ways in which the COVID-19 pandemic has
 11 exacerbated mental health issues for American youth, it also highlights the mental health
 12 challenges youth faced before the pandemic. Specifically, the report notes that before the
 13 pandemic “mental health challenges were the leading cause of disability and poor life outcomes in
 14 young people.”⁸⁰

15 78. Before the pandemic, one in five children aged 3 to 17 in the United States had a
 16 mental, emotional, developmental, or behavioral disorder.⁸¹

17 79. In 2021, 42% of high school aged youth “felt so sad or hopeless almost every day
 18 for at least two weeks in a row” that they “stopped doing their usual activities.”⁸² Females were
 19

20 ⁷⁸ *Protecting Youth Mental Health: The U.S. Surgeon General’s Advisory*, U.S. Dep’t Health &
 21 Hum. Servs. (Dec. 7, 2021), <https://www.hhs.gov/sites/default/files/surgeon-general-youth-mental-health-advisory.pdf>.

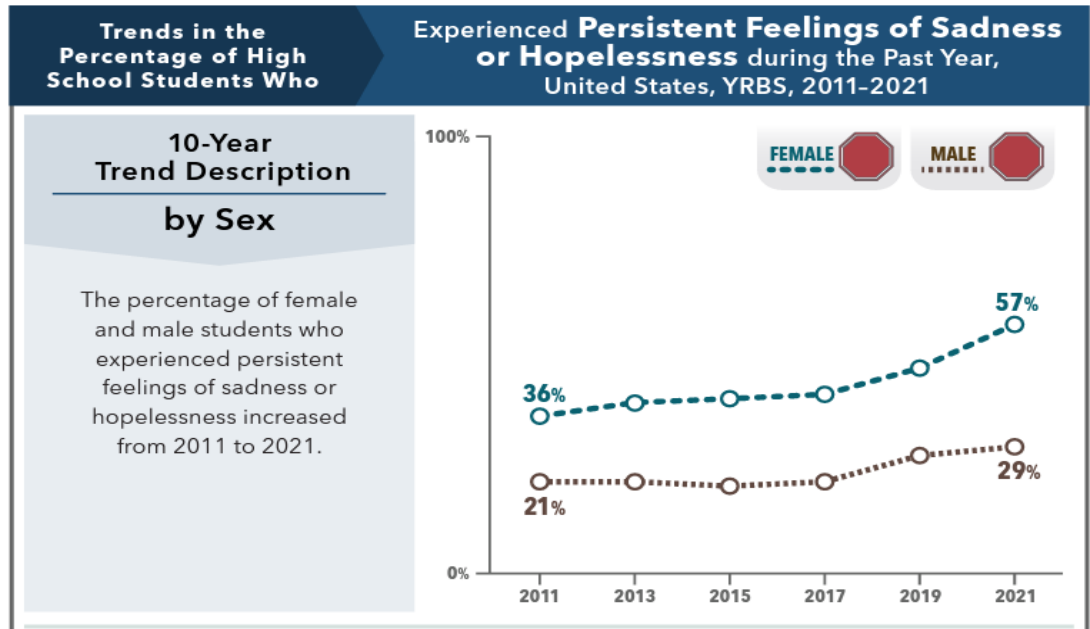
22 ⁷⁹ Press Release, U.S. Dep’t Health & Hum. Servs., *U.S. Surgeon General Issues Advisory on*
 23 *Youth Mental Health Crisis Further Exposed by COVID-19 Pandemic* (Dec. 7, 2021),
 24 <https://www.njsba.org/news-publications/school-board-notes/december-14-2021-vol-xlv-no-18/surgeon-general-warning-mental-health-crisis-for-youths/>.

25 ⁸⁰ *Id.*

26 ⁸¹ *Id.*

27 ⁸² *Youth Risk Behavior Survey: Data Summary & Trends Report* at 60, CDC (Feb. 13, 2023),
 28 https://www.cdc.gov/healthyyouth/data/yrbs/pdf/YRBS_Data-Summary-Trends_Report2023_508.pdf.

more likely than males to experience these “persistent feelings of sadness or hopelessness.”⁸³ From 2011 to 2021, the rate of female high school aged youth who reported persistent feelings of sadness or hopelessness increased from 36% to 51% (to one out of every two female children), and the rate of male high school aged youth increased from 21% to 29%.⁸⁴



80. The share of children seriously considering attempting suicide increased 11% from 2011 to 2021, up to 22% of all high school students. The share who created a suicide plan increased to 18%.⁸⁵

⁸³ *Id.*

⁸⁴ *Id.* at 60-66.

⁸⁵ Sandy Cohen, *Suicide rate highest among teens and youth adults*, UCLA Health (Mar. 15, 2022), <https://www.uclahealth.org/news/suicide-rate-highest-among-teens-and-young-adults>.

1 81. From 2007 to 2018, suicide rates among youth aged 10 to 24 in the United States
 2 increased by 57%.⁸⁶ By 2018, suicide was the second leading cause of death for youth aged 10 to
 3 24.⁸⁷

4 82. From 2007 to 2016, emergency room visits for youth aged 5 to 17 rose 117% for
 5 anxiety disorders, 44% for mood disorders, and 40% for attention disorders.⁸⁸

6 83. This and other data led the American Academy of Pediatrics, the American
 7 Academy of Child and Adolescent Psychiatry, and the Children's Hospital Association to join the
 8 Surgeon General and declare a national emergency in child and adolescent mental health.⁸⁹

9 84. President Joe Biden also addressed the mental health harms defendants' platforms
 10 have caused to youth in his State of the Union address in 2022, noting that youth were struggling
 11 from the harms of social media even before the pandemic.⁹⁰ He called on all to "hold social media
 12 platforms accountable for the national experiment they're conducting on our children for profit."⁹¹

13 **D. Social Media Has Had a Harmful Effect on Bucks County**

14 85. As a funder of youth mental health services within the county, Municipal plaintiff
 15 Bucks County is uniquely harmed by the current youth mental health crisis. It funds outpatient
 16

17 ⁸⁶ *Protecting Youth Mental Health: The U.S. Surgeon General's Advisory*, U.S. Dep't Health &
 18 Hum. Servs. (Dec. 7, 2021), <https://www.hhs.gov/sites/default/files/surgeon-general-youth-mental-health-advisory.pdf>.

19 ⁸⁷ *AAP-AACAP-CHA Declaration of a National Emergency in Child and Adolescent Mental*
 20 *Health*, Am. Acad. Pediatrics (Oct. 19, 2021), <https://www.aap.org/en/advocacy/child-and-adolescent-healthy-mental-development/aap-aacap-cha-declaration-of-a-national-emergency-in-child-and-adolescent-mental-health/>.
 21

22 ⁸⁸ Matt Richtel, *A Teen's Journey Into the Internet's Darkness and Back Again*, N.Y. Times
 23 (Aug. 22, 2022), <https://www.nytimes.com/2022/08/22/health/adolescents-mental-health-technology.html>.

24 ⁸⁹ *AAP-AACAP-CHA Declaration of a National Emergency in Child and Adolescent Mental*
 25 *Health*, Am. Acad. Pediatrics (Oct. 19, 2021), <https://www.aap.org/en/advocacy/child-and-adolescent-healthy-mental-development/aap-aacap-cha-declaration-of-a-national-emergency-in-child-and-adolescent-mental-health/>.

26 ⁹⁰ President Biden, State of the Union Address (Mar. 1, 2022) (transcript available at
 27 <https://www.whitehouse.gov/state-of-the-union-2022/>).

28 ⁹¹ *Id.*

1 mental health services for children and teens, family-based mental health services, crisis services,
2 a mobile crisis unit, emergency services, a partial hospitalization pilot program to promote family-
3 based care for youth with mental health diagnoses, dedicated suicide prevention efforts for youth,
4 evidence-based programs for school-aged youth, trainings on trauma-informed care, extensive
5 school-based programming, peer-support services, and family support services.

6 86. Municipal plaintiff Bucks County has invested in school-based partnerships to
7 address student mental health issues due to the youth mental crisis. Despite all of the programs
8 and services it offers and funds, Bucks County service providers are struggling to provide enough
9 mental health services because of the increase in youth seeking these services. Many children and
10 youth cannot access services in a timely manner due to long wait lists for existing mental health
11 care providers.

12 87. Municipal plaintiff Bucks County has borne increased costs and expenses in
13 response to the youth mental health crisis. These costs include allocating funding for, among other
14 expenses:

15 (a) hiring additional mental health personnel to focus on youth mental health,
16 including over 80 new school-based mental health workers since 2021;

17 (b) developing additional mental health resources including mental health
18 programs for youth, family-based mental health services, crisis prevention programs for youth,
19 outpatient mental health programs, mobile crisis programs, emergency services specifically for
20 youth mental health emergencies, peer support services, family support services, and partial
21 hospitalization programs for youth;

22 (c) training mental health workers, social workers, and other personnel to help
23 youth with their mental health, including assessment and diagnosis tools, suicide prevention
24 approaches, trauma-informed care strategies, and certified peer support programs for young adults;

25 (d) producing and distributing educational materials on social, emotional, and
26 mental health for youth, including suicide prevention materials;

(e) coordinating and delivering mental health care services to public schools within the county, including offering assessments, group therapy, individual counseling, and suicide prevention efforts;

(f) supporting families and caretakers of youth with mental health diagnoses through family-based partial hospitalization programs, mental health trainings, trauma-informed care trainings, caregiving coaching, and support groups;

(g) increasing intervention services and hiring additional personnel to address property damaged as a result of youth acting out because of mental, social, and emotional problems caused by defendants' conduct;

(h) investigating and responding to threats made over social media; and

(i) increasing resources to law enforcement and other diversionary services to address increase in anti-social and criminal behavior by youth.

E. Social Media Has Had a Harmful Effect on the Youth in Bucks County

88. The children residing in plaintiffs' jurisdiction have been directly impacted by the youth mental health crisis in its community.

89. As children's use of defendants' platforms has increased, children's mental, emotional, and social health has declined.

90. There has been a surge in the proportion of youth in plaintiffs' community who say they cannot stop or control their anxiety, who feel so sad and hopeless that they stop doing the activities that they used to love, who are considering suicide, who made plans to commit suicide, and who have attempted to commit suicide.

91. Since the beginning of the COVID-19 pandemic, adolescents increased their social media use, also raising levels of excessive and problematic use of digital media.⁹² These higher

⁹² Laura Marciano et al., *Digital Media Use and Adolescents' Mental Health During the Covid-19 Pandemic: A Systematic Review and Meta-Analysis*, Frontiers Pub. Health (Feb. 1, 2022), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8848548/>; see also Eric E. Rasmussen, et al., *The serially mediated relationship between emerging adults' social media use and mental well-being* at 102:206-213 (2020); Corey J. Blomfield neira & Bonnie L. Barber (2014), *Social networking site use: Linked to adolescents' social self-concept, self-esteem, and depressed mood*, Australian

1 rates of social media use are related to increased rates of “ill-being.”⁹³ Thus, the increase in
 2 adolescent social media use during the pandemic has caused an increase in adolescents
 3 experiencing mental health problems.

4 92. For instance, over 75% of public schools reported an increase in concerns about
 5 youth depression, anxiety, and other disturbances since the start of the pandemic.⁹⁴ That
 6 relationship is reflected in reports on the provision of mental health services to youth. Youth
 7 receiving mental health services in specialty mental health and general medical settings
 8 predominantly do so because they “[f]elt depressed,” “[t]hought about killing [themselves] or tried
 9 to,” or “[f]elt very afraid and tense.”⁹⁵

10 93. Anxiety disorders are also up, affecting 31.9% of adolescents between the ages of
 11 13 and 18.⁹⁶ “Research shows that untreated teenagers with anxiety disorders are at higher risk to
 12 perform poorly in school, miss out on important social experiences, and engage in substance
 13 abuse.”⁹⁷

14 94. The prevalence of mental health conditions in youth are harmful because, among
 15 other reasons, they inhibit learning. Adolescents in grades 6 through 12 identify depression, stress,
 16
 17

18
 19 Journal of Psychology, 66:1, 56-64, DOI: 10.1111/ajpy.12034; a. Jean M. Twenge, PhD. iGen.
 New York: Atria Books (an imprint of Simon & Schuster), 2017.

20 ⁹³ *Id.*

21 ⁹⁴ *Roughly Half of Public Schools Report That They Can Effectively Provide Mental Health*
 22 *Services to All Students In Need*, Nat’l Ctr. Educ. Stat. (May 31, 2022),
https://nces.ed.gov/whatsnew/press_releases/05_31_2022_2.asp.

23 ⁹⁵ Rachel N. Lipari et al., *Adolescent Mental Health Service Use and Reasons for Using Services*
 24 *in Specialty, Educational, and General Medical Settings*, SAMHSA (May 5, 2016),
[https://www.samhsa.gov/data/sites/default/files/report_1973/ShortReport-1973.html#:~:text=The percent20Substance percent20Abuse percent20and percent20Mental,273 percent20TALK percent20\(8255\)](https://www.samhsa.gov/data/sites/default/files/report_1973/ShortReport-1973.html#:~:text=The percent20Substance percent20Abuse percent20and percent20Mental,273 percent20TALK percent20(8255)).

26 ⁹⁶ *Anxiety Disorders: Facts and Statistics*, Anxiety & Depression Ass’n Am.,
 27 <https://adaa.org/understanding-anxiety/facts-statistics> (last visited Feb. 26, 2023).

28 ⁹⁷ *Id.*

1 and anxiety as the most prevalent obstacles to learning.⁹⁸ Most middle school and high school
 2 students also fail to get enough sleep on school nights, which contributes to poor academic
 3 performance.⁹⁹ These negative mental health outcomes are also the most common symptoms of
 4 excessive social media use.

5 95. During the 2021-2022 school year, Bucks County students were screened for
 6 mental health conditions. The county found that: (a) 34% of school-aged youth were at risk for
 7 moderate/severe depression; (b) 40% were at risk for significant anxiety; (c) 31% were at risk for
 8 PTSD; (d) 29% had a history of suicide ideation; and (e) 3% had current suicide ideation.¹⁰⁰

9 96. That crisis has led to a marked increase in the number of plaintiffs' adolescent
 10 residents in need of mental health services.

11 97. Additionally, more children have been acting out as a result of the decline
 12 defendants caused in mental, emotional, and social health among youth.

13 98. In many cases, behavioral issues in Bucks County are directly related to defendants'
 14 social media platforms. For instance, a 15-year old boy in Bucks County was arrested in October
 15 2022 after threatening to "shoot up" Central Bucks High School West via a Snapchat message.¹⁰¹
 16 The boy also used TikTok to share videos of other mass shootings.¹⁰²

17 99. In another set of incidents in 2021, students in Bucks County were found destroying
 18 school property, including ripping off soap dispensers and signs off walls, as a form of
 19

20 ⁹⁸ *Insights From the Student Experience, Part I: Emotional and Mental Health* at 2-3, YouthTruth
 21 (2022), https://youthtruthsurvey.org/wp-content/uploads/2022/10/YouthTruth_EMH_102622.pdf.

22 ⁹⁹ Anne G. Wheaton et al., *Short Sleep Duration Among Middle School and High School*
 23 *Students-United States, 2015*, 67(3) *Morbidity & Mortality Wkly. Rpt.* 85-90 (Jan. 26, 2018),
<http://dx.doi.org/10.15585/mmwr.mm6703a1>.

24 ¹⁰⁰ *Youth Risk Behavior Surveillance System Results*, CDC, <https://www.cdc.gov/healthyyouth/data/yrbs/results.htm> (last modified Aug. 20, 2020).
 25

26 ¹⁰¹ Christopher Dornblaser, *Police: Teen arrested for threatening to 'shoot up' Central Bucks*
 27 *West High School*, Bucks Cnty. Courier Times (Oct. 14, 2022),
<https://www.yahoo.com/news/police-teen-arrested-threatening-shoot.212209061.html>.

28 ¹⁰² *Id.*

1 participation in the “devious lick” challenge on TikTok, a viral trend encouraging students to
2 vandalize and otherwise destroy school property.¹⁰³

3 100. Recently, teenagers in Bucks County were caught shooting small projectile colored
4 beads known as Orbeez beads as part of the “#OrbeezChallenge” on TikTok.¹⁰⁴ This set of
5 incidents included: (a) four teenagers firing Orbeez beads at other youth near a middle school in
6 Delaware County; (b) two youth shooting Orbeez beads during a movie in a theater; and (c) another
7 young person shooting Orbeez at 10-year old child in the face and also at a delivery driver while
8 driving.¹⁰⁵

9 101. Bucks County has been forced to divert resources and expend additional resources
10 in an attempt to address the decline in youth mental, emotional, and social health within its
11 jurisdiction. *See supra*, §IV.E.

12 102. Bucks County requires significantly greater and long-term funding to address the
13 nuisance defendants have created. It is time, as President Biden declared, to get “all Americans
14 the mental health services they need.”¹⁰⁶

15 **F. Defendants Intentionally Design, Operate, and Market Their Social**
16 **Media Platforms for Youth Users**

17 103. This mental health crisis among America’s youth is the result of defendants’ actions
18 to design and market their social media platforms in such a way as to encourage youth addiction
19 to their platforms.
20
21

22 ¹⁰³ James McGinnis, *TikTok ‘devious lick’ challenge has students trashing school bathrooms,*
23 *stealing. Bucks, Montco schools are not immune*, Bucks Cnty. Courier Times (Sept. 17, 2021),
<https://www.phillyburbs.com/story/news/2021/09/17/tiktok-devious-lick-challenge-has-students-trashing-school-bathrooms-stealing-bucks-montco-schools-n/8377546002/>.

24 ¹⁰⁴ Jo Ciavaglia, *Bucks County police are warning parents about the #OrbeezChallenge. What*
25 *you need to know*, Bucks Cnty. Courier Times (Feb. 1, 2023), <https://www.yahoo.com/now/bucks-county-police-warning-parents-165126652.html>.

26 ¹⁰⁵ *Id.*

27 ¹⁰⁶ President Biden, State of the Union Address (Mar. 1, 2022) (transcript available at
28 <https://www.whitehouse.gov/state-of-the-union-2022/>).

104. Defendants each maintain and operate social media platforms. The interactive features defendants provide on their platforms are similar in many respects. For example, Facebook, Instagram, Snap, TikTok, and YouTube all offer tailored “feeds” of content curated by complex algorithms intended to learn a user’s interests and ways to publicly express affirmation for such curated content through “likes,” comments, and sharing or reposting the content, which lead to dopamine spikes, which in turn encourage addiction. These methods are so effective in promoting use that defendants are known to copy the designs and features of one another.¹⁰⁷ The salient features of each of defendants’ social media platforms are described in more detail below.

105. Defendants profit from their social media platforms by using them as advertising platforms. Defendants collect data on their users’ viewing habits and behaviors and use that data to sell advertisers access to their youth and other users to allow those companies to promote their products. Advertisers pay a premium to target advertisements to specific categories of users, including youth.

106. Defendants view youth, adolescent, and even preadolescent users as one of their most valuable commodities as an audience for their advertisements. Young users are central to defendants’ business model and advertising revenue as children are more likely than adults to use social media. Indeed, 95% of children aged 13 to 17 have cell phones,¹⁰⁸ 90% use social media,¹⁰⁹ and 28% buy products and services through social media.¹¹⁰

¹⁰⁷ See, e.g., Kevin Hurler, *For Sites Like Instagram and Twitter, Imitation Is the Only Form of Flattery*, Gizmodo (Aug. 16, 2022), <https://gizmodo.com/instagram-tiktok-snapchat-facebook-meta-1849395419>.

¹⁰⁸ Emily A. Vogels et al., *Teens, Social Media and Technology 2022*, Pew Rsch. Ctr. (Aug. 10, 2022), <https://www.pewresearch.org/internet/2022/08/10/teens-social-media-and-technology-2022/>.

¹⁰⁹ *Social Media and Teens*, Am. Acad. Child & Adolescent Psychiatry (Mar. 2018), https://www.aacap.org/AACAP/Families_and_Youth/Facts_for_Families/FFF-Guide/Social-Media-and-Teens-100.aspx.

¹¹⁰ Erinn E. Murphy et al., *Taking Stock with Teens: 21 Years of Researching U.S. Teens GenZ Insights at 13*, Piper Sandler (Fall 2021), https://piper2.bluematrix.com/docs/pdf/3bad99c6-e44a-4424-8fb1-0e3adfcdbd1d4.pdf?utm_source=newsletter&utm_medium=email&utm_campaign=newsletter_axiosam&stream=top.

107. To profit from these young users, defendants intentionally market their platforms to children and teens. For children under 13, the Children’s Online Privacy Protection Act of 1998 (“COPPA”)¹¹¹ regulates the conditions under which platforms like defendants’ can collect and use their information.

108. COPPA requires platforms that either target children under age 13 or have actual knowledge of users under age 13 to obtain “verifiable parental consent” prior to collecting and using information about them.¹¹² Defendants have blatantly violated COPPA or turned a blind eye to younger users on their platforms by leaving users to self-report their age. More recently, defendants embarked on a bolder strategy and sought to capture preadolescent audiences by offering “kid versions” of their platforms that, while not collecting and using their information, are reportedly “designed to fuel [children’s] interest in the grown-up version.”¹¹³

109. To maximize revenue, defendants have intentionally designed and operated their platforms to maximize users’ screen time. Defendants have done so by building features and operating their platforms in a manner intended to exploit human psychology using complex algorithms driven by advanced artificial intelligence (“AI”) and machine-learning systems. As stated by Catheryn O’Neil, Ph.D., Harvard mathematician and data scientist, “algorithms are opinions embedded in code . . . and that algorithms are not objective. Algorithms are optimized to some definition of success. So, if you can imagine, if . . . a commercial enterprise builds an algorithm to their definition of success, it’s a commercial interest. It’s usually profit.”¹¹⁴ In this regard, in the name of profit, defendants have progressively modified their platforms in ways that promote excessive and problematic use and have done so in ways known to be harmful to children.

¹¹¹ See 15 U.S.C. §§6501-6506.

¹¹² *Id.*

¹¹³ Leonard Sax, *Is TikTok Dangerous for Teens?*, Inst. for Fam. Stud. (Mar. 29, 2022), <https://ifstudies.org/blog/is-tiktok-dangerous-for-teens->.

¹¹⁴ *The Social Dilemma – 2020 Transcript*, Scraps from the Loft (Oct. 3, 2020), <https://scrapsfromtheloft.com/movies/the-social-dilemma-movie-transcript/>.

110. One way defendants maximize the time users spend on their platforms involves the design of feeds – whether of photos, videos, or sponsored or promoted content. Each uses algorithms to serve users personalized content for them to consume *ad nauseam*. Google’s former design ethicist, Tristan Harris (“Harris”), explained that this never-ending stream is designed to “keep [users] scrolling, and purposely eliminate any reason for [them] to pause, reconsider or leave.”¹¹⁵ Defendants’ feeds take “an experience that was bounded and finite, and turn it into a bottomless flow that keeps going.”¹¹⁶ This “flow state,” as psychologists describe it, “fully immerse[s]” users, distorts their perception of time, and “has been shown to be associated with problematic use of social networking sites.”¹¹⁷ As Harris further states:

[W]e’ve moved away from having a tools-based technology environment to an addiction- and manipulation-based technology environment. . . . Social media isn’t a tool that’s just waiting to be used. It has its own goals, and it has its own means of pursuing them by using your psychology against you.¹¹⁸

111. A second way social media platforms manipulate users, particularly young ones, is through social reciprocity. “Reciprocity,” from a psychology perspective, refers to the powerful social phenomenon of how people respond to positive or, conversely, hostile actions. Reciprocity means that in response to friendly actions, people respond in a friendly manner and vice versa.¹¹⁹ Phillip Kunz (“Kunz”) best illustrated the automatic nature of reciprocity through his Christmas card experiment. In the experiment, Kunz sent a group of complete strangers holiday cards with

¹¹⁵ Von Tristan Harris, *The Slot Machine in Your Pocket*, Spiegel Int’l (July 27, 2016), <https://www.spiegel.de/international/zeitgeist/smartphone-addiction-is-part-of-the-design-a-1104237.html>.

¹¹⁶ *Id.*

¹¹⁷ Nino Gugushvili et al., *Facebook use intensity and depressive symptoms: a moderated mediation model of problematic Facebook use, age, neuroticism, and extraversion* at 3, BMC Psych. 10, 279 (Nov. 28, 2022), <https://doi.org/10.1186/s40359-022-00990-7>.

¹¹⁸ *The Social Dilemma – 2020 Transcript*, Scraps from the Loft (Oct. 3, 2020), <https://scrapsfromtheloft.com/movies/the-social-dilemma-movie-transcript/>.

¹¹⁹ Ernst Fehr & Simon Gächter, *Fairness and Retaliation: The Economics of Reciprocity*, 14(3) J. Econ. Persps. 159-81 (Mar. 2000), https://www.researchgate.net/profile/Ernst-Fehr-2/publication/23756527_Fairness_and_Retaliation_The_Economics_of_Reciprocity/links/5eb024e945851592d6b87d3b/Fairness-and-Retaliation-The-Economics-of-Reciprocity.pdf.

1 pictures of his family and included a brief note.¹²⁰ Those people, whom he had never met or
 2 communicated with before, reciprocated, flooding him with holiday cards.¹²¹ The majority of the
 3 responses did not even ask Kunz who he was.¹²² They simply responded to his initial gesture with
 4 a reciprocal action.

5 112. Reciprocity is why Facebook and Snapchat automatically tell a “sender when you
 6 ‘saw’ their message, instead of letting you avoid disclosing whether you read it. As a consequence,
 7 you feel more obligated to respond” immediately.¹²³ That keeps users on the platform longer.
 8 Another tactic, push notifications, make users feel psychologically compelled to return to the
 9 platform.

10 113. A third way defendants manipulate users to keep using or coming back to their
 11 platforms is through the use of IVRs. Slot machines are a frequent example of how IVRs work.¹²⁴
 12 Users pull a lever to win a prize. With each pull, the user may or may not win a prize (*i.e.*, an
 13 intermittent reward that varies in value).

14 114. IVRs work by spacing out dopamine triggering stimuli with dopamine gaps,
 15 allowing for anticipation and craving to develop, which strengthens the desire to engage in the
 16 activity with each release of dopamine.

21 ¹²⁰ Phillip R. Kunz & Michael Woolcott, *Season’s Greetings: From my status to yours*, 5(3) Soc.
 22 Sci. Rsch. 269-78 (Sept. 1976), [https://doi.org/10.1016/0049-089X\(76\)90003-X](https://doi.org/10.1016/0049-089X(76)90003-X).

23 ¹²¹ *Id.*

24 ¹²² *Id.*

25 ¹²³ Von Tristan Harris, *The Slot Machine in Your Pocket*, Spiegel Int’l (July 27, 2016),
 26 <https://www.spiegel.de/international/zeitgeist/smartphone-addiction-is-part-of-the-design-a-1104237.html>.

27 ¹²⁴ See, e.g., Julian Morgans, *The Secret Ways Social Media is Built for Addiction*, Vice (May 17,
 28 2017), <https://www.vice.com/en/article/vv5jkb/the-secret-ways-social-media-is-built-for-addiction>.

115. Defendants bake IVRs into the design and operations of their respective platforms by “link[ing] a user’s action (like pulling a lever) with a variable reward.”¹²⁵ For example, when “we swipe down our finger to scroll the Instagram feed, we’re playing a slot machine to see what photo comes next.”¹²⁶ Facebook also delays the time it takes to load the feed. “This is because without that three-second delay, Instagram wouldn’t feel variable.”¹²⁷ Without that delay, there would be no time for users’ anticipation to build. In slot machine terms, there would be “no sense of *will I win?* because you’d know instantly. So the delay isn’t the app loading. It’s the cogs spinning on the slot machine.”¹²⁸ Each of defendants’ platforms exploits this biochemical reaction among its users, typically using “likes,” “hearts,” or other forms of approval that serve as the reward.

116. Youth are especially vulnerable both to the ways in which defendants manipulate users to maximize their “watch time” and to the resulting harms. Children’s brains undergo a fundamental shift around age 10 that makes “preteens extra sensitive to attention and admiration from others.”¹²⁹ Consequently, defendants’ use of IVRs, reciprocity, and other “rewards” to maximize the time users spend on their platforms exploits a vulnerability unique to youth. This “extra sensitivity” also puts them at greater risk. As Tristan Harris, Google’s former design ethicist acknowledged: “Everyone innately responds to social approval, but some demographics, in particular teenagers, are more vulnerable to it than others.”¹³⁰

¹²⁵ Von Tristan Harris, *The Slot Machine in Your Pocket*, Spiegel Int’l (July 27, 2016), <https://www.spiegel.de/international/zeitgeist/smartphone-addiction-is-part-of-the-design-a-1104237.html>.

¹²⁶ *Id.* (emphasis in original).

¹²⁷ Julian Morgans, *The Secret Ways Social Media is Built for Addiction*, Vice (May 17, 2017), <https://www.vice.com/en/article/vv5jkb/the-secret-ways-social-media-is-built-for-addiction>.

¹²⁸ *Id.* (emphasis in original).

¹²⁹ Zara Abrams, *Why young brains are especially vulnerable to social media*, Am. Psych. Ass’n (Aug. 25, 2022), <https://www.apa.org/news/apa/2022/social-media-children-teens>.

¹³⁰ Von Tristan Harris, *The Slot Machine in Your Pocket*, Spiegel Int’l (July 27, 2016), <https://www.spiegel.de/international/zeitgeist/smartphone-addiction-is-part-of-the-design-a-1104237.html>.

117. In adolescence, the structures of the brain that are “‘closely tied’” to social media activity and that drive instinctual behavior begin to change.¹³¹ The ventral striatum is one of those structures. It receives a rush of dopamine and oxytocin, known as the “‘happy hormones,’” whenever we experience social rewards.¹³² Between the ages of 10 and 12, the receptors for those happy hormones begin to multiply in this region of the brain, which makes compliments on a new hairstyle, laughter from a classmate, or other social rewards “start to feel a lot more satisfying.”¹³³

118. Historically, these biological changes incentivized children and teens to develop healthy social skills and connections. “But arriving at school in a new pair of designer jeans, hoping your crush will smile at you in the hallway, is worlds away from posting a video on TikTok that may get thousands of views and likes,” according to Mitch Prinstein (“Prinstein”), Chief Science Officer for the American Psychology Association.¹³⁴

119. Part of what makes the “interactions so different”¹³⁵ is that they are often permanent and public in nature. There is no public ledger tracking the number of consecutive days you have spoken to someone like there is for Snap “streaks.” Similarly, “[a]fter you walk away from a regular conversation, you don’t know if the other person liked it, or if anyone else liked it.”¹³⁶ Conversely, on defendants’ platforms, children, their friends, and even complete strangers can publicly deliver or withhold social rewards in the form of likes, comments, views, and follows.¹³⁷

120. These social rewards release dopamine and oxytocin in the brains of youth and adults alike; but there are two key differences, as Prinstein explained: “First, adults tend to have a

¹³¹ *Id.*

¹³² *Id.*

¹³³ *Id.*

¹³⁴ Zara Abrams, *Why young brains are especially vulnerable to social media*, Am. Psych. Ass’n (Aug. 25, 2022), <https://www.apa.org/news/apa/2022/social-media-children-teens>.

¹³⁵ *Id.*

¹³⁶ *Id.*

¹³⁷ *Id.*

1 fixed sense of self that relies less on feedback from peers. Second, adults have a more mature
2 prefrontal cortex, an area that can help regulate emotional responses to social rewards.”¹³⁸

3 121. Adolescents, by contrast, are in a “period of personal and social identity formation,”
4 much of which “is now reliant on social media. Due to their limited capacity for self-regulation
5 and their vulnerability to peer pressure,” adolescents “are at greater risk of developing mental
6 disorder.”¹³⁹

7 122. Together, defendants have designed, refined, marketed, and operated their social
8 media platforms to maximize the number of youth who use their platforms and the time they spend
9 on those platforms. Despite knowing that social media inflicts harms on youth, defendants have
10 continued to create more sophisticated versions of their platforms with features designed to keep
11 users engaged and maximize the amount of time they spend using social media. Defendants’
12 conduct in designing and marketing exploitative and manipulative platforms has resulted in youth
13 spending excessive amounts of time on defendants’ platforms.

14 123. Defendants’ efforts have proven wildly successful. The majority of teenagers use
15 the same five social media platforms: YouTube, TikTok, Instagram, Snapchat, and Facebook.¹⁴⁰
16 Each of these platforms individually boasts high numbers of teenage users.

17 **G. Facebook and Instagram Have Substantially Contributed to the**
18 **Youth Mental Health Crisis**

19 **1. The Facebook Platform**

20 124. Facebook is a social networking platform owned by Meta.

22 ¹³⁸ *Id.*

23 ¹³⁹ Betul Keles et al., *A systematic review: the influence of social media on depression, anxiety*
24 *and psychological distress in adolescents*, Int’l J. Adolescence & Youth (Mar. 3, 2019),
25 https://www.researchgate.net/publication/331947590_A_systematic_review_the_influence_of_social_media_on_depression_anxiety_and_psychological_distress_in_adolescents/fulltext/5c94432345851506d7223822/A-systematic-review-the-influence-of-social-media-on-depression-anxiety-and-psychological-distress-in-adolescents.pdf.
26

27 ¹⁴⁰ Emily A. Vogels et al., *Teens, Social Media and Technology 2022*, Pew Rsch. Ctr. (Aug. 10,
28 2022), <https://www.pewresearch.org/internet/2022/08/10/teens-social-media-and-technology-2022/>.

1 125. Facebook was founded in 2004 and has become the largest social network in the
 2 world. As of October 2021, Facebook had approximately 2.9 billion monthly active users,
 3 approximately 2 billion of whom use Facebook every day.¹⁴¹

4 126. When Facebook was founded in 2004, only students at certain colleges and
 5 universities could use the social media platform, and verification of college enrollment was
 6 required to access Facebook.

7 127. In 2005, Facebook expanded and became accessible to students at more universities
 8 around the world, after which Facebook launched a high school version that also required an
 9 invitation to join.

10 128. Facebook later expanded eligibility to employees of several companies, including
 11 Apple and Microsoft, and also added more universities to its network.

12 129. In September 2006, Facebook became available to all internet users. At the time,
 13 Facebook claimed that it was open only to persons aged 13 and older with a valid email address;
 14 however, on information and belief, Facebook did not in fact require verification of a user's age
 15 or identity and did not actually verify users' email addresses, such that underage users could easily
 16 register an account with and access Facebook.

17 130. Facebook then underwent a series of changes aimed at increasing user engagement
 18 and platform growth, without regard to user safety, including the following changes:

- 19 • In 2009, Facebook launched the “like” button;
- 20 • In 2011, Facebook launched Messenger, its direct messaging service, and started
 21 allowing people to subscribe to non-friends;
- 22 • In 2012, Facebook started showing advertisements in its newsfeed and launched a
 23 real-time bidding system through which advertisers could bid on users based on
 their visits to third-party websites;
- 24 • In 2014, Facebook's facial recognition algorithm (DeepFace) reached near-human
 25 accuracy in identifying faces;

26
 27 ¹⁴¹ See *id.*; Stacy Jo Dixon, *Number of Daily Active Facebook Users Worldwide as of 4th Quarter*
 28 *2022 (in Millions)*, Statista (Feb. 13, 2023), <https://www.statista.com/statistics/346167/facebook-global-dau/>.

- In 2015, Facebook made significant changes to its newsfeed algorithm to determine what content to show users and launched its live-streaming service;
- In 2016, Facebook launched games for its social media platform so that users could play games without having to install new apps; and
- In 2017, Facebook launched Facebook Creator, an app for mobile video posts that assists with content creation.

2. The Instagram Platform

131. Instagram is a social media platform that launched in 2010, which Meta acquired for \$1 billion in April 2012.

132. Instagram enables users to share photos and videos with other users and view other users' photos and videos. These photos and videos appear on users' Instagram "feeds," which are virtually bottomless, scrollable lists of content.

133. After being acquired by Meta, Instagram experienced exponential user growth, expanding from approximately ten million monthly active users in September 2012 to more than one billion monthly active users worldwide today, including approximately 160 million users in the United States.¹⁴²

134. Instagram's user growth was driven by design and development changes to the Instagram platform that increased engagement at the expense of the health and well-being of Instagram's users – especially the children using the platform.

135. For example, in August 2020, Instagram began hosting and recommending short videos to users, called Reels.¹⁴³ Like TikTok, Instagram allows users to view an endless feed of Reels that are recommended and curated to users by Instagram's algorithm.

¹⁴² Stacy Jo Dixon, *Number of Instagram Users Worldwide from 2020 to 2025 (in Billions)*, Statista (Feb. 15, 2023), <https://www.statista.com/statistics/183585/instagram-number-of-global-users/>.

¹⁴³ *Introducing Instagram Reels*, Instagram (Aug. 5, 2020), <https://about.instagram.com/blog/announcements/introducing-instagram-reels-announcement>.

136. Instagram has become the most popular photo-sharing social media platform among children in the United States – approximately 72% of children aged 13 to 17 in the United States use Instagram.¹⁴⁴

3. Facebook and Instagram Design and Market Their Platforms to Appeal to a Youth Audience

137. Facebook and Instagram have expended significant effort to attract youth, including teens and preteens, to their platforms, including designing features that appeal to them. They do this to maximize the revenue generated from relationships with advertisers and also because they view teenagers as a way to attract other potential users, such as by using teenagers to recruit parents who want to participate in their children’s lives, as well as younger siblings who look to older siblings as models for which social media platforms to use and how to use them.¹⁴⁵

138. Facebook and Instagram explicitly target teenagers. An internal Instagram marketing plan reveals that it knows “[i]f we lose the teen foothold in the U.S. we lose the pipeline” for growth.¹⁴⁶ To ensure that did not happen, Instagram devoted almost all of its \$390 million annual marketing budget for 2018 to target teenagers.¹⁴⁷

139. Facebook also views preteens or “tweens” as a “valuable but untapped audience,” even contemplating “[e]xploring playdates as a growth lever.”¹⁴⁸ Facebook formed a team to

¹⁴⁴ Katherine Schaeffer, *7 Facts About Americans and Instagram*, Pew Rsch. Ctr. (Oct. 7, 2021), <https://www.pewresearch.org/fact-tank/2021/10/07/7-facts-about-americans-and-instagram/>.

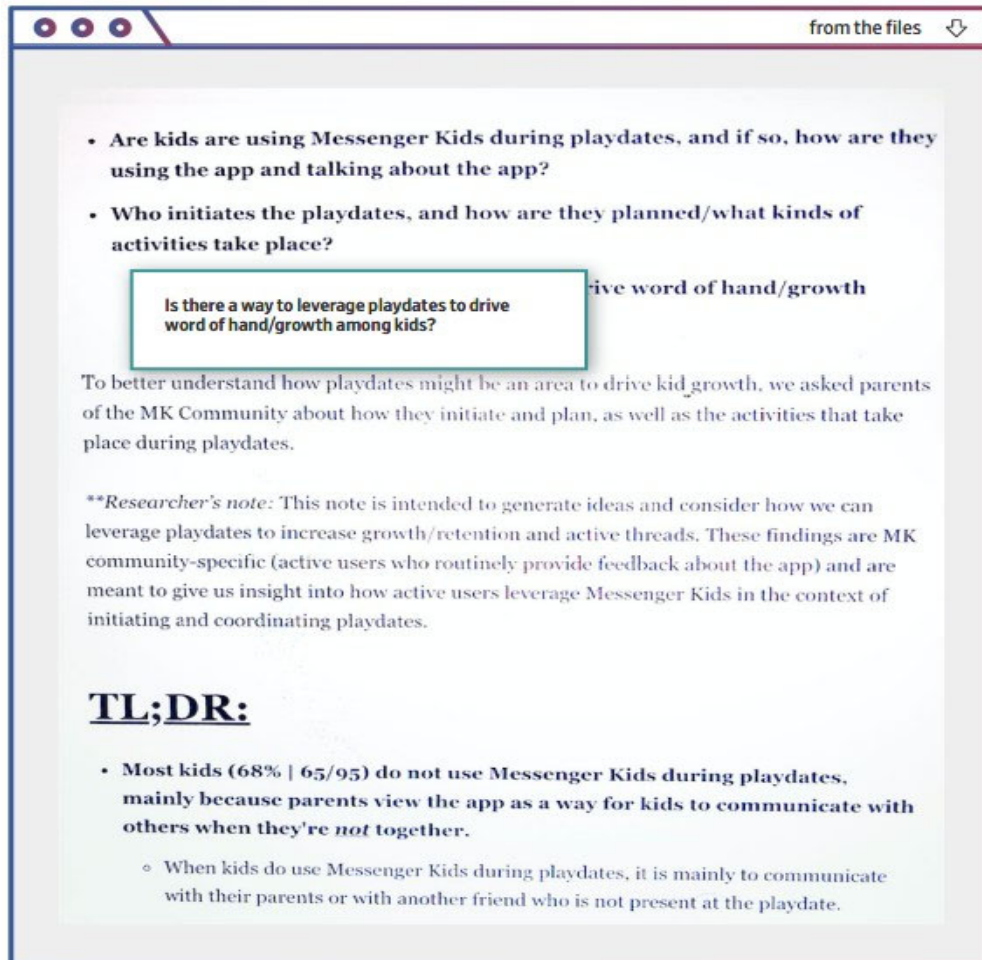
¹⁴⁵ Sheera Frenkel et al., *Instagram Struggles with Fears of Losing Its ‘Pipeline’: Young Users*, N.Y. Times (Oct. 26, 2021), <https://www.nytimes.com/2021/10/16/technology/instagram-teens.html>.

¹⁴⁶ *Id.*

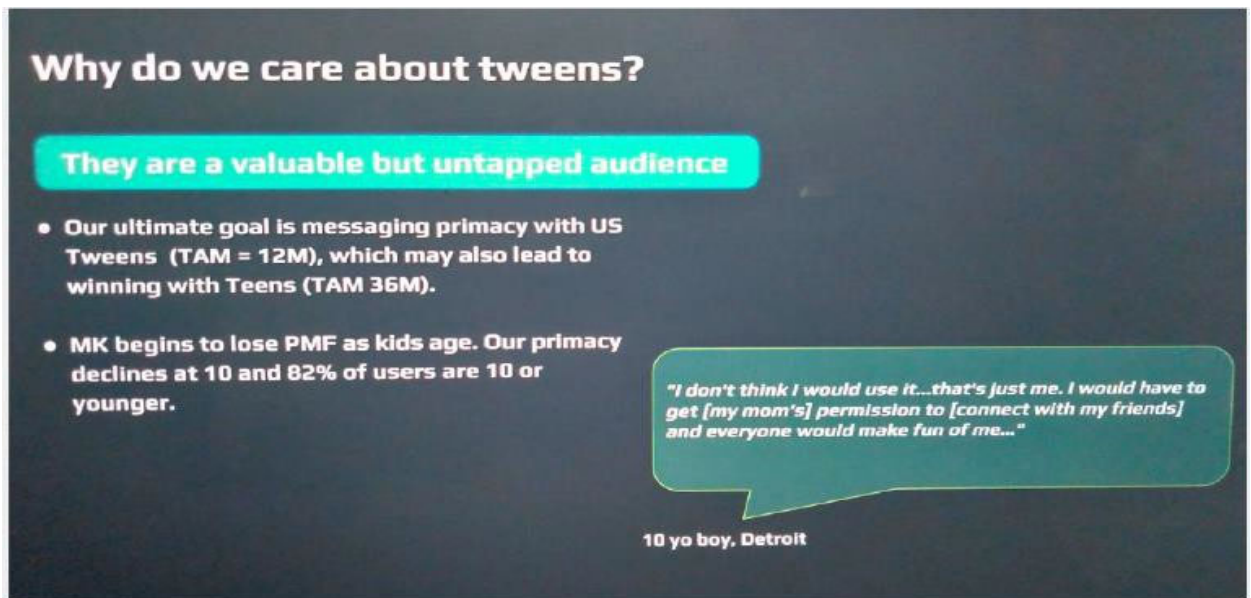
¹⁴⁷ *Id.*

¹⁴⁸ Georgia Wells & Jeff Horwitz, *Facebook’s Effort to Attract Preteens Goes Beyond Instagram Kids, Documents Show; It has investigated how to engage young users in response to competition from Snapchat, TikTok; ‘Exploring playdates as a growth lever,’* Wall St. J. (Sept. 28, 2021), <https://www.wsj.com/articles/facebook-instagram-kids-tweens-attract-11632849667>.

study preteens, endeavored to create more products designed for them, and commissioned strategy papers regarding the “business opportunities” created.¹⁴⁹



¹⁴⁹ *Id.*



140. For these reasons, Facebook and Instagram are designed to be used by children and are actively marketed to children throughout their markets in the United States. Facebook and Instagram both advertise to children through their own efforts, as well as through advertisers that create and target advertisements to children. Internal company documents establish that Facebook spends hundreds of millions of dollars researching, analyzing, and marketing to children to find ways to make its platforms more appealing to these age groups and to maximize the time they spend on its platforms as these age groups are seen as essential to Facebook's long-term profitability and market dominance.¹⁵⁰ For instance, after Instagram's founders left in September 2018, "Facebook went all out to turn Instagram into a main attraction for young audiences" and "began concentrating on the 'teen time spent' data point" in order to "drive up the amount of time that teenagers were on the app with features including Instagram Live, a broadcasting tool, and Instagram TV, where people upload videos that run as long as an hour."¹⁵¹

¹⁵⁰ *Id.*

¹⁵¹ Sheera Frenkel et al., *Instagram Struggles with Fears of Losing Its 'Pipeline': Young Users*, N.Y. Times (Oct. 26, 2021), <https://www.nytimes.com/2021/10/16/technology/instagram-teens.html>.

141. Similarly, Instagram’s popularity among young people is the result of its deliberate efforts to target children, which in turn is driven by the desire of advertisers and marketers to target children on the Facebook and Instagram platforms. In fact, Facebook’s acquisition of Instagram was primarily motivated by its desire to make up for declines in the use of Facebook by children and its view of Instagram as central to its ability to attract and retain young audiences. A 2018 internal Facebook marketing report is indicative of this, lamenting the loss of teenage users to competitors’ platforms as “an existential threat.”¹⁵² In contrast, a Facebook presentation from 2019 indicated that “Instagram is well positioned to resonate and win with young people,” and “[t]here is a path to growth if Instagram can continue their trajectory.”¹⁵³

142. With respect to preteens, Facebook’s policy is that they cannot register an account on either Facebook or Instagram, but it knowingly lacks effective age-verification protocols. Since at least 2011, Facebook has known that its age-verification protocols are largely inadequate, estimating at that time that it removed 20,000 children under age 13 from Facebook every day.¹⁵⁴ In 2021, Adam Mosseri, the executive in charge of Instagram, acknowledged users under 13 can still “lie about [their] age now” to register an account.¹⁵⁵

143. Facebook has yet to implement protocols to verify a user’s age, presumably because it has strong business incentives not to do so or to laxly enforce its policy. Facebook also has agreements with cell phone manufacturers and/or providers and/or retailers, who often preinstall its platforms on mobile devices prior to sale without regard to the age of the intended user of each

¹⁵² *Id.*

¹⁵³ Georgia Wells et al., *Facebook Knows Instagram Is Toxic for Teen Girls, Company Documents Show; Its own in-depth research shows a significant teen mental-health issue that Facebook plays down in public*, Wall St. J. (Sept. 14, 2021), <https://www.wsj.com/articles/facebook-knows-instagram-is-toxic-for-teen-girls-company-documents-show-11631620739>.

¹⁵⁴ Austin Carr, *Facebook Booting “20,000” Underage Users Per Day: Reaction to Growing Privacy Concerns?*, Fast Co. (Mar. 22, 2011), <https://www.fastcompany.com/1741875/facebook-booting-20000-underage-users-day-reaction-growing-privacy-concerns>.

¹⁵⁵ Georgia Wells & Jeff Horwitz, *Facebook’s Effort to Attract Preteens Goes Beyond Instagram Kids, Documents Show; It has investigated how to engage young users in response to competition from Snapchat, TikTok; ‘Exploring playdates as a growth lever,’* Wall St. J. (Sept. 28, 2021), <https://www.wsj.com/articles/facebook-instagram-kids-tweens-attract-11632849667>.

1 such device. That is, even though Facebook is prohibited from providing its platforms to users
 2 under the age of 13, Facebook actively promotes and provides underage users access to its
 3 platforms by encouraging and allowing cell phone manufacturers to preinstall the platforms on
 4 mobile devices indiscriminately. Consequently, in a recent Pew Research study, approximately
 5 11% of United States parents of children between the ages of 9 and 11 said their children used
 6 Instagram in 2020¹⁵⁶ despite Facebook claiming to remove approximately 600,000 underage users
 7 per quarter.¹⁵⁷

8 144. Facebook's efforts to attract young users have been successful. In a recent study,
 9 62% of children aged 13 to 17 reported they have used Instagram's app, and 32% of children aged
 10 13 to 17 reported they have used Facebook's app or website.¹⁵⁸

11 **4. Facebook and Instagram Intentionally Design Exploitative**
 12 **Features Aimed at Keeping Users on the Platforms for as Long**
as Possible

13 145. The Facebook platforms are designed to maximize user engagement, using features
 14 that exploit the natural human desire for social interaction and the neurophysiology of the brain's
 15 reward systems to keep users endlessly scrolling, posting, "liking," commenting, and counting the
 16 number of "likes" and comments to their own posts. The developing brains of children are
 17 particularly vulnerable to such exploitation.

18 146. One of the ways in which Facebook and Instagram employ IVRs is through its push
 19 notifications and emails, which encourage habitual use and are designed to prompt users to open
 20 and be exposed to content selected to maximize the use of the Facebook platforms and the ads run
 21 on them. In particular, Facebook and Instagram space out notifications of likes and comments into

22 _____
 23 ¹⁵⁶ Brooke Auxier et al., *Parenting Children in the Age of Screens*, Pew Rsch. Ctr. (July 28, 2020),
 24 <https://www.pewresearch.org/internet/2020/07/28/childrens-engagement-with-digital-devices-screen-time/>.

25 ¹⁵⁷ Georgia Wells & Jeff Horwitz, *Facebook's Effort to Attract Preteens Goes Beyond Instagram*
 26 *Kids, Documents Show; It has investigated how to engage young users in response to competition*
 from Snapchat, TikTok; 'Exploring playdates as a growth lever,' Wall St. J. (Sept. 28, 2021),
 27 <https://www.wsj.com/articles/facebook-instagram-kids-tweens-attract-11632849667>.

28 ¹⁵⁸ Heather Kelly, *Teens have fled Facebook but are loyal to YouTube, poll shows*, Wash. Post
 (Aug. 10, 2022), <https://www.washingtonpost.com/technology/2022/08/10/teens-social-pew/>.

1 multiple bursts rather than notifying users in real time so as to create dopamine gaps that leave
2 users craving in anticipation for more. In this regard, Facebook’s push notifications and emails
3 are specifically designed to manipulate users into reengaging with the Facebook platforms to
4 increase user engagement regardless of a user’s health or well-being.

5 147. Facebook also exploits IVRs to manipulate users with one of its most defining
6 features: the “Like” button. Facebook knows “Likes” are a source of social comparison harm for
7 many users as detailed below. Several Facebook employees involved in creating the Like button
8 have since left Facebook and have spoken publicly about the manipulative nature of the Facebook
9 platforms and the harm they cause users.¹⁵⁹

10 148. Additionally, Facebook designed other features of its platforms on principles of
11 IVRs, such as posts, comments, tagging, and the “pull to refresh” feature (which is similar to the
12 way that slot machines work).

13 149. Other design decisions were motivated by reciprocity, such as the use of visual cues
14 to reflect that someone is currently writing a message (a feature designed to keep a user on the
15 platform until they receive the message) and alerting users when a recipient has read their message
16 (which encourages the recipient to respond and return to the platform to check for a response).

17 150. Facebook and Instagram are designed to encourage users to post content and to like,
18 comment, and interact with other users’ posts. Each new post that appears on a user’s feed
19 functions as a dopamine-producing social interaction in the user’s brain. Similarly, likes,
20 comments, and other interactions with users’ posts function as an even stronger dopamine-
21 producing stimulus than does seeing new posts from other users. This in turn drives users to
22 generate content they expect will generate many likes and comments. In this regard, Facebook
23 has designed its platforms to function in concert as popular content posted by other users

24
25
26
27 ¹⁵⁹ See, e.g., Paul Lewis, *‘Our minds can be hijacked’: the tech insiders who fear a smartphone*
28 *dystopia*, Guardian (Oct. 6, 2017), <https://www.theguardian.com/technology/2017/oct/05/smartphone-addiction-silicon-valley-dystopia>.

1 psychologically compels users to post similar content themselves, trapping users – especially youth
 2 – in endless cycles of ““little dopamine loops.””¹⁶⁰

3 **5. Facebook’s and Instagram’s Algorithms Are Manipulative and** 4 **Harmful**

5 151. Facebook and Instagram also employ advanced computer algorithms and AI to
 6 make the platforms as engaging and habit forming as possible for users. For example, Facebook
 7 and Instagram display curated content and employ recommendations that are customized to each
 8 user by using sophisticated algorithms. The proprietary services developed through such
 9 algorithms include Facebook’s Feed (a newsfeed of stories and posts published on the platform,
 10 some of which are posted by connections and others that are suggested by Facebook’s algorithms),
 11 People You May Know (algorithm-based suggestions of persons with common connections or
 12 background), Suggested for You, Groups You Should Join, and Discover (algorithm-based
 13 recommendations of groups). Such algorithm-based content and recommendations are pushed to
 14 each user in a steady stream as the user navigates the platform, as well as through notifications
 15 sent to the user’s smartphone and email addresses when the user is disengaged with the platform.

16 152. These algorithms are not based exclusively on user requests or even user inputs.
 17 The algorithms combine information entered or posted by the user on the platform with the user’s
 18 demographics and other data points collected and synthesized by Facebook, make assumptions
 19 about that user’s interests and preferences, make predictions about what else might appeal to the
 20 user, and then make very specific recommendations of posts and pages to view and groups to visit
 21 and join based on rankings that will optimize Facebook’s key performance indicators. In this
 22 regard, Facebook’s design dictates the way content is presented, such as its ranking and
 23 prioritization.¹⁶¹

24
 25 ¹⁶⁰ Allison Slater Tate, *Facebook whistleblower Frances Haugen says parents make 1 big mistake*
 26 *with social media*, Today (Feb. 7, 2022), <https://www.today.com/parents/teens/facebook-whistleblower-frances-haugen-rcna15256>.

27 ¹⁶¹ See, e.g., Adam Mosseri, *Shedding More Light on How Instagram Works*, Instagram (June 8,
 28 2021), <https://about.instagram.com/blog/announcements/shedding-more-light-on-how-instagram-works>.

153. Facebook's and Instagram's current use of algorithms in their platforms is driven and designed to maximize user engagement. Over time, Facebook and Instagram have gradually transitioned away from chronological ranking, which organized the interfaces according to when content was posted or sent, to prioritize Meaningful Social Interactions ("MSI"), which emphasizes users' connections and interactions such as likes and comments and gives greater significance to the interactions of connections that appeared to be the closest to users. Facebook thus developed and employed an "amplification algorithm" to execute engagement-based ranking, which considers a post's likes, shares, and comments, as well as a respective user's past interactions with similar content, and exhibits the post in the user's newsfeed if it otherwise meets certain benchmarks.

154. Facebook's algorithms covertly operate on the principle that intense reactions invariably compel attention. Because these algorithms measure reactions and contemporaneously immerse users in the most reactive content, these algorithms effectively work to steer users toward the most negative content because negative content routinely elicits passionate reactions.

155. Due to its focus on user engagement, Facebook's algorithms promote content that is objectionable and harmful to many users. As set forth in greater detail below, Facebook was well aware of the harmful content it was promoting but failed to change its algorithms because the inflammatory content its algorithms were feeding to users fueled their return to the platforms and led to more engagement, which in turn helped Facebook and Instagram sell more advertisements that generate most of their revenue. As such, Facebook's algorithms promote harmful content because such content increases user engagement, which thereby increases its appeal to advertisers and increases its overall value and profitability.

156. Facebook's and Instagram's shift from chronological ranking to algorithm-driven content and recommendations has changed the platforms in ways that are profoundly dangerous and harmful to children, whose psychological susceptibility to habit-forming platforms put them at great risk of harm from the platforms' exploitative and harmful features. In this regard, the algorithms used by these platforms exploit child users' diminished decision-making capacity, impulse control, emotional maturity, and psychological resiliency caused by users' incomplete

1 brain development, and Facebook and Instagram specifically design their platforms with these
2 vulnerabilities in mind.

3 **6. Facebook and Instagram “Feeds” Are Designed to Enable** 4 **Users to Scroll Endlessly**

5 157. Both Facebook and Instagram show each user a “feed” that is generated by an
6 algorithm for that user, which consists of a series of photos and videos posted by accounts that the
7 user follows, along with advertising and content specifically selected and promoted by the
8 company.

9 158. These feeds are virtually bottomless lists of content that enable users to scroll
10 endlessly without any natural end points that would otherwise encourage them to move on to other
11 activities. In this regard, “[u]nlike a magazine, television show, or video game,” the Facebook and
12 Instagram platforms only rarely prompt their users to take a break by using ““stopping cues.””¹⁶²
13 The “bottomless scrolling” feature is designed to encourages users to use its platforms for
14 unlimited periods of time.

15 159. Facebook and Instagram also exert control over a user’s feed through certain
16 ranking mechanisms, escalation loops, and promotion of advertising and content specifically
17 selected and promoted based on, among other things, its ongoing planning, assessment, and
18 prioritization of the types of information most likely to increase user engagement.

19 160. As described above, the algorithms generating a user’s feed encourage excessive
20 use and promote harmful content, particularly where the algorithm is designed to prioritize the
21 number of interactions rather than the quality of interactions.

22 161. In this regard, Facebook and Instagram use private information of their child users
23 to “precisely target [them] with content and recommendations, assessing . . . what will provoke a
24 reaction,” including encouragement of “destructive and dangerous behaviors,” which is how they
25

26 ¹⁶² See Zara Abrams, *How can we minimize Instagram’s harmful effects?; Psychologists’ research*
27 *has shown that Instagram use is associated both with beneficial and detrimental effects –*
28 *depending on how it’s used*, Am. Psych. Ass’n (Dec. 2, 2021),
<https://www.apa.org/monitor/2022/03/feature-minimize-instagram-effects>.

1 “can push teens into darker and darker places.”¹⁶³ As such, Facebook’s “amplification algorithms,
 2 things like engagement based ranking . . . can lead children . . . all the way from just something
 3 innocent like healthy recipes to anorexia promoting content over a very short period of time.”¹⁶⁴
 4 Facebook and Instagram thus specifically select and push this harmful content on their platforms,
 5 for which they are then paid, and do so both for direct profit and also to increase user engagement,
 6 resulting in additional profits down the road.

7 162. As one example, in 2021, Senators Richard Blumenthal, Marsha Blackburn, and
 8 Mike Lee tested and confirmed the fact that the Facebook and Instagram platforms’
 9 recommendation-based feeds and features promote harmful content by opening test accounts
 10 purporting to be teenage girls. Senator Blumenthal stated: “‘Within an hour all of our
 11 recommendations promoted pro-anorexia and eating disorder content.’”¹⁶⁵ Likewise, Senator Lee
 12 found that an account for a fake 13-year-old girl was quickly “flooded with content about diets,
 13 plastic surgery and other damaging material for an adolescent girl.”¹⁶⁶

14 163. Instagram features a feed of “Stories,” which are short-lived photo or video posts
 15 that are accessible only for 24 hours. This feature encourages constant, repeated, and compulsive
 16 use of Instagram so that users do not miss out on content before it disappears. As with other feeds,
 17 the presentation of content in a user’s Stories is generated by an algorithm designed by Instagram
 18 to maximize the amount of time a user spends on the app.

19 164. Instagram also features a feed called “Explore,” which displays content posted by
 20 users not previously “followed.” The content in “Explore” is selected and presented by an
 21

22 ¹⁶³ See *Facebook Whistleblower Frances Haugen Testifies on Children & Social Media Use: Full*
 23 *Senate Hearing Transcript* at 09:02 Rev (Oct. 5, 2021), [https://www.rev.com](https://www.rev.com/blog/transcripts/facebook-whistleblower-frances-haugen-testifies-on-children-social-media-use-full-senate-hearing-transcript)
 24 [/blog/transcripts/facebook-whistleblower-frances-haugen-testifies-on-children-social-media-use-](https://www.rev.com/blog/transcripts/facebook-whistleblower-frances-haugen-testifies-on-children-social-media-use-full-senate-hearing-transcript)
[full-senate-hearing-transcript](https://www.rev.com/blog/transcripts/facebook-whistleblower-frances-haugen-testifies-on-children-social-media-use-full-senate-hearing-transcript) (statement by Chairman Richard Blumenthal).

25 ¹⁶⁴ *Id.* at 37:34 (statement by Frances Haugen (“Haugen”)).

26 ¹⁶⁵ Vanessa Romo, *4 takeaways from senators’ grilling of Instagram’s CEO about kids and safety*,
 27 NPR (Dec. 8, 2021), [https://www.npr.org/2021/12/08/1062576576/instagrams-ceo-adam-](https://www.npr.org/2021/12/08/1062576576/instagrams-ceo-adam-mosseri-hears-senators-brush-aside-his-promises-to-self-poli)
[mosseri-hears-senators-brush-aside-his-promises-to-self-poli](https://www.npr.org/2021/12/08/1062576576/instagrams-ceo-adam-mosseri-hears-senators-brush-aside-his-promises-to-self-poli).

28 ¹⁶⁶ *Id.*

1 algorithm designed to maximize the amount of time a user spends on the app. As with other feeds,
 2 the Explore feature may be scrolled endlessly; and its algorithm will continually generate new
 3 recommendations, encouraging users to use the app for unlimited periods of time.

4 165. Instagram also features a feed called “Reels,” which presents short video posts by
 5 users not previously followed. These videos play automatically, without input from the user,
 6 encouraging the user to stay on the app for indefinite periods of time. As with other feeds, Reels
 7 content is selected and presented by an algorithm designed to maximize the amount of time a user
 8 spends on the app.

9 **7. For Years, Facebook and Instagram Have Been Aware that**
 10 **Their Platforms Harm Children**

11 166. Social media platforms like Facebook – and Instagram in particular – can cause
 12 serious harm to the mental and physical health of children. Moreover, this capacity for harm is by
 13 design – what makes these platforms profitable is precisely what harms its young users.

14 167. In an internal slide presentation in 2019, Facebook’s own researchers studying
 15 Instagram’s effects on children concluded: “We make body image issues worse for one in three
 16 teen girls.”¹⁶⁷ This presentation was one of many documents leaked by former employee Haugen
 17 to journalists at *The Wall Street Journal* and federal regulators in 2021.¹⁶⁸ *The Wall Street*
 18 *Journal*’s reporting on the documents began in September 2021 and caused a national and
 19 international uproar.
 20
 21

22 ¹⁶⁷ Georgia Wells et al., *Facebook Knows Instagram Is Toxic for Teen Girls, Company Documents*
 23 *Show; Its own in-depth research shows a significant teen mental-health issue that Facebook plays*
down in public, Wall St. J. (Sept. 14, 2021), [https://www.wsj.com/articles/facebook-knows-](https://www.wsj.com/articles/facebook-knows-instagram-is-toxic-for-teen-girls-company-documents-show-11631620739)
[instagram-is-toxic-for-teen-girls-company-](https://www.wsj.com/articles/facebook-knows-instagram-is-toxic-for-teen-girls-company-documents-show-11631620739) documents-show-11631620739.

24 ¹⁶⁸ *The Wall Street Journal* and *Digital Wellbeing* published several of these documents in
 25 November 2021. See, e.g., Paul Marsden, *The ‘Facebook Files’ on Instagram harms – all leaked*
 26 *slides on a single page*, Digit. Wellbeing (Oct. 20, 2021), [https://digitalwellbeing.org/the-](https://digitalwellbeing.org/the-facebook-files-on-instagram-harms-all-leaked-slides-on-a-single-page/)
 27 [facebook-files-on-instagram-harms-all-leaked-slides-on-a-single-page/](https://digitalwellbeing.org/the-facebook-files-on-instagram-harms-all-leaked-slides-on-a-single-page/). Gizmodo also started
 28 publishing these documents in November 2021. See Dell Cameron et al., *Read the Facebook*
Papers for Yourself; Hundreds of internal documents formed the basis of dozen of news stories.
They have not been made public. Until now, Gizmodo (Feb. 14, 2023),
<https://gizmodo.com/facebook-papers-how-to-read-1848702919>.

1 168. Upon information and belief, at least as far back as 2019, Facebook initiated a
 2 Proactive Incident Response experiment, which began researching the effect of Facebook and
 3 Instagram on the mental health of today’s children.¹⁶⁹ Facebook’s own in-depth analyses show
 4 significant mental-health issues stemming from the use of Instagram among teenage girls, many
 5 of whom linked suicidal thoughts and eating disorders to their experiences on the app.¹⁷⁰ In this
 6 regard, the companies’ own researchers have repeatedly found that Instagram is harmful for a
 7 sizable percentage of teens who use the platform.¹⁷¹

8 169. In particular, the researchers found that “[s]ocial comparison,” or peoples’
 9 assessment of their own value relative to that of others, is “worse on Instagram” for teens than
 10 on other social media platforms.¹⁷² One in five teens reported that Instagram makes “them feel
 11 worse about themselves.”¹⁷³ Roughly two in five teen users reported feeling “unattractive,”
 12 while one in ten teen users reporting suicidal thoughts traced them to Instagram.¹⁷⁴ Teens
 13 “consistently” and without prompting blamed Instagram “for increases in the rate of anxiety and
 14 depression.”¹⁷⁵ Although teenagers identify Instagram as a source of psychological harm, they
 15 often lack the self-control to use Instagram less. Also, according to their own researchers, young
 16 users are not capable of controlling their Instagram use to protect their own health.¹⁷⁶ Such users

17
 18
 19 ¹⁶⁹ See *Facebook Whistleblower Testifies on Protecting Children Online*, C-SPAN (Oct. 5, 2021),
 20 <https://www.c-span.org/video/?515042-1/whistleblower-frances-haugen-calls-congress-regulate-facebook>.

21 ¹⁷⁰ See Georgia Wells et al., *Facebook Knows Instagram Is Toxic for Teen Girls, Company*
 22 *Documents Show*, Wall St. J. (Sept. 14, 2021), <https://www.wsj.com/articles/facebook-knows-instagram-is-toxic-for-teen-girls-company-documents-show-11631620739>.

23 ¹⁷¹ *Id.*

24 ¹⁷² *Id.*

25 ¹⁷³ *Id.*

26 ¹⁷⁴ *Id.*

27 ¹⁷⁵ *Id.*

28 ¹⁷⁶ *Id.*

1 “often feel “addicted” and know that what they’re seeing is bad for their mental health but feel
2 unable to stop themselves.”¹⁷⁷

3 170. Similarly, in a March 2020 presentation posted to Facebook’s internal message
4 board, researchers found that “[t]hirty-two percent of teen girls said that when they felt bad about
5 their bodies, Instagram made them feel worse.”¹⁷⁸ Sixty-six percent of teen girls and 40% of teen
6 boys have experienced negative social comparison harms on Instagram.¹⁷⁹ Further, approximately
7 13% of teen girl Instagram users say the platform makes thoughts of “suicide and self harm” worse,
8 and 17% of teen girl Instagram users say the platform makes “[e]ating issues” worse.¹⁸⁰ Internal
9 researchers also acknowledged that “[m]ental health outcomes” related to the use of Instagram
10 “can be severe,” including: (i) “Body Dissatisfaction”; (ii) “Body Dysmorphia”; (iii) “Eating
11 Disorders”; (iv) “Loneliness”; and (v) “Depression.”¹⁸¹

12 171. Not only is Facebook aware of the harmful nature of the Facebook and Instagram
13 platforms, the leaked documents reveal that Facebook is aware of the specific design features that
14 lead to excessive use and harm to children. For instance, Facebook and Instagram know that

15 ¹⁷⁷ *Id.*

16 ¹⁷⁸ *Id.*; see also *Teen Girls Body Image and Social Comparison on Instagram – An Exploratory*
17 *Study in the U.S.*, Wall St. J. (Sept. 29, 2021), [https://digitalwellbeing.org/wp-content/](https://digitalwellbeing.org/wp-content/uploads/2021/10/Facebook-Files-Teen-Girls-Body-Image-and-Social-Comparison-on-Instagram.pdf)
18 [uploads/2021/10/Facebook-Files-Teen-Girls-Body-Image-and-Social-Comparison-on-](https://digitalwellbeing.org/wp-content/uploads/2021/10/Facebook-Files-Teen-Girls-Body-Image-and-Social-Comparison-on-Instagram.pdf)
19 [Instagram.pdf](https://digitalwellbeing.org/wp-content/uploads/2021/10/Facebook-Files-Teen-Girls-Body-Image-and-Social-Comparison-on-Instagram.pdf); *Hard Life Moments-Mental Health Deep Dive* at 14, Facebook (Nov. 2019),
20 [https://about.fb.com/wp-content/uploads/2021/09/Instagram-Teen-Annotated-Research-Deck-](https://about.fb.com/wp-content/uploads/2021/09/Instagram-Teen-Annotated-Research-Deck-1.pdf)
21 [1.pdf](https://about.fb.com/wp-content/uploads/2021/09/Instagram-Teen-Annotated-Research-Deck-1.pdf); Paul Marsden, *The ‘Facebook Files’ on Instagram harms – all leaked slides on a single*
22 *page* at slide 14, Digit. Wellbeing (Oct. 20, 2021), [https://digitalwellbeing.org/the-facebook-files-](https://digitalwellbeing.org/the-facebook-files-on-instagram-harms-all-leaked-slides-on-a-single-page)
23 [on-instagram-harms-all-leaked-slides-on-a-single-page](https://digitalwellbeing.org/the-facebook-files-on-instagram-harms-all-leaked-slides-on-a-single-page) (hard life moment – mental health deep
24 dive).

25 ¹⁷⁹ *Teen Girls Body Image and Social Comparison on Instagram – An Exploratory Study in the*
26 *U.S.* at 9, Wall St. J. (Sept. 29, 2021), [https://digitalwellbeing.org/wp-content/uploads/](https://digitalwellbeing.org/wp-content/uploads/2021/10/Facebook-Files-Teen-Girls-Body-Image-and-Social-Comparison-on-Instagram.pdf)
27 [2021/10/Facebook-Files-Teen-Girls-Body-Image-and-Social-Comparison-on-Instagram.pdf](https://digitalwellbeing.org/wp-content/uploads/2021/10/Facebook-Files-Teen-Girls-Body-Image-and-Social-Comparison-on-Instagram.pdf).

28 ¹⁸⁰ *Hard Life Moments-Mental Health Deep Dive* at 14, Facebook (Nov. 2019),
[https://about.fb.com/wp-content/uploads/2021/09/Instagram-Teen-Annotated-Research-Deck-](https://about.fb.com/wp-content/uploads/2021/09/Instagram-Teen-Annotated-Research-Deck-1.pdf)
[1.pdf](https://about.fb.com/wp-content/uploads/2021/09/Instagram-Teen-Annotated-Research-Deck-1.pdf); Paul Marsden, *The Facebook Files’ on Instagram harms – all leaked slides on a single page*
at slide 14, Digit. Wellbeing (Oct. 20, 2021), [https://digitalwellbeing.org/the-facebook-files-on-](https://digitalwellbeing.org/the-facebook-files-on-instagram-harms-all-leaked-slides-on-a-single-page)
[instagram-harms-all-leaked-slides-on-a-single-page](https://digitalwellbeing.org/the-facebook-files-on-instagram-harms-all-leaked-slides-on-a-single-page).

¹⁸¹ *Teen Girls Body Image and Social Comparison on Instagram – An Exploratory Study in the*
U.S. at 34, Wall St. J. (Sept. 29, 2021), [https://digitalwellbeing.org/wp-content/uploads/2021](https://digitalwellbeing.org/wp-content/uploads/2021/10/Facebook-Files-Teen-Girls-Body-Image-and-Social-Comparison-on-Instagram.pdf)
[/10/Facebook-Files-Teen-Girls-Body-Image-and-Social-Comparison-on-Instagram.pdf](https://digitalwellbeing.org/wp-content/uploads/2021/10/Facebook-Files-Teen-Girls-Body-Image-and-Social-Comparison-on-Instagram.pdf).

Instagram’s Explore, Feed, and Stories features contribute to social comparison harms “in different ways.”¹⁸² Moreover, specific “[a]spects of Instagram exacerbate each other to create a perfect storm” of harm to users, and the “[s]ocial [c]omparison [s]weet [s]pot” – a place of considerable harm to users, particularly teenagers and teen girls – lies at the center of Meta’s model and platforms’ features.¹⁸³ Internal researchers wrote that “social comparison and perfectionism are nothing new, but young people are dealing with this on an unprecedented scale” and “constant comparison on Instagram is contributing to higher levels of anxiety and depression.”¹⁸⁴

H. YouTube’s Social Media Platform Has Substantially Contributed to the Youth Mental Health Crisis

172. YouTube is a platform where users can post, share, view, and comment on videos related to a vast range of topics. The platform became available publicly in December 2005 and was acquired by Google in 2006.

173. YouTube reports that it has over 2 billion monthly logged-in users.¹⁸⁵ Even more people use YouTube each month because consumers do not have to register an account to view a video on YouTube. As a result, anyone can view most content on YouTube regardless of age.

174. Users, whether logged in or not, watch *billions of hours of videos every day*.¹⁸⁶

175. Users with accounts can post their own videos, comment on others, and since 2010, express their approval of videos through “likes.”¹⁸⁷

¹⁸² *Id.* at 31.

¹⁸³ *Id.* at 33.

¹⁸⁴ See *The Facebook Files, Part 2: ‘We Make Body Image Issues Worse,’* Wall St. J. (Sept. 14, 2021), <https://www.wsj.com/podcasts/the-journal/the-facebook-files-part-2-we-make-body-image-issues-worse/c2c4d7ba-f261-4343-8d18-d4de177cf973>.

¹⁸⁵ *YouTube for Press*, YouTube, <https://blog.youtube/press/> (last visited Feb. 27, 2023).

¹⁸⁶ *Id.*

¹⁸⁷ Josh Lowensohn, *YouTube’s big redesign goes live to everyone*, CNET (Mar. 31, 2010), <https://www.cnet.com/culture/youtubes-big-redesign-goes-live-to-everyone/>.

176. Beginning in 2008 and through today, YouTube has recommended videos to users.¹⁸⁸ Early on, the videos YouTube recommended to users were the most popular videos across the platform.¹⁸⁹ YouTube admits “[n]ot a lot of people watched those videos,” at least not based on its recommendation.¹⁹⁰

177. Since then, YouTube has designed and refined its recommendation system using machine-learning algorithms that today take into account a user’s “likes,” time spent watching a video, and other behaviors to tailor its recommendations to each user.¹⁹¹

178. YouTube automatically plays those recommendations for a user after they finish watching a video. This feature, known as “autoplay,” was implemented in 2015. YouTube turns the feature on by default, which means videos automatically and continuously play for users unless they turn it off.¹⁹²

179. YouTube purports to disable by default its autoplay feature for users aged 13 to 17.¹⁹³ However, as mentioned above, YouTube does not require users to log in or even have an account to watch videos. For them or anyone who does not self-report an age between 13 and 17, YouTube defaults to automatically playing the videos its algorithm recommends to the user.

¹⁸⁸ Cristos Goodrow, *On YouTube’s recommendation system*, YouTube (Sept. 15, 2021), <https://blog.youtube/inside-youtube/on-youtubes-recommendation-system/>.

¹⁸⁹ *Id.*

¹⁹⁰ *Id.*

¹⁹¹ *Id.*

¹⁹² *Autoplay videos*, YouTube Help, <https://support.google.com/youtube/answer/6327615?hl=en#:~:text=For%20users%20aged%2013%2D17,turned%20off%20Autoplay%20for%20you> (last visited Feb. 27, 2023).

¹⁹³ *Id.*

180. The primary way YouTube makes money is through advertising. It made \$19 billion in advertising revenue in 2021 alone.¹⁹⁴ Consequently, Google has designed YouTube to maximize user engagement, predominantly through the amount of time users spend watching videos.

182. “[T]he best way to keep eyes on the site,” YouTube realized, was “recommending videos, alongside a clip or after one was finished.”¹⁹⁶ That is what led to the development of its recommendation algorithm and autoplay feature described above.

184. However, YouTube has not implemented even rudimentary protocols to verify the age of users. Anyone can watch a video on YouTube without registering an account or reporting their age.

185. Instead, YouTube leveraged its popularity among youth to increase its revenue from advertisements by marketing its platform to popular brands of children’s products. For example, Google pitched Mattel, the maker of Barbie and other popular children’s toys, by telling its executives: “YouTube is today’s leader in reaching children age 6-11 against top TV

¹⁹⁵ Mark Bergen, *YouTube Executive Ignores Warnings, Letting Toxic Videos Run Rampant*, Bloomberg (Apr. 2, 2019), <https://www.bloomberg.com/news/features/2019-04-02/youtube-executives-ignored-warnings-letting-toxic-videos-run-rampant?leadSource=uverify%20wall>.

COMPLAINT FOR VIOLATIONS OF: (1) PENNSYLVANIA PUBLIC NUISANCE LAW; AND (2) PENNSYLVANIA UNFAIR TRADE PRACTICES AND CONSUMER PROTECTION ACT

channels.”¹⁹⁷ When presenting to Hasbro, the maker of Play-Doh, My Little Pony, and other children’s toys, Google touted: “YouTube is unanimously voted as the favorite website of kids 2-12” and “93% of tweens visit YouTube to watch videos.”¹⁹⁸ In a different presentation to Hasbro, YouTube was referred to as “[t]he new ‘Saturday Morning Cartoons’” and claimed YouTube was the “#1 website regularly visited by kids” and “the #1 source where children discover new toys + games.”¹⁹⁹

186. In addition to turning a blind eye toward underage users of its platform, YouTube developed and marketed a version of YouTube specifically for children under the age of 13.

187. YouTube’s efforts to attract young users have been successful. A vast majority, 95%, of children aged 13 to 17 have used YouTube.²⁰⁰

2. YouTube Intentionally Designs Features to Keep Its Users on Its Platform for as Long as Possible

188. Google employs design features and complex algorithms to create a never-ending stream of videos intended to grip users’ attention.

189. Like the other defendants’ social media platforms, Google developed features that exploit psychological phenomena such as IVRs to maximize the time users spend on YouTube.

190. YouTube uses design elements that operate on principles of IVRs to drive both YouTube content creators and YouTube viewers into habitual, excessive use. Google designed YouTube to allow users to like, comment, and share videos and to subscribe to content creators’ channels. These features serve as rewards for users who create and upload videos to YouTube. As described above, receiving a like indicates others’ approval and activates the reward region of

¹⁹⁷ Complaint for Permanent Injunction, Civil Penalties, and Other Equitable Relief, Exhibits A-C, *FTC v. Google LLC et al.*, No. 1-19-cv-02642-BAH, ECF 1-1 (D.D.C. Sept. 4, 2019).

¹⁹⁸ *Id.*

¹⁹⁹ *Id.*

²⁰⁰ *Id.*

the brain.²⁰¹ The use of likes therefore encourages users to use YouTube over and over, seeking future pleasurable experiences.

191. YouTube also uses IVRs to encourage users to view others' content. One of the ways Google employs IVRs into YouTube's design is through subscriber push notifications and emails, which are designed to prompt users to watch YouTube content and encourages excessive use of the platform. When a user "subscribe[s]" to another user's channel, the subscriber receives notifications every time that user uploads new content, prompting the subscriber to open YouTube and watch the video.²⁰²

192. One of YouTube's defining features is its panel of recommended videos. YouTube recommends videos to users on both the YouTube home page and on every individual video page in an "Up Next" panel.²⁰³ This list automatically populates next to the video a user is currently watching. This recommended video list is a never-ending feed of videos intended to keep users on the app watching videos without having to affirmatively click or search for other videos. This constant video stream, comprised of videos recommended by YouTube's algorithms, is the primary way Google increases the time users spend on YouTube.

3. YouTube's Algorithms Are Manipulative and Harmful, Especially to a Youth Audience

193. Google uses complex algorithms throughout YouTube to recommend videos to users. These algorithms select videos that populate the YouTube homepage, rank results in user searches, and suggest videos for viewers to watch next. These algorithms are manipulative because they are designed to increase the amount of time users spend on YouTube.

²⁰¹ See, e.g., Lauren E. Sherman et al., *The Power of the Like in Adolescence: Effects of Peer Influence on Neural and Behavioral Responses to Social Media*, 27(7) Psych. Sci. 1027-35 (July 2016), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5387999/>.

²⁰² *Manage YouTube Notifications*, YouTube, <https://support.google.com/youtube/answer/3382248?hl=en&co=GENIE.Platform%3DDesktop> (last visited Feb. 27, 2023).

²⁰³ *Recommended Videos*, YouTube, <https://www.youtube.com/howyoutubeworks/product-features/recommendations/> (last visited Feb. 27, 2023).

1 194. Google began building the YouTube recommendation system in 2008.²⁰⁴ When
 2 Google initially developed its recommendation algorithms, the end goal was to maximize the
 3 amount of time users spend watching YouTube videos. A YouTube spokesperson admitted as
 4 much, saying YouTube’s recommendation system was initially set up to “optimize” the amount of
 5 time users watch videos.²⁰⁵

6 195. Former YouTube engineer Guillaume (“Chaslot”) has stated that when he worked
 7 for YouTube designing its recommendation algorithm, the priority was to keep viewers on the site
 8 for as long as possible to maximize “watch time.”²⁰⁶ Chaslot further stated: “Increasing users’
 9 watch time is good for YouTube’s business model” because the more people watch videos, the
 10 more ads they see, and YouTube’s advertising revenue increases.²⁰⁷

11 196. Early on, one of the primary metrics behind YouTube’s recommendation algorithm
 12 was clicks. As YouTube describes: “Clicking on a video provides a strong indication that you will
 13 also find it satisfying.”²⁰⁸ However, as YouTube learned, clicking on a video does not mean a user
 14 actually watched it. Thus, in 2012, YouTube also started tracking watch time – the amount of time
 15 a user spends watching a video.²⁰⁹ YouTube made this switch to keep people watching for as long
 16
 17
 18

19 ²⁰⁴ Cristos Goodrow, *On YouTube’s recommendation system*, YouTube (Sept. 15, 2021),
<https://blog.youtube/inside-youtube/on-youtubes-recommendation-system/>.

20 ²⁰⁵ Ben Popken, *As algorithms take over, YouTube’s recommendations highlight a human*
 21 *problem*, NBC (Apr. 19, 2018), <https://www.nbcnews.com/tech/social-media/algorithms-take-over-youtube-s-recommendations-highlight-human-problem-n867596>.

22 ²⁰⁶ William Turton, *How YouTube’s algorithm prioritizes conspiracy theories*, Vice (Mar. 5,
 23 2018), <https://www.vice.com/en/article/d3w9ja/how-youtubes-algorithm-prioritizes-conspiracy-theories>.

24 ²⁰⁷ Jesselyn Cook & Sebastian Murdock, *YouTube is a Pedophile’s Paradise*, Huffington Post
 25 (Mar. 21, 2020), https://www.huffpost.com/entry/youtube-pedophile-paradise_n_5e5d79d1c5b6732f50e6b4db.

26 ²⁰⁸ Cristos Goodrow, *On YouTube’s Recommendation System*, YouTube (Sept. 15, 2021),
 27 <https://blog.youtube/inside-youtube/on-youtubes-recommendation-system/>.

28 ²⁰⁹ *Id.*

1 as possible.²¹⁰ In YouTube’s own words, this switch was successful. “These changes have so far
 2 proved very positive – primarily less clicking, more watching. We saw the amount of time viewers
 3 spend watching videos across the site increase immediately”²¹¹ In 2016, YouTube started
 4 measuring “valued watchtime” via user surveys to ensure that viewers are satisfied with their time
 5 spent watching videos on YouTube.²¹² All of these changes to YouTube’s algorithms were made
 6 to ensure that users spend more time watching videos and ads.

7 197. YouTube’s current recommendation algorithm is based on deep-learning neural
 8 networks that retune its recommendations based on the data fed into it.²¹³ While this algorithm is
 9 incredibly complex, its process can be broken down into two general steps. First, the algorithm
 10 compiles a shortlist of several hundred videos by finding videos that match the topic and other
 11 features of the video a user is currently watching.²¹⁴ Then the algorithm ranks the list according
 12 to the user’s preferences, which the algorithm learns by tracking a user’s clicks, likes, and other
 13 interactions.²¹⁵ In short, the algorithms track and measure a user’s previous viewing habits and
 14 then finds and recommends other videos the algorithm thinks will hold the consumer’s attention.

15
 16
 17 ²¹⁰ Dave Davies, *How YouTube became one of the planet’s most influential media businesses*,
 18 NPR (Sept. 8, 2022), <https://www.npr.org/2022/09/08/1121703368/how-youtube-became-one-of-the-planets-most-influential-media-businesses>.

19 ²¹¹ Eric Meyerson, *YouTube Now: Why We Focus on Watch Time*, YouTube (Aug. 10, 2012),
<https://blog.youtube/news-and-events/youtube-now-why-we-focus-on-watch-time/>.

20 ²¹² Cristos Goodrow, *On YouTube’s recommendation system*, YouTube (Sept. 15, 2021),
 21 <https://blog.youtube/inside-youtube/on-youtubes-recommendation-system/>.

22 ²¹³ Alexis C. Madrigal, *How YouTube’s Algorithm Really Works*, Atl. (Nov. 8, 2018),
<https://www.theatlantic.com/technology/archive/2018/11/how-youtubes-algorithm-really-works/575212/>;
 23 Paul Covington et al., *Deep Neural Networks for YouTube Recommendations*, Google (2016),
<https://storage.googleapis.com/pub-tools-public-publication-data/pdf/45530.pdf>.

24 ²¹⁴ Karen Hao, *YouTube is experimenting with ways to make its algorithm even more addictive*,
 25 MIT Tech. Rev. (Sept. 27, 2019), <https://www.technologyreview.com/2019/09/27/132829/youtube-algorithm-gets-more-addictive/>;
 26 Paul Covington et al., *Deep Neural Networks for YouTube Recommendations*, Google (2016), <https://storage.googleapis.com/pub-tools-public-publication-data/pdf/45530.pdf>.

27 ²¹⁵ Karen Hao, *YouTube is experimenting with ways to make its algorithm even more addictive*,
 28 MIT Tech. Rev. (Sept. 27, 2019), <https://www.technologyreview.com/2019/09/27/132829/youtube-algorithm-gets-more-addictive/>;
 Paul Covington et al., *Deep Neural Networks for*

1 198. YouTube’s recommendation system is “constantly evolving, learning every day
 2 from over 80 billion pieces of information.”²¹⁶ Some of the information on which the
 3 recommendation algorithm relies to deliver recommended videos to users includes users’ watch
 4 and search history, channel subscriptions, clicks, watch time, survey responses, shares, likes,
 5 dislikes, users’ location (country), and time of day.²¹⁷

6 199. The recommendation algorithm can determine which “signals” or factors are more
 7 important to individual users.²¹⁸ For example, if a user shares every video they watch, including
 8 videos the user gives a low rating, the algorithm learns not to heavily factor the user’s shares when
 9 recommending content.²¹⁹ Thus, the recommendation algorithm “develops dynamically” to an
 10 individual user’s viewing habits and makes highly specific recommendations to keep individual
 11 users watching videos.²²⁰

12 200. In addition to the algorithm’s self-learning, Google engineers consistently update
 13 YouTube’s recommendation and ranking algorithms, making several updates every month,
 14 according to YouTube Chief Product Officer Neal Mohan (“Mohan”).²²¹ The end goal is to
 15 increase the amount of time users spend watching content on YouTube.

16 201. Because Google has designed and refined its algorithms to be manipulative, these
 17 algorithms are incredibly successful at getting users to view content based on the algorithm’s

18 _____
 19 *YouTube Recommendations*, Google (2016), <https://storage.googleapis.com/pub-tools-public-publication-data/pdf/45530.pdf>.

20 ²¹⁶ Cristos Goodrow, *On YouTube’s Recommendation System*, YouTube (Sept. 15, 2021),
 21 <https://blog.youtube/inside-youtube/on-youtubes-recommendation-system/>.

22 ²¹⁷ *Recommended Videos*, YouTube, <https://www.youtube.com/howyoutubeworks/product-features/recommendations/#signals-used-to-recommend-content> (last visited Feb. 27, 2023).

23 ²¹⁸ *Id.*

24 ²¹⁹ *Id.*

25 ²²⁰ Cristos Goodrow, *On YouTube’s Recommendation System*, YouTube (Sept. 15, 2021),
 26 <https://blog.youtube/inside-youtube/on-youtubes-recommendation-system/>.

27 ²²¹ Nilay Patel, *YouTube Chief Product Officer Neal Mohan on The Algorithm, Monetization, and*
 28 *the Future for Creators*, The Verge (Aug. 3, 2021),
<https://www.theverge.com/22606296/youtube-shorts-fund-neal-mohan-decoder-interview>.

1 recommendation. Mohan stated in 2018 that YouTube’s AI-driven recommendations are
 2 responsible for 70% of the time users spend on YouTube.²²² In other words, 70% of all YouTube
 3 content that users watch was recommended to users by YouTube’s algorithms as opposed to users
 4 purposely searching for and identifying the content they watch.

5 202. Mohan also stated that recommendations keep mobile device users watching
 6 YouTube for more than 60 minutes at a time on average.²²³

7 203. Given that people watch more than one billion hours of YouTube videos daily,²²⁴
 8 YouTube’s recommendation algorithms are responsible for hundreds of millions of hours that
 9 users spend watching videos on YouTube.

10 **4. YouTube’s Conduct Has Harmed Youth Mental Health**

11 204. YouTube’s conduct harms youth mental health through its features designed to
 12 maximize the amount of time users spend watching videos and by recommending content to youth
 13 through its algorithms.

14 205. YouTube’s algorithms push its young users down rabbit holes where they are likely
 15 to encounter content that is violent, is sexual, or encourages self-harm, among other types of
 16 harmful content.

17 206. Research by the Tech Transparency Project (“TTP”) shows that YouTube Kids fed
 18 children content involving drug culture, guns, and beauty and diet tips that could lead to harmful
 19 body image issues.²²⁵ Among the videos TTP found were step-by-step instructions on how to
 20 conceal a gun, guides on how to bleach one’s face at home, and workout videos emphasizing the

21
 22
 23 ²²² Joan E. Solsman, *YouTube’s AI is the puppet master over most of what you watch*, CNET (Jan. 20, 2018), <https://www.cnet.com/tech/services-and-software/youtube-ces-2018-neal-mohan/>.

24 ²²³ *Id.*

25 ²²⁴ Shira Ovide, *The YouTube Rabbit Hole is Nuanced*, N.Y. Times (Apr. 21, 2022),
 26 <https://www.nytimes.com/2022/04/21/technology/youtube-rabbit-hole.html>.

27 ²²⁵ Alex Hern, *YouTube Kids shows videos promoting drug culture and firearms to toddlers*,
 28 Guardian (May 5, 2022), <https://www.theguardian.com/technology/2022/may/05/youtube-kids-shows-videos-promoting-drug-culture-firearms-toddlers>.

1 importance of burning calories and telling children to “[w]iggle your jiggle.”²²⁶ This research
 2 shows that YouTube Kids not only lets inappropriate content slip through its algorithmic filters
 3 but actively directed the content to children through its recommendation engine.

4 207. Similar examples abound. Amanda Kloer, a campaign director with the child safety
 5 group ParentsTogether, spent an hour on her child’s YouTube Kids profile and found videos
 6 “encouraging kids how to make their shirts sexier, a video in which a little boy pranks a girl over
 7 her weight, and a video in which an animated dog pulls objects out of an unconscious animated
 8 hippo’s butt.”²²⁷ Another parent recounted that YouTube Kids’ autoplay function led her six-year-
 9 old daughter to an animated video that encouraged suicide.²²⁸

10 208. Other youth are fed content by YouTube’s algorithms that encourages self-harm.
 11 As reported by PBS Newshour, a middle schooler named Olivia compulsively watched YouTube
 12 videos every day after she came home from school.²²⁹ Over time she became depressed and started
 13 searching for videos on how to commit suicide. Similar videos then gave her the idea of
 14 overdosing. Weeks later she was in the hospital after “downing a bottle of Tylenol.”²³⁰ Ultimately,
 15 she was admitted into rehab for digital addiction because of her compulsive YouTube watching.²³¹

16 209. According to the Pew Research Center, 46% of parents say their child has
 17 encountered inappropriate videos on YouTube.²³² Children are not encountering these videos on

18
 19 ²²⁶ *Guns, Drugs, and Skin Bleaching: YouTube Kids Poses Risks to Children*, Tech Transparency
 20 Project (May 5, 2022), <https://www.techtransparencyproject.org/articles/guns-drugs-and-skin-bleaching-youtube-kids-still-poses-risks-children>.

21 ²²⁷ Rebecca Heilweil, *YouTube’s kids app has a rabbit hole problem*, Vox (May 12, 2021),
<https://www.vox.com/recode/22412232/youtube-kids-autoplay>.

22 ²²⁸ *Id.*

23 ²²⁹ Lesley McClurg, *After compulsively watching YouTube, teenage girl lands in rehab for ‘digital*
 24 *addiction*,’ PBS (May 16, 2017), <https://www.pbs.org/newshour/health/compulsively-watching-youtube-teenage-girl-lands-rehab-digital-addiction>.

25 ²³⁰ *Id.*

26 ²³¹ *Id.*

27 ²³² Brooke Auxier et al., *Parenting Children in the Age of Screens*, Pew Rsch. Ctr. (July 28, 2020),
 28 <https://www.pewresearch.org/internet/2020/07/28/parental-views-about-youtube/>.

1 their own volition. Rather, they are being fed harmful and inappropriate videos through
 2 YouTube's algorithms. Again, YouTube's AI-driven recommendations are responsible for 70%
 3 of the time users spend on YouTube.²³³

4 210. Other reports have also found that YouTube's recommendation algorithm suggests
 5 a wide array of harmful content, including videos that feature misinformation, violence, and hate
 6 speech, along with other content that violates YouTube's policies.²³⁴ A 2021 crowdsourced
 7 investigation from the Mozilla Foundation involving 37,000 YouTube users revealed that 71% of
 8 all reported negative user experiences came from videos recommended by YouTube to users.²³⁵
 9 Additionally, users were 40% more likely to report a negative experience with a video
 10 recommended by YouTube's algorithm than with a video for which they had searched.²³⁶

11 211. The inappropriate and disturbing content to which YouTube's algorithms expose
 12 children have adverse effects on mental health. Mental health experts have warned that YouTube
 13 is a growing source of anxiety and inappropriate sexual behavior among children under the age of
 14 13.²³⁷

15 212. Further the harmful content to which YouTube's algorithms expose children harm
 16 brain development. "Children who repeatedly experience stressful and/or fearful emotions may
 17 under-develop parts of their brain's prefrontal cortex and frontal lobe, the parts of the brain
 18
 19
 20

21 ²³³ Joan E. Solsman, *YouTube's AI is the puppet master over most of what you watch*, CNET (Jan.
 22 20, 2018), <https://www.cnet.com/tech/services-and-software/youtube-ces-2018-neal-mohan/>.

23 ²³⁴ Brandy Zadrozny, *YouTube's recommendations still push harmful videos, crowdsourced study finds*, NBC News (July 17, 2021), <https://www.nbcnews.com/tech/tech-news/youtubes-recommendations-still-push-harmful-videos-crowdsourced-study-rcna1355>.

25 ²³⁵ *Id.*

26 ²³⁶ *Id.*

27 ²³⁷ Josephine Bila, *YouTube's dark side could be affecting your child's mental health*, CNBC
 28 (Feb. 13, 2018), <https://www.cnbc.com/2018/02/13/youtube-is-causing-stress-and-sexualization-in-young-children.html>.

1 responsible for executive functions, like making conscious choices and planning ahead,” according
 2 to Donna Volpitta, Ed.D., founder of The Center for Resilient Leadership.²³⁸

3 213. Even though much of the content YouTube’s algorithms feed to youth is harmful,
 4 it triggers chemical reactions that encourage youth to spend more time watching videos on
 5 YouTube. According to Dr. Volpitta, watching “fear-inducing videos cause the brain to receive a
 6 small amount of dopamine,” which acts as a reward and creates a desire to do something over and
 7 over.²³⁹ This dopaminergic response is in addition to the reward stimulus YouTube provides users
 8 through IVRs.

9 214. Mental health professionals across the country have seen an increase in children
 10 experiencing mental health issues because of YouTube. Natasha Daniels, a child psychotherapist
 11 in Arizona, has said she has seen a rise in cases of children suffering from anxiety because of
 12 videos they watched on YouTube.²⁴⁰ Because of their anxiety, these children “exhibit loss of
 13 appetite, sleeplessness, crying fits and fear.”²⁴¹

14 215. In addition to causing anxiety, watching YouTube is also associated with
 15 insufficient sleep.²⁴² In one study on the effect of app use and sleep, YouTube was the only app
 16 consistently associated with negative sleep outcomes.²⁴³ For every 15 minutes teens spent
 17 watching YouTube, they had a 24% greater chance of getting fewer than seven hours of sleep.²⁴⁴
 18 YouTube is particularly problematic on this front because YouTube’s recommendation and
 19 autoplay feature make it “so easy to finish one video” and watch the next, said Dr. Alon Avidan,

20
 21 ²³⁸ *Id.*

22 ²³⁹ *Id.*

23 ²⁴⁰ *Id.*

24 ²⁴¹ *Id.*

25 ²⁴² Meg Pillion et al., *What’s ‘app’-ning to adolescent sleep? Links between device, app use, and*
 26 *sleep outcomes*, 100 *Sleep Med.* 174-82 (Dec. 2022), <https://www.sciencedirect.com/science/article/abs/pii/S1389945722010991?via%3Dihub>.

27 ²⁴³ *Id.*

28 ²⁴⁴ *Id.*

1 director of the UCLA Sleep Disorders Center.²⁴⁵ In turn, insufficient sleep is associated with poor
 2 health outcomes.²⁴⁶ Thus, YouTube exacerbates an array of youth mental health issues by
 3 contributing to sleep deprivation.

4 216. Despite the vast evidence that YouTube’s design and algorithms harm millions of
 5 youth, Google continues to manipulate them into staying on the platform and watching more and
 6 more videos so it can increase its ad revenue.

7 **I. Snapchat’s Social Media Platform Has Substantially Contributed to**
 8 **the Youth Mental Health Crisis**

9 217. Snapchat is a photo-sharing platform that allows users to form groups and share
 10 photos, known as “snaps,” that disappear after being viewed by the recipients. It was created in
 11 2011 by Stanford University students Evan Spiegel and Bobby Murphy, who serve as Snap’s Chief
 12 Executive Officer (“CEO”) and Chief Technical Officer (“CTO”), respectively.²⁴⁷

13 218. Snapchat quickly evolved from a simple photo-sharing app as Snap made design
 14 changes and rapidly developed new features aimed at, and ultimately increasing Snapchat’s
 15 popularity among, teenage users.

16 219. Today, Snapchat is one of the largest social media platforms in the world. By its
 17 own estimates, Snapchat has 363 million daily users, including 100 million daily users in North
 18 America.²⁴⁸ Snapchat reaches 90% of people aged 13 to 24 in over 20 countries and reaches nearly
 19 half of all smartphone users in the United States.²⁴⁹

20
 21 ²⁴⁵ Cara Murez, *One App is Especially Bad for Teens’ Sleep*, U.S. News (Sept. 13, 2022),
 22 <https://www.usnews.com/news/health-news/articles/2022-09-13/one-app-is-especially-bad-for-teens-sleep>.

23 ²⁴⁶ Jessica C. Levenson et al., *The Association Between Social Media Use and Sleep Disturbance*
 24 *Among Young Adults*, 85 Preventive Med. 36-41 (Apr. 2016), <https://www.sciencedirect.com/science/article/abs/pii/S0091743516000025>.

25 ²⁴⁷ Katie Benner, *How Snapchat is Shaping Social Media*, N.Y. Times (Nov. 30, 2016),
 26 <https://www.nytimes.com/2016/11/30/technology/how-snapchat-works.html>.

27 ²⁴⁸ *October 2022 Investor Presentation* at 5, Snap Inc. (Oct. 20, 2022), <https://investor.snap.com/events-and-presentations/presentations/default.aspx>.

28 ²⁴⁹ *Id.* at 6-7.

220. Snapchat initially became well known for its self-destructing content feature. In 2012, Snap added video-sharing capabilities, pushing the number of “snaps” to 50 million per day.²⁵⁰ A year later, Snap added the “Stories” function, which allows users to upload a rolling compilation of snaps that the user’s friends can view for 24 hours.²⁵¹ The following year, Snap added a feature that enabled users to communicate with one another in real time via text or video.²⁵² It also added the “Our Story” feature, expanding on the original stories function by allowing users in the same location to add their photos and videos to a single publicly viewable content stream.²⁵³ At the same time, Snap gave users the capability to add filters and graphic stickers onto photos indicating a user’s location through a feature it refers to as “Geofilters.”²⁵⁴

221. In 2015, Snap added a “Discover” feature that promotes videos from news outlets and other content creators.²⁵⁵ Users can watch that content by scrolling through the Discover feed. After the selected video ends, Snapchat automatically plays other video content in a continuous stream unless or until a user manually exits the stream.

222. In 2020, Snap added the “Spotlight” feature, through which it serves users “an endless feed of user-generated content” Snap curates from the 249 million daily Snapchat users.²⁵⁶

²⁵⁰ J.J. Colao, *Snapchat Adds Video, Now Seeing 50 million Photos A Day*, Forbes (Dec. 14, 2012), <https://www.forbes.com/sites/jjcolao/2012/12/14/snapchat-adds-video-now-seeing-50-million-photos-a-day/?sh=55425197631b>.

²⁵¹ Ellis Hamburger, *Snapchat’s Next Big Thing: ‘Stories’ That Don’t Just Disappear*, The Verge (Oct. 3, 2013), <https://www.theverge.com/2013/10/3/4791934/snapchats-next-big-thing-stories-that-dont-just-disappear>.

²⁵² Romain Dillet, *Snapchat Adds Ephemeral Text Chat and Video Calls*, TechCrunch (May 1, 2014), <https://techcrunch.com/2014/05/01/snapchat-adds-text-chat-and-video-calls/>.

²⁵³ Laura Stampler, *Snapchat Just Unveiled a New Feature*, Time (June 17, 2014), <https://time.com/2890073/snapchat-new-feature/>.

²⁵⁴ Angela Moscaritolo, *Snapchat Adds ‘Geofilters’ in LA, New York*, PC Mag. (July 15, 2014), <https://www.pcmag.com/news/snapchat-adds-geofilters-in-la-new-york>.

²⁵⁵ Steven Tweedie, *How to Use Snapchat’s New ‘Discover’ Feature*, Bus. Insider (Jan. 27, 2015), <https://www.businessinsider.com/how-to-use-snapchat-discover-feature-2015-1>.

²⁵⁶ Salvador Rodriguez, *Snap is launching a competitor to TikTok and Instagram Reels*, CNBC (Nov. 23, 2020), <https://www.cnbc.com/2020/11/23/snap-launching-a-competitor-to-tiktok-and-instagram-reels.html>.

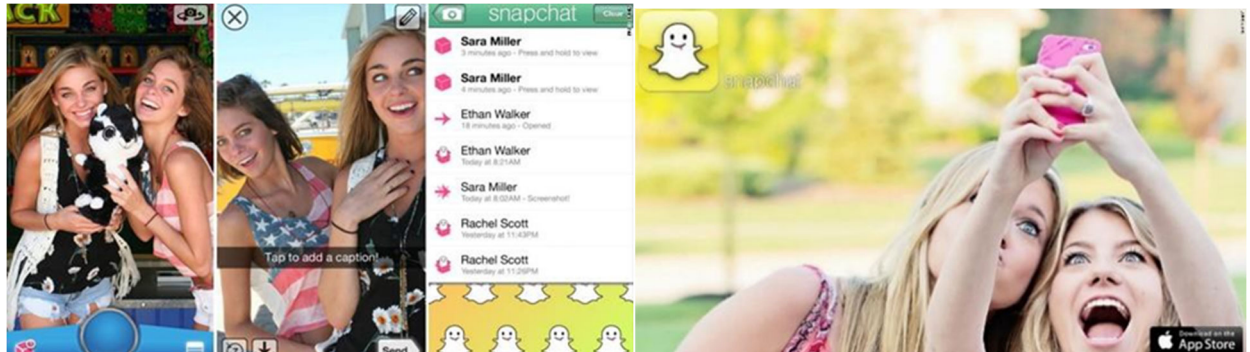
1. Snap Designs and Markets Its Platform to Appeal to a Youth Audience

223. Snap specifically markets Snapchat to children aged 13 to 17 because they are a key demographic for Snap's advertisers. Advertising is Snap's primary source of revenue and is essential to its business model.

224. Snap began running advertisements on Snapchat in 2014.²⁵⁷ Since then, Snapchat's business model has revolved around its advertising revenue, which has boomed. Snap now expects to generate \$4.86 billion in Snapchat advertising revenue for 2022.²⁵⁸

225. Internal documents describe users between the ages of 13 and 34 as "critical" to Snap's advertising success because of the common milestones achieved within that age range.²⁵⁹

226. While Snap lumps teenagers in with younger adults in its investor materials, Snap's marketing materials featuring young models reveal its priority market:



²⁵⁷ Sara Fischer, *A timeline of Snap's advertising, from launch to IPO*, Axios (Feb. 3, 2017), <https://www.axios.com/2017/12/15/a-timeline-of-snaps-advertising-from-launch-to-ipo-1513300279>.

²⁵⁸ Bhanvi Staija, *TikTok's ad revenue to surpass Twitter and Snapchat combined in 2022*, Reuters (Apr. 11, 2022), <https://www.reuters.com/technology/tiktoks-ad-revenue-surpass-twitter-snapchat-combined-2022-report-2022-04-11/>.

²⁵⁹ *October 2022 Investor Presentation* at 27, Snap Inc. (Oct. 20, 2022), <https://investor.snap.com/events-and-presentations/presentations/default.aspx>.



227. In addition to its marketing, Snap has targeted a younger audience by designing Snapchat in a manner that older individuals find hard to use.²⁶⁰ The effect of this design is that Snapchat is a platform where its young users are insulated from older users, including their parents. As Snap's CEO explained, "[w]e've made it very hard for parents to embarrass their children."²⁶¹

228. Snap also designed Snapchat as a haven for young users to hide content from their parents by ensuring that photos, videos, and chat messages quickly disappear. This design further insulates children from adult oversight.

229. Moreover, Snap added as a feature the ability for users to create cartoon avatars modeled after themselves.²⁶² By using an art form generally associated with and directed at younger audiences, Snap further designed Snapchat to entice teenagers and younger children.

²⁶⁰ See Hannah Kuchler & Tim Bradshaw, *Snapchat's Youth Appeal Puts Pressure on Facebook*, Fin. Times (Aug. 21, 2017), <https://www.ft.com/content/07e4dc9e-86c4-11e7-bf50-e1c239b45787>.

²⁶¹ Max Chafkin & Sarah Frier, *How Snapchat Built a Business by Confusing Olds*, Bloomberg (Mar. 3, 2016), <https://www.bloomberg.com/features/2016-how-snapchat-built-a-business/>.

²⁶² Kif Leswing, *Snapchat just introduced a feature it paid more than \$100 million for*, Bus. Insider (July 19, 2016), <https://www.businessinsider.com/snapchat-just-introduced-a-feature-it-paid-more-than-100-million-for-2016-7>.

230. In 2013, Snap also marketed Snapchat specifically to children under 13 through a feature it branded “SnapKidz.”²⁶³ This feature – part of the Snapchat platform – allowed children under 13 to take photos, draw on them, and save them locally on the device.²⁶⁴ Children could also send these images to others or upload them to other social media sites.²⁶⁵

231. While the SnapKidz feature was later discontinued, and Snap purports to now prohibit users under the age of 13, its executives have admitted that its age verification “is effectively useless in stopping underage users from signing up to the Snapchat app.”²⁶⁶

232. Snap’s efforts to attract young users have been successful. Teenagers consistently name Snapchat as a favorite social media platform. The latest figures show that 13% of children aged 8 to 12 used Snapchat in 2021,²⁶⁷ and almost 60% of children aged 13 to 17 use Snapchat.²⁶⁸

2. Snap Intentionally Designs Exploitative Features to Keep Users on Its Platform for as Long as Possible

233. Snap has implemented inherently and intentionally exploitative features into Snapchat that are designed to keep users on its platform for as long as possible. These features include “Snapstreaks,” various trophies and reward systems, quickly disappearing (“ephemeral”) messages, and filters. Snap designed these features, along with others, to maximize the amount of time users spend on Snapchat.

²⁶³ Larry Magid, *Snapchat Creates SnapKidz – A Sandbox for Kids Under 13*, Forbes (June 23, 2013), <https://www.forbes.com/sites/larrymagid/2013/06/23/snapchat-creates-snapkidz-a-sandbox-for-kids-under-13/?sh=7c682a555e5a>.

²⁶⁴ *Id.*

²⁶⁵ *Id.*

²⁶⁶ Isobel Asher Hamilton, *Snapchat admits its age verification safeguards are effectively useless*, Bus. Insider (Mar. 19, 2019), <https://www.businessinsider.com/snapchat-says-its-age-verification-safeguards-are-effectively-useless-2019-3>.

²⁶⁷ Victoria Rideout et al., *Common Sense Census: Media use by tweens and teens*, Common Sense Media (2022), https://www.commonsensemedia.org/sites/default/files/research/report/8-18-census-integrated-report-final-web_0.pdf at 5.

²⁶⁸ Emily A. Vogels et al., *Teens, Social Media and Technology 2022*, Pew Rsch. Ctr. (Aug. 10, 2022), <https://www.pewresearch.org/internet/2022/08/10/teens-social-media-and-technology-2022/>.

234. Snaps are intended to manipulate users by activating the rule of reciprocation.²⁶⁹ Whenever a user gets a snap, they feel obligated to send a snap back. In addition, Snapchat tells users each time they receive a snap by pushing a notification to the recipient's cellphone. These notifications are designed to prompt users to open Snapchat and view content, increasing the amount of time users spend on Snapchat. Further, because snaps disappear within ten seconds of being viewed, users feel compelled to reply immediately. This disappearing nature of snaps is a defining characteristic of Snapchat and is intended keep users on the platform.

235. Snap also keeps users coming back to the Snapchat platform through the "Snapstreaks" feature.²⁷⁰ A "streak" is a counter within Snapchat that tracks how many consecutive days two users have sent each other snaps. If a user fails to snap the other user within 24 hours, the streak ends. Snap adds extra urgency by putting an hourglass emoji next to a friend's name if a Snapchat streak is about to end.²⁷¹ This design implements a system where a user must "check constantly or risk missing out."²⁷² This feature is particularly effective on teenage users. "For *teens in particular*, streaks are a vital part of using the app, and of their social lives as a whole."²⁷³ Some children become so obsessed with maintaining a Snapstreak that they give their

²⁶⁹ Nir Eyal, *The Secret Psychology of Snapchat*, Nir and Far (Apr. 14, 2015), <https://www.nirandfar.com/psychology-of-snapchat/>.

²⁷⁰ See Avery Hartmans, *These are the sneaky ways apps like Instagram, Facebook, Tinder lure you in and get you 'addicted,'* Bus. Insider (Feb. 17, 2018), <https://www.businessinsider.com/how-app-developers-keep-us-addicted-to-our-smartphones-2018-1#snapchat-uses-snapstreaks-to-keep-you-hooked-13>; see generally Virginia Smart & Tyana Grundig, *'We're designing minds': Industry insider reveals secrets of addictive app trade*, CBC (Nov. 3, 2017), <https://www.cbc.ca/news/science/marketplace-phones-1.4384876>; Julian Morgans, *The Secret Ways Social Media is Built for Addiction*, Vice (May 17, 2017), <https://www.vice.com/en/article/vv5jkb/the-secret-ways-social-media-is-built-for-addiction>.

²⁷¹ Lizette Chapman, *Inside the Mind of a Snapchat Streaker*, Bloomberg (Jan. 30, 2017), <https://www.bloomberg.com/news/features/2017-01-30/inside-the-mind-of-a-snapchat-streaker>.

²⁷² *Id.*

²⁷³ Avery Hartmans, *These are the sneaky ways apps like Instagram, Facebook, Tinder lure you in and get you 'addicted,'* Bus. Insider (Feb. 17, 2018), <https://www.businessinsider.com/how-app-developers-keep-us-addicted-to-our-smartphones-2018-1#snapchat-uses-snapstreaks-to-keep-you-hooked-13>; see generally Cathy Becker, *Experts warn parents how Snapchat can hook in teens with streaks*, ABC News (July 27, 2017), <https://abcnews.go.com/Lifestyle/experts-warn-parents-snapchat-hook-teens-streaks/story?id=48778296>.

1 friends access to their accounts when they may be away from their phone for a day or more, such
 2 as on vacation.²⁷⁴

3 236. Snap also designed features that operate on IVR principles to maximize the time
 4 users are on its platform. The “rewards” come in the form of a user’s “Snapscore” and other
 5 signals of recognition similar to “likes” used in other platforms. For example, a Snapscore
 6 increases with each snap a user sends and receives. The increase in score and other trophies and
 7 charms users can earn by using the app operate on variable reward patterns. Like Snapstreaks,
 8 these features are designed to incentivize sending snaps and increase the amount of time users
 9 spend on Snapchat.

10 237. Snap also designs photo and video filters and lenses, which are central to
 11 Snapchat’s function as a photo- and video-sharing social media platform. Snap designed its filters
 12 and lenses in a way to further maximize the amount of time users spend on Snapchat. One way
 13 Snap uses its filters to hook young users is by creating temporary filters that impose a sense of
 14 urgency to use them before they disappear. Another way Snap designed its filters to increase
 15 screen use is by gamification. Many filters include games,²⁷⁵ creating competition between users
 16 by sending each other snaps with scores. Further, Snap tracks data on the most commonly used
 17 filters and develops new filters based on this data.²⁷⁶ Snap also personalizes filters to further entice
 18 individuals to use Snapchat more.²⁷⁷ Snap designs and modifies these filters to maximize the
 19 amount of time users spend on Snapchat.

22 ²⁷⁴ Caroline Knorr, *How to resist technology addiction*, CNN (Nov. 9, 2017),
 23 <https://www.cnn.com/2017/11/09/health/science-of-tech-obsession-partner/index.html>; Jon
 24 Brooks, *7 Specific Tactics Social Media Companies Use to Keep You Hooked*, KQED (June 9,
 2017), <https://www.kqed.org/futureofyou/397018/7-specific-ways-social-media-companies-have-you-hooked>.

25 ²⁷⁵ Josh Constine, *Now Snapchat Has ‘Filter Games,’* TechCrunch (Dec. 23, 2016),
<https://techcrunch.com/2016/12/23/snapchat-games/>.

26 ²⁷⁶ *How We Use Your Information*, Snap Inc., <https://snap.com/en-US/privacy/your-information>
 27 (last visited Feb. 27, 2023).

28 ²⁷⁷ *Id.*

238. Snap also uses complex algorithms to keep users engaged with Snapchat by suggesting friends to users and recommending new content.

239. Snap notifies users based on an equation Snap uses to determine whether someone should add another user as a friend on Snapchat. This is known as “Quick Add.” By using an algorithm to suggest friends to users, Snapchat increases the odds users will add additional friends, send additional snaps, and spend more time on the app.

240. Snapchat also contains “Discover” and “Spotlight” features that use algorithms to recommend content to users. The Discover feature includes content from news and other media outlets.²⁷⁸ A user’s Discover page is populated by an algorithm and constantly changes depending on how a user interacts with the content.²⁷⁹ Similarly, the Spotlight feature promotes popular videos from other Snapchat users and is based on an algorithm that determines whether a user has positively or negatively engaged with similar content.²⁸⁰ Snap programs its algorithms to push content to users that will keep them engaged on Snapchat and thereby increases the amount of time users spend on Snapchat, worsening their mental health.

3. Snap’s Conduct in Designing and Operating Its Platform Has Harmed Youth Mental Health

241. The way in which Snap has designed and operated Snapchat has caused youth to suffer increased anxiety, depression, disordered eating, cyberbullying, and sleep deprivation.

242. Snap knows Snapchat is harming youth because, as alleged above, Snap intentionally designed Snapchat to maximize engagement by preying on the psychology of children through its use of algorithms and other features including Snapstreaks, various trophies and reward systems, quickly disappearing messages, filters, and games.

²⁷⁸ Steven Tweedie, *How to Use Snapchat’s New ‘Discover’ Feature*, Bus. Insider (Jan. 27, 2015), <https://www.businessinsider.com/how-to-use-snapchat-discover-feature-2015-1>.

²⁷⁹ *How We Use Your Information*, Snap Inc., <https://snap.com/en-US/privacy/your-information> (last visited Feb. 27, 2023).

²⁸⁰ Sara Fischer, *Snapchat launches Spotlight, a TikTok competitor*, Axios (Nov. 23, 2020), <https://www.axios.com/2020/11/23/snapchat-launches-spotlight-tiktok-competitor>; *How We Use Your Information*, Snap Inc., <https://snap.com/en-US/privacy/your-information> (last visited Feb. 27, 2023).

243. Snap should know that its conduct has negatively affected youth. Snap’s conduct has been the subject of inquiries by the United States Senate regarding Snapchat’s use “to promote bullying, worsen eating disorders and help teens buy dangerous drugs or engage in reckless behavior.”²⁸¹ Further, Senators from across the ideological spectrum have introduced bills that would ban many of the features Snapchat uses, including badges and other awards recognizing a user’s level of engagement with the platform.²⁸² Despite these calls for oversight from Congress, Snap has failed to curtail its use of streaks, badges, and other awards that recognize users’ level of engagement with Snapchat.

244. Snap also knows or should know of Snapchat’s other negative effects on youth because of published research findings. For instance, the *Journal of the American Medical Association* has recognized that Snapchat’s effect on how young people view themselves is so severe that it named a new disorder, “Snapchat dysmorphia,” after the platform.²⁸³ This disorder describes people, usually young women, seeking plastic surgery to make themselves look the way they do through Snapchat filters.²⁸⁴ The rationale underlying this disorder is that beauty filters on social media, like Snapchat, create a “sense of unattainable perfection” that is alienating and damaging to a person’s self-esteem.²⁸⁵ One social psychologist summed up the effect this way:

²⁸¹ Bobby Allyn, *4 takeaways from the Senate child safety hearing with YouTube, Snapchat and TikTok*, Nat’l Pub. Radio (Oct. 26, 2021), <https://www.npr.org/2021/10/26/1049267501/snapchat-tiktok-youtube-congress-child-safety-hearing>.

²⁸² See Abigail Clukey, *Lawmaker Aims To Curb Social Media Addiction With New Bill*, Nat’l Pub. Radio (Aug. 3, 2019), <https://www.npr.org/2019/08/03/747086462/lawmaker-aims-to-curb-social-media-addiction-with-new-bill>; *Social Media Addiction Reduction Technology Act*, S. 2314, 116th Cong. (2019); *Kids Internet Design and Safety Act*, S. 2918, 117th Cong. (2021).

²⁸³ ‘Snapchat Dysmorphia’: When People Get Plastic Surgery To Look Like A Social Media Filter, WBUR (Aug 29, 2018), <https://www.wbur.org/hereandnow/2018/08/29/snapchat-dysmorphia-plastic-surgery>.

²⁸⁴ *Id.*

²⁸⁵ Nathan Smith & Allie Yang, *What happens when lines blur between real and virtual beauty through filters?*, ABC News (May 1, 2021), <https://abcnews.go.com/Technology/lines-blur-real-virtual-beauty-filters/story?id=77427989>.

1 “[T]he pressure to present a certain filtered image on social media can certainly play into
2 [depression and anxiety] for younger people who are just developing their identities.”²⁸⁶

3 245. Despite knowing Snapchat harms its young users, Snap continues to update and add
4 features intentionally designed to maximize the amount of time users spend on Snapchat. Snap
5 continues its harmful conduct because its advertising revenue relies on Snapchat’s users
6 consuming large volumes of content on its platform.

7 **J. TikTok’s Social Media Platform Has Substantially Contributed to the**
8 **Youth Mental Health Crisis**

9 246. TikTok is a social media platform that describes itself as “the leading destination
10 for short-form mobile video.”²⁸⁷ According to TikTok, it is primarily a platform where users
11 “create and watch short-form videos.”²⁸⁸

12 247. TikTok’s predecessor, Musical.ly, launched in 2014 as a place where people could
13 create and share 15-second videos of themselves lip-syncing or dancing to their favorite music.²⁸⁹

14 248. In 2017, ByteDance launched an international version of a similar platform that
15 also enabled users to create and share short lip-syncing videos that it called TikTok.²⁹⁰

16 249. That same year, ByteDance acquired Musical.ly to leverage its young user base in
17 the United States of almost 60 million monthly active users.²⁹¹

18
19 ²⁸⁶ *Id.*

20 ²⁸⁷ *About: Our Mission*, TikTok, <https://www.tiktok.com/about> (last visited Feb. 27, 2023).

21 ²⁸⁸ *Protecting Kids Online: Snapchat, TikTok, and YouTube: Hearing Before the Subcomm. On*
22 *Consumer Protection, Product Safety, and Data Security*, 117 Cong. (2021) (statement of Michael
23 Beckerman, VP and Head of Public Policy, Americas, TikTok), <https://www.commerce.senate.gov/2021/10/protecting-kids-online-snapchat-tiktok-and-youtube>.

24 ²⁸⁹ Biz Carson, *How a failed education startup turned into Musical.ly, the most popular app*
25 *you’ve probably never heard of*, Bus. Insider (May, 28, 2016), <https://www.businessinsider.com/what-is-musically-2016-5>.

26 ²⁹⁰ Paresh Dave, *China’s ByteDance scrubs Musical.ly brand in favor of TikTok*, Reuters (Aug. 1,
27 2018), <https://www.reuters.com/article/us-bytedance-musically/chinas-bytedance-scrubs-musical-ly-brand-in-favor-of-tiktok-idUSKBN1KN0BW>.

28 ²⁹¹ Liza Lin & Rolfe Winkler, *Social-Media App Musical.ly Is Acquired for as Much as \$1 billion;*
With 60 million monthly users, startup sells to Chinese maker of news app Toutiao, Wall St. J.

1 250. Months later, the apps were merged under the TikTok brand.²⁹²

2 251. Since then, TikTok has expanded the length of time for videos from 15 seconds to
3 up to 10 minutes;²⁹³ created a fund that was expected to grow to over \$1 billion within three years
4 to incentivize users to create videos that even more people will watch;²⁹⁴ and had users debut their
5 own songs, share comedy skits,²⁹⁵ and “challenge” others to perform an activity.²⁹⁶

6 252. TikTok has designed its platform to facilitate bottomless scrolling with a never-
7 ending stream of videos.

8 253. “[O]ne of the defining features of the TikTok platform” is its “For You” feed.²⁹⁷
9 This is a space within the platform where TikTok offers content supposedly curated for them based
10 on complex, machine-learning algorithms intended to keep users on its platform. TikTok itself
11 describes the feed as “central to the TikTok experience and where most of our users spend their
12 time.”²⁹⁸ *The New York Times* described it this way:

13 It’s an algorithmic feed based on videos you’ve interacted with, or even just
14 watched. It never runs out of material. It is not, unless you train it to be, full of
15 people you know, or things you’ve explicitly told it you want to see. It’s full of

16 (Nov. 10, 2017), <https://www.wsj.com/articles/lip-syncing-app-musical-ly-is-acquired-for-as-much-as-1-billion-1510278123>.

17 ²⁹² Paresh Dave, *China’s ByteDance scrubs Musical.ly brand in favor of TikTok*, Reuters (Aug. 1,
18 2018), <https://www.reuters.com/article/us-bytedance-musically/chinas-bytedance-scrubs-musical-ly-brand-in-favor-of-tiktok-idUSKBN1KN0BW>.

19 ²⁹³ Andrew Hutchinson, *TikTok Confirms that 10 Minute Video Uploads are Coming to All Users*,
20 SocialMediaToday (Feb. 28, 2022), <https://www.socialmediatoday.com/news/tiktok-confirms-that-10-minute-video-uploads-are-coming-to-all-users/619535/>.

21 ²⁹⁴ Vanessa Pappas, *Introducing the \$200M TikTok Creator Fund*, TikTok (July 29, 2021),
22 <https://newsroom.tiktok.com/en-us/introducing-the-200-million-tiktok-creator-fund>.

23 ²⁹⁵ Joseph Steinberg, *Meet Musical.ly, the Video Social Network Quickly Capturing the Tween*
24 *and Teen Markets*, Inc. (June 2, 2016), <https://www.inc.com/joseph-steinberg/meet-musically-the-video-social-network-quickly-capturing-the-tween-and-teen-m.html>.

25 ²⁹⁶ John Herrman, *How TikTok is Rewriting the World*, N.Y. Times (Mar. 10, 2019),
<https://www.nytimes.com/2019/03/10/style/what-is-tik-tok.html>.

26 ²⁹⁷ *How TikTok recommends videos #ForYou*, TikTok (June 18, 2020), <https://newsroom.tiktok.com/en-us/how-tiktok-recommends-videos-for-you>.
27

28 ²⁹⁸ *Id.*

1 things that you seem to have demonstrated you want to watch, no matter what you
 2 actually say you want to watch.²⁹⁹

3 254. The “For You” feed has successfully garnered TikTok hundreds of millions of
 4 users. Since 2018, TikTok has grown from 271 million global users to more than 1 billion global
 5 monthly users as of September 2021.³⁰⁰ As of July 2020, “TikTok classified more than a third of
 6 its 49 million daily users in the United States as being 14 years old or younger,” and that likely
 7 underestimates those under 14 and older teenagers (*i.e.*, those between 15 and 18 years old)
 8 because TikTok claims not to know how old a third of its daily users are.³⁰¹

9 **1. TikTok Designs and Markets Its Platform to Appeal to a Youth Audience**

10 255. TikTok, like the other defendants’ platforms, has built its business plan around
 11 advertising revenue, which has boomed. In 2022, TikTok is projected to receive \$11 billion in
 12 advertising revenue, over half of which (*i.e.*, \$6 billion) is expected to come from the United
 13 States.³⁰²

14 256. TikTok, since its inception as Musical.ly, has been designed and developed with
 15 youth in mind.

16 257. Alex Zhu (“Zhu”) and Louis Yang (“Yang”), the co-founders of Musical.ly, raised
 17 \$250,000 to build an app that experts could use to create short three- to five-minute videos
 18
 19
 20

21
 22 ²⁹⁹ John Herrman, *How TikTok is Rewriting the World*, N.Y. Times (Mar. 10, 2019),
<https://www.nytimes.com/2019/03/10/style/what-is-tik-tok.html>.

23 ³⁰⁰ Jessica Bursztynsky, *TikTok says 1 billion people use the app each month*, CNBC (Sept. 27,
 24 2021), <https://www.cnn.com/2021/09/27/tiktok-reaches-1-billion-monthly-users.html>.

25 ³⁰¹ Raymond Zhong & Sheera Frenkel, *A Third of TikTok’s U.S. Users May Be 14 or Under,*
 26 *Raising Safety Questions*, N.Y. Times (Sept. 17, 2020), <https://www.nytimes.com/2020/08/14/technology/tiktok-underage-users-ftc.html>.

27 ³⁰² Bhanvi Staija, *TikTok’s ad revenue to surpass Twitter and Snapchat combined in 2022*, Reuters
 28 (Apr. 11, 2022), <https://www.reuters.com/technology/tiktoks-ad-revenue-surpass-twitter-snapchat-combined-2022-report-2022-04-11/>.

1 explaining a subject.³⁰³ The day they released the app, Zhu said they knew “[i]t was doomed to
2 be a failure” because “[i]t wasn’t entertaining, and it didn’t attract teens.”³⁰⁴

3 258. According to Zhu, he stumbled upon the idea that would become known as TikTok
4 while observing teens on a train, half of whom were listening to music, while the other half took
5 selfies or videos and shared the results with friends.³⁰⁵ “That’s when Zhu realized he could
6 combine music, videos, and a social network to attract the early-teen demographic.”³⁰⁶

7 259. Zhu and Yang thereafter developed the short-form video app that is now known as
8 TikTok, which commentators have observed “encourages a youthful audience in subtle and
9 obvious ways.”³⁰⁷

10 260. Among the more subtle ways the app was marketed to youth are its design and
11 content. For example, the Federal Trade Commission (“FTC”) alleged that the app: (a) initially
12 centered around a child-oriented activity (*i.e.*, lip syncing); (b) featured music by celebrities that
13 then appealed primarily to teens and tweens, such as Selena Gomez and Ariana Grande; (c) labeled
14 folders with names meant to appeal to youth, such as “Disney” and “school”; and (d) included
15 songs in such folders related to Disney television shows and movies, such as “Can You Feel the
16 Love Tonight” from the movie “The Lion King” and “You’ve Got a Friend in Me” from the movie
17 “Toy Story” and songs covering school-related subjects or school-themed television shows and
18 movies.³⁰⁸

19
20 ³⁰³ Biz Carson, *How a failed education startup turned into Musical.ly, the most popular app*
21 *you’ve probably never heard of*, Bus. Insider (May 28, 2016), <https://www.businessinsider.com/what-is-musically-2016-5>.

22 ³⁰⁴ *Id.*

23 ³⁰⁵ *Id.*

24 ³⁰⁶ *Id.*

25 ³⁰⁷ John Herrman, *Who’s Too Young for an App? Musical.ly Tests the Limits*, N.Y. Times
26 (Sept. 16, 2016), <https://www.nytimes.com/2016/09/17/business/media/a-social-network-frequented-by-children-tests-the-limits-of-online-regulation.html>.

27 ³⁰⁸ Complaint for Civil Penalties, Permanent Injunction, and Other Equitable Relief at ¶¶26-27,
28 *United States v. Musical.ly*, No. 2:19-cv-01439-ODW-RAO, ECF 1 (“*Musical.ly* Complaint”) (C.D. Cal. Feb. 27, 2019).

261. The target demographic was also reflected in the sign-up process. In 2016, the birthdate for those signing up for the app defaulted to the year 2000 (*i.e.*, 16 years old).³⁰⁹

262. TikTok also cultivated a younger demographic in unmistakable, albeit concealed, ways. In 2020, *The Intercept* reported on a document TikTok prepared for its moderators. In the document, TikTok instructs its moderators that videos of senior people with “too many wrinkles” are disqualified for the “For You” feed because that would make “the video . . . much less attractive [and] not worth[] . . . recommend[ing.]”³¹⁰

263. In December 2016, Zhu confirmed the company had actual knowledge that a lot of their users are under 13, including some top users.³¹¹

264. The FTC alleged that despite the company’s knowledge of these and a “significant percentage” of other users who were under 13, the company failed to comply with COPPA.³¹²

265. TikTok settled those claims in 2019 by agreeing to pay what was then the largest-ever civil penalty under COPPA and to several forms of injunctive relief.³¹³

266. In an attempt to come into compliance with the consent decree and COPPA, TikTok made available to users under 13 what it describes as a “limited, separate app experience.”³¹⁴ The child version of TikTok restricts users from posting videos through the app. Children can

³⁰⁹ Melia Robinson, *How to use Musical.ly, the app with 150 million users that teens are obsessed with*, Bus. Insider (Dec. 7, 2016), <https://www.businessinsider.com/how-to-use-musically-app-2016-12>.

³¹⁰ Sam Biddle et al., *Invisible Censorship: TikTok Told Moderators to Suppress Posts by “Ugly” People and the Poor to Attract New Users*, *The Intercept* (Mar. 15, 2020), <https://theintercept.com/2020/03/16/tiktok-app-moderators-users-discrimination/>.

³¹¹ Jon Russell, *Muscal.ly defends its handling of young users, as it races past 40M MAUs at 8:58-11:12*, TechCrunch (Dec. 6, 2016), <https://techcrunch.com/2016/12/06/musically-techcrunch-disrupt-london/>.

³¹² See generally *Musical.ly* Complaint, ¶19.

³¹³ Lesley Fair, *Largest FTC COPPA settlement requires Musical.ly to change its tune*, FTC (Feb. 27, 2019), <https://www.ftc.gov/business-guidance/blog/2019/02/largest-ftc-coppa-settlement-requires-musically-change-its-tune>.

³¹⁴ Dami Lee, *TikTok stops young users from uploading videos after FTC settlement*, *The Verge* (Feb. 27, 2019), <https://www.theverge.com/2019/2/27/18243510/tiktok-age-young-user-videos-ftc-settlement-13-childrens-privacy-law>.

1 still, however, record and watch videos on TikTok.³¹⁵ For that reason, experts fear the app is
 2 “designed to fuel [children’s] interest in the grown-up version.”³¹⁶

3 267. These subtle and obvious ways TikTok markets to and obtained a young user base
 4 are manifestations of Zhu’s views about the importance of user engagement to growing TikTok.
 5 Zhu explained the target demographic to *The New York Times*: “[T]eenage culture doesn’t exist”
 6 in China because ““teens are super busy in school studying for tests, so they don’t have the time
 7 and luxury to play social media apps.””³¹⁷ By contrast, Zhu describes “[t]eenagers in the U.S. [as]
 8 a golden audience.””³¹⁸

9 268. TikTok’s efforts to attract young users have been successful. Over 67% of children
 10 aged 13 to 17 report having used the TikTok app.³¹⁹

11 **2. TikTok Intentionally Designs Features to Keep Users on Its** 12 **Platform for as Long as Possible**

13 269. Like the other defendants’ social media platforms, TikTok developed features that
 14 exploit psychological phenomenon such as IVRs and reciprocity to maximize the time users spend
 15 on its platform.

16 270. TikTok employs design elements and complex algorithms to simulate variable
 17 reward patterns in a flow-inducing stream of short-form videos intended to captivate its users’
 18 attention well after they are satiated.

19 271. TikTok drives habitual use of its platform using design elements that operate on
 20 principles of IVRs. For example, TikTok designed its platform to allow users to like and reshare

21 ³¹⁵ *Id.*

22 ³¹⁶ Leonard Sax, *Is TikTok Dangerous for Teens?*, Inst. for Fam. Stud. (Mar. 29, 2022),
 23 <https://ifstudies.org/blog/is-tiktok-dangerous-for-teens->.

24 ³¹⁷ Paul Mozur, *Chinese Tech Firms Forced to Choose Market: Home or Everywhere Else*, N.Y.
 25 Times (Aug. 9, 2016), <https://www.nytimes.com/2016/08/10/technology/china-homegrown-internet-companies-rest-of-the-world.html>.

26 ³¹⁸ *Id.*

27 ³¹⁹ Emily Vogels et al., *Teens, Social Media and Technology 2022*, Pew Rsch. Ctr. (Aug. 10,
 28 2022), <https://www.pewresearch.org/internet/2022/08/10/teens-social-media-and-technology-2022/>.

1 videos. Those features serve as rewards for users who create content on the platform. Receiving
 2 a like or reshare indicates that others approve of that user's content and satisfies their natural desire
 3 for acceptance.³²⁰ Studies have shown that "likes" activate the reward region of the brain.³²¹ The
 4 release of dopamine in response to likes creates a positive feedback loop.³²² Users will use TikTok
 5 again and again in the hope of another pleasurable experience.³²³

6 272. TikTok also uses reciprocity to manipulate users to use the platform. TikTok
 7 invokes reciprocity through features like "Duet." The Duet feature allows users to post a video
 8 side by side with a video from another TikTok user. Users use Duet as a way to react to the videos
 9 of TikTok content creators. The response is intended to engender a reciprocal response from the
 10 creator of the original video.

11 273. TikTok, like Snapchat, offers video filters, lenses, and music, which are intended
 12 to keep users on its platform. Also, like Snapchat, TikTok has gamified its platform through
 13 "challenges." These challenges are essentially campaigns in which users compete to perform a
 14 specific task. By fostering competition, TikTok incentivizes users to use its platform.

15 274. TikTok's defining feature, its "For You" feed, is a curated, never-ending stream of
 16 short-form videos intended to keep users on its platform. In that way, TikTok feeds users beyond
 17 the point they are satiated. The ability to scroll *ad infinitum*, coupled with the variable reward
 18
 19
 20
 21

22 ³²⁰ See, e.g., Lauren E. Sherman et al., *The Power of the Like in Adolescence: Effects of Peer*
 23 *Influence on Neural and Behavioral Responses to Social Media*, 27(7) Psych. Sci. 1027-35
 (July 2016), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5387999/>.

24 ³²¹ *Id.*

25 ³²² Rasan Burhan & Jalal Moradzadeh, *Neurotransmitter Dopamine (DA) and its Role in the*
 26 *Development of Social Media Addiction*, 11(7) J. Neurology & Neurophysiology 507 (2020),
 27 [https://www.iomcworld.org/open-access/neurotransmitter-dopamine-da-and-its-role-in-the-](https://www.iomcworld.org/open-access/neurotransmitter-dopamine-da-and-its-role-in-the-development-of-social-media-addiction.pdf)
 development-of-social-media-addiction.pdf.

28 ³²³ *Id.*

1 pattern of TikTok, induces a flow-like state for users that distorts their sense of time.³²⁴ That flow
2 is yet another way TikTok increases the time users spend on its platform.

3 275. Like other defendants, TikTok employs algorithms to keep users engaged. For
4 instance, the first thing users see when they open TikTok is the “For You” feed even if they have
5 never posted anything, followed anyone, or liked a video.³²⁵

6 276. The “For You” page presents users with a “stream of videos” TikTok claims are
7 “curated to [each user’s] interests.”³²⁶

8 277. According to TikTok, it populates each user’s “For You” feed by “ranking videos
9 based on a combination of factors” that include, among others, any interests expressed when a user
10 registers a new account, videos a user likes, accounts they follow, hashtags, captions, sounds in a
11 video they watch, and certain device settings such as their language preferences and where they
12 are located.³²⁷

13 278. Critically, some factors weigh heavier than others. To illustrate, TikTok explains
14 that an indicator of interest, such as “whether a user finishes watching a longer video from
15 beginning to end, would receive greater weight than a weak indicator, such as whether the video’s
16 viewer and creator are both in the same country.”³²⁸

17 279. TikTok claims it ranks videos in this way because the length of time a user spends
18 watching a video is a “strong indicator of interest.”³²⁹

20 ³²⁴ Christian Montag et al., *Addictive Features of Social Media/Messenger Platforms and*
21 *Freemium Games against the Background of Psychological and Economic Theories*, 16(14) Int’l
J. Env’t Rsch. & Pub. Health 2612 (July 23, 2019), <https://doi.org/10.3390/ijerph16142612>.

22 ³²⁵ Brian Feldman, *TikTok is Not the Internet’s Eden*, N.Y. Mag. (Mar. 16, 2020),
23 <https://nymag.com/intelligencer/2020/03/tiktok-didnt-want-you-to-see-ugly-or-poor-people-on-its-app.html>.

24 ³²⁶ *How TikTok recommends videos #ForYou*, TikTok (June 18, 2020),
25 <https://newsroom.tiktok.com/en-us/how-tiktok-recommends-videos-for-you>.

26 ³²⁷ *Id.*

27 ³²⁸ *Id.*

28 ³²⁹ *Id.*

280. However, Zhu offered a different explanation. He repeatedly told interviewers that he was “focused primarily on increasing the engagement of existing users.”³³⁰ ““Even if you have tens of millions of users,”” Zhu explained, ““you have to keep them *always* engaged.””³³¹

281. The decisions TikTok made in programming its algorithms are intended to do just that, as TikTok candidly explained in an internal document titled, “TikTok Algo 101.” The document, which TikTok has confirmed is authentic, “explains frankly that in the pursuit of the company’s ‘ultimate goal’ of adding daily active users, it has chosen to optimize for two closely related metrics in the stream of videos it serves: ‘retention’ – that is, whether a user comes back – and ‘time spent.’”³³²

282. ““This system means that watch time is key.””³³³ Chaslot, the founder of Algo Transparency, who reviewed the document at the request of *The New York Times*, explained: ““[R]ather than giving [people] what they really want,”” TikTok’s “algorithm tries to get people addicted.””³³⁴

283. Put another way, the algorithm, coupled with the design elements, conditions users through reward-based learning processes to facilitate the formation of habit loops that encourage excessive use.

³³⁰ Joseph Steinberg, *Meet Musical.ly, the Video Social Network Quickly Capturing the Tween and Teen Markets*, Inc. (June 2, 2016), <https://www.inc.com/joseph-steinberg/meet-musically-the-video-social-network-quickly-capturing-the-tween-and-teen-m.html>.

³³¹ Biz Carson, *How a failed education startup turned into Musical.ly, the most popular app you’ve probably never heard of*, Bus. Insider (May 28, 2016), <https://www.businessinsider.com/what-is-musically-2016-5> (emphasis added).

³³² Ben Smith, *How TikTok Reads Your Mind*, N.Y. Times (Dec. 5, 2021), <https://www.nytimes.com/2021/12/05/business/media/tiktok-algorithm.html>.

³³³ *Id.*

³³⁴ *Id.*

284. The end result is that TikTok uses “a machine-learning system that analyzes each video and tracks user behavior so it can serve up a continually refined, never-ending stream of TikToks optimized to hold [users’] attention.”³³⁵

3. TikTok’s Conduct in Designing and Operating Its Platform Has Harmed Youth Mental Health

285. TikTok’s decision to program its algorithms to prioritize user engagement causes harmful and exploitative content to be amplified to the young market it has cultivated.

286. TikTok’s prioritization of user engagement amplifies the spread of misinformation and content that promotes hate speech and self-harm. The Integrity Institute, a nonprofit organization of engineers, product managers, data scientists, and others, has demonstrated how prioritizing user engagement amplifies misinformation on TikTok and other platforms.³³⁶ That pattern, the Integrity Institute notes, is “true for a broad range of harms,” including hate speech and self-harm content, in addition to misinformation.³³⁷

287. The Integrity Institute’s analysis builds on a premise Mark Zuckerberg (“Zuckerberg”), CEO of Facebook, described as the “Natural Engagement Pattern.”³³⁸

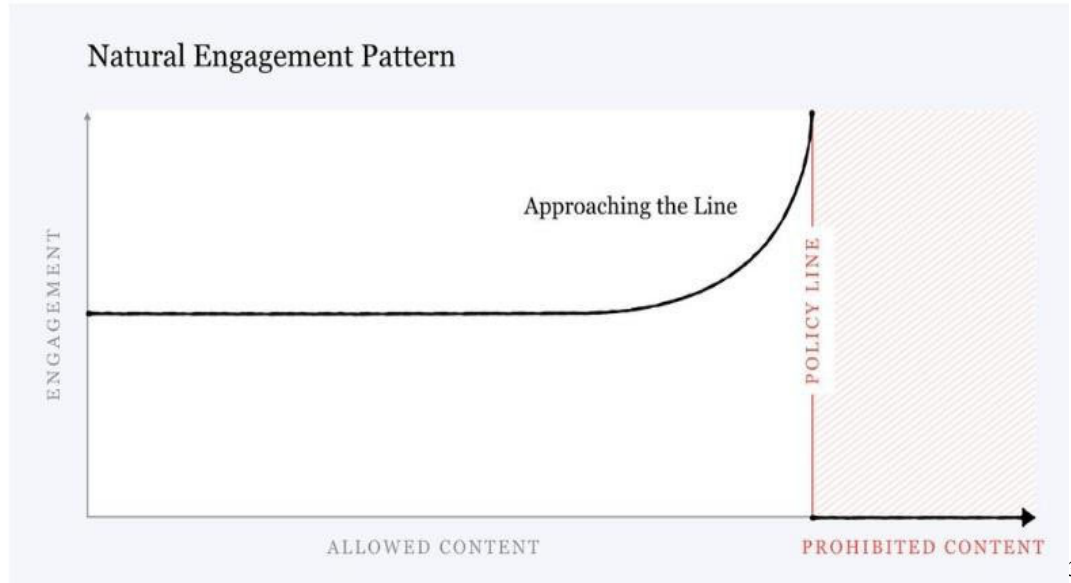
288. The chart below shows that as content gets closer and closer to becoming harmful, on average, it gets more engagement:

³³⁵ Jia Tolentino, *How TikTok Holds Our Attention*, New Yorker (Sept. 23, 2019), <https://www.newyorker.com/magazine/2019/09/30/how-tiktok-holds-our-attention>.

³³⁶ Jeff Allen, *Misinformation Amplification Analysis and Tracking Dashboard*, Integrity Inst. (Oct. 13, 2022), <https://integrityinstitute.org/our-ideas/hear-from-our-fellows/misinformation-amplification-tracking-dashboard>; see also Steven Lee Myers, *How Social Media Amplifies Misinformation More Than Information*, N.Y. Times (Oct. 13, 2022), <https://www.nytimes.com/2022/10/13/technology/misinformation-integrity-institute-report.html>.

³³⁷ Jeff Allen, *Misinformation Amplification Analysis and Tracking Dashboard*, Integrity Inst. (Oct. 13, 2022), <https://integrityinstitute.org/our-ideas/hear-from-our-fellows/misinformation-amplification-tracking-dashboard>.

³³⁸ *Id.*



339

289. According to Zuckerberg: “[N]o matter where we draw the lines for what is allowed, as a piece of content gets close to that line, people will engage with it more on average.”³⁴⁰

290. This has important implications for any social media platform design, as the Integrity Institute explains:

[W]hen platforms use machine learning models to predict user engagement on content, we should expect the predicted engagement to follow the actual engagement. When those predictions are used to rank and recommend content, specifically when a higher predicted engagement score means the content is more likely to be recommended or placed at the top of feeds, then we expect that misinformation will be preferentially distributed and amplified on the platform.³⁴¹

291. Put differently, if you use past engagement to predict future engagement, as TikTok does, you are most likely to populate users “For You” feed with harmful content.

292. The Integrity Institute tested its theory by analyzing the spread of misinformation on TikTok. Specifically, the Integrity Institute compared the amount of engagement (e.g., number

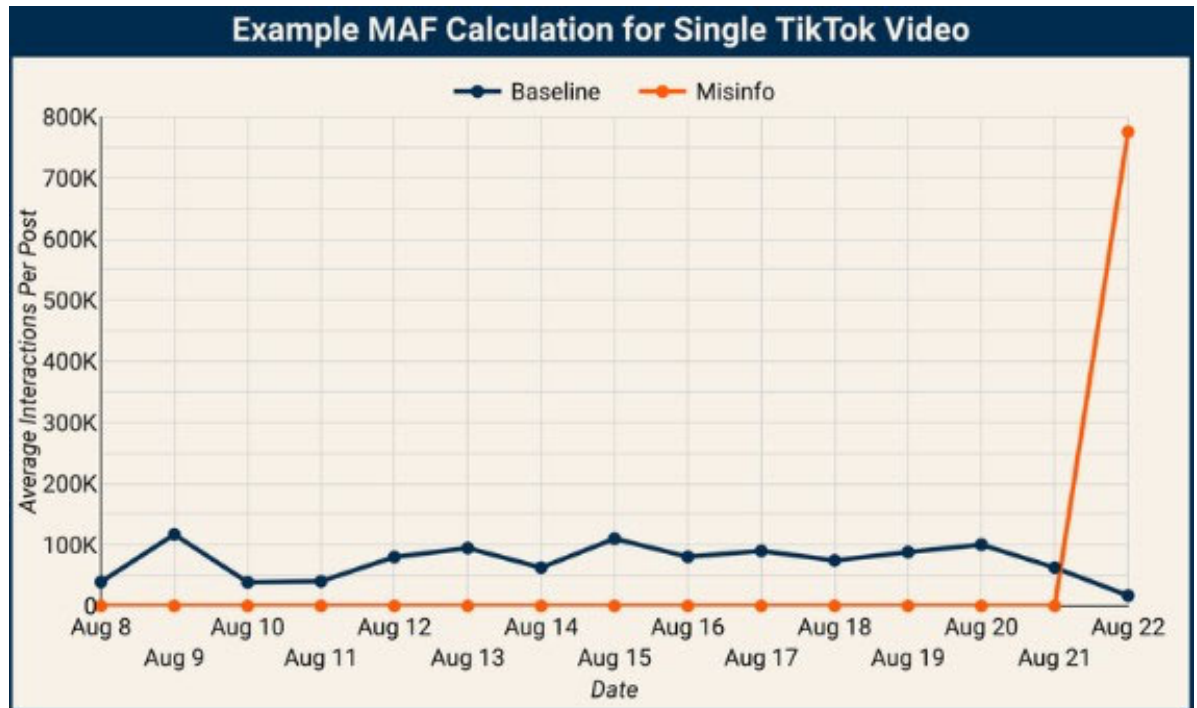
³³⁹ Mark Zuckerberg, *A Blueprint for Content Governance and Enforcement*, Facebook (May 5, 2021), <https://www.facebook.com/notes/751449002072082>.

³⁴⁰ *Id.*

³⁴¹ *Misinformation Amplification Analysis and Tracking Dashboard*, Integrity Inst. (Oct. 13, 2022), <https://integrityinstitute.org/our-ideas/hear-from-our-fellows/misinformation-amplification-tracking-dashboard>.

of views) received by a post containing misinformation as compared to prior posts from the same content creator.³⁴²

293. For example, a TikTok user's historical posts received on average 75,000 views. When that same user posted a false statement (as determined by the International Fact Checking Network), the post received 775,000 views. In this case, TikTok amplified the misinformation ten times more than this user's typical content.³⁴³



294. After analyzing many other posts from other users, the Integrity Institute found that TikTok on average amplified misinformation 29 times more than other content.³⁴⁴

295. A separate investigation by *NewsGuard* found TikTok's search algorithm similarly amplified misinformation. TikTok's search engine, like its "For You" feed, is a favorite among

³⁴² *Id.*

³⁴³ *Id.*

³⁴⁴ *Id.*

1 youth, with 40% preferring it (and Instagram) over Google.³⁴⁵ Unfortunately, *NewsGuard* found
 2 that one in five of the top 20 TikTok search results on prominent news topics, such as school
 3 shootings and COVID-19 vaccines, contain misinformation.³⁴⁶

4 296. Misinformation is just one type of harmful content TikTok amplifies to its young
 5 users. Investigations by *The Wall Street Journal* found TikTok inundated young users with videos
 6 about depression, self-harm, drugs, and extreme diets, to name a few.

7 297. In one investigation, *The Wall Street Journal* found TikTok's algorithm quickly
 8 pushed users down rabbit holes where they were more likely to encounter harmful content. *The*
 9 *Wall Street Journal* investigated how TikTok's algorithm chose what content to promote to users
 10 by having 100 bots scroll through the "For You" feed.³⁴⁷ Each bot was programmed with interests,
 11 such as extreme sports, forestry, dance, astrology, and animals.³⁴⁸ Those interests were not
 12 disclosed in the process of registering their accounts.³⁴⁹ Rather, the bots revealed their interests
 13 through their behaviors, specifically the time they spent watching the videos TikTok recommended
 14 to them. Consistent with TikTok's internal "Algo 101" document, *The Wall Street Journal* found
 15 time spent watching videos was "the most impactful data on [what] TikTok serves you."³⁵⁰

20 ³⁴⁵ Wanda Pogue, *Move Over Google. TikTok Is the Go-To Search Engine for Gen Z*, Adweek
 21 (Aug. 4, 2022), <https://www.adweek.com/social-marketing/move-over-google-tiktok-is-the-go-to-search-engine-for-gen-z/>.

22 ³⁴⁶ Jack Brewster et al., *Misinformation Monitor; September 2022*, NewsGuard,
 23 <https://www.newsguardtech.com/misinformation-monitor/september-2022/> (last visited Feb. 26, 2023).

24 ³⁴⁷ *Inside TikTok's Algorithm: A WSJ Video Investigation*, Wall St. J. (July 21, 2021),
 25 <https://www.wsj.com/articles/tiktok-algorithm-video-investigation-11626877477>.

26 ³⁴⁸ *Id.*

27 ³⁴⁹ *Id.*

28 ³⁵⁰ *Id.*

298. Over the course of 36 minutes, one bot watched 224 videos, lingering over videos with hashtags for “depression” or “sad.”³⁵¹ From then on, 93% of the videos TikTok showed this account were about depression or sadness.³⁵²

299. That is not an outlier. Former YouTube engineer Guillaume Chaslot, who worked on the algorithm for YouTube, explained that 90% to 95% of the content users see on TikTok is based on its algorithm.³⁵³

300. “[E]ven bots with general mainstream interests got pushed to the margin as the recommendations got more personalized and narrow.”³⁵⁴ Deep in these rabbit holes, *The Wall Street Journal* found “users are more likely to encounter potential harmful content.”³⁵⁵

301. Chaslot explained why TikTok feeds users this content:

[T]he algorithm is able to find the piece of content that you’re vulnerable to. That will make you click, that will make you watch, but it doesn’t mean you really like it. And that it’s the content that you enjoy the most. It’s just the content that’s most likely to make you stay on the platform.³⁵⁶

302. A follow-up investigation by *The Wall Street Journal* using bots found “that through its powerful algorithms, TikTok can quickly drive minors – among the biggest users of the app – into endless spools of content about sex and drugs.”³⁵⁷

303. The bots in this investigation were registered as users aged 13 to 15 and, as before, programmed to demonstrate interest by how long they watched the videos TikTok’s algorithms

³⁵¹ *Id.*

³⁵² *Id.*

³⁵³ *Id.*

³⁵⁴ *Id.*

³⁵⁵ *Id.*

³⁵⁶ *Id.*

³⁵⁷ Rob Barry et al., *How TikTok Serves Up Sex and Drug Videos to Minors*, Wall St. J. (Sept. 8, 2021), https://www.wsj.com/articles/tiktok-algorithm-sex-drugs-minors-11631052944?st=e92pu5734lvc7ta&reflink=desktopwebshare_permalink.

1 served them.³⁵⁸ The bots scrolled through videos that did not match their interests without
 2 pausing.³⁵⁹ The bots lingered on videos that matched any of their programmed interests.³⁶⁰

3 304. Every second the bot hesitated or rewatched a video again proved key to what
 4 TikTok recommended to the accounts, which *The Wall Street Journal* found was used to “drive
 5 users of any age deep into rabbit holes of content.”³⁶¹

6 305. For example, one bot was programmed to pause on videos referencing drugs,
 7 among other topics. The first day on the platform, the “account lingered on a video of a young
 8 woman walking through the woods with a caption suggesting she was in search of marijuana.”³⁶²
 9 The following day, the bot viewed a video of a “marijuana-themed cake.”³⁶³ The “majority of the
 10 next thousand videos” TikTok directed at the teenage account “tout[ed] drugs and drug use,
 11 including marijuana, psychedelics and prescription medication.”³⁶⁴

12 306. TikTok similarly zeroed in on and narrowed the videos it showed accounts whether
 13 the bot was programmed to express interest in drugs, sexual imagery, or a multitude of interests.
 14 In the first couple of days, TikTok showed the bots a “high proportion of popular videos.”³⁶⁵ “But
 15 after three days, TikTok began serving a high number of obscure videos.”³⁶⁶

16
17
18
19
20 ³⁵⁸ *Id.*

21 ³⁵⁹ *Id.*

22 ³⁶⁰ *Id.*

23 ³⁶¹ *Id.*

24 ³⁶² *Id.*

25 ³⁶³ *Id.*

26 ³⁶⁴ *Id.*

27 ³⁶⁵ *Id.*

28 ³⁶⁶ *Id.*

1 307. For example, a bot registered as a 13 year old was shown a series of popular videos
2 upon signing up.³⁶⁷ The bot, which was programmed to demonstrate interest in sexual text and
3 imagery, also watched sexualized videos.

4 308. At least 2,800 of the sexualized videos that were shown to *The Wall Street Journal*'s
5 bots were labeled as being for adults only.³⁶⁸ However, TikTok directed these videos to the minor
6 accounts because, as TikTok told *The Wall Street Journal*, it does not “differentiate between videos
7 it serves to adults and minors.”³⁶⁹

8 309. TikTok also directed a concentrated stream of videos at accounts programmed to
9 express interest in a variety of topics. One such account was programmed to linger over hundreds
10 of Japanese film and television cartoons. “In one streak of 150 videos, all but four” of the videos
11 TikTok directed at the account “featured Japanese animation – many with sexual themes.”³⁷⁰

12 310. The relentless stream of content intended to keep users engaged “can be especially
13 problematic for young people” because they may lack the capability to stop watching, says David
14 Anderson, a clinical psychologist at the nonprofit mental health care provider, The Child Mind
15 Institute.³⁷¹

16 311. In a similar investigation, *The Wall Street Journal* found TikTok “flood[ed] teen
17 users with videos of rapid-weight-loss competitions and ways to purge food that health
18 professionals say contribute to a wave of eating disorder cases spreading across the country.”³⁷²
19
20

21 ³⁶⁷ *Id.*

22 ³⁶⁸ *Id.*

23 ³⁶⁹ *Id.*

24 ³⁷⁰ *Id.*

25 ³⁷¹ *Id.*

26 ³⁷² Tawnell D. Hobbs et al., *The Corpse Bride Diet: How TikTok Inundates Teens With Eating-*
27 *Disorder Videos*, Wall St. J. (Dec. 17, 2021), [https://www.wsj.com/articles/how-tiktok-inundates-](https://www.wsj.com/articles/how-tiktok-inundates-teens-with-eating-disorder-videos-11639754848)
28 [teens-with-eating-disorder-videos- 11639754848](https://www.wsj.com/articles/how-tiktok-inundates-teens-with-eating-disorder-videos-11639754848) (some of the accounts performed searches or
sent other, undisclosed signals indicating their preferences).

1 312. In this investigation, *The Wall Street Journal* analyzed the tens of thousands of
2 videos TikTok recommended to a dozen bots registered as 13 year olds. As before, the bots were
3 given interests. Bots scrolled quickly through videos that did not match their interests and lingered
4 on videos that did.³⁷³ The accounts registered as 13 year olds were programmed at different times
5 to display interests in weight loss, gambling, and alcohol.³⁷⁴

6 313. “TikTok’s algorithm quickly g[ave] users the content they’ll watch, for as long as
7 they’ll watch it.”³⁷⁵ For example, TikTok streamed gambling videos to a bot registered to a 13
8 year old after it first searched for and favorited several such videos.³⁷⁶ When the bot began
9 demonstrating interest in weight loss videos, the algorithm adapted quickly, as the chart below
10 demonstrates:³⁷⁷

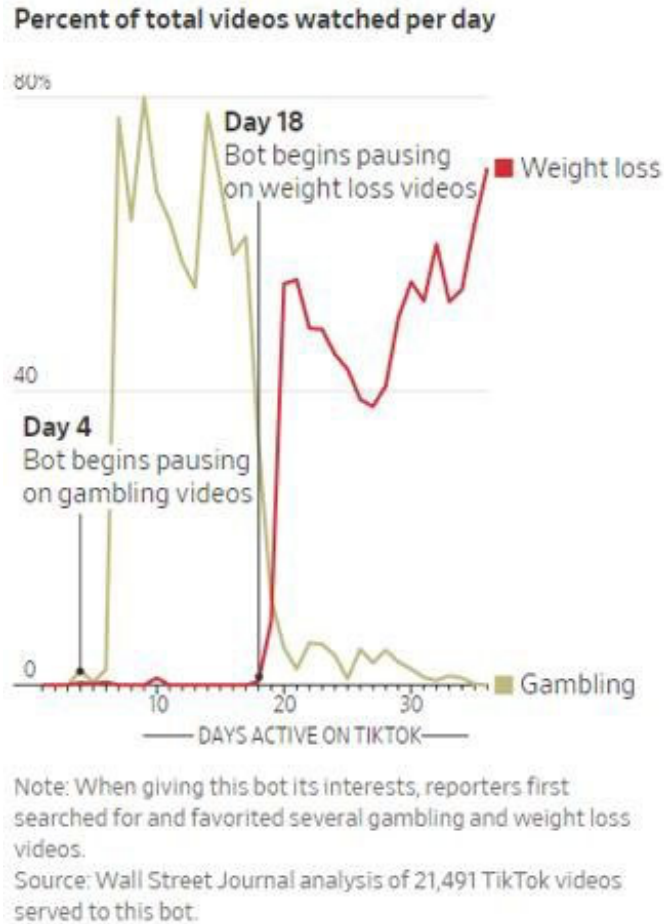
11
12
13
14
15
16
17
18
19
20
21
22
23
24 ³⁷³ *Id.*

25 ³⁷⁴ *Id.*

26 ³⁷⁵ *Id.*

27 ³⁷⁶ *Id.*

28 ³⁷⁷ *Id.*



314. After the change in programming, weight loss videos accounted for well over 40% of the content TikTok's algorithm recommended to the user.³⁷⁸

315. The other accounts were also flooded with weight loss videos. Over the course of about 45 days, TikTok inundated the accounts with more than 32,000 such videos, "many promoting fasting, offering tips for quickly burning belly fat and pushing weight-loss detox programs and participation in extreme weight-loss competitions."³⁷⁹ Some encouraged purging, eating less than 300 calories a day, consuming nothing but water some days, and other hazardous diets.³⁸⁰

³⁷⁸ *Id.*

³⁷⁹ *Id.*

³⁸⁰ *Id.*

1 316. According to Alyssa Moukheiber, a treatment center dietitian, TikTok’s powerful
2 algorithm and the harmful streams of content it directs at young users can tip them into unhealthy
3 behaviors or trigger a relapse.³⁸¹

4 317. Unfortunately, it has done just that for several teenage girls interviewed by *The*
5 *Wall Street Journal*, who reported developing eating disorders or relapsing after being influenced
6 by the extreme diet videos TikTok promoted to them.³⁸²

7 318. They are not alone. Katie Bell, a co-founder of the Healthy Teen Project, “said the
8 majority of her 17 teenage residential patients told her TikTok played a role in their eating
9 disorders.”³⁸³

10 319. Others, like Stephanie Zerwas, an associate professor of psychiatry at the
11 University of North Carolina at Chapel Hill, could not recount how many of her young patients
12 told her that: “I’ve started falling down this rabbit hole, or I got really into this or that influencer
13 on TikTok, and then it started to feel like eating-disorder behavior was normal, that everybody was
14 doing that.”³⁸⁴

15 320. This trend extends nationwide. The National Association of Anorexia Nervosa and
16 Associated Disorders has fielded 50% more calls to its hotline since the pandemic began, most of
17 whom it says are from young people or parents on their behalf.³⁸⁵

18 321. Despite the ample evidence that TikTok’s design and operation of its platform
19 harms the tens of millions of youth who use it, TikTok continues to manipulate them into returning
20 to the platform again and again so that it may serve them ads in between the exploitative content
21 it amplifies.

22
23
24 ³⁸¹ *Id.*

25 ³⁸² *Id.*

26 ³⁸³ *Id.*

27 ³⁸⁴ *Id.*

28 ³⁸⁵ *Id.*

V. **THE COMMUNICATIONS DECENCY ACT EXPRESSLY ALLOWS INTERACTIVE COMPUTER SERVICE COMPANIES TO LIMIT HARMFUL CONTENT AND PROVIDES NO BLANKET IMMUNITY FOR THE ALLEGED MISCONDUCT HERE**

322. The Communications Decency Act, 47 U.S.C. §230(c), was passed by Congress to address the harms associated with certain content and drafted to limit liability for “Good Samaritans” seeking to restrict such harmful content. It is entitled “*Protection for ‘Good Samaritan’ blocking and screening of offensive material*” and states in 230(c)(1) that: “[n]o *provider* or user of an interactive computer service *shall be treated as the publisher* or speaker of any information provided by another information content provider.” 47 U.S.C. §230(c) (emphasis added); *see* 47 U.S.C. §230(b)(4)-(5). Section 230(c)(2), entitled “Civil liability,” expressly states that providers or users may not be held liable for actions taken “*to restrict access* to or availability of material” or to provide others with the means to “restrict access” to material “that the provider or user considers to be *obscene, lewd, lascivious, filthy, excessively violent, harassing, or otherwise objectionable*, whether or not such material is constitutionally protected.” 47 U.S.C. §230(c)(2)(A). Thus, the Communications Decency Act protects “Good Samaritans” seeking to limit the deluge of harmful content; it is no shield for defendants’ own deliberate acts in designing, marketing, and operating social media platforms in ways harmful to youth so as to maximize youth engagement and advertising dollars.

323. Plaintiffs expressly disavow any claims or allegations that attempt to hold defendants liable as the publisher or speaker of any information provided by third parties within the plain meaning of the statute and as interpreted by applicable law.

324. The Communications Decency Act does not immunize defendants’ conduct from liability because, among other considerations: (a) defendants are liable for their own affirmative conduct in recommending, promoting, and amplifying harmful content to youth in ways deliberately designed to be addictive; (b) defendants are liable for their own actions designing and marketing their social media platforms in a way that causes harm; (c) defendants are liable for the content they create that causes harm; and (d) defendants are liable for deliberately creating experiences for youth they know or have reason to know is harmful, unlawful, and/or tortious.

1 325. Plaintiffs' claims arise from defendants' status as designers and marketers of
2 dangerous social media platforms that have injured the health, comfort, and repose of its youth
3 community. The nature of defendants' platforms centers around defendants' use of algorithms
4 and other design features that encourage users to spend the maximum amount of time on their
5 platforms.

6 326. Defendants are also liable for the content they create. In addition to content such
7 as, for example, Snapchat filters, which promote body dysmorphia, defendants send emails and
8 notifications to youth including material they create, which often promotes and amplifies harmful
9 content.

10 327. Plaintiffs' claims are predicated on defendants' conduct which has resulted in
11 fueling the current youth mental health crisis so evident among plaintiffs' youth.

12 **VI. CAUSES OF ACTION**

13 **COUNT I**

14 **Violations of Pennsylvania Public Nuisance Law** 15 **(Against All Defendants)**

16 328. Municipal plaintiff Bucks County incorporates each preceding paragraph as though
17 set forth fully herein.

18 329. Municipal plaintiff Bucks County brings this claim under Pennsylvania public
19 nuisance law as to all defendants.

20 330. A public nuisance is an unreasonable interference with a right common to the
21 general public. Defendants created and maintained a public nuisance which proximately caused
22 injury to plaintiff.

23 331. Defendants have created a mental health crisis in plaintiff's communities, injuring
24 the public's health and safety and interfering with the operations, use, and enjoyment of the life
25 and/or the free use of property of entire communities or neighborhoods. This condition affected
26 any considerable and substantial number of persons in plaintiff's jurisdiction.

27 332. Residents in plaintiff's county, including the youth, have a right to be free from
28 conduct that endangers their health and safety. However, defendants have engaged in conduct that

1 endangers or injures the health and safety of plaintiff's residents by designing, marketing, and
 2 operating their respective social media platforms and targeting youth in plaintiff's communities in
 3 a manner that substantially interferes with the functions and operations of plaintiff's operations
 4 and impacts the public health, safety, and welfare of the public in the county.

5 333. Each defendant has created or assisted in the creation of a condition that is injurious
 6 to the health and safety of plaintiff and its residents, especially children, and interferes with the
 7 comfortable enjoyment of life and property to plaintiff.

8 334. The health and safety of plaintiff's residents, including the children who use, have
 9 used, or will use defendants' platforms, as well as those affected by others' use of their platforms,
 10 are matters of substantial public interest and of legitimate concern to plaintiff.

11 335. Defendants' nuisance-creating conduct was intentional and unreasonable and/or
 12 violated statutes which established specific legal requirements for the protection of others.
 13 Defendants' conduct has affected and continues to affect a substantial number of people within
 14 plaintiff's jurisdiction and is likely to continue causing significant harm.

15 336. Defendants had control over their conduct in Bucks County and that conduct had
 16 an adverse effect on the public right. Defendants had sufficient control over, and responsibility
 17 for, the public nuisance they created – defendants were in control of the “instrumentality” of the
 18 nuisance, namely the operation of their social media platforms, at all relevant times.

19 337. Defendants' ongoing conduct has directly caused a severe disruption of the public
 20 health, order, and safety to plaintiff and its residents. Defendants' conduct is ongoing and
 21 continues to produce permanent and long-lasting damage.

22 338. Defendants' conduct has created an ongoing, significant, unlawful, and
 23 unreasonable interference with rights common to the general public, including the public health,
 24 welfare, safety, peace, comfort, and convenience of plaintiff and plaintiff's communities.³⁸⁶

25
 26
 27
 28 ³⁸⁶ See Restatement (Second) of Torts §821B.

1 339. Defendants' conduct is unreasonable, intentional, and unlawful, including, without
2 limitation, because it violates Pennsylvania law, including, but not limited to the UTPCPL, 73 P.S.
3 §201-1, *et seq.*

4 340. This harm to youth mental health and the corresponding impacts to the public
5 health, safety, and welfare of plaintiff's communities outweighs any social utility of defendants'
6 wrongful conduct.

7 341. The rights, interests, and inconvenience to plaintiff's communities far outweigh the
8 rights, interests, and inconvenience to defendants, who have profited tremendously from their
9 wrongful conduct.

10 342. But for defendants' actions, the young people in plaintiff's jurisdiction would not
11 use social media platforms as frequently or as long as they do today and would not be deluged
12 with exploitative and harmful feeds and other design features to the same degree, and the public
13 health crisis that currently exists as a result of defendants' conduct would have been averted.

14 343. Logic, common sense, justice, policy, and precedent indicate defendants' unfair and
15 deceptive conduct has caused the damage and harm complained of herein. Defendants knew or
16 reasonably should have known that their design, promotion, and operation of their platforms would
17 cause youth to use their platforms excessively, that their marketing was designed to appeal to
18 youth, and that their active efforts to increase youth use of their platforms were causing harm to
19 youth, including youth in plaintiff's communities.

20 344. Thus, the public nuisance caused by defendants was reasonably foreseeable,
21 including the financial and economic losses incurred by plaintiff. Defendants know, and have
22 known, that their intentional, unreasonable, negligent, and unlawful conduct will cause, and has
23 caused, youth to become addicted to their social media platforms, which has a harmful effect on
24 youth mental health.

25 345. Despite this knowledge, defendants intentionally, negligently, unreasonably, and/or
26 unlawfully marketed their platforms to adolescents and children, fueling the youth mental health
27 crisis in Bucks County.

1 346. Alternatively, defendants' conduct was a substantial factor in bringing about the
2 public nuisance even if a similar result would have occurred without it. By designing, marketing,
3 promoting, and operating their platforms in a manner intended to maximize the time youth spend
4 on their respective platforms, despite knowledge of the harms to youth from their wrongful
5 conduct, defendants directly facilitated the widespread, excessive, and habitual use of their
6 platforms and the public nuisance affecting plaintiff. By seeking to capitalize on their success by
7 refining their platforms to increase the time youth spend on their platforms, defendants directly
8 contributed to the public health crisis and the public nuisance affecting plaintiff and its residents.

9 347. Defendants' conduct is of a continuing nature and/or has produced a permanent or
10 long-lasting effect, and, as defendants know or have reason to know, have a significant effect upon
11 the public right.

12 348. Defendants' intentional, negligent, and/or unreasonable nuisance-creating conduct,
13 for which the gravity of the harm outweighs the utility of the conduct, includes:

14 (a) designing, marketing, promoting, and/or operating their platforms in a
15 manner intended to maximize the time youth spend on their respective platforms, despite
16 knowledge of the harms to youth from their wrongful conduct;

17 (b) manipulating users to keep using or coming back to their platforms through
18 the use of IVRs;

19 (c) intentionally marketing their platforms to children and teens and directly
20 facilitating the widespread, excessive, and habitual use of their platforms among youth; and

21 (d) knowingly designing and modifying their platforms in ways that promote
22 excessive and problematic use in ways known to be harmful to children.

23 349. Defendants owed the public legal duties, including a preexisting duty not to expose
24 Bucks County and its residents to an unreasonable risk of harm and a duty to exercise reasonable
25 and ordinary care and skill in accordance with the applicable standards of conduct in designing
26 and marketing platforms to youth and adolescents.

27 350. Each defendant breached its duty to exercise the appropriate degree of care
28 commensurate with marketing and promoting their platforms to youth.

1 351. Defendants' conduct is especially injurious to plaintiff because, as a direct and
2 proximate cause of defendants' conduct creating or assisting in the creation of a public nuisance,
3 plaintiff and its residents have sustained and will continue to sustain substantial injuries.

4 352. Each defendant is liable for creating the public nuisance because the intentional,
5 unreasonable, negligent, and/or unlawful conduct of each defendant was a substantial factor in
6 producing the public nuisance and harm to plaintiff.

7 353. The nuisance created by defendants' conduct is abatable.

8 354. Defendants' misconduct alleged in this case does not concern a discrete event or
9 discrete emergency of the sort a political subdivision would reasonably expect to occur, and is not part
10 of the normal and expected costs of a local government's existence. Plaintiff alleges wrongful acts
11 which are neither discrete nor of the sort a local government can reasonably expect.

12 355. Municipal plaintiff Bucks County has incurred expenditures and has had to take
13 steps to mitigate the harm and disruption caused by defendants' conduct, including allocating
14 funding for the following:

15 (a) additional mental health personnel to focus on youth mental health,
16 including over 80 new school-based mental health workers since 2021;

17 (b) additional mental health resources including mental health programs for
18 youth, family-based mental health services, crisis prevention programs for youth, outpatient
19 mental health programs, mobile crisis programs, emergency services specifically for youth mental
20 health emergencies, peer support services, family support services, and partial hospitalization
21 programs for youth;

22 (c) trainings for mental health workers, social workers, school staff, and other
23 personnel to help youth with their mental health, including assessment and diagnosis tools, suicide
24 prevention approaches, trauma-informed care strategies, and certified peer support programs for
25 young adults;

26 (d) production and distribution of educational materials on social, emotional,
27 and mental health for youth, including suicide prevention materials;

(e) coordination and delivery of mental health care services to public schools within the county, including offering assessments, group therapy, individual counseling, and suicide prevention efforts;

(f) supporting families and caretakers of youth with mental health diagnoses including through funding of family-based partial hospitalization programs, mental health trainings, trauma-informed care trainings, caregiving coaching, and support groups;

(g) increasing intervention services and hiring additional personnel to address property damaged as a result of youth acting out because of mental, social, and emotional problems caused by defendants' conduct;

(h) investigating and responding to threats made over social media; and

(i) increasing resources to law enforcement and other diversionary services to address increase in anti-social and criminal behavior by youth.

356. Fully abating the nuisance resulting from defendants' conduct will require much more than these steps.

357. Plaintiff requests an order providing for abatement of the public nuisance that defendants have created, or of which defendants have assisted in the creation, and enjoining defendants from future violations.

358. Plaintiff also seeks the maximum statutory and civil penalties permitted by law, including actual and compensatory damages, as a result of the public nuisance that defendants have created, or of which defendants have assisted in the creation.

359. Defendants are jointly and severally liable because they have acted in concert with each other and because plaintiffs are not at fault.

COUNT II

Violation of the Pennsylvania Unfair Trade Practices and Consumer Protection Act, 73 P.S. §201, *et seq.* (Against All Defendants)

360. Plaintiff Commonwealth of Pennsylvania incorporates each preceding paragraph as though set forth fully herein.

1 361. Plaintiff Commonwealth of Pennsylvania brings this claim under Pennsylvania's
2 UTPCPL as to all defendants.

3 362. Under the UTPCPL, an act or a practice is violating if the defendant is engaged in
4 unfair methods of competition and unfair or deceptive acts or practices. Defendants engaged in
5 unfair methods of competition by: (i) designing, marketing, promoting, and operating their
6 platforms in a manner intended to deluge youth with the most polarizing, titillating, controversial,
7 emotionally charged, and otherwise salacious material created by third parties and by defendants
8 themselves; and (ii) using Intermittent Variable Rewards ("IVRs") or dopamine hits to
9 intentionally alter youth users' behavior, creating habits and addiction so as to maximize the time
10 youth spend on their respective platforms, despite knowledge of the harms to youth from their
11 wrongful conduct. Moreover, defendants have expressly spoken falsely in the public domain about
12 the positive effects of their platforms on youth users. For example in 2021, former YouTube CEO
13 Susan Wojcicki stated that Google's video platform YouTube is beneficial to adolescents' mental
14 health; Snap CEO Evan Spiegel similarly stated that Snapchat makes 95% of its users (most of
15 whom are youth) "feel happy"; Facebook sought first to conceal and then to downplay and
16 diminish its own study which found that Instagram use harmed the well-being of teenage girls and
17 TikTok too has denied that it is subjecting users to harmful experiences. In so doing, defendants
18 have engaged in unfair and/or deceptive business practices that directly or indirectly harmed
19 Pennsylvania consumers within the meaning of 73 P.S. §201-4(v) and (xxi).

20 363. The exemptions under 73 P.S. §201-3 do not apply to defendants. First, plaintiff is
21 not alleging defendants are liable for what third parties have said on defendants' platforms but
22 rather for defendants' own conduct. Second, plaintiff's claims arise from defendants' status as
23 designers and marketers of dangerous social media platforms that have injured the health, comfort,
24 and repose of its community. The nature of defendants' platforms centers around defendants' use
25 of algorithms and other design features that encourage users to spend the maximum amount of
26 time on their platforms – not on particular third-party content. Third, defendants are liable for the
27 content they create. And fourth, plaintiff does not seek to hold defendants liable as publishers or
28 speakers of information provided by other content providers.

1 364. Plaintiff's claim rests on defendants' affirmative conduct, which has resulted in the
2 current public health crisis among youth mental health.

3 365. Defendants' conduct violated the UTPCPL by:

4 (a) designing, marketing, promoting, and/or operating their platforms in a
5 manner intended to maximize the time youth spend on their respective platforms, despite
6 knowledge of the harms to youth from their wrongful conduct;

7 (b) manipulating users to keep using or coming back to their platforms through
8 the use of IVRs;

9 (c) intentionally marketing their platforms to children and teens, directly
10 facilitating the widespread, excessive, and habitual use of their platforms among youth; and

11 (d) knowingly designing and modifying their platforms in ways that promote
12 excessive and problematic use in ways known to be harmful to children.

13 366. The aforementioned methods, acts, or practices constitute unfair or deceptive acts
14 or practices within the meaning of §201-2(4) of the UTPCPL, including, but not limited to:

15 (a) "[c]ausing likelihood of confusion or of misunderstanding as to the source,
16 sponsorship, approval or certification of goods or services" in violation of 73 P.S. §201-2(4)(ii);

17 (b) "[r]epresenting that goods or services have sponsorship, approval,
18 characteristics, ingredients, uses, benefits or quantities that they do not have or that a person has a
19 sponsorship, approval, status affiliation, or connection that he does not have" in violation of 73
20 P.S. §201-2(4)(v);

21 (c) "[r]epresenting that goods or services are of a particular standard, quality or
22 grade, or that goods are of a particular style or model, if they are of another" in violation of 73 P.S.
23 §201-2(4)(vii); and

24 (d) "[e]ngaging in any other fraudulent or deceptive conduct which creates a
25 likelihood of confusion or of misunderstanding" in violation of 73 P.S. §201-2(4)(xxi).

26 367. The above described conduct has been willful within the meaning of 73 P.S. §201-8
27 and is unlawful under the UTPCPL.

PRAYER FOR RELIEF

WHEREFORE, plaintiffs pray for judgment as follows:

A. Entering an order that the conduct alleged herein constitutes a public nuisance under Pennsylvania law;

B. Entering an order that defendants are jointly and severally liable;

C. Entering an order requiring defendants to abate the public nuisance described herein and to deter and/or prevent the resumption of such nuisance;

D. Enjoining defendants and any agents, successors, assigns, and employees acting directly or through any corporate or business device from engaging in further actions causing or contributing to the public nuisance as described herein;

E. Enjoining defendants from further violations of the COPPA and directing that defendants take affirmative steps to obtain “verifiable parental consent” prior to collecting and using information about them;

F. Entering an order that defendants’ conduct is in violation of the UTPCPL, and directing that defendants take affirmative steps to provide accurate information to the public as to the harms of their services;

G. Enjoining defendants and any agents, successors, assigns, and employees acting directly or through any corporate or business device from engaging in acts and practices alleged in this Complaint or any other acts and practices which violate the UTPCPL;

H. Directing defendants pursuant to §201-8(b) of the UTPCPL to pay civil penalties in the amount of \$1,000 for each and every violation of the UTPCPL;

I. Directing defendants to disgorge and forfeit all profits they have derived as a result of their unfair and deceptive acts and practices as set forth in this Complaint;

J. Awarding equitable relief to fund prevention education and treatment for excessive and problematic use of social media;

K. Awarding actual and compensatory damages;

L. Awarding statutory damages in the maximum amount permitted by law;

M. Awarding reasonable attorneys’ fees and costs of suit;

1 N. Awarding pre-judgment and post-judgment interest; and

2 O. Such other and further relief as the Court deems just and proper under the
3 circumstances.

4 **DEMAND FOR JURY TRIAL**

5 Plaintiffs hereby demands a trial by jury.

6 DATED: March 14, 2023

ROBBINS GELLER RUDMAN
& DOWD LLP
AELISH M. BAIG (201279)
TAEVA C. SHEFLER (291637)

9
10 s/ Aelish M. Baig
AELISH M. BAIG

11 One Montgomery Street, Suite 1800
12 San Francisco, CA 94104
13 Telephone: 415/288-4545
415/288-4534 (fax)
aelishb@rgrdlaw.com
tshefler@rgrdlaw.com

14 ROBBINS GELLER RUDMAN
15 & DOWD LLP
16 MARK J. DEARMAN
NICOLLE B. BRITO
225 NE Mizner Boulevard, Suite 720
17 Boca Raton, FL 33432
18 Telephone: 561/750-3000
561/750-3364 (fax)
mdearman@rgrdlaw.com
nbrito@rgrdlaw.com

20 ROBBINS GELLER RUDMAN
21 & DOWD LLP
LAURA STEIN
261 Old York Road, Suite 507A
22 Jenkintown, PA 19046
23 Telephone: 215/988-9546
215/988-9885 (fax)
lstein@rgrdlaw.com

24 JOSEPH J. KHAN
25 BUCKS COUNTY SOLICITOR
Office of the Commissioners
26 55 East Court Street
Doylestown, PA 18901
27 Telephone: 215/348-6464
28

MATTHEW D. WEINTRAUB
BUCKS COUNTY DISTRICT ATTORNEY
100 N. Main St.
Doylestown, PA 18901
Telephone: 215/340-8038
267/885-1417 (fax)

SEEGER WEISS LLP
CHRISTOPHER A. SEEGER
JENNIFER SCULLION
CHRISTOPHER AYERS
55 Challenger Road
Ridgefield Park, NJ 07660
Telephone: 973/639-9100
973/679-8656 (fax)
cseeger@seegerweiss.com
jscullion@seegerweiss.com
cayers@seegerweiss.com

Attorneys for Plaintiffs