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### How Can Economics Be Applied to Criminal Justice Reform? (with transcript)

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*Barnes:*

Welcome to Case in Point produced by the University of Pennsylvania Law School. I'm your host, Steve Barnes.

In this episode we will be speaking with Paul Heaton, a senior fellow here at Pen Law, and the academic director of Pen Laws Quattrone Center for the Fair Administration of Justice. An economist by training, his research aims to apply insights from economics to inform studies of crime, courts, and legal policy.

Today we will examine some of the key innovations in these areas from criminal justice reform to medical marijuana laws to help victims of mass violence may be compensated in the wake of attacks.

Thank you, Paul, for joining us. It's a pleasure to have you here. So let's get right into it. If you could, please, and since you're new to in law, talk a little bit please about some of your latest research. Your newest projects that you're working on.

*Paul Heaton:*

Sure. And thanks for having me, Steve. The Quattrone Center is focused on taking a systems approach to thinking about the criminal justice system. So you know often when we think about criminal justice issues it's in the context of a particular case, or a particular defendant.

And one of the things that we wanted to with the center is instead of focusing on individual cases, is important as those can be, to think about some of the larger systemic factors that that feeding into the outcomes in individual cases. So a few of the areas of that I've been doing work recently included work on open file discovery. So this is the process of exchanging information between prosecutors and defense attorneys prior to the adjudication of the case. So that's one area, and there's been some interesting and innovative policies that have been adopted in a few places like Texas and North Carolina and we want to understand a little bit better what the impacts of those policies are.

I have some other work looking at different methods for providing defense counsel to indigent defendants. So one trend that's in becoming more popular is so-called holistic indigent defendants. So one approach to a defense that involves pairing lawyers with social workers, with civil attorneys, that take a more kind of holistic view of the problems that a client might have, and have the attorneys – you know, be like the tip of the spear in trying to solve some of the problems that bring clients into contact with the criminal justice system to begin with. So doing an empirical study

of how that approach compares to traditional indigent defendants in the Bronx. And then some other work looking at community policing and its impact on crime.

So a fairly broad set of topics, but all things that are focused on thinking about this larger criminal justice system that we have.

*Steve Barnes:* Right. So right now criminal justice system policing is very much in the news. Everything from police community relations to sentencing reform. And to step back a bit, you are an economist by training so if you could, please, talk a little bit about how your work informs the study of crime, courts, and legal policy.

*Paul Heaton:* Great. Yeah. I think there's a number of ways. But I think one of the big challenges that we face in the criminal justice world right now is just building the evidence that we need to understand how to solve some of these big problems. So you're absolutely right that there is a huge amount of public conversation, and discussion in the media concerned by policymakers about things like racial profiling, or potential racial bias about wrongful conviction another big issue.

But the question becomes, once we become concerned about these issues as a practical matter, what do we do to actually resolve them? And one of the things that you get as about how do we actually measure the effects of some sort of policy or practicing on outcomes that we care about? So if we put some sort of new rules in place for the police, will that actually affect racial profiling and racial bias? Or, if we make modifications to the criminal code what sort of impact would that have? And so a lot of my research is focused on getting data and conducting analyses that would allow us to clearly understand consequences of different policy choices we might make.

So you can think of it as essentially helping policymakers to understand, to the extent that were concerned about these problems, what are the things that we can actually do to remedy them? And of course, we need good evidence that we need data and analysis because a lot of what happens in criminal justice goes up by anecdote. You know if something sounds good and so we'll just try it out and claim that it works well without rigorously trying to measure and assess.

*Steve Barnes:* So could you give us an example please some of your recent, or past work, informing the criminal justice system, or public policy in that way?

*Paul Heaton:* Yeah. Let me give you one example from here in Philadelphia. So I think if you were to talk with criminal defendants, so first of all the vast majority of them don't have enough money to afford their own attorney, and so they are given an attorney. And in the United States we have two predominant ways of doing that. Sometimes we have public defenders, so systems – a system whereby we have an office of professionals who all they do is they do indigent defense for a living. They are salaried. We have one here in Philadelphia called the Defender Association.

And the other predominant method is what's called appointed a private counsel. So we take attorneys who have their own private practice and we pull them in and on a one-off basis we say okay, here. The court is going to essentially hire you to represent this indigent defendant, and to provide counsel. So I think most criminal defendants would say, you know, public defenders are terrible. We don't think they are very good. We don't think they provide good representation, and there is this common perception that public defenders aren't as good as private lawyers.

That actually became a topic of litigation here in Philadelphia. In fact, Prof. Rudolph ski was involved in this because there was concerns about quality of counsel that were being provided to defendants. And here in Philadelphia it was actually defendants in murder cases. So you know very serious charges, potentially life imprisonment or death on the line. So we probably care about having a system that provides people with capable counsel.

So I conducted a study with a colleague, James Anderson, where we actually got information from thousands of murder cases and were able to compare the performance of public defenders to private appointed counsel. And what we discovered, and I won't go into all the archaic institutional details, of course. But what we were able to discover and that is after isolating, and I think what economist or researchers would say is a very convincing experimental way, what the impacts of the attorney's work, public defenders were actually far more effective at representing their clients.

So they reduce the probability of a murder conviction by about 20 percent. They reduced to the expected time served that their clients would spend – time spent in jail, by about 25 percent. So this is, you know, several years off the sentence. And then, we were able to trace and understand what the methods that the public defenders did; why they were providing better representation.

Partially, as a result of this research, as well as some of the litigation, Philadelphia has actually changed its method of compensating appointed attorneys in order to try and reduce that disparity. So this is an example where there's kind of a common belief; public defenders are terrible, and when you actually subjected to empirical analysis, quite the opposite turns out to be true. And once you understand that it provides you with a way to improve the system and reduce disparity, in this case, by trying to find methods to improve the performance of the private appointed attorneys.

*Steve Barnes:* That's a great example. Thank you. So to look at what might be arguably a thornier issue, you mentioned one of your newer studies was examining some of the issues around community policing. Could you talk about that a little bit, please?

*Paul Heaton:* It's interesting. So community policing has become fairly widespread at this point. It became popular particularly during the 1990s and the spread of this model was helped by a number of federal grant programs. And you know, when people say community policing, often they mean different things. But one of the interesting things is if you're actually look at the empirical research and there's actually very little evidence that would tell us convincingly that if we had to similar departments and one implements community policing and the other doesn't that they would have different outcomes, be it in crime, be it in satisfaction with the police, whatever. And so I am doing a study which actually looks at community policing events which are widespread. They have them in many departments, certainly here locally and across the country, and tries to understand better, is there an actual measurable impact of these types of activities on crime.

*Steve Barnes:* For example, what do you mean by community policing events?

*Paul Heaton:* Yeah. So it's fairly common for police departments to stage kind of public events, festivals, gatherings where they do demonstrations, where they do crime awareness, where they meet with people and tell them about crime patterns in the community. And despite the fact that when you talk to police chiefs, you know, they say oh yeah, we think these are really well. If you actually asked, you know, have you tried to measure what these do, the answer is well, no, that's impossible. Because there's all sorts of things that feed into crime besides these events. But we think we have a methodology which is actually going to allow us to measure the effects of these events. And so that's what we're working on.

*Steve Barnes:* You also mention some innovative approaches in Texas and North Carolina. Could you expound a little bit about that, please?

*Paul Heaton:* Yeah. Sure. So this is a study of something called open file discovery. So I think that a lot of people don't actually have a very clear idea of how criminal cases work in terms of information. I think we typically think that the police do an investigation and maybe we do ballistics and forensics, and both sides, both the defense and the prosecutors have equal access to that information, and they kind of evaluate the evidence, and then the case moves forward.

And the reality is far different. The prosecutor has its case and its cards, and the defense attorney doesn't necessarily have access to much of the information the prosecutor has. And as a result of that information silently, there is a potential for mistakes, or error. One thing that you might be concerned about is that a prosecutor might have exculpatory information, so information that would – which might point to the innocence of the defendant, but they might not – that might be kind of reluctant to share that.

As a result of the Supreme Court case, Brady v. Maryland, they are required to share that with the defense, but there is a lot of instances where we see evidence that that hasn't occurred. So if we were to look at the registry of exonerations, many cases involving wrongful conviction are cases where the prosecution had some sort of information that they might have shared, but they kind of didn't, and that turned out to be problematic.

So open file discovery is a policy response to that, and that basically sets as the default, hey prosecutor, you just have to take all the contents of your file, so whatever you get from the police, information from witnesses, and just open the books out and let the defense examine it. That's potentially a powerful way to avoid these types of water called Brady violations and improve information sharing. But it could have some costs. So prosecutors in some cases are concerned that if they make too much information about the case available it could lead to witness intimidation or tampering with evidence.

No one has empirically studied this to actually see, you know, people raising these concerns via anecdote, but there actually hasn't been an analysis to say okay. Well, if we were to implement these policies, is there really more witness tampering? Affect, you know, the calculus of negotiations between the prosecutor and defense? And so we have some data from Ohio, North Carolina,

and Texas which have implemented these types of policies and we're engaged in an empirical study to try and better understand what these actually do. And hopefully, you know, the benefit of that sort of research would be there are other jurisdictions which you have thought about this and right now they have to decide whether they want to implement the policy without really understanding clearly what's likely to be the result. And with this research they can have better evidence as to what this will actually do.

*Steve Barnes:* So in the Texas and North Carolina cases, or studies, are you working just independently? Or, are you working in cooperation with prosecutor's office is that there and the defenders are there?

*Paul Heaton:* Yeah. So I mean it's a combination. So the actual empirical analysis we're doing largely independently. But obviously with any study of this sort you want to go just beyond the number crunching and also try and understand, to the extent that you find interesting patterns what are the institutional features that can explain those. And so that will, of necessity, involve having conversations with both prosecutors and defenders in those jurisdictions.

*Steve Barnes:* That's great. So taking a look at some of the studies you've completed. So you're going to be publishing a new study soon about victim compensation funds following incidents of massive violence. As you explain what that study is about and what some of the highlights and key findings are, please?

*Paul Heaton:* Yeah. Sure. So victim compensation funds are special funds that get set up where we provide typically one-time payments to people who have been injured in certain events. So a few prominent examples include after 9/11 there as a special fund that was set up by the government to pay out compensation to people who were killed in the 9/11 attacks. After the Boston Marathon bombing there were a number of charitable donations that were accumulated into a fund of, if I remember correctly, about \$60 million, which was then disbursed to victims.

Now, these phones are kind of interesting from the perspective of the legal scholar because normally when people are injured, we don't come up with some sort of special fund to pay them. We have a tort system for dealing with that.

*Steve Barnes:* And could you define just tort system for our listeners?

*Paul Heaton:* Yeah. So you have the opportunity in civil court to seek reimbursement for your injury from whoever you think was responsible. And so that, you know, if you and I get in a car accident we don't develop a special fund. When people are injured in crime that typically sue the person who is responsible, if that person is able to.

And so this study was designed to try and better understand. So in situations where we institute one of these funds, how does that affect people's behavior? Does it make them more or less willing to pursue lawsuits? One reason that's important is because increasingly companies and other organizations may turn in the future to these types of funds. So think about the BP oil spill. They set up a specialized claims facility. GM, with the recent challenges it's had with respect to the ignition systems, they've tried to channel people who were injured into a special fund rather than – and discourage them from suing GM.

And so there's some interesting questions about what these funds actually do to people's opinion. So in the study, what we did is we actually ran an experiment where we presented people with a scenario involving a shooting in a stadium; and because we designed the experiment, we were actually able to vary whether or not there was a fund, and how much compensation it provided. And then we could compare how people behave. Whether or not they would pursue litigation, et cetera, depending on whether a fund existed.

And then we compared the results that we got from our experimental study to the actual observed behavior in about a dozen or so major incidents like the 9/11 fund, like the Oklahoma City bombing, the Colorado theatre shootings, et cetera, where funds have actually been in place, and we can observe something about the litigation.

*Steve Barnes:* And can you reveal the results, or is it –

*Paul Heaton:* Yeah, sure. Absolutely. I mean I think there are a number of interesting things. So it probably comes as no surprise that when people get compensation through one of these funds, it does reduce their willingness to pursue lawsuits, and that makes sense. But I think one of the interesting results was that even in situations where people were fully compensated for the cost of their injuries. A substantial fraction, a bit more than half, still indicated they wanted to pursue lawsuits. And if you look at people's reasoning, they feel that litigation serves a lot of purposes beyond just

compensation. They want to hold people responsible, and they want to be able to encourage proactive measures in the future that would prevent such tragedies from occurring again.

And so, you know, I think that the bottom line is that these funds can be a valuable tool in managing litigation. But there is still going to be – the tort system does other things besides just providing payments. And it seems that that these types of funds probably can't replicate those sort of benefits that victims are looking for.

*Steve Barnes:* Right. Just as a side question, so if a person, or people except funds – except financial compensation through one of these funds, is there federal law in terms – governing how, and whether they can still file suit against the –

*Paul Heaton:* Yeah. That's a great question. It actually varies from fund to fund. So the 9/11 fund, for example, in order to participate in the fund you had to waive your ability to pursue a lawsuit. But for the BP fund there was one element of the fund that requires waivers. But many of them do not. So the Virginia Tech shooting, for example, you could take the money from the fund, and if you wanted to turn around, pay an attorney, and sue Virginia Tech.

And I think one of the interesting things you saw in Virginia Tech is that that there were actually very few lawsuits against the university. And some people have attributed that to the fund essentially providing payments and allowing people to have closure and move on without needing to resort to a costly and, you know, very prolonged process of litigation.

*Steve Barnes:* That's great. You also done some studies at the state level in terms of liability litigation related to – getting away from a little less tragic space here. In terms of how people's ability to sue impacts the cost of auto insurance. Could you explain a little bit about what that study – what was focused on and what states are involved, and what the findings were, please?

*Paul Heaton:* Yeah, sure. So this is – I've done a number of studies thinking about how the various features of tort law, so the rules we make about who can sue who and under what circumstances and how that affects ordinary consumers. So auto insurance is regulated on a state-by-state basis and each state has a different rules about when lawsuits can occur. Here in Pennsylvania, for example, it's kind of an interesting place. You have the choice, as part of your auto insurance policy, you can choose to say I'm not going to

pursue lawsuits under certain circumstances. And in return you get a lowered insurance premium. Not all states are like that. Some states you don't have the choice, and there's just an automatic limit on lawsuits. And you have to take that. So this study was one that was designed to try and understand, if you put different rules in place regarding who can sue. So one particular – one that a number of states have thought about recently is so-called no-fault. So it's this limitation on lawsuits that I just described.

Does that actually affect consumers pocketbooks? And this might be an interesting thing to understand because if you're in a state that has no fault insurance, Michigan and Florida, and New York are three prominent examples, and you're thinking about hey, do we want to change the rules, you kind of like to know hey, if I were to change my no-fault rules in Michigan, are people actually going to save money from that? And prior to this study that was not really very clear.

And so for this study we actually got data on hundreds of thousands of individual consumers and had information about how much they pay on auto insurance. Then we did comparisons across consumers in different states over time because some states have changed their regulations to see when you implement a change how do your auto insurance premiums change relative to places that had a more stable policy regime?

And what we found is that a number of the different tort reform is that people talk about, for example, what are called damage caps or limits on the maximum amount that can be paid out in a lawsuit, didn't actually have much measurable effect. But one of the big things that did have an effect was whether or not you have one of these no-fault versus a traditional tort system. So do you have a system that automatically limits on lawsuits, or do you have kind of a more traditional freefall where anyone can sue anyone?

*Steve Barnes:* Right. So in the no-fault case, what's was the big take away?

*Paul Heaton:* Well, ironically, what it turns out is that that getting rid of no-fault actually saves people money. And you know there's a lot of reasons for that, and I've actually written a book about that, so I won't bore you with all of the details. But, you know, no-fault laws were put in place in the 70s in kind of a different environment. And they initially worked well in constraining costs. But over time, plaintiff attorneys and others have figured out how to adapt to the legal regimes such that they tend to provide higher benefits to injured drivers, but actually not do a very good job at

limiting lawsuits. So it turns out that under no fault you can kind of collect wants from your insurer, and then still pursue a lawsuit and collect again in many cases. And so as a result, the no-fault regimes have become more expensive. And when you make changes and move more towards traditional tort, it actually saves consumers money.

Now, you know, I think you have to be careful about that because you know the consumers are getting some benefits in terms of additional payments and things when you're injured. And so you want to weigh those benefits against the additional costs in terms of premiums. But I think it's a very important for policy makers to understand what reforms will actually affect cost and which ones probably won't. And this research helps to identify that.

*Steve Barnes:* Fantastic. Great. And you've done some other insurance studies as well. Could you talk a little bit about those, please? One or two examples?

*Paul Heaton:* Yeah. One area where I continue to do active research actually relates to the Affordable Care Act. So you know with the Affordable Care Act we think of it as being an act which has to do with health insurance, which it certainly is. It's about expanding health insurance coverage, but it turns out there's lots of other insurance products that we don't think so much about that actually pay for medical care. So your auto insurance is a great example. You may not realize it, but there's probably a provision of your auto insurance that says when you're injured in an auto accident the first pay or is going to be your auto insurance, not your health insurance.

Workers compensation is another example. If we're injured here at Pen on the job, it isn't necessarily our private health insurance that begins to pay the medical costs for the injuries, it's the workers compensation insurance that Pen takes out for all of its employees. So there's been very little analysis that has thought beyond the health care system to some of these other insurance systems, workers comp, homeowners insurance, auto insurance, despite the fact that whenever you make big changes to the health care system, there may very well be trickle-down impacts on these other insurance products. So I have a series of studies which have actually tried to measure and assess, is there any evidence that the changes that are being initiated under the Affordable Care Act, and particularly the coverage expansion components, what implications will those have for workers, for medical malpractice insurance? For auto insurance?

And in some cases, there does seem to be evidence that that there may be some impacts. Fortunately, in many cases, they appear as though they are going to be in a cost-saving direction for consumers. So for example, there's some evidence to suggest that that auto insurance costs may go down as we expand health coverage. And the basic logic you can think of there is as we provide are different places for people to have their medical care covered, then they are going to be less reliant on any one particular source of payment, including their auto insurance.

*Steve Barnes:* I'm glad you mentioned a medical malpractice. So malpractice, the Affordable Care Act, no-fault insurance, all of these in addition to being insurance topics are political hot button issues. So two questions I guess, please. One, as a researcher, how do you approach should these issues that have great weight in the public sphere in terms of how policymakers and politicians that deal with them, talk about them to the public, and amongst each other? And second, I'm just very curious to find out what your study revealed in terms of medical malpractice reform on emergency department care. It's a study you did somewhat recently.

*Paul Heaton:* Yeah, sure. So you know in terms of the policy discussion you're absolutely right that there's a lot of these topics that are very controversial. But in a lot of ways I think that's the best place for us to be working as researchers, or, at least, as empirical researchers. Because the tendency in our public discourse, I think, is when we feel very passionate or ideological about some particular issue, we want to just kind of toss evidence out the window and say, you know, hey, we think that Obama care is bad. Or we think that it's fantastic.

And I believe that in peer go research can provide a sort of discipline to the policy discourse. You know, there's that famous quote by Daniel Patrick Moynihan that, you know, have your own opinion, but you can't have your own facts. And I view one of the roles that we have as researchers as providing objective facts to help inform these conversations where otherwise it might be a kind of passion and ideology that carry the day.

So you asked about the medical malpractice research. So this is actually research which is designed to tackle a question which has occurred repeatedly in front of Congress, and in individual states. And this has to do with a particular problem of the cost of healthcare in the United States. So we obviously spend a huge fraction of GDP on healthcare, and there's a lot of reasons for that,

but one reason that some people have pointed to is what's called defensive medicine. So they argue that doctors are concerned about being sued for malpractice, and as a result, they will do procedures or tests which are not clinically necessary, but which are designed to shield them from liability.

And if you look at surveys of doctors, a substantial fraction, 60 percent or more say that they routinely engage in these types of defensive medicine activities. And so one thing that's been proposed as a policy solution is well, what if we implement some shields for liability to physicians. Is that a way to get them to stop doing all of these unnecessary wasteful tests? And some organizations have estimated that those types of reforms can save hundreds of billions, billions with a B, dollars per year. So a lot of money potentially on the line.

So in the study I did we actually examined a couple of states which implemented very strong liability shields for emergency department physicians.

*Steve Barnes:* Which one, may I ask?

*Paul Heaton:* We focused on Texas, Georgia, South Carolina, among others. And in this study, we had access to wonderful data comprising millions and millions of Medicare claims with detailed information about the sort of procedures; what sort of test they did on each patient, et cetera. And so we were actually able to look in the data and say okay, if we take Georgia, and if it implements that this liability shield, is there evidence that physicians actually stop doing the unnecessary tests, et cetera? So in other words is this going to actually save us money?

Unfortunately, the answer in our analysis, which was published in the *New England Journal of Medicine*, is not really. People do about the same stuff after you implement these shields. And our interpretation of that is while malpractice reform might be one piece of the puzzle, apparently, it's not the whole piece. There may be cultural influences, the training physicians receive, or other things that are also guiding these decisions. And you know, I think that that's important to understand and it suggests that it's a simple change to the court system might not panacea that people are looking at in terms of reducing burgeoning healthcare costs.

*Steve Barnes:* Staying in healthcare for a moment, but branching out a bit. You've also done some studies of information technology's impact

on healthcare, as well as public sector reform. Could you discuss that a little bit, please?

*Paul Heaton:*

Yeah. Sure. So in the healthcare space one of the papers that I've published in this area is designed to confront a particular puzzle that has arisen in the research community, and it has to do with the effects of health information technology. So things like computerized medical records, or computerized drug ordering system. So there is a lot of evidence said that these types of information technology capabilities have become much more widespread in hospitals and in doctors' offices. But there doesn't seem to necessarily be a lot of evidence said that this is actually making healthcare more productive, or lowering costs.

And so the question is why is that? Why are we making all of these investments and not seeming to get much of a return? And the answer that we point to in our research is that this is actually part of the historic adoption pattern of information technology. And if we look at the experience of other industries, we actually had a similar thing happened.

So when information technology was introduced in banking, for example, initially lots of computerization. But it was – we weren't seeing in measures of bank productivity any evidence that it was improving things. And there's a number of reasons for that. Things like how do we measure productivity, and in healthcare that's particularly difficult. But I think one of the key takeaways is the experience of other industries suggests that the information technology along isn't enough. It takes a quiet to work out the kinks and develop systems that are user-friendly.

You also have to couple the information technology investments with what I would call managerial, or organizational changes. So you need to change your work processes and how you structure lines of authority, for example, in a way that takes advantage of the new information. And until you do both of those things, have the computers and make the kind of organizational and managerial change, you're not really going to reap the benefits. I think the good news is that the experience of other industries suggests that even though right now we might not be seeing a big productivity benefit from these investments, there is reason to be optimistic that a few years down the road when hospitals and doctors' offices and other healthcare providers have had a chance to better incorporate the technologies and make some of these other changes, that indeed we are going to be able to see some important benefits of the technology investments.

*Steve Barnes:* Great. Staying both, I guess in healthcare, but also with political, or social hot button issues, you've also done a study of recent medical marijuana laws with recreational marijuana use. Could you talk about that a bit, please?

*Paul Heaton:* Yeah. So medical marijuana is obviously a very interesting issue, and it's one that is increasingly able to be studied because of course there's a lot of jurisdictions now which are implementing medical marijuana. And if you like Colorado, which are just outright legalizing recreational marijuana. And there's obviously a lot of interest in the public health community, among the public policymakers in trying to understand what the implications of these new types of rules are.

So my empirical research tries to look at outcomes that are linked to, or potentially linked to marijuana use to try and better understand what the impacts of these laws are.

It turns out that one of the interesting things about medical marijuana, and marijuana more generally, is probably a lot of the public health impact hinges on whether or not marijuana and alcohol, or what economists would call substitutes, or compliments. Which is to say, when we make marijuana more widely available, do people consume more alcohol, or do they consume less alcohol? Or is there no impact.

The reason why is that it turns out that alcohol is very bad for lots of public health outcomes. We get in lots of car accidents as a result of alcohol use. There's lots of violence as a result of alcohol use. People have a lot of health conditions that are linked to alcohol use. And so if you are able to reduce alcohol consumption through any means, potentially that could have public health benefits. To date, there hasn't been great evidence as to whether or not liberalizing access to marijuana affects alcohol use. And so in our analysis we've tried to look at various data sets, and various outcomes to better understand that.

I would say for that research the jury is still out. But there's some indication that, in fact, they may be substitutes. The so that actually liberalizing marijuana access reduces alcohol consumption and may lead to some public health benefits, interestingly enough.

*Steve Barnes:* Right. So just so I understand that. For individuals who use marijuana recreationally, and potentially a lot of it, your study and the public health debate actually focuses more on whether or not

people consume alcohol more as a result of their marijuana use.  
Am I following that correctly?

*Paul Heaton:* That's certainly been an important question in the debate. And the reason why is, let's take something like impaired driving. It turns out that the evidence suggest that you don't get impaired in the same way when you've used marijuana then when you use alcohol. And people are much less likely to use marijuana and get behind the wheel. And so for something whether or not I cause a car accident, even though marijuana may have other negative health consequences, for that particular outcome probably alcohol was a lot worse. And so that substitute ability then becomes particularly important.

Now, obviously, it's possible that increasing use of marijuana can have other longer-term impacts, cancer, et cetera. And you know, I would say those are open questions that we don't necessarily understand very well at this point.

*Steve Barnes:* Well, Paul, thank you very much. This has been a fascinating conversation. And your work is extremely interesting for a number of different reasons, up to and including the fact that a lot of the study's conclusions you've discussed sort of seem to defy conventional wisdom a little bit.

So we really appreciate you being here on broadcast and hope you will come back again sometime soon to talk about your latest projects.

*Paul Heaton:* Thanks for having me.

*Steve Barnes:* Thank you. And thanks very much for joining this episode of Case in Point.

*[End of Audio]*