IN THE SUPERIOR COURT FOR THE STATE OF VERMONT

IN AND FOR THE COUNTY OF CHITTENDON, CIVIL DIVISION

DZEMILA HECO, et al., Plaintiffs, v. FOSTER MOTORS, INC., et al., Defendants.	Docket No. S0869-10 CnC 11:14 a.m. May 30, 2013

DESIGNATION OF RECORD - MOTION HEARING
TESTIMONY OF CHANTEL S. PARENTEAU
BEFORE THE HONORABLE GEOFFREY CRAWFORD
JUDGE OF THE SUPERIOR COURT

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I N D E X

(Designation commenced at 11:14 a.m.)

THE COURT: Why don't you some on up?

DR. PARENTEAU: Okay.

THE BAILIFF: I thought we'd wait until everybody comes.

THE COURT: Is everybody here that's going to be here? Are we missing anyone?

MR. WRAY: Unless Dr. Hubel --

THE COURT: Sure.

MR. GILBERT: He has a flight. But if she leaves, she leaves.

THE COURT: Exactly. Yeah.

MR. GILBERT: I've done cross-examination before alone.

THE COURT: Right.

MR. GILBERT: So I'll have to do it again. Maybe.

DR. PARENTEAU: We can skip.

MR. GILBERT: You what?

MR. WRAY: The witness volunteers to skip cross-examination.

MR. GILBERT: Oh.

THE COURT: Right, right. You'll waive it, right? What time is your flight?

DR. PARENTEAU: I think it's around 4.

THE COURT: Oh, piece of cake. Yeah. It's really

close, the airport is. This is not a big deal.

DR. PARENTEAU: Okay.

THE COURT: It's about 15 minutes from here.

DR. PARENTEAU: I just have to go to a concert to tonight, my son's.

THE COURT: All right.

DR. PARENTEAU: Yes.

THE BAILIFF: Would you stand and raise your right hand for me, please?

DR. PARENTEAU: Stand?

THE BAILIFF: I'm sorry. I need to swear you in. Would you raise your right hand, please?

CHANTEL S. PARENTEAU

called as a witness for the Defendant, having been duly sworn, testified as follows:

THE COURT: All right. Mr. Wray, all yours.

MR. WRAY: Thank you, Your Honor.

DIRECT EXAMINATION

BY MR. WRAY:

Q Could you tell us your name, please?

A Oh. Chantal Parenteau.

Q And, Dr. Parenteau, where do you work?

A I'm 80 percent at the University of Michigan. I'm in in the department of surgery in the medical school. And I'm also 20 percent working as a consultant, working with David Viano.

Q And have you brought a copy of your resume with you today or your CV?

A Yes. You did.

Q All right.

MR. WRAY: Your Honor, I've got a booklet here of 16 exhibits that I've put together. I don't have the projector, so --

THE COURT: Yeah. No, that would be great. I'd be glad for a copy.

MR. GILBERT: You can use, mine if you'd like, Dick.

MR. WRAY: Oh, yeah. I didn't have the forethought to ask, so --

THE COURT: Yeah. Sure.

MR. WRAY: But here's a set of the exhibits.

THE COURT: Thanks. All right. I appreciate it.

BY MR. WRAY:

Q And in this notebook we have your resume as Exhibit 1. Is this up to date?

A Yes, I think so.

Q So you have an undergraduate degree from Penn?

A That's --

Q What was your major?

A I was a bioengineer.

Q What is a bioengineer?

A Well, basically it's like a biomedical engineer. We

study some aspects of mechanical engineering, electrical engineering, chemical engineering, but we're really focusing on the human body.

Q You have a Master's degree. And what was that in? What topic?

A Also bioengineering. I did that at Penn.

Q And then you have a Ph.D. from Chalmers University?

A That's correct.

Q And what was your expertise there or your concentration?

A I was also working as a bioengineer. They have different names. The department was on occupant safety. And I did my thesis looking at foot/ankle injuries in vehicle crashes. So looking at accident data, cadaver testing, modeling.

Q And then you've worked as a teaching assistant as a biomechanical engineer for various companies, including General Motors and Delphi, and then as a consultant, as you've described, with Mr. Viano's company -- Dr. Viano's company, Probiomechanics, correct?

A That's correct.

Q All right. And now your title with the University of Michigan is what?

A I'm a research assistant professor. I just started last June.

Q And your work is research primarily?

A Yes.

Q How many articles -- what -- do you have a goal for how many articles you publish per year?

A My set goal is ten per year at the University.

Q And have you published articles in the past?

A Yes, I have.

Q Do you have those in your resume here --

A I believe --

Q -- your published --

A Yeah, they're all there.

Q And are you a member of the Society of Automotive Engineers?

A I used to be. I am no longer, but I am still active. But --

Q You have how many publications in the Society of Automotive Engineers journal?

A No, I don't know. Quite a few.

Q And you've published with many co-authors, I see from your list?

A Yes.

Q Besides Dr. Viano?

A Correct.

Q How many articles have you published with Dr. Viano as one of the co-authors?

A I don't know. I would have to go back, but a lot of

them. He was my Ph.D. adviser. So we go way back.

Q In fact, he was your Ph.D. adviser in -- at Chalmers in Sweden --

A Correct.

Q -- correct? And at that time Dr. Viano was working for General Motors, Saab?

A That's correct.

Q Okay. What I'd like to do is -- is sort of do a history of engineering literature with regard to field data on crashes. And, Dr. Parenteau, in your work, do you consult literature on -- that includes analysis of field data?

A All the time.

Q Do you consult information from physical tests in your work that you do?

A Yes, I do.

Q And do you deal with engineers on a regular basis?

A Yes. All the time.

Q And is -- what amount of your work is related to automotive analysis or engineering?

A I would say most of it. I would say 90 percent. I'm in the department of surgery, but my group is -- is a group that is looking at applying medicine -- medical techniques and looking for occupant safety.

Q So even though you're associated with the School of Medicine and Surgery at the University of Michigan, you're

still focusing on traffic and automobile safety?

A Yes.

Q Okay. All right. Let's -- with that background --

A Yes. I'm not --

THE COURT: I thought you did --

THE WITNESS: -- a surgeon.

THE COURT: -- animal as well or something.

THE WITNESS: No. No, no. All automotive.

THE COURT: Okay.

BY MR. WRAY:

Q All right. Let's turn to Exhibit 2 in the book. And what do we have here? And --

MR. WRAY: Now, for everyone's knowledge, we have selected pages from all these articles. So we don't have a huge, thick volume.

BY MR. WRAY:

Q But what is Exhibit 2? What --

A This is a paper that was published by Schwimmer, Schwimmer and Wolf. They're from Cornell University. And they were -- basically they had access to this database, because in the '60s, you didn't have NASS CDS. So they had a different set of data that was called Automotive Crash Injury Research Project.

Q And is that what Mr. Schwimmer is talking about in the first paragraph of the forward here?

A Yes.

Q Okay. Maybe you can tell us from this, what are the data collectors? What is he using here at Cornell?

A He's doing -- he's looking at accident data from 21 states. He's got information -- he's basically interested in looking at injury causes for occupant safety. He also collects some information about the crash itself, the vehicle, looking at crashworthiness.

Q Now, at this time you've told us already NASS did not exist?

A Uh-huh.

Q So the federal input here was the National Institute of Health?

A Yes.

Q And then the Automotive Manufacturers Association and the Armed Forces Epidemiological Board are the other sources he lists?

A Yes.

Q Okay. Now, if you turn to the next page, you've mentioned the 21 states. How many automobile accident cases were involved in this study?

A Well, according to the table here --

Q Oh, I'm --

A -- I -- I don't have --

Q Are you looking --

A -- a total.

Q -- at page 7?

A I was looking at page 9. I'm sorry. I skipped a page.

Q Okay.

A So the sample size was 45,000 accident cases. 21 states.

Q Okay. And if you turn to the next page, table 1, with that 45,000 database, what is Mr. Schwimmer depicting here in table 1?

A Well, here what he did, he looked at the cause of the injury. So looking at the vehicle interior. Because they wanted to see, you know, what was the common contact point. So he's splitting it by instrument panel, ejection, windshield, steering assembly. And now he's looking at your injuries, but he wanted to kind of like define what's an injury. So he split it by minor, non-dangerous, dangerous and fatal.

Q We saw references earlier with Dr. Hubel about MI -- MAIS or AIS --

A Yes.

Q -- scales. That's an Abbreviated Injury Scale?

A Yes.

Q I don't think we told the Court much about it. What is that?

A Oh. In -- in the 1970s the automotive industry, the medical people were interested in coding the injuries because

people like me may think that a whiplash injury could be, you know, a moderate injury and somebody like Mr. Gilbert may think it's a minor injury. So they wanted to provide a scale that was used by everybody to rate the severity of an injury. And it's based on threat to life. So it ranges from one --

Q Uh-huh.

A -- to six. Where one, it could be like a laceration, a contusion; two could be like a finger fracture. So it's not a threat to life.

Q Right.

A And six -- well, that -- that's critical.

THE COURT: Right.

THE WITNESS: It's like massive crush of the cranium, for example. There's also a seven and nine. That's for the unknowns.

THE COURT: Right.

BY MR. WRAY:

Q Now, that didn't exist back in the '60s when Mr. Schwimmer was writing, did it?

A No, not at that time.

Q So did he do something similar here?

A He sure did. He was trying to rate the injuries and put them in different buckets. As like fatal, dangerous, non-dangerous and then minor, which included some of the unknowns.

Q And out of his 45,000 samples, he's got some pretty low numbers here, doesn't he, on this table for dangerous injuries?

A That's true.

Q He's got some ones and twos and sixes and zeroes?

A That's correct.

Q And what he says at the bottom of page 9 I thought was interesting. You know, he talks about a common practice to use fatalities. And he's trying to take this to another level right at the end saying -- what is he telling us?

A What is he telling us?

Q Yes. That -- that more than just fatalities should be considered?

A No. You would need to include also injuries.

Q Right. That was his point; that the injuries are more numerous than fatalities and may be more important?

A Correct.

Q All right. Now, turning to the next page, which is 17, what does Mr. Schwimmer tell us here in this table? This is not just a count of injuries. What is he showing us here?

A Well, in here he's giving us the -- the risk score and he's comparing the dataset from prior years to this new year. And basically it doesn't change that much for the main conclusion looking at the most frequent type of injury sources.

Q Okay. And Mr. Schwimmer is not calculating a standard error or any statistical values in these charts, is he?

A No, he's not.

Q In looking at these numbers, it shows steering assembly, instrument panel, ejection and windshield at the top.

A That's correct.

Q And on your basis -- of your experience in automotive engineering, after this article was published and this research was done and announced in the '60s, were there design initiatives to address the safety issues relating to these parts of the vehicle?

A Yes. The government understood that there was an issue. The number of people dying and getting seriously injured in car crashes was going up.

THE COURT: Right.

THE WITNESS: And then they wanted to come up with countermeasures. In this case, it was the regulations. So they looked at this and they tried to prioritize, "Well, what do we need to do first?" And they came up with the regulations. They're called FMVSS, Federal Motor Vehicle Standards (sic).

THE COURT: Uh-huh.

MR. WRAY: Safety Standards.

THE WITNESS: And in 1967 -- huh?

THE COURT: Yeah. Got it.

MR. WRAY: Federal Motor Vehicle Safety Standards.

THE COURT: Yeah.

THE WITNESS: And in, for example, 1967 they made a requirements for the steering column because they were looking at this. And you can see that steering assembly is a big issue.

THE COURT: Right.

THE WITNESS: Right?

THE COURT: Right.

THE WITNESS: So this -- by this small number, it was number one. So they said, "Well, we know that the steering will" -- it's like right now it's not well-designed. It intrudes with --

THE COURT: Right.

THE WITNESS: -- the crash of the vehicle. It was a rigid pole. So they made a requirement that we need to design it so it would collapse and have some energy absorption properties. So the FMVSS came about. And also they created a new organization such as NHTSA and the DOT, and they say, "Well, we need something more. We need to start looking at these" -- "at this accident data."

THE COURT: Right.

BY MR. WRAY:

Q Before we leave Schwimmer, one last thing on page --

A Yes.

Q -- 17. He does talk about statistics in this paragraph that begins, "In general." What does he tell us here?

A Oh, he says -- are you asking for the last statement here? He says, "Our sampling very small." It doesn't -- but it gives use clues of what we need to address. It gives us a priority. And he suggests that you use -- you need to do further analysis in here.

Q Okay. And in the paragraph that begins, "In general," what does he say, if you look up about four or five paragraphs?

A He's saying that we're looking at a gross phenomenon, and this is no statistical control. So he's looking at the data and cutting in, looking by frequency. So he's not applying statistics, he's just looking at the frequency of these injury causes.

Q And he's telling the reader that he hasn't looked at statistics?

A Correct.

Q All right. If we turn to the next page, this is just a chart in Exhibit 3 that follows the kinds of things that Schwimmer was talking about and ranks the injuries? Is that what that is?

A Yes, it is.

Q Okay.

THE COURT: So this would be like what year or what --

THE WITNESS: Oh, this is like '61 and '62.

THE COURT: Right. You're too young, but Mr. Wray and I can remember when quite normal people rode around without

seat belts. It was like --

MR. WRAY: I remember my '61 Chevy well.

THE COURT: Exactly.

And then -- so at some point people began to wear seat belts. It must have changed it quite a point. When did we start to do that? Now you get --

THE WITNESS: Well, you --

THE COURT: -- to if you don't put them on.

THE WITNESS: They -- they had different regulations. They -- they cannot force you to wear a seat belt.

THE COURT: Right.

THE WITNESS: Right? So they will put a test that you have to pass.

THE COURT: Right.

THE WITNESS: And if you don't wear your seat belt, you're not going to do well. So they --

THE COURT: Right.

THE WITNESS: -- they -- people had to provide at least the seat belt. But they had -- you know the Donny rollover? It's -- it's a rollover test that's really severe.

THE COURT: Right.

THE WITNESS: It's no longer part of the regulation. But if you didn't put the seat belt, if the seat belt was not available, there was a high risk of the occupant being ejected.

THE COURT: Yeah. Right.

THE WITNESS: So that kind of forced manufacturers to have the seat belt available.

THE COURT: Okay. I didn't want to go down --

MR. WRAY: And that was in the '60s, wasn't it? Late '60s?

THE COURT: '60s, yeah.

So, culturally, when did we start to wear seat belts? I mean, I sort of remember this, but '70, '72, like that?

THE WITNESS: Well --

MR. WRAY: We all have different dates, I think.

THE COURT: Yeah. Right, right.

THE WITNESS: I think in '75 seat belt use rate was around 55 percent.

THE COURT: Oh, okay.

THE WITNESS: So it's much higher now.

THE COURT: Yeah, yeah.

THE WITNESS: That's in '75.

THE COURT: And what is it now?

THE WITNESS: Oh, we're like 80, 85 --

THE COURT: Yeah. Right. I mean my wife will --

THE WITNESS: -- you know, almost 90.

THE COURT: -- tell me if I don't have it on. Right.

THE WITNESS: Yeah. But if you look at FARS data, it's a different picture, because a lot of -- because these are fatal crashes.

THE COURT: Right.

THE WITNESS: So mostly the people in that database, they're --

THE COURT: It's a select group?

THE WITNESS: Yeah.

THE COURT: Yeah. Right.

THE WITNESS: Yeah.

THE COURT: Okay. Thanks.

MR. WRAY: So the seat belts actually would address a number of these things, like the windshield, the instrument panel.

THE COURT: That's what I was thinking. Yeah, you don't meet those things anymore when you have a shoulder strap on.

MR. WRAY: Well --

THE WITNESS: Well, you still --

MR. WRAY: -- not everybody does.

THE WITNESS: -- need padding.

THE COURT: What's that?

THE WITNESS: You still need some padding in your IP area --

THE COURT: Right.

THE WITNESS: -- for your knees, your --

THE COURT: Right, right.

///

BY MR. WRAY:

Q And Exhibit 4, what are you showing us?

A Oh, that was an old --

Q That may be my '61 Chevy.

A Yeah, and I use old vehicle because the steering wheel, again, was a rigid pole --

THE COURT: Right.

THE WITNESS: -- and there was no disengagement.

THE COURT: Right.

THE WITNESS: So when the front structure would crush --

THE COURT: Right.

THE WITNESS: -- it would just push on this pole. And the same time most crashes are frontal. The occupant's going forward. So it's like --

THE COURT: Right.

THE WITNESS: -- it's going forward. So loading it, and at the same time the steering wheel's loading the occupant.

BY MR. WRAY:

Q In page 5 -- or Exhibit 5, what are you showing us?

A Now because of the FMVSS, it was 203 and 204, they made requirements that you need a breakaway joint so it would disengage, so it wouldn't --

THE COURT: Uh-huh.

THE WITNESS: -- when you have crush, it would

disengage and not poke towards you. And there is energy absorption that was added to the steering column.

BY MR. WRAY:

Q Okay. So now we're going forward this the '70s. NHTSA exists and --

A Yes.

Q -- Mr. Schwimmer in our past. If you look at Exhibit 6, what is NHTSA doing here, October of 1979?

A Well, now in the '70s, they -- they created NHTSA, they created DOT and they say, "Well, we need databases now. We need to collect information. And we need to provide engineers with the information of what's going in the field." But also once they put a countermeasure in, to be able to look, is it beneficial, really.

THE COURT: Right.

THE WITNESS: Right? So they say, "Well, we need to create a database." And they have different databases that was talked about this morning. So now this is a preliminary database. That's the -- before NASS CDS.

THE COURT: Uh-huh.

THE WITNESS: They had two years of data and they went through and -- it was '77. So only two years to March I think '70 -- '78. And they basically -- they collected information on occupants, their -- where -- looking at the crashworthiness, where -- how was the vehicle impacted, looking at the injuries.

So now we have the AIS code. So now you can look at the frequency of severe injuries or moderate injuries.

BY MR. WRAY:

Q So at this point we have the AIS, the injury code's been adopted --

A Yes.

Q -- but the NASS database doesn't exist?

A Not yet. This was preliminary. So it's like a pilot.

Q So how many crashes and occupants do we have here? I think in the first page of Exhibit 6 it shows us down at the last paragraph.

A It showed in the next -- but there was 8,616 tow-away vehicles and 14,491 occupants and 485 fatalities.

THE COURT: Which page are you on? I'm just --

MR. WRAY: The first page.

THE WITNESS: He -- the first page.

MR. WRAY: It's the bottom paragraph on the first page, Your Honor --

THE COURT: Oh --

MR. WRAY: -- combined investigation --

THE COURT: I see. Yep, yep.

MR. WRAY: -- presented here.

THE COURT: Yep. Thanks.

BY MR. WRAY:

Q So they're dealing -- they're doing tow-away vehicles

even before NASS?

A Yes.

Q With their standard?

A Yes.

Q Okay. Now, if you turn to the next page, it was actually page 35 of the report, this data is referred to as NCSS, which you mentioned already, and you mentioned the AIS. What's being shown in this table?

A Here what they're doing is they're -- you know like the vehicle, when you look at -- do you know about the impact directions, the o'clock?

THE COURT: Uh-huh.

THE WITNESS: And at 1:00? So you know --

THE COURT: Sure.

THE WITNESS: -- about that? All right. So now here they're looking at the number of vehicles, the number of occupants. They have AIS2+, which would be moderate to serious injuries. And looking at serious injured occupants and fatalities.

THE COURT: Right.

THE WITNESS: And now they're taking the number -- they're taking the rate. So now if you are in a 1:00 crash, what's your rate or risk of injury of serious injuries or fatalities for that particular direction.

THE COURT: Yep.

BY MR. WRAY:

Q If we look at AIS3+ for the rear impacts, the five, six and 7:00 --

A Yeah. It was lowest.

Q -- the numbers we have are what?

A They're lowest. So now you get down to -- for AIS3+.

Q The 3+.

A For -- the 5:00 is a ten, 6:00 is a ten, 7:00 is a seven.

Q Okay.

A So you're getting to small numbers, but it -- it gave you trends of what was going on.

Q Let's turn to the next page, which is page 37. We have another table here at the top. And -- and this doesn't use rear, it uses something else to describe rear impacts.

A Well, now you're not going in the direction of force. Now you're looking at your impact location on your vehicle. Is it a frontal impact, is it a side impact --

Q It's the damage area?

A -- a left, and right side and then a back? So now rear impacts would be considered back because that's what -- and then they have tops. So that could be primarily rollovers. Yes. And they're doing the same thing; they're looking at the rate -- the risk of injuries or fatalities with respect to the impact location.

Q So now they're calculating a risk percentage?

A That's correct.

Q Okay. So out of these 40,000 vehicles --

A Right.

Q -- that are listed here -- well, I -- I guess that's maybe double counting. But of these vehicles, they have in the back category for AIS3+ how many in the number?

A They had 15.

Q And they calculated what percentage?

A 0.5.

Q And then the graph down below, again, they're showing front, back, right, left --

Which are the side, correct?

A Yes.

Q -- and top. And what is shown in that?

A Well, it tells you that the risk of serious injuries of fatalities is -- is lowest in rear impacts.

THE COURT: Uh-huh.

THE WITNESS: So that's consistent a little bit with Schwimmer.

BY MR. WRAY:

Q And it's --

A And it's --

Q -- highest in the rollovers, the --

A That is correct. Top impacts. And then our priority

should be the front and side.

Q And the -- the NHTSA conclusion under that table, the last sentence says what? The very bottom on page 37.

A Yes. "Fatality rate in side impact is twice as high as front while that for back is very low."

Q So they're making comparisons?

A That's correct.

Q And they're not reporting statistical significance?

A No, they're not.

Q All right. The next page is, "Occupant Distributions by Seat Locations." And this just says where people sit in the vehicle, is that right?

A That's correct. It's just a pie chart. Most of them are drivers because --

THE COURT: Right. Because you always one of those.

THE WITNESS: You always have one.

THE COURT: We know that. Right.

THE WITNESS: Yeah.

MR. WRAY: It's advisable.

THE COURT: Right.

BY MR. WRAY:

Q In the shaded part are front seat and the -- the light part is somewhere else, right?

A That's correct. So majority were front outboard -- front occupants.

Q Now, if you turn to the next page, which is page 80 of this much longer report, we see here that NHTSA is spreading the data by investigator, is that right?

A Yes. They were trying now to send some qualified people to calculate the delta-v as one way to look at the vehicle crashworthiness or assess the severity of the crash. And they have different groups. There's Calspan, University of Michigan. It's actually HSRI.

THE COURT: Uh-huh.

THE WITNESS: That's us. University of Miami, Dynamic Science. So they have different teams and they're going in and -- and assessing the delta-v.

BY MR. WRAY:

Q And the delta-vs are spread with the examples in each one, again very low numbers, right?

A Yes.

Q Okay.

THE COURT: So they're assessing them, as we said, by reading the police report and looking at photos?

THE WITNESS: Okay. They -- they send an investigator --

THE COURT: Right.

THE WITNESS: -- after the crash.

THE COURT: Yeah, but like two days later.

THE WITNESS: And that's fine.

THE COURT: Right.

THE WITNESS: And you just measure the crush on your vehicle.

THE COURT: Right.

THE WITNESS: So it's -- intrusion is the inside, the crush is on the outside. So they --

THE COURT: Right.

THE WITNESS: -- they look at the crush where it is located --

THE COURT: Right.

THE WITNESS: -- and they have test data. So you know the stiffness of your vehicle.

THE COURT: Right.

THE WITNESS: So from knowing the crush and the stiffness, you can kind of assess and estimate the severity. You know the vehicle weight --

THE COURT: Uh-huh.

THE WITNESS: -- so you can determine the delta-v.

THE COURT: Oh, okay.

THE WITNESS: So it's -- you put it in a program.

THE COURT: Right. And --

THE WITNESS: So there's different location where you measure your crush on your vehicle.

THE COURT: Pretty reliable or iffy or what?

THE WITNESS: Oh, it's pretty good.

THE COURT: Yeah.

THE WITNESS: You know, there's --

THE COURT: Because it --

THE WITNESS: -- always questions when you do crush reconstruction, especially if you have like multiple impacts and then you get hit twice in the same area.

THE COURT: Right.

THE WITNESS: But, in general, it's pretty good.

THE COURT: Okay. Because sometimes we have these Ouija board fake experts come here on the whiplash cases to explain --

THE WITNESS: And their low speed.

THE COURT: Yeah, yeah.

THE WITNESS: It's easier when you have a lot --

THE COURT: When you have a lot --

THE WITNESS: -- of crush.

THE COURT: -- you have something that you can get your teeth into?

THE WITNESS: Yeah.

THE COURT: Yeah. All right. And you can duplicate it by running a -- a car into a wall, right?

THE WITNESS: That's correct.

THE COURT: Yeah. All right.

THE WITNESS: So they use the information to assess stiffness. So they have data on -- on the vehicle.

THE COURT: All right. So you share my sort of queasiness about the low-speed analysis?

THE WITNESS: Well, it's harder to assess, yes.

THE COURT: Yeah. All right.

THE WITNESS: They're tests. So you can compare the data with like bumper tests. But, yes, it's not so straightforward.

THE COURT: But -- and then the -- I'm sorry. I don't mean to go on about it, but I just want to --

MR. WRAY: No, no. This is --

THE COURT: I've been worried about it.

MR. WRAY: -- this is very --

THE COURT: But -- but for the scientific community, the serious scientific community, the -- at least at higher speeds the -- these delta-v numbers are pretty reliable?

THE WITNESS: Yes.

THE COURT: Yeah.

THE WITNESS: And there's -- there are confidence that are associated, which are delta-v. They will tell you -- or you can be confident about that delta-v.

THE COURT: All right. Good. Thanks.

THE WITNESS: And that's also coded in the database.

THE COURT: Right.

BY MR. WRAY:

Q That's in the actual NASS database?

A Uh-huh.

Q In the case file?

A Uh-huh.

Q Now, you -- you were just talking with the Judge about the low speed being very difficult to calculate.

A More difficult.

Q Are there some high speeds that are difficult to calculate also?

A Yes.

Q Why is that?

A Because they're too severe. Like how do you measure your crush?

THE COURT: Right, right.

BY MR. WRAY:

Q And have you found that there are a number of cases in NASS that do not have delta-vs at all?

A That's correct.

Q And have you noticed there's a trend as to which ones fall in that category?

A They tend to be at the higher speed. When you -- when you download them, they tend to be at higher speeds. Just -- that's just a known -- there could be --

THE COURT: Sure.

THE WITNESS: -- multiple impacts.

THE COURT: Sure.

BY MR. WRAY:

Q All right. Let's move on to the '80s.

A '80s now.

Q This is Exhibit 7. "Harm Causation and Ranking in Car Crashes." This is Malliaras who we've --

A Yes.

Q -- referenced to before. 1985.

A Do you want me to explain harm. Oops. There's no question.

Q You're focused on injury, correct?

A Yes.

Q And a lot of what you have published and Dr. Viano has published is focused not on the scene or the vehicle, per se, but on injury causes, right?

A Yes.

Q Okay. Is that what harm is here?

A Harm -- okay, because -- harm is based on your severity of your injury and it's also based on the cost because you can have a longer hospital stay, for example, and that's more expensive. So harm, they didn't want to put dollar sign but they wanted to kind of assess if you have this type of injury, you know what's your severity. We know -- we talked about the AIS. But now what is the effect of that injury. So it's kind of based on the cost, but they didn't wanted to put dollar signs. So that's harm.

Q Okay. Let's turn to the next page, which is page 5. We see that figure 4 that I had difficulty with Dr. Hubel about. Let me ask you, Dr. Parenteau, in figure 4, the frequency line that's there, why does that go down on the left if we're talking about NASS data, as this is?

A Most crashes that were tow-away were at a delta-v that was 10 to 15. There's not a lot of crashes that occur at a very, very high speed. They're unusual.

THE COURT: Right.

THE WITNESS: That the one you kind of find more in FARS data. But if you look at all of them, most of them are in that range, the 10 to 15 delta-v range.

BY MR. WRAY:

Q And if we included the crashes that were not tow-aways, would the left side of this chart look different?

A Yes. But we don't know the delta-v. Yes. But most of them that are, you know, parking lot accidents that people -- that they're drivable after, they tend to be lower severity.

Q Okay. If we turn to the next page, which is page 15 of the original report, table 10 is here. And is Malliaras breaking out information hereby delta-v?

A Yes. He's looking at the harm, which is -- we talked about, and he's looking by the source of the injury and by the delta-v buckets.

Q And here it's somewhat like Schwimmer, he's looking at

parts of the vehicle, correct?

A He is. And now he is looking also by body region.

Q And he's got percentages again? This is not just a count, he's got percentages?

A Yes.

Q And, again, no standard error or no statistical representation in the table, is there?

A Nope.

Q If we turn to the next exhibit, Exhibit 8, here we have Digges and others. "Safety Performance of Motor Vehicle Seats in 1993." And the next page is actually page 185 out of this publication. What are Digges and his authors showing us in this figure that's on page 185?

A Okay. Here he analyzed three different databases. He's used NASS, he used Polk for exposure and he used FARS. And he's looking at re-impacts. And he's basically telling us that, yes, you have occupants that are injured in rear impacts. But these are not -- but if you look at the fatalities, your rate of fatalities, it's pretty small. People tend not to be fatally injured in a fatal (sic) crash.

Q If you look right above the figure, he tells us he looking at the years '81 through '86 --

A Yeah.

Q -- in figure 2. And what does he say here the figure shows us about rear impacts?

A They account for about 11 percent of car crashes but only five percent of all fatal crashes.

Q Okay. And then he talks about occupants involved in crashes. He says what percent are rear?

A 12 percent.

Q Okay. And what percent --

A And only 23 percent of those are injured.

Q All right. So that's -- it's a higher percentage of all injuries in rears but there are fewer rears collected by this information?

A Yes.

Q And then he talks about seriousness. What happens -- are there more rear impacts that are serious injuries? What does he say?

A "Occupant with serious injuries in rear crashes account for 7.6 percent and 3.5 percent of all serious and fatal injuries." So 3.5 is for fatalities and 7.6 is for serious.

Q Now, there are no pluses and minuses after these numbers, are there?

A No.

Q There's no standard error reported in this?

A No, that's correct.

Q Okay. And then after figure 2, what does he say about whether or not even though there are not very many of these injuries, they should be studied?

A Well, he's saying that here what's evident about this is that, yes, injuries can happen in the rear, in fact, but they tend to be minor. There is a small fraction of serious or fatalities of injuries that if you're in a rear impact.

Q And does he suggest that it still be studied even though there are not many serious injuries?

A Yes.

Q Okay. Let's turn to Molino, which is Exhibit 9.

A Yes.

Q Now, Louis Molino is employed by whom, or was back in 1997 employed by whom?

A By NHTSA.

Q So this NHTSA talking about their own database?

A Yes.

Q Now, this has figure 1 that shows the seat back incline position. Now, there was some questions of Dr. Hubel about that.

A Yes. Okay. This -- just to clarify --

THE COURT: Right.

THE WITNESS: -- this has nothing to do with the seat properties of a yielding seat or a stiff seat.

THE COURT: Right.

THE WITNESS: The investigator just goes in irrespective of who designs the seat, and they look -- it's like at the seat-back inclination. They estimate what it was

before the crash.

THE COURT: Right.

THE WITNESS: So you're sitting down. You're about 20 degrees.

THE COURT: Right.

THE WITNESS: After the crash, if your seat is back, they're --

THE COURT: Right. Okay.

THE WITNESS: -- say, "Oh, it's 45 degrees."

THE COURT: Right, right.

THE WITNESS: And then they use this to code what it was before, what it is after. So now they -- they say an upright seat. It's like -- if it's like 90 degrees, right --

THE COURT: Uh-huh.

THE WITNESS: -- about 90 degrees. Here's slightly reclined. So maybe 25 degrees. And then completely reclined, you're -- you're like above 45 degrees. So they -- they define different buckets.

BY MR. WRAY:

Q So one thing is starting position and another one is ending position, is that right?

A Right. Because somebody could drive -- you know, if you're in a Trans Am, for example --

THE COURT: Yeah.

THE WITNESS: -- you may drive a --

THE COURT: Yeah. Right. It will be --

THE WITNESS: -- little bit more reclined.

THE COURT: -- way back. Right.

THE WITNESS: So they look at the change.

BY MR. WRAY:

Q Okay. And that is being discussed in -- by NHTSA and Mr. Molino in this article, is that right?

A Yes. Because they just added that variable the year before. So it was a new variable in a the database. Because as Mister -- Dr. Hubel mentioned, we keep adding to the database and improving it.

Q By "we" you mean NHTSA?

A NHTSA. Yes, I mean NHTSA. Sorry.

Q Okay. And here Mr. Molino had only, you said, a couple of years of data? It looks like '88 to '90?

A Yes. He didn't have much. But he was looking for trends.

Q All right. If we turn to the next page, which doesn't have a number on it but it has table 1, here he's splitting this data by delta-v apparently?

A Yes.

Q Now, one tricky thing for the Court's benefit I'll point out is delta-v here's not in miles per hour, is it? Oh, it is -- I don't know. What's it in?

A No. It's in kilometers. The database is metric.

Q Okay. It's metric. And here we have percentages and we have counts --

A Yes.

Q -- that Mr. Molino's giving us? Is there a standard error that he has here?

A No.

Q He discusses it later though I think in this article.

A Yes.

Q Okay.

A I'm not sure where, but, yes.

Q And then has other -- completely reclined or upright or slightly reclined at the bottom also in this table 2?

A Yes.

Q And here's he's got injuries as being the alternative rather than delta-v. So he's comparing delta-v above and injuries down below?

A Right. So now he's got two buckets of the seats completely reclined or upright or slightly reclined by different injury severities. Yes.

Q Okay. And then the next page is similar, he's got delta-v again?

A Yes.

Q All right. Let's go on to the next, Exhibit 10. This is Malliaras, who's the lead author.

A Yes.

Q We see some authors showing up over and over again. Is that typical that you -- are you familiar with these authors?

A Oh, yeah. I know Ken Digges quite well. Yes. And Malliaras, I've --

Q Now, this the article that the Plaintiffs' expert, Joseph Burton, has relied on in this case and others as showing the relationships between crash injuries and the nature of crashes. Is this the kind of article that you and Dr. Viano will rely on in your work as well?

A Yes. It's a -- it's a good publication.

Q I notice on the -- the first page after the cover-up, which is page 177, Malliaras refers to -- in the introduction, high volume highway accident records, many of them nationally representative and of research caliber. Do you regard the NASS database as being of research caliber?

A Yes. I -- I've worked with other databases throughout the world and I -- I think NASS is -- is a nice set of data, especially for engineers. And we can query it. It's available. That's what --

THE COURT: Right, right.

THE WITNESS: It's even --

BY MR. WRAY:

Q Now, if we look at --

A I'm sorry.

Q -- page 186 --

A Yes.

Q -- the next page, we've got a figure here at the top. And what is Malliaras, comparing here?

A Here he's looking at the probability of injury as a function of delta-v. And at the bottom, he's comparing the MAIS3+. So, for here, he -- the buckets he's looking is frontal, side and rear --

Q In figure 2?

A -- and he's looking by impact direction. So the o'clock. Yes, in figure 2.

Q And where is the rear? Which of the three curves in figure 2 is the rear?

A It's the one with the little square. So the one at the bottom. Here he uses regression analysis. So his curve is very nice.

Q He smoothes it out?

A Yes.

Q So if we look at a delta-v of about 25, for example, here, is Malliaras giving us the percentage probability of a 3+ injury?

A Yes. So it -- you have about less than five percent probability of serious injuries in that delta-v.

Q And then he has the -- the side and the frontal above that?

A Yes.

Q Okay. If we turn to the next page, he's doing similar analyses, but what is he analyzing here?

A Now he's looking at the effect of your restraint system. So --

Q In figure 3?

A -- no belt -- in figure 3. No belt, belt and then airbag. So he had data on airbags now.

Q Okay. And in figure 4, what is he plotting?

A Now -- now that we're starting to get more data, we can start looking at demographics. And he's looking by age groups.

Q So it's not good for me to get old?

A Well, no.

Q In terms of car crashes? And he is showing statistically that it's true, that older people are more at risk?

A Yes. And that's well-known.

Q All right. Again, these charts, these do not have any standard error listed on them, do they?

A No.

Q But like most articles, they'll be some discussion of statistics in these articles, won't there?

A Yes.

Q Okay. Let's look briefly at Exhibit 11. This is -- we're up to 2008 now.

A Yes.

Q And this is Galli and Digges. What is this article dealing with?

A Now they're --

Q Rear impacts again?

A -- looking at the severe head and neck injuries in rear impacts.

Q And if you turn to the second page, there's figure 3.

A Yes.

Q What does figure 3 show us? Is it data being cut again?

A The data is again cut by these different delta-v buckets. And he's looking at different type of injury severity. So the first one, the striped one is any head or neck injury. So that can include AIS one. And then after that, he goes and puts another bucket that looks at AIS2+ type of injuries and then he goes and looks at the more severe one, 3+. So, again, he's looking at the proportion, the risk of -- the rate of injuries as a function of delta-v showing the progression.

Q And this is all rear impacts, correct?

A Yes. In front seat occupants.

Q So what Digges -- I'm sorry. What Galli is reporting here is similar to the database that is in table 6 in Dr. Viano's --

A It's a --

Q -- report?

A It's a similar methodology, yes.

Q He's got a similar -- he's got '97 through 2005. So not quite as many years?

A Yes. And he's looking at head and neck.

Q Head and neck. So he's got both. Okay. Where yours was just injury, correct, table 6?

A Yes. We looked at -- and then we looked at severe. So a four is considered severe.

Q Okay. So the different ways of cutting the same dataset?

A Yes.

Q If we look at Exhibit 12, we have Yoganandan writing about 4+. That's like you just mentioned?

A Yes.

Q So it's even more --

A Now he's looking --

Q -- severe?

A -- at head injuries.

Q Okay. And he just has head injuries. So it's a subcategory of injuries?

A Yes.

Q So this data is getting to be even smaller in terms of a -- a cut of NASS, correct?

A Yes.

Q But he's not looking only at NASS, is he? What else is

he looking at?

A He's looking at different databases. SIREN.

THE WITNESS: Are you familiar with SIREN?

THE COURT: Uh-huh.

THE WITNESS: Okay.

BY MR. WRAY:

Q What is SIREN?

A NHTSA --

Q I know that you know too much about it, but just various only.

A I know U of M used to be a SIREN center with one of the founder. But, anyhow, basically NHTSA says, "Okay. We have NASS CDS. That gives us good information, but we want to kind of look at more recent type of vehicles. We want to focus on airbags and seat belts." And that's why they want more recent vehicles. So, again, they want it frontals and sides.

THE COURT: Right.

THE WITNESS: They actually excluded most rear impacts unless there was a child or a second or more occupant in rear impacts. And they wanted to look at the technology.

Now, the SIREN case, you have the -- you have somebody like a NASS investigator go in -- actually, at U of M, it was an old NASS investigator. So they go in and reconstruct a crash. Then you have the medical people coming in. So it has an engineering and a medical center. And now you have the CT

scans and you have all the detailed information, the nurses -- the nurse who comes in and who actually looked at the patient, comes in those case reviews. So it's reviewed in a group like this. It's about the same size of this room.

THE COURT: Uh-huh.

THE WITNESS: And you have engineers coming in, the medical people, the person -- the radiologist is there in the room, the crash reconstructionist is also there, and then you go through the case. It's like -- well, they first go through the crash reconstruction, what happens to the vehicle, the dynamics, then we go through the kinematics and then we go through the biomechanics and try to assess what's the injury source and what was the mechanism. So it's not more details. And it's reviewed by a group of people.

BY MR. WRAY:

Q You've been in those reviews?

A Yes, as Delphi used to be part of it.

Q Now, in terms of NASS, have you presented to the NASS investigators also?

A Yes. Every year they have -- they get trained because there's new variables that are inputted. Like you just saw the seat back.

THE COURT: Right.

THE WITNESS: And before -- this morning we talked about the child seat, looking at the make and model. So you

need to train these NASS investigators so they have a -- I think it's in November, because I've been in one. It was in November. And they go through what are the new variables to make sure that they know how --

THE COURT: Uh-huh.

THE WITNESS: -- to collect the data. So -- and, yes, I've been to one of them.

BY MR. WRAY:

Q And what did you present on? What topic?

A Well, I was invited as a guest speaker. We did a lot of NASS CDS analyses where we were looking at rollovers. I was working with Saab, GM, our -- Delphi, the sensors also and our restraint, the curtain airbags. And we -- so it was a big group. But the thing with rollovers is that there were no leverage -- there's no regulations on rollovers, right, to look at the whole vehicle kinematics. So we wanted to find out, "Well, what are the most field relevant conditions that we have to simulate in the lab?" So we -- we just look at the data like found all the trip-overs where you hit something and you roll --

THE COURT: Uh-huh.

THE WITNESS: -- were the most frequent ones. So we double up a procedure to analyze the occupant kinematics and our sensors and our countermeasures --

THE COURT: Right.

THE WITNESS: -- under those conditions. And we came up with quite a few laboratory test conditions.

So we were invited to -- to show like how we use NASS CDS to the investigators. Kind of like say, "Hey, you know, you've been analyzing this in the field and this is how we use your data." So that was -- that was interesting.

BY MR. WRAY:

Q And, Dr. Parenteau, the third --

A Yes.

Q -- category here is Australian?

A Australian. Yes.

Q Does Australia also gather data on automobile crashes?

A Yes, they do. It --

Q We don't need to go into --

A Okay.

Q -- what they do. Continue to the next page, table 1 splits out the data from NASS, SIREN and Australia?

A Yes.

Q -- and Delta -- and on Delta belted and unbelted, right?

A Yes.

Q Okay. And then, again, this is giving percentages?

A Yes. They're comparing the different databases.

Q And no standard error is appearing here, is it?

A Not here.

Q All right. Now, let's -- I've got one article of yours,

article -- Exhibit 13.

A Yes.

Q This is the Edwards' article.

A Yes.

Q Mark Edwards and you and Dr. Viano published in 2009 that Dr. Hubel is very critical of?

A Yes.

Q What I want to do is go through this article and just have you tell us what the pieces of the article are and why you display the data like you do. First of all, this is what kind of impacts?

A We looked at rear impacts.

Q And --

A We were --

Q -- you're looking at that same factor that Molino was on the NASS seat incline variable?

A Yes. Because in Molino, remember, he just did inside analysis. After they put this variable inside the database, so now we said, "Okay. We waited a few years. Let's go back and reassess." And we looked at reclined seats and not -- I mean, rotating seats and not rotating seats. And it --

Q And you had how many years of data? It look like '95 to '06?

A Yeah. So 12 years.

Q And he had two? Molino had two years?

A One I think.

Q One or two. Okay.

A So here we look at the -- only the front outboard occupants, right, looking at rear impacts.

Q Now, who is mark Edwards?

A Mark is a consultant right now, but he used to work at NHTSA. He was the head of their statistical department. Now his exact title, I don't know. But he was high up at NHTSA in that field.

Q Who was involved in the statistical analysis for this article?

A Mark was.

Q Okay.

A So we collected the data and Mark did the -- the analysis.

Q Now, in the results category on the first page of this article --

A Yes.

Q -- we see the conclusion here for delta-v greater than 30?

A Yes.

Q What -- what does the article say?

A If your seat does not rotate --

Q No. If you'd just read the -- the sentence there.

A Oh, I'm sorry. I was going -- "The risk of severe

injury to occupants in seats that do not rotate in more than 30 miles per hour delta-v crashes with 3.8 times greater than seats that rotated."

Q Okay. This is the value that Dr. Hubel, you heard her criticize, 3.8 times --

A Yes.

Q -- and she talked about the small sample size? So let's go through the article and see if something's being concealed from the reader.

A Okay.

Q Okay? If we go to the next page of the article, there's a pie chart there. That's --

A A pie chart.

Q -- showing occupants; much like the other one we saw.

A Yeah. I just don't think I have --

Q So let's go past that. This is all background that you're providing the reader, right?

A Yes.

Q You get to a section called methods?

A Yes.

Q What do you set out in methods?

A Here we're telling the reader what we're doing. So what type of vehicle -- vehicles did we use. Right? So we -- in this case, we included body type less than ten. So we don't have ice cream trucks.

THE COURT: Right.

THE WITNESS: We're looking at passenger cars.

THE COURT: Right.

THE WITNESS: We're looking at delta-vs. So -- and we had three buckets. I call them buckets. Less than 20. 20 to 30, and above 30. We also looked at belt use and we provided the definition of belt use. And what's our definition for rotated seats. So for -- like we talked about your seat, what it was before. So basically we look at your seat back, what's it's coded before and how it is after --

THE COURT: Right.

THE WITNESS: -- the crash.

THE COURT: Right.

THE WITNESS: So if it moves, it is --

THE COURT: Yeah.

THE WITNESS: -- a rotated seat.

BY MR. WRAY:

Q And methods --

A If the stays in the same position or if it's pushed forward, it's upright. Yes, yes.

Q Okay. In methods, in the second paragraph, what is being discussed?

A Methods, second paragraph. You're talking in this comparison?

Q Yes.

A So here in this method we use it -- we used weighted data and we used a car -- a chi square to compare your --

Q What is a chi square?

A Well, it's a statistical method to compare two different proportions. Now, now I'm going to leave it to Dr. Hubel to be the expert on that one. But you basically look at your ratios, your risks, and compare them.

Q Who did the chi squares for this article?

A Mark Edwards.

Q Dr. Edwards did. Okay.

THE COURT: Can we look for a break? Otherwise nobody's going to get a lunch.

MR. WRAY: Okay.

THE COURT: And we'll get back together at 1:00.

You've got -- your flight is at 4:00, right?

THE WITNESS: Yeah.

THE COURT: So if I get you out of here by 2:00, you'll be there by 2:30 with an hour-and-a-half to get some coffee.

THE WITNESS: Okay.

THE COURT: Okay? We'll do it.

MR. WRAY: Dr. Parenteau will insist on the coffee.

THE COURT: Yeah. Right. She's on her own there. But I think she'll -- you'll manage.

MR. GILBERT: Dr. Hubel will have to --

THE COURT: Will have to leave at 1:00. I understand. Yeah.

All right.

MR. GILBERT: 12:30.

THE COURT: Good enough. I'll get you guys out of here.

(Recess at 12:05 p.m., recommencing at 1:09 p.m.)

THE COURT: Okay.

MR. WRAY: Mr. Gilbert has challenged me to see how close I can come to my 15 to 20-minute estimate to finish up.

THE COURT: Oh, yeah, piece of cake.

MR. WRAY: I think it should be.

BY MR. WRAY:

Q We were looking, Dr. Parenteau, at Exhibit 13 in your binder here, which is the Edwards article.

A Yes.

Q We've gone through the introduction, we were starting to go talk about the methods. And you told us about the chi square being described here. Is standard error discussed in this article?

A Yes. We provided the standard errors and we provided a 95th confidence interval. We did not choose the standard errors in our calculation for the chi scare. We used a weighted data. But we provided it to the reader.

Q On the next page, right before the results start, is

that where you discussed standard errors?

A Yes.

MR. GILBERT: Which exhibit is it, David?

MR. WORTHEIM: 13.

THE WITNESS: Yes. We provided -- NHTSA had a report where they, if -- when you look at the data you have to use this program that's called SAS.

THE COURT: Right.

THE WITNESS: And SAS did not allow to calculate standard error. You needed this other software called SUDAAN. I do not have SUDAAN. But we found a publication and it showed like an estimate on how you can estimate standard errors based on this expediential equation right here.

THE COURT: Yeah.

THE WITNESS: And that's what we used. That was provided by NHTSA and that's what we provided to the reader and you can see it in Table 1 at the bottom.

BY MR. WRAY:

Q Is that publication Exhibit 14? Is that the same one?

A Is it 14? Oh, yes, uh-huh.

Q Now, going back to the article --

A Yes.

Q -- this is 13 under results, here you start setting forth in Dr. Edwards -- is Dr. Edwards a doctor?

A Yes.

Q -- some information in Table 1, injuries by seat rotation, correct?

A Yes.

Q And you do show chi square and P values there.

A Yes.

Q And you show a 95th percentile confidence interval.

A Yes.

Q So anybody reading this article has that information available to them plus the way that you calculated it.

A That's correct. At least, that was our objective.

Q So you've got Table 2 and Table 3 that talk more about C rotation and various delta-vs.

A Yes.

Q And that is all you talk about in this article or do you go on to some other part of NASS?

A Other part of NASS? We also looked at the seat belt.

Q Before we go to that --

A Okay.

Q -- let's skip over -- I want to talk about the case review. Do you see the heading individual case review?

A Yes.

Q We've heard about case studies. Is Table 8, which is a couple of pages further on in this article --

A Yes.

Q -- is that a list of the cases? What are you showing

us there?

A Okay. We wanted to understand why people get injured in rotating and non-rotating seats. So we said, okay, now we have the overall picture that, yes, you're more at risk in a non-rotating seat. But why? It doesn't make sense. So what we do in a lot of our articles, if we have a question, we go in and download the cases to try to review them and see, well, what's going on. And what we found out when we're looking at the non-rotating seats -- this has nothing to do with stiff seats or yielding seats.

What we found out is that most of the time in these crashes that are above 30 miles per hour, you have a lot of intrusion that comes in. And because of the intrusion, it pushes on the seatback and doesn't allow the yielding to occur. So it instructs the yielding properties. And that's what we found. So we found that it was -- one of our conclusions it was not a seat issue, it's an intrusion issue. And the government actually updated -- we talked about these regulations. There's 301 tests. And now they updated it with an offset test. So now you're not engaging the strong structures, you're engaging just part of the strong structures; so you have more intrusion.

So we thought it was more an issue that would be addressed with this new regulation. So it was not really a seat issue. If you look, I think some of our seats fit this

rotating and not rotating bucket. We have a LeSabre, I think, in both categories. So it was really an intrusion type of issue.

Q And one of the things that Ford has studied, I know, is that they have done an impact on one side, an offset rear impact, and one seat will recline and one will stay up?

A Yes.

Q Same design, but they have different performance in the same crash.

A That is correct. And NHTSA did a lot of research. They have all those tests available publicly. And we actually downloaded all of them. And, yes, the seat can stay upright and that's not -- yes.

Q The information in Tables 8 and 9 is the kind of information one would see in the case file; is that right?

A Yes.

Q And you've reported all that in your article as well.

A Yes.

Q Then next we get to the discussion on the next page where you talk about these things. In the discussion, actually, you go on limitations after that, which is almost as long as the discussion, isn't it?

A In this case, yes.

Q I want to look at the third limitation right before we get to references. What does the third limitation start by

saying?

A The sample sizes for the 12 years of NASS CDS data is small when the study is limited to the most-severe injury in rear impacts.

Q So are you concealing this from the reader?

A No. No, it's provided.

Q What did you go on to say in the next sentence?

A "While the weighted data provides the best national estimate of the occurrence of failed accident injury, the standard errors can be large. This makes statistical analysis difficult. These results should be seen as a best estimate of the national incidence of injury in rear crashes where the front seat bag has either rotated or not rotated as judged by the NASS investigators."

Q Why do you categorizes this section of the article limitations?

A Because we caution the reader and we tell them this is what we've done. And it's true. It's a small sample, so be aware of it.

Q All right. You heard Dr. Hubel disagree with the way that you have calculated standard error, and Dr. Edwards has calculated standard error. In addition to Exhibit 14, is Exhibit 15 another example of support for the types of calculations that you and Dr. Edwards have done?

A Okay. All right. So again we do not have SUDAAN, we just had SAS. Then we were aware that you can -- instead of using this approximation, now SAS can calculate for you the standard error. So we said, okay. We asked what was the procedure and we've been told it was the procedure --

Q Who did you ask?

A In this case I asked U of M.

Q University of Michigan?

A Yes.

Q All right.

A Yes. And because it's not provided; that routine is not provided in the manual, so we asked what it was and they said to use procedure survey. And since you weigh the data using a factor that's called RAT weight, we thought it was sufficient to calculate the standard error. If you read this, it says that you have to weigh the data and the RAT weight it the best --

Q What are you reading?

A That's what I'm looking for.

Q This is page 13 of Exhibit 15?

A 13, yes.

Q The last page of Exhibit 15. That's referring to the RAT weight. That's another acronym, isn't it?

A Yeah, the RAT weight or RIF. So we read this, and our understanding was that using the RAT weight was sufficient.

Q Let's assume Dr. Hubel is right and you are wrong and Dr. Edwards is wrong. Have you taken Dr. Hubel's calculation of standard error and applied it to the table that she was talking about, Table 6, from Dr. Viano's study?

A Yes.

Q Exhibit 16 that is table; is that right, the very last exhibit you have here.

A Yes.

MR. WRAY: Your Honor, I would like to mark as Exhibit C the comparison of the standard error, treating B as being the binder of the exhibits.

MR. GILBERT: When was this done?

MR. WRAY: Yesterday.

THE WITNESS: The 29th.

MR. GILBERT: Judge, we thought the -- pardon me. Objection. We thought this hearing was about our motion to exclude Dr. Viano's work, the MASCES. We did not expect that he would sent a surrogate, we did not expect that he would start generating new tables. We thought the issue was about the tables he generated and provided and testified to in his deposition.

MR. WRAY: Let me clarify what this is.

THE COURT: Okay.

MR. WRAY: This is the table. This is the same table from the deposition. It just has an extra line in it.

THE COURT: Right. I understand. I'll allow it. They're addressing the criticisms that Dr. Hubel raised.

MR. WRAY: Your Honor, may I approach?

THE COURT: Sure.

MR. GILBERT: Where is my copy?

MR. WRAY: On your table.

BY MR. WRAY:

Q Dr. Parenteau, do you have a copy?

A Yes.

Q Now, the exhibit I've marked as C is the same table as in Dr. Viano's supplemental deposition with one category of information added; is that right?

A Yes. It's highlighted and I called it SE2.

Q Now you heard me ask Dr. Hubel questions, then she pulled out a couple standard errors and showed a 400 percent difference.

A Yes.

Q Did you run the entire table?

A Yes.

Q Now, she said she ran the entire table too, but she doesn't have it to give to us. You heard that testimony?

A Yes.

Q Okay. When you ran the standard errors in the entire table, did you find that with her calculation some were larger and some were smaller?

A That's correct.

Q And have you laid them out here to the extent that you were able to produce them?

A Yes.

Q There's some blanks that you have here. You finished this yesterday, correct?

A Yes.

Q Why are there some blanks?

A Because I still have questions. I couldn't get the -- my program to run initially, so it took me a little while to get this, but I was unable to reproduce, when I was using her method, the total with unknown. My numbers were slightly smaller. So I've got to go back and figure out why this is going on. But for the MAIS4+ that she produces in her report, we were able to reproduce the exact number. We also used --

Q Where does that appear?

A Well, for the front SE, the total with unknown, you see that we originally had 4,535.

Q Give us a reference where we're looking.

A I don't have line numbers. Right here. MAIS4+ for front.

Q The second set of data. Okay. And the total unknown?

A Yes, with the total with unknown. You see how I have 92,243? And we had a smaller SE calculated with just a RAT weight of 4,535.

Q And hers is much larger.

A So I used Dr. Hubel's method and we come up with what she was saying. But we did that also for rear impacts as a function of these different delta-v buckets.

Q But if we go over to the delta-v buckets, as you've described them, and we look at the rear impacts, 4+ fatalities --

A Yes.

Q -- and go over to 20 to 25, or 25 to 30, are Dr. Hubel's standard errors larger or smaller than yours?

A They are smaller, a little bit.

Q Did you see anything important in terms of the differences in these numbers for the buckets that you were looking at, the ones in the 25-to-30 range?

A No, not for rear impacts.

Q One more topic I think may be all that I have here, and that is: Could you give us some examples of automotive safety engineering improvements that have been made to address injuries where there was no statistical significant finding that the injuries were happening? Individual reports, small numbers of individual reports.

A Yes.

Q What are some examples?

A You know, some of them it was the children in the second row. You know how you have a switch for the window?

THE COURT: Right.

THE WITNESS: Right.

THE COURT: Yup.

THE WITNESS: Well, kids, what we were -- what they observed is that kids would come out and look out the window and put their knees on the switch, and the window would come up.

THE COURT: Right. Yeah.

THE WITNESS: Yeah. So there weren't many cases, but NHTSA was quick to react. They understood this was an issue and they came with up a countermeasure. The countermeasure was just to put a protector over the switch so this would not happen. So that's where it's a quick example of implementing a regulation. Their goal --

BY MR. WRAY:

Q There are a lot of switches now that you have to pull up to make the window go up, as opposed to pushing down, aren't there?

A Yes.

Q Another example?

A Can I talk about the airbags?

Q Sure.

A The airbags, for example. In the 1970s, we had airbags available. Airbags are good. Right? They are there to protect the unbelted occupant primarily, but it's a

supplemental, so it also provides benefit for the belted person.

THE COURT: Right.

THE WITNESS: So they wanted to -- NHTSA was like, yes, yes, yes, you need something for my unbelted person. Put in an airbag. Well, the industry went back and said, yes, but I don't think our airbags are ready. We can probably cause some injuries. And they put them in the fleet. And we had cases where small-statured and children were being killed.

THE COURT: Right.

THE WITNESS: So NHTSA is like all right, I'm not -- the technology is not ready yet. We're going to wait. But in the '90s, they said, okay, let's go back to the airbag. So what happened, and I'm sure you heard of them, some of these airbags were causing some fatalities, like children that were seated on the passenger lap or small females. There weren't many cases. But NHTSA was checking them because when they put a regulation in, their thing is like we have to have a benefit, but we cannot harm cause any harm.

THE COURT: Right.

THE WITNESS: So they were like let's do something quickly. So the first thing did is like you put your kids in the back. Then in some vehicles you cannot put the kid in the back, right? Because there is no second row seat, like a pickup.

THE COURT: Oh, yeah.

THE WITNESS: So you're allowed to put a switch. So that was a Band-Aid for those vehicles. Put the kids in the back. Then if you have to put them in, you have a switch and you can turn them off. But that's not a good idea because you can forget. So then they when went and said, okay, let's do the powered airbag so it's not so powerful. And now they have the new regulation, you know, and your vehicle probably has the smart system. So now it looks at the weight. You know how you put your briefcase?

THE COURT: Uh-huh.

THE WITNESS: And you now it lights up? It calculates the weight, so it knows it's, like, oh, is this a child or is it an adult? And if it's a child, they'll all do a low inflation. So now the airbags are small enough so you don't need this big puffy airbag. It will give you us just a little bit to reduce the risk of inflation.

For the driver, it's the same thing. They don't have the weight sensor, but they have a seat track sensor. So, you know, if you're fully forward you probably need a lower inflation, because you don't want the airbag. So this is an example where they were quick to react. Because, again, their objective is do no harm, but they also want to protect. Airbags are beneficial. They're saving lives, a lot of lives, but these were a few that died because of the airbags, so they

addressed them quickly.

BY MR. WRAY:

Q As an automotive safety engineer, is it more difficult when the field data shows that there are countervailing considerations. If you change this way, a different population will be hurt; if you change the other way, it will be a different population?

A That's correct. You have to look at both sides because you cannot do harm. That's the main thing. The switch is easy. That's like -- that's a no brainer.

THE COURT: Right, there's no downside.

THE WITNESS: But the seat back is something that's been studied throughout the different decades, right? They always say, okay, yes, there's some cases -- there are some instances where a rigid seat is beneficial, right? But there's a lot of other instances where it would be dis-beneficial. You know, a child sitting behind a stiff seat in a frontal impact. We know that most of the times the kids hit the seat back. So if it's rigid, it's not a good thing. And also most of our crashes we talked about were low speeds. That's where whiplash were at. And in whiplash you want a yielding seat.

So they look at both sides, and it's like -- it's not very conclusive. That's why they haven't changed it. There's benefits and dis-benefits. So what are you supposed to do? That's what our engineers are stuck with.

BY MR. WRAY:

Q That conclusion you just stated was what Molino's conclusion was in 1997, wasn't it?

A Yes.

Q That's what we looked at earlier today. There's something on both sides.

A Yeah.

Q Even though your data imperfect, as an automotive safety engineer do you find it useful to look at the data as opposed to going from intuition?

A Yes, it's a tool. Like it's the whole picture. You have to use accident data. You first look in literature. Like, what's the issue? That's the first thing you do. Then you look at the accident data. What do I find? Like those window switches. Well, NASS CDS does not have that data because it's a car crash on US roadways. They had to look at like newspapers articles and look at different other databases to find out how many people I can help, because it's not available. So we do that. We do simulation. We do testing. We do a lot of things before we come up with a countermeasure. Field data is one tool to help. Yes.

Q Now, your articles we've talked about are published in the SAE and Traffic Interprevention --

A Interprevention, yes

Q And the third one?

A AAP.

Q Okay. Are they peer reviewed?

A Yes.

Q Reviewed by other engineers?

A Yes.

Q Are they reviewed by statisticians also from time to time?

A They could.

Q Don't know?

A Well, AAP? A lot of statisticians.

Q All right. One final question.

A Yes.

Q Dr. Parenteau, have you ever testified before in your life in any setting?

A No.

THE COURT: Seriously? You do a good job.

THE WITNESS: Thank you.

MR. WRAY: Well, she hasn't been cross-examined yet.

THE COURT: She'll be fine there, very pro, very nice. All right.

THE WITNESS: I'll stay close to you.

CROSS-EXAMINATION

BY MR. GILBERT:

Q This is the first time we have met as well, isn't it?

A Yes.

Q Who made the decision, Dr. Parenteau, to -- when Dr. Viano learned that his opinions were being challenged for the reasons expressed in the pleadings we filed, who made the decision to send you instead of Dr. Viano himself?

A You know, I'm not there all the time, but when I was listening to a phone conversation, I think it came from Dick, because I went, oh.

Q So counsel for JCI made the decision not to bring --

A That's what I heard from the discussion on the phone.

THE COURT: Let's go to the heart of it. Don't worry about it.

MR. GILBERT: Okay.

BY MR. GILBERT:

Q Who did the statistical analysis in the Edwards report?

A I provided the NASS CDS. I downloaded the data, and then I asked Mark to do it because he wanted to do a chi square. As you saw in most of our publications, we just calculate a risk and we stop, you know, because that's good enough. So he wanted to use the chi square.

Q That's a good enough for whom?

A For us.

Q The statistician?

A No, for us engineers to look at the trends.

Q Who did the statistical analysis in that paper?

A Mark.

Q Okay. In that paper can you tell Judge Crawford how many categories -- let me get my Exhibit 13.

A Yes.

Q Go to page -- Table 6. How many categories of information are there? I counted 12; is that correct?

MR. WRAY: What page is that?

MR. GILBERT: Table 6.

THE WITNESS: So we're looking at age group, one, two, three, four. Four age groups, right? Three delta-v buckets.

BY MR. GILBERT:

Q So I have 12.

A And then you have rotating and not rotating seats.

Q Okay. Do I understand that based on Table 8 there were 25 occupants in those 12 categories?

A Here we're looking at above -- yeah, you have them all.

Q Twenty-five?

A Yeah, I believe we provided them all, yeah.

Q So 25 occupants were divided into 12 categories.

A Wait a minute. We only look at about 30 here in that Table 8.

Q Thirty.

A No, we provide them all. I'm sorry. Yeah.

Q Twenty-five occupants?

A Yeah.

Q And 25 occupants were divided into 12 categories per Table 6.

A Yes.

Q So some -- if they divided them equally, each category would have about two, 2.1?

A It's a small sample. That's why we put the limitations in there. It's to look at trends.

Q I didn't ask that.

A Okay.

Q With the sample sizes of two, do you believe there is any problem with drawing any conclusions based upon that sample size in standard error calculation?

A I think it's small, so we can provide trends only, not statistical significance.

Q So you can't provide any statistical analysis with a sample sizes of one or two?

A Yeah.

Q Who said that? Did Parenteau say that or did Edwards say that or did Viano say that; that you can't draw any statistical conclusions based on sample sizes of one and two?

A We wrote that in the paper. I don't understand what you're saying. You're saying --

Q Who did the statistical analysis? It was Edwards, right?

A It was Mark, yeah.

Q Did Edwards say that you can't draw any statistical conclusions based on sample sizes of one and two?

A Yeah, he was the author, so he put that in the --

Q Did you tell Edwards that you were not using the lines of code NHTSA specified?

A No, because -- wait a minute. I did not use -- this one is the line of codes by NHTSA. Dr. Hubel doesn't have any issue with my weighted data. That's not the issue. My issue is my SEs. The SEs as provided, I provided the equation. And at that time Procedure Survey was not available, sir.

Q When did Proc Survey become available?

A With SAS software, at the end of 2008. This is a paper that's 2000 --

Q 9.

A 20009. I didn't have it available.

Q So did you use the SAS software with the NHTSA required two lines of code that were in 2008? Did you use that for the 2009 article?

A I didn't use Procedure Survey.

Q Okay. Did Edwards tell you that needed to use that code for the 2009 article?

A No.

Q The code that was available a year before.

A No.

Q When was that code first available; do you know?

A I think it was around the end of 2008, but then since I did not know SUDAAN, you know, we were still continuing and using that estimate with using the expediential equation.

Q Did you tell Dr. Viano that you were not using the NHTSA code?

A No, because I didn't know. I really didn't know.

Q Do you think Viano should have known that?

A He doesn't --

Q Should Edwards have known that?

A He didn't know either.

Q Okay. Edwards is a statistician?

A He is.

Q Used work for NHTSA?

A Yes.

Q And he didn't know?

A He did not know. It's not in the manual, you know.

Q It's what?

A It's not in the manual that say you have to this particular procedure.

Q What is a stratified sample?

A It's not a census sample; it's something that you use weighing to your sample to get to a bigger estimate.

Q I'm not sure I --

A Yeah. I am not quite sure exactly, to be quite honest, so I'm trying to answer.

Q You don't know what a stratified sample is either?

A No, I prefer not to those type of questions.

Q Who can answer, you or Viano or who? Who do I ask what a stratified sample is for purposes of the work that Viano has done in this case? Do I ask you? Do I ask Viano? Edwards?

A Well, I don't think it's going to change our conclusion by asking that.

Q Who should I ask? If you don't know what it is, who does? Does Viano?

A You can ask me and I'll get back to you.

Q Okay. Does Viano know?

A He may know more.

Q Have you talked to him about that?

A No, I don't think so.

Q Have you talked to Edwards, since you co-authored articles with Edwards, who is a statistician? Did you talk to him about that?

A No.

Q Why didn't you? Not important?

A I'm sure it is important. But it doesn't change our conclusion.

Q What did Dr. Viano tell you was going to be done today? What was the purpose of the hearing today?

A That you wanted to find out what we have done.

Q Did he tell you that we were going to ask questions

like we asked him in his March 14, 2012, deposition?

A No, I don't think so.

Q Did you ask him: Will you tell me what the issues are, so I can address the criticisms that Plaintiff and the Plaintiff's expert have of this work in this case? Did you ask him?

A Well, I read Dr. Hubel's report, yes, so I was aware of what were the issues and we knew that the issues was the standard error. And which decided, okay, let's take that into consideration. Let's go back to the drawing board. She says it's not accurate. So we said let's provide it. And we want our data to be as accurate as possible. So if you think this gives you a better accuracy, we'll be happy to redo it.

Q As of today, the correct standard of error used by NHTSA as been out for at least five years?

A Well, where has it been out?

Q I don't know. Wherever NHTSA puts something out. Where do you get NHTSA's code?

A NHTSA's code is available -- the database is available on the website.

Q I'm not talking about the database. I'm talking --

A In the coding manual. That SAS procedure is not part of the coding manual.

Q Are you telling me that NHTSA doesn't provide the lines of code for a stratified sample that Dr. Hubel referred to

today in her PowerPoint?

A That's a trick question.

Q I don't want to ask a trick question.

A Yeah, because I am not sure if it's available anywhere. But in the coding manual that we use, it was not available.

Q It is available now?

A I don't think so. I saw the e-mail from Rory.

Q Who is Rory?

A That's the Austin -- Rory Austin. He's the guy who e-mailed Dr. Hubel back.

Q That was more than five years ago that started, didn't it?

A Yes.

Q And since then, do you know whether NHTSA provides the proper two lines of code for analyzing NASS data as a stratified sample?

A I don't know of any publications. I thought the Procedure Survey was sufficient. Okay?

MR. GILBERT: Okay. Can I approach the witness, Your Honor?

THE COURT: You can show her something, sure.

BY MR. GILBERT:

Q Did Viano tell you it was sufficient?

A No. I asked U of M and they told me Procedure Survey was sufficient. Then I understand that you have to use PSU

STRAT, so it's not an issue to add it. You're going to show me something?

THE COURT: What is Procedure Survey, exactly? I'm getting a little lost here.

THE WITNESS: Yeah.

MR. GILBERT: It's Proc Survey Freq.

THE COURT: Yeah. Thanks.

THE WITNESS: It calculates SE.

THE COURT: It's what?

THE WITNESS: It calculates the standard error.

THE COURT: Okay. It runs along next to whatever you are doing and --

THE WITNESS: Yeah, you just ask give me a table, let's say, rotating seat, not rotating seat, give me a two-by-two table and it will give you the numbers, right? The weighted numbers.

THE COURT: Okay.

THE WITNESS: Or unweighted numbers. Then you can do another command and ask for the standard error. So it's an additional command --

THE COURT: Okay.

THE WITNESS: -- that you have to give.

THE COURT: All right. I don't really understand about the two lines of secret code. What is all that about?

THE WITNESS: For the Procedure standard error, I

only included the RAT weight, and what we learn is that you have to also add the PSU stratification because there's some differences. So there's variation depending on your PSU that you have to add.

THE COURT: All right. So then you get a more refined --

THE WITNESS: SE.

THE COURT: Okay.

THE WITNESS: Yes. And we didn't do that and we understand we should do that, so we'll be happy to do it.

MR. GILBERT: That was in the slideshow Dr. Hubel did.

THE COURT: Right, right.

MR. GILBERT: It gives the actual code.

THE COURT: Right.

BY MR. GILBERT:

Q In the five or six years, if I could give you the Viano Deposition 10, tell me whether or not that appears to be a NHTSA publication specifying what Proc Survey Freq is.

A Well, it provides it here, yes.

Q So for five years now, you and Dr. Viano and Dr. Edwards have been authoring these articles, publishing them in the journals, and you still haven't started using, as of March 14, the lines of code that NHTSA requires; is that true?

A Yes. That is true.

Q Do you have any plans to go back to the journals, all these journals -- just a minute -- where you and Dr. Viano have published articles and tell them got it wrong, you weren't using the code NHTSA requires?

A I went back to our table and used our expediential equation that we have provided, and we get very similar number than Dr. Hubel.

Q Do you remember my question?

A Your question is: Do we need -- are we planning to go back to our publication and provide the updated SEs?

Q Have you made any effort, as of March 14, to go back and look at the articles that have been published over the past five or six years and say, here are some corrections that need to be made?

A No, because I wasn't aware of all of this until last week. So probably and for future studies, as long as we say what we're going to do for the procedure, and we'll probably provide it.

Q You're going to go back to all the journals and --

A That I don't know. That's a hard question.

Q Who is going to make that decision?

A I don't know. It's going to be discussed. But in the articles that you're talking with Edwards, we provided what was the standard error and we got accepted with our equation.

Q How does this stuff get peer reviewed? I think I read

somewhere that most of the publications you and Dr. Viano have done have been driven by projects during litigation. Is that true?

A Not always.

Q I said most.

A Could be. And then we find something interesting and we publish on it. Yes.

Q So you have a lawsuit involving obese people, so you publish something in Dr. Viano's journal about obese people. That's true as a rule, isn't it, for most of the articles?

A Yes, it brings up a new idea and we look at it, yes.

Q And then after these articles are published in Dr. Viano's journal as a traffic injury prevention?

A Yes, but he removes himself and there's the co-editor that reviews through his review process.

Q Just try and follow my questions.

A Yes.

Q You offer a publication for Dr. Viano's journal, and then someone peer reviews it.

A Yes.

Q Do you tell the peer reviewers as to how you were querying the NASS data?

A I sure did. We just went through the Edwards paper and we provided how we did the SE and we provided every single code.

Q Aside from the Edwards paper, you have published many articles and did not use the required NASS coding. We understand that now, don't we?

A Yes.

Q And have you made any effort to go back to those journals and say I did it wrong? We need to correct these articles?

A Well, not yet. But usually we do. If we find something, we usually go back.

Q And another indicia of these articles is that you and Dr. Viano often cite each other and the people he knows who publish in his journal for support in litigation, don't you?

A I guess if it's --

Q Viano has done that here liberally, hasn't he?

A Yes.

Q He cited a lot of authors, including Dr. Parenteau, Dr. Edwards, himself, all articles that he published in his own journal.

A Yes, because if we looked at it --

Q Has he ever made any effort --

MR. WRAY: Could I ask that this witness also be allowed to complete the answer, rather than interrupting?

THE COURT: Sure. Both slow down a little bit. Wait until the question is finished and he'll wait until the answer is done, okay?

THE WITNESS: Okay.

THE COURT: Like taking turns.

MR. GILBERT: I forgot my question.

THE WITNESS: You were asking that we were citing each other.

BY MR. GILBERT:

Q Yes, citing each other now for support in lawsuits.

A These lawsuits are actually bringing research forward. So because of these research, we're looking at data that we may not have looked at before.

Q I got that part. That part came out loud and clear a few minutes ago that these research projects and publications, for the most part, are driven by litigation, lawsuits. I got that right, didn't I?

A Most part, not always though.

Q Not always. But for the most part, that's how these articles start to germinate.

A Most part, I would agree with you, but not always. So now that we refer back to each other it's because there was a lot of research. Rear impacts are not that frequent, so there is not --

Q So let's continue for just a moment. I don't want to beat a dead horse, but Professor Hubel today testified that one of your studies relied upon a sample size of five occupants; do you remember that?

A Yes, but which one was she talking about?

Q Opinion 40. It was an opinion given in this case.

A Okay.

Q It relied upon estimates based on five occupants. Correct?

A Okay, if you say so.

Q Do you have a problem with that sample size?

MR. WRAY: Your Honor, could I ask at least the witness be given a chance to see what the opinion is? We don't have it. I don't know what it is.

MR. GILBERT: It was in the PowerPoint. I'd be happy to show it to you.

THE WITNESS: You know, I could not see the PowerPoint from where I was sitting.

THE COURT: Okay. Do you have it right there?

MR. GILBERT: I'd be very happy to show her. It was -- if I can approach the witness, Your Honor?

THE COURT: Sure.

BY MR. GILBERT:

Q It was a slide about Opinion 40, about obesity and the risk of injury, MAIS4+ was .62 compared to 30.

A So you're talking about the SAE paper now, 2008.

Q 2009.

A You're talking about the Edwards one.

Q Yes.

A Okay.

Q Based upon five occupants.

A Yeah. We're looking for trends. Obesity is something that's on our radar screen. Not just for litigation, but for occupant protection.

Q But the obesity article and articles were first driven by a lawsuit involving those issues; isn't that true? Back several years ago.

A I don't know. It's an honest answer.

Q Are you saying you deny that it was driven by litigation?

A I don't remember, to be quite honest.

Q Okay.

A I mean obesity has become on the radar screen for occupant protection because more and more people are obese.

Q In the article you wrote in 2009, was that Edwards too, where you observed or made some statistical conclusions based upon three occupants?

A We observed that obese occupants are more at risk and that's consistent with the literature. You have multiple authors looking at this.

Q Ma'am, try and confine your answer to my question, if you can answer or yes no.

A Okay.

Q That was based upon a statistical analysis of sample

size of three occupants, wasn't it?

MR. WRAY: Object, Your Honor. If Mr. Gilbert can't give the witness the article, I don't know how she can say that. It's only fair that --

THE COURT: Well, she may not recall.

Do you recall a sample size as small as three?

THE WITNESS: Not right now. But we're looking at trends, looking at the effect of obesity, so I don't think there were statistics. I think we were just looking at trends of the effect of obesity.

THE COURT: Maybe I can ask you. Help me out with my -- my problem is a little different from their problem, which is in a couple weeks those chairs will be full of laypeople, jurors.

THE WITNESS: Yes.

THE COURT: When someone from either side with a Ph.D. comes in and testifies, they listen transfixed. They're totally trusting, most of them, in the credit that they give any serious scientific witness. So I understand what you mean when you say it's an intriguing trend and maybe it will take us somewhere, and this is preliminary, and I wouldn't, you know, bet mother's retirement on it, but it might take us in an interesting direction. I get why engineers would publish about that.

But these people are making major life decisions for

the parties in this case. Do you think these intriguing trends are, like, reliable enough to meet a higher standard than just interesting possibility? Do you see my problem?

THE WITNESS: Yes.

THE COURT: So what do you think?

THE WITNESS: I think they need to be brought up as trends. We know that obese occupants are more at risk. It's out there. Because of these trends that we have observed, people have started looking at the effect of obesity just now with cadaver testing.

THE COURT: Right.

THE WITNESS: You know, they compared like a normal size cadaver with an obese occupant, and now we're like, oh, we're understanding what's going on. There's -- obese occupants have more fat in their butts, so they tend to be scooted more forward because of this fat here. So the urge point is more forward. So now you have bigger mass in a frontal impact.

THE COURT: Right.

THE WITNESS: So they're going in. They have less ride down. And there's more risk of injury. For a rear impact it's the same thing. You have now this cushion before you engage those structures. So two cadaver tests. Okay? So we're looking at trends. This is a new thing. I'm doing the same thing with our CT scans. Like what's going on that's

different with obesity? So it's a new phenomenon.

THE COURT: All right. My question was a little more generally than just obesity, but that's helpful. Is obesity an issue in this case?

MR. WRAY: Not a significant one, Your Honor. Most of the stuff Mr. Gilbert is talking about we didn't even intend to bring up.

THE COURT: Right. But I haven't met Ms. Heco. I don't know if she's a big lady or a small lady.

THE WITNESS: She's got a BMI of 36, so she's obese.

THE COURT: I know, but I hate to see when I go to see the doctor. I ride my bike. I mean, give me a break. But is her heaviness an issue as a causation of her injury on either side?

MR. GILBERT: Absolutely not.

MR. WRAY: I don't think it is. I mean, it's a factor in the force on the seat, but that's just a mathematical calculation; it's not disputed.

THE COURT: All right. I'll turn it back to you. Thank you for your patience.

MR. GILBERT: Don't worry about it. I do what I'm told to do in this room.

BY MR. GILBERT:

Q Let's go back to this thing. You said it's a trend, this obesity thing is a trend.

A Yeah, we know that they're more -- okay.

Q But your study was a statistical study, wasn't it? It wasn't a trend.

A No. We're providing information for engineers to look at this issue and we see that obese occupants don't have the same protection.

MR. GILBERT: If I could approach, Your Honor.

THE COURT: Sure. All that means is that he's going to show you something. He's not going to bite you.

BY MR. GILBERT:

Q In Opinion 24 --

A 24.

Q -- of Viano, he was expressing 95 percent confidence intervals and he --

A That's from Mark's study, right?

Q But it was -- Dr. Viano is relying on it.

A Okay.

Q He's relying on it.

A Okay.

Q But he's not expressing -- Viano isn't expressing a trend when he relies on that; he's expressing on someone's statistical studies, correct?

A Yes. And here he's not reporting statistics, he's comparing the risk, which is just a calculation, it's a proportion, like they did in 1961. You're more at risk with a

steering wheel coming and intruding. So here we're comparing your rate. So if you're obese, you have a higher rate of injury.

Q So when you compare risks and use standard errors and draw from mass CDS data, that's not doing statistics? Is that your testimony?

A That's a trick question, isn't it?

Q Tell me how to untrick it.

A NASS CDS is designed for engineers to go in and look for trends, and see how well our countermeasures are performing, and to come up with new countermeasures.

Q It's a statistical database, isn't it?

A It has properties that use statistics, because it's weighted, but it's designed for engineers. We're not waiting for the statistics people to tell us obesity is an issue. We're going to a long time before it all enters into this database. So we're keeping track of what's going on and, yes, obsess occupants -- they've used it in siren cases, they've looked at NASS, they've looked at all kind of databases and, yes, obese occupants are more at risk.

Q So you can do a statistical analysis with two occupants, three occupants, it doesn't matter; is that what you're saying?

A If this is what we have. We have to use the data and report it and this is what we're finding.

Q So you can take a large amount of data, tens of thousands of accidents, keep drilling down, drilling down, drilling down, drilling down. Now you've got two occupants. And you can do some sort of statistical analysis and make estimates from two occupants?

A I can make observations like those two cadaver tests. I can make an observation that -- yes.

Q When you -- when Viano -- do you know what Viano generated as his point of interest in this case? What was his hypothesis? What was he looking for? What was he trying to do in this Heco case?

A In this?

THE COURT: This case involving Ms. Heco. That's her name.

THE WITNESS: Yeah. So you want me to give you his opinions?

THE COURT: Just the executive version.

MR. GILBERT: No.

THE COURT: As they relate to what we've been talking about today.

BY MR. GILBERT:

Q What was his effort? What was he trying to look for in the Heco case?

THE COURT: From the NASS data, not whatever else he's done. We're not worried about that. Just what -- because

I've been wondering about it myself. The takeaway. You know what I mean? The message.

THE WITNESS: Yes. Ms. Heco's crash, I think, was an unusual crash. And, yes, if you look at the crash severity your risk of being seriously injured is not as high as in other crash modes for that particular crash severity.

THE COURT: Right.

THE WITNESS: So yielding seats, what we're finding is that yielding seats in general are performing well. Because that's the only countermeasure for you in a rear impact, right? It's just a seat. The belt also helps. So when we -- I don't have his whole report here.

THE COURT: Right.

THE WITNESS: But it's unusual. And then we went in and like look at the Neon cases. We wanted to find out if somebody else -- is this common phenomenon in those? So we weren't looking at the weighted cases, we were looking at individual cases so we could look at it to see, well, is the seat an issue? So that's why we did the Neon analysis. It was not to do a statistical analysis. It was just to identify cases so we can compare it. Did the seat perform the same way in another crash with a Dodge Neon?

BY MR. GILBERT:

Q What did --

A Yes.

Q Are you done?

A I'm not sure. This is a long question that you ask what were all his opinions.

Q I think it was shorter than you think. What percentage -- what did Dr. Viano tell you -- let me back up. You said something today that I think was of interest to the Court, and it certainly was of interest to me, is that designers of seats use this NASS data take make decisions about seat design.

A That's one input, yes.

Q You said that in your testimony.

A I didn't necessarily say seat designers, but everybody, all automotive engineers use this.

Q This is a seat case. Are you telling Judge Crawford that JCI seat designers use NASS CDS data --

A I don't know. I was a Delphi and we had seats when I was a Delphi and we used NASS CDS.

Q Are you telling Judge Crawford that JCI seat designers use NASS CDS data in making decisions about the design of JCI seats?

A No, I don't know what they do. But I know Chrysler has been using NASS CDS to make decision about their vehicle design.

Q Wouldn't it be important, since you're saying this stuff is relevant to decisions about seat design, wouldn't it

be important to know JCI is even using NASS CDS data?

A I don't know if they are, but I know that -- like I said, U of M is part of siren and were continuing with an ICEM program, and JCI engineers are there in the room when we review the cases.

Q Do you know -- I'll ask it as plainly --

A No, I don't know.

Q I'll ask it as plainly as I know how. Do you know whether JCI seat design takes into account NASS data?

A I don't know.

Q Then if they don't take into NASS data, then it's not relevant for that purpose, correct?

MR. WRAY: I'll object to evidentiary rulings from the witness stand.

THE COURT: He's just sort of playing.

MR. WRAY: He is sort of playing.

THE WITNESS: I don't know.

BY MR. GILBERT:

Q Okay. Do you know, did Dr. Viano tell you -- because in the brief the brief says that decisions or NASS can be used to evaluate defect and then alternative design. Are you aware of that claim by JCI in this case?

A I guess. I read through it.

Q Okay. Do you know what the Plaintiff's theory of defect is in this case?

A Tell me.

Q Well, did Dr. Viano tell you before you came here?

A It would be easier if you just tell me.

Q The reason I'm asking you is that JCI says that these defect claims need to be judged by NASS, and I need to ask you what you understand the defect claim is by the Plaintiff in this case.

A No, I don't think so.

Q Do you know -- JCI has also told the Court that decisions about alternative design need NASS data. Do you know if what the Plaintiff's claim of alternative design is?

A I would assume it would be a stiff seat.

Q Do you know what a dual recliner is?

A Yes.

Q Do you know whether or not the alternative design in this case is a dual recliner?

A I think it was a single recliner, but I don't know.

Q So our alternative design is a single recliner?

THE COURT: I don't think -- to be fair, I don't think she knows what your alternative design is. You guys are missing each other.

MR. GILBERT: Okay.

THE COURT: Give her the thumbnail.

BY MR. GILBERT:

Q I'll tell you that the alternative design here by our

experts is a dual recliner seat.

A Okay.

Q And we are claiming, our experts are claiming, that a single recliner seat is defective because it does not have a dual recliner.

A Oh.

Q And a single recliner seat promotes injuries and ejection from the seat. Is this the first time you've heard that?

A No.

Q Did Dr. Viano to tell you that?

A No, but I've heard that before.

Q Do you know from, for example, that JCI agrees that a single recliner seat promotes ejection and serious injuries?

MR. WRAY: I'll object, Your Honor. I think that it's improper for him to say things that are not from our position. I don't see how --

MR. GILBERT: Okay, I'll --

THE COURT: I think the question that is interesting to me is now that you know the theory of this Plaintiff's case, there should have been two -- what do you call them?

MR. GILBERT: Dual recliners.

THE COURT: I've been calling them brakes in my head. But two mechanisms, not one. Do these relatively small samples shed any light on whether that's true or not true?

THE WITNESS: No. I don't --

MR. WRAY: We agree. We agree, Your Honor. We were never contending anything like that, that the NASS data has anything to do one recliner or two recliners.

BY MR. GILBERT:

Q Are you contending that the NASS data has anything to with the risks of being rear-ended in a Neon versus these sport cars and tow trucks?

MR. WRAY: Again, we're not contending that. I think these are questions for me. These are not NASS issues. We can go on all afternoon with questions like this.

THE COURT: All right. So what is the NASS issue? That's where I started off this morning and I still don't have it in focus.

MR. WRAY: I wasn't very articulate. I apologize.

THE COURT: All right. It was early in the day.

MR. GILBERT: That's the question I had.

THE COURT: What's the NASS issue? And then she can comment that Dr. Viano will say here's the question which I'm able to solve for the defense by looking at these statistics.

MR. WRAY: It's so simple. This has a lot to do over something that's not even controverted after Dr. Hubel testified this morning.

THE COURT: Right.

MR. WRAY: The main point is that most people -- I

think she admitted there are more injuries in frontals than rears.

THE COURT: Right.

MR. WRAY: So you have to consider what the seat does in a frontal as well as a rear. That's the main point. That's what all the NASS data relates to. Other subpoints are this was a relatively severe crash. It was a delta-v of 23 1/2. Doesn't sound like anything to the jurors, but that's another vehicle with the same weight hitting you the 47 miles an hour.

THE COURT: Right.

MR. WRAY: And it is a fairly -- it is a significant event; it's relatively rare and the NASS data shows how rare it is.

MR. GILBERT: That's not true.

MR. WRAY: The next point is the severity of the injury is extremely unusual. It is a handful. We've just shown it's three, four, five out of 80,000. And Dr. Hubel says that's insignificant. But if it's three out of 80,000, that might have some probative value. That's the kind of stuff they've been doing with NASS. I think those are the main points, the ones I just stated. The fact that this is a rare event. The fact that the frontals are more of an issue because with the stiff seat the risk benefit analysis is the stiff seat presents more issues in a frontal impact.

So that's not our case at all. It's not a Dodge

Neon, it's not anything. It's a frontal impact. But a designer has to think about frontal impacts. And NASS data is what a designer looks at and sees and knowing intuitively, after they get out of school, frontal impacts are something you worry about. And a tertiary consideration is that the jurors will think about airbags and seat belts. Those are safety devices. And they make me pretty safe in a frontal. But this horrible seat makes me safer in a rear. That's just the --

THE COURT: That it's a rare event. What you've extracted from the NASS info is that it's a rare event to have a serious just injury from the rear impact.

MR. WRAY: Rear impact at this delta-v. This is a high delta-v. And the frontals are more common than the rears.

THE COURT: Right. And there was a third.

MR. WRAY: The one I was just talking about. Rears are less dangerous than frontals.

MR. GILBERT: I've got a question for --

MR. WRAY: Those are basics. But the whole thing Dr. Viano uses it for -- and he doesn't need any of his articles to support that. I think Dr. Hubel gave us this morning the fact that NASS and other sources will give us all that information.

THE COURT: All right.

MR. GILBERT: Why are we here, if they aren't using these statistics? I have a question for her.

THE COURT: Sure.

BY MR. GILBERT:

Q Are you aware that Dr. Viano, in his deposition, admitted -- admitted that the risk of serious injury goes down as you get to more violent collisions? The risk goes down, not up.

A Really?

Q Is this the first time you've heard that?

A Are you taking it out of context?

MR. WRAY: Yes.

MR. GILBERT: No.

THE WITNESS: Okay.

MR. WRAY: It's in Dr. Hubel's report. I think we've all read it.

BY MR. GILBERT:

Q And it's in Dr. Viano's deposition that you said you read. And when I asked him about why the risk of serious injury goes down as you get into more violent collisions, he said that's a statistical anomaly, not reality. Are you aware of that testimony?

MR. WRAY: Could I add to the question that was with reference to over 45 delta-v's?

MR. GILBERT: No, it wasn't.

MR. WRAY: Was it 35? It was one of those way up there.

THE COURT: How severe were the --

MR. GILBERT: It was comparing 30 to 35 and 35 to 40 with 15 to 20. I mean, 10 to 15 and 15 to 20.

MR. WRAY: We could look at it in context. It's a reference to the very low, where there's almost no data, and the very high, where there's almost no data.

THE COURT: All right. I'll read the report again. Do you know anything about this issue? Doesn't sound like it.

THE WITNESS: I don't see it here. I'm looking at this table and the risk goes up with crash severity. Are you talking about the MAIS3+ that did not have the F and it goes down a little bit?

MR. GILBERT: Can I show her this?

THE COURT: Sure.

MR. GILBERT: We're probably getting this a little longer, but the answers are longer than the questions sometimes. I'm going to show you -- could I approach the witness, Your Honor?

THE COURT: Sure.

MR. GILBERT: Not to do anything.

THE COURT: This is C?

MR. GILBERT: Yes.

BY MR. GILBERT:

Q MAIS4 risk.

A Yes.

Q Rear impacts.

A Yes.

Q You have at 15 to 20, you have a .16. Then 25 to 30, you have a .47. And then at 35 to 40, your risk goes from .47 down to -- rather, at 30 to 35, your risk is 3.7, then it goes down to 3.0 at 35 to 40. Is there any explanation for that?

A Oh, because you're saying it dips? That is your issue?

Q Yes.

A They probably didn't have enough sample.

THE COURT: Exactly.

THE WITNESS: It's because our buckets are so small. You have enough data here, you can widen the bucket and you will see that there's a trend; that it goes up.

THE COURT: It's part of the problem of having only a few samples.

THE WITNESS: Yeah, and here are very small buckets, but you have the data up here and you can group them, you know, less than 20, 20 to 30.

THE COURT: Right, right, right.

THE WITNESS: It's all there.

THE COURT: I get it. Only a teenager would think the faster you went the safer you were.

THE WITNESS: Yeah.

MR. GILBERT: Or a statistical analysis.

THE COURT: All right. I think we can -- anything

crucial? We've got to get her on the plane and we've got lots of other things to do. Does that cover it?

MR. WRAY: I have nothing else, Your Honor.

THE COURT: All right. Thank you. Nice to have met you.

MR. GILBERT: I hope I was nice to you.

THE COURT: Oh, yeah, you were just playful. Intellectually playful.

(Designation of audio concluded at 2:05 p.m.)

CERTIFICATION

I, Michelle McCall, CET**D-614, a court approved proofreader, do hereby certify that the forgoing is a correct transcript from the official electronic sound recording of the proceedings in the above-entitled matter, to the best of my professional skills and abilities.

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