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TRANSCRIPT - GR 11 18 22 "Economics and Medicine" **Bapu Jena, MD PhD, from Harvard Medical School**

00:13:41I think I want to start uh start things off today. I hope everyone can hear me out there in the zoom world. Thank you all for coming in person. Prc: as well. Uh, we have a couple of links in the audience today. A little bit of this will be interactive. That should be fun

- 00:13:58um to those in on the zoom in the zoom universe or on zoom uh welcome to medicine. Grand rounds like I said, it should be a fun day today. Uh, I'm excited to introduce Dr. Baker Jenna from Harvard University. Uh: you may be familiar with him, or even voice. Uh, he's the host of the Freak outics, and he Podcast, among many other things.
- 00:14:18Uh. Dr. Jen is currently the Joseph P. Newhouse Professor of Health Care Policy at Harvard Medical school and a faculty, a research Fellow at the National Bureau of Economic Research.
- 00:14:29He completed his undergraduate Uh Education at Mit and Economics and Biology, followed by A. Phd. In Economics, Uh. And an Md. Then uh both at the University of Chicago.
- 00:14:42He then completed his internal medicine training at Mass General Hospital, and it's since stayed on in that Harvard health and education system at the position educator and a researcher
- 00:14:53as an economist and physician. His research involves several areas of health, economics and policy, including the use of natural experiments in health care, the economics of division, behavior, and then physician, workforce, medical malpractice, that amount of health, care, productivity, and medical and innovation.
- 00:15:13Uh. So, without further ado, I please give a warm welcome to Dr. Bapu Jena.

Bapu Jena

00:15:21Uh, thank you for that introduction. I, you left out the most important part, which is, I grew up in Richmond, Virginia. No, it's not. That's not exactly. You have to go to the dark web to figure that out. And I went to a school called the Governor School for Government and International Studies. Maybe you have some alumni on zoom or uh, um, yeah, perfect. So um, Thank you so much for that that kind of introduction. And uh for uh,

- 00:15:50um participating with me in this talk today. Uh it's called Random Acts of Medicine. You'll see why it's titled that talk in A in a few moments. But what i'm hoping to do is make this uh very interactive. So I'll talk for about five or six minutes and give you a sense of the types of work. Um! That I do. And then after that I'd really like to turn it over to all of you, so we can brainstorm together and get you sort of engaged in the creative process, because I think that's in in in research. What I spent a lot of my time
- 00:16:20uh doing that to me is sort of the scarcest ingredient. There's a lot of people who can
- 00:16:26uh do the technical aspects of research. You can certainly learn those components, and you do learn those components for those of you. We end up doing um research. But one thing we don't teach people is how to come up with ideas, and so that's really what I want to spend most of my time with you uh doing today. So let me just give you an example of the types of projects that I do again for like five or six minutes, and then I'll um start sort of peppering you all with questions, and we'll brainstorm together. So

- 00:16:55those of you on, zoom, just unmute and talk. Or if you're in the audience, grab a bike and just throw out some ideas. So um uh, how many of you have seen the movie, the replacements. By the way, maybe I can get this uh a rub. Count anybody. Raise your hand in the room. Anybody in the movie, the replacements Who do we got in here? Oh, we don't have anyone in person who has seen it?
- 00:17:16What a shame It's a great movie it's with the featuring Kiana Reeves. Um! It's a movie about a um. The player strike that happened in the Nfl. In one thousand nine hundred and eighty-seven uh some of you probably seen the movie concussion with Will Smith. This is a movie about chronic traumatic encephalopathy uh the brain injury that's thought to occur from the repeated head contact that occurs
- 00:17:41in professional football. And uh, one question that I and others have been interested in is whether or not playing professional football affects your mortality. Now, the challenge of studying that question is that,
- 00:17:53uh, people who play professional football are different than people who don't. And, In fact, if you look at the overall life expectancy of Nfl. Players versus non nfl, players. Nfl: players live longer lives, Shouldn't Be a surprise like the things that allow them physiologically to do what they do on the field, probably is positively correlated with underlying health and life Expectancy Plus these individuals are wealthier, they have better access to medical care. So it's probably not a surprise,
- 00:18:22but that isn't the right causal question. It's not the right thought experiment. What you really want to say is the people who played in the Nfl. What would happen to those individuals had they not played in the Nfl. And ha not been exposed to sort of injuries and lifestyle factors that are associated with the Nfl. Now, one way you could answer that question is, you could do a randomized control trial where you randomize some people to play in the Nfl. And others not to, and then followed out
- 00:18:51the mortality of these two groups over many years. No one would ever do that clinical trial wouldn't be feasible for a lot of reasons. But in my line of work what I try to search for is what we call natural experiments, or as a title of the talk is alluded to. These random acts of medicine or random acts of
- 00:19:08uh, you know, random Path, that our lives are sent down just by chance alone. So that's why I mentioned the movie, the replacement. The The movie replacements was about this strike that happened in one thousand nine hundred and eighty-seven, where the Nfl. Decided the players League decided to go on strike.
- 00:19:27Uh, and as a result the League itself was faced with a decision whether to cancel games or to allow the games to proceed, but to instead have replacement players play in those games, and that's what they chose to do. So they
- 00:19:43um higher players who played in other professional football leaks. Maybe former college players. These are people who are quite good at football, but just barely not good enough to make the cut to play in the Nfl. So now we had this opportunity to take people who were replacement players for those three or four games in one thousand nine hundred and eighty-seven and Compare them to people
- 00:20:02who we think we're otherwise similar, but by chance, you know, because they're pretty close to each other. Um! We're exposed to
- 00:20:11longer term participation in the Nfl. Uh, and the lifestyle factors, and the exposures to injury that happen as a result of participation in the Nfl. And if you compare these two groups, which are more like to like
- 00:20:23uh. What you found is that Nfl. Players actually live slightly shorter lives than um than the replacement players. And so that was what you know one way to sort of think about. How could you study the effect of playing in the Nfl. In a way that is is rigorous, but also relies on sort of observational data and what we call an economics. An epidemiologist refer to as natural experiments. Let me give you another example. I'm going to give you three total. The second example
- 00:20:52relates to uh this idea early in the pandemic of trying to understand what was leading to Uh the Z spread of Covid nineteen. So there's one thought that this is, you know, spreading through large super

spreader events, and that probably was an issue. But There's a second question of how much of the spread that we are observing was due to

- 00:21:14um spreading in small encounters small gatherings, perhaps, with people that you know and trust who you might think. Well, okay. I I know this group of people. They're my co- residents or co attendings. Uh. I think that is probably safe to gather in May of two thousand and twenty, and not risk um spreading uh Covid nineteen
- 00:21:36uh how would you study that right. It's. You need data on many, many people who are gathering. You need to know whether or not those people who are gathering versus not gathering socially with each other. Ever give up Covid nineteen. And then there's another problem which is very difficult to solve, which is,
- 00:21:54how do we know this is a result of gathering. The people who are choosing to gather early in the pandemic were different than the people who weren't, and they may have been more or less like a mask to travel, to go to restaurants, whatever it might be.
- 00:22:07So what we thought was all right. Well, we work a lot with insurance data in in, in the type of research that we do, and what that means is anytime you go to the doctor or your hospitalized or loved one is hospitalized,
- 00:22:20the doctor or the hospital um therapist bills your insurance company for that, And that record. That bill is actually very uh informative. Is it? Could tell us the types of medical care that you've received when you go to a pharmacy and full of prescription for medication, the insurer pays for that. So that information is tracked. And so we get very rich information about people's medical lives, uh, and insurance companies also know your date of birth.
- 00:22:48And so our idea was the following: Let's take a a bunch of households, you know, looking at millions of households across the Us. And look at households in the same city in the same week of the year, and look at households in which one member of that household had a birthday, had a birthday
- 00:23:05and another household. No members of that household uh had a birthday, and we're looking at, you know, many, many hundreds or thousands of households in the same area the same week. And what we found was that if a household has a member with a birthday, not a birthday party, just a birthday, they are about thirty percent more likely to have a diagnosis of Covid, nineteen in the subsequent two weeks. And that idea came from our own family. Our daughter uh, was turning I think five
- 00:23:34in the middle of the pandemic, and we had to decide whether or not to have an in-person birthday or a zoom birthday, and we were literally thinking about having an in-person birthday, because it was an important thing
- 00:23:45um to celebrate We ended up going with the zoom birthday, But that got us thinking all right. Birthdays are a good example where we have a reason to gather, probably much more so than any other reason that we might think of to get together with friends.
- 00:23:58Um! We can identify those events in the data we know when people have birthdays and we know households who Don't have a member with their birthday, and then we can link that to Covid, nineteen diagnosis, because we have the insurance information on these individuals, and also it's random, right? So like the birthday timing is random. And so if you have two households or two thousand households in a given city in a given week of the year. Those households that have by chance a birthday that week are going to look basically the same as the households that don't.
- 00:24:28It's almost like a randomized control trial where you're randomizing gathering based on the timing of birthdays, which is a chance sort of a event. Uh, we found that the effect was largest. When a household had a child with a birthday, maybe not surprising, because parents are more likely to celebrate the birthdays of their children than they might be, you know, their thirty fifth birthday for an adult. We also found that the sort of birthday effect
- 00:24:55was similar in magnitude in highly Republican areas and highly democratic areas, a democrat areas of the country which is sort of interesting because early in the pandemic there's a lot of discussion

and continues to be about how um the public health behaviors that people were engaging in were politically uh aligned. And what this city should suggest is that well, you know What if you don't just worry about what people say that they do. But look at what they actually do.

- 00:25:23We found the identical birthday effect in highly blue and highly red parts of the country would suggest that when you, when you look at their actual behavior, people were behaving quite similarly, at least when it comes to something like a birthday for an adult or for a for a child.
- 00:25:39Um! The last example I'll give you, and then I'm going to turn it over to you or all of us. Uh is um
- 00:25:46uh work that I've done. That's outside of health, and most of the work that I do is related to health because I I'm a position. Um, but I'm also trained as an economist, and so I do have interests outside of health as well. And so these were. We were able to get some data from the State of Florida, where we had information on every driver who had been pulled over by a police officer uh and ticketed,
- 00:26:10and we knew information about the driver. We knew their name. Uh, we had some race information as well and same thing for the officers who pulled them over. So we knew the name of the officer, and what we showed was that when the same driver,
- 00:26:23you know. Let's say, over a ten year period. They pulled over a couple of times when the same driver is pulled over by someone who shares their same first name
- 00:26:31versus in instances where the officer who pulls them over does not share their same first name, they're much less likely to get a ticket if they happen to be pulled over by an officer that shares their same first name. Of course it's important to account for the relationship between the name and the you know, race or ethnicity of a driver. My name is Bapu Ba, who is obviously not an Irish name, but you know, holding that constant saying. When Bapu is pulled over by Papu, the officer, first, papa is pulled over by Sam.
- 00:27:01Um uh the police officer. People are likely to get a ticket of Sam as the one who's pulling him over. And um! If Officer Bob, who pulls them over now they are, what does it have to do with hell. Well, I just give you an example.
- 00:27:15Uh I live in Boston. Boston is a place where there's a lot of Bostonians in in uh New Englanders. So if I go into a room at the hospital where I work with some mass general and a patient
- 00:27:28has a Southern accent. Um, you know that's going to peak my interest because of where I grew up. So the first question I'm going to ask him, is where you from, and um they might say Virginia
- 00:27:40if they say Virginia. Second question, I'm going to ask them is, you know what part of Virginia if they say, Richmond, Virginia. Then you know you can all I can all but guarantee that they just bought themselves five to ten more minutes of discussion in the room, and you can imagine, if you had date on all those sorts of encounters over thousands or tens of thousands or more,
- 00:28:04I say it again,
- 00:28:05That's just the problem of the unmute allowing people to unmute themselves. So you can imagine that if you had data on all these sorts of encounters, and you could, because you would know the name of the person who was trying to care the name of the patient, or maybe even where they grew up where they train.
- 00:28:30I might spend five or ten more minutes with that person, and maybe that time they would be more likely to risk. Listen to my recommendation the medical team's recommendation. Maybe we pick up on something diagnostically that we otherwise wouldn't have picked up, and there's already a literature in medicine about how shared some. You know similarities between providers and patients. Um may affect outcomes. So this is sort of a way of thinking about how you might take something like this, which is obviously not a health related topic
- 00:28:55and apply it to medicine. I'll make one more point, and then I'll, and I'll turn it over to our discussion, which is the one question you have to ask yourself when you see it a an effect like this, or is it big? Is it small. Uh it wouldn't be a surprise to you know that there's racial bias in policing

- 00:29:12the benefit to a driver of having the same first name as the officer who pulls them over is as large in magnitude in terms of getting a slap on the wrist, not getting a ticket um as being a white driver relative to a black driver. So the heuristic that's operating in the back of the officer's mind where he or she pulls over an officer and things. Oh, maybe you know, they're not explicitly thinking I'm going to be nice to this person
- 00:29:40or more leaning to this person because they share the same first name. I presume it's something to happen sort of more subconsciously, but that effect is the same in magnitude as uh being a black driver versus a driver. So it's large, I think, in in that sense, alright, So that sort of a overview of the type of work uh that I do. If you're familiar with the books free economics, it's very much like for economics. We've medicine. Um If you've heard the podcast economics, Md: that I host. It's a lot a lot like
- 00:30:10the type of stuff that that I talk about, but it's relying on big data uh tools of economics uh in particularly thinking about instances where people are exposed to care circumstances randomly. Um!
- 00:30:25And most of the questions have sort of a general feel to them like you don't have to be in medicine to understand or appreciate what's going on, so that sort of characterizes the work. Um! So I'm going to pause now, and just orient you to the exercise that we're going to do together.
- 00:30:40I'm just gonna show you some photos, maybe show you some words, and I'm gonna ask you to just come up with ideas on the spot, and if you know where I'm going with a photo or a set of words,
- 00:30:52then give your colleagues a chance to chime in, and then, you know, maybe you could even say the answer, but pretend like you didn't know where I was going, or even push yourself further, and come up with a different idea than where you Where you might not know. I'm going. Um! Does that sound good.
- 00:31:08I could see the yeah. I could see that. I see they're all awake, which is just the for me to see wa in their hands. Get to see that far away, their person
- 00:31:20alright, perfect. So what is this? A photo of this yell? Boston Marathon perfect? I can hear you all perfectly as Well, so what ideas come to mind? Just use the word Marathon, you could say. I'm interested in knowing what happens to
- 00:31:36uh stick injuries when uh Tbs shows Harry Potter Marathons on Tv, because all the teams are, you know, running around pretending that the Harry Potter. Is it just
- 00:31:48what I did from the mind extreme exercise. Okay. So I'm just going to run with this so you could say, what is the impact on health
- 00:31:59of extreme exercise in general, or maybe the extreme exercise that happens during a Marathon, or you might even say what's the long term effect of extreme exercise, So you know, running a marathon raise your hand in the audience. How many of you run a Marathon?
- 00:32:14How many of you have thought about running a marathon? But say, why would I run a marathon. But say, why would I run a Marathon? But say, why would I run a marathon? That's like everybody. Everybody's shaking almost all right. So
- 00:32:32if you look at Marathon runners,
- 00:32:34let's just go with this idea. If you look at Marathon runners,
- 00:32:38and you compare them to people who don't run marathons. They probably live longer and healthier lives. But the question is, is it the training for the Marathon that led them to those longer lives? Or is the fact that you know inherently, biologically, and physiologically, they're just able to run marathons, whereas other people are not.
- 00:32:56We call that a selection bias problem. Of course you could solve that by saying, Let's randomize people to running marathons, or training for marathons, and randomize others not to and see what happens, both in terms of short term mortality, or maybe in the long term uh more, Tatty, you might be familiar. There's a study in the New and Journal Medicine a few years ago,

- 00:33:15uh which looked at from phone and uh proponent measures or some cardiac biomarker measures after people are running a marathon, and they're elevated. Uh, if you're not surprisingly so, because the stress that's placed in the heart,
- 00:33:28it wouldn't be inconceivable to think that people who run marathons who stress their hard out in this way twenty, thirty, forty years later might even have higher rates of my cardio.
- 00:33:38Um uh injury. Maybe they're more likely to develop a Rhythmius right compared to otherwise similar people who did not train. And that's the key thing otherwise similar. Can you, By the way, can you imagine a situation where suppose you wanted to look at whether or not running a Marathon has any effect on your mortality in the next two to three months. Can you imagine a situation where you could,
- 00:34:01using real world natural experiments, randomized people to running a marathon; in other words, a situation where some group of people who are about to run a marathon by chance did not randomly. Can you? Can you think of any ideas like that?

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00:34:19Uh, yeah. So I said, age restrictions. So if there's like a clear like sixteen to eighteen cut off, maybe kids who are in high school, we'd run a lot. We're almost as healthy to run it. But for whatever reason, the Marathon

Bapu Jena

00:34:32Um, Then you have an age restriction. Yeah, exactly like you have a seventeen year old who's about to turn eighteen training for a Marathon, but the Marathon that they want to run in that year they impose an age restriction, maybe because something bad happened the year before, but that year the imposing age restrictions. And so you could compare the sixty day mortality rates of those people who are just,

- 00:34:55you who are ready to run a marathon who would have qualified, but didn't because of some age restriction. You compare them to people just above the age of eighteen.
- 00:35:03M. Might do the same thing with Marathon qualifying time. So let's say, for the Boston Marathon, you have to run three hours in thirty minutes, and maybe you have a group of people who had times of three hours and twenty-five minutes roughly in three hours and forty minutes. So this is some random threshold people above and below that threshold were able or not able to run a particular marathon. And then you look thirty to sixty days after. What was the causal effect of participating in that Marathon
- 00:35:31compared to and otherwise similar group of people who by chance were not able to good, or you could even say, Maybe a Marathon gets canceled because of something like hurricane. Sandy people were supposed to run the Marathon,
- 00:35:43but for some random reason uh, you know, weather disruption weren't able to, or their flights were canceled. So there's all sorts of ways you could conceive of some naturally random event that prevents people who would otherwise be ready and prepared to run a Marathon from not doing that
- 00:36:00alright good. What other ideas come to mind? So I'm just you this photo here. There's a lot of people who are running. I want you to sort of imagine the roads on the side of this photo. Probably pretty clear. Not that many cars on the roads because they're blocked. What other ideas come to mind?
- 00:36:22Say it again. Probably explain more, he said. Human trap like I guess you mentioned there's no cars. But there's a lot of people, and I certainly couldn't drive on that road.
- 00:36:31Yeah. So what about what about the he? Are you thinking about like pedestrian injuries, or something like that traffic or pedestrian injuries related to marathons. Yeah. So maybe, maybe, for

example, like the roads are blocked. And so there's other roads that are open, and a bunch of traffic is funneling through those areas. And so there's more pedestrian injuries. One is because there's more traffic on the smaller road or B, because the people who are using those roads are not familiar with them. And so

- 00:36:57uh, if you're driving in a road that you're less familiar with, we might expect more pedestrian injuries. Uh, as a result. Good! What else? What other ideas come to mind about these roads being closed

00:37:09uh times to the like times to the hospital for people who are having emergencies.

- 00:37:17Um! That you may see uh an increase in delay between um contacting a Dms. And uh arrival at a healthcare center. Yeah, good. So I just take a story. A few years ago my wife Um, she's a radiologist. Um at uh Brigham and Women's Hospital

Bapu Jena

00:37:37uh in Boston, and she was running this race called the Race to remember. It was like a five K race, or maybe a five mile race, and it started in one part of Boston called the seaport, and it went through

- 00:37:49uh uh part of Boston called Beacon hill. Beacon Hill is where Mass general is located, and then it goes into the city called Cambridge, and then it goes right back. And so she it. This is the first time running this kind of race. And um she's like Oh, you want to come Watch me, I said, sure.
- 00:38:05And so I was driving down our main thoroughfare called Store Drive, trying to get off the exit, to go to to master, and on the park there, so I could see her on the race route, but the road to the to the hospital was blocked. That exit was blocked,
- 00:38:18so I turn around, and I went back home, and then, hours later, I see my wife at home, and she mentions to me sort of offhandedly. Well, what happened? All the people who needed to get to the hospital that day, and that was sort of an offhand comment by her.
- 00:38:32But it struck me as being really insightful, because Marathon this she didn't run a marathon. She ran a five mile or five K race. Marathons are incredibly disruptive right they twenty-six miles that are blocked off, or more, many, many people, incredible road disruptions.
- 00:38:49And so I said, Okay, well, let's look at this. And so what we found was we. We were able to get data from about ten or eleven marathons over ten or eleven years, and we've mapped out where the marathons go. We know the zip codes that are affected, and then we know the zip codes that are
- 00:39:05sort of on the outer skirts at our borders that were not directly affected, and what we saw was that on Marathon day in a given city there is a pretty large increase in cardiac arrest and heart attack mortality.
- 00:39:19Um! On the day of that Marathon compared to the surrounding days of the week in the weeks before and the weeks after the Marathon, and there's no such Marathon effect in the unaffected hospitals, the control hospitals, and uh,
- 00:39:34you know what we, what we what we thought that sorry. What? What explains this right? This is a sort of a random event. Nobody is choosing to have a cardiac arrest. But maybe this is because these are runners who are killing over the street as opposed to grandma or grandpa who are at home, who live near the Marathon route, have a cardiac arrest and can't get to the hospital in time. So we investigated that we started by just looking
- 00:40:00at the characteristics of this population, the average age of about seventy-eight. And They have chronic conditions, so they're unlikely to be running marathons. But even if you subset it to people who

have alzheimer's dementia, who are on dialysis unlikely to be running marathons, you still see a similar um similar pattern.

- 00:40:18Um! We are also able to scrape data from news articles in these cities to look at whether or not runners themselves were dying, and they were not dying. Um! During these marathons, at any higher rate than the surrounding days. Um! What we also were able to do was to get data on ambulance transport times
- 00:40:37for a subset of these cities where we had ambulance data, and what we saw was that there was an increase in ambulance transport times on the mornings of marathons in Marathon of Fuck affected zip codes, whereas in the surrounding zip codes it's the blue line in the top panel.
- 00:40:54There's no effect on transport times, no surprise, because the roads are blocked,
- 00:40:58and then in the evening, when the roads reopen, there is no sort of Marathon day effect on transport times, because the roads are open at that point, and so there's no sort of delays. So this was evidence to us that the mechanism of higher mortality on Marathon days
- 00:41:15was due to transport delays, and this could be ambulance, transport, delays. It could be someone who's driving a loved one to the hospital. Who's having ongoing
- 00:41:24um chest pain Either of those two um could be at issue here, and so, when I did the study uh I was interested in, because I thought it was kind of interesting, like Marathon to mortality. That's the kind of stuff that excites me. Uh, those are the kinds of questions that I like to do.
- 00:41:40Um, No, there's a broader application for when you hold public events, we tend to think about the safety of the participants of the events or the spectators. We don't really think about the people who live on the sides of those events who might not be able to get to the hospital turns out that more people die
- 00:41:57because of road closures during marathons every year, then died because the Boston Marathon bombings, and yet the Boston Marathon bombings are very salient, and the bombings are very salient in people's, minds, whereas these are sort of hidden debts that you wouldn't know about. Um.
- 00:42:15The other thing is in medicine. If you think about it. One of the fundamental things that we have to deal with uh, when you're taking care of patients is to know when to act and when you can wait. So you know it's the middle of the night, and you know your kids got a fever to one or two.
- 00:42:33Do you need to call your pediatrician in the other night? Do you need to go to the ed. Can you wait to the next day? Uh, You're an intern on call, and so and so just had a a procedure, and it's having some abdominal pain.
- 00:42:47Can you watch them for a few minutes? You could watch them for now, or do you need to call the surgical attending in overnight, like we're always face to this question of how quickly do we need to add? And the same is true here. But we're not going to randomize people to say, All right, you're having chest pain.
- 00:43:01You come into the hospital immediately. This group randomly. Another group. You take two hours to come in the hospital, and let's just see what happened. You never do that randomized trial.
- 00:43:10But here we have this opportunity, because the natural randomization that occurs because of the road closures during Marathon days to say, All right. Well, what happens if we delay cardiac care for heart attacks? What happens if we delay care for people who are shorter breath, who have a G. I bleed, who have a headache, who have a trauma. You can imagine doing the same sort of experiment across a bunch of acute medical conditions to figure out exactly how much to delays in care matter. So there is sort of a clinical
- 00:43:38application of this sort of research, though my interest was primarily because it was just an interesting topic.
- 00:43:43All right. What's the Joint Commission?
- 00:43:48Who knows

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00:43:52someone? Someone must have what the joint commission is. If If so, you haven't been uh, yeah for hospital appliance for things. Yeah, exactly. So they they're basically I would describe them as a accreditation body sort of a regulatory body. They come and visit hospitals every few years

Bapu Jena

00:44:14uh to make sure that the hospitals are doing what they're supposed to be doing to the quality and safety. Um of uh processes in the hospital, and they and these are very stressful visits. A whole slew of inspectors descends upon a hospital. They're going to monitoring

- 00:44:30the floors, the operating rooms, all sorts of different things. So it's a stressful time for hospitals.
- 00:44:35What ideas come to mind.

Unknown Speaker

00:44:38Yeah.

Bapu Jena

00:44:39So someone that I've asked if someone raise their hand.

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00:44:42So what ideas come to mind with the So let me see if some of zoom rates are like, uh, uh imaginary. Yeah, okay, I I think I I just think about like patient care during the weeks leading up to the Joint commission coming, and then patient here, following the Joint Commission being there just kind of like this. Build up a patient safety, and then i'll like I'll let down. We've got it. We have to go back to our old ways. So what do you think happened? Do you think that outcomes would improve during the dates of joint commission visits, or they get

Bapu Jena

00:45:12who says, improve? I can see all your hands raise your hand. Who says improve,

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00:45:16maybe like it depends what hey? Auction is probably better, but I don't know about surgery

Anubhav Kumar

00:45:30that I had with working dot com so I'll pay, but I just wanted to call to register that I'm back.

Bapu Jena

00:45:41I think I hear someone doing something on booking dot Com. I mean, they may be okay. By the way, don't you use expedia. I'm just to be honest, all right. So okay, who thinks outcomes could get worse?

- 00:45:58So they're in stress, and it's not. They're not telling yeah, outside of your normal pattern or behavior, because you know, someone is emailing you to the Xy and Z. It's not what you typically do. So here's another story. It involves my wife when she was a I think she's a resident, or maybe she was a fellow. She um gets an email from the hospital or the Department administrator saying, The Joint Commission is coming today. Please do X, Y. And Z, and it's a long list of things that have
- 00:46:28to be done, and she turns to me, and she says, um! It will be running around like chickens with their heads cut off, and I was like, Oh, wait! I know these joint commission business are very stressful, and there's like a lot of them to happen every year. What if we're able to get data from the Joint Commission
- 00:46:45on when they visit hospitals and link that to the hospitalization data that we use in Medicare to figure out what's the impact of a joint commission visit, and so we're actually able to scrape all this information from the Joint Commission website. They didn't give it to us, but we were able to get it extracted in an automated way,
- 00:47:03and we linked it to the Medicare data. And what we found was actually that my wife's intuition was incorrect.
- 00:47:11Um that what happens during the dates of a joint commission visit is that the mortality rate of people who are admitted to the hospital during that week compared to the surrounding weeks Falls, the thirty day mortality falls,
- 00:47:25and it's a larger reduction in teaching hospitals. And the reason we looked at teaching hospitals in particular was because these are places where there's a lot more at stake reputationally. If the Joint Commission visit goes poorly, and also they just tend to have a lot more infrastructure in place to mobilize.
- 00:47:44Uh when the Joint Commission comes in. So there's, you know, multiple quality and safety officers nursing professionals. Everybody gets together, figures out what to do. It's a bigger deal than in smaller hospitals that can't mobilize the resources to attend to this kind of visit.
- 00:47:59Um, you might then say, Well, okay, Bapu, How do I know It's that care changed. Maybe it's the types of patients who are being seen changed,
- 00:48:07and may you know, Maybe there's fewer high-risk procedures, or maybe patients who would normally be accepted to the ed from another hospital like an Eddie transfer or accepted to the floor like the outside hospital, transfer the floor. Maybe those happen less commonly, and those patients tend to be sicker. We looked at those issues that they don't. They don't apply here. That's not what's explaining this. The number of procedures, the types of procedures, the types of patients, the reason that they're hospitalized is basically identical between
- 00:48:37joint commission visit weeks and uh non uh visit weeks. We also looked into things that my proxy for mechanisms um based on what the Joint Commission measures, so that, you know they might be measuring hand hygiene or surgical hygiene,
- 00:48:53just general infection control practices. So we looked at things like Cdf. Infection rates catheter. The fully catheter associated uti's bloodstream infections didn't find any reduction in those things, not to say that that the joint commissions processes
- 00:49:09that are being measured weren't a driver of mortality reductions, but at least on these infectious disease domains
- 00:49:15infection control domains that wasn't what explained it. So what we're sort of left with this. This idea called the Hawthorne effect, and the idea is that when you are being monitored your behavior changes. So imagine you're thinking about going into cardiology, and

- 00:49:30you're on your cardiology rotation, and the attending uh who is uh, you know you're attending for that block,
- 00:49:38You know she or he is the chair of cardiology. You're probably going to be behaving differently than if they weren't, just because maybe you want to let a recommendation, or whatever. Whatever your behavior is being monitored, we know that behavior changes, and so that could be. What goes on here is that when you know that the inspectors are watching. You do things a little bit differently, maybe a little bit more carefully than you otherwise would, and maybe not intentionally, not knowingly to yourself. Say, Oh, i'm going to provide better care now, but perhaps unknowingly, that could occur.
- 00:50:08And the reason this is interesting is that if you're interested in the field of quality and safety. Most of the things that quality and safety experts uh, or people in hospitals, do. They don't affect more touting? A lot of things. Don't affect mortality. Here's a finding where the mortality rate falls.
- 00:50:25Um you about half a percentage point which is pretty significant in Nationally, they were talking about tens of thousands of desks nationally, that could be for prevented if we could replicate what was happening
- 00:50:36in in hospitals uh from during joint commission visit weeks. Now the solution is not, of course, to say, Let's have the Joint Commission visit every day of the year that'd be very stressful for people right. A bad idea. But um!
- 00:50:49If you did sort of like a more anthropologic analysis, qualitative analysis, you could figure out what was happening. What was different in these hospitals in terms of the care that was being provided during Joint Commission Weeks versus not?
- 00:51:02Or what is this a photo of?
- 00:51:05Yeah. Okay. What is the Cardiology Conference. Looking at this photo. What ideas come to mind?
- 00:51:14Yeah, we don't have it. Yeah, the path that yeah, you probably don't use it very much. It's a it's a called a Pcsk nine inhibitor. So if you're going to the cardiology, you might. You might know about it, but
- 00:51:27it seems It's the lower cholesterol, and they're pretty expensive. They're in infused drugs. Uh, but they dramatically reduce um. The cholesterol. Um. Yeah, So you might say I I wonder if repat the prescriptions go up after the dates of this cardiology meeting, because it's clearly plastered all over the wall. We, by the way, looked at
- 00:51:47this kind of question before to look at whether or not certain drugs prescribing goes up or branded versus generic prescribing goes up because there's also a lot of is advertising, but there's also drug detailing and reps. We're here. We don't actually find any evidence of that we we didn't publish it. But um in case that's what you're thinking about. What else? What other ideas come to mind?
- 00:52:10Second,

00:52:11what's happening to patients that are in hospitals, when all of the cardiologists are an Acc. Yeah. So what do you think? Do you think that patients do better or worse?

Bapu Jena

00:52:20They're getting better care because the older cardiologists are away. They must they? You must not have the any. Any cardiology attending on this call. They you're gonna get uh kicked out all right. So they So one person, one bold person said, They get better care uh

- 00:52:38any opposing views.
- 00:52:43I'll say it's neutral through yeah, or you know, it's because staffing is lower or the quote unquote best Cardiologists are not.

- 00:53:00You know not in the hospital. They're at the Ac. Or Aj. Meetings. So I had this idea as a resident where um I think it was not a camera. What meeting was the at or Acc. But I was in the Ccu that time, and I don't actually know if the staffing was different,
- 00:53:17but it felt like it was different. The types of attendings that were around felt like they were different, and this idea just popped into my head, and we could look at it. So we had identified dates of a bunch of cardiology meetings we linked to the Medicare data, and what we found was that for high risk conditions like cardiac arrest where the mortality rate
- 00:53:35if you're in Medicare and you make it to the hospital alive. Seventy percent of those people are still dead. Thirty days later, after making it to the hospital. Um! So it's incredibly high and more tied to condition. What we find is that if you happen to have a cardiac arrest during the dates of the cardiology meetings, your mortality rate falls to sixty percent
- 00:53:54versus seventy. So that's a huge reduction in mortality. Something similar to this high risk heart failure. Um. So you know, if you think about like all the things that cardiologists have at their disposal like Beta Block or Staten Aspirin Pci,
- 00:54:11none of those things generate ten percentage point reductions in mortality. So there's something about the style of care that's being practiced during the dates of Aha and acc meetings.
- 00:54:22It is very different than the style of care that's practice on non meeting dates, And, by the way, this is a clean, natural experiment. People don't know Patients don't know
- 00:54:31when the Aa. And Acc. Meeting is, or are they can't say, Oh, I'm gonna have a heart attack today, because I know that the meeting is or not occurring. Or, by the way, let me choose to have a cardiac arrest
- 00:54:44because of these dates, and it is clearly they Don't know that. And you can even see that in the data that the characteristics of patients are basically identical on meeting dates and non meeting days. So it satisfies this kind of um criteria for a good natural um experiment;
- 00:55:01and what we also found was that rates of Pci fall by about a third during the day to these meetings, so we weren't able to get a full look into the
- 00:55:10kind of intensity of care, or the types of care that's provided. But one indicator was that Pci use fell by about a third, so that suggested to us that maybe the intensity of care was a little bit different during meeting days, and we could talk about Why, that might be the case. Um,
- 00:55:26i'll give you sort of a story for why this might be happening. So imagine you've got two patients. One's a forty year old guy who's a construction worker He smokes, but nothing. He doesn't have any of the medical problems. He develops chest pain at the construction site he gets brought to the Uva Ed. He has a stemming um. He gets taken to the Cath Lab.
- 00:55:47He gets a stent. He does really well. The other is a woman who lives ten miles away at a nursing home. She's got twelve medical problems,
- 00:55:55fifteen medications, nine years old. She has the exact same chest pain she's brought to the same ed.
- 00:56:02She has the exact same Ekg: maybe with the exact same uh cardiac biomarker elevation. She gets taken to the Cat Lab, but she dies within two weeks of the procedure because of complications. It's not hard to imagine that that story,
- 00:56:17those two stories might be true. And so what we think is going on here is that during the rest of the year.
- 00:56:24There is people there are people who are being intervened upon in a area that's very gray, like there's some black and white areas in medicine, like. If someone comes to the ed with their leg cut off, you know you have to stop the bleeding you it's not gray. It's black and white,
- 00:56:39but if someone comes in with chest pain and um, they have an in stamy. You know the it's. Sometimes it could be gray about whether or not You want to inter intervene on that person, particularly depending on how all they are, what are the risk factor they may have for bad outcomes associated with

- 00:56:56um a procedure, so it can be a little bit more gray. And what we're kind of highlighting in this study is that in the remainder of the year outside the meetings. It could be possible that we're intervening in patients, that we shouldn't be intervening um on sort of a less is more sort of um story. I'll say we did a replication study of this for a different meeting called the Tct. It's a meeting that's primarily for interventional cardiologists. We find very similar findings. But we are also able to link
- 00:57:24that data in that study to who these physicians were who were either staying behind or not staying behind during meeting dates. We linked it to their publications uh, where they went to medical school clinical trials. So the doctors who are leaving to go to these meetings they tend to be very different.
- 00:57:41Um, they're much more likely to be publishing clinical articles, and probably some articles in journals. Um, they do a lot more. Um
- 00:57:49uh research. They run clinical trials more often. So the types of doctors are very different. And so that kind of speaks to that that suggestion at the very beginning. You know we the the average age, by the way, the doctors was very similar, so it's not an older doctor versus a younger doctor effect,
- 00:58:03but the characteristics of the doctors, and also the types of way that they practice medicine might be very different. Uh, because ultimately these are the same types of patients being seen on meeting dates and non meeting dates. And yet the outcomes are very different,
- 00:58:19all right. Who anybody in the Audience: have kids.
- 00:58:24Couple of you have kids. Okay, what? What is the age cut off for school entry?

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00:58:31What is he? I just say that kindergarten kindergarten, this kindergarten

Bapu Jena

00:58:39five. So you have to be in depending on your state like in our State. You have to be five years old by September, one to enter, Kindergarten, if you turn five on September fifth, you have to wait a year to enter kindergarten, so you're going to be the oldest in your class. What does that have to do with Adhd?

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00:58:58Younger kids?

Bapu Jena

00:59:02Exactly. Right. So this is a paper we had in the New and Journal in two thousand and eighteen so four years ago, almost, where we looked at the birth month of the child, and what we showed was that kids were born in August

- 00:59:21in States of the September. One cut off kids who were born in August are about thirty percent more likely to be diagnosed and treated medically with a medication for Adhd compared to kids who are born in September. They're basically identical, separated by a couple of weeks of birth. And the reason why is that
- 00:59:38an august born child is the youngest kid in his or her class. So when they behave inattentively in class,

- 00:59:46the teacher sees that and says, All right. Well, maybe this child has adhd. That is a conversation with parents. Parents have a conversation with the doctor. Next thing you know, that child is about thirty percent more likely to be diagnosed and treated with Adhd for Adhd, when, in fact,
- 01:00:01what could be going on is this biologically? That Kid is almost a year younger, and therefore less mature than his or her peers. So this study really spoke to the subjectivity of that diagnosis, and also actually gives a practical fix like. So if you're a psychiatrist and you're evaluating a patient young young child for adhd
- 01:00:22knowing something about when they're born, might be useful like you should automatically have a filter in your mind, saying, Okay, if this child is born in August, I should have a higher threshold for calling this Adhd Um Good.
- 01:00:37What is this? A photo of
- 01:00:40pumpkins? Exactly. What does it make you think of
- 01:00:44Halloween, Halloween? All right. What ideas come to mind when I, when you see the word Halloween.

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01:00:50So what do you think you think Diabetes complications go up? Yeah,

Bapu Jena

01:01:00interesting. They don't go up, by the way. So this is unpublished. But I don't want to just show you all the sort of great assets I want to show you what happens when the rubber hits the road, and things don't work out as you might think. So We looked at whether or not hospitalizations for Dka or uh hyper Glycaemia go up after Halloween. We don't find any evidence of that at all. Um!

- 01:01:22What happened? What ideas come to mind if I tell you the words Halloween and adhd any ideas come to mind

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01:01:29injuries.

Bapu Jena

01:01:39I I think that was it. They're connecting kids just running around uh got you got to? Okay, So kids with eighty-eight, having more injuries, as after Halloween, or during all you perfect, Right? Good. We could do that. We haven't done that. What else for concentration? In school? Uh-huh. So maybe concentration gets worse interesting.

- 01:01:58Um
- 01:01:59might be able to see that if you had certain types of data um on school performance, but it'd be hard because they have to be tests that are administered right around that time. What about Halloween and diagnosis of Adhd? Any ideas come to mind?

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01:02:14Maybe it would go up. They're just full of sugar because of where that falls in the school year, but, like it's a certain amount of time into the school year where teachers are maybe making more referrals. Um, for like being more concerned because they've had some time with students in their classroom. So it just happens to be around Halloween. Adhd diagnoses go up

Bapu Jena

01:02:35good, good. And so the way you could address that issue is that

- 01:02:40if there's something specific about Halloween, you should expect to see something like literally right around then. But if it's a more generalized phenomenon where, you know, you get to know what's going on with the child, you'd expect that to see some gradual changes, maybe around that time after the child has been in school for a couple of months.
- 01:02:56So what we do actually is, this is unpublished, so please don't tweet about it, or you could tell your friends about it. But Don't spread it all over social media and take snapshots. But what we what we basically looked at is whether or not rates of Adhd diagnosis go up on Halloween,
- 01:03:13and the intuition was on Halloween. Kids are very excited, and they could be excited because the candy or they could be excited, because about what's about to happen in the evening with trick or treating,
- 01:03:24and what we find is probably actually that second thing. So we see that for doctors visits by kids by day of week, relative to Halloween, there's an increase in Adhd diagnoses on Halloween compared to the surrounding days of the week, and we're excluding instances where Halloween happens on a on a Saturday or Sunday. So these are weekday Halloween instances, and but there's no increase afterwards. So this is not about going to Halloween trick or treating getting candy, and then being revved up in the office
- 01:03:53in the days subsequent to Halloween. It's really, I think, sort of an excitement effect.
- 01:03:58Well, i'll also say that we show that the effect ha is larger when it's really nice weather in that city in a given year. So, for example, this year in Boston, there was really nice weather. There were more kids trick or treating outside than last year. Um! In a few years before the pandemic, what is quite rainy outside, just by chance, just randomly. And so what we show is that when it's nice weather outside there's an increase in the Adhd Halloween effect.
- 01:04:26Then let's say when there's bad weather outside, so it's sort of points to this mechanism that it's the excitement about what is to come ahead? Um! That might lead kids at the margin. So this is not a a child who has no signs or symptoms of Adhd and a doctor then says you have a H. That's not what's happening here? It's going to be situations where maybe the doctor, the parents have been thinking that there could be something going on here, and really at the margin they get pushed over because of what they observe in the clinical encounter.
- 01:04:55Um in the office.
- 01:04:58All right. Let me do. Maybe one more example, and then i'll pause as we go to. I'll just leave some room for some questions. I I'm intentionally leaving a little bit less time for questions, because This is sort of interactive. But um! This is the last one I'll do. Um.
- 01:05:11I've done a lot of work looking at gender disparities in in pay and promotion and medicine. We've been fortunate to have data from a company called Doximity.
- 01:05:20Uh. You might be familiar with documents, I think, if it's like sort of the linkedin of medicine. And so we have information on who doctors are, where they trained, how many publications they've authored, whether they've run a clinical trials. We've linked that to information on how much revenue they bring in for Medicare.

- 01:05:38Um. Lots of information about these people, so we can really kind of robustly say, for comparing men and women in medicine of the same rank, of the same years of experience, same specialty, same sort of research and clinical productivity. One hundred and fifty.
- 01:05:52Um! What do we find? And we find that men still get promoted faster, and they get paid more um than women, even when you're making sort of um equal work for equal pay sort of analyses. Now, one thing that comes up in these sorts of questions is all right. Are there. Differences in salaries can often be negotiated. So our promotions are sort of things that are negotiable. Okay, I want to get promoted now, or I want to wait a year to uh. One thing that comes up in these questions is whether or not there's difference between men and women, and how they promote themselves, and there's a lot of ways you could study that.
- 01:06:21But I want to focus your attention on one particular way. Imagine you have data from pubmed,
- 01:06:27and you have data on five million abstract from pubmed. You know the authorship of the author. So you know who the office are. You know their gender, and you have the actual abstract. So you know the text of the abstract. What ideas come to mind, for whether or not men might promote themselves or their research differently than women.

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01:06:49Sometimes you can have like split authorships with primary authorship or kind of where you fall into the authorship ranking.

Bapu Jena

01:06:56Yeah, So you could use the authorship order to maybe assess this. But that challenge there is, you know, that sometimes proxies for who did more work than not, which is a little bit different than sort of promotion. It's like it could be that there's different levels of work that we're done by different authors. Um, But that's one thing you could look at the author ordership or split off the ship. Good! What about the abstract? Think about the text that's in the abstract

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01:07:21look for keywords. So there are words that maybe more

- 01:07:25uh
- 01:07:27ways of saying the same thing, but in slightly different ways. So if you're describing the outcome of an experiment you might tend to use language that is stronger, or is more cautious and kind of how you're projecting your findings.
- 01:07:42And if you were to correlate that with the presumed gender of the first author, and that's potentially the author of the abstract. You could
- 01:07:52look for patterns in language. But Don't, we already kind of know
- 01:07:56about that.
- 01:07:57That's a good question.

Bapu Jena

01:08:09Yeah. So we do know something about this in in medicine, to some extent and in economics. People have done some work, and we had this work a few years ago. This is the British Medical Journal,

where we look at about five million objects. And here's a couple of examples just to give you a sense. So the first article is by Daniel and Christie.

- 01:08:26Um, uh, we presume them both to be women. In the second article is by Matthew and Oleg. Those are both um uh Men's names, and the second Arthur. Second article, which is by sort of a male male, first, last author team, if you will, they describe work that's promising, unique novel,
- 01:08:44and of course remarkably assuring. So in case you were in, you had a little doubt in your mind, or whether you should be assured or not, you should be assured by this work. Um, you do that systematically over five million articles? Or so. What you find is that male
- 01:09:01male-male teams first officer last author which are calling your male lead authors. They're more likely to use terms like novel, unique, promising, favorable, et cetera. And, by the way, this is for articles of similar quality. So we're holding constant. The article, the journal in which the article is published. So we're saying, Okay, these are all articles published in the Journal, Science, or in the journal Nature
- 01:09:24and we're holding constant the citation. So articles that have been cited similar numbers of time. So it's, therefore, presumably have similar impact. Scientifically,
- 01:09:33we show that even holding those constant men use terms uh differently. Um, um than women. So this is sort of a big data way to look at whether or not the language that is used um differs, and what impact that might have. So let me. Um,
- 01:09:51i'm just gonna show you one more thing just for fun I could. We could go on this for hours. Uh everybody know this movie fast and furious. Yeah, So you might wonder whether or not speeding goes up after fast and furious movie releases
- 01:10:07it does.
- 01:10:09So if you look at the right side of this red line is the weekends basically around the weekends after fast and furious movie releases.
- 01:10:17And of course, you know, if you're interested in setting the effect of media on behavior, it's hard to study, because people who watch fast and furious movies are different than people who don't. But here you have a nice natural experiment where this movie comes out
- 01:10:31that rewards or talks about a very specific type of behavior. The title of the movie is fast and furious. Not. It's not slow and deliberate, right? So you see the kind of behavior that results from that. So this is sort of a calls a way to study this question of whether or not media impacts the way that people behave. So. Um, let me stop there. Um!
- 01:10:55I hope this was fun.
- 01:10:56I hope you got a sense of the types of work that uh people like me do. Um. How natural experiments can be interesting, but also tell us things about what works and doesn't work. And uh, in in health care, and I also just want to highlight like you may not have any experience of these methods or these types of questions, but in real time you were able to come up with some really interesting ideas on your own. So
- 01:11:18for those of you who are in this type of work, i'd I'd encourage you to think more about it. You could always email me if you've got a sort of a nice, interesting question. I'm always interested in those kinds of ideas. Um. So I'll stop here for maybe take a couple of questions.
- 01:11:32If you have any.

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01:11:34Actually, Jenna, does this? Does any of this make you feel like slightly uh

- 01:11:38we need to depressed. It feels like there's lots of uh badgers outside of our control. Our factors that we never even would have thought of as being factors. I thought about that when you were talking

about like um kind of the same name as a police officer, that he just feels kind of a little bit hopeless about how we're going to fix some disparities. We see It's almost like we're not even. You know what is,

Bapu Jena

01:12:01what are the factors in part? Yeah, I mean. So I think there. So the way I think about this research, and in fact, the title of the talk is random Acts of medicine is we? We have a book that's coming out, which is exactly about this point, which is sort of the role that chance plays in our lives, and we frame it not as is as you did, which is like all right. It's hopeless, because there's these things that are out of our control, that shift us into different types of care and different outcomes in ways that we

- 01:12:30we just could, we could, we would hopelessly be able to know about here. There's actually some things that are sort of predictable. Now, if you sort of know where to look and how to think about the issue. So you know, for example, or we should know, for example, that care might change When cardiologists are out of town.
- 01:12:44It turns out for the better. Um. We know, for example, what might happen during Marathons. Now those might be random and unexpected events, but once you start to find out more about them. You could actually do something about it. But I think what I like about this type of work is a It is sort of interesting because it talks about how chance or accidents in our lives. These random events have impacts, but also in some cases can help. You understand about what works, and what doesn't work in health care. So there's something to be
- 01:13:14from it in a way that it would otherwise sometimes be difficult. You think of like a shortage of a drug like norepinephrine that you use in the Icu just a random shortage nationally. What if you saw that mortality and sepsis patients goes up, which you do see. There is a paper about that in Jama
- 01:13:32that tells you that norepinephrine works. Maybe you don't have to do a randomized trial, or you can rely more heavily on that sort of quasi-experimental, observational data um that would be would be useful.

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01:13:45Thank you. I know. I think, after Class Mills had his virtual hand up in a moment ago,

James Platts-Mills

01:13:51did you? I did. This might be my last grand rounds after accusing distinguished cardiologists having worst possible outcomes. So I think I have to ask the question while I'm still here. But you know, actually my question was going to be about exactly that using um drug shortages as natural experiments,

- 01:14:08I was just curious about yeah, just other examples of recent shortages that could be set up to understand role of different medications. I guess there's you talked a lot about Adhd. I know there's a

Bapu Jena

01:14:19significant at all. Yeah, I mean, this is like to me. This is sort of a fundamental question like there's so many medications that we use where we have low quality data. Now, just imagine you were to collect data on sepsis patients and look at whether or not they got norepreneurs versus not. And you control for a bunch of factors, and you run a regression.

- 01:14:39You might find in that regression that Norepinephrine use
- 01:14:44positively associated with mortality.
- 01:14:47You can't look at that and say, Oh, well, the norepreneur is causing mortality right? Because who do you use the drug and you use the drug and people who are at high risk of mortati? Right? So it's a it's a confounded relationship. But if you use a natural experiment, say all right. Well, maybe there's a shortage uh one day, or maybe there's certain patients who have a counter indication to that drug, So they have to use a different drug, something that's randomly,
- 01:15:12randomly driving the use of one drug versus another, and therefore isn't correlated with the the mortality risk
- 01:15:20uh, or the outcome that you're worried about. I think that there's a whole slew of studies that one could do, using these sort of natural experiments with medications to better understand what medicines work, and what settings, and in a way that is difficult to do for a lot of different reasons and randomized trials.

Unknown Speaker

01:15:39Okay, Cool.

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01:15:42Okay. I'm going to toss it out to the room here.

- 01:15:45Well, we did have a couple of thoughts on our little um chat here. Let me see uh, we had rates of surgical complications on the days after daylight savings. That could be an idea that we Don't find the effect. Okay? Oh, very interesting.

Bapu Jena

01:16:03I will just say, by the way, Um,

- 01:16:05we've also looked at rates of surgical complications and mortality
- 01:16:11on surgeon's birthdays.
- 01:16:14And we yeah, we had data on. You know, there's It's amazing what type of data is out there. But we actually had data on physicians, birthdays and surgeon's birthday in particular, and we can show in this very
- 01:16:25clean event study. If you look at all the operations that a surge is performing over A. Let's say, a month period, and you plot the daily mortality rate of the patients who they operate on their birthday. It spikes up,
- 01:16:38and it goes right back to the baseline, and the composition of patients is not any different. It's not like They're operating on fewer patients or higher risk patients.
- 01:16:48Um, but it's, you know. We think it's about distraction, right like you, thinking you're talking to the team about something out. If you're doing it, your birthday, Maybe it's weighing in your mind. Maybe you're rushing to get out to go celebrate whatever it may be. Um, so like. Did we? Did You look at operative times on average. And did that
- 01:17:08change similarly? Great question great. So we couldn't look at that, because we're using uh claims data to do that. We need to use either a surgical registry database. But there are some like this squip, or that we've used the mpog data to look at overlapping surgery. Um, But there we don't know the

surgeon's birthdays because we don't know the identifying information on the surgeon. So in the data that we have identifying information on the search, and we know their name. We know their birthday. We don't have information that allows us to say whether or not the surgeries are

- 01:17:36are shorter or longer, but that would have been a way to test that particular mechanism. So it's a great question.
- 01:17:45I see my hand one up. There's the uh, the July first effects like with you. Intern starting that actually began out in the data. Yeah. So we We've looked at this. There's a lot of people who've looked at the July effects uh effect, and it's sort of mixed
- 01:18:00uh There is actually a systematic review, I think, by Bob walked or at Ucsf, if I remember correctly, but there are studies that suggest that it. It exists probably the higher quality ones point towards an effect. What we did was when we said, All right, well look
- 01:18:17it doesn't make sense to study the July effect in the General Hospital population, because most of the patients that you treat on the general medical floor.
- 01:18:25You know they're gonna be fine. They're not gonna They're not dying right. They may not be well, but they're not dying. They're not at high risk of mortality from small uh small deviations in in, in in good care that might occur during July, but it's high risk. Patients who might be more susceptible. So what we said is, let's look at the highest risk. Patients in the hospital. The people who are in the top, let's say third or quartile of predictive mortality,
- 01:18:51and only focusing on them, do we see a July effect? And we actually do see a pretty large July effect in that group, and the idea is that for people who are really sick, even small deviations and care from the standard could have an impact on mortality, whereas for the typical bread and butter patient
- 01:19:09um, you know, if you dose the lasics wrong for like a a general heart failure patient. You give ten uh you give twenty instead of ten or forty instead of ten. You're probably unlikely to lead to a mortality event. Um, but it might be more likely uh for sicker patients.

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01:19:29I wanted to go back a little bit to the discussion where we're having about language um and gender and abstract

- 01:19:36Um! Has there been any work to look at? If you do have a female lead author who is using those words um to see. Is there an impact on a journal impact factor or on publication rates? Partially?
- 01:19:52What if my Bi is looking at? That would be that. Um.

Bapu Jena

01:19:56There may be a tendency to be less likely to take seriously when we use those terms rather than focusing solely on. That's a great question. So let me tell you the answer I do know, and the answer I don't know. And then there's some related research to this point.

- 01:20:12Um. So we've looked at whether or not the use of those terms sort of predicts higher citations down the line, and it seems to um Again, it's hard to separate. Whether or not. The research is actually more,
- 01:20:26you know, important or um whatever like, you know, novel um. That part is hard to do. But the use of those terms does predict downstream citations, and it could be because the research is more is truly more impactful. Um, we do a couple of things to try to look at that. But we think part of it is just because the language is shaping people's perceptions of the novelty of the research. But we have not looked to see whether or not there is a sort of differential response based on the gender of the author.

- 01:20:56Um, but your question does make me think about this study by um Heather Sarson, who's a economist. She was at the University of British Columbia. She has this really fascinating economics paper. It's not in a medical journal. But what she shows is that so? She looks at surgeons,
- 01:21:14male surgeons, and female surgeons. She looks at instances when the surgeon has a bad event. So the patient dies on the day of surgery. So that's uniformly would be considered a bad event, and what she shows is that when a female surgeon has a bad outcome like that.
- 01:21:32The referrals to that surgeon fall, and, moreover, the referrals by the provider that refer to that surgeon fall to other female surgeons in the future; whereas when a male surgeon has a bad outcome,
- 01:21:47referrals to that surgeon, and referrals to male surgeons by the referr who refer to that male surgeon Who' the patient they don't fall. And so the interpretation is that when a female surgeon has a bad outcome,
- 01:22:01the referring doctor interprets something from that, and says, Okay, maybe this is not a great surgeon,
- 01:22:07whereas when a male surgeon has a bad outcome, the referring doctor does not have that interpretation. It says maybe this is a sort of the cost of doing business. This happens when you do surgery, so it's sort of interesting. Uh, and to me, honestly, it's quite scary that that that you would see that response. But it's empirically a pretty solid observation. So for those of you. It's in the research. There's probably a lot of different ways. You could think about how that bias plays out in clinical practice. But that's one particular one
- 01:22:36fundamental attribution error. Yeah, Yeah, exactly. Yeah. It's an attribution here that's exactly right.

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01:22:42We're learning on cognitive biases. I'm happy. Chelsea said that

- 01:22:49Yeah, and Dr. Garrett Bakerman said she was told to uh learn to write like a man. Apparently her bi was right.
- 01:23:01And
- 01:23:02okay. I I think that's how we get from the group here in the room, and there's nothing else kind of trickling into the chat. This is a great talk. I really appreciated it.
- 01:23:11Um, Yeah, you got a lot of thumbs up here in the audience. So very I appreciate it. Yeah, okay, Dr. Jenna, you have a great day and thanks for spending your afternoon with us. Of course. All right, be safe, everybody take care.