APPENDIX TO SUMMARY REPORT

Buffalo OIC Process, Outcome and Cost Evaluation Full Study Detailed Report

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TABLE OF CONTENTS

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LIST OF EXHIBITS

INTRODUCTION

Widespread diversion and misuse of prescription opioid pain relievers in the United States has escalated to a public health crisis. In addition, the use of heroin and synthetic opioids like fentanyl continue to damage communities, as fentanyl is increasingly manufactured illicitly, mixed with other drugs, and imbibed by users without their knowledge. Since 1999, the number of overdose deaths involving opioids has more than quadrupled,[1] and National Institute of Health data show that on any given day, 128 Americans die from an opioid overdose.[2]

The opioid epidemic has devastating consequences for the health of individuals and communities, including increased rates of infectious diseases, neonatal syndromes, and mortality.[3] The crisis also impacts social and economic welfare: The Centers for Disease Control and Prevention estimates that the costs of healthcare, lost productivity, addiction treatment, and criminal justice involvement related to prescription opioid misuse combine to create an economic burden of $78.5 billion a year in the United States.[4] The opioid epidemic places new pressures on an already overburdened criminal justice system, impacting law enforcement, jails, and courts. Not only have caseloads increased due to new charges, courts must also grapple with the unique treatment and stabilization needs of opioid users.

Across numerous states, courts have begun to mobilize and build coordinated responses. Modeled on successful therapeutic court programs, these new "opioid intervention courts" prevent death from overdose by providing individuals with immediate access to medically assisted treatment, stabilization, peer recovery support, and court supervision.

The first opioid intervention court (OIC) was launched in Buffalo, New York in May of 2017. The Buffalo OIC is not a drug court. Unlike traditional drug courts that are longer term and focused on reducing recidivism, the Buffalo opioid intervention court is a brief intervention (intended to last 90 to 120 days) and has a distinct primary and immediate goal of saving lives. The program is initiated directly post arrest and is intended to prevent overdose and heroin related deaths and to support stabilization using intensive court supervision, medically assisted treatment (MAT), and peer support. The OIC serves as a medical intervention option for courts and criminal justice officials.

It is important to recognize that the opioid intervention court (OIC) model is a distinct program and does not follow a traditional treatment court model. The intention is to keep defendants alive and assist in their stabilization until they determine the final case disposition. The OIC

[1] **https://www.drugabuse.gov/drug-topics/trends-statistics/overdose-death-rates**
[2] HEAL Initiative Research Plan (NIH, June 2018)
[3] Retrieved from **https://www.drugabuse.gov/drug-topics/opioids/opioid-overdose-crisis**
[4] As Opioid Use Disorders Increased, Prescriptions for Treatment Did Not Keep Pace (NIDA Notes, July 2018)

model is, however, grounded in evidence from the literature on treatment courts. Research indicates that treatment, and specifically medically assisted treatment, is a powerful element in lowering likelihood of overdoses/death and subsequent recidivism, as well as a range of other positive outcomes. A systematic review of 46 opioid-related interventions delivered before, during, and after incarceration found that opioid agonist treatment (OAT) was associated with lower rates of illicit opioid use, higher adherence to OUD treatment, lower recidivism, and higher rates of employment one year post-incarceration. Individuals who received OAT while incarcerated had fewer nonfatal overdoses, and lower mortality.[5]

As the most prominent and institutionalized model, drug courts have been shown to be effective in reducing criminal recidivism.[6] A meta-review of 154 independent evaluations found that the vast majority of participants in adult drug courts experienced lower recidivism than non-participants, with an average effect analogous to a drop in recidivism from 50% to 38%, and with the effects lasting up to three years.[7]

Research evidence suggests that in addition to reducing recidivism, drug courts improve the psycho-social functioning of offenders,[8] and reduce taxpayer costs due to positive outcomes for drug court participants (including fewer re-arrests, less time in jail and less time in prison).[9] Some drug courts have been shown to cost less to operate than processing offenders through business-as-usual in the court system.[10]

An important feature of the Buffalo OIC is the numerous types of medically assisted treatment (MAT) that are available for clients, including methadone, naltrexone, and buprenorphine. Medications have become an essential component of ongoing treatment plans for opioid use disorders, both for patients in acute withdrawal and to support long term recovery. The use of opioid reversal drugs has been shown to be an effective, as well as cost-effective, way of saving lives. The National Institute on Drug Abuse has argued for the importance of expanding research on MAT, and integrating pharmacotherapies more comprehensively in treatment services in specialty care and primary care.[11] Other practitioners have also called for policy changes to remove barriers to evidence-based treatment for opioid use disorder, including mandating the provision of MAT in correctional settings, promoting it in drug courts, and proactively offering it to individuals at high risk of overdose.[12]

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[5] Malta, M., Varatharajan, T., Russell, C., Pang, M., Bonato, S., & Fischer, B. (2019).
[6] GAO, 2005.
[7] Mitchell, O., Wilson, D. B., Eggers, A., & MacKenzie, D. L. (2012).
[8] Kralstein, 2010.
[9] Carey & Finigan, 2004; Carey, Finigan, Waller, Lucas, & Crumpton, 2005.
[10] Carey & Finigan, 2004; Carey et al., 2005.
[11] Volkow, N. D. (2015).
[12] Davis, C. S., & Carr, D. H. (2019).

EVALUATION OF THE BUFFALO OPIOID INTERVENTION COURT

As more courts have expressed interest in replicating this groundbreaking model, a great deal of attention has been focused on how an OIC should operate, particularly the core practices that make this program effective. Given the interest in learning "what works" with opioid using populations that enter the court the system, the Buffalo OIC participated in a federally funded process, outcome and cost evaluation completed by NPC Research.

In early 2019, NPC Research was contracted by the National Drug Court Institute, under a grant from the Bureau of Justice Assistance to conduct a process, outcome, and cost evaluation of the Buffalo OIC as a promising model to address the opioid crisis. This appendix presents detailed methods and results from this comprehensive evaluation.

The evaluation of the Buffalo OIC was designed to answer the following questions through a process evaluation, an outcome evaluation and a cost-benefit analysis.

1. What circumstances led to the development of the OIC program and what were the intended objectives?
2. How did the OIC team plan to accomplish their objectives? (How does the program operate and what are the key activities and interventions?)
3. Who are the OIC participants? What is their demographic make-up and in what ways are OIC participants different than others in the arrestee population?
4. Was the OIC implemented following the intended model?
    a. How was the OIC implemented and did it follow the 10 Essential Elements of Opioid Courts?
    b. Did the OIC connect participants with the intended services in the intended time frame and did participants complete the program successfully?
5. Did the OIC accomplish its intended short-term objectives for participants compared to those who did not participate? That is, did the OIC connect participants to more services more swiftly than similar individuals who did not participate in the OIC?
6. Did the program accomplish its main objective (to save lives)?
    a. Were people who participated in OIC less likely to die than similar individuals who did not participate in the OIC?
    b. Did Erie County experience a decrease in events related to overdose death after the OIC was implemented?
7. Did the program have other corollary impacts (in addition to saving lives)?
8. Is the program cost beneficial?
    a. What did the program cost?
    b. Was there a monetary return on investment?

This appendix first presents the methods and results of the process evaluation, drawing from the *10 Essential Elements* as a framework to describe the practices of the Buffalo OIC including recommendations for further improvements to strengthen outcomes for clients. Next, the

outcome evaluation illustrates the impact of the OIC on engagement in treatment and in deaths avoided. In the final section, the cost evaluation provides the cost of implementing the OIC and compares the cost of OIC outcomes to outcomes for individuals eligible for the OIC but who experienced business as usual. The cost evaluation also assesses the extent to which program costs are offset by any cost-savings related to participant outcomes. The main report provides a summary of the overall study, highlighting the key findings.

DESCRIPTION OF BUFFALO OIC

Around 2010, rates of opioid addiction and related deaths began to climb dramatically in Buffalo, New York. In 2016, Erie County had the highest rate of opioid-related deaths of any county in New York (approximately 30 per 100,000 residents).2 With a population of just under 1 million, this translates to approximately 300 lives lost to opioid overdoses in one year. In 2016, the Erie County Opioid Epidemic Task Force implemented several public health responses to overdose fatalities.

The creation of the Buffalo opioid intervention court was a collaborative effort between dozens of concerned stakeholders, including the judicial bench, treatment courts, hospitals, public health, public defense, law enforcement, prosecution and treatment. Mirroring other communities that were grappling with the opioid epidemic, rates of opioid addiction and deaths climbed dramatically in Buffalo between 2010 and 2014, and in 2015 there were over 200 deaths due to overdoses. This crisis prompted a response from county executives and resulted in an Executive Order (#014)13 that established an Opioid Task Force. This task force was charged with examining the opioid crisis, including prescription practices, access to treatment services, medication-assisted treatment programs, police intervention, and distribution of Naloxone (Narcan). During this time, various judicial officers and the treatment court coordinator convened to discuss how they could address this crisis through court intervention. Due to a strong collaborative relationship formed through other operational treatment courts, the stakeholders had a solid “baseline” of coordination and problem solving from which to launch. According to Buffalo opioid intervention court staff, the efficacy of having a treatment court and associated collaborative relationships already in place is an important lesson that other courts should consider when developing a program.

The research on implementation science and in treatment courts shows that when a new program is launched, agencies and teams are more likely to achieve their goals and objectives when the intended model is followed closely. While the OIC is a completely new model, and research is currently underway, decades of findings from treatment courts provide an important framework for OICs to consider. In addition, during the summer of 2019, the Center for Court Innovation, in partnership with the original OIC in Buffalo and the Office of Policy and Planning of the New York Unified Court System, and through funding and support from the

[13] Downloaded on 10/28/19 from http://www2.erie.gov/exec/index.php?q=executive-order-014

Bureau of Justice Assistance, released the *10 Essential Elements of Opioid Courts.*[14] *The 10 Essential Elements* are anchored in the Buffalo experience, as well as other operational opioid court efforts in various states (e.g. Tennessee, Arizona). *The 10 Essential Elements* also reflect decades of research on traditional therapeutic courts, evidence-based practices in substance use disorder treatment, and the use of medically assisted treatment.

THE TEN ESSENTIAL ELEMENTS OF OPIOID COURTS

1. Broad legal eligibility
2. Immediate screening for risk of overdose
3. Informed consent after consultation with defense counsel
4. Suspension of prosecution or expedited plea
5. Rapid clinical assessment and treatment engagement
6. Recovery support services
7. Frequent judicial supervision and compliance monitoring
8. Intensive case management
9. Program completion and continuing care
10. Performance evaluation and program improvement

Key Activities

Placement in the OIC is initiated immediately after an individual's arrest. Individuals with opioid use disorder receive rapid placement in treatment (often medication-assisted treatment, or MAT), other wraparound services, intensive monitoring, and peer support, along with daily court appearances. Their cases are held in abeyance until stabilization is initiated and then the normal judicial process resumes. Once stabilized, many participants are transferred to drug court for ongoing treatment, continued wraparound services, and recovery support. The traditional treatment court system can take upwards of 50 + days from arrest to filing to assessment and entry into the program. Given the serious nature of opioid use disorder, the opioid intervention court measures intake in terms of hours. While many of the program features are similar to the traditional treatment court model (e.g. assessment, access to evidence based treatment, judicial contact, case management), what is significantly different about this model is the immediacy of the brief screening[15] completed in the jail the day of the arrest and if the defendant agrees to participate, they are brought before the judge for entry

[14] The director of the Buffalo OIC (Jeff Smith) and the New York Statewide Treatment Court Coordinator (Dennis Reilly) were instrumental in the development of the *10 Essential Elements of Opioid Courts*.
[15] https://npcresearch.com/wp-content/uploads/RODS-Validation-INSTRUMENT-JCHC-072513.pdf

into the program within hours of booking. Within that first 24 hours they are also evaluated by a nurse and doctor for assessment and administration of medically assisted treatment (MAT). Numerous types of MAT are available for clients, including methadone, naltrexone, and buprenorphine.

The sample timeline visualized here illustrates the immediacy and quick pace of the court, which allows the stakeholders to immediately intervene to save lives.

The Buffalo stakeholders set out to intentionally create a system that was different from the standard treatment court models available in the community. The Buffalo opioid intervention court was built around the founding principle of saving lives, rather than a concern with reducing recidivism. Reducing recidivism, and adjudication of the individual's crime, could occur after the individual was stable and had been provided with the tools and support to prevent overdose and death. The court was developed to operate as a pre-plea track prior to treatment court, to serve those not eligible for standard treatment court, and to stabilize individuals prior to disposition.

Once participants have entered the program and completed initial screening, they are expected to attend court daily (at least for the first few weeks of the program) where they have access to the peer specialist and case manager who both assist participants with connections to treatment providers and other services such as transportation and housing assistance. A defense attorney assigned to the OIC is always present in the courtroom and stands with the participants while they meet with the judge. Some participants also choose to have their own attorney present. A random number of participants are drug tested during each day's court session. During court appearances with the judge, the judge speaks with participants about their current needs and whether they are engaging in the services they have been referred to and about any drug testing results.

There are no phases in the OIC program. As participants show signs of stabilization, the required frequency of court appearances may decrease based on the discretion of the judge after being informed by the staff (case manager, peer specialist, attorneys) on how the participant is doing. Once participants are stabilized and the danger of immediate overdose is

passed, while the participants continue to participate in the program, the normal adjudication process resumes, resulting in the full range of potential dispositions according to the facts of the case including case dismissal, diversion options and conviction. If the case is dismissed, the participant may choose to continue in the OIC program or choose to leave.

The process of determining whether an OIC participant is eligible for one of the treatment courts is not clearly documented. Because many cases, once adjudicated, may result in dismissal, it is not always known right away whether the case (and therefore the participant) will be an option for treatment court at all. Once the case disposition is determined, the case manager and attorneys can work together to determine treatment court eligibility based on participant's criminal history, charges on the current case and assessed level of risk and need. Criteria for successful OIC completion is also not well documented or very structured. Factors related to successful completion include being engaged in and consistently attending assigned treatment, whether disposition was decided on a participant's case, compliance with the check-in requirements with the case manager and attendance in court.

As described earlier, the OIC's primary goal is saving lives through:

- rapid access to medication-assisted treatment (MAT), and
- supporting stabilization through intensive court supervision, peer support, and drug testing

The OIC is intended as a short term (90 to 180 day) intervention to prevent overdose death and initiate stabilization while the court is determining a participant's case disposition. Although the OIC is not a treatment court, it was designed based on research from treatment courts and includes rapid access to evidence-based treatment services (e.g. MAT, cognitive behavior therapies for substance use disorders), specialized peer support, intensive case management and supervision, and frequent court appearances that include individual conversations with a judge similar to court appearances in treatment courts. Exhibit 1 describes how the Buffalo OIC varies from the standard treatment court model in several important ways.

Exhibit 1: Traditional treatment court practices compared to OIC practices

Activity	Standard Treatment Court	Opioid Intervention Court
Referral and entry	Can take 50+ days	Immediate (within 24 hours) – focus on clinical needs rather than legal eligibility of the case
Screening and Assessment	Days to weeks	Within hours of arrest
Court appearances/ Status Hearings	Weekly or bi-weekly appearances in front of Judge	Daily (M-F) appearances in first 60 days; 3 times weekly post 60 days
Evidence based treatment	After assessment, evidence-based treatment may be provided within a few weeks	MAT offered/utilized within 24-48 hours of arrest (methadone/vivitrol/suboxone) Referral to other evidence-based therapies are provided in addition to MAT
Case management	Weekly contact with case manager and/or probation officer	Daily contact with case manager
Incentives and sanctions	Ongoing use of incentives and sanctions	Extremely limited use of traditional incentives and sanctions (though positive regard from the judge, changes to the treatment plan, the peer support specialist and case managers is effective in participant engagement)
Curfew	Curfew typically used as sanction	Nightly curfew calls conducted by case manager to monitor status/health
Drug testing	Best practice is drug testing twice per week	Drug testing for opioids (random while attending court daily)
Community support groups	AA/NA and other sober support	Peer Recovery Support Specialists assigned to all participants within hours of arrest
Legal status at entry	Pre and post disposition model	Suspension of charge via prosecutor agreement
Eligibility	Specific, targeted, charges	Broad range of eligible charges, ranging from misdemeanors to felonies.
Program completion	Graduation if conditions completed	If conditions completed, either transferred to a treatment court program; charges dismissed, favorable disposition, or full prosecution. Each case varies according to legal criteria and participant assessment.
Staffing meetings	Weekly staffing (before court) of cases on the docket among all team members	No formal staffing. Case manager(s) meets daily with judge briefly before court to review each case.

The creation of the Buffalo opioid intervention court was a collaborative effort between dozens of concerned stakeholders, including the judicial bench, treatment courts, hospitals, public health, public defense, law enforcement, prosecution and treatment. Mirroring other communities that were grappling with the opioid epidemic, rates of opioid addiction and deaths climbed dramatically in Buffalo between 2010 and 2014, and in 2015 there were over 200 deaths due to overdoses. This crisis prompted a response from county executives and resulted in an Executive Order (#014)[16] that established an Opioid Task Force. This task force was charged with examining the opioid crisis, including prescription practices, access to treatment services, medication-assisted treatment programs, police intervention, and distribution of Naloxone (Narcan). During this time, various judicial officers and the treatment court coordinator convened to discuss how they could address this crisis through court intervention. Due to a strong collaborative relationship formed through other operational treatment courts, the stakeholders had a strong "baseline" of coordination and problem solving from which to launch. According to Buffalo opioid intervention court staff, the efficacy of having a treatment court and associated collaborative relationships already in place is an important lesson that other courts should consider when developing a program.

[16] Downloaded on 10/28/19 from http://www2.erie.gov/exec/index.php?q=executive-order-014

PROCESS EVALUATION

Research has demonstrated that programs that have performed monitoring and evaluation and made changes based on the feedback have significantly better outcomes.[17] A process evaluation considers a program's policies and procedures and examines whether the program is meeting its goals and objectives. Process evaluations generally determine whether programs have been implemented as intended and are delivering planned services to target populations. To do this the evaluator must have criteria or standards to apply to the program being studied. In the case of the Buffalo Opioid Intervention Court, the *10 Essential Elements of Opioid Courts* provide a framework against which the Buffalo OIC process can be compared. Process evaluation should provide useful information about program functioning in ways that can contribute to program improvement. The main benefit of a process evaluation is improving program practices with the intention of increasing program effectiveness for its participants. Program improvement leads to better outcomes and impacts and in turn, increased cost-effectiveness and cost-savings.

The focus of this process evaluation was to answer the following research questions.

1. What circumstances led to the development of the OIC program and what were the intended objectives?
2. How did the OIC team plan to accomplish their objectives? (How does the program operate and what are the key activities and interventions?)
3. Was the OIC implemented following the intended model (i.e., the *10 Essential Elements*)?

METHODS: PROCESS EVALUATION

The information that supports this process evaluation report was collected from site visits in 2019 during which multiple NPC staff members observed and met with the OIC staff and with other partner agencies. The site visits included interviews with all critical stakeholders, along with observations of staff meetings and court sessions. Additionally, information for this report was gathered from an online assessment as well as stakeholder phone interviews, and review of program documentation.

Online Assessment

NPC used an online assessment to gather program basic objective process information from the OIC staff. Although NPC developed this assessment originally for traditional treatment courts, the majority of the assessment questions were still relevant to the OIC, and using this

[17] Carey, Finigan, & Pukstas, 2008; Carey, Waller, & Weller, 2011; Carey, Mackin, & Finigan, 2012.

assessment allowed NPC to determine where the OIC processes were different from, as well as similar to, a traditional treatment court. The assessment provides a consistent method for collecting structure and process information from court programs and covers a number of areas, including eligibility requirements, specific court program processes (e.g., phases, treatment providers, urinalyses, fee structure, rewards/sanctions), graduation, continuing care, identification of staff members and their roles, and a description of the program participants (e.g., general demographics). The use of this assessment allowed NPC to begin building an understanding of the program before site visits, as well as to collect information that will support a thorough review of the data collected by the OIC program.

Observation

NPC staff members visited the OIC three times in 2019 during which multiple NPC staff members observed staff meetings, meetings to prepare the judge for court, and court sessions. These observations provided information about the structure, established procedures, and routines used in the OIC including interactions between staff members, court responses to participant behavior and how the judge worked with staff and participants during court sessions.

Key Stakeholder Interviews

Key stakeholder interviews, conducted both in person during site visits and through phone calls over time, were a critical component of the process study. NPC staff conducted detailed interviews with individuals involved in the administration of the OIC including the judge, program coordinator, attorneys, treatment providers, case managers, the peer support specialist, MAT providers, mobile van staff and other service providers.

The interviews clarified and expanded upon information gained from the online assessment and allowed NPC to obtain a deeper and more comprehensive understanding of the program's process, as well as identify changes that have occurred with the program over time. The information gathered by the evaluation team focused both on the day-to-day operations, as well as the most important and unique characteristics of the OIC.

Document Review

The evaluation team reviewed program documents including the screening form used in the jail, program referral forms, assessment tool, and the management information system (the Unified Court System database) to better understand the operations and practices of the CCTC.

RESULTS: PROCESS EVALUATION

The main focus of the Buffalo Opioid Intervention Court is to provide stabilization and support to those in crisis with the goal of saving lives while the court is determining a participant's case disposition. Through screening within hours of arrest, engagement with medically assisted treatment, intensive judicial contact and peer recovery assistance, participants are provided with multiple supports to address their needs. Unlike traditional treatment courts, which are concerned with reducing recidivism and increasing treatment completion, the overarching goal of the OIC model is to prevent opioid overdose and save lives in the direct time frame after arrest and booking through strategic and individualized interventions including immediate screening and engagement in MAT and other treatment, intensive judicial monitoring, and recovery support services. By helping to stabilize individuals who are at immediate risk of overdose death, opioid intervention courts offer hope to individuals in crisis and set participants on the path to long-term recovery and a better quality of life.

As these courts continue to develop across the country it is important to note that not all opioid intervention courts need to be identical. The *10 Essential Elements* should be considered the guiding principles for the OIC model as the elements reflect experiences of the varied OIC models across the country, as well as decades of research from treatment courts and evidence-based treatments. For purposes of this process evaluation, the Buffalo OIC practices are organized according to the *10 Essential Elements* to provide insights into operations and inclusion of recommended elements in their practices.

As the inspiration for the development of the *10 Essential Elements,* the Buffalo OIC has done exceptional work in integrating the *Essential Elements* into daily processes. Specific areas and practices that stand out in the Buffalo OIC include:

- Two dedicated court staff that screen almost every individual that is arrested and awaiting arraignment in the Buffalo jail within hours of arrest
- Potential participants appear in front of the OIC judge within a day of the arrest (Monday through Friday)
- Assessment and connection to medication-assisted treatment within 12 to 24 hours of program entry
- Daily court check-ins for new participants of the program.
- Daily contact with case manager and/or peer recovery specialist.

Additional details of the Buffalo Opioid Intervention Court's practices are described in the introduction to this report, and in the process evaluation results below. In the sections that follow, each guideline as described in the original *10 Essential Elements* publication is listed, followed by a description of how the Buffalo OIC is implementing that guideline and recommendations (where applicable) for improvements.

Essential Element #1: Broad Legal Eligibility

Opioid intervention courts should accept the broadest range of charges possible, ideally including felony and misdemeanor charges. Eligibility for opioid intervention court should rest primarily on the defendant's clinical needs rather than the crime charged. The purpose of these programs is to prevent overdose deaths. Therefore, opioid intervention courts should strive to accept every clinically appropriate defendant. Courts considering inclusion of domestic violence or family offense cases should create protocols to ensure victim safety and coordinate with available victim advocacy programs.

Buffalo Opioid Intervention Court Process Description:

- The vast majority of cases coming through the local court system where the defendant is using opioids are eligible for participation in the OIC. Charges that disqualify an individual from participating in the program include any violent charges, sex offenses, and/or drug dealing charges, (although at the time of the evaluation the OIC did not have written documentation of ineligible charges). Individuals with any other charges are potentially eligible for the OIC as long as they meet the screening criteria for opioid use described under Essential Element #2. Even within these disqualifying charges, the program can still discuss individuals on a case-by-case basis, generally related to the violent and drug-dealing charges. For example, the OIC has accepted individuals with drug dealing charges if it's determined they are dealing to support or continue their opioid use.

Suggestions/Recommendations for the OIC:

In their policy and procedures manual, the Buffalo OIC should

- Document the specific charges that are ineligible for the program.
- Document the process for accepting/rejecting individuals with current or prior drug dealing charges.
- Document the process for accepting/rejecting individuals with current or prior violent charges.

Essential Element #2: Immediate screening for risk of overdose

Opioid courts should use a specialized screening tool to identify individuals who are at high risk of overdose. This screening should be as immediate and universal as possible. Ideally, every defendant should be screened within hours of arrest. Screening can be administered by court staff, pretrial services, or another partner agency. Information obtained through screening must be protected in accordance with federal and state confidentiality laws and professional ethics.

This information should be shared only with defense counsel until defense counsel consents to broader release.

Buffalo Opioid Intervention Court Process Description

- Every weekday, two dedicated court staff conduct a brief screening and intake in central jail booking of every willing individual that has been arrested and is awaiting arraignment. Staff utilize an intake form that gathers relevant information regarding substance use disorders, mental health issues, veteran status, current charges, warrant status, drug of choice, and most recent substance use (among many other items). The purpose of the screening is to identify those that may be at high risk of opioid overdose upon release.
- The court intake staff screen individuals in central booking for *all* treatment courts in the Buffalo City Court system. However, there are six questions that are asked of all individuals within this screening process related to opioid use/history, that have been approved for use by the public defender's office.[18] If individuals answer "yes" to any of the questions, a form (known locally as the "blue sheet") is completed and sent to the clerk's office. The blue sheet signals to the clerk that they can skip arraignment and should be ordered straight to the OIC courtroom for first appearance before the judge.
- The dedicated court staff screen every individual in central booking that is willing to meet. For any individual that is unwilling to talk, the court staff do a computer check on their criminal history. If anything indicates past opioid use, the individual can still be referred to the OIC. Individuals who are unwilling or unable to talk (because they are sick or still under the influence and cannot be roused), may go to arraignment in their assigned courtroom and process through the standard court system. Court staff noted that this was a small number of individuals but can occur due to the voluntary nature of the screening process.
- Screening staff also give a brief overview of the OIC for those who may be eligible and noted that individuals in the jail become more interested and willing to participate in the program when they share that medication-assisted treatment can be available to them within 24 hours.

Suggestions/Recommendations for the OIC:

- The team is encouraged to explore and create a structured process to follow up with individuals that are unwilling or unable to meet (due to being under the influence) with intake staff. By processing through the standard court system they may be missing an opportunity for life-saving treatment.

[18] A copy of these questions can be found here: https://npcresearch.com/wp-content/uploads/RODS-Validation-INSTRUMENT-JCHC-072513.pdf

Essential Element #3: Informed consent after consultation with defense counsel

Every person who screens positive for risk of opioid overdose and who also meets the jurisdiction's legal eligibility criteria should be offered the opportunity to enter the opioid intervention court after consultation with defense counsel. Defense counsel should be on hand to advise clients as immediately as possible after overdose screening. Defendants who agree to participate in the opioid intervention court should have their cases transferred without delay.

Buffalo Opioid Intervention Court Process/Description

- Dedicated defense counsel from Buffalo Legal Aid is present at every court session for the Buffalo OIC. Since individuals are rapidly screened and sent to the OIC courtroom, defense counsel has an opportunity to speak with potential participants in the courtroom and answer any questions before they appear in front of the OIC judge.

Suggestions/Recommendations for the OIC:

- Create documentation of the process for review of cases by the public defender, and the legal protections afforded participants in the OIC.

Essential Element #4: Suspension of prosecution or expedited plea

Opioid courts should concentrate on meeting participants' clinical needs rather than on the legal posture of the case. The legal process should not interfere with the participant's rapid engagement in treatment. To facilitate this goal, prosecutors should agree to suspend prosecution of the case for the duration of the program, allowing the participant, the court, and the treatment providers to focus on clinical stabilization. In post-plea models, opioid courts should expedite the plea process and facilitate the rapid resolution of the legal case so that treatment inception is not delayed by legal procedures.

Buffalo Opioid Intervention Court Process/Description

- The local prosecutor's office places any potential OIC case on hold, pending entry and participation in the program, so no other actions are necessary from their standpoint (and therefore they do not cause any delays in case processing or program entry). Once participants have entered the program and begun services, case processing begins.

Suggestions/Recommendations for the OIC:

The OIC should document:

- How and under what circumstances individuals receive a case closure (dismissal) vs. transfer to another treatment court.

- Any agreements between legal aid and the prosecutor's office on case handling, management and dismissals.

Essential Element #5: Rapid clinical assessment and treatment engagement

Defendants who enter the opioid intervention court should receive a comprehensive clinical assessment administered by a qualified treatment professional and should rapidly engage in individualized, evidence-based treatment services, ideally within 24 hours of arrest. Treatment plans should consider each participant's unique mental and physical health, trauma, and other needs. Medication-Assisted Treatment should be a core component of the program and should be offered to all participants, following informed consent, ideally within 24 hours of arrest. Note, however, that participants cannot be required to engage in Medication-Assisted Treatment. An abstinence-based option should be available for participants who do not wish to use opioid-based medications as part of their treatment plan. Additional treatment modalities, including cognitive behavioral approaches, individual and group counseling, and others, should be utilized to the greatest extent possible. Opioid intervention courts should work proactively with the treatment community and government agencies to identify and fill treatment gaps. At all times, information pertaining to a participant's treatment must be protected in accordance with federal and state confidentiality laws and shared only in accordance with properly executed release agreements.

Buffalo Opioid Intervention Court Process/Description

- A case manager meets with individuals as soon as they appear in the OIC courtroom (after they have spoken with their defense attorney). The case manager discusses the treatment options available, while seeking input from the individual. From there, they work together to decide on a treatment agency/medication-assisted treatment (MAT) provider. That information is then communicated to the team when the individual appears in front of the OIC judge.
- Staff from a treatment agency (Best Behavioral Health) is always in attendance for the court sessions and has a mobile treatment van outside the courthouse for assessments after the court session. There is also a peer support specialist, along with a program director or counselor in attendance. This allows the treatment providers to introduce themselves and talk directly with individuals after they've appeared in front of the OIC judge. The mobile treatment unit allows them to immediately complete a bio-psycho-social assessment and then take individuals directly to their clinic to meet with a doctor and get their first MAT prescription (no medications are in the mobile unit). After MAT has been initiated, a nurse can see participants in the mobile unit after court sessions and perform medical assessments as needed (via TeleHealth). They can also send prescription refills to the doctor at the clinic. If any significant medical issues arise, appointments are made with the clinic and participants are seen within 1-2 days.

- While other treatment providers that work with OIC participants are not in attendance for each court session, they are also able to rapidly schedule and meet with new participants, perform assessments, and typically provide MAT prescriptions within 24 hours.
- All MAT providers in the State of New York are required to provide outpatient services. Treatment services for each participant are based on assessment and case planning and include various group and individual treatment sessions (curriculums vary by provider).

Essential Element #6: Recovery support services

Opioid intervention courts should offer participants a broad range of evidence-based recovery support services. Support groups like Alcoholics Anonymous, Narcotics Anonymous, and similar groups—including secular alternatives—can be important supports to participants. Whenever possible, courts should utilize peer recovery advocates to help participants engage in the program and offer them additional guidance and encouragement. In addition, courts should leverage partner agencies and volunteers to assist participants with general medical needs, trauma-related care, housing, transportation, and other supports. Where available, opioid intervention courts should partner with family support navigators, who can help address the impact of opioids on the entire family.

Buffalo Opioid Intervention Court Process/Description

- The Buffalo OIC has a peer specialist that appears at every court session to make direct contact with potential new clients. The OIC peer specialist is a valuable resource due to her ability to communicate and relate to the lived experiences of the participants in a way that other stakeholders cannot. The peer specialist also meets with current clients to assist with connections to needed services at every court session.
- In addition, the OIC collaborates with an organization called Save the Michael's. This agency provides several support groups for individuals, parents, and families affected by opioid use (among many other services) and also provides transportation to services. Many stakeholder interviews noted that transportation was a significant challenge for participants. The Save the Michael's organization assists greatly in this area by providing participants with daily transportation to their court sessions, as well as their other program requirements. This organization has done a tremendous amount of work to help eliminate the long wait times typically associated with residential treatment beds. It was reported that participants needing inpatient treatment receive approval within a matter of days and transportation is always available and provided by the organization.

Suggestions/Recommendations for the OIC:

Similar to earlier recommendations, the OIC should create documentation of all parts of the program. Under this Essential Element, our recommendation is to:

- Document the peer recovery support specialist role, contact procedures and general job duties in the policy and procedure manual.

Essential Element #7: Frequent judicial supervision and compliance monitoring.

Opioid intervention courts should require participants to return to court frequently for supervision and monitoring—ideally every weekday—for at least 90 days. The judge should use evidence-based techniques, like motivational interviewing, to engage participants in strengths-based conversations about their progress. Participants should undergo frequent, random drug testing using evidence-based drug testing protocols. During the 90-day stabilization period, however, the court should avoid imposing punitive sanctions for positive drug tests, relapses, or other triggering events. Rather, the court should work with treatment partners to adjust the participant's treatment plan to achieve clinical stabilization. Programs that include a longer-term, post-stabilization component should use sanctions judiciously and in a graduated manner consistent with the national best practices for drug courts.

Buffalo Opioid Intervention Court Process/Description

- The program requires new participants to appear in court daily to speak with the judge about their engagement with treatment (including therapy and MAT) and other services, whether or not they had used since their last court appearance, and their engagement or need for assistance in other aspects of their lives. There is no set amount of time that they must appear daily, nor is it tied to phase structure. Reporting requirements are dependent on each participant, their progress on program requirements, and recommendations of program stakeholders. Those struggling or needing more assistance or supervision can be required to report daily, even if reporting requirements have been lessened over time. Most conversations with the judge lasted between 3 and 5 minutes.
- Stakeholders reported, and researchers observed, that the original OIC judge was exceptionally engaging and focused on participant strengths. The judge used motivational interviewing was able to connect with participants and develop a strong rapport.
- A new judge was assigned in May of 2019, and observations of her interactions showed that she was also able to develop rapport and that participants were comfortable having conversations with her.
- While the program was originally intended to last 90 days, stakeholders noted that most participants continued to need services from the program beyond this threshold in

order to get stabilized (closer to 120 days or more). For this reason, the OIC adjusted their intended program length to 6 months.

- Drug testing occurs during weekdays when participants are at the courthouse for court sessions. Participants are tested for a variety of substances, but the program is focused primarily on opioid use due to the high risk of overdose. As a result, testing positive for substances other than opioids does not typically result in a court response.
- The court reported that their primary responses to opioid use or other non-compliant behaviors (such as missing appointments or failing to appear in court) come in the form of treatment/therapeutic adjustments. Verbal warnings and writing essays are used as well. It was reported, and also observed, that punitive sanctions (including jail days) are very rarely used as a court response. When clients fail to appear in court, a warrant is issued immediately. Law enforcement working with the OIC actively looks for participants on OIC warrant in the community and will pick them up and bring them back to court, or to the jail if court is not in session.

Suggestions/Recommendations for the OIC:

- Document program requirements. Outline expectations, how progress is measured and when someone is eligible to advance or graduate.
- Document incentives and sanctions that may be used for participants to ensure accountability and document the kinds of behaviors that will result in incentives or sanctions.
- Consider responding to other drug use in addition to opioid use with appropriate therapeutic adjustments (as the outcome evaluation showed that participants who used other drugs in addition to opioids were less likely to complete the program and more likely to recidivate).

Essential Element #8: Intensive case management.

Case managers employed by the opioid intervention court or a partner agency should help to ensure that participants have necessary support systems during the critical stabilization period. Case managers act as liaisons between the court, supervision agencies, and service providers. In addition, they help to coordinate the ordering and timing for services.

Buffalo Opioid Intervention Court Process/Description

- Two dedicated case managers are in attendance for all OIC court sessions. They demonstrated extraordinary compassion with the participants and are supportive of the OIC's mission to save lives. The case managers are central to all aspects of the program, serving as the point of contact to the many agencies and organizations working with OIC

and connecting participants with those services. This helps ensure that the process for participants entering the program is as seamless as possible. It also ensures that coordinated care is occurring between the various stakeholder agencies and the court. They do excellent work collecting information (including updates from the treatment providers, as well as if participants called/checked-in each night), which is they used to update the judge each morning before court. They are an invaluable resource and stand out as one of the truly essential strengths of the program.

Suggestions/Recommendations for the OIC:

- Document job duties, roles and division of duties so that when turn-over occurs, training can be seamless.

Essential Element #9: Program completion and continuing care.

Opioid courts should require participants to complete a minimum of 90 days of treatment and supervision before leaving the program to achieve stabilization and lay an effective foundation for longer-term treatment. After this period, eligible participants should be considered for longer-term programs, like a drug court, mental health court, veterans treatment court, or other problem-solving court models, where they can continue to receive evidence-based treatment and achieve long-term recovery. Alternatively, opioid intervention courts can be designed to include a longer-term component that participants transition into after completing the stabilization period. In situations where the participant's legal case will be resolved at the conclusion of the 90-day stabilization period—for example, through dismissal of charges or a plea agreement with no ongoing court involvement—participants should be offered continuing care planning before they leave the program.

Buffalo Opioid Intervention Court Process Description

- Upon entry to the OIC, attorneys may begin discussions of possible resolutions to the case, but negotiations and agreements typically occur as the OIC participant nears program completion. It is at this point that the program stakeholders also have input as to the best option for participants going forward. If the case moves forward through adjudication, ongoing care may include referral to one of the available Erie County treatment courts. Alternatively, if the case is dismissed continuing care may involve a referral to continuing treatment outside the jurisdiction of the court.
- The Buffalo City Court system has several different treatment court programs that are highly functional and able to serve the needs of several types of participants (veterans, DUI, mental health, etc). As a result, OIC participants may continue programming within one of these local programs. However, how it is determined whether an OIC participant should be referred to one of the treatment courts or what the process is for referral is

not documented and OIC staff and other key stakeholders interviewed were unclear on this process.

Suggestions/Recommendations for the OIC:

- Outline how and why certain individuals/cases/charges/circumstances may receive expungement, transfer to another treatment court, etc.
- Create the ability to track hours/days in program to monitor and increase engagement for those that are languishing in the program.
- Create a clear line of documentation of reasons for program exit and options for continuing care.

Essential Element #10: Performance evaluation and program improvement.

Opioid courts should collect data around clearly-defined, participant-level performance measures, such as: date of arrest; date of screening for overdose risk; dates and types of assessment conducted; date of program entry; date of treatment inception; dates of overdose events (fatal and non-fatal); participant use of medication-assisted treatment (including type of medication used); participant use of other treatment modalities; dates of attendance at treatment; dates and nature of contacts with peer support specialists, case managers, and others; dates and frequency of drug testing and test results; dates and frequency of court check-in hearings; dates and nature of contacts between participants and treatment providers; dates of any re-arrests or technical violations; and other measures. Courts should collect this data continuously and meet at least annually as a team analyze this data, ideally with the help of a qualified research partner, to identify service gaps and make program improvements.

Buffalo Opioid Intervention Court Process/Description

- The OIC has a case management system that is used statewide that includes the ability to enter data specific to the OIC and the program is collecting the majority of data outlined within this essential element.
- The OIC has collaborated with multiple researchers and evaluators from universities and private research firms to study their program effectiveness and process and to provide recommendations for program improvement. The current BJA funded evaluation described in this report includes the creation of a “how-to” manual based on the evaluation results that may be used by other jurisdictions to implement opioid intervention courts.

Suggestions/Recommendations for the OIC:

- Because the OIC process includes extremely rapid screening and assessment and connection to services (within hours of arrest), add an option to the treatment court database that allows the tracking of participant information by the hour.
- Create a quality assurance plan to address data entry, timeliness of entry, and checks and balances on data that is entered.
- Create data collection procedures to capture overdose and opioid related death data.

SUMMARY

Overall, the Buffalo OIC is following the *10 Essential Elements of Opioid Intervention Courts*, and in fact, as the first program of its kind, was the inspiration for these essential elements. Being a new program, many of the procedures were evolving as the original plans were adjusted based on the reality of attempting to implement this innovative program and many of these adjustments were not documented or clearly understood by all of the stakeholders. Nearly all recommendations for improved services were related to better documentation of procedures. The OIC should create documentation of all parts of this highly successful program. This will not only assist OIC staff and related agencies with continuing to implement the intended processes and provide essential services as staff changes over time, it will also allow other jurisdiction to more easily implement similar programs through example.

OUTCOME EVALUATION

The main purpose of outcome evaluation is to determine whether the program has improved participant outcomes. In other words, did the program achieve its intended goals for its participants? An outcome evaluation can examine short-term outcomes that occur while a participant is still in the program. Short-term outcomes include whether the program is delivering the intended amount of services, whether participants receive treatment more quickly and complete treatment more often than those who do not participate, whether participants are successfully completing the program in the intended amount of time, and what factors lead to participants successfully completing the program. An outcome evaluation can also measure longer term outcomes (sometimes called an "impact evaluation"), including participant outcomes after program completion. For the OIC the main longer-term outcome of interest is whether participant lives were saved both during and after the program. Also, of interest is whether there is any impact of the program on emergency department visits as well as impact on criminal recidivism.

The main research question addressed in the outcome study include:

1. Who are the OIC participants? What is their demographic make-up and in what ways are OIC participants different than others in the arrestee population?
2. Was the OIC implemented following the intended model? Did the OIC connect participants with the intended services in the intended time frame and did participants complete the program successfully?
3. Did the OIC accomplish its intended short-term objectives for participants compared to those who did not participate? That is, did the OIC connect participants to more services more swiftly than similar individuals who did not participate in the OIC?
4. Did the program accomplish its main objective (to save lives)?
    a. Were people who participated in OIC less likely to die than similar individuals who did not participate in the OIC?
    b. Did Erie County experience a decrease in events related to overdose death after the OIC was implemented?
5. Did the program have other corollary impacts (in addition to saving lives) such as impacts on criminal recidivism?

METHODS: OUTCOME EVALUATION

The outcome study followed a quasi-experimental design with an historical comparison group. NPC selected all participants who entered the OIC program between implementation in May of 2017 and the day of the data receipt in July 2019. Because all OIC participants were identified and screened in the jail, the comparison group was selected from the historical jail population. After reviewing the historical jail population (those booked between January 2015 and December 2016) and the OIC program populations, NPC matched two separate comparison groups, 1. Individuals who were in the jail data who matched OIC participants on demographics and criminal history and 2. Individuals who were in both the jail data and treatment data (OASAS) who matched OIC participants on demographics, criminal history and treatment history. More details on these comparison groups later in this report.

Based on data availability, program and comparison participants were tracked through existing administrative databases for a period of 6 to 18 months following the index jail booking that led to the program entry (or a selected index for the comparisons). The evaluation team used data sources as described in Exhibit O1 to determine whether the program sample and comparison groups differed in access to treatment (e.g., MAT), criminal justice involvement (e.g., arrests), and deaths over time.

Within the context of the OIC, the program goal is an immediate preservation of life and to stabilize defendants while an appropriate disposition of their case is determined, so the 6 month period immediately after booking (while an individual is participating in the program) is the key outcome time period to measure for the program. Of course, ideally, this life saving approach will result in these individuals connecting with treatment and other services that may create longer lasting behavior change and extend life further. The focus of the outcome study was on the time period during the 6 months after booking, extending to one year to determine some longer term outcomes. Future studies could measure whether there are even longer term impacts.

Data Sources

The evaluation team gathered data necessary for the evaluation from administrative databases as described in Exhibit O1. The Exhibit lists the type of data collected and the source of these data.

Exhibit O1. Data Sources

Data	Source
OIC Program Data *Examples:* • Participant demographics • Program start and end dates • Dates of court appearances & warrants • Dates/results of drug tests	New York Unified Court System's Universal Case Management System (UCMS)
Criminal Justice-Related Data *Examples:* • Arrest dates • Booking dates • Dates of case filings • Charges (top coded) • Disposition and sentencing	Buffalo City Police Jail New York's Computerized Criminal History system from the Division of Criminal Justice Services (DCJS)
Substance Use Disorder Treatment Related Data *Examples:* • Substance use treatment services • Substance use history • Additional demographics	The New York State Office of Alcoholism and Substance Abuse Services (OASAS)
Overdose and Death Data • Dates of death • County and statewide overdose rates • County and statewide opioid death rates	New York State Department of Health's Vital Records New York State Department of Health Opioid Dashboard (https://health.ny.gov/statistics/opioid/)

Buffalo Opioid Intervention Court Program Participant Data (UCMS)

NPC obtained a subset of New York's Universal Case Management System (UCMS) which included all individuals who entered the program from implementation in May 2017 to data export in July 2019. UCMS is New York Unified Court System's data system that is used across multiple court programs in the state for case management, program monitoring, and court recording (e.g., warrants). UCMS was provided in Excel workbook and included: demographics, court record information including court appearances and warrants, assessment and intake information, court administered drug tests, and limited substance use treatment referral data. Assessments were available for 240 of the 416 participants included in the UCSM data extract.

Buffalo City Police Jail Booking Data

The Buffalo City Jail provided a data extract in comma separated variable (csv) format from their administrative data system including all bookings occurring between January 2015 and July 2019. Information provided included date of booking, criminal charges, and personal identifiers (e.g., name, date of birth, etc.).

Jail data was used to identify the index event (i.e., booking) that led to program entry for OIC participants. Individuals booked who did not participate in OIC were used as the comparison pool and further refined into matched comparison groups, as described in sample selection.

Statewide Case File Data (DCJS)

Statewide case file data were obtained via New York's Computerized Criminal History system. Researchers at NPC provided DCJS with a list of identified OIC participants as well as the comparison group individuals. DCJS then identified the samples in their system and provided the following data: all criminal case histories available for those individuals up to September of 2019 including dates of arrest, case filing, disposition; the top charge associated with each case; sentencing information for cases resulting in conviction; and limited demographics.

DCJS case file data were used to assess prior criminality and recidivism outcomes. Arrest dates included in case filings and associated charges were used as a proxy for participant arrests for 2 years prior to program index (i.e., jail booking that led to program entry) and up to 18 months after program entry. Charge data were also available in this dataset and were used to calculate recidivism for different charge types (e.g., drug charges, property charges, felony vs. misdemeanor charges).

Statewide Substance Use Disorder Treatment Data (OASAS)

The New York State Office of Alcoholism and Substance Abuse Services (OASAS) collects primary client level data required for all publicly funded and some privately funded substance use treatment services. Data include intake and discharge assessments performed, dates of service, level and type of care received (modality), and demographics. Due to strict privacy controls, OASAS does not keep personal identifiable information except for in a coded field consisting of a unique combination of first and last name, social security, and date of birth. NPC

Research created a similar convention from the sample groups to link treatment data to each individual.

Treatment assessment data, including substances used, mental health history, and education/employment were used to further match the comparison pool to the participant group. Treatment services were used to assess prior treatment history (the presence or lack thereof), and treatment outcomes (e.g., access to treatment, time to treatment, completion of treatment episodes).

Statewide Vital Records

Statewide death records were obtained from the New York Department of Health's Vital Records Department. NPC provided a list of identified OIC participants as well as the comparison group individuals. Vital records then identified the individuals in their system, if present, and provided their date of death, if applicable. Death dates were used for survival analysis and to calculate rates of death to assess the program's possible impact.

OIC Sample Selection and Comparison Matching

Participant Group

The OIC participant group included 416 unique individuals. For the purposes of this evaluation, this group is examined in multiple ways:

Within Program Review: To compare participants who successfully completed the program to those who exited unsuccessfully, we used all non-active OIC participants entering between May 2017 and July 2019. This group was used to describe the differences in characteristics of participants based on dosage and exit status, and a typical service utilization profile of a participant in the program (also used in the cost calculations). There were 344 participants who exited the program.

For Comparative Analysis: All OIC participants who entered the program (or had an index event) between implementation in May 2017 and February 2019, regardless of completion status. This group was used for any analyses used in comparison to the matched groups described below (e.g., survival, treatment, recidivism, and cost comparisons). Only participants with at least 6 full months of post-index outcomes were selected for analyses. NPC employs an intent to treat (ITT) approach, where every participant entering the program, regardless of program status, is used to describe program impact. This sample was categorized into two groups for comparison group matching.

> *Group 1* – All those in the "comparative" OIC participant group who had at least 6 months from their index arrest were used to match to a criminal justice involved comparison group, described below. There were 341 participants who had at least 6 months of outcomes and who were used to match.

Group 2 – A subsection of Group 1, those with at least one substance use disorder treatment episode in OASAS (regardless of whether this treatment episode occurred before, after or during their participation in the OIC) was used to match to a similarly treatment involved comparison group, described below. There were 326 participants (out of the 341) who had at least one episode in OASAS and were therefore included in this match.

Comparison Group

Comparison group design considerations: A comparison group from a neighboring or similar New York county was considered but was discarded due to several factors. In general, other counties, even within the same state, have widely varying criminal justice systems, cultures and services available in the community. It would not be possible to determine if any differences observed in a comparison group from another county were due to the lack of the opioid intervention court or due to one or more of the myriad of other differences in that county's infrastructure. In addition, there were no other counties in New York of a similar size to Erie County that also had the exceptionally high rates of overdose deaths in 2016, the year prior to OIC implementation.

For these reasons, a historical comparison group was selected from within Erie County from the time period directly preceding the implementation of the OIC (2015 and 2016). Using a historical comparison group from within the same county and jurisdiction minimized any differences in the two groups outside the OIC program itself that might have impacted outcomes. Although there may be changes in systems over time even within the same jurisdiction, the historical comparison group in this study included individuals booked into the jail less than a year prior to the start of the OIC, and all were within two years of implementation.

For the comparative analyses, two matched comparison groups were considered in relation to the two OIC program groups described above. Both groups are comprised of individuals who were booked at the jail between January 2015 and December 2016 and who were similar to those who participated in the OIC program (e.g., demographics, criminal history, treatment history), but who were unable to participate as it was prior to OIC implementation.

: NPC identified individuals in the Buffalo City jail data with booking dates occurring between January 2015 and December 2016 as potential comparison group members. Anyone booked into the Buffalo City jail is determined eligible for OIC based on the results of a brief screening. Prior to program implementation, the screening instrument was not in use. Therefore, any booking that occurred during that time was considered a potentially eligible index event for this study.

NPC reviewed additional information such as demographics, criminal history, and prior treatment information for all potential comparison group members. Matching included all available information provided across the city jail, statewide court systems, and statewide treatment systems, where available, including age, gender, race, number of prior arrests and charge types (from DCJS), and prior treatment (from OASAS). After the initial comparison group

was identified based on their index event in the jail without regard to whether the individuals had available treatment data, an additional group was matched from only those individuals found in the statewide treatment database, OASAS (i.e., individuals with at least an assessment or one substance use disorder treatment episode, regardless of when the episode occurred in relationship to the index event).

Group 1 – Criminal Justice Population (CJ Comparison): The initial comparison group pool were all individuals with a booking date (an index event) that occurred during the historical time period before the OIC was implemented in May of 2017 (from 2015 through 2016). A sub-group was then identified via PSM using the variables listed in the Exhibit below. The presence or absence of a substance use disorder (SUD) treatment episode was dichotomously coded and those not found in OASAS were coded as "No prior treatment." Without treatment data, the amount of information around possible substance use, and specifically opioid use, was limited to the presence of prior treatment, and similar criminal histories, particularly around prior drug charges. This group was matched to the Participant Group 1 above and includes 341 individuals.

Group 2 – Treatment Population (Tx Comparison): The initial comparison group pool for this group was all individuals with a booking date (an index event) that occurred during the historical time period before the OIC was implemented in May of 2017 (from 2015 through 2016) *and who could also be found in the OASAS treatment data*. OASAS's assessment data provide additional information about opioid use as well as more detailed treatment history information. Researchers then used the available additional OASAS variables in PSM. This group was matched to the Participant Group 2, and represents 326 individuals.

Exhibit O2. Data Elements Employed in Propensity Score Matching

PSM Matched Data Element
Groups 1 & 2 (Combined from jail, DCJS, OASAS, and UCMS):
Age at booking date
Gender
Race
Number of total arrests 2 years prior to booking date (total, drug, person, property, misdemeanor, felony)
Prior treatment history (any prior detox, residential, inpatient, outpatient, or MAT)
Group 2 Only (from OASAS Assessments):
Substances use history (opioids, cocaine)
Mental health history
Education (high school graduate)
Income Source (public, private, none)

Analytic Approach for Matching Participants and Comparison

The historical comparison groups were selected from observational data collected by governmental agencies (i.e., participants were not randomly assigned, but were selected based on the natural course of program implementations). Using observational data for inferential statistics is complicated by the fact that program participants may systematically differ from comparison group members, and those differences, rather than OIC, may account for some or all of the differences in the impact measures. To reduce this selection bias, NPC employed a matching method called Propensity Score Matching (PSM) to remove study participants from the comparison sample that did not have similar demographics or criminal histories as the PSC population.[19]

Propensity scores are a weighting scheme designed to mimic random assignment. The first step of propensity score analysis was to estimate the probability that a study participant will or will not be an OIC participant. This prediction (the estimated probability of whether an individual is likely to enter the program) is known as the propensity score. Once the propensity score for each individual was established, the extent to which OIC participants differed from comparison group members was calculated for each program using Weighted Least Squares (WLS) regression. This calculation is done by using the propensity scores to weight the parameters in the equation, which adjusts for any pre-existing differences between the two groups. This methodology has advantages over other techniques that statistically adjust for pre-existing differences because it uses a multivariate approach (taking into account many possible measured variables) to create propensity weights and thus reduces potential bias in impact (e.g., recidivism) results. Researchers matched OIC participants in the comparative analysis sample using a one-to-one matching scenario, without replacement (i.e., each OIC participant was matched to one comparison group member, and comparison group members could only be used once).

Matching included all available information provided across the city jail, statewide court, and statewide treatment systems, where available, including age, gender, race, number of prior arrests (from DCJS), and prior substance use disorder treatment engagement (from OASAS). Testing on the validity of the match showed no statistically significant differences between the two groups on demographics (including age, gender, race, housing status, education level and employment status), prior treatment (including prior detox, residential, inpatient, outpatient and MAT), and criminal history (including numbers of prior arrests with drug, property, person, felony and misdemeanor charges).

While the criminal justice comparison group was pulled only from the jail data, from the same pool as individuals who participated in the OIC. This group would technically be the most similar to those in the OIC in that the OIC did not use prior treatment involvement as a criterion for entering the OIC. However, without the OASAS data, it was not possible to determine whether anyone in the comparison jail population used opioids. The closest indication of drug use

[19] Rosenbaum & Rubin, 1983.

available without OASAS was the existence of prior drug charges, which is not necessarily indicative of an opioid use disorder.

However, selecting only those who could be found in OASAS skews the sample toward only those who had received treatment at some point, either before or after their index event, which has two problems. 1. OIC participants were screened in the jail and their eligibility was not based on treatment history so a comparison group that only includes those with treatment may be fundamentally different from those in the OIC and 2. One of the outcomes of interest is whether the OIC successfully connected participants to treatment more often than individuals who were booked in the jail under business as usual conditions, so selecting a comparison from only those who had treatment would appear to then negate the ability to determine if the OIC led to greater treatment engagement. However, over half of all OIC participants received treatment prior to entering the OIC therefore, to select a matching comparison pool, over half of the comparison pool had to have prior treatment, which means they were already in the OASAS data. Further, the time period during which treatment occurred is key. OIC participants and comparison group members were matched on treatment history (any treatment that occurred within two years prior to their index booking) so any OIC participants who did not have treatment before entering the OIC were matched with those who also did not have treatment prior. And, treatment that occurred subsequent to OIC entry was measured over a period of 12 months directly after the index booking, therefore although some comparison group members received treatment eventually, it may not have occurred within 12 months after their index booking. Finally, using a comparison group that was available in the OASAS treatment data allowed us to match on reported use of opioids and the presence of opioid use disorder. A comparison group that has been involved in the treatment system also tells us more about whether the court involvement provides any added value for OIC participants in addition to the value of treatment alone and whether the timing of that treatment is important. Finally, a direct comparison of the CJ and TX comparison groups demonstrated no significant differences between the comparison groups on the variables used in matching. However, the Tx Comparison match showed the best match to OIC participants across the majority of available data including treatment history, demographics, other socioeconomic variables and criminal history regardless of whether or not the variable was used in the matching process (see matching results below). For all the previously stated reasons, the final comparison group selected for this study to measure OIC outcomes and costs consisted of those in the jail population who did not participate in the OIC but who had data available in OASAS (comparison group 2: Tx Comparison)

Matching Results

Exhibit O3 shows the results of the match for both comparison groups and the OIC participants on the variables used for matching, as well as other descriptive variables related to demographics, socioeconomic status, criminal history and treatment history that were not used as a part of the matching process. The main purpose of Exhibit O3 is to demonstrate that the two comparison groups are quite similar on a range of available information, in spite of the fact

that the CJ comparison was not selected from those with OASAS treatment data and was a random sample pulled from the jail data and then matched to the OIC participants. And, although the CJ comparison group was not selected from those with OASAS data, many of them did end up being found in the OASAS data later. Regardless of whether specific variables were used in matching, there were no significant differences between the Tx comparison and OIC participants for any measurable variables after the matching was completed. The variables in Exhibit O3 includes assessment data only on those who received an assessment.

Exhibit O3: OIC Participants and Comparison Groups Match Results

	CJ Comparison	Tx Comparison	OIC
N	341	326	326
Gender			
Male	70%	65%	67%
Female	30%	35%	33%
Race			
Black	9%	12%	13%
White	72%	69%	68%
Latinx	16%	18%	17%
Other	2%	2%	2%
Social Background			
English is primary language	87%	87%	88%
Homeless	10%	11%	9%
Employed	21%	14%	16%
Veteran	7%	3%	4%
High School Graduate	76%	69%	67%
Age (Mean)	32.3	33.6	32.7
Prior Tx			
Any Prior Treatment	60%	68%	68%
Detox	37%	36%	37%
Residential	18%	17%	18%
Inpatient	28%	24%	30%
Outpatient	53%	54%	54%
Opioid related MAT	48%	51%	52%
Arrests: Two Years Prior to Index			
All	1.5	1.3	1.5

Drug	0.6	0.6	0.7
DWI	0.1	0.1	0.1
Person	0.06	0.04	0.04
Property	0.6	0.6	0.6
Misdemeanor	1.1	1.0	1.1
Felony	0.3	0.3	0.3
Other	0.1	0.10	0.2
Violent Felony Offense	0.05	0.04	0.04

Exhibit O4 provides the characteristics of the OIC participants and comparison group used for the final outcome and cost analyses. The information provided includes data from OASAS assessments as well as data from criminal justice sources such as the jail and DCJS. There were no significant differences between the two groups based on the data elements used in the match (See Exhibit O2. *Data Elements Employed in Propensity Score Matching*) or any other variables listed in this exhibit.

Exhibit O4: Characteristics of Final Matched Comparison group: Used for Outcome Analyses

	Comparison N=326	OIC N=326
Arrests: Two Years Prior to Index		
All	1.3	1.5
Drug	0.6	0.7
DWI	0.1	0.1
Drug or DWI	0.6	0.7
Person	0.04	0.04
Property	0.6	0.6
Misdemeanor	1.0	1.1
Felony	0.3	0.3
Other	0.10	0.2
Violent Felony Offense	0.04	0.04
Convictions: Two Years Prior to Index		
All	0.7	0.7
Drug	0.2	0.2
DWI	0.04	0.04

Drug or DWI	0.3	0.3
Person	0.03	0.02
Property	0.3	0.3
Misdemeanor	0.6	0.6
Felony	0.03	0.03
Other	0.1	0.1
Violent Felony Offense	0.0	0.0
Social Background		
English is primary language	87%	88%
Homeless	11%	9%
Employed	14%	16%
Veteran	3%	4%
High School Graduate?	69%	67%
Married	9%	8%
Has income	69%	70%
Has children	58%	57%
Parent has alcohol or SUD	71%	68%
Experienced trauma	72%	67%
Has impairment	21%	20%
Traumatic brain injury	3%	3%
Any indication of mental illness	56%	57%
Previous Detox	27%	28%
Ever had a ER/ED visit	33%	37%
Hospital visit	12%	14%
Used tobacco by 18	89%	93%
Used substances by 18	87%	85%
Substances Used		
Tobacco	94%	92%
Opioids	92%	91%
Alcohol	30%	23%
Methamphetamine	1%	2%
Cocaine	63%	60%
Marijuana	36%	37%
Prior Treatment		
All	68%	68%

Detox	36%	37%
Residential	17%	18%
Inpatient	24%	30%
Outpatient	54%	54%
MAT	19%	17%
Opioid related MAT	51%	52%

There are several notable characteristics of OIC participants (and matched comparison group members). As expected, almost all of the individuals reported using opioids. In addition, almost all also used tobacco and well over half used cocaine. Between a quarter and one-third using marijuana and alcohol. Very few reported methamphetamine use. Roughly two-thirds reported experiencing trauma and had parents who had substance use disorders. Less than 10% were married though over half reported having children. Over half had substance use treatment episodes prior to their index booking.

Analyses

Once all data were gathered on the study participants, researchers cleaned and moved the data into Statistical Package for the Social Sciences (SPSS) 23.0 for statistical analysis. The analyses used to answer specific questions are described below. Some analyses include data sources that do not cover the full outcome window for every participant. In these instances where all participants do not have the full outcome time available, only those with complete information were included. These discrepancies in sample sizes are noted throughout the report. Outcomes are counted with respect to the participant program index booking date or the index used to select the comparison groups.

Outcome Study Question 1 – Who are the OIC participants? What is their demographic make-up and in what ways are OIC participants different than others in the jail population?

Program data were reviewed and compiled for all those who entered the program between implementation and July 2019. For these individuals, researchers reviewed the overall demographics and assessment information available from the program as well as created a service profile reviewing; the average number of days from jail booking (index) to program entry, first court session, and first treatment; the average number days in the program; and the average number of drug tests, court sessions, and warrants.

Using data obtained from the jail system in tandem with linked treatment data from OASAS, additional demographic and assessment information were descriptively compared between the two groups, that is OIC participants and the general jail population. Additionally, an index booking date was randomly selected for the jail population not participating in OIC. Using this proxy index date, prior substance use disorder treatment and prior criminality were reviewed across OIC and the non-OIC jail populations. Chi-square and independent samples t tests were performed to identify which factors were significantly associated with OIC participation.

Study Question 2 – Was the OIC implemented following the intended model? Did the OIC connect participants with the intended services in the intended time frame and did participants complete the program successfully?

Program data, in addition to treatment data, were used to review if OIC participants were connected to the intended services in the intended time frame. Specifically, access to treatment and regular engagement and completion of the program were examined.

Access to treatment was calculated by determining the time between index jail booking and entry into a variety of treatment modalities, with a focus on opioid MAT. The proportion of participants who had accessed treatment by 14 and 30 days, as well as at any time post index, as well as the median time (in days) was reviewed by completion status. The OIC participants were split into groups (successful and unsuccessful completion, with those participants still active at the time of the program dataset export not included), and Chi-square tests identified those timeframes where the groups significantly differed.

Graduate and non-graduate participants were compared on the basis of demographic characteristics, criminal justice history, and a variety of activities occurring during the program to determine whether any significant patterns predicting program graduation could be found. Chi-square and independent samples t tests were performed to identify which factors were significantly associated with program completion (graduation).

Study Question 3 – Did the OIC accomplish its intended short-term objectives for participants compared to those who did not participate? That is, did the OIC connect participants to more services more swiftly than similar individuals who did not participate in the OIC?

Access to treatment was calculated by determining the time between index jail booking for OIC participants and matched comparison group, and entry into a variety of treatment modalities, with a focus on opioid MAT. The proportion of individuals who accessed treatment by 14 and 30 days, 6 months, and any time post index, as well as the median time (in days) was reviewed by group. Individuals whose index booking occurred fewer than six months prior to the OASAS dataset export (July 19th, 2019) were set to missing for the 6-month analysis as they did not have a complete outcome window to review. Chi-square tests identified those timeframes where the groups significantly differed.

Survival analysis further examined the differences in time to first treatment between OIC participants and comparison groups post index event (jail booking). Time to first treatment episode was calculated between the date of first treatment (any modality) and the index booking date. The survival opportunity window was censored (i.e., artificially truncated) at 12 months post index, or the date of OASAS dataset export (July 19th, 2019), whichever was earliest. The number of months of observation for each participant serves as the censor date for those who still have not received treatment at the end of the outcome window. A Kaplan-Meier estimator was used to determine if there were any significant differences in how swiftly (or how soon) treatment occurred between OIC participants and the comparison group.

Study Question 4 – Did the program accomplish its main objective (to save lives)? (a) Were people who participated in OIC less likely to die than similar individuals who did not participate in the OIC? (b) Did Erie County experience a decrease in events related to overdose death after the OIC was implemented?

Crosstabs were run to examine differences in death rate (the number/percentage of individuals who died during the specified time period) between OIC and the comparison group for up to 18 months following index. Individuals whose index booking occurred fewer than 18 months prior to the OASAS dataset export (July 19th, 2019) were set to missing as they did not have a complete outcome window to review. Chi-square analyses were used to identify any significant differences in death rates between OIC and comparison group participants.

Survival analysis further examined the differences in survival time between OIC participants and comparison groups post index (jail booking). Time to death, or survival time, was calculated between the date of death, if applicable, and index booking date. The survival opportunity window was censored (i.e., artificially truncated) at 18 months post index, or the date of the dataset export (statewide death records exported on September 2020), whichever was earliest. The number of months of observation for each participant serves as the censor date for those who are still alive at the end of the outcome window. A Kaplan-Meier estimator was used to determine if there were any significant differences in how swiftly (or how soon) death occurred between OIC participants and the comparison group.

Using data from the New York State Department of Health Opioid Dashboard, crude rates of county and statewide overdoses, opioid related deaths, and opioid related ER visits were calculated for 2016, 2017, and 2018. In this case, the crude rate was calculated as;

$$Crude\ Rate = \left(\frac{Number\ of\ Events}{Yearly\ Population}\right) * 100{,}000$$

which represents the number of events per 100,000 of population for the given area under analysis.

Study Question 5 – Did the program have other corollary impacts (in addition to saving lives) such as impacts on criminal recidivism?

Crosstabs were run to examine differences in recidivism rate (the number/percentage of individuals rearrested at least once during the specified time period) between OIC and the matched comparison group up to 18 months following index jail booking. Rearrests were reviewed using court case filings, and convictions were reviewed using court disposition data. Individuals whose index booking occurred fewer than 18 months prior to the dataset export (September 19th, 2019) were set to missing for 18-month analyses as they did not have a complete outcome window to review. Chi-square analyses were used to identify any significant differences in rearrest rates between OIC and comparison group participants.

Independent sample t tests were performed to compare the mean number of arrests post entry for OIC participants and the comparison groups at 18 months post index.

Program data were reviewed and compiled for all those who entered the program between implementation and July 2019. For these individuals, researchers reviewed the overall demographics and assessment information available from the program as well as created a service profile reviewing; the average number of days from jail booking (index) to program entry, first court session, and first treatment; the average number days in the program; and the average number of drug tests, court sessions, and warrants.

Study Limitations

The following is a list of limitations impacting data analyses by data source as well as potential limitations in design.

Differing Database Time Periods

The main study period includes individuals booked into the Buffalo City Police Jail between January 2015 and July 2019. For program participants, the OIC was implemented in May of 2017, but participants may have been booked prior to entry, especially those who entered during implementation as the program reached out to individuals booked prior to implementation. A historical comparison (i.e., pre-implementation) group was used and included individuals booked between January 2015 and December 2016. Due to the overlap immediately prior to implementation, any non-program participant booking between January and May of 2017 were not used as in index event for comparison individuals.

Comparative analyses include only OIC participants who were able to meet at least 6 months of outcomes. Therefore, the matched program group includes only those individuals booked through January of 2019.

Missing or Unavailable Program Data

Program data are housed in a system used by the court. Court activities, including court appearances, dates and results of warrants, court administered drug tests, and charge information were regularly entered. Data regarding treatment services and referrals, drug tests administered outside of the court, or other services provided by partnering agencies in the program (e.g., mobile van data) are not housed in this system and were unavailable for review.

Assessment data is also provided via UCMS, however participants complete the assessment post entry, and therefore only 240 of 416 participants had assessment data present.

Missing or Unavailable Court Data

DCJS data is top coded, meaning that if multiple charges are present on an arrest (e.g., burglary and possession), only the top (i.e., most severe) charge will be included. While all case filings, and associated arrests and convictions, are included, not all charges present on each case will be represented, and therefore counted. As such, any analysis regarding the presence or absence of certain charge types will possibly be undercounted.

Substance Use Treatment Data Identifier Availability

OASAS data was provided for all of New York state, however due to the convention of their identifier, individuals without a social security number (provided from the city jail) were extremely difficult to accurately identify. As such, any comparison individual without a SSN was not included in the matched comparison groups to prevent a misrepresentation of (missing) treatment data.

System Changes and Historical Comparison Group Study Design

Between 2016 and 2018, there was a substantial decrease in overdoses and opioid related deaths in Erie County. In addition to the OIC, the Erie County Health Department along with partnership throughout the community implemented many efforts (such as the distribution of Narcan and education campaigns to the public) that may have impacted OD and death rates in Erie County. It is not possible to be ascertain whether the overall decrease in OD and death rates in the County was due to these public health efforts or the implementation of the OIC, or (quite likely) both combined. However, the examination of OIC participants specifically and their matched comparison of those incarcerated in the Buffalo jail does provide strong evidence for the impact of the OIC within the criminal justice population. In addition, no other county of a similar size with similar overdose death rates in 2016 (prior to the implementation of the Buffalo OIC) demonstrated the same decrease in overdose death rates between 2016 and 2018 as that found in Erie County. Out of the 58 counties in New York, there were only four counties in the state that had a similar sharp decline in overdose deaths during that same time period (Broome, Steuben, Columbia, Onondaga) and all are substantially smaller than Erie County with populations less than half the size. In addition, only one (Broome)[20] started with a similar overdose death rate in 2016.

[20] In 2016, Broome County started an opioid council that worked collaboratively with criminal justice system, the health care system and community partners on a large education campaign resulting in changes to law enforcement response and prescription practices. (see https://icma.org/articles/opioid-mission-broome-county-new-york)

RESULTS: OUTCOME EVALUATION

This section presents the results of the outcome evaluation according to each outcome study questions described in the methods.

In-Program Outcomes

1a. Who are the OIC participants? What is their demographic make-up?

Exhibit O5 provides basic demographics for all OIC participants (N=416) that entered the program from the first day of implementation through the date of the UCMS download (July 26th, 2019).

Exhibit O5: OIC Participant Basic Demographics

Demographics	Percent
Gender	
Female	35%
Male	65%
Race	
American Indian/Alaskan Native	1%
Asian	1%
Black	13%
Hispanic/Latino	18%
White	68%
Average Age (Range)	**33 (18-71)**
Note: N = 416. Includes all participants from OIC inception	

The majority of OIC participants were male, white and over the age of 30 (though age ranges from 18 to 71 years) (see Exhibit O5). Full assessments were performed by the OIC program for a little over half (56%, n=234) of the OIC participants. The information in the following Exhibit (see Exhibit O6) was gathered from these assessment results.

Exhibit O6: OIC Participant Assessment Results

Assessment Results	Percent
Drugs Used	
Alcohol	17%
Marijuana	26%
Cocaine	40%
Opioids	93%
Marital Status	
Single/never married	81%
No longer married	11%
Married	9%
Completed High school	**55%**
Experiences withdrawal	**17%**
Employed at OIC entry	**18%**
In school at OIC entry	**3%**
Veteran	**3%**
Prior treatment	**83%**
Prior experience in tx court	**39%**
Admitted to drug use	**82%**
Arrested before age 18	**48%**
Substance use before age 18	**53%**
Ever had a MH Assessment	**65%**
Ever had a ER/ED visit	**58%**
Had a traumatic Brain Injury	**11%**
Note: N ranges from 107 to 234 due to incomplete or missing data for some assessment items	

As expected, based on the target population of the OIC, almost all participants reported using opioids. In addition, between a third and a half also reported cocaine use. Roughly half reported using substances and being arrested before age 18. The vast majority (82%) had participated in SUD treatment prior to intake. Over one-third had participated in a treatment court in the past. Almost all OIC participants (81%) were single, with just 9% married at the time of the assessment. Nearly half did not complete high school and only 18% were employed at intake.

1b. In what ways are OIC participants different than others in the jail population?

Demographic and socio-economic and health information for all OIC participants (N=416) and the jail population as a whole during the study time period (N=13,180) were compared. Basic demographics were available for all individuals in the jail data. In addition, about one-third of individuals in the jail population (which included OIC participants) were also found in the OASAS treatment data and had assessments completed. The OASAS assessment results for OIC participants (N=397) were compared to the results for the rest of the jail population in OASAS (N=4,257) to determine whether there were characteristics that were different or unique to OIC participants. Exhibit O7 includes demographic information available from the jail data on all jail inmates as well as assessment results from the OASAS data available on a smaller subsample.

Exhibit O7: OIC Participant Assessment Results

	Jail	OIC
Gender	**N=13,180**	**N=416**
Male	74%	65%
Female	26%	35%
Race and Ethnicity		
White	33%	68%
Black	59%	13%
Hispanic/Latino	6%	18%
Prior Treatment		
Detox prior to index arrest	4%	33%
Residential Tx prior to index arrest	2%	16%
Inpatient Tx prior to index arrest	4%	26%
Outpatient Tx prior to index arrest	10%	49%
Methadone prior to index arrest	1%	15%
Opioid related MAT Tx prior to index arrest	5%	48%
Mean Age At Index in Years	**32.9**	**32.6**

	Jail	OIC
OASAS Assessment	**N=4,257**	**N=397**
English is the primary language	95%	87%
Homeless	6%	8%
Employed	31%	17%
Veteran	4%	4%
Graduated high school	68%	68%

Married	9%	7%
Has income	82%	70%
Has children	63%	57%
Parent had alcohol or substance use disorder	53%	68%
Experienced trauma	57%	68%
Has chronic condition (asthma, hypertension, diabetes, tb)	13%	11%
Has impairment (speech, hearing, sight, mobility, development)	21%	19%
Traumatic brain injury	4%	4%
Any indication of mental illness (treated, hospitalized)	45%	55%
Previous detox	12%	26%
Previous ED visit	28%	38%
Previous Hospital visit	13%	14%
Used tobacco by 18	81%	93%
Used substances by 18	83%	85%
Substance Use		
Uses tobacco	78%	91%
Uses opioids	28%	91%
Uses alcohol	61%	21%
Uses methamphetamines	1%	2%
Uses cocaine	42%	60%
Uses marijuana	65%	39%
Uses other substance	12%	19%

Note: N sizes vary based on missing or incomplete data for some data elements. For gender, race/ethnicity and age; Jail N ranges from 13,150 to 13,180 and OIC N = 416 (Includes all OIC participants from the time of OIC inception to July 2019). For assessment and substance use information; Jail N ranges from 2,402 to 4,257 and OIC N ranges from 326 to 397 due to missing data on some assessment items.

In comparison to the jail population as a whole, OIC participants were markedly different. Of particular note, white individuals were vastly overrepresented in the OIC programs compared to the rest of the jail population. The jail population was 33% white and nearly 60% black compared to the OIC population which was 68% white and just 13% black. Although on the surface this looks like a gross disparity, an examination of statistics from the New York State Opioid Annual Report (New York State Department of Health 2019)[21] revealed that between 2016 and 2018 the rate of opioid related emergency department (ED) visits, opioid related overdoses, and opioid related overdose deaths in the State of New York for individuals who were white was more than double that for individuals who were black, indicating that OIC

[21] **https://www.health.ny.gov/statistics/opioid/**

demographics may reflect the demographics of the opioid using population in the state. Similarly, though less dramatically, OIC participants were more likely to be Hispanic compared to the rest of the jail population and these proportions are also reflected in the state report in opioid ODs and ED visits.

Other marked differences include a much larger proportion (more than 5 times the number) of OIC participants had received substance use disorder treatment prior to their index arrest (the arrest that led to participation in the OIC) compared to the rest of the jail population. The assessment results also revealed that OIC participants were less likely to be employed or have an income but were more likely to have a parent with a substance use disorder, to have experienced trauma and to have been treated for a mental illness as well as to have previously gone through detox and been to an ED. OIC participants were also more likely to report using opioids and cocaine than the rest of the jail population, but less likely to use alcohol or marijuana.

Although these differences were interesting in themselves, the differences were also used to help select a comparison group of individuals in the jail population who were similar to OIC participants, but whose index arrest and entry in the jail occurred before the OIC program was implemented. This is discussed in more detail previously in the methods section of this report.

2a. Did participants complete the program successfully?

Exhibit O8 provides the percent of participants in the OIC study sample by program participation status. At the time of the data download, 17% of participants were still active and about one-fifth were on warrant status. Participants who exited the OIC without completing were split nearly evenly between those whose case due to the index arrest was closed (so the court no longer had jurisdiction) (12%) and those who chose not to continue to participate in the OIC program (15%). About one-third of the overall sample successfully completed the program. However, as illustrated in Exhibit O9, if active participants and those who were on warrant are not included in program exit calculations, of those who exited the program, **55%** completed successfully (graduated).

Exhibit O8: Percent of OIC Participants by Participation Status

Program Exit Status	Percent N=416
Active	17%
Graduated	33%
Terminated - Closed Case	12%
Terminated - Dropout	15%
On Warrant	21%
Deceased	1%

Note: N = 416

Exhibit O9 provides the numbers and percent of participants who successfully completed the OIC (graduated) and who did not complete the OIC due to their case closing or dropping out. Participants on warrant of who were deceased were not included.

Exhibit O9: Percent of OIC Participants who exited the program by exit status

Grad Status at OIC Exit	N=248	Percent
Non-Grad	112	45%
Grad	136	55%

2b. Did the OIC connect participants with the intended services in the intended time frame?

The OIC's intended length of stay is 6 months.[22] OIC requirements and program activities for participants include swift screening at the jail and entry into the program (appearance in the OIC court within 48 hours of booking in the jail), swift assessment and referral to treatment (by walking down to the mobile van for assessment directly from the first court session), daily court sessions where they spoke with the judge and connected with case management and peer support, and random drug testing. In addition, participants who failed to appear are put on warrant status and law enforcement actively search for participants and bring them back to court.

OIC Program Length of Stay. Exhibit O10 presents the results of OIC participants length of stay. Although the original intended length of stay for the OIC was 3 months, the OIC staff determined that given the seriousness of the OUD experienced by many participants, the OIC intended program length should shift to 6 months. On average, participants stayed in the program about 6 months (186 days - the intended length of time), though there was a large range from one day to two years. Most participants (60%) exited the OIC program within six months. Another quarter exited within one year and a small percentage (15%) had lengths of stay of 13 months or more. Given the nature of these participants (many are both high risk and high need) it is expected that some participants may need more time with the support of the program.

[22] Early in OIC implementation, the intended length of stay was 90 days. However, the OIC staff quickly realized that 90 days was too short a time for participants to stabilize and then begin the adjudication process on their cases. The OIC determined the 6 months was a more realistic timeline.

Exhibit O10: OIC Length of Stay

OIC Length of Stay	
Average Length in Days	186
Standard Deviation	162
Range	1 to 797
Categories	**Percent**
0 to 3 months	37%
4 to 6 months	23%
7 to 12 months	26%
13+ months	15%

Note: N = 344 which is the total amount of non-active participants

Program Entry (First Court Appearance). The OIC is designed for participants to go from jail booking to in-jail screening to their first OIC appearance in court within hours. Ideally, participants will be booked into the jail, be screened and have their first court appearance the same day they are screened. Although, because court sessions are not held on the weekends, a potential participant who was arrested on a Friday afternoon may not attend their first court appearance until Monday (roughly 72 hours from the time of their booking). Exhibit O11 show that the median number of days from an eligible screening to first court appearance is zero days, indicating that the OIC is getting many people to their first court appearance in under 24 hours. Though some participants have taken substantially longer (ranging from 1 to 78 days).

Exhibit O11: Length of time from eligible screening to first court appearance

Number of days from screening to…	Median	Range
First Court Appearance	0	0 to 78

Note: First court appearance N = 415. One participant was missing the first court date

Exhibit O12 provides the percent of participants who entered the program within specified time period. Over half (52%) of participants have their first court sessions within 48 hours of booking, and 58% have their first appearance within 72 hours. An examination of graduates versus non-graduates (participant who exited the program before completion) showed the graduates were slightly more likely to have their first court appearance sooner, though this difference was not significant. Further examination of the data shows that 80% of participants have their first court session within 12 days of booking and almost 90% (87%) are in court within 30 days.

Exhibit O12: Percent of participants who attended their first court appearance within 48 and 72 hours

Percent of participants who appeared in court…	Non-Grad	Grad	Total (Including Actives)
Within 48 hours of jail booking	53%	54%	52%
Within 72 hours of jail booking	57%	61%	58%

Warrants. Before describing access to treatment and the frequency of court appearance, it is important to understand that the OIC program is voluntary and many people with opioid use disorder may not be able to fully commit to the daily frequency of court appearances required by the program. Therefore, many of the program services and court appearances were impacted by participant failures to appear. When participants did not appear in court, a warrant was issued and law enforcement was tasked with finding the participants and bringing them back to court. We reviewed and analyzed warrant data to determine the extent of warrants issues and associated time away from the program. In addition, we analyzed program services provided during the time participants were actively participating (removing the time participants were away on warrant status).

Exhibit O13 provides the warrant information for OIC participants and also provides a breakdown of warrants for OIC graduates and non-graduates including the percentage of participants on warrant status at some time during their program participation, the mean length of time from OIC entry to first warrant, and the mean number of days on warrant.

Overall, 68% of all participants were on warrant at some point during their time in the OIC program. Note that this is a similar number to the percent of participants who were arrested within 12 months of their index arrest and OIC entry (see Exhibit O33 for recidivism data). It is likely that many of the arrests were due to program warrants when law enforcement found the OIC participants and brought them back to the program.[23] The sample in this analysis includes 344 participants who exited the program. Those with warrants comprised 68% of those who exited the program for a total of 234 participants.

[23] Note that data on warrants are collected in a separate database than data on arrest dates, and there is no indication in the arrest data on whether an arrest is related to a specific warrant, so it is not possible to confirm what percentage of arrests were due to warrants from the OIC.

Exhibit O13: Warrant Information for all OIC Participants, Graduates and Non-Graduates

Warrant Information		
Put on warrant during program stay (N = 344)	**Percent**	
Non-Grad	73%	
Grad	27%	
All participants	68%	
Total number of warrants while in program (N = 344)	**Mean**	**Std. Dev.**
Non-Grad	2.7	2.7
Grad	1.3	2.2
All participants	2.2	2.6
Total number of days on warrants while in program (N = 344)	**Mean**	**Std. Dev.**
Non-Grad	114.1	143.3
Grad	28.8	76.3
All participants	80.3	128.2
Days from program entry to first warrant for those with warrants (68%, N = 234)	**Mean**	**Std. Dev.**
Non-Grad	22.2	30.0
Grad	46.8	53.5
All participants	28.8	39.2
Days on first warrant for those with warrants (68%, N = 234)	**Mean**	**Std. Dev.**
Non-Grad	53.6	98.0
Grad	23.7	57.9
All participants	45.5	89.9

Court Appearance Frequency. The OIC requires participants to attend court daily (Monday through Friday) during the beginning of the program (at least the first month). Exhibit O14 shows the average number of hearings attended per week by the participants in the study sample broken down into 8 day segments for the first 30 days from the participants' first court appearance. Days spent on warrant have been removed from this calculation so these results only include times when the participant was actively participating in the program The data show that on average, participants attended court approximately twice per week rather than daily. This sample includes those participants who had at least one court hearing within the first month of program participation after adjusting for warrant status (N=297).

Exhibit O14: Number of Court Hearings Attended During the First Month by Time in Program

Time in Program	Mean # of Court Hearings N=297	Std. Deviation
0 to 8 days	1.6	1.3
9 to 16 days	3.4	2.2
17 to 24 days	5.1	2.5
25 to 31 days	8.0	5.5

Note: Length of time in program is adjusted for time on warrant status.

Exhibit O15 compares court appearance attendance for graduates and non-graduates. Unsurprisingly, graduates had twice as many court appearances as non-graduates (likely because non graduates spent less time in the program). However, graduates and non-graduates had similar number of appearances during the first month, and almost identical numbers of missed appearances. This analysis sample includes all those who exited the program split by graduates (N=136) and non-graduates (N=208).

Exhibit O15: Court Appearances Attended and Missed during the First Month and Total Time in Program

Average number of…	Non-Grad (N = 208)		Grad (N = 136)	
	Mean	SD	Mean	SD
Court appearances while in program	15.3	15.7	30.0	15.2
Court appearances within 1 month of program entry	5.3	4.5	7.2	6.0
Missed court appearances while in program	10.5	10.4	12.0	10.2
Missed court appearances within 1 month of program entry	3.3	2.4	3.0	2.5

Note: N = 344

Treatment Engagement. The OIC refers participants to treatment and ensures that participants have a warm hand-off to treatment if participants choose to engage. The peer support specialist walks participants to the mobile health van for their assessment, and the staff in the van will drive participants to their MAT appointment. Further, participants who are assessed as needing inpatient treatment can take a bus directly from the courthouse to the residential treatment provider, and the judge (with the bailiff in attendance) will personally walk participants from the courtroom to the bus if they agree to go.

Over 80% of all participants, and nearly 90% of graduates participated in some form of treatment after their index booking. Over two-thirds (70%) received MAT. Other than MAT, the most common treatment modality provided was outpatient treatment and approximately one-quarter received some form of inpatient treatment or residential (e.g., halfway houses or sober living).

Exhibit O16: Percent of all participants, graduates and non-graduates who engaged in treatment by modality

Percent that accessed treatment, post index, by modality	All N=344	Non-Grad N=208	Grad N=136
Any treatment	**82%**	**78%**	**88%**
Detox	18%	18%	18%
Residential	24%	18%	35%
Inpatient	29%	32%	25%
Outpatient	60%	50%	76%
Opioid related-MAT	**70%**	**68%**	**74%**

One of the OIC goals is to connect participants with treatment swiftly. They have partnerships with treatment providers who assist them with this goal, ensuring that treatment slots are held available for OIC participants. The measure of treatment engagement is based on time between the index booking and a treatment episode start date. Note that the OIC makes a referral to treatment (which frequently happens in the mobile van after a participant's first court session), however engagement in treatment is under the control of the treatment provider and the participant. The median amount of time to any treatment for OIC participants is just over three weeks (24 days). Exhibit O17 shows that OIC graduates consistently engage in treatment sooner than those who exit the program unsuccessfully. These statistics include only those in the study sample who have officially exited the program (N=344) and does not include active participants.

Exhibit O17: Number of days to treatment by modality

	Non Grad			Grad		
Number of days from index to treatment start, for those with...	**Median**	**Range**	**N**	**Median**	**Range**	**N**
Any treatment	**37**	**0-941**	**163**	**16**	**0-472**	**120**
Detox	195	9-703	38	45	2-712	25
Residential	126	6-1001	37	34	2-554	47
Inpatient	122	6-730	67	39	2-496	34
Outpatient	68	1-941	104	41	1-554	103
Opioid related-MAT	**41**	**1-941**	**141**	**22**	**1-691**	**101**

Exhibit O18 provides the percent of OIC participants who were engaged in treatment within two weeks and within 30 days. About one-third of participants were engaged in some form of treatment within two weeks and nearly half were engaged within one month. These statistics include only those in the study sample who have officially exited the program (N=344) and does not include active participants.

Exhibit O18: Percent of participants who engaged in treatment within specified time periods by modality

Percent that accessed treatment within 14 days post index, by modality	**All N=344**	**Non-Grad N=208**	**Grad N=136**
Any treatment	**31%**	**24%**	**42%**
Detox	3%	1%	6%
Residential	6%	1%	13%
Inpatient	4%	2%	6%
Outpatient	17%	21%	14%
Opioid related-MAT	**24%**	**21%**	**30%**
Percent that accessed treatment within 30 days post index, by modality			
Any treatment	**45%**	**38%**	**57%**
Detox	5%	2%	8%
Residential	8%	2%	16%
Inpatient	9%	9%	10%
Outpatient	22%	19%	28%
Opioid related-MAT	**35%**	**30%**	**43%**

Drug Testing. OIC participants were tested randomly on days when they appear in court. On average, participants received approximately two tests per month. The court made it clear that participants should avoid using opioids (or any mind-altering substance) if possible, however, participants were not sanctioned for use as the intention of the OIC is to connect participants with treatment (both MAT and counseling) and to keep participants engaged in the program and in court to prevent overdose and death. If the court enforced abstinence, it could lead more participants to disengage and be more likely to abscond. Drug testing is used as a way to determine whether participants needed additional treatment or support, to keep them accountable to themselves, and to determine whether the MAT and other treatment is working to promote sobriety.

Exhibit O19 reveals that just under half of all OIC participants test positive in the first month after program entry, and the majority of participants were not using opioids alone but were using both opioids and cocaine together. Interestingly, graduates were more likely to test positive for opioids alone while non graduates were more likely to test positive for cocaine alone and slightly more likely to test positive for cocaine and opioids together. Also of interest is that graduates and non-graduates tested positive at equal rates in the first month. These results indicate that the OIC participants may benefit from the program addressing cocaine use, as well as opioid use. The sample used for these calculations include non-graduates (N=167) and graduates (N=63) who took a drug test within one month of entry to the program.

Exhibit O19: Percent of participants who tested positive by type of substance

At 1 month post entry, participants tested positive…	Non-Grad N = 167	Grad N = 63
For any substance	**44%**	**44%**
Opioids without cocaine	6%	14%
Cocaine without opioids	8%	2%
Opioids and cocaine	28%	22%

Exhibit O20 provides the results of positive drug tests by type of substance. In the first three months post entry, positive tests for graduates compared to non-graduates were less likely to be positive for opioids or cocaine, but more likely to be positive for marijuana. Of particular note, 72% the positive tests for cocaine were from non-graduates compared to just 32% from graduates. It appears that cocaine along with opioids is a combination that requires some additional, or different, services to support participant success. The samples used in this analyses include a total of 527 drug tests during the first three months of OIC participation with 307 tests from non-graduates and 210 tests from graduates.

Exhibit O20: Percent of positive tests by type of drug during the first three months of OIC participation

Of the positive tests in the first 3 months, % that tested positive for…	Non-Grad Tests N=307	Grad Tests N=210
Opioids	64.9%	43.6%
Cocaine	71.7%	31.9%
Marijuana	46.3%	59.6%

3. Did the OIC accomplish its intended short-term objectives for participants compared to those who did not participate? That is, did the OIC connect participants to more services more swiftly than similar individuals who did not participate in the OIC?

To answer this question, it is necessary to compare the results for OIC participants to a comparison group of individuals who did not enter the OIC, to determine if OIC participation is related to greater engagement in treatment than the traditional criminal justice system response. The samples used in the following analyses include all OIC participants who had at least 6 months since program entry (N=326) and the matched comparison group (N=326).

Exhibit O21 demonstrates that OIC participants are significantly more likely to engage in treatment and to successfully complete treatment within 6 months and 12 months of their index booking. OIC participants are also significantly more likely to meet treatment goals than similar individuals who did not participate in the OIC.

Exhibit O21: Engagement in Treatment within one year post Index

Percent that accessed treatment *within 6 and 12 months of index booking*, post index, by modality	Comparison (n=326)	OIC (n=326)	Pearson X^2	*p*
Tx Episode Post Index - 6 months				
All Tx	51%	73%	$X^2(1, N=652) = 32.86$	<.000
Detox	15%	13%	$X^2(1, N=652) = 0.32$	.572
Residential	8%	17%	$X^2(1, N=652) = 11.61$	.001
Inpatient	17%	23%	$X^2(1, N=652) = 4.26$	.039
Outpatient	33%	51%	$X^2(1, N=652) = 21.22$	<.000
OpMAT	34%	60%	$X^2(1, N=652) = 42.44$	<.000
Tx Completion Post Index – 6 months				
Successful	22%	29%	$X^2(1, N=652) = 5.46$	.019
Unsuccessful	37%	50%	$X^2(1, N=652) = 11.56$	.001
Goals	20%	28%	$X^2(1, N=652) = 4.85$	.028
SUD Goals	19%	30%	$X^2(1, N=652) = 11.39$	.001
Tx Episode Post Index - 12 months				
All Tx	65%	82%	$X^2(1, N=564) = 21.28$	<.000
Detox	22%	19%	$X^2(1, N=564) = 0.39$	.534
Residential	13%	25%	$X^2(1, N=564) = 12.49$	<.000
Inpatient	25%	30%	$X^2(1, N=564) = 2.03$	.154
Outpatient	45%	62%	$X^2(1, N=564) = 15.54$	<.000
OpMAT	44%	71%	$X^2(1, N=564) = 40.60$	<.000
Tx Completion Post Index – 12 months				
Successful	31%	38%	$X^2(1, N=564) = 3.22$	.073
Goals	29%	37%	$X^2(1, N=564) = 12.88$	.05
SUD Goals	27%	38%	$X^2(1, N=564) = 3.85$	.004

Exhibit O22 provides the percent of individuals who engaged in treatment within 14 days and 30 days of their index booking. OIC participants were substantially and significantly more likely to begin treatment during both time periods. OIC participants were 8 times more likely to receive MAT within 14 days of index booking and were over 7 times more likely to engage in any treatment within that time period.

Exhibit O22: Percent of individuals who engaged in treatment within two weeks and one month of index booking

Percent that accessed treatment within 14 days post index, by modality	Comparison (n=326)	OIC (n=326)	Pearson X^2	*p*
Any treatment	**4%**	**30%**	$X^2(1, N=652) = 80.88$	**<.000**
Detox	1%	3%	$X^2(1, N=652) = 5.43$	.020
Residential	0%	5%	$X^2(1, N=652) = 16.40$	<.000
Inpatient	1%	4%	$X^2(1, N=652) = 4.10$	.043
Outpatient	1%	17%	$X^2(1, N=652) = 51.17$	<.000
Opioid related-MAT	**3%**	**24%**	$X^2(1, N=652) = 64.41$	**<.000**
Percent that accessed treatment within 30 days post index, by modality				
Any treatment	**12%**	**43%**	$X^2(1, N=652) = 76.74$	**<.000**
Detox	2%	5%	$X^2(1, N=652) = 5.45$	.020
Residential	1%	6%	$X^2(1, N=652) = 15.24$	<.000
Inpatient	4%	9%	$X^2(1, N=652) = 7.52$	.006
Outpatient	6%	22%	$X^2(1, N=652) = 34.22$	<.000
Any Opioid related-MAT	**9%**	**34%**	$X^2(1, N=652) = 61.81$	**<.000**

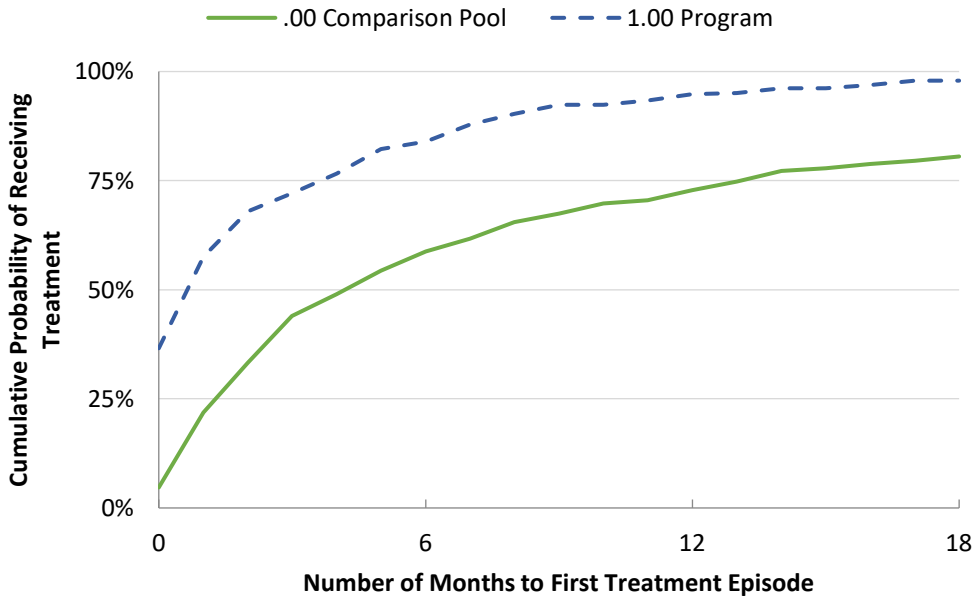
Exhibit O23 illustrates the mean and median time to treatment for treatment episodes that occurred within the 18 months after the index booking for OIC participants and the comparison group and Exhibit O24 shows the survival graph between the two groups. OIC participants engaged in treatment significantly more quickly than the comparison group. The mean number of months for OIC participants was 2.9 compared to 7.4 for the comparison group. The median (which indicates the point at which at least half the individuals had engaged in treatment) shows treatment engagement within 1 month of index booking for OIC participants compared to 5 months for non-participants.

Exhibit O23: OIC participant and Comparison time to treatment from index booking

Within 18 months of index arrest	Comparison (n=326)	OIC (n=326)
Mean # of months to any tx		
Estimate	7.38	2.90
Standard Error	0.38	0.25
95% Confidence Interval	(6.64, 8.13)	(2.41, 3.39)
Median # of months to any tx		
Estimate	5.00	1.00
Standard Error	0.59	0.14
95% Confidence Interval	(3.85, 6.15)	(0.73, 1.27)

The survival graph in Exhibit O24 illustrates the probability that an individual will receive treatment during a specified time period. As individuals begin engaging in treatment, the overall probability of the group engaging in treatment increases. The OIC program participant line climbs faster and sooner than the comparison line, indicating that more OIC participants have engaged in treatment significantly sooner.

Exhibit O24: Survival graph for time to treatment engagement for the OIC program participants (n=326) and the comparison group (n=326)



95% confidence interval: comparison (8.30, 10.80)/OIC (2.58, 3.68)

Long-Term Outcomes

4. Did the program accomplish its main objective (to save lives)?
4a. Were people who participated in OIC less likely to die than similar individuals who did not participate in the OIC

OIC and Comparison Death Rates: Within the context of the OIC, the program goal is an immediate preservation of life and to get defendants stabilized while an appropriate disposition of their case is determined, so the 6 month period after booking (while an individual is participating in the program) is the intended outcome time period of the program and therefore of the study. Of course, ideally, this life saving approach will result in these individuals connecting with treatment services that may create longer lasting behavior change and extend life further. The focus of the outcome study was on the time period during the 6 months after booking, extending to one year to determine some longer term outcomes. Future studies could measure whether there are even longer term impacts.

Exhibit O25 reveals that individuals who did not participate in the OIC (the comparison group) were 3 times more likely to die within 6 months of their index booking than OIC participants and twice as likely to die within 12 months. This indicates that, while under OIC supervision, participants were 3 times less likely to die than similar individuals who were not in the OIC, and over a 12 month period, the OIC cut the death rate by half. These results were not statistically significant, most likely due to the small number death events during the 12 month period (there were 9 deaths of individuals in the OIC and 20 deaths in the comparison group). However, the size of this difference is substantial and when the focus is human lives, this translates into meaningful numbers. It is likely that this difference will gain significance as the population increases over time.

Exhibit O25: Percent of individuals who died at 6 and 12 months post index booking

	Comparison	OIC	t	df	significance	interval
% of deaths 6 months post index	3%	1%	1.622	650	0.105	(-0.0039, 0.0407)
% of deaths 12 months post index	6%	3%	1.563	592	0.119	(-0.0071, 0.0627)

6 months: Comparison N=326/Program N=326
12 months: Comparison N=326/Program N=268

Also of interest for comparative purposes is the death rate of the general U.S. population. The average age of the OIC and comparison population was roughly 32 years. In 2018, the death rate in the United States for individuals between 25-34 was just over 1 individual per 1,000 per year.[24] In contrast, the death rate in the OIC population (based on the number of deaths over 12 months from booking) was 15 per 1,000 and the death rate in the comparison group was 33 per 1,000.

Impact of MAT: An additional key question was whether the use of MAT added value to OIC participation, and vice versa, whether the OIC added value above that of MAT in preventing OUD related deaths. Were individuals who received MAT less likely to die than people who did not receive MAT (in both OIC and comparison group)? Does the timing of when the MAT was received relate to rates of death? And, were those who received MAT and participated in the OIC less likely to die than those who received MAT but did not participate in the OIC?[25]

Exhibit O26 shows that those who received MAT, regardless of whether the individual was an OIC participant, were less likely to die than those who did not receive MAT. Exhibit O26 further shows that those who received MAT within 14 days of the index booking were less likely to die in the 12 months following their index booking than those who received MAT sometime later in that same 12 month period. Although these numbers are not statistically significant (most likely due to the relatively small n size for number of deaths), the effect sizes are large enough to be meaningful with those who received MAT roughly half as likely to die. For those in the OIC, participants who received MAT were one-third as likely to die than those who did not receive MAT.

An examination of OIC participants and the comparison group revealed that 2% (n=1) of those in the OIC who received MAT within 14 days died and no individuals in the comparison who received MAT within 14 days died. However, the number of individuals in the comparison group who received MAT within 14 days was extremely small (n=8) (compared to 54 OIC participants) and there was only one death within all those who received MAT so this result showing more deaths in the OIC is likely not representative of a larger population.

A more robust comparison is made between OIC participants and comparison group members who received MAT sometime in the 12 months following their index booking as substantially more people received MAT in both the OIC and comparison group during that period. OIC participants who received MAT were less likely to die than individuals in the comparison group who received MAT, (specifically, individuals on MAT in the comparison group were 3 times more likely to die than those on MAT in the OIC) indicating that the OIC provides value above and beyond MAT alone. This result approached significance but was not significant (probably due to the small number of deaths in each group).

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[24] **https://www.statista.com/statistics/195948/total-death-rate-in-the-us-since-1990/**

[25] Although the impact of adherence to MAT and length of time on MAT would provide important nuance in understanding these results, those data were not available.

Exhibit O26: Death rates for OIC participants and the comparison group for those who received MAT and those who did not

Percentage of deaths 12 months from index arrest	OIC N=268[26]	Comparison N=326	Total N=594[27]
Received MAT with **14 days** of index booking	2% (n=54)	0% (n=8)	1.6% (n=62)
No-MAT within 14 days	4% (n=214)	6% (n=318)	5% (n=532)
Received MAT within 12 months of index booking	2% (n=168)*	6% (n=142)	4% (n=310)
No MAT within 12 months	7% (n=70)	7% (n=184)	7% (n=254)

*Trend: p=.079

4b. Did OIC participants survive longer than those who did not receive the OIC

Because the comparison group was a historical sample, the comparison group members had a longer outcome window than individuals in the OIC. For this reason, time to death was measured with time caps so that both groups were measured during equivalent time periods. In general, for those who died in both groups, although the number of days to death was longer for OIC participants the difference was not significantly longer. Exhibit O27 shows that, for those who died within 18 months of their index booking, the length of time to death was roughly 20% longer.

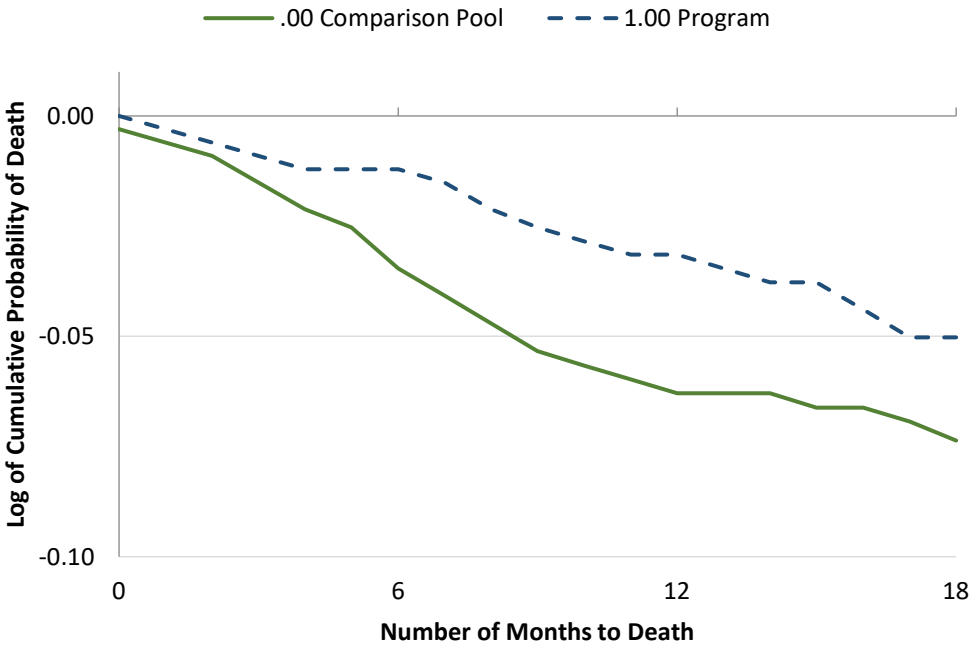
Exhibit O27: Number of days to death for OIC participants and the comparison group for those who died within equivalent time periods

	Comparison	Program	t	df	significance	interval	r
Time to death in days within…							
12 months post index	180	213	-0.79	15.95	0.437	(-117.56, 53.35)	0.19
18 months post index	223	276	-0.93	18.34	0.334	(-165.90, 59.31)	0.21

Exhibit O28 shows that the comparison group line drops slightly more quickly than the line for OIC participants, indicating that the comparison group individuals who died did so slightly sooner than OIC participants.

[26] N=238 at 12 months
[27] N = 564 at 12 months

Exhibit O28: Survival graph using an 18 month censor

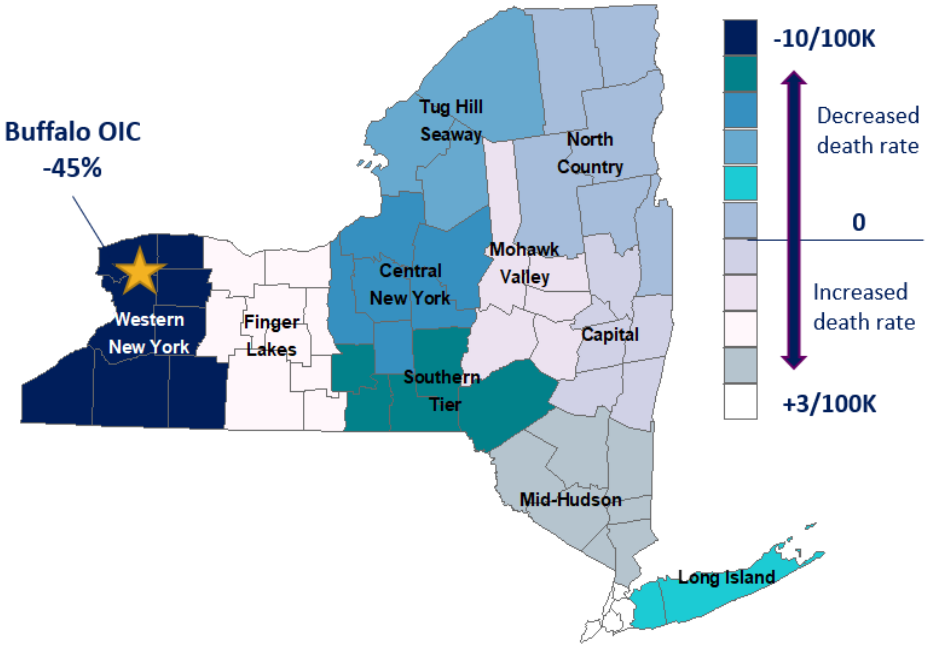


95% confidence interval: comparison (16.92, 17.59)/OIC (17.36, 17.83)

4c. Is there evidence of a wider impact on mortality rates associated with the OIC? Did Erie County experience a decrease in events related to overdose death after the OIC was implemented?

Death Rates. Since 2016, the number of opioid-related overdose deaths (OD) has sharply declined in Erie County. The number of OD deaths per 100K population fell from 30 in 2016 to 16 in 2018, a decrease of 45%. The largest decrease was between 2017 and 2018 (a decrease of 41%), after the implementation of the OIC. The decrease in the Western NY region as a whole during the same time period was 35%. This change outpaced all other regions in New York State. While New York State in its totality saw a decrease in the number of OD deaths, Erie County saw the most notable differences and led the overall trend. Exhibit O29 shows the relative decreases in death rates from 2016 to 2018 across the state of New York.

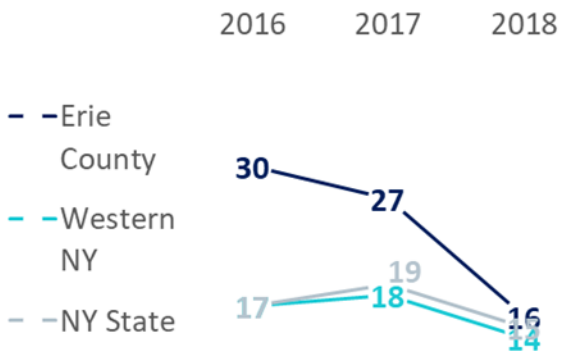
Exhibit O29: Change in death rates (numbers per 100K) by region in New York



While Erie may be able to attribute some of this decrease in death rates to the increased use of Naloxone and other holistic approaches used by the Erie County Opioid Epidemic Task Force implemented in 2016, the most substantial decrease in death rates occurred from 2017 to 2018, after the OIC was implemented (See Exhibit O30). Other regions in NY that implemented public health responses, including distribution of Naloxone and training in its use, also saw decreases in death rates, though not as large as in Western New York and in Erie. There were 10 fewer deaths per 100K population between 2016 and 2018 in the Western region, a larger decrease than any region in New York. In Erie County itself, there were 14 fewer deaths per 100K. In addition, no other county of a similar size with similar overdose death rates in 2016 (prior to the implementation of the Buffalo OIC) demonstrated the same decrease in overdose death rates between 2016 and 2018 as that found in Erie County. Out of the 58 counties in New York, there were only four counties in the state that had a similar sharp decline in overdose deaths during that same time period (Broome, Steuben, Columbia, Onondaga) and all are substantially smaller than Erie County with populations less than half the size. In addition, only one (Broome)[28] started with a similar overdose death rate in 2016. These findings provide some evidence that the additional steps to provide immediate, coordinated care in the justice involved population may have had an additional impact on overdose deaths.

[28] In 2016, Broome County started an opioid council that worked collaboratively with criminal justice system, the health care system and community partners on a large education campaign resulting in changes to law enforcement response and prescription practices. (see https://icma.org/articles/opioid-mission-broome-county-new-york)

Exhibit O30: Number of deaths per 100K from 2016 to 2018

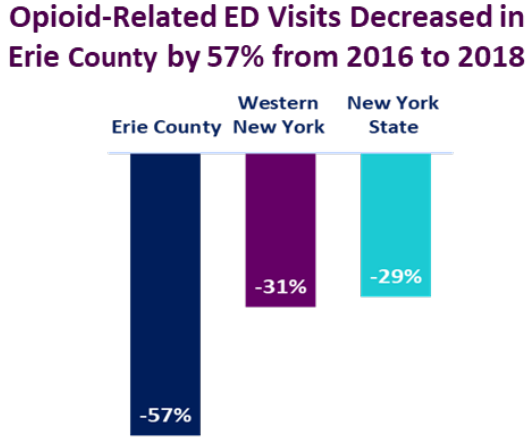


*The numbers in this figure for Western NY and the state exclude Erie

Opioid-Related Emergency Department Visits. Emergency department (ED) visits related to opioid use represent an important marker for the community's response to the opioid epidemic. In addition, since ED visits can be expensive (~$5K-$9K per visit according to a NIH study), these numbers also serve as a measure of the high cost of opioid addiction to our health care system and to our communities.

While Western New York and New York State as a whole saw substantial drops in the number of ED visits from 2016 to 2018, the decrease in Erie County (where the Buffalo OIC was implemented in 2017) was nearly double the region-wide and state-wide numbers, giving some indication that the Buffalo OIC may have an impact over and above other efforts to combat the opioid epidemic in the region and in the state (see Exhibit O31).

Exhibit O31: Percent decrease in Opioid related emergency department (ED) visits between 2016 and 2018

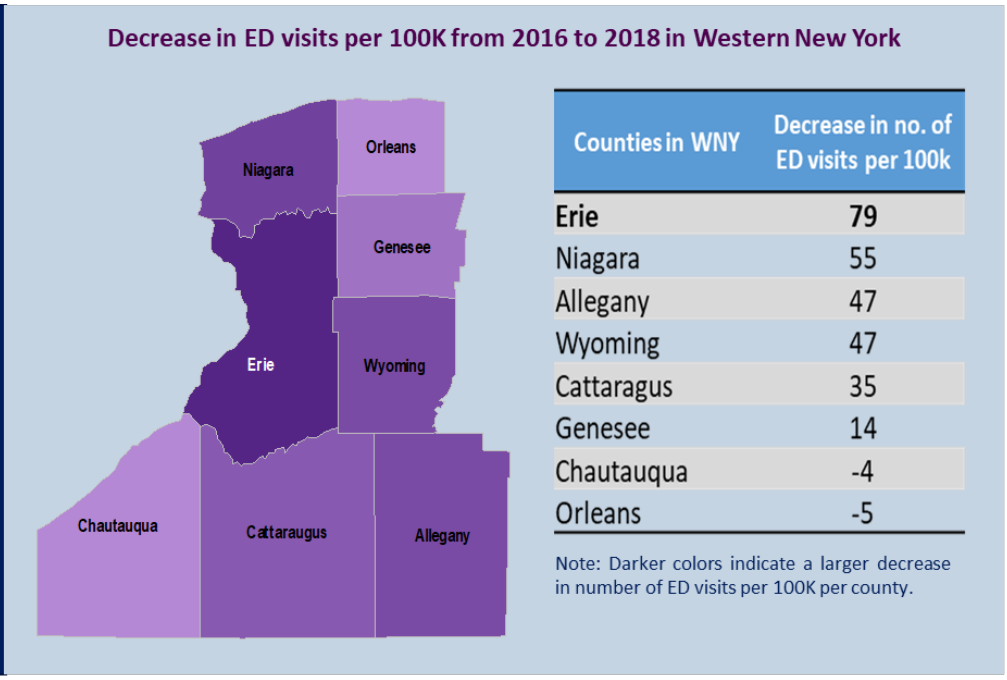


The number of ED visits per 100K population was markedly lower in Erie County in 2018 (61 visits) compared to 2016 (140 visits). Within Western New York, Erie County and Niagara County saw the largest differences in ED visits per 100K between 2016 and 2018 (See Exhibit O32)

Exhibit O32: Decrease in emergency department (ED) visits between 2016 and 2018 by county in Western New York

Erie County had 79 fewer opioid-related ED visits per 100K population in 2018 vs. 2016, the biggest difference among counties with at least 50K people in New York State*

* Excludes NYC – Data from NYC were unavailable



Counties in WNY	Decrease in no. of ED visits per 100k
Erie	79
Niagara	55
Allegany	47
Wyoming	47
Cattaragus	35
Genesee	14
Chautauqua	-4
Orleans	-5

Note: Darker colors indicate a larger decrease in number of ED visits per 100K per county.

5. Did the program have other corollary impacts (in addition to saving lives) such as decreased criminal recidivism?

Rearrests and reconvictions. Exhibit O33a shows that the mean number of rearrests and Exhibit O33b shows the percent of individuals rearrested is markedly higher for OIC participants than for the comparison group at 6 months and 12 months post index booking. However, reconvictions show the opposite trend, with OIC participants receiving substantially fewer convictions for charges than the comparison group. The higher number of rearrests may be due to the high incidence of warrants for individuals in the OIC for failures to appear.[29] When participants fail to appear, law enforcement is dispatched to find them and bring them back to

[29] It is important to note that DCJS only includes arrest data for new crimes. So, if the arrests and bookings that occurred due to warrants were not recorded as new crimes, then these results indicate that OIC participants are getting rearrested for new criminal activity more frequently than the comparison group.

the court where they may be rebooked into the jail briefly until the next court session. These active warrants are intended as a life saving measure to ensure that the participants stay engaged in the program. The fact that reconvictions are so much lower for OIC participants indicates both 1. That the high numbers of arrests probably are due to warrants rather than increased criminal activity and 2. Involvement in the OIC may effectively decrease crime, although this is not the main purpose of the court program.[30] Research has demonstrated that engagement in treatment is related to lower criminal recidivism.[31], [32], [33] The OIC's notable success engaging participants with treatment may be having a "side effect" of decreasing criminal recidivism as well as saving lives.

Exhibit O33a: Mean number of rearrests at 6 and 12 months post index booking for OIC participants and the comparison group

6 Month Post Index Recidivism - Cumulative Arrests	Arrests					
	Comparison		OIC		t-test	
	Mean	SD	Mean	SD	t	*p*
All	0.53	0.82	0.96	1.01	-6.04	*<.000*
Drug	0.29	0.59	0.58	0.76	-5.55	*<.000*
DWI	0.02	0.15	0.02	0.16	0.26	*0.795*
Drug or DWI	0.30	0.59	0.59	0.75	-5.54	*<.000*
Person	0.03	0.16	0.04	0.21	-0.83	*0.408*
Property	0.18	0.49	0.33	0.70	-3.11	*0.002*
Misdemeanor	0.37	0.69	0.79	0.93	-6.49	*<.000*
Felony	0.16	0.40	0.19	0.44	-1.01	*0.311*
Violent Felony Offense	0.04	0.20	0.05	0.25	-0.52	*0.605*
Other	0.04	0.20	0.06	0.25	-0.87	*0.387*
6 Month Post Index Recidivism - Cumulative Convictions	**Convictions**					
	Comparison		OIC		t-test	
	Mean	SD	Mean	SD	t	*p*
All	0.52	0.79	0.29	0.69	3.98	*<.000*
Drug	0.23	0.47	0.12	0.40	3.24	*0.001*
DWI	0.04	0.20	0.02	0.14	1.36	*0.175*

[30] Another possible reason for the lower number of convictions could be due to a time lag between the arrest and conviction in the DCJS data. Although the analysis removed participants who did not have sufficient time after their arrest to account for the lag, this may not have accounted for all convictions that occurred for a longer period after the arrest.

[31] Belenko, S., Hiller, M., & Hamilton, L. (2013).

[32] Dominique de Andrade, Jessica Ritchie, Michael Rowlands, Emily Mann, Leanne Hides, Substance Use and Recidivism Outcomes for Prison-Based Drug and Alcohol Interventions, Epidemiologic Reviews, Volume 40, Issue 1, 2018, Pages 121–133, https://doi.org/10.1093/epirev/mxy004

[33] Finigan M. Societal outcomes and cost savings of drug and alcohol treatment in the state of Oregon, report to the Office of Alcohol and Drug Abuse Programs, Department of Human Resources, Oregon, 1995

Drug or DWI	0.26	0.51	0.13	0.42	3.43	*0.001*
Person	0.03	0.16	0.01	0.11	1.96	*0.051*
Property	0.18	0.47	0.13	0.47	1.50	*0.134*
Misdemeanor	0.45	0.73	0.26	0.67	3.36	*0.001*
Felony	0.04	0.20	0.02	0.15	1.36	*0.174*
Violent Felony Offenses	0.01	0.10	0.01	0.09	0.23	*0.816*
Other	0.08	0.28	0.03	0.16	2.75	*0.006*

12 Month Post Index Recidivism - Cumulative Arrests	**Arrests**					
	Comparison		**OIC**		**t-test**	
	Mean	**SD**	**Mean**	**SD**	**t**	**p**
All	0.76	1.03	1.42	1.45	-6.50	*<.000*
Drug	0.38	0.75	0.85	1.02	-6.41	*0.001*
DWI	0.03	0.17	0.03	0.19	0.06	*0.956*
Drug or DWI	0.40	0.75	0.87	1.02	-6.44	*<.000*
Person	0.05	0.24	0.07	0.29	-1.01	*0.322*
Property	0.27	0.60	0.49	0.92	-3.54	*0.001*
Misdemeanor	0.55	0.88	1.16	1.31	-6.83	*<.000*
Felony	0.21	0.47	0.28	0.56	-1.77	*0.082*
Violent Felony Offense	0.06	0.24	0.08	0.33	-1.04	*0.316*
Other	0.06	0.27	0.09	0.30	-1.23	*0.226*

12 Month Post Index Recidivism - Cumulative Convictions	**Convictions**					
	Comparison		**OIC**		**t-test**	
	Mean	**SD**	**Mean**	**SD**	**t**	**p**
All	0.73	0.98	0.43	0.78	4.04	*<.000*
Drug	0.31	0.63	0.16	0.44	3.27	*0.001*
DWI	0.05	0.24	0.03	0.18	1.06	*0.278*
Drug or DWI	0.36	0.67	0.19	0.48	3.37	*0.001*
Person	0.04	0.20	0.01	0.15	1.88	*0.053*
Property	0.25	0.58	0.19	0.55	1.24	*0.213*
Misdemeanor	0.63	0.92	0.37	0.75	3.73	*<.000*
Felony	0.06	0.24	0.05	0.22	0.68	*0.497*
Violent Felony Offense	0.01	0.10	0.01	0.09	0.23	*0.816*
Other	0.13	0.35	0.06	0.23	2.91	*0.003*

Note: At 6 months post index N for comparison and program group is 326.
For 12 month post index Comparison N = 326 and Program N = 238.

Exhibit O33b: Percent of individuals rearrested at 6 and 12 months post index booking for OIC participants and the comparison group

6 Month Post Index Recidivism - Percent Re-arrested	Comparison Arrests	OIC Arrests	*p value*	Comparison Convictions	OIC Convictions	*p value*
All	39%	62%	*<.000*	39%	20%	*<.000*
Drug	24%	44%	*<.000*	21%	9%	*<.000*
DWI	2%	2%	*.560*	3%	2%	*.219*
Drug or DWI	25%	45%	*<.000*	23%	11%	*<.000*
Person	3%	4%	*.506*	3%	0%	*.011*
Property	15%	25%	*.001*	15%	10%	*.032*
Misdemeanor	30%	53%	*<.000*	35%	18%	*<.000*
Felony	14%	17%	*.281*	4%	2%	*.173*
Other	4%	6%	*.468*	7%	3%	*1.000*
Violent Felony Offense	4%	5%	*.849*	0%	0%	*.532*
12 Month Post Index Recidivism - Percent Re-arrested	**Comparison Arrests**	**OIC Arrests**	***p value***	**Comparison Convictions**	**OIC Convictions**	***p value***
All	50%	70%	*<.000*	48%	30%	*<.000*
Drug	29%	53%	*<.000*	25%	13%	*<.000*
DWI	3%	3%	*.740*	5%	3%	*.349*
Drug or DWI	31%	55%	*<.000*	29%	16%	*<.000*
Person	4%	6%	*.264*	4%	1%	*.021*
Property	21%	32%	*.002*	19%	14%	*.109*
Misdemeanor	38%	60%	*<.000*	44%	25%	*<.000*
Felony	18%	24%	*.102*	6%	5%	*.497*
Other	6%	9%	*.143*	12%	6%	*.005*
Violent Felony Offense	6%	7%	*.532*	1%	1%	*.817*

Note: At 6 months post index N for comparison and program group is 326.
For 12 month post index Comparison N = 326 and Program N = 238.

Incarceration. Exhibit O34 reveals that OIC participants spend less time incarcerated in the county and city police jails and less time in prison one year after their index booking than the comparison group. This is another indication of the possible positive impact of the OIC on crime.

Exhibit O34: Time on probation and incarcerated (based on sentence data) for OIC participants and the comparison group – 12 months post index booking

Sentences	Comparison		OIC		t-test	
	Mean	SD	Mean	SD	t	p
County jail days	51.57	130.65	29.28	97.92	2.31	0.02
Police jail days due to warrants	0.91	1.18	0.33	0.68	-7.47	< 0.000
Prison days	34.79	120.04	14.98	193.24	1.46	0.14

COST EVALUATION

COST METHODS

Research Questions:

Is the program cost beneficial? What did the program cost?

Was there a monetary return on investment?

To answer the above questions, NPC conducted an analysis of the OIC to assess the cost of the program, and the extent to which program costs were offset by any cost-savings related to participant outcomes. This section provides the methods and results for the cost-benefit analysis performed for the OIC. The same program and comparison groups used for the outcome evaluation were used for the cost analysis.

The cost evaluation addressed the following study questions:

- How much does the OIC program cost?
- What is the cost impact on the criminal justice system (and other taxpayer funded systems) of sending individuals through OIC compared to individuals eligible for the OIC but who received traditional processing?
- What is the cost impact on taxpayer funded and non-taxpayer funded systems (societal costs) of sending individuals through OIC compared to individuals eligible for the OIC but who received traditional processing?
- What is the cost-benefit ratio? That is, is there a return on taxpayer investment in the program?

Transaction and Institutional Cost Analysis (TICA)

The cost approach utilized by NPC Research is called Transactional and Institutional Cost Analysis (TICA). The TICA approach views an individual's interaction with publicly funded agencies as a set of transactions in which the individual utilizes resources contributed from multiple agencies. Transactions are those points within a system where resources are consumed and/or change hands. In the case of opioid courts, when an opioid court participant appears in court or has a drug test, resources such as judge time, defense attorney time, court facilities, and urine cups are used. Court appearances and drug tests are transactions. In addition, the TICA approach recognizes that these transactions take place within multiple organizations and institutions that work together to create the program of interest. These organizations and institutions contribute to the cost of each transaction that occurs for program participants. TICA is an intuitively appropriate approach to conducting costs

assessment in an environment such as an opioid court, which involves complex interactions among multiple taxpayer funded organizations.

The TICA methodology is based upon six distinct steps. Exhibit C1 lists each of these steps and the tasks involved.

NPC conducted step 1 (determining program process) during site visits, through analysis of program documents, and through interviews with key informants. Researchers completed step 2 (identifying program transactions) and Step 3 (identifying the agencies involved with transactions) through observation during site visits and by analyzing the information gathered in Step 1. Step 4 (determining the resources used) was performed through extensive interviewing of key informants, direct observation during site visits, and by collecting administrative data from the agencies involved in the program. NPC completed step 5 (determining the cost of the resources) through interviews with program staff and with agency financial officers and other staff, as well as analysis of budgets found online or provided by agencies. Finally, Step 6 (calculating cost results) involved calculating the cost of each transaction and multiplying this cost by the number of transactions. For example, to calculate the cost of drug testing, NPC multiplied the drug test cost by the average number of drug tests performed per person. All the transactional costs for each individual were added to determine the overall cost per program participant/comparison group individual. This was reported as an average cost per person for the program, and outcome/impact costs due to rearrests, jail time and other recidivism costs. NPC was also able to calculate the cost of program processing per agency, so that it was possible to determine which agencies contributed the most resources to the program and which agencies gained the most benefit.

Exhibit C1. The Six Steps of TICA

Step	Description	Tasks
Step 1	Determine flow/process (i.e., how program participants move through the system).	Site visits/direct observations of program practice. Interviews with key informants (agency and program staff) using a treatment court typology and cost guide.
Step 2	Identify the transactions that occur within this flow (i.e., where clients interact with the system).	Analysis of process information gained in Step 1.
Step 3	Identify the agencies involved in each transaction (e.g., court, treatment, police).	Analysis of process information gained in Step 1. Direct observation of program transactions.
Step 4	Determine the resources used by each agency for each transaction (e.g., amount of judge time per transaction, amount of attorney time per transaction, number of transactions).	Interviews with key program informants using program typology and cost guide. Direct observation of program transactions. Administrative data collection of number of transactions (e.g., number of court appearances, number of treatment sessions, number of drug tests).
Step 5	Determine the cost of the resources used by each agency for each transaction.	Interviews with budget and finance officers. Document review of agency budgets and other financial paperwork.
Step 6	Calculate cost results (e.g., cost per transaction, total cost of the program per participant).	Indirect support and overhead costs (as a percentage of direct costs) are added to the direct costs of each transaction to determine the cost per transaction. The transaction cost is multiplied by the average number of transactions to determine the total average cost per transaction type. These total average costs per transaction type are added to determine the program and outcome costs.

Cost to the Taxpayer

To maximize the study's benefit to policymakers, a "cost-to-taxpayer" approach was used for this evaluation. This focus helps define which cost data should be collected (costs and avoided costs involving public funds) and which cost data should be omitted or calculated separately in the analyses (e.g., costs to the individual participating in the program).

The central core of the cost-to-taxpayer approach in calculating benefits (avoided costs) for opioid courts specifically is the fact that untreated substance abuse will cost tax dollar-funded systems money that could be avoided or diminished if substance abuse were treated. In this approach, any cost that is the result of untreated substance abuse and that directly impacts a citizen (through tax-related expenditures) is used in calculating the benefits of substance abuse treatment.

For this evaluation, because of the key goal of the OIC program "to save lives", in addition to the taxpayer costs, we also included societal costs to illustrate the substantial impacts to individuals, families and society as a whole as a result of the important work of the OIC. The societal costs included in this evaluation are the cost of human death, and cost of victimizations for person and property crimes and. In addition, the estimated cost of opioid use related emergency department visits were included to illustrate the potential county-wide public health impact of the decrease in ED visits in Erie County between 2016 and 2018. NPC attempted to include other taxpayer and non-taxpayer societal costs such as overdoses, heath care expenses, taxes paid, and income, but was not able to acquire the necessary data. The non-taxpayer funded societal costs used in this analysis are shown separately so that policymakers may use the taxpayer funded analysis to both understand the cost and savings related to public funds, as well as to make decisions around the allocation of recourses, but a fuller picture of the impact of the OIC can be seen in the societal costs.

Cost Data Collection

The cost evaluation involved calculating the costs of the program and the costs of outcomes (or impacts) after program entry (or the equivalent for the comparison group). In order to determine if there were any benefits (or avoided costs) due to OIC program participation, it was necessary to determine what the participants' outcome costs would have been had they not participated in the OIC. One of the best ways to do this is to compare the costs of outcomes for OIC participants to the outcome costs for similar individuals who were eligible for the OIC but did not participate. The OIC participants and comparison group in this cost evaluation were the same samples as those used in the preceding outcome evaluation.

Researchers collected cost data for the OIC evaluation and divided them into program costs and outcome costs. The **program costs** were those associated with activities performed within the program. The program-related "transactions" included in this analysis were OIC sessions (including any meetings and other activities preparing for the hearings), case management, peer support, assessments, drug testing, telehealth, Recovery Connections mobile team van, and intakes/screenings. The **outcome costs** were those associated with activities that occurred

outside the OIC program. These transactions included criminal justice-related activities (e.g., new arrests subsequent to program entry, subsequent court cases, jail days, police jail days due to warrant-related arrests, prison days, probation days), as well as other events that occurred such as treatment, victimizations, and death.

The costs for this study were calculated to include taxpayer costs as well as non-taxpayer societal costs (victimizations and death). All cost results provided in this report are based on fiscal year 2020 dollars or were updated to fiscal year 2020 using the Consumer Price Index.

RESULTS: COST EVALUATION

Program Costs

Program transactions for which costs were calculated include daily court sessions (including daily case conferences), case management, peer support, assessments, drug testing, telehealth, Recovery Connections mobile team van, and intakes/screenings. It should be noted that transportation services are also used by the program through the Save the Michaels organization. However, due to these services being provided on an as-needed basis (and therefore somewhat intermittent), data on transportation usage was not available for this study. A portion of the transportation services are also donated, meaning that a share of the services has no cost to taxpayers.

Obtaining the cost of OIC transactions for court sessions and daily case conferences, case management, peer support, telehealth, mobile van, and intakes/screenings involved asking each OIC team member for the average amount of time they spend on these activities (including any time needed to prepare for these activities), observing their activities on a site visit and obtaining each OIC team member's annual salary and benefits from a supervisor or financial officer at each agency involved in the program. As this is typically public information, some of the salaries were found online, but detailed benefits information often came from the agency's financial officer or human resources department. In addition to salary and benefits, the indirect support rate and jurisdictional overhead rate were used in a calculation that results in a fully loaded cost per participant. The indirect support rates and overhead rates for each agency involved in the program were obtained from agency budgets that were found online or by contacting the agencies directly.

Court Sessions. Court sessions are typically one of the most staff and resource intensive program transactions. These sessions include representatives from the following agencies:

- Unified Court System for the State of New York, Eighth Judicial District
- BestSelf Behavioral Health
- Legal Aid Bureau of Buffalo, Inc.
- Erie County District Attorney's Office

NPC based the cost of a court session (the time during a session when a single program participant interacts with the judge) on the average amount of court time (in minutes) each participant interacts with the judge during the court session. This included the direct costs for the time spent for each OIC team member present, the time team members spend preparing for the session, the time team members spend in the daily case conference, the agency support costs, and jurisdictional overhead costs. NPC calculated the cost for a single OIC court appearance at $23.14 per participant.

Case Management is based on the amount of staff time dedicated to case management activities during a regular work week and is then translated into a total cost for case management per participant per day (taking staff salaries and benefits, and support and overhead costs into account).[34] The main agency involved in case management is the Unified Court System for the State of New York, Eighth Judicial District. The daily cost of case management was calculated to be $1.29 per participant.

Peer Support was based on the amount of staff time dedicated to peer support activities during a regular work week and was then translated into a total cost for peer support per participant per day (taking staff salaries and benefits, and support and overhead costs into account).[35] The agency involved in peer support is BestSelf Behavioral Health. The daily cost of peer support was $0.18 per participant.

Assessments for OIC participants were provided by BestSelf Behavioral Health at a cost of $125.00 per assessment.

Drug Testing was performed on site by court staff and off-site by treatment agencies. Only drug tests done by the court were included in this analysis as data on drug tests done at treatment agencies were not available. The court uses instant urinalysis (UA) tests at a cost of $1.48 per panel (each panel tests for one specific drug).

Medical providers and medication prescribers who do **telehealth** for OIC participants were paid an average rate of $175.00 per hour. It was estimated by program staff that one hour was spent on average per participant for telehealth services over their time in the program. Medication costs were not included in this calculation due to a lack of data on medication provided.

Costs for the Recovery Connections **mobile team van** were calculated using salary and benefit costs for involved staff plus support and overhead costs. Only OIC participants use the mobile van when it was parked out front of court each court day. Another vehicle was used to transport participants to prescribers and home. The cost of mobile van services was calculated to be $66.12 per participant.

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[34] Case management included meeting with participants, evaluations, phone calls, referring out for other help, answering questions, reviewing referrals, consulting, making community service connections, documentation, file maintenance, and referrals.
[35] Peer support included meeting with participants, making phone calls, providing support through lived experiences, answering questions, connecting individuals to services within the community, and completing required documentation.

Intakes/screenings were based on the amount of staff time dedicated to performing intakes/screening during a regular work week and were then translated into a total cost for a intake/screening per participant. The agency performing the intakes/screenings was the Unified Court System for the State of New York, Eighth Judicial District. The average cost per intake/screening was calculated to be $5.57.

Program Cost Results by Transaction

Exhibit C2 displays the unit cost per program related event (or "transaction"), the number of events and the average cost *per individual* for each of the OIC events for all participants who exited the program.[36] The sum of these events or transactions is the total per participant cost of the OIC program. The Exhibit includes the average for all OIC participants regardless of completion status (*N* = 344). It is important to include participants who were discharged as well as those who graduated as all participants use program resources, whether they graduate or not.

Exhibit C2. OIC Program Costs per Participant by Transaction

Transaction	Unit Cost	All OIC Participants	
		Avg. # of Events per Person	Avg. Cost per Person
Intakes/Screenings	$5.57	1.00	$6
Assessments*	$125.00	0.57	$71
Court Sessions	$23.14	32.32	$748
Case Management Days	$1.29	185.81	$240
Peer Support Days	$0.18	185.81	$33
Drug Tests (per panel)	$1.48	96.76	$143
Telehealth Meetings	$175.00	N/A	$175
Mobile Van	$66.12	N/A	$66
Total			**$1,482**

*The average number of assessment (.57) per person indicates that a little over half of all participants received a full assessment. Although the OIC attempts to connect participants with treatment services, not all participants agree to engage in treatment services or to participate in an assessment.

The unit cost multiplied by the number of events per person results in the cost per person for each transaction during the course of the program. When the costs of the transactions were

[36] Program participants included in the program cost analysis are those who had sufficient time to complete the program and who exited the program either through graduation or termination. Active participants were not included in the analysis as they were still using program services so did not represent the cost of the full program from entry to exit.

summed, the result was a total OIC program cost per participant of $1,482. The largest contributor to the cost of the program was court sessions ($748), followed by case management ($240) and telehealth meetings ($175). When compared to treatment courts, the total OIC program cost per participant of $1,482 is quite low. This is likely due to the shorter amount of time in court sessions for OIC participants, and the fact that the main focus of the OIC is to get participants connected with treatment (but not to oversee treatment during the program).

Program Cost Results per Agency

Another useful way to examine program costs is by agency. Exhibit C3 shows that the costs accruing to the 8th Judicial District Court (court sessions, case management, drug testing, and intakes/screenings) account for 52% of the total program cost per participant. The next largest cost (27%) was for BestSelf Behavioral Health (court sessions, peer support, assessments, telehealth, and mobile van), followed by Legal Aid Bureau of Buffalo, Inc. (11%) for time spent on staffing and court sessions.

Exhibit C3. OIC Program Costs per Participant by Agency

Agency	Avg. Cost per Person for All OIC Participants
Unified Court System for the State of New York, 8th Judicial District	$768
BestSelf Behavioral Health	$406
Legal Aid Bureau of Buffalo, Inc.	$168
Erie County District Attorney's Office	$140
Total	**$1,482**

Program Cost Summary

The total cost for the OIC program was estimated at $1,482 per participant. Overall, the largest portion of OIC costs was due to resources put into court sessions (an average of $748, or 50% of total costs), followed by case management ($240, or 16%), and telehealth meetings (an average of $175, or 12% of total costs). When program costs were evaluated by agency, the largest portion of costs accrued to the 8th Judicial District Court ($768, or 52% of total costs), followed by BestSelf Behavioral Health ($406, or 27%), and Legal Aid Bureau of Buffalo, Inc. ($168, or 11%).

Outcome Costs

Outcome costs include any events (transactions) that occur after program entry that were not related to program activities. For this study, criminal justice system related events and life events were included in the cost analyses. These events included arrests, court cases, days incarcerated (jail and prison), days in police jail due to warrant arrests, time on probation, substance use and mental health disorder treatment, victimizations (person and property crimes), and deaths.

The cost per **Arrest** incorporated the time of the law enforcement positions involved in making an arrest, the salaries and benefits for those positions, support costs and overhead costs. Information about which law enforcement agencies typically conduct arrests was obtained by talking with program staff along with web searches. The cost of an arrest used in this analysis was the cost of an arrest by the Buffalo Police Department. NPC contacted staff at the department to obtain this figure, but some cost information was obtained online from agency budgets or pay scales. NPC used that information to calculate the cost of an average arrest episode. The average cost of a single arrest by the Buffalo Police Department was $98.79.

Court Cases include those cases that were dismissed as well as those cases that resulted in conviction. Because they were the main agencies involved, court case costs in this analysis were shared among the Unified Court System of the State of New York - 8th Judicial District, Erie County District Attorney's Office, and Legal Aid of Buffalo, Inc. Using budget and caseload information from each agency, the cost of a Court Case was calculated to be $4,169.03.

Jail was provided by the Erie County Sheriff's Office, Jail Management Division. Using budget and average daily population information obtained online, the cost per person per day of jail was calculated to be $225.50 in 2018. Using the Consumer Price Index, this was updated to fiscal 2020 dollars, or $230.87.

Police Jail Days occurred when participants were picked up on a warrant. Jail days were provided by the Buffalo Police Department. Using the police budget and average daily population information found online, the cost per day of a jail day at the Buffalo Police Department was calculated to be $113.88.

Probation costs were obtained through online information from the New York Assembly (the lower house of the New York State Legislature) and Erie County. The average cost of probation was $7.16 per day in 2018. Using the Consumer Price Index, this was updated to fiscal 2020 dollars, or $7.33 per day.

Prison costs were obtained through online information from the New York Department of Corrections and Community Supervision. The statewide cost per person per day of prison was $87.01 in 2018. Using the Consumer Price Index, this was updated to fiscal 2020 dollars, or $89.08.

Treatment Services for OIC participants were provided by BestSelf Behavioral Health, Catholic Health System, and various other treatment agencies. The treatment costs used for this analysis

were the Medicaid billing rates between OASES and the service providers. Each service specified a fixed price for each unit of service. The unit cost for medically managed detoxification was $826.85 per day. The cost for outpatient clinic treatment was $107.20 per day. The cost for residential rehabilitation treatment was $1460.77 per day. The cost for inpatient treatment was $256.46 per day. The cost for opioid outpatient treatment was $138.31 per day.

Victimization costs were calculated from the National Institute of Justice's Victim Costs and Consequences: A New Look (1996).[37] The costs were updated to fiscal 2020 dollars using the Consumer Price Index. Property crimes were $14,544.15 per event and person crimes were $47,115.99 per event.

The cost of a **Death** used in this analysis uses information from the U.S. Department of Health and Human Services' 2016 Guidelines for Regulatory Impact Analysis. This report's approach for valuing mortality risk reductions was based on estimates of the value per statistical life (VSL) and was generally in line with the value of a life used in other government agency's cost evaluations. Each death in this analysis used the report's mid-range of the VSL for fiscal year 2020, which was $10,100,000.00.

The outcome cost analyses were based on a cohort of individuals who participated in the OIC program and a matched comparison group of individuals who were eligible for the OIC program but who did not attend the program. The same program and comparison groups used for the outcome evaluation were used for the cost analyses. These individuals were followed through administrative data for 1 year post program entry (and a similar time period for the comparison group). This study compared recidivism and other outcome costs for the groups over that 1 year by transaction, as well as the outcome costs by agency.

The outcome costs discussed below do not represent the entire cost to the criminal justice system or other public systems. Rather, the outcome costs include the transactions for which NPC's research team was able to obtain data and cost information on both the OIC and comparison group from the same sources. Note that some possible costs or cost savings related to the program are not considered in this study. These include the number of drug-free babies born, health care expenses, and OIC participants legally employed and paying taxes. The gathering of this kind of information is generally quite difficult due to HIPAA confidentiality laws and due to the fact that much of the data related to this information are not collected in any

[37] The costs for victimizations were based on the National Institute of Justice's *Victim Costs and Consequences: A New Look (1996).* This study documents estimates of costs and consequences of personal crimes and documents losses per criminal victimization, including attempts, in a number of categories, including fatal crimes, child abuse, rape and sexual assault, other assaults, robbery, drunk driving, arson, larceny, burglary, and motor vehicle theft. The reported costs include lost productivity, medical care, mental health care, police and fire services, victim services, property loss and damage, and quality of life. In our study, arrest charges were categorized as violent or property crimes, and therefore costs from the victimization study were averaged for rape and sexual assault, other assaults, and robbery and attempted robbery to create an estimated cost for violent crimes, arson, larceny and attempted larceny, burglary and attempted burglary, and motor vehicle theft for an estimated property crime cost. All costs were updated to fiscal 2020 dollars using the consumer price index (CPI).

one place, or are not collected at all. Although NPC examined the possibility of obtaining this kind of data, it was not feasible within the time frame or budget for this study.

Outcome Cost Results by Transaction

Exhibit C4 shows the average number of recidivism-related events per individual for all OIC participants (regardless of graduation status) and the comparison group over 1 year. These events were counted from the time of program entry (an estimated "program entry date" was calculated for the comparison group to ensure an equivalent time period between groups).

Exhibit C4. Average Number of Events per Person over 1 Year from OIC Entry

Outcome Events	Average Number of Events (per person)	
	All OIC Participants (*N* = 268)	Comparison Group (*N* = 326)
Rearrests	1.42	0.76
Court Cases	1.52	0.85
Probation Days	35.39	38.04
County Jail Days	29.28	51.57
Police/City Jail Days due to Warrants	0.91	0.33
Prison Days	14.98	34.79
Detoxification Days	1.26	1.44
Outpatient Clinic Days	99.46	75.03
Residential Days	14.63	12.99
Inpatient Days	8.13	5.96
Opioid Outpatient Days	39.64	55.15
Property Victimizations	0.49	0.27
Person Victimizations	0.07	0.05
Deaths[a]	0.03	0.06

[a] The number in this row divided the total number of deaths per cohort (9 in the OIC participants cohort and 20 in the comparison group) by the number of people in the cohort (268 for OIC participants and 326 for the comparison group).

Overall, as demonstrated in Exhibit C4, OIC participants had more rearrests, court cases, police jail days due to warrants, outpatient clinic days, residential days, inpatient days, and property and person victimizations than the comparison group, but, related to the OIC group having fewer new convictions, had fewer probation days, jail days, and prison days, as well as fewer detoxification days, opioid outpatient days, and fewer deaths.

Exhibits C5 and C6 display the costs of outcomes by transaction that occurred in the 1 year after program entry for all OIC participants (regardless of graduation status), and the comparison group. Exhibit C5 shows only the outcome costs that accrued to taxpayer funded systems, while Exhibit C6 shows both the taxpayer funded systems and societal outcome costs (non-taxpayer funded systems).

Exhibit C5. Taxpayer Funded Outcome Costs per Person over 1 Year from OIC Entry

Outcome Events	Unit Cost	Outcome Costs (per person)	
		All OIC Participants (*N* = 268)	Comparison Group (*N* = 326)
Criminal Justice Events			
Rearrests	$98.79	$140	$75
Court Cases	$4,169.03	$6,337	$3,544
Probation Days	$7.33	$259	$279
Jail Days	$230.87	$6,760	$11,906
Police Jail Days due to Warrants	$113.88	$104	$38
Prison Days	$89.08	$1,334	$3,099
Subtotal for Criminal Justice Recidivism		**$14,934**	**$18,941**
Treatment Events			
Detoxification Days	$826.85	$885	$1,059
Outpatient Clinic Days	$107.20	$4,891	$6,921
Residential Days	$146.77	$1,529	$1,442
Inpatient Days	$256.46	$1,954	$1,495
Opioid Outpatient Days	$138.31	$1,141	$2,754
Subtotal for Publicly Funded Treatment		**$10,400**	**$13,671**
Total		**$25,334**	**$32,612**

The first subtotal in Exhibit C5 displays the costs associated with criminal justice outcomes that occurred in the 1 year after program entry for all OIC participants and the comparison group, and the second subtotal displays the costs associated with publicly funded treatment. Exhibit C5 shows that the difference in the 1-year outcome cost between all OIC participants and the comparison group was $7,278 per participant, indicating that OIC participants cost less than the comparison group when only taxpayer funded costs were included. This difference shows that there is a benefit, or savings, to taxpayers due to OIC participation.

When societal costs are taken into account in Exhibit C6, and the full cost of treatment (both publicly funded and privately funded), victimizations, and death are included the real benefits of the OIC program are clearly evident. Even a small difference in the number of actual deaths (9 for the OIC program group and 20 for the comparison group, or an average of .03 for the OIC program group and .06 for the comparison group) makes a huge difference when the value of a life is included in the analysis.

Exhibit C6. Taxpayer and Societal Outcome Costs per Person over 1 Year from OIC Entry

Outcome Events	Unit Cost	Outcome Costs (per person)	
		All OIC Participants (*N* = 268)	Comparison Group (*N* = 326)
Rearrests	$98.79	$140	$75
Court Cases	$4,169.03	$6,337	$3,544
Probation Days	$7.33	$259	$279
Jail Days	$230.87	$6,760	$11,906
Police Jail Days due to Warrants	$113.88	$104	$38
Prison Days	$89.08	$1,334	$3,099
Subtotal for Criminal Justice Recidivism		**$14,934**	**$18,941**
Detoxification Days	$826.85	$1,042	$1,191
Outpatient Clinic Days	$107.20	$10,662	$8,043
Residential Days	$146.77	$2,147	$1,907
Inpatient Days	$256.46	$2,085	$1,529
Opioid Outpatient Days	$138.31	$5,483	$7,628
Subtotal for Public and Private Treatment		**$21,419**	**$20,298**
Property Victimizations	$14,544.15	$7,127	$3,927
Person Victimizations	$47,115.99	$3,298	$2,356
Deaths	$10,100,000.00	$303,000	$606,000
Subtotal for Other Societal Costs		**$313,425**	**$612,283**
Total		**$349,778**	**$651,522**

The first subtotal in Exhibit C6 displays the costs associated with criminal justice outcomes that occurred in the 1 year after program entry for all OIC participants and the comparison group, and the second subtotal displays the costs associated with publicly funded and privately funded treatment. The third subtotal displays the societal costs on which NPC was able to obtain costs and data (victimizations and deaths). Exhibit C6 shows that when taxpayer and societal costs were included, the difference in the 1-year outcome cost between all OIC participants and the comparison group was $301,744 per participant, indicating that OIC participants cost less than

the comparison group when taxpayer funded and societal costs were included. This difference shows that there is a substantial benefit, or savings, to taxpayers and to society at large due to OIC participation.

Public vs. Private Treatment Costs

NPC was able to obtain data showing the breakdown between public and private costs for the total treatment costs shown in the previous Exhibit. Exhibit C7 displays the split between public and private treatment costs that occurred in the 1 year after program entry for all OIC participants (regardless of graduation status) and the comparison group.

Exhibit C7. Outcome Treatment Costs per Person over 1 Year from OIC Entry

Treatment Events	Public Treatment Costs (per person)		Private Treatment Costs (per person)	
	All OIC Participants *(N = 268)*	Comparison Group *(N = 326)*	All OIC Participants (*N* = 268)	Comparison Group (*N* = 326)
Detoxification Days	$885	$1,059	$157	$132
Outpatient Clinic Days	$4,891	$6,921	$5,771	$1,122
Residential Days	$1,529	$1,442	$618	$465
Inpatient Days	$1,954	$1,495	$131	$34
Opioid Outpatient Days	$1,141	$2,754	$4,342	$4,874
Total Treatment Costs	**$10,400**	**$13,671**	**$11,019**	**$6,627**

While total treatment costs in the 1 year from OIC entry were similar between the two groups ($21,419 per OIC participant and $20,298 per comparison group member), Exhibit C7 shows that OIC participants used less publicly-funded treatment per participant than the comparison group. OIC participants also used almost twice as much privately-paid treatment than comparison group members. This may be due to OIC participants being connected with private insurance or at least being encouraged to use private insurance should they have it.

Outcome Cost Results per Agency

The taxpayer funded outcome costs were also examined by agency to determine the relative benefit to each agency that contributed taxpayer resources to the OIC program. The transactions shown in the previous Exhibit were provided by one or more agencies. If one specific agency provides a service or transaction (for example, the Department of Corrections and Community Supervision provided all prison days), all costs for that transaction accrued to that specific agency. If several agencies all participate in providing a service or transaction (for example, the 8th Judicial District, Erie County District Attorney's Office, and Legal Aid of Buffalo, Inc were all involved in court cases), costs were split proportionately amongst the agencies

involved based on their level of participation. Exhibit C8 provides the publicly funded cost for each agency and the difference in cost between the OIC participants and the comparison group per person. A positive number in the difference column indicates a cost savings for OIC participants.

Exhibit C8. Taxpayer Funded Outcome Costs per Person by Agency over 1 Year from OIC Entry

Agency	OIC Outcome Costs per Participant	Comparison Outcome Costs per Person	Cost Difference per Person
8th Judicial District Court	$4,341	$2,427	($1,914)
Erie County District Attorney's Office	$1,487	$832	($655)
Legal Aid Bureau of Buffalo, Inc.	$509	$285	($224)
Law Enforcement	$244	$113	($131)
Erie County Probation Department	$259	$279	$20
Erie County Sheriff's Office	$6,760	$11,906	$5,146
Department of Corrections and Community Supervision	$1,334	$3,099	$1,765
Publicly Funded Treatment	$10,400	$13,671	$3,271
Total	**$25,334**	**$32,612**	**$7,278**

Exhibit C8 shows that the Erie County Probation Department, Erie County Sheriff's Office- Jail Management Division, New York Department of Corrections and Community Supervision, and publicly funded treatment benefitted from savings associated with OIC participation, but all other agencies (8th Judicial District Court, Erie County District Attorney's Office, Legal Aid Bureau of Buffalo, Inc., and law enforcement) did not. As demonstrated in Exhibit C8, the total taxpayer funded outcome cost over 1 year from program entry for the OIC per participant (regardless of graduation status) was $25,334, while the cost per comparison group member was $32,612. The difference between the OIC and comparison group represents a savings to taxpayers of $7,278 per participant.

Costs of Opioid-Related Emergency Room Visits

Opioid-related emergency room (ER) visits are another important metric for measuring the overall cost impact of the OIC program. Unfortunately, NPC was not able to obtain individual level data on opioid-related ER visits on either the OIC participant group or the comparison group samples. However, as described in the outcome section of this appendix, data on opioid-related ER visits were available for Erie County as a whole before and after the OIC program was implemented. According to data from New York State Department of Health Opioid

Dashboard[38] there were an estimated 1,286 opioid-related ER visits in 2016 and 561 opioid-related ER visits in 2018.[39] Using publicly available patient price information from a major hospital system in Buffalo, the cost per opioid-related ER visit was estimated to be $13,322.[40]

Exhibit C9. Opioid-Related ER Visit Costs Before and After OIC Implementation

Opioid-Related ER Visits	**1,286**	**561**
	Before OIC Implementation (2016)	**After OIC Implementation (2018)**
Total Opioid-Related ER Visit Costs	**$17,132,092**	**$7,473,642**

Exhibit C9 displays the opioid-related ER visit costs that occurred before and after the OIC program was implemented. The estimated cost in 2016 (before the OIC was implemented) for opioid-related ER visits was $17,132,092. In 2018, after the OIC was implemented, the estimated cost was $7,473,642, for a potential (and likely conservative) savings of $9,658,450.

Cost Evaluation: CONCLUSION

Over time, the OIC resulted in significant cost savings and a return on taxpayer investment in the program. The program investment cost is low, at only $1,482 per OIC participant. When the cost difference in taxpayer funded outcomes between OIC participants and comparison group members was calculated, the benefit due to fewer probation days, jail time, prison time, and publicly funded treatment for OIC participants over the 1 year included in this cost-benefit analysis came to $7,278. This amount resulted in a positive return on the taxpayer investment over the 1-year time period and a cost-benefit ratio of 1:4.91. That is, for every taxpayer dollar invested in the OIC program, there was a $4.91 return after 1 year.

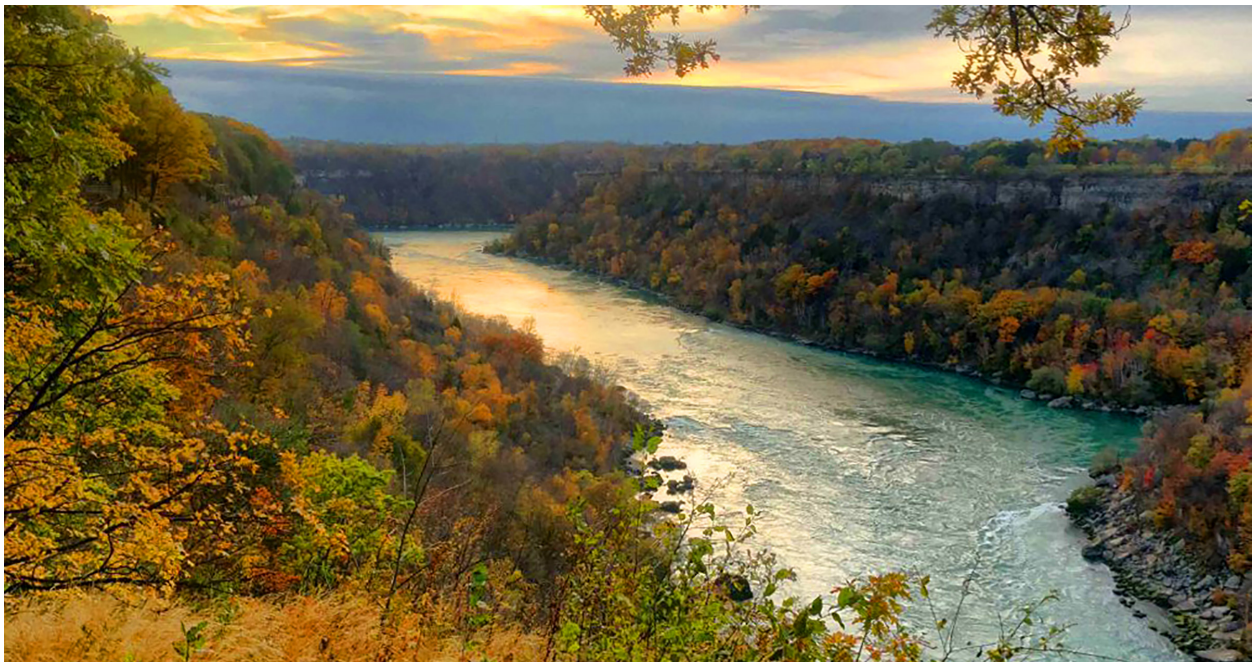
When societal costs (privately funded treatment, victimizations, and deaths) were also included, the return after 1 year increased significantly, to $301,744 per participant. These were the costs that accrued through only 1 year after program entry. Many of these costs were due to positive outcomes while the participant was still in the program. Therefore, it is reasonable to state that savings to the state and local criminal justice systems, publicly funded treatment, and society as a whole (due to significantly fewer deaths) were generated from the

[38] **https://www.health.ny.gov/statistics/opioid/**

[39] Data showed ER visits per 100,000 of population. According to U.S. Census Bureau statistics, Erie County had a population of 918,678 in 2016 and 919,717 in 2018. Dividing actual population by 100,000 and then by the number of ER visits per 100,000 for each time period results in an estimated 1,286 ER visits in 2016 and 561 ER visits in 2018.

[40] https://www.kaleidahealth.org/general-information/patient-pricing.asp. Code 918 for "Poisoning and Toxic Effects of Drugs without Major Complication or Co-morbidity" was used for this analysis. It is likely that many of the opioid-related ER visits actually would include patients with major complications or co-morbidities, but for a more conservative estimate, the $13,322 rate was used instead of $49,683 for Code 917 (Poisoning and Toxic Effects of Drugs with Major Complication or Co-morbidity). This means that the actual costs for opioid-related ER visits and the potential savings due to a reduction in opioid-related ER visits after the OIC was implemented are likely much higher than shown.

time of participant entry into the program. If OIC participants continue to have positive outcomes in subsequent years (as has been shown in other courts NPC has evaluated[41]) then these cost savings can be expected to continue to accrue over time, repaying the program investment costs and providing further savings in opportunity resources to public agencies. These findings indicate that OIC is both beneficial to participants, beneficial to Erie County and New York taxpayers, and society as a whole.



[41] Carey et al., 2005; Finigan et al., 2007.

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