

DOPE LABS

Transcript of Lab 057: Volcanic Winters, Microplastics, and More: Live from the Great Northern

Titi Welcome to Dope Labs, a weekly podcast that mixes hardcore science, pop culture and a healthy dose of friendship.

Zakiya This week we have a special episode that was recorded live at the Great Northern Festival in Minneapolis, Minnesota.

Titi We had so much fun during this live show because we talked about the science of all things winter and what better place to talk about the science of cold and all things winter than the coldest place that I have ever been to in these United States of America?

Zakiya And we got a lot of flack, Titi, on Instagram. people were saying, Why didn't you tell us you were having a live show? Well.

Titi Y'all are spicy,

Zakiya Spicy in the comments. But we're going to go ahead and tell people now. We have a live show on April 14th at seven p.m. at the Boston Museum of Science. So if you're in the Greater Boston area, come out and join us. Tickets are free. All you have to do is register and you can get the same energy on April 14.

Titi Yes, there will be a link in our show notes for you to register and come. Again, those tickets are \$0 and zero cents, so you want to see you.

Zakiya All right, let's get into it. Here is our conversation recorded live from the Great Northern Festival

Titi I came out too hot. Too hot!

Zakiya Too hot, you threw your mic pack off.

Titi My mic pack flew off.

Zakiya How are you feeling?

Titi Thank you all so much for being here. It is cold. I was like, I wouldn't come.

Zakiya But we're glad that you're here. So we like to have a little bit of fun. You know, I don't know anybody here. Has anybody heard Dope Labs before? Some people? OK. OK, so y'all have been in the lab.

Titi All right. All right.

Zakiya So you already know it's going to be some cackling in here. We're going to be laughing a lot tonight. For those of you that don't know us, I'm Titi, and I'm Zakiya, and we both host Dope Labs, which is our podcast that's for people who like science and for people who are just like, um, I'm not quite sure--.

Titi --Not interested.

Zakiya OK? I'm not quite sure. So we want to have a little bit of fun with y'all. For just a little backstory, our podcast is built on like our experience as grad students. So I'm a molecular biologist slash geneticist. You know, I've got a little bit of biochemistry, all of that, right? And when I was in grad school, I'm at Titi

Titi Yes, and I was started grad school and I was I'm in material science and engineering, mechanical engineering. A little bit of chemistry, a little bit of biomaterials, but not really. I'm not going to pretend like I know any biology.

Zakiya And so we liked for our podcast to feel like what we think our experience was, which was friendship and science, but not like dry eye science, right? A little bit of exciting science. And so we graduated and this is maybe 2014, 2015, getting on up into the 2016 and 17. Anytime we told a joke, we said something that everybody else was saying, "We should have a podcast."

Titi Absolutely right. We're funny, we should have a podcast. Isn't that what everybody is doing? yeah.

Zakiya Isn't that how it goes? So that's kind of where we started. And we just wanted to bring this, you know, care for each other, this passion for science and a passion for explaining science. So, I like to say, well, Titi says it most of the time that I never meet a stranger.

Titi Never.

Zakiya I'm southern. That's that's how it works. And you know, we would go out and talk to people, and we said--.

Titi She was doing most of the talking. I was just doing the listening and like, Hey, this person may kill us.

Zakiya No need to fear, I'm good in hand to hand combat. But if people found out that we were scientists, they would ask questions like, You know, I never figured, I never understood, like, why is the sky blue, and people say it's something, you know, that's really simple, but can you explain it?

Titi Or they would ask, I don't know about buoyancy. How do ships stay afloat? Or they would ask things that were more biological in its background, where Zakiya would really be able to chime in. And I would just be listening and, you know, sipping my tea.

Zakiya But I think what we found is this is where we really loved science at that intersection of excitement and question asking and accessibility. And so that's what we try to do with Dope Labs, and that's what we're going to try to do with y'all tonight. OK. Also, buckle up. Buckle up. All right. So when we were saying like, OK, first of all, girl it's going to be cold.

Titi It's going to be cold, and the we're not ready. Those were the two things that we knew. It's going to be cold and we're not ready.

Zakiya I'm going to tell one of Titi's secrets, and she's going to be upset, maybe. She wanted to wear a snow suit...for this.

Titi It was for fashion's sake, I thought you all would really appreciate it. You would understand. You would say, Listen, I see you. I know what you're doing. It didn't come in time.

Zakiya But you know, I said that could be a good in, you know, when we're talking about science, there's there's so much we could start with when we think about pop culture and what's happening. I said, what will people want to hear from us? Maybe we could talk about the Lunar New Year that's happening.

Titi Maybe. Yeah.

Zakiya And then I said, maybe we could be spicy and talk about Joe Rogan. Hmm. Maybe, maybe. But then I said, we should really talk about what's really happening today. And the people aren't really, I haven't seen too much on Twitter or Instagram about it, but it's groundhog day.

Titi Yes. Now I grew up in Maryland, so that's just south of Pennsylvania and Punxsutawney Phil. This isn't him. I know him. When I see him every Groundhog Day, it's like, well, at least in Pennsylvania, it's a holiday and everybody's waiting to see if the groundhog sees its shadow. And we're keeping our fingers crossed that he doesn't so that we don't have to experience anymore cold winters. But it turns out this morning he did. I think you guys didn't really care because it's just part of the course. But everyone on the East Coast is not very happy about it.

Zakiya And so when we started thinking about, you know, groundhogs, now Titi has way more experience than I do with the groundhog.

Titi We go way back.

Zakiya Yeah, not so much in North Carolina. We don't really check in with that. But I was like, Is there a science to it? Not really. I feel like this is just, you know, people are just having a good time, having a good time. But then we did start thinking like, how do we know about what's going to happen, severe weather events and change in climate? And I think that's a big theme of the Great Northern. And so, you know, we have been we've had a couple of episodes, some of you may have heard them. We talked about some of the fires that we've seen on the West Coast that we've seen in Australia. And just, you know, I think, trying to get that sweet balance when we're talking to folks about the difference between weather day to day like today supposed to feel like minus 15. OK. And people, you know, if you if I share that on Instagram, people are going to say like, Oh, that just shows you climate change is not really that warm. Look how cold it is. And I'm like, No, no, no, no, no. We're talking about climate. That's over a long period of time. Right? And so we're seeing all of these severe weather events tied to increasing temperatures, ocean acidification, seeing melting of snow. And so we're seeing a lot more things that feel like heat waves seem way more heatwaves. We're seeing, you know, hurricanes way more hurricane activity than I ever remember. Now, I don't have many years of record. I don't have many years of record, but we're seeing way more of this stuff. And that still feels like it's related to winter. You know, is still related to all these things are kind of tied together. And so I think we're starting to see a change in people coming around the corner. We're kind of seeing that we all are tied together like these borders of what's Minnesota, what's Wisconsin, what's I don't even know if those are right beside each other, don't judge me.

Titi We didn't say we knew geography.

Zakiya Yeah, I mean, it's a science, but it's not mine. And you know, and so, you know, that's that's really like fate kind of I mean, it's artificial. Right? Because what's happening on the East Coast, what's happening in the Midwest? All of that is all tied together. What's happening in in in the North Pole, in Antarctica, in the Pacific Ocean? You know, we just saw a volcano eruption there. All of

those things are tied together, and that's because this is all the water that we have. I don't know what you all learned in elementary school maybe about the water cycle. Anybody have a water cycle song that they know? No? Oh, I see somebody said maybe. It's a spotlight. You're saying no now? No, I promise you it was maybe.

Titi That was before was going to put you on the spot.

Zakiya I was. I mean, I thought we were having a good time. And so I had a water cycle song and it was like, "condensation, evaporation, precipitation on my mind." Anybody heard that?

Titi I've never heard that.

Zakiya That's hurtful. Yeah. Well, it's all part of the water cycle and it happens all the time. That was that second verse. But when we think about that, this is all the water that we have. So what's happening in Australia? Run off on the roads and into the rivers and into greater bodies of water, into different basins. That's the same water from that ancestral water, right? Like, that's water that evaporated.

Titi Your grandma's water.

Zakiya That's your grandma's water. That's your grandma's water, you know? And when you really think about that, that water has a record like that, water has a memory and we have to take care of it. One of the things we've been seeing is over time, right, when we look and when we think about climate and we think about changes on a really large scale, over time we're seeing some warming oceans. And you know, it may feel good for a vacation. You're like, Oh, it's warm out here, you know? Oh, you know, get myself, get my pictures. All right. But that's not the only thing that's happening with these oceans. What we're also getting is what I like to call spicier oceans. OK, now anybody suffer from like acid reflux or heartburn? Y'all don't have that either? So y'all didn't know the water cycle and you don't have heartburn. OK, I'm just keeping, I'm keeping score.

Titi It's just you, it's just you, it's just you.

Zakiya It's just just me. Well, if I'm if I'm trying to have a good time, I'm definitely having a Rolaid. OK? The ocean is acidifying. Anybody heard of that before? OK. All right. We got an informed crowd. So when we think about what does it mean to acidify, we know about the pH scale. Have you all seen alkaline water? OK. They say that's pH nine and above. So if you look at this scale up here over in the Blues, that's your alkaline. What else is in the blue? Bleach is alkaline. I'm trying to think soap is alkaline. The ocean should be neutral. We want want it to be around seven. OK. When you start to get over into the acidic areas, you get into, like lemon juice and tomatoes and coffee. Those are the things that bother me. And then stomach acid, which is around like pH two. Now, our oceans are, because of the activity that we're having here as inhabitants of planet Earth, our oceans are starting to capture a little bit more carbon dioxide and we're getting this intricate process. I won't take you through the chemistry, but if you ask me later, I will. And we're getting some ocean acidification and people like, Oh, don't be so alarmed. The is only changing. Like, we're looking at steps of one here on this scale behind us. But the patches only change about zero point like plate one. So that's only a little bit. And I said, my friends, OK, you're missing. The point is a log scale. And so if you guys have seen, you know, not to take us back to the past few years and what's happening, but we've seen log scale before so that zero point one percent change or zero point one step change is about a 30 percent change in acidification. So we're getting way more acidic. I don't want to swim in a gin and tonic like I don't want it. I don't want the ocean to feel like that. And it's not just me. If you won't do it for yourselves, if we won't change our behavior and stuff for, you know, the future generations at least do it for the delicacies that we love. OK, so what we know with this, like ocean acidification, is that we're losing basically our gems, our treats, our oysters and other organisms that create shells and exoskeletons, crustaceans, anybody like shrimp? I'm going to stop asking them.

Titi They don't eat anything.

Zakiya They don't eat anything. They don't have heartburn. And I don't know about the water cycle.

Titi It's just us.

Zakiya OK, so you guys do know some crustaceans and you care about those. And so we're thinking about, you know, when we look at the projection for what the pH of the ocean might be based on the changes that we're seeing now, we're thinking at the end of the century. So 2100. It's wild to say, that when scientists have done experiments and they're saying like snails and things that create shells that are in the ocean, the shells are dissolving like within forty five minutes because of the acidification that we expect to have. So, I'm like, we got to make some changes.

Titi Absolutely, absolutely. And one of the major changes that we have to also think about when it comes to these delicacies that are in the ocean that we're thinking about is microplastics. I think all of us are aware that our ocean has a huge plastic problem and plastic is a really interesting material, a material scientist. So we'll talk about it just a little bit of plastic. There's no way for it to degrade the plastic that you see in everything that we have in our clothes that we have in our shoes that we have in pretty much every corner of our rooms. That plastic will exist forever. It will never degrade and it has to go somewhere. And one of the places that it's going is into the ocean. Right now, they're saying that a majority of the microplastics that are found in the ocean are from textiles, so like clothing and things like that, because apparently y'all are throwing your clothes away in the trash? I didn't know people were doing that.

Zakiya I didn't know I had plastic clothes. Cotton is the fabric of my life.

Titi Car tires

Zakiya OK? Thought was rubber. Material scientist, I differ.

Titi City dust. [silence] Exactly. I mean, if you've been in New York, you know what city dust is. You're basically chewing the air. It's nasty. And then also what's really interesting is another large part of it is road markings. Road markings actually thermoplastic, so I don't know if you've ever seen some road markings be put down, but like they'll put fire on top of it and helps it adhere to the road. So it has synthetic materials such as resin and it's not just paint. And so when it rains, when it snows and it runs into our sewers, that's where it gets incorporated into our water system and then that eventually gets out into the ocean. So there have been a lot of studies have been done to figure out how much plastic is there actually in the ocean. And so, you know, let's let's show them. So there was some research that was done with salps and over eight years, they looked at the gut of over 100 salps and they found microplastics in all of their stomachs. So, the reason why they chose this type of fish, I had never even seen this before. It looks very strange.

Zakiya I thought that was a toy.

Titi Yes, it's is because it's a filter fish. They live about a mile deep in the ocean and to propel themselves through the ocean. They take water in and then they push it out. And that's also how they eat. So then they became like a really great animal to look at to figure out if there's microplastics. They found microplastics in all 100 over eight years, so they are estimating that in the ocean that there is about eight million microplastic particles per cubic meter.

Zakiya I thought you meant total that you were going to say total.

Titi No, per cubic meter. Eight million microplastics. So it's a problem. It's a really, really big problem. And so, like I was saying, when you have all of these ways for the microplastics to get into our water system, into our ocean and like Zakiya was saying, this water is all that we have and it has that

closed loop, so it's really cyclical. You know, it rains. It goes into the water, evaporates, goes back in the sky. We drink it. Now they're finding microplastics in snowpack, in mountains. They're taking samples. This is a paper from Europe, but they've also found it in Colorado. So we know that there's microplastics in the snow. And so then you think about the animals that live there, the people who drink water that's really fresh, that comes from the mountains. And what does that mean for us as humans and how we consume? So when you think about snow and microplastics in the snow and snow formation, it seems really possible that microplastic could be in the snow that's just falling down onto our streets. Because if you think of the structure of water, so H₂O, when it's when it's frozen, it makes us really discreet hexagonal pattern. And so as a snowflake grows. It's going to expand in a way that only that fits that hexagonal pattern, which is why snowflakes are always pretty symmetric. But they also are never the same as we all know. And the reason why they're never the same is because up in the clouds, when you have the water vapor. So some people think that snowflakes start from a water droplet, that's not true. It's water vapor. That water vapor then condenses onto a piece of dust or a piece of plastic. And that's when it starts to grow. So if you go back one side, you can see that dependent on depending on the humidity. So the amount of water vapor that is in the cloud and then the temperature at the time, that dictates the size and shape of your snowflake. So, the colder it is, the more intricate the design gets. The warmer it is, the more it stays flat. The more humidities, the more water vapor. You can see that it becomes more and more and more intricate, and these snowflakes are the same because they're while they're in the they're water vapor state and they're beginning to grow. They're traveling through these clouds, they're flying all over the place, and no two snowflakes take the same path. It's kind of like people. And so by the time they reach the critical mass and they start to get too heavy to stay inside of clouds, that's when they start to fall down. And so when you start to think about snow and microplastics, it really makes you think about how, you know, we were kids, we'd go outside when it was snowing and you'd stick your tongue out. Now, it kind of it kind of ruins that for everybody because you don't want to do that too much, I don't think anymore, because then you might end up pooping Legos. We're going to take a quick break, but when we get back, we'll have more from our live show at the Great Northern Festival.

Zakiya OK, we're back, but before we get to today's show, just a heads up that next week, we have a really great episode for you. It's all about the connection between our minds and our bodies. We're talking to Dr. Suzanne O'Sullivan about psychosomatic disorders. So don't miss it. Now, let's get back to the Great Northern Festival.

Zakiya I'm not up pooping Legos, but I think the thing we have realized, so we've been here for a couple of days and I think the major takeaway, I've been having a good time. I'm having a great time here, OK? I came here from Atlanta. I put on, I bundled up and I said, wow, winter is different here. Like, y'all are doing stuff.

Titi No one's staying at home. Everybody's out.

Zakiya These winters are not created equal. Winter for me, I'm like, Oh, dreary. There's nothing to do. Everything's closed. There's no snow. And even the call, even the thought that there might be snow, there's way less activity than we see here. And so, you know, I just feel like we could could learn something. We could learn something, you know, maybe we could. Maybe I need to be here in the winter, like to see all the things that are going on with the Great Northern. I don't know if you guys have done anything else, that's part of the festival. I mean, you have pond hockey. I see people doing some things are going to show you a little bit because I have some questions for you. You know, people doing all kinds of stuff just outside having a good time. Brewery tours. I just don't know. We don't have that and I want it. I want it. But, I was looking. When I started looking, I was like, why, you know, I'm in Google like, Why is Winter.

Titi So awful?

Zakiya Yeah, so awful in Atlanta is so great here. OK, so and I found this different kind of winter that I hadn't heard of. So, you know, we saw a volcanic eruption a couple of weeks ago that was really devastating in the southern Pacific Ocean, in Tonga. And when I was looking at that and looking up different stuff about winter, I came across the volcanic winter. Anybody ever heard of that before? I see somebody says yes. Well, I hadn't heard of it.

Titi Me either.

Zakiya And we to talk about it real quick, OK? So a volcanic winter is basically you have a volcano that erupts and it is pushing up so much ash and you have sulfur as well that you basically create this cloud of debris and particles in the stratosphere. Now we won't get into like what all those little things are and what's happening. I won't walk you through that. But what you basically create or what the environment or the atmosphere creates is, now we're going to switch to summer. You know, those little reflective things you can put on your windshield so the car doesn't get too hot. It basically creates that in the atmosphere, right? And so any sun that's coming down, it gets reflected back in heat is what you get is effective winter. So global decrease in temperature two to three degrees globally, just from a powerful volcanic eruption. And I was like, Is this for real? When I first heard of it, because I hadn't heard of it before, I felt like everybody did a science project with a volcano. They didn't talk about it then.

Titi No.

Zakiya And so I was like, Well, I'm not sure. I don't know about this. And I looked a little bit more beyond Wikipedia, and I said, Oh, it looks like the last time this happened was in like 1912. But they can track this back to so many years ago. And I was like, Well, what's the real like? What's the real physical evidence of this? And there is some. They're taking full ice cores. So, yeah, we're pretty familiar with ice cores. We don't have that, OK? But they're taking these ice cores and going so deep and pulling the ice out, and they can see volcanic ash covering. So if you look at that thick gray ring here in this cylinder, evidence of a volcanic winter.

Titi So that's kind of like tree rings or in rock faces how they can look back.

Zakiya And look at striations and things like that. Now I love this kind of science. It feels really exciting. It feels like I can see it with the naked eye compared to like molecular biology, which is what I've done. But it also feels a little unsafe. Like, do we know this isn't a load-bearing ice core, you know, like, I just feel like we shouldn't take too many of these, you know, punchouts from the earth that I'm like, somebody should be regulating this?

Titi You holepunching the Earth. Something's going to happen. Something bad is going to happen.

Zakiya I've seen a lot of movies, and that's usually how it starts. Now this is what I want to ask you about.

Titi Yes. we've got questions.

Zakiya Now, I'm interested. I'm going to tell you, I'm in thermaculture. So y'all are dipping in different hot water baths while it's cold outside.

Titi They go from hot water, then cold water, then back to hot, then back to cold. I don't know how many cycles y'all do, but it's different.

Zakiya We haven' figured out the science behind this one, but we're trying to find a way to make it an episode. And we're going to have to shout out all, y'all, because, you know, this is your own thing, so when we do it, we're going to on social media, we're going to ask for a call, we're going to say, Hey,

let us know what you think. If you've ever done this, I want y'all to call in and tell us, OK, we want to hear it.

Titi And so another thing that we found that was very interesting when we were doing our Googles, why is winter so awful but seems so manageable to people in the Midwest? Apparently, you are smarter. Yes, I think it's fair. Big up yourselves, big up yourselves.

Zakiya Big up to y'all.

Titi There have been studies that have shown that folks that are in cooler climates are actually smarter, they make better decisions than people in warmer climates, and the studies that they were doing is that they would have. So apparently a comfortable temperature is 72 degrees. I know that probably sounds balmy to y'all. But so they put folks that were in a room colder than 72 degrees by five degrees and then warmer, and that gave them a series of tests and almost 100 percent of the time. The people who were in the cooler rooms performed way better, and it's not even that they were able to perform better, they were able to choose routes to get to an answer that made more sense. They were more logical and they didn't stray away from complex thinking. The people in warmer, in the warmer rooms, they would always just kind of take the easiest route to be able to finish whatever they were doing. So that was really, really interesting to me. And I said, Wow, I guess I guess maybe the people in Minnesota know what they're doing and they they've got it. They've got it all figured out. They know exactly what I mean. I saw this guy walking, that seems smart, genius.

Titi It's genius. I was like, You don't you have to go outside. This is perfect. But then I was like, Are they smarter? Because they also do things like this? And y'all seem to do it a lot and like to do it, and I don't really understand is dangerous, it feels very dangerous, but luckily for y'all, I'm taking a lot of physics, so I was able to understand it a little bit more. So for something like the ski jump you, I'm sure you've all seen it. The Winter Olympics is upon us. We are very excited about it. With the ski jump, they go down that long ramp and they launch themselves into the sky and they all make the same shape with their body. And that's intentional, of course, and it's because of physics. They're making this shape with their body that is one aerodynamic, but also gives them the ability to fly. So it gives them lift. So it's the same. It's the same thought process, the same physics that's used for airplane wings. You can see that the shape is roughly the same, right? The air that's passing over a ski jumper is going a lot faster. And what that does is it creates a difference in pressure, so there's higher pressure beneath them and that pushes them up into the sky. Now they don't have an engine on their backs, so they got to come down to the ground. And that's well, that's not the only part that scares me, but they got to come down to the ground. So once they reach their their peak, they start to make their way down. They change the shape of their skis. And then when they hit the ground, they always make sure they have bent knees and they are able to distribute the energy that they have accumulated from going down the ramp so fast, flying through the sky and distribute that energy into the ground and not into their bones and crash. So, that is something that I think you've got to be pretty smart to be able to do that. So it lines up with the science.

Zakiya I mean, I think we got to figure it out like y'all know something that we don't know yet on the East Coast.

Titi Yeah, because meanwhile, on the East Coast a few weeks ago, we got a whopping four inches of snow.

Zakiya OK. Imagine.

Titi It was a dark time for us. We were struggling. These are real pictures. They were stranded overnight on the highway from four inches of snow because we don't know what we're doing.

Zakiya And those are warm temperature decisions, OK? They they need to lower the temperature when they decide how we're going to prepare for the snow.

Titi Exactly. And I mean, we've had-- this isn't the first time this has happened.

Zakiya I don't know how long ago it was, but now we were in grad school. This is in Durham, North Carolina. Yes. This is the story we don't tell often, but

Titi Y'all are friends now. So yeah.

Zakiya We're going to tell it. We both are in the lab and I'm like, Oh, girl, is going to snow today. They always say it's going to snow.

Titi It never snows in North Carolina.

Zakiya And I'm like, Oh, we're going to go out, you know, so we can do an experiment, said everything up. We can go out after our experiments are done and then they're like, No, no, the ice is coming. It's ice and snow. Everything comes to a screeching halt. So we're at Duke at the time. We're in the labs. But Duke is a major employer in Durham, North Carolina. But also when Duke makes a decision, so does everybody else. So the whole city of Durham just says, two o'clock, Everything's canceled, everything's closed.

Titi People are running around screaming, crying.

Zakiya People are off work I mean, so we both parked in the same parking garage. I was on like the top floor. It took us so long to get down out of the garage and I said, What do you think is happening? So we're facetimeing each other OK in the car because we've been in there so long. And I said this, you know, it's been 30 minutes. That's a long time to me to be in the parking garage.

Titi In the parking parking garage, trying to get out.

Zakiya And the things I'm thinking about are like, so much exhaust. Should we all be here like this, you know? It doesn't seem right now, normally the cars come and go. So you have time for this stuff to clear. Do I have enough gas? I wait to the last minute for everything. Do I have enough gas if we continue the way here and idle?

Titi I thought we were going to have to sleep there.

Zakiya I mean, just to give you a taste of the level of panic. We're in line waiting to get, still waiting to get out of the garage and somebody comes and knocks on my window. And it is a woman from my lab. She said, "Can you take me home to Chapel Hill, which is about 30 minutes from here?" I'm like, Girl, I've been here 30 minutes. I haven't moved, but one level I won't be able to take you home. I said, What about your car? She said, I'll just leave it. Just take me as far as you can, as far as you can go, and then I'll get out what? I mean, people were making those types of decisions at four inches of snow, and I thought that she was being wild. But when we made it out to the street--.

Titi When we made it out to the street, it was as if the apocalypse had happened.

Zakiya People had abandoned their cars.

Titi People had abandoned their cars. That's the reason why we that people just got out their cars and left their cars there.

Zakiya I know that would not fly here.

Titi I know y'all wouldn't have that. First of all, the streets will be clean. Yes. And people were just leaving their cars parked at the light. And so we were waiting behind cars that don't have people in them. We both lived less than five miles away from campus. It took us four hours to get home.

Zakiya I thought they learned something from that.

Titi They didn't.

Zakiya They didn't.

Titi They didn't.

Zakiya They didn't.

Titi We haven't learned anything on the East Coast. But one of the things that gets really impacted on the East Coast when things like this happen, I know you saw in those pictures that there were some trucks. The trucking industry get severely impacted every time something like this happens, like we make jokes about it, but there are truckers that are really struggling because they are trying to get us the things that we need in our grocery stores and the things that we are adding to cart on Amazon. So one of the episodes that we did recently recently was about the trucker shortage and calling it a trucker shortage kind of is misleading because there are over 10 million people with a CDL.

Titi So what is a CDL?

Zakiya Commercial driver's license.

Titi Commercial driver's license, but only a third of them are trucking. And there's a reason. The reason for that is because the trucking industry is modeling themselves after the fast food industry and what they bank on, what they hope for is that they can get people that are really excited, dedicated to become truckers, and then they burn them out. And then another person will come in right behind them.

Zakiya That sounds a little bit like nursing, science, medicine, academics. I'm like, hmm,.

Titi Right? It sounds like a lot of industries and you can that I'm telling you, go back and listen to this episode because you'll find that there are a lot of tactics that overlay in a lot of the industries that we work in. And so you'll start to be like, Wait a minute, are you trying to? What's going on here? What's happening? And like all of these ways that we're being monitored and managed and being asked to put out really, really high productivity rates that seem impossible. It all goes back to the the invention of the factory in the assembly line. What they did is that they had this thing called scientific management, where they would find the biggest, toughest guy in the in the whole factory. And they would say over the next hour, I want you to make as many of these things as you can. And if he could make one hundred, they would say, that's the line. Everybody needs to be making 100 of these an hour. And so then they would dictate what your productivity or how productive you were based on that benchmark. And that's the same tactic that they use in a lot of different industries, including the trucking industry. And so when we have things like that, should we call it a snowstorm? I don't know.

Zakiya Well, no delay. Yes.

Titi We didn't have any, this is my actual grocery store. We don't have any food.

Zakiya This is a couple weeks ago.

Titi This is a couple of weeks ago, I haven't eaten since then. This is my first time eating. There was no-- there was no food. The only food that was on the shelves were things that were prepackaged. So

you couldn't find any fresh vegetables. There's no meat. There was no milk. There was not there was plant milk, there was plant based milk, which is just fine. But there was a lot of people where everybody came to the grocery store and we all just stared at the empty shelves like what? What is actually going on? And is because of all this backup and there's not enough truckers that are being valued and put into a situation where they can flourish and do their jobs and do them their jobs for a long time. And so that was one of the things that we found when we were researching for this episode, Lab 039: Add to Cart. Seventy percent of all freight is transported by trucks. The average truck driver on the road is driving 21 days out of the month and doing 14-hour days.

Zakiya That's a lot of time.

Titi I don't do anything that much.

Zakiya Sometimes just sleep that long.

Titi I can sleep for a very long time, yes. But even that, I can't do that for that long.

Zakiya I feel like we really got to give the truckers their props, right? Like, you know, when I was a kid, I used to go like this when I saw a truck.

Titi Yes.

Zakiya I feel like we need to like, do this, but then do a heart. Yeah. Like, we should do something when we see them.

Titi Honestly, they're working very, very hard and they really don't get the the necessary props that they should be getting. And the other thing is that they don't also don't get any money when they stop. Yeah. Like when they stop driving, when they're when they're dropping their goods off, the clock stops, they stop making money. And so there's a lot of initiatives out there that's trying to get them better pay for their work, but it's just really, really tough. So that's what happens on the East Coast. I mean, I think it again to go back to the if it's colder, you're smarter.

Zakiya Yeah, we haven't quite figured.

Titi We haven't, we're not cold enough.

Zakiya But you know, you really have to kind of say, We should learn from each other, so I'm going to try to take some tips that I see around here and try to take some of that back with me to Georgia. I think he'll maybe take something back with you to Maryland, and I know you'll

Titi probably I'll probably take food.

Zakiya She will. She will. And y'all know rocking with us throughout this. And you may say I thought they were talking about winter. How are we talking about trucks? But, you know, I think we just are really excited to show you, we're just giving you just a tiny sliver. Like if we had a pie, not even a full slice of what is like, that's between us, right? We just are in our brains. You're in our brains, you're with us, you're with us. And so, you know, although we were talking about winter, I feel like just to recap, we've talked about quite a few things, you know, we talked a little bit about climate. Then we jumped into sharing all of this water. And then we said, let's do it for the bivalves, you know, so that's that's where our mussels and oysters and crustaceans too, even though I don't really rock with them.

Titi And then we talk about plastic snow, we talked about volcanic winter, which my friend told us all about, those cores, those load bearing cores.

Zakiya And I think I've really settled on winter is underrated. Like, y'all are doing it right up here. Winter is underrated.

Titi It is. It definitely is.

Zakiya You've sold us. You've sold us.

Titi Yes, we've learned a lot about the physics of winter and how you all are able to maneuver on the ice and fly through the sky with no problems.

Zakiya But our overall thing is that we got a lot to learn from you. We have enjoyed our time with y'all, and unfortunately, I think it's over, but we have enjoyed you and we hope that you will continue to check us out. Shares with your friends? Yes. Just as a reminder, we're only on Spotify, but it's free and it's every Thursday and you can get as many doses as you like. Thank you.

Zakiya That's it for Lab 57. Call us at 202-567-7028, and tell us what you thought. Hopefully that convinced you that you need us near you live soon. You can give us an idea for a lab we should do this semester by calling us again at 202-567-7028.

Titi And don't forget, there's so much more for you to dig into on our website. You can see a cheat sheet for all the previous labs, additional links and resources in the show notes, plus, you can sign up for our newsletter. Check it out at dopelabspodcast.com. Special thanks to the Great Northern Festival for having us.

Zakiya You can find them on Instagram @thegreatnorthernfestival.

Titi You can find us on Twitter and Instagram @DopeLabspodcast.

Zakiya And Titi's on Twitter and Instagram @dr_tsho.

Titi You can find Zakiya on Twitter and Instagram @zsaidso. Dope Labs is a Spotify original production from MEGAOhm Media Group.

Zakiya Our producers are Jenny Radelet Mast and Lydia Smith of Wave Runner Studios.

Titi Editing and Sound Design by Rob Marczak.

Zakiya Mixing by Hannis Brown.

Titi Original Music composed and produced by Taka Yasuzawa and AlexSugiura from Spotify. Creative producers Candice Manriquez Wrenn and Corinne Gilliard. Special thanks to Shirley Ramos, Yasmeen Afifi, Kimu Elolia, Teal Kratky and Brian Marquis.

Zakiya Executive producers for MegaOhm Media Group are us.

Zakiya Titi Shodiya.

Zakiya And Zakiya Watley.