

The Role of Substance Use in Probation Outcomes

Pennsylvania Commission on Sentencing



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Executive Summary

Substance use is common among justice-involved individuals. Prior research suggests that substance use can be associated with poorer outcomes among individuals under supervision in the community. The Pennsylvania Commission on Sentencing conducted a study to determine the extent to which this is true for individuals in Pennsylvania drawing on:

- I. Analysis of resentencing events reported to the Commission
- II. Interviews with key stakeholders in two jurisdictions
- III. Analysis of probation case files in two jurisdictions

The main analyses in this report are based on data for individuals sentenced to a term of probation or county intermediate punishment with at least one restrictive intermediate punishment (RIP) element from 47 counties that reported sufficient information on resentencing events from January 1, 2016 to May 8, 2019.

Findings

Resentencing

- Approximately 13 percent of individuals sentenced to a term of community supervision in 2016-2017 were resentenced as of May 2019.
- There were substantial differences across county in the rates of resentencing, though these differences were not significant at the class level.
- Technical violations were the most common reported reason for resentencing, though 20.8 percent of resentencing events were for a new offense either alone or in conjunction with a technical violation.
- Individuals under restrictive components of county intermediate punishment (RIP) were more likely to experience resentencing in general and for technical violations.
- The most common outcome of resentencing procedures was county incarceration (56.2 percent) with the next most common outcome being a probation sentence (31.9 percent)
- Some analyses suggested that white individuals were more likely to receive probation and less likely to receive county incarceration at resentencing relative to black individuals, but these results were not statistically significant when controlling for other differences between these groups.

The Relationship between Substance Use and Resentencing

- At least 50 percent of individuals sentenced to community supervision in Pennsylvania could be considered substance-involved at the time of sentencing.
- Among those who were resentenced for technical violations, up to 50.9 percent were resentenced for a substance-related technical violation.
- Individuals who are white were more likely to have substance-related technical violations.

- Substance-involved individuals were 29% more likely to be resentenced and were generally resentenced more quickly than those without known substance involvement
- Among substance-involved individuals, those who were ordered to treatment as part of their sentence were less likely to be resentenced for a new offense.
- Substance dependent individuals may be more likely to be resentenced to county incarceration or restrictive intermediate punishment, but these findings were not statistically significant after controlling for between group differences.
- Only 7.9-10.5 percent of substance-related resentencing events resulted in an order to treatment.

The Cost of Substance-Related Resentencing

- Substance use was directly implicated in up to 30.5 percent of all resentencing events.
- We estimate that substance-related violations of community supervision among individuals sentenced in 2016-2017 was associated with an additional 652,376 to 1,338,262 days of justice supervision statewide.
- The marginal cost of additional supervision incurred from substance-related violations of community supervision is estimated to be up to \$2.9 million *per year*. Approximately two-thirds of this estimate is the cost of county-level supervision and incarceration. This does not include the costs of criminal justice processing or the costs to communities associated with additional services or new offenses.

Gaps in Current Data Reporting

- There are significant gaps in current reporting. Eleven counties reported no resentencing data on individuals sentenced to community supervision between 2016-2017 and nine additional counties reported at such low rates that they were not reliable
- Many counties report reasons for technical violations using global categories that preclude reliable determination of the type of technical violation. Some counties use global categories for all or a majority of their reported resentencing events which obscures the number of resentencing events that may be related to new offenses.
- There is limited information on the type of treatment ordered and treatment that may have been received even if not ordered as part of a formal sentence.

Recommendations

- **Assess potential need for substance use treatment prior to sentencing.**
Given the high rate of substance involvement in this population and the cost of substance-related violations, counties should make every effort to use validated risk-needs-responsivity instruments.
- **Practitioners should consider the options for evidence-based treatment at sentencing.**
Substance-involved individuals who were ordered to treatment were less 28% likely to be revoked for a new offense.
- **Improve access to evidence-based treatment for those under community supervision.**
Substance-related technical violations accounted for a substantial fraction of all

resentencing events. Additional data from one site also suggested that substance use remains an un- or under-addressed issue for many individuals under supervision.

- **Consider using incarceration less frequently for substance-related violations of probation, especially for individuals who are receiving treatment.**

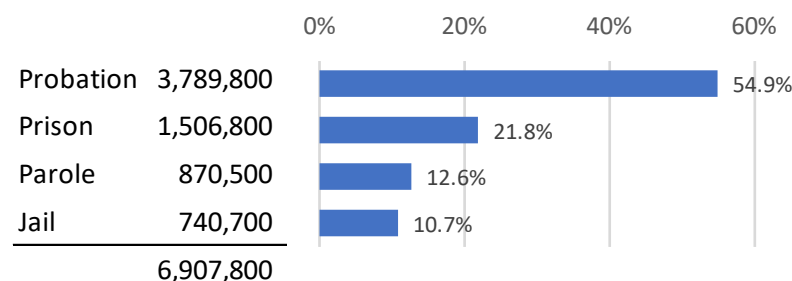
When incarceration interrupts treatment it can delay progress and reduce treatment retention and may increase risk of overdose. The cost of responding to substance-related violations is significant and borne mostly by counties.

The Role of Substance Use in Probation Outcomes

Community Supervision in the United States

In 2016, there were approximately 6.9 million individuals under correctional supervision in the United States – of these, a substantial majority (67 percent) were under community supervision in the form of probation (55 percent) and (to a lesser extent) parole (12 percent; Exhibit 1). In general, probation populations more closely mirror the general population than do incarcerated populations, though men and non-whites are overrepresented compared to the general population. Black people comprise 13 percent of the general population¹ but 55 percent of adults on probation, 38 percent of adults on parole (Kaeble and Cowhig, 2018); and 32 percent of the sentenced prison population (Bronson and Carson, 2019).

Exhibit 1. Individuals under Correctional Supervision in 2016, National²



As incarceration has grown, so too have community supervision populations in a phenomenon some scholars refer to as “mass probation” (Phelps, 2013, 2020), reflecting the growing reach of the correctional system.³ The sheer size of the population is also important because any violation of probation conditions exposes individuals to potential incarceration, with community supervision-related incarceration accounting for up to 70 percent of prison admissions (Pew, 2018). In a recent report from the Council of State Governments, it was estimated that nearly one quarter of all state prison admissions are due to technical violations, such as a positive drug test or failure to report (Council of State Governments, 2019). While policies vary by state, sentences for technical violations can be upwards of six months incarceration (Alper and Ruhland, 2016; see also Cohen 1995; Stickels 2007).

Probation violations typically take the form of two broad categories: the commission of a new criminal offense and “technical violations” (TVs), a violation of the conditions of probation. The conditions of probation vary across individuals in both the scope of requirements and the intensity of supervision to which the individual is subjected. Common requirements include abiding by all laws, not associating with other justice-involved persons, maintaining

¹ <https://www.census.gov/quickfacts/fact/table/US/PST045219>

² Sources: Carson, 2018; Kaeble 2018; Zeng, 2018; Annual Jail Survey 2016

³ Similar to incarceration, there is evidence of racial disparity in community supervision. In recent years this disparity has declined somewhat, largely due to decreases in non-White drug arrests.

employment, attending regular meetings at the probation office, paying any fees owed the court, supervision, or restitution fees, attending educational or treatment programs, and submitting to regular alcohol and drug testing (Mitchell et al., 2014). There is increasing recognition that these requirements can impose unfair burdens on individuals under supervision, impeding their ability to be productive community members (Doherty, 2016; Ruhland and Robey, 2016). In some cases, individuals view or experience the conditions of probation as more onerous punishment than incarceration (e.g., Alper and Ruhland, 2016; Crouch, 1993; May and Wood, 2005; Williams et al., 2008), which undermines the purpose and rationale for community supervision alternatives. There is some evidence that black individuals are more likely to feel that way than whites (May and Wood, 2005; Williams et al., 2008). Ever expanding probation conditions and the increased surveillance of offenders, including on-site drug testing, have been identified as possible causes of declining rates of successful probation completion over the last three decades. (Wodahl et al., 2011)

Correlates of Probation Violation and Revocation

Past research on probation outcomes has focused on both successful completion of probation (compared to “failure”) at the termination of a case and the timing and likelihood of revocation – i.e., the imposition of additional punishment on an individual on probation, including temporary or sustained incarceration or the extension of community supervision terms. The correlates of probation failure and revocation are largely similar, though a larger body of work focuses on revocation, as many individuals will have multiple technical violations and revocations even though most will ultimately terminate probation “successfully” (Clear et al. 1992; Gray et al., 2001).⁴

Individuals who have committed more serious offenses and have previous experience with the criminal justice system are also more likely to be revoked, both in general (Olson and Lurigio, 2000; Steinmetz and Henderson, 2015) as well as for new crimes (Olson et al., 2003), and are less likely to successfully complete probation (Morgan, 1995). Similarly, individuals identified as having greater criminogenic risk scores and needs are more likely to have their probation revoked (Steinmetz and Henderson, 2016), even for technical violations (Hildebrand et al., 2013).⁵

⁴ Probation can terminate “successfully” when the term of probation ends and all outstanding requirements are completed (e.g., education courses, restitution and fees paid). However, it is possible that during the period of supervision, the individual experienced either (1) temporary incarceration as a sanction for violation and/or (2) an extension of probation supervision.

⁵ It should be noted that risk assessments have been criticized for not being race neutral (e.g., ProPublica, 2016); criminal history is a strong component of many risk scores and may reflect differential policing in minority neighborhoods, differential likelihood of police contact, and differential processing by the justice system. To the extent that this is true, multivariate analyses will underestimate the effect of race on outcomes.

Racial Disparities in Probation Outcomes

Non-white probationers may be more likely to be revoked (Ho et al 2014; Minor et al., 2003; Steinmetz and Henderson, 2016; Tapia and Harris 2006). Similarly, there is some evidence that both black and Hispanic probationers are more likely to terminate probation unsuccessfully, resulting in incarceration or extension of supervision terms (Morgan, 1994, 1995; Steinmetz and Henderson, 2015).

Jannetta et al. (2014) analyzed probation outcomes in four different jurisdictions and found that black probationers were 55-100 percent more likely to be revoked than white probationers.¹ The authors estimated that 20-49 percent of this black-white disparity remained unexplained after taking into account group differences (i.e., age, risk score, criminal history). However, this study was not able to control for the type of violation behavior leading to revocation.

The exact extent to which different probation outcomes are due to disparate responses by probation officers and other criminal justice stakeholders or differential behavior by probationers is unclear. However, researchers have called attention to structural inequality and racism as important factors to consider when assessing black-white disparities that cannot be otherwise explained by differences related to probationer characteristics, offense type, or sentence characteristics (Steinmetz and Henderson, 2015).

¹ The large range is reflective of different jurisdictional practices. In one of the sites, the revocation rate for black probationers was over 100% higher but that jurisdiction had a very low base rate of revocations.

Social bonds are thought to reduce criminal involvement in general (see e.g., Laub and Sampson, 2003), and this is borne out by research specific to individuals under probation supervision. To the extent that individuals are married (Morgan, 1995; Stevens-Martin et al., 2014), have a high school education or above (Yukhnenko et al., 2019), and are employed with greater income (Hepburn and Griffin, 2004; Ho et al 2014; Jones, 1995; Morgan, 1994; Olson and Lurigio, 2000; Stevens-Martin et al., 2014), there is less chance of revocation and greater chance of successful completion of probation. However, evidence for these possible protective factors for *women* under supervision is more mixed (Collins 2010; Olson et al 2003; Salisbury and Van Voorhis 2009; Schulenberg 2007; Stalans and Lurigio, 2015). Despite lower rates of employment, rurality has also been associated with lower rates of technical violations compared to more urban and suburban communities (Olson et al., 2001; Staton-Tindall et al., 2015).

Consistent with other criminal justice outcomes, men – especially minority men – and younger individuals are more likely to have their probation revoked (Ho et al., 2014; Minor et al., 2003;

Olson and Lurigio, 2000; Piquero 2003; Steinmetz and Henderson, 2016; Stevens-Martin et al., 2014; Tapia and Harris, 2006) and may also be at greater risk of rearrest (Olson et al., 2003) and probation failure (Steinmetz and Henderson, 2015).

However, many of these studies either omit women from the sample or utilize mixed-gender samples of which women comprise a small proportion compared to men. Women are often subjected to closer supervision and more unique requirements to meet compared to men (e.g., Bosworth, 2007; McCorkel, 2003). An examination of women and gender differences has been increasingly called for among scholars in light of the growth of justice-involved women in the majority of states (Pew, 2018; Herberman and Bonczar, 2014). Among the few studies that have been conducted focusing on female populations, evidence suggests that prior imprisonment (Collins 2010; Schulenberg, 2007; Olson et al., 2003), lower income (Schulenberg, 2007), and residential instability (Schulenberg, 2007) increase the likelihood of poorer supervision outcomes for women. There is some evidence that treatment completion has a greater effect for women than men on reducing recidivism; although, the effect may be greater for women that are low risk and/or committed substance-related violations but not necessarily for non-drug violations (Olson et al., 2003). Criminal justice-involved women often have complicated histories of trauma (Daly, 1992; Simpson et al., 2008) that may both directly and indirectly affect probation outcomes (e.g., via mental health and well-being; see Salisbury and Van Voorhis, 2009; Olson et al., 2015). There has been some effort to unpack interactions between gender and offense type, but studies are few (Olson et al., 2015; Benda 2005).

As with courtroom decision-making, organizational policies and culture affect responses to probation violations (Clear et al., 1992; Kerbs et al., 2009). For example, intensive supervision programs - which typically involve high rates of surveillance, drug testing, and swift punishment – may be associated with high rates of failure, especially for individuals with substance use issues (Farrington and Welsh, 2005; Petersilia and Turner, 1993; Zajac et al., 2015, 2020). Surveillance-focused agencies are often contrasted to rehabilitation focused agencies, though purely therapeutic models have also produced mixed evidence (Skeem and Manchek, 2008). In general, combining accountability through intensive surveillance with rehabilitative counseling and referrals for assessed rehabilitative service needs (“criminogenic needs”) has produced the most promising results (Aos et al., 2006; Cox et al., 2005).

Even within the same agency there is significant officer discretion in whether and when to file a request for probation revocation (Ruhland and Robey, 2016), consistent with the notion of line officers as “street level bureaucrats” (Lipsky, 1980). In other words, probation officers often create informal policies through the development of routine practices regarding certain types of cases as a way to manage limited resources (Portillo and Rudes, 2014). At times, these actions will directly conflict with supervisors’ desires (Kras et al., 2019), especially to the extent that line officers perceive policymakers to be empowered yet out of touch (Kras et al., 2017; Lynch, 1998). Probation officers are thought to bring a set of values and beliefs about their roles that affects their actions and decision-making, often construed as one end of a continuum

between surveiller and social worker; surveillance styles of supervision are associated with greater revocations (West and Seiter, 2004).⁶ As evidence-based practices have been identified and adopted, probation offices and officers may have increasingly embraced an approach that emphasizes both accountability (public safety) and client outcomes.

Some evidence also suggests that the type of violation affects the response of officers; Harris et al. (2001) find that substance use related violations and failures to report are more likely to result in more punitive outcomes, while failures to pay fines and fees are not generally responded to as punitively. There is also evidence that officers have different expectations about the risks of particular types of offenders; for example, that substance-using probationers are at a greater risk of technical violations than those who do not use substances (Eno Loudon and Skeem, 2013). Probation officers with specialized caseloads (i.e., whose clients share a common problem or characteristic) may respond to violations differently (Alper and Ruhland, 2016), though whether this is related to a lower caseload (e.g., Jalbert et al., 2012; West and Seiter, 2004), socialization to a specific treatment approach, or another factor is unknown.

Substance Use in Community Supervision Populations

Individuals under community supervision, like incarcerated individuals, are much more likely to have a history of substance use, misuse and dependence than the general population (Bronson et al., 2017; Fearn et al., 2016). While exact prevalence rates from criminal justice agencies are unknown, data from the National Survey on Drug Use and Health (NSDUH) suggest that nearly half of all probationers have a substance use disorder (Feucht and Gfoerer, 2011). Older data suggest that alcohol and drug use at the time of the offense for which they are under supervision are very common among adult probationers, especially those resulting from felonies (Mumola and Bonczar 1998).⁷ The same study also suggests that as many as two-thirds of probationers are *drug involved* – that is, convicted of a substance-related offense, using drugs at the time of the offense, or were actively using illicit substances in the month prior to the offense. A small but more recent sample of probationers suggests that more than 75 percent of individuals on community supervision could need substance use treatment (Owens et al., 2011). The pervasive unmet health and mental health needs of justice-involved individuals are likely a contributing factor to justice involvement, with at least some of the substance use reported by probationers representing attempts to engage in self-treatment (Hall et al., 2018; Reingle-Gonzalez et al., 2015).

Treatment in Community Corrections

Drug involvement is a consistent predictor of revocation (Johnson and Jones, 1998; Olson and Lurigio, 2000; Stevens-Martin et al., 2014), new offenses (Huebner and Cobbina, 2007; Olson et

⁶ In addition to these policies, officers' decisions are likely informed by their own personal histories and beliefs, including implicit bias (see Banaji and Greenwald, 2013).

⁷ Pennsylvania broadly defines misdemeanors as crimes for which an offender may be sentenced to a term of incarceration of no more than five years (18 Pa. Code § 106(b)(6)), rather than a maximum of one year. As a result, many Pennsylvania misdemeanants might be considered felony offenders under other definitions.

al., 2000, 2003), and probation failure (Benedict and Huff-Corzine, 1997).⁸ There is evidence to suggest that treatment reduces the likelihood of poor probation outcomes (Albonetti and Hepburn, 1997; Holloway et al., 2006), especially when targeted at individuals with the greatest risk of continued criminal involvement (Morash et al., 2019). Yet, substance use treatment among probationers is relatively rare (Mumola and Bonczar, 1998). Even though most community corrections programs coordinate at least some sort of substance use treatment, the National Criminal Justice Treatment Practices survey found that only about 10 percent of each agency's probationers and parolees actually have access to treatment; further, what treatment is available is generally educational and of limited intensity – i.e., generally not evidence-based (Taxman et al., 2007).⁹ This is concerning given that justice-involved individuals likely comprise a large share of people with high substance use disorder severity and therefore a greater need for evidence-based treatment (Caulkins and Reuter, 2017).

Probationers with opioid use disorder may be especially limited in their access to medication-assisted treatment (MAT) despite the strong, and growing, body of evidence demonstrating its effectiveness (Krawczyck et al., 2017; PEW, 2018). Probation and parole are the least likely to allow MAT compared to other criminal justice agencies (Friedmann et al., 2012), while even drug courts also frequently disallow its use (Matusow et al., 2013). Many probation directors also report little to no professional training and knowledge about methadone, buprenorphine, or naltrexone (Reichert and Gleicher, 2019).

Barriers to access

Geographical distance and transportation are among the most important barriers to treatment access – treatment centers are substantially geographically removed from many of their would-be clients, inhibiting follow-up and treatment (Beardsley et al., 2003; Chan et al., 2016; Owens et al., 2011; Pullen and Oser, 2014). This is particularly problematic given that rural individuals in some areas may experience higher rates of substance use, especially among youth (Hall et al., 2008; Warner and Leukefeld, 2001), and related to consumption of alcohol and methamphetamines (Van Gundy, 2006). Lack of extensive public transportation can make accessing distant treatment centers especially difficult for low-income individuals (Browne et al., 2016; Pullen and Oser, 2014; Sexton et al., 2008). There is some evidence that mobile-assisted technologies may help alleviate some of this availability gap (e.g., Browne et al., 2016; Marsch et al., 2014; Young, 2012), though technology and evidence for its beneficial effects is still developing. Evidence also suggests that these models are strongly associated with patient

⁸ Indicators vary and have some limitations, including varied use of current, prior, or any indication of substance use history as indicators; lack of indicators of SUD diagnoses from standardized assessment tools (predominant reliance on self-reports, officer reports and offense type, and urinalysis); and variation in indicators of substance use treatment (e.g. in prison, any history, current history, treatment completion). And finally, the existence of little to no indications of type of substance use disorder or modality of treatment, has provided limited context and ability to identify specific substance use related predictors of probation outcomes.

⁹ The community corrections portion of the survey was based on a stratified cluster sample of counties nationwide.

satisfaction and are an effective alternative, especially in resource-scarce settings (Lin et al., 2019).

The widespread stigmatization of substance use disorder operates as a barrier to treatment (Luoma, 2010). This challenge may be further intensified within some groups, such as pregnant women or people who are parents who experience stigma as a barrier to seeking treatment (Stringer and Baker, 2018; Stone, 2015).

Further, while the Affordable Care Act improved health insurance coverage for substance use treatment (Andrews et al., 2019; Maclean and Saloner, 2019), inability to pay remains an important barrier for many individuals (Owens et al., 2011), as does inadequate treatment capacity (Andrews et al., 2019). Rural areas also typically have less funding support and access to resources (Olson et al., 2001), leading to complications for individuals with treatment needs (Wodahl, 2006). Staton-Tindall et al. (2015) found that rural individuals returning to the community were more than twice as likely to be using drugs while also less likely to be employed or in substance use treatment than their non-rural counterparts (see also Olson et al., 2001). A survey in one state found that 73 percent of probation officers are frustrated by the lack of available treatment (Van Deinse et al., 2018) which may lead to greater reliance on financial and surveillance conditions (Ellsworth and Weisheit, 1997) rather than rehabilitative services. Even when treatment is available in rural areas, there remain gaps in the quality of treatment (Edmond et al., 2015). Studies have documented resistance among rural prescribers to adopt evidence-based practices related to prescribing (Dotson et al., 2014), especially medication assisted treatment (MAT) for opioid use disorders (e.g., Jones, 2018).

Other structural barriers impede the accessibility of treatment for individuals on probation. Both rural and urban communities report funding constraints that limit their abilities to implement substance use treatment at the needed level, as well as a lack of facilities and lack of interagency cooperation (Pullen and Oser, 2014). Agency turnover and limited resources to individualize treatment undermine the implementation of effective treatment in correctional settings (Farabee et al., 1999). Further, expanding probation rolls have increased line officer caseloads and decreased the respective time and resources they can afford to allocate to each client (Jalbert et al., 2012; West and Seiter, 2004).

Probation officer resistance to substance use treatment, particularly the use of medication¹⁰, can also operate as a barrier. The issue of substance use treatment can be uncomfortable for probation officers who feel that their primary goal is public safety rather than public health (Marlowe, 2003; Mitchell et al., 2016), though there is likely significant variation in these beliefs across place and within individual offices. One study found that probation officers expressed resistance to evidence-based practices (EBPs) because they feel EBPs take away their discretion

¹⁰ Medication-assisted treatment is most often discussed in reference to treatment for opioid use disorder. Medications for opioid use disorder (MOUD) include both agonist medication (methadone or buprenorphine) as well as antagonist medication (naltrexone).

to determine the appropriateness of a given intervention and may sacrifice public safety (Viglione, 2017). Even when EBPs are put in place, officers can create internal resistance to new policies they feel are too lenient (e.g., Rudes, 2012). Probation officers who are more concerned with rehabilitation than punishment are more likely to support EBPs (Belenko et al., 2018; Mitchell et al., 2016), which may result in increased access to treatment. Administrators have an important role in shaping the policy and culture of organizations; probation agencies headed by administrators with a human services background adopt more EBPs (Friedmann et al., 2007). Probation office culture varies across place, with offices in the Northeast and Midwest more likely to adopt stronger rehabilitative ideals, which are in turn related to greater implementation of substance use treatment and EBPs (Henderson and Taxman, 2009).

Barriers to completion

Even where treatment¹¹ is available, many individuals do not complete treatment (e.g., Hiller et al., 1996). Substance use treatment often requires a substantial daily or weekly time investment, in addition to the time and resource burdens already required of individuals under justice supervision (Sexton et al., 2008). This investment may seem even steeper to individuals who do not feel that they need treatment; one-recent state-based study of a rural population found that a majority of individuals that screened positive for substance use disorder did not feel they needed treatment (Davis et al., 2016). Rates of completion are often lowest for individuals with more extensive substance use histories (e.g., Hiller et al., 1999; Simpson et al., 1997), more serious criminal involvement (Huebner and Cobbina, 2007; Hiller et al., 1999) and mental health issues (Ravndal and Vaglum, 1991). Individuals who have greater self-efficacy and self-esteem may be more likely to complete treatment (Broome et al., 1996; Hiller et al., 1999), while those with higher proclivities toward risk-taking may be less likely to do so (Gossweiler et al., 1996). Involvement in the criminal justice system is often cited as positively associated with treatment completion compared to general population samples, likely because of perceived coercion and the negative legal and other consequences accompanying treatment non-completion (Hiller et al., 1999; Young and Belenko, 2002; Young et al., 2004).

In general population studies, one of the most consistent factors to predict successful treatment completion is an individual's level of motivation for change, i.e., treatment readiness (DeLeon et al., 1997; Shen et al., 2000; see also Prendergast et al., 2009). Consistent with work on desistance from crime (e.g., Paternoster and Pogarsky, 2009; Paternoster and Bushway, 2008), substance use treatment readiness appears to result from a cognitive shift in the relative perceived costs and benefits of continued use compared to abstinence (Miller and Rollnick, 1991).

Continued drug use is not only a barrier to successful probation completion because of abstinence requirements, but misuse of substances also has a strong relationship with

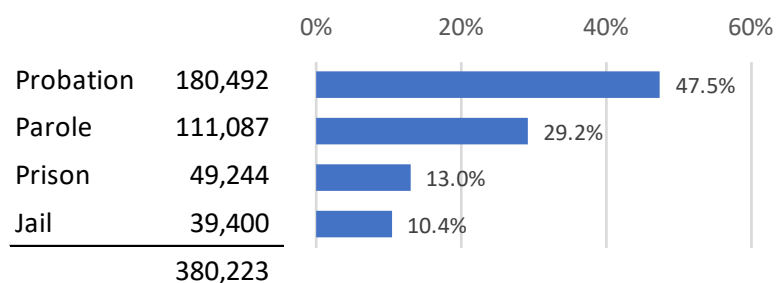
¹¹ "Treatment," in this review, is used as a general term and does not necessarily refer to evidence-based or a specific form or modality of treatment (e.g., residential treatment versus use of outpatient MAT); nor does it refer to a specific dosage (i.e. length of treatment engagement).

continued criminal activity beyond substance use (Hayhurst et al., 2019). Continued substance involvement may be especially consequential for women, for whom substance use represents a more substantial pathway to criminal involvement (Hall et al., 1993; Salisbury and Van Voorhis, 2009; Simpson et al., 2008; Tripodi and Pettus-Davis, 2013). A meta-analysis of drug misuse and crime suggested that the relationships were strongest for involvement in shoplifting, burglary, and prostitution (Bennett et al., 2008), which may indicate that individuals commit income-generating crimes to facilitate use (Goldstein, 1985). However, data from California suggest that agonist treatment for opioid use disorder may reduce the costs of crime by more than \$17,000 per individual treated (Krebs et al., 2017). Bondurant et al. (2018) further demonstrate that additional substance use treatment centers reduce county crime costs by \$2.9 million.

Community Supervision in Pennsylvania

Pennsylvania had 380,000 individuals under correctional supervision in 2016 (Exhibit 2); parole supervisions account for a greater share of the correctional population in the Commonwealth than nationally (29.2 percent vs. 12.6 percent), while probation accounts for slightly less (47.5 percent vs. 54.9 percent). Pennsylvania ranks in the top third of states in terms of the number of individuals on probation supervision per 100,000 (Phelps, 2017). In 2016, most individuals on probation in Pennsylvania were supervised locally by counties, though 14 percent were supervised by the Pennsylvania Board of Probation and Parole. Approximately 60% of these individuals were white, 27 percent were black, and 13 percent were either of another or unknown race. More than 40 percent of the supervised population was convicted of a drug or DUI offense (Pennsylvania Board of Probation and Parole, 2016).

Exhibit 2. Individuals under Correctional Supervision in 2016, Pennsylvania¹²



Probation in Pennsylvania is statutorily designed to be “primarily concerned with the rehabilitation and restoration to a useful life of the parolee or probationer.”¹³ An individual term of probation may be overseen by individual county probation offices, or by the Pennsylvania Board of Probation and Parole, known as “special probation”.¹⁴ Probationers may

¹² Sources: Annual Jail Survey 2016; Kaebler, 2018; Zeng, 2018

¹³ See 42 Pa. Code § 9912, e.g. See also Model Penal Code § 6.03(1).

¹⁴ 37 Pa. Code § 65.4

also be held responsible for a supervision fee of at least \$25, though it may be waived (Mitchell et al., 2014).

In the event of a technical violation or commission of a new crime and determination of probable cause while under a term of community supervision, the individual will be brought before the original sentencing judge, at which point they may receive a revocation of their original sentence. At this stage, known as a Gagnon II hearing, an individual may be sentenced up to the statutory maximum for the original offense, regardless of how much of the original sentence has been served (Mitchell et al., 2014).¹⁵

Act 115 of 2019

Act 115, passed December 18, 2019 repealed two alternative to incarceration sentencing options: county intermediate punishment (CIP) and state intermediate punishment (SIP) programs (42 Pa. Code § 9721). Though CIP as a sentencing alternative was repealed, many programs used under the CIP mantle (i.e., restrictive programs) under Title 42 Chapter 98 are now available as a sentence to “probation with restrictive conditions”. Examples of restrictive conditions include electronic monitoring, house arrest, and others. The Pennsylvania Commission on Sentencing is responsible for adopting guidelines about which offenders are eligible for placement in restrictive conditions; these guidelines are under development at the time of writing this report. The sentencing alternative formerly known as SIP was repealed and replaced with the State Drug Treatment program (STP). Note: STP is not an alternative available to the court, it is a program operated by the Pennsylvania Department of Corrections; the court issues a sentence of total confinement. The court or prosecutor may oppose eligibility for some programs.

The Present Study

While significant research suggests that substance use creates challenges for individuals on probation, extant research is generally limited to predicting probation failures for individuals who have substance use issues. Evaluations of specific treatment programs suggest improved outcomes for individuals receiving treatment, and yet limited work has examined the extent to which treatment moderates the relationship between drug use and probation outcomes in a large sample of offenders. Prior literature also has generally not focused on the outcomes of revocation hearings as affected by defendant and violation characteristics. The primary goal of this research was to speak to the current practices and issues in the Commonwealth of Pennsylvania and to use these findings to suggest opportunities to improve outcomes using evidence-based practices. This study involved three mutually informing components:

¹⁵ In 2020, Pennsylvania implemented resentencing guidelines to structure these decisions.

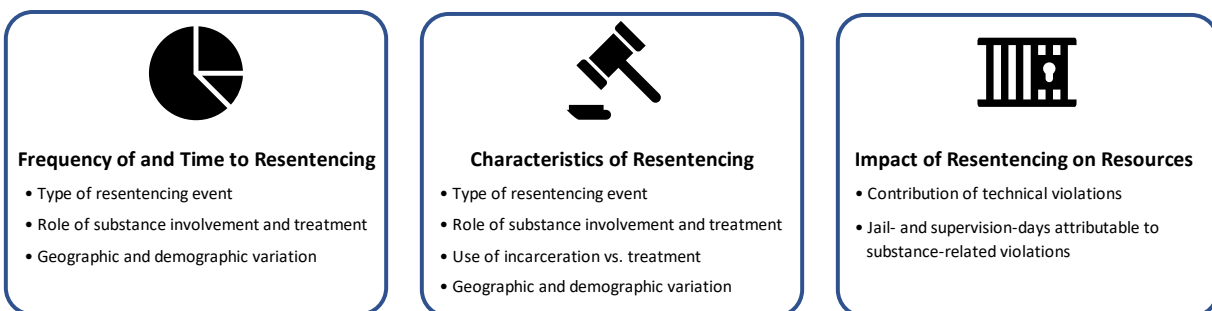
- I. Analysis of administrative resentencing event data reported by Counties to the Pennsylvania Commission on Sentencing
- II. Collection and analysis of supplemental rich case-file data collected from terminated probation cases in two jurisdictions
- III. Interviews with a variety of justice and treatment stakeholders in the same two jurisdictions

In the last section of this report, we discuss these findings in the context of evidence-based practices for treating substance use disorder in criminal justice populations.

Administrative Data Analysis

Beginning in 2016 with the Pennsylvania Sentencing Guidelines 7th edition, Amendment 3, the Commission began requiring jurisdictions to report the resentencing outcomes for individuals under community supervision (i.e., probation, state and county intermediate punishments). We use these data to conduct our analyses, allowing us to speak to general trends in Pennsylvania while also allowing us to account for and explore natural jurisdictional variation.

Exhibit 3. Study Research Themes and Questions



There are three general questions that these analyses intend to address, as depicted in Exhibit 3.¹⁶ First and foremost, what is the frequency at which individuals under community supervision, in the Commonwealth of Pennsylvania, are resentenced? *When* do individuals under supervision experience resentencing events? How do these rates and time to resentencing vary by offense, geographic, and demographic characteristics? Further, how is substance use related to probation outcomes, and is this effect moderated by treatment?

Second, how are individuals under community supervision resentenced? What is the typical outcome for a resentencing event? How does substance involvement affect resentencing? Under what conditions is treatment imposed compared to incarceration or an extension of probation? How do geographic, individual, and (original and violation) offense characteristics affect these outcomes?

¹⁶ For a fuller description of specific research questions, see Methodological Appendix G.

Finally, to what extent can we estimate the cumulative impact of substance-related resentencing on state and local resources?

A complete description of the analysis plan for each of these stages can be found in the Methodological Appendix.

Sample

To allow for a sufficient period of observation, the sample for this analysis is all individuals sentenced between January 1, 2016 and December 31, 2017 for whom probation or a restrictive intermediate punishment is the most serious sanction across all offenses in a judicial proceeding.¹⁷ The data are matched at the offense level¹⁸ to the resentencing data as collected by the Commission through May 8, 2019 using individual, case, and offense identifiers (see Methodological Appendix, B for additional detail). Cases for which no match is found in the resentencing data are assumed not to have experienced a resentencing event in the term of their community supervision.

Subsequent new offense data is matched using the individual's state identifier variable (SID) in conjunction with reported prior case processing event identifiers. Due to limitations in information reported by counties, we are not able to match all new offenses to sentencing details. The subset of new offenses for which we are able to match new sentencing proceedings provide information on new offense behavior.

In 2016 and 2017, there were 96,159 cases whose most serious sentence was a term of probation or involving county intermediate punishment with restrictive components (**hereafter referred to as RIP**). However, of the 67 counties in Pennsylvania, only 56 reported any resentencing data to the Commission; nine additional counties reported resentencing events for less than 1 percent of cases sentenced. We focus the remainder of our discussion on the 67,172 cases sentenced in 47 counties that were not identified as low- or non-reporting.

¹⁷ Restrictive Intermediate Punishment (RIP) is a specific type of county intermediate punishments (CIP). CIP sanctions are supervised by probation offices and take place in the community. The most common forms of RIP are electronic monitoring and intensive supervision. Individuals sentenced to State Intermediate Punishment (SIP) are not included in this sample.

¹⁸ A judicial proceeding (case) may have include more than one criminal offense. We matched resentencing records at the offense level using a one-to-many strategy (i.e., allowing for multiple resentencing events per offense) and aggregated to analyze results at the case-level.

Who is in the sample?

Our sample is primarily male and white, with an average age of approximately 35 (see Exhibit 4). The most common primary offense type is a misdemeanor drug crime. Exhibit 5 displays the location of each offender on the 7th Edition, Pennsylvania Basic Sentencing Matrix, based upon the offender's offense gravity score (OGS) and prior record score (PRS).¹ Roughly, 20% of offenders in the sample have an OGS of 1 and a PRS of zero, meaning the person has not committed a prior felony offense. As shown in Exhibit 6, approximately 80 percent of the sample falls within sentencing Levels 1 and 2.² Approximately 20 percent of the sample is given a sentence that includes some form of restrictive intermediate punishment (RIP).³ The remaining 80 percent of the sample (roughly 54,000 offenders) receive a traditional probation sentence. Offenders sentenced to probation are primarily found in Levels 1 and 2.

Exhibit 4. Sample Characteristics

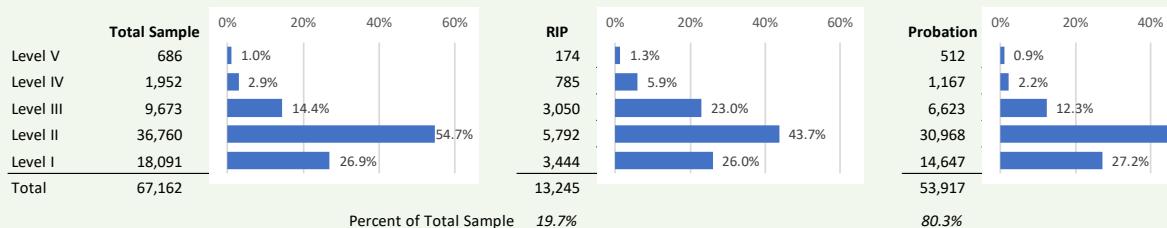
		N	Percent	Average
Total		67,162	-	-
Sex	Male	47,684	71.0%	-
	Female	19,478	29.0%	-
Race/Ethnicity	White	48,483	72.2%	-
	Black	16,895	25.2%	-
	Hispanic	191	0.3%	-
	Other	296	0.4%	-
	Unknown	1,297	1.9%	-
Age				34.8

Exhibit 5. Sample Count and Relative Percent by Offense Gravity Score, Prior Record Score, and Sentencing Levels

		Prior Record Score (PRS)									
		0	1	2	3	4	5	RFEL	RVOC		
Offense Gravity Score (OGS)	14	1	1							2	
	13	6								6	Level 5
	12	5				1				6	686
	11	40	6	5	1	4	7	3		66	
	10	98	12	32	13	19	41	8	1	224	
	9	246	43	17	20	13	14	3	3	359	Level 4
	8	363	73	60	32	24	43	17		612	1,952
	7	521	93	79	48	46	78	6		871	
	6	815	209	215	112	111	168	19		1,649	Level 3
	5	4,999	1,186	754	408	314	544	90		8,295	9,673
	4	1,362	244	177	88	71	117	22		2,081	Level 2
	3	10,996	2,872	2,364	1,532	1,095	2,292	403		21,554	36,760
	2	4,927	1,298	948	563	486	671	145		9,038	Level 1
	1	13,164	3,081	2,145	1,236	931	1,526	316		22,399	18,091
		37,543	9,118	6,796	4,053	3,115	5,501	1,032	4	67,162	

		Prior Record Score (PRS)									
		0	1	2	3	4	5	RFEL	RVOC		
Offense Gravity Score (OGS)	14	.%	.%	.%	.%	.%	.%	.%	.%	.0%	
	13	.%	.%	.%	.%	.%	.%	.%	.%	.0%	Level 5
	12	.%	.%	.%	.%	.%	.%	.%	.%	.0%	1.0%
	11	.1%	.%	.%	.%	.%	.%	.%	.%	.1%	
	10	.1%	.%	.%	.%	.%	.1%	.%	.%	.3%	
	9	.4%	.1%	.%	.%	.%	.%	.%	.%	.5%	Level 4
	8	.5%	.1%	.1%	.%	.%	.1%	.%	.%	.9%	2.9%
	7	.8%	.1%	.1%	.1%	.1%	.1%	.%	.%	1.3%	
	6	1.2%	.3%	.3%	.2%	.2%	.3%	.%	.%	2.5%	Level 3
	5	7.4%	1.8%	1.1%	.6%	.5%	.8%	.1%	.%	12.4%	14.4%
	4	2.%	.4%	.3%	.1%	.1%	.2%	.%	.%	3.1%	Level 2
	3	16.4%	4.3%	3.5%	2.3%	1.6%	3.4%	.6%	.%	32.1%	54.7%
	2	7.3%	1.9%	1.4%	.8%	.7%	1.%	.2%	.%	13.5%	Level 1
	1	19.6%	4.6%	3.2%	1.8%	1.4%	2.3%	.5%	.%	33.4%	26.9%
		55.9%	13.6%	10.1%	6.%	4.6%	8.2%	1.5%	.0%	100.0%	

Exhibit 6: Distribution of Sample by Sentencing Levels



¹ 204 Pa. Code §303.16(a).

² The sentencing levels provide a range of sentencing options to the court. For example, the standard range sentence for Level 1 offenders (PRS of zero and an OGS of 1 or 2) is Restorative Sanctions (RS). For Level 2 offenders the standard range requires a county sentence but permits both incarceration and non-confinement. Treatment is recommended for drug dependent offenders. For Level 3 offenders the standard range is defined as having a lower limit of incarceration of less than 12 months. Included are offenses for which state or county intermediate punishment sentence is authorized by statute. If eligible, treatment is recommended for drug dependent offenders in lieu of incarceration (see 204 Pa. Code §303.1).

³ RIP provide for strict supervision of the offender. Programs include house arrest with electronic surveillance and partial confinement programs (e.g., work release, halfway facility) (see 204 Pa. Code §303.12). Offenders under consideration for RIP at Levels 3 or 4 “shall have a diagnostic assessment of dependency on alcohol or other drugs” (see 204 Pa. Code §303.12(a)(4)(ii)).

Findings

Frequency and Time to Resentencing

Exhibit 7 describes the experience of any resentencing event across demographic groups. Because of the large sample size, nearly all observed group differences are statistically significant at conventional levels. However, in many cases, the substantive differences are small. We thus provide Cramer's V statistics as an estimate of the *strength* of the relationship.

The strongest relationship we observe between demographic characteristics and resentencing is for age; younger individuals are more likely to experience at least one resentencing event while under community supervision. More than 14 percent of those who are 18-24 at the time of sentencing are resentenced, compared to 7.4 percent of those who are 45-54, and only 4.1 percent of those who are 55 or older.

Exhibit 7: Demographic Patterns of Incidence and Frequency of Any Resentencing Event

		Number of cases			Cramer's V statistic	Average resentencing events	
		Term of probation or RIP	Resentenced	Percent resentenced			t/F
	Overall	67,162	9,023	13.4%		1.34	
Sex	Male	47,684	6,247	13.1%	0.02	1.35	0.64
	Female	19,478	2,776	14.3%		1.33	
Race	White	48,483	6,806	14.0%	0.02	1.34	0.11
	Black	16,895	2,043	12.1%		1.34	
	Hispanic	191	17	8.9%			
	Other	296	16	5.4%			
Age	18-24	15,076	2,587	14.6%	0.09	1.37	4.65
	25-34	25,003	3,566	10.8%		1.35	
	35-44	13,501	1,742	9.7%		1.30	
	45-54	8,781	843	7.4%		1.27	
	55+	4,790	281	4.1%		1.25	

Notes: t/F = test statistic based on t- or F- distribution as appropriate. Cramers V statistic and t-statistic for race based only on black and white individuals. There are too few Hispanic and other race individuals to warrant a reliable comparison.

There are similar patterns for the number of resentencing events experienced among those who are resentenced. There are no statistically significant differences in the average number of resentencing events between men and women or by race. There are, however, small statistically significant differences in the average number of resentencing events by age category.¹⁹

¹⁹ A description of the resentencing sample by OGS, PRS, and sentencing levels is provided in Appendix A.

Cramer's V

Cramer's V is a statistical test that measures the strength of the relationship between two variables that indicate membership in different groups (i.e., are not made of numeric values). Often when we have large sample sizes, other measures of these relationships (e.g., χ^2 tests) will be statistically significant even if the differences between groups are substantively small. Cramer's V quantifies the degree to which what the patterns we observe differ from what we would expect if the two variables were not related at all. V values range from 0 to 1. The closer V values are to 0, the weaker the relationship. In general, we use the following thresholds to describe the strength of relationships:

Exhibit 8. Cramer's V Interpretation

Cramer's V	Strength of Relationship
$0.0 \leq V < 0.2$	Weak
$0.2 \leq V < 0.3$	Moderate
$0.3 \leq V \leq 1$	Strong

Approximately fourteen percent (13.5 percent) of cases where the most serious sentence is probation are resentenced, compared to 13.2 percent of cases where the most serious sentence involves some element of restrictive intermediate punishment (Exhibit 9).²⁰ Note, however, that although statistically significant the strength of this relationship is very weak.

Exhibit 9. Incidence of Resentencing by Supervision Type

	Number of cases	Resentenced	Percent resentenced
Probation	53,917	7,274	13.5%
RIP	13,245	1,749	13.2%
Overall	67,162	9,023	13.4%

There is significant variation across counties in terms of both resentencing rates (range: 1.2 percent to 30 percent; see Exhibit 10) as well as the average number of resentencing events for those cases with at least one resentencing event (range: 1 to 3.67). County has a moderate relationship with the rate of resentencing ($V=0.22$), explaining much more variation than demographics. Some of these differences may reflect differences in what is reported to the Commission, though it is equally possible that these are representative of true differences

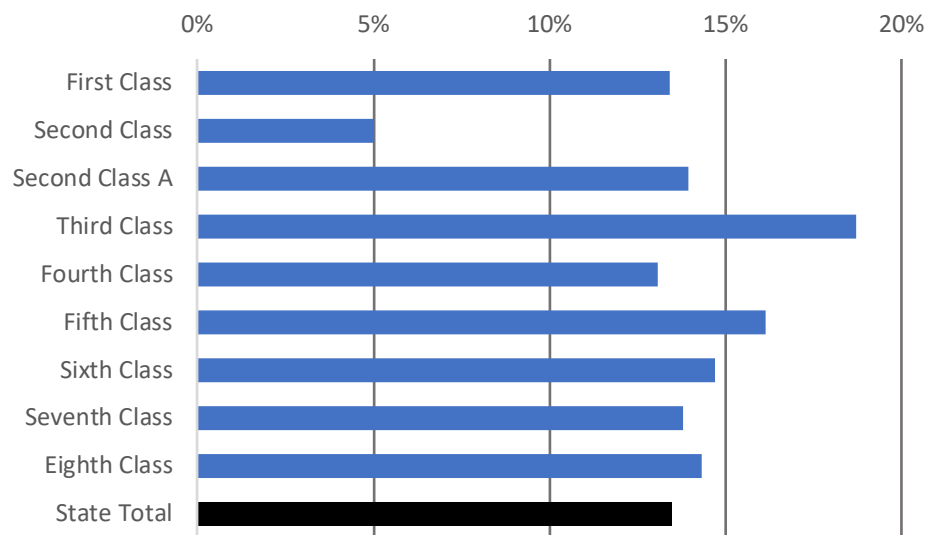
²⁰ Recall that RIP is not a sentence, but is used in this report to refer to individuals whose most serious sentence in the judicial proceeding was a term of county intermediate punishment with restrictive components

across counties. For example, counties with low resentencing rates may engage in a number of informal interventions to respond to violations of supervision that reduce the need for formal resentencing hearings. Looking at county class averages (see Exhibit 11), there is significantly less variation, with most classes close to the sample average.

Exhibit 10. Differences in Resentencing by County

	Number of Cases	Resentenced		Average resentencing events
		Number	Percent	
First Class				
Philadelphia	4,137	554	13.4%	1.57
Second Class				
Allegheny	13,944	698	5.0%	1.22
Second Class A				
Bucks	-	-	-	-
Delaware	4,506	897	19.9%	1.32
Montgomery	6,444	628	9.7%	1.34
Subtotal	10,950	1,525	13.9%	1.33
Third Class				
Berks	2,658	412	15.5%	1.09
Chester	-	-	-	-
Cumberland	1,568	257	16.4%	1.21
Dauphin	-	-	-	-
Erie	2,409	463	19.2%	1.66
Lackawanna	1,292	233	18.0%	1.34
Lancaster	-	-	-	-
Lehigh	2,333	700	30.0%	1.22
Luzerne	2,640	315	11.9%	1.39
Northampton	1,716	172	10.0%	1.13
Westmoreland	3,994	927	23.2%	1.48
York	-	-	-	-
Subtotal	18,610	3,479	18.7%	1.35
Fourth Class				
Beaver	-	-	-	-
Butler	-	-	-	-
Cambria	-	-	-	-
Centre	1,026	110	10.7%	2.16
Fayette	2,220	436	19.6%	1.31
Franklin	1,740	409	23.5%	1.11
Monroe	870	83	9.5%	1.22
Schuylkill	-	-	-	-
Washington	2,443	48	2.0%	1.15
Subtotal	8,299	1,086	13.1%	1.31
Fifth Class				
Adams	-	-	-	-
Blair	-	-	-	-
Lawrence	-	-	-	-
Lebanon	749	166	22.2%	1.81
Lycoming	1,379	212	15.4%	1.21
Mercer	580	59	10.2%	1.12
Northumberland	-	-	-	-
Subtotal	2,708	437	16.1%	1.43
Sixth Class				
Armstrong	311	60	19.3%	1.35
Bedford	435	75	17.2%	1.21
Bradford	320	82	25.6%	1.33
Carbon	728	68	9.3%	1.10
Clarion	329	61	18.5%	1.10
Clearfield	-	-	-	-
Clinton	482	138	28.6%	1.17
Columbia	386	32	8.3%	1.09
Crawford	597	48	8.0%	1.02
Elk	87	1	1.2%	1.00
Greene	125	3	2.4%	3.67
Huntingdon	344	13	3.8%	1.15
Indiana	713	75	10.5%	1.37
Jefferson	324	10	3.1%	1.30
McKean	-	-	-	-
Mifflin	287	13	4.5%	1.00
Perry	307	31	10.1%	1.10
Pike	247	67	27.1%	1.12
Somerset	468	100	21.4%	1.32
Susquehanna	-	-	-	-
Tioga	276	56	20.3%	1.43
Venango	406	119	29.3%	1.60
Warren	223	33	14.8%	1.55
Wayne	137	22	16.1%	1.36
Subtotal	7,532	1,107	14.7%	1.28
Seventh Class				
Juniata	189	43	22.8%	1.12
Snyder	-	-	-	-
Union	256	26	10.2%	1.08
Wyoming	244	26	10.7%	1.12
Subtotal	689	95	13.8%	1.11
Eighth Class				
Cameron	-	-	-	-
Forest	25	3	12.0%	1.00
Fulton	177	21	11.9%	1.33
Montour	91	18	19.8%	1.22
Potter	-	-	-	-
Sullivan	-	-	-	-
Subtotal	293	42	14.3%	1.26
State Total	67,162	9,023	13.4%	1.34

Exhibit 11. Resentencing Rate by County Class



Technical Violations

Of those who are resentenced, most are resentenced for technical violations at least once (89.32 percent; Exhibit 12), either alone or in addition to a new offense. As with the incidence of resentencing in general, there are few substantive differences across sex, race, and age. While statistically significant, the strength of the relationship is consistently weak.

Exhibit 12. Demographic Patterns of Technical Violations among Individuals Resentenced

		Technical Violations			Cramer's V statistic
		Number of cases resentenced	Number resentenced for	Percent resentenced for	
Overall		9,023	8,059	89.3%	
Sex	Male	6,247	5,536	88.6%	0.03
	Female	2,776	2,523	90.9%	
Race/ Ethnicity	White	6,806	6,105	89.7%	0.02 ^a
	Black	2,043	1,796	87.9%	
	Hispanic	17	15	88.2%	
	Other	16	14	87.5%	
Age	18-24	2,587	1,904	73.6%	0.02
	25-34	3,566	2,977	83.5%	
	35-44	1,742	1,466	84.2%	
	45-54	843	703	83.4%	
	55+	281	253	90.0%	

Note: Cramer's V statistic based on a comparison of black and white individuals alone. There are too few Hispanic and other race individuals to warrant a reliable comparison.

Exhibit 13. Differences in Resentencing for Technical Violations by Supervision Type

	Number of cases resentenced	Technical Violations		Cramer's V statistic
		Number resentenced for	Percent resentenced for	
Overall	9,023	8,059	89.3%	0.10
Probation	7,274	6,388	87.8%	
RIP	1,749	1,671	95.5%	

Those who are supervised under elements of restrictive intermediate punishment are more likely to be resentenced for a technical violation (95.5 percent) compared to those who are on traditional probation (87.8 percent; see Exhibit 13). Mirroring resentencing incidence, the strongest bivariate predictor of resentencing for technical violation is county of sentencing ($V=0.40$, strong). Counties vary in the degree to which cases are resentenced for technical violations alone or in tandem with new offenses, ranging from 60.3 percent in Philadelphia to 100 percent in several counties (Exhibit 14).²¹

²¹ Counties with high rates of resentencing for technical violations may reflect differences in reporting practices. Many counties with high rates of technical violations use global categories, such as “one or more violation” for most or all of their cases. These practices lead to overrepresenting the relative frequency of technical violations in such jurisdictions.

Exhibit 14. Differences in Resentencing for Technical Violations by County

	Technical Violation			Technical Violation			
	Number of Cases	Number (one or more) Percent (one or more)		Number of Cases	Number (one or more) Percent (one or more)		
First Class			Sixth Class				
Philadelphia	554	334	60.3%	Armstrong	60	59	98.3%
Second Class							
Allegheny	698	698	100.0%	Bedford	75	75	100.0%
Second Class A							
Bucks				Bradford	82	79	96.3%
Delaware	897	855	95.3%	Carbon	68	53	77.9%
Montgomery	628	628	100.0%	Clarion	61	60	98.4%
Subtotal	1,525	1,483	97.2%	Clearfield	-	-	-
Third Class							
Berks	412	253	61.4%	Clinton	138	131	94.9%
Chester	-	-	-	Columbia	32	32	100.0%
Cumberland	257	241	93.8%	Crawford	48	43	89.6%
Dauphin	-	-	-	Elk	1	1	100.0%
Erie	463	463	100.0%	Greene	3	3	100.0%
Lackawanna	233	222	95.3%	Huntingdon	13	8	61.5%
Lancaster	-	-	-	Indiana	75	68	90.7%
Lehigh	700	547	78.1%	Jefferson	10	9	90.0%
Luzerne	315	274	87.0%	Mckean	-	-	-
Northampton	172	165	95.9%	Mifflin	13	12	92.3%
Westmoreland	927	869	93.7%	Perry	31	25	80.6%
York	-	-	-	Pike	67	67	100.0%
Subtotal	3,479	3,034	87.2%	Somerset	100	73	73.0%
Fourth Class							
Beaver	-	-	-	Susquehanna	-	-	-
Butler	-	-	-	Tioga	56	52	92.9%
Cambria	-	-	-	Venango	119	89	74.8%
Centre	110	83	75.5%	Warren	33	31	93.9%
Fayette	436	392	89.9%	Wayne	22	19	86.4%
Franklin	409	398	97.3%	Subtotal	1,107	989	89.3%
Monroe	83	79	95.2%	Seventh Class			
Schuylkill	-	-	-	Juniata	43	38	88.4%
Washington	48	47	97.9%	Snyder	-	-	-
Subtotal	1,086	999	92.0%	Union	26	24	92.3%
Fifth Class							
Adams	-	-	-	Wyoming	26	24	92.3%
Blair	-	-	-	Subtotal	95	86	90.5%
Lawrence	-	-	-	Eighth Class			
Lebanon	166	165	99.4%	Cameron	-	-	-
Lycoming	212	187	88.2%	Forest	3	3	100.0%
Mercer	59	43	72.9%	Fulton	21	20	95.2%
Northumberland	-	-	-	Montour	18	18	100.0%
Subtotal	437	395	90.4%	Potter	-	-	-

Substance-Related Technical Violations

Of particular interest for this project is the role of drug and alcohol related technical violations (substance-related technical violations, SRTVs). We considered a technical violation to be substance-related if it included: alcohol possession or use, drug possession or use, and failure to attend education or treatment if ordered to receive drug treatment at the time of sentencing.²² At first glance, SRTVs are relatively rare; 17.8 percent of individuals who are resentenced are cited for a drug or alcohol violation (including failure to attend treatment; Exhibit 15, Estimate I). However, this number is likely downwardly biased by the data collection instrument, which allows for technical violations to be described as an unspecified violation of probation terms. Many districts use these nonspecific descriptions in their labeling of technical violations, with several districts using catchall categories for most or all of the reported technical violation resentencing events. Estimate II uses only a subsample of counties for which fewer than 30 percent of their technical violations are categorized using a catchall category. Using this estimate, as many as 50.9 percent of technical violations are related to substance use.

Exhibit 15. Demographic Variation in Substance-Related Technical Violations

	Estimate 1				Estimate 2			
	Number resentenced	one or more SRTV	Percent one or more SRTV	Cramer's V statistic	Number resentenced	one or more SRTV	Percent one or more SRTV	Cramer's V statistic
Overall	9,023	1,608	17.8%		1,714	873	50.9%	
Male	6,247	1,040	16.6%	0.05	1,223	578	47.3%	0.12
Female	2,776	568	20.5%		491	295	60.1%	
White	6,806	1,368	20.1%	0.24	1,235	715	57.9%	0.22
Black	2,043	203	9.9%		449	141	31.4%	
Hispanic	17	5	29.4%		5	1	20.0%	
Other	16	1	6.3%		3	-	-	
18-24	2,587	361	14.0%	0.03	439	223	50.8%	0.03
25-34	3,566	586	16.4%		693	355	51.2%	
35-44	1,742	283	16.2%		352	172	48.9%	
45-54	843	148	17.6%		176	95	54.0%	
55+	281	65	23.1%		54	28	51.9%	

Note: Cramer's V statistic for race based only on black and white individuals. There are too few Hispanic and other race individuals to warrant a reliable comparison.

Whites are nearly twice as likely to be cited for a substance-related technical violation for resentencing as are blacks (20.1 percent vs 9.9 percent, Estimate I; 57.9 percent vs. 31.4 percent Estimate II); Cramer's V indicates a moderately strong relationship for both estimates. We are not able to draw conclusions about other races and substance-related technical

²² This is likely an undercount, as individuals sent to treatment by probation officers will not be captured. However, we feel that a conservative estimate is prudent.

violations due to small sample sizes. Women may be more likely to be resentenced for substance-related violations, especially when removing counties with ambiguous reporting practices (60.1 percent vs 47.3 percent), though the Cramer's V implies a weak relationship. While Estimate 1 implies that older individuals are slightly more likely to be resentenced for a substance-related technical violation, the pattern is less apparent after removing counties that use ambiguous reporting methods (Estimate 2); age is not strongly related to resentencing for technical violations using either method.

Individuals whose sentence includes elements of restrictive intermediate punishment are significantly more likely to be resentenced for a substance-related technical violation (Exhibit 16); using the clearer reporting requirements of Estimate 2, individuals with RIP are two-thirds more likely to be resentenced for a substance-related technical violation (70.2 percent) than individuals sentenced only to probation (47.7 percent).

Exhibit 16. Differences in Substance-Related Technical Violations among those Resentenced by Supervision Type

	Estimate 1				Estimate 2			
	Number resentenced	one or more SRTV	Percent one or more SRTV	Cramer's V statistic	Number resentenced	one or more SRTV	Percent one or more SRTV	Cramer's V statistic
Overall	9,023	1,608	17.8%		1,714	873	50.9%	
Probation	7,274	1,237	17.0%	0.04	1,469	701	47.7%	0.16
RIP	1,749	371	21.2%		245	172	70.2%	

County of sentencing continues to be significantly and strongly related to outcomes, especially for substance-related technical violations, with the proportion ranging from zero to over 80 percent ($V=0.49$ to 0.58 ; see Exhibit 17). While many counties report low rates of substance-related technical violations, this appears to be driven by the use of ambiguous violation codes, as shown by the difference between Estimates 1 and 2.

Exhibit 17. Substance-Related Technical Violation Rates among those Resentenced by County

	Number Resentenced	One or more SRTV	Percent one or more SRTV	Included in Estimate 2		Number Resentenced	One or more SRTV	Percent one or more SRTV	Included in Estimate 2
First Class					Sixth Class				
Philadelphia	554	88	15.9%	✓	Armstrong	60	18	30.0%	
Second Class					Bedford	75	4	5.3%	
Allegheny	698	0	.0%		Bradford	82	0	.0%	
Second Class A					Carbon	68	12	17.6%	
Bucks	-	-	-		Clarion	61	32	52.5%	
Delaware	897	32	3.6%		Clearfield	-	-	-	
Montgomery	628	0			Clinton	138	20	14.5%	
<i>Subtotal</i>	<i>1,525</i>	<i>32</i>	<i>2.1%</i>		Columbia	32	23	71.9%	✓
Third Class					Crawford	48	40	83.3%	✓
Berks	412	1	.2%		Elk	1	0	.0%	✓
Chester	-	-	-		Greene	3	1	33.3%	
Cumberland	257	13	5.1%		Huntingdon	13	0	.0%	
Dauphin	-	-	-		Indiana	75	0	.0%	
Erie	463				Jefferson	10	4	40.0%	
Lackawanna	233	40	17.2%		Mckean	-	-	-	
Lancaster	-	-	-		Mifflin	13	0	.0%	
Lehigh	700	177	25.3%		Perry	31	10	32.3%	
Luzerne	315	21	6.7%		Pike	67	29	43.3%	
Northampton	172	9	5.2%		Somerset	100	18	18.0%	
Westmoreland	927	624	67.3%	✓	Susquehanna	-	-	-	
York	-	-	-		Tioga	56	14	25.0%	
<i>Subtotal</i>	<i>3,479</i>	<i>885</i>	<i>25.4%</i>		Venango	119	28	23.5%	
Fourth Class					Warren	33	3	9.1%	
Beaver	-	-	-		Wayne	22	11	50.0%	
Butler	-	-	-		<i>Subtotal</i>	<i>1,107</i>	<i>267</i>	<i>24.1%</i>	
Cambria	-	-	-		Seventh Class				
Centre	110	54	49.1%		Juniata	43	24	55.8%	✓
Fayette	436	41	9.4%		Snyder	-	-	-	
Franklin	409	58	14.2%		Union	26	12	46.2%	
Monroe	83	56	67.5%	✓	Wyoming	26	18	69.2%	✓
Schuylkill	-	-	-		<i>Subtotal</i>	<i>95</i>	<i>54</i>	<i>56.8%</i>	
Washington	48	3	6.3%		Eighth Class				
<i>Subtotal</i>	<i>1,086</i>	<i>212</i>	<i>19.5%</i>		Cameron	-	-	-	
Fifth Class					Forest	3	1	33.3%	
Adams	-	-	-		Fulton	21	7	33.3%	
Blair	-	-	-		Montour	18	0	.0%	
Lawrence	-	-	-		Potter	-	-	-	
Lebanon	166	31	18.7%		Sullivan	-	-	-	
Lycoming	212	18	8.5%		<i>Subtotal</i>	<i>42</i>	<i>8</i>	<i>19.0%</i>	
Mercer	59	13	22.0%		State Total	9,023	1,608	17.8%	
Northumberland	-	-	-						
<i>Subtotal</i>	<i>437</i>	<i>62</i>	<i>14.2%</i>						

New Offenses

The most serious reason for which someone may be resentenced is the commission of a new offense. New offenses are relatively rare, occurring for only 3 percent of the total population sentenced to community supervision and 22.1 percent of those who are resentenced at least once (Exhibit 18). Men are more likely to commit a new offense relative to women (23.3 percent vs. 19.6 percent), though the relationship is weak ($V=0.04$). Race and age also have weak relationships with the likelihood of being resentenced for a new offense ($V=0.02$ and 0.03 , respectively).

Exhibit 18. Demographic Patterns of New Offenses Among Individuals Resentenced

		Number resentenced	One or more new offense	% one or more new offense	Cramer's V statistic
	Overall	9,023	1,998	22.1%	
Sex	Male	6,247	1,455	23.3%	0.04
	Female	2,776	543	19.6%	
Race/ Ethnicity	White	6,806	1,541	22.6%	0.02
	Black	2,043	427	20.9%	
	Hispanic	17	2	11.8%	
	Other	16	2	12.5%	
Age	18-24	2,587	598	23.1%	0.03
	25-34	3,566	790	22.2%	
	35-44	1,742	396	22.7%	
	45-54	843	168	19.9%	
	55+	281	45	16.0%	

Cramer's V statistic for race based only on black and white individuals. There are too few Hispanic and other race individuals to warrant a reliable comparison.

While more likely to be resentenced for a technical violation, individuals whose sentences include restrictive intermediate punishment are less likely to be resentenced for a new offense (12.4 percent; Exhibit 19) compared to those who are sentenced to traditional probation (24.5 percent).

Exhibit 19. Differences in New Offenses among those Resentenced by Supervision Type

	Number resentenced	One or more new offense	% one or more new offense	Cramer's V statistic
Overall	9,023	1,998	22.1%	
Probation	7,274	1,782	24.5%	0.12
RIP	1,749	216	12.3%	

New offenses are not equally rare across place – in several counties, more than 40 percent of individuals resentenced are reported as committing at least one new offense (Exhibit 20). Most counties reporting low rates of new offenses are small; however, several counties also report very low or *no* resentencing events related to new offenses. It is possible that this is related to county reporting practices. As described previously, several counties elect to report resentencing events according to catchall “one or more violation” categories. It is also likely that these differences are a function of differences in probation management practices, with some counties opting for informal sanctions more frequently for violations not involving new

offenses. County retains a moderately strong association with the likelihood of being resentenced for at least one new offense (V=0.41).

Exhibit 20. Differences in New Offenses among those Resentenced by County

	Number of Cases	One or more new offenses	Percent		Number of Cases	One or more new offenses	Percent
First Class				Sixth Class			
Philadelphia	554	286	51.6%	Armstrong	60	18	30.0%
Second Class				Bedford	75	0	0.0%
Allegheny	698	0	0.0%	Bradford	82	18	22.0%
Second Class A				Carbon	68	22	32.4%
Bucks	-	-	-	Clarion	61	1	1.6%
Delaware	897	124	13.8%	Clearfield	-	-	-
Montgomery	628	0	0.0%	Clinton	138	10	7.2%
<i>Subtotal</i>	<i>1,525</i>	<i>124</i>	<i>8.1%</i>	Columbia	32	1	3.1%
Third Class				Crawford	48	8	16.7%
Berks	412	184	44.7%	Elk	1	0	0.0%
Chester	-	-	-	Greene	3	0	0.0%
Cumberland	257	18	7.0%	Huntingdon	13	7	53.8%
Dauphin	-	-	-	Indiana	75	41	54.7%
Erie	463	1	0.2%	Jefferson	10	3	30.0%
Lackawanna	233	15	6.4%	McKean	-	-	-
Lancaster	-	-	-	Mifflin	13	1	7.7%
Lehigh	700	224	32.0%	Perry	31	11	35.5%
Luzerne	315	43	13.7%	Pike	67	2	3.0%
Northampton	172	55	32.0%	Somerset	100	32	32.0%
Westmoreland	927	377	40.7%	Susquehanna	-	-	-
York	-	-	-	Tioga	56	5	8.9%
<i>Subtotal</i>	<i>3,479</i>	<i>917</i>	<i>26.4%</i>	Venango	119	55	46.2%
Fourth Class				Warren	33	12	36.4%
Beaver	-	-	-	Wayne	22	4	18.2%
Butler	-	-	-	<i>Subtotal</i>	<i>1,107</i>	<i>251</i>	<i>22.7%</i>
Cambria	-	-	-	Seventh Class			
Centre	110	40	36.4%	Juniata	43	18	41.9%
Fayette	436	105	24.1%	Snyder	-	-	-
Franklin	409	132	32.3%	Union	26	6	23.1%
Monroe	83	20	24.1%	Wyoming	26	5	19.2%
Schuylkill	-	-	-	<i>Subtotal</i>	<i>95</i>	<i>29</i>	<i>30.5%</i>
Washington	48	3	6.3%	Eighth Class			
<i>Subtotal</i>	<i>1,086</i>	<i>300</i>	<i>27.6%</i>	Cameron	-	-	-
Fifth Class				Forest	3	0	0.0%
Adams	-	-	-	Fulton	21	8	38.1%
Blair	-	-	-	Montour	18	1	5.6%
Lawrence	-	-	-	Potter	-	-	-
Lebanon	166	13	7.8%	Sullivan	-	-	-
Lycoming	212	44	20.8%	<i>Subtotal</i>	<i>42</i>	<i>9</i>	<i>21.4%</i>
Mercer	59	25	42.4%				
Northumberland	-	-	-	State Total	9,023	1,998	22.1%
<i>Subtotal</i>	<i>437</i>	<i>82</i>	<i>18.8%</i>				

Substance Use

Surprisingly, substance-involved individuals²³ under community supervision in Pennsylvania are not, in general, more likely to be resentenced compared to those who are not substance-involved (13.0 percent vs 13.9 percent; Exhibit 21). Among those who are resentenced, substance-involved individuals are more likely to be resentenced for a technical violation, though the relationship is statistically weak. There is a weak-moderate relationship between substance involvement and *substance-related* technical violations – substance-involved persons are approximately 2/3 more likely to be resentenced for a substance-related technical violation (Estimate 2, 58.3 percent) relative to those individuals that are not known to be substance-involved (39.6 percent). There is a small, weak, relationship between substance involvement and committing new offenses; 20.1 percent of substance-involved individuals are resentenced for a new offense compared to 24.2 percent of those without known substance involvement.

Exhibit 21. Relationship between Substance Involvement, Substance Offenses, and Substance Dependence and Resentencing

	Resentenced		Technical Violation		Estimate 1 SRTV (Estimate 1)		Estimate 2 SRTV (Estimate 2)		New Offense	
	N	%	N	%	N	%	N	%	N	%
Substance-Involved	4,542	13.0%	4,143	91.2%	1,024	22.6%	605	58.3%	913	20.1%
Not Substance-Involved	4,481	13.9%	3,916	87.4%	584	13.0%	268	39.6%	1,085	24.2%
<i>Cramer's V</i>		0.01		0.06		0.12		0.18		0.05
Any Substance Offense	4,015	12.4%	3,657	91.1%	838	20.9%	444	53.7%	756	18.8%
No Substance Offense	5,008	14.4%	4,402	87.9%	770	15.4%	429	48.4%	1,242	24.8%
<i>Cramer's V</i>		0.03		0.05		0.07		0.05		0.07
Assessed as Dependent	875	13.2%	838	95.8%	458	52.3%	373	80.6%	211	24.1%
Not Assessed as Dependent	8,148	13.5%	7,221	88.6%	1,150	14.1%	500	40.0%	1,787	21.9%
<i>Cramer's V</i>		0.00		0.07		0.30		0.36		0.02

These patterns are generally consistent for those convicted of substance offenses and those with assessed as substance dependent, with some exception. The relationship between substance offenses of conviction and resentencing outcomes are weak ($V < \pm 0.20$). However, there is a moderately strong relationship between being assessed as substance dependent and the likelihood of being resentenced for a substance-related technical violation. There is also a weak positive relationship between substance dependence and the commission of a new

²³ In our study, “substance-involved” persons are identified as having any of the following conditions at the time of sentencing for the offense leading to community supervision: (a) conviction of at least one drug or alcohol offense in the same proceeding (even if that offense is not the most serious); (b) assessment as drug or alcohol dependent prior to sentencing; (c) sentenced to drug or alcohol treatment. Because not all offenders are required to be assessed prior to sentencing, this variable is not a reliable indicator in and of itself. This approach is consistent with Mumola and Bonzcar (1998), who identify individuals as substance-involved based on offense of conviction, the use of substances at the time of the offense, or reporting behaviors consistent with dependence.

offense (24.1 percent vs. 21.9 percent). However, merely being convicted of a substance offense is (weakly) *negatively* associated with resentencing in general and being resentenced for new offenses.

If resentenced, substance-involved individuals under community supervision have, on average, more resentencing events per person (1.38) than those who are not substance-involved (1.3). The same is true of individuals who are substance dependent (Exhibit 22). However, individuals who are convicted of any substance offense have slightly fewer resentencing events, on average, compared to those who do not (1.31 vs. 1.36).

Exhibit 22. Average Number of Resentencing Events by Substance Involvement, Substance Offenses, and Substance Dependence

	Avg. Number of Resentencing Events	t
Substance-involved	1.38	4.96
No known substance involvement	1.33	
Substance offense	1.31	-2.81
No substance offense	1.36	
Substance dependent	1.41	2.82
No known dependency	1.33	

Multivariate Models

The findings from the previous set of analyses could reflect unobserved differences between groups and differential distribution across counties, which was a strong predictor of outcomes. The models in Exhibit 23 include county dummies variables (not shown) with clustered standard errors. Coefficients for all models are transformed for ease of interpretation.

Odds Ratios

The relative likelihood of resentencing, resentencing for technical violations, and resentencing for new offenses are indicated by odds ratios. For categorical (non-numeric) variables, odds ratios represent the relative risk of the outcome relative to a reference category (indicated by brackets in the table). For numeric variables, the odds ratio is the expected change in risk relative to a one-unit change. Values greater than 1 indicate a relatively higher risk of the outcomes while values less than one indicate reduced relative risk. For example, men are 90% (0.90×100) as likely as women to be resentenced for a technical violation; a more common way of saying this is that men are 10% less likely to be resentenced for a technical violation ($1.00 - 0.90 = 0.10 \times 100$) relative to women

Average Marginal Effects

Average marginal effects are the average change in the dependent variable (in this case, the number of resentencing events) based on a one-unit change. For example, individuals who are substance-involved experience 0.46 more resentencing events on average compared to those who are not substance-involved.

The models suggest that men are no more or less likely to be resentenced than women in general or to be resentenced for new offenses. Men also do not experience more resentencing events than women. However, men in our sample were 10% less likely to be resentenced for technical violations. There were no differences in the likelihood of resentencing, technical violations, or new offenses, or the number of resentencing events between black and white individuals under community supervision net of other case characteristics. Each additional year of age was associated with approximately a 3% reduction in the likelihood of being resentenced in general, for a technical violation, and for a new offense. Age had a statistically significant but substantially small ($-0.01 < \text{AME} < 0.00$) effect on the number of resentencing effects.

After controlling for other individual and case characteristics, substance-involved individuals in Pennsylvania were approximately 29% more likely to be resentenced compared to those without known substance involvement and 34% more likely to be resentenced for a technical violation. However, substance-involved individuals were no more or less likely to be resentenced for a new offense. Substance-involved individuals experience, on average, 0.46 more resentencing events than those with no known substance involvement.

Individuals with sentences that included elements of restrictive intermediate punishment (RIP) were also approximately 27% more likely to be resentenced for any reason and 32% more likely to be resentenced for technical violations compared to those who were sentenced to traditional probation alone. Those under RIP supervision experience statistically fewer resentencing events, but the substantive effect is small (-0.02). They were no more or less likely to be resentenced for a new offense.

Those under community supervision in Pennsylvania with property crimes as the most serious offense of conviction were more likely to be resentenced for any reason (OR=1.35), for technical violations (OR=1.30), and for new offenses (OR=1.45) relative to those convicted of violent offenses. Other types of felonies (e.g., public order) were *less* likely to be resentenced in general (OR=0.85). Individuals whose most serious conviction offenses are 51% less likely to be resentenced for any reason, 51% less likely to be resentenced for technical violations, and 67% less likely to be resentenced for new offenses. They also experience 0.55 fewer resentencing events overall.

Exhibit 23. Multivariate Unconditional Logistic Regression for Resentencing, Technical Violations, New Offenses, and Number of Events

	Resentenced			Technical Violation			New Offense			Number of Events		
	Odds Ratio ^a	Standard Error ^b	p-value	Odds Ratio	Standard Error	p-value	Odds Ratio	Standard Error	p-value	Average Marginal Effect ^c	Standard Error	p-value
Male [Female]	0.92	0.04		0.90	0.04	*	1.14	0.10		-0.01	0.02	
Black [White]	0.91	0.05		0.90	0.05		0.92	0.07		-0.02	0.02	
Age	0.97	0.00	***	0.97	0.00	***	0.97	0.00	***	0.00	0.00	**
Substance-Involved [No involvement]	1.29	0.12	***	1.34	0.14	**	1.28	0.20		0.46	0.06	***
Total Supervision Length	1.00	0.00		1.00	0.00		1.00	0.00		0.00	0.00	***
RIP [Probation only]	1.27	0.11	*	1.32	0.12	**	0.80	0.12		0.16	0.04	***
Prior Record	1.10	0.02	***	1.10	0.01	***	1.10	0.04	**	-0.02	0.01	*
<i>Most serious conviction offense</i> [Violent]												
Property	1.35	0.08	***	1.30	0.06	***	1.45	0.21	*	-0.03	0.04	
Substance	0.86	0.09		0.83	0.10		0.82	0.13		-0.46	0.06	***
DUI	0.49	0.07	***	0.49	0.08	***	0.33	0.05	***	-0.55	0.06	***
Other Type	0.85	0.05	**	0.85	0.05	**	0.82	0.08	*	-0.07	0.03	*
Felony [Misdemeanor]	0.99	0.11		0.99	0.11		1.03	0.10		0.04	0.03	
N	66,675			66,675			47,754 ^d			66,675		

^a OR = Odds Ratio [exponentiated logistic coefficient]

^b SE = Standard Error

^c AME = Average Marginal Effect [dy/dx]

^d Excludes counties in which no new offenses were reported

* p<.05 (two-tailed)

** p<.005 (two-tailed)

*** p<.001 (two-tailed)

For substance-involved individuals under community supervision (Exhibit 24), an order to treatment²⁴ was not significantly associated with resentencing in general or for technical violations. Individuals sentenced to treatment experienced 0.11 more resentencing events on average compared to substance-involved individuals who were *not* ordered to treatment at the time of sentencing. However, when treatment was ordered, substance-involved individuals were 28% less likely to be resentenced for a *new offense* compared to those for whom no treatment was ordered.

Exhibit 24. Multivariate Unconditional Logistic Regression for Resentencing, Technical Violations, New Offenses and Number of Events; Substance-Involved Individuals Only

	Resentenced			Technical Violation			New Offense			Number of Events		
	Odds Ratio	Standard Error	p-value	Odds Ratio	Standard Error	p-value	Odds Ratio	Standard Error	p-value	Average Marginal Effect	Standard Error	p-value
Treatment ordered [Tx not ordered]	0.82	0.13		0.82	0.13		0.72	0.10	*	0.11	0.03	**
N	34,688			34,688			22,040 ^a			34,688		

^a Excludes counties in which no new offenses were reported

* p<.05 (two-tailed)

** p<.005 (two-tailed)

*** p<.001 (two-tailed)

Time to Resentencing

Not only is the incidence and frequency of resentenced varied across people and place, so too is the time to resentencing (Exhibit 25). Some individuals are resentenced within a month of the onset of probation, though the average time until the first resentencing event is 327 days, (10.9 months) and the median is 288 days (9.6 months). The longest time to resentencing observed in these data is 1,162 days (38.7 months).

²⁴ Refers to an order to treatment at the time of sentencing. This does not include all individuals who may have received treatment. Individuals who are ordered to treatment at the time of sentencing likely reflects both individual willingness (consent to participate in treatment) and belief by justice agents that the individual is an appropriate candidate for treatment. However, the results are nevertheless suggest that treatment may be valuable in this population.

Exhibit 25. Number of Days to First Resentencing Event among those Resentenced

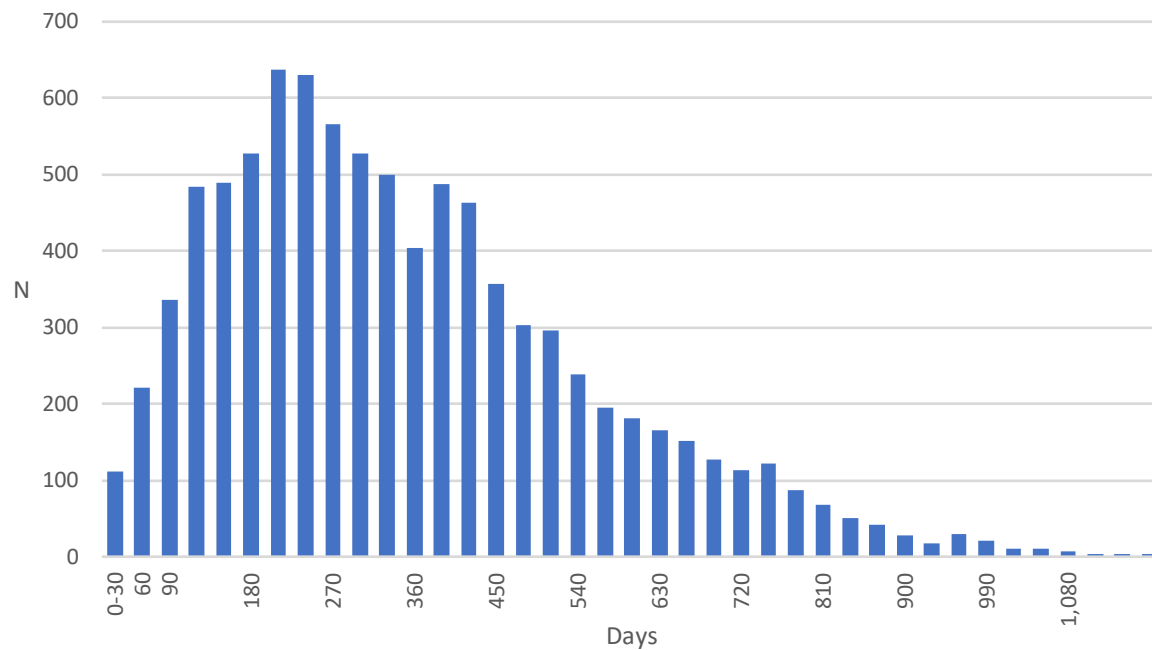


Exhibit 26. Demographic Patterns of Time to Resentencing

		N	Average	Standard	KW χ^2
		Resentenced	Time (days)	Deviation	
	Overall	9,023	337	206	
Sex	Male	6,247	343	206	p<0.001
	Female	2,776	323	198	
Race/ Ethnicity	White	6,806	327	201	p<0.001
	Black	2,043	376	210	
	Hispanic	17	268	218	
	Other	16	373	278	
Age	18-24	2,587	339	206	p=0.495
	25-34	3,566	336	200	
	35-44	1,742	336	203	
	45-54	843	343	210	
	55+	281	319	203	

Kruskal Wallis statistic for race based only on black and white individuals. There are too few Hispanic and other race individuals to warrant a reliable comparison.

On average, women are resentenced more quickly than are men, with 323 days until the first resentencing event compared to 343 days for men (Exhibit 24). Black individuals under community supervision are resentenced on average 50 days later than are white individuals

(376 days relative to 327 days). Despite differences in the incidence of resentencing by age, there are no statistically significant differences in the average *time to* resentencing by age. As shown in Exhibit 27, Individuals under county intermediate punishment are resentenced more than a month sooner on average (299 days) compared to those under traditional probation (346 days).

Exhibit 27: Differences in Time to Resentencing by Supervision Type

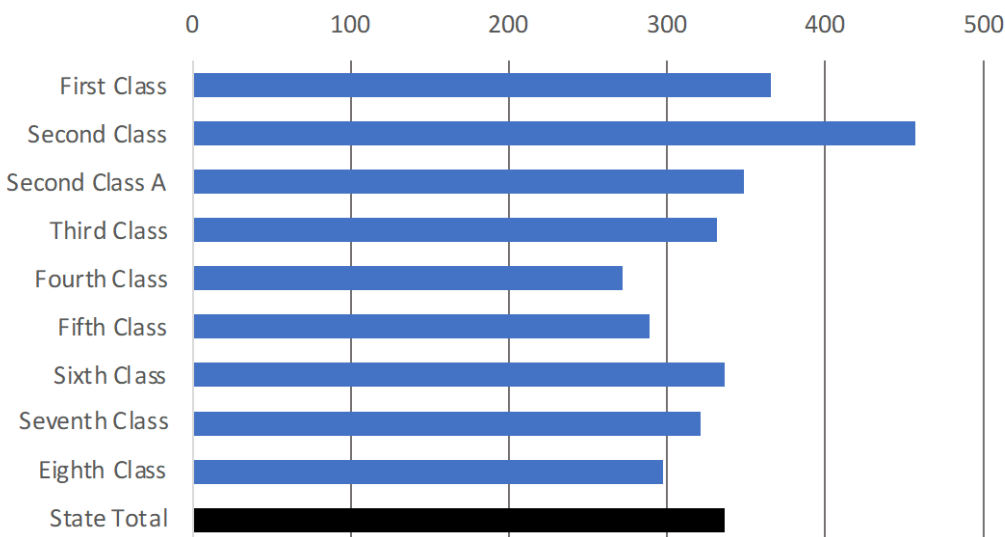
	N Resentenced	Average Time (days)	Standard Deviation	KW χ^2
Probation	7,274	346	201	p<0.001
RIP	1,749	299	210	

Counties with the shortest average time to resentencing are generally smaller or more rural (e.g., Forest, Pike, Mifflin, Jefferson) but not exclusively (e.g., Monroe, Lehigh, Huntingdon, Bedford). There is significant variation across counties (Exhibit 28). Over three-quarters of the counties have an average time to resentencing of less than one year.

Exhibit 28. Average Time to Resentencing by County; Sorted from Shortest to Longest

County	N Resentenced	Average Time (days)	Standard Deviation	County	N Resentenced	Average Time (days)	Standard Deviation
Forest	3	163	43	Bradford	82	330	184
Monroe	83	199	149	Tioga	56	331	206
Pike	67	210	156	Warren	33	333	227
Mifflin	13	211	113	Venango	119	337	164
Jefferson	10	222	145	Perry	31	344	177
Wayne	22	223	174	Erie	463	352	206
Wyoming	26	236	174	Fulton	21	352	233
Columbia	32	244	162	Mercer	59	352	190
Montour	18	255	133	Union	26	352	210
Lehigh	700	264	192	Juniata	43	353	230
Lebanon	166	271	171	Luzerne	315	356	206
Fayette	436	272	158	Westmoreland	927	363	164
Franklin	409	273	189	Philadelphia	554	365	209
Washington	48	274	178	Lackawanna	233	366	223
Crawford	48	277	127	Berks	412	367	210
Cumberland	257	278	184	Delaware	897	374	208
Lycoming	212	285	202	Carbon	68	376	203
Northampton	172	289	150	Indiana	75	388	206
Clinton	138	291	188	Huntingdon	13	419	188
Clarion	61	292	200	Somerset	100	433	219
Montgomery	628	310	187	Allegheny	698	456	235
Greene	3	310	80	Elk	1	480	
Centre	110	322	201	Bedford	75	498	228
Armstrong	60	326	166	Total	9,023	337	203

Exhibit 29. Average Time to Resentencing by County Class



Incarceration

Exhibit 30 shows the average time to a resentencing event that lead to any term of incarceration for different demographic groups. The average time to an incarceration resentencing was 337 days for men, compared to 314 days for women. As with resentencing in general, white individuals under community supervision had a shorter average time to incarceration (322 days) relative to black individuals (361). This suggests that whites “fail” more quickly than blacks. There was no significant difference by age category.

Exhibit 30. Demographic Patterns of Time to Resentencing Resulting in Incarceration

		N Resentenced	Average Time (days)	Standard Deviation	KW X ²
Overall		6,122	333	209	
Sex	Male	4,251	337	211	p<0.001
	Female	1,871	314	202	
Race/ Ethnicity	White	4,792	322	208	p<0.001
	Black	1,211	361	210	
	Hispanic	11	169	112	
	Other	9	384	317	
Age	18-24	1,826	334	209	p=0.056
	25-34	2,417	328	207	
	35-44	1,159	330	212	
	45-54	543	333	215	
	55+	174	287	191	

Kruskal Wallis chi-square statistic for race based only on black and white individuals. There are too few Hispanic and other race individuals to warrant a reliable comparison.

Exhibit 31. Differences in Time to Resentencing Resulting in Incarceration by Supervision Type

	N Resentenced	Average Time (days)	Standard Deviation	KW χ^2
Probation	4,799	340	201	p<0.001
RIP	1,323	293	210	

Individuals who were sentenced to traditional probation had a much longer average time to incarceration compared to those on county intermediate punishment (Exhibit 31). This may be due to the increased supervision of those on RIP, to the increased number of conditions to which they are subject, or because individuals sentenced to RIP are more likely to be incarcerated for violations. The section “Qualities of Resentencing” will address this latter possibility. County variation in time to resentencing resulting in incarceration is available in Appendices B and C.

New Offenses

Exhibit 32 shows the average time to a resentencing event that resulted from a new offense, alone or in addition to a technical violation. The average time to a resentence resulting from a new offense was 364 days. There was no significant difference between men (364 days) and women (366 days) nor between white individuals (361 days) and black individuals (376 days). There also was no significant difference by age category.

Exhibit 32. Demographic Patterns of Time to Resentencing Relating to New Offense

		N Resentenced	Average Time (days)	Standard Deviation	KW χ^2
	Overall	1,998	364	204	
Sex	Male	1,455	364	204	p=0.537
	Female	543	366	193	
Race/ Ethnicity	White	1,541	361	201	p=0.097
	Black	427	376	201	
	Hispanic	2	131	34	
	Other	2	512	465	
Age	18-24	598	348	199	p=0.058
	25-34	790	368	201	
	35-44	396	364	197	
	45-54	168	399	219	
	55+	45	390	204	

Kruskal Wallis chi-square statistic for race based only on black and white individuals. There are too few Hispanic and other race individuals to warrant a reliable comparison.

Exhibit 33. Differences in Time to Resentencing Relating to New Offense by Supervision Type

	N Resentenced	Average Time (days)	Standard Deviation	KW X ²
Probation	1,782	360	196	p=0.064
RIP	216	400	240	

Individuals who were sentenced to traditional probation had a much longer average time to new offenses compared to those on county intermediate punishment (Exhibit 33); the average difference was greater than one month (39 days). Together with previous findings, this suggests that individuals who are under RIP supervision are more likely to be resentenced for technical violations but not new offenses.

Substance Use

Substance involvement dramatically shortens the time to resentencing for individuals under community supervision (309 days, relative to 365 days for those without known substance involvement; see Exhibit 34).

Exhibit 34. Differences in Time to Resentencing by Substance Involvement

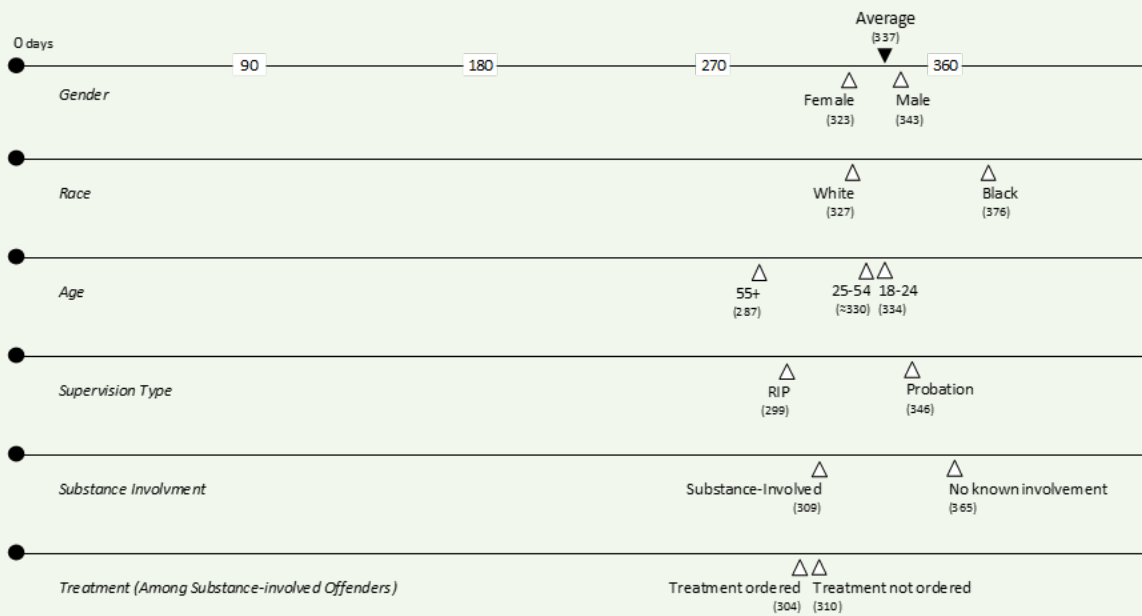
	Time to Resentence				Time to Incarceration				Time to New Offense			
	N	Average Time (days)	Standard Deviation	KW X ²	N	Average Time (days)	Standard Deviation	KW X ²	N	Average Time (days)	Standard Deviation	KW X ²
Substance-involved	4,542	309	210	p<0.001	3,108	303	202	p<0.001	913	362	206	p<0.001
No known involvement	4,481	365	193		3,014	357	213		1,085	366	197	

Among those who are substance-involved, treatment marginally reduces the average time to resentencing (Exhibit 35). However, substance-involved individuals who are under community supervision and sentenced to treatment had a longer average time to reincarceration (313 days) relative to those who were not sentenced to treatment (302 days).

Exhibit 35. Differences in Time to Resentencing among Substance-Involved by Treatment Ordered at Original Sentencing

	Time to Resentence				Time to Incarceration				Time to New Offense			
	N	Average Time (days)	Standard Deviation	KW X ²	N	Average Time (days)	Standard Deviation	KW X ²	N	Average Time (days)	Standard Deviation	KW X ²
Treatment ordered	602	304	205	p<0.094	388	313	229	p<0.001	82	364	257	p<0.001
Treatment not ordered	3,940	310	191		2,720	302	198		831	362	201	

Exhibit 36: A Summary of Time to Resentencing



Multivariate Models

To account for potential differences between groups that might affect our estimates of bivariate differences in time to resentencing, we also estimate a multivariable Cox proportional hazards model (see Methodological Appendix, section E, for a discussion of the model and diagnostics). Exhibit 37 reports hazard ratios from this model.

What is a hazard?

An individual's *hazard* is the probability that they will experience some outcome (e.g., be resentenced for any reason) at a specific point in time.

What is a hazard ratio?

A *hazard ratio* refers to the relationship between the hazards of individuals who have different characteristics. For example, we can calculate the hazard ratio between an individual who is substance-involved and compare it to an individual that does not have known substance involvement. If the hazard ratio is less than one, that means the person who is substance-involved has a smaller hazard (risk) than the person without known substance involvement at a specific point in time; if the hazard ratio is *greater* than one, it means that the substance-involved individual has a higher risk at any specific point in time. In Exhibit 37, substance involvement is associated with a risk that is approximately 1.2 times higher than the risk of individuals without known substance involvement (the base category) to experience an outcome (e.g., new incarceration). Another way to say this is that substance involvement is associated with a 20 percent higher hazard (or risk) of being revoked (i.e., resentenced).

Exhibit 37. Cox Proportional Hazard Models for Any Resentencing, New Incarceration, and New Offense

	Any Resentencing		Reincarceration		New Offense	
	H.R. ^a	Signif.	H.R.	Signif.	H.R.	Signif.
Male [Female]	.93	**	.95		1.14	*
Black [White]	.95		.89	***	.95	
Age	.98	***	.97	***	.97	***
Substance-Involved [None known]	1.19	***	1.23	***	1.14	
RIP [Probation only]	1.96	***	2.60	***	1.53	***

Models also include controls for primary offense of conviction type (not shown) and account for variation across county. [Brackets] indicate the category to which hazard ratios are compared.

a HR = Hazard Ratio [exponentiated coefficient]

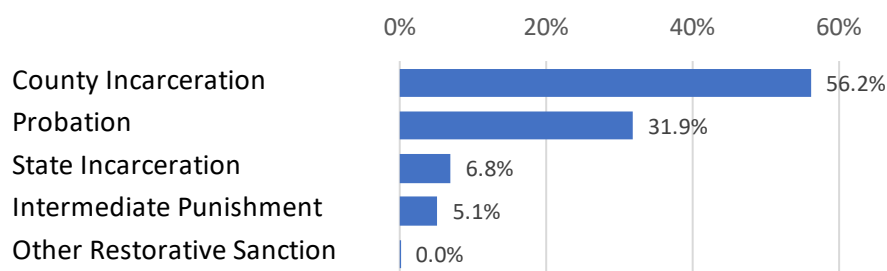
* p<.05 (two-tailed); ** p<.005 (two-tailed); *** p<.001 (two-tailed)

Men have a 7 percent lower hazard of being resentenced compared to women at any specific point in time, but a 14 percent higher hazard for being resentenced for a new offense. Black individuals face similar hazards for resentencing overall and for new offenses relative to whites (the hazard ratio is not statistically significant from 1.00), but have an 11 percent *lower* hazard for resentences resulting in incarceration. Each year of additional age is associated with a 2 percent reduction in the hazard of resentencing and a 3 percent reduction in the hazard of incarceration and resentencing related to a new offense. Substance-involved individuals have a 19 percent higher hazard relating to those without known substance involvement of being resentenced for any reason and a 23 percent higher hazard for resentencing resulting in incarceration.

Qualities of Resentencing

When individuals are resentenced, the most common outcome is a county jail sentence (56.2 percent; Exhibit 38). The next most common outcome is an extension of probation (31.9 percent). State incarceration is relatively rare (6.8 percent).²⁵

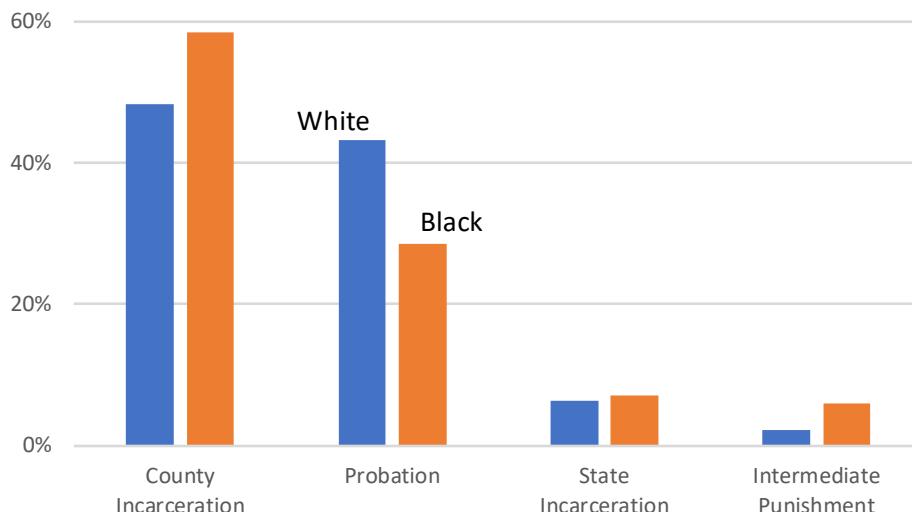
Exhibit 38. Outcome of Resentencing Proceedings²⁶



²⁵ Note that for the remainder of this report, the unit of analysis is the resentencing *event*, not the individual/case. Numbers for the sample will thus differ slightly from previous sections.

²⁶ Note that Intermediate punishment includes both county intermediate punishments and state intermediate punishment, though the latter is rarer.

Exhibit 39. Outcome of Resentencing Proceedings by Race²⁷



There are no substantive differences in the outcome of resentencing procedures by sex or age (see Appendix D). Exhibit 39 shows that whites (43.3 percent) are more likely to receive probation as a result of resentencing, relative to blacks (28.5 percent). However, the effect size between race and outcome is considered small ($V=0.14$) and the effect of race is not significant in multivariable models.

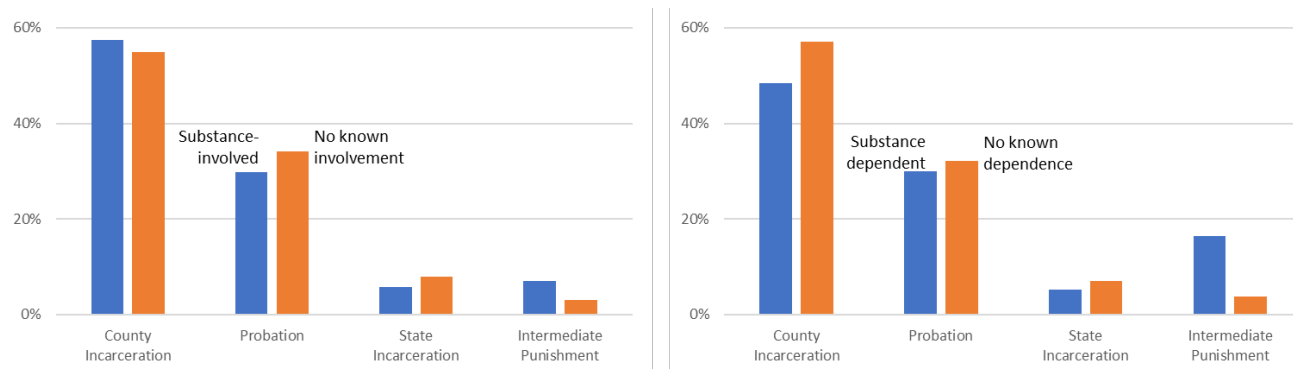
Substance-involved offenders (i.e., who are convicted of a substance-related offense, are assessed as dependent prior to sentencing, or are sentenced to substance treatment) are slightly more likely to be sentenced to a term of county incarceration following a violation of supervision compared to those without known substance involvement (57 percent vs. 55 percent), but less likely to be incarcerated in a state facility (5.7 percent vs 8.0 percent; Exhibit 40). Individuals assessed as substance *dependent*²⁸ are less likely to be sentenced to county incarceration and are more likely to be sentenced to intermediate punishment.²⁹ The relationship between substance dependence and outcome is stronger than the broader measure of involvement ($V=0.17$ vs. $V=0.09$), though both are considered small effect sizes (see Appendix E).

²⁷ Does not include restorative sanctions (less than one percent). Intermediate punishment includes both county intermediate punishments and state intermediate punishment, though the latter is rarer.

²⁸ Note that substance dependent offenders are a subset of substance-involved offenders as defined and used in this report.

²⁹ These estimates include both State Intermediate Punishment Sentences ($n=12$) and County Intermediate Punishment ($n=149$). The most common reported type of CIP program is “Individualized Services”. It is not possible to determine which of these services may have included treatment. House arrest and work release comprise the second most frequent intermediate punishments (11.19 and 16.78 percent, respectively).

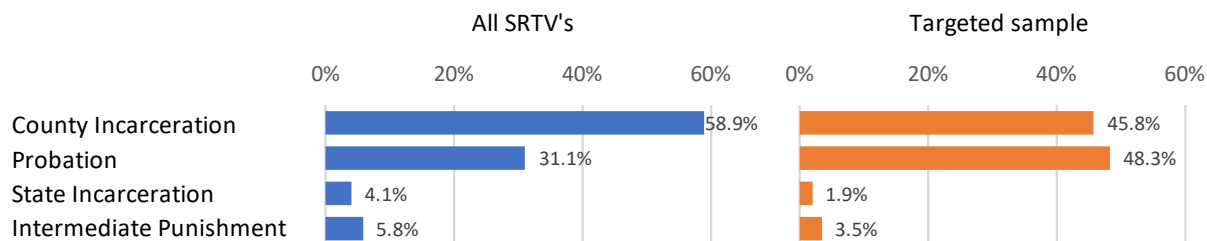
Exhibit 40. Outcome of Resentencing Proceedings by Substance Involvement and Substance Dependency³⁰



Substance-Related Violations

Similar to our estimates of the number of *individuals* who are resentenced for substance-related technical violations (i.e., a violation of conditions reported as drug or alcohol use or failure to attend drug or alcohol treatment), we can also estimate the share of resentencing *events* that are attributable to substance use. In the total analytic sample, approximately 12 percent of all resentencing events involve a substance-related technical violation (SRTV). However, as described previously, there is reason to believe this is a very conservative estimate. In the targeted subsample, this number is even higher, 25.7 percent. Exhibit 41 displays the sentencing outcomes for substance-related technical violations. More than half of the SRTVs lead to county incarceration (slightly less than half for the targeted sample) and roughly one third result in probation for all SRTV's (roughly half for the targeted subsample). State incarceration and County Intermediate Punishment are rarely used during resentencing.

Exhibit 41. Outcomes of Proceedings Related to Substance-Related Technical Violations (SRTVs)²⁹



³⁰ Note that Intermediate Punishment includes both county intermediate punishments and state intermediate punishment, though the latter is rarer.

It is rare for substance-related technical violations to result in orders for treatment – only 10.5 percent of such events result in an order to treatment (and 7.9 percent in the targeted sample). Exhibit 42 displays the demographic patterns of treatment orders for individuals with substance-related technical violations. White individuals are more likely to be ordered to treatment in response to a technical violation compared to black individuals, though the relationship is statistically weak ($V < 0.20$). There is a moderately strong relationship between age and treatment orders ($V = 0.22$). However, none of these relationships is significant in multivariable models (see Appendix F). It is also important to note that funding for treatment orders are limited to individuals who meet certain offense and prior record qualifications (i.e., Level 3 and 4 in the sentencing matrix). This likely explains the apparent underuse of court-ordered treatment.³¹

Exhibit 42. Demographic Patterns of Treatment Ordered at Resentencing.

		Total Sample			Targeted Sample		
		N	Ordered to Treatment	Cramer's V statistic	N	Ordered to Treatment	Cramer's V statistic
Overall		1,188	10.5%		520	7.9%	
Sex	Male	766	11.6%	0.05	352	8.2%	0.02
	Female	422	8.5%		168	7.1%	
Race/ Ethnicity	White	1,016	11.1%	0.05	415	9.4%	0.12
	Black	146	6.2%		97	1.0%	
Age	18-24	339	8.3%	0.22	135	5.9%	0.19
	25-34	496	7.9%		238	5.5%	
	35-44	211	9.5%		94	8.5%	
	45-54	100	21.0%		45	22.2%	
	55+	41	41.5%		8	25.0%	

Note: Cramer's V statistic for race based only on black and white individuals. There are too few Hispanic and other race individuals to warrant a reliable comparison.

In addition, individuals are more likely to be sentenced to treatment if they are sentenced exclusively for a technical violation, rather than a combination of technical violations and a new offense (9.7 percent relative to 2.9 percent in the targeted sample).³² Additionally, *none* of the individuals who were under supervision for a non-substance-related offense (e.g., theft) and brought forth on substance-related technical violation were ordered to treatment as part of their resentencing. Being assessed as dependent to one or more substances is strongly related to being ordered to treatment ($V = 0.34$), but still only 23 percent of these individuals are resentenced to treatment after a substance-related technical violation.

³¹ 37 Pa. § 451

³² It is not possible to account for treatment that may have been received prior to resentencing or to determine if probation supervision was accompanied by facilitation of treatment.

Impact of Resentencing on Resources

Given the increased frequency of resentencing events (primarily technical violations) involving substance-involved individuals under community supervision and the frequency of incarceration outcomes for those events, it is worthwhile to consider the cumulative resource burden associated with these events. Due to limitations in reporting and incomplete matching of new offense details to resentencing events it is not possible to directly report the specific resource burden attributed to substance-related violations. However, it is possible to create bounded estimates.

Substance-related technical violations account for 12.3 percent of resentencing events for technical violations³³ in the total analytic sample. In the targeted subsample³⁴, substance-related technical violations are reported in 25.7 percent of resentencing events. Out of the 7,899 total resentencing events for technical violations in our sample then, we can expect that between 974 and 2,030 are associated with substance-related technical violations.³⁵

Substance use also affects resentencing through the commission of new substance-related offenses. Of 9,976 total resentencing events, 2,077 involved the commission of a new offense (alone or in conjunction with violations of conditions). Of these, new offense details were available for 1,033 (49.7 percent).³⁶ Among these cases where new offense type could be determined, 48.6 percent involved at least one new substance-related conviction (n=502). A lower bound for the percent of resentencing revocation hearings involving a new offense, then, is the assumption that of the new offenses not matched, *none* were related to substance offenses, thereby producing a total of 502 of 2,077 resentencing events (24.2 percent) involving at least one substance-related new offense. The upper bound (1,009 new offenses) is calculated by multiplying the percent of the matched sample (48.6 percent) involved in a new substance-related conviction by the total number of events (2,077).

³³ Note here that the unit of analysis is the resentencing *event*, not the individual, as in earlier sections of this report. Events with both technical violations and new offenses are counted as new offenses to avoid double-counting.

³⁴ See Exhibit 15

³⁵ These estimates are achieved by multiplying the total number of technical violation events (7,899) by our lower estimate of the percent of events involving a substance-related technical violation from the total analytic sample (12.3 percent) and our upper estimate of substance-related technical violations using the targeted subsample (25.7 percent). [Lower bound estimate = 12.3% * 7,899 = 974; Upper bound estimate = 25.7% * 7,899 = 2,030].

³⁶ New offense details were not available for a significant portion of the sample. This is likely due to a combination of (a) time differences in the reported sentencing of new offenses and (b) incomplete data reporting (i.e., not including the new offense identifier) at the time resentencing data is collected.

Exhibit 43. Sample Estimates of Substance-Related Resentencing Events

Events	Total	Lower Bound (substance-related)		Upper Bound (substance-related)	
		Percent	# Events	Percent	# Events
Technical Violation	7,899	12.3%	974	25.7%	2,030
New Offense	2,077	24.2%	502	48.6%	1,009
Total	9,976	14.8%	1,476	30.5%	3,039

As shown in Exhibit 43, the data suggest that between 14.8 percent to 30.5 percent of all resentencing events are related to substance use by individuals under supervision. The lower bound is an extremely conservative estimate, while the upper bound assumes that counties with less detailed reporting behave similarly to those with more detailed reporting.³⁷

To better understand the cost of these resentencing events, we next estimated the number of supervision days for county and state incarceration and community (probation) supervision related to substance-related technical violations and new offenses. Based on the observed rate of the three outcomes³⁸, the average length of non-concurrent incarceration and probation monitoring, and applying it to the upper and lower bounds for substance-related technical violations and new offenses from the previous Exhibit, we estimate that for resentencing events for individuals in our sample from January 2016 to May 2019, substance-related violations led to between 78,504 and 161,594 days of county incarceration³⁹, 30,189 to 61,912 days of state incarceration, and 346,927 to 711,208 days of probation supervision (Exhibit 44). These estimates do not include sentences for individuals who were not sentenced to terms of probation and intermediate punishment in the community between January 2016 and December 2017 but were resented during that time or resented to intermediate punishment programs.

³⁷ It also possible, however, that even this upper bound is conservative (e.g., if substance-involved convictions were less likely to match or if larger counties behave differently).

³⁸ Because some cases receive multiple sentences (e.g., 30 days of county incarceration and an additional 6-month probation sentence), the rate of these outcomes do not sum to 100 percent.

³⁹ The estimated total days (78,504) for the lower bound is generated by adding the number of days for county jail for technical violations (50,891) with the county jail days resulting from new offenses (27,613). Similar calculations were performed for the upper estimate (106,069 +55,525) and for state prison and probation.

Exhibit 44. Sample Estimates of Substance-Related Supervision Days

Substance-Related								Average		
Technical Violations		Percent		Events		N			Days	Total Days
Lower Bound	County Jail	59.2%	*	974	=	577	577	*	88.2	= 50,891
	State Prison	4.2%	*	974	=	41	41	*	401.3	= 16,455
	Probation	40.0%	*	974	=	390	390	*	475.6	= 185,294
										252,640
Upper Bound	County Jail	59.2%	*	2,030	=	1,203	1,203	*	88.2	= 106,069
	State Prison	4.2%	*	2,030	=	85	85	*	401.3	= 34,297
	Probation	40.0%	*	2,030	=	812	812	*	475.6	= 386,195
										526,562
Substance-Related								Average		
New Offenses		Percent		Events		N			Days	Total Days
Lower Bound	County Jail	49.6%	*	502	=	249	249	*	110.9	= 27,613
	State Prison	6.6%	*	502	=	33	33	*	416.4	= 13,733
	Probation	49.0%	*	502	=	246	246	*	657.1	= 161,633
										202,980
Upper Bound	County Jail	49.6%	*	1,009	=	501	501	*	110.9	= 55,525
	State Prison	6.6%	*	1,009	=	66	66	*	416.4	= 27,615
	Probation	49.0%	*	1,009	=	495	495	*	657.1	= 325,013
										408,153

The prior calculations provide estimates of the number of days of supervision, based on the analytic sample, over the study period. To be more meaningful, these sample estimates of substance-related supervision days are extrapolated statewide and costs of supervision for substance-related technical violations and new offenses are calculated. These estimates are created via a four-step process. In the first step, we estimate the number of statewide events related to technical violations and new offenses. Next, we calculate the share of these estimates that is attributable to substance-related violations. Third, we estimate the total supervision-days that result from resentenced substance-related events. Finally, in the fourth step, we monetize the costs associated with this supervision. Note that these estimates are not the result of nor intended to be reflective of a full-scale cost-benefit analysis.

Step 1: The statewide estimates of resentencing events are calculated by multiplying the rate of resentencing events in the analytic sample by the number of individuals sentenced to a term of probation or CIP with RIP, statewide. Using technical violations as an example, in the analytic sample the rate of technical violation events is 0.118 per person (7,899 / 67,162). Multiplying this rate by the total number of individuals sentenced to a term of probation or CIP (N=96,159) yields 11,309 statewide, substance-related technical violations events. Similar calculations are made for new offenses in Exhibit 45.

Exhibit 45. Estimating the Number of Statewide Resentencing Events

	Resentencing events (analytic sample)	÷	Number of cases (analytic sample)	=	Resentencing events per case	*	Number of cases sentenced to probation or RIP (statewide)	=	Statewide resentencing events
Technical Violation Events	7,899	÷	67,162	=	.118	*	96,159	=	11,309
New Offense Events	2,077	÷	67,162	=	.031	*	96,159	=	2,974

Step 2: Estimates of the number of substance-related resentencing events are calculated by using the estimates of the statewide resentencing events and the lower- and upper-bound rates of substance-related resentencing events. For example, the lower bound estimate is calculated by multiplying the number (11,309) of statewide technical violation events (see Exhibit 45) by the lower-bound estimate of the percentage (12.3 percent) of substance-related technical violations (see Exhibit 43). This results in a lower-bound estimate of 1,394 substance-related technical violations, statewide.

Exhibit 46. Estimating the Number of Statewide Resentencing Events Attributable to Substance-Related Violations

		Resentencing Events (statewide)	*	Percent substance- related	=	Number substance- related (statewide)
Lower Bound	Technical Violations	11,309	*	12.3%	=	1,394
	New Offenses	2,974	*	24.2%	=	719
Upper Bound	Technical Violations	11,309	*	25.7%	=	2,907
	New Offenses	2,974	*	48.6%	=	1,445

Step 3: The total number of supervision-days attributable to substance-related violations is calculated based upon the number of statewide substance-related events, the frequency of jail, prison, and probation as a sentence, and the average number of supervision days for those

sentences (Exhibit 47). For example, roughly 59 percent of technical violations receive a sentence of county jail; individuals sentenced to jail for technical violations receive an average sentence of 88.2 days. In the lower-bound estimate 826 (of 1,394 total events attributable to substance-related technical violations) are sentenced to county jail for a combined period of 72,853 days (826 days * 88.2 average days).

Exhibit 47. Extrapolated State-Level Estimates of Substance-Related Supervision Days

Substance-Related							Average			
Technical Violations		Percent		Events				Days		Total Days
Lower Bound	County Jail	59.2%	*	1,394	=	826	*	88.2	=	72,853
	State Prison	4.2%	*	1,394	=	59	*	401.3	=	23,677
	Probation	40.0%	*	1,394	=	558	*	475.6	=	265,385
										361,915
Upper Bound	County Jail	59.2%	*	2,907	=	1722	*	88.2	=	151,880
	State Prison	4.2%	*	2,907	=	122	*	401.3	=	48,959
	Probation	40.0%	*	2,907	=	1163	*	475.6	=	553,123
										753,962
Substance-Related							Average			
New Offenses		Percent		Events				Days		Total Days
Lower Bound	County Jail	49.6%	*	719	=	357	*	110.9	=	39,591
	State Prison	6.6%	*	719	=	47	*	416.4	=	19,571
	Probation	49.0%	*	719	=	352	*	657.1	=	231,299
										290,461
Upper Bound	County Jail	49.6%	*	1,445	=	717	*	110.9	=	79,515
	State Prison	6.6%	*	1,445	=	95	*	416.4	=	39,558
	Probation	49.0%	*	1,445	=	708	*	657.1	=	465,227
										584,300

Step 4: The total days of supervision, associated with substance-related violations, are multiplied by the average cost per day of supervision to calculate statewide cost estimates during the study period. These cost estimates are converted from a 29-month period to costs per one year (12 months). This study makes use of average cost estimates from a 2019 analysis by the Pennsylvania House Appropriations Committee. They estimate the average cost per day to house an inmate in county jail is \$80.82 per person per day, \$123.99 per person per day of state incarceration, and \$3.01 for probation.

However, average costs of supervision can be misleading; these costs include not only the cost of an additional person under supervision but also the fixed and variable costs associated with

the continued operation of the criminal justice system (e.g., the cost of facility maintenance, officer salaries, etc.). The Vera Institute of Justice (2013) recommends the use of *marginal costs* – the additional cost solely associated with bringing an individual under supervision.⁴⁰ Because marginal costs for Pennsylvania Corrections in 2016 were not available at the time of writing, we estimate the marginal cost as portion of the average cost reported by the Pennsylvania House Appropriations Committee. For incarceration, we use the median ratio found in other reports.⁴¹ For jail and probation ratios, we use the most recent available estimates for Pennsylvania (Collins et al, 2014).⁴² The estimated *marginal cost* per day to house an inmate in county jail is \$19.40 ($\$80.82 \times .24$) per person per day, \$17.36 ($\$123.99 \times .14$) per person per day of state incarceration, and \$.90 ($\$3.01 \times .3$) for probation.

Statewide, for a one-year period of time, we estimate the cost of supervision for substance-related resentencing to cost approximately **\$1,398,739 to \$2,873,557** per year (See Exhibits 48 and 49).^{43,44}

⁴⁰ Marginal costs can be short-run or long-run. Long-run marginal costs are greater than short-run marginal costs because they also incorporate changes in variable costs (e.g., staff size, inmate health care) that accumulate over time. *In this report “marginal cost” refers to the short-run marginal cost.*

⁴¹ Estimates for this ratio ranged from 0.10 (Michigan) to 0.27 (New York). The average ratio was 0.17, while the most recent estimate was 0.23 (Maryland). See: Governor’s Office of Crime Control and Prevention (2017); Schabases (2013); Maxwell (2015); Vera Institute of Justice (2013, 2015).

⁴² For example, the marginal cost for county jail is estimated at \$19.40. It is calculated by dividing the 2012 estimate of the short run marginal costs by the average costs of county jail ($\$16.31 \div \$68.17 = .24$). Multiplying the ratio of marginal to average costs by the 2016 estimate of average costs results in 2016 marginal cost of \$19.40 ($.24 \times \$80.82 = \19.40). Similar calculations were conducted for state prison and probation.

⁴³ This global estimate is achieved by summing the total cost of all substance-related violation supervision costs \$3,380,285 to \$6,944,430), estimating a per-month cost over the 29 months of observation (\$116,562 to \$239,463), and multiplying by 12 to achieve the estimated annual cost.

⁴⁴ Some counties hold individuals incarcerated in county jails financially responsible for their confinement (Jaafari, 2019).

Exhibit 48. Estimated Statewide Cost of Supervision Days Related to Substance-Related Violations and New Offenses for January 2016 to May 2019 (29 months)

		Lower Bound					Upper Bound				
		Avg cost per person (per day)		Ratio of Average to Marginal Cost	Days	Total Cost	Avg cost per person (per day)		Ratio of Average to Marginal Cost	Days	Total Cost
Technical Violations	County Jail	\$ 80.82	*	0.24	*	72,853 = \$ 1,413,119	\$ 80.82	*	0.24	*	151,880 = \$ 2,945,994
	State Prison	\$123.99	*	0.14	*	23,677 = \$ 410,994	\$123.99	*	0.14	*	48,959 = \$ 849,853
	Probation	\$ 3.01	*	0.30	*	265,385 = \$ 239,642	\$ 3.01	*	0.30	*	553,123 = \$ 499,470
						361,915 \$ 2,063,756					753,962 \$ 4,295,316
New Offenses	County Jail	\$ 80.82	*	0.24	*	39,591 = \$ 767,945	\$ 80.82	*	0.24	*	79,515 = \$ 1,542,342
	State Prison	\$123.99	*	0.14	*	19,571 = \$ 339,722	\$123.99	*	0.14	*	39,558 = \$ 686,671
	Probation	\$ 3.01	*	0.30	*	231,299 = \$ 208,863	\$ 3.01	*	0.30	*	465,227 = \$ 420,100
						290,461 \$ 1,316,529					584,300 \$ 2,649,114
All Substance related violations	County Jail	\$ 80.82	*	0.24	*	112,445 = \$ 2,181,063	\$ 80.82	*	0.24	*	231,396 = \$ 4,488,336
	State Prison	\$123.99	*	0.14	*	43,248 = \$ 750,716	\$123.99	*	0.14	*	88,517 = \$ 1,536,524
	Probation	\$ 3.01	*	0.30	*	496,684 = \$ 448,506	\$ 3.01	*	0.30	*	1,018,350 = \$ 919,570
						652,376 \$ 3,380,285					1,338,262 \$ 6,944,430

Exhibit 49. Yearly estimate of the Statewide Cost of Supervision Days for substance-related technical violations and new offenses

		Lower Bound	Upper bound
Study period estimate		\$ 3,380,285	\$ 6,944,430
	÷	29	29 months
		\$ 116,562	\$ 239,463 per month
	*	12	12 months
Yearly estimate		\$ 1,398,739	\$ 2,873,557

The Cost of Treatment

The use of confinement for technical violations of supervision is contested; one study in Washington found that felony recidivism was *not* reduced by the use of confinement for technical violations (Drake, 2011). One possible alternative response to substance-related technical violations of community supervision is to engage individuals in evidence-based treatment in lieu of incarceration or additional supervision.

This is not without financial implications. There are currently no studies that compare the costs and benefits of individuals who are engaged in treatment relative to those who are under community supervision *among individuals already under community supervision*. Further, it is also not reasonable to directly compare the *marginal* costs of justice system responses in this analysis with *average* costs of treatment; marginal costs exclude fixed and variable costs that are otherwise included in the treatment fee. Treatment costs also vary significantly by substance, type of service, and by location. Finally, counties vary in the extent to which individuals, counties, and state funds are responsible for or available to defer costs of treatment.

However, substantial literature addresses the benefits and costs of substance-use treatment relative to no engagement with treatment for both justice-involved and general populations. Drug treatment during incarceration has been estimated to produce benefit-cost ratios well over 2:1, as shown in Exhibit 50 below. A benefit-cost ratio of \$3.87, for example, means that for the system investment of \$1 in the studied program, there is a \$3.87 return in benefits (e.g., crimes avoided, associated reduced system burden). Research also suggests that these savings accumulate over the lifetime of individuals – Zarkin et al. (2012) estimate that, depending on the quality of treatment and the availability of aftercare, lifetime criminal justice savings alone range from \$0.2 to \$17.1 billion.

Exhibit 50. Estimates of Treatment Benefit to Cost ratios

Study	Type of Program(s)	Benefit to Cost Ratio (per \$1 spent)
Levitt (2004)	Incarceration	\$1.54 to \$2.20
Aos et al. (2001)	Community based substance use treatment	\$1.11 to \$3.30
Collins et al. (2010)	Single episode of community-based, publicly funded, treatment	\$1.20
Nafziger (2016)	Buprenorphine Maintenance	\$1.76
Zarkin et al. (2005)	Diversion from prison to community-based treatment	\$2.17
Nafziger (2016)	Methadone Maintenance	\$2.22
Aos and Drake (2013)	Community-based intensive inpatient/outpatient treatment	\$3.96
Aos et al. (2005)	Substance use treatment with shorter prison sentence (drug offenders)	\$7.25 to \$9.94
Ettner et al. (2006)	Community-based substance use treatment	\$7.26
Aos and Drake (2013)	Community-based outpatient /non-intensive treatment	\$10.85

Note: Benefit-Cost Ratio = (Total Cost + Net Benefit)/ Total Cost

Net Benefit= Total Benefit-Total Cost

Site Visits

To better understand the findings from the administrative data analysis, Pennsylvania Commission on Sentencing (PCS) staff conducted site visits to Allegheny County and Centre County.⁴⁵ The goals of the visits were to (1) collect case-level information from recently closed probation files and (2) interview key stakeholders (e.g., probation staff; treatment providers; defense counsel) about the policies, practices, and procedures related to supervising individuals under probation and current agency and criminal justice system responses to substance-involved offenders. The case-level data collected from the sites provide additional details and characteristics, above and beyond what is included in the PCS resentencing data, about offenders who were sentenced to probation (e.g., marital status; income assistance) and their time under supervision (e.g., drug testing; technical violations). The interviews with key stakeholders serve as a complement to the empirical analyses of the PCS administrative resentencing data and review of current best practices. The interviews provide a more in-depth, comparative perspective into ways probation offices organize themselves, how they supervise offenders⁴⁶, how probation and the court consider technical violations, and insights into existing resources and barriers in the community related to treatment. The site visits are *not* intended to provide a comprehensive evaluation or assessment of the performance of individual probation offices, probation officers, or judicial officers in these counties. Nor are they intended as a comprehensive documentation of system-wide policies and community resources devoted to substance-involved offenders in these counties or Pennsylvania more broadly.

Allegheny County

In February and March (2020), PCS staff made two separate visits to Allegheny County. On the first visit PCS staff met with members of the senior management team and members of the data analytic unit. On the second visit staff met with judges who handle criminal dockets and specialty courts, attorneys from the public defenders' office, and representatives from the Human Services Administrative Office.⁴⁷

The Allegheny County Adult Probation and Parole "is charged by the Court of Common Pleas with the responsibility of providing effective community-based alternatives to incarceration, improving public safety, partnering with community and law enforcement resources and promoting positive behavioral change from offenders."⁴⁸ The office has embraced evidence-based practices through a Bureau of Justice Assistance Smart Supervision grant, including the

⁴⁵ Allegheny County is a Second class county and Centre County is a Fourth class county. The coronavirus pandemic prevented PCS staff from visiting and including York County (Third Class) as a site in the current study.

⁴⁶ Hereinafter, referred to as clients.

⁴⁷ PCS staff were also scheduled to meet with representatives from the District Attorney's office, but these interviews ultimately did not occur.

⁴⁸ Allegheny County Adult Probation Department, 2018 Annual Report (p. 3).

https://www.alleghenycourts.us/annual_reports/default.aspx?show=xZz4iW8EneoSTpjUXm3Bfw==

training of all staff on the Carey Group Four Core Competencies (building professional alliances, skill practices to address criminogenic needs, effective case planning, and rewards and sanctions). Officers also make use of risk and needs assessment tools to classify offenders into risk levels and to develop case management plans. The office is also a criminal justice partner in the Allegheny County Safety and Justice Challenge grant, awarded by the John D. and Catherine T. MacArthur Foundation, with the goal of reducing jail populations. In addition, the office has a robust electronic case management system with multiple dashboards allowing for real-time monitoring of cases and outcomes (Allegheny County Adult Probation and Parole 2019).

The office has a caseload of approximately 19,000 individuals supervised in the community. These cases are supervised by roughly 140 adult probation officers. Staff estimated that 50 to 60 percent of underlying offenses involve substance use. The office operates out of four community resource centers (CRCs) spread out geographically across the county. The CRCs are offices where clients can meet with probation officers and also receive programming services (e.g., batterer intervention programs, cognitive behavioral therapy (Allegheny County Adult Probation and Parole 2019). The CRCs also serve as a location for offender drug testing and comprehensive drug and alcohol assessments.

At probation intake there is an initial assignment of offenders into low, medium, and high risk based on “Proxy”—an assessment tool that predicts recidivism based upon current age, age at first arrest, number of lifetime arrests⁴⁹. Four officers handle the low risk caseload (roughly 800 offenders per officer). These offenders are typically seen once or twice and do not have to call in regularly, provided they remain compliant. Medium-risk offenders make up the bulk of the caseload and they are assigned to officers in one of four CRC offices, based on geography in the county. They meet with their officer, on average, once a month. High-risk offenders are typically younger offenders (18-26) and “frequent fliers.” There are 12 officers who handle these cases (about 2 or 3 officers per center). Officers handling high-risk offenders typically handle a caseload of about 80 to 100 cases. These are specialized officers who work nights, weekends, and holidays. Medium and High-risk offenders are also administered the LSI-R to build a case plan based on criminogenic needs⁵⁰ and can be moved within classification levels if the officer thinks they are misclassified. Offenders can also be downgraded or upgraded based upon compliance, with supervisor approval.

Common Illicit Substances:

Marijuana, heroin, crack cocaine, opioids (including fentanyl) and ecstasy are common substances used by substance-involved offenders in Allegheny County. In recent years, methamphetamine use has been on the rise.

⁴⁹ Certain cases such as sex offenses, domestic violence, M/H, and problem-solving cases are transferred to specialized caseloads and are not eligible for low risk supervision at the onset of supervision.

⁵⁰ The office has been using an evidence-based approach to classification and the development of case management plans for over a decade.

Violations/Sanctions:

The Allegheny County Probation office does not make use of a formal graduated sanctions matrix and they do not make use of formal rewards. While there is no formal sanctioning policy, medium risk offenders are typically allowed 3 or 4 failed drug tests, for “less serious” drugs (e.g., marijuana), before a formal revocation proceedings are initiated.⁵¹ Typically, an offender who has tested positive for marijuana is retested 30 days later. Even when formal revocation proceedings are initiated (i.e., Gagnon I hearing), clients have 90 days to comply with new conditions. Failed tests for other drugs (e.g., fentanyl, methamphetamine) are followed by an assessment and a recommendation for some type of treatment, especially for those classified as high risk. Additional options for probation include mandating increased reporting, increased frequency of drug screening, and asking the judge to add a treatment order. Both probation officers and judges expressed reluctance to incarcerate clients prior to revocation proceedings, and only do so if there is a perceived risk to community safety. For offenders who are continuing to engage in substance use and are arrested for a new offense, there are far fewer options as the offender may be detained. Probation officers can seek a treatment order through a court-generated diversion program, otherwise the violation process commences.⁵²

Most stakeholders indicated that there is significant variation in the viewpoints of judges regarding substance use violations and appropriate sanctions. At one end are judges who are open to treatment, problem-solving court approaches (e.g., Drug Court; DUI Court; Mental Health Court; Veterans Court), and are reluctant to violating offenders for drug-related technical violations; and on the other are “zero tolerance” judges—judges who will violate any offender who has a failed urinalysis, including positive for marijuana use. Probation staff indicated that they sometimes felt constrained to respond to violations in certain ways depending on the judge of record.

Drug Court:

Allegheny County also operates a drug court program that serves as an intensive drug treatment program, as an alternative to incarceration. This post-plea program is designed for individuals with substance abuse issues and are involved in the criminal justice system. Individuals are monitored electronically for 36 months and may receive residential treatment following their plea. Roughly 200 individuals are in the program. The drug court recently allowed the use of MAT, though the judge prefers for clients to taper off.

Treatment

The court does not currently make use of risk and needs tools at the time of sentencing. Instead offenders can be ordered to treatment by judges as a condition of probation based upon the

⁵¹ After all failed drug tests, probation officers refer offenders to treatment. Proceedings are canceled for offenders who attend treatment and remain drug free.

⁵² Offenders can also be transferred to one of four alternative housing sites to engage in treatment while awaiting a court date, provided the underlying or pending charges are non-violent.

information provided in the affidavit, the recommendation of the District Attorney, or through mitigation arguments by the defense at sentencing. Otherwise, probation relies upon the LSI-R assessment to build a case plan based upon criminogenic needs. Further, there are drug and alcohol assessors on-site at each of the four remote centers that administer additional assessments following a positive urinalysis or self-disclosed use. Positive drug tests are usually followed by a formal referral to treatment and additional reporting requirements or other informal sanctions. In some cases, individuals may be incarcerated for repeat positive tests. Many probation officers will attempt to get these individuals into treatment via “treatment release.” Under this practice, individuals who are temporarily incarcerated for a drug violation are released without being violated if they enter treatment. This process requires the written consent of a judge. When probation clients are in treatment, officers try to maintain open lines of communication with treatment providers about client progress.

Most substance-involved offenders will qualify for intensive outpatient treatment at their initial assessment. Participants in the interviews reported that justice professionals in the community have increasingly supported MAT, problem solving (specialty) courts, and NARCAN. However, it was expressed during the interviews that members of the Bench would benefit from additional training regarding evidence-based practices, treatment, and more effective ways to address issues of relapse. Suboxone remains the most common medically assisted treatment in their population. Treatment for uninsured offenders is paid for through the Allegheny County Drug and Alcohol Services (ALDA) or through treatment funds from the Pennsylvania Commission on Crime and Delinquency IP/Drug Court Grant. Otherwise, payment is through private insurance or Medicare.

Allegheny County has a robust set of resources for behavioral health. For example, Justice Related Services (JRS), housed under the Human Services Administration, provide a range of services for justice involved offenders with mental illness or co-occurring mental illness and substance use disorder. JRS work with offenders pre-arraignment, at the Magisterial Court, and with offenders at the Court of Common Pleas to assess need for treatment and advocate for a service plan. However, substance use disorders alone do not qualify individuals to receive JRS assistance.

Barriers to treatment

Client resistance to treatment (attitudes) and peers were identified as the most significant barrier to treatment. The challenge of separating clients from peers is amplified when an individual is *unable* to distance themselves from other people that are associated with their use (e.g., when family members and spouses also engage in substance use). Half-way houses are sometimes used in Allegheny County to address this challenge. Stable housing access was also discussed as a barrier to treatment, especially for single men who may not be eligible for many housing programs

Transportation was not viewed as a significant barrier. The county has a robust public transportation network to outpatient and methadone clinics; in addition, participants

expressed that treatment programs often provide inpatient pick up and drop off services. Treatment providers are also in the process of implementing mobile MAT units and in-home services to overcome existing transportation issues to remote areas. Finally, the availability of programming and excessive wait time to enter programs were not viewed as a problem. Outpatient programming was perceived to have the longest wait time.

Substance Use and Probation Outcomes in Allegheny County

In 2019, Allegheny county closed 10,119 cases (dockets) of probation supervision for 8,382 people. Eighty-five percent of the individuals had only one docket, but 11 percent had two active dockets and 3.5 percent had between 3 and 11 dockets. Approximately half (49 percent) of individuals in this group were under supervision for a substance-related offense. This is consistent with rates of substance involvement using the Commission's administrative data (the analytic sample). However, based on information shared during stakeholder interviews, this is likely an undercount; stakeholders suggested that retail theft and theft without taking charges are "almost always" indicative of substance involvement.

Most (72.7 percent) of the individuals with probation supervision that ended in 2019 were male; the individuals in the sample were on average 38 years old. The sample was 60 percent white, and 40 percent black (less than one percent other race). Nearly 78 percent of individuals were single at the time of supervision. One third (33.12 percent) of the sample was receiving some form of income assistance, including public assistance (8.3 percent), retirement benefits (8.3 percent), and help from friends or family (14.6 percent).

Approximately 20 percent of all adults under probation supervision in the sample were drug tested at least once; almost all individuals in a drug or alcohol problem solving court received drug testing. Fifty-eight percent of individuals had at least one positive test. The average percent of tests (within-individual) that were positive was 36 percent¹; conditional on any positive tests, the average is 67.8 percent.² Black individuals were more likely to have any positive drug test (conditional on being tested) and had a higher rate of positive tests on average compared to whites and individuals of other race (Exhibit 51).

¹ Most individuals are tested more than once. The "average percent of tests positive" is calculated by dividing the total number of positives by the total number of tests.

² The "average percent of tests positive" includes individuals who never tested positive. The average percent of tests positive, conditional on any positive test removes individuals, from the calculation, who have never tested positive.

Exhibit 51: Drug Testing and Positive Testing Rates

	Any Positive Drug Test	Average % of Tests Positive	Average % of Tests Positive Any Positive Test
Overall	58.3%	35.9%	67.6%
Male	57.5%	35.2%	66.8%
Female	60.8%	38.0%	70.1%
Black	63.0%	43.0%	71.5%
White	55.6%	31.4%	64.7%
Other Race	33.3%	22.2%	67.5%

The data shared by Allegheny County Probation and Parole suggest that violations are more common than suggested by focusing on the formal process of resentencing. Thirty-two percent of individuals in the Allegheny 2019 sample had a recorded violation during their term of supervision; 14 percent *of all individuals under supervision* had a violation related to a new offense. However, not all violations resulted in formal resentencing (a Gagnon II hearing). Only 16.1 percent of all individuals under supervision had a Gagnon II hearing. Among people with recorded violations, only 49.3 percent also had a formal Gagnon II hearing. This is consistent with comments made by stakeholders in the probation department – they espoused a graduated sanctioning philosophy where violations did not necessarily immediately result in formal sanctions. The average number of violations associated with a Gagnon II hearing was 4.8.

Among those who experienced at least one Gagnon II hearing, 13.8 percent experienced a hearing for a substance-related technical violation. This rate was slightly higher among whites (15.0 percent) versus black (12.6 percent). Approximately 37 percent of those who experienced at least one Gagnon II hearing were revoked. Revocation rates were slightly lower among those who had been brought forward on a substance-related technical violation relating (30.9 percent vs 38.0 percent), though the relationship is statistically weak ($V=0.05$). Women were more likely to be revoked than men (46.7 percent vs 34.8 percent); there were no substantial differences in revocation by race.

The site-provided data also suggest certain limitations to the information provided to the Commission by Allegheny county via the resentencing module. For example, the rate of resentencing reported by Allegheny in the Commission's analytic sample is only 5.38 percent, compared to 16.1 percent in their data. While the samples differ in meaningful ways, a gap this large suggests that there may be underreporting to the Commission. Additionally, these data illustrate the incomplete data reporting to the Commission: contrary to the reported data, approximately 41% of individuals who had a Gagnon II hearing committed a new offense either alone or in conjunction with a technical violation.

Centre County

PCS staff made two separate visits to Centre County (December 2019 and January 2020). On the first visit PCS staff met with the chief probation officer and hand coded offender, case-level data. On the second visit PCS staff met with a senior probation officer and senior managers from the Centre County Drug and Alcohol Services.

The Centre County Probation and Parole Department office is located in the borough of Bellefonte, PA (the county seat of Centre County). The office has a total of 17 adult probation officers, 5 juvenile probation officers, and 7 staff.⁵³ Of the 17 adult probation officers, 9 are assigned to general supervision and handle roughly 150 cases per person. These officers typically meet with their clients once a month, often through field visits at clients' homes or places of employment. The remaining officers handle intensive supervision⁵⁴, Domestic Violence Court, DUI Court, Drug Court, ARD coordination, and specialty court coordination. In 2018 the office had 1,483 active probation cases, 428 intensive supervision cases, and 1,427 active parole cases.⁵⁵

The office relies upon the Wisconsin model to assess levels of supervision. Beyond the designation of intensive supervision, there is very little case-type specialization among the officers. At the time of interviews, there was some effort to divide cases geographically based on officer preferences to be in the field versus the main office. The chief probation officer indicated that the office was preparing to adopt the Ohio Risk Assessment System (ORAS) as a way to better classify individuals and provide greater supervision of high-risk clients and less contact and supervision for low-risk clients.

Common Illicit Substances

Stakeholders indicated that Centre County is seeing a shift away from opioids to methamphetamines. Alcohol and marijuana abuse are still common, as is the use of multiple substances (e.g., many drugs are laced with fentanyl). Probation staff expressed frustration that many of their clients have access to marijuana medically, complicating their ability to moderate illicit substance use. Probation staff was also frustrated by a perception marijuana use was not taken seriously by some prosecutors.

⁵³ Information about Centre County is reflective of staffing levels and policies and practices as of December 2019.

⁵⁴ Officers who handle intensive supervision typically see clients one or more times a week and conduct more frequent home and after-hours visits.

⁵⁵ At the time of the visit, the probation office lacked an electronic case management system. Caseload statistics are manually compiled by the office manager and come from the 2018 Adult Probation and Parole Statistical Survey, submitted to the Pennsylvania Board of Probation and Parole. A case management system was implemented later in 2020.

Violations/Sanctions

Individual probation offices have broad discretion when it comes to responding to probation violations and initiating revocation procedures.⁵⁶ While lacking a formal graduated sanctions policy or structured form, officers typically utilize an informal set of graduated sanctions (e.g., increased frequency of meetings; weekly urine tests; increased home visits) when responding to technical violations. Failed urinalysis tests for less serious drugs (e.g., alcohol; marijuana) are often met with a verbal and/or written warning. In some instances, testing is increased to every two weeks and the probation officer asks the court (via a memo) to modify the terms of their probation by adding treatment as a condition. Rarely, are these individuals revoked. Failed urinalysis tests for methamphetamine or heroin typically receive 10 to 15 days in jail before receiving inpatient treatment.

Treatment

Referrals for treatment assessment are made to the Centre County Drug and Alcohol Office, a single county authority responsible for identifying, evaluating, and treating individuals with drug and alcohol abuse and addiction. Referrals from probation are handled through the Treatment Accountability for Safer Communities (TASC) Program. Within this program, case management staff conduct assessments and forward treatment service recommendations to the court. Assessments are often conducted prior to sentencing dates, including for all offenders prior to a county intermediate punishment (CIP) sentence and when a judge requests a pre-sentencing investigation report (PSI). Additionally, assessments are requested, by the judge, in some cases where a PSI has not been completed based upon the statement of probable cause indicating that drugs or alcohol were involved in the offense. This assessment is used to determine if treatment should be a condition of the probation order. Assessments can also undertaken at the recommendation of the probation officer following a technical violation. Respondents indicated that trainings about assessment and treatment are regularly provided, but attendance by judges is very low.

The TASC assessment takes between one to two hours to administer and includes questions about the individual's history with drug and alcohol, employment, education, family and social history, mental health, and relies on the American Society of Addiction Medicine's (ASAM) placement criteria.⁵⁷ Recommendations for treatment include: no services recommended, ongoing support (e.g., continue current level of treatment), basic drug and alcohol training, outpatient treatment, intensive outpatient treatment, residential, halfway house, and inpatient treatment.

The county has two contracts with treatment providers for drug and alcohol awareness education, outpatient treatment, and intensive outpatient treatment. There are additional private service providers in the county. Stakeholders reported that there were generally limited

⁵⁶ Some revocations require supervisor approval.

⁵⁷ The ASAM criterial replaced the PA client placement criteria in 2017.

waiting periods for outpatient treatment. The county has one residential option for substance use treatment. However, this facility only accepts private insurance; TASC managers reported that when inpatient treatment is needed, they rely on out of county options for inpatient care. Placement is generally achieved in one to two weeks if there is no need for detox. There is roughly a 24 hour wait time for a detoxification center. Centre County also runs both a Drug Court (started in 2018) and DUI Court (started in 2009).

Barriers to Treatment

Stakeholders reported that the greatest barrier to treatment is client transportation issues, specifically related to obtaining services and resources.⁵⁸ Further, respondents indicated that the county has limited psychiatric services, and there is a lack of affordable housing. Further, there was concern that most treatment was too short (three to four weeks) in duration to have a positive impact and that the county lacks evidence-based treatment programs for many substances, including methamphetamines.⁵⁹

⁵⁸ Centre County has the 5th largest land area (1,113 square miles) of all counties in Pennsylvania. The statewide average is roughly one half the size (667 square miles).

⁵⁹ TASC staff mentioned that they are in the process of providing trainings for criminal justice partners and treatment providers on the Matrix model.

Substance Use and Probation Outcomes in Centre County

At the time of the site visit, Centre County did not have an electronic case management system. The research team coded a random sample of 53 cases closed in 2019. Of the 53 cases, 77 percent (n=41) were men and 23 percent were women (n=12). The sample was predominantly white (n=45), though 11 percent of the sample was black (n=6) and 4 percent was Asian (n=2). More than two-thirds of the sample was less than thirty years old at the time of being placed on supervision, though 10 percent of the sample was over age 60. More than half of the sample had at least some post-secondary education (n=28).

Substance-related charges were the most serious offense type for a substantial minority of probation cases. Eleven of the 53 cases were for drug possession (21 percent), eight for DUIs (15 percent) and two for other substance-related offenses (4 percent). In addition, five cases with other primary offense types included a lesser charge that was substance-related (9 percent) and six cases had prior records involving substance-related offenses (11 percent). The most common type of possession charge was for paraphernalia (n=5), followed by marijuana (n=2). In total, fifty-seven percent of offenders were identifiably substance-involved, including substance related charges, prior records thereof, and reported use. We were only able to identify eight probationers who received a TASC evaluation for substance dependency (15 percent).

Approximately 26 percent of the sample experienced at least one violation while under supervision (n=14). Among those who violated at least once, 21 percent were violated for a substance-related behavior (n=3); all of these offenses were for new drug-related charges. Substance-involved individuals were nearly twice as likely to experience a violation compared to individuals who were not substance-involved (Exhibit 52).

Exhibit 52. Violations of Supervision by Substance-Involvement, Centre County

	Total	Any Violation		V
	N	N	%	
Substance-Involved	30	10	33.3%	0.18
No known Involvement	23	4	17.4%	

Evidence-Based Practices for Substance Use Treatment in Community Corrections Populations

There exist a number of comprehensive, evidence-based guidelines for substance use treatment both in general (e.g., National Institute of Drug Abuse [NIDA], 2018) and for justice-involved populations (e.g., NIDA, 2014; Peters and Wexler, 2005). It is not the intent of this section to reproduce these guidelines in their entirety nor to provide a complete literature review of related studies. There are also a number of challenges associated with implementing evidence-based substance use disorder treatment in criminal justice settings that affect the ability of individual jurisdictions to adopt certain programs (Taxman and Belenko, 2012). The information discussed below will provide an introduction to the conditions of treatment and types of treatment that have been associated with positive outcomes for justice-involved populations so that county agencies will be able to more fully consider adopting evidence-based policies.

General Principles

Substance use can result in addiction, “a chronic disease characterized by compulsive, or uncontrollable, drug-seeking and use,” leading to changes in the brain (NIDA 2019: 1; see also Volkow et al., 2010). Treating addiction varies significantly by person and substance, but evidence consistently shows these principles are associated with better outcomes:

I. Match treatment to needs, broadly defined

The best treatment varies both between substances and between people. Not all types of treatment are evidence-based for all substances. For example, while cognitive behavioral therapy (CBT) is generally considered extremely effective, it has not yet been shown to be effective for the treatment of heroin or prescription opioids. The Matrix Model, which some Pennsylvania counties have recently begun to implement, has been shown to be effective only for treating cocaine and methamphetamine use; this does not mean it has been shown *not* to be effective for other substances but that there is not an established evidence base. See Exhibit 53 for a summary of research-supported treatment types by substance. Note that twelve-step programs are not listed in this table. These programs may be helpful in sustaining recovery but at present, no evidence suggests that twelve-step programs are helpful in initiating recovery for substances other than alcohol (Donovan and Wells, 2007; NIDA, 2018).

Additionally, when developing a plan to treat substance use, it is critical to be aware of other challenges people are facing; stress from these other areas may induce people to return to use even if they have the motivation to succeed (NIDA 2018). By providing comprehensive support in response to challenges that individuals are facing, we improve the likelihood of successful outcomes. Women who use substances, especially those in the criminal justice system, may have different treatment needs than men related to differences in their biology, social environments, motivations for treatment seeking, etc. (NIDA, 2018).

Exhibit 53. Evidence Based Treatment Modalities by Substance

Evidence Based Treatment	Substance Type			
	Alcohol	Opioids	Marijuana	Stimulants
Pharmacotherapies	Naltrexone Acamprosate Disulfiram ¹	Buprenorphine Methadone ² Naltrexone ³		
Pharmacotherapy (Alone)	●	●		
Pharmacotherapy & CBT	● ⁴	●		
Cognitive Behavioral Therapy (CBT)	●		●	●
Motivational Enhancement	●		● ⁵	
Contingency Management/ Motivational Incentives ⁶	●	●	●	●
Community Reinforcement & Vouchers	●	●		●
Matrix Model				●

Note: Synthesized from NIDA, 2018

¹ Recommended for extremely motivated clients; compliance is an issue.

² Methadone is more effective when combined with CBT and social services

³ Requires full detoxification prior to initiation. Oral naltrexone is only recommended for extremely motivated clients; compliance is an issue. Injectable formats may be an alternative. Naltrexone may not be as effective as reducing overdoses and other clinical indicators of use (National Academies of Sciences, Engineering and Medicine, 2017).

⁴ Do not observe additive effects with addition of CBT given pharmacotherapy.

⁵ CBT program components are critical for marijuana treatment.

⁶ Evidence suggests that motivational incentive programs do not increase favorable attitudes toward gambling.

II. Treatment needs time to work

In an effort to maximize county resources, some jurisdictions may opt for short-term treatment, especially in expensive inpatient programs. However, for residential or outpatient treatment to be effective, it must occur for a *minimum of 90 days* (NIDA, 2018).⁶⁰ Longer treatment has been associated with the likelihood of prolonged change (e.g., Bleiberg et al., 1994; Hubbard et al., 2003; Simpson et al., 1999; Zhang et al., 2003). While there is some ambiguity around defining specific thresholds, studies with strong research designs are more likely to show that treatment length has moderate effects (Pearson et al., 2012). Opting to fund shorter treatment length undermines the efficacy of these treatments and may be associated with less ideal outcomes or with reduced benefit-cost ratios.

⁶⁰ This minimum does not apply to medication assisted treatment for opioid use disorder.

III. Detoxification is not treatment

Evidence has shown that detoxification does not change long term patterns of use (Bentzley et al., 2015). Detoxification is only a first step toward treatment and should be followed by engagement in other treatment services (NIDA, 2018).

IV. Monitor progress and adapt

Return to use is common (Brecht and Herbeck, 2014; Hser et al., 2007, 2015; McLellan et al., 2000; Moos and Moos, 2006; Nosyk et al., 2013; Scott et al., 2005). However, continual monitoring serves as an important indicator of when treatment plans are working and when they may need to be adjusted to provide additional services (NIDA, 2014). Progress is often measured using urine screens, though several free psychometric scales are available for use by clinicians (see Goodman et al., 2013). Some evidence also suggests that using drug screens to inform treatment plans (i.e., increasing program intensity) improves the ability of individuals to be drug-abstinent during early treatment (Marlowe et al., 2012; however, see Marlowe et al., 2014).

Considerations for Justice-Involved Populations

Employing evidence-based practices is particularly important in criminal justice populations; ineffective treatment will not likely lead to a person's successfully moving away from the criminal justice system (NIDA, 2014).

I. Drug use does not necessitate a need for treatment

Not all individuals who use drugs meet the diagnostic criteria for substance use disorder. Those who have physical dependence and addiction should receive treatment priority (NIDA, 2014). The risk-needs-responsivity principle suggests that treatment should be targeted for those individuals with the most severe substance use challenges.

II. Treatment is associated with improved probation outcomes

Treatment has been shown to reduce criminal involvement in general populations (Holloway et al., 2006) and to reduce costs of crime (Krebs et al., 2017). Some evidence also suggests that substance use disorders moderate the relationship between criminal thinking and recidivism (Caudy et al., 2015); put another way, the criminal behavior of individuals with substance use disorders may be substantially reduced by addressing their substance use issues. Further, there are many strong experimental and quasi-experimental studies that suggest that individuals under community supervision experience better outcomes when they are also engaged in substance use treatment. This includes a reduction in recidivism (Benedict and Huff-Corzine, 1998; Hollis et al., 2019; Huebner et al., 2007; Young et al., 2004) and time to rearrest (Krebs et al., 2009; Young et al., 2004).

III. Forced abstinence is not the same as treatment (NIDA, 2014)

Abstinence is a frequent requirement of probation supervision; violation of this condition may result in a number of negative consequences. For some individuals, this may motivate a reduction or cessation of drug use (MacKenzie et al., 1999); some scholars argue that abstinence can be achieved on probation simply through repeat tests (Harrell and Kleiman, 2002) but this can be expensive (Kleiman et al., 2003). However, abstinence requirements are not the same as treating an underlying substance use disorder (NIDA, 2014). A recent meta-analysis suggests that surveillance alone does not reduce recidivism rates (Drake, 2018). The same study also found that surveillance only approaches lead may actually be ultimately cost agencies more because of the increased detection of minor violations (and associated costs of incarceration) (Drake, 2018).

After prolonged periods of abstinence without treatment, individuals may ultimately return to use after they complete their supervision. However, resuming use after a long period of abstinence puts them at significant risk of fatally overdosing (e.g., Krinsky et al., 2009). Although there is a lack of mortality data related to people with histories of community supervision, it is well-documented that incarcerated persons have an elevated risk of overdose death following release from correctional facilities (Binswanger et al., 2007; Lim et al., 2012; Merrall et al., 2010; Winter et al., 2016). In a study of fatal overdoses in Allegheny County, Pennsylvania between 2008 and 2014, over one-third of decedents had a history of incarceration; among those who were incarcerated in the year preceding their death, 25.6% overdosed within 30 days of their last release from jail (Hacker et al., 2018). A 2018 study showed that individuals being released from the Philadelphia Department of Prisons between 2010 and 2016 had over 35 times the risk of overdose death in the first two weeks after release compared to other Philadelphia residents (Pizzicato et al., 2018).

Studies indicate that most of these deaths are attributable to fatal overdose (Merall et al., 2010; Binswanger et al., 2016, Rosen et al., 2008). The recent surge of fentanyl in the drug supply has also contributed to increased overdose outcomes, as the proportion of fentanyl-related deaths for those with prior incarceration history are double that of those without prior incarceration (Brinkley-Rubenstein et al., 2018). Similar patterns of increased risk have also been observed in jail-based settings, where people are incarcerated for shorter periods of time (Hacker et al., 2018; Lim et al., 2012; Pizzicato et al., 2018).

Receipt of opioid agonist therapy (methadone and buprenorphine) during incarceration is significantly associated with an approximately 40 to 60 percent reduction in all cause and overdose related mortality after release (Degenhardt et al., 2014; Marsden et al., 2017; Green et al., 2018). Early suggestive findings have shown access to evidence-based treatment and familial and community supports post-release may prevent relapse

leading to overdose (Binswanger et al 2012), with research on the role of medication-assisted treatment on outcomes for individuals on probation ongoing (Gordon et al., 2019).

IV. *Legal pressure does not necessarily reduce the efficacy of treatment (NIDA, 2014)*

The issue of coercion in drug treatment is a complicated and contentious issue; literature thus far has done a poor job differentiating between different levels and types of coercion (Bright and Martire, 2013). At one extreme end are situations in which judges or family members forcefully commit an individual to inpatient drug treatment against the express wishes of the individual. There is some evidence that this form of coerced treatment is not successful in facilitating the cessation of drug use and may even result in higher risks of overdose upon release (Rafful et al., 2018; Werb et al., 2016).

However, the criminal justice system can also be said to coerce treatment when it offers treatment as an alternative to incarceration or as an alternative sanction for probation violations; this “quasi-coercion” does not deprive clients of their right to consent (Lunze et al., 2016). This type of coercion is much more common in the justice system, though not all justice-involved clients feel coerced (Wild et al., 2016). Legal pressure can provide an external source of motivation and can improve client retention; criminal justice involved clients have been observed to have greater motivation and stay in treatment longer (Knight et al., 2000; Miller and Flaherty, 2000; Young et al., 2004).

There is some evidence that clients who are coerced into treatment do at least as well as non-coerced clients (Farabee et al., 1998), with most studies showing neutral or positive benefits of this type of coerced treatment (Bright and Martire, 2013). However, most research fails to distinguish between legal requirements and perceptions of coercion (e.g., Klag et al., 2005). One meta-analysis has found that coerced and mandated treatment are effective in community populations, but not in custodial populations; voluntary treatment is most effective (Parhar et al., 2008). Even among non-motivated clients, it is possible to improve motivation through continued treatment (Farabee et al., 1995; Simpson and Joe, 2004).

V. *Graduated sanctions improve accountability*

Both rewards and sanctions are important elements of supervising substance-involved individuals on probation (APPA, 2007). Ensuring the certainty and timeliness (swiftness) of sanctions and rewards improves perceptions of fairness (NIDA, 2014; Tyler, 1994), which is associated with greater compliance (Inciardi et al., 1997; Marlowe and Meyer, 2011; Sherman, 1993).

The Hawaii Opportunity Probation Experiment (also known as HOPE, or the HOPE model) is a well-known graduated sanctioning method that incorporates elements of certainty and swiftness for probation violations. The first experimental evaluation

showed significant promise for the program's ability to reduce drug-related violations in a high-risk population (Hawken and Kleiman, 2009). However, recent efforts to implement similar models in other jurisdictions have produced mixed results; while efforts in Washington reduced violations over time (Hamilton et al., 2016; see also Kilmer et al., 2013), other jurisdictions not been successful, including in Pennsylvania (O'Connell et al., 2016; Lattimore et al., 2016). Cowell et al. (2018) also suggest that the cost of such programs may be difficult to scale. Some jurisdictions have not seen improved outcomes even while maintaining program fidelity (Zajac et al., 2020). A recent meta-analysis also finds that the effect of swift-certain-fair graduated sanctions programs (including HOPE) did not reach statistical significance⁶¹; the same report found that programs that included surveillance and treatment or risk-needs-responsivity were associated with larger reductions in recidivism (Drake, 2018).

VI. Treatment providers and justice agents should have open lines of communication

It is important that treatment providers and justice agents have a shared understanding of each other's roles and functions. This includes coming to an agreement about who is responsible for addressing issues related to relapse and treatment violations (Peters and Wexler, 2005). However, agencies should also be mindful of strict Federal confidentiality protections related to the sharing of protected health information (including substance use assessment and treatment) for specific individuals without their consent.

VII. Incarceration can interrupt treatment

Individuals who are already receiving treatment in the community may experience significant disruption to services if incarcerated even for a short period of time. This disruption may also become permanent (e.g., Fu et al., 2013). Individuals released from incarceration are especially vulnerable to return to use and overdose (e.g., Pizzicato et al., 2018).

VIII. Not all treatment providers are equal

Clients under community supervision often do not have access to treatment (Taxman et al., 2007). It thus is tempting to assume that if a client is in treatment, they are receiving *evidence-based* treatment – but this may not be the case. One survey of 766 public and private treatment providers showed that a minority of those surveyed made medication-assisted treatment (buprenorphine, naltrexone) or contingency management available, with lower rates among public programs most likely to be used by justice-involved populations (Roman et al., 2006; see Taxman and Belenko, 2012). A recent study in one jurisdiction also found that clients were often frustrated by the poor fit between treatment options and their needs (Rosenberg et al., 2019).

⁶¹ The author reports $p=0.066$, which is greater than the traditional significance level of 0.05. This means there is a 6.6% chance that the findings observed were the result of random sampling error.

Drug Courts

Drug courts, when properly implemented, draw on each of these principles. Drug courts are a specific type of specialty or “problem-solving” courts that are less adversarial in nature and focus on the rehabilitation of offenders with certain health or social statuses (Marble and Worrall, 2009). Drug courts vary in their implementation across district (e.g., pre- vs. post- plea) and in the strategies used to achieve accountability (Mackenzie, 2006).

Several meta-analyses suggest that adult drug courts are successful in reducing recidivism, both generally and for drug-related offending specifically (e.g., Mitchell et al., 2012; Shaffer, 2010), which appears largely mediated by reductions in drug use (Rossman et al., 2011). The largest effects are observed for courts that offer expungement or dismissal upon successful completion and when courts do not use single-providers (Mitchell et al., 2012; Shaffer, 2010). There is some evidence that drug courts are especially beneficial to offenders with more serious criminal histories (Rossman et al., 2011), consistent with risk-needs-responsivity principles (Andrews and Bonta, 2003). Marlow (2006) finds that drug courts work best for offenders who are assessed as high risk and high need.

However, many drug courts may struggle in their fidelity to the evidence-based drug court model (e.g., Matusow et al., 2013). Also, the use of incarceration as a sanction in drug court can lead to participants serving incarceration sentences that are similar in aggregate length to presumptive sentences for their original offense (Sevigny et al., 2013).

How to Select the Right “Best Practice”?

Taxman and Belenko (2012) argue there are two primary considerations that agencies must consider when choosing which evidence-based practices to implement in their jurisdiction. First, agencies should consider whether the intervention is *transportable* – i.e., the extent to which the agency can implement the intervention while keeping true to the population originally intended and the specific requirements and practices of the model. Jurisdictions should ask – “Can we implement this model with true *fidelity*?”

Second, agencies must consider whether they have the *organizational capacity* to implement a given evidence-based model. Questions of capacity should consider not only staff training and availability, but also attitudes, motivation, and readiness for change. Significant organizational change requires buy-in from key stakeholders (see e.g., Silverman and O’Connell, 1999; Weisburd et al., 2002). The absence of organizational capacity can undermine fidelity to the model and lead to less successful outcomes.⁶²

⁶² Taxman and Belenko (2012) suggest one possible implementation strategy (see p. 12-14) as well as providing a thorough introduction to identifying practices that are “evidence-based” and discussing numerous resources for criminal justice agencies.

Summary and Recommendations

Resentencing, as referenced in this report, occurs when an individual under community supervision commits either a technical violation or a new offense while under supervision and the original sentence is revoked. Resentencing is the most formal way of responding to these behaviors. Beginning in 2016, all counties in Pennsylvania are required to report resentencing proceedings and outcomes to the Pennsylvania Commission on Sentencing per the Third Amendment to the Seventh Edition of the Pennsylvania Sentencing Guidelines.⁶³ In this report, those data were matched to the population of individuals sentenced to a term of community supervision in the form of probation or county intermediate punishment with restrictive elements.

Our analyses suggest that resentencing occurred in a substantial minority of cases. More than 10 percent of all cases sentenced to a term of community supervision were resentenced over the course of their supervision. There was substantial variation reported across counties, with some counties reporting rates as high as 30 percent. Approximately 80 percent of these resentencing events were for technical violations alone. Individuals who were sentenced to restrictive elements of county intermediate punishment were more likely to be resentenced compared to those who were sentenced to a term of probation alone. When resentencing does occur, the most common outcome is a term of local incarceration. There were no significant differences in resentencing outcome by race after controlling for relevant factors.

How does Substance Use Affect Resentencing in Pennsylvania?

Substance involvement is relatively common in individuals under community supervision. Interviews with local stakeholders suggest that most individuals under community supervision are substance-involved in some way. Analyses of administrative data suggest that at least half of individuals are substance-involved.

In the analytic sample, individuals who were identified as substance-involved were more likely to be resentenced, especially for technical violations, and were resentenced more quickly, relative to individuals without known substance involvement. Substance use is a common cause of resentencing. As many as 50.9 percent of individuals resentenced for technical violations were resentenced for substance violations. Nearly half (48.7 percent) of matched new offenses were for substance-involved offenses. In total, between up to 30.5 percent of all resentencing events are attributable to substance-related technical violations or new offenses. However, treatment is relatively rarely imposed as a condition of resentencing for substance-related violations.

⁶³ Effective for all sentences imposed on or after Jan 1, 2016, all subsequent revocations of probation, county intermediate punishment, and state intermediate punishment and related resentences are required to be reported. Resentencing or revocation of parole violations are not included.

What is the Cost of Substance-Related Resentencing in Pennsylvania?

To estimate the costs associated with substance-related resentencing in Pennsylvania, we extrapolated estimates generated from the analytic sample to the full population of individuals sentenced to a term of community supervision in Pennsylvania between January 1, 2016 and December 31, 2017. These estimates are subject to a number of assumptions (see *Impact of Resentencing on Resources* for more detail) and are dependent on the quality of data reported to the Commission. Nevertheless, these estimates provide an important, albeit rough, anchor for understanding the resource burden associated with substance use by individuals under community supervision in the Commonwealth.

Based on the frequency of resentencing outcomes reported to the Commission, substance-related technical violations and new offenses lead to an estimated 650,000 to 1.3 million additional days of criminal justice supervision over the study period statewide. Probation supervision accounts for the majority of these. We applied estimated costs of supervision for county jail, state incarceration, and probation using estimates from the Pennsylvania House Appropriations Committee (2019) to produce an annual estimated cost of **\$1.4 million to \$2.9 million per year**. Approximately two-thirds of this cost is attributable to county supervision (local incarceration and probation).

Data Limitations

In the course of analysis, we identified several limitations of the data reported to the Commission using the resentencing module on SGS Web. Most importantly, while counties are required to report information on resentencing proceedings and outcomes, 11 counties reported no resentencing events for individuals sentenced between 2016-2017 between the period of January 1, 2016 and May 8, 2019. A further nine counties reported resentencing events at such a low rate (less than one percent of all individuals sentenced) that we suspect underreporting. We confirmed underreporting in one county by comparing rates of violations using data from the local probation office and data reported to the Commission. Thus, rates of resentencing reported in this report are likely to be *conservative* estimates.

Currently, the Commission does not collect detailed information on the conditions of supervision for individuals who are resentenced. As a result, our estimates of the effect of treatment reflect only the effect of treatment ordered at sentencing. We were unable to determine which individuals in the sample may have received treatment orchestrated by the local probation office. Further, these estimates do not speak to what type of treatment was received (i.e., if it was evidence based, medication-assisted, etc.).

We also identified issues related to the quality of data reported. This led to difficulties in estimating the rate of substance-involved technical violations. The current SGSWeb reporting module allows counties to select from several technical violation types including “Any single instance of a violation of any of the terms or conditions established” or “Multiple instances of violations of any of the terms or conditions established”. In many counties, these generic

violation types are used for the majority of technical violation cases; in some counties, *all* resentencing events reported under these categories. The likely consequence of this is a significant underreporting of substance-related technical violations. For this reason, we provide upper and lower bound estimates of substance-related technical violations throughout the report. The lower bound includes all counties in the analytic sample, even those that have high rates of ambiguous technical violation reporting. The upper bound is based on a targeted subsample of counties for which the rate of ambiguous reporting is less than 30% of all resentencing events involving technical violations. Unfortunately, there are few counties that meet this criterion. See Exhibit 15 for more detail.

Recommendations

The recommendations below dovetail with statewide efforts to improve the use of evidence-based practices (EBPs) in probation. The County Chief Adult Probation and Parole Officers Association of Pennsylvania is currently engaged in a multiyear effort to expand the use of EBPs throughout the Commonwealth. Further, our recommendations should help inform the continued refinement of resentencing guidelines and as the Commission considers the development of the Eighth Edition Guidelines.

1. Evaluate justice involved persons for substance involvement and related disorders prior to sentencing.

The results from the analytic sample suggest that substance use is both common and problematic for individuals under community supervision in Pennsylvania. However, because of limited information available at the point of sentencing, the prevalence of substance involvement and substance use disorders among these individuals is likely an undercount. There are some types of offenses for which individuals are assessed for substance dependence by the court prior to sentencing,⁶⁴ but this is not generally the case. In 2016-2017, only 8.1 percent of cases sentenced included an evaluation for a substance use disorder prior to sentencing. Our interviews with county stakeholders suggested that there are other types of offenses frequently associated with substance involvement (e.g., retail theft); most estimated the rate of substance involvement among their clients as greater than two-thirds. An important first step to understanding the relationship between substance use and criminal justice outcomes is to expand systems for assessment. This should not only inform sentencing outcomes but can also provide a meaningful metric for evaluating program success among different populations.

⁶⁴ Individuals who are convicted of DUI offenses are required to be evaluated (38 Pa Code § 3816(a)). Individuals who are being considered for sentencing to intermediate punishment, depending on the specific program, are also evaluated prior to sentencing.

2. Improve access to evidence-based treatment at the time of sentencing.

Currently, sentences that incorporate treatment are rare – only 15.7 percent of substance-involved individuals receive such a sentence. Yet, our results suggest that substance-involved individuals who receive sentences with treatment elements are less likely to commit new offenses than other substance-involved individuals who do not. State funds are already available for approved programs for offenders in Level III of the guidelines. However, this study suggests that many offenders in other levels may also benefit from evaluation and expanded treatment options. As the Commission considers potential changes for the Eighth Edition guidelines, it may be beneficial to consider expanding the Levels and offenses for which treatment programs are conforming sentencing options. However, this will require sufficient increases in capacity and resources. The recent passage of the Justice Reinvestment Initiative – II (S.B. 500, 501, and 502 of 2019) might be used to facilitate these changes through language that increases state support of county probation offices.

3. Continue to educate justice practitioners about evidence-based treatment for substance use.

In our interviews with stakeholders, treatment providers suggested that justice practitioners often lacked sufficient information about the benefits (such as reduced criminal involvement) and evidence in favor of certain treatments (including medication-assisted-treatment for opioids). Justice personnel in these same jurisdictions simultaneously expressed desires to expand the use of evidence-based practices. Both groups suggested that acceptance of medication-assisted-treatment had increased over time at least in part due to educational efforts. This suggests the need for ongoing, routine, and formalized engagement between public health experts, treatment providers, and justice agents. It is also important that these educational conversations are routinely updated as evidence evolves.

4. Improve access to evidence-based treatment while under supervision.

In our sample, substance-involved individuals in our sample were resentenced more often and more quickly than those without known involvement. Substance-related violations account for an estimated 14.8 to 30.5 percent of all resentencing events, suggesting a substantial unmet need. Stakeholders interviewed in two counties suggested they do *not* feel that there is a lack of treatment availability, though this may not be true in all counties. However, interviewees also made statements about treatment practices that were not consistent with evidence-based practices, including (a) treatment of insufficient duration and (b) application of treatments to populations not supported by evidence. We suspect that many counties experience challenges in implementing evidence-based practices related to treatment availability in their area; we encourage justice practitioners to improve their own understanding of evidence-based practices to better advocate for substance-involved offenders. As mentioned above, JRI-II provides for increased state support of

county probation services. We would encourage agencies to advocate for the adoption of evidence-based programming in applications to the Advisory Committee responsible for administering funds. Expansion of public programming may be another way to ensure that treatment received is consistent with evidence-based practices.

5. Consider expanding informal responses and/or lessening punitive responses to substance-related violations of supervision conditions.

As demonstrated in this report, substance-related technical violations make up a significant portion of overall technical violations; similarly, up to 50% of all new offenses are substance-related. The marginal costs of these violations are substantial; most of these costs are borne at the county-level in the form of jail and community supervision sanctions. Even though individuals have served, on average, 10.9 months of supervision at the time of resentencing, individuals are sentenced to an additional 15.8 months (475 days) of probation supervision (on average). This serves to increase the time under supervision significantly and thereby increases supervision caseloads.

Local courts have the opportunity to develop swift, certain, and *brief* sanction programs for technical violations of probation under Pa. 42 §9771.1. Such programs allow for the use of short-term incarcerative punishments (up to 21 days for a fourth or subsequent violation) without formal revocation procedures. Such programs also allow for the imposition of substance use treatment order conditions. These programs may be a means of limiting the significant resource burden of substance-related technical violations.

Sentences that incorporate treatment remained rare at resentencing. Individuals without known substance involvement at the time of their original sentencing were especially at risk; *none* of these individuals received an order to treatment *even though they were resentenced for a substance-related violation*. Increasing the use of informal sanctions and prioritizing treatment over punitive responses may improve outcomes over time while also relieving immediate and long-term case pressure on probation agents and courts.

Revocation, however, is sometimes warranted. The Commission recommends the use of risk-needs-responsivity instruments at resentencing, which should inform these decisions.⁶⁵ When community supervision sentences are revoked, judges should be mindful of the severity of the violation and rehabilitative needs of the defendant, as well the amount of the original sentence that has already been served.⁶⁶

6. Restructure data collection instruments to reduce ambiguous reporting.

The Commission is currently undergoing efforts to improve the reporting software used by counties to submit sentencing and resentencing data. As these efforts continue, it is important to consider the ways in which the current reporting system allows for ambiguous reporting that undermines the utility of the data collected, especially as it relates to

⁶⁵ 204 Pa. §307.4 (a)

⁶⁶ 204 Pa. §307.1 (a)(2)

technical violations, resentencing, and the type of technical violation. The new system should limit the options of catchall categories. Further, the Commission should evaluate data reported for patterns that suggest incomplete or inaccurate reporting.

Appendices

Appendix	Title
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A	Description of Resentencing Sample by Offense Gravity Score, Prior Record Score, and Sentencing Levels
B	Time to Resentencing Resulting in Incarceration, by County
C	Time to Resentencing Resulting in Incarceration, by County Class
D	Outcome of Resentencing Proceedings by Sex and Age
E	Outcome of Resentencing Proceedings by Substance Involvement and Dependency
F	Logistic Regression Adjusted Odds of Incarceration as a Result of Resentencing

Appendix A

Description of Resentencing Sample by Offense Gravity Score, Prior Record Score, and Sentencing Levels

		Prior Record Score (PRS)									
		0	1	2	3	4	5	RFEL	RVOC		
Offense Gravity Score (OGS)	14									0	
	13									0	Level 5
	12					1				1	60
	11	3		1		1	1			6	
	10	7	2				4		1	14	
	9	19	5	3	3	2	4			36	Level 4
	8	39	10	5	1	1	4	3		63	230
	7	59	14	11	3	8	9			104	
	6	104	26	33	17	11	17	2		210	Level 3
	5	535	123	105	59	42	64	10		938	1,228
	4	146	36	24	9	7	19	1		242	Level 2
	3	1,460	473	377	253	162	263	56		3,044	5,168
	2	838	235	174	100	90	112	19		1,568	Level 1
	1	1,499	411	314	180	133	227	33		2,797	2,337
		4,709	1,335	1,047	625	458	724	124	1	9,023	

		Prior Record Score (PRS)									
		0	1	2	3	4	5	RFEL	RVOC		
Offense Gravity Score (OGS)	14	.%	.%	.%	.%	.%	.%	.%	.%	.0%	
	13	.%	.%	.%	.%	.%	.%	.%	.%	.0%	Level 5
	12	.%	.%	.%	.%	.%	.%	.%	.%	.0%	.7%
	11	.%	.%	.%	.%	.%	.%	.%	.%	.1%	
	10	.1%	.%	.%	.%	.%	.%	.%	.%	.2%	
	9	.2%	.1%	.%	.%	.%	.%	.%	.%	.4%	Level 4
	8	.4%	.1%	.1%	.%	.%	.%	.%	.%	.7%	2.5%
	7	.7%	.2%	.1%	.%	.1%	.1%	.%	.%	1.2%	
	6	1.2%	.3%	.4%	.2%	.1%	.2%	.%	.%	2.3%	Level 3
	5	5.9%	1.4%	1.2%	.7%	.5%	.7%	.1%	.%	10.4%	13.6%
	4	1.6%	.4%	.3%	.1%	.1%	.2%	.%	.%	2.7%	Level 2
	3	16.2%	5.2%	4.2%	2.8%	1.8%	2.9%	.6%	.%	33.7%	57.3%
	2	9.3%	2.6%	1.9%	1.1%	1.%	1.2%	.2%	.%	17.4%	Level 1
	1	16.6%	4.6%	3.5%	2.%	1.5%	2.5%	.4%	.%	31.0%	25.9%
		52.2%	14.8%	11.6%	6.9%	5.1%	8.%	1.4%	.0%	100.0%	

Appendix B

Time to Resentencing Resulting in Incarceration, by County

County	N Incarcerated	Average Time (days)	County	N Incarcerated	Average Time (days)
Forest	2	145	Washington	27	327
Pike	64	209	Bradford	72	336
Monroe	75	213	Warren	29	338
Mifflin	12	223	Union	18	343
Wayne	22	223	Armstrong	17	343
Columbia	29	231	Luzerne	302	348
Wyoming	26	236	Erie	322	349
Crawford	33	255	Indiana	55	364
Lebanon	145	257	Berks	375	365
Lehigh	655	260	Philadelphia	216	365
Jefferson	6	270	Lackawanna	118	369
Fayette	375	273	Delaware	483	371
Lycoming	185	275	Venango	72	376
Franklin	364	279	Carbon	66	379
Cumberland	196	283	Huntingdon	6	384
Montour	17	288	Greene	1	399
Clarion	59	289	Mercer	49	399
Perry	13	294	Westmoreland	321	421
Clinton	93	298	Somerset	94	433
Northampton	157	298	Fulton	12	448
Tioga	36	316	Allegheny	315	450
Montgomery	456	322	Elk	1	480
Juniata	31	325	Bedford	56	519
Centre	44	326	Total	6,122	330

Appendix C

Time to Resentencing Resulting in Incarceration, by County Class

County Class	N Incarcerated	Average Time (days)
First Class	216	365
Second Class	315	450
Second Class A	939	347
Third Class	2,446	329
Fourth Class	885	275
Fifth Class	379	284
Sixth Class	836	338
Seventh Class	75	298
Eighth Class	31	341
State Total	6,122	330

Appendix D

Outcome of Resentencing Proceedings by Sex and Age

		N	State Incarceration	Intermediate Punishment	County Incarceration	Probation
Sex	Male	6,893	7.3%	4.8%	55.7%	32.2%
	Female	3,032	5.8%	5.7%	57.3%	31.1%
	<i>Cramer's V</i>		<i>0.03</i>	<i>NS</i>	<i>NS</i>	<i>NS</i>
Age	18-24	2,858	6.7%	4.1%	58.9%	30.3%
	25-34	3,939	7.3%	5.0%	55.5%	32.2%
	35-44	1,906	6.6%	5.5%	55.2%	32.6%
	45-54	910	5.7%	6.3%	54.7%	33.3%
	55+	305	7.9%	8.2%	51.1%	32.8%
	<i>Cramer's V</i>		<i>NS</i>	<i>0.04</i>	<i>0.04</i>	<i>NS</i>

NS = Chi-square test of association is not statistically significant.

Appendix E

Outcome of Resentencing Proceedings by Substance Involvement and Dependency

	N	State Incarceration	Intermediate Punishment	County Incarceration	Probation
Substance involved	5,045	5.7%	7.1%	57.2%	29.6%
No known involvement	4,931	3.6%	3.0%	54.6%	33.8%
<i>Cramer's V</i>		<i>0.05</i>	<i>0.09</i>	<i>0.03</i>	<i>0.05</i>
Substance dependent	981	19.5%	16.4%	48.4%	30.0%
No known dependence	8,995	3.2%	3.8%	56.7%	31.9%
<i>Cramer's V</i>		<i>0.02</i>	<i>0.17</i>	<i>0.05</i>	<i>0.01</i>

NS = Chi-square test of association is not statistically significant.

Appendix F

Logistic Regression Adjusted Odds of Incarceration as a Result of Resentencing

	Odds Ratio	Standard Error	p- value
TV only [New Offense]	1.02	0.12	
Both TV and New Offense [New Offense]	1.65	0.23	***
Male [Female]	1.09	0.06	
Black [White]	0.90	0.08	
Age	1.00	0.00	
Drug Involved [No Known Involvement]	0.98	0.15	
RIP [Probation Only]	2.42	0.44	***
Prior Record	1.02	0.02	

Note: Logistic regression model also include controls for county most serious offense of conviction; standard errors are clustered by county.

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Methodological Appendix

A. Analysis Plan

Given the variety of questions of interest, we make use of several types of analyses, some of which are conducted at different units of analysis. We first present descriptive statistics for each out the research questions. Where applicable, we conduct tests of statistical difference using F- and t-tests as appropriate.

Frequency and time to resentencing

To determine the frequency of resentencing, it is necessary to analyze the data at the level of the *defendant-case*. The base population is the number of defendant-cases (in total and according to specific criteria) sentenced in 2016-2017 for which the most serious sanction was probation. The numerator is determined by the number of defendant-cases (in total and according to specific criteria) that experienced one or more resentencing event during the observation period.

We conduct predictive multivariate analyses for (1) the incidence and the number of resentencing events using a logit- negative binomial hurdle model (e.g., Galvin, 2019; Hester and Hartman, 2017); (2) the incidence of specific types of violations using logistic regression. These models will control for individual and case characteristics, including the county of sentencing. See section C for additional detail.

Time to first resentencing will be analyzed using Kruskal-Wallis, Kaplan-Meier, and Cox proportional hazard analyses for the total sample and for specified subgroups. Time to resentencing is defined as the length of time, in days, between the date of sentencing and the date of the first resentencing event experienced *at the defendant-case level*. by the first event will be determined by subtracting the date of effective supervision. Both Kaplan-Meier and Cox analyses take into account right-hand censoring of observations cause by a finite follow-up period and the period for which the individual is at risk. See sections D-F for further detail.

Qualities of Resentencing

Analyses will describe the incidence of a term of incarceration (state prison or county jail) for resentencing events overall, as well as across specified subgroups. We will also present and discuss distributions of increases in punishment length overall and by group. This will be complemented by county fixed effect multivariate regressions for each outcome of interest. The functional form will vary according to the outcome. Bivariate outcomes will use logit and/or linear probability models, contingent on specification tests. Discrete outcomes, such as the length of incarceration, will be modeled using a hurdle model (Section C).

Impact of Substance-Related Resentencing on Resources

To determine an approximate impact of substance-related resentencing, we first estimate the approximate share of resentencing events that are substance-related. We also estimate the average sanction associated with substance-related technical violations and new offenses in terms of supervision days in state confinement, local confinement, and community supervision. We then extrapolate these estimates to the state level and multiply these events by the marginal

cost daily of supervision to produce estimated annual costs related to substance-related violations.

B. Data Structure

The primary analyses described in this report use data reported to the Commission by counties via SGS Web, related to both original sentencing events and resentencing events for violations of probation conditions. Commission sentencing files are at the level of *individual-case-offense*, while resentencing events are at the level of *individual-case-offense-resentencing event*. An example of these file structures is below, with original cases outlined in black and resentencing events outlined in dashed lines:

Original Sentencing Data			Resentencing Data			
Offender ID	Original Case ID	Offense ID	Original Case	Offense ID	Resentencing Hearing ID	Date of Resentencing
<i>SID</i>	<i>JPR_ID</i>	<i>JPO_ID</i>	<i>JPR_ID</i>	<i>JPO_ID</i>	<i>JPS_ID</i>	<i>DOS</i>
A	C1	O1	C1	RE1	O1	May 2, 2016
A	C1	O2	C1	RE1	O2	May 2, 2016
A	C1	O3	C1	RE1	O3	May 2, 2016
A	C1	O4	C1	RE2	O1	Sept. 19, 2017
A	C2	O5	C1	RE2	O2	Sept. 19, 2017
A	C2	O6	C3	RE3	O7	June 8, 2017
B	C3	O7	C3	RE4	O7	April 9, 2019

Note: "A" and "B" are individual identifiers, "C" followed by a number denotes case identifiers, "O" followed by a number denotes a unique case identifier, and "RE" followed by a number denotes a resentencing event case identifier.

To analyze rates of resentencing, the resentencing data were collapsed to the level of the original case identifier (*jpr_id*) and matched m:1 using *sid* and *jpr_id* as unique identifiers, as depicted below.

Merged Data						
Offender ID	Original Case ID	Offense ID		Original Case	Number of Resentencing Events	Date of First Resentencing Event
<i>SID</i>	<i>JPR_ID</i>	<i>JPO_ID</i>		<i>JPR_ID</i>	<i>count(jps_id)</i>	<i>min(dos)</i>
A	C1	O1	←	C1	2	May 2, 2016
A	C1	O2	↙	"	"	"
A	C1	O3	↙	"	"	"
A	C1	O4	↙	"	"	"

A	C2	O5				
A	C2	O6				
B	C3	O7	←	C3	2	June 8, 2017

Most analyses are conducted at the level of the case using most serious offense to avoid individuals with more offenses from exhibiting a disproportionate impact on outcomes. The most serious offense is determined using the following criteria, in order:

- 1) The offense identified as the most serious offense in a judicial proceeding (ms_sentjp)
- 2) The longest probation or restrictive intermediate punishment (RIP) sentence not identified as consecutive nor concurrent (i.e., entered first)

The sections below discuss issues related to model selection and modeling for the administrative data analysis containing in the report. The sections are named according to the model used in the reported analyses.

C. Hurdle Model

The prevalence and frequency of resentencing is consistent with a two-stage process. The first process determines whether an individual who has been sentenced to a term of community supervision experiences any resentencing event during the period of observation (Stage 1). The second process determines – contingent upon a positive outcome in the first process – how many resentencing events the individual will experience over the course of the observation period (Stage 2).

Most individuals will not experience any resentencing events over the course of the observation period. Of those that do, most will experience fewer than three, as shown below.

Number of Resentencing Events	n	Percent	Percent >0
0	71,524	93.92%	-
1	3,714	4.88%	80.25%
2	715	0.94%	15.45%
3	120	0.16%	2.59%
4	46	0.06%	0.99%
5	22	0.03%	0.48%
6	6	0.01%	0.13%

7	3	0.00%	0.06%
9	1	0.00%	0.02%
19	1	0.00%	0.02%
Total	76,152	100.00%	100.00%

The uneven distribution of these resentencing events suggests that ordinary least squares regression (OLS) is not a suitable modeling choice. More appropriate methods include Poisson and negative binomial regression, zero-inflated Poisson and negative binomial models (ZIP and ZINB, respectively), and hurdle models.⁶⁷

Poisson and negative binomial regression models are both suitable when the dependent variable is a count variable (i.e., the dependent variable's values consists only of non-negative whole numbers). However, Poisson regression assumes that the mean of the distribution of the dependent variable is equal to the variance; many count variables have variances greater than the mean (overdispersion). In the case of overdispersion, negative binomial regression is preferable to Poisson models by including an additional parameter to that effect (Long and Freese, 2001).

Both Poisson and negative binomial models underpredict the occurrence of zeroes, posing a problem for the prediction of resentencing events. Lambert (1992) solved this issue by allowing the process generating zeroes to be generated by two independent processes. The inherent assumption in this model is that there two latent groups: one group that will never have a positive count observation ("certain zeroes") and another group that follows more traditional count processes, which may result in zero or more positive outcomes. For the present study, this means assuming that at least some individuals under probation supervision will never be resentenced and another group who may be resentenced one or more times.

Hurdle models follow a similar logic to zero-inflated count models. However, rather than assuming two independent processes affecting the incidence and frequency of the outcome, they assume a single underlying latent distribution. Observations about a certain point on this latent distribution (i.e., the hurdle) will have a non-zero count. These models are closely related to zero-inflated models and conditional negative binomial models (Hilbe, 2007). Recent work suggests that a logit-negative binomial hurdle model performs similarly or better than zero-inflated models (Hester and Hartman, 2017).⁶⁸

⁶⁷ The problem here is not one of selective observation – we observe all possible resentencing events. As a consequence, a Heckman Correction (Heckman, 1976) and Tobit regression are also not suitable modeling choices.

⁶⁸ The current logit-negative binomial regression command in Stata produces coefficients that depict the change in log-odds of (1) "certain 0s" and (2) the number of events conditional on not being a certain 0.

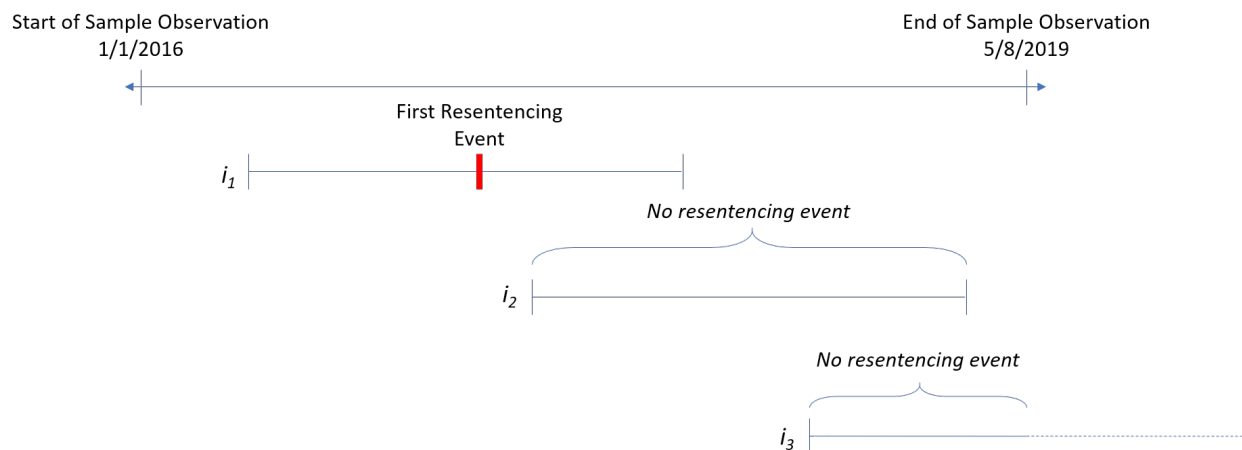
D. Kruskal-Wallis Test

As an initial analysis of variation in time to resentencing across populations, we conduct Kruskal-Wallis tests. This test is akin to an analysis of variance test (ANOVA) but does not impose the restrictive assumption that the outcome of interest is normally distributed. Kruskal-Wallis tests have a null hypothesis that the distribution of the outcome variable within stratifying groups is the same and use a χ^2 coefficient (Kruskal and Wallis, 1952).

E. Kaplan Meier Estimator

Kaplan Meier estimators are of use when the outcome of interest is the time until an event takes place – in the present study, the time to the first resentencing event. This is often referred to as “time to failure”, even though resentencing in and of itself does not constitute a “failure” of probation.

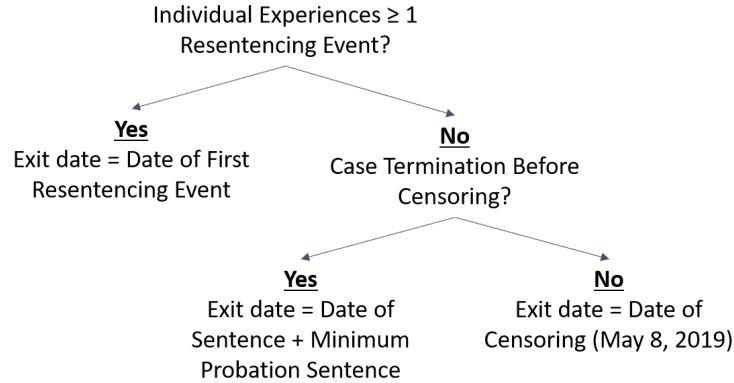
Not all cases will be resentenced. Similarly, we do not follow all cases through the end of their probation period, meaning that some cases are right-hand censored. Thus, there are three possible outcomes, as shown below.



First, a case may begin supervision during the observation period and then experience one or more resentencing events during the course of their supervision (i_1). Alternatively, a case may enter and exit supervision during the observation period without experiencing a resentencing event (i_2). Finally, a case may begin supervision during the course of the observation period but complete supervision at a date outside the observation window; if the case does not experience a resentencing event during the observation period, it is *censored* (i_3). Both Kaplan Meier and

These log-odds coefficients are difficult to interpret in substantive terms. We therefore report (1) odds ratios predicting *failure* (i.e., the odds of *not* being a “certain 0”) and (2) average marginal effects (AMEs) for the number of resentencing events conditional on not being a certain zero. For continuous variables, the AME is the expected difference in the number of resentencing events given a one-unit increase in that variable; for dichotomous variables, the AME is the expected change in the number of resentencing events for cases that possess the given characteristic compared to those that do not.

Cox Proportional Hazard models (discussed below) take this censoring into account. For these models, t_0 is defined as the date of first supervision (the date of sentencing). The exit date is calculated according to the outcome observed and the overlap between the time at risk and the observation period:



The Kaplan Meier estimator (Kaplan and Meier, 1958) is a non-parametric estimator of the distribution of the probability of survival at each time point, i.e.:

$$\hat{S}(t) = \prod_{j|t_j \leq t} \left(\frac{n_j - d_j}{n_j} \right)$$

Where n_j is the number of individuals at risk at time t_j , and d_j is the number of failures at time t_j . The estimated survival function, $\hat{S}(t)$, is given by the product of the proportion of surviving cases at time t_j by the proportion of surviving cases at all previous time points (Cleves et al., 2002). Kaplan Meier estimators are useful for calculating both total sample survival functions as well as observing differences in survival functions between groups (e.g., between men and women). However, for more robust multivariate analysis, it is necessary to use a different estimator, such as Cox proportional hazards.

F. Cox Proportional Hazards

The Cox proportional hazards model (Cox, 1972) is a semiparametric estimator of the survivor function wherein the model allows for specified covariates to alter the baseline survivor function. The baseline survivor function itself ($h_0(t)$) is not subject to any distributional assumptions (as in the Weibull estimator), nor does the model constrain the hazard function to a particular pattern over time. However, the model does assume that the ratio (proportion) of hazard functions between individuals is constant across time (Cleves et al., 2002).

For subject j at time t with covariates x , the model is given by:

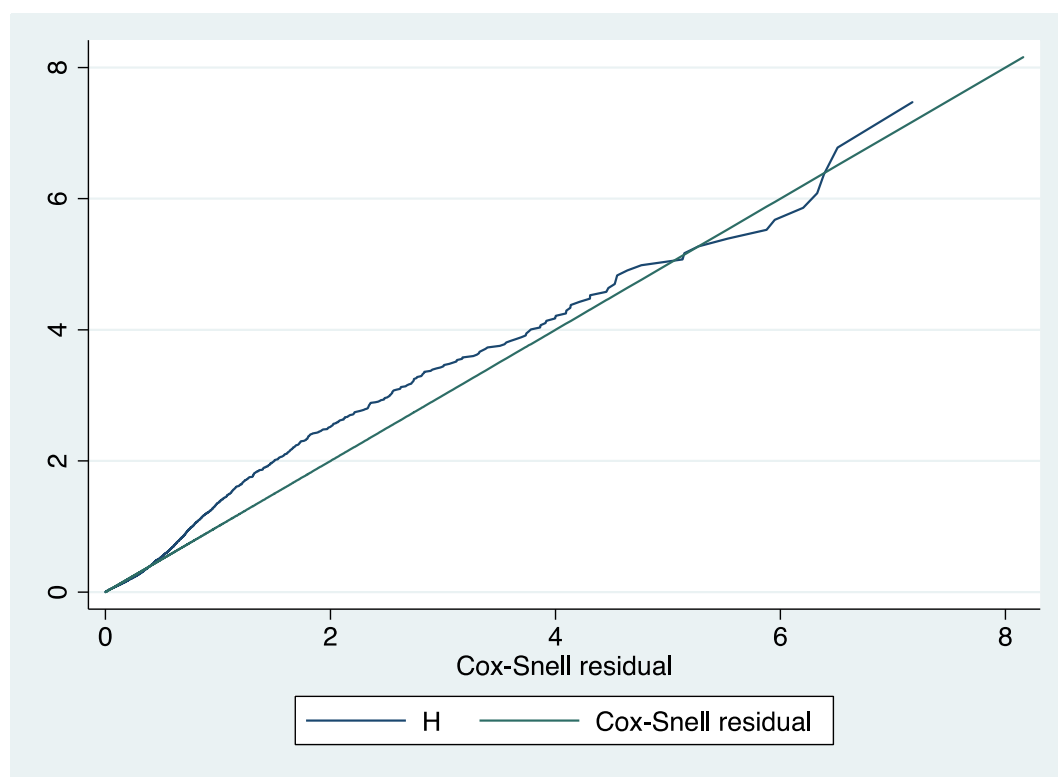
$$h(t|x_j) = h_0(t) \exp(\beta_x x_j)$$

Our main models are based on a slightly modified *stratified* hazard model. This approximates a panel model by allowing for the baseline hazard to differ across model though the coefficients are constrained to be the same.

Based on the significant relationships between county and both the incidence and time to resentencing in the bivariate estimates, we also include a shared frailty parameter by county (θ), which was significant, indicating its importance in the model.

Diagnostics

To test the model's overall goodness of fit, we estimated Cox-Snell residuals and plotted them against the Nelson-Aalen cumulative hazard function (Cleves et al., 2002). The results, below, indicate sufficient goodness of fit.



The main assumption of the Cox model is that the hazard function remains proportional across groups at each time point. To test this assumption, we estimated Schoenfeld residuals using Stata's *stphtest* function. Because the command assumes the homogeneity of variance across risk sets, including across strata, we estimated these residuals within each county as suggested by Cleves et al (2002). The results of our equations are below using a cutoff of 0.004⁶⁹:

Number of
Rhos
Significant

⁶⁹ Determined using a Bonferroni correction within each stratum.

Male	
Black	1
Age	2
Substance-Involved	
RIP	7
Prior Record	
Property	
Drug Offense	
DUI	
Other Type	
Felony	1

These results suggest that the proportionality assumption is generally met within each stratum.

G. Detailed Research Questions

Frequency of and Time to Resentencing

1. What is the overall rate of resentencing (revocation) proceedings in for individuals under probation (including state and county intermediate punishment) in Pennsylvania?
 - a. What is the rate of technical violations?
 - b. What is the rate of drug/alcohol related technical violations?
 - c. What is the rate of new offenses?
 - d. What is the rate of drug/alcohol related new offenses?
2. How do the rates of resentencing proceedings and specific violation types vary across demographic groups?
3. How do the rates of resentencing proceedings and specific violation types vary across drug-involved individuals under community supervision?
 - a. Are there differences in these patterns depending on the definition of “drug involved” (i.e., drug/alcohol dependence, drug/alcohol related offense)?
 - b. Does a sentence for treatment moderate this relationship?
4. How does resentencing vary across type of supervision (i.e., RIPs vs probation)?
5. How do resentencing rates vary across place?
 - a. Are there differences in patterns across rural/urban counties?
 - b. How do resentencing rates for substance misuse vary across place?
6. What is the distribution of the length of time until the first resentencing proceeding?
 - a. How does this vary for new offense vs drug-related and other technical violations?
 - b. How does this vary for drug/alcohol-involved vs other individuals?
 - c. How does this vary by demographic group?
 - d. How does this vary by type of supervision?
 - e. How does this vary across place?
7. What is the distribution of the length of time until the first resentencing *resulting in incarceration* (revocation)?

- a. How does this vary for new offense vs drug-related and other technical violations?
- b. How does this vary for drug/alcohol-involved vs other individuals?
- c. How does this vary by demographic group?
- d. How does this vary by type of supervision?
- e. How does this vary across place?

Characteristics of Resentencing

- 1. What is the typical outcome of a resentencing procedure (i.e., type of outcome, length of incarceration or probation extension)?
 - a. Are there variations across demographic groups?
 - b. Does this vary by reason for resentencing (i.e., technical violation, new offense, both)?
 - c. Does this vary for drug/alcohol involved vs other individuals under community supervision?
 - d. Does treatment moderate this relationship?
- 2. How do the qualities of resentencing vary across place?

Impact of Resentencing on Resources

- 1. What is the total resentencing impact of substance-involved individuals compared to others?
 - a. How many resentencing proceedings are attributable to substance misuse compared to other causes?
 - b. How many additional days of incarceration (jail, prison) are attributable to substance-involved individuals?
 - c. How many additional days of supervision are attributable to substance-involved individuals?