

## Probable Causation, Episode 54: Carolina Arteaga

**Jennifer** [00:00:08] Hello and welcome to Probable Causation, a show about law, economics and crime. I'm your host, Jennifer Doleac of Texas A&M University, where I'm an Economics Professor and the Director of the Justice Tech Lab.

**Jennifer** [00:00:18] My guest this week is Carolina Arteaga. Carolina is an Assistant Professor of Economics at the University of Toronto. Carolina, welcome to the show.

**Carolina** [00:00:26] Thank you so much, Jennifer. Happy to be here.

**Jennifer** [00:00:29] Today, we're going to talk about your research on how incarcerating parents in Colombia affects their kids educational outcomes. But before we get into that, could you tell us about your research expertise and how you became interested in this topic?

**Carolina** [00:00:41] Yes, so this is actually the second paper I've written. And the first paper I wrote was something about education. And I really saw myself as writing in that literature for a very long time. So I was actually exposed to this topic mostly from movies and documentaries when I moved to the US. I was completely new to this idea of the extent of the incarceration problem in the US, and I was just shocked by everything I was learning. I remember watching the Netflix documentary the 13th, and the question that remained in my head was what are the intergenerational effects of all of these very severe and systemic problems that I see in the US? So that's how I started thinking about this question. It's interesting because it's not coming from being exposed to the crime literature, but it was more about the culture, the movie scene around incarceration in the US.

**Jennifer** [00:01:42] That's why it's important to occasionally stop reading academic papers if you want to come up with new ideas.

**Carolina** [00:01:48] But then you need to combine that with the fact that, OK, it was like, what is the intergenerational effects of all of incarceration problem in the US? In my head, I already knew about what data I could be using or how could I tackle this from an academic point of view. So the connection of like the real world problems, plus like the instruments from the field was kind of the thing that allowed me to put these two things together and write a paper on this topic.

**Jennifer** [00:02:13] I love it. OK, so your paper is titled, "Parental Incarceration and Children's Educational Attainment." You're considering this topic in the context of Colombia. So give us some context. What's the prison system in that country like and how do incarceration rates and sentence length differ from those in other countries?

**Carolina** [00:02:29] Yes. So so the first thing I want to point out that is very different in the Colombian context is, is the crime rates. So the homicide rate, for example, in the US is 5 for 100,000. In Colombia, that number is around 25 per 100,000. So it's a much more violent context. However, this is similar to the one in the region. So the Latin American average is very similar and this is also similar to other developing countries. But it is important to remember that this is a context with much higher crime rates. Now, that combined with the fact that incarceration rates in Colombia are much lower than the US. So the current incarceration rate is about 236 per 100,000 compared to the one that is over 700 in the US. This is very important to understand that the marginal criminal that is

entering prison in Colombia is probably more negatively selected. There is a much more serious criminal than the marginal criminal entering it in the US prison system. And another very important difference is that when you go to prison in Colombia, you go for a very long time. So to deal with overcrowding prisons, you only serve prison time if your sentence is over four years, so that by default is the minimum prison sentence. And that's going to lead to an average of around 4.4 years in prison, which is much higher than the US, which is already a country characterized by very long sentences. But it's going to be even longer than other contexts, like Scandinavian countries, where, for example, in Sweden you go to prison on average only for three months. So it's going to be a different context in what the prison experience is and who is that typical person going into prison.

**Jennifer** [00:04:10] And so if you're sentenced for less time, if you're sentenced for like three years, are you just on probation for those three years?

**Carolina** [00:04:17] Exactly, yes.

**Jennifer** [00:04:18] OK, interesting. Yeah, very different. And tell us a little bit more about the consequences of being sent to prison. Are families able to visit? And when someone gets out, does a criminal record affect someone's access to things like public benefits or employment?

**Carolina** [00:04:31] OK, so when you're in prison, you're allowed visits by family members or friends who are adults once a week. And you're also allowed a visit once a month from children. So adults can go once a week, but children can only go once a month. Now in terms of what happens after, you don't lose access to any public benefits as a result of a criminal record, and it's not common for employers to check for criminal background. Later on, I'll tell you about the data I use. And the data uses just a website where you can just check if someone has a criminal record, but this is not something that employers use. What they do use, which is very common, is they will go to another website and check if currently you have charges pending or police is requesting you for whatever reasons. But it's not common for employers to look for your past criminal records.

**Jennifer** [00:05:26] OK, so incarcerating an individual obviously affects that person, but it also affects their family and community. And in this paper, you're interested specifically in how it affects their kids and in particular how it affects those kids educational outcomes. So what are the various mechanisms you have in mind for how locking someone up might affect their child?

**Carolina** [00:05:45] Yes. So when I started thinking about this project, what I had in mind was, well, you are losing someone that is probably providing income to the family. So there's going to be an income decline to a household that was probably already disadvantaged to begin with. So this is going to be additional financial hardship and that's going to create trouble for kids. I was also thinking about the increased stress, not only because of this declining income, but also related to family separation. So I thought that these two things, were going to be the most important drivers of what I was going to find in kids outcomes.

**Jennifer** [00:06:20] And before you started writing your paper, what had we known about the effects of parental incarceration?

**Carolina** [00:06:26] So there was a huge literature on on sociology and psychology documenting how hard it was for children who experienced parental incarceration in terms

of their future education, mental and physical health, and also their own interactions with violence and crime. In the economics literature, there wasn't that much, but there were three papers. They didn't have bulletproof identification, but they were really worried about endogeneity seriously. And by this, I mean the fact that families that experience incarceration are not similar to families that don't experience parental incarceration. They are negatively selected on a host of different variables. So the fact that we see a difference in these type of families, children and parents, may not be because of the effect of incarceration, but because of the underlying differences that were there before incarceration. So the three papers that looked at this, they didn't find these very large negative effects. Either they find no effects or positive effects. So this was already surprising for me that the very small number of econ papers that we're looking at, these didn't find those negative large effects that were found in other disciplines.

**Jennifer** [00:07:39] So three papers. But given the importance of the topic and how much attention it's gotten, that doesn't seem like very much. So why didn't we know more than we do or more than we'd like to before you started this project? When you first started thinking about this topic, what were the challenges you had to overcome in order to measure the causal effect of incarceration on the children of those who are incarcerated?

**Carolina** [00:08:00] Yes. So there are many challenges to overcome to make progress on this question. So the first is that you need to follow the incarcerated population. And this is usually a population that we don't know much about. So that's the first thing. The first thing. But then second is you need to be able to link that population to their children and be able to follow a relevant outcome for the children. But of course, even if you have these two problems solved, that's not enough, because then you have the endogeneity problem that I described before. So this is just that incarcerated parents are different from not incarcerated parents even before they go to prison. So we cannot say that the difference we see in kids from incarcerated parents versus those who don't have incarcerated parents are the result of incarceration because they were different to begin with. So for this, we need an instrument or we need some exogeneity in the decision of going to prison. And luckily in the incarceration context, there is a very good candidate for this type of identification.

**Jennifer** [00:09:02] Yeah, so sort of the ideal experiment we'd like, from a research perspective, is to randomly assigned people to prison and not. But of course, that's terribly unethical and would never happen. But it turns out all the time you see randomization of cases to judges. And that is what you find in your context, is that you're going to use the fact that cases are randomly assigned to judges as a natural experiment. Which brings us to how the court system in Columbia works. So tell us about the courts. How many courts are there? How many judges are there? And how cases are assigned?

**Carolina** [00:09:30] So first, the country is divided in 33 judicial districts. A district is either a large city or a state or a combination of states. Depending on the population size. Each district is divided then into three tiers of courts that see different crimes according to their severity. So at the district court tier level, there're going to be many judges and this is where the randomization is going to happen. So in the largest court district level, we're going to have as many as 55 judges, but we're also going to have that in many others, we only have a couple of judges to randomized with. So once a case enters into the system, there's going to be a software that randomized to one of the different judges that currently are working at the district court level at the time.

**Jennifer** [00:10:20] And so walk us through your empirical approach. How do you use the way that cases are assigned to judges to isolate the causal effects of incarceration?

**Carolina** [00:10:28] OK, so we start with the fact that judges in the same district tier have a similar pool of cases. Well, this is not a fact. This is something that we actually need to prove. But for the time being, let's assume that the pool of cases is similar across judges. But then as any human decision, some judges will deliver different verdicts for some cases, even if the cases were the same. More specifically, some judges tend to be more lenient or more stringent than others. So what this means is that if there is a case that is not clear cut in either direction, if that case is assigned to a lenient judge, that person is probably likely to be free. But if that person is assigned to a harsh judge, that person is probably going to prison. So it's kind of like we actually have for a selected group of cases, those that are not clear cut, it is almost a lottery. And for them it's going to be very important who is the judge that they're assigned to. So for for this group of cases, we actually have a very good experiment in which we can see what is the effect of going to prison, given that the decision of going to prison for you was in fact completely exogenous.

**Jennifer** [00:11:46] And what data are you using for this?

**Carolina** [00:11:48] So I'm pulling data from different sources. I started with sociodemographic data on households with children. So this is a huge dataset in Colombia that we called the census of low-income population. And this is data that covers around 70 percent of the population. And is- the government uses this to identify poor households to be able to target different social programs. This is great because this gives me data on this link between parents and kids. And then what I do next is to identify all of the parents in that sample and to search individually for their criminal records. So I'm able to locate around 100,000 criminal records for this population. And then I'm going to connect these to their children and I'm going to track what's happening in terms of educational attainment of the children of those parents that I found with criminal records.

**Jennifer** [00:12:44] And so the outcome measure you're you're focused on here is educational attainment. How do you define that?

**Carolina** [00:12:49] I'm going to look at final educational attainment, capped at high school.

**Jennifer** [00:12:53] And so educational attainment is the number of grades you've completed?

**Carolina** [00:12:57] Yes. It's the number of grades you're completed. And for this population, which is, again, the population in Colombia, this is going to be the relevant margin for their maximum educational attainment.

**Jennifer** [00:13:09] Great. OK, and so your empirical strategy here is an instrumental variable strategy. And so it's going to tell you the effect of incarceration on the kids of the compliers. So in other words, that's the kids of individuals for whom it matters which judge decided their case. So you were saying earlier, like, you know, there are some cases where, you know, which judge is hearing the case is actually influential. They're kind of on the margin here. And there are other cases where it's not going to matter at all. Every judge would sentence them or every judge would not sentence them. So it's these middle people.

**Carolina** [00:13:40] Exactly.

**Jennifer** [00:13:40] And so that's the important thing to keep in mind about the strategy, is that that's the group that this strategy is going to tell us about. Your results are going to be relevant to them.

**Carolina** [00:13:48] Exactly.

**Jennifer** [00:13:48] So who should we think of as the compliers in your context?

**Carolina** [00:13:51] So exactly. So you're completely right. So those whose incarceration sentence would have been different under a harsher or a more lenient judge. And we should think about these people that are going to prison for drug related crimes or for domestic violence type of crimes or for medium sized property crimes or not very severe violent crimes. So these are the type of compliance we're going to be able to say something about. So more serious type of crimes, those are going to be going to prison regardless of judge assignments. So we're not going to be able to learn anything about them. Or misdemeanor type crimes or lesser crimes also, we won't be able to learn anything from them because they're going to- not going to be sent to prison regardless of judge assignment.

**Jennifer** [00:14:39] And I guess, again, from our earlier piece of our conversation, these people who are sort of on the margin of being sentenced to prison or not are going to prison for somewhere around four years?

**Carolina** [00:14:49] Yes. Yes.

**Jennifer** [00:14:50] OK, great.

**Carolina** [00:14:51] So there is always the possibility to shorten your sentence for good behavior and things like that. But the nominal sentence is not going to be less than four years.

**Jennifer** [00:15:01] OK, great. All right. So let's talk about the main results. What do you find is the effect of parental incarceration on the educational attainment of their kids?

**Carolina** [00:15:09] So I find that on average, parental incarceration increases the educational attainment of children by .78 years. And with an average schooling of almost eight years, this is an effect that corresponds to a 10 percent increase in education as a result of parental incarceration.

**Jennifer** [00:15:29] Increase. So going to be the opposite of what most people might think coming in here so that you're finding that the kids actually stay in school longer.

**Carolina** [00:15:36] Yes. Yes.

**Jennifer** [00:15:38] OK. And you consider whether this effect differs across different groups. So what do you find when you look at that?

**Carolina** [00:15:44] Yeah, so unfortunately, I don't have enough power to make precise estimates about two groups, but I do find that the benefit of incarceration is larger for boys than for girls. And this is actually a result that is consistent with previous research in

economics, but also in psychology that documents that boys are more vulnerable than girls to negative experience in the household. So this is interesting. Now, another dimension of heterogeneity that is very interesting is, well, the design of these judge instruments allows us already to think about, well, when more lenient judges are sending people to prison, this means that the person that they're sending to prison is probably more serious criminal than the criminal that is going to prison under the harsher judges because they're sending a larger pool of criminals. So what I do find is that the benefit of parental incarceration is higher for those that are going to prison under the most lenient judges. So this means that the benefit is higher for the more severe criminals. And this is also very interesting when we think, well, what happens if we were to increase the level of incarceration? Well, this would mean that we are incarcerating less severe criminals, and that means that there is going to be lower benefits and probably cost of incarcerating those people.

**Jennifer** [00:17:09] Yeah, so that piece definitely, I think, goes in the direction people would expect. Right. So that the criminals that are sort of closer to the ones everyone would lock up, there seem to be the biggest benefits to removing them from the house.

**Carolina** [00:17:21] Exactly. Exactly.

**Jennifer** [00:17:22] OK, and then you also consider the effect of parental incarceration on the environment the child is living in, which helps us understand mechanisms a little bit. So what do you find there?

**Carolina** [00:17:31] So I find that there is a large increase in labor force participation of the spouse, which is usually a woman. Because around 80 percent of the incarcerated parents are fathers. I do see that there is a worsening of household income. So this was kind of the main mechanism I was thinking about before starting this project that could explain why children could be worse after parental incarceration. And as I told you, I do find positive effects, but it's not that there is not an income channel happening. I do see that income is falling. I see that there is a decrease in the probability of male as head of the household, which is natural again, because most of the parents are men. I see also an increase in the probability of living with grandparents. So I see all of this as indicative of there are huge changes in the household that are happening in a very short period of time. And I interpret this as a possibility for the household to reoptimize from a situation that it was suboptimal, from a situation that was problematic to some of the people in the household. And this allows them to move to a new equilibrium that on average is beneficial for the child.

**Jennifer** [00:18:45] That's interesting. Yeah. So to kind of put in other words I guess, this is essentially just a shock to the household that isn't just going to be removing a person.

**Carolina** [00:18:54] Yes.

**Jennifer** [00:18:54] It essentially becomes an opportunity for everyone to figure out a new normal. And it turns out that at least on average, that new normal is better for the kid, at least when you're looking at educational outcomes.

**Carolina** [00:19:07] Yes. And I do think that the fact that sentences in Colombia are very long plays a key role in this reallocation or reoptimization of the household. So if this shock was something that was going to be just a couple of weeks or a month or two, all of these changes in the household probably wouldn't be happening. But the fact that this is a medium term thing, this is something that we need to adopt because we won't survive with the savings that we have or that we don't have, we need to make permanent changes in

the household to deal with this new situation. I think part of that is related to the fact that sentences are long in this context.

**Jennifer** [00:19:44] Are you able to say more about how often the kids wind up living with their grandparents or with other people? Do you have any more information on that?

**Carolina** [00:19:52] So the initial level of of being in an intergenerational household is actually quite large. So around a quarter of children already were living with grandparents, and I see that there is an increase of around 10 to 15 percent in this. But I have to say that this type of analysis is done on a selected subsample of my data, so this does not mean that this is going to be the average effect. There is really not much more that I could say.

**Jennifer** [00:20:19] Got it. You can't push it too far. OK, so there have been a few other papers, I think, on this topic that have come out since you first started working on this study. Can you tell us a little bit about that other work in this area?

**Carolina** [00:20:32] Yeah, so contemporaneous to my work there were three other research initiatives looking at the same question with the same approach. So there is a paper in the US that was recently published and there is also a paper for Norway and for Sweden. The US paper finds, broadly speaking, positive effects of parental incarceration. And the Scandinavian work finds either negative effects or null effects.

**Jennifer** [00:20:57] And we had Jeff Weaver on Probable Causation, gosh, a couple of years ago now. So I'll post a link to that interview in the show notes as well. And so these papers do find very different results. So how should we think about what's driving the differences across these different studies?

**Carolina** [00:21:13] So I think there are two things that are particularly important. One is Colombia has a much higher crime rate than these other two contexts. And I told you, I gave you the numbers already that from comparing Colombia to the US. But if you were to compare Colombia to the Scandinavian countries, that gap is even larger. So when we're thinking about who is that marginal criminal, that is where we are having indendification from, it's going to be a very different profile, the marginal criminal in Sweden versus the marginal criminal in Colombia. And if we connect this to our previous conversation about marginal treatment effects, this will say that if you're incarcerating a less severe criminal, you're probably going to find a negative effects of parental incarceration. So this can be a reason why that's what we see in the Scandinavian context.

**Carolina** [00:22:07] And also going to prison in these different contexts is a vastly different experience. So as I was saying before, in Sweden, on average you go to prison for three months and the conditions are very different. And this probably doesn't allow the type of reoptimization of the household that I was explaining a couple of seconds ago. So what is happening to the household is very different. And also what type of households and what type of criminals we're talking about is also very different.

**Jennifer** [00:22:37] It also feels like there's a different counterfactual too, right. Like these different places are just—especially when we're talking about Scandinavia versus the US and Colombia—I think of those being as two opposite sides of the coin, right, in terms of like the general level of social support and the social welfare system. And like all of that, these general benefits, the family, it just seems like there's several dimensions here on which the treatment is different. The experiment is like it's- you're affecting a different type of person and then the counterfactual's also different. And so, you know, you wind up with

just these very different results, which can be confusing to think about, especially as we think about kind of where we go next.

**Carolina** [00:23:19] Yes, exactly. And the risk at which children are of dropping out of school in Colombia and probably starting to work in the informal sector, this is also something that is very different from the other two contexts, even more so relative to the Scandinavian context. And one of the things that I'm going to say that is a result of this study is that there should be more involvement of the government in providing subsidies and in providing assistance and in giving households more help in dealing with their multidimensional layers of disadvantage. And this is also something that is very different in the Scandinavian context.

**Jennifer** [00:23:56] So that's one policy implication here. What are the other policy implications of your results and the other work in this area. For policymakers and advocates and practitioners listening, what should they be taking away from this?

**Carolina** [00:24:07] So I think one thing I want to highlight is that the result of this paper does not imply a recommendation to change the level of incarceration. Incarceration is a costly policy tool and a comprehensive cost benefit analysis is not what this paper is doing. And so that's the first point that I want to make here. And then the second is related to this point. Well, we already know from the analysis here that if we were to change that level of incarceration, the person who is at the margin is going to be changing. And we know that criminal that you're incarcerating that wouldn't be incarcerated otherwise, the effect for the children of that criminal, it's going to be less positive or probably even negative. So that's the second thing that I want to point out, that if we were to increase incarceration, we would be starting to see negative effects of incarceration at some point.

**Carolina** [00:25:00] But an implication of this papers is that while we now know that children of convicted parents who are marginally not incarcerated are in a very vulnerable situation and that the government can do more to protect them. So these children are exposed to negative role models and in some cases abusive parents at home and visits and assistance from child protection services or a social worker could identify these cases and could provide some assistance and solutions to some of these situations. So I do think that is a policy recommendation. The fact that we are surprised about these positive results, I think that only shows that we really don't know much about the challenges these children face on a regular basis.

**Jennifer** [00:25:49] Yeah, and there's probably also a lot of variation across kids too, right. Like this is the average effect—and you can look at the marginal treatment effects across people affected by different judges—but even beyond that, there're going to be some kids that- where this has a really negative shock and some kids who have a super positive shock. And then basically what you're finding is what's the net effect in the middle.

**Carolina** [00:26:10] Yes, exactly.

**Jennifer** [00:26:11] So I know that you and other researchers have gotten pushback about your findings. These have been out for a couple of years and they were really surprising. And a lot of people are quite upset about the results and worry about what people might do with them. So I wanted to give you a chance to just respond to those who worry that your research might be used as justification to incarcerate more people or take kids away from their parents. You've already addressed this a little bit. But just head on, what would you say to those folks that worry that your research—even if you don't think your research



should be used this way, you don't think this is the implication—some advocates might use your research in that way. What would you say to that?

**Carolina** [00:26:48] So, yeah, definitely the results of this paper don't imply that incarceration should increase. That's not a result of this paper. But I think the people who have contributed to this new literature, we've read the extensive work outside of economics that has been done, especially in sociology, to create a picture of what are the characteristics of the prison population. And most of this job is done in the US. And I just want to mention some numbers from this literature. So it's been reported that 60 percent of parents in prison reported drug use in the month before their offense. 25 percent reported a history of alcohol dependence. 14 percent reported mental illness. 60 percent of parents in prison had experienced childhood trauma. And they engage in domestic violence at a rate that is four times higher than the rest of the population. So as a child, if you're growing up in this environment, this is imposing huge challenges for kids. And we should at least consider the possibility that for some of these children, some space, at least for some time away from those parents could be beneficial. So this is not to say that this could be for most kids or all the time or all parents, but I think it is important to acknowledge that it is a very grim outlook. And these children are going through many layers of disadvantages and to consider that there could be negative effects from this exposure. And this is what we have, things like foster care. And recent literature has found that there are positive effects of that marginal case going to foster care. So this is not much more different than that, to acknowledge the fact that for in some very severe cases, these children are exposed to very different, difficult outlook.

**Jennifer** [00:28:51] Yeah, and I think, as you were saying earlier, I mean, one way to use these results is, is to just see them as highlighting a vulnerable population. And saying, OK, well, maybe for various reasons, we don't want to actually take the kids out of the home and put them in foster care. We don't lock the parents up. Those are costly interventions. There are many reasons we might not want to do that. But then, given the challenges these kids are facing, there's probably good reason to be pouring other resources into those communities or those households to make sure that the kids' needs are addressed. This is an area where we just need a lot of creativity and investment to figure out what works best here.

**Carolina** [00:29:29] And we definitely need more research because again, the fact that this was a surprise for sure for me when I entered this project, I was not expecting to find positive effects. And I think it was the same about Sam Norris, Jeff Weaver, and Matt. But this only shows that we really don't know anything about the life for these children. And there is- we just need more research on what are the disadvantages that these kids face and what are the most important things and what can we do about it.

**Jennifer** [00:30:00] Yeah. So, what is the research frontier? What are the next big questions in this area that you and others are going to be thinking about going forward?

**Carolina** [00:30:07] So I think it's exactly what I was just saying, just trying to identify what are the biggest challenges in these disadvantaged households and try to design policies to address these disadvantages. Now, a second thing that is missing, at least in my work, is that eventually parents leave prison and some of them are going to go back home. And this poses a new set of challenges for the spouse and for the kids, at least in the Colombian context. You didn't increase your human capital when you were in prison. You probably learned some criminal capital where you were in prison. So the person that is coming back with a whole new layer of problems and situations, and this is something that

governments should try to understand, like what are the challenges that this is imposing to the household and what can we do to help households and former prisoners navigate this process?

**Jennifer** [00:31:04] Yeah, so not only the usual questions we think about when we're thinking about prisoner reentry and helping people reintegrate—we're usually focused there on how do we get them jobs and how do we keep them from going back to prison. But really highlighting this reintegration with the family in the household, too, and how it's going to affect everyone there and making sure everyone's in the best position they can be in.

**Carolina** [00:31:23] Exactly.

**Jennifer** [00:31:23] I agree, it's a place we have very little, certainly at least causal empirical research. Good ethnographic research out there, but not research on kind of what policy effects are.

**Carolina** [00:31:33] And yeah, I mean, the identification challenge there is even harder. So I wouldn't know how to start, but of course, it's something that is very important for policy and for us academics.

**Jennifer** [00:31:47] Yeah. My guest today has been Carolina Arteaga from the University of Toronto. Carolina, thanks so much for talking with me.

**Carolina** [00:31:53] Thank you for having me.

**Jennifer** [00:31:54] You can find links to all the research we discussed today on our website, [probablecausation.com](http://probablecausation.com). You can also subscribe to the show there or wherever you get your podcasts to make sure you don't miss a single episode. Big thanks to Emergent Ventures for supporting the show. And thanks also to our Patreon subscribers. This show is listener supported, so if you enjoy the podcast, then please consider contributing via Patreon. You can find a link on our website. Our sound engineer is John Keur with production assistance from Haley Grieshaber. Our music is by Werner, and our logo was designed by Carrie Throckmorton. Thanks for listening, and I'll talk to you in two weeks.