Do Diverted Kids Stay Out of Trouble?:
A Longitudinal Analysis of Recidivism Outcomes in Diversion

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This study evaluates the effectiveness of a police diversion program between 2008 and 2016. Youth participating in the diversion program were compared to youth not participating in diversion on the probability of, and time to, second offense using unadjusted comparisons at 6, 12, 18, 24, and 36 months, unadjusted lifetable comparisons of time to second arrest, and Cox multivariate proportional hazards regression models. Diverted youth had significantly fewer second offenses. The rate of recidivism among diverted youth was lower than non-diversion youth at all time periods in unadjusted models, and statistically significant at 6 months, 12 months, and 18 months. Keywords: police, recidivism, juvenile diversion, prevention

Nationally there is a movement to reduce youth detention, as involvement with the juvenile justice system is correlated with future arrests, incarceration, adult criminality, drug use, teen pregnancy and school drop-out (Carney & Buttell, 2003; Cullen, Jonson, & Nagin, 2011; McCarthy, Schiraldi, & Shark, 2016). Neither arrest nor incarceration address the underlying risk factors that first lead to interaction with the juvenile justice system, such as poor academic performance, learning disabilities, traumatic experiences, childhood maltreatment, or parents’ criminal justice involvement (Burt, Resnick, & Novick, 1998; Gatti, Tremblay, & Vitaro, 2009). Juvenile diversion programs were developed in the 1970s to avoid arresting and charging a juvenile for a first offense, in part because history of arrest is one of the greatest risk factors for future arrests (Cullen et al., 2011). Yet despite decades of use, there are no current standards for what defines a diversion program.

National efforts, such as the Juvenile Detention Alternative Initiative (JDAI), focus on programs and policies to reduce the number of juveniles in detention, including programs that divert youth from court involvement and attempt to mitigate systemic inequalities (Austin, Johnson, & Weitzer, 2005; Gregory, Skiba, & Noguera, 2010; Massoglia, 2008). The results of diversion efforts in reducing recidivism have been mixed (Cocozza et al., 2005; Maggard, 2015). A meta-analysis conducted by Schwalbe et al. (2012) found that juvenile diversion programs alone did not...
significantly prevent recidivism more than other interventions such as youth court, family treatment or restorative justice programs. Another meta-analysis found that juvenile diversion programs were more effective in reducing recidivism than conventional judicial interventions (Wilson & Hoge, 2013b). Patrick, Marsh, Bundy, Mimura and Perkins (2003) found that a juvenile diversion program that stressed youth accountability did reduce recidivism when compared to either a court mandated diversion program or an educational intervention both of which lacked strong accountability components.

One criticism of court-based juvenile diversion programs is that many of them are typically available to youth only “post-charge”-- after youth have been charged with a crime (Cocozza et al., 2005; Wilson & Hoge, 2013a). Since the majority of police encounters do not lead to an arrest, these services cannot be offered after minor infractions and thereby work to prevent offending (Mears et al., 2016). Pre-charge diversion, on the other hand, provides the opportunity to prevent offending as well as avoid the labeling of a youth as a delinquent. If a young person starts to adopt an identity of a juvenile delinquent, he or she is at increased risk of repeated interactions with the juvenile justice system (Bernburg, Krohn, & Rivera, 2006; Hoge, 2016). Further, if the diversion program involves other court-referred youth there is an increased likelihood that a relatively low-risk youth may become exposed to more delinquent peers. Research has demonstrated that when exposed to more delinquent peers, low-level juvenile offenders are at increased risk via peer contagion of engaging in more significant criminogenic behavior (Dodge, Dishion, & Lansford, 2007).

**Pre-Complaint Police Diversion**

One of the promising approaches to preventing juvenile recidivism is police-based diversion (McCold, 2003). Police diversion or pre-complaint diversion is different than post-charge diversion in that it avoids the first point of contact with the juvenile court system. That is, youth in police-based diversion are not formally charged with an offense, maintain clear juvenile records and in some programs youth are also offered needed social services, such as mental health support or after-school activities. One of the major barriers to implementing police-based diversion is the extra training and resources needed for police officers to know how and when to offer diversion and to also have a functioning diversion program in place to support diversion activities once an eligible youth is identified (Bahney, Daugirda, Firman, Kurash, & Rhudy, 2014). Although training programs such as Crisis Intervention Training (CIT) appear to improve officers’ knowledge in handling potential diversion cases (Compton, Esterberg, McGee, Kotwicki, & Oliva, 2006), there is limited evidence that training alone can reduce incarceration (Taheri, 2016). A well-developed, robust and sustainable juvenile diversion program is essential to making a substantive impact on reducing juvenile arrests and preventing the cycle of repeated interactions with the juvenile justice system (Wilson & Hoge, 2013a).

While many studies of these interventions focus on preventing first arrest, there has been little research on outcomes after completion of the diversion program (Wilson & Hoge, 2013b). In fact, most diversion studies only have data assessing up to the first year of follow-up (Schwalbe et al., 2012). More research is needed to understand if police-based diversion interventions that include both training and dedicated team-based diversion resources are effective at reducing recidivism and if so how long these interventions are effective.
Recidivism Outcomes in Diversion

This article tracks recidivism data in the context of a community police based juvenile diversion program, the Safety Net Collaborative (SN) in Cambridge, MA. A prior study identified that this program was associated with a significant decline in juvenile arrests in Cambridge (Barrett & Janopaul-Naylor, 2016). However, a more direct assessment of recidivism at the individual level (defined as a second arrestable offense (i.e., delinquent offense for which the youth could have been arrested) for those who were diverted and a second arrest for those who were not diverted) has yet to be established. Youth who are diverted and monitored through a formalized program in comparison to youth who are diverted but without formalized supports and services typically have more intensive levels of support, intervention and monitoring and therefore may be less likely to be arrested while the interventions are ongoing, which in Cambridge is typically about 6 months. Further, youth who are diverted for 6 months rather than processed through courts and probation during that time would be less susceptible to the aforementioned effects of labeling theory as they have not been processed in the juvenile justice system. It is less clear if the youth who are identified as eligible for diversion and receive supports and interventions during diversion are then able to avoid further contact with law enforcement either by being arrested or summoned to court, which means that the youth is not placed in handcuffs and booked at the police station but he or she is formally charged and receives notice they are required to appear in court. One of the main reasons we lack this understanding is that longitudinal data of arrests, summons and diversions for juveniles over the course of a number of years is difficult to both access and track (Schwalbe et al., 2012). We investigate whether youth who receive diversion through SN as their first point of contact with law enforcement were less likely to recidivate as juveniles over a three-year time period using data from SN Collaboration participants and comparison group individuals that span the 8 years since the beginning of the intervention. This study details a model of juvenile diversion with the potential to decrease youth arrests, improve care quality, reduce costs, and improve outcomes for at-risk youth.

METHODS

Description of the Police Based Diversion Intervention: The Safety Net Collaborative

Safety Net is a collaborative effort in the city of Cambridge, a diverse urban city in the northeast, between the Cambridge Police Department (CPD), Cambridge Public Schools (CPS), Department of Human Services – Youth Programs, and Cambridge Health Alliance (CHA). SN engages specially trained police officers called Youth Resource Officers (YROs). The YROs work with juveniles who are at risk for delinquency with outreach, prevention, and support activities. In this model, trained YROs act in a case management capacity to ensure youth who are referred by the community or via diversion are matched with the proper services and supports and follow through with care plans (Barrett & Olle, 2016). YROs in this model are trained in a unique curriculum that includes the application of child development and trauma theories. Thus, YROs are able to discern when to refer to and how to monitor use of social service agencies. For example, all YROs are trained on how to administer the Youth Level of Service-Case Management Inventory (YLS-CMI) (Guy, Nelson, Fusco-Morin, & Vincent, 2014). The YLS-CMI is an empirically validated strength and needs assessment for at-risk youth. Every youth who is diverted receives the YLS-CMI and if the results indicate that mental health or social services supports are needed the YRO can assist in making that referral. Youth who normally might not receive case management services are receiving them via the police, which affords the officer the opportunity to act in a preventative
manner as part of the team trying to help the youth and family rather than solely in an enforcement capacity. In contrast, “usual protocol” for police-behavioral health partnerships in the jurisdiction where Safety Net takes place typically involves the officer providing a handoff to behavioral health/youth service providers with no further officer outreach.

The capacity to provide young people with pre-complaint diversion through SN started in 2008 but, like many “real world” programs that serve the needs of the community, the nature of the interventions that accompanied the diversions has developed and expanded over time. The SN model expanded the role of YROs by training them to recognize trauma and its symptoms, and establishing processes for YROs to directly collaborate with mental health professionals, when indicated, and other community providers to divert youth, tasking YROs to screen youth for potential mental health conditions using the YLS-CMI, and assigning YROs to act as case managers to ensure follow-through with services and supports. Examples of supports outside of mental health services include afterschool sports and arts programs, mentors, and family support services. YROs received ongoing training over the years in youth development, youth mental health, implicit bias and case management in order to enhance their capacity in managing diversion cases. The capacity of the SN partners in the schools and mental health agencies to respond to youth who entered into diversion contracts improved over time as partnerships with the YROs developed. Youth diverted through SN are able to access individual, group and family psychotherapy. Youth and families are also able to access specialized cognitive behavioral and anger management treatment if indicted.

Diversion within SN, which is offered to those youth who have committed an arrestable offense, is also voluntary and requires the consent of a parent or guardian for the youth to participate in diversion. SN diversion differs from court diversion, which can be offered to Cambridge youth after they have been formally charged and processed by the juvenile court. It is important to note that SN diversion is not offered to youth who have not committed an offense or who otherwise would not have been in contact with the legal system. SN is a diversion program that collaboratively targets fragmentation of services through cross-system alignment and collaboration and intentionally links police, schools, after-school programs and mental health resources in order to provide contextually relevant, multi-level services for diverted youth.

**Data Source and Study Sample**
Data are 2008-2016 juvenile records collected from the Cambridge Police Department. These records provide information regarding date of birth, date of initial and following offenses, status of offense (arrest, SN diversion, or summons), and reported race and ethnicity. Data were de-identified to protect the individual identity of the youth before data analysis. All data collection, storage and analysis protocols were approved by the IRB of the Cambridge Health Alliance. The data consist of Cambridge youth residents who committed an arrestable offense between 2008 and 2016. Data were not available about the specific type of offense committed; however even some felony offenses were considered for diversion (e.g., assault and battery). Also, youth who have committed multiple offenses are still considered for diversion. Youth who are not eligible for diversion would include youth whose offenses involved a victim who did not agree to diversion, offenses for which arrest is mandated (e.g., domestic assault) and youth whose guardians declined the diversion option.
The treatment group consisted of youth, age 18 or younger, diverted into the SN program between 2008 and 2016. The comparison group consisted of youth that were not diverted, i.e., youth that were issued a summons or arrested for their first offense.

The first outcome of interest is recidivism, or a second offense, defined as a second arrest or summons for the comparison group and a first arrest or summons after diversion for the treatment group). The second outcome of interest is number of days until recidivism.

**Statistical Analyses**

In unadjusted analyses, we compared treatment and comparison groups on race, gender, age at first offense, and recidivism at 6, 12, 18, 24, 30, and 36 months. Next, we graphically plotted the percentage of individuals that remain without a second offense over a two-year period (using the terminology of hazard analyses, this graphical representation is a “life table” of “survival curves” representing time to failure for each group). To assess the statistical significance of the difference in these survival curves, we conducted an unadjusted log-rank survival function test that compares the rates of time to recidivism. To assess the difference in time to recidivism between groups after adjustment for covariates, we estimated multivariate Cox proportional hazard models with the time to event variable capturing days from initial offense until the second offense, the day before the 19th birthday, or the end of the data collection period. Cox models adjust for observable differences between the SN group and comparators, and account for group differences in time of exposure (some youth enter the data later in the period of analysis and therefore are not tracked for the full time period and are thus right-censored). Variables adjusted for in Cox proportional hazard models are age at first offense, sex, and race/ethnicity (categorized as Hispanic, non-Hispanic white or non-white).

**RESULTS**

**Baseline Characteristics**

A total of 272 youth were identified by the Cambridge Police Department as committing a first arrestable offense between October 2008 and December of 2016: 162 were arrested or summonsed and 83 diverted into SN. There were significant differences in the comparison group compared to the SN group on gender (28.3% vs. 12.9% female, respectively), age (14.8 vs. 15.5 years old at first offense), and race (15.5% non-Hispanic white, 65.2% black, 17.7% Hispanic, and 1.6% Asian in the comparison group compared to 29.4% non-Hispanic white, 49.4% black, 20% Hispanic, and 1.2% Asian in the SN group) (Table 1).

**Recidivism Rates**

In unadjusted analyses, rates of recidivism were lower in the SN group compared to the comparison group, but these differences diminished over time. Rates of recidivism for SN youth were significantly lower than comparison youth at six-month follow-up (7.1% vs. 20.3%, respectively \([p=0.006]\)) one-year follow-up (10.6% vs. 26.2% \([p=0.004]\)); 18-month follow-up (14.1% vs. 27.8% \([p=0.01]\)); but not significantly different after two years (21.2% vs. 30.0% \([p=0.13]\)) or three years (25.9% vs. 33.2% \([p=0.229]\)) (Figure 1).
Table 1

Descriptive Characteristics of Safety Net and Comparison Populations (n=272)

<table>
<thead>
<tr>
<th></th>
<th>Safety Net (n=85)</th>
<th>Control (n=187)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>12.9% (11)</td>
<td>28.3% (53)</td>
<td>p=0.006</td>
</tr>
<tr>
<td>Male</td>
<td>87.1% (74)</td>
<td>71.7% (134)</td>
<td></td>
</tr>
<tr>
<td><strong>Age at First Offense</strong></td>
<td>Mean, SE</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>14.8 years (2.45)</td>
<td>15.5 years (1.40)</td>
<td>p=0.004</td>
</tr>
<tr>
<td><strong>Range of Age at First Offense</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10.2 – 18.7</td>
<td>6.5 – 18.9</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>29.4% (25)</td>
<td>15.5% (29)</td>
<td>p=0.008</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td>49.4% (42)</td>
<td>65.2% (122)</td>
<td>p=0.013</td>
</tr>
<tr>
<td>Hispanic</td>
<td>20.0% (17)</td>
<td>17.7% (33)</td>
<td>p=0.642</td>
</tr>
<tr>
<td>Other</td>
<td>1.2% (1)</td>
<td>1.6% (3)</td>
<td>p=0.786</td>
</tr>
</tbody>
</table>

Data: 2008-2016 criminal records collected by the Cambridge Police Department

The life table diagram graphically displays what fraction of each population (Safety Net and control group) committed a second offense over time, with the start point at day zero, where 100% of observed youth are still without a second offense (Figure 2). This visual display shows a longer time to recidivism in the SN group compared to the comparison group in these unadjusted models. Testing the significance of the difference in recidivism rates over time between these groups, the unadjusted log-rank survival function test identified a significant difference in time to recidivism within the first six months (p=.005), one year (p=.002), and two years (p=.04).

Our next set of models compared the hazard rate (rate of time to recidivism) between the SN and control groups each at six months, one year, and two years. The statistic of interest in this analysis is the hazard ratio (HR), which is a ratio of two hazard rates (in our case, the ratio of the hazard of recidivism for the SN participants to the hazard for the control group). An HR of 1.0 represents no difference, lower than 1.0 represents less hazard of recidivism for the Safety Net group compared to controls, and greater than 1.0, a greater hazard for Safety Net compared to controls. In multivariate Cox proportional hazard models, SN was significantly associated with a lower hazard of recidivism at six months (HR=.33; p=.01) and one year (HR=.36; p=.006); and approached significance after two years (HR=.59; p=.07). In all models, age, gender, and race/ethnicity were not significant predictors of hazard of recidivism (Table 2).
Figure 1
Proportion of Youth with Second Offense by Time Period and Safety Net Collaborative Participation

Note: Differences between Safety Net and Comparison Populations are significant at p<.05 at 6 months, 12 months, and 18 months.

Figure 2
Kaplan-Meier Survival Estimate of Second Offense by Safety Net Collaborative Participation
Table 2  
*Cox Regression Hazard Models at 6, 12, and 24 Months Identifying Time to Second Offense Adjusting for Age at First Offense, Sex, and Race*

<table>
<thead>
<tr>
<th></th>
<th>6 Months</th>
<th>12 Months</th>
<th>24 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safety Net</strong></td>
<td><strong>Hazard Ratio</strong></td>
<td><strong>Standard Error</strong></td>
<td><strong>z</strong></td>
</tr>
<tr>
<td>(ref comparison</td>
<td>0.332</td>
<td>0.150</td>
<td>-2.44</td>
</tr>
<tr>
<td>group)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>**Age at First</td>
<td>1.00</td>
<td>0.0003</td>
<td>0.61</td>
</tr>
<tr>
<td>Offense (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>0.671</td>
<td>0.245</td>
<td>-1.09</td>
</tr>
<tr>
<td>(ref male)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td>(ref non-Hispanic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>white/Asian)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Black</strong></td>
<td>1.669</td>
<td>0.756</td>
<td>1.13</td>
</tr>
<tr>
<td><strong>Hispanic</strong></td>
<td>1.292</td>
<td>0.701</td>
<td>0.47</td>
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DISCUSSION

Effective models to divert youth from the juvenile justice system are needed to both reduce juvenile recidivism and improve outcomes for youth who engage in risky or delinquent behaviors (Mears et al., 2016). One promising approach is police-based, pre-charge diversion with links to mental health, school and after-school services; however, there is little in terms of longitudinal data to assess whether youth who first receive diversion are able to avoid being arrested or summoned as juveniles after the diversionary period has ended (Hoge, 2016). The SN diversion program involves cross-sector collaboration and police officer involvement in case management, which are essential and relatively unique components of the program. The goal of SN is to train and deploy youth resource officers to be a strong presence in the community, have the capacity to collaborate with service providers, follow-up with families and to provide a positive influence for youth at high risk for negative social outcomes.

This study adds evidence to the potential effectiveness of diversionary models in reducing exposure to the juvenile justice system. In a prior study, the implementation of SN was found to be associated with a reduction in overall juvenile arrests in the community (Barrett & Janopaul-Naylor, 2016). This long-term follow-up study of youth entering the program between 2008 and 2016 found that SN also reduced rates of recidivism and increased time to recidivism compared to youth who were initially arrested or summoned. These findings are particularly important in light of the relative lack of studies that track longitudinal data on diversion program outcomes past one year (Schwalbe et al., 2012).

The observed reduction in recidivism diminished over a two- and three-year time period. Many juvenile diversion programs “graduate” the youth after the conditions of diversion are completed with no follow-up after completion of the diversion program (Wilson & Hoge, 2013b). This study highlights that 6-month diversion programs may only have short-term effectiveness and that in fact the initial beneficial effects of increased access to resources and monitoring likely deteriorate over time. We hope this study helps further the evidence on effective program models. For example, future research might explore whether booster interventions for youth at 18 months after diversion may help to reduce the risk of long-term recidivism.

There are several limitations of note in this analysis. First, a limitation to the recidivism analyses is that data were not available for arrests and arrestable offenses starting at the age of 19 (1.1% of the control group and 5.9% of SN participants turned 19 one year after their first offense, and 10.8% of the control group and 21.2% of SN participants turned 19 two years after their first offense). In sensitivity analyses, we found no changes in significance or direction of the results when these individuals were dropped from the unadjusted analyses or when Cox proportional hazards models were re-estimated with the 19th birthday as a right-censored event. Second, data on the specific offenses that led to arrest, summons or diversion were unavailable. While some felony offenses are still considered for diversion, youth committing a serious felony offense (e.g., involving serious injury to a victim) are not eligible for SN and the severity of the committed offenses are likely to be greater on average among comparison group than treatment group participants. That said, given their risk of recidivism is not statistically different after 18 months suggests the treatment group is less likely to be composed of significantly lower risk youth. Third,
although we control for demographic covariates in multivariate survival analysis models, we lack a randomized control group to make causal comparisons. Randomized controlled trials of diversion interventions are needed.

Despite these limitations, results from our analysis suggest that youth who are diverted rather than arrested or summonsed at first point of contact with police were less likely to have future contact with the juvenile justice system. This finding provides further evidence that cities and communities that lack any form of diversion for low-level juvenile offenses should consider developing diversion programs that promote strong collaborations across youth-serving systems and conduct intensive training of police officers in youth development, trauma, case management, and the use of standardized risk assessments. Further, these findings speak to the critical importance of building in the capacity for effective follow-up with youth who have completed diversion to help prevent recidivism post-diversion.
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