

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLUMBIA

UNITED STATES OF AMERICA, ET AL.,	)	
	)	
Plaintiffs,	)	
	)	
vs.	)	CV No. 20-3010
	)	Washington, D.C.
	)	November 16, 2023
GOOGLE LLC,	)	9:30 a.m.
	)	
Defendant.	)	Day 42
	)	Morning Session

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TRANSCRIPT OF BENCH TRIAL PROCEEDINGS  
BEFORE THE HONORABLE AMIT P. MEHTA  
UNITED STATES DISTRICT JUDGE

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WITNESS INDEX

- - -

WITNESSES	DIRECT	CROSS	REDIRECT	RECROSS
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PLAINTIFF'S:

MICHAEL WHINSTON	10451			
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INDEX OF EXHIBITS

- - -

PLAINTIFF'S

ADMITTED

UPXD106

10553

## 1 P R O C E E D I N G S

2 COURTROOM DEPUTY: All rise. This court is in  
3 session. The Honorable Amit P. Mehta presiding.

4 THE COURT: Good morning, everyone. Please be  
5 seated.

6 COURTROOM DEPUTY: Good morning, Your Honor.  
7 This is Civil Action 20-3010, United States of America,  
8 et al., versus Google LLC.

9 Kenneth Dintzer for the DOJ.

10 Jonathan Sallet on behalf of Plaintiff States.

11 John Schmidlein on behalf of Google.

12 THE COURT: All right. Good morning, everyone.  
13 So are we ready to move forward this morning?

14 MR. DINTZER: Absolutely, Your Honor.

15 THE COURT: All right. Let's pull the curtain on  
16 Professor Whinston.

17 MR. SEVERT: Good morning, Your Honor.

18 Adam Severt for the United States.

19 The United States calls Professor Michael  
20 Whinston.

21 THE COURT: All right. Sorry, I wanted to make  
22 sure I had my hands on Professor Murphy's slide deck as  
23 well.

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MICHAEL WHINSTON, WITNESS FOR THE PLAINTIFFS ON REBUTTAL,  
HAVING BEEN PREVIOUSLY SWORN, RESUMED THE STAND AND  
TESTIFIED FURTHER AS FOLLOWS:

DIRECT EXAMINATION

BY MR. SEVERT:

Q Professor Whinston, welcome back.

A Thanks. Yeah, me again.

Q Did you prepare us a slide deck to help facilitate  
your testimony today?

A I did.

Q Okay.

MR. SEVERT: Your Honor, may I approach?

THE COURT: You may.

BY MR. SEVERT:

Q Okay.

Professor Whinston --

Mr. Penado, if you could turn to Slide 2 of  
UPDX106.

And I want to start by talking about market  
definition and market power.

And I want to start with the questions that the  
Court raised.

During the testimony of Dr. Israel and Dr. Murphy,  
the Court asked some version of whether a monopolist of

1 general search services would have the incentive to restrict  
2 output. How would you answer that question?

3 A I'd answer it yes.

4 So, you know, I think if you're thinking about  
5 this -- I guess a starting point is the kind of classic  
6 textbook Econ 101 monopolist which -- who sets a single  
7 price for everyone in the market.

8 And, you know, in that story, most of the time, it  
9 isn't necessary for output to be restricted, but most of the  
10 time the way a monopolist operates is to reduce output and  
11 raise price -- as part of raising price, and, you know, by  
12 doing so, make monopoly profits.

13 This market is different. This market has, you  
14 know, zero price on the user side, and so, you know, the way  
15 kind of the key variable for a monopolist in that setting is  
16 quality.

17 And so the monopolist in this setting, you know,  
18 has an incentive to reduce quality for -- and I think I  
19 touched on this, I think, previously, that, you know, one  
20 aspect of, you know, and kind of a key aspect of reducing  
21 quality, is it lowers the cost that you incur.

22 When I say "reduce quality," you know, that  
23 includes not increasing quality as fast as you might  
24 otherwise would. So by doing so, you save costs, and,  
25 you know, if you're going to keep your users either way and

1 make the ad revenue on them, then you raise your profits.

2           And so reducing -- now, what does reducing quality  
3 do? Well, when you reduce quality of search, Your Honor,  
4 that's going to tend to make people search less. And so  
5 there is an output effect of that exercise of monopoly  
6 power.

7           I should say, reducing quality and reducing  
8 queries will also potentially have effects on the ad market  
9 because there will be less available ads and that can also  
10 drive up price on the ads side.

11           THE COURT: Can I just -- I'm sorry, can I just  
12 follow up?

13           Because I understood Professor Israel to say that  
14 a monopolist is defined by an entity that has the incentive  
15 to restrict output and that the primary way to do that is  
16 reducing production in the ordinary sense of somebody who's  
17 manufacturing widgets. You reduce the number of widgets  
18 you're making, the price goes up, the monopolist can make  
19 monopolist profits, right?

20           And I also understood him to say that in this  
21 setting, that he thought Google was not a monopolist because  
22 he saw no evidence of the restriction of output, which is  
23 what prompted me to ask the question of, well, in this  
24 market, would a monopolist even have the incentive to  
25 restrict output?



1 THE WITNESS: Right.

2 I read those questions.

3 THE COURT: Right.

4 THE WITNESS: And so I'd say a few different  
5 things and actually I'm going to have a few slides related  
6 to this.

7 So, first, I think Dr. Israel's formulation at the  
8 start of that, where he was talking kind of about the  
9 classic monopolist, is overly simplistic.

10 So, you know the degree to which a monopolist has  
11 to reduce output in order to raise price depends on  
12 responsiveness of demand.

13 THE COURT: Right.

14 THE WITNESS: And so in some cases, if demand is  
15 not very responsive, you don't have to reduce output very  
16 much to raise that price. In fact, in some cases, you may  
17 not have to reduce demand output at all to raise the price,  
18 you may just have headroom to do it, okay?

19 A second thing is that kind of classic story is  
20 all about monopolist that's set a single price for the whole  
21 market. And so if a monopolist can price discriminate,  
22 charging different consumers different prices, it need not  
23 actually necessarily reduce output even in a case where it's  
24 not, demand -- I don't know if you remember, you know,  
25 Econ 101, the shape of demand.

1 THE COURT: It's been a while.

2 THE WITNESS: Okay. Sorry. Probably a good  
3 thing.

4 But, yeah, demand can be very steep or not steep.

5 THE COURT: Yeah, no, I know.

6 THE WITNESS: Even when it's not steep, you know,  
7 when there is a responsiveness, if you can price  
8 discriminate, you can charge different prices to each of the  
9 consumers and capture all of that profit, all the surplus  
10 from consumers in the limit, if you can price discriminate  
11 very well and not even reduce output at all.

12 So on the ads side of the market here, that  
13 actually is what happened, not necessarily perfectly, of  
14 course, but, you know, Google does charge advertisers who  
15 have different willingnesses to pay for ads different prices  
16 through the way the auction works. So that's a first  
17 response. Is that, I think, Dr. Israel was saying that it's  
18 necessary to see output restriction, but it isn't actually  
19 necessary.

20 The second piece, I think, is we're going to  
21 address in just a moment.

22 BY MR. SEVERT:

23 Q And, Professor Whinston, do you have an opinion  
24 whether Google's exercise of monopoly power has, in fact,  
25 resulted in a reduction in output?

1           A     Yeah, I think it's clear that it has or very  
2 likely that it has in the sense that, you know, we see, and  
3 I talked about this the last time I was here, Your Honor,  
4 that, for example, Google has responded to the kind of rare  
5 instances when it has more competitive pressure by  
6 increasing quality, by increasing the amount its spends on,  
7 you know, whether it was responding to Bing or Go Big in  
8 Europe or the more recent, you know, AI Chatbot responses,  
9 that you can see Google responding to competitive when it  
10 perceives a competitive threat.

11                     And so that response to a competitive threat is  
12 also -- the flip side of it is, well, when there isn't a  
13 competitive threat, it's not making that investment and the  
14 quality is lower, and for the reasons I said, if quality is  
15 lower, we expect that to have some effect on search -- on  
16 the amount that people search.

17           Q     And, Professor Whinston, did you see Dr. Israel's  
18 testimony that total query volume on general search engines  
19 has more than doubled over the past ten years?

20           A     I did.

21           Q     Okay.

22                     And is that evidence inconsistent with your  
23 conclusion that Google has monopoly power?

24           A     So, Your Honor, this is exactly what comes to your  
25 question, the second part of your question is, you know,

1 Dr. Israel says, well, output has increased so much, I don't  
2 see any sign that output is going down.

3 So if you bring up the next slide, on the right is  
4 Dr. Israel -- on the bottom right, Your Honor, is  
5 Dr. Israel's graph of total search queries for Google going  
6 up over time.

7 The other three figures here are what output was  
8 doing in three very famous Section 2 monopolization cases,  
9 where in each case what I've done is graph a public source  
10 of output up to the date of a District Court opinion or a  
11 settlement.

12 So one of these was standard oil from back in  
13 1908, 1909 and you can see output was increasing, despite  
14 the fact that standard oil was very, you know, was a  
15 monopolist.

16 On the top right is AT&T, which was, you know,  
17 ended up -- had a Section 2 case that was settled where  
18 output for long distance calls was obviously increasing  
19 dramatically over time.

20 On the bottom left is the *Microsoft* case, where  
21 I'm plotting global shipments of PCs up to the date of the  
22 district court opinion. Dramatic increase in output.

23 And actually, after I made this slide a couple  
24 days ago, I was walking downstairs and there are eight  
25 placards of, it was striking, eight placards of the history

1 of the district court. You know one of them is devoted to  
2 two of these cases.

3 The main point, though, economically, is that  
4 there are lots of reasons why output and queries have been  
5 going up. The Internet has been expanding, connectivity has  
6 been improving. You know, many, many things have  
7 contributed to the output going up. So, you know, is there  
8 anything to take, like should we take anything from output  
9 going up here that there isn't monopoly power being  
10 exercised? No, we should not take anything from that.

11 And you can here, Your Honor, both -- Dr. Israel  
12 sort of waffled a little but he did push the point.  
13 Professor Murphy, when he started talking about output,  
14 you know, a few times, I was here, he, distanced himself  
15 from saying, oh, I can really say that this is a result of  
16 monopoly or a result of exclusion.

17 So, you know, I just don't really take anything  
18 from this, I think.

19 Q And, Professor, Dr. Israel also disputed the  
20 profits that Google earns from its distribution contracts,  
21 including with Apple, are revealing about its market power?

22 THE COURT: Before you move on, I'm sorry. Could  
23 I follow-up?

24 MR. SEVERT: Sure.

25 THE COURT: So I understand your position with

1 respect to the upward trajectory of output and Dr. Israel's  
2 position on it.

3 But I understand you to now say that you believe  
4 that there is evidence that Google has restricted output by  
5 not making certain quality improvements, or at least a  
6 result of -- a consequence of not making quality  
7 improvements would reduce output, right?

8 THE WITNESS: Yeah.

9 So the really direct evidence that I was citing is  
10 evidence that the level of competition that Google perceives  
11 it faces has effects on how much effort it puts into  
12 quality.

13 The second piece of that is that quality does have  
14 an effect on searches. That is, you know, in some sense,  
15 you know, less direct evidence.

16 You know, the one piece of evidence that --  
17 I think, empirical evidence I cite is the Google ablation  
18 studies. That's not looking at overall market output, to be  
19 clear, it's looking at what Google is getting. And it's, as  
20 I've testified, it's low responsiveness but it's not zero.

21 The fact that it's looking just at Google,  
22 I think, is not necessarily the -- a big distinguishing  
23 factor because Google is such a big part of the market.

24 But, you know, that's how I would describe what --  
25 why I say that there's evidence for this.

1 THE COURT: Okay.

2 I think you've just answered my question which is:  
3 What do you think the record evidence is that -- of there  
4 being a consequence of even if you can't quantify it, of a  
5 reduction in output due to a reduction in quality.

6 THE WITNESS: Right.

7 So what I think the record evidence is is, you  
8 know, the steps in this chain of logic. It's not that I see  
9 a reduction in quality and I actually am measuring total  
10 market output, okay. But I see a -- you know, I should --  
11 sorry, I should step back.

12 I see a change in the level of competition and  
13 then I see a change in the level of output. It's not that  
14 level kind of evidence.

15 The record evidence is, I see a change in output,  
16 I see a responsiveness in quality. I also have evidence I  
17 see a change in quality, I see some responsiveness in search  
18 behavior by consumers. Low but some.

19 So that's what I would say the record evidence is.

20 THE COURT: Okay.

21 BY MR. SEVERT:

22 Q Professor Whinston, turning to the profits that  
23 Google earns from distribution contracts, Dr. Israel  
24 disputed that those profits, including from the Apple  
25 contract, are revealing about its market power. Did you

1 have any reaction to that testimony?

2 A I did.

3 You know, I didn't -- this, I just didn't think  
4 made sense.

5 So, Your Honor, what Dr. Israel basically was  
6 saying, is look, Apple made all of these profits in this  
7 deal and doesn't that -- that tells me that Google didn't  
8 have a lot of market power.

9 But, you know, we've talked about -- I talked  
10 about last time that Google made, you know, a lot of profit  
11 in this -- you know, in these contracts, and it did so --  
12 you know, I think the record is clear it did so because it  
13 has a very -- you know, its position in the market is it has  
14 many, many advantages; it's much stronger than its  
15 competitors.

16 So if you bring up the next slide --

17 Q Slide 4.

18 A Slide 4. Sorry, I've fallen out of the habit.

19 If you bring up Slide 4, this is evidence from  
20 Mr. Pichai.

21 And you can see, you know, actually, it's kind of  
22 an interesting question and answer when I read it in the  
23 testimony transcripts, that, you know, he's asked, you know,  
24 did you communicate to Apple during these negotiations that  
25 they didn't really have any leverage in negotiating a



1 revenue share percentage because Google was the only viable  
2 option.

3           And he starts -- and he -- starts answering, well,  
4 there were many factors, da, da, da, da. And at the very  
5 end of his answer he goes, Oh, and, by the way, yes, I did  
6 take into account what you were saying, which was why we  
7 didn't pay Apple the share that Apple -- we didn't pay the  
8 share that Apple wanted. And so, you know, it's clear that  
9 he was thinking about this market power that he had.

10           And, you know, the thing is -- just to add to  
11 that, yeah, I -- in some sense, I expect Apple to make money  
12 in the -- to get a good amount of profit out of this deal  
13 because Apple's bargaining position in this is it has a  
14 bunch of users and that only -- that it, in some sense,  
15 largely controls access to. So it's going to get a bunch of  
16 profit in these deals. The question is, how much profit is  
17 the other side going to get.

18           And like I said last time, if Google faced rivals  
19 that were kind of on par with it, Apple would be able to  
20 play them off each other and make almost all the profit in  
21 this deal. But instead, as you can see here, that wasn't  
22 the situation. Google had a lot of bargaining power as  
23 well.

24           Q       And did Professor Murphy offer testimony that  
25 sheds light on this issue too?

1           A     He did.

2                     If you bring up Slide 5.

3                     So Professor Murphy, if you read his reports, goes  
4 on and on about the advantages and how much stronger Google  
5 is.

6                     In his testimony, you know, he said similar kinds  
7 of things. And this is just one point where he describes  
8 this particular negotiation saying, you know, there's lots  
9 of headroom between those numbers, meaning what they thought  
10 the clawback would be and the deal that they were doing.

11                    So what's the headroom? It's like, yeah, they  
12 were getting a lot of profit over and above what they would  
13 have gotten absent the deal. And why is that? It's because  
14 they had a strong bargaining position. And why did they  
15 have a strong bargaining position? Because they didn't have  
16 close rivals.

17           Q     Let's talk about market definition for a moment.

18                    One of Dr. Israel's main points is that the three  
19 relevant markets, I think if you use his words, define away  
20 competition. Do you think you defined away competition in  
21 this case?

22           A     No, I absolutely don't.

23           Q     Why not?

24           A     Well, you know, I think when you -- and this is  
25 something I -- Your Honor, I said at the very beginning,

1 it's now two times ago, when I talked about market  
2 definition, it's a zero one exercise.

3           There's always things that, in the end, are left  
4 out, right, that -- and it's not that they don't compete at  
5 all. There are some things that are, to some degree,  
6 competitors that, when you end up defining a relevant  
7 market, they're not included.

8           But it's not that you just like define the -- or  
9 I, certainly not in this case, have just defined the market  
10 and not paid any attention to what those things are. The  
11 process of thinking about what should be the relevant market  
12 is a process of thinking are those alternatives close, big  
13 constraints on the pricing of Google, say, of general search  
14 engines or of -- you know, are they competitive constraints  
15 on quality.

16           And so, you know, for me, I looked at many, many  
17 alternatives, both when I was looking at the search services  
18 side and when I was looking at the ads side, and came to the  
19 conclusion that those things would not prevent a  
20 hypothetical monopolist from exercising considerable market  
21 power.

22           Q     And starting with general search services,  
23 Dr. Israel claimed that the market for general search  
24 services is not proper because it aggregates queries with  
25 dissimilar competitive conditions.

1 Do you agree with that claim?

2 A No, I don't.

3 THE COURT: Sorry. Can you repeat the question?

4 MR. SEVERT: Sure.

5 BY MR. SEVERT:

6 Q Do you agree with Dr. Israel's claim that your  
7 general search services market is improper because it  
8 aggregates queries that have dissimilar competitive  
9 conditions?

10 A The answer was, no, I don't agree.

11 Q And why?

12 A So, you know, the thing about -- and, again, I  
13 testified about this last time -- two times ago, you know,  
14 general search services, I think a key characteristic of it  
15 is this one-stop shop being characteristic.

16 And it's -- you know, it's an example of what --  
17 like, if you -- in economics and, I guess, in the latest  
18 draft of the horizontal merger guidelines, it's called the  
19 "bundle market."

20 So what is a bundle market? A bundle market is a  
21 situation where the aggregation of the various things that a  
22 product is doing is in some sense more than the sum of its  
23 parts. Like that is a distinct product. And that's why, I  
24 think, in general search services, I don't agree at all with  
25 Dr. Israel.

1 Q All right. Let's talk about one-stop shops.

2 Dr. Israel talked about consumers making a  
3 decision each time they make a new search. Is that  
4 consistent with Google's business model?

5 A No, it's not consistent -- not consistent really  
6 with Google's business model at all.

7 So, you know, Dr. Israel has this view that every  
8 time a consumer is coming up to a search, it's just  
9 separately thinking about where should I go, each decision,  
10 every query is a separate decision.

11 And, you know, if that was the case, you know,  
12 Google wouldn't, in some sense, doing what it does. Like  
13 it would be fine for it to have, like, 20 specialized  
14 vertical platforms and not be offering google.com at all,  
15 because, like, well, why not, because we're offering all the  
16 same kinds of information and people can just go every  
17 single time to what they want. But that's not what it does.  
18 And it doesn't do that because if someone -- people value  
19 the one-stop shop feature.

20 And, actually, you know, Your Honor, I was -- at  
21 one point in working on this, I came across -- I know I have  
22 used this Marissa Mayer Swiss Army knife analogy. At one  
23 point, I also came across this video where, you know, from  
24 the mid to late 2000s where she's talking about what Google  
25 is doing and introducing universal search and putting

1 together all these things. And, like, literally in the  
2 video, she has this -- the background is a bunch of silos  
3 where she sang --

4 MR. SCHMIDTLEIN: Your Honor, this is all  
5 fascinating, but it wasn't disclosed in any of his reports  
6 or in any of his opinions. So I don't think we should be  
7 hearing about what Professor Whinston's been doing browsing  
8 the Internet since he started testifying.

9 THE COURT: I don't know that that's what he's  
10 saying. But I don't -- if it's not something that he's  
11 relied upon, it sort of falls in the bucket of what we  
12 talked about yesterday.

13 MR. SEVERT: He's not relied upon the video  
14 specifically.

15 THE COURT: I'm sorry?

16 MR. SEVERT: He's not relied upon the video  
17 specifically.

18 THE COURT: Go ahead and move on.

19 BY MR. SEVERT:

20 Q And -- well, first, did you have anything else to  
21 add to your last answer?

22 A At this point, I don't remember the question.

23 Q Okay. Fair. Fair. Let's move on.

24 You previously testified that the fact that  
25 browsers only want a general search engine as a default,

1 that that supports your general search services market.

2 Dr. Israel argued that one needs to focus on the  
3 user side and not the browser side.

4 Does the fact that browsers are making the choice  
5 mean that this is not relevant for -- to understanding  
6 users' preferences?

7 A No, not at all.

8 I mean, browsers, you know, not perfectly by any  
9 means, but browsers are -- certainly, a very important  
10 consideration for a browser is what users want. And so the  
11 fact that users want -- have this one-stop shop preference  
12 makes browsers care about having a general search engine and  
13 a default for it.

14 Q And does the fact that browsers have these  
15 preferences tell you anything else about market definition?

16 A It does.

17 So, you know, Your Honor, like two -- one fact is  
18 that defaults really matter, defaults are very powerful.

19 A second fact is that browsers have this  
20 preference for general search engines, making them the  
21 default.

22 So those two facts together mean that that is an  
23 important differentiator for general search engines relative  
24 to alternative sources of information.

25 Q And I think, Professor Whinston, both you and

1 Professor Rangel both testified about the evidence showing  
2 the importance of defaults. Does the importance of defaults  
3 tell you anything about Dr. Israel's approach to market  
4 definition?

5 A Yeah.

6 Well, sort of.

7 As I was saying before, that, you know, this idea  
8 that every decision is a separate decision and we're just  
9 going to go -- you know, consumers -- you know, a  
10 hyperrational consumer is just thinking every single time,  
11 gee, what is it that -- where can I get that information and  
12 doing it all separately. You know, defaults wouldn't really  
13 matter in that world.

14 You know, I think Dr. Israel talked about, oh,  
15 browsers want these things as backstops. Why would you need  
16 a backstop if that's how consumers behave?

17 Q You also presented evidence that Google recognizes  
18 general search services as a market.

19 Is Dr. Israel's approach to market definition  
20 consistent with Google's documents in ablation experiments?

21 A No.

22 So, you know, Dr. -- it's not consistent with  
23 Google's recognition of general search engines as distinct.  
24 It's advice in the choice screen. It's what it does with  
25 Chrome. It's not consistent with how variants description



1 of what the market is, his 3-to-2 comments, his comment that  
2 if Google didn't exist, everyone would go to Bing. And it's  
3 not consistent, importantly, with the evidence of consumer  
4 responsiveness to Google's quality which as, you know,  
5 Google's own experiment show to be low.

6 Q All right, Professor Whinston, let's turn to the  
7 ads markets now.

8 THE COURT: Before you do that, can I ask you,  
9 Professor Whinston, Professor Israel -- sorry -- Dr. Israel  
10 had an analysis that he did of sessions, a sessions  
11 analysis, in which he evaluated how long users were on  
12 Google, and I think he drew from that the notion that the  
13 evidence is not showing that people, in fact, do one-stop  
14 shop at Google, that they're not there bundling their  
15 searches in a way that would be consistent with your view  
16 that it's a one-stop shop.

17 I think I'm describing his analysis correctly,  
18 and, if I am, what's your reaction to that?

19 THE WITNESS: So, Your Honor, when I testified  
20 before, I talked about various reasons why general search  
21 engines have this one-stop shop feature.

22 Dr. Israel's analysis, even taking it as it is,  
23 I mean, there are issues about it, but even taking it as it  
24 is, is really just talking about what was the first, which  
25 is, you know, is basically how difficult is it for me --

1 does it matter that I'm bundle in time different searches so  
2 that, like, oh, is it the case that I'm -- you know,  
3 searching for books and then immediately right after that  
4 searching for hardware, and right after that searching for  
5 shoes, you know.

6 And that analysis was kind of looking at that  
7 issue, and he would argue, he tried -- you know, his  
8 argument was, well, we don't see that it's close temporal  
9 connection.

10 THE COURT: Right.

11 THE WITNESS: And therefore, that doesn't seem to  
12 be a big thing.

13 But even taking that aside, you know, there were  
14 all of these other reasons and are all of these other  
15 reasons why it's a one -- why there's this one-stop-shop  
16 feature.

17 And so, you know, to me, a really big one is this  
18 mental energy point that, you know, if you are trying every  
19 single time that you are thinking where do I go, you know,  
20 you have to think like in his world, like, people just  
21 instantly cautiously come up with exactly where they should  
22 be getting their information.

23 But, you know, to begin with, that mental process  
24 is costly, and, moreover, people may just not know about  
25 where things are. And, you know, that, I think, is a

1 significant factor. And you can see it in the fact that  
2 this is -- Google offers this kind of, you know, product  
3 that -- and I'm not -- okay, I'm not allowed to talk about  
4 the video, but, like that was -- is a big component of how  
5 I think what Google is doing.

6 And there were other things, including that it's a  
7 browser default and other things as well.

8 But I think it's not really just temporal  
9 connection.

10 BY MR. SEVERT:

11 Q Let's turn to the ads markets.

12 I think last time you talked about Google's  
13 general search text ad pricing. Does that evidence relate  
14 to market definition or market power?

15 A It does.

16 Q And would it be both?

17 A Sorry, I didn't understand.

18 THE COURT: Can you restate the question.

19 BY MR. SEVERT:

20 Q Sure.

21 Does the evidence that you presented on general  
22 search text ad pricing relate to market definition, market  
23 power, or both?

24 A Okay. Thank you, thank you for asking him to  
25 repeat it, too, because I kind of missed it.

1           Yeah, so it's both.

2           And the reason, you know, I talked about it as  
3 evidence of market power, but, you know, you can't have  
4 market power if -- you know, Google within this general  
5 search services hypo -- relevant market couldn't be  
6 exercising a lot of market power if it wasn't a relevant  
7 market to begin with, because, you know, what is a relevant  
8 market? It's a market where a hypothetical monopolist of  
9 all general search services would have market power.

10           Well, if just Google within it has -- not just  
11 because they're almost all of it, but if Google within it  
12 has significant market power, if you can see direct evidence  
13 of that, that's telling you that it's a relevant market.

14           Q     And just to help frame the discussion, can you  
15 just remind the Court of your principal opinion regarding  
16 Google's ad pricing over time?

17           A     Sure.

18           You know, my principal opinion about Google's ad  
19 pricing overtime is that Google has exercised significant  
20 market power by raising prices. And it has done so to  
21 capture advertiser surplus, you know, to try to capture as  
22 much of advertiser surplus as it can.

23           And, you know, that -- the ability that it has to  
24 do that, which comes from the low responsiveness of  
25 advertisers that you see in -- that you can see in the

1 experiments that Google has done, is reflective of its  
2 market power.

3 Q And have you reviewed Dr. Israel's testimony on  
4 this topic?

5 A I have.

6 Q And Dr. Israel testified that Google creates value  
7 for advertisers and sometimes set prices to share that  
8 value.

9 Is sharing value a commonly accepted reason for a  
10 price increase?

11 A Well, it's a commonly accepted reason if you have  
12 a lot of market power.

13 So, Your Honor, you know, if a firm is talking  
14 about, you know, that its price increases are to share the  
15 value of the quality improvements that it's doing, that is  
16 one thing that you see when firms have a lot of market  
17 power.

18 So to take a -- I think one thing that may be a  
19 contrast would be, think about the computer market in the  
20 last 20 years, okay, computers have dramatically increased  
21 their quality. Their prices really haven't gone up. And  
22 the reason is that computer manufacturers are competing and  
23 you know, they are improving quality but so are their rivals  
24 improving quality. And so that ends up meaning that it's  
25 consumers that benefit, not the computer manufacturers from

1 these quality improvements.

2           You know, no computer -- you know, Dell -- no  
3 computer manufacturer is sitting there talking about, well,  
4 you know, the memory has gotten bigger, we'll share the  
5 value, we're going to get a chunk of that.

6           In fact, we're going to try to actually make it so  
7 that consumers don't get any of it. They'd lose all their  
8 consumers.

9           Q     And have you seen Google talk about extracting  
10 value from advertisers?

11          A     I have.

12           So, you know, Your Honor, I don't want to -- if  
13 you bring in the next slide, Slide 6, you know, this is  
14 something I had up when I was last here so I don't want to  
15 spend a lot of time on it.

16           But this was just this history of what was going  
17 on during this period of Google was making these quality  
18 improvements and it started tracking this measure of excess  
19 CPC, I think Dr. Israel talked about this as well, that it  
20 was increasing the amount of value advertisers -- those  
21 things were increasing the amount of value advertisers were  
22 getting because the amount of clicks, the number of clicks  
23 were going up.

24           So what Google sought out to do was to say, no,  
25 we -- we're increasing clicks, we're going to make -- we're

1 going to raise prices to make sure advertisers are not  
2 gaining from that, like, we're going to be the ones who gain  
3 from it.

4 And they first, you know, called it holistic  
5 pricing. And then back in -- once they kind of realized  
6 they had managed to do that, then in 2018, they switched to  
7 calling it value-based pricing, and the aim there was to go  
8 further.

9 Q And did you see similar evidence on Slide 7?

10 A Yes.

11 So if you bring up Slide 7, you know, Your Honor,  
12 this is another document that I talked about when I was here  
13 in the past.

14 And this was just from this meeting, meeting --  
15 these are meeting minutes about how they were going to use  
16 the design of the auction to raise prices, and where, you  
17 know, over on the last item on the right, for example, was  
18 Adam Juda saying, like, what's the aim here, it's -- to  
19 basically price a penny below the breaking point of the top  
20 advertiser, i.e., let's extract all of -- let's try -- the  
21 ideal thing is to extract all of that advertiser's value.

22 MR. SEVERT: Mr. Penado, if we could go to  
23 Slide 8.

24 THE COURT: I'm sorry, before you do that, can I  
25 ask you: Is there not some tension in your position that

1 Google has had the ability to capture value of ad  
2 improvements, ad quality, with the idea that at least in  
3 the -- that in the search market, it has had an incentive to  
4 decrease quality or at least not increase quality at the  
5 rate at which it would have had in a competitive market?

6 THE WITNESS: So the thing that's really different  
7 is, in the search market, there are no prices. So here  
8 there are prices.

9 So if you raise your quality, you can try to  
10 capture it, if you have market power, through increasing  
11 price. You can't do that in the search market. So that's  
12 the difference.

13 THE COURT: Okay.

14 BY MR. SEVERT:

15 Q And so when you testified last time, you commented  
16 on Google's efforts to raise prices at the same time that it  
17 introduced the ad quality improvements, and Dr. Israel said  
18 this was needed to give Google an incentive to introduce the  
19 improvements, and it's reflected on the slide.

20 What do you think of that argument?

21 A So, you know, this is something I talked about,  
22 I think it was one of the last things I talked about two  
23 times ago when I was here.

24 And about this -- when talking about these quality  
25 improvements and the price change -- and these pricing



1 changes that -- yes, Google -- you know, I put up a  
2 document, which I think actually Dr. Israel put up the same  
3 document to talk about this episode so I think we're talking  
4 about the episode and the facts of what happened the same.

5 We're pointing, in fact, to the same -- I think  
6 it's the same document or very close to it, about, you know,  
7 the ads quality team was increasing click-through rates,  
8 advertisers, if prices didn't rise, would have been  
9 benefiting from that, and that -- but it potentially thinned  
10 the auction and might lower prices.

11 And that was a concern at Google, like, oh, there  
12 are these quality improvements, and, you know, the document  
13 I showed and that Dr. Israel showed, was saying, well, if we  
14 don't have a mechanism to raise prices, we're going to not  
15 introduce these things because our profits will be lower  
16 when we raise quality.

17 And so what it did was all the things I talked  
18 about, you know, all the changes in the ad auction to quote  
19 share in the value, to capture the value to try to make it  
20 so they gained, rather than the advertisers, not --

21 And so, you know, that's what Dr. Israel also  
22 talked about and described as Mr. Severt's question said.

23 And you can see it here; I'll just point at the  
24 bottom part. You want to have incentives to make -- you  
25 want it, Google, to have incentives to make it, I think,

1 "its" is what it should be, PCTR better, that is, you know,  
2 to increase -- shorthand for increase its qualities. You  
3 need some mechanism to deal with this issue, the issue being  
4 the thinning of the auction that may bring, which is the  
5 general one I talked about with knobs.

6           So what Dr. Israel is saying just this, that it's  
7 a good thing that Google can raise -- we need a mechanism  
8 for Google to introduce this, it's a good thing they could  
9 raise their prices.

10           You know, my position is really different, which  
11 is, there's a different mechanism that can lead Google to  
12 introduce quality improvements, which is competition.

13           If it faced competition just like the computer  
14 manufacturers, it would have a different incentive, and that  
15 competition, I think I said it this way, you know, changes  
16 what's rational for a firm.

17           When Google has market power, it needs to share in  
18 the value for it to be rational to introduce the quality  
19 improvement. If instead it faces competition and rivals are  
20 also trying to innovate, trying to -- and improving, close  
21 rivals are improving their quality, it's going to have to do  
22 this or it's going to lose its advertisers. So that's the  
23 difference, I think, in our perspectives.

24           Q     And so we've talked about Google's price  
25 increases. Let's talk to evidence about advertiser

1 reactions to price changes.

2 MR. SEVERT: And, Mr. Penado, if you could put up  
3 Slide 9.

4 BY MR. SEVERT:

5 Q In your review of Dr. Israel's testimony, did you  
6 see him say that advertiser reactions are where competition  
7 comes in because advertisers react, given what their options  
8 are?

9 A I did.

10 And so you can see on Slide 9, Your Honor, you  
11 know, what Dr. Israel said.

12 I agree with this statement; that is, advertiser  
13 reactions is where you see competition coming in, if it  
14 exists.

15 The thing is, you know, Google has provided us,  
16 you know, evidence about what advertiser reactions are. And  
17 so that's what you -- they performed experiments where  
18 the -- what they did is they varied prices to advertisers,  
19 holding everything else fixed and saw what advertisers did.  
20 It's, you know, these kind of experiments can be kind of the  
21 gold standard of evidence because they hold things fixed.

22 So -- other things.

23 And so if you turn to the next -- bring up the  
24 next slide, Slide 10, I won't -- I'll describe this. Given  
25 that some things are redacted, I'll be careful about this.

1           This is -- if you remember, Your Honor, when I  
2 described this last time, I didn't show a slide, but I  
3 talked about how they did these experiments and they  
4 realized there was, quote, "stickage." So this time, I'm  
5 showing you actually the figure of one of these results of  
6 these experiments.

7           And so just to remind you just very, very quickly,  
8 they did these experiments of raising -- you know, when they  
9 were thinking, gee, how much can we raise prices, you know,  
10 to advertisers and get away with. They did, you know, these  
11 experiments raising prices, sometimes by as much as  
12 15 percent to advertisers.

13           And they first did it for -- you know, six weeks.  
14 Then they were like, well, we're worried that the advertiser  
15 reactions may take more time so they did three-month  
16 experiments. And then they were worried again and they did  
17 six-month experiments. And every time what they found was  
18 raising prices was profitable.

19           So what you're looking at here, Your Honor, is a  
20 figure that is showing you, you know, how much ad revenue  
21 they're getting. You know, that's the -- the squiggly line  
22 is -- I think it's so small on my thing so I'm trying to  
23 remember, I think it was day by day.

24           And then the sharp break is when they change  
25 prices in the experiment.

1           And what you can see is immediately total revenue  
2 jumps up because, of course, by that -- at that moment,  
3 advertisers haven't had a chance to react at all.

4           And then there's some decay over time, a little  
5 bit of decay where some advertisers do start reacting. But  
6 in the end, revenue asymptotes to something that is way  
7 higher than what it started at.

8           And the conclusion of this is, hey, if we raise  
9 prices, we'll be more profitable.

10           And so, why can -- what is that capturing? It's  
11 capturing advertisers were not responsive enough to price  
12 changes to prevent it being profitable to do them.

13           MR. SEVERT: Mr. Penado, if you could please turn  
14 to Slide 11.

15 BY MR. SEVERT:

16           Q     And Dr. Israel raised a circle principle during  
17 his testimony. Can you just remind us what the circle  
18 principle says?

19           A     Sure.

20           So the circle principle, Your Honor, is this idea  
21 that if you include in a relevant market, say, a substitute  
22 for Bing -- sorry -- a substitute, you know, for Google, you  
23 should include in your relevant market anything else that is  
24 a closer substitute.

25           So this comes from -- if you look at the

1 horizontal merger guidelines, there's an example sort of  
2 suggesting that, you know, ideally you might want to follow  
3 this principle.

4           You know, it's not completely clear, you know, so  
5 I don't want to be saying I endorse this principle.

6 I'm just trying to describe it. Because it's also true, for  
7 example, that the horizontal merger guidelines say that any  
8 relevant market is valid whether or not it satisfies this  
9 principle. And I don't know of any evidence about whether  
10 doing things that satisfy the circle principle or not is a  
11 better idea or not.

12           So leaving that -- so I'm going to -- I've  
13 described it, we can go on.

14           Q     Well -- and Dr. Israel said that your market  
15 definition violates the circle principle whether you agree  
16 with it or not. Do you agree that your markets violate his  
17 circle principle?

18           A     I don't.

19           So, you know, in essence, the way I view the  
20 market is what's shown here, Your Honor, that the closest  
21 rivals to Google and ads are other general search engines.  
22 I think other specialized search engines are kind of in the  
23 next ring around, and that things like Facebook and TikTok  
24 and display ads -- I don't think we even have display ads on  
25 the figure -- are the furthest out.

1           So that's kind of how I view what's going on here  
2 in terms of closeness of substitution and -- which would  
3 satisfy and does satisfy this circle principle.

4           Q     And can you just briefly explain why you don't  
5 think ads on Facebook are closer substitutes for Google  
6 Search ads than ads on rival general search engines?

7           A     Yes.

8           So, Your Honor, when I was here, I talked about  
9 the ways in which ad products are substitutes for each  
10 other, can be substitutes. And so, there were a variety of  
11 different reasons why there's differentiation between --  
12 and, you know, the things that affect substitution between  
13 ad products.

14           For me, you know, the key thing about a search ad  
15 is that it -- and I said this at the time, it reflects the  
16 intent of a consumer at the moment the consumer is  
17 expressing that intent and has that intent, and that's  
18 something that no -- nothing that's not a search ad does.

19           And then I also, you know -- and it's, you know,  
20 able -- because of that targeting ability, search ads have a  
21 differential ability to, you know, in terms of the consumer  
22 purchase journey. Whether you think it's totally linear or  
23 people jump back up sometimes, it's still the case that, you  
24 know -- and I think there's been a lot of testimony about  
25 this as well, that there are important differences in the

1 relative strengths of different kinds of ads in terms of  
2 where they hit the funnel.

3           You know, I think if I'm remembering, I think  
4 actually Mr. Pichai even himself used the final as a -- at  
5 one point and referred to it.

6           So I think those differences are very important,  
7 and so that, I think, is the key driver for me.

8           MR. SEVERT: Mr. Penado, can you please turn to  
9 Slide 12.

10 BY MR. SEVERT:

11           Q     And this is a slide Dr. Israel presented in his  
12 testimony.

13           And, Professor Whinston, I want to direct your  
14 attention to his first bullet.

15           And Professor Israel writes, "For two ads to be  
16 substitutes for one another, they must allow advertisers to  
17 reach overlapping audiences."

18           To you agree with that statement?

19           A     I don't.

20           And actually -- so, Your Honor, the thing I really  
21 don't agree with here is the use of the word "must."

22           It's not that I -- you know, it is a factor that  
23 affects differentiation, audience overlap, and, in fact, as  
24 you can see, Dr. Israel refers to it as my Factor Number 2.  
25 So I talked about it when I was here.



1           It's just that I think it's one factor among many.  
2   And as I said, I think an important factor. I don't think  
3   it is a necessary factor.

4           So just to -- I think a simple example that kind  
5   of explain this and why audience -- you know, Dr. Israel  
6   talked about ads in different cities. I think maybe it was  
7   Cleveland and Kansas City or something like that. And he  
8   talked about, well, imagine that, you know, we have an ad  
9   product that just reaches consumers in Kansas City and an ad  
10   product that just reaches consumers in Cleveland and, you  
11   know, according to him, those things are not substitutes  
12   because you can't reach the same consumer through the  
13   different ad products.

14           But, you know, think of -- I'm from Boston. Think  
15   of a hotel in Boston. It has 100 rooms a night that it  
16   wants to sell. It doesn't care whether it's filling its  
17   rooms with people from Kansas City or people from Cleveland.  
18   Those people are perfectly substitutable to that advertiser.

19           And so for that advertiser, those two ad products  
20   are substitutes. You know, it's willing -- if the price of  
21   reaching people in Cleveland goes up, it will switch and try  
22   to reach more people in Kansas City because it just wants to  
23   fill the rooms.

24           So, you know, I think this example just makes  
25   really clear that this idea that you must have overlap, you

1 know, in order for things to be substitutes is just not  
2 right.

3 Q And so, Professor, if audience overlap is not in  
4 and of itself determinative, what other factors are  
5 important for understanding substitution?

6 A Well, as I said, I think, you know, two really  
7 important factors is intent and, you know, the differences  
8 in the extent to which you know -- in search ads, you see  
9 the consumer expressing their intent at the moment they have  
10 it. And you don't see that for non-search ads in anywhere  
11 close to the same way, and there's just a lot of evidence in  
12 the record about that.

13 Q Did Dr. Israel's measure -- does Dr. Israel's  
14 analysis measure overlap in a way -- in any way that had to  
15 do with intent?

16 A Not at all.

17 So, you know, when you go and you see people on  
18 Facebook in the same -- you know, I think he did it by  
19 sessions again.

20 So when you go and you look at people on Facebook  
21 in that -- in what he described as the same session,  
22 you know, they're not necessarily at all having the same  
23 intent they had when they put a search in on Google. And  
24 for -- you know, they may be corresponding with their  
25 friends about the latest -- their ski trip for that weekend

1 or looking at what their friends' postings have been.

2 And so what's important to the advertiser is "can  
3 I reach the consumer when they have that intent." And so,  
4 you know, this -- the measures that Dr. Israel is showing,  
5 while I'm not saying they're totally uninformative, but  
6 they're missing this whole aspect of intent.

7 THE COURT: Can I ask you -- sorry, Counsel.

8 But one of the points I thought Dr. Israel to make  
9 is that, in a sense, Bing ads and Google Ads are not  
10 substitutes. And the reason he would say that is that they  
11 have relatively different audiences, you know, people who  
12 use Google, use Google. People who use Bing, use Bing. And  
13 in that sense, because there is no audience overlap, those  
14 really aren't substitutable ad products?

15 THE WITNESS: Right.

16 So it's the same as this example of the cities.

17 So think about the Boston hotel. It doesn't care  
18 whether it's filling its rooms with people who are on Bing  
19 or people who are on Google. They're substitutes for that  
20 hotel trying to fill its rooms.

21 THE COURT: Right. Okay.

22 BY MR. SEVERT:

23 Q Another thing that Dr. Israel presented was an  
24 analysis of the Nike boycott of Facebook. Did you review  
25 Dr. Israel's testimony about the boycott?

1           A     I did.

2                   MR. SEVERT:  And, Mr. Penado, if you could put up  
3 Slide 13.

4 BY MR. SEVERT:

5           Q     And I think this is Dr. Israel's slide on the  
6 Facebook boycott.

7                   Do you have any concerns with Dr. Israel's  
8 analysis here?

9           A     I did.

10                   When I looked at it, you know, and especially  
11 looking at the figure on the right, you know, Dr. Israel  
12 presents this as evidence that the boycott of Facebook by  
13 Nike -- and, actually, let me just back up for one moment  
14 just to make sure we're all on the same page.

15                   So, Your Honor, Dr. Israel was talking about this  
16 episode where Nike suspended its advertising on Meta  
17 products, Facebook and the other social media, Instagram,  
18 et cetera.

19                   And in this figure, they did it in this period in  
20 the summer of 2020 in what is that gray -- on the right-hand  
21 figure --

22                   And none of this is redacted, right?  Okay.  Just  
23 want to make sure.

24                   So that gray band is the time period when it  
25 suspended it.

1           And so, first of all, I should just say even  
2 before we go any further, you know, this is evidence of what  
3 one advertiser did and not -- so, you know, it's very  
4 limited in its -- in what you can take from it, because it's  
5 not information about the market in general, but it is some  
6 information, but it's one -- you've got to remember it's one  
7 advertiser.

8           But what concerned me, aside from that, is he's  
9 using this -- so, Your Honor, the figure on the right, just  
10 to remind you, the dashed line is the Nike's advertising --  
11 measuring Nike's advertising in dollar value on Meta  
12 products, and you see it goes to zero during the boycott  
13 period.

14           The yellow line is how much it was spending on  
15 search. And he says, oh, look, during the boycott period,  
16 it went way up, okay?

17           So first thing when you look at it, you say to  
18 yourself, well, okay, it seems like if you look at that  
19 yellow line, it's going up all the time pretty much. And  
20 most noticeably, it doesn't go down when the boycott ends.  
21 So it seems like there's some trend in search -- in the  
22 amount Nike is spending on search ads that doesn't have  
23 anything to do with the boycott period. And that was kind  
24 of like a first kind of red flag for me about this is.

25           Q       And Dr. Israel testified that he controlled for

1 the factors that you identified and that his analysis -- and  
2 redid his analysis and then his results were even stronger,  
3 is that correct?

4 A So, you know, what happened is, Your Honor, I  
5 both, in my rebuttal report, Your Honor, I both pointed this  
6 fact out and showed that if you control for this with a time  
7 trend, that, you know, control for these time effects, the  
8 result -- his result completely went away.

9 He then went and said, oh, no, there are, you  
10 know, I'll put in -- I'm going to -- I've put in other time  
11 controls supposedly for COVID, for example, that didn't  
12 really match what was going on with COVID.

13 So without getting into the weeds at this hour,  
14 but it's -- you know, it wasn't reliable what he did, and,  
15 you know, let me just say that.

16 Q And just maybe to cut to the chase if we could put  
17 up Slide 14, did you perform your own analysis of the  
18 Facebook boycott?

19 A I did.

20 So I did both a regression analysis, like I said,  
21 that said that the results went away, but I also did  
22 something else, which is, you know, I plotted -- you know,  
23 other one other thing about what Dr. Israel did is he looked  
24 at things in terms of dollar values.

25 Now, the way economists usually measure

1    responsiveness, in fact, is through elasticities.

2                    So what an elasticity is, is it's measuring  
3    proportional changes. And actually if you go just for a  
4    moment to Slide 15, you'll see that that is what Dr. Israel  
5    says he's doing. He says he's doing a measure of cross  
6    elasticity. What "cross" means the effect of the boycott,  
7    you know, of -- effectively when you boycott Nike, it's --  
8    sorry, when Nike boycotts Meta, it's like Meta's price went  
9    to infinity and we're looking at how much that shifted to  
10   search, how much it shifted to display.

11                   That would be a cross elasticity if you did it in  
12   proportions but not when you do it in absolute dollars which  
13   is what his first graph was showing.

14                   So the thing, if you go back to Slide 14, this is  
15   in proportions. And what you can see here, color --  
16   I apologize the colors are different than the figure before,  
17   but...

18                   So Meta here is black, it goes to zero in the  
19   boycott period.

20                   Search is red, it hardly goes up at all  
21   proportionately.

22                   Display is the aqua color, the greenish aqua  
23   color. That goes up significantly.

24                   But the thing that really, really, really goes up  
25   a lot is non-Meta social media, you know, Pinterest

1 et cetera. That goes up, you know, in August 2020, it's --  
2 you know, 20 -- basically 22 times higher than it was in  
3 January 2020.

4 Q And then during his testimony, Dr. Israel showed  
5 the Court the slide that's on page 16 of your presentation  
6 from a Nike internal document. Are the results of your  
7 study consistent with Nike's ordinary course document?

8 A They are.

9 And so if you -- Your Honor, this is a figure that  
10 I know you've seen before.

11 The before pause pie chart is labeled week 51 as  
12 before the boycott. The thing labeled during pause week 15,  
13 that's during the boycott period.

14 And what you can see here is before -- you know, a  
15 combination of Snapchat, Pinterest and Twitter combined  
16 before the pause was 1 percent of their ad spending. It  
17 goes up to 9 percent when -- actually this is -- it's really  
18 small for me, it might be 10 percent in here, during the --  
19 Twitter, Snapchat, Pinterest.

20 THE COURT: It's 10.

21 THE WITNESS: Ten. Thank you. Thanks. I didn't  
22 take my glasses off.

23 So it goes up, you know, just like the figure I  
24 showed you in this pie chart, display goes up from, you  
25 know, 18 percent to 31 percent, you know, just like in my



1 figure that I showed you, kind of similar.

2 And the thing that -- and search goes from  
3 48 percent to 51 percent of Nike's spend. So exactly these  
4 kind of proportional changes that I was showing you overall  
5 in the data is what this document is showing.

6 BY MR. SEVERT:

7 Q All right.

8 And aside from the pie charts, is there anything  
9 else informative on this Nike slide?

10 A Yeah, I mean, I think the really -- the one thing  
11 that's really informative is the second bullet point at the  
12 bottom.

13 So what it's saying is during the pause, social  
14 investment shrunk, you know, by more than half to just  
15 8 percent because we weren't doing Meta anymore.

16 Why? Due to limitations on scale opportunities  
17 within Snapchat, Pinterest and Twitter.

18 So literally what they're saying is we would have  
19 done more but, in essence, there were no more ads that were  
20 like worth buying on those social media sites.

21 And that is very much actually a reflection of  
22 another thing about this episode which is, it's a boycott,  
23 so it's effectively like an infinite price increase on Meta  
24 ads.

25 And so that's a lot of ads that you have to try to

1 move somewhere -- of ad budget that you're trying to move  
2 somewhere.

3 And if instead, for example, you were thinking  
4 about, say, a 5 percent or a 10 percent increase in price on  
5 Meta products, there would be much less that you were trying  
6 to move. And, like, I would expect to see even more of a  
7 shift to nonsocial here than what you see and even less of a  
8 shift to search than what you see here if it was a smaller  
9 price increase.

10 Q And, Professor, we have been talking about the  
11 arguments made by Dr. Israel. I'd now like to turn to the  
12 testimony of Professor Murphy.

13 MR. SEVERT: Mr. Penado, if we could turn to  
14 Slide 17.

15 BY MR. SEVERT:

16 Q Professor Murphy argued that search defaults  
17 enhance competition. Is it your opinion that search  
18 defaults are inherently anti-competitive?

19 A Not at all.

20 You know, I think defaults can be good for  
21 consumers. For all the reasons we've talked, they have this  
22 one-stop shop preference and, you know, they don't want to  
23 be thinking all the time about exactly what they're doing.  
24 So it's not that they're always good for consumers but they  
25 can be certainly good for consumers.

1 Q So if defaults aren't the problem, what is?

2 A So, you know, I think the thing is, saying,  
3 you know, Your Honor, I was here and a lot, you know, the  
4 beginning of Professor Murphy's testimony, there was a lot,  
5 quite a bit of time to defaults and why defaults are good.  
6 It's missing the issue. The issue is not defaults and  
7 whether they're good or bad or anything else. The issue is  
8 Google's contracts that are giving it exclusive defaults,  
9 it's the exclusivity, and the exclusive contracts that are  
10 the issue, not whether defaults are good.

11 Q And you previously testified about the power of  
12 defaults.

13 Did you hear Professor Murphy testify that  
14 defaults have limited effects on search usage?

15 A I did.

16 Q And do you agree with Professor Murphy's  
17 assessment about the importance of defaults?

18 A I don't.

19 MR. SEVERT: If we could, Mr. Penado, put up  
20 Slide 18.

21 BY MR. SEVERT:

22 Q And here, Professor Murphy argued that if a rival  
23 were to obtain Google Search defaults, it would gain only 15  
24 to 20 percent of queries on the device.

25 Do you agree with that estimate?

1           A     I don't, no.

2           Q     Can you remind the Court of what you relied upon  
3 to come up with your estimate of the power of defaults?

4           A     Sure.

5                     So, Your Honor, the thing, before we go off of  
6 this Slide 18, you know, a key thing to notice here in  
7 Slide 18 is what Professor Murphy was relying on.

8                     So you can see here to come up with his 15 to  
9 20 percent number, he's relying on evidence from Windows,  
10 which was this comparison of Windows PCs to Mac PCs and the  
11 difference in Google's share between those, and also on the  
12 Mozilla Firefox default change evidence.

13                    And both of those are on PCs. You know, one of  
14 them, clearly explicitly; the other, because Mozilla was  
15 almost all PC traffic.

16                    And, you know, the majority of the covered queries  
17 through Google's contracts are on mobile, not on PCs. And  
18 on mobile, the evidence is, you know, very clear that  
19 defaults have a bigger effect.

20                    So now if you go to Slide 19, you'll see, you  
21 know, kind of, Your Honor, what I relied on in coming up  
22 with my estimates of the power of defaults or what I --  
23 sometimes, we referred to as share shifts. It's all  
24 redacted so I'm not going to say any of the numbers but you  
25 can see, you know, what did I rely on. I relied on

1 estimates from Google, from Microsoft, from Apple that they  
2 all were using, when they were dealing with deals, business  
3 deals at which billions of dollars were at stake.

4           Moreover, you know, in the case of -- certainly in  
5 the case of Google and Microsoft, the documents that I  
6 looked at described exactly what evidence they cared about  
7 and they thought was relevant for their estimates.

8           So in the case of Google, they, a mobile estimate,  
9 I'm showing here on the left. And, you know, it was  
10 important to distinguish mobile versus desktop in my  
11 analysis because the documents made it clear that, for  
12 example, Google looked at different episodes, clearly  
13 thought mobile and desktop were different and looked at  
14 different historical episodes on mobile and desktop to come  
15 up with their estimates.

16           So on mobile, they relied on Apple Maps, and on  
17 Desktop, they relied on Mozilla.

18           Microsoft also had estimates, and I talked last  
19 time about what it based its estimates on.

20           And then Apple, I should say, the evidence that I  
21 had for Apple was, you know, a document instead where they  
22 talked -- they didn't break it out by mobile and desktop,  
23 they gave one number.

24           But the key things to take from this aside -- A,  
25 this was, you know, in the course of a negotiation and

1 situation that involved billions and billions of dollars of  
2 business, and, you know, you, I think, you heard Mr. Roszak  
3 talk about how seriously he took it for Google, you heard  
4 Microsoft executive talk about how seriously Microsoft took  
5 it.

6 And so it was taken very seriously, the documents  
7 described what historical episodes they were looking at.  
8 They weren't just picking numbers out of a hat, they were,  
9 like, thinking hard and saying, well, what do we know about  
10 what has happened historically and, you know, in terms of  
11 how defaults have mattered.

12 And, third, the numbers are all pretty similar,  
13 okay? Microsoft's number for desktop is somewhat higher,  
14 but, you know, other than that, the numbers are all pretty  
15 similar.

16 THE COURT: And, I'm sorry, could you just tell me  
17 one more, these percentages represent what?

18 THE WITNESS: Sorry. My apologies.

19 These are the kind of -- if a default shift -- if  
20 Google lost the default, how much business would it lose to  
21 the rival who gained the default out of -- I should say, out  
22 of the traffic that was covered, out of the traffic that was  
23 previously going through the default.

24 So another way to put it is, what share of  
25 consumers stick with the default. You know, they don't --

1 whatever, you know, whatever the default was, even though  
2 the rival is much weaker, they're not following Google,  
3 they're sticking with the default.

4 So that's what this was. Is that clear?

5 THE COURT: Uh-huh.

6 BY MR. SEVERT:

7 Q And did you hear Professor Murphy discount these  
8 estimates from these documents because the firms created  
9 them did not need to be precise?

10 A I did.

11 Q What do you make of that testimony?

12 A Yeah, I think that just doesn't make sense to me.  
13 It doesn't make sense to me for a couple of reasons.

14 One, as I just said, these were deals that  
15 involved billions of dollars. You know, take Microsoft, for  
16 example, like, it literally offered to give all of what it  
17 thought the value of these defaults was over to Apple in  
18 order to try to win this deal. And, like, you get that  
19 wrong, you're going to really be in big trouble, okay?  
20 So that's one aspect of this.

21 I think Dr. Murphy tried to discount Google's use  
22 of this, that was actually through that -- that previous  
23 slide that we talked about headroom was also a slide that,  
24 you know, part of his testimony where he was talking about  
25 this and he was, like, oh, it didn't matter. They were

1 making so much profit in this, they didn't need to pay  
2 attention to what their outside -- what that would get if  
3 they lost, if they didn't get the deal.

4           And that's just, you know, it's -- I think it's  
5 wrong, both, conceptually and it's wrong factually. So  
6 conceptually -- okay, so I teach MBAs and executive MBAs,  
7 and when you're teaching the strategy of negotiation, in the  
8 business literature, one thing that gets talked about a lot  
9 is you have to pay a lot of attention to your BATNA,  
10 B-A-T-N-A. That's, you know, an acronym for best  
11 alternative to the negotiated agreement. What's your  
12 payoff?

13           And the reason is, it affects your bargaining  
14 position. It affects, like, how strong a bargaining  
15 position you have.

16           And so one thing you really want to do is think  
17 about what you would you get if this deal didn't happen and  
18 what would your rival get if this deal didn't happen. And  
19 that is a really important thing to keep in mind when you're  
20 bargaining because it tells you, you know, what is your risk  
21 compared to your bargaining counter-parties' risk if this  
22 deal doesn't get finalized. So that's conceptually.

23           Factually, you know, we had the previous slide,  
24 you know, about -- that I showed you, Your Honor, about  
25 Mr. Pichai. One of the things about that same quote is he



1 was thinking about -- a lot about what his -- what Apple's  
2 alternative -- you know, in that language I just gave, what  
3 Apple's BATNA was, like what alternative do you have to me  
4 to Google, if you -- you, Apple, if you don't write a deal  
5 with me, okay?

6 And so he also, not on that slide, talked a lot  
7 about the uncertainty he felt when he was bargaining, that  
8 he really -- he wanted the deal to happen because he didn't  
9 know if the deal didn't happen, what would Apple do. Well,  
10 when he's thinking about that, he's thinking about what  
11 happens if I don't get this deal, and the only way to do  
12 that is to know these numbers. And so it's clear that that  
13 was, for all of these parties, an important thing.

14 Q And Professor Murphy also suggested that you did  
15 not base your estimate on I think what he called market  
16 evidence. Is that true?

17 A No.

18 So, I mean -- I guess I based it on -- you know,  
19 those numbers I talked about moment ago, they came from  
20 documents.

21 I guess a first statement is, I think documents --  
22 you know, ordinary course of business documents are market  
23 evidence that they are showing you things about how the  
24 market works and what's driving outcomes in the market and  
25 how people are thinking.

1           But also, very, very importantly, these parties  
2 were saying what historical market outcomes they were  
3 thinking about and looking to, to justify the estimates that  
4 they had.

5           And so, you know, yes, I didn't do -- actually in  
6 the case of Mozilla, I did do separate analysis of it, but  
7 in the case of these -- you know, the other things that the  
8 parties were looking at, I didn't, but the parties did, and  
9 that's where they came up with the estimates that they did.

10           THE COURT: I'm sorry. Can I ask a different  
11 question and maybe you're going to get to it.

12           But one of the things Professor Murphy suggested  
13 was that there was not as great a foreclosure of the market  
14 due to the defaults because --

15           THE WITNESS: Due to the?

16           THE COURT: Due to the defaults.

17           THE WITNESS: Okay.

18           THE COURT: -- because there is, in his view,  
19 competition for search not through defaults. And he showed  
20 a pie chart of the shares of where search was happening on  
21 iOS devices default versus some other method of access.

22           And, you know, the numbers showed that a large  
23 percentage would go through the default but not as much as  
24 you might think.

25           THE WITNESS: So I take two things.

1           There's sort of two separate things that you're  
2 describing from Professor Murphy. One is, okay, with the  
3 contracts in place, how much traffic do the defaults shift?  
4 That's exactly the evidence that we -- you know, this power  
5 of defaults evidence.

6           So, like, yes, you can talk about how much is  
7 going through different places, but these are the estimates  
8 that these parties had about how important defaults were and  
9 what they shifted. So that's one.

10           A second thing is, he also talked about, well,  
11 you know, maybe all that doesn't really matter -- I'm going  
12 to paraphrasing here. So maybe all that doesn't matter  
13 because rivals can compete to be the defaults, can compete  
14 to be the exclusives, and that's like four slides away.

15 BY MR. SEVERT:

16           Q     And Professor Murphy, I think, showed the Court  
17 some analysis from a consultant in 2010 to suggest that  
18 default effects on Mobile were lower than what you relied  
19 upon in your analysis.

20           And if we could put that up, Mr. Penado. It's  
21 Slide 20.

22           And, Professor Whinston, do these examples  
23 presented by Professor Murphy change any of your opinions?

24           A     No, they didn't.

25           Q     Why not?

1           A     So you can, I guess, bring up Slide 21.

2                     So, Your Honor, you know, there was a lot of -- in  
3 my reports and rebuttal report, there was a lot about  
4 various ways in which problems that I felt with those  
5 estimates, you know, about the quality -- potential quality  
6 of those estimates and their consistency with other  
7 evidence.

8                     But not to spend going time going through all of  
9 that, I think the two big points are, number one, no market  
10 participants relied on these numbers that Professor Murphy  
11 is saying are good evidence. What they relied on it,  
12 especially in the case of Google over and over and over  
13 again, is the evidence I relied on, number one.

14                     Number two, if you believe --

15                     Actually, if you could just put up momentarily  
16 Slide 20 again.

17                     If you believe that the -- you know, Google was  
18 going to get 90-plus percent on mobile phones no matter what  
19 and you were Google, you would never pay the revenue shares  
20 that they're paying. It would be a massive money loser, it  
21 would make no economic sense.

22                     So if you go back to Slide 21.

23                     You know, Your Honor, last time I talked about how  
24 the revenue shares can be viewed as kind of a lower bound on  
25 the effect of defaults, you know, in words -- like, you're

1 not going to pay --

2 I guess it's now -- I can now say the Apple  
3 number, it's now public, I guess -- or whatever the Apple  
4 number, it doesn't matter.

5 You're not going to pay that number if you think  
6 the amount -- if you're Google and you think the amount  
7 you're going to lose is what was on that slide a moment ago  
8 because you would lose billions and billions of dollars  
9 doing it.

10 So those, I think, just the two really big points  
11 about why I don't take that evidence seriously.

12 Q And, Professor Whinston, you testified last  
13 time -- I think we're starting to get to the Court's  
14 question, that your foreclosures measures fell in a range  
15 from 33 to 50 percent.

16 Can you just remind the Court what those numbers  
17 represent? I think you summarized it on the next slide.

18 A Sure.

19 So up on Slide 22.

20 So I talked, when I was here last time, quite a  
21 bit about this measure of foreclosure which I viewed as  
22 measuring the share of the market that's tied up by Google's  
23 exclusive contracts.

24 And that came from, you know, when I looked to,  
25 say, Areeda and Hovenkamp, for example, how they describe

1 foreclosure measures for the courts.

2           And what I said at the time, was, well, it's --  
3 there's kind of a range, depending on how strong you think  
4 rivals are as to how much they tie up the business.

5           So in that range, I described at the time was  
6 33 to 50 percent. 50 percent was the share of U.S. queries  
7 covered by Google's exclusive contracts.

8           That's, you know, the first item on this slide.  
9 And what does that represent? That represents the share of  
10 U.S. queries where the default -- the fact that Google is  
11 the default could affect people's choices.

12           The 33 percent instead captured this -- of lower  
13 bound on the proportion of people who won't change their  
14 default.

15           So, you know, as we've talked about, you know,  
16 some people are just going to follow the default. I think  
17 Professor Murphy testified that he knows somebody whose  
18 parents are never -- are always going to follow the  
19 default -- or father, I think it was. You know, I think we  
20 all know people who are like that. Some of us maybe even  
21 are those people, that may be me.

22           So those people are going to follow the default.  
23 They're not accessible to rivals no matter -- for any  
24 plausible investments, these rivals can make to try to win  
25 these people. And that's where that 33 percent comes from.

1 And what it uses is the numbers that I talked about it a few  
2 moments ago, these share-shift estimates.

3 Q And Professor Murphy criticizes your measure of  
4 foreclosure.

5 And let's put that up on Slide 23, Mr. Penado.

6 And says, "It needs to be measured relative to a  
7 but-for world." And we see his estimate is zero.

8 What's your answer to that?

9 A So I just really don't agree with this  
10 perspective, that, you know, I think what foreclosure -- you  
11 know, foreclosure is a useful measure of, you know, this  
12 idea that you're going to look at what the effect of the  
13 contracts is when they're in place at tying up business is a  
14 very useful thing to look at and understand as an input into  
15 competitive effects analysis when I do consider what the  
16 effects are against but-for worlds, against alternatives.

17 So, you know, I think I -- I disagree with the  
18 idea of not measuring foreclosure in that way.

19 And the idea, you know, Professor Murphy, you  
20 know, I think -- actually, I literally -- it's not on this  
21 slide. I literally heard him say, "My but-for world is the  
22 actual world."

23 And, here, you can see, well, if your but-for  
24 world is the actual world then, by definition, foreclosure  
25 is zero.

1           I mean now I'm not saying he defined -- I want to  
2 be careful. I'm not saying he defined it away, but I just  
3 don't agree that foreclosure is zero here. That a sense --  
4 maybe I should put this differently. That a sensible  
5 measure of foreclosure is zero.

6           MR. SEVERT: Mr. Penado, we can turn to Slide 24,  
7 and Professor Murphy's opinions relating to competition for  
8 the contract.

9 BY MR. SEVERT:

10          Q     And I think Professor Murphy made much of the  
11 fact -- and this is, I think, what the Court was asking  
12 about before -- that rivals can compete for default  
13 contracts. Did you see that testimony?

14          A     I did.

15          Q     And where does this competition for the contract  
16 framework fit into your thinking about the case?

17          A     So, Your Honor, when I kind of think about this --  
18 the effect of these exclusives, I sort of think about it  
19 in -- in some sense, in two pieces. I sort of, as a first  
20 step, which I think is really, you know, essential, is to  
21 think, well, if the contracts are in place, what do they do?  
22 That's kind of the foreclosure analysis. Like, with the  
23 contracts in place, what do they do to traffic? How do they  
24 affect the amount of traffic that's available to rivals?

25                 Once I do that, kind of a second step is to think,



1 okay, now let's think about -- given that I know kind of  
2 what the contracts do, let's think about competition for  
3 them. And that's an analysis where -- that I do, and  
4 thinking about how that competition would work is an  
5 analysis that I do when I think about competitive effects.

6 And I also do it for thinking about but-for world.  
7 Like, how do I think competition will play out more  
8 generally for -- including competition for the contract --  
9 for these contracts.

10 Q And Professor Murray argues that if Google is not  
11 allowed to compete for these exclusive contracts,  
12 competition would be harmed.

13 Are you offering an opinion that Google should be  
14 prohibited from competing in search?

15 A Not at all.

16 And, of course, you know, one sense is prohibited  
17 is a legal conclusion and I'm not offering legal  
18 conclusions.

19 But, you know, in terms of the economics,  
20 Your Honor, I think for me the issue is not whether Google  
21 competes. We want Google to compete. The issue in this  
22 case is how it's competing.

23 And in this case, that, you know, it's competing  
24 for these exclusive contracts -- for these exclusionary  
25 contracts.



1           We're at a point where I want to try to explain  
2 and kind of go through how competition for exclusives works,  
3 and in particular, I want to talk about two kinds of things  
4 that are represented in these three bullet points.

5           One, you know, a first question you might just ask  
6 is, why would a distributor and a manufacturer find it  
7 worthwhile to agree to a contract that harms competition?  
8 So that's kind of just a first, like, base level of  
9 question, like, you know, maybe it's -- that something  
10 that's -- you know, that's something that not obvious at  
11 first but I think it's worth talking about.

12           And that has nothing to do per se with there being  
13 rivals who are trying to get, also get those contracts, but  
14 it's just, is there a reason why an agreement that harms  
15 competition could be valuable and, you know, an agreement  
16 that those two parties might reach.

17           The second thing is, suppose there is competition  
18 for these agreements. Does that solve the problem? Does it  
19 mean that, no, you know, the -- if rivals -- so I'm going to  
20 explain to you why, when you have -- why a distributor and a  
21 dominant firm can find it worthwhile to sign such a  
22 contract.

23           And the next question you might ask, is, well, if  
24 rivals can bid to prevent that from happening, why isn't  
25 that enough?

1           And so the next two points that we'll follow are  
2 me explaining why that isn't enough.

3           Q     Okay. And if we could turn to Slide 26,  
4 Mr. Penado?

5           THE COURT: Counsel, why don't we actually take  
6 our break at this point. Sounds like you're --  
7 Professor Whinston is transitioning to a more robust  
8 discussion. So why don't we go ahead and just take a break.  
9 We will resume at 11:15.

10           And just the same instruction as before with  
11 respect to discussing your testimony during the breaks.  
12 Thank you.

13           COURTROOM DEPUTY: All rise. This Court stands in  
14 recess.

15           (Recess from 10:56 a.m. to 11:15 a.m.)

16           COURTROOM DEPUTY: All rise. This Honorable Court  
17 is again in session.

18           THE COURT: Please be seated. Thank you,  
19 everyone.

20 BY MR. SEVERT:

21           Q     Okay.

22           Professor Whinston, let's turn to Slide 26 of your  
23 presentation, and your first bullet point here.

24           What did you mean by -- in this first bullet?

25           A     Okay.

1           So, Your Honor, I think we're kind of about to do  
2 exclusive contracting 101 in these next three bullets.

3           So as I've described it to you, the first thing I  
4 want to talk about is this question of, like, why would a  
5 dominant firm and a distributor even find it worthwhile to  
6 sign such a contract?

7           And so kind of a starting point for that is to  
8 think about the -- and I highlight it here, you know, how do  
9 we think about competition? And a key thing about  
10 competition is that it's what economists refer to as a  
11 public good. So, you know, what do we mean by a public  
12 good? A good example to keep in mind -- to have in mind  
13 here would be, like, climate change.

14           So climate change is something that affects all of  
15 us, all different countries, all different people, and in  
16 that sense, is something that is public, but we each  
17 contribute individually to it. And so different countries,  
18 for example, are all doing things that may affect and do  
19 affect how much climate change there is.

20           So competition is kind of like that, because the  
21 actions of individual agents in a market can affect how much  
22 competition there's going to be.

23           And so let's think about, again, not yet thinking  
24 about competition for these contracts but let's just think  
25 about a dominant firm and a distributor.

1           A distributor, what does the distributor care  
2 about? The distributor cares about its profits. So, you  
3 know, that can be affected by what's happening to its users,  
4 you know, because it wants to attract, of course, users to  
5 its device or its browser, whatever.

6           But there are two things, you know, that it  
7 certainly leaves out, that it doesn't care about. It  
8 doesn't care about consumers that are elsewhere out in the  
9 market, and it certainly doesn't care about advertisers,  
10 okay?

11           And so the decisions of a distributor, it, to some  
12 extent may internalize, what economists would say  
13 internalize or care about, just short econotalk for care  
14 about, the impacts on its users, but there's a bunch of  
15 things that matter for others in the marketplace that it  
16 will not take account of.

17           Now, let's think about the dominant firm. The  
18 dominant firm had a -- you know, what's its view about the  
19 extent of competition. Well, it actually likes it when  
20 there's less.

21           So the combination of a distributor who doesn't  
22 care enough about preserving competition, because it doesn't  
23 consider advertisers, because it doesn't consider other  
24 consumers that aren't its users and a dominant firm that  
25 actually would like to reduce competition, means that

1 there's room for a deal that harms competition.

2 THE COURT: Why do you say or why do you suggest  
3 that a distributor would not, for example, care about  
4 advertisers in the sense that we've heard -- I think we've  
5 heard -- distributors say that, you know, the user  
6 experience matters to them, and the user experience would  
7 also include advertising on whatever general search engine  
8 they selected?

9 THE WITNESS: Yes.

10 So it may care about the user experience. What  
11 I'm just saying is if the price of advertising goes up and  
12 advertisers are worse off, that's not something it cares  
13 about.

14 It does care about what the user experience is on  
15 its device or on its browser.

16 So...

17 THE COURT: But if they're getting a revenue  
18 share, maybe this is your point, don't they align their  
19 interests with the advertisers in a sense?

20 THE WITNESS: Actually, the opposite. The more  
21 the advertisers pay, the better.

22 THE COURT: Right.

23 THE WITNESS: So actually, they like it when  
24 prices go up to advertisers. They like it when there's less  
25 competition for the advertisers.

1 THE COURT: I see what you're saying. Okay.

2 THE WITNESS: So those are the specifics.

3 But I think, you know, the key, you know, the kind  
4 of stepping back from the specifics of who's benefited and  
5 who's hurt, what's clear is that the distributor is not  
6 fully considering the social good, that competition benefits  
7 many, okay?

8 And, of course, the dominant firm likes it when  
9 there's less competition.

10 So this combination of interest means that there's  
11 room for a mutually beneficial deal that harms competition  
12 because nobody is taking account enough of competition.

13 Just like nobody -- you know, no country is  
14 sufficiently taking account of climate change, of what they  
15 do to the climate, and that's a real problem for public  
16 welfare.

17 So that's -- and, you know, another way, maybe a  
18 shorthand way to put this would be, the dominant firm who  
19 wants competition to be reduced will find it worthwhile to  
20 pay the distributor to reduce it, to agree to something that  
21 reduces it.

22 So that's just kind of the first bullet point to  
23 just sort of understand why the incentives are such in these  
24 kind of negotiations, that when you have a dominant firm,  
25 you can see anti-competitive deals being reached.



1 BY MR. SEVERT:

2 Q Have you seen evidence of a distributor trying to  
3 promote competition despite the fact that it's a public  
4 good?

5 A We have.

6 So it's kind of an interesting -- this was a slide  
7 that came up, I think it was actually in Professor Murphy's  
8 testimony in 27, Mozilla, when it -- actually, I guess it  
9 was the cross-examination, sorry -- but it was when he was  
10 on the stand -- was looking at -- you know, thinking about  
11 why it might go to Yahoo! rather than Google.

12 In the mission statement, a key thing was if you  
13 look on the left here, why go with Yahoo!, well, opportunity  
14 to level the playing field in search, okay?

15 So Mozilla wanted -- would like there to be more  
16 competition in search, and actually Mitchell Baker testified  
17 to this, I think, and that, yeah, if there was more  
18 competition, that would be good for us.

19 But, you know, one of the things you realize when  
20 you think about Mozilla is they're tiny, and they can't  
21 really change in a substantial way, you know, the scale of  
22 rivals. They can affect it somewhat. But they're just a  
23 small piece of the marketplace, like a small country dealing  
24 with climate change and they can't do it on their own. And  
25 so that kind of shows you what the -- in some sense is a

1 nice illustration of what the problem is with public goods  
2 and why this kind of is an example of it.

3 Q And Professor Murphy argues that Apple's size, in  
4 contrast to Mozilla, gives it an incentive to support  
5 competition. What do you make of that point?

6 A Well, I think it's true that Apple has more of an  
7 incentive to promote competition, or certainly an ability to  
8 affect competition than Mozilla does, because it's much  
9 bigger.

10 But Apple still only, you know, is half the  
11 market. And so this externality point, this public good  
12 point, is still there.

13 MR. SEVERT: Mr. Penado, let's turn to Slide 28.

14 BY MR. SEVERT:

15 Q And your bullet here is, "How is a dominant firm  
16 able to use its monopoly profits to ensure it wins here"?

17 A Okay.

18 So, Your Honor, the next two bullets, we've talked  
19 about why two parties, a dominant firm and a distributor,  
20 could find it worthwhile to write an anti-competitive  
21 agreement, to reach an anti-competitive agreement.

22 Now I want to turn to, you know, is it enough if  
23 we have competitor -- rivals able to compete for agreements,  
24 is that enough to prevent such agreements from happening,  
25 anti-competitive deals from happening. And I want to -- the

1 next two bullet points kind of explain why not.

2           So the first bullet point is saying that, you  
3 know, when competition is for an exclusive contract, a  
4 dominant firm, it basically, that kind of competition  
5 advantages a dominant firm, because -- and how -- well, the  
6 dominant firm is able to use the monopoly profits it  
7 protects to make sure that it wins.

8           So, you know, if you think about, you know,  
9 imagine a -- you know, Google is competing against a rival  
10 for an exclusive contract and who's going to win. And let's  
11 even imagine that they're, you know, otherwise maybe the  
12 rival is pretty -- if the rival wins, it's going to gain  
13 some scale and bring competition to the market, okay?

14           So the thing about bringing competition to the  
15 market is, you lower profits for firms in the industry, like  
16 you bring more competition, you know, Google and everyone  
17 starts having -- trying to innovate more or lower their  
18 in-search services or lower their ad prices, overall profits  
19 in the market go down. That's just what competition does.

20           And the result of that is that the rival will have  
21 less incentive to bid than Google will have to -- you know,  
22 to bid. So let's take a really extreme example. Imagine  
23 that the rival would bring so much competition that profits  
24 are driven to zero. How much will the rival bid for that?  
25 Close to zero, because it's not -- if it brings competition,

1 there's not going to be any profit there. How much will  
2 Google bid to prevent that from happening? The difference  
3 between its monopoly profits and zero.

4 And so the difference in their willingness to pay  
5 that comes from the fact that one of them is protecting  
6 monopoly and the other is bringing competition is a very  
7 important difference. And that is one reason why a dominant  
8 firm -- you know, why competition from rivals, you know, can  
9 fail to prevent these deals. So the rival needs to be much  
10 better in order to win.

11 Q And, Professor, did you see evidence in the record  
12 consistent with the idea that a dominant firm can outbid  
13 rivals for exclusives?

14 A I did.

15 So if you bring up the next slide, Slide 29.

16 So this is just from the testimony of Mr. Nadella  
17 where -- you know, what is he saying. Well, you know, the  
18 dominant player in search is paying a lot of money to  
19 maintain that share position.

20 So it's really kind of reflecting this same kind  
21 of idea, that a dominant firm will find it worthwhile to pay  
22 to prevent competition from happening.

23 MR. SEVERT: Mr. Penado, if we could turn to  
24 Slide 30.

25

1 BY MR. SEVERT:

2 Q And this is turning to your third bullet here,  
3 your final bullet.

4 Why does competition for exclusives, when there is  
5 a dominant firm, advantage the dominant firm?

6 A Okay.

7 So the last bullet point, Your Honor, the last  
8 thing I wanted to talk about, is how competition for --  
9 another way that competition for exclusives that a dominant  
10 firm is advantaged when competition takes the form of  
11 competition for exclusives.

12 And a secondary consequence of that which is that  
13 that competition -- because the dominant firm is advantaged,  
14 the competition for those contracts can be less intense. So  
15 it will be kind of a two part thing.

16 So why is competition for exclusives advantage the  
17 dominant firm? It's because competition for exclusives is  
18 all or nothing.

19 And if you think about a dominant firm, the  
20 document firm -- when competition is all or nothing, the  
21 dominant firm -- to beat the rival, the dominant firm kind  
22 of has to be better on average for all the different uses  
23 and consumers compared to the rival.

24 If a rival is good for just some part of traffic,  
25 you know take DuckDuckGo for privacy or something, it still

1 can't compete for something that is an all or nothing deal.

2           And so, as a result, you know, if -- I should say,  
3 if instead it wasn't competition for exclusives, it was not  
4 all or nothing, then, you know, DuckDuckGo would be bringing  
5 competition because Google would have to beat in the thing  
6 that DuckDuckGo is best at, okay? And that difference, you  
7 know, can end up softening competition.

8           So actually -- I know you asked the other day --  
9 I think you brought up grocery store question, ketchup,  
10 maybe. There was something about ketchup.

11           And so -- and it was interesting to me because  
12 I think -- when Mr. Severt was asking about my  
13 qualifications, I talked about the -- this antitrust -- this  
14 book of antitrust lectures that I wrote in 2006 and '7. One  
15 of them was on exclusive dealing.

16           And one of them -- and in that exclusive dealing  
17 chapter, by the way -- actually, it was written, I think,  
18 very much, hoping people like you would read it. And I know  
19 you're going to have a vacation coming up on Thanksgiving  
20 so it's a page turner.

21           Anyway, more seriously, it had an example which  
22 I think also kind of illustrates this idea.

23           So, you know, imagine that you have a -- the  
24 example was potato chips so I'll do potato chips and stick  
25 with it because that's what I'm used to.

1           But imagine that there's a dominant potato chip  
2 manufacturer and there's also a different potato chip that  
3 has -- is really good for one -- its manufacturer, but it  
4 doesn't have like the general, you know, attractiveness, but  
5 it is really good, say, at, you know, light potato chips or  
6 salt-free potato chips. Let's do salt-free potato chips.

7           And think about the difference if the dominant  
8 manufacturer wants to keep that smaller firm -- salt-free  
9 firm out of the grocery store think about two different  
10 situations. One where the dominant firm is just trying to  
11 buy shelf space, okay?

12           And the other, where it's -- you know, say it  
13 offers the grocery store, I'll pay you a certain amount for  
14 each foot of good shelf space, and the other where it's  
15 competing for an exclusive -- it says, no, a grocery store,  
16 I want to be -- I'm going to only offer you to be the  
17 exclusive potato chip in your store.

18           In the first case, it's hard -- it's much harder  
19 to keep the special, you know, the salt-free manufacturer  
20 out of the store, because like if there's some people who  
21 want that salt-free thing, you know, the grocery store is  
22 going to find some place on the shelf to it put.

23           In the case where it's all or nothing, it's -- you  
24 know, the salt-free manufacturers, they're going to lose.  
25 They're just not going to be able to compete against the

1 dominant potato chip manufacturer to be the one in the  
2 store.

3 And so, you know, that just kind of, I guess in a  
4 different setting, kind of illustrates this idea of all or  
5 nothing.

6 And I think one of the things that's really  
7 telling, if you go back to Professor Murphy's testimony, is  
8 how many times he used the word "win."

9 Win is happening -- you know, the fact that it's  
10 win or lose is happening because it's exclusive contracts,  
11 it's all or nothing.

12 And if you're instead, say, and we'll talk about,  
13 you know, I talked about last time, competing, say, with  
14 unconditional revenue shares, which are kind of like bidding  
15 for shelf space, then it's not win or lose. Like it's how  
16 much is each going to get and what special -- and, you could  
17 imagine, you know, if there -- there might be a search  
18 engine like DuckDuckGo that's good for privacy and another  
19 search engine, maybe Microsoft is good in the U.S. on PCs  
20 and et cetera that there might be competition in this way  
21 that pressures Google and makes Google compete harder.

22 THE COURT: So how does your thinking about this  
23 marry up with the DuckDuckGo example on Apple or privacy  
24 mode? In other words, this is an example it seems to me of  
25 wanting to -- or DuckDuckGo attempting to compete in what



1 it's good at.

2 THE WITNESS: Right.

3 It's exactly that. It's just -- you know, if  
4 instead of Google saying, hey, it's, you know, our exclusive  
5 or no rev share -- you know, Google is offering a rev share  
6 for revenue that was coming -- whatever revenue Apple gave  
7 it out of its Safari default, and then DuckDuckGo, Apple  
8 would have a very different incentive for giving DuckDuckGo  
9 the privacy traffic. So that's the sense in which I think  
10 it marries up.

11 BY MR. SEVERT:

12 Q And I think you touched on the exclusive contracts  
13 can make competition less intense. How is that?

14 A Well, it follows from what I just said in this  
15 example that if, when it's all or nothing, the dominant  
16 firm, Google, only, you know, has to basically be better on  
17 average, and it's way better on average than its rivals.

18 But if it's instead not all or nothing, now -- and  
19 a different way to put it, if Google wants to win all the  
20 default traffic the way it has it now, it has to beat the  
21 rivals and offer more in the thing that the rivals are good  
22 at and not just like on average. So the alternatives that  
23 it's competing against are, you know, the things the rivals  
24 are best at.

25 And so that can end up meaning that competition --

1 that the revenue share Google offers is higher when its  
2 unconditional revenue share is being offered than when it's  
3 competition for exclusives.

4 And there's actually an economic literature that  
5 formally models this, and it's exactly this kind of result.  
6 When you have a firm that -- an asymmetric situation where  
7 rivals are a dominant -- there's a dominant firm,  
8 competition for exclusives ends up -- you know, applying it  
9 to this setting, competition for exclusives results in lower  
10 revenue shares than when you have unconditional not all for  
11 nothing -- all for -- all or nothing competition.

12 Q And I think that's a good segue.

13 Mr. Penado, if you could put up Slide 31.

14 I want to now talk about the procompetitive  
15 justifications Professor Murphy presented.

16 And Professor Murray argued that the  
17 procompetitive benefits of Google's contracts outweigh any  
18 harm to competition. Do you agree with that?

19 A I don't.

20 Q And Professor Murphy suggested that if Google  
21 cannot enter into exclusive contracts, payments to  
22 distributors will go down. Do you agree with that?

23 A I don't.

24 Q And why do you say that -- I think you touched on  
25 this in the last question. Why do you say that payments

1 could be larger under less restrictive alternatives?

2 A Well, it's a combination of two things.

3 One, Your Honor, is -- and we talked about this  
4 last time -- that if there are less restrictive  
5 alternatives, rivals are likely to have a better chance to  
6 gain traffic and gain scale, and that's going to make them  
7 stronger competitors.

8 And having stronger competitors puts pressure, you  
9 know, even -- it doesn't just put pressure on Google to have  
10 higher quality for consumers, say, or for advertisers, but  
11 it also puts more pressure on Google in these negotiations  
12 over revenue share.

13 Like you saw in the Apple 2016 that Microsoft  
14 being in there, this, I guess, you know, matters potentially  
15 for what Google has to pay.

16 And I think Mr. Nadella commented -- and it may  
17 have been other Microsoft businesses as well -- but like  
18 we've -- you know, done more for, you know, Apple than we've  
19 done for ourselves in some sense, like by raising what  
20 Google ended up -- what Google ended up having to pay.

21 So if rivals get stronger, actually that will tend  
22 to push revenue shares up.

23 But a second thing is what I just talked about a  
24 moment ago, that if competition for these things is not all  
25 or nothing, that also can push revenue shares up.

1           Q     And what are some examples of less restrictive  
2 alternatives under which there would be greater competition  
3 in today?

4           A     So the two I talked about last time that I thought  
5 about -- and, again, Your Honor, just to remind you, like  
6 when I started thinking about but-for worlds and competitive  
7 effects, it was challenging because like exactly what Google  
8 would do, rolling back the clock, what would be legally  
9 permissible, what Google's counsel would find legally  
10 permissible.

11                     So what I did is I focused on what I regarded as a  
12 couple of less restrictive alternatives.

13                     One was Google using kind of -- what you might  
14 think of as most favored supplier contracts, where it  
15 shouldn't be treated worse than anyone else. That, you  
16 know, for example, could lead -- allow a choice screen --  
17 for a distributor to do a choice screen.

18                     Another were unconditional revenue share payments.  
19 That was the other thing that I talked about.

20           Q     And what do you mean by an "unconditional revenue  
21 share payment"?

22           A     So unconditional -- I know Professor Murphy  
23 commented, he wasn't sure exactly what I meant.

24                     I mean, I think there actually are a range of  
25 things that it could be.

1           So one possibility is I offer -- you know, Google  
2 offers a distributor a revenue share for any traffic coming  
3 from the device.

4           Another possibility is it offers revenue share for  
5 any traffic coming from the search access point. So, for  
6 example -- sorry about that.

7           For example, to offer Apple -- like whenever we  
8 are -- whenever we are -- you put us as the default in  
9 Safari, maybe you put us for non-private search or whatever  
10 it is, whenever you make us the default, we'll share revenue  
11 with you.

12           Now, the thing about that, of course, is -- and  
13 this comes back to the point about defaults versus  
14 exclusives, Apple is perfectly free to, you know, make  
15 Google a default all the time then if it wants to. But  
16 isn't obligated to, it's not restricted by the exclusion --  
17 by the exclusivity term.

18           Q     And Professor Murphy testified that Google  
19 wouldn't pay for any of these kinds arrangements. Do you  
20 agree with that?

21           A     I don't.

22           Q     Why not?

23           A     Well, I think, you know, first of all, take the  
24 case of unconditional revenue share payments. I just said  
25 that what the literature actually seems to suggest and

1 indicate is that Google would pay more than it's paying now  
2 if it was unconditional. So that would be one thing to look  
3 at.

4 As well, you know, in a choice screen, you know,  
5 one -- if, like, this most favorite supplier contract,  
6 I think Professor Murphy was like, well, we know we're going  
7 to be in the choice screen anyway so we're not going to pay.

8 But if rivals are offering revenue share payments,  
9 say, suppose rivals are offering unconditional revenue share  
10 payments, it may be tempting for the distributor to make the  
11 rival, you know, have the default all the time and turn down  
12 the offer from Google, and that's going to make Google pay.  
13 So that, you know, that is why I say that.

14 Q Are unconditional revenue share payments used --  
15 revenue share agreements used in the real world?

16 A They are.

17 Q Can you give the Court an example?

18 MR. SCHMIDTLEIN: Objection, Your Honor.

19 This -- all this testimony, none of it was  
20 disclosed in his expert reports. The words "unconditional  
21 revenue share payments" did not appear in his first report,  
22 and he provides no examples of any real-world examples of  
23 unconditional revenue shares anywhere in his reports.

24 THE COURT: All right. I'll overrule the  
25 objection. I mean, Professor Murphy did spend some time

1 yesterday speaking about -- or it was the day before --  
2 about unconditional revenue share, and so I think this is an  
3 appropriate rebuttal testimony.

4 Go ahead.

5 BY MR. SEVERT:

6 Q Can you give the Court an example of an  
7 unconditional revenue share?

8 A Sure.

9 So, you know, the default change menu, for  
10 example, on a browser, like, it's just kind of what I said,  
11 that you ought -- these -- a rival -- firms offer revenue  
12 share payments that say, you know, we're in that menu, and  
13 if put us in the -- if -- sorry -- if a consumer chooses to  
14 switch to us, we'll pay you revenue share then.

15 Another example would be the second -- you know, I  
16 described to you how there were different iterations of the  
17 choice screen in Europe. The second one, not the one that I  
18 looked at for the data that I showed you, Google designed an  
19 auction for firms to be in the choice screen, and firms were  
20 bidding to be in the choice screen and paying Google.

21 BY MR. SEVERT:

22 Q And going back --

23 THE COURT: Sorry, what does that mean, to be in  
24 the choice screen?

25 THE WITNESS: So consumers -- the second version

1 of the choice screen, consumers were faced with a choice of  
2 search providers. Once a quarter, the firm -- search  
3 engines would -- and it had to be general search engines  
4 like I described to you -- would say how much they were  
5 willing to pay for each time they were chosen by a consumer.

6 And so the one -- base -- it was constructed, kind  
7 of like the ad auction, as a second price -- as a  
8 generalized second-price auction, you know, there were five  
9 slots, just like there are ad slots on a SERP, on a  
10 search-results page, there were a certain number of slots in  
11 this chose screen menu for consumers, and so advertisers --  
12 advertisers, sorry -- general search engines would bid --

13 THE COURT: To be -- as to where they would be  
14 ranked?

15 THE WITNESS: Well, what they --

16 THE COURT: Well, not ranked, but placed, I should  
17 say.

18 THE WITNESS: I'm just trying to think back to  
19 what I remember about it.

20 So I don't -- I think -- so there's two issues.  
21 One is, they would bid to be in and the highest bidder would  
22 pay, you know, the amount that would be better than the  
23 second highest bidder; second highest bidder, the amount,  
24 the third.

25 So they were paying, and each time a consumer



1 chose them, they would pay that amount, just like each time  
2 a consumer clicks on an ad, the advertiser pays.

3 The one thing I'm not 100 percent sure of is  
4 whether the order in the choice screen was determined by how  
5 much you paid --

6 THE COURT: I'm trying to --

7 THE WITNESS: -- or whether it was randomized.

8 And I'm not sure about that, to be honest. I know I knew  
9 it, I just don't remember it sitting here now.

10 THE COURT: Because I'm just trying to understand  
11 why -- what the bidding is for.

12 THE WITNESS: The bidding is to be in it, as  
13 opposed to not be in it.

14 Now, what I can't remember is, is it also the case  
15 that you might be bidding higher so you would be in a higher  
16 position on the list, and I'm just not remembering that.

17 BY MR. SEVERT:

18 Q Just outside of the search context, are  
19 unconditional revenue shares used?

20 A Sure.

21 I mean, unconditional revenue share payments are  
22 used all the time. You know, Your Honor, like contingency  
23 fees for lawyers. Like, what a party in a lawsuit cares  
24 about, say, maybe it's a negligence case or something, is  
25 what recovery -- how many dollars are they going to get in

1 recovery. And they pay the lawyer a share of that in a  
2 contingency fee.

3 And, you know, the thing -- you know, what they're  
4 doing is paying for the thing they care about, right?

5 Just like in a revenue share, in an unconditional  
6 revenue share payment, what you're paying for is revenue.  
7 You're paying a share of revenue, and revenue is what you  
8 care about when you're a search engine, like...

9 So it's very analogous in that sense.

10 BY MR. SEVERT:

11 Q All right, Professor Whinston, just going back to  
12 what will happen under lesser alternatives. Let's just now  
13 assume, as Professor Murphy argues, that payments of  
14 distributors would fall?

15 THE COURT: I'm sorry, what?

16 BY MR. SEVERT:

17 Q That payments of distributors would go down?

18 A We're assuming that.

19 Q Just assume that's --

20 A Contrary to what I said but, yes, okay, I got it.

21 Q Did Professor Murphy present any reliable evidence  
22 that this would harm consumers by leading to more expensive  
23 devices because of passthrough?

24 A I see.

25 So you're asking me about passthrough issues.

1           So, you know, Professor Murphy testified that  
2 revenue share payments end up getting, you know, are passed  
3 through to consumers in the form of lower prices on devices  
4 or maybe higher quality devices or the like.

5           You know, the evidence that he pointed to,  
6 I think, was not reliable. You know, he showed you  
7 something about margins and talked about margins in Apple  
8 and prices over time.

9           In my reports, I talk about a bunch of problems  
10 with that, but, you know, I think a bottom line of this is  
11 like Professor Murphy himself sat here saying, well, it  
12 could just be a coincidence, like that was the whole  
13 coincidence discussion.

14           So, you know, I don't think there's any reliable  
15 evidence that he pointed to.

16           Q     And is there any evidence that you have identified  
17 where Google has looked at that, what has Google looked at?

18           A     So if you bring up Slide 32.

19           So, Your Honor, this is a slide I showed you  
20 previously when I was talking about the profitability of  
21 Google's contracts, how much profit it was earning in these  
22 contracts, and in particular, this is about its projections  
23 of the profitability in its contract with Apple, and as I  
24 said, this is the same slide.

25           But I'm bringing it back up because, in this

1 slide, you know, Google is making, as I talked about  
2 previously, you know, very detailed calculations about what  
3 the profits are that it sees -- the incremental profits are,  
4 the benefits of this deal are to it.

5 But in addition, it's not only -- it's doing that  
6 first, looking at what are profit -- its profits would be  
7 under the current revenue share level in the deal. That's  
8 under the heading that says "Current Economics," okay, and  
9 you can see what the revenue share was then.

10 But it's also doing it just below that in the  
11 revenue share that Apple was asking for, which was quite a  
12 bit higher, okay.

13 All the numbers -- you know, it's impossible, of  
14 course, from this slide, to go see the numbers, but the  
15 bottom line is, if you went and you looked at these detailed  
16 numbers, nowhere in this is Google thinking or modeling, oh,  
17 if we -- you pay this higher revenue share, Apple is going  
18 to sell more phones, and that's going to have impacts on our  
19 profits.

20 So, like, when it -- and this was true whenever  
21 I've seen these kind of deal evaluations looking at revenue  
22 shares. It thinks about what the revenue is -- the total  
23 revenue generated in the deal is and it -- changing the  
24 revenue share changes how that's split up between the  
25 partner, the distributor, and Google. But it's not

1 saying -- there's nothing in these documents saying, well,  
2 the benefit of paying a higher revenue share is they'll be,  
3 you know, consumers will have lower prices and they'll be  
4 more phones purchased or anything like that.

5 Q Professor, I'd like to now turn to some of  
6 Professor Murphy's arguments about the Android agreement  
7 specifically, and I think those are listed on Slide 33.

8 Starting with the first one, Google -- or  
9 Professor Murphy argues that Google's Android agreements  
10 promote competition between Android and iOS. What effects  
11 do Google's contracts have on its incentives to push  
12 Android?

13 A So, Your Honor, this came up, I think, briefly the  
14 last time I was here. I can't remember whether it was you  
15 or someone else who asked me a question. But my response  
16 was, at the time, that it's complex, like, exactly the --  
17 how these deals affect Google's incentives to promote  
18 Android.

19 And in particular, the deal that it has with  
20 Apple, where it's making money when an Apple phone -- when  
21 an Apple phone is sold to a consumer, Google, because of the  
22 arrangements that it has, being the exclusive default, makes  
23 money on the searches that come from that phone, and that  
24 actually undermines the incentives Google has to promote  
25 Android.

1           So, like, a really good way to think about this,  
2 I think, it just makes it really clear, is, imagine Apple  
3 enters into search, serving all the search results for Apple  
4 consumers, for Apple users so that Google no longer is  
5 making money or making much less money on Apple, searches  
6 from Apple users. It's clear then, you know, that Google's  
7 incentives to push Android phones to really make consumers  
8 buy Android phones would go way up. So you can kind of --  
9 you know, because that's how they would -- they'd be making  
10 much, much more on Android phones in that case compared to  
11 iOS, you know, Apple phones.

12           So that's kind of what I meant last time when I  
13 said it's complex.

14           Q     And can you give the Court an example of how that  
15 might work?

16           THE COURT: I'm sorry, what was the question?

17           BY MR. SEVERT:

18           Q     Sorry, do you have an example of how that might  
19 work?

20           A     How that might work.

21           Q     Sorry, I'll withdraw.

22           Professor Murphy's second point is that the  
23 contracts ensure a consistent out-of-the-box Android  
24 experience. What's your response to that?

25           A     My response to that is twofold.

1           One, you know, Mr. Pichai, when he -- you know, he  
2 was asked, are there significant incentives for distributors  
3 to give a really good experience on Android, you know,  
4 whether it's consistency or security updates or the like,  
5 the answer was, yes, yes, they do.

6           I guess the second thing I'd say is, like if it's  
7 really about consistency, like another way to have  
8 consistency is to always have a choice screen, that's very  
9 consistent. So it's not -- you know, I don't see the link  
10 between exclusivity and consistency.

11           Q     And turning to the third claim, the MADA barter.  
12 What's your response to Professor Murphy's MADA barter  
13 benefit?

14           A     So, you know, Professor Murphy, you know, says  
15 that because Google is offering the -- essentially, the Play  
16 Store for free, as well as other GMS apps, that allows  
17 distributors to have low priced Android phones, okay?

18                     And here my response is kind of, you know, more  
19 about that there are less restrictive alternatives that  
20 could accomplish the same thing.

21                     And so, for example, if Google was charging, you  
22 know -- wasn't bundling -- you know, wasn't essentially  
23 bundling or paying for the widget and the placement  
24 restrictions but instead just licensed GMS, it could offer  
25 lower license fees for low priced phones, and, you know,

1 that could make the license fee conditional on the features  
2 of the phone.

3 And, actually, if you look in Europe, Google was  
4 free to decide -- you know, when they unbundled, Google was  
5 free, Your Honor, to set the prices as it wanted, you know,  
6 in the way that it wanted. And what it did is it offered  
7 licenses that were, you know, dependent on what country you  
8 were in and also dependent on the features of the phone  
9 which correlated with what the phone prices were.

10 Q And then, Professor, in your opinion, while we're  
11 talking about the MADA, what makes the MADA  
12 anti-competitive?

13 A So what makes the MADA anti-competitive or at  
14 least the focus here is on the restrictions, on the  
15 placement restrictions, that basically -- you know, that  
16 Google is effectively paying for, you know, placement of the  
17 widget.

18 And it's doing it by giving away the Play Store  
19 for free. And the Play Store is so valuable that it's just  
20 must have. So no one is going -- no one can have a  
21 commercially viable Android phone without the Play Store,  
22 and, thus, no one can effectively get around having --  
23 agreeing to these placement restrictions.

24 It's not -- you know, a separate issue is like  
25 does the bundling matter in some other way, that would be a



1     tying claim. That's not, at least, my understanding of what  
2     the government's argument -- claim is in the case.

3             Q     Okay.

4                     Professor Whinston, if we could turn to Slide 34,  
5     turn to our last topic today of investment incentives.

6                     Do you recall hearing Professor Murphy testify  
7     that the challenged agreements do not hinder rivals' ability  
8     or incentives to invest?

9             A     I do.

10            Q     And do you agree with that?

11            A     I don't.

12            Q     And why not?

13            A     So, you know, the challenged agreements, as I said  
14     last time I was here, have two kinds of effects on  
15     incentives to invest. One is on rival -- on the costs of  
16     improving quality, and the other side of this is on the  
17     benefits.

18                     And, you know, as I said last time, you know,  
19     basic economic model of investment is we're going to look at  
20     benefits -- you know, benefit cost analysis. So with higher  
21     costs and low -- you know, lower benefits, it's less  
22     attractive to invest.

23            Q     And Professor Murphy testified that Google's  
24     agreements neither raise investment costs nor lower  
25     investment benefits. Why do you think that's wrong?

1           A     So on the cost side -- now, frankly, I just --  
2 I don't know how to put -- I didn't understand --

3           Q     Sure.

4           A     -- follow.

5                   No. I understood your question.

6                   I didn't understand what Professor Murphy's -- it  
7 didn't make sense to me.

8                   You know, I think there's lots of evidence about  
9 how denying rivals' scale ends up making rivals unable to,  
10 for example, do experiments that help rivals improve their  
11 quality. And so those things make it more difficult to  
12 improve quality, or, in economist language, raise the costs  
13 of quality investment.

14          Q     What about the benefits of investment?

15          A     So the benefits of investment really are the point  
16 about foreclosure, right, that when we talked about  
17 foreclosure last time and the foreclosure measure, what  
18 these contracts do is they end up locking up traffic. And  
19 so if a rival improves its quality, it doesn't, you know --  
20 a bunch of the traffic is tied up by Google's agreements.

21                   And so that directly lowers the traffic that  
22 rivals can get by getting better, and, in turn, ends up  
23 lowering their investment incentives.

24          Q     And Professor Murphy points to the results of the  
25 European choice screen to say there's hardly any effect on

1 Google's -- of Google's exclusive defaults.

2 Why is that wrong?

3 A Well, the funny thing -- you know -- I don't know  
4 funny, sorry, may be the wrong word.

5 The thing about the choice screen is it's actually  
6 exactly showing you this point, that the -- you know, the  
7 difference between a rival -- when a rival improves -- has  
8 high quality, what does it get when there's a choice screen  
9 versus what does it get when it faces Google's contracts,  
10 Google's defaults.

11 And so what we saw in the choice screen, okay,  
12 Google is much stronger than its rivals. It gets -- in the  
13 choice screen, it got 90 percent of the choices -- or I  
14 should say more in Europe, but then adjusted for the U.S.  
15 with my regression analysis.

16 And it's not surprising. Like, if you're a  
17 much -- if you have really high quality and your rivals  
18 don't, what do we expect consumers to do? Choose the high  
19 quality firm.

20 But with the defaults in place, the foreclosure  
21 analysis is saying to you, like, no, if the Google has these  
22 agreements in place and a rival is foreseeing becoming much  
23 higher quality, it's not going to get the same kind of  
24 traffic, and that's going to -- when a rival thinks about is  
25 it worthwhile investing, the answer is going to be, well,

1 it's much less worthwhile investing when I'm facing these  
2 defaults.

3 Q And is your claim about a large effect of benefits  
4 from investment just a prediction you're making based on  
5 economic theory?

6 A No.

7 I mean, it comes directly from market evidence --  
8 from, you know, the market evidence.

9 So one piece of it that I just talked about is  
10 coming from the foreclosure analysis, that's what happens if  
11 the contracts are in place.

12 The other piece of it is evidence from the choice  
13 screen.

14 And, yeah -- I mean, which is completely intuitive  
15 if you are good and consumers have the option of choosing  
16 you, they will.

17 Q And I think -- and you talked a bit about European  
18 choice screen and how it can sort of hide the effects of  
19 Google's contracts with weak rivals.

20 Does this matter for one how -- for how one might  
21 view the contracts' competitive effects?

22 A It does.

23 So, Your Honor, last time when I was here, I  
24 talked about how if you have a situation with a dominant  
25 firm that's very strong and rivals that are weak, you know,

1 and you compare a choice screen to the current situation --  
2 you know, situation with defaults, you may not see much  
3 effect, that it hides the power of defaults because the  
4 rivals are weak and no one wants to choose them in a choice  
5 screen or few people do, okay?

6 But, you know, that's hiding -- you know, when you  
7 think about the competitive effects analysis, to just look  
8 at that, which is what Professor Murphy kind of keeps  
9 wanting you to do, is ignoring this whole point that it  
10 affects the likelihood of rivals gaining higher quality, of  
11 them investing and gaining higher quality.

12 And so one way to kind of put it is it ignores the  
13 fact that a significant part of the reason why -- you know,  
14 Professor Murphy kept talking about the world as it is. A  
15 significant part of the reason why the world is as it is, is  
16 the contracts.

17 And so, you know, that's, I think, a really key  
18 thing for thinking about what's going on here.

19 THE COURT: So could you just explain one more  
20 time your view of why the relationship between the choice  
21 screen and investment incentives, I'm not sure I followed.

22 THE WITNESS: Sure, I'd be happy to.

23 So, you know, if you're thinking about a but-for  
24 world, for example, and, you know, Professor Murphy, for  
25 example, talked a lot about -- he looks at the choice

1 screen, okay. But he looks at the choice screen in a very  
2 different way than I do, okay.

3 For me, what I'm trying to do is I'm thinking  
4 about, well, if a rival is thinking about investing and  
5 getting stronger, what are its incentives when Google has  
6 these defaults compared to a world where Google -- it's a  
7 level playing field.

8 And we'll call the choice screen a level playing  
9 field, okay?

10 So what the foreclosure analysis said was -- well,  
11 let's start on the other side.

12 What the choice screen tells us is weak rivals in  
13 a choice screen who aren't very good don't get very much  
14 choice, not many people choose them. Some do, for  
15 whatever -- some people may not like Google for various  
16 reasons. But not, surprisingly, if the rivals are not very  
17 good, not many people choose them.

18 And Google, who's very -- who's much stronger,  
19 gets the vast majority, over 90 percent, of the choices.

20 But if you think now let's compare that to a  
21 situation where Google has defaults. And what the  
22 foreclosure -- and so in the current situation where the  
23 rivals are weak, think about covered queries, they're not  
24 getting any of them, right?

25 What the foreclosure analysis told you is that out

1 of the 50 percent of covered queries, if a rival, you know,  
2 unimaginably, implausibly -- I'm sorry to use the Super Duck  
3 term -- but like became -- is much better than Google as  
4 Google got better -- is now with the rivals, it would get  
5 17 percent of the 50 percent of covered queries, or --  
6 sorry. I didn't say that right. 17 percent of U.S. queries  
7 out of 50 percent that are covered, so a third of them.

8           So if you think about it, with the contracts in  
9 place, this rival who thought about investing would say to  
10 itself, I'm going to get a third of the covered queries.  
11 With the contract not in place, with a choice screen, the  
12 rival would say I'm going to get more than 90 percent of  
13 those queries if I get that much better.

14           And so that's what I mean when I'm thinking --  
15 like, I'm comparing those two situations and thinking,  
16 what's the implication for a firm that maybe is weak now  
17 when it thinks about the benefits that it would get through  
18 gaining traffic.

19           THE COURT: So is the bottom line point you're  
20 making is that with a choice screen, a weaker rival has more  
21 incentive to invest?

22           THE WITNESS: Correct.

23           THE COURT: To gain greater market share?

24           THE WITNESS: Correct.

25

1 BY MR. SEVERT:

2 Q And how, Professor, does the Go Big in Europe fit  
3 with your analysis of incentives in a choice screen world?

4 A So, you know, Go Big in Europe is a situation --  
5 I guess, it's focused on Google's incentives.

6 And, you know, so a second piece of this,  
7 Your Honor, that I talked about last time is not just what  
8 rivals' incentives are but also how does having a more even  
9 playing field, having stronger rivals, having more  
10 competition, more competitive threat for Google effect its  
11 incentives.

12 We've seen, you know, in Go Big in Europe, the  
13 rivals, you know, Google responded by investing more -- by  
14 giving higher quality to consumers. It did the same, of  
15 course, when -- as I testified before, with Bing as well,  
16 when Bing was introduced.

17 Q Professor Murphy also argued that your opinions on  
18 incentive -- investments incentives are flawed because  
19 Microsoft did not invest when it had easier access  
20 distribution. What did you make of that testimony?

21 A Well, Microsoft definitely did invest. I mean, it  
22 had this -- they tried to buy Yahoo! for many billions of  
23 dollars in the late 2000s, which it didn't -- it ended up  
24 not being able to do. It invested in developing Bing.

25 You know, Microsoft -- Bing lost billions -- you



1 know, billions and billions of dollars. I talk about this  
2 in my report. It only became profitable in 2015 on a yearly  
3 basis, after losing tons and tons of money before.

4 So it's not that Microsoft didn't invest. Whether  
5 it was successful so far is a different question.

6 MR. SEVERT: Mr. Penado, if you could please put  
7 up Slide 35.

8 BY MR. SEVERT:

9 Q And Professor Murphy used -- Slide 35 relates to  
10 the Microsoft Yahoo! deal that you've talked about and  
11 Professor Murphy also talked about.

12 Professor Murphy used this slide to suggest that  
13 the Yahoo! deal from Microsoft did not lead to a material  
14 improvement in Bing's quality. Do you agree with that?

15 A No.

16 Q And why not?

17 A Well, I think as was brought out in  
18 cross-examination, this slide is talking about the gap  
19 between Google and Bing, you know, the difference in their  
20 quality scores, not Bing's quality score.

21 And, Your Honor, we know, you know, given the  
22 evidence that I talked about last time, that during this  
23 time period, Google was feeling threatened by Bing, and,  
24 you know, responded by pouring resources into trying to get  
25 better and into quality improvements and, you know,

1 precision improvements.

2           And so you know, in fact, in my rebuttal --  
3 I think it was rebuttal, but one of my two reports -- if you  
4 bring up the next slide.

5           Q     I think it's your reply report.

6           A     Okay.  Sorry.

7                     In my reply report.

8                     This is just a graph from -- in 20 -- over a  
9 period from February 2011 to October of 2012 of what was  
10 happening to Bing's precision score as measured by Google.

11                    And so you can see it.  I mean, it is going up.

12                    Now, the gap, Google is also, you know,  
13 responding -- and, you know, starting to -- in this period,  
14 starting to improve its quality as well.  And so the gap --  
15 at this point, the gap didn't narrow.

16           Q     So we've been talking about what Microsoft did in  
17 the past.  Now I want to just talk about what Microsoft is  
18 doing today.

19                    Have you seen any evidence about investments  
20 Microsoft is or is willing to make today?

21           A     Well, what -- I mean, I guess in the testimony I  
22 saw, that -- you know, I think the bottom line is Microsoft  
23 is willing to invest when it has distribution, that it is --  
24 when it -- in PCs, it does and is willing to invest.  And  
25 I think what Mr. Nadella testified to is that Microsoft is

1 very willing to invest but not when it can't get traffic.

2 And so in mobile, that's kind of a big problem  
3 right now.

4 MR. SEVERT: And, Mr. Penado, if you could turn to  
5 Slide 37.

6 BY MR. SEVERT:

7 Q And at the beginning of his presentation to the  
8 Court, this was his fourth slide, Professor Murphy  
9 identified two high level questions that we put here on your  
10 Slide 37.

11 Do you agree that these are two big questions in  
12 this case?

13 A Yeah, I mean, the questions are very high level.

14 It's hard to -- it's hard to have a qualm with  
15 these two questions.

16 Like, yes, we want to know whether challenged  
17 agreements harm competition.

18 And second, we want to know whether there are any  
19 pro-competitive efficiencies.

20 Q And do you agree with the answers Professor Murphy  
21 provided in his testimony?

22 A No. I mean, my answers to these questions are  
23 very, very different than Professor Murphy's.

24 So, you know, when I look at the evidence in this  
25 case, the -- you know, the documents, the data, how this

1 market works, I see, you know, that, A, you know, defaults  
2 are really, really important in this market first.

3 Second, that, you know -- and I should say as  
4 well, looking at all that information and applying the  
5 relevant economic principles to it.

6 So if I look at that, I see that defaults are  
7 really, really important.

8 B, that competitive -- you know, the fact that  
9 there might be competition in some cases for these exclusive  
10 contracts does not solve the problem and that the claimed  
11 pro-competitive effects, I either don't see convincing  
12 evidence of or think that there are less restrictive  
13 alternatives that could achieve them.

14 MR. SEVERT: Your Honor, at this time, I move to  
15 admit UPXD106 to complete Professor Whinston's testimony.

16 THE COURT: Okay. We'll admit it.

17 (Plaintiffs' Exhibit UPXD106  
18 received into evidence.)

19 MR. SEVERT: Pass the witness.

20 THE COURT: Okay. Why don't we, instead of  
21 starting the cross, why don't we just go ahead and break for  
22 lunch now. So we will resume at 1:15. See everybody then.

23 COURTROOM DEPUTY: All rise. This Court stands in  
24 recess.

25 (Recess from 12:13 p.m. to 1:15 p.m.)

C E R T I F I C A T E

I, William P. Zaremba, RMR, CRR, certify that the foregoing is a correct transcript from the record of proceedings in the above-titled matter.

Date: November 16, 2023



William P. Zaremba, RMR, CRR

<b>BY MR. SEVERT: [34]</b> 10451/6 10451/15 10455/22 10460/21 10465/5 10467/19 10472/10 10472/19 10477/14 10480/4 10482/15 10485/10 10488/22 10489/4 10494/6 10495/15 10496/21 10500/6 10504/15 10509/9 10513/20 10518/1 10519/14 10521/25 10526/11 10532/5 10532/21 10534/17 10535/10 10535/16 10539/17 10548/25 10550/8 10552/6 <b>COURTROOM</b> <b>DEPUTY: [5]</b> 10450/2 10450/6 10513/13 10513/16 10553/22 <b>MR. DINTZER: [1]</b> 10450/14 <b>MR. SCHMIDTLEIN:</b> <b>[2]</b> 10467/4 10531/18 <b>MR. SEVERT: [20]</b> 10450/17 10451/13 10458/24 10465/4 10467/13 10467/16 10476/22 10480/2 10482/13 10485/8 10489/2 10495/13 10496/19 10509/6 10519/13 10521/23 10550/6 10552/4 10553/14 10553/18 <b>THE COURT: [51]</b> 10450/4 10450/12 10450/15 10450/21 10451/14 10453/11 10454/3 10454/13 10455/1 10455/5 10458/22 10458/25 10460/1 10460/20 10465/3 10467/9 10467/15 10467/18 10470/8 10471/10 10472/18 10476/24 10477/13 10488/7 10488/21 10493/20 10499/16 10500/5 10503/10 10503/16 10503/18 10513/5 10513/18 10516/2 10516/17 10516/22 10517/1 10525/22 10531/24 10532/23 10533/13 10533/16 10534/6 10534/10 10535/15 10539/16 10546/19 10548/19 10548/23 10553/16 10553/19 <b>THE WITNESS: [29]</b> 10454/1 10454/4 10454/14 10455/2	10455/6 10459/8 10460/6 10470/19 10471/11 10477/6 10488/15 10493/21 10499/18 10503/15 10503/17 10503/25 10516/9 10516/20 10516/23 10517/2 10526/2 10532/25 10533/15 10533/18 10534/7 10534/12 10546/22 10548/22 10548/24 <b>7 [1]</b> 10523/14 <b>0</b> <b>0340 [1]</b> 10447/4 <b>1</b> <b>1 percent [1]</b> 10493/16 <b>10 [2]</b> 10480/24 10493/20 <b>10 percent [2]</b> 10493/18 10495/4 <b>100 [1]</b> 10486/15 <b>100 percent [1]</b> 10534/3 <b>101 [3]</b> 10452/6 10454/25 10514/2 <b>10:56 [1]</b> 10513/15 <b>11 [1]</b> 10482/14 <b>1100 [1]</b> 10447/3 <b>11:15 [2]</b> 10513/9 10513/15 <b>12 [1]</b> 10485/9 <b>12:13 [1]</b> 10553/24 <b>13 [1]</b> 10489/3 <b>1300 [1]</b> 10447/14 <b>14 [2]</b> 10491/17 10492/14 <b>15 [4]</b> 10492/4 10493/12 10496/23 10497/8 <b>15 percent [1]</b> 10481/12 <b>16 [3]</b> 10446/5 10493/5 10554/7 <b>17 [1]</b> 10495/14 <b>17 percent [2]</b> 10548/5 10548/6 <b>18 [3]</b> 10496/20 10497/6 10497/7 <b>18 percent [1]</b> 10493/25 <b>19 [1]</b> 10497/20 <b>1908 [1]</b> 10457/13 <b>1909 [1]</b> 10457/13 <b>1:15 [2]</b> 10553/21 10553/24 <b>2</b> <b>20 [6]</b> 10466/13 10474/20 10493/2 10504/21 10505/16 10551/8 <b>20 percent [2]</b> 10496/24 10497/9	<b>20-3010 [2]</b> 10446/4 10450/7 <b>20001 [1]</b> 10448/9 <b>2000s [2]</b> 10466/24 10549/23 <b>20024 [1]</b> 10448/3 <b>2006 [1]</b> 10523/14 <b>2010 [1]</b> 10504/17 <b>2011 [1]</b> 10551/9 <b>2012 [1]</b> 10551/9 <b>2015 [1]</b> 10550/2 <b>2016 [1]</b> 10528/13 <b>2018 [1]</b> 10476/6 <b>202 [4]</b> 10447/4 10447/9 10448/4 10448/9 <b>2020 [3]</b> 10489/20 10493/1 10493/3 <b>2023 [2]</b> 10446/5 10554/7 <b>20530 [1]</b> 10447/8 <b>21 [2]</b> 10505/1 10505/22 <b>22 [2]</b> 10493/2 10506/19 <b>23 [1]</b> 10508/5 <b>24 [1]</b> 10509/6 <b>26 [2]</b> 10513/3 10513/22 <b>27 [1]</b> 10518/8 <b>28 [1]</b> 10519/13 <b>29 [1]</b> 10521/15 <b>3</b> <b>30 [1]</b> 10521/24 <b>3010 [2]</b> 10446/4 10450/7 <b>307-0340 [1]</b> 10447/4 <b>307-6158 [1]</b> 10447/9 <b>31 [2]</b> 10493/25 10527/13 <b>32 [1]</b> 10536/18 <b>3249 [1]</b> 10448/9 <b>33 [2]</b> 10506/15 10538/7 <b>33 percent [2]</b> 10507/12 10507/25 <b>33 to [1]</b> 10507/6 <b>333 [1]</b> 10448/8 <b>34 [1]</b> 10542/4 <b>35 [2]</b> 10550/7 10550/9 <b>354-3249 [1]</b> 10448/9 <b>37 [2]</b> 10552/5 10552/10 <b>4</b> <b>42 [1]</b> 10446/7 <b>434-5000 [1]</b> 10448/4 <b>450 [1]</b> 10447/7 <b>48 percent [1]</b> 10494/3 <b>5</b> <b>5 percent [1]</b> 10495/4 <b>50 [2]</b> 10507/6 10507/6 <b>50 percent [4]</b> 10506/15 10548/1 10548/5 10548/7 <b>5000 [1]</b> 10448/4	<b>508-6000 [1]</b> 10447/15 <b>51 [2]</b> 10493/11 10494/3 <b>6</b> <b>6000 [1]</b> 10447/15 <b>6158 [1]</b> 10447/9 <b>680 [1]</b> 10448/3 <b>7</b> <b>7100 [1]</b> 10447/8 <b>720 [1]</b> 10447/15 <b>7th [1]</b> 10447/14 <b>8</b> <b>8 percent [1]</b> 10494/15 <b>80203 [1]</b> 10447/15 <b>9</b> <b>90 percent [3]</b> 10544/13 10547/19 10548/12 <b>90-plus [1]</b> 10505/18 <b>9:30 [1]</b> 10446/6 <b>A</b> <b>a.m [3]</b> 10446/6 10513/15 10513/15 <b>ability [6]</b> 10473/23 10477/1 10484/20 10484/21 10519/7 10542/7 <b>ablation [2]</b> 10459/17 10469/20 <b>able [7]</b> 10462/19 10484/20 10519/16 10519/23 10520/6 10524/25 10549/24 <b>about [218]</b> <b>above [2]</b> 10463/12 10554/4 <b>above-titled [1]</b> 10554/4 <b>absent [1]</b> 10463/13 <b>absolute [1]</b> 10492/12 <b>absolutely [2]</b> 10450/14 10463/22 <b>absolve [1]</b> 10511/17 <b>accepted [2]</b> 10474/9 10474/11 <b>access [4]</b> 10462/15 10503/21 10530/5 10549/19 <b>accessible [1]</b> 10507/23 <b>accomplish [1]</b> 10540/20 <b>according [1]</b> 10486/11 <b>account [4]</b> 10462/6 10515/16 10517/12 10517/14 <b>achieve [1]</b> 10553/13 <b>acronym [1]</b> 10501/10 <b>across [2]</b> 10466/21 10466/23 <b>Action [1]</b> 10450/7 <b>actions [1]</b> 10514/21 <b>actual [2]</b> 10508/22	10508/24 <b>actually [38]</b> 10454/5 10454/23 10455/13 10455/18 10457/23 10460/9 10461/21 10466/20 10475/6 10478/2 10481/5 10485/4 10485/20 10489/13 10492/3 10493/17 10494/21 10500/22 10503/5 10505/15 10508/20 10513/5 10515/19 10515/25 10516/20 10516/23 10518/7 10518/8 10518/16 10523/8 10523/17 10527/4 10528/21 10529/24 10530/25 10538/24 10541/3 10544/5 <b>ad [26]</b> 10453/1 10453/8 10472/13 10472/22 10473/16 10473/18 10477/1 10477/2 10477/17 10478/18 10481/20 10484/9 10484/13 10484/14 10484/18 10486/8 10486/9 10486/13 10486/19 10488/14 10493/16 10495/1 10520/18 10533/7 10533/9 10534/2 <b>Adam [3]</b> 10447/6 10450/18 10476/18 <b>Adam Severt [1]</b> 10450/18 <b>adam.severt [1]</b> 10447/9 <b>add [2]</b> 10462/10 10467/21 <b>addition [1]</b> 10537/5 <b>address [1]</b> 10455/21 <b>adjusted [1]</b> 10544/14 <b>admit [2]</b> 10553/15 10553/16 <b>ADMITTED [1]</b> 10449/10 <b>ads [26]</b> 10453/9 10453/10 10455/12 10455/15 10464/18 10470/7 10472/11 10478/7 10483/21 10483/24 10483/24 10484/5 10484/6 10484/6 10484/20 10485/1 10485/15 10486/6 10487/8 10487/10 10488/9 10488/9 10490/22 10494/19 10494/24 10494/25 <b>advantage [2]</b> 10522/5 10522/16 <b>advantaged [2]</b> 10522/10 10522/13
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<b>A</b>	10483/15 10483/16 10485/18 10485/21 10496/16 10496/25 10508/9 10509/3 10511/3 10512/7 10517/20 10527/18 10527/22 10530/20 10542/10 10550/14 10552/11 10552/20	10530/15 10530/23 10531/11 10531/19 10531/24 10534/22 10535/11 10537/13 10539/3 10553/4 10553/22	10491/2 10491/17 10491/20 10498/11 10503/6 10504/17 10504/19 10508/15 10509/22 10510/3 10510/5 10542/20 10544/15 10544/21 10545/10 10546/7 10547/10 10547/25 10549/3	10494/8 10496/7 10538/4 <b>anyway [2]</b> 10523/21 10531/7 <b>anywhere [2]</b> 10487/10 10531/23 <b>apologies [1]</b> 10499/18 <b>apologize [1]</b> 10492/16 <b>appear [1]</b> 10531/21 <b>APPEARANCES [2]</b> 10446/11 10447/17 <b>Apple [40]</b> 10458/21 10460/24 10461/6 10461/24 10462/7 10462/7 10462/8 10462/11 10462/19 10498/1 10498/16 10498/20 10498/21 10500/17 10502/4 10502/9 10506/2 10506/3 10519/6 10519/10 10525/23 10526/6 10526/7 10528/13 10528/18 10530/7 10530/14 10536/7 10536/23 10537/11 10537/17 10538/20 10538/20 10538/21 10539/2 10539/3 10539/4 10539/5 10539/6 10539/11 <b>Apple's [4]</b> 10462/13 10502/1 10502/3 10519/3 <b>applying [2]</b> 10527/8 10553/4 <b>approach [3]</b> 10451/13 10469/3 10469/19 <b>appropriate [1]</b> 10532/3 <b>apps [1]</b> 10540/16 <b>aqu a [2]</b> 10492/22 10492/22 <b>are [136]</b> <b>Areeda [1]</b> 10506/25 <b>aren't [4]</b> 10488/14 10496/1 10515/24 10547/13 <b>argue [1]</b> 10471/7 <b>argued [5]</b> 10468/2 10495/16 10496/22 10527/16 10549/17 <b>argues [4]</b> 10510/10 10519/3 10535/13 10538/9 <b>argument [3]</b> 10471/8 10477/20 10542/2 <b>arguments [2]</b> 10495/11 10538/6 <b>Army [1]</b> 10466/22 <b>around [2]</b> 10483/23 10541/22 <b>arrangements [2]</b> 10530/19 10538/22 <b>as [76]</b> 10450/22 10451/4 10452/11 10452/23 10452/23
<b>advantages [3]</b> 10461/14 10463/4 10520/5 <b>advertiser [14]</b> 10473/21 10473/22 10476/20 10479/25 10480/6 10480/12 10480/16 10481/14 10486/18 10486/19 10488/2 10490/3 10490/7 10534/2 <b>advertiser's [1]</b> 10476/21 <b>advertisers [30]</b> 10455/14 10473/25 10474/7 10475/10 10475/20 10475/21 10476/1 10478/8 10478/20 10479/22 10480/7 10480/18 10480/19 10481/10 10481/12 10482/3 10482/5 10482/11 10485/16 10515/9 10515/23 10516/4 10516/12 10516/19 10516/21 10516/24 10516/25 10528/10 10533/11 10533/12 <b>advertising [5]</b> 10489/16 10490/10 10490/11 10516/7 10516/11 <b>advice [1]</b> 10469/24 <b>affect [9]</b> 10484/12 10507/11 10509/24 10514/18 10514/19 10514/21 10518/22 10519/8 10538/17 <b>affected [1]</b> 10515/3 <b>affects [5]</b> 10485/23 10501/13 10501/14 10514/14 10546/10 <b>after [4]</b> 10457/23 10471/3 10471/4 10550/3 <b>again [9]</b> 10451/8 10465/12 10481/16 10487/19 10505/13 10505/16 10513/17 10514/23 10529/5 <b>against [5]</b> 10508/16 10508/16 10520/9 10524/25 10526/23 <b>agents [1]</b> 10514/21 <b>aggregates [2]</b> 10464/24 10465/8 <b>aggregation [1]</b> 10465/21 <b>ago [8]</b> 10457/24 10464/1 10465/13 10477/23 10502/19 10506/7 10508/2 10528/24 <b>agree [23]</b> 10465/1 10465/6 10465/10 10465/24 10480/12	10483/15 10483/16 10485/18 10485/21 10496/16 10496/25 10508/9 10509/3 10511/3 10512/7 10517/20 10527/18 10527/22 10530/20 10542/10 10550/14 10552/11 10552/20 <b>agreeing [1]</b> 10541/23 <b>agreement [6]</b> 10501/11 10512/14 10512/15 10519/21 10519/21 10538/6 <b>agreements [11]</b> 10512/18 10519/23 10519/24 10531/15 10538/9 10542/7 10542/13 10542/24 10543/20 10544/22 10552/17 <b>ahead [4]</b> 10467/18 10513/8 10532/4 10553/20 <b>AI [1]</b> 10456/8 <b>aided [1]</b> 10448/11 <b>aim [2]</b> 10476/7 10476/18 <b>ai [2]</b> 10446/3 10450/8 <b>align [1]</b> 10516/18 <b>all [86]</b> 10450/2 10450/12 10450/15 10450/21 10454/17 10454/20 10455/9 10455/9 10455/11 10461/6 10462/20 10464/5 10465/24 10466/1 10466/6 10466/14 10466/15 10467/1 10467/4 10468/7 10469/12 10470/6 10471/14 10471/14 10473/9 10473/11 10475/7 10476/20 10476/21 10478/17 10478/18 10482/3 10487/16 10487/22 10489/14 10490/1 10490/19 10492/20 10494/7 10495/19 10495/21 10495/23 10497/15 10497/23 10498/2 10499/12 10499/14 10500/16 10502/13 10504/11 10504/12 10505/8 10507/20 10510/15 10513/13 10513/16 10514/14 10514/15 10514/15 10514/18 10522/18 10522/20 10522/22 10523/1 10523/4 10524/23 10525/4 10525/11 10526/15 10526/18 10526/19 10527/10 10527/11 10527/11 10528/24	10530/15 10530/23 10531/11 10531/19 10531/24 10534/22 10535/11 10537/13 10539/3 10553/4 10553/22 <b>allow [2]</b> 10485/16 10529/16 <b>allowed [2]</b> 10472/3 10510/11 <b>allows [1]</b> 10540/16 <b>almost [3]</b> 10462/20 10473/11 10497/15 <b>also [34]</b> 10453/8 10453/9 10453/20 10456/12 10458/19 10460/16 10466/23 10469/17 10478/21 10479/20 10483/6 10484/19 10491/21 10497/11 10498/18 10500/23 10502/6 10502/14 10503/1 10504/10 10510/6 10512/13 10516/7 10523/22 10524/2 10528/11 10528/25 10534/14 10537/10 10541/8 10549/8 10549/17 10550/11 10551/12 <b>alternative [4]</b> 10468/24 10501/11 10502/2 10502/3 <b>alternatives [11]</b> 10464/12 10464/17 10508/16 10526/22 10528/1 10528/5 10529/2 10529/12 10535/12 10540/19 10553/13 <b>always [4]</b> 10464/3 10495/24 10507/18 10540/8 <b>am [2]</b> 10460/9 10470/18 <b>AMERICA [2]</b> 10446/3 10450/7 <b>AMIT [2]</b> 10446/9 10450/3 <b>Amit P. Mehta [1]</b> 10450/3 <b>among [1]</b> 10486/1 <b>amount [14]</b> 10456/6 10456/16 10462/12 10475/20 10475/21 10475/22 10490/22 10506/6 10506/6 10509/24 10524/13 10533/22 10533/23 10534/1 <b>analogous [1]</b> 10535/9 <b>analogy [1]</b> 10466/22 <b>analysis [28]</b> 10470/10 10470/11 10470/17 10470/22 10471/6 10487/14 10488/24 10489/8 10491/1	10491/2 10491/17 10491/20 10498/11 10503/6 10504/17 10504/19 10508/15 10509/22 10510/3 10510/5 10542/20 10544/15 10544/21 10545/10 10546/7 10547/10 10547/25 10549/3 <b>Android [13]</b> 10538/6 10538/9 10538/10 10538/12 10538/18 10538/25 10539/7 10539/8 10539/10 10539/23 10540/3 10540/17 10541/21 <b>another [12]</b> 10476/12 10485/16 10488/23 10494/22 10499/24 10517/17 10522/9 10525/18 10529/18 10530/4 10532/15 10540/7 <b>answer [9]</b> 10452/2 10452/3 10461/22 10462/5 10465/10 10467/21 10508/8 10540/5 10544/25 <b>answered [1]</b> 10460/2 <b>answering [1]</b> 10462/3 <b>answers [2]</b> 10552/20 10552/22 <b>anti [7]</b> 10495/18 10517/25 10519/20 10519/21 10519/25 10541/12 10541/13 <b>anti-competitive [7]</b> 10495/18 10517/25 10519/20 10519/21 10519/25 10541/12 10541/13 <b>antitrust [4]</b> 10447/7 10447/12 10523/13 10523/14 <b>any [31]</b> 10457/2 10461/1 10461/25 10464/10 10467/5 10467/6 10468/8 10475/7 10483/7 10483/9 10487/14 10489/7 10490/2 10497/24 10504/23 10507/23 10511/18 10511/19 10521/1 10527/17 10530/2 10530/5 10530/19 10531/22 10535/21 10536/14 10536/16 10543/25 10547/24 10551/19 10552/18 <b>anymore [1]</b> 10494/15 <b>anyone [1]</b> 10529/15 <b>anything [12]</b> 10458/8 10458/8 10458/10 10458/17 10467/20 10468/15 10469/3 10482/23 10490/23	

<b>A</b>	10501/9 <b>attract</b> [1] 10515/4 <b>attractive</b> [1] 10542/22 <b>attractiveness</b> [1] 10524/4 <b>auction</b> [8] 10455/16 10476/16 10478/10 10478/18 10479/4 10532/19 10533/7 10533/8 <b>audience</b> [4] 10485/23 10486/5 10487/3 10488/13 <b>audiences</b> [2] 10485/17 10488/11 <b>August</b> [1] 10493/1 <b>available</b> [2] 10453/9 10509/24 <b>Avenue</b> [2] 10448/3 10448/8 <b>average</b> [4] 10522/22 10526/17 10526/17 10526/22 <b>away</b> [8] 10463/19 10463/20 10481/10 10491/8 10491/21 10504/14 10509/2 10541/18	<b>basis</b> [1] 10550/3 <b>BATNA</b> [2] 10501/9 10502/3 <b>be</b> [103] 10450/4 10452/9 10453/9 10455/4 10459/18 10462/19 10463/10 10464/11 10466/13 10466/14 10467/6 10470/5 10470/15 10471/12 10471/22 10472/16 10473/5 10474/18 10474/19 10476/2 10478/15 10479/1 10479/18 10480/20 10480/25 10482/9 10483/5 10484/10 10485/15 10487/1 10487/24 10492/11 10493/18 10495/5 10495/20 10495/23 10495/25 10500/9 10500/19 10504/13 10504/14 10505/20 10505/24 10507/21 10508/6 10509/2 10510/12 10510/13 10511/22 10512/15 10513/18 10514/13 10514/22 10515/3 10517/18 10517/19 10518/15 10518/18 10521/1 10521/9 10522/14 10522/15 10522/22 10523/4 10524/16 10524/16 10524/25 10525/1 10525/17 10525/20 10526/16 10528/1 10529/2 10529/8 10529/15 10529/25 10531/2 10531/7 10531/10 10532/15 10532/19 10532/20 10532/23 10533/3 10533/13 10533/13 10533/21 10533/22 10534/8 10534/12 10534/13 10534/15 10534/15 10536/12 10537/6 10538/2 10538/3 10539/9 10541/25 10544/4 10544/25 10546/22 10553/9 <b>beat</b> [3] 10522/21 10523/5 10526/20 <b>became</b> [2] 10548/3 10550/2 <b>because</b> [62] 10453/9 10453/13 10453/21 10459/23 10461/12 10462/1 10462/13 10463/13 10463/15 10464/24 10465/7 10466/15 10466/15 10466/18 10472/25 10473/7 10473/11	10475/22 10478/15 10480/7 10480/21 10482/2 10483/6 10484/20 10486/12 10486/22 10488/13 10490/4 10494/15 10497/14 10498/11 10500/8 10501/20 10502/8 10503/14 10503/18 10504/13 10506/8 10514/20 10515/4 10515/22 10515/23 10517/12 10519/8 10520/5 10520/25 10522/13 10522/17 10523/5 10523/11 10523/25 10524/20 10525/10 10529/7 10534/10 10535/23 10536/25 10538/21 10539/9 10540/15 10546/3 10549/18 <b>becoming</b> [1] 10544/22 <b>been</b> [12] 10451/3 10455/1 10458/4 10458/5 10458/6 10467/7 10478/8 10484/24 10488/1 10495/10 10528/17 10551/16 <b>before</b> [19] 10446/9 10458/22 10469/7 10470/8 10470/20 10476/24 10490/2 10492/16 10493/10 10493/11 10493/12 10493/14 10493/16 10497/5 10509/12 10513/10 10532/1 10549/15 10550/3 <b>begin</b> [2] 10471/23 10473/7 <b>beginning</b> [3] 10463/25 10496/4 10552/7 <b>behalf</b> [2] 10450/10 10450/11 <b>behave</b> [1] 10469/16 <b>behavior</b> [1] 10460/18 <b>being</b> [11] 10458/9 10460/4 10465/15 10479/3 10482/12 10512/12 10517/25 10527/2 10528/14 10538/22 10549/24 <b>believe</b> [3] 10459/3 10505/14 10505/17 <b>below</b> [2] 10476/19 10537/10 <b>BENCH</b> [1] 10446/9 <b>beneficial</b> [1] 10517/11 <b>benefit</b> [4] 10474/25 10538/2 10540/13 10542/20 <b>benefited</b> [1] 10517/4 <b>benefiting</b> [1] 10478/9	<b>benefits</b> [11] 10517/6 10527/17 10537/4 10542/17 10542/20 10542/21 10542/25 10543/14 10543/15 10545/3 10548/17 <b>best</b> [3] 10501/10 10523/6 10526/24 <b>better</b> [14] 10479/1 10483/11 10516/21 10521/10 10522/22 10526/16 10526/17 10528/5 10533/22 10543/22 10548/3 10548/4 10548/13 10550/25 <b>between</b> [11] 10463/9 10484/11 10484/12 10497/11 10521/3 10537/24 10538/10 10540/10 10544/7 10546/20 10550/19 <b>bid</b> [7] 10512/24 10520/21 10520/22 10520/24 10521/2 10533/12 10533/21 <b>bidder</b> [3] 10533/21 10533/23 10533/23 <b>bidding</b> [5] 10525/14 10532/20 10534/11 10534/12 10534/15 <b>big</b> [15] 10456/7 10459/22 10459/23 10464/12 10471/12 10471/17 10472/4 10500/19 10505/9 10506/10 10549/2 10549/4 10549/12 10552/2 10552/11 <b>bigger</b> [3] 10475/4 10497/19 10519/9 <b>billions</b> [10] 10498/3 10499/1 10499/1 10500/15 10506/8 10506/8 10549/22 10549/25 10550/1 10550/1 <b>Bing</b> [13] 10456/7 10470/2 10482/22 10488/9 10488/12 10488/12 10488/18 10549/15 10549/16 10549/24 10549/25 10550/19 10550/23 <b>Bing's</b> [3] 10550/14 10550/20 10551/10 <b>bit</b> [5] 10482/5 10496/5 10506/21 10537/12 10545/17 <b>black</b> [1] 10492/18 <b>book</b> [1] 10523/14 <b>books</b> [1] 10471/3 <b>Boston</b> [3] 10486/14 10486/15 10488/17 <b>both</b> [12] 10458/11 10464/17 10468/25 10469/1 10472/16 10472/23 10473/1
	<b>B</b>			
	<b>B-A-T-N-A</b> [1] 10501/10 <b>back</b> [16] 10451/7 10457/12 10460/11 10476/5 10484/23 10489/13 10492/14 10505/22 10517/4 10525/7 10529/8 10530/13 10532/22 10533/18 10535/11 10536/25 <b>background</b> [1] 10467/2 <b>backstop</b> [1] 10469/16 <b>backstops</b> [1] 10469/15 <b>bad</b> [1] 10496/7 <b>Baker</b> [1] 10518/16 <b>band</b> [1] 10489/24 <b>bargaining</b> [9] 10462/13 10462/22 10463/14 10463/15 10501/13 10501/14 10501/20 10501/21 10502/7 <b>Barrett</b> [1] 10448/8 <b>barter</b> [2] 10540/11 10540/12 <b>base</b> [3] 10502/15 10512/8 10533/6 <b>based</b> [4] 10476/7 10498/19 10502/18 10545/4 <b>basic</b> [1] 10542/19 <b>basically</b> [7] 10461/5 10470/25 10476/19 10493/2 10520/4 10526/16 10541/15			



<b>B</b>	10462/15 10467/2 10515/14 10536/9 10543/20 <b>bundle [4]</b> 10465/19 10465/20 10465/20 10471/1 <b>bundling [4]</b> 10470/14 10540/22 10540/23 10541/25 <b>business [9]</b> 10466/4 10466/6 10498/2 10499/2 10499/20 10501/8 10502/22 10507/4 10508/13 <b>businesses [1]</b> 10528/17 <b>buy [3]</b> 10524/11 10539/8 10549/22 <b>buying [1]</b> 10494/20	10517/25 10518/22 10521/8 10521/12 10522/14 10523/7 10526/13 10526/25 10528/25 10531/17 10532/6 10537/9 10539/8 10539/14 10541/20 10541/22 10543/22 10545/18 10551/11 <b>Can you [1]</b> 10482/17 <b>can't [10]</b> 10460/4 10473/3 10477/11 10486/12 10518/20 10518/24 10523/1 10534/14 10538/14 10552/1 <b>cannot [1]</b> 10527/21 <b>capture [6]</b> 10455/9 10473/21 10473/21 10477/1 10477/10 10478/19 <b>captured [1]</b> 10507/12 <b>capturing [2]</b> 10482/10 10482/11 <b>card [1]</b> 10511/20 <b>care [15]</b> 10468/12 10486/16 10488/17 10515/1 10515/7 10515/8 10515/9 10515/13 10515/13 10515/22 10516/3 10516/10 10516/14 10535/4 10535/8 <b>cared [1]</b> 10498/6 <b>careful [2]</b> 10480/25 10509/2 <b>cares [3]</b> 10515/2 10516/12 10534/23 <b>Carr [1]</b> 10447/13 <b>case [28]</b> 10454/23 10457/9 10457/17 10457/20 10463/21 10464/9 10466/11 10471/2 10484/23 10498/4 10498/5 10498/8 10503/6 10503/7 10505/12 10509/16 10510/22 10510/23 10511/17 10524/18 10524/23 10530/24 10534/14 10534/24 10539/10 10542/2 10552/12 10552/25 <b>cases [5]</b> 10454/14 10454/16 10457/8 10458/2 10553/9 <b>cautiously [1]</b> 10471/21 <b>Center [1]</b> 10447/13 <b>certain [3]</b> 10459/5 10524/13 10533/10 <b>certainly [7]</b> 10464/9 10468/9 10495/25 10498/4 10515/7 10515/9 10519/7 <b>Certified [1]</b> 10448/7	<b>certify [1]</b> 10554/2 <b>cetera [3]</b> 10489/18 10493/1 10525/20 <b>CH [1]</b> 10448/8 <b>chain [1]</b> 10460/8 <b>challenged [3]</b> 10542/7 10542/13 10552/16 <b>challenging [1]</b> 10529/7 <b>chance [2]</b> 10482/3 10528/5 <b>change [16]</b> 10460/12 10460/13 10460/15 10460/17 10477/25 10481/24 10497/12 10504/23 10507/13 10514/13 10514/14 10514/19 10517/14 10518/21 10518/24 10532/9 <b>changes [8]</b> 10478/1 10478/18 10479/15 10480/1 10482/12 10492/3 10494/4 10537/24 <b>changing [1]</b> 10537/23 <b>chapter [1]</b> 10523/17 <b>characteristic [2]</b> 10465/14 10465/15 <b>charge [2]</b> 10455/8 10455/14 <b>charging [2]</b> 10454/22 10540/21 <b>chart [3]</b> 10493/11 10493/24 10503/20 <b>charts [1]</b> 10494/8 <b>chase [1]</b> 10491/16 <b>Chatbot [1]</b> 10456/8 <b>chip [4]</b> 10524/1 10524/2 10524/17 10525/1 <b>chips [5]</b> 10523/24 10523/24 10524/5 10524/6 10524/6 <b>choice [33]</b> 10468/4 10469/24 10529/16 10529/17 10531/4 10531/7 10532/17 10532/19 10532/20 10532/24 10533/1 10533/1 10534/4 10540/8 10543/25 10544/5 10544/8 10544/11 10544/13 10545/12 10545/18 10546/1 10546/4 10546/20 10546/25 10547/1 10547/8 10547/12 10547/13 10547/14 10548/11 10548/20 10549/3 <b>choices [3]</b> 10507/11 10544/13 10547/19 <b>choose [4]</b> 10544/18 10546/4 10547/14 10547/17 <b>chooses [1]</b> 10532/13 <b>choosing [1]</b> 10545/15	<b>chose [2]</b> 10533/11 10534/1 <b>chosen [1]</b> 10533/5 <b>Chrome [1]</b> 10469/25 <b>chunk [1]</b> 10475/5 <b>circle [7]</b> 10482/16 10482/17 10482/20 10483/10 10483/15 10483/17 10484/3 <b>cite [1]</b> 10459/17 <b>cities [2]</b> 10486/6 10488/16 <b>citing [1]</b> 10459/9 <b>City [4]</b> 10486/7 10486/9 10486/17 10486/22 <b>Civil [1]</b> 10450/7 <b>claim [6]</b> 10465/1 10465/6 10540/11 10542/1 10542/2 10545/3 <b>claimed [2]</b> 10464/23 10553/10 <b>classic [3]</b> 10452/5 10454/9 10454/19 <b>clawback [1]</b> 10463/10 <b>clear [14]</b> 10456/1 10459/19 10461/12 10462/8 10483/4 10486/25 10497/18 10498/11 10500/4 10502/12 10511/22 10517/5 10539/2 10539/6 <b>clearly [2]</b> 10497/14 10498/12 <b>Cleveland [4]</b> 10486/7 10486/10 10486/17 10486/21 <b>click [1]</b> 10478/7 <b>click-through [1]</b> 10478/7 <b>clicks [4]</b> 10475/22 10475/22 10475/25 10534/2 <b>climate [6]</b> 10514/13 10514/14 10514/19 10517/14 10517/15 10518/24 <b>clock [1]</b> 10529/8 <b>close [7]</b> 10463/16 10464/12 10471/8 10478/6 10479/20 10487/11 10520/25 <b>closeness [1]</b> 10484/2 <b>closer [2]</b> 10482/24 10484/5 <b>closest [1]</b> 10483/20 <b>CO [1]</b> 10447/15 <b>coag.gov [1]</b> 10447/16 <b>coincidence [2]</b> 10536/12 10536/13 <b>color [3]</b> 10492/15 10492/22 10492/23 <b>Colorado [3]</b> 10447/11 10447/11 10447/13 <b>colors [1]</b> 10492/16 <b>COLUMBIA [1]</b>
	<b>C</b>			
	<b>calculations [1]</b> 10537/2 <b>call [1]</b> 10547/8 <b>called [3]</b> 10465/18 10476/4 10502/15 <b>calling [1]</b> 10476/7 <b>calls [2]</b> 10450/19 10457/18 <b>came [8]</b> 10464/18 10466/21 10466/23 10502/19 10503/9 10506/24 10518/7 10538/13 <b>can [86]</b> 10453/9 10453/11 10453/11 10453/18 10454/21 10455/4 10455/7 10455/8 10455/10 10456/9 10457/13 10458/11 10458/15 10461/21 10462/21 10465/3 10466/16 10469/11 10470/8 10472/1 10472/18 10473/12 10473/14 10473/22 10473/25 10476/24 10477/9 10478/23 10479/7 10479/11 10480/10 10480/20 10481/9 10482/1 10482/10 10482/17 10483/13 10484/4 10484/10 10485/8 10485/24 10488/2 10488/7 10490/4 10492/15 10493/14 10495/20 10495/25 10497/2 10497/8 10497/25 10503/10 10504/6 10504/13 10504/13 10505/1 10505/24 10506/2 10506/16 10507/24 10508/23 10509/6 10509/12 10512/21 10512/24 10514/21 10515/3			

<b>C</b>	10512/15 10512/17 10514/9 10514/10 10514/20 10514/22 10514/24 10515/19 10515/22 10515/25 10516/1 10516/25 10517/6 10517/9 10517/11 10517/12 10517/19 10518/3 10518/16 10518/18 10519/5 10519/7 10519/8 10520/3 10520/4 10520/13 10520/14 10520/16 10520/19 10520/23 10520/25 10521/6 10521/8 10521/22 10522/4 10522/8 10522/9 10522/10 10522/11 10522/13 10522/14 10522/16 10522/17 10522/20 10523/3 10523/5 10523/7 10525/20 10526/13 10526/25 10527/3 10527/8 10527/9 10527/11 10527/18 10528/24 10529/2 10538/10 10549/10 10552/17 10553/9	<b>concern</b> [1] 10478/11 <b>concerned</b> [1] 10490/8 <b>concerns</b> [1] 10489/7 <b>conclusion</b> [4] 10456/23 10464/19 10482/8 10510/17 <b>conclusions</b> [1] 10510/18 <b>conditional</b> [1] 10541/1 <b>conditions</b> [2] 10464/25 10465/9 <b>connection</b> [2] 10471/9 10472/9 <b>connectivity</b> [1] 10458/5 <b>CONNOLLY</b> [1] 10448/2 <b>consequence</b> [3] 10459/6 10460/4 10522/12 <b>consider</b> [3] 10508/15 10515/23 10515/23 <b>considerable</b> [1] 10464/20 <b>consideration</b> [1] 10468/10 <b>considering</b> [1] 10517/6 <b>consistency</b> [5] 10505/6 10540/4 10540/7 10540/8 10540/10 <b>consistent</b> [12] 10466/4 10466/5 10466/5 10469/20 10469/22 10469/25 10470/3 10470/15 10493/7 10521/12 10539/23 10540/9 <b>Constitution</b> [1] 10448/8 <b>constraints</b> [2] 10464/13 10464/14 <b>constructed</b> [1] 10533/6 <b>consultant</b> [1] 10504/17 <b>consumer</b> [15] 10447/12 10466/8 10469/10 10470/3 10484/16 10484/16 10484/21 10486/12 10487/9 10488/3 10532/13 10533/5 10533/25 10534/2 10538/21 <b>consumers</b> [31] 10454/22 10455/9 10455/10 10460/18 10466/2 10469/9 10469/16 10474/25 10475/7 10475/8 10486/9 10486/10 10495/21 10495/24 10495/25 10499/25 10515/8 10515/24 10522/23 10528/10	10532/25 10533/1 10533/11 10535/22 10536/3 10538/3 10539/4 10539/7 10544/18 10545/15 10549/14 <b>context</b> [1] 10534/18 <b>contingency</b> [2] 10534/22 10535/2 <b>CONTINUED</b> [1] 10448/1 <b>contract</b> [13] 10460/25 10509/8 10509/15 10510/8 10511/10 10512/7 10512/22 10514/6 10520/3 10520/10 10531/5 10536/23 10548/11 <b>contracting</b> [1] 10514/2 <b>contracts</b> [41] 10458/20 10460/23 10461/11 10496/8 10496/9 10497/17 10504/3 10506/23 10507/7 10508/13 10509/13 10509/21 10509/23 10510/2 10510/9 10510/11 10510/24 10510/25 10511/2 10511/8 10511/11 10511/18 10512/13 10514/24 10522/14 10525/10 10526/12 10527/17 10527/21 10529/14 10536/21 10536/22 10538/11 10539/23 10543/18 10544/9 10545/11 10545/19 10546/16 10548/8 10553/10 <b>contracts'</b> [1] 10545/21 <b>Contrary</b> [1] 10535/20 <b>contrast</b> [2] 10474/19 10519/4 <b>contribute</b> [1] 10514/17 <b>contributed</b> [1] 10458/7 <b>control</b> [2] 10491/6 10491/7 <b>controlled</b> [1] 10490/25 <b>controls</b> [2] 10462/15 10491/11 <b>convincing</b> [1] 10553/11 <b>correct</b> [4] 10491/3 10548/22 10548/24 10554/3 <b>correctly</b> [1] 10470/17 <b>correlated</b> [1] 10541/9 <b>corresponding</b> [1] 10487/24 <b>cost</b> [3] 10452/21 10542/20 10543/1	<b>costly</b> [1] 10471/24 <b>costs</b> [5] 10452/24 10542/15 10542/21 10542/24 10543/12 <b>could</b> [33] 10451/18 10458/22 10476/22 10479/8 10480/2 10482/13 10489/2 10491/16 10495/13 10496/19 10499/16 10504/20 10505/15 10507/11 10511/12 10512/15 10513/3 10519/20 10521/23 10525/16 10527/13 10528/1 10529/16 10529/25 10536/12 10540/20 10540/24 10541/1 10542/4 10546/19 10550/6 10552/4 10553/13 <b>couldn't</b> [1] 10473/5 <b>counsel</b> [3] 10488/7 10513/5 10529/9 <b>counter</b> [1] 10501/21 <b>counter-parties'</b> [1] 10501/21 <b>countries</b> [2] 10514/15 10514/17 <b>country</b> [3] 10517/13 10518/23 10541/7 <b>couple</b> [3] 10457/23 10500/13 10529/12 <b>course</b> [11] 10455/14 10482/2 10493/7 10498/25 10502/22 10510/16 10515/4 10517/8 10530/12 10537/14 10549/15 <b>court</b> [22] 10446/1 10448/6 10448/7 10450/2 10451/23 10451/25 10457/10 10457/22 10458/1 10473/15 10493/5 10497/2 10504/16 10506/16 10509/11 10513/13 10513/16 10531/17 10532/6 10539/14 10552/8 10553/22 <b>Court's</b> [1] 10506/13 <b>courts</b> [1] 10507/1 <b>covered</b> [8] 10497/16 10499/22 10507/7 10547/23 10548/1 10548/5 10548/7 10548/10 <b>COVID</b> [2] 10491/11 10491/12 <b>CPC</b> [1] 10475/19 <b>created</b> [1] 10500/8 <b>creates</b> [1] 10474/6 <b>criticizes</b> [1] 10508/3 <b>cross</b> [7] 10449/4 10492/5 10492/6 10492/11 10518/9 10550/18 10553/20
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<p><b>C</b>  <b>cross-examination</b> [2]  10518/9 10550/18  <b>CRR</b> [2] 10554/2  10554/8  <b>current</b> [4] 10537/7  10537/8 10546/1  10547/22  <b>curtain</b> [1] 10450/15  <b>cut</b> [1] 10491/16  <b>CV</b> [1] 10446/4</p>	<p>10507/14 10507/16  10507/19 10507/22  10509/12 10526/7  10526/20 10530/8  10530/10 10530/15  10531/11 10532/9  10538/22  <b>defaults</b> [42] 10468/18  10468/18 10469/2  10469/2 10469/12  10495/16 10495/18  10495/20 10496/1  10496/5 10496/5  10496/6 10496/8  10496/10 10496/12  10496/14 10496/17  10496/23 10497/3  10497/19 10497/22  10499/11 10500/17  10503/14 10503/16  10503/19 10504/3  10504/5 10504/8  10504/13 10505/25  10530/13 10544/1  10544/10 10544/20  10545/2 10546/2  10546/3 10547/6  10547/21 10553/1  10553/6  <b>Defendant</b> [2] 10446/7  10448/2  <b>define</b> [2] 10463/19  10464/8  <b>defined</b> [5] 10453/14  10463/20 10464/9  10509/1 10509/2  <b>defining</b> [1] 10464/6  <b>definitely</b> [1] 10549/21  <b>definition</b> [10]  10451/21 10463/17  10464/2 10468/15  10469/4 10469/19  10472/14 10472/22  10483/15 10508/24  <b>degree</b> [2] 10454/10  10464/5  <b>Dell</b> [1] 10475/2  <b>demand</b> [6] 10454/12  10454/14 10454/17  10454/24 10454/25  10455/4  <b>Denver</b> [1] 10447/15  <b>denying</b> [1] 10543/9  <b>DEPARTMENT</b> [2]  10447/2 10447/11  <b>dependent</b> [2] 10541/7  10541/8  <b>depending</b> [1] 10507/3  <b>depends</b> [1] 10454/11  <b>describe</b> [4] 10459/24  10480/24 10483/6  10506/25  <b>described</b> [10]  10478/22 10481/2  10483/13 10487/21  10498/6 10499/7  10507/5 10514/3  10532/16 10533/4</p>	<p><b>describes</b> [1] 10463/7  <b>describing</b> [2]  10470/17 10504/2  <b>description</b> [1]  10469/25  <b>design</b> [1] 10476/16  <b>designed</b> [1] 10532/18  <b>desktop</b> [6] 10498/10  10498/13 10498/14  10498/17 10498/22  10499/13  <b>despite</b> [2] 10457/13  10518/3  <b>detailed</b> [2] 10537/2  10537/15  <b>determinative</b> [1]  10487/4  <b>determined</b> [1]  10534/4  <b>developing</b> [1]  10549/24  <b>device</b> [4] 10496/24  10515/5 10516/15  10530/3  <b>devices</b> [4] 10503/21  10535/23 10536/3  10536/4  <b>devoted</b> [1] 10458/1  <b>did</b> [68] 10451/9  10451/11 10456/17  10456/20 10458/12  10460/25 10461/2  10461/11 10461/12  10461/24 10462/5  10462/24 10463/1  10463/14 10467/20  10470/10 10476/9  10478/17 10480/5  10480/9 10480/18  10480/19 10481/3  10481/8 10481/10  10481/13 10481/15  10481/16 10487/13  10487/18 10488/24  10489/1 10489/9  10489/19 10490/3  10491/14 10491/17  10491/19 10491/20  10491/21 10491/23  10492/11 10496/13  10496/15 10497/25  10500/7 10500/9  10500/10 10502/14  10503/6 10503/8  10503/9 10509/13  10509/14 10513/24  10521/11 10521/14  10529/11 10531/21  10531/25 10535/21  10541/6 10549/14  10549/19 10549/20  10549/21 10550/13  10551/16  <b>did you</b> [5] 10451/9  10461/24 10488/24  10491/17 10549/20  <b>didn't</b> [31] 10461/3  10461/3 10461/7</p>	<p>10461/25 10462/7  10462/7 10463/15  10470/2 10472/17  10478/8 10481/2  10491/11 10493/21  10498/22 10500/25  10501/1 10501/3  10501/17 10501/18  10502/8 10502/9  10503/5 10503/8  10504/24 10543/2  10543/6 10543/7  10548/6 10549/23  10550/4 10551/15  <b>difference</b> [10]  10477/12 10479/23  10497/11 10521/2  10521/4 10521/7  10523/6 10524/7  10544/7 10550/19  <b>differences</b> [3]  10484/25 10485/6  10487/7  <b>different</b> [36] 10452/13  10454/4 10454/22  10454/22 10455/8  10455/15 10455/15  10471/1 10477/6  10479/10 10479/11  10479/14 10484/11  10485/1 10486/6  10486/13 10488/11  10492/16 10498/12  10498/13 10498/14  10503/10 10504/7  10514/15 10514/15  10514/17 10522/22  10524/2 10524/9  10525/4 10526/8  10526/19 10532/16  10547/2 10550/5  10552/23  <b>differential</b> [1]  10484/21  <b>differentiation</b> [2]  10484/11 10485/23  <b>differentiator</b> [1]  10468/23  <b>differently</b> [1] 10509/4  <b>difficult</b> [2] 10470/25  10543/11  <b>Dintzer</b> [2] 10447/2  10450/9  <b>direct</b> [6] 10449/4  10451/5 10459/9  10459/15 10473/12  10485/13  <b>directly</b> [2] 10543/21  10545/7  <b>disagree</b> [1] 10508/17  <b>disclosed</b> [2] 10467/5  10531/20  <b>discount</b> [2] 10500/7  10500/21  <b>discriminate</b> [3]  10454/21 10455/8  10455/10  <b>discussing</b> [1]</p>	<p>10513/11  <b>discussion</b> [3]  10473/14 10513/8  10536/13  <b>display</b> [5] 10483/24  10483/24 10492/10  10492/22 10493/24  <b>disputed</b> [2] 10458/19  10460/24  <b>dissimilar</b> [2] 10464/25  10465/8  <b>distance</b> [1] 10457/18  <b>distanced</b> [1] 10458/14  <b>distinct</b> [2] 10465/23  10469/23  <b>distinguish</b> [1]  10498/10  <b>distinguishing</b> [1]  10459/22  <b>distribution</b> [4]  10458/20 10460/23  10549/20 10551/23  <b>distributor</b> [18]  10512/6 10512/20  10514/5 10514/25  10515/1 10515/1  10515/2 10515/11  10515/21 10516/3  10517/5 10517/20  10518/2 10519/19  10529/17 10530/2  10531/10 10537/25  <b>distributors</b> [6]  10516/5 10527/22  10535/14 10535/17  10540/2 10540/17  <b>district</b> [6] 10446/1  10446/1 10446/10  10457/10 10457/22  10458/1  <b>Division</b> [1] 10447/7  <b>do</b> [93] 10453/3  10453/15 10454/18  10455/23 10460/3  10463/20 10465/1  10465/6 10466/18  10470/8 10470/13  10471/19 10473/24  10475/24 10476/6  10476/24 10477/11  10477/20 10479/21  10482/5 10482/12  10483/16 10487/15  10489/7 10490/23  10492/12 10496/16  10496/25 10499/9  10500/11 10501/16  10502/3 10502/9  10502/11 10503/5  10503/6 10504/3  10504/22 10508/15  10509/21 10509/21  10509/23 10509/23  10509/23 10509/25  10510/2 10510/3  10510/5 10510/6  10510/7 10511/3  10511/16 10512/12</p>
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<b>D</b>	10486/16 10488/17 10490/20 10490/22 10500/12 10500/13 10501/22 10504/11 10504/12 10506/4 10515/7 10515/8 10515/9 10515/21 10515/22 10515/23 10524/4 10528/9 10543/19	10509/3 10511/5 10513/5 10513/8 10516/18 10527/19 10527/23 10530/21 10533/20 10534/9 10536/14 10540/9 10542/11 10543/2 10544/3 10544/18 10547/13 10553/11 10553/19 10553/20	10489/15 10490/25 10491/23 10492/4 10493/4 10495/11 <b>Dr. Israel's [16]</b> 10454/7 10456/17 10457/5 10459/1 10463/18 10465/6 10469/3 10469/19 10470/22 10474/3 10480/5 10487/13 10487/13 10488/25 10489/5 10489/7 <b>Dr. Murphy [2]</b> 10451/24 10500/21 <b>draft [1]</b> 10465/18 <b>Dramatic [1]</b> 10457/22 <b>dramatically [2]</b> 10457/19 10474/20 <b>drew [1]</b> 10470/12 <b>drive [1]</b> 10453/10 <b>driven [1]</b> 10520/24 <b>driver [1]</b> 10485/7 <b>driving [1]</b> 10502/24 <b>Duck [1]</b> 10548/2 <b>DuckDuckGo [8]</b> 10522/25 10523/4 10523/6 10525/18 10525/23 10525/25 10526/7 10526/8 <b>due [5]</b> 10460/5 10494/16 10503/14 10503/15 10503/16 <b>during [13]</b> 10451/24 10461/24 10475/17 10482/16 10490/12 10490/15 10493/4 10493/12 10493/13 10493/18 10494/13 10513/11 10550/22	<b>econotalk [1]</b> 10515/13 <b>effect [14]</b> 10453/5 10456/15 10459/14 10492/6 10497/19 10505/25 10508/12 10509/18 10511/8 10511/19 10543/25 10545/3 10546/3 10549/10 <b>effective [1]</b> 10511/13 <b>effectively [4]</b> 10492/7 10494/23 10541/16 10541/22 <b>effects [15]</b> 10453/8 10459/11 10491/7 10496/14 10504/18 10508/15 10508/16 10510/5 10529/7 10538/10 10542/14 10545/18 10545/21 10546/7 10553/11 <b>efficiencies [1]</b> 10552/19 <b>effort [1]</b> 10459/11 <b>efforts [1]</b> 10477/16 <b>eight [2]</b> 10457/24 10457/25 <b>either [2]</b> 10452/25 10553/11 <b>elasticities [1]</b> 10492/1 <b>elasticity [3]</b> 10492/2 10492/6 10492/11 <b>else [9]</b> 10467/20 10468/15 10480/19 10482/23 10491/22 10494/9 10496/7 10529/15 10538/15 <b>elsewhere [1]</b> 10515/8 <b>Email [5]</b> 10447/4 10447/9 10447/16 10448/4 10448/5 <b>empirical [1]</b> 10459/17 <b>end [8]</b> 10462/5 10464/3 10464/6 10482/6 10523/7 10526/25 10536/2 10543/18 <b>ended [4]</b> 10457/17 10528/20 10528/20 10549/23 <b>endorse [1]</b> 10483/5 <b>ends [5]</b> 10474/24 10490/20 10527/8 10543/9 10543/22 <b>energy [1]</b> 10471/18 <b>engine [6]</b> 10467/25 10468/12 10516/7 10525/18 10525/19 10535/8 <b>engines [12]</b> 10456/18 10464/14 10468/20 10468/23 10469/23 10470/21 10483/21 10483/22 10484/6 10533/3 10533/3 10533/12 <b>enhance [1]</b> 10495/17 <b>enough [7]</b> 10482/11
<b>do... [40]</b> 10514/1 10514/8 10514/11 10514/18 10516/2 10516/2 10517/15 10518/24 10519/5 10523/24 10524/6 10527/18 10527/22 10527/24 10527/25 10529/8 10529/17 10529/20 10530/19 10538/11 10539/18 10540/5 10542/6 10542/7 10542/9 10542/10 10542/25 10543/10 10543/18 10544/18 10544/18 10546/5 10546/9 10547/2 10547/3 10547/14 10549/24 10550/14 10552/11 10552/20 <b>do you [17]</b> 10465/1 10465/6 10483/16 10496/16 10496/25 10500/11 10511/3 10516/2 10519/5 10527/18 10527/22 10530/19 10542/6 10542/10 10550/14 10552/11 10552/20 <b>do you have [3]</b> 10455/23 10502/3 10539/18 <b>document [10]</b> 10476/12 10478/2 10478/3 10478/6 10478/12 10493/6 10493/7 10494/5 10498/21 10522/20 <b>documents [10]</b> 10469/20 10498/5 10498/11 10499/6 10500/8 10502/20 10502/21 10502/22 10538/1 10552/25 <b>does [38]</b> 10453/2 10455/14 10459/13 10466/12 10466/17 10468/4 10468/14 10468/16 10469/2 10469/24 10471/1 10472/13 10472/15 10472/21 10484/3 10484/18 10487/13 10507/9 10509/15 10511/17 10512/18 10512/18 10515/1 10516/14 10519/8 10520/19 10522/4 10525/22 10532/23 10541/25 10544/8 10544/9 10545/20 10545/22 10549/2 10549/8 10551/24 10553/10 <b>doesn't [22]</b> 10461/7 10466/18 10471/11	<b>doing [23]</b> 10452/12 10452/24 10457/8 10463/10 10465/22 10466/12 10466/25 10467/7 10469/12 10472/5 10474/15 10483/10 10492/5 10492/5 10494/15 10495/23 10506/9 10514/18 10535/4 10537/5 10537/10 10541/18 10551/18 <b>DOJ [3]</b> 10447/2 10447/6 10450/9 <b>DOJ-ATR [1]</b> 10447/6 <b>dollar [2]</b> 10490/11 10491/24 <b>dollars [8]</b> 10492/12 10498/3 10499/1 10500/15 10506/8 10534/25 10549/23 10550/1 <b>dominant [34]</b> 10512/21 10514/5 10514/25 10515/17 10515/18 10515/24 10517/8 10517/18 10517/24 10519/15 10519/19 10520/4 10520/5 10520/6 10521/7 10521/12 10521/18 10521/21 10522/5 10522/5 10522/9 10522/13 10522/17 10522/19 10522/21 10522/21 10524/1 10524/7 10524/10 10525/1 10526/15 10527/7 10527/7 10545/24 <b>don't [55]</b> 10454/15 10454/24 10457/1 10458/17 10463/22 10464/4 10465/2 10465/10 10465/24 10467/6 10467/9 10467/10 10467/22 10471/8 10475/7 10475/12 10475/14 10478/14 10483/5 10483/9 10483/18 10483/24 10484/4 10485/19 10485/21 10486/2 10487/10 10495/22 10496/18 10497/1 10499/25 10502/4 10502/11 10506/11 10508/9	<b>done [6]</b> 10457/9 10473/20 10474/1 10494/19 10528/18 10528/19 <b>doubled [1]</b> 10456/19 <b>down [6]</b> 10457/2 10490/20 10520/19 10527/22 10531/11 10535/17 <b>downstairs [1]</b> 10457/24 <b>Dr [1]</b> 10469/22 <b>Dr. [56]</b> 10451/24 10451/24 10454/7 10455/17 10456/17 10457/1 10457/4 10457/5 10458/11 10458/19 10459/1 10460/23 10461/5 10463/18 10464/23 10465/6 10465/25 10466/2 10466/7 10468/2 10469/3 10469/14 10469/19 10470/9 10470/22 10474/3 10474/6 10475/19 10477/17 10478/2 10478/13 10478/21 10479/6 10480/5 10480/11 10482/16 10483/14 10485/11 10485/24 10486/5 10487/13 10487/13 10488/4 10488/8 10488/23 10488/25 10489/5 10489/7 10489/11 10489/15 10490/25 10491/23 10492/4 10493/4 10495/11 10500/21 <b>Dr. Israel [38]</b> 10451/24 10455/17 10457/1 10457/4 10458/11 10458/19 10460/23 10461/5 10464/23 10465/25 10466/2 10466/7 10468/2 10469/14 10470/9 10474/6 10475/19 10477/17 10478/2 10478/13 10478/21 10479/6 10480/11 10482/16 10483/14 10485/11 10485/24 10486/5 10488/4 10488/8 10488/23 10489/11	<b>E</b> <b>each [12]</b> 10455/8 10457/9 10462/20 10466/3 10466/9 10484/9 10514/16 10524/14 10525/16 10533/5 10533/25 10534/1 <b>earning [1]</b> 10536/21 <b>earns [2]</b> 10458/20 10460/23 <b>easier [1]</b> 10549/19 <b>Econ [2]</b> 10452/6 10454/25 <b>Econ 101 [1]</b> 10454/25 <b>economic [5]</b> 10505/21 10527/4 10542/19 10545/5 10553/5 <b>economically [1]</b> 10458/3 <b>economics [4]</b> 10465/17 10510/19 10511/22 10537/8 <b>economist [1]</b> 10543/12 <b>economists [3]</b> 10491/25 10514/10 10515/12	

<b>E</b>	10470/2 10513/19 10520/16 <b>everything [1]</b> 10480/19 <b>evidence [60]</b> 10453/22 10456/22 10459/4 10459/9 10459/10 10459/15 10459/16 10459/17 10459/25 10460/3 10460/7 10460/14 10460/15 10460/16 10460/19 10461/19 10469/1 10469/17 10470/3 10470/13 10472/13 10472/21 10473/3 10473/12 10476/9 10479/25 10480/16 10480/21 10483/9 10487/11 10489/12 10490/2 10497/9 10497/12 10497/18 10498/6 10498/20 10502/16 10502/23 10504/4 10504/5 10505/7 10505/11 10505/13 10506/11 10518/2 10521/11 10535/21 10536/5 10536/15 10536/16 10543/8 10545/7 10545/8 10545/12 10550/22 10551/19 10552/24 10553/12 10553/17 <b>exactly [12]</b> 10456/24 10471/21 10494/3 10495/23 10498/6 10504/4 10526/3 10527/5 10529/7 10529/23 10538/16 10544/6 <b>examination [3]</b> 10451/5 10518/9 10550/18 <b>example [36]</b> 10456/4 10465/16 10476/17 10483/1 10483/7 10486/4 10486/24 10488/16 10491/11 10495/3 10498/12 10500/16 10506/25 10514/12 10514/18 10516/3 10519/2 10520/22 10523/21 10523/24 10525/23 10525/24 10526/15 10529/16 10530/6 10530/7 10531/17 10532/6 10532/10 10532/15 10539/14 10539/18 10540/21 10543/10 10546/24 10546/25 <b>examples [4]</b> 10504/22 10529/1 10531/22 10531/22 <b>excess [1]</b> 10475/18	<b>exclusion [2]</b> 10458/16 10530/16 <b>exclusionary [3]</b> 10510/24 10511/9 10511/19 <b>exclusive [20]</b> 10496/8 10496/9 10506/23 10507/7 10510/11 10510/24 10514/2 10520/3 10520/10 10523/15 10523/16 10524/15 10524/17 10525/10 10526/4 10526/12 10527/21 10538/22 10544/1 10553/9 <b>exclusives [15]</b> 10504/14 10509/18 10511/3 10512/2 10521/13 10522/4 10522/9 10522/11 10522/16 10522/17 10523/3 10527/3 10527/8 10527/9 10530/14 <b>exclusivity [3]</b> 10496/9 10530/17 10540/10 <b>executive [2]</b> 10499/4 10501/6 <b>exercise [3]</b> 10453/5 10455/24 10464/2 <b>exercised [2]</b> 10458/10 10473/19 <b>exercising [2]</b> 10464/20 10473/6 <b>Exhibit [1]</b> 10553/17 <b>EXHIBITS [1]</b> 10449/8 <b>exist [1]</b> 10470/2 <b>exists [1]</b> 10480/14 <b>expanding [1]</b> 10458/5 <b>expect [4]</b> 10456/15 10462/11 10495/6 10544/18 <b>expensive [1]</b> 10535/22 <b>experience [6]</b> 10516/6 10516/6 10516/10 10516/14 10539/24 10540/3 <b>experiment [2]</b> 10470/5 10481/25 <b>experiments [11]</b> 10469/20 10474/1 10480/17 10480/20 10481/3 10481/6 10481/8 10481/11 10481/16 10481/17 10543/10 <b>expert [1]</b> 10531/20 <b>explain [6]</b> 10484/4 10486/5 10512/1 10512/20 10520/1 10546/19 <b>explaining [1]</b> 10513/2 <b>explicitly [1]</b> 10497/14 <b>expressing [2]</b> 10484/17 10487/9 <b>extent [3]</b> 10487/8	10515/12 10515/19 <b>externality [1]</b> 10519/11 <b>extract [2]</b> 10476/20 10476/21 <b>extracting [1]</b> 10475/9 <b>extreme [1]</b> 10520/22 <b>F</b> <b>Facebook [9]</b> 10483/23 10484/5 10487/18 10487/20 10488/24 10489/6 10489/12 10489/17 10491/18 <b>faced [3]</b> 10462/18 10479/13 10533/1 <b>faces [3]</b> 10459/11 10479/19 10544/9 <b>facilitate [1]</b> 10451/9 <b>facing [1]</b> 10545/1 <b>fact [26]</b> 10454/16 10455/24 10457/14 10459/21 10467/24 10468/4 10468/11 10468/14 10468/17 10468/19 10470/13 10472/1 10475/6 10478/5 10485/23 10491/6 10492/1 10507/10 10509/11 10511/1 10518/3 10521/5 10525/9 10546/13 10551/2 10553/8 <b>factor [7]</b> 10459/23 10472/1 10485/22 10485/24 10486/1 10486/2 10486/3 <b>factors [4]</b> 10462/4 10487/4 10487/7 10491/1 <b>facts [2]</b> 10468/22 10478/4 <b>factually [2]</b> 10501/5 10501/23 <b>fail [1]</b> 10521/9 <b>Fair [2]</b> 10467/23 10467/23 <b>fall [1]</b> 10535/14 <b>fallen [1]</b> 10461/18 <b>falls [1]</b> 10467/11 <b>famous [1]</b> 10457/8 <b>far [1]</b> 10550/5 <b>fascinating [1]</b> 10467/5 <b>fast [1]</b> 10452/23 <b>father [1]</b> 10507/19 <b>favored [1]</b> 10529/14 <b>favorite [1]</b> 10531/5 <b>feature [3]</b> 10466/19 10470/21 10471/16 <b>features [2]</b> 10541/1 10541/8 <b>February [1]</b> 10551/9 <b>fee [2]</b> 10535/2 10541/1 <b>feeling [1]</b> 10550/23 <b>fees [2]</b> 10534/23	10540/25 <b>fell [1]</b> 10506/14 <b>felt [2]</b> 10502/7 10505/4 <b>few [5]</b> 10454/4 10454/5 10458/14 10508/1 10546/5 <b>field [4]</b> 10518/14 10547/7 10547/9 10549/9 <b>Fifth [1]</b> 10447/7 <b>figure [11]</b> 10481/5 10481/20 10483/25 10489/11 10489/19 10489/21 10490/9 10492/16 10493/9 10493/23 10494/1 <b>figures [1]</b> 10457/7 <b>fill [2]</b> 10486/23 10488/20 <b>filling [2]</b> 10486/16 10488/18 <b>final [2]</b> 10485/4 10522/3 <b>finalized [1]</b> 10501/22 <b>find [8]</b> 10512/6 10512/21 10514/5 10517/19 10519/20 10521/21 10524/22 10529/9 <b>fine [1]</b> 10466/13 <b>Firefox [1]</b> 10497/12 <b>firm [38]</b> 10474/13 10479/16 10512/21 10514/5 10514/25 10515/17 10515/18 10515/24 10517/8 10517/18 10517/24 10519/15 10519/19 10520/4 10520/5 10520/6 10521/8 10521/12 10521/21 10522/5 10522/5 10522/10 10522/13 10522/17 10522/19 10522/20 10522/21 10522/21 10524/8 10524/9 10524/10 10526/16 10527/6 10527/7 10533/2 10544/19 10545/25 10548/16 <b>firms [6]</b> 10474/16 10500/8 10520/15 10532/11 10532/19 10532/19 <b>first [29]</b> 10454/7 10455/16 10467/20 10470/24 10476/4 10481/13 10485/14 10490/1 10490/17 10490/24 10492/13 10502/21 10507/8 10509/19 10511/12 10512/5 10512/8 10512/11 10513/23 10513/24 10514/3 10517/22 10520/2
----------	---	---	---	---

<b>F</b>	<b>funnel [1]</b> 10485/2	10463/12 10471/22	10506/1 10506/5	10548/4
<b>first... [6]</b> 10524/18	<b>funny [2]</b> 10544/3	10475/22 10481/21	10506/7 10507/16	<b>gotten [2]</b> 10463/13
10530/23 10531/21	10544/4	10491/13 10516/17	10507/18 10507/22	10475/4
10537/6 10538/8	<b>further [3]</b> 10451/4	10536/2 10543/22	10508/12 10511/11	<b>government's [1]</b>
10553/2	10476/8 10490/2	10547/5 10547/24	10512/19 10514/22	10542/2
<b>fit [2]</b> 10509/16	<b>furthest [1]</b> 10483/25	<b>give [6]</b> 10477/18	10520/10 10520/12	<b>graph [4]</b> 10457/5
10549/2	<b>G</b>	10500/16 10531/17	10521/1 10523/19	10457/9 10492/13
<b>five [1]</b> 10533/8	<b>gain [6]</b> 10476/2	10532/6 10539/14	10524/16 10524/22	10551/8
<b>fixed [2]</b> 10480/19	10496/23 10520/12	<b>given [4]</b> 10480/7	10524/24 10524/25	<b>gray [2]</b> 10489/20
10480/21	10528/6 10528/6	10480/24 10510/1	10525/16 10528/6	10489/24
<b>flag [1]</b> 10490/24	10548/23	10550/21	10531/6 10531/7	<b>great [1]</b> 10503/13
<b>flawed [1]</b> 10549/18	<b>gained [2]</b> 10478/20	<b>gives [1]</b> 10519/4	10531/12 10532/22	<b>greater [2]</b> 10529/2
<b>flip [1]</b> 10456/12	10499/21	<b>giving [4]</b> 10496/8	10534/25 10535/11	10548/23
<b>Floor [1]</b> 10447/14	<b>gaining [4]</b> 10476/2	10526/8 10541/18	10537/17 10537/18	<b>greenish [1]</b> 10492/22
<b>focus [2]</b> 10468/2	10546/10 10546/11	10549/14	10541/20 10542/19	<b>grocery [5]</b> 10523/9
10541/14	10548/18	<b>glasses [1]</b> 10493/22	10544/23 10544/24	10524/9 10524/13
<b>focused [2]</b> 10529/11	<b>gap [4]</b> 10550/18	<b>global [1]</b> 10457/21	10544/25 10546/18	10524/15 10524/21
10549/5	10551/12 10551/14	<b>GMS [2]</b> 10540/16	10548/10 10548/12	<b>guess [13]</b> 10452/5
<b>follow [8]</b> 10453/12	10551/15	10540/24	10551/11	10465/17 10502/18
10458/23 10483/2	<b>gave [3]</b> 10498/23	<b>go [36]</b> 10456/7	<b>gold [1]</b> 10480/21	10502/21 10505/1
10507/16 10507/18	10502/2 10526/6	10466/9 10466/16	<b>gone [1]</b> 10474/21	10506/2 10506/3
10507/22 10513/1	<b>gee [2]</b> 10469/11	10467/18 10469/9	<b>good [36]</b> 10450/4	10518/8 10525/3
10543/4	10481/9	10470/2 10471/19	10450/6 10450/12	10528/14 10540/6
<b>follow-up [1]</b> 10458/23	<b>general [28]</b> 10452/1	10476/7 10476/22	10450/17 10455/2	10549/5 10551/21
<b>followed [1]</b> 10546/21	10456/18 10464/13	10483/13 10487/17	10462/12 10479/7	<b>guidelines [3]</b>
<b>following [1]</b> 10500/2	10464/22 10464/23	10487/20 10490/2	10479/8 10495/20	10465/18 10483/1
<b>follows [2]</b> 10451/4	10465/7 10465/14	10490/20 10492/3	10495/24 10495/25	10483/7
10526/14	10465/24 10467/25	10492/14 10497/5	10496/5 10496/7	<b>H</b>
<b>foot [1]</b> 10524/14	10468/1 10468/12	10497/20 10503/23	10496/10 10505/11	<b>habit [1]</b> 10461/18
<b>foreclose [1]</b> 10547/22	10468/20 10468/23	10505/22 10512/2	10514/11 10514/12	<b>had [24]</b> 10450/22
<b>foreclosure [18]</b>	10469/18 10469/23	10513/8 10516/24	10514/12 10517/6	10457/17 10462/9
10503/13 10506/21	10470/20 10472/13	10518/11 10518/13	10518/4 10518/18	10462/22 10463/14
10507/1 10508/4	10472/21 10473/4	10520/19 10525/7	10519/11 10522/24	10470/10 10475/14
10508/10 10508/11	10473/9 10479/5	10527/22 10532/4	10524/3 10524/5	10476/6 10477/1
10508/18 10508/24	10483/21 10484/6	10535/17 10537/14	10524/14 10525/18	10477/3 10477/5
10509/3 10509/5	10490/5 10516/7	10539/8 10549/2	10525/19 10526/1	10482/3 10487/14
10509/22 10543/16	10524/4 10533/3	10549/4 10549/12	10526/21 10527/12	10487/23 10498/18
10543/17 10543/17	10533/12	10553/20	10539/1 10540/3	10498/21 10501/23
10544/20 10545/10	<b>generalized [1]</b>	<b>go ahead [3]</b> 10467/18	10545/15 10547/13	10503/4 10504/8
10547/10 10547/25	10533/8	10532/4 10553/20	10547/17	10515/18 10523/21
<b>foreclosures [1]</b>	<b>generally [1]</b> 10510/8	<b>goes [15]</b> 10453/18	<b>Good morning [2]</b>	10533/3 10549/19
10506/14	<b>generated [1]</b>	10462/5 10463/3	10450/4 10450/12	10549/22
<b>foregoing [1]</b> 10554/3	10537/23	10486/21 10490/12	<b>goods [1]</b> 10519/1	<b>half [2]</b> 10494/14
<b>foreseeing [1]</b>	<b>get [37]</b> 10462/12	10492/18 10492/20	<b>GOOGLE [136]</b>	10519/10
10544/22	10462/15 10462/17	10492/23 10492/24	<b>Google LLC [1]</b>	<b>hand [1]</b> 10489/20
<b>form [2]</b> 10522/10	10469/11 10475/5	10493/1 10493/17	10450/8	<b>hands [1]</b> 10450/22
10536/3	10475/7 10481/10	10493/23 10493/24	<b>Google's [33]</b>	<b>happen [5]</b> 10501/17
<b>formally [1]</b> 10527/5	10500/18 10501/2	10494/2 10516/11	10455/24 10466/4	10501/18 10502/8
<b>formulation [1]</b>	10501/3 10501/17	<b>going [74]</b> 10452/25	10466/6 10469/20	10502/9 10535/12
10454/7	10501/18 10501/22	10453/4 10454/5	10469/23 10470/4	<b>happened [4]</b>
<b>forward [1]</b> 10450/13	10502/11 10503/11	10455/20 10457/2	10470/5 10472/12	10455/13 10478/4
<b>found [1]</b> 10481/17	10505/18 10506/13	10457/5 10458/5	10473/16 10473/18	10491/4 10499/10
<b>four [1]</b> 10504/14	10511/20 10511/22	10458/7 10458/9	10477/16 10479/24	<b>happening [10]</b>
<b>fourth [1]</b> 10552/8	10512/13 10512/13	10462/15 10462/17	10496/8 10497/11	10503/20 10512/24
<b>frame [1]</b> 10473/14	10525/16 10528/21	10469/9 10475/5	10497/17 10500/21	10515/3 10519/24
<b>framework [1]</b>	10534/25 10541/22	10475/6 10475/16	10506/22 10507/7	10519/25 10521/2
10509/16	10543/22 10544/8	10475/23 10475/25	10527/17 10529/9	10521/22 10525/9
<b>frankly [1]</b> 10543/1	10544/9 10544/23	10476/1 10476/2	10536/21 10538/9	10525/10 10551/10
<b>free [12]</b> 10511/20	10547/13 10548/4	10476/15 10478/14	10538/11 10538/17	<b>happens [2]</b> 10502/11
10524/6 10524/6	10548/10 10548/12	10479/21 10479/22	10539/6 10542/23	10545/10
10524/8 10524/19	10548/13 10548/17	10483/12 10484/1	10543/20 10544/1	<b>happy [1]</b> 10546/22
10524/21 10524/24	10550/24 10552/1	10490/19 10491/10	10544/1 10544/9	<b>hard [4]</b> 10499/9
10530/14 10540/16	<b>get-out-of-jail-free [1]</b>	10491/12 10497/24	10544/10 10545/19	10524/18 10552/14
10541/4 10541/5	10511/20	10499/23 10500/19	10549/5	10552/14
10541/19	<b>gets [3]</b> 10501/8	10503/11 10504/7	<b>google.com [1]</b>	<b>harder [2]</b> 10524/18
<b>friends [1]</b> 10487/25	10544/12 10547/19	10504/11 10505/8	10466/14	10525/21
<b>friends' [1]</b> 10488/1	<b>getting [11]</b> 10459/19	10505/8 10505/18	<b>got [4]</b> 10490/6	<b>hardly [2]</b> 10492/20
<b>fully [1]</b> 10517/6			10535/20 10544/13	

<b>H</b>	10494/18 10494/25 10495/10 10495/21 10496/14 10497/19 10499/11 10501/9 10501/15 10502/3 10511/8 10511/18 10511/19 10512/20 10514/12 10517/24 10518/2 10518/5 10519/23 10520/20 10520/21 10523/5 10523/19 10523/23 10524/4 10526/8 10527/6 10527/10 10528/5 10528/9 10528/17 10531/11 10536/16 10537/18 10538/3 10538/11 10539/18 10540/7 10540/8 10540/17 10541/20 10541/20 10542/14 10544/17 10545/15 10545/24 10551/19 10552/14 <b>haven't [2]</b> 10474/21 10482/3 <b>having [10]</b> 10451/3 10468/12 10487/22 10520/17 10528/8 10528/20 10541/22 10549/8 10549/9 10549/9 <b>he [58]</b> 10453/21 10453/22 10454/8 10458/12 10458/13 10458/14 10462/3 10462/3 10462/5 10462/9 10462/9 10463/1 10463/6 10463/7 10467/8 10470/10 10470/11 10470/12 10471/7 10471/7 10486/7 10487/18 10487/21 10488/10 10490/15 10490/25 10491/9 10491/14 10491/23 10492/5 10499/3 10500/24 10500/25 10501/25 10502/6 10502/7 10502/7 10502/8 10502/8 10502/8 10502/15 10503/19 10504/10 10507/17 10509/1 10509/2 10518/9 10521/17 10525/8 10529/23 10531/22 10536/5 10536/6 10536/15 10540/1 10540/1 10546/25 10547/1 <b>he didn't [1]</b> 10502/8 <b>he said [1]</b> 10463/6 <b>he's [11]</b> 10461/23 10467/9 10467/10 10467/13 10467/16 10490/8 10492/5	10492/5 10497/9 10502/10 10502/10 <b>heading [1]</b> 10537/8 <b>headroom [4]</b> 10454/18 10463/9 10463/11 10500/23 <b>hear [2]</b> 10496/13 10500/7 <b>heard [5]</b> 10499/2 10499/3 10508/21 10516/4 10516/5 <b>hearing [2]</b> 10467/7 10542/6 <b>help [3]</b> 10451/9 10473/14 10543/10 <b>here [53]</b> 10455/12 10456/3 10457/7 10458/9 10458/11 10458/14 10462/21 10475/14 10476/12 10476/18 10477/7 10477/23 10478/23 10481/19 10483/20 10484/1 10484/8 10485/21 10485/25 10489/8 10492/15 10492/18 10493/14 10493/18 10495/7 10495/8 10496/3 10496/22 10497/6 10497/8 10498/9 10504/12 10506/20 10508/23 10509/3 10511/14 10511/25 10513/23 10514/8 10514/13 10518/13 10519/15 10519/16 10522/2 10534/9 10536/11 10538/14 10540/18 10541/14 10542/14 10545/23 10546/18 10552/9 <b>hey [2]</b> 10482/8 10526/4 <b>hide [1]</b> 10545/18 <b>hides [1]</b> 10546/3 <b>hiding [1]</b> 10546/6 <b>high [5]</b> 10544/8 10544/17 10544/18 10552/9 10552/13 <b>higher [16]</b> 10482/7 10493/2 10499/13 10527/1 10528/10 10534/15 10534/15 10536/4 10537/12 10537/17 10538/2 10542/20 10544/23 10546/10 10546/11 10549/14 <b>highest [3]</b> 10533/21 10533/23 10533/23 <b>highlight [1]</b> 10514/8 <b>him [5]</b> 10453/20 10472/24 10480/6 10486/11 10508/21 <b>himself [3]</b> 10458/14 10485/4 10536/11 <b>hinder [1]</b> 10542/7	<b>his [32]</b> 10462/5 10463/3 10463/6 10463/19 10467/5 10467/6 10470/1 10470/1 10470/17 10471/7 10471/20 10482/17 10483/16 10485/11 10485/14 10491/1 10491/2 10491/2 10491/8 10492/13 10493/4 10497/8 10500/24 10502/1 10503/18 10508/7 10531/20 10531/21 10531/23 10552/7 10552/8 10552/21 <b>historical [3]</b> 10498/14 10499/7 10503/2 <b>historically [1]</b> 10499/10 <b>history [2]</b> 10457/25 10475/16 <b>hit [1]</b> 10485/2 <b>hold [1]</b> 10480/21 <b>holding [1]</b> 10480/19 <b>holistic [1]</b> 10476/4 <b>honest [1]</b> 10534/8 <b>Honor [53]</b> 10450/6 10450/14 10450/17 10451/13 10453/3 10456/3 10456/24 10457/4 10458/11 10461/5 10463/25 10466/20 10467/4 10468/17 10470/19 10474/13 10475/12 10476/11 10480/10 10481/1 10481/19 10482/20 10483/20 10484/8 10485/20 10489/15 10490/9 10491/4 10491/5 10493/9 10496/3 10497/5 10497/21 10501/24 10505/2 10505/23 10509/17 10510/20 10511/25 10514/1 10519/18 10522/7 10528/3 10529/5 10531/18 10534/22 10536/19 10538/13 10541/5 10545/23 10549/7 10550/21 10553/14 <b>HONORABLE [3]</b> 10446/9 10450/3 10513/16 <b>hoping [1]</b> 10523/18 <b>horizontal [3]</b> 10465/18 10483/1 10483/7 <b>hotel [3]</b> 10486/15 10488/17 10488/20 <b>hour [1]</b> 10491/13 <b>Hovenkamp [1]</b> 10506/25 <b>how [69]</b> 10452/2	10459/11 10459/24 10462/16 10463/4 10469/16 10469/25 10470/11 10470/25 10472/4 10476/15 10481/3 10481/9 10481/20 10484/1 10490/14 10492/9 10492/10 10499/3 10499/4 10499/11 10499/20 10501/14 10502/23 10502/25 10504/3 10504/6 10504/8 10505/23 10506/25 10507/3 10507/4 10509/23 10510/4 10510/7 10510/22 10512/2 10514/8 10514/19 10514/21 10519/15 10520/5 10520/24 10521/1 10522/8 10525/8 10525/15 10525/22 10526/13 10532/16 10533/4 10534/4 10534/25 10536/21 10537/24 10538/17 10539/9 10539/14 10539/18 10539/20 10543/2 10543/9 10545/18 10545/20 10545/20 10545/24 10549/2 10549/8 10552/25 <b>huh [1]</b> 10500/5 <b>hurt [1]</b> 10517/5 <b>hyperrational [1]</b> 10469/10 <b>hypo [1]</b> 10473/5 <b>hypothetical [2]</b> 10464/20 10473/8
			<b>I</b>	
			<b>I also [6]</b> 10453/20 10460/16 10466/23 10484/19 10491/21 10510/6 <b>I apologize [1]</b> 10492/16 <b>I can [2]</b> 10458/15 10506/2 <b>I did [14]</b> 10456/20 10461/2 10462/5 10480/9 10489/1 10489/9 10491/19 10491/20 10496/15 10500/10 10503/6 10509/14 10521/14 10529/11 <b>I didn't [6]</b> 10461/3 10481/2 10493/21 10503/5 10503/8 10543/2 <b>I don't [23]</b> 10454/24 10465/10 10465/24 10467/6 10467/9 10467/10 10467/22 10483/9 10483/18	

<b>I</b>	10500/21 10501/4	10523/25 10524/16	10496/17	<b>increasing [10]</b>
<b>I don't... [14]</b> 10483/24	10502/15 10502/21	10533/18 10534/3	<b>important [15]</b> 10468/9	10452/23 10456/6
10485/19 10486/2	10504/16 10505/9	10534/6 10534/8	10468/23 10484/25	10456/6 10457/13
10496/18 10497/1	10506/10 10506/13	10534/10 10534/16	10485/6 10486/2	10457/18 10475/20
10506/11 10527/19	10506/17 10507/16	10535/15 10536/25	10487/5 10487/7	10475/21 10475/25
10527/23 10530/21	10507/19 10508/10	10539/16 10545/1	10488/2 10498/10	10477/10 10478/7
10533/20 10536/14	10508/17 10508/20	10546/21 10547/3	10501/19 10502/13	<b>incremental [1]</b>
10542/11 10543/2	10509/10 10509/11	10547/3 10548/2	10504/8 10521/7	10537/3
10544/3	10509/20 10510/7	10548/10 10548/12	10553/2 10553/7	<b>incur [1]</b> 10452/21
<b>I guess [13]</b> 10452/5	10510/20 10511/14	10548/14 10548/15	<b>importantly [2]</b>	<b>INDEX [2]</b> 10449/2
10465/17 10502/18	10512/11 10514/1	<b>I'm -- you [1]</b> 10471/2	10470/3 10503/1	10449/8
10502/21 10505/1	10516/4 10517/3	<b>I'm going [8]</b> 10454/5	<b>impossible [1]</b>	<b>indicate [1]</b> 10531/1
10506/2 10506/3	10518/7 10518/17	10483/12 10491/10	10537/13	<b>individual [1]</b> 10514/21
10518/8 10525/3	10519/6 10523/9	10504/11 10512/19	<b>improper [1]</b> 10465/7	<b>individually [1]</b>
10528/14 10540/6	10523/12 10523/17	10524/16 10548/10	<b>improve [3]</b> 10543/10	10514/17
10549/5 10551/21	10523/22 10525/6	10548/12	10543/12 10551/14	<b>industry [1]</b> 10520/15
<b>I have [3]</b> 10466/21	10526/12 10527/12	<b>I'm just [4]</b> 10483/6	<b>improvement [2]</b>	<b>infinite [1]</b> 10494/23
10474/5 10475/11	10527/24 10528/16	10516/11 10533/18	10479/19 10550/14	<b>infinity [1]</b> 10492/9
<b>I just [10]</b> 10458/17	10529/24 10530/23	10534/10	<b>improvements [13]</b>	<b>information [7]</b>
10461/3 10500/14	10531/6 10532/2	<b>I'm not [7]</b> 10472/3	10459/5 10459/7	10466/16 10468/24
10502/2 10508/9	10533/20 10536/6	10472/3 10488/5	10474/15 10475/1	10469/11 10471/22
10526/14 10530/24	10536/10 10538/7	10497/24 10509/1	10475/18 10477/2	10490/5 10490/6
10534/9 10543/1	10538/13 10539/2	10509/2 10510/17	10477/17 10477/19	10553/4
10545/9	10543/8 10545/17	<b>I'm not sure [2]</b>	10477/25 10478/12	<b>informative [2]</b>
<b>I know [7]</b> 10455/5	10546/17 10550/17	10534/8 10546/21	10479/12 10550/25	10494/9 10494/11
10466/21 10493/10	10551/3 10551/5	<b>I'm sorry [9]</b> 10453/11	10551/1	<b>inherently [1]</b>
10510/1 10523/8	10551/22 10551/25	10458/22 10467/15	<b>improves [2]</b> 10543/19	10495/18
10523/18 10529/22	<b>I thought [2]</b> 10488/8	10476/24 10499/16	10544/7	<b>innovate [2]</b> 10479/20
<b>I mean [13]</b> 10468/8	10529/4	10503/10 10535/15	<b>improving [6]</b> 10458/6	10520/17
10470/23 10494/10	<b>I understand [2]</b>	10539/16 10548/2	10474/23 10474/24	<b>input [1]</b> 10508/14
10502/18 10509/1	10458/25 10459/3	<b>I'm thinking [2]</b>	10479/20 10479/21	<b>Instagram [1]</b>
10511/22 10529/24	<b>I want [11]</b> 10451/20	10547/3 10548/14	10542/16	10489/17
10531/25 10545/7	10451/22 10485/13	<b>I've [7]</b> 10457/9	<b>incentive [13]</b> 10452/1	<b>instances [1]</b> 10456/5
10548/14 10549/21	10509/1 10512/1	10459/20 10461/18	10452/18 10453/14	<b>instantly [1]</b> 10471/21
10551/21 10552/13	10512/3 10519/22	10483/12 10491/10	10453/24 10477/3	<b>instead [11]</b> 10462/21
<b>I say [2]</b> 10459/25	10519/25 10524/16	10514/3 10537/21	10477/18 10479/14	10479/19 10495/3
10531/13	10527/14 10551/17	<b>i.e [1]</b> 10476/20	10519/4 10519/7	10498/21 10507/12
<b>I should [9]</b> 10453/7	<b>I wanted [1]</b> 10450/21	<b>idea [12]</b> 10469/7	10520/21 10526/8	10523/3 10525/12
10460/10 10460/11	<b>I was [12]</b> 10456/3	10477/2 10482/20	10548/21 10549/18	10526/4 10526/18
10490/1 10499/21	10458/14 10459/9	10483/11 10486/25	<b>incentives [19]</b>	10540/24 10553/19
10509/4 10523/2	10464/17 10466/20	10508/12 10508/18	10478/24 10478/25	<b>instruction [1]</b>
10533/16 10553/3	10469/7 10475/14	10508/19 10521/12	10517/23 10538/11	10513/10
<b>I think [105]</b> 10452/4	10477/23 10485/25	10521/21 10523/22	10538/17 10538/24	<b>intense [2]</b> 10522/14
10452/18 10452/19	10496/3 10538/14	10525/4	10539/7 10540/2	10526/13
10454/7 10455/17	10542/14	<b>ideal [1]</b> 10476/21	10542/5 10542/8	<b>intent [9]</b> 10484/16
10455/20 10456/1	<b>I'd [6]</b> 10452/3 10454/4	<b>ideally [1]</b> 10483/2	10542/15 10543/23	10484/17 10484/17
10458/18 10459/17	10495/11 10538/5	<b>identified [3]</b> 10491/1	10546/21 10547/5	10487/7 10487/9
10459/22 10460/2	10540/6 10546/22	10536/16 10552/9	10549/3 10549/5	10487/15 10487/23
10460/7 10461/12	<b>I'll [8]</b> 10478/23	<b>ignores [1]</b> 10546/12	10549/8 10549/11	10488/3 10488/6
10463/24 10465/14	10480/24 10480/25	<b>ignoring [1]</b> 10546/9	10549/18	<b>interest [1]</b> 10517/10
10468/25 10469/14	10491/10 10523/24	<b>illustrates [2]</b>	<b>include [3]</b> 10482/21	<b>interesting [3]</b>
10470/12 10470/17	10524/13 10531/24	10523/22 10525/4	10482/23 10516/7	10461/22 10518/6
10471/25 10472/5	10539/21	<b>illustration [1]</b> 10519/1	<b>included [1]</b> 10464/7	10523/11
10472/8 10472/12	<b>I'm [49]</b> 10453/11	<b>imagine [8]</b> 10486/8	<b>includes [1]</b> 10452/23	<b>interests [1]</b> 10516/19
10474/18 10475/19	10454/5 10457/21	10520/9 10520/11	<b>including [4]</b> 10458/21	<b>internal [1]</b> 10493/6
10477/22 10478/2	10458/22 10467/15	10520/22 10523/23	10460/24 10472/6	<b>internalize [2]</b>
10478/5 10478/25	10470/17 10471/1	10524/1 10525/17	10510/8	10515/12 10515/13
10479/15 10479/23	10471/2 10472/3	10539/2	<b>inconsistent [1]</b>	<b>Internet [2]</b> 10458/5
10481/22 10481/23	10472/3 10476/24	<b>immediately [2]</b>	10456/22	10467/8
10483/22 10484/24	10481/4 10481/22	10471/3 10482/1	<b>increase [8]</b> 10457/22	<b>introduce [5]</b> 10477/18
10485/3 10485/3	10483/6 10483/12	<b>impacts [2]</b> 10515/14	10474/10 10477/4	10478/15 10479/8
10485/7 10486/1	10485/3 10486/14	10537/18	10479/2 10479/2	10479/12 10479/18
10486/2 10486/4	10488/5 10491/10	<b>implausibly [1]</b>	10494/23 10495/4	<b>introduced [2]</b>
10486/6 10486/24	10497/24 10498/9	10548/2	10495/9	10477/17 10549/16
10487/6 10487/18	10499/16 10503/10	<b>implication [1]</b>	<b>increased [2]</b> 10457/1	<b>introducing [1]</b>
10489/5 10494/10	10504/11 10509/1	10548/16	10474/20	10466/25
10495/20 10496/2	10509/2 10510/17	<b>importance [3]</b>	<b>increases [2]</b> 10474/14	<b>intuitive [1]</b> 10545/14
10499/2 10500/12	10512/19 10516/11	10469/2 10469/2	10479/25	<b>invest [10]</b> 10542/8



<b>I</b>	10510/21 10511/14 10541/24 <b>issues [3]</b> 10470/23 10533/20 10535/25 <b>it [325]</b> <b>it would be [2]</b> 10466/13 10505/20 <b>it's [165]</b> <b>item [2]</b> 10476/17 10507/8 <b>iterations [1]</b> 10532/16 <b>its [42]</b> 10456/6 10458/20 10458/21 10460/25 10461/13 10461/14 10465/22 10474/1 10474/14 10479/1 10479/2 10479/22 10486/16 10488/18 10488/20 10489/16 10490/4 10498/19 10515/2 10515/3 10515/5 10515/5 10515/14 10515/18 10515/24 10516/15 10516/15 10519/16 10521/3 10524/3 10526/7 10526/17 10527/1 10536/22 10536/23 10537/6 10538/11 10543/19 10544/12 10547/5 10549/10 10551/14 <b>itself [2]</b> 10487/4 10548/10	10450/9 <b>kenneth.dintzer2 [1]</b> 10447/5 <b>kept [1]</b> 10546/14 <b>ketchup [2]</b> 10523/9 10523/10 <b>key [11]</b> 10452/15 10452/20 10465/14 10484/14 10485/7 10497/6 10498/24 10514/9 10517/3 10518/12 10546/17 <b>kind [63]</b> 10452/5 10452/15 10452/20 10454/8 10454/19 10456/4 10460/14 10461/21 10462/19 10471/6 10472/2 10472/25 10476/5 10480/20 10480/20 10483/22 10484/1 10486/4 10490/23 10490/24 10494/1 10494/4 10497/21 10499/19 10505/24 10507/3 10509/17 10509/22 10509/25 10510/1 10512/2 10512/8 10514/1 10514/7 10514/20 10517/3 10517/22 10517/24 10518/6 10518/25 10519/2 10520/1 10520/4 10521/20 10521/20 10522/15 10522/21 10523/22 10525/3 10525/4 10525/14 10527/5 10529/13 10532/10 10533/6 10537/21 10539/8 10539/12 10540/18 10544/23 10546/8 10546/12 10552/2 <b>kinds [7]</b> 10463/6 10466/16 10485/1 10511/10 10512/3 10530/19 10542/14 <b>knew [1]</b> 10534/8 <b>knife [1]</b> 10466/22 <b>knobs [1]</b> 10479/5 <b>know [387]</b> <b>knows [1]</b> 10507/17 <b>ksmurzynski [1]</b> 10448/5	10472/12 10474/20 10475/14 10476/17 10477/15 10477/22 10481/2 10498/18 10505/23 10506/12 10506/20 10522/7 10522/7 10525/13 10527/25 10528/4 10529/4 10538/14 10539/12 10542/5 10542/14 10542/18 10543/17 10545/23 10549/7 10550/22 <b>late [2]</b> 10466/24 10549/23 <b>latest [2]</b> 10465/17 10487/25 <b>LAW [1]</b> 10447/11 <b>lawsuit [1]</b> 10534/23 <b>lawyer [1]</b> 10535/1 <b>lawyers [1]</b> 10534/23 <b>lead [3]</b> 10479/11 10529/16 10550/13 <b>leading [1]</b> 10535/22 <b>least [5]</b> 10459/5 10477/2 10477/4 10541/14 10542/1 <b>leaves [1]</b> 10515/7 <b>leaving [1]</b> 10483/12 <b>lectures [1]</b> 10523/14 <b>left [4]</b> 10457/20 10464/3 10498/9 10518/13 <b>legal [2]</b> 10510/17 10510/17 <b>legally [2]</b> 10529/8 10529/9 <b>less [20]</b> 10453/4 10453/9 10459/15 10495/5 10495/7 10515/20 10516/24 10517/9 10520/21 10522/14 10526/13 10528/1 10528/4 10529/1 10529/12 10539/5 10540/19 10542/21 10545/1 10553/12 <b>lesser [1]</b> 10535/12 <b>let [3]</b> 10489/13 10491/15 10511/13 <b>let's [23]</b> 10450/15 10463/17 10466/1 10467/23 10470/6 10472/11 10476/20 10476/20 10479/25 10508/5 10510/1 10510/2 10513/22 10514/23 10514/24 10515/17 10519/13 10520/10 10520/22 10524/6 10535/12 10547/11 10547/20 <b>level [11]</b> 10459/10 10460/12 10460/13 10460/14 10512/8 10518/14 10537/7 10547/7 10547/8	10552/9 10552/13 <b>leverage [1]</b> 10461/25 <b>license [2]</b> 10540/25 10541/1 <b>licensed [1]</b> 10540/24 <b>licenses [1]</b> 10541/7 <b>light [2]</b> 10462/25 10524/5 <b>like [103]</b> 10458/8 10462/18 10463/11 10464/8 10465/17 10465/23 10466/12 10466/13 10466/15 10467/1 10468/17 10471/2 10471/20 10471/20 10472/4 10476/2 10476/18 10478/11 10479/13 10481/14 10483/23 10486/7 10490/18 10490/21 10490/24 10491/20 10492/8 10493/23 10493/25 10494/20 10494/23 10495/6 10495/11 10499/9 10500/16 10500/18 10500/25 10501/14 10502/3 10504/6 10504/14 10505/25 10507/20 10509/22 10510/7 10511/11 10511/14 10511/19 10512/8 10512/9 10513/6 10514/4 10514/13 10514/20 10515/25 10516/23 10516/24 10517/13 10518/15 10518/23 10520/15 10523/18 10524/4 10524/20 10525/14 10525/15 10525/18 10526/22 10528/13 10528/17 10528/19 10529/5 10529/7 10530/7 10531/5 10531/6 10532/10 10533/4 10533/7 10533/9 10534/1 10534/22 10534/23 10535/5 10535/8 10536/4 10536/11 10536/12 10537/20 10538/4 10538/5 10538/16 10539/1 10540/4 10540/6 10540/7 10541/24 10544/16 10544/21 10547/15 10548/3 10548/15 10552/16 <b>likelihood [1]</b> 10546/10 <b>likely [2]</b> 10456/2 10528/5 <b>likes [2]</b> 10515/19 10517/8 <b>limit [1]</b> 10455/10 <b>limitations [1]</b>
<b>J</b>	<b>jail [2]</b> 10511/20 10511/22 <b>January [1]</b> 10493/3 <b>John [2]</b> 10448/2 10450/11 <b>jon.sallet [1]</b> 10447/16 <b>Jonathan [2]</b> 10447/11 10450/10 <b>journey [1]</b> 10484/22 <b>jschmidlein [1]</b> 10448/4 <b>Juda [1]</b> 10476/18 <b>JUDGE [1]</b> 10446/10 <b>Judicial [1]</b> 10447/13 <b>jump [1]</b> 10484/23 <b>jumps [1]</b> 10482/2 <b>just [119]</b> <b>JUSTICE [1]</b> 10447/2 <b>justifications [1]</b> 10527/15 <b>justify [1]</b> 10503/3	<b>labeled [2]</b> 10493/11 10493/12 <b>language [2]</b> 10502/2 10543/12 <b>large [2]</b> 10503/22 10545/3 <b>largely [1]</b> 10462/15 <b>larger [1]</b> 10528/1 <b>last [31]</b> 10456/3 10461/10 10462/18 10465/13 10467/21		
<b>K</b>	<b>Kansas [4]</b> 10486/7 10486/9 10486/17 10486/22 <b>keep [5]</b> 10452/25 10501/19 10514/12 10524/8 10524/19 <b>keeps [1]</b> 10546/8 <b>Kenneth [2]</b> 10447/2			

<b>L</b>	10487/11 10492/25 10494/25 10496/3 10496/4 10501/8 10501/9 10502/1 10502/6 10505/2 10505/3 10511/8 10521/18 10546/25	10468/4 10468/20 10475/17 10501/1 10537/1 10538/20 10539/5 10539/5 10539/9 10543/9 10545/4 10548/20	10520/15 10520/19 10545/7 10545/8 10548/23 10553/1 10553/2	10531/25 10532/23 10534/21 10545/7 10545/14 10548/14 10549/21 10551/11 10551/21 10552/13 10552/22
<b>limitations... [1]</b> 10494/16	10521/18 10546/25	<b>managed [1]</b> 10476/6	<b>marketplace [2]</b> 10515/15 10518/23	<b>meaning [3]</b> 10463/9 10474/24 10526/25
<b>limited [2]</b> 10490/4 10496/14	<b>lots [3]</b> 10458/4 10463/8 10543/8	<b>manufacturer [7]</b> 10475/3 10512/6 10524/2 10524/3 10524/8 10524/19 10525/1	<b>markets [4]</b> 10463/19 10470/7 10472/11 10483/16	<b>means [5]</b> 10468/9 10492/6 10511/2 10515/25 10517/10
<b>line [8]</b> 10481/21 10490/10 10490/14 10490/19 10536/10 10537/15 10548/19 10551/22	<b>low [7]</b> 10459/20 10460/18 10470/5 10473/24 10540/17 10540/25 10542/21	<b>manufacturers [4]</b> 10474/22 10474/25 10479/14 10524/24	<b>marries [1]</b> 10526/10 <b>marry [1]</b> 10525/23 <b>massive [1]</b> 10505/20	<b>meant [2]</b> 10529/23 10539/12
<b>linear [1]</b> 10484/22	<b>lower [16]</b> 10456/14 10456/15 10478/10 10478/15 10504/18 10505/24 10507/12 10520/15 10520/17 10520/18 10527/9 10536/3 10538/3 10540/25 10542/21 10542/24	<b>manufacturing [1]</b> 10453/17	<b>match [1]</b> 10491/12 <b>material [1]</b> 10550/13 <b>matter [13]</b> 10468/18 10469/13 10471/1 10500/25 10504/11 10504/12 10505/18 10506/4 10507/23 10515/15 10541/25 10545/20 10554/4	<b>measure [10]</b> 10475/18 10487/13 10487/14 10491/25 10492/5 10506/21 10508/3 10508/11 10509/5 10543/17
<b>link [1]</b> 10540/9	<b>lowering [1]</b> 10543/23	<b>many [14]</b> 10458/6 10458/6 10461/14 10461/14 10462/4 10464/16 10464/16 10486/1 10517/7 10525/8 10534/25 10547/14 10547/17 10549/22	<b>mattered [1]</b> 10499/11 <b>matters [2]</b> 10516/6 10528/14	<b>measured [2]</b> 10508/6 10551/10
<b>list [1]</b> 10534/16	<b>lowers [2]</b> 10452/21 10543/21	<b>Maps [1]</b> 10498/16	<b>may [18]</b> 10451/13 10451/14 10454/16 10454/18 10471/24 10474/18 10479/4 10481/15 10487/24 10507/21 10514/18 10515/12 10516/10 10528/16 10531/10 10544/4 10546/2 10547/15	<b>measures [3]</b> 10488/4 10506/14 10507/1
<b>listed [1]</b> 10538/7	<b>lunch [1]</b> 10553/21	<b>margins [2]</b> 10536/7 10536/7	<b>mayb [17]</b> 10486/6 10491/16 10503/11 10504/11 10504/12 10507/20 10509/4 10512/9 10516/18 10517/17 10520/11 10523/10 10525/19 10530/9 10534/24 10536/4 10548/16	<b>measuring [5]</b> 10460/9 10490/11 10492/2 10506/22 10508/18
<b>literally [5]</b> 10467/1 10494/18 10500/16 10508/20 10508/21	<b>M</b>	<b>Marissa [1]</b> 10466/22	<b>Mayer [1]</b> 10466/22	<b>mechanical [1]</b> 10448/10
<b>literature [3]</b> 10501/8 10527/4 10530/25	<b>Mac [1]</b> 10497/10	<b>market [84]</b> 10451/20 10451/21 10452/7 10452/13 10452/13 10453/8 10453/24 10454/21 10455/12 10458/21 10459/18 10459/23 10460/10 10460/25 10461/8 10461/13 10462/9 10463/17 10464/1 10464/7 10464/9 10464/11 10464/20 10464/23 10465/7 10465/19 10465/20 10465/20 10468/1 10468/15 10469/3 10469/18 10469/19 10470/1 10472/14 10472/14 10472/22 10472/22 10473/3 10473/4 10473/5 10473/6 10473/7 10473/8 10473/8 10473/9 10473/12 10473/13 10473/20 10474/2 10474/12 10474/16 10474/19 10477/3 10477/5 10477/7 10477/10 10477/11 10479/17 10482/21 10482/23 10483/8 10483/14 10483/20 10490/5 10502/15 10502/22 10502/24 10502/24 10503/2 10503/13 10505/9 10506/22 10514/21 10515/9 10519/11 10520/13	<b>matters [2]</b> 10516/6 10528/14	<b>mechanism [4]</b> 10478/14 10479/3 10479/7 10479/11
<b>little [2]</b> 10458/12 10482/4	<b>MADA [5]</b> 10540/11 10540/12 10541/11 10541/11 10541/13	<b>made [7]</b> 10457/23 10461/4 10461/6 10461/10 10495/11 10498/11 10509/10	<b>maybe [17]</b> 10486/6 10491/16 10503/11 10504/11 10504/12 10507/20 10509/4 10512/9 10516/18 10517/17 10520/11 10523/10 10525/19 10530/9 10534/24 10536/4 10548/16	<b>media [3]</b> 10489/17 10492/25 10494/20
<b>LLC [2]</b> 10446/6 10450/8	<b>main [2]</b> 10458/3 10463/18	<b>main [2]</b> 10458/3 10463/18	<b>MEHTA [2]</b> 10446/9 10450/3	<b>memory [1]</b> 10475/4
<b>LLP [1]</b> 10448/2	<b>Maine [1]</b> 10448/3	<b>Maine [1]</b> 10448/3	<b>memory [1]</b> 10475/4	<b>mental [2]</b> 10471/18 10471/23
<b>locking [1]</b> 10543/18	<b>maintain [1]</b> 10521/19	<b>maintain [1]</b> 10521/19	<b>menu [3]</b> 10532/9 10532/12 10533/11	<b>merger [3]</b> 10465/18 10483/1 10483/7
<b>logic [1]</b> 10460/8	<b>majority [2]</b> 10497/16 10547/19	<b>majority [2]</b> 10497/16 10547/19	<b>merger [3]</b> 10465/18 10483/1 10483/7	<b>Merit [1]</b> 10448/6
<b>long [2]</b> 10457/18 10470/11	<b>make [36]</b> 10450/21 10452/12 10453/1 10453/4 10453/18 10462/11 10462/20 10466/3 10475/6 10475/25 10476/1 10478/19 10478/24 10478/25 10488/8 10489/14 10489/23 10500/11 10500/12 10500/13 10505/21 10507/24 10519/5 10520/7 10526/13 10528/6 10530/10 10530/14 10531/10 10531/12 10539/7 10541/1 10543/7 10543/11 10549/20 10551/20	<b>make [36]</b> 10450/21 10452/12 10453/1 10453/4 10453/18 10462/11 10462/20 10466/3 10475/6 10475/25 10476/1 10478/19 10478/24 10478/25 10488/8 10489/14 10489/23 10500/11 10500/12 10500/13 10505/21 10507/24 10519/5 10520/7 10526/13 10528/6 10530/10 10530/14 10531/10 10531/12 10539/7 10541/1 10543/7 10543/11 10549/20 10551/20	<b>MBA [2]</b> 10501/6 10501/6	<b>Meta [8]</b> 10489/16 10490/11 10492/8 10492/18 10492/25 10494/15 10494/23 10495/5
<b>longer [1]</b> 10539/4	<b>Makes [7]</b> 10468/12 10486/24 10525/21 10538/22 10539/2 10541/11 10541/13	<b>Makes [7]</b> 10468/12 10486/24 10525/21 10538/22 10539/2 10541/11 10541/13	<b>me [28]</b> 10451/8 10453/23 10461/7 10464/16 10470/25 10471/17 10484/14 10485/7 10489/13 10490/8 10490/24 10491/15 10493/18 10499/16 10500/12 10500/13 10502/3 10502/5 10507/21 10510/20 10511/13 10513/2 10523/11 10525/24 10535/25 10538/15 10543/7 10547/3	<b>Meta's [1]</b> 10492/8
<b>look [15]</b> 10461/6 10482/25 10487/20 10490/15 10490/17 10490/18 10508/12 10508/14 10518/13 10531/2 10541/3 10542/19 10546/7 10552/24 10553/6	<b>making [17]</b> 10453/18 10456/13 10459/5 10459/6 10466/2	<b>making [17]</b> 10453/18 10456/13 10459/5 10459/6 10466/2	<b>mean [24]</b> 10468/5 10468/8 10468/22 10470/23 10494/10 10502/18 10509/1 10511/22 10512/19 10513/24 10514/11 10529/20 10529/24	<b>method [1]</b> 10503/21
<b>looked [11]</b> 10464/16 10489/10 10491/23 10498/6 10498/12 10498/13 10506/24 10532/18 10536/17 10536/17 10537/15				<b>Michael [2]</b> 10450/19 10451/2
<b>looking [17]</b> 10459/18 10459/19 10459/21 10464/17 10464/18 10471/6 10481/19 10488/1 10489/11 10492/9 10499/7 10503/3 10503/8 10518/10 10537/6 10537/21 10553/4				<b>Microsoft [22]</b> 10457/20 10498/1 10498/5 10498/18 10499/4 10499/4 10500/15 10511/16 10525/19 10528/13 10528/17 10549/19 10549/21 10549/25 10550/4 10550/10 10550/13 10551/16 10551/17 10551/20 10551/22 10551/25
<b>looks [2]</b> 10546/25 10547/1				<b>Microsoft's [1]</b> 10499/13
<b>lose [8]</b> 10475/7 10479/22 10499/20 10506/7 10506/8 10524/24 10525/10 10525/15				
<b>loser [1]</b> 10505/20				
<b>losing [1]</b> 10550/3				
<b>lost [3]</b> 10499/20 10501/3 10549/25				
<b>lot [23]</b> 10461/8 10461/10 10462/22 10463/12 10473/6 10474/12 10474/16 10475/15 10484/24				

<b>M</b>	10482/9 10486/22 10494/14 10494/19 10494/19 10495/6 10499/17 10510/7 10513/7 10516/20 10518/15 10518/17 10519/6 10520/16 10520/17 10523/21 10526/21 10528/11 10528/18 10531/1 10535/22 10537/18 10538/4 10539/10 10540/18 10543/11 10544/14 10546/19 10548/12 10548/20 10549/8 10549/9 10549/10 10549/13 <b>moreover [2]</b> 10471/24 10498/4 <b>morning [6]</b> 10446/7 10450/4 10450/6 10450/12 10450/13 10450/17 <b>most [5]</b> 10452/8 10452/9 10490/20 10529/14 10531/5 <b>move [8]</b> 10450/13 10458/22 10467/18 10467/23 10495/1 10495/1 10495/6 10553/14 <b>Mozilla [9]</b> 10497/12 10497/14 10498/17 10503/6 10518/8 10518/15 10518/20 10519/4 10519/8 <b>Mr. [27]</b> 10451/18 10461/20 10476/22 10478/22 10480/2 10482/13 10485/4 10485/8 10489/2 10495/13 10496/19 10499/2 10501/25 10504/20 10508/5 10509/6 10513/4 10519/13 10521/16 10521/23 10523/12 10527/13 10528/16 10540/1 10550/6 10551/25 10552/4 <b>Mr. Nadella [3]</b> 10521/16 10528/16 10551/25 <b>Mr. Penado [17]</b> 10451/18 10476/22 10480/2 10482/13 10485/8 10489/2 10495/13 10496/19 10504/20 10508/5 10509/6 10513/4 10519/13 10521/23 10527/13 10550/6 10552/4 <b>Mr. Pichai [4]</b> 10461/20 10485/4 10501/25 10540/1 <b>Mr. Roszak [1]</b> 10499/2	<b>Mr. Severt [1]</b> 10523/12 <b>Mr. Severt's [1]</b> 10478/22 <b>much [49]</b> 10454/16 10457/1 10459/11 10461/14 10462/16 10463/4 10473/22 10481/9 10481/11 10481/20 10490/14 10490/19 10492/9 10492/10 10494/21 10495/5 10499/20 10500/2 10501/1 10503/23 10504/3 10504/6 10507/4 10509/10 10514/19 10514/21 10519/8 10520/23 10520/24 10521/1 10521/9 10523/18 10524/18 10525/16 10533/4 10534/5 10536/21 10539/5 10539/10 10539/10 10544/12 10544/17 10544/22 10545/1 10546/2 10547/13 10547/18 10548/3 10548/13 <b>Murphy [48]</b> 10451/24 10458/13 10462/24 10463/3 10495/12 10495/16 10496/13 10496/22 10497/7 10500/7 10500/21 10502/14 10503/12 10504/2 10504/16 10504/23 10505/10 10507/17 10508/3 10508/19 10509/10 10511/1 10511/4 10519/3 10527/15 10527/20 10529/22 10530/18 10531/6 10531/25 10535/13 10535/21 10536/1 10536/11 10538/9 10540/14 10542/6 10542/23 10543/24 10546/8 10546/14 10546/24 10549/17 10550/9 10550/11 10550/12 10552/8 10552/20 <b>Murphy's [11]</b> 10450/22 10496/4 10496/16 10509/7 10518/7 10525/7 10538/6 10539/22 10540/12 10543/6 10552/23 <b>Murray [2]</b> 10510/10 10527/16 <b>must [4]</b> 10485/16 10485/21 10486/25 10541/20 <b>mutually [1]</b> 10517/11 <b>my [26]</b> 10450/22	10460/2 10473/18 10479/10 10481/22 10485/24 10491/5 10493/22 10493/25 10497/22 10498/10 10499/18 10505/3 10508/21 10523/12 10536/9 10538/15 10539/25 10540/18 10542/1 10544/15 10550/2 10551/2 10551/3 10551/7 10552/22 <b>N</b> <b>Nadella [3]</b> 10521/16 10528/16 10551/25 <b>narrow [1]</b> 10551/15 <b>necessarily [4]</b> 10454/23 10455/13 10459/22 10487/22 <b>necessary [4]</b> 10452/9 10455/18 10455/19 10486/3 <b>need [6]</b> 10454/22 10469/15 10479/3 10479/7 10500/9 10501/1 <b>needed [1]</b> 10477/18 <b>needs [4]</b> 10468/2 10479/17 10508/6 10521/9 <b>negligence [1]</b> 10534/24 <b>negotiated [1]</b> 10501/11 <b>negotiating [1]</b> 10461/25 <b>negotiation [3]</b> 10463/8 10498/25 10501/7 <b>negotiations [3]</b> 10461/24 10517/24 10528/11 <b>neither [1]</b> 10542/24 <b>never [2]</b> 10505/19 10507/18 <b>new [1]</b> 10466/3 <b>next [15]</b> 10457/3 10461/16 10475/13 10480/23 10480/24 10483/23 10506/17 10511/23 10512/23 10513/1 10514/2 10519/18 10520/1 10521/15 10551/4 <b>nice [1]</b> 10519/1 <b>night [1]</b> 10486/15 <b>Nike [8]</b> 10488/24 10489/13 10489/16 10490/22 10492/7 10492/8 10493/6 10494/9 <b>Nike's [4]</b> 10490/10 10490/11 10493/7 10494/3 <b>no [43]</b> 10446/4 10453/22 10455/5	10458/10 10463/22 10465/2 10465/10 10466/5 10468/7 10469/21 10475/2 10475/2 10475/24 10477/7 10484/18 10488/13 10491/9 10494/19 10497/1 10502/17 10504/24 10505/9 10505/18 10505/21 10507/23 10511/3 10511/5 10511/21 10512/19 10517/13 10524/15 10526/5 10531/22 10539/4 10541/20 10541/20 10541/22 10543/5 10544/21 10545/6 10546/4 10550/15 10552/22 <b>nobody [2]</b> 10517/12 10517/13 <b>non [3]</b> 10487/10 10492/25 10530/9 <b>non-Meta [1]</b> 10492/25 <b>non-private [1]</b> 10530/9 <b>non-search [1]</b> 10487/10 <b>none [2]</b> 10489/22 10531/19 <b>nonsocial [1]</b> 10495/7 <b>not [155]</b> <b>nothing [15]</b> 10484/18 10512/12 10522/18 10522/20 10523/1 10523/4 10524/23 10525/5 10525/11 10526/15 10526/18 10527/11 10527/11 10528/25 10538/1 <b>notice [1]</b> 10497/6 <b>noticeably [1]</b> 10490/20 <b>notion [1]</b> 10470/12 <b>November [2]</b> 10446/5 10554/7 <b>now [32]</b> 10453/2 10459/3 10464/1 10470/7 10491/25 10495/11 10497/20 10506/2 10506/2 10506/3 10509/1 10510/1 10511/12 10515/17 10519/22 10526/18 10526/20 10527/14 10530/12 10531/1 10534/9 10534/14 10535/12 10538/5 10543/1 10547/20 10548/4 10548/16 10551/12 10551/17 10552/3 10553/21 <b>nowhere [1]</b> 10537/16 <b>number [13]</b> 10453/17 10475/22 10485/24 10497/9 10498/23
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<b>N</b>	10518/14 10519/17 10520/13 10522/6 10523/6 10524/11 10535/20 10537/8 10537/12 10540/17 10542/3 10544/11 10546/5 10547/1 10547/2 10547/9 10551/6 10553/16 10553/19	10550/2 <b>operates [1]</b> 10452/10 <b>opinion [8]</b> 10455/23 10457/10 10457/22 10473/15 10473/18 10495/17 10510/13 10541/10 <b>opinions [4]</b> 10467/6 10504/23 10509/7 10549/17 <b>opportunities [1]</b> 10494/16 <b>opportunity [1]</b> 10518/13 <b>opposed [1]</b> 10534/13 <b>opposite [1]</b> 10516/20 <b>option [2]</b> 10462/2 10545/15 <b>options [1]</b> 10480/7 <b>order [5]</b> 10454/11 10487/1 10500/18 10521/10 10534/4 <b>ordinary [3]</b> 10453/16 10493/7 10502/22 <b>other [34]</b> 10457/7 10462/17 10462/20 10471/14 10471/14 10472/6 10472/7 10480/22 10483/21 10483/22 10484/10 10487/4 10489/17 10491/10 10491/23 10491/23 10497/14 10499/14 10503/7 10503/21 10505/6 10515/23 10521/6 10523/8 10524/12 10524/14 10525/24 10528/17 10529/19 10540/16 10541/25 10542/16 10545/12 10547/11	10453/5 10453/15 10453/22 10453/25 10454/11 10454/15 10454/17 10454/23 10455/11 10455/18 10455/25 10457/1 10457/2 10457/7 10457/10 10457/13 10457/18 10457/22 10458/4 10458/7 10458/8 10458/13 10459/1 10459/4 10459/7 10459/18 10460/5 10460/10 10460/13 10460/15 <b>outside [2]</b> 10501/2 10534/18 <b>outweigh [1]</b> 10527/17 <b>over [15]</b> 10456/19 10457/6 10457/19 10463/12 10473/16 10476/17 10482/4 10500/17 10505/12 10505/12 10505/12 10528/12 10536/8 10547/19 10551/8 <b>overall [3]</b> 10459/18 10494/4 10520/18 <b>overlap [5]</b> 10485/23 10486/25 10487/3 10487/14 10488/13 <b>overlapping [1]</b> 10485/17 <b>overly [1]</b> 10454/9 <b>overrule [1]</b> 10531/24 <b>overtime [1]</b> 10473/19 <b>own [3]</b> 10470/5 10491/17 10518/24	<b>parts [1]</b> 10465/23 <b>party [1]</b> 10534/23 <b>Pass [1]</b> 10553/18 <b>passed [1]</b> 10536/2 <b>passthrough [2]</b> 10535/23 10535/25 <b>past [3]</b> 10456/19 10476/13 10551/17 <b>pause [4]</b> 10493/11 10493/12 10493/16 10494/13 <b>pay [25]</b> 10455/15 10462/7 10462/7 10501/1 10501/9 10505/19 10506/1 10506/5 10516/21 10517/20 10521/4 10521/21 10524/13 10528/15 10528/20 10530/19 10531/1 10531/7 10531/12 10532/14 10533/5 10533/22 10534/1 10535/1 10537/17 <b>paying [11]</b> 10505/20 10521/18 10531/1 10532/20 10533/25 10535/4 10535/6 10535/7 10538/2 10540/23 10541/16 <b>payment [2]</b> 10529/21 10535/6 <b>payments [13]</b> 10527/21 10527/25 10529/18 10530/24 10531/8 10531/10 10531/14 10531/21 10532/12 10534/21 10535/13 10535/17 10536/2 <b>payoff [1]</b> 10501/12 <b>pays [1]</b> 10534/2 <b>PC [1]</b> 10497/15 <b>PCs [7]</b> 10457/21 10497/10 10497/10 10497/13 10497/17 10525/19 10551/24 <b>PCTR [1]</b> 10479/1 <b>Penado [17]</b> 10451/18 10476/22 10480/2 10482/13 10485/8 10489/2 10495/13 10496/19 10504/20 10508/5 10509/6 10513/4 10519/13 10521/23 10527/13 10550/6 10552/4 <b>penny [1]</b> 10476/19 <b>people [33]</b> 10453/4 10456/16 10466/16 10466/18 10470/13 10471/20 10471/24 10484/23 10486/17 10486/17 10486/18 10486/21 10486/22 10487/17 10487/20 10488/11 10488/12 10488/18 10488/19
<b>number... [8]</b> 10499/13 10505/9 10505/13 10505/14 10506/3 10506/4 10506/5 10533/10 <b>Number 2 [1]</b> 10485/24 <b>numbers [14]</b> 10463/9 10497/24 10499/8 10499/12 10499/14 10502/12 10502/19 10503/22 10505/10 10506/16 10508/1 10537/13 10537/14 10537/16 <b>NW [3]</b> 10447/3 10447/7 10448/8	<b>once [3]</b> 10476/5 10509/25 10533/2 <b>one [85]</b> 10452/19 10457/12 10458/1 10459/16 10463/7 10463/18 10464/2 10465/15 10466/1 10466/19 10466/21 10466/22 10468/2 10468/11 10468/17 10470/13 10470/16 10470/21 10471/15 10471/15 10471/17 10474/16 10474/18 10477/22 10479/5 10481/5 10485/5 10485/16 10486/1 10488/8 10489/13 10490/3 10490/6 10490/6 10491/23 10494/10 10495/22 10497/13 10498/23 10499/17 10500/14 10500/20 10501/8 10501/16 10501/25 10503/12 10504/2 10504/9 10505/9 10505/13 10510/16 10511/14 10512/5 10518/19 10521/5 10521/7 10523/14 10523/16 10524/3 10524/10 10525/1 10525/6 10528/3 10529/13 10530/1 10531/2 10531/5 10532/17 10532/17 10533/6 10533/21 10534/3 10538/8 10540/1 10541/20 10541/20 10541/22 10542/15 10545/9 10545/20 10545/20 10546/4 10546/12 10546/19 10551/3 <b>one-stop [8]</b> 10465/15 10466/1 10466/19 10468/11 10470/13 10470/16 10470/21 10495/22 <b>one-stop-shop [1]</b> 10471/15 <b>ones [1]</b> 10476/2 <b>only [10]</b> 10462/1 10462/14 10467/25 10496/23 10502/11 10519/10 10524/16 10526/16 10537/5	<b>objection [2]</b> 10531/18 10531/25 <b>obligated [1]</b> 10530/16 <b>obtain [1]</b> 10496/23 <b>obvious [1]</b> 10512/10 <b>obviously [1]</b> 10457/18 <b>October [1]</b> 10551/9 <b>off [4]</b> 10462/20 10493/22 10497/5 10516/12 <b>offer [8]</b> 10462/24 10524/16 10526/21 10530/1 10530/7 10531/12 10532/11 10540/24 <b>offered [3]</b> 10500/16 10527/2 10541/6 <b>offering [8]</b> 10466/14 10466/15 10510/13 10510/17 10526/5 10531/8 10531/9 10540/15 <b>offers [5]</b> 10472/2 10524/13 10527/1 10530/2 10530/4 <b>Official [1]</b> 10448/7 <b>oh [9]</b> 10458/15 10462/5 10469/14 10471/2 10478/11 10490/15 10491/9 10500/25 10537/16 <b>oil [2]</b> 10457/12 10457/14 <b>okay [50]</b> 10451/12 10451/16 10454/18 10455/2 10456/21 10460/1 10460/10 10460/20 10467/23 10472/3 10472/24 10474/20 10477/13 10488/21 10489/22 10490/16 10490/18 10499/13 10500/19 10501/6 10502/5 10503/17 10504/2 10510/1 10511/14 10513/3 10513/21 10513/25 10515/10 10517/1 10517/7	<b>P</b> <b>P. [1]</b> 10450/3 <b>p.m [2]</b> 10553/24 10553/24 <b>page [4]</b> 10489/14 10493/5 10523/20 10533/10 <b>paid [2]</b> 10464/10 10534/5 <b>par [1]</b> 10462/19 <b>paraphrasing [1]</b> 10504/12 <b>parents [1]</b> 10507/18 <b>part [9]</b> 10452/11 10456/25 10459/23 10478/24 10500/24 10522/15 10522/24 10546/13 10546/15 <b>participants [1]</b> 10505/10 <b>particular [4]</b> 10463/8 10512/3 10536/22 10538/19 <b>parties [7]</b> 10502/13 10503/1 10503/8 10503/8 10504/8 10512/16 10519/19 <b>parties' [1]</b> 10501/21 <b>partner [1]</b> 10537/25	

<b>P</b>	10518/23 10545/9 10545/12 10549/6 <b>pieces [1]</b> 10509/19 <b>Pinterest [4]</b> 10492/25 10493/15 10493/19 10494/17 <b>placards [2]</b> 10457/25 10457/25 <b>place [10]</b> 10504/3 10508/13 10509/21 10509/23 10524/22 10544/20 10544/22 10545/11 10548/9 10548/11 <b>placed [1]</b> 10533/16 <b>placement [4]</b> 10540/23 10541/15 10541/16 10541/23 <b>places [1]</b> 10504/7 <b>Plaintiff [2]</b> 10447/10 10450/10 <b>PLAINTIFF's [2]</b> 10449/5 10449/10 <b>Plaintiffs [3]</b> 10446/4 10447/2 10451/2 <b>Plaintiffs' [1]</b> 10553/17 <b>platforms [1]</b> 10466/14 <b>plausible [1]</b> 10507/24 <b>play [6]</b> 10462/20 10510/7 10540/15 10541/18 10541/19 10541/21 <b>player [1]</b> 10521/18 <b>playing [4]</b> 10518/14 10547/7 10547/8 10549/9 <b>please [5]</b> 10450/4 10482/13 10485/8 10513/18 10550/6 <b>plotted [1]</b> 10491/22 <b>plotting [1]</b> 10457/21 <b>plus [1]</b> 10505/18 <b>point [31]</b> 10452/5 10458/3 10458/12 10463/7 10466/21 10466/23 10467/22 10471/18 10476/19 10478/23 10485/5 10494/11 10512/1 10513/6 10513/23 10514/7 10516/18 10517/22 10519/5 10519/11 10519/12 10520/2 10522/7 10530/5 10530/13 10539/22 10543/15 10544/6 10546/9 10548/19 10551/15 <b>pointed [3]</b> 10491/5 10536/5 10536/15 <b>pointing [1]</b> 10478/5 <b>points [9]</b> 10463/18 10488/8 10505/9 10506/10 10511/24 10512/4 10513/1 10520/1 10543/24 <b>position [12]</b> 10458/25 10459/2 10461/13	10462/13 10463/14 10463/15 10476/25 10479/10 10501/14 10501/15 10521/19 10534/16 <b>possibility [2]</b> 10530/1 10530/4 <b>postings [1]</b> 10488/1 <b>potato [9]</b> 10523/24 10523/24 10524/1 10524/2 10524/5 10524/6 10524/6 10524/17 10525/1 <b>potential [1]</b> 10505/5 <b>potentially [3]</b> 10453/8 10478/9 10528/14 <b>pouring [1]</b> 10550/24 <b>power [29]</b> 10451/21 10453/6 10455/24 10456/23 10458/9 10458/21 10460/25 10461/8 10462/9 10462/22 10464/21 10472/14 10472/23 10473/3 10473/4 10473/6 10473/9 10473/12 10473/20 10474/2 10474/12 10474/17 10477/10 10479/17 10496/11 10497/3 10497/22 10504/4 10546/3 <b>powerful [1]</b> 10468/18 <b>precise [1]</b> 10500/9 <b>precision [2]</b> 10551/1 10551/10 <b>prediction [1]</b> 10545/4 <b>preference [3]</b> 10468/11 10468/20 10495/22 <b>preferences [2]</b> 10468/6 10468/15 <b>prepare [1]</b> 10451/9 <b>present [1]</b> 10535/21 <b>presentation [3]</b> 10493/5 10513/23 10552/7 <b>presented [6]</b> 10469/17 10472/21 10485/11 10488/23 10504/23 10527/15 <b>presents [1]</b> 10489/12 <b>preserving [1]</b> 10515/22 <b>presiding [1]</b> 10450/3 <b>pressure [4]</b> 10456/5 10528/8 10528/9 10528/11 <b>pressures [1]</b> 10525/21 <b>pretty [4]</b> 10490/19 10499/12 10499/14 10520/12 <b>Prettyman [1]</b> 10448/8 <b>prevent [7]</b> 10464/19 10482/12 10512/24 10519/24 10521/2 10521/9 10521/22	<b>previous [2]</b> 10500/22 10501/23 <b>previously [7]</b> 10451/3 10452/19 10467/24 10496/11 10499/23 10536/20 10537/2 <b>price [29]</b> 10452/7 10452/11 10452/11 10452/14 10453/10 10453/18 10454/11 10454/16 10454/17 10454/20 10454/21 10455/7 10455/10 10474/10 10474/14 10476/19 10477/11 10477/25 10479/24 10480/1 10482/11 10486/20 10492/8 10494/23 10495/4 10495/9 10516/11 10533/7 10533/8 <b>priced [2]</b> 10540/17 10540/25 <b>prices [28]</b> 10454/22 10455/8 10455/15 10473/20 10474/7 10474/21 10476/1 10476/16 10477/7 10477/8 10477/16 10478/8 10478/10 10478/14 10479/9 10480/18 10481/9 10481/11 10481/18 10481/25 10482/9 10516/24 10520/18 10536/3 10536/8 10538/3 10541/5 10541/9 <b>pricing [8]</b> 10464/13 10472/13 10472/22 10473/16 10473/19 10476/5 10476/7 10477/25 <b>primary [1]</b> 10453/15 <b>principal [2]</b> 10473/15 10473/18 <b>principle [10]</b> 10482/16 10482/18 10482/20 10483/3 10483/5 10483/9 10483/10 10483/15 10483/17 10484/3 <b>principles [1]</b> 10553/5 <b>privacy [4]</b> 10522/25 10525/18 10525/23 10526/9 <b>private [1]</b> 10530/9 <b>pro [2]</b> 10552/19 10553/11 <b>pro-competitive [2]</b> 10552/19 10553/11 <b>Probably [1]</b> 10455/2 <b>problem [7]</b> 10496/1 10511/11 10512/18 10517/15 10519/1 10552/2 10553/10 <b>problems [2]</b> 10505/4 10536/9	<b>proceedings [3]</b> 10446/9 10448/10 10554/4 <b>process [3]</b> 10464/11 10464/12 10471/23 <b>procompetitive [2]</b> 10527/14 10527/17 <b>produced [1]</b> 10448/11 <b>product [5]</b> 10465/22 10465/23 10472/2 10486/9 10486/10 <b>production [1]</b> 10453/16 <b>products [8]</b> 10484/9 10484/13 10486/13 10486/19 10488/14 10489/17 10490/12 10495/5 <b>Professor [89]</b> 10450/16 10450/19 10450/22 10451/7 10451/17 10453/13 10455/23 10456/17 10458/13 10458/19 10460/22 10462/24 10463/3 10467/7 10468/25 10469/1 10470/6 10470/9 10470/9 10485/13 10485/15 10487/3 10495/10 10495/12 10495/16 10496/4 10496/13 10496/16 10496/22 10497/7 10500/7 10502/14 10503/12 10504/2 10504/16 10504/22 10504/23 10505/10 10506/12 10507/17 10508/3 10508/19 10509/7 10509/10 10510/10 10511/1 10511/4 10513/7 10513/22 10518/7 10519/3 10521/11 10525/7 10527/15 10527/16 10527/20 10529/22 10530/18 10531/6 10531/25 10535/11 10535/13 10535/21 10536/1 10536/11 10538/5 10538/6 10538/9 10539/22 10540/12 10540/14 10541/10 10542/4 10542/6 10542/23 10543/6 10543/24 10546/8 10546/14 10546/24 10549/2 10549/17 10550/9 10550/11 10550/12 10552/8 10552/20 10552/23 10553/15 <b>Professor Murphy [38]</b> 10458/13 10462/24 10463/3 10495/12 10495/16 10496/13
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<b>P</b>	10507/13	10505/5 10505/5	10529/24	10474/22 10488/10
<b>Professor Murphy...</b>	<b>proportional [2]</b>	10528/10 10536/4	<b>Rangel [1]</b> 10469/1	10501/13 10512/14
<b>[32]</b> 10497/7 10500/7	10492/3 10494/4	10542/16 10543/11	<b>ranked [2]</b> 10533/14	10521/7 10546/13
10503/12 10504/2	<b>proportionately [1]</b>	10543/12 10543/13	10533/16	10546/15
10504/16 10504/23	10492/21	10543/19 10544/8	<b>rare [1]</b> 10456/4	<b>reasons [9]</b> 10456/14
10505/10 10507/17	<b>proportions [2]</b>	10544/17 10544/19	<b>rate [1]</b> 10477/5	10458/4 10470/20
10508/3 10508/19	10492/12 10492/15	10544/23 10546/10	<b>rates [1]</b> 10478/7	10471/14 10471/15
10509/10 10511/4	<b>protecting [1]</b> 10521/5	10546/11 10549/14	<b>rather [2]</b> 10478/20	10484/11 10495/21
10527/15 10527/20	<b>Protection [1]</b>	10550/14 10550/20	10518/11	10500/13 10547/16
10529/22 10531/6	10447/12	10550/20 10550/25	<b>rational [2]</b> 10479/16	<b>rebuttal [6]</b> 10451/2
10531/25 10535/13	<b>protects [1]</b> 10520/7	10551/14	10479/18	10491/5 10505/3
10535/21 10536/11	<b>provided [2]</b> 10480/15	<b>qualm [1]</b> 10552/14	<b>reach [6]</b> 10485/17	10532/3 10551/2
10538/9 10540/14	10552/21	<b>quantify [1]</b> 10460/4	10486/12 10486/22	10551/3
10542/6 10542/23	<b>providers [1]</b> 10533/2	<b>quarter [1]</b> 10533/2	10488/3 10512/16	<b>recall [1]</b> 10542/6
10543/24 10546/8	<b>provides [1]</b> 10531/22	<b>queries [15]</b> 10453/8	10519/21	<b>received [1]</b> 10553/17
10546/14 10546/24	<b>public [9]</b> 10457/9	10457/5 10458/4	<b>reached [1]</b> 10517/25	<b>recent [1]</b> 10456/8
10549/17 10550/11	10506/3 10514/11	10464/24 10465/8	<b>reaches [2]</b> 10486/9	<b>recess [4]</b> 10513/14
10550/12 10552/8	10514/11 10514/16	10496/24 10497/16	10486/10	10513/15 10553/23
<b>Professor Murphy's [9]</b>	10517/15 10518/3	10507/6 10507/10	<b>reaching [1]</b> 10486/21	10553/24
10450/22 10496/4	10519/1 10519/11	10547/23 10548/1	<b>react [2]</b> 10480/7	<b>recognition [1]</b>
10496/16 10525/7	<b>pull [1]</b> 10450/15	10548/5 10548/6	10482/3	10469/23
10538/6 10539/22	<b>purchase [1]</b> 10484/22	10548/10 10548/13	<b>reacting [1]</b> 10482/5	<b>recognizes [1]</b>
10540/12 10543/6	<b>purchased [1]</b> 10538/4	<b>query [2]</b> 10456/18	<b>reaction [2]</b> 10461/1	10469/17
10552/23	<b>push [5]</b> 10458/12	10466/10	10470/18	<b>record [8]</b> 10460/3
<b>Professor Murray [1]</b>	10528/22 10528/25	<b>question [23]</b> 10452/2	<b>reactions [5]</b> 10480/1	10460/7 10460/15
10527/16	10538/11 10539/7	10453/23 10456/25	10480/6 10480/13	10460/19 10461/12
<b>Professor Rangel [1]</b>	<b>put [26]</b> 10478/1	10456/25 10460/2	10480/16 10481/15	10487/12 10521/11
10469/1	10478/2 10480/2	10461/22 10462/16	<b>read [4]</b> 10454/2	10554/3
<b>Professor Whinston</b>	10487/23 10489/2	10465/3 10467/22	10461/22 10463/3	<b>recorded [1]</b> 10448/10
<b>[11]</b> 10450/16 10451/7	10491/10 10491/10	10472/18 10478/22	10523/18	<b>recovery [2]</b> 10534/25
10451/17 10455/23	10491/16 10496/19	10503/11 10506/14	<b>ready [1]</b> 10450/13	10535/1
10460/22 10468/25	10499/24 10504/20	10512/5 10512/9	<b>real [3]</b> 10517/15	<b>RECROSS [1]</b> 10449/4
10470/9 10506/12	10505/15 10508/5	10512/23 10514/4	10531/15 10531/22	<b>red [2]</b> 10490/24
10513/7 10513/22	10509/4 10517/18	10523/9 10527/25	<b>real-world [1]</b>	10492/20
10542/4	10524/22 10526/19	10538/15 10539/16	10531/22	<b>redacted [3]</b> 10480/25
<b>Professor Whinston's</b>	10527/13 10528/9	10543/5 10550/5	<b>realize [1]</b> 10518/19	10489/22 10497/24
<b>[2]</b> 10467/7 10553/15	10530/8 10530/9	<b>questions [7]</b>	<b>realized [2]</b> 10476/5	<b>redid [1]</b> 10491/2
<b>profit [11]</b> 10455/9	10532/13 10543/2	10451/22 10454/2	10481/4	<b>REDIRECT [1]</b> 10449/4
10461/10 10462/12	10546/12 10550/6	10552/9 10552/11	<b>really [53]</b> 10458/15	<b>reduce [13]</b> 10452/10
10462/16 10462/16	10552/9	10552/13 10552/15	10458/17 10459/9	10452/18 10452/22
10462/20 10463/12	<b>puts [3]</b> 10459/11	10552/22	10461/25 10466/5	10453/3 10453/17
10501/1 10521/1	10528/8 10528/11	<b>quickly [1]</b> 10481/7	10468/18 10469/12	10454/11 10454/15
10536/21 10537/6	<b>putting [1]</b> 10466/25	<b>quite [3]</b> 10496/5	10470/24 10471/17	10454/17 10454/23
<b>profitability [2]</b>	<b>Q</b>	10506/20 10537/11	10472/8 10474/21	10455/11 10459/7
10536/20 10536/23	<b>qualifications [1]</b>	<b>quote [3]</b> 10478/18	10477/6 10479/10	10515/25 10517/20
10482/9 10482/12	10523/13	10481/4 10501/25	10485/20 10486/25	<b>reduced [1]</b> 10517/19
10550/2	<b>qualities [1]</b> 10479/2	<b>R</b>	10487/6 10488/14	<b>reduces [1]</b> 10517/21
<b>profits [19]</b> 10452/12	<b>quality [60]</b> 10452/16	<b>raise [17]</b> 10452/11	10491/12 10492/24	<b>reducing [6]</b> 10452/20
10453/1 10453/19	10452/18 10452/21	10453/1 10454/11	10492/24 10492/24	10453/2 10453/2
10458/20 10460/22	10452/22 10452/23	10454/16 10454/17	10493/17 10494/10	10453/7 10453/7
10460/24 10461/6	10453/2 10453/3	10476/1 10476/16	10494/11 10500/19	10453/16
10478/15 10515/2	10453/7 10456/6	10477/9 10477/16	10501/16 10501/19	<b>reduction [4]</b> 10455/25
10519/16 10520/6	10456/14 10456/14	10478/14 10478/16	10502/8 10504/11	10460/5 10460/5
10520/15 10520/18	10456/14 10456/14	10479/7 10479/9	10506/10 10508/9	10460/9
10520/23 10521/3	10459/5 10459/6	10481/9 10482/8	10509/20 10511/13	<b>refer [1]</b> 10514/10
10537/3 10537/3	10459/12 10459/13	10542/24 10543/12	10511/22 10511/24	<b>referred [2]</b> 10485/5
10537/6 10537/19	10460/5 10460/9	<b>raised [2]</b> 10451/23	10518/21 10520/22	10497/23
<b>prohibited [2]</b>	10460/16 10460/17	10482/16	10521/20 10524/3	<b>refers [1]</b> 10485/24
10510/14 10510/16	10464/15 10470/4	<b>raising [6]</b> 10452/11	10524/5 10525/6	<b>reflected [1]</b> 10477/19
<b>projections [1]</b>	10474/15 10474/21	10473/20 10481/8	10539/1 10539/2	<b>reflecting [1]</b> 10521/20
10536/22	10474/23 10474/24	10481/11 10481/18	10539/7 10540/3	<b>reflection [1]</b> 10494/21
<b>promote [5]</b> 10518/3	10475/1 10475/17	10528/19	10540/7 10543/15	<b>reflective [1]</b> 10474/1
10519/7 10538/10	10477/2 10477/4	<b>Ralph [1]</b> 10447/13	10544/17 10546/17	<b>reflects [1]</b> 10484/15
10538/17 10538/24	10477/4 10477/9	<b>randomized [1]</b>	10553/2 10553/2	<b>regarded [1]</b> 10529/11
<b>prompted [1]</b> 10453/23	10477/17 10477/24	10534/7	10553/7 10553/7	<b>regarding [1]</b> 10473/15
<b>proper [1]</b> 10464/24	10478/7 10478/12	<b>range [4]</b> 10506/14	<b>Realtime [1]</b> 10448/7	<b>Registered [1]</b> 10448/6
<b>proportion [1]</b>	10478/16 10479/12	10507/3 10507/5	<b>reason [10]</b> 10473/2	<b>regression [2]</b>
	10479/18 10479/21		10474/9 10474/11	10491/20 10544/15

<b>R</b>	10549/13 10550/24	10535/5 10535/6	10543/10 10543/22	10453/7 10453/13
<b>relate</b> [2] 10472/13 10472/22	<b>responding</b> [3] 10456/7 10456/9 10551/13	10535/6 10535/7 10535/7 10536/2 10537/7 10537/9 10537/11 10537/17 10537/21 10537/22 10537/23 10537/24 10538/2	10544/12 10544/17 10545/19 10545/25 10546/4 10546/10 10547/12 10547/16 10547/23 10548/4 10549/9 10549/13	10453/20 10454/4 10458/15 10459/3 10459/25 10460/19 10464/13 10475/24 10480/6 10482/21 10483/7 10488/10 10490/1 10490/17 10491/15 10495/4 10497/24 10498/20 10499/21 10506/2 10506/25 10508/21 10511/13 10515/12 10516/2 10516/5 10523/2 10524/5 10524/12 10525/12 10525/13 10527/24 10527/25 10528/10 10531/9 10531/13 10532/12 10533/4 10533/17 10534/24 10540/6 10543/25 10544/14 10548/6 10548/9 10548/12 10553/3
<b>related</b> [1] 10454/5	<b>response</b> [7] 10455/17 10456/11 10538/15 10539/24 10539/25 10540/12 10540/18	<b>review</b> [2] 10480/5 10488/24	<b>rivals'</b> [3] 10542/7 10543/9 10549/8	<b>saying</b> [29] 10455/17 10458/15 10461/6 10462/6 10463/8 10467/10 10469/7 10476/18 10478/13 10479/6 10483/5 10488/5 10494/13 10494/18 10496/2 10499/9 10503/2 10505/11 10509/1 10509/2 10516/11 10517/1 10520/2 10521/17 10526/4 10536/11 10538/1 10538/1 10544/21
<b>relates</b> [1] 10550/9	<b>responses</b> [1] 10456/8	<b>reviewed</b> [1] 10474/3	<b>RMR</b> [2] 10554/2 10554/8	<b>says</b> [9] 10457/1 10482/18 10490/15 10492/5 10492/5 10508/6 10524/15 10537/8 10540/14
<b>relating</b> [1] 10509/7	<b>responsive</b> [2] 10454/15 10482/11	<b>right</b> [36] 10450/12 10450/15 10450/21 10453/19 10454/1 10454/3 10454/13 10457/3 10457/4 10457/16 10459/7 10460/6 10464/4 10466/1 10470/6 10471/3 10471/4 10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	<b>room</b> [2] 10516/1 10517/11	<b>scale</b> [5] 10494/16 10518/21 10520/13 10528/6 10543/9
<b>relationship</b> [1] 10546/20	<b>restate</b> [1] 10472/18	10467/3 10471/6 10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	<b>rooms</b> [5] 10486/15 10486/17 10486/23 10488/18 10488/20	<b>score</b> [2] 10550/20 10551/10
<b>relative</b> [3] 10468/23 10485/1 10508/6	<b>restrict</b> [3] 10452/1 10453/15 10453/25	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	<b>Roszak</b> [1] 10499/2	<b>Schmidlein</b> [2] 10448/2 10450/11
<b>relatively</b> [1] 10488/11	<b>restricted</b> [3] 10452/9 10459/4 10530/16	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	<b>Safari</b> [2] 10526/7 10530/9	<b>score</b> [2] 10550/20 10551/10
<b>relevant</b> [13] 10463/19 10464/6 10464/11 10468/5 10473/5 10473/6 10473/7 10473/13 10482/21 10482/23 10483/8 10498/7 10553/5	<b>restriction</b> [2] 10453/22 10455/18	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	<b>said</b> [26] 10456/14 10462/18 10463/6 10463/25 10477/17 10478/22 10479/15 10480/11 10483/14 10484/15 10486/2 10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>Sallet</b> [2] 10447/11 10450/10
10468/5 10473/5 10473/6 10473/7 10473/13 10482/21 10482/23 10483/8 10498/7 10553/5	<b>restrictions</b> [4] 10540/24 10541/14 10541/15 10541/23	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10462/18 10463/6 10463/25 10477/17 10478/22 10479/15 10480/11 10483/14 10484/15 10486/2 10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>salt</b> [6] 10524/6 10524/6 10524/8 10524/19 10524/21 10524/24
10498/7 10553/5	<b>restrictive</b> [6] 10528/1 10528/4 10529/1 10529/12 10540/19 10553/12	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>salt-free</b> [6] 10524/6 10524/6 10524/8 10524/19 10524/21 10524/24
10498/7 10553/5	<b>result</b> [8] 10458/15 10458/16 10459/6 10491/8 10491/8 10520/20 10523/2 10527/5	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>same</b> [20] 10466/16 10477/16 10478/2 10478/4 10478/5 10478/6 10486/12 10487/11 10487/18 10487/21 10487/22 10488/16 10489/14 10501/25 10513/10 10521/20 10536/24 10540/20 10544/23 10549/14
10505/10 10505/11 10505/13	<b>resulted</b> [1] 10455/25	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>same</b> [20] 10466/16 10477/16 10478/2 10478/4 10478/5 10478/6 10486/12 10487/11 10487/18 10487/21 10487/22 10488/16 10489/14 10501/25 10513/10 10521/20 10536/24 10540/20 10544/23 10549/14
10505/10 10505/11 10505/13	<b>results</b> [8] 10481/5 10491/2 10491/21 10493/6 10527/9 10533/10 10539/3 10543/24	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>Sallet</b> [2] 10447/11 10450/10
10505/10 10505/11 10505/13	<b>RESUMED</b> [1] 10451/3	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>salt</b> [6] 10524/6 10524/6 10524/8 10524/19 10524/21 10524/24
10505/10 10505/11 10505/13	<b>rev</b> [2] 10526/5 10526/5	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>salt-free</b> [6] 10524/6 10524/6 10524/8 10524/19 10524/21 10524/24
10505/10 10505/11 10505/13	<b>rev share</b> [2] 10526/5 10526/5	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>same</b> [20] 10466/16 10477/16 10478/2 10478/4 10478/5 10478/6 10486/12 10487/11 10487/18 10487/21 10487/22 10488/16 10489/14 10501/25 10513/10 10521/20 10536/24 10540/20 10544/23 10549/14
10505/10 10505/11 10505/13	<b>revealing</b> [2] 10458/21 10460/25	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>Sallet</b> [2] 10447/11 10450/10
10505/10 10505/11 10505/13	<b>revenue</b> [50] 10453/1 10462/1 10481/20 10482/1 10482/6 10505/19 10505/24 10516/17 10525/14 10526/6 10526/6 10527/1 10527/2 10527/10 10528/12 10528/22 10528/25 10529/18 10529/20 10530/2 10530/4 10530/10 10530/24 10531/8 10531/9 10531/14 10531/15 10531/21 10531/23 10532/2 10532/7 10532/11 10532/14 10534/19 10534/21	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>salt</b> [6] 10524/6 10524/6 10524/8 10524/19 10524/21 10524/24
10505/10 10505/11 10505/13	<b>Reporter</b> [4] 10448/6 10448/6 10448/7 10448/7	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>salt-free</b> [6] 10524/6 10524/6 10524/8 10524/19 10524/21 10524/24
10505/10 10505/11 10505/13	<b>reports</b> [7] 10463/3 10467/5 10505/3 10531/20 10531/23 10536/9 10551/3	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>salt-free</b> [6] 10524/6 10524/6 10524/8 10524/19 10524/21 10524/24
10505/10 10505/11 10505/13	<b>represent</b> [3] 10499/17 10506/17 10507/9	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>same</b> [20] 10466/16 10477/16 10478/2 10478/4 10478/5 10478/6 10486/12 10487/11 10487/18 10487/21 10487/22 10488/16 10489/14 10501/25 10513/10 10521/20 10536/24 10540/20 10544/23 10549/14
10505/10 10505/11 10505/13	<b>represented</b> [1] 10512/4	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>salt-free</b> [6] 10524/6 10524/6 10524/8 10524/19 10524/21 10524/24
10505/10 10505/11 10505/13	<b>represents</b> [1] 10507/9	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>same</b> [20] 10466/16 10477/16 10478/2 10478/4 10478/5 10478/6 10486/12 10487/11 10487/18 10487/21 10487/22 10488/16 10489/14 10501/25 10513/10 10521/20 10536/24 10540/20 10544/23 10549/14
10505/10 10505/11 10505/13	<b>resources</b> [1] 10550/24	10471/10 10476/17 10487/2 10488/15 10488/21 10489/11 10489/20 10489/22 10490/9 10494/7 10516/22 10526/2 10531/24 10535/4 10535/11 10543/16 10547/24 10548/6 10552/3	10487/6 10491/9 10491/20 10491/21 10500/14 10507/2 10526/14 10530/24 10532/10 10535/20 10536/24 10539/13 10542/13 10542/18 10547/10	<b>salt-free</b> [6] 10524/6 10524/6 10524/8 10524/19 10524/21 10524/24
1050				

<b>S</b>	10457/8 10457/17	10499/4 10499/6	<b>shelf [4]</b> 10524/11 10524/14 10524/22 10525/15	<b>similar [5]</b> 10463/6 10476/9 10494/1 10499/12 10499/15	
<b>screen...</b> [2] 10548/20 10549/3	<b>Section 2 [2]</b> 10457/8 10457/17	10506/11 10523/21	<b>shift [5]</b> 10495/7 10495/8 10499/19 10504/3 10508/2	<b>simple [1]</b> 10486/4	
<b>se [1]</b> 10512/12	<b>security [1]</b> 10540/4	<b>SERP [1]</b> 10533/9	<b>shifted [3]</b> 10492/9 10492/10 10504/9	<b>simplist [1]</b> 10454/9	
<b>search [75]</b> 10452/1 10453/3 10453/4 10456/15 10456/16 10456/18 10457/5 10460/17 10464/13 10464/17 10464/22 10464/23 10465/7 10465/14 10465/24 10466/3 10466/8 10466/25 10467/25 10468/1 10468/12 10468/20 10468/23 10469/18 10469/23 10470/20 10472/13 10472/22 10473/5 10473/9 10477/3 10477/7 10477/11 10483/21 10483/22 10484/6 10484/6 10484/14 10484/18 10484/20 10487/8 10487/10 10487/23 10490/15 10490/21 10490/22 10492/10 10492/20 10494/2 10495/8 10495/16 10495/17 10496/14 10496/23 10503/19 10503/20 10510/14 10516/7 10518/14 10518/16 10520/18 10521/18 10525/17 10525/19 10530/5 10530/9 10533/2 10533/2 10533/3 10533/10 10533/12 10534/18 10535/8 10539/3 10539/3	<b>see [59]</b> 10455/18 10456/2 10456/9 10456/17 10457/2 10457/13 10460/8 10460/10 10460/12 10460/13 10460/15 10460/16 10460/17 10460/17 10461/21 10462/21 10471/8 10472/1 10473/12 10473/25 10473/25 10474/16 10476/9 10478/23 10480/6 10480/10 10480/13 10482/1 10485/24 10487/8 10487/10 10487/17 10490/12 10492/4 10492/15 10493/14 10495/6 10495/7 10495/8 10497/8 10497/20 10497/25 10508/7 10508/23 10509/13 10511/16 10517/1 10517/25 10521/11 10535/24 10537/9 10537/14 10540/9 10546/2 10551/11 10553/1 10553/6 10553/11 10553/21	<b>services [12]</b> 10452/1 10464/17 10464/22 10464/24 10465/7 10465/14 10465/24 10468/1 10469/18 10473/5 10473/9 10520/18	<b>ships [1]</b> 10497/23 10457/21	<b>single [5]</b> 10452/6 10454/20 10466/17 10469/10 10471/19	
<b>search-results [1]</b> 10533/10	<b>seem [1]</b> 10471/11	<b>serving [1]</b> 10539/3	<b>shipments [1]</b> 10457/21	<b>sites [1]</b> 10494/20	
<b>searches [5]</b> 10459/14 10470/15 10471/1 10538/23 10539/5	<b>seems [4]</b> 10490/18 10490/21 10525/24 10530/25	<b>session [4]</b> 10446/7 10450/3 10487/21 10513/17	<b>shoes [1]</b> 10471/5	<b>sitting [2]</b> 10475/3 10534/9	
<b>searching [3]</b> 10471/3 10471/4 10471/4	<b>seen [6]</b> 10475/9 10493/10 10518/2 10537/21 10549/12 10551/19	<b>sessions [3]</b> 10470/10 10470/10 10487/19	<b>shop [8]</b> 10465/15 10466/19 10468/11 10470/14 10470/16 10470/21 10471/15 10495/22	<b>situation [10]</b> 10462/22 10465/21 10499/1 10527/6 10545/24 10546/1 10546/2 10547/21 10547/22 10549/4	
<b>seated [2]</b> 10450/5 10513/18	<b>sees [1]</b> 10537/3	<b>set [3]</b> 10454/20 10474/7 10541/5	<b>shops [1]</b> 10466/1	<b>situations [2]</b> 10524/10 10548/15	
<b>second [22]</b> 10454/19 10455/20 10456/25 10459/13 10468/19 10494/11 10504/10 10509/25 10512/17 10528/23 10532/15 10532/17 10532/25 10533/7 10533/8 10533/23 10533/23 10539/22 10540/6 10549/6 10552/18 10553/3	<b>segue [1]</b> 10527/12	<b>sets [1]</b> 10452/6	<b>short [1]</b> 10515/13	<b>six [2]</b> 10481/13 10481/17	
<b>second-price [1]</b> 10533/8	<b>selected [1]</b> 10516/8	<b>setting [5]</b> 10452/15 10452/17 10453/21 10525/4 10527/9	<b>shorthand [2]</b> 10479/2 10517/18	<b>six-month [1]</b> 10481/17	
<b>secondary [1]</b> 10522/12	<b>sense [26]</b> 10453/16 10456/2 10459/14 10461/4 10462/11 10462/14 10465/22 10466/12 10488/9 10488/13 10500/12 10500/13 10505/21 10509/3 10509/19 10510/16 10511/9 10511/25 10514/16 10516/4 10516/19 10518/25 10526/9 10528/19 10535/9 10543/7	<b>settled [1]</b> 10457/17	<b>should [20]</b> 10453/7 10458/8 10458/10 10460/10 10460/11 10464/11 10466/9 10467/6 10471/21 10479/1 10482/23 10490/1 10498/20 10499/21 10509/4 10510/13 10523/2 10533/16 10544/14 10553/3	<b>six [2]</b> 10481/13 10481/17	
<b>Section [3]</b> 10447/12	<b>seem [1]</b> 10471/11	<b>settlement [1]</b> 10457/11	<b>shouldn't [1]</b> 10529/15	<b>size [1]</b> 10519/3	
	<b>seems [4]</b> 10490/18 10490/21 10525/24 10530/25	<b>Severt [3]</b> 10447/6 10450/18 10523/12	<b>show [2]</b> 10470/5 10481/2	<b>ski [1]</b> 10487/25	
	<b>seen [6]</b> 10475/9 10493/10 10518/2 10537/21 10549/12 10551/19	<b>Severt's [1]</b> 10478/22	<b>showed [13]</b> 10478/13 10478/13 10491/6 10493/4 10493/24 10494/1 10501/24 10503/19 10503/22 10504/16 10532/18 10536/6 10536/19	<b>slide [75]</b> 10450/22 10451/9 10451/18 10457/3 10457/23 10461/16 10461/17 10461/18 10461/19 10463/2 10475/13 10475/13 10476/9 10476/11 10476/23 10477/19 10480/3 10480/10 10480/24 10480/24 10481/2 10482/14 10485/9 10485/11 10489/3 10489/5 10491/17 10492/4 10492/14 10493/5 10494/9 10495/14 10496/20 10497/6 10497/7 10497/20 10500/23 10500/23 10501/23 10502/6 10504/21 10505/1 10505/16 10505/22 10506/7 10506/17 10506/19 10507/8 10508/5 10508/21 10509/6 10511/24 10513/3 10513/22 10518/6 10519/13 10521/15 10521/15 10521/24 10527/13 10536/18 10536/19 10536/24 10537/1 10537/14 10538/7 10542/4 10550/7 10550/9 10550/12 10550/18 10551/4 10552/5 10552/8 10552/10	
	<b>seem [1]</b> 10471/11	<b>Severt's [1]</b> 10478/22	<b>shown [1]</b> 10483/20	<b>Slide 10 [1]</b> 10480/24	
	<b>seems [4]</b> 10490/18 10490/21 10525/24 10530/25	<b>shape [1]</b> 10454/25	<b>shows [1]</b> 10518/25	<b>Slide 11 [1]</b> 10482/14	
	<b>seen [6]</b> 10475/9 10493/10 10518/2 10537/21 10549/12 10551/19	<b>share [50]</b> 10462/1 10462/7 10462/8 10474/7 10474/14 10475/4 10478/19 10479/17 10497/11 10497/23 10499/24 10506/22 10507/6 10507/9 10508/2 10516/18 10521/19 10526/5 10526/5 10527/1 10527/2 10528/12 10529/18 10529/21 10530/2 10530/4 10530/10 10530/24 10531/8 10531/9 10531/14 10531/15 10531/21 10532/2 10532/7 10532/12 10532/14 10534/21 10535/1 10535/5 10535/6 10535/7 10536/2 10537/7 10537/9 10537/11 10537/17 10537/24 10538/2 10548/23	<b>share-shift [1]</b> 10508/2	<b>shrunk [1]</b> 10494/14	<b>Slide 12 [1]</b> 10485/9
	<b>seem [1]</b> 10471/11	<b>shares [10]</b> 10503/20 10505/19 10505/24 10525/14 10527/10 10528/22 10528/25 10531/23 10534/19 10537/22	<b>showing [11]</b> 10469/1 10470/13 10481/5 10481/20 10488/4 10492/13 10494/4 10494/5 10498/9 10502/23 10544/6	<b>Slide 13 [1]</b> 10489/3	
	<b>seems [4]</b> 10490/18 10490/21 10525/24 10530/25	<b>sharp [1]</b> 10474/9	<b>shown [1]</b> 10483/20		
	<b>seen [6]</b> 10475/9 10493/10 10518/2 10537/21 10549/12 10551/19	<b>she [2]</b> 10467/2 10467/3	<b>shows [1]</b> 10518/25		
	<b>sees [1]</b> 10537/3	<b>she's [1]</b> 10466/24	<b>shrunk [1]</b> 10494/14		
	<b>segue [1]</b> 10527/12	<b>sheds [1]</b> 10462/25	<b>side [12]</b> 10452/14 10453/10 10455/12 10456/12 10462/17 10464/18 10464/18 10468/3 10468/3 10542/16 10543/1 10547/11		
	<b>selected [1]</b> 10516/8		<b>sign [3]</b> 10457/2 10512/21 10514/6		
	<b>sense [26]</b> 10453/16 10456/2 10459/14 10461/4 10462/11 10462/14 10465/22 10466/12 10488/9 10488/13 10500/12 10500/13 10505/21 10509/3 10509/19 10510/16 10511/9 10511/25 10514/16 10516/4 10516/19 10518/25 10526/9 10528/19 10535/9 10543/7		<b>significant [6]</b> 10472/1 10473/12 10473/19 10540/2 10546/13 10546/15		
	<b>seen [6]</b> 10475/9 10493/10 10518/2 10537/21 10549/12 10551/19		<b>significantly [1]</b> 10492/23		
	<b>sees [1]</b> 10537/3		<b>silos [1]</b> 10467/2		
	<b>segue [1]</b> 10527/12				
	<b>selected [1]</b> 10516/8				
	<b>sense [26]</b> 10453/16 10456/2 10459/14 10461/4 10462/11 10462/14 10465/22 10466/12 10488/9 10488/13 10500/12 10500/13 10505/21 10509/3 10509/19 10510/16 10511/9 10511/25 10514/16 10516/4 10516/19 10518/25 10526/9 10528/19 10535/9 10543/7				
	<b>seem [1]</b> 10471/11				
	<b>seems [4]</b> 10490/18 10490/21 10525/24 10530/25				
	<b>seen [6]</b> 10475/9 10493/10 10518/2 10537/21 10549/12 10551/19				
	<b>sees [1]</b> 10537/3				
	<b>segue [1]</b> 10527/12				
	<b>selected [1]</b> 10516/8				
	<b>sense [26]</b> 10453/16 10456/2 10459/14 10461/4 10462/11 10462/14 10465/22 10466/12 10488/9 10488/13 10500/12 10500/13 10505/21 10509/3 10509/19 10510/16 10511/9 10511/25 10514/16 10516/4 10516/19 10518/25 10526/9 10528/19 10535/9 10543/7				
	<b>seem [1]</b> 10471/11				
	<b>seems [4]</b> 10490/18 10490/21 10525/24 10530/25				
	<b>seen [6]</b> 10475/9 10493/10 10518/2 10537/21 10549/12 10551/19				
	<b>sees [1]</b> 10537/3				
	<b>segue [1]</b> 10527/12				
	<b>selected [1]</b> 10516/8				
	<b>sense [26]</b> 10453/16 10456/2 10459/14 10461/4 10462/11 10462/14 10465/22 10466/12 10488/9 10488/13 10500/12 10500/13 10505/21 10509/3 10509/19 10510/16 10511/9 10511/25 10514/16 10516/4 10516/19 10518/25 10526/9 10528/19 10535/9 10543/7				
	<b>seem [1]</b> 10471/11				
	<b>seems [4]</b> 10490/18 10490/21 10525/24 10530/25				
	<b>seen [6]</b> 10475/9 10493/10 10518/2 10537/21 10549/12 10551/19				
	<b>sees [1]</b> 10537/3				
	<b>segue [1]</b> 10527/12				
	<b>selected [1]</b> 10516/8				
	<b>sense [26]</b> 10453/16 10456/2 10459/14 10461/4 10462/11 10462/14 10465/22 10466/12 10488/9 10488/13 10500/12 10500/13 10505/21 10509/3 10509/19 10510/16 10511/9 10511/25 10514/16 10516/4 10516/19 10518/25 10526/9 10528/19 10535/9 10543/7				
	<b>seem [1]</b> 10471/11				
	<b>seems [4]</b> 10490/18 10490/21 10525/24 10530/25				
	<b>seen [6]</b> 10475/9 10493/10 10518/2 10537/21 10549/12 10551/19				
	<b>sees [1]</b> 10537/3				
	<b>segue [1]</b> 10527/12				
	<b>selected [1]</b> 10516/8				
	<b>sense [26]</b> 10453/16 10456/2 10459/14 10461/4 10462/11 10462/14 10465/22 10466/12 10488/9 10488/13 10500/12 10500/13 10505/21 10509/3 10509/19 10510/16 10511/9 10511/25 10514/16 10516/4 10516/19 10518/25 10526/9 10528/19 10535/9 10543/7				
	<b>seem [1]</b> 10471/11				
	<b>seems [4]</b> 10490/18 10490/21 10525/24 10530/25				
	<b>seen [6]</b> 10475/9 10493/10 10518/2 10537/21 10549/12 10551/19				
	<b>sees [1]</b> 10537/3				
	<b>segue [1]</b> 10527/12				
	<b>selected [1]</b> 10516/8				
	<b>sense [26]</b> 10453/16 10456/2 10459/14 10461/4 10462/11 10462/14 10465/22 10466/12 10488/9 10488/13 10500/12 10500/13 10505/21 10509/3 10509/19 10510/16 10511/9 10511/25 10514/16 10516/4 10516/19 10518/25 10526/9 10528/19 10535/9 10543/7				
	<b>seem [1]</b> 10471/11				
	<b>seems [4]</b> 10490/18 10490/21 10525/24 10530/25				
	<b>seen [6]</b> 10475/9 10493/10 10518/2 10537/21 10549/12 10551/19				
	<b>sees [1]</b> 10537/3				
	<b>segue [1]</b> 10527/12				
	<b>selected [1]</b> 10516/8				
	<b>sense [26]</b> 10453/16 10456/2 10459/14 10461/4 10462/11 10462/14 10465/22 10466/12 10488/9 10488/13 10500/12 10500/13 10505/21 10509/3 10509/19 10510/16 10511/9 10511/25 10514/16 10516/4 10516/19 10518/25 10526/9 10528/19 10535/9 10543/7				
	<b>seem [1]</b> 10471/11				
	<b>seems [4]</b> 10490/18 10490/21 10525/24 10530/25				
	<b>seen [6]</b> 10475/9 10493/10 10518/2 10537/21 10549/12 10551/19				
	<b>sees [1]</b> 10537/3				
	<b>segue [1]</b> 10527/12				
	<b>selected [1]</b> 10516/8				
	<b>sense [26]</b> 10453/16 10456/2 10459/14 10461/4 10462/11 10462/14 10465/22 10466/12 10488/9 10488/13 10500/12 10500/13 10505/21 10509/3 10509/19 10510/16 10511/9 10511/25 10514/16 10516/4 10516/19 10518/25 10526/9 10528/19 1053				



<b>S</b>	10507/20 10509/19 10511/21 10511/25 10515/11 10518/25 10520/13 10522/24 10524/20 10524/22 10528/19 10529/1 10531/25 10538/5 10541/25 10547/14 10547/15 10553/9	<b>spend [4]</b> 10475/15 10494/3 10505/8 10531/25 <b>spending [3]</b> 10490/14 10490/22 10493/16 <b>spends [1]</b> 10456/6 <b>split [1]</b> 10537/24 <b>squiggly [1]</b> 10481/21 <b>stake [1]</b> 10498/3 <b>stand [2]</b> 10451/3 10518/10 <b>standard [3]</b> 10457/12 10457/14 10480/21 <b>stands [2]</b> 10513/13 10553/22 <b>start [5]</b> 10451/20 10451/22 10454/8 10482/5 10547/11 <b>started [5]</b> 10458/13 10467/8 10475/18 10482/7 10529/6 <b>starting [8]</b> 10452/5 10464/22 10506/13 10514/7 10538/8 10551/13 10551/14 10553/20 <b>starts [3]</b> 10462/3 10462/3 10520/17 <b>State [1]</b> 10447/11 <b>statement [4]</b> 10480/12 10485/18 10502/21 10518/12 <b>STATES [7]</b> 10446/1 10446/3 10446/10 10450/7 10450/10 10450/18 10450/19 <b>steep [3]</b> 10455/4 10455/4 10455/6 <b>stenography [1]</b> 10448/10 <b>step [3]</b> 10460/11 10509/20 10509/25 <b>stepping [1]</b> 10517/4 <b>steps [1]</b> 10460/8 <b>stick [2]</b> 10499/25 10523/24 <b>stickage [1]</b> 10481/4 <b>sticking [1]</b> 10500/3 <b>still [4]</b> 10484/23 10519/10 10519/12 10522/25 <b>stop [9]</b> 10465/15 10466/1 10466/19 10468/11 10470/13 10470/16 10470/21 10471/15 10495/22 <b>store [12]</b> 10523/9 10524/9 10524/13 10524/15 10524/17 10524/20 10524/21 10525/2 10540/16 10541/18 10541/19 10541/21 <b>story [2]</b> 10452/8 10454/19 <b>strategy [1]</b> 10501/7 <b>Street [2]</b> 10447/3 10447/7	<b>strengths [1]</b> 10485/1 <b>striking [1]</b> 10457/25 <b>strong [5]</b> 10463/14 10463/15 10501/14 10507/3 10545/25 <b>stronger [10]</b> 10461/14 10463/4 10491/2 10528/7 10528/8 10528/21 10544/12 10547/5 10547/18 10549/9 <b>studies [1]</b> 10459/18 <b>study [1]</b> 10493/7 <b>substantial [1]</b> 10518/21 <b>substitutable [2]</b> 10486/18 10488/14 <b>substitute [3]</b> 10482/21 10482/22 10482/24 <b>substitutes [9]</b> 10484/5 10484/9 10484/10 10485/16 10486/11 10486/20 10487/1 10488/10 10488/19 <b>substitution [3]</b> 10484/2 10484/12 10487/5 <b>successful [1]</b> 10550/5 <b>such [5]</b> 10459/23 10512/21 10514/6 10517/23 10519/24 <b>sufficiently [1]</b> 10517/14 <b>suggest [4]</b> 10504/17 10516/2 10530/25 10550/12 <b>suggested [3]</b> 10502/14 10503/12 10527/20 <b>suggesting [1]</b> 10483/2 <b>suggests [1]</b> 10511/1 <b>Suite [2]</b> 10447/8 10447/14 <b>sum [1]</b> 10465/22 <b>summarized [1]</b> 10506/17 <b>summer [1]</b> 10489/20 <b>Super [1]</b> 10548/2 <b>supplier [2]</b> 10529/14 10531/5 <b>support [1]</b> 10519/4 <b>supports [1]</b> 10468/1 <b>suppose [2]</b> 10512/17 10531/9 <b>supposedly [1]</b> 10491/11 <b>sure [20]</b> 10450/22 10458/24 10465/4 10472/20 10473/17 10476/1 10482/19 10489/14 10489/23 10497/4 10506/18 10520/7 10529/23 10532/8 10534/3 10534/8 10534/20	10543/3 10546/21 10546/22 <b>surplus [3]</b> 10455/9 10473/21 10473/22 <b>surprising [1]</b> 10544/16 <b>surprisingly [1]</b> 10547/16 <b>suspended [2]</b> 10489/16 10489/25 <b>SW [1]</b> 10448/3 <b>Swiss [1]</b> 10466/22 <b>switch [2]</b> 10486/21 10532/14 <b>switched [1]</b> 10476/6 <b>SWORN [1]</b> 10451/3
	<b>somebody [2]</b> 10453/16 10507/17 <b>someone [2]</b> 10466/18 10538/15 <b>something [19]</b> 10463/25 10467/10 10475/14 10477/21 10482/6 10484/18 10486/7 10491/22 10512/9 10512/10 10514/14 10514/16 10516/12 10517/20 10522/25 10523/1 10523/10 10534/24 10536/7 <b>sometimes [4]</b> 10474/7 10481/11 10484/23 10497/23 <b>somewhat [2]</b> 10499/13 10518/22 <b>somewhere [2]</b> 10495/1 10495/2 <b>sorry [30]</b> 10450/21 10453/11 10455/2 10458/22 10460/11 10461/18 10465/3 10467/15 10470/9 10472/17 10476/24 10482/22 10488/7 10492/8 10499/16 10499/18 10503/10 10518/9 10530/6 10532/13 10532/23 10533/12 10535/15 10539/16 10539/18 10539/21 10544/4 10548/2 10548/6 10551/6 <b>sort [9]</b> 10458/12 10467/11 10469/6 10483/1 10504/1 10509/18 10509/19 10517/23 10545/18 <b>sought [1]</b> 10475/24 <b>Sounds [1]</b> 10513/6 <b>source [1]</b> 10457/9 <b>sources [1]</b> 10468/24 <b>space [3]</b> 10524/11 10524/14 10525/15 <b>speaking [1]</b> 10532/1 <b>special [2]</b> 10524/19 10525/16 <b>specialized [2]</b> 10466/13 10483/22 <b>specifically [3]</b> 10467/14 10467/17 10538/7 <b>specifics [2]</b> 10517/2 10517/4	<b>T</b> <b>take [19]</b> 10458/8 10458/8 10458/10 10458/17 10462/6 10474/18 10481/15 10490/4 10493/22 10498/24 10500/15 10503/25 10506/11 10513/5 10513/8 10515/16 10520/22 10522/25 10530/23 <b>taken [1]</b> 10499/6 <b>takes [1]</b> 10522/10 <b>taking [5]</b> 10470/22 10470/23 10471/13 10517/12 10517/14 <b>talk [17]</b> 10463/17 10466/1 10472/3 10475/9 10478/3 10479/25 10499/3 10499/4 10504/6 10512/3 10514/4 10522/8 10525/12 10527/14 10536/9 10550/1 10551/17 <b>talked [53]</b> 10456/3 10461/9 10461/9 10464/1 10466/2 10467/12 10469/14 10470/20 10472/12 10473/2 10475/19 10476/12 10477/21 10477/22 10478/17 10478/22 10479/5 10479/24 10481/3 10484/8 10485/25 10486/6 10486/8 10495/21 10498/18 10498/22 10500/23 10501/8 10502/6 10502/19 10504/10 10505/23 10506/20 10507/15 10508/1 10519/18 10523/13 10525/13 10528/3 10528/23 10529/4 10529/19 10536/7 10537/1 10543/16 10545/9 10545/17 10545/24 10546/25 10549/7 10550/10		

<b>T</b>	<b>textbook [1]</b> 10452/6	10487/9 10487/24	10540/19 10552/18	10476/6 10476/15	
<b>talked... [2]</b> 10550/11 10550/22	<b>than [28]</b> 10456/19 10461/14 10465/22 10478/20 10482/7 10484/6 10492/16 10493/2 10494/14 10495/7 10495/8 10499/14 10504/18 10518/11 10519/8 10520/21 10526/17 10527/2 10527/10 10528/18 10529/15 10531/1 10533/22 10544/12 10547/2 10548/3 10548/12 10552/23	10487/25 10488/1 10493/16 10498/7 10498/15 10501/2 10505/6 10507/13 10516/18 10518/24 10520/17 10520/18 10521/4 10543/10 10543/23 10550/19	<b>there's [33]</b> 10459/25 10463/8 10464/3 10471/15 10479/11 10482/4 10483/1 10484/11 10484/24 10487/11 10490/21 10504/1 10507/3 10511/20 10514/22 10515/14 10515/20 10516/1 10516/24 10517/9 10517/10 10521/1 10524/1 10524/2 10524/20 10527/4 10527/7 10533/20 10536/14 10538/1 10543/8 10543/25 10544/8	10478/20 10479/8 10480/17 10480/18 10480/18 10480/21 10481/3 10481/3 10481/8 10481/8 10481/10 10481/13 10481/14 10481/15 10481/16 10481/16 10481/17 10481/24 10485/2 10485/16 10487/9 10487/23 10487/23 10487/24 10488/3 10488/10 10489/19 10493/8 10495/21 10495/22 10495/24 10498/1 10498/2 10498/6 10498/7 10498/8 10498/16 10498/17 10498/21 10498/22 10498/23 10499/7 10499/8 10499/8 10499/25 10500/25 10501/1 10501/3 10501/3 10502/19 10502/23 10503/2 10503/4 10503/9 10503/9 10504/9 10504/24 10505/11 10506/25 10507/4 10509/21 10509/23 10509/23 10511/9 10516/8 10516/18 10516/23 10516/24 10517/14 10518/20 10518/22 10518/24 10531/16 10533/4 10533/5 10533/13 10533/15 10533/21 10533/25 10534/1 10534/25 10535/1 10535/4 10539/9 10540/5 10541/4 10543/18 10545/16 10549/22	
<b>targeting [1]</b> 10484/20	<b>thank [5]</b> 10472/24 10472/24 10493/21 10513/12 10513/18	10547/14 10547/17 10547/24 10548/7 10553/13	<b>therefore [1]</b> 10471/11	<b>they'd [2]</b> 10475/7 10539/9	
<b>teach [1]</b> 10501/6	<b>thank you [4]</b> 10472/24 10472/24 10493/21 10513/12	<b>them [22]</b> 10453/1 10458/1 10462/20 10468/20 10482/12 10497/14 10500/9 10510/3 10511/21 10516/6 10521/5 10523/15 10523/16 10528/6 10534/1 10546/4 10546/11 10547/14 10547/17	<b>these [77]</b> 10457/12 10458/2 10461/6 10461/11 10461/24 10462/16 10467/1 10468/14 10469/15 10471/14 10471/14 10475/1 10475/17 10476/15 10477/24 10477/25 10478/12 10478/15 10480/20 10481/3 10481/5 10481/6 10481/8 10481/10 10491/7 10494/3 10499/17 10499/19 10500/7 10500/8 10500/14 10500/17 10502/12 10502/13 10503/1 10503/7 10504/7 10504/8 10504/22 10505/10 10507/24 10507/25 10508/2 10509/18 10510/9 10510/11 10510/24 10510/24 10511/2 10511/8 10511/10 10511/16 10511/17 10512/4 10512/18 10514/2 10514/24 10517/23 10521/9 10528/11 10528/24 10530/19 10532/11 10536/21 10537/15 10537/21 10538/1 10538/17 10541/23 10543/18 10544/21 10545/1 10547/6 10552/11 10552/15 10552/22 10553/9	<b>they'll [2]</b> 10538/2 10538/3	
<b>teaching [1]</b> 10501/7	<b>Thanks [2]</b> 10451/8 10493/21	<b>then [25]</b> 10453/1 10460/13 10471/3 10476/5 10476/6 10481/14 10481/16 10481/24 10482/4 10484/19 10491/2 10491/9 10493/4 10498/20 10508/24 10523/4 10525/15 10526/7 10530/15 10532/14 10537/9 10539/6 10541/10 10544/14 10553/21	<b>they [108]</b> 10461/25 10463/9 10463/10 10463/11 10463/12 10463/14 10463/14 10463/15 10464/4 10464/14 10466/3 10466/17 10471/21 10474/23 10476/4 10476/5 10476/6	<b>they're [25]</b> 10464/7 10470/14 10473/11 10481/21 10487/22 10488/5 10488/6 10488/19 10494/18 10495/23 10495/24 10496/7 10500/2 10500/3 10505/20 10507/23 10508/13 10516/17 10518/20 10518/22 10520/11 10524/24 10524/25 10535/3 10547/23	
<b>team [1]</b> 10478/7	<b>Thanksgiving [1]</b> 10523/19	<b>theory [1]</b> 10545/5		<b>thing [56]</b> 10454/19 10455/3 10462/10 10465/12 10471/12 10474/16 10474/18 10476/21 10477/6	
<b>tell [3]</b> 10468/15 10469/3 10499/16	<b>that [606]</b> <b>that's [71]</b> 10453/4 10454/20 10455/16 10459/18 10459/24 10460/19 10465/23 10466/17 10467/9 10469/16 10473/13 10477/6 10477/11 10478/21 10479/22 10480/17 10481/21 10484/1 10484/17 10484/18 10493/5 10493/13 10494/11 10494/25 10500/4 10500/20 10501/4 10501/10 10501/22 10503/9 10504/4 10504/9 10504/14 10506/22 10507/8 10507/25 10509/22 10509/24 10510/3 10511/14 10512/8 10512/10 10512/10 10516/12 10517/15 10517/17 10517/22 10520/19 10523/25 10525/6 10525/18 10526/9 10527/12 10528/6 10531/12 10535/19 10537/7 10537/18 10537/24 10539/9 10539/12 10540/8 10542/1 10542/25 10544/24 10545/10 10545/25 10546/6 10546/17 10548/14 10552/2	<b>there [69]</b> 10453/5 10453/9 10455/7 10456/12 10457/24 10458/4 10458/7 10458/9 10459/4 10460/3 10462/4 10464/5 10470/14 10470/23 10471/13 10472/6 10475/3 10476/7 10476/25 10477/7 10477/8 10478/11 10481/4 10484/10 10484/25 10488/13 10491/9 10494/8 10494/19 10495/5 10496/4 10503/13 10503/18 10505/2 10505/3 10511/2 10511/3 10511/4 10511/13 10511/15 10511/24 10512/12 10512/14 10512/17 10514/19 10515/6 10518/15 10518/17 10519/12 10521/1 10522/4 10523/10 10525/17 10525/17 10525/20 10528/4 10528/14 10529/2 10529/24 10532/16 10533/8 10533/9 10533/10 10536/16 10540/2			
<b>telling [2]</b> 10473/13 10525/7	<b>that's [71]</b> 10453/4 10454/20 10455/16 10459/18 10459/24 10460/19 10465/23 10466/17 10467/9 10469/16 10473/13 10477/6 10477/11 10478/21 10479/22 10480/17 10481/21 10484/1 10484/17 10484/18 10493/5 10493/13 10494/11 10494/25 10500/4 10500/20 10501/4 10501/10 10501/22 10503/9 10504/4 10504/9 10504/14 10506/22 10507/8 10507/25 10509/22 10509/24 10510/3 10511/14 10512/8 10512/10 10512/10 10516/12 10517/15 10517/17 10517/22 10520/19 10523/25 10525/6 10525/18 10526/9 10527/12 10528/6 10531/12 10535/19 10537/7 10537/18 10537/24 10539/9 10539/12 10540/8 10542/1 10542/25 10544/24 10545/10 10545/25 10546/6 10546/17 10548/14 10552/2				
<b>tells [3]</b> 10461/7 10501/20 10547/12	<b>that's [71]</b> 10453/4 10454/20 10455/16 10459/18 10459/24 10460/19 10465/23 10466/17 10467/9 10469/16 10473/13 10477/6 10477/11 10478/21 10479/22 10480/17 10481/21 10484/1 10484/17 10484/18 10493/5 10493/13 10494/11 10494/25 10500/4 10500/20 10501/4 10501/10 10501/22 10503/9 10504/4 10504/9 10504/14 10506/22 10507/8 10507/25 10509/22 10509/24 10510/3 10511/14 10512/8 10512/10 10512/10 10516/12 10517/15 10517/17 10517/22 10520/19 10523/25 10525/6 10525/18 10526/9 10527/12 10528/6 10531/12 10535/19 10537/7 10537/18 10537/24 10539/9 10539/12 10540/8 10542/1 10542/25 10544/24 10545/10 10545/25 10546/6 10546/17 10548/14 10552/2				
<b>temporal [2]</b> 10471/8 10472/8	<b>that's [71]</b> 10453/4 10454/20 10455/16 10459/18 10459/24 10460/19 10465/23 10466/17 10467/9 10469/16 10473/13 10477/6 10477/11 10478/21 10479/22 10480/17 10481/21 10484/1 10484/17 10484/18 10493/5 10493/13 10494/11 10494/25 10500/4 10500/20 10501/4 10501/10 10501/22 10503/9 10504/4 10504/9 10504/14 10506/22 10507/8 10507/25 10509/22 10509/24 10510/3 10511/14 10512/8 10512/10 10512/10 10516/12 10517/15 10517/17 10517/22 10520/19 10523/25 10525/6 10525/18 10526/9 10527/12 10528/6 10531/12 10535/19 10537/7 10537/18 10537/24 10539/9 10539/12 10540/8 10542/1 10542/25 10544/24 10545/10 10545/25 10546/6 10546/17 10548/14 10552/2				
<b>tempting [1]</b> 10531/10	<b>that's [71]</b> 10453/4 10454/20 10455/16 10459/18 10459/24 10460/19 10465/23 10466/17 10467/9 10469/16 10473/13 10477/6 10477/11 10478/21 10479/22 10480/17 10481/21 10484/1 10484/17 10484/18 10493/5 10493/13 10494/11 10494/25 10500/4 10500/20 10501/4 10501/10 10501/22 10503/9 10504/4 10504/9 10504/14 10506/22 10507/8 10507/25 10509/22 10509/24 10510/3 10511/14 10512/8 10512/10 10512/10 10516/12 10517/15 10517/17 10517/22 10520/19 10523/25 10525/6 10525/18 10526/9 10527/12 10528/6 10531/12 10535/19 10537/7 10537/18 10537/24 10539/9 10539/12 10540/8 10542/1 10542/25 10544/24 10545/10 10545/25 10546/6 10546/17 10548/14 10552/2				
<b>ten [2]</b> 10456/19 10493/21	<b>that's [71]</b> 10453/4 10454/20 10455/16 10459/18 10459/24 10460/19 10465/23 10466/17 10467/9 10469/16 10473/13 10477/6 10477/11 10478/21 10479/22 10480/17 10481/21 10484/1 10484/17 10484/18 10493/5 10493/13 10494/11 10494/25 10500/4 10500/20 10501/4 10501/10 10501/22 10503/9 10504/4 10504/9 10504/14 10506/22 10507/8 10507/25 10509/22 10509/24 10510/3 10511/14 10512/8 10512/10 10512/10 10516/12 10517/15 10517/17 10517/22 10520/19 10523/25 10525/6 10525/18 10526/9 10527/12 10528/6 10531/12 10535/19 10537/7 10537/18 10537/24 10539/9 10539/12 10540/8 10542/1 10542/25 10544/24 10545/10 10545/25 10546/6 10546/17 10548/14 10552/2				
<b>tend [2]</b> 10453/4 10528/21	<b>that's [71]</b> 10453/4 10454/20 10455/16 10459/18 10459/24 10460/19 10465/23 10466/17 10467/9 10469/16 10473/13 10477/6 10477/11 10478/21 10479/22 10480/17 10481/21 10484/1 10484/17 10484/18 10493/5 10493/13 10494/11 10494/25 10500/4 10500/20 10501/4 10501/10 10501/22 10503/9 10504/4 10504/9 10504/14 10506/22 10507/8 10507/25 10509/22 10509/24 10510/3 10511/14 10512/8 10512/10 10512/10 10516/12 10517/15 10517/17 10517/22 10520/19 10523/25 10525/6 10525/18 10526/9 10527/12 10528/6 10531/12 10535/19 10537/7 10537/18 10537/24 10539/9 10539/12 10540/8 10542/1 10542/25 10544/24 10545/10 10545/25 10546/6 10546/17 10548/14 10552/2				
<b>tension [1]</b> 10476/25	<b>that's [71]</b> 10453/4 10454/20 10455/16 10459/18 10459/24 10460/19 10465/23 10466/17 10467/9 10469/16 10473/13 10477/6 10477/11 10478/21 10479/22 10480/17 10481/21 10484/1 10484/17 10484/18 10493/5 10493/13 10494/11 10494/25 10500/4 10500/20 10501/4 10501/10 10501/22 10503/9 10504/4 10504/9 10504/14 10506/22 10507/8 10507/25 10509/22 10509/24 10510/3 10511/14 10512/8 10512/10 10512/10 10516/12 10517/15 10517/17 10517/22 10520/19 10523/25 10525/6 10525/18 10526/9 10527/12 10528/6 10531/12 10535/19 10537/7 10537/18 10537/24 10539/9 10539/12 10540/8 10542/1 10542/25 10544/24 10545/10 10545/25 10546/6 10546/17 10548/14 10552/2				
<b>term [2]</b> 10530/17 10548/3	<b>that's [71]</b> 10453/4 10454/20 10455/16 10459/18 10459/24 10460/19 10465/23 10466/17 10467/9 10469/16 10473/13 10477/6 10477/11 10478/21 10479/22 10480/17 10481/21 10484/1 10484/17 10484/18 10493/5 10493/13 10494/11 10494/25 10500/4 10500/20 10501/4 10501/10 10501/22 10503/9 10504/4 10504/9 10504/14 10506/22 10507/8 10507/25 10509/22 10509/24 10510/3 10511/14 10512/8 10512/10 10512/10 10516/12 10517/15 10517/17 10517/22 10520/19 10523/25 10525/6 10525/18 10526/9 10527/12 10528/6 10531/12 10535/19 10537/7 10537/18 10537/24 10539/9 10539/12 10540/8 10542/1 10542/25 10544/24 10545/10 10545/25 10546/6 10546/17 10548/14 10552/2				
<b>terms [6]</b> 10484/2 10484/21 10485/1 10491/24 10499/10 10510/19	<b>that's [71]</b> 10453/4 10454/20 10455/16 10459/18 10459/24 10460/19 10465/23 10466/17 10467/9 10469/16 10473/13 10477/6 10477/11 10478/21 10479/22 10480/17 10481/21 10484/1 10484/17 10484/18 10493/5 10493/13 10494/11 10494/25 10500/4 10500/20 10501/4 10501/10 10501/22 10503/9 10504/4 10504/9 10504/14 10506/22 10507/8 10507/25 10509/22 10509/24 10510/3 10511/14 10512/8 10512/10 10512/10 10516/12 10517/15 10517/17 10517/22 10520/19 10523/25 10525/6 10525/18 10526/9 10527/12 10528/6 10531/12 10535/19 10537/7 10537/18 10537/24 10539/9 10539/12 10540/8 10542/1 10542/25 10544/24 10545/10 10545/25 10546/6 10546/17 10548/14 10552/2				
<b>testified [18]</b> 10451/4 10459/20 10465/13 10467/24 10469/1 10470/19 10474/6 10477/15 10490/25 10496/11 10506/12 10507/17 10518/16 10530/18 10536/1 10542/23 10549/15 10551/25	<b>that's [71]</b> 10453/4 10454/20 10455/16 10459/18 10459/24 10460/19 10465/23 10466/17 10467/9 10469/16 10473/13 10477/6 10477/11 10478/21 10479/22 10480/17 10481/21 10484/1 10484/17 10484/18 10493/5 10493/13 10494/11 10494/25 10500/4 10500/20 10501/4 10501/10 10501/22 10503/9 10504/4 10504/9 10504/14 10506/22 10507/8 10507/25 10509/22 10509/24 10510/3 10511/14 10512/8 10512/10 10512/10 10516/12 10517/15 10517/17 1051				

<b>T</b>	<b>thinning [1]</b> 10479/4	10491/6 10491/7	<b>trend [2]</b> 10490/21	<b>Uh [1]</b> 10500/5
<b>thing... [47]</b> 10479/7	<b>third [6]</b> 10499/12	10491/10 10495/23	10491/7	<b>Uh-huh [1]</b> 10500/5
10479/8 10480/15	10522/2 10533/24	10496/5 10498/19	<b>TRIAL [1]</b> 10446/9	<b>unable [1]</b> 10543/9
10481/22 10484/14	10540/11 10548/7	10505/8 10505/23	<b>tried [3]</b> 10471/7	<b>unbundled [1]</b> 10541/4
10485/20 10488/23	10548/10	10506/13 10506/20	10500/21 10549/22	<b>uncertainty [1]</b>
10490/17 10491/23	<b>this [209]</b>	10507/2 10507/5	<b>trip [1]</b> 10487/25	10502/7
10492/14 10492/24	<b>This is [1]</b> 10450/7	10525/13 10528/4	<b>trouble [1]</b> 10500/19	<b>unconditional [17]</b>
10493/12 10494/2	<b>those [31]</b> 10454/2	10529/4 10530/15	<b>true [4]</b> 10483/6	10525/14 10527/2
10494/10 10494/22	10460/24 10463/9	10531/11 10531/25	10502/16 10519/6	10527/10 10529/18
10496/2 10497/5	10464/10 10464/12	10533/5 10533/25	10537/20	10529/20 10529/22
10497/6 10501/8	10464/19 10468/22	10534/1 10534/22	<b>try [10]</b> 10473/21	10530/24 10531/2
10501/16 10501/19	10475/20 10485/6	10536/8 10538/14	10475/6 10476/20	10531/9 10531/14
10502/13 10504/10	10486/11 10486/18	10538/16 10539/12	10477/9 10478/19	10531/20 10531/23
10508/14 10511/12	10486/19 10488/13	10542/14 10542/18	10486/21 10494/25	10532/2 10532/7
10512/17 10514/3	10494/20 10497/11	10543/17 10545/23	10500/18 10507/24	10534/19 10534/21
10514/9 10518/12	10497/13 10502/19	10546/20 10549/7	10512/1	10535/5
10520/14 10522/8	10505/4 10505/6	10550/22 10550/23	<b>trying [18]</b> 10471/18	<b>under [5]</b> 10528/1
10522/15 10523/5	10506/10 10506/16	10553/14	10479/20 10479/20	10529/2 10535/12
10524/21 10526/21	10507/21 10507/22	<b>times [6]</b> 10458/14	10481/22 10483/6	10537/7 10537/8
10528/23 10529/19	10512/13 10512/16	10464/1 10465/13	10488/20 10495/1	<b>undermines [1]</b>
10530/12 10531/2	10517/2 10522/14	10477/23 10493/2	10495/5 10511/16	10538/24
10534/3 10535/3	10538/7 10543/11	10525/8	10512/13 10518/2	<b>understand [8]</b>
10535/4 10540/6	10548/13 10548/15	<b>tiny [1]</b> 10518/20	10520/17 10524/10	10458/25 10459/3
10540/20 10544/3	<b>though [2]</b> 10458/3	<b>titled [1]</b> 10554/4	10533/18 10534/6	10472/17 10508/14
10544/5 10546/18	10500/1	<b>today [5]</b> 10451/10	10534/10 10547/3	10517/23 10534/10
<b>things [44]</b> 10454/5	<b>thought [8]</b> 10453/21	10529/3 10542/5	10550/24	10543/2 10543/6
10458/6 10463/7	10463/9 10488/8	10551/18 10551/20	<b>turn [20]</b> 10451/18	<b>understanding [3]</b>
10464/3 10464/5	10498/7 10498/13	<b>together [2]</b> 10467/1	10470/6 10472/11	10468/5 10487/5
10464/10 10464/19	10500/17 10529/4	10468/22	10480/23 10482/13	10542/1
10465/21 10467/1	10548/9	<b>told [1]</b> 10547/25	10485/8 10495/11	<b>understood [3]</b>
10469/15 10471/25	<b>threat [4]</b> 10456/10	<b>tons [2]</b> 10550/3	10495/13 10509/6	10453/13 10453/20
10472/6 10472/7	10456/11 10456/13	10550/3	10513/3 10513/22	10543/5
10475/21 10477/22	10549/10	<b>too [2]</b> 10462/25	10519/13 10519/22	<b>unimaginably [1]</b>
10478/15 10478/17	<b>threatened [1]</b>	10472/25	10521/23 10531/11	10548/2
10480/21 10480/22	10550/23	<b>took [2]</b> 10499/3	10538/5 10542/4	<b>uninformative [1]</b>
10480/25 10483/10	<b>three [7]</b> 10457/7	10499/4	10542/5 10543/22	10488/5
10483/23 10484/12	10457/8 10463/18	<b>top [2]</b> 10457/16	10552/4	<b>Unit [1]</b> 10447/12
10486/11 10487/1	10481/15 10511/24	10476/19	<b>turner [1]</b> 10523/20	<b>UNITED [6]</b> 10446/1
10491/24 10498/24	10512/4 10514/2	<b>topic [2]</b> 10474/4	<b>turning [3]</b> 10460/22	10446/3 10446/10
10501/25 10502/23	<b>three-month [1]</b>	10542/5	10522/2 10540/11	10450/7 10450/18
10503/7 10503/12	10481/15	<b>total [5]</b> 10456/18	<b>Twitter [3]</b> 10493/15	10450/19
10503/25 10504/1	<b>through [15]</b> 10455/16	10457/5 10460/9	10493/19 10494/17	<b>United States [1]</b>
10512/3 10514/18	10477/10 10478/7	10482/1 10537/22	<b>two [33]</b> 10458/2	10450/19
10515/6 10515/15	10486/12 10492/1	<b>totally [2]</b> 10484/22	10464/1 10465/13	<b>United States of [1]</b>
10518/19 10525/6	10497/17 10499/23	10488/5	10468/17 10468/22	10450/7
10526/23 10528/2	10500/22 10503/19	<b>touched [3]</b> 10452/19	10477/22 10485/15	<b>universal [1]</b> 10466/25
10528/24 10529/25	10503/23 10504/7	10526/12 10527/24	10486/19 10487/6	<b>up [88]</b> 10453/10
10543/11	10505/8 10512/2	<b>tracking [1]</b> 10475/18	10503/25 10504/1	10453/12 10453/18
<b>think [157]</b>	10536/3 10548/17	<b>traffic [19]</b> 10497/15	10505/9 10505/14	10457/3 10457/6
<b>thinking [30]</b> 10452/4	<b>thus [1]</b> 10541/22	10499/22 10499/22	10506/10 10509/19	10457/10 10457/17
10462/9 10464/11	<b>tie [1]</b> 10507/4	10504/3 10509/23	10512/3 10512/16	10457/21 10458/5
10464/12 10466/9	<b>tied [2]</b> 10506/22	10509/24 10511/9	10513/1 10515/6	10458/7 10458/9
10469/10 10471/19	10543/20	10522/24 10526/9	10519/18 10519/19	10458/23 10461/16
10481/9 10495/3	<b>TikTok [1]</b> 10483/23	10526/20 10528/6	10520/1 10522/15	10461/19 10463/2
10495/23 10499/9	<b>time [62]</b> 10452/8	10530/2 10530/5	10524/9 10528/2	10464/6 10466/8
10502/1 10502/10	10452/10 10456/3	10543/18 10543/20	10529/4 10533/20	10471/21 10474/21
10502/10 10502/25	10457/6 10457/19	10543/21 10544/24	10542/14 10548/15	10474/24 10475/14
10503/3 10509/16	10461/10 10462/18	10548/18 10552/1	10551/3 10552/9	10475/23 10476/11
10510/4 10510/6	10465/13 10466/3	<b>trajectory [1]</b> 10459/1	10552/11 10552/15	10478/1 10478/2
10514/23 10518/10	10466/8 10466/17	<b>transcript [3]</b> 10446/9	<b>twofold [1]</b> 10539/25	10480/2 10480/23
10525/22 10529/6	10469/10 10471/1	10448/10 10554/3	<b>tying [2]</b> 10508/13	10482/2 10484/23
10537/16 10546/18	10471/19 10472/12	<b>transcription [1]</b>	10542/1	10486/21 10489/2
10546/23 10547/3	10473/16 10475/15	10448/11	<b>U</b>	10489/13 10490/16
10547/4 10548/14	10477/15 10477/16	<b>transcripts [1]</b>	<b>U.S [6]</b> 10447/2	10490/19 10491/17
10548/15	10481/2 10481/4	10461/23	10507/6 10507/10	10492/20 10492/23
<b>thinks [3]</b> 10537/22	10481/15 10481/17	<b>transitioning [1]</b>	10525/19 10544/14	10492/24 10493/1
10544/24 10548/17	10482/4 10484/15	10513/7	10548/6	10493/17 10493/23
<b>thinned [1]</b> 10478/9	10489/24 10490/19	<b>treated [1]</b> 10529/15		10493/24 10496/19

<b>U</b>	10522/22	<b>violate [1]</b> 10483/16	10456/2 10456/15	<b>weekend [1]</b> 10487/25
<b>up...</b> [45] 10497/3	<b>using [3]</b> 10490/9	<b>violates [1]</b> 10483/15	10458/8 10458/10	<b>weeks [1]</b> 10481/13
10497/8 10497/21	10498/2 10529/13	<b>volume [1]</b> 10456/18	10462/6 10462/7	<b>welcome [1]</b> 10451/7
10498/15 10503/9	<b>usually [1]</b> 10491/25	<b>vs [1]</b> 10446/5	10467/6 10467/11	<b>welfare [1]</b> 10517/16
10504/20 10505/1	<b>V</b>	<b>W</b>	10471/8 10475/25	<b>well [58]</b> 10450/23
10505/15 10506/19	<b>vacation [1]</b> 10523/19	<b>waffled [1]</b> 10458/12	10476/22 10478/13	10453/3 10453/23
10506/22 10507/4	<b>valid [1]</b> 10483/8	<b>walking [1]</b> 10457/24	10478/16 10479/7	10455/11 10456/12
10508/5 10508/13	<b>valuable [2]</b> 10512/15	<b>want [30]</b> 10451/20	10481/9 10482/8	10457/1 10462/3
10511/23 10516/11	10541/19	10451/22 10466/17	10483/13 10483/24	10462/23 10463/24
10516/24 10518/7	<b>value [17]</b> 10466/18	10467/25 10468/10	10486/8 10490/2	10466/15 10467/20
10521/15 10523/7	10474/6 10474/8	10468/11 10469/15	10491/16 10494/15	10469/6 10471/8
10523/9 10523/19	10474/9 10474/15	10475/12 10475/14	10494/18 10495/10	10472/7 10473/10
10525/23 10526/10	10475/5 10475/10	10478/24 10478/25	10495/13 10496/19	10474/11 10475/3
10526/25 10527/8	10475/20 10475/21	10483/2 10483/5	10497/5 10497/23	10475/19 10478/13
10527/13 10528/20	10476/7 10476/21	10485/13 10489/23	10499/9 10500/23	10481/14 10483/14
10528/20 10528/22	10477/1 10478/19	10495/22 10501/16	10501/23 10504/4	10484/25 10486/8
10528/25 10536/2	10478/19 10479/18	10509/1 10510/21	10504/20 10507/19	10487/6 10490/18
10536/18 10536/25	10490/11 10500/17	10512/1 10512/3	10508/7 10509/6	10499/9 10502/9
10537/24 10538/13	<b>value-based [1]</b>	10514/4 10519/22	10510/21 10511/7	10504/10 10507/2
10539/8 10543/9	10476/7	10519/25 10524/16	10511/16 10511/17	10508/23 10509/21
10543/18 10543/18	<b>values [1]</b> 10491/24	10524/21 10527/14	10513/3 10513/5	10512/23 10515/19
10543/20 10543/22	<b>variable [1]</b> 10452/15	10551/17 10552/16	10513/8 10513/9	10518/13 10519/6
10549/23 10550/7	<b>variants [1]</b> 10469/25	10552/18	10514/9 10514/11	10520/5 10521/17
10551/4 10551/11	<b>varied [1]</b> 10480/18	<b>wanted [7]</b> 10450/21	10514/16 10518/5	10526/14 10528/2
<b>updates [1]</b> 10540/4	<b>variety [1]</b> 10484/10	10462/8 10502/8	10519/23 10521/23	10528/17 10530/23
<b>UPDX106 [1]</b> 10451/19	<b>various [4]</b> 10465/21	10518/15 10522/8	10528/3 10530/7	10531/4 10531/6
<b>upon [5]</b> 10467/11	10470/20 10505/4	10541/5 10541/6	10530/8 10531/6	10533/15 10533/16
10467/13 10467/16	10547/15	<b>wanting [2]</b> 10525/25	10537/17 10542/4	10536/11 10538/1
10497/2 10504/19	<b>vast [1]</b> 10547/19	10546/9	10543/16 10544/11	10540/16 10544/3
<b>upward [1]</b> 10459/1	<b>version [2]</b> 10451/25	<b>wants [8]</b> 10486/16	10544/18 10550/21	10544/25 10547/4
<b>UPXD106 [2]</b> 10553/15	10532/25	10486/22 10515/4	10552/9 10552/16	10547/10 10549/15
10553/17	<b>versus [5]</b> 10450/8	10517/19 10524/8	10552/18 10553/19	10549/21 10550/17
<b>us [12]</b> 10451/9	10498/10 10503/21	10526/19 10530/15	10553/20 10553/21	10551/14 10551/21
10480/15 10482/17	10530/13 10544/9	10546/4	<b>we will [2]</b> 10513/9	10553/4
10507/20 10514/15	<b>vertical [1]</b> 10466/14	<b>was [156]</b>	10553/21	<b>went [6]</b> 10490/16
10518/18 10530/8	<b>very [39]</b> 10454/15	<b>Washington [5]</b>	<b>we'll [8]</b> 10475/4	10491/8 10491/9
10530/9 10530/10	10454/15 10455/4	10446/5 10447/3	10482/9 10513/1	10491/21 10492/8
10532/13 10532/14	10455/11 10456/1	10447/8 10448/3	10525/12 10530/10	10537/15
10547/12	10457/8 10457/14	10448/9	10532/14 10547/8	<b>were [49]</b> 10462/4
<b>usage [1]</b> 10496/14	10461/13 10462/4	<b>wasn't [8]</b> 10462/21	10553/16	10462/6 10462/19
<b>usdoj.gov [2]</b> 10447/5	10463/25 10468/9	10467/5 10473/6	<b>we're [24]</b> 10455/20	10463/10 10463/12
10447/9	10468/18 10478/6	10491/14 10523/3	10466/15 10469/8	10470/11 10471/13
<b>use [11]</b> 10463/19	10481/7 10481/7	10529/23 10540/22	10475/5 10475/6	10472/6 10475/21
10476/15 10485/21	10485/6 10490/3	10540/22	10475/25 10475/25	10475/21 10475/23
10488/12 10488/12	10494/21 10497/18	<b>way [34]</b> 10452/10	10475/25 10476/2	10476/15 10481/9
10488/12 10488/12	10499/6 10503/1	10452/14 10452/25	10478/3 10478/5	10481/14 10481/16
10500/21 10519/16	10503/1 10508/14	10453/15 10455/16	10478/14 10481/14	10482/11 10484/10
10520/6 10548/2	10521/6 10523/18	10462/5 10470/15	10489/14 10492/9	10491/2 10494/19
<b>used [10]</b> 10466/22	10526/8 10535/9	10479/15 10482/6	10506/13 10512/1	10494/19 10495/3
10485/4 10523/25	10537/2 10540/8	10483/19 10487/11	10514/1 10531/6	10495/5 10496/23
10525/8 10531/14	10545/25 10547/1	10487/14 10487/14	10531/7 10532/12	10498/2 10498/2
10531/15 10534/19	10547/13 10547/13	10490/16 10491/25	10535/18 10541/10	10498/3 10498/13
10534/22 10550/9	10547/16 10547/18	10499/24 10502/11	10542/19	10499/7 10499/8
10550/12	10552/1 10552/13	10508/18 10517/17	<b>we've [11]</b> 10461/9	10500/14 10500/25
<b>useful [2]</b> 10508/11	10552/23 10552/23	10517/18 10518/21	10479/24 10495/21	10503/2 10503/2
10508/14	<b>viable [2]</b> 10462/1	10522/9 10523/17	10507/15 10516/4	10503/8 10504/8
<b>user [6]</b> 10452/14	10541/21	10525/20 10526/17	10516/4 10519/18	10504/18 10505/19
10468/3 10516/5	<b>video [5]</b> 10466/23	10526/19 10526/20	10528/18 10528/18	10529/18 10532/16
10516/6 10516/10	10467/2 10467/13	10539/1 10539/8	10549/12 10551/16	10532/19 10533/1
10516/14	10467/16 10472/4	10540/7 10541/6	<b>weak [6]</b> 10545/19	10533/4 10533/5
<b>users [11]</b> 10452/25	<b>view [8]</b> 10466/7	10541/25 10546/12	10545/25 10546/4	10533/8 10533/10
10462/14 10468/10	10470/15 10483/19	10547/2	10547/12 10547/23	10533/25 10541/7
10468/11 10470/11	10484/1 10503/18	<b>ways [2]</b> 10484/9	10548/16	10541/8 10541/9
10515/3 10515/4	10515/18 10545/21	10505/4	<b>weaker [2]</b> 10500/2	<b>weren't [2]</b> 10494/15
10515/14 10515/24	10546/20	<b>wc.com [2]</b> 10448/4	10548/20	10499/8
10539/4 10539/6	<b>viewed [2]</b> 10505/24	10448/5	<b>weeds [1]</b> 10491/13	<b>what [204]</b>
<b>users' [1]</b> 10468/6	10506/21	<b>we [67]</b> 10450/13	<b>week [2]</b> 10493/11	<b>what's [17]</b> 10463/11
<b>uses [2]</b> 10508/1			10493/12	10470/18 10476/18

<b>W</b>	10457/17 10457/20	10499/21 10507/13	<b>win [11]</b> 10500/18	10494/18 10495/5
<b>what's... [14]</b> 10479/16	10463/7 10465/21	10507/20 10512/13	10507/24 10511/2	10495/6 10496/23
10483/20 10484/1	10466/9 10466/23	10515/21 10517/18	10511/16 10520/10	10499/20 10501/2
10488/2 10501/11	10466/24 10467/3	10524/20 10538/15	10521/10 10525/8	10501/17 10501/18
10502/24 10508/8	10469/11 10471/19	10547/13 10548/9	10525/9 10525/10	10502/9 10503/23
10515/3 10515/18	10471/21 10471/25	<b>who's [6]</b> 10453/16	10525/15 10526/19	10505/19 10505/20
10517/5 10539/24	10473/8 10476/16	10517/4 10517/5	<b>Windows [2]</b> 10497/9	10505/21 10506/8
10540/12 10546/18	10480/6 10480/13	10520/10 10547/18	10497/10	10510/4 10510/12
10548/16	10480/17 10482/5	10547/18	<b>wins [3]</b> 10519/16	10512/6 10514/4
<b>whatever [8]</b> 10500/1	10485/2 10489/16	<b>whole [4]</b> 10454/20	10520/7 10520/12	10514/13 10515/12
10500/1 10506/3	10498/21 10500/24	10488/6 10536/12	<b>withdraw [1]</b> 10539/21	10515/25 10516/3
10515/5 10516/7	10503/9 10503/20	10546/9	<b>within [4]</b> 10473/4	10516/6 10517/18
10526/6 10530/9	10507/10 10507/25	<b>whose [1]</b> 10507/17	10473/10 10473/11	10518/15 10518/18
10547/15	10509/15 10510/3	<b>why [57]</b> 10458/4	10494/17	10520/23 10523/4
<b>when [97]</b> 10452/22	10512/1 10521/17	10459/25 10462/6	<b>without [2]</b> 10491/13	10523/5 10523/18
10453/3 10455/6	10524/10 10524/12	10463/13 10463/14	10541/21	10526/8 10529/2
10455/7 10456/5	10524/14 10524/23	10463/23 10465/11	<b>witness [3]</b> 10449/2	10529/8 10529/8
10456/9 10456/12	10527/6 10529/14	10465/23 10466/15	10451/2 10553/18	10529/9 10531/1
10458/13 10461/22	10533/13 10536/17	10469/15 10470/20	<b>WITNESSES [1]</b>	10531/2 10532/15
10463/24 10464/1	10538/20 10547/6	10471/15 10471/15	10449/4	10533/3 10533/4
10464/6 10464/17	10547/21 10547/22	10482/10 10484/4	<b>won't [2]</b> 10480/24	10533/12 10533/13
10464/18 10470/19	<b>whether [19]</b> 10451/25	10484/11 10486/5	10507/13	10533/21 10533/21
10474/16 10475/14	10455/24 10456/7	10494/16 10496/5	<b>word [3]</b> 10485/21	10533/22 10534/1
10476/12 10477/15	10483/8 10483/9	10504/25 10506/11	10525/8 10544/4	10534/15 10535/14
10477/23 10477/24	10483/15 10484/22	10511/6 10512/6	<b>words [4]</b> 10463/19	10535/17 10535/22
10478/16 10479/17	10486/16 10488/18	10512/14 10512/20	10505/25 10525/24	10537/6 10539/8
10481/1 10481/8	10496/7 10496/10	10512/20 10512/24	10531/20	10539/9 10541/25
10481/24 10484/8	10510/20 10534/4	10513/2 10513/5	<b>work [4]</b> 10510/4	10548/4 10548/9
10485/25 10487/17	10534/7 10538/14	10513/8 10514/4	10539/15 10539/19	10548/12 10548/17
10487/20 10487/23	10540/4 10550/4	10516/2 10516/2	10539/20	<b>wouldn't [3]</b> 10466/12
10488/3 10489/10	10552/16 10552/18	10517/23 10518/11	<b>working [1]</b> 10466/21	10469/12 10530/19
10489/24 10490/17	<b>which [36]</b> 10452/6	10518/13 10519/2	<b>works [4]</b> 10455/16	<b>write [2]</b> 10502/4
10490/20 10492/7	10453/22 10454/10	10519/19 10520/1	10502/24 10512/2	10519/20
10492/8 10492/12	10457/16 10460/2	10521/7 10521/8	10553/1	<b>writes [1]</b> 10485/15
10493/17 10498/2	10462/6 10470/4	10522/4 10522/16	<b>world [15]</b> 10469/13	<b>written [1]</b> 10523/17
10501/7 10501/19	10470/11 10470/24	10527/24 10527/25	10471/20 10508/7	<b>wrong [6]</b> 10500/19
10502/7 10502/10	10473/24 10477/5	10530/22 10531/13	10508/21 10508/22	10501/5 10501/5
10506/20 10506/24	10478/2 10479/4	10534/11 10542/12	10508/24 10508/24	10542/25 10544/2
10508/13 10508/15	10479/10 10479/12	10542/25 10544/2	10510/6 10531/15	10544/4
10509/17 10510/5	10484/2 10484/9	10546/13 10546/15	10531/22 10546/14	<b>wrote [1]</b> 10523/14
10512/20 10515/19	10487/8 10491/22	10546/20 10550/16	10546/15 10546/24	
10516/23 10516/24	10492/12 10494/22	10553/19 10553/20	10547/6 10549/3	<b>Y</b>
10517/8 10517/24	10497/10 10498/3	<b>widget [2]</b> 10540/23	<b>worlds [2]</b> 10508/16	<b>Yahoo [5]</b> 10518/11
10518/8 10518/9	10505/4 10506/21	10541/17	10529/6	10518/13 10549/22
10518/19 10520/3	10509/20 10522/12	<b>widgets [2]</b> 10453/17	<b>worried [2]</b> 10481/14	10550/10 10550/13
10522/4 10522/10	10523/21 10525/14	10453/17	10481/16	<b>yeah [14]</b> 10451/8
10522/20 10523/12	10526/9 10529/2	<b>will [20]</b> 10453/8	<b>worse [2]</b> 10516/12	10455/4 10455/5
10526/15 10527/1	10537/11 10541/9	10453/9 10478/15	10529/15	10456/1 10459/8
10527/2 10527/6	10545/14 10546/8	10486/21 10510/7	<b>worth [2]</b> 10494/20	10462/11 10463/11
10527/10 10529/6	10549/23	10513/9 10515/16	10512/11	10469/5 10473/1
10535/8 10536/20	<b>while [3]</b> 10455/1	10517/19 10520/20	<b>worthwhile [8]</b>	10494/10 10500/12
10537/20 10538/20	10488/5 10541/10	10520/21 10520/24	10512/7 10512/21	10518/17 10545/14
10538/20 10539/12	<b>Whinston [18]</b>	10521/1 10521/21	10514/5 10517/19	10552/13
10540/1 10541/4	10450/16 10450/20	10522/15 10527/22	10519/20 10521/21	<b>yearly [1]</b> 10550/2
10543/16 10544/7	10451/2 10451/7	10528/21 10535/12	10544/25 10545/1	<b>years [2]</b> 10456/19
10544/8 10544/9	10451/17 10455/23	10538/3 10545/16	<b>would [83]</b> 10452/1	10474/20
10544/24 10545/1	10456/17 10460/22	10553/21	10452/2 10452/24	<b>yellow [2]</b> 10490/14
10545/23 10546/6	10468/25 10470/6	<b>William [3]</b> 10448/6	10453/24 10459/7	10490/19
10547/5 10548/14	10470/9 10485/13	10554/2 10554/8	10459/24 10460/19	<b>yes [12]</b> 10452/3
10548/17 10549/15	10504/22 10506/12	<b>WILLIAMS [1]</b> 10448/2	10462/19 10463/10	10462/5 10476/10
10549/16 10549/19	10513/7 10513/22	<b>willing [6]</b> 10486/20	10463/12 10464/19	10478/1 10484/7
10551/23 10551/24	10535/11 10542/4	10533/5 10551/20	10466/13 10469/15	10503/5 10504/6
10552/1 10552/24	<b>Whinston's [2]</b>	10551/23 10551/24	10470/2 10470/15	10516/9 10535/20
<b>whenever [5]</b> 10511/18	10467/7 10553/15	10552/1	10471/7 10472/16	10540/5 10540/5
10530/7 10530/8	<b>who [17]</b> 10452/6	<b>willingness [1]</b>	10473/9 10474/19	10552/16
10530/10 10537/20	10455/14 10476/2	10521/4	10477/5 10478/8	<b>yesterday [2]</b> 10467/12
<b>where [45]</b> 10454/8	10488/11 10488/12	<b>willingnesses [1]</b>	10479/14 10484/2	10532/1
10454/23 10457/9	10488/18 10488/19	10455/15	10488/10 10492/11	<b>yet [1]</b> 10514/23

Y	Z			
<p><b>you [672]</b>  <b>you know [27]</b>  10452/25 10458/14  10471/19 10475/13  10478/12 10484/19  10487/22 10487/24  10490/2 10491/4  10491/15 10496/3  10499/2 10504/11  10511/12 10511/16  10512/9 10517/17  10526/3 10526/5  10540/9 10540/25  10550/24 10550/25  10551/13 10552/25  10553/1  <b>you'll [2]</b> 10492/4  10497/20  <b>you're [28]</b> 10452/4  10452/25 10453/18  10481/19 10495/1  10500/19 10501/7  10501/19 10503/11  10504/1 10505/25  10506/5 10506/6  10506/7 10508/12  10511/20 10513/6  10517/1 10523/19  10525/12 10535/6  10535/7 10535/8  10535/25 10544/16  10545/4 10546/23  10548/19  <b>you've [4]</b> 10460/2  10490/6 10493/10  10550/10  <b>your [112]</b>  <b>Your Honor [53]</b>  10450/6 10450/14  10450/17 10451/13  10453/3 10456/3  10456/24 10457/4  10458/11 10461/5  10463/25 10466/20  10467/4 10468/17  10470/19 10474/13  10475/12 10476/11  10480/10 10481/1  10481/19 10482/20  10483/20 10484/8  10485/20 10489/15  10490/9 10491/4  10491/5 10493/9  10496/3 10497/5  10497/21 10501/24  10505/2 10505/23  10509/17 10510/20  10511/25 10514/1  10519/18 10522/7  10528/3 10529/5  10531/18 10534/22  10536/19 10538/13  10541/5 10545/23  10549/7 10550/21  10553/14  <b>yourself [1]</b> 10490/18</p>	<p><b>Zaremba [3]</b> 10448/6  10554/2 10554/8  <b>zero [12]</b> 10452/14  10459/20 10464/2  10490/12 10492/18  10508/7 10508/25  10509/3 10509/5  10520/24 10520/25  10521/3</p>			