

**PROCEEDINGS AT HEARING
OF
DECEMBER 8, 2020**

COMMISSIONER AUSTIN F. CULLEN

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December 8, 2020
(Via Videoconference)

(PROCEEDINGS COMMENCED AT 9:00 A.M.)

THE REGISTRAR: Good morning. The hearing is now resumed. Mr. Commissioner.

THE COMMISSIONER: Thank you, Madam Registrar. Yes, Ms. Patel, do you have conduct of this panel of witnesses?

MS. PATEL: I do, Mr. Commissioner.

THE COMMISSIONER: Thank you.

MS. PATEL: Mr. Commissioner, we have today with us Peter Reuter, Professor Peter Reuter, who has appeared before the commission in our spring hearings, and Professor Jonathan Caulkins, who is new to our hearings. And they are here as the authors of a paper which is really a followup to the evidence that we heard yesterday from Professors Bouchard and Milloy. Their paper titled "White Paper on Relating the Size of Illegal Markets to Associated Amounts of Money Laundered" is what they will be speaking to today which is what you do with the data of the sort that you received from the study conducted by our witnesses yesterday.

Professor Reuter has already appeared as a

1 witness and so his CV is an exhibit already. I
2 believe, Madam Registrar, it's exhibit 22. If
3 you could just pull that up.

4 THE REGISTRAR: Yes.

5 MS. PATEL:

6 Q Professor Reuter, you have previously appeared
7 before our commission?

8 THE COMMISSIONER: I'm sorry, Ms. Patel, just to
9 interrupt you. I'm sorry, I don't think the
10 witnesses have been affirmed or sworn yet.

11 MS. PATEL: Thank you, Mr. Commissioner, you're
12 correct. I'm jumping ahead of myself this
13 morning.

14 THE COMMISSIONER: It's an early start.

15 THE REGISTRAR: Witnesses, can you please unmute
16 yourselves. Thank you. Would each of you
17 please state your full name and spell your first
18 name and last name for the record. I'll start
19 with Professor Caulkins.

20 THE WITNESS: (JC) Jonathan Paul Caulkins. First
21 name J-o-n-a-t-h-a-n. Last name
22 C-a-u-l-k-i-n-s.

23 THE REGISTRAR: Thank you. And Professor Reuter.

24 THE WITNESS: (PR) Peter Reuter, R-e-u-t-e-r.

25 **JONATHAN CAULKINS, a**

1 A (PR) Correct.

2 Q You served as editor of the *Journal of Policy*
3 *Analysis and Management* from 1999 to 2004; is
4 that correct? And you founded and then directed
5 RAND's Drug Policy Research Center from 1989 to
6 1993?

7 A (PR) Correct.

8 Q You've published extensively on illegal markets;
9 is that right?

10 A (PR) Correct.

11 Q And recently you were the --

12 A (PR) Correct.

13 Q Recently you were the 2019 recipient of the
14 prestigious Stockholm Prize in Criminology?

15 A (PR) Correct.

16 Q And I understand that that was for your work on
17 policy development in relation to drug abuse; is
18 that right?

19 A (PR) That's correct.

20 Q You are a co-author of a text *Drug Policy and*
21 *the Public Good* along with your co-panelist
22 Professor Caulkins?

23 A (PR) Correct.

24 Q Also you have a number of publications
25 co-authored with Professor Caulkins, but I'll

1 just mention one more. You co-authored last
2 year a piece entitled *The Future of fentanyl and*
3 *Other Synthetic Opioids* for RAND Corporation; is
4 that right?

5 A (PR) Correct.

6 MS. PATEL: Thank you. Madam Registrar, you can take
7 down Professor Reuter's CV.

8 And if you could pull up Professor Caulkins
9 CV, please.

10 Q Professor Caulkins, do you recognize this as
11 your CV?

12 A (JC) Yes, I do.

13 Q Okay. And I'll just read you a few of your
14 qualifications. Again I won't go through them
15 all. You are an economist; is that right?

16 A (JC) No, I'm an engineer. I do publish
17 frequently in economics journals, but my
18 training is in engineering. It's a branch of
19 engineering called operations research.

20 Q Okay. Well, that actually translates nicely
21 into my next question, which is that you are
22 Professor of Operations Research and Public
23 Policy at Carnegie Mellon University's Heinz
24 College; is that right?

25 A (JC) Yes, that's correct.

1 Q And can you explain to us what is operations
2 research?

3 A (JC) Sure. It's a branch of mathematics and
4 engineering that tries to understand how to
5 support decision-making by building models of
6 systems, particularly systems that involve
7 people. It sprang out of World War II
8 addressing questions like how do you array a
9 convoy to protect against U-boats, but the
10 methods have been applied now in all sorts of
11 military and civilian sectors.

12 Q You have also written and published quite a bit
13 in the area of drugs and illegal markets; is
14 that right?

15 A (JC) That's correct.

16 Q And including you have published two editions of
17 a text titled *Marijuana Legislation: What*
18 *Everyone Needs to Know?*

19 A (JC) *Marijuana Legalization: What Everyone*
20 *Needs to Know*, yep, that's correct.

21 Q *Legalization*, thank you. Published by Oxford
22 University Press. You are a past co-director of
23 RAND's Drug Policy Research Center?

24 A (JC) Correct.

25 Q You have a masters degree in electrical

1 engineering and a doctorate in operations
2 research both from Massachusetts Institute of
3 Technology?

4 A (JC) Correct.

5 Q I mentioned a couple of your co-publications
6 with Professor Reuter, and just I'll mention a
7 couple more. One we heard about yesterday which
8 is a publication that you co-authored with Greg
9 Midgette, *What America's Users Spend on Illegal*
10 *Drugs*, and I understand there's a couple of
11 versions of that publication. One I have that's
12 indicated to be for the period 2000 to 2010, and
13 one from 2006 to 2016?

14 A (JC) That is correct.

15 Q Can you tell us a little bit about what that
16 publication aims to do?

17 A (JC) Sure. The Office of the National Drug
18 Control Policy wants to be able to just scale
19 the size of the markets. The title of the
20 publication stresses the amount of money that is
21 spent by users of the four major drugs, but
22 there are also estimates of the number of users,
23 including of the number of clinical chronic
24 users and the weight of the drugs that are
25 consumed. They have commissioned those studies

1 over an even longer period of time than you
2 mentioned. It's just that RAND, and hence
3 myself, were involved in the two more recent
4 ones that you mentioned, but there have been
5 earlier studies in the series and they are just
6 trying to understand the scale of the markets.

7 Q And when you say the scale of the markets,
8 you're talking about the US market; is that
9 right?

10 A (JC) Yes, correct, US national market.

11 Q All right. And you published several works on
12 drug policy addressing the opioid crisis with
13 one of the topics we're focused on today,
14 researching and understanding drug markets as
15 well?

16 A (JC) Yep. Yes, I did.

17 MS. PATEL: Madam Registrar, if we could please mark
18 this as the next exhibit, and I'm afraid I don't
19 have the number at hand.

20 THE REGISTRAR: Mr. Commissioner, I believe the next
21 number is 336.

22 THE COMMISSIONER: Thank you. I'm sorry, it took me
23 a while to unmute there. 336.

24 **EXHIBIT 336: Curriculum Vitae of Jonathan**
25 **Caulkins**

1 MS. PATEL: Madam Registrar, we can take down this
2 document, and if you could please pull up
3 Professor Reuter and Professor Caulkins' white
4 paper.

5 Q Professor Reuter, I'll pick on you because
6 you're unmuted. You recognize this paper as a
7 paper that you and Professor Caulkins prepared
8 for the commission?

9 A (JC) That is correct.

10 Q It's titled "A White Paper on Relating the Size
11 of Illegal Markets to Associated Amounts of
12 Money Laundered"?

13 A (PR) Correct.

14 Q All right. Can you please briefly tell us why
15 "white paper"? What does that signify?

16 A (PR) I think Jonathan can answer that. I'm not
17 sure. I think he wrote that.

18 (JC) I did. I don't think it signified a
19 whole lot except it's not a peer-reviewed
20 journal article.

21 MS. PATEL: Okay. Madam Registrar, if we could
22 please -- I think we're are at --
23 Mr. Commissioner, I think we're at 337, if we
24 could please have this marked as the next
25 exhibit.

1 THE COMMISSIONER: Very well, 337.

2 THE REGISTRAR: Exhibit 337.

3 **EXHIBIT 337: White Paper on Relating the Size**
4 **of Illegal Markets to Associated Amounts of**
5 **Money Laundered - November 19, 2020**

6 MS. PATEL:

7 Q And I would address this question to either one
8 of you. Actually I'll start with Professor
9 Caulkins. What is the purpose of this paper?

10 A (JC) The question that it addresses is what
11 proportion of money the drug users spend on
12 drugs ends up being demand [indiscernible] try
13 to comment on the parallel question for human
14 trafficking, for sex, human -- for sex work and
15 also wildlife trafficking, so that's the
16 question that we're trying to help answer. What
17 the aim of the paper is is to help provide a
18 framework for thinking about that question that
19 identifies what are the key variables for a
20 particular market that drive the answer and to
21 identify sources of data that could be used --
22 [indiscernible] to try to estimate those
23 parameters. We are not expert on Vancouver or
24 British Columbia's markets in particular, nor
25 did we have the resources to estimate all of

1 those parameters. So that's why I stress the
2 word "framework," hopefully clarifies what the
3 issues are, gives some sense of the magnitude,
4 but we're not trying to provide the definitive
5 numbers customized for that particular market.

6 Q You're providing what could be a blueprint for
7 other people to come along and fill in the gaps
8 with other research and sources of data?

9 A (JC) Exactly. And we do try to -- I mean, as
10 you can see, there are numbers in the report.
11 We make sort of best educated guess based on our
12 general knowledge of markets around the world,
13 so the model is not expressed only in algebraic
14 symbols. It's populated with numbers, but if
15 the calculations seem interesting and promising
16 someone else could follow up with trying to
17 tailor them to the particular market in
18 British Columbia.

19 Q And this might be an unfair question because we
20 asked you to write this paper, but why do it?

21 A (JC) Some people might be under the
22 misunderstanding that every dollar that is
23 earned in an illegal market, a drug market, a
24 wildlife trafficking market or human trafficking
25 market necessarily needs to be laundered, and

1 that's not the case, which begs the question
2 then what proportion of those dollars would
3 become demand for money laundering services.
4 And as I said, we hope we provide some help in
5 trying to think about that question and a path
6 forward to coming up with a more precise
7 estimate should that be seen as valuable.

8 Q And, Professor Reuter, if one had a number, I'm
9 asking you because we had some discussion about
10 this in the spring, if there is a number, if
11 based on research and following the kind of
12 framework that we are about to walk through that
13 is set out in this paper, one comes up with a
14 number for how much money, and we'll follow
15 through from what the evidence we heard
16 yesterday, Professor Bouchard and Professor
17 Milloy testified that the fentanyl market in
18 British Columbia is worth 2- to \$300 million a
19 year. If from that we were able to come up with
20 a number that says this is how much of that
21 those proceeds of crime need to be laundered,
22 what is the utility to anti-money laundering
23 efforts of having that kind of number available,
24 if any?

25 A (PR) I want to calibrate questions. That is a

1 very hard question as opposed to the merely
2 expositional questions you're asking
3 [indiscernible]. So I want my answer to be
4 graded against very hard. So this is a number
5 that will help give you a sense of how important
6 money laundering control might be in terms of
7 its effect on the fentanyl trade. If very
8 little of fentanyl revenues are laundered, then
9 making money laundering more difficult or
10 detecting more activity through money laundering
11 doesn't get you great benefits. If on the other
12 hand fentanyl, the fentanyl trade results in a
13 lot -- the large share of the revenue is
14 laundered then money laundering controls might
15 be an effective way of making fentanyl more
16 expensive or harder to get.

17 THE COMMISSIONER: I'm going to interrupt here if I
18 may, Professor Reuter. Is there a way of
19 increasing the sound on your microphone?

20 THE WITNESS: (PR) Give me one second to try to do
21 that.

22 THE COMMISSIONER: Thank you.

23 MS. PATEL: Madam Registrar, while Professor Reuter
24 is adjusting his microphone, you can take down
25 this paper. Thank you.

1 THE WITNESS: (PR) I don't see how to do that. I
2 think if I speak more -- if I speak more into
3 the screen does that help?

4 THE COMMISSIONER: It does help, thank you.

5 THE WITNESS: (PR) Okay. So that would be I think
6 the principal use of it. A second use is if you
7 think about money laundering control authority,
8 so having to make a choice about where they put
9 their effort if fentanyl -- if the fentanyl
10 market produces a relatively small amount of
11 money laundered then the fentanyl market should
12 get relative little attention from the money
13 laundering control authorities. That would be
14 sort of the two public policy uses I would think
15 the number helps.

16 MS. PATEL:

17 Q You mention in your paper that illicit drug
18 markets attract quite a bit of attention from
19 anti-money laundering -- in anti-money
20 laundering efforts. Can you tell us why that
21 is?

22 A (PR) I think the visible markets as compared to
23 other activities that generate money laundering,
24 I mean, I have a particular interest in
25 international money laundering and corruption

1 moneys, which I think are probably larger in
2 terms of laundering needs than drug markets, and
3 those are generated in ways that are much more
4 difficult for investigators to follow. We'll
5 keep coming back to the distinctive quality of
6 the character of the drug markets being their
7 total reliance on cash. And cash is in one
8 sense an anonymous and in another sense it's
9 very visible and having to handle large
10 quantities of cash makes drug dealing a
11 relatively easy target for money laundering
12 investigators. So money laundering bulks --
13 drug revenues bulk large I think in every
14 country's money laundering investigations, but I
15 think that that has a lot to do with the nature
16 of the transactions [indiscernible].

17 Q And indeed in your paper you say that cash is
18 the curse of the drug trade?

19 A (PR) Well, it's hard stuff. There's actually a
20 wonderful description of -- never mind. I mean,
21 you have this physical item that you have to
22 handle day after day. I mean, if you're a
23 kleptocrat, if you're, you know, an oil minister
24 in a poor country, you just get one cheque in
25 your Swiss bank account and that's it. But if

1 you're a drug dealer there's just all this money
2 day after day that you have to count and deal
3 with and get into the bank and get out of the
4 bank promptly. It's much harder work in many
5 respects to handle cash as compared to other
6 kinds, but sort of it's both the fact that it's
7 cash and also the fact that it's so daily and
8 repetitive that I think makes it -- you know,
9 allows us to claim it's the curse as well as
10 sort of the thing that allows the system to
11 work.

12 Q I'm going to ask both of you a couple of
13 questions about previous efforts that have been
14 made to try to determine what proportion of
15 proceeds of crime from the drug trade are
16 laundered. First I want to touch on something
17 that you alluded to which is that there are
18 other sources of illicit flows from money
19 laundering, and at page 3 of your report -- we
20 don't need to bring it up, but I'll quote for
21 you -- you say that:

22 "This claim of drug money laundering
23 dominating money --"

24 And here you're citing another study. It's not
25 important for our purposes right now.

1 "-- is inconsistent with the rest of the
2 literature, which suggests that drug
3 moneys account for no more than 25 percent
4 of money laundering."

5 A (PR) So the literature here is not particularly
6 strong or large. The United Nations Office on
7 Drugs and Crime has generated relatively
8 systematic and documented efforts to estimate
9 total money laundering. I forget the exact
10 label they put on it, but in that context other
11 flows are much larger than drug flows. And if
12 you go to the literature that deals with
13 corruption you'll see numbers for total
14 corruption revenues larger than those for drug
15 revenues. Again nobody has strong estimates of
16 any of this. It's very impressionistic, but
17 it's seems plausible that corrupt officials have
18 laundered more than drug dealers do and we
19 haven't even gotten to the laundering of fraud
20 and embezzlement, both of which are very
21 difficult to estimate.

22 MS. PATEL: Just a moment, Professor Reuter.

23 Mr. Commissioner, I'm still having some trouble
24 hearing Professor Reuter. Professor Reuter,
25 what I'm going to suggest is perhaps we could

1 thank you for your patience. I'm going to
2 repeat my last question just to ensure that we
3 do get your answer on that. I have drawn your
4 attention to the statement in your paper that
5 claims that drug money dominates money
6 laundering is inconsistent with the rest of the
7 literature which suggest that drug moneys
8 account for no more than 25 percent of money
9 laundering.

10 A (PR) So the literature is not very large and not
11 very strong. It -- you can find the global
12 estimates that give some sense the composition
13 of money laundering, international money
14 laundering in particular, from the United
15 Nations Office on Drugs and Crime, and I don't
16 remember the exact figures, but in that context
17 the share from drug revenues I think is
18 substantially less than 25 percent of the total,
19 and if you look at separately at estimates of
20 total corruption payments and in particular
21 payments to kleptocrats and to sort of senior
22 officials, it produces estimates that are quite
23 comparable to the total for drug revenues and
24 more of that is likely to be laundered,
25 particularly laundered internationally, than

1 drug revenues. But these are impressions rather
2 than strong numbers. I think we say in the
3 report that surely the total drug revenues
4 globally is in the hundreds of billions, whether
5 it's a couple of hundred billion or 600 billion
6 is impossible to say. To give you a sense of
7 the variation in estimates, in the latest what
8 America users spend on illegal drugs, the range
9 of plausible estimates for the heroin market is
10 between 17 billion and 85 billion. It's a very
11 large range, and this is as well studied as any
12 market is. So I think it's very important to
13 get across our uncertainty about the scale of
14 these markets.

15 Q And as you mentioned before it continues,
16 despite this uncertainty and despite the fact
17 that it might not be a majority of illicit flows
18 that are subject to money laundering it
19 continues to attract attention, as you say in
20 your report, because its salience both as a
21 source of social harm and of criminal earnings
22 one can readily understand the harm that's
23 caused by the drug trade and the understanding
24 of how the transactions actually occur with
25 cash. Is that why it attracts so much

1 attention?

2 A (PR) I think that's one of two things. I think
3 it is -- you know, it is the money generating
4 criminal activity that is most conspicuously
5 associated with serious harms both in Canada and
6 in the United States and it's relatively easy
7 for investigators to follow. So I think the
8 effect of both -- both those effects give it the
9 particular prominence that it has.

10 Q And I was going to ask you what are some of
11 the -- the question for both of you -- what are
12 some of the approaches that have been taken?
13 You say there isn't a lot of research in this
14 area, but what are some of the approaches that
15 have been taken in the literature to determining
16 how much of drug revenue is laundered?

17 A (PR) I mean, our literature review on that is
18 short because I really could not find any
19 systematic effort to distinguish between drug
20 revenues and money laundering from drugs. I
21 mean, occasionally it's explicitly stated that
22 the estimate of the proceeds of crime is an
23 estimate of the money laundered and there are,
24 as you know better than I, legal definitions in
25 which that is correct. But if you think of

1 money laundering as most of us do, and I think
2 it's operationally useful, as the effort to
3 conceal, then the numbers are different and I'm
4 unable to identify systematic efforts to make
5 that distinction.

6 Q The paper addresses this approach, different
7 approaches to conceiving of what is money
8 laundering. You mention Schneider says, assumes
9 that all money, all proceeds of crime are by
10 definition laundered, that's one approach. You
11 could say it doesn't matter how it's spent; if
12 it's proceeds of crime and you spend it on your
13 rent, well, there's money laundering. And you
14 mentioned in your paper a couple of other
15 studies where assumptions are made, maybe one
16 assumption is an IRS assumption of 9 percent of
17 cocaine and heroin dealers launder their income.
18 Another assumption is that's cited there is that
19 4 percent of illegal marijuana proceeds are
20 laundered. Can --

21 A (PR) As you say, these are assumptions. I mean,
22 there's nothing -- there is a study that finds,
23 I don't remember, you know, they looked at
24 27 cocaine dealers and found that the figure in
25 1978 was 8 percent and so, you know, being

1 economists they glom on to the one number they
2 have and assume it's forever and for everything
3 and there we go. It has no authority. It
4 merely has convenience as an argument.

5 Q Just as a point of clarification for our own
6 record that Schneider work that I just referred
7 to that's cited in your paper is F Schneider
8 citing from a paper "Turnover of Organized Crime
9 and Money Laundering" and just to distinguish
10 between the Professor Schneider who we heard
11 from earlier in these proceedings?

12 A (PR) Right. F as opposed to S.

13 Q Yes, thank you. We're going to take a look at
14 the framework that you have put together here,
15 but perhaps just before we pull up the first
16 table and have a look at the numbers, can you
17 just tell us, give us a bit of a background to
18 how you addressed this problem and conceived of
19 this kind of mathematical approach that we're
20 about to look at?

21 A (PR) This is clearly Jonathan's side, so I'd
22 prefer to turn over to Jonathan.

23 Q Thank you.

24 A (JC) Sure. The first thing to say is that we
25 begin with a heroin market such as what is

1 common in many cities around the world,
2 including Vancouver, before fentanyl infiltrated
3 the opioid market because for a variety reasons
4 things are better studied and there are
5 complexities in interpreting prices, for
6 instance with fentanyl, that we defer to start
7 with the more basic case, and that basic case
8 broadly speaking probably also applies for
9 cocaine and for imported methamphetamine. And
10 then we comment to redact from that classic
11 heroin model to well, what does the opioid
12 situation look like in 2020 and also cannabis is
13 different than opioids. The key thing to
14 understand about the distribution networks for
15 these expensive illegal drugs that are subject
16 to substantial criminal penalties is that there
17 are multiple layers of operation, business
18 people, if you want to refer to illegal criminal
19 activity as business, illegal businesses,
20 there's multiple layers that separate the user
21 from the importer. And so the Bouchard et al
22 study is looking at the dollar flows at the
23 bottom of that distribution chain, but you have
24 to try to figure out how much money passes up
25 through each of those layers of the distribution

1 chain and then how much stops at each of those
2 layers of the distribution chain. And so at
3 some level the key things you want to think
4 about are how many links are there in the chain
5 from the point at which the drugs enter Canada
6 to the point at which they are sold to the user
7 and what are the prices at each of those links
8 because that answers the question of how much
9 money gets parked in each of those layers. And
10 the proportion of money that stays in each of
11 those layers that gets laundered can vary based
12 on the people in those layers ability to spend
13 cash. Here I'm using I think it was the second
14 notion of laundered that we're interested in,
15 the disposal of cash in a way that one is
16 intentionally trying to hide its origin,
17 potentially hiring somebody else paying for
18 those of services and so on. So the basic idea,
19 there's this multilayered distribution network
20 and we're trying to figure out how much money
21 stays in each of those layers.

22 Q And we're going to look at the table where you
23 set out this analysis, but first I want to
24 address two broad conclusions that the two of
25 you arrived at in doing this work and I'm

1 referring to the conclusions referred to at the
2 bottom of page 3 of your report.

3 Madam Registrar, maybe we can bring that up
4 again. This is page 3 of the report, also of
5 the PDF I believe.

6 If you could just tell us what about those
7 two central insights that you arrived at?

8 A (JC) Sure. The first one is only a minority of
9 the money that drug users spend needs to be
10 laundered in this more professional sense of the
11 term, or the flip side of that is a lot of the
12 money that -- a lot of the cash that drug users
13 spend and hence enters the drug supply chain the
14 participants in that drug supply chain are able
15 to spend as cash, and that's surprising perhaps
16 to a lot of people. But the key reason is that
17 prices jump up a lot at each of these market
18 levels and so if there's a big bump up in the
19 price between what retail sellers pay to their
20 suppliers and retail sellers charge to their
21 customers, then quite a bit of what the
22 customers pay for the drugs stays down there
23 with the retail sellers and our understanding is
24 the retail sellers are often able to spend much
25 of that in cash because there are very many

1 retail sellers, and so even though a lot of
2 money in aggregate stays at that layer, it's not
3 a lot of money per retail seller. So it's not
4 as if a retail seller has to figure out what to
5 do with \$10 million in cash. That's the first
6 point. Do you want me to go on to the second or
7 do you want to pass to --

8 Q We'll explore that first point in more depth as
9 we proceed, but if you could go to the second
10 one.

11 A (JC) So the second point is that the proportions
12 of the money that users spend that stayed at
13 these levels are driven by the prices at each of
14 these levels or equivalently the price markups
15 from one level to the next level. This is
16 perhaps easiest to grasp if we use some sort of
17 extreme examples, not realistic but they make
18 the point. If the retailer were selling at \$100
19 a gram something that they bought for \$1 a gram,
20 then 99 percent of the revenues stays right
21 there in their pocket at the retail level. At
22 the other extreme if retailers were selling at
23 \$100 a gram something that they bought at \$99 a
24 gram then 99 percent of what users spend passes
25 through the retail level on up to the higher

1 synthetic opioids on the model, and we'll get to
2 that, but first we'll walk through the base case
3 of the heroin distribution model. Can you tell
4 us what we're seeing here?

5 A (JC) Sure. So organized by columns we have
6 different layers of the network. Maybe it's
7 perhaps easiest to think about starting on the
8 right. The far right would be the foreign
9 suppliers, things outside of Canada, things that
10 we're not really concerned about at the moment
11 except insofar as we want to know how much money
12 goes from Canada to those foreign suppliers, but
13 no details there. So the far right-hand column
14 has very little detail. The first column where
15 we meaningfully are looking at things in detail
16 are importers. So those are the people
17 operating inside Canada who are receiving the
18 drugs from abroad. And they then sell on to the
19 next layer moving down the chain, the
20 wholesalers, who sell on to the retailers, who
21 are the ones who sell to the users. So the
22 columns correspond to the levels of the market.
23 And perhaps I should explain this term "heavy
24 user." As I'm sure would surprise no one, there
25 is a great variety of intensities of use, and

1 that's true not only for heroin, that's true for
2 all sorts of products. With drugs in particular
3 the majority of the demand tends to come from
4 the minority of people who use heavily and it is
5 not uncommon to convert to the demand that would
6 be associated with this number of heavy users.
7 So just suppose that a heavy user uses daily,
8 somebody else uses once a week. So the heavy
9 user uses seven times as much as the light user.
10 So then if we had one heavy user and seven light
11 users we would say well, that's the equivalent
12 demand of two heavy users. So that far left
13 column of heavy users is not meant to mean heavy
14 users and we pretend that medium and light users
15 don't exist. That's just meant to represent all
16 demand but expressed in terms of units of heavy
17 users equivalents. So those columns correspond
18 to the market levels. The rows are providing
19 basic facts about the operations of the typical
20 representative or average player at those
21 different market levels. First row is just the
22 number of entities at that level and you see
23 this pyramid structure. Ten importers can
24 supply 100 wholesalers, who can supply
25 1,000 retailers, who can supply 10,000 heavy

1 users. That multiple, it's called branching
2 factor, in this table is set at 10. That's
3 perhaps broadly correct and is a round number
4 that makes easy to track the calculations. This
5 a great example of something which one would
6 like to customize to the British Columbia market
7 with some data collection specific to
8 British Columbia.

9 Q And again just to make it clear, the numbers
10 that you populated this chart with are not based
11 on data that you've collected from the field.
12 This is a hypothetical model?

13 A (JC) This is a hypothetical model that we aim to
14 have be the ballpark of what we would guess
15 would be the case of British Columbia. So for
16 instance, the total spending of these
17 10,000 users, which is there in bold face and I
18 guess it's the sixth line of the first column,
19 \$234 million is within the range of what the
20 Bouchard et al study estimates is spent on
21 fentanyl in British Columbia. So it's meant to
22 be scaled to be approximately right.

23 The second row is the typical transaction
24 size for people at that market level expressed
25 in kilograms of total material in the bag

1 purchased. So a typical purchase size for a
2 heroin, or "down" I guess is the jargon in
3 Vancouver, is .4 grams, sometimes called
4 4 points, and so you see that .0004 kilograms
5 corresponds to that .4 grams. And likewise
6 reading across that row those might be typical
7 transaction sizes for players at those other
8 market levels again expressed as the amount of
9 material in the form that it is presented to the
10 retailers.

11 What I mean by that is that when someone
12 buys heroin in an illegal market it would be
13 extraordinarily uncommon for it to literally be
14 a bag where 100 percent of the molecules in the
15 bag or diacetylmorphine. There's filler, would
16 be the slang term for it, more technically
17 diluents and adulterants in the bag also. So
18 this is the total weight of the bag at the
19 concentration or potency that is typical of a
20 street transaction.

21 The third row is the frequency of
22 transactions. We're imagining that the users
23 are buying daily. And it's typical that as you
24 move up to these higher levels of the market
25 they have a lower, quote/unquote, cycle

1 frequency. They make fewer transactions per
2 year because they're bigger transactions, more
3 complicated to negotiate. The 1,460 is the
4 total weight, so roughly 1.5 metric tons of
5 material, and that would be the same at each
6 level apart from seizures or accidental
7 disposals. And accidental disposal would be
8 something like the police raid a drug dealer's
9 premises and they are flushed down the toilet
10 before the police get a chance to seize them.
11 Those are not inside a final market country
12 usually terribly large, so we didn't complicate
13 things by adding those, but one could if one
14 wanted a fancier model. Then the next line is
15 the market price per gram of material at the
16 potency of retail transaction across those
17 different market levels. So those are basic
18 descriptors and in the best of all possible
19 worlds all those numbers in yellow would be
20 estimated specific to British Columbia, and as I
21 suggested, what we did is we used our general
22 expert knowledge of markets around the world to
23 guess at numbers that are wildly off, but those
24 are not by and large rooted in Vancouver
25 specific studies at present.

1 Q Just a quick question before you carry on. The
2 \$160 number, where does that come from?

3 A (JC) So there are some studies we are able to
4 read about retail heroin prices that are
5 specific to Vancouver and British Columbia and
6 the median price of a point -- that's just a
7 slang jargon for typically a .1 gram unit of
8 heroin purchased on the street -- is \$20. But
9 there's a range of prices that goes below that.
10 A common reason is that there are quantity
11 discounts in illegal markets. So if you buy
12 4 points at once, the price per point might be a
13 little bit lower, in the same way that if one
14 were in a grocery store buying a larger box of
15 something it's sometimes a lower price per unit.
16 So our guess is that the actual average amount
17 of money spent per point purchased is a little
18 bit below the median. So \$16 per point and
19 hence \$160 per gram of material is our best
20 guess. This is informed in particular by a
21 study by Stockwell. I think the date for that's
22 2010.

23 Q Yes, and just the reference I think you've got
24 it a footnote 3 of your paper. We don't need to
25 go there but just for the record. I interrupted

1 you. So we've walked through the organization
2 of the market's buying habits and prices. That
3 brings us to spending on drugs, the market size
4 of 234 million.

5 A (JC) Yes. So let me comment briefly on the
6 colour coding scheme here. Yellow are
7 parameters or assumptions or facts about the
8 world that you need to plug into the
9 spreadsheet, and then stuff that's not yellow is
10 sort of logical arithmetic consequences of those
11 yellow numbers. So the 234- is basically
12 multiplying the number of users times the
13 amount, the size of a purchase times the number
14 of purchases per year times the price per
15 purchase. So if you believe the four numbers in
16 yellow above the 234- in that column, then
17 arithmetic gets you to the 234-. And likewise
18 the other numbers there that are describing the
19 net revenue market level, they are explaining of
20 that 234- how many remains at each of those
21 market levels.

22 Q With the 234 million we are starting then
23 looking at this number, we are starting at the
24 point where we were yesterday, which was here is
25 the size we estimate of the retail market, and

1 yesterday it was fentanyl, today we're talking
2 about a hypothetical heroin market. And next I
3 understand you're going to show us, I mean, you
4 say in this paper, it's important to remember
5 that cash flows up where that cash lands. If
6 you can take us through that.

7 A (JC) Yeah, happily. I think this phrase that I
8 guess is pretty common in Vancouver "down" is
9 actually a lovely phrase because it's sort of a
10 jargon that says this is an illegal market
11 opioid purchased for non-medical use and exactly
12 which opioid is in that bag of down has evolved
13 over time. In 2010 most of that opioid was
14 diacetylmorphine, and in 2020 most of that
15 opioid is fentanyl or other used synthetic
16 opioids. But a lot about the structure of the
17 market has remained the same even though the
18 particular molecule of opioid that is being
19 purchased has changed. So that's sort of
20 another reason why it made sense to start with
21 the heroin market, is most of this table and all
22 of its basic structure and logic carries forward
23 to the contemporary time.

24 But, yeah, the 234- basically if prices
25 double at each market level -- and that's the

1 maintained assumption in this table and remind
2 me to come back and comment about that
3 assumption in a minute -- but if prices double,
4 then half the money stays with retailers, a
5 quarter ends up with the wholesalers, an eighth
6 ends up with the importers and an eighth goes to
7 the foreign suppliers.

8 Q And that's where we see the retailers retaining
9 117 million, wholesalers 58 million, importers
10 29 million and foreign suppliers 29 million,
11 those bold numbers down there?

12 A (JC) Yep, exactly. They're just sort of half,
13 quarter, eighth, eighth of the 234-. And if the
14 numbers look like they don't quite exactly add
15 up that's just because there's some extra
16 significant digits that are not shown and
17 there's rounding.

18 Q Right. And then underneath the next line you
19 adjust for the cash purchases and the disposal
20 of cash in business or other every day needs for
21 each level, and can you just walk us through
22 that.

23 A (JC) I would be very happy to. If it's okay I'd
24 like to back to the idea that prices double at
25 each market level. This is an example of where

1 I really think it's kind of a placeholder
2 number. The markup from one level to the next
3 is not always exactly the same multiplier. In
4 this illustration it's doubled at each level.
5 There's no physical law of the universe that
6 says that the price markup has to be the same in
7 each of the different levels. And this is
8 really a round number and that helps to talk
9 through the logic. It may well be on the high
10 side, and so as I suspect you'll get us to
11 later, we also work all of these numbers where
12 the multiplier is 1.6, not 2. And I think our
13 experience looking at different markets around
14 world is the multiplier is often a little shy of
15 2, so it may well be somewhere between what's
16 illustrated here and what we do with the 1.6,
17 but I want to stress that's a place where we're
18 dropping in a round number and it would be great
19 if it could be customized to Vancouver specific
20 numbers. The same way that 160 that you had me
21 talk through is based on a Vancouver specific
22 estimate, the 80, 40 and 20 could be. It would
23 take potentially some additional data collection
24 that we don't have access to ourselves, but
25 ideally that would be tailored to the market.

1 Q So --

2 A (JC) Si if that's okay then I'll go forward and
3 answer the question you asked.

4 Q Yeah, what you're saying is the multiplier is an
5 assumption here and we'll get to later how more
6 research is required for data to adjust these
7 assumptions and one of those data points is what
8 is the multiplier at each level?

9 A (JC) Yeah, exactly. All right. So that row
10 that we were just talking about has the 117, 58,
11 29 and 29 is the revenue net of the cost of
12 goods sold, COGs. That is cash that is parked
13 at each of those market levels. Now on that
14 cash that people operating at that market level
15 receive, some of it they're able to just spend
16 as cash and some of it they can't so easily
17 spend as cash so they have to dispose of in some
18 other way. And the yellow numbers there,
19 100,000, 250,000 and 500,000, are sort of
20 placeholder guesses of what each operation at
21 each of those market levels might be able to
22 spend in cash. So for the retailers it's not an
23 operation, it's pretty much usually just an
24 individual person, so the guess here is maybe a
25 person living in Vancouver or living in

1 British Columbia might be able to spend \$100,000
2 in cash. And moving over to the wholesalers,
3 wholesalers often have assistants, people they
4 higher, so there that 250,000 is meant to stand
5 for what the wholesaler himself or herself
6 spends on their food, for instance, and also the
7 wages that they pay, and likewise with the
8 importers. And then if you multiply those
9 guesses of amounts that could be spent in cash
10 per operation by the number of operations at
11 that market level, that first row of the table,
12 then that gives a guess of how much cash that
13 was retained at that market level can simply be
14 spent and hence does not have to be dealt with
15 in a more complicated way.

16 Q So what you're showing here, just let me -- some
17 broad conclusions here, most of the cash stays
18 at the retailer level?

19 A (JC) Correct.

20 Q But at the same time most of it is spent on
21 day-to-day living expenses?

22 A (JC) Correct.

23 Q And there's very little left at the retail level
24 even though that's the place where most of the
25 cash stays to require official or professional

1 money laundering services?

2 A (JC) Exactly. And it's simply because there are
3 a whole bunch of retailers, so even though the
4 total revenue net of cost of goods sold by that
5 whole sector is not small, when you divide it by
6 the number of people working at that market
7 level, then the revenue per person is not large.
8 Retailers are not making as much money as
9 importers on a per person basis.

10 Q You say later that with respect to retailers it
11 might actually be even less that needs to be
12 laundered at the end of the day, and why is
13 that?

14 A (JC) Yeah, so there are multiple reasons for
15 that. One, perhaps not the largest, is that
16 some of the income that retailers receive is in
17 kind versus as opposed to cash. So an example
18 would be a drug user who is a burglar as one of
19 the ways they generate money might sometimes
20 steal money and sometimes steal an object, a
21 radio or something. And there is some amount of
22 transactions at the retail level that are
23 effectively like a barter transaction. The
24 retailer is providing the drugs and the user is
25 purchasing it with, say, a stolen radio or

1 sometimes sexual favours. And so that
2 \$117 million is more like that's what it would
3 be had all of those transactions been cash
4 transactions and none of it was in kind barter.
5 The proportion of retailers' revenue that is in
6 kind or barter is not a well-studied thing. A
7 study in the United States thought that it might
8 be on the order of one-eighth, but I wouldn't
9 put too much stock in that figure. By and large
10 the retailers can't pay their suppliers in
11 radios and so on, so it's mostly cash that goes
12 up to the higher levels. That's something.
13 It's probably not the biggest thing. The
14 biggest thing may be that we created that column
15 with the image that the retailers were like
16 full-time workers in this illegal activity and
17 quite a bit of retailing is not done by people
18 who are working 40 hours a week at retailing
19 drugs. So the 1,000 at the top of that column
20 is like a 1,000 people who are working full-time
21 might be able to provide that amount of retail
22 drug selling services, but there very possibly
23 are more than 1,000 individuals who are
24 providing those services and hence more than
25 1,000 people who can use some of that cash

1 proceeds to buy food, rent and other things.

2 Q So there could be the equivalent of
3 1,000 full-time positions, but it's spread out
4 amongst part-timers, perhaps as many as 2,000,
5 3,000, which makes each person's takeaway of
6 that 117 million much less?

7 A (JC) Exactly. You said that better than I did.
8 Thank you.

9 Q I'll make a note for once. And then you do
10 mention self-dealing as well as perhaps a factor
11 that could --

12 A (JC) Oh, yeah, yeah. Right, so some of these
13 retailers are themselves users, and sometimes
14 heavy users, and so they are people who consume
15 more than an otherwise similar person who is not
16 consuming expensive drugs on a daily basis, so
17 they have a greater capacity to spend than
18 somebody else would because heroin is a pretty
19 darn expensive thing, so if you have a heavy
20 heroin habit you're spending more than your peer
21 who is only buying food and rent and so on, yes.

22 Q Right. So if we've whittled away here at the
23 amount of money that's left for retail sellers
24 to dispose of to very relatively small amounts,
25 so what is left in terms of money that needs to

1 be dealt with by some kind of professional money
2 laundering means?

3 A (JC) At the retail level or in total?

4 Q No, moving on from the retailers. I think that
5 we've -- leave retailers aside.

6 A (JC) Yeah, so the same logic basically applies
7 to the other two market levels, so the 58- would
8 be \$58 million in revenue net of cost to goods
9 sold that is parked at the wholesalers level of
10 the market and they can spend a certain amount
11 of money in cash in this particular table that
12 is guessed to be \$25 million. And here we're
13 very much in the realm of guessing. These are
14 not numbers that are often studied or we know
15 well, but whatever amount they're able to spend
16 in cash, the difference between that is what
17 remains to be dealt with [indiscernible] 33- in
18 this table. And similarly for the importers,
19 \$29 million in revenue and other cash and goods
20 sold minus the number in this table is 5- that
21 we guess might be able to be sold spent in cash
22 leaving 24-. And the logic here is the one that
23 you alluded to earlier: because there are so
24 many fewer people operating at these higher
25 market levels it's harder for them to spend all

1 of this cash revenue net of the cost of goods
2 sold than is the case at the retail level.

3 Q And would this indicate that anti-money
4 laundering efforts would have more of an effect
5 at the higher levels of this supply chain if you
6 are targeting --

7 A (JC) Yes. I think that's true, particularly if
8 one thinks of anti-money laundering the way that
9 one normally does as things involving banks. If
10 somehow one tried to make it very difficult to
11 pay rent or buy groceries with cash, that could
12 effect the retailers, but as we conventionally
13 understood anti-money laundering efforts, they
14 are going to make life challenging primarily for
15 the people who make more money than retailers
16 do, the wholesalers and the importers.

17 Q And so, I mean, on the assumption and going back
18 to the question of what's the utility of doing
19 this kind of analysis, I mean, on the assumption
20 that it's easier for law enforcement to target
21 retail dealers who are out in the open dealing
22 and are perhaps more observable than the higher
23 levels of the supply chain, this analysis
24 provides maybe a better, a value assessment of
25 AML measures. And, Professor Reuter, I'll let

1 you perhaps give the evidence.

2 A (PR) So, I mean, the way in which money
3 laundering has been sold as a means of
4 controlling drug markets, and there have been
5 times when it's gotten a lot of emphasis at
6 least rhetorically in the US, is that it is the
7 way to reach people involved in the drug trade
8 who never touch the drugs. They can stay away
9 from the drugs, but they can't stay away from
10 the money is the argument. And so if we follow
11 the money, then we can get those people that
12 otherwise can't be seen. So it sort of
13 reinforces your point that money laundering,
14 maybe money laundering controls could be used,
15 investigations could be used against retailers,
16 but there's so many other ways one can catch
17 retailers that at the higher levels money
18 laundering investigations may be the best way of
19 reaching people who have very -- who do well at
20 concealing their connection to the drugs
21 themselves.

22 Q Professor Caulkins, I was going to move to
23 figure 1 on page 8 unless there's anything with
24 respect to this table that you think we should
25 cover before moving on?

1 A (JC) No, be glad to move on.

2 Q Okay. Madam Registrar could you move on to
3 page 8, please, figure 1.

4 Professor Caulkins, if you could tell us
5 what we're looking at here. And I'll just
6 mention that we're looking at a chart, a figure
7 here that's under the heading -- we don't need
8 to go back to it, but under the heading of
9 "Sensitivity Analyses." If you could tell us
10 what is the purpose of this and what we're
11 seeing?

12 A (JC) Sure. Well, let me start with what's the
13 purpose of sensitivity analysis and then this
14 particular chart. So sensitivity analysis
15 analyzes the sensitivity of the conclusions to
16 assumptions made in the analysis, including
17 assumptions about particular parameter values.
18 So as I suggested a lot of the yellow parameters
19 in that previous table are not known with
20 precision. We made a best guess, but you would
21 like to know whether or not varying that best
22 guess a little bit would overturn the
23 conclusion. So that's the purpose of
24 sensitivity analysis.

25 This particular chart is trying to look at

1 makeup of that demand for money laundering
2 services, how much comes from retailers, how
3 much comes from wholesalers and so on, varies,
4 and that's what this graph is meant to display.
5 So the particular observation is that the blue,
6 which is the demand for money laundering by
7 retailers, only exists if criminals can't spend
8 very much money on cash. It shrinks down to
9 nothing quite quickly as they're able to spend
10 money on cash for reasons we've talked about.
11 At the far other extreme, the bottom band is the
12 amount of money that goes to foreign suppliers
13 of the drugs, that is completely unaffected by
14 the ability of criminals within Canada to spend
15 some of their illegal income as cash. So that
16 band stays exactly the same size and then the
17 wholesalers and importers are in between.

18 Q Just noting there that the blue band in your
19 graph here it ends at \$117,000. That's at the
20 point at which there's nothing left for
21 retailers to launder; correct?

22 A (JC) Right. I mean, the 117- is rounded off,
23 it's 116,800. That doesn't matter. But yeah,
24 the base case in table 1 has \$116,800 retained
25 per retailer at the retail level and so if each

1 of those folks could spend on average 116,800
2 they would be spending all of the revenue net of
3 cost to goods sold.

4 Q All right. Now, the other one of the parameters
5 that you've mentioned that needs to be taken
6 into account that we already we've discussed
7 that we need more data on is what is the
8 multiplication factor at each level, and this is
9 where the analysis gets more complex, at least
10 visually. So if we could move on to page 10,
11 figure 2. Now we've got solid lines and dotted
12 lines. Can you explain what we're looking at
13 here.

14 A (JC) Yeah, absolutely. So let's do just solid
15 lines first. The previous graph was varying the
16 ability to spend but keeping those proportions
17 the same. Wholesalers ability to spend cash was
18 locked in at 2.5 times retailers' ability to
19 spend cash, and importers' ability to spend cash
20 was locked in as 5 times. You know, those are
21 just -- those are guesses. They're not
22 necessarily right. So this is a different
23 display, and you're right, it's more complicated
24 to read, that attempts to allow the reader to
25 insert different beliefs about the ability to

1 services, but yeah, you can think about it
2 either way. So if the solid lines are okay,
3 then what we have here is going back to that
4 question of well, do prices really double each
5 time you move one layer down the distribution
6 chain? And maybe they don't fully double. And
7 the dashed lines are the exact same as the solid
8 lines except what it would look like if prices
9 are only increasing by 60 percent from one
10 market level to the next, not by 100 percent.
11 And without looking at the picture, just sort of
12 thinking, you realize well, if prices are less
13 than doubling, prices don't increase as much
14 when you move from one level to the next, then
15 less of that money stops at the retail level and
16 more of it moves further up the distribution
17 chain. So that's why the dashed line for
18 retailers is below the solid line. If price
19 markups are smaller then you have lower demand
20 for money laundering services from retailers but
21 more of the money moves farther up the chain and
22 so the lines that correspond to importers -- and
23 I'm sorry, I'm colour blind; I think they might
24 be yellow or green, but they're the flattest
25 ones -- there the dashed line is higher than the

1 solid line because if price markups are lower,
2 more goes up to the importer level and so their
3 demand for money laundering services would be a
4 greater proportion of what users spend on drugs.

5 Q Right. Can you just explain the blue line, the
6 foreign suppliers line, that stays flat, and is
7 that because we're not concerned with the amount
8 of money that foreign suppliers are spending in
9 this scenario?

10 A (JC) Correct. Yeah, so actually I'm not sure
11 with whether I like the placement of the blue
12 line there because I don't mean to imply that no
13 money goes to foreign suppliers. What you said
14 is 100 percent correct, the amount of money that
15 goes to foreign suppliers is uninfluenced by
16 domestic dealers' ability to spend cash if the
17 import price, that is the price importers pay to
18 foreign suppliers, is 1/8th of the retail price
19 then 1/8th of what retailers spend on drugs goes
20 out of Canada to pay those foreign suppliers
21 irrespective of what criminals inside Canada can
22 do with their cash. But you said it exactly
23 correct.

24 Q Not meant to indicate that the foreign suppliers
25 are not retaining any of the cash from the

1 market?

2 A (JC) Yeah, correct. Correct.

3 Q I'm going to move on then to the next figure,
4 figure 3. And going back again to this idea of
5 the multiplier of between levels of the --
6 sorry, Madam Registrar, that's at page 13.
7 Going back again to the idea that proportion of
8 an amount of money that is left to be laundered
9 really depends on that price increase from one
10 level to the next. So can you tell us what
11 you're trying to illustrate here with this
12 figure?

13 A (JC) Sure. I think you actually really have
14 already set it up very well. The horizontal
15 access is this price multiplier. So the base
16 case in table 1 corresponds to 2.0 on the
17 horizontal access. The vertical access
18 continues to be proportion of money spent on
19 drugs that is potential to ban for money
20 laundering services at the different levels.
21 And yeah, you're exactly right, if those markups
22 are really big, or to the right-hand side of
23 this graph, then more of the money stays with
24 the retailers and so they could account for a
25 greater amount of demand for money laundering

1 services. Conversely, if you go to the
2 left-hand side of the graph, the markups are a
3 smaller proportion, like at the far left that
4 would be 50 percent increase in prices each step
5 down in the distribution chain, then the
6 retailers are retaining so little cash that if
7 they're able to spend \$100,000 per full-time
8 equivalent dealer they can spend it all. So
9 there's no demand from them. And conversely if
10 these price increases at every single one of the
11 market levels are kind of small, that means that
12 the import price that the importers pay the
13 foreign suppliers gets up to it looks like
14 30 percent or so of the retail price, and so for
15 every \$100 that the users spend at retail, 30 of
16 those 100 would be going abroad to pay the
17 foreign suppliers.

18 Q Just can you explain what's the relationship
19 between the proportion of money that stays at
20 each level and could require money laundering
21 services and the amount of money? So we're
22 starting at with a fixed market price. The
23 multiplier doesn't impact what the price is at
24 the retail level; correct? That's the first?

25 A (JC) I'm sorry. Yeah, now I understand your

1 question. That's absolutely true. We anchored
2 on the \$160 per gram of material from the
3 Stockwell study referred to earlier and so when
4 we adjust the multipliers what we're changing is
5 the price that the retailers pay the
6 wholesalers, that the wholesalers pay the
7 importers and the importers pay the foreign
8 suppliers. Correct. We hit on the 160 because
9 of all the price numbers that's the one that I
10 think is best understood. There are a lot of
11 studies that look at the users and the retail
12 market. In fact Vancouver is sort of a world
13 leader in exactly that kind of research.

14 Q All right. And so looking at the foreign
15 supplier band just as an example, at the
16 multiplication level of 1.5 of price increase,
17 the foreign suppliers are retaining 30 percent
18 of the market share. Is that what that shows?
19 I think what I'm asking here for is to help me
20 understanding the correlation between the
21 proportion and the amounts that go to each
22 level?

23 A (JC) Sure. So when we're at the far left of the
24 graph and prices are marked up by 50 percent,
25 the reciprocal of 1.5 is two thirds. So if

1 users are spending \$100 then one third of that
2 stays with the retailers and two-thirds of it
3 goes up to be revenue of wholesalers, the
4 retailers spending money buying drugs from
5 wholesalers. Then likewise of all the money
6 that the wholesalers take in, two-thirds of that
7 passes up to the importers inside Canada and of
8 all the money that the importers inside Canada
9 receive as revenue two-thirds of that gets sent
10 on to the foreign suppliers. So two-thirds
11 cubed is 8 over 27, so 8/27ths, which is the
12 number you're seeing there just expressed as a
13 decimal, of the money that the users spend
14 passes all the way up the distribution chain
15 inside Canada and goes abroad. Peter, you're
16 going to explain that better.

17 (PR) I think what Eileen is asking about is
18 the total amount changed and the answer is no.
19 We are freezing both the retail price and the
20 quantity. So the total [indiscernible].

21 (JC) Yes, exactly. We froze that 160 and we
22 froze the roughly 1.5 metric tons, which is
23 consistent with the Bouchard et al estimate of
24 the total size of the down market in
25 British Columbia.

1 Q We're just showing different way that this
2 market of 234 million could be carved up?

3 A (JC) Thank you. M'mm-hmm.

4 Q Okay. Now, well, the important takeaway from a
5 research perspective of this graph is that it's
6 important to get that number right. If you want
7 to see where the cash is going and what the
8 demand for money laundering is you need to know
9 what the multiplier is?

10 A (JC) Absolutely. Completely equivalent to
11 knowing what the multiplier is is just want to
12 know what prices are at those other market
13 levels. We got a pretty good handle on the
14 price users pay retailers. You would also like
15 to know what retailers pay wholesalers, what
16 wholesalers pay importers, and what importers
17 pay their foreign suppliers. So there's three
18 other prices at those higher market levels, and
19 if you knew those three other prices, you'd know
20 an awful lot.

21 Q Okay. And you touch a little bit further on in
22 this in the paper, and I want to address some of
23 that, part of that now. You say at the bottom
24 of page 13, you say that in some respects
25 monitoring market prices is actually easier than

1 monitoring demand or quantities consumed and can
2 you tell us why that is?

3 A (JC) I'm very happy to. Peter, were you wanting
4 to say something to elaborate on the previous
5 points?

6 (PR) It was on the previous point, but let
7 me not interrupt. Go ahead.

8 (JC) So this is a pretty important and kind
9 of subtle and unappreciated point, but the
10 difficulty of estimating the size of the market,
11 whether it's number of users or quantity
12 consumed, I don't think I need to elaborate on
13 that. That's hard to do. Those are hidden
14 populations. All the testimony yesterday was
15 about how hard it is to estimate hidden
16 populations. That's a difficult thing to do.
17 The nice thing about trying to understand prices
18 at a given market level in a -- sometimes we use
19 the term mature market or a stable market or an
20 established market -- is there's this concept
21 that economists use called the law of one price.
22 It's not a law passed by legislators, but just a
23 rule or empirical observation. And the basic
24 idea is that at any given market level there has
25 to be some standard going price because if

1 somebody tried to charge wildly more than that
2 standard going price, then nobody would buy from
3 them. And conversely if somebody went below
4 that price, then all people would want to buy
5 from that person. So this is perhaps maybe best
6 illustrated in everyday life by thinking about
7 the price of gasoline at different gas stations.
8 Within any particular neighbourhood for any
9 given quality of gasoline and quality of
10 associated services, like whether it's
11 self-serve or not, there's not a lot of
12 variation in the price per litre of gasoline and
13 that means that to understand roughly what the
14 market price of gasoline is you don't need to
15 see every single gas station. You don't even
16 need to have a random sample if all of those gas
17 stations are charging pretty close to the same
18 price. And there's probably -- well, there
19 is -- more variation in the prices charged at a
20 given level of an illegal drug distribution
21 system than there is for gas stations because
22 there are poorer information flows. It's harder
23 to comparison shop, but that's the general
24 principle, is if there is a going price at a
25 market level you don't have the burden of trying

1 to sample all of those operators or even having
2 to get a truly random sample of them. As long
3 as you get a reasonable number of data points,
4 you're going to get into the right ballpark. So
5 that's the meaning of that comment.

6 Q So the research can be done. It's not a massive
7 undertaking. It's a matter of getting a
8 relatively smaller number of data points than
9 say for example is involved in the Bouchard et
10 al study?

11 A (JC) Yeah. You need enough data points to be
12 able to take an average, but you are
13 particularly not stymied by the need to have a
14 random representative sample. It's not hard in
15 some sense to get a large sample of drug users
16 to answer a survey, but if you're not careful,
17 those people may not be typical. They may be
18 different in systematic ways from the people
19 that you're missing, and so that's a real
20 challenge. And the Bouchard et al of the world,
21 they're drawing on some of the people who are
22 unusually skilled at the ability to obtain good
23 samples of drug users. It's a very difficult
24 thing to do. But when -- to the extent that
25 this law of one price is applying, you still

1 **PETER REUTER, a witness**
2 **for the commission,**
3 **recalled.**

4 **EXAMINATION BY MS. PATEL (continuing):**

5 Q Professor Reuter and Professor Caulkins, you
6 move on from the algebraic models that we've --
7 well, the one algebraic model and then the
8 sensitivities to it that we just worked through
9 to consideration of economic logic, which you
10 say supports the conclusions that you are seeing
11 from the algebraic model. And I think this
12 question is best addressed to Professor Reuter
13 to explain what the theoretical model is that
14 you apply here referred to as the risks and
15 prices model of drug prices and what it shows
16 and how it complements the algebraic model that
17 we've just been through with Professor Caulkins.
18 Oh, and, Professor Reuter, you're muted.

19 A (PR) So the basic inside of the risks and prices
20 model is that the reason drugs or illegal drugs
21 are expensive relative to any other commodity is
22 that the participants in the drug trade incur
23 risks which they have to be compensated. There
24 are two classes of risks. One set of risks come
25 from the government, risk of being arrested,

1 incarcerated, having drugs seized, having assets
2 seized. Another set of risks come from other
3 participants in the trade. They can be robbed,
4 they can be killed. Bad things can happen as a
5 result of that, and that most of the cost of
6 delivering drugs to users is in the form of risk
7 compensation. And the reason that's a useful
8 insight for this particular exercise is that you
9 think about where the risks are concentrated,
10 and retailers are the most exposed to both kinds
11 of risks, the risk of being arrested and
12 incarcerated and the risk of being robbed or
13 victimized in other ways. And there are very
14 large number of retailers, so there's
15 combination of the fact that they incur high
16 risks and there are very many of them is the
17 fundamental logic of why so much of the revenue
18 is associated with the retailing. And so that
19 sort of seemed to us important to otherwise --
20 sort of this otherwise soft of arbitrary
21 assertion that so much of the money goes at the
22 bottom. It's because they in aggregate face
23 most of the risk. And even though each of them
24 maybe demands less for being compensated for a
25 particular risk, the fact that there are so many

1 more of them than there are of the high level
2 players means that they end up with the total --
3 with a large share of the total compensation.

4 Q How does that help to explain why the retail
5 levels don't need money laundering services even
6 though they keep this large pack of cash?

7 A (PR) That's a separate observation. The fact
8 though they are a very large number, they earn
9 each of them on average much less than is earned
10 by those who are at the higher levels. And so
11 even though they may get half of the cash, they
12 will be unlikely to account for half of the
13 demand for money laundering services because
14 each of them spends a large share of their
15 modest income, not small but modest income on
16 everyday items that you can purchase in cash.
17 That's separate from the risks and prices model.

18 Q You've spoken about the risk that part of what
19 I -- at page 14 of your report you talk about
20 three principles of the risks and prices --
21 there we are, the risks and prices model. You
22 talk about prices being in equilibrium, prices
23 being justified and the compensation for risk,
24 which is the last point which you've just
25 addressed. Can you talk a little bit about the

1 equilibrium point.

2 A (PR) This is essentially the variant of what
3 Jonathan was talking about just before the break
4 which is the notion that at any one time there
5 is a price for heroin, retail price for heroin
6 in Vancouver, and that price is not subject to
7 dramatic changes in short periods of time and
8 how stable these equilibria are is something
9 that Jonathan and I spent a lot of time thinking
10 about, and I wouldn't want to make strong
11 assertions, but there is -- I mean, if you look
12 at the data in the Bouchard report that shows a
13 pretty stable price over -- I remember looking
14 at the period, I think it was 2016 to '18,
15 something like that. It was a modest range and
16 didn't change my [indiscernible] over time, and
17 that's because not a lot changes from a mature
18 drug market of the time. That is the
19 enforcement risks and the risks from other
20 participants don't change much over time. I
21 mean, it's useful to compare it with an immature
22 market. So the markets that are just emerging
23 you might find that there are relatively few
24 suppliers and a couple of them are caught, then
25 there might be a short-term spike in prices as

1 users just can't find suppliers and then a
2 couple -- you know, in some period there's one
3 month and six months, others come into the
4 market and prices go back to the previous level.
5 But when you've got a market that is as well
6 establish as the Vancouver heroin market, very
7 unlikely that [indiscernible] small number of
8 suppliers will have a substantially effect on
9 prices. The sort of famous exception to that is
10 the Australian heroin drought in the late 2000
11 in which there was some supply shock that really
12 made a difference and sent the market to a
13 different and less stable equilibrium --

14 Q Professor, we are having just a little bit of
15 difficulty with your audio again.

16 A (PR) Okay. I'll lean in.

17 Q Thank you. Thanks.

18 A (PR) Sorry. Do I need to repeat that?

19 Q Perhaps just the last part about the Australian
20 heroin market. It was an interesting point and
21 I would hate to lose it?

22 A (PR) Okay. The Australian drought is an event
23 of late 2000, very close to Christmas 2000, in
24 which suddenly heroin became much less
25 available. Prices went up, consumption went

1 down, there was a shift to other drugs, but the
2 market was shifted from one equilibrium to sort
3 of a lot of fluctuations. Actually Jonathan has
4 done more work on this than I, which you see
5 just the kind of instability that you do not see
6 if you look at prices in the heroin market in
7 Vancouver.

8 Q And the justification element of the model, can
9 you speak to that?

10 A (PR) Well, that is the notion that this price is
11 a sort of determined by competitive forces and
12 that there are not in economist terms excess
13 profits. These are all compensations for
14 specific cost factors and what's odd in this
15 market is there's this cost factor which is
16 compensation for assuming these risks, and those
17 risks -- I'm not sure if I'm jumping ahead, but
18 one reason this is a useful model is that it
19 enables you to think about how things might
20 change over time so that if, for example, there
21 is a relaxation of enforcement against low level
22 heroin dealers then we should expect to see a
23 decline in the compensation that they need to
24 stay in the market. I mean, the way that shows
25 up is not that they sit around a table and agree

1 oh, we don't need to earn as much, but the
2 notion is that some people who otherwise would
3 not be willing to sell heroin because it was too
4 risky, would now decide to enter the market,
5 that increases the supply of labour and drives
6 down the cost of labour. So that's how that
7 works.

8 Q And similarly does it help to explain why a
9 smaller proportion of the total retail pie stays
10 in the hands of importers or wholesalers? Are
11 they at less risk of violence and arrest?

12 A (PR) They individually may be at higher -- you
13 know, I doubt that they are at higher risk of
14 arrest or seizure. If arrested they are likely
15 to get a longer sentence, but the really
16 critical thing is not that but the fact there
17 are so many fewer of them, so that the risk even
18 if each of them demands a very high reward for
19 taking those risks, there are so few of them
20 that it doesn't add up to a large total cost of
21 moving that 1.5 tons of heroin.

22 Q I do want to move on to cover some important
23 sections of your paper dealing with
24 pharmaceutical opioid diversion and fentanyl,
25 but I thought I would give either of you an

1 opportunity to comment on the economic logics of
2 the market before I do that.

3 A (PR) Could I raise two points related to what
4 Jonathan talked about that even precede that,
5 and one is, I mean, like Jonathan I am a great
6 price man. I want to get better measures of
7 prices. I think that gives us a lot of insights
8 into the markets. But there's one complication
9 which is really very important to pay attention
10 to, which is that users can report what they
11 spent on purchasing whatever they got the last
12 time, they do not know what they got. And one
13 of the early papers that Jonathan and I wrote
14 was about how variable is the content of the
15 standard bag of heroin -- I can't remember if it
16 was heroin or cocaine that we were looking at --
17 in a city, you know, in a given city. And so
18 what you have to -- the complication is that you
19 actually to get a good price series you need to
20 have not just self-report of how much was spent
21 but ideally you want to have what they purchased
22 so you know how much they got for the
23 [indiscernible]. And again Jonathan is sort of
24 the one who really used that insight to develop
25 an important price series, but that's a critical

1 issue.

2 The second one is that we talk about a
3 markup as though it's made constant across
4 levels of the markets. It is not -- that's a
5 sort of analytic convenience to assume that it's
6 the same across all levels, and again Jonathan
7 has done most of the work on the branching
8 factor and on just how much -- and it can vary
9 not only over time but across market levels, and
10 again the sort of risks and prices is really the
11 framework I would suggest to suggest why it
12 might vary, how it might vary across different
13 levels. I believe in the importance of prices,
14 but I don't want to understate the complexity of
15 getting the data.

16 Q Professor Caulkins, anything to add to that?

17 A (JC) No. That's all -- I agree with all of it.

18 Q At page 17 of your report you address
19 pharmaceutical opioid diversion and think about
20 how this phenomenon could and the abuse of
21 pharmaceutical opioids could impact the demand
22 for money laundering. To get to the point, you
23 conclude that the expansion of prescription
24 opioid abuse and dependence has little direct
25 effect on the demand for money laundering. Can

1 you tell us why that is.

2 A (JC) Is that directed to me or to Peter?

3 Q Well, you've responded first, so we'll direct it
4 to you.

5 A (JC) Excellent. Sure. So the short answer is
6 that most prescription opioids that are diverted
7 and then purchased are diverted at very low
8 levels, so there isn't any high level of that
9 distribution chain. It might be a person with
10 multiple prescriptions using one prescription
11 selling the pills from other prescriptions, so
12 they're like all retail sellers and they are
13 often not even full-time retail sellers. So you
14 don't have those market layers of importers and
15 wholesalers in the diverted prescription opioid
16 market. I mean, I don't want to say there's not
17 ever any, but that's just not most of the story.
18 Most of the story is it's someone who is a user,
19 user dealer, acquiring and selling to appear at
20 the low level, so nobody ever amasses enough
21 cash that they need to purchase money laundering
22 services. But it's not irrelevant altogether.
23 When there's a lot of diversion of prescription
24 opioids that are abused that can over time have
25 more people develop opioid use disorder and

1 there's a phenomenon, the term that's often used
2 for it is, quote/unquote, trading down, when the
3 person stops using diverted prescription opioids
4 and goes to the illegal market for opioids,
5 heroin in the past, fentanyl now. And so the
6 diversion of prescription opioids can over time
7 increase the total demand and total size of the
8 down market, but the model has already paid
9 attention to that. That would just be the
10 equivalent of that 10,000 users becomes a bigger
11 number and the whole thing just scales up but
12 does not alter the proportion of users spending
13 on down that would need to be laundered.

14 Q Professor Reuter, do you have anything to add to
15 that?

16 A (PR) No, that's fine.

17 Q Then I'm going to move on to the effect of
18 fentanyl and synthetic opioids and it's at
19 page 17 of your report. And I'll just I think
20 the question is -- well, I'll just address it to
21 you first, Professor Caulkins, and you can
22 redirect if it's not appropriately addressed to
23 you. What are the impacts that synthetic
24 opioids -- we tend to think of it all under the
25 heading of fentanyl, but I appreciate there's

1 different substances. What are the impacts of
2 synthetic opioids on the demand for money
3 laundering, thinking through its impact using
4 the model you've developed here?

5 A (JC) It's a great question. It's an important
6 question. It's a much more complex question
7 than the previous one with prescription opioids.
8 So I'll say some things and Peter will probably
9 add.

10 Before trying to directly answer your
11 question, how does it affect the demand for
12 money laundering services, it is worth pausing
13 just to note some of how it makes it harder to
14 think about or answer these questions, and
15 pausing to make sure everybody is on the same
16 page on the sort of physics of what's in a bag
17 and what it means and so on. So let's start
18 with the idea that people have opioid use
19 disorder so they have a disorder demand for
20 opioids in general. There are a very large
21 number of opioids, heroin traditionally a most
22 famous one for illegal; there are the Fentanyls,
23 there's morphine. It's a whole class of
24 chemicals and they all operate on the same
25 neuroreceptors. They're not identical, but

1 they're very closely related and that's one of
2 the things that's very nice about the term
3 "down." It's sort of saying this is demand for
4 black market opioids and we're going to be
5 agnostic about exactly which of the opioids is
6 in that bag.

7 Fentanyl is far, far more potent per pure
8 milligram than heroin in a very specific sense.
9 And this is important to understand. The
10 language that's often used for describing this
11 is morphine equivalent doses and this is how
12 many grams of morphine is one gram of the other
13 substance equivalent to. And for fentanyls it's
14 typically 50 to 100. So you can roughly
15 speaking think of this as fentanyl as 50 to 100
16 times as potent as morphine. And for heroin
17 it's 2 to 5. So heroin is 2 to 5 times more
18 potent than morphine. And so the ratio of those
19 two things, 50 to 100 divided by 2 to 5 is
20 ballpark something in the area of 25. You know,
21 these ratios pertain to equianalgesic properties
22 so they come out of healthcare for pain control.
23 The equivalence for a non-medical user may not
24 be exactly the same, but broadly speaking a
25 given mass of fentanyl produces about 25 times

1 as many hits or doses or days of satiation for
2 someone with opioid use disorder. That's an
3 important fact about the chemical. The second
4 thing that's really important to remember is
5 that whether it was 2010 when the opioid was
6 predominantly diacetylmorphine, fancy name for
7 heroin, or 2020 when the opioid is primarily
8 fentanyl or some other new synthetic opioid, an
9 awful lot of the physical material in the bag is
10 neither of those things; it's filler. The fancy
11 terms are diluents and adulterants. Diluents is
12 a non-psychoactive thing like mannitol. And an
13 adulterant is some other thing that has some
14 psychoactive effect such as caffeine. So the
15 bag you're buying has a whole bunch of filler
16 and it has some amount of opioid in it. Back in
17 2000 when the opioid was heroin it might have
18 been ballpark 20 percent of the material in the
19 bag was actually the opioid, the heroin. Now
20 the proportion that is fentanyl is way smaller
21 than that because fentanyl is so crazy powerful,
22 so now only it might be like 1 percent or even a
23 shade less than that of the mass in the bag is
24 fentanyl, and most of the mass in the bag is
25 some other stuff, caffeine, milk sugar filler or

1 whatever. So at some level at the retail level
2 things may not be all that different. People
3 are still buying a point, which is the standard
4 jargon for a retail package, a unit of down.
5 And in the past it was a lot of filler with a
6 moderate amount of heroin; now it's even more
7 filler with a smaller amount of fentanyl, but
8 the amount of triggering of the opioid receptors
9 in the brain sort of ballpark the same.

10 Now, it's not that there are no differences,
11 and in the report and now in testimony we can go
12 into there are going to be some differences, but
13 I think it's important to recognize that at some
14 level we are just, like, substituting in a way
15 more potent opioid and that retail price of a
16 point seems not yet to have changed a great
17 deal. And that is -- so that's basically true.
18 Where there's a bit of a puzzle is if you go up
19 to the wholesale level where people are trading
20 a kilogram of material at a time, a kilogram of
21 heroin in the past, kilogram of fentanyl now,
22 our price data on kilograms of fentanyl are
23 really, really thin. This is new stuff; it's
24 not well studied. These are -- I don't know
25 that we should even call it data. These are

1 like a handful of anecdotes, but it sure seems
2 like not only is the fentanyl 25 times as potent
3 per unit mass, it's actually less expensive per
4 unit mass. So if you think about at the
5 wholesale level Fentanyl's price per dose or per
6 day of satiation for the customer, it's way,
7 way, way less expensive. It could even be
8 99 percent less expensive, but almost certainly
9 it's at least 90 percent less expensive. So
10 when you're at that wholesale level it's like
11 your cost of raw material just collapsed and
12 became way the heck less expensive. That ought
13 to matter and that ought to affect potentially
14 prices all up and down that supply chain. This
15 general question of, okay, suppose the prices up
16 at the higher level of the supply chain change,
17 what happens all the way down the supply chain
18 is something that Peter and I and a handful of
19 other people have been thinking about for
20 30 years because it relates directly to how you
21 think about the effectiveness of interdiction
22 and source country control. And we can talk
23 more, you probably will want us to, about this
24 additive and multiplicative model, and walk
25 through it, but I hope that sets it up a little

1 bit, and I want to the pause now to see if
2 there's some other part of the setup that we
3 should talk about before diving into the
4 nitty-gritty of additive model and
5 multiplicative model.

6 Q No, I think that was an excellent explanation
7 and just I want to clarify, the cost of fentanyl
8 it's not -- and I think this is what you say.
9 I'm quoting from your paper, and I think the
10 study references Pardo [phonetic], it's not that
11 it's just less expensive by weight. It is much
12 less expensive per morphine equivalent dose; is
13 that correct?

14 A (JC) Absolutely. So it seems to be at the
15 wholesale level even less expensive per unit
16 weight and also it's this factor of 25-ish or so
17 more morphine equivalent doses per pure gram of
18 the material, and you put the two together and
19 it's a very big factor. Peter.

20 (PR) So, I mean, I'm really struck by the
21 fact that at least until early 2019 on the web
22 you could see advertisements from Chinese
23 suppliers offering a kilogram of fentanyl for
24 \$5,000 and every reason to think that those were
25 honest illegal ads that you could, you know, put

1 it on your Mastercard and they would deliver it.
2 Now, maybe Canadian investigators would seize
3 it; that was a risk. I do not know how the risk
4 is shared. But one of the puzzles is the notion
5 that a kilo of fentanyl could have cost tens of
6 thousands of dollars back in 2018 and what
7 Chinese manufacturers were willing to deliver.
8 They certainly did deliver in the US. I don't
9 know in China, but it's hard to believe that it
10 wouldn't have been available to Canadian
11 dealings as well.

12 Q Now, I have a question that's a bit outside the
13 scope of the report itself, but given your
14 expertise both you have on the subject, why is
15 it so much cheaper?

16 A (JC) Well, the short answer is it's synthetic,
17 so -- well, two things, synthetic and super
18 potent. I mean, the total amount of material
19 we're talking about here even when it was heroin
20 is like 1.5 metric tons. That may sound like a
21 lot, but that's a very small amount of material
22 for a market that's worth hundreds of millions
23 of dollars. So we can collectively, chemical
24 engineers and people with skill, you can
25 manufacture most chemicals at prices way, way,

1 simpler more efficient [indiscernible] for
2 fentanyl were developed and that's probably what
3 explains the 2014 entry of cheap [indiscernible]
4 manufactured fentanyl that hadn't existed
5 before.

6 (JC) They were developed and also spread
7 around on the web. So, for example, some of the
8 older ways of making fentanyl required you to
9 maintain careful control of temperature, and
10 that's something that's not difficult for a
11 pharmaceutical company to do, but it's harder to
12 do in your sink in your house. But some of the
13 newer methods don't require that control of
14 temperature during the process, so they become
15 something that I don't want to say any amateur
16 can do, but anybody with reasonable competence
17 in chemistry is able to do.

18 Q And going back to the price issue, yesterday we
19 heard that according at least to VPD price
20 intelligence about the price of a point or of
21 heroin versus a point of fentanyl on the street,
22 leaving aside of course whether anybody can tell
23 a substance is one thing or other, there's no
24 reported difference, it's \$10 or it's \$20, so
25 that -- in your report you go on, and we'll go

1 to it, you suggest that there should be an
2 impact of what could be as much of a 99 percent
3 decrease in the price of the original good at
4 market level, there should be an impact, but
5 what we heard yesterday suggests that that is
6 simply not the case.

7 A (JC) Right. So this is, like, super important
8 and I want to make sure that I explain this
9 well. So that point is about 100 milligrams of
10 material. In the past it might have been, just
11 to pick a number, 25 milligrams of heroin and
12 75 milligrams of filler. Now that point is
13 1 milligram of fentanyl and 99 milligrams of
14 filler. So you're right, the number of dollars
15 paid for that point hasn't changed, but the
16 content of the bag has changed. One of our
17 former colleagues Mark Klein [phonetic] had a
18 fabulous way of explaining this. So it's
19 standard unit pricing and you use the example
20 that this even happens sometimes with candy bars
21 that sometimes candy manufacturers don't like to
22 bounce the price of their candy bar around too
23 much when the price of sugar goes up and down,
24 so they adjust the size of the candy bar a
25 little bit. On the street it's in a cash trade.

1 It's terrifically convenient if the thing that
2 is being transacted illegally has a simple price
3 like \$20, because somebody hands a \$20 bill, the
4 other person hands over the little bag of
5 contraband. That happens quickly, hard to
6 observe it. If the price became \$17.72 and it
7 was a cash business then there's making change
8 and things gets complicated. So the fact that
9 the price of the point seems stable in the sense
10 of the number of dollars offered in return for a
11 point that's not a surprise. To give another
12 example in New York City they don't use the term
13 "point"; they talk about a dime bag. Dime is
14 the slang for \$10. Their standard pricing there
15 is \$10 per bag, and over time what's in the bag
16 changes, as Peter spoke of earlier.

17 Q So the unsophisticated person, use myself as an
18 example, considering that the price of fentanyl
19 is so much cheaper than heroin might think well,
20 the price of the dime bag remains the same, but
21 your cost of goods is so much cheaper there must
22 be a glut of cash somewhere in this supply
23 chain, and is that not the case?

24 A (JC) Well, yeah. So now we'll sort of try to
25 walk through this additive and multiplicative

1 model story. So you are right that if Peter and
2 I are right and these anecdotes are right that
3 the wholesale price per morphine equivalent dose
4 of the opioid has changed dramatically,
5 something has got to change someplace.

6 Q Professor Caulkins, can I interrupt you just for
7 just a second.

8 Madam Registrar, can you actually scroll
9 down to page 19 to table 2. I just think that
10 would be helpful to have that in front of us.

11 A (JC) It sure would. Thank you for that. Before
12 diving into the table let me just say that drug
13 markets sometimes take a long time to get to
14 their new equilibrium compared to other markets.
15 Information flows are poor. So we may -- even
16 though in terms of what's in that point bag
17 Vancouver might have transitioned over to the
18 new equilibrium. Used to be heroin. For a
19 while there was a mixture. Now it's mostly
20 fentanyl and maybe it will be continue to be
21 mostly fentanyl ten years from now. All up and
22 down the supply chain things may not have fully
23 shaken out yet, or even if they may have shaken
24 out as of December 8th they may not have fully
25 shaken out yet in terms of the data that anybody

1 knows about yet because there can be lags
2 between when things change in the market and
3 when you know about them.

4 So we're in this table trying to shed some
5 light on what either is happening as we speak or
6 may happen soon. And the base case line in this
7 table is corresponding to what we had talked
8 about before, sort of the down market before
9 fentanyl came along. The line directly below
10 that says, all right, suppose that all of a
11 sudden at the top of the chain -- we had been
12 speaking about wholesalers before, but I really
13 want to talk about it now at the import level.
14 Suppose the importers are able to purchase the
15 opioid at way lower price than they used to be
16 able to but nothing else has had time to adjust.
17 That's what is meant by "immediately after the
18 import prices fall." And then the third and
19 fourth lines are two stories about how that
20 change in price at the import level could
21 percolate down to the retail level. They are
22 maybe bookends of what we would guess could
23 actually happen and it's useful to sort of think
24 through both of the bookends and then we
25 probably have to wait until we actually see and

1 get some data before we really find out where
2 things sit likely between the two bookends,
3 although once I play this out I think we'll both
4 make a guess that the end result may be closer
5 to the additive bookend than the multiplicative
6 bookend. So that's the story here.

7 If all that happens in the market is the
8 importers don't have to pay the foreign
9 suppliers as much as they used to, then that row
10 describing where the demand for money laundering
11 is, nothing changes for the retailers or
12 wholesalers. All of a sudden the importers have
13 a whole bunch more income, or a whole bunch more
14 income net of the cost of goods sold because
15 they're still getting the same revenue but now
16 they're paying the foreign suppliers very
17 little, and conversely, the amount of money that
18 would need to be laundered in order to pay the
19 foreign suppliers drops in the first row of the
20 first top of the table it's 12.5, drops way down
21 to 1.3. But in that first row under importers
22 and foreign suppliers 10.4 plus 12.5 is 22.9.
23 When you drop down a row the 22.6 and 1.3 still
24 adds up to 22.9, it's just more of that is
25 staying with the importers because the importers

1 don't have to pay the foreign suppliers as much
2 anymore. So that's the meaning of the second
3 line. And you're right, we wouldn't expect that
4 necessarily to stay exactly like that for five
5 or ten years. Eventually the markets might well
6 respond. We talked earlier about this idea that
7 the profits and the trade have to be justified
8 because eventually the market will adapt to
9 smooth things out, but that adaptation can
10 perhaps be particularly slow at the importer
11 level. That's a portion of the market with
12 relatively few players with some specialized
13 skills. It's not so easy for just any old
14 person down the street to suddenly anoint
15 themselves as a large scale importer of opioids.
16 But over time something is going to happen and
17 that's what the two lines below it are supposed
18 to mean.

19 Q To put a competition analysis on it, it's easier
20 for the importers to price fix?

21 A (JC) Yeah, yeah. That's a good way to put it.
22 And we tend to think about it in terms of length
23 of time. They might be able to price fix for a
24 fairly long time before it's eroded. Whereas if
25 it were a portion of the market where there were

1 a lot more competition and more people could
2 come in quickly, then if you try to price fix
3 that would get eroded very quickly. Yeah, it's
4 a good way to put it.

5 All right. So when you go to the additive
6 line, the change in prices is the same in
7 dollars per gram of morphine equivalent dose all
8 up and down the chain, but because prices are
9 way the heck higher at the retail end than they
10 are for the importers that same drop in price
11 per gram is a fairly modest reduction in
12 percentage terms. So the numbers in the first
13 table had been \$160 a gram at the retail, only
14 20 at the import, so if that 20 suddenly dropped
15 to be 2, say, that's a drop of 18, but the drop
16 of 18 on a base of 160 is a relatively modest
17 percentage drop. And so that's why in that
18 third row the retailers, wholesalers and
19 importers are back pretty much to where they
20 were originally. The only difference is now not
21 very much money is going to the foreign
22 suppliers. So the additive model says once
23 things shake out you are back close to where you
24 were before, and conceptually the logic for the
25 additive model would be to say at the end of the

1 day most of what is driving income up and down
2 the distribution chain is not payment for the
3 physical labour of lugging the stuff around.
4 Good grief, it's only 1.5 metric tons. That can
5 go in a small truck. It's not payment for the
6 manual labour of taking a big bag of powder and
7 dividing it up into ten smaller bags of powder.
8 That's not really that difficult. Rather it's
9 the things that Peter was talking about before,
10 the risk of incarceration, the risk of violence.
11 If that's most of what's driving income for
12 people in the domestic distribution chain, maybe
13 that's not all that different whether one is
14 moving an opioid called heroin or this other
15 opioid that's much less expensive because most
16 of the quote/unquote work you're doing is
17 accepting risk, not like physical mechanical
18 labour.

19 Q Your risk as a retailer of being robbed or
20 facing violence on the streets or being arrested
21 is the same, it doesn't matter what the import
22 value of the substance that you're selling is?

23 A (JC) Yeah. Yeah. To first order approximation,
24 exactly. The multiplicative model takes a very
25 different view of the world. The multiplicative

1 model just says hey, if the prices dropped for
2 the importers by -- let me pause for a second.
3 Yeah, 90 percent is what we wrote into the
4 report. If the price for the importers dropped
5 by 90 percent then maybe the price for the
6 wholesalers drops by 90 percent and the price
7 for the retailers drops by 90 percent and the
8 price for the users drops by 90 percent,
9 everything drops by 90 percent, and then all of
10 a sudden the total cash revenues for everybody
11 becomes only one-tenth what it was before and
12 then pretty much everybody can just spend that
13 amount of cash. So that's why in the
14 multiplicative model you start to get a row
15 that's mostly zeros there. The proportion going
16 to the foreign suppliers looked like it jumped
17 back up to 12.5 percent, but it's 12.5 percent
18 of a market the whole market is only worth
19 23 million now. So it still says demand for
20 money laundering services mostly went away
21 because all of a sudden most of the dollars have
22 gone out of this market. So the additive and
23 multiplicative models are models that are in the
24 literature. There's logics for them. Our guess
25 is that particularly since nobody is talking

1 about there having been this across the board
2 price collapse we would guess that when all has
3 shaken out it's more likely to be closer to the
4 additive model. But we say this with a little
5 bit of hesitation because drug markets can
6 surprise us, it's still early and we can bore
7 you to tears with a bunch of explanations of why
8 it really is quite tricky to monitor prices of
9 opioids now that there are these weird mixture.
10 So we won't promise it's going to end up looking
11 like the additive model, but if we had to pick
12 between the two I think we'd guess it's more
13 likely to come out like the additive model once
14 everything is stabilized.

15 Q And you say it takes a long time for -- sorry,
16 Professor Reuter, go ahead.

17 A (PR) Just, I mean, I do remember that the
18 measurement of retail drug prices is very
19 imprecise, so if the additive model's right and
20 the price [indiscernible] by about 10 percent
21 there's no reason that [indiscernible].

22 Q Professor Reuter, sorry, we're losing you.

23 A (PR) So if the end of model is right and prices
24 have declined by almost 10 percent let's say,
25 it's quite unlikely that our measures of retail

1 prices are precise enough to pick that up. So
2 there may have been a decline in the real price,
3 but it's not something that this series would
4 [indiscernible] 90 percent increase and so I
5 think we'd be convinced that the decline has not
6 been dramatic, but it might have been at least a
7 modest decline and it's just not reflected in
8 the very noisy measure that we have available.

9 (JC) And the ability to measure prices at
10 the wholesale and import level in some respects
11 is even more limited both because it's harder to
12 gather data points at those market levels but
13 also there you really do need to pay attention
14 to the potency, where in the supply chain are
15 things being cut. Usually the stuff that's
16 arriving -- the fentanyl that's arriving from
17 China is very potent -- very pure, like
18 90 percent pure. You can't give that to users.
19 However bad the overdose rates are now when the
20 material is like 1 percent fentanyl, if you were
21 ever trying to sell bags retail down that was
22 90 percent fentanyl, it would be catastrophic
23 death rates. So somewhere along the line
24 there's that cutting taking place, and so the
25 only way you can really know the wholesale and

1 import prices is if you not only, say, listen to
2 a wire tap and hear a dealer mention the price
3 per kilogram, you really do need to send that
4 kilogram to a forensic lab and establish whether
5 it's still at the import potency or if it's been
6 diluted yet.

7 Q That's a great segue into collection of data
8 that's needed to fill out this model and where
9 that data might come from. But I just want to
10 note I think one way when you say that the
11 measurement of prices of market prices is
12 imprecise and one way that a 10 percent decrease
13 in price could be manifested is you've got a
14 slight -- you've got a unit that's being sold
15 for \$10 but it is slightly more potent. You get
16 more --

17 A (JC) 10 percent more morphine equivalent doses
18 in the bag, and yeah, users can very quickly
19 adjust to that. The jargon is tolerance. And
20 so if you've got somebody who has been using
21 10 percent more morphine equivalent doses for a
22 few weeks, they'll just adjust to that and,
23 like, behaviourally and health-wise the effects
24 on them are not even necessarily going to be
25 dramatically different.

1 Q All right. Madam Registrar, you can take down
2 this document. Thank you.

3 I'm going to now move into a discussion
4 of -- we've talked about the model. We've
5 talked about the algebraic model. We've talked
6 about the sensitivity, the data that needs to go
7 into it. The next section of your report
8 discusses what data is needed to fill this out
9 with more than assumptions. And the first is
10 the total value, dollar value of the drug
11 market, and if you could just -- I'm not sure to
12 whom this is best addressed. Perhaps I'll start
13 with Professor Caulkins. What are the
14 approaches to estimating the value of the drug
15 market?

16 A (JC) Sure. The Bouchard et al report is a
17 classic excellent example of trying to
18 answer that question. And these are what are
19 called demand side estimates where you work up
20 from estimates of the number of users and how
21 much those users are spending. There are supply
22 side estimates for at least some substances.
23 Like when the United States dominated the
24 world's consumption of cocaine, you could start
25 with satellite imagery of the number of hectares

1 of cocoa bush cultivation and apply a bunch of
2 conversion factors to get from hectares of cocoa
3 bushes to metric tons of cocaine. That's not
4 likely to be useful for Canada because Canada is
5 never going to dominate global consumption and
6 its certainly not useful for a synthetic
7 because, as we talked about earlier, you can't
8 start with satellite photos. There are some
9 other methods increasingly popular, particularly
10 in Europe are waste water monitoring methods
11 where you take samples of literally waste water
12 going into a waste water plant and you pull out
13 the amount usually not of the drug itself but of
14 the metabolites that are excreted by the user
15 who has consumed it, and then you can do some
16 sort of chemistry calculations to back out how
17 many grams or kilograms you think were consumed
18 in the part of the city that's served by that
19 waste water treatment plant. So those are the
20 kinds of approaches one takes to try and figure
21 that out.

22 Q Hmm. You mentioned in your report that there's
23 a strong community of ethnographers dedicated to
24 the study of drug use in British Columbia, and
25 so we're particularly well situated to get the

1 demand side data?

2 A (JC) M'mm-hmm.

3 Q The second data point that you mentioned is
4 needed and, Professor Reuter, I'll invite you to
5 jump in at any point. I don't mean to leave you
6 out. Is prices at various market levels. What
7 are the sources of that information?

8 A (PR) Well, I mean, at the retail level you can,
9 as I said, ask users how much they spent in
10 their last expenditure and they can also give
11 their guess as to what it was they purchased.
12 That's a very noisy measure because they are so
13 unsure about what's in the bag. You do a large
14 enough sample and then you match it with data on
15 a large number of seizures so you have estimates
16 of what the -- what are the contents of the
17 typical bag, you can get a rough estimate of the
18 true price. We always think in terms of price
19 per pure gram as a way of just making sure we're
20 comparing in a standard way across markets.
21 When you get to the higher levels, essentially
22 we're in the hands of investigative agents.
23 That is researchers are never going to have
24 access to enough data above the retail level to
25 be able to come up with price estimates. There

1 might be -- I mean, there's a lot of wire
2 tapping and, you know, drug dealers are
3 constantly looking for the safe platform in
4 which to do their transactions. Those platforms
5 never turn out to be as safe as they think they
6 are and so there's a whole lot of data being
7 analyzed in UK, Netherlands and France on this
8 platform that they penetrated and they have
9 literally millions of transactions. But again
10 there's a problem that you don't truly know --
11 you know what price they set, but you're not
12 quite sure what is in the bag, so to speak.
13 Well, the bag ... That's a sort of relatively
14 new data source, but it's not going to be
15 available to scholars directly. It would have
16 to be working with investigators so that the --
17 I think the data on prices above the retail
18 level can only be obtained with the active
19 engagement of investigative agencies. And I can
20 offer a model. I've worked, I've written two
21 papers now with a criminologist who is in the
22 national police agency of the Netherlands and he
23 has access to usually rich data. I don't get to
24 see them, the data. We walk through the
25 analysis and it would be wonderful if the RCMP

1 had a couple of research criminologists on their
2 staff.

3 Q The papers -- I'm going to butcher the
4 pronunciation, but the papers you're talking
5 about are referenced in your white paper here
6 with a Professor Soudijn?

7 A (PR) Soudijn, right, Melvin Soudijn.

8 Q Just as reference. And also you mentioned in
9 the paper that there's a difficulty in getting
10 this kind of intelligence from law enforcement
11 because their priorities are different than what
12 an economist or a criminologist might be
13 interested in?

14 A (PR) Right. I mean, we're deeply interested in
15 prices. Police are deeply uninterested in
16 prices. They're interested in money, but that
17 is different, and so it's the just not -- and
18 this isn't in any way being critical. You know,
19 if they're not asked to produce price data,
20 there's no reason in terms of their activity to
21 doing that. So in part it's sort of what
22 civilian, what the political leadership asks
23 police agencies to do if you -- I mean, Jonathan
24 and I share the view that you can see drug
25 enforcement is largely about regulating markets,

1 regulating illegal drug markets, and if you're a
2 regulator, then price matters. You also like to
3 have availability measures which are a different
4 indicator. But if you don't have that
5 conception piece, think of drug enforcement as
6 being about arresting dealers, seizing drugs,
7 then prices are not [indiscernible] so it's
8 really it's about sort of changing the vision of
9 what which agencies are doing.

10 Q So we've talked about the size of the market,
11 the prices at various levels. We're thinking
12 about those yellow rows of data in that first
13 graph that we looked at, that first table. The
14 third point is understanding, then, going -- in
15 my mind I'm moving down that graph to the cash
16 spending by the various actors in the supply
17 chain to understand then how much is going to be
18 left over or not. How do you get at that kind
19 of information?

20 A (PR) Well, one the things you don't do is rely
21 on the limited imagination of bourgeoisie
22 researchers like Caulkins and Reuter. I mean,
23 our notion of how much money you can spend is
24 just very limiting, so you really do need data
25 and figure out -- I mean, I'm being ironic but

1 for a purpose. If you think about drug dealers
2 who probably are smart enough to realize that
3 they do not have a long life of freedom in which
4 to spend all the money and that putting aside
5 cash has limited value, they may well spend a
6 lot of time in prison, they may have very
7 different consumption patterns than any other
8 group, and I don't think there's any other way
9 than, you know, trying to collect data from
10 investigations, maybe from interviews. I mean,
11 I did a long time ago a study of drug dealers in
12 prison and one advantage one has is that prisons
13 are boring, talking about your own life is
14 relatively interesting, so it was those that
15 were willing to talk were willing to say a lot.
16 And I wasn't asking about expenditures, but my
17 guess is if you asked them, you know, what were
18 the good times like and how did you spend your
19 money, that's an interesting question, so I
20 think this is researchable. But, you know, I'm
21 not optimistic that there's enough commonality
22 across dealers that you'll get much from a few
23 interviews. I could be wrong but, you know, my
24 guess is that there's different interviewers and
25 there's extravagant dealers and it changes over

1 time, but maybe Jonathan has another point of
2 view.

3 Q Professor Caulkins, I know you've done a lot
4 work in this area as well. I invite you to jump
5 in.

6 A (JC) Yeah, sure. Peter's right that you really
7 would like to let the people at the different
8 market levels talk about their lives. But maybe
9 I'm slightly more optimistic or I'm going to put
10 a slightly more optimistic spin on this. So
11 suppose you are one way or another able to get
12 interviews with 25 wholesalers and 25 importers
13 talking in prison or whatever and asking them
14 about their live and how they spent money. I
15 think you would notice did they say oh, yeah, I
16 was able to buy real estate with cash. That
17 happens in some countries. It cannot happen in
18 other countries. And that makes a big
19 difference. If you think about how much money
20 can you spend on hamburgers and T-shirts,
21 there's a cap on that. But if you can buy real
22 estate with cash, that makes a big difference.
23 Even if you can buy some other expensive asset
24 that you can then resell. Sports cars is a
25 classic example. And you guys know well can you

1 buy gambling chips in a casino and then cash
2 out. So I think even if you're not going to get
3 an exact accounting of everything that happens
4 you might catch on to what are some of the
5 things besides like hamburgers, T-shirts and
6 maybe rent that one is allowed to spend cash on.
7 And this really varies a lot from society to
8 society. You probably, as far as we understand
9 it, cannot pay your landlord in cash in Norway
10 or Sweden. But you probably can pay your
11 landlord in cash in a typical American city. So
12 I think you could get some better handle on this
13 even if it's not highly precise.

14 (PR) On the bourgeoisie side I want to point
15 out that Jonathan talks about buying burgers and
16 Pepsis and things like that. It makes my point.

17 Q The fourth data point that you talk about is
18 branching factors and other data on the drug
19 dealing cycle. Branching factors again, that's
20 that idea of how many levels do you have in the
21 market and how many operators are there at each
22 level; is that right?

23 A (JC) Yeah, exactly. So the ratio of the number
24 of people at one market level to the number of
25 people at the higher market level would be the

1 average branching factor. So if there are
2 1,000 retailers and 100 wholesalers, 1,000
3 divided by 100 is 10, so the branching factor
4 from wholesale to resale [sic] would be 10. Or
5 another way to think about it is how many
6 customers does the average person at one market
7 level supply one market level down. And the
8 reason you need to know that is you got to know
9 how many players there are at each of those
10 market levels. You know, had there been not a
11 hundred wholesalers but 600 wholesalers, they
12 would have been able to spend more of their
13 total revenue as cash. Yeah, that's it exactly.

14 Q Right. And how do you get at this data? Again
15 are you looking at ethnographic studies?

16 A (JC) Yeah, so when we've done this in some other
17 places, interviews with dealers in prison is one
18 source. Sometimes it's case files from law
19 enforcement. So yeah, I guess interpreting the
20 word "ethnographic" broadly, you're looking for
21 as many case examples as you can come up with.
22 You're not going to be able to mail a survey to
23 people.

24 Q Right.

25 A (PR) This is actually an area in which Martin

1 Bouchard has done some interesting work. The
2 social network analysis that he does so well is
3 one of the ways of capturing these branching
4 factors. Because if you can trace how many
5 dealers a single dealer network deals with up
6 and down, you know, if there's multiple
7 suppliers both ways.

8 Q Right. I'm going to move on unless --

9 A (JC) There is -- if it's okay there's one thing
10 that managed not to come up here and it's sort
11 of related to the earlier point that when law
12 enforcement is talking to a suspect or an
13 arrestee, you can ask who did you get these
14 drugs from. That's what you need to know to
15 make the case. Or you can ask what did you pay.
16 The what you paid doesn't help me make the case
17 but helps me understand the market. Sort of
18 similarly, if all you're -- if you're just
19 trying to convict the person, then when you have
20 a sample of drugs you only need to establish
21 that it contains heroin. Or cocaine or whatever
22 other drug. But if you want to understand the
23 market, you want that laboratory analysis to
24 assay the potency and report the weight and
25 ideally also to report the number of bags that

1 it is divided up into. And jurisdictions vary
2 in how studious they are about this. For
3 reasons that I'm not sure I'll ever understand,
4 the state of Victoria in Australia analyzes
5 quantitatively in a forensic lab every single
6 bag of drugs that they buy or seize, and as a
7 result you can produce phenomenally good high
8 frequency price series for that state. So every
9 time a police officer just grabs some drugs one
10 way or another, even at retail, those go to the
11 lab and you know exactly what's in each of those
12 bags and they do carefully report even how many
13 bags it was divided into. So as Peter was
14 talking about earlier, in much of the world you
15 know that the user spent \$20 on the bag but you
16 don't really know what's in it, in the state of
17 Victoria they are super studious about sending
18 things to the forensic laboratory. The typical
19 situation in the United States is, well, a lot
20 of this stuff goes to the forensic laboratory,
21 but the law enforcement forensic laboratory
22 never lets that information out to the outside
23 world, and so we only have limited chances to
24 exploit that data. And then there are other
25 jurisdictions that only ever do the qualitative

1 test just to say yes, there's heroin in it, but
2 we never even find out what's in it. So that
3 role of cooperation with the law enforcement
4 forensic labs is a very important one for
5 understanding prices.

6 Q You discuss, you go on in your paper to discuss
7 the application of the model that you've
8 developed to other illegal markets. I just want
9 to touch on -- it's very interesting and I'll
10 recommend the paper to all of our listeners and
11 the Commissioner and staff who reviewed it with
12 interest. But I just want to touch on a couple
13 of them, and one I think and, Professor
14 Caulkins, this is for you. This the impact of
15 illegal cannabis markets and you discuss the
16 impact of legalization on illegal markets and by
17 consequence the need for money laundering. Can
18 you speak to that.

19 A (JC) Sure. I think the first bottom line is
20 just to say that you have to think about each
21 drug separately and if you think about cocaine,
22 you're probably going to end up thinking fairly
23 similarly to what we've been talking about for
24 heroin, but the cannabis markets are not like
25 that. If one wanted to know what proportion of

1 money spent on cannabis ends up being demand for
2 money laundering, you kind of start from
3 scratch. And I think that that was probably
4 even true before legalization and some of the
5 reasons are very different branching factors and
6 the fact that the production costs were not
7 necessarily negligible. When you're thinking
8 about the cost of materials for heroin
9 distribution in Canada apart from the heroin
10 itself, the numbers are just trivial. The cost
11 of the plastic bags and the cost of the filler
12 end up being just tiny compared to the cost of
13 the drug. But in cannabis, the cost of actually
14 growing and drying and trimming the cannabis and
15 so on, those are no longer trivial. So the
16 broad point is even when the cannabis was
17 illegal, it still really did look quite a bit
18 different and now that legalization has happened
19 it doesn't look anything at all like the
20 production and distribution of illegal opioids.
21 So you'd have to, like, start from scratch to
22 think about any money laundering demand that
23 comes from the cannabis markets.

24 Q Professor Reuter, anything to add to that?

25 A (PR) Well, are we going to get into -- I mean,

1 Jonathan, I think you just got started, what
2 happens with legalization.

3 (JC) Well, I mean, I think the most obvious
4 thing is that criminals whose income is illegal
5 and they might want to launder it get replaced
6 by licensed businesses that are not laundering
7 money for the same reason that licensed gas
8 stations and groceries stores don't. So when
9 the market stops being illegal then the dollar
10 flows stop needing to be laundered.

11 (PR) But I mean I think there's clearly a
12 transition period which is at least three, maybe
13 as long as seven years in which there's still a
14 substantially legal cannabis market, but the --
15 I mean, what is worth saying --

16 (JC) Price.

17 (PR) -- The prices will decline
18 substantially. We've seen in a number of
19 American states almost a collapse of business.
20 They declined by 50 percent, two thirds in a
21 few years and there's no reason to think they
22 have bottomed out at all. So the illegal
23 [indiscernible] will be selling a smaller
24 quantity at a much lower price so whatever
25 demand it was from money laundering from

1 cannabis markets in 2017 before legalization in
2 Canada, by 2025 even if there's a substantial
3 illegal cannabis market in Canada, the money
4 laundering demand it going to be negligible.

5 Q In your paper you cite at page 26 one of your
6 studies, Professor Caulkins, on I think
7 legalization in the State of Washington. You
8 say that:

9 "Within a few years of commercial store
10 openings, licensed sales accounted for
11 two-thirds of cannabis sales to Washington
12 State residents."

13 Just showing that edging out that Professor
14 Reuter was talking about.

15 A (JC) Yeah.

16 Q And all of which of course leads to less need
17 for money laundering services?

18 A (JC) M'mm-hmm.

19 Q I want to touch on -- you go on in your report
20 to discuss the application of the model to
21 prostitution and human trafficking and you --
22 just to be clear here you talk about not
23 independent sex workers but sex workers who are
24 being exploited in your model under the aegis of
25 a pimp or somebody who is taking the proceeds

1 from that person. Can you tell us a bit about
2 how you thought about the illicit proceeds of
3 this market.

4 A (JC) Sure. I think one thing to say is we draw
5 very heavily on this book by Kara who tried to
6 provide a description of the businesses in this
7 world with -- you know, with prices and the
8 other parameters one needs to do these
9 calculations. I really wish that there were ten
10 other books by ten other authors that had
11 independently tried to estimate the parameters.
12 In this case -- so in drugs we've been in the
13 field for 30 years. The data we can complain
14 about, but at least there's been a large effort
15 in the scholarly community to think about it.
16 In human trafficking space there are far fewer
17 people who try to think about human trafficking
18 as a business or an industry and to measure,
19 estimate or report these parameters. So there's
20 a big caveat here that what we say is to a
21 degree an interpretation of the implications of
22 Kara but we're very dependent on that source.

23 Q Just to jump in, the reference it's a book by --
24 sorry an article by Siddharth Kara, *Supply and*
25 *Demand: Human Trafficking in the Global Economy?*

1 A (JC) Yeah, a book. There's some other tidbits
2 that are not inconsistent with it, but I do want
3 to signal that the empirical base we're drawing
4 on is thinner in this case. But the basic
5 observation is that ... The language here gets
6 very awkward because it's like emotionally
7 disturbing to apply the business jargon to human
8 trafficking, but that's what we're trying to do.
9 We're trying to think about and talk about them
10 as businesses. The object commodity entity --
11 that's where it's hard language to use -- that
12 is trafficked in human trafficking is from the
13 perspective of the retail operation an employee,
14 not something that is physically handed over to
15 the customer and so needs to be replaced all the
16 time. And that makes the whole economics very,
17 very different. So if you buy \$3,000 worth --
18 if a retailer buys \$3,000 worth of drugs and the
19 price markup is doubling then that generates
20 \$6,000 worth of revenue, and so 50 percent of
21 what the drug users pay to the retailers passes
22 on up the chain to the higher levels of the
23 chain. But when a retail sex services operation
24 incurs costs of \$3,000 to take control of a sex
25 worker, that person is going to generate an

1 awful lot more than \$6,000 worth of revenue over
2 their, quote/unquote, career with that
3 organization. So the proportion of what
4 customers pay to that retail entity that's
5 providing commercial sex services that gets
6 passed further up the chain is very, very
7 small percent. The great majority of the money
8 that the customers of the commercial sex
9 services organization -- great majority of the
10 money that the customers give those retail
11 operations stays with the retail operations.
12 There's not large amounts of money going up to
13 higher levels of the -- higher level entities.
14 It's a really hard thing to talk about. The
15 best way to communicate the result is to use the
16 business jargon, but it is actually quite
17 disturbing to speak of it in those terms.

18 Q I can appreciate that. It is. So to go back to
19 the model developed early on in the report, it's
20 not such a -- it's not a simple fit to this, to
21 sex trafficking, to human trafficking?

22 A (JC) Yeah, yeah, it's not just plugging in
23 different parameters. You can carry forward the
24 idea that there are operations at the retail
25 level, being the ones that interact directly

1 with customers, and there are operations further
2 up the supply chain, meaning they're not
3 directly interacting with the customers, and the
4 proportion of the customers' money that is sent
5 further up the chain is very small in this
6 illegal market.

7 Q And what are -- I do want to touch briefly on
8 the topic of wildlife trafficking, which you
9 also address. What are the implications of
10 applying or attempting to apply the model to
11 international illegal wildlife trafficking?

12 A (JC) Sure. So there are definitely
13 similarities. A lot of the international
14 wildlife production happens abroad and there are
15 multilayered distribution chains with large
16 increases in price as you move down the chain.
17 But there are some conspicuous differences, and
18 as we understand it, we think this is probably
19 true, one of the big differences is it's not
20 primarily cash at the retail end, and that in
21 part reflects differences in the customers.
22 Most of the heroin is purchased by people who
23 are not affluent, who are living relatively
24 chaotic lives, who may not be well banked, and
25 those transactions are mostly not made with

1 credit cards and other electronic means. But a
2 lot of the wildlife products when they are sold
3 to the final consumer, they are sold to people
4 who are relatively more affluent, stable lives,
5 more likely to be banked and they are not
6 usually taking place on street corners. Lots of
7 times they're taking place within or under the
8 cover of a business, a registered business that
9 also sells legal things. And so there's cash
10 moving around in parts of the supply chain, but
11 a lot of the money that the customers are
12 spending they're probably not buying with cash,
13 and so the whole character of the laundering is
14 very different. So in our heroin model we are
15 counting cash and we're saying you've got this
16 cash revenue, you can spend some as cash, the
17 rest is cash that's hot cash you got to do
18 something with. That whole way of thinking
19 about it is probably quite different when a lot
20 of the funds flowing in from the customers are
21 not starting out as cash.

22 Q So it might in fact be the inverse problem of
23 the drug trade where higher up the chain you
24 have to convert your profits into cash in order
25 to make your payments for it to the suppliers

1 that you're getting your goods from?

2 A (JC) That's true, and it's perhaps not
3 coincidental that some of the movement across
4 borders is provided by firms who will move
5 across borders a variety of different
6 commodities. Some of the same entities that are
7 good at moving wildlife products across borders
8 may be moving a variety of other contraband
9 across borders, too.

10 Q I would like to move on the implications. At
11 the end of your paper you turn to contemplating
12 what the implications are for the model you've
13 just discussed and more generally for money
14 laundering of a cashless society, and we started
15 out thinking about the drug trade, Professor
16 Reuter noted, you know, it's cash is the curse
17 of the drug trade. And as we're moving into an
18 economy that is increasingly less cash based
19 there are alternative payment systems that
20 arise. You mentioned cryptocurrency, bitcoin in
21 your paper. So I think maybe, Professor Reuter,
22 I'll turn it over to you. Just some general
23 thoughts, what is the impact that you're seeing,
24 if any, on drug trade of the move away in the
25 legitimate economy from cash and what can you

1 contemplate might happen in that space?

2 A (PR) This is a very speculative part of the
3 paper. I hope you're clear about that. We have
4 seen a move in more western societies, almost
5 all western societies, to much more frequent use
6 of things other than cash without it affecting
7 the drug trade. That is, I mean, if you compare
8 1980 to 2015, the share of all retail
9 transactions that involved cash have surely
10 fallen dramatically, and I use the term
11 "dramatically" with precision this time. But
12 the drug trade has remained entirely a cash
13 trade. The question is what happens as you
14 really start to squeeze cash as a mode of
15 transaction in the legal economy. And, you
16 know, inspired by your query on Monday morning
17 Jonathan wrote to three researchers in an almost
18 cashless society and got back interesting
19 answers about what has happened with drug
20 dealers and it was actually interesting
21 consistency, and Jonathan should summarize and
22 then I'll say something about a Dutch study
23 which I think also --

24 Q Maybe I'll just interject here to provide some
25 background. At page 30 of your report, and

1 machines, so so long as you have any bank
2 account, you can still withdraw cash. So the
3 users can get the cash. And precisely because
4 the societies are moving cashless apparently
5 even drug users leading fairly impoverished and
6 chaotic lives are more likely to have bank
7 accounts than they might be in the United
8 States. So the users get their assets however
9 they get them, whether it's government transfer
10 payments or organized jobs or informal jobs.
11 Apparently like when a drug user stands at a
12 subway station and sells you a magazine, that is
13 transacted with this system called Swish which
14 is a person-to-person cellphone-to-cellphone
15 transaction which immediately puts money in the
16 seller's bank account. And so, you know,
17 likewise if you were going to hire your
18 neighbour's kid to cut grass, I gather in Sweden
19 instead of handing them a \$20 bill you would do
20 a Swish transaction. So the users are banked
21 and they can just go to the ATM and take out
22 cash, but it is an issue for the dealers. The
23 dealers are now collecting cash and they cannot
24 spend as much. One anecdote that one my
25 colleagues gave is that his mother is quite

1 old-fashioned and still likes to give him gifts
2 of cash at the holidays and his bank does not
3 want to accept that cash. So the solutions, so
4 in that society even the retailers are not able
5 to spend as much of their cash income as we
6 envision in our setup, and so they've got to do
7 other things with it. And the things that were
8 mentioned that they do with it are there are
9 perhaps semi-shady currency exchange operations
10 which will exchange Swedish kroner for euros,
11 and euros can be spent as cash because there are
12 many euro countries that are not cashless. So
13 changing denomination changes it into something
14 that can be used a few hundred kilometres away
15 in a non-cashless society. And then there are
16 other operations that look more like direct
17 money laundering services. But yeah, in short,
18 it does seem like it compels the sellers to deal
19 with all of their revenues and other cost of
20 goods sold as opposed to only a portion of it,
21 but that institutions emerge to help them with
22 that problem, so it's not that the markets
23 cannot function, but this is a bit of an extra
24 burden on them.

25 MS. PATEL: Professor Caulkins, I've just received a

1 message from our IT support that we are
2 experiencing -- some users are experiencing a
3 problem with the video. I'm just going to take
4 a moment to ask them if that's been resolved or
5 if we need to stand down for a second.

6 TECHNICAL COORDINATOR: I think we can continue,
7 Eileen. So far everyone is on video.

8 MS. PATEL: All right. Thank you very much.

9 Q So what you're saying makes intuitive sense.
10 You think that there's two ways that a retail
11 drug dealer could go. One is to adapt their
12 businesses to electronic payment means, but of
13 course there's problems with that you mentioned
14 before.

15 A (JC) Yeah. In fact, you just reminded me of
16 another anecdote, an anecdote I just heard about
17 in the last 24 hours, but apparently there are
18 some drug transactions in Sweden that are
19 conducted via Swish, so the drug purchaser
20 transfers via Swish money to the drug seller's
21 Swish account, so now the drug seller does not
22 have to worry about cash. But what I gather
23 they do have to worry about in Sweden is there
24 are relatively weak privacy protections for
25 financial transactions in Sweden, so you're

1 vulnerable to investigation because of that. I
2 was going to use the word "paper trail," but
3 it's not a paper trail, that electron trail,
4 which I guess -- I'm no civil constitution
5 expert, but apparently in Sweden you have fewer
6 rights to privacy over your bank transaction
7 records than in common law countries. So it
8 happens, but I guess it's actually a point of
9 vulnerability and can lead to investigation.

10 Q Yeah. And that addresses one of the two
11 problems that you raise in your paper with
12 respect to a move to a cashless society is how
13 can you conduct illegal transactions with
14 privacy, which is critical and a feature of
15 cash, and then the second problem which we've
16 also touched on is how do you convert those
17 revenues from drug dealing, and say it's not --
18 if it is staying in cash to electronic forms or
19 other acceptable forms, and that suggests, I
20 think what you're saying it suggests a
21 proliferation of money laundering services aimed
22 maybe more towards that lower level of the drug
23 supply chain than we saw was necessary in the
24 heroin model applicable in Canada. Is that a
25 fair summary?

1 A (PR) [Indiscernible] if you mean specific money
2 laundering services, I mean, if you go to
3 blockchain system like bitcoin, they're not
4 specifically for money laundering. They just
5 facilitate money laundering. At the moment they
6 seem to play a modest role in the drug trade.
7 Slowly they will become more accessible over
8 time, and I mean, I certainly wouldn't know how
9 to get a bitcoin transaction. But, you know,
10 five years from now it might well be that this
11 is a standard kind of mode and it's easy to do
12 that, and I just think it's very hard to project
13 how this is all going to play out. In some
14 sense it is striking how unimportant the
15 internet is so far in the drug trade. It seems
16 to be very marginal, but I would not want to bet
17 that it's going to stay that way, and so I think
18 the technological changes are unpredictable and
19 our responses [indiscernible] work out. I guess
20 I'm confident something, some method will emerge
21 that will ensure [indiscernible] transactions
22 and complicate money laundering investigations,
23 but I wouldn't rule on my expertise.

24 Q Money laundering techniques will evolve. Now,
25 Professor Reuter, you mentioned the research

1 that you'd done with somebody from the
2 Netherlands with respect to moving cash and I
3 think -- are you talking about the study about
4 Colombian drug cartels moving cash out of
5 western Europe? Could you please tell us a
6 little bit about what you found there?

7 A (PR) It was fascinating. So the Dutch police
8 had raided over maybe three years half a dozen
9 businesses whose sole line of business was
10 moving money from Netherlands back to Colombia
11 and maybe [indiscernible] Venezuela, money
12 generated by cocaine sales and these were large
13 businesses in terms of the volume of money.
14 They were tiny in terms of employees. But the
15 cocaine smuggler would receive money typically
16 in 20 euro notes from wholesalers that he sold
17 to and then when they get that money back, it
18 wasn't really money laundering, this is
19 transporting cash, and the first transaction of
20 these businesses, these specialized businesses,
21 was to take those 20 euro notes and convert them
22 to 500 euro notes because a 500 euro note of
23 course is ideal for cash smuggling, and there
24 was a charge of 3 percent for that. You know,
25 there was always somebody in a bank who would be

1 willing to do that transaction. And then these
2 businesses would hire Colombians who were living
3 in the Netherlands, and you can get a large
4 number of them over the course of a year,
5 recruit them at dance clubs apparently, and pay
6 them a few thousand euros plus a return airfare
7 to Colombia for them to bring between 250- and
8 500,000 euros of cash in a backpack with
9 concealed compartments back to Colombia. And
10 what astonished us was that we could document
11 from the books of these businesses that it cost
12 at least 10 percent of the money to transport it
13 back to Colombia and it could have been as high
14 as 17 percent. Melvin felt that there was real
15 evidence it was the high end of that. And if
16 you think about the cost of moving money
17 internationally now, that is some absurd figure.
18 But it was evidence of -- I mean, you asked at
19 the very beginning about the curse of cash.
20 Well, I offer you there's a 17 percent tax if
21 you're a Colombian drug dealer in the
22 Netherlands. Now the only thing you can say is
23 look, if they just spent 2 percent of their
24 money on a good consultant they could have done
25 it for much less, but whatever it was that was

1 what they did. And the amounts -- we had
2 records covering hundreds of millions of euros;
3 this was not some boutique. This was clearly an
4 important element of the business of cocaine
5 smuggling in the Netherlands, which is an
6 important entry point for the European cocaine
7 market.

8 Final thing is again it wasn't -- it was not
9 actually money laundering. It was money
10 transportation. And we never knew what happened
11 in Colombia and how they laundered it. There
12 was some hints, but I didn't really get into
13 that.

14 MS. PATEL: All right. Now, Mr. Commissioner, I've
15 covered the issues that I wanted to cover with
16 these two witnesses and I will turn it over to
17 any of my colleagues who have questions for
18 them. I think there are a few.

19 THE COMMISSIONER: Yes. Thank you, Ms. Patel. I
20 understand that Ms. Stratton on behalf of the
21 province has been allocated ten minutes.

22 MS. STRATTON: Thank you, Mr. Commissioner, and I
23 intend to be very brief. I will not need those
24 ten minutes.

25 **EXAMINATION BY MS. STRATTON:**

1 Q Professor Reuter and Professor Caulkins, I'd
2 just like to ask you a few questions to clarify
3 your research expertise and experience.
4 Professor Reuter, I see from your CV that you
5 are the executive director of a joint
6 legislative executive task force on commercial
7 gaming in Maryland in 1995. Other than that
8 experience is it fair to say that you do not
9 have experience or expertise on money laundering
10 in the gaming or casino sector?

11 A (PR) Certainly nothing since 1995. I did
12 various things before then. No.

13 Q Is it fair to say you do not have specific
14 expertise on money laundering in the real estate
15 industry either in BC or elsewhere?

16 A (PR) That is correct.

17 Q And is it also fair to say that you do not have
18 specific expertise on money laundering in the
19 province of British Columbia?

20 A (PR) That is correct.

21 Q Thank you. And, Professor Caulkins, you told
22 the commission earlier that you were not an
23 expert in the British Columbia or Vancouver
24 illicit drug markets; is that right?

25 A (JC) That's correct.

1 Q And is it also accurate to say, then, that
2 you're not an expert on money laundering in
3 British Columbia?

4 A (JC) That's correct.

5 Q And is it also accurate that you do not have
6 particular expertise or experience with money
7 laundering in the gaming or casino sector?

8 A (JC) That's correct.

9 Q And finally is it also accurate that you do not
10 have specific expertise in money laundering in
11 real estate?

12 A (JC) That is correct.

13 MS. STRATTON: Thank you very much. Those are all my
14 questions, Mr. Commissioner.

15 THE COMMISSIONER: Thank you, Ms. Stratton. Now,
16 Ms. George, on behalf of the Law Society of BC,
17 who has been allocated five minutes.

18 MS. GEORGE: Thank you, Mr. Commissioner. Having
19 heard the direct examination we have no
20 questions for these witnesses.

21 THE COMMISSIONER: Thank you, Ms. George.

22 Mr. Leung, on behalf of the British Columbia
23 Lottery Corporation who has been allocated
24 ten minutes.

25 MR. LEUNG: Similarly given what was covered today I

1 have no questions for these witnesses.

2 THE COMMISSIONER: Thank you, Mr. Leung.

3 I assume, Ms. Patel, you have nothing arising?

4 MS. PATEL: Nothing thank you, Mr. Commissioner.

5 THE COMMISSIONER: Right. Thank you. Well,

6 Professor Reuter and Professor Caulkins, I'd

7 like to thank you both for your time and sharing

8 your expertise with us in an area that is both

9 interesting and difficult to navigate through,

10 but I think you've helped us understand the area

11 very well and will help us in ultimately making

12 certain findings and making certain

13 recommendations. So I am grateful to both of

14 you for the time you've taken and the experience

15 and expertise that you've shared with us. You

16 are now both excused from any further testimony.

17 **(WITNESSES EXCUSED)**

18 THE COMMISSIONER: And I think, Ms. Patel, we can

19 adjourn until tomorrow morning at 9:30. Is that

20 correct?

21 MS. PATEL: Yes, that's correct, Mr. Commissioner.

22 THE COMMISSIONER: Thank you.

23 THE REGISTRAR: The hearing is adjourned until

24 December 9, 2020, at 9:30 a.m. Thank you.

25 **(PROCEEDINGS ADJOURNED AT 12:31 P.M. TO DECEMBER 9, 2020)**