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# Indiana Adults Who Participated In Treatment Court Programs Had Better Health Outcomes Than Those Who Did Not

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**ABSTRACT** More people are arrested in the US for substance-related crimes than for any other offense. Treatment courts are a judicial intervention offering a holistic, public health approach to substance use, and they provide an alternative to incarceration. There is, however, great variability with respect to court practices and interventions across the US. This article explores whether there is an association between participation in treatment court programs and three health-related outcomes, as measured by mortality, emergency department use, and emergency medical services (EMS) use. We studied people who were accepted into thirty treatment court programs in Indiana between January 1, 2018, and June 30, 2021, including 350 people who completed treatment court programs and 180 people who applied and were accepted but chose not to participate. We monitored health outcomes for participants for one year after they completed a program, or for the year after their decision not to enroll for nonparticipants. Treatment court participants were 83 percent less likely to die, 34 percent less likely to present at an emergency department, and 83 percent less likely to call EMS compared with nonparticipants. Our findings can inform policies to expand the number of treatment court programs and broaden their use.

**U**nder the US judicial system, more people are arrested and incarcerated for substance-related crimes (that is, offenses associated with the use, marketing, or distribution of substances; offenses committed because of a substance's pharmacologic effect; or offenses committed because money was needed to purchase substances) than for any other offense.<sup>1,2</sup> As of 2022, according to the most recent data available, approximately 46 percent of people in federal penitentiaries and 13 percent of those in state prisons were serving substance-related sentences.<sup>3</sup> Although goals for carceral settings include rehabilitation and the deterrence of criminal behavior,<sup>4</sup> research shows that

incarceration is associated with neither the improvement of states' crime statistics nor a reduction in substance use behaviors.<sup>5</sup>

Incarceration is especially deleterious for people with substance use disorder (SUD): a complex medical condition in which people have a strong urge to use substances despite their negative impact on cognition and behaviors.<sup>6</sup> Justice-involved people are almost four times more likely than the general population to have an active SUD.<sup>7,8</sup> Over time, research has indicated that overdose was the third leading cause of death among incarcerated people, and the leading cause of death postrelease.<sup>9</sup> Recently released incarcerated people are up to 129 times more likely to die from an overdose event than

the general population, especially if substance use was not adequately treated during incarceration.<sup>10</sup> The two-week period postrelease is a time of particular vulnerability.<sup>11</sup>

The Centers for Disease Control and Prevention cites medication, including buprenorphine, methadone, and naltrexone, as an important intervention for treating SUD.<sup>12</sup> There are significant intervals during which justice-involved people can be provided with medications for opioid use disorder (MOUD), but this treatment has remained underused.<sup>13</sup> Although estimates have shown that 63 percent of sentenced jail inmates and 58 percent of federal prisoners meet the criteria for SUD,<sup>14</sup> only about 5 percent received appropriate medication as of 2014.<sup>15</sup>

Treatment courts, which are a judicial intervention incorporating public health approaches and policies, are an alternative for some people sentenced for substance-related crimes. These courts are based in the theory of therapeutic justice and embrace a philosophy that the law can act as an agent to improve health and societal outcomes.<sup>16</sup> There are more than 4,000 treatment courts in the US, including drug courts, mental health courts, reentry courts, opioid courts, veterans courts, juvenile drug courts, and Tribal healing-to-wellness courts.<sup>17</sup> Treatment courts provide strategies that refer people to therapies, educational opportunities, support groups, monitoring, and medications (collectively, “interventions”) to address underlying issues implicit in substance use and associated behaviors. Research suggests that treatment courts are only in the early stages of wide acceptance of medication-assisted treatment.<sup>18</sup> A qualitative research study conducted by Ekaterina Pivovarova and colleagues revealed that the provision of MOUD could be improved with better communication between treatment providers and treatment courts.<sup>19</sup>

Unlike traditional court proceedings, which are often adversarial and involve sanctioning, treatment courts are based on a nurturing, supportive, team-approach model that recognizes SUD as a disease.<sup>20</sup> Treatment court teams generally comprise judges, prosecuting attorneys, defense attorneys, probation officers, law enforcement personnel, behavioral health professionals, and mental health professionals.<sup>20</sup> Although there are recognized “best practices,” there is great flexibility within the courts regarding resources, models, and approaches.

People must apply to treatment courts. Each court establishes its own eligibility criteria.<sup>18</sup> If accepted, participants usually plead guilty before beginning their program. The plea, though, is held in abeyance. Treatment courts typically adopt a phased approach requiring participation

for twelve to thirty-six months (according to the authors’ interviews with treatment court personnel). If participants successfully complete the treatment court program, charges are dismissed. Participants who do not complete the program are returned to the traditional judicial system, where charges can be enforced, and sanctions, including incarceration, may ensue.

Although it is well established that treatment court programs are associated with lower recidivism and rearrest rates,<sup>21–25</sup> few studies have focused on the relationship between court participation and health outcomes.<sup>26,27</sup> A randomized controlled study conducted by Denise Gottfredson and colleagues analyzed associations between participation and mortality in a single treatment court over the course of fifteen years.<sup>28</sup> Their study found that neither mortality from any cause nor death from substance-related causes significantly differed between participants in an adult drug court and those participating in traditional court processes.

A more recent study by Bradley Ray and colleagues examined whether there was an association between emergency medical services (EMS) calls and participation in a mental health court in one Indiana county.<sup>29</sup> Treatment court participants had fewer EMS calls than those in traditional judicial programs, but the researchers were not able to link this outcome to court experiences.

We previously studied interventions offered to incarcerated people convicted for substance-related crimes to identify promising models,<sup>30</sup> but we did not analyze associations with health outcomes or trends in treatment court programs. In this study, we addressed research gaps regarding associations between interventions and outcomes, expanded our analyses across multiple Indiana counties, and increased the number of observations to determine whether participation in treatment court programs benefits people sentenced for substance-related crimes.

## Study Data And Methods

Our multidisciplinary team comprised experts in legal epidemiology, medicine, qualitative methods, biostatistics, and large-scale agent-based modeling. We received Institutional Review Board approval for our study from both Temple University and the University of Pittsburgh. We used data from a variety of sources to create unique individual profiles of treatment court applicants to examine how program participation might affect mortality; emergency department (ED) visits; and morbidity, as measured by EMS use. An example of a participant and a non-participant profile is in the online appendix.<sup>31</sup>

**SETTING** We selected Indiana as our study site because it consistently places in the top half of states for substance-related fatalities<sup>32</sup> and has a significant number and variety of treatment courts. In 2018, Indiana had eight different types of treatment courts in fifty-two of its ninety-two counties. It also has a governmentally sponsored data warehouse, the Management Performance Hub. The Management Performance Hub provides access to securely housed and deidentified data spanning multiple subject areas. This platform links disparate data sets and is intended to promote analysis, transparency, and collaboration between state agencies.

**STUDY POPULATION** Our study population was adults sentenced for substance-related crimes who applied to participate in one of thirty Indiana treatment court programs during the period January 1, 2018, through June 30, 2021. The start date was selected because before that date, few treatment courts used an electronic case management system, the Supervised Release System—a source that provides chronological case summaries, sociodemographic data, and hearing information, which are frequently absent from paper records. The end date was chosen to allow adequate time for us to follow people for one year after program completion or for the year after their decision not to enroll.

Under Indiana law, Supervised Release System records are excluded from public access. Exceptions can be granted if the Indiana Office of Judicial Administration determines that the public interest would be served and no significant harm to treatment court participants or the public would result. To comply with this rule, we approached seventy-seven treatment courts that used the Supervised Release System for permission to release their records to the Management Performance Hub. After two informational webinars, thirty Indiana treatment courts (or 39 percent of eligible treatment courts) agreed to participate. The Indiana Office of Judicial Administration then granted an exception, and Supervised Release System records were provided to the Management Performance Hub seventeen months after our initial request. This was the first time that treatment court records were released to the Management Performance Hub.

The Supervised Release System records revealed that 530 applicants were approved to participate in our treatment court collaborators' programs. Of the 530 applicants, 350 completed a treatment court program ("participants"), and 180 were accepted to a program but chose not to participate ("nonparticipants").

**SOCIODEMOGRAPHIC DATA** Applicants' sociodemographic data, including age, sex, race and ethnicity, employment status, disability status,

## Participating in programs that embrace a holistic, team approach to substance use may save lives.

and SUD diagnosis, were self-reported and obtained from Supervised Release System records.

**INTERVENTION DATA** Data concerning medications offered to participants and nonparticipants were obtained from Indiana's Prescription Drug Monitoring Program, and interventions offered to participants were obtained from qualitative interviews with judges and court personnel ( $n = 15$  courts) and court documents ( $n = 12$  courts). Court documents were obtained from the internet and the collaborating treatment courts. The Prescription Drug Monitoring Program data identified which people received a prescription for controlled substances, including MOUD. After an informational webinar, the Indiana Professional Licensure Agency (the organization that maintains these data) agreed to allow the Management Performance Hub to link Prescription Drug Monitoring Program data with Supervised Release System data and outcome data.

The purpose of conducting these interviews with court personnel was to address gaps in the Supervised Release System records regarding interventions. The interviews also helped us better contextualize treatment court infrastructure and policies. The thirty treatment court collaborators were sent an interview request via email, and 50 percent agreed to participate. Interviews were structured in two parts: A preliminary survey captured background information about the courts, and a semistructured virtual or in-person interview focused on the development and implementation of treatment court policies, interventions, and infrastructure, as well as applicant eligibility and exclusionary criteria. If both interview transcripts and court documents were available, the information provided through interviews was used to create treatment court policy data sets. As we were unable to determine which interventions were used by any individual, we assumed that all participants assigned to a specific treatment court re-

ceived a common set of interventions. Information concerning the legal epidemiology methods used to code the interviews and court documents, survey questions, and codebook is in the appendix.<sup>31</sup>

**OUTCOME DATA** The Management Performance Hub houses data sets identifying mortality (from the Indiana State Department of Health), ED visits (from the Indiana State Department of Health), and EMS calls (from the Indiana Department of Homeland Security). After informational webinars, each agency permitted the Management Performance Hub to link their data sets to Supervised Release System and Prescription Drug Monitoring Program data. The outcome data were collected for each applicant for the one-year period after they completed a treatment court program (participants) or for the year after their decision not to enter treatment court (nonparticipants).

We accessed individual deidentified applicant data sets containing sociodemographic information and prescriptions for MOUD and other controlled substances through the Management Performance Hub. The data dictionary describing the variables we analyzed is in the appendix.<sup>31</sup> We then added the treatment court policy data sets to the Management Performance Hub's deidentified data sets to create 530 unique applicant profiles (see an example profile in the appendix).<sup>31</sup>

**ANALYSIS** We conducted descriptive analyses and compared sociodemographic characteristics of participants and nonparticipants using *z*-score tests of proportions. Odds ratios and corresponding 95% confidence intervals were calculated by participation status for each outcome, as well as by race, ethnicity, and sex.<sup>33</sup> Analyses were performed to make the following comparisons: Prescription Drug Monitoring Program data for participants and nonparticipants, health outcomes for participants and nonparticipants, and interventions provided to participants by treatment courts. A *p* value of <0.05 was used to determine statistical significance.<sup>34</sup> R statistical software, version 4.0.1, was used for all analyses. Although our analysis was performed at the individual level, sociodemographic and outcome data were aggregated to protect the anonymity of treatment courts and applicants.

We also compared the characteristics of our thirty Indiana treatment court collaborators with those of the remaining courts that declined to collaborate for this study. Statistical tests were used to compare the groups aggregated together, using Poisson rate regression with heteroskedasticity robust standard errors.

**LIMITATIONS** We acknowledge several limitations. This was an observational study, and we

could not draw causal conclusions. Given the number of people who enter the legal system, the sample size was relatively small; however, we were able to access large proportions of people within the treatment courts that collaborated with us. We did not interview applicants and do not have data informing us why people did or did not choose to participate in a treatment court program. We could not attribute differences found in our study solely to treatment court participation, as confounding variables could have affected the results. This could have affected our ability to generalize the study's results, as our sample may have disproportionately included treatment courts with judges who were particularly motivated about the results of well-implemented programs. Because of strict requirements surrounding data acquisition and use, we could not include the universe of Indiana treatment courts, and thus only courts that agreed to participate were analyzed. Finally, all outcome data were derived from Indiana experiences.<sup>35</sup> It is possible that additional events occurred in other jurisdictions; however, any potential undercounting would most likely have occurred for both participant and non-participant groups.

## Study Results

**STUDY POPULATION** Approximately 51 percent (*n* = 272) of applicants applied to adult drug courts or an "other" treatment court,<sup>36</sup> 29 percent (*n* = 153) applied to mental health courts, 15 percent (*n* = 82) applied to reentry courts, and 5 percent (*n* = 29) applied to veterans treatment courts (data not shown). In general, the counties of our treatment court collaborators had higher arrest and age-adjusted overdose mortality rates than the counties of other treatment courts. More specifically, the treatment courts in our study had statistically significant higher rates of overall arrests, opioid-related arrests, and arrests for opioid possession. A table showing comparisons of adverse outcomes between the treatment courts in our study and the other Indiana treatment courts is in appendix exhibit 1.<sup>31</sup>

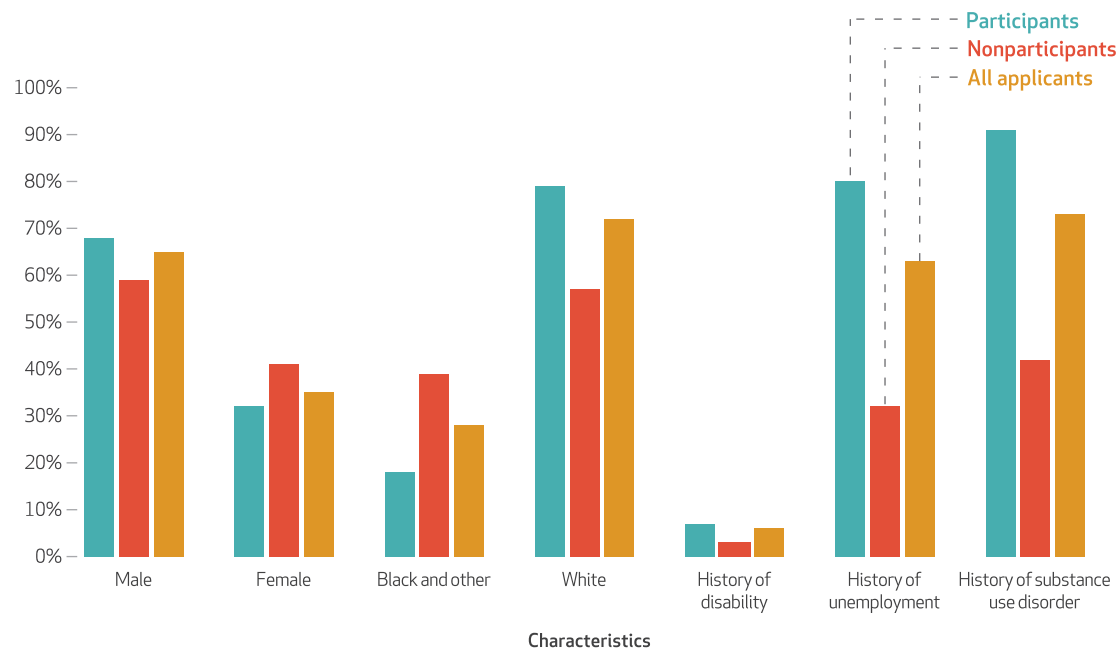
**SOCIODEMOGRAPHIC CHARACTERISTICS** We identified sociodemographic characteristics of all applicants to the thirty treatment courts that we studied. The age range for the applicants was 18–70 years. Overall, the median age of the applicants was thirty-two, with no statistical differences between participants (thirty-two) and nonparticipants (thirty-four).

There were statistically significant differences between the groups regarding other characteristics (exhibit 1). Participants were more likely to be male (68 percent) compared with non-



## EXHIBIT 1

**Sociodemographic characteristics of people who applied to participate in 30 treatment court programs in Indiana, January 1, 2018–June 30, 2021**



**SOURCE** Authors' analysis of data from the Indiana Management Performance Hub. **NOTES** This study looked at 30 treatment courts (out of 77 treatment courts in Indiana that used the Supervised Release System). Participants ( $n = 350$ ) completed a treatment court program; nonparticipants ( $n = 180$ ) were accepted to a program but chose not to participate. Groups had statistically significant differences on all characteristics ( $p < 0.05$ ) except age (not shown). People identifying as American Indian or Alaska Native, Asian, Hispanic, or Native Hawaiian or other Pacific Islander were included in the "Black and other group," but they made up less than 2 percent of that subpopulation.

## EXHIBIT 2

**Interventions offered to participants in 30 treatment court programs in Indiana, January 1, 2018–June 30, 2021**

Intervention types	Number	Percent
Education		
Substance use education	107	31
Monitoring		
Home visits	34	10
Testing for illicit drugs	272	78
Support groups		
Alcoholics Anonymous	241	69
Narcotics Anonymous	241	69
Other support groups	258	74
Treatment		
Anger management	265	76
Cognitive behavioral therapy	271	77
Inpatient treatment	17	5
Mandatory substance use counseling	19	5
MOUD prescription in the PDMP	103	29**
MOUD referral	350	100
Trauma counseling	250	71

**SOURCE** Authors' analysis of data from the Indiana Management Performance Hub. **NOTES**  $n = 350$ . Data on medication for opioid use disorder (MOUD) were available from the Indiana Prescription Drug Monitoring Program (PDMP) for both participants and nonparticipants (not shown); participants were more likely to receive prescriptions for MOUD than nonparticipants, as follows: participants,  $n = 103$  (29%); nonparticipants,  $n = 37$  (21%). \*\* $p < 0.05$

participants (59 percent), more likely to identify as White (79 percent) compared with nonparticipants (57 percent), and less likely to identify as Black or from other racial and ethnic groups (18 percent) compared with nonparticipants (39 percent). People identifying as American Indian or Alaska Native, Asian, Hispanic, or Native Hawaiian or other Pacific Islander were included in the "Black and other" group, but they made up less than 2 percent of that subpopulation. Participants were more likely to have a history of disability, unemployment, or SUD, with 7 percent, 80 percent, and 91 percent of them reporting these events, respectively, compared with only 3 percent, 32 percent, and 42 percent of nonparticipants, respectively.

**INTERVENTIONS** Exhibit 2 shows the types of interventions offered to participants by the treatment courts. Interventions were clustered in four groups: education; monitoring; support groups; and treatment, including MOUD (that is, prescriptions for buprenorphine, methadone, and naltrexone) and other therapies. All treatment courts reported referring participants to MOUD; however, only 29 percent of participants and 21 percent of nonparticipants had pre-

scriptions reported in the Prescription Drug Monitoring Program.

**OUTCOMES** Exhibit 3 shows the percentage of participants and nonparticipants who experienced adverse health outcomes. EMS use was the outcome recorded most frequently among participants and nonparticipants, with 43 percent and 82 percent, respectively, having contact with the system. Exhibit 4 presents the odds ratios for the adverse health outcomes analyzed. Compared with the nonparticipant group, participants were 83 percent less likely to die, 34 percent less likely to present at an emergency department, 83 percent less likely to use EMS, 74 percent less likely to use EMS for a substance-use related issue, and 40 percent less likely to use EMS resulting in the administration of naloxone. These outcomes were similar by race, ethnicity, and sex (data not shown). We did not identify any statistically significant associations between specific types of interventions offered and the adverse health outcomes.

## Discussion

Ours was the first study, to our knowledge, to reveal that people who participated in Indiana treatment court programs had significantly better health outcomes, as measured by mortality,

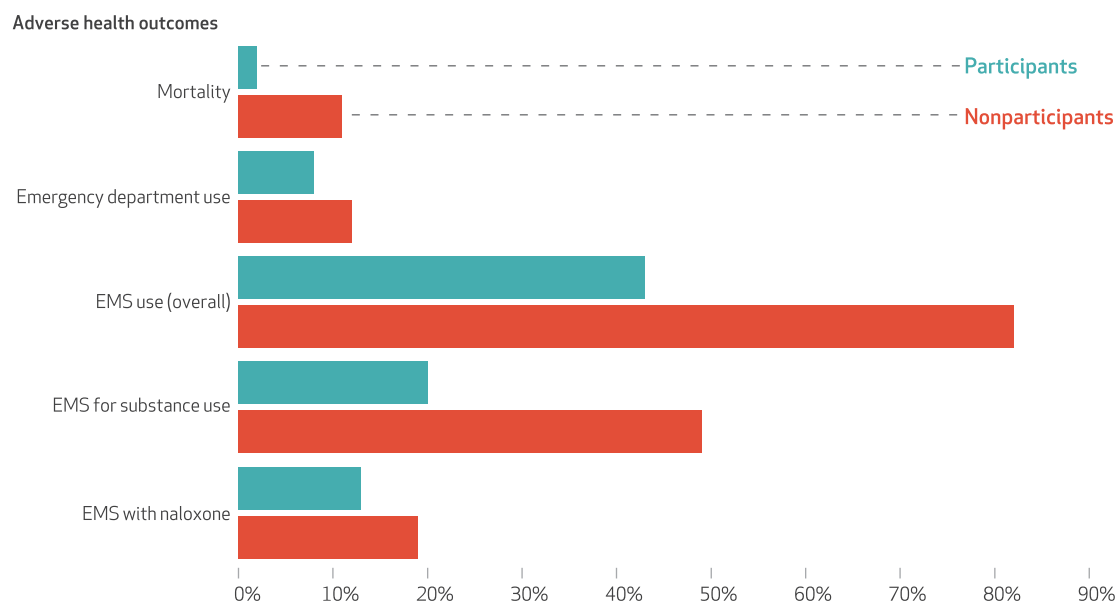
ED use, EMS use, EMS use for substance use, and EMS use with naloxone.

These results were unexpected, considering the risk profiles of the two groups. In general, participants had a greater risk profile than nonparticipants in every characteristic except for race and ethnicity. In fact, they were more than twice as likely as nonparticipants to have a history of disability, unemployment, or SUD. Each of these characteristics is associated with a higher likelihood of poor health outcomes.<sup>37–41</sup> Some studies support a link between these characteristics and an increased risk for overdose.<sup>42–44</sup> Our finding that a group with a riskier profile was less likely to experience adverse health events may indicate that our results reflect an underestimation of the potential benefits of treatment court programs.

We could not identify interventions or clusters of interventions that were associated with better health outcomes. Our data only identified whether an applicant was offered an intervention, not whether they took advantage of it. However, as treatment courts exclude participants from their programs for noncompliance, and each of the participants in our study completed a treatment court program, we hypothesize that, overall, participants adhered with fidelity to the interventions offered by treatment courts.

### EXHIBIT 3

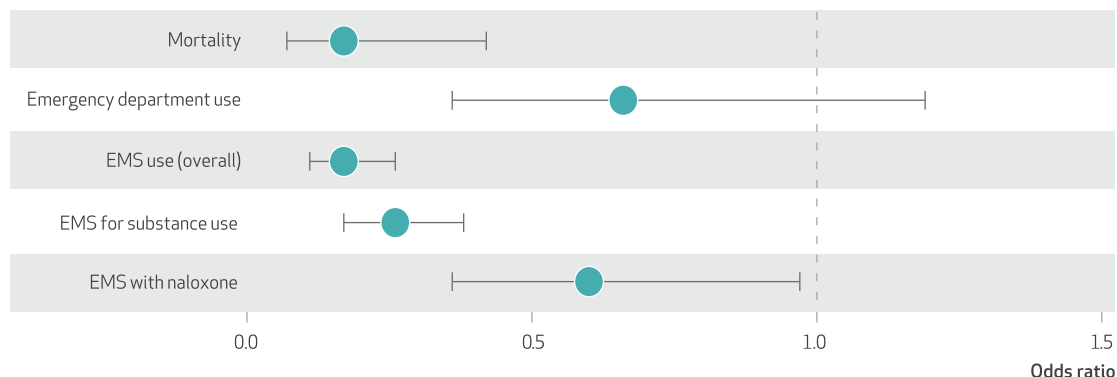
#### Adverse health outcomes among people who applied to participate in 30 treatment court programs in Indiana, January 1, 2018–June 30, 2021



**SOURCE** Authors' analysis of data from the Indiana Management Performance Hub. **NOTES** Participants ( $n = 350$ ) and nonparticipants ( $n = 180$ ) (defined in the exhibit 1 notes) had statistically significant differences at the 0.01 alpha level for all comparisons except emergency department use ( $p = 0.012$ ). Outcomes were identified from linked Management Performance Hub data sets. EMS is emergency medical services.

## EXHIBIT 4

**Adverse health outcomes among people who participated in 30 treatment court programs in Indiana compared with outcomes among nonparticipants, January 1, 2018–June 30, 2021**



**SOURCE** Authors' analysis of data from the Indiana Management Performance Hub. **NOTES** Odds ratios are for treatment court participants relative to nonparticipants (defined in the exhibit 1 notes). Odds ratios less than 1.0 indicate that the outcome was less likely to occur among participants than among nonparticipants. Whiskers indicate 95% confidence intervals. EMS is emergency medical services.

Our research findings can be used to expand the number of treatment courts in underserved areas; in addition, our data can support policies to promote a more inclusive court system, including removing barriers to treatment court eligibility. For example, “violent offenders” are prohibited from participating in treatment court programs that receive federal funding;<sup>45</sup> however, research suggests that such people benefit greatly from treatment court participation.<sup>46</sup> People with complex needs, such as SUD and mental health issues, cognitive impairment, or serious medical conditions, may be excluded from eligibility when resources are insufficient to address their needs.<sup>47</sup> Our data can be used to support policies to augment treatment court teams with additional professionals, such as physicians and mental health specialists. To effectively compete for funding to expand participation, our research can demonstrate both the value and the impact of treatment court programs.

We understand that the comparison between participants and nonparticipants may have produced potential confounding, but it must be emphasized that the people in both groups were similar, in that they each took the affirmative action of applying to treatment court. We believe that it is logical to assume that at least at the time of application, both participants and nonparticipants shared a similar intent to participate in a treatment court program. Further, we believe that if similar treatment courts were to be introduced in counties that currently do not have them, the same characteristics that predicted participation in our sample would likely predict

participation in other counties as well. This would allow for the inference on the effects of participation in new counties to be similar to what we found.

Future investigation into why people chose to participate in treatment court versus those who opted out would inform whether there are similarities between the groups. It could also reveal facilitators and barriers, such as stigmatization, for participation. We did not include juvenile drug courts in our study. Analyzing a possible association between participation in these programs and health and societal outcomes, such as school attendance, could greatly inform the science, as more than 90 percent of US adults with SUD began their substance use in adolescence.<sup>48</sup> Comparing the outcomes of treatment court participants with those of the incarcerated population or the outcomes of participants with those of the general population would help determine whether treatment courts are achieving their goal of keeping people alive and healthy. Analyzing wraparound services that may be provided postrelease would bolster our applicant profiles. Finally, an economic analysis of the savings achieved through the costs of treatment court participation versus the costs of health outcomes for our outcomes of interest may help inform decision makers regarding the importance of treatment court use and expansion.

## Conclusion

Our study's results confirm the importance of treatment courts as a public health intervention to improve health outcomes among participants.

Participating in programs that embrace a holistic, team approach to substance use may save lives. Our results can inform the establishment of additional treatment courts and can improve

current programs. Results can also be used as evidence-based support when treatment courts are applying for funding opportunities to establish or expand court services. ■

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