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Coproduction in the Treatment of Substance Use Disorder and Its Relationship to Clinics' Service Output Patterns

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Abstract

Health, social, and human service providers seek diverse ways to engage service users in the service production process. This approach to engagement with users is known as "coproduction." In addition to conventional user-provider coproduction (i.e., patient-centered care), providers attending to stigmatized and marginalized groups may hire staff who share life experiences with user groups. These providers are known as "user representatives," and their service provision is known as "peer coproduction." Using nationally representative data from substance use disorder treatment clinics in the United States, I investigate how clinics' use of patient-centered care and peer coproduction mechanisms is associated with organizational service availability and utilization patterns. Results demonstrate the potential and limitations of the two coproduction mechanisms in substance use disorder treatment. This study is a critical examination of working conditions and the impact of user-engagement mechanisms and calls for a more empowered work environment in human service organizations.

Since the inception of the field, social work practitioners and researchers have regarded the promotion of users' self-determination and autonomy as a core value (National Association of Social Workers 2017). Unfortunately, despite the centrality of user-provider relationships in health, social, and human service provision, practitioners engage users without substantive power sharing and authority sharing in decision-making processes regarding care (Hasenfeld 1987; Hardina et al. 2006; Watkins-Hayes 2009). Social work scholars have conducted little research on how service users and providers engage and what happens when they collaborate. Scholars in other disciplines, however, have made important advances in understanding the importance, methods, and potential benefits of user-provider collaboration in diverse policy and service settings.

User engagement in decision-making about services is a central subject in nonprofit and public administration literature because private organizations have assumed increasing responsibility for public service provision (Smith and Lipsky 1995; Alford 2009; Hasenfeld and Garrow 2012; Brandsen, Verschuere, and Steen 2018). To improve user experience, service outcomes, and operational legitimacy, health and social service experts and field leaders encourage service providers to engage service users in the service provision process. This approach is commonly referred to as "coproduction" (Alford 2009). Some scholars believe coproduction has the potential to incorporate user preferences and help allocate public resources more efficiently. The collaborative mechanism is implemented in various phases of the service production cycle (e.g., the commissioning, design, delivery, and assessment phases), from citizens' participation in the annual budget preparation process to

elderly residents' involvement in the management of long-term care facilities (Bovaird 2007; Nabatchi, Sancino, and Sicilia 2017; Brandsen et al. 2018). In this article, I focus on the collaboration between end users and providers in the service delivery and implementation phase (e.g., social workers' engagement of individual clients in their care planning and service delivery processes).

Despite our improved understanding of the conditions for and impact of user-provider engagement, there are substantial theoretical and empirical gaps in the literature on coproduction. Researchers and service providers have often conceptualized and practiced coproduction as a normative and ceremonial process (Voorberg, Bekkers, and Tummers 2015). Many case studies of successful coproduction efforts find high levels of trust, interdependence, and shared authority between service providers and users (Teno et al. 2001; Burke 2013; Tortzen et al. 2018; Mazzei et al. 2019). In such cases, service providers consider service users as legitimate decision-makers; examples of such user participation include parents in education and citizens in municipal governance (Bovaird 2007; Pestoff 2012). However, such mutual respect and authority sharing may not be readily achievable in venues that serve stigmatized and marginalized groups' needs, such as welfare offices, homeless shelters, behavioral disorder treatment centers, and substance use disorder (SUD) treatment clinics. Few studies have examined the substantive systemic impact of coproduction efforts with a sample representative of the service field.

Recent conceptual advances suggest multiple coproduction mechanisms may operate in a service field with unique strengths and weaknesses, and providers may use a mix of mechanisms to engage users (Park 2020). In a departure from conceptualizing coproduction as a uniform and normative mechanism that works in most circumstances, the new framework imagines diverse and imperfect service provision mechanisms in a given service setting. Under different working conditions with different attributes, some mechanisms may be considered more beneficial and productive than others. For instance, in the SUD treatment field, direct collaboration with patients with severe craving symptoms in a decision-making process regarding care might be challenging. Instead, as commonly practiced in the field, clinicians may ask staff with firsthand lived experience of SUD to serve as patient advocates until the patients become more stable and ready to contribute to their care planning (White 2014; Park 2020).

As an attempt to advance social work literature on engagement between service users and providers and to encourage more informed collaborative efforts in human service fields, I empirically test a conceptual framework proposing that health and social service organizations may use multiple coproduction mechanisms with different potentials and limitations. I use survey data from a nationally representative sample of SUD treatment clinics in the United States conducted in 2017 (n = 657). To demonstrate the importance and clinical implications of coproduction efforts, I ask the following question: How is the use of patient-centered care and peer coproduction mechanisms by SUD treatment clinics associated with organizational service availability and utilization patterns?

VARIOUS COPRODUCTION MECHANISMS IN THE SERVICE DELIVERY PHASE

Since Elinor Ostrom and colleagues established the concept in the 1970s, coproduction has generated tremendous interest around the globe as a mechanism that can not only compensate for diminished public investment by leveraging civil society capacities but also democratize governance processes by engaging citizens and service beneficiaries (Ostrom and Ostrom 1971; Parks et al. 1981; Brudney and England 1983; Alford 2009). Many governments now mandate citizen and service user engagement in various policy and program commission, design, implementation, and evaluation processes (e.g., homeless and formerly homeless individuals' engagement in regional service coordination and foster youths' involvement in their transitional independent living plan development; US Department of Housing and Urban Development 2009; California Department of Family and Children's Services 2018). Partially due to its broad appeal and applicability, coproduction has been defined in several ways (Dudau, Glennon, and Verschuere 2019). Many dimensions of the definition have been contested, including but not limited to who should participate (e.g., citizens, end-service users, volunteers, or providers at private and public organizations), in what service production phase coproduction should occur (e.g., service commission, design, delivery, or evaluation), for what purpose (i.e., public or private benefits), and whether participation should be voluntary or involuntary (Brudney and England 1983; Brandsen and Honingh 2016; Nabatchi et al. 2017; Park 2020).

This article focuses on user-provider collaboration in the service delivery phase.Compared with user engagement in other phases (e.g., commission, design, and evaluation), coproduction in service delivery may have limited potential to influence structural and organizational factors shaping the experience of end users, such as program eligibility criteria, regional public resource allocation priorities, and organizational core services (Bovaird 2007; Nabatchi et al. 2017). However, whether user participants in these phases reflect the identities or represent the concerns and needs of vulnerable end-service users is a largely unanswered question, particularly in fields serving marginalized populations (Gutmann and Thompson 2004; Bovaird 2007; Fung 2009; Cahn and Gray 2012; Voorberg et al. 2015; Park 2020). For instance, community health centers in the United States that primarily serve low-income patients at less than 200 percent of the federal poverty line are required to have a consumer-majority governing board to qualify for federal funding (the primary revenue source). Unfortunately, contrary to the original intent of this requirement, patients paying fees in full (about 10 percent of all community health center patients) are more likely to serve on the board and are often recruited by managers to become patients after being identified as potential board members (Wright 2013; Shin et al. 2015). Even if health centers recruit low-income patients to serve on the board, sometimes such patients are not perceived as equal decision-makers but rather as information providers with limited authority and power to influence the decision-making process, which is dominated by experts, administrators, and full-paying patients (Wright 2013).

Meanwhile, coproduction in the service delivery phase may provide unique opportunities for service users to directly influence service decisions from which they will benefit (Whitaker

1980; Brudney and England 1983; Bovaird 2007; Benjamin and Campbell 2015). Street-level bureaucracy literature suggests that frontline providers can reinterpret policies and program guidelines, mediate biased resource flows, and improve service experiences (e.g., access to and utilization of support services) by exercising their discretion to accommodate service users' needs and concerns (Lipsky 1980; Brodkin 2011). From the perspective of marginalized service users in the health, social, and human service fields, the opportunity to make a small but immediate and tangible difference by collaborating with frontline providers might produce more meaningful results than the distant and symbolic benefits that might result from engagement in commissioning, design, and evaluation processes. Thus, coproduction in the service delivery phase deserves careful attention (Hodgkinson et al. 2017; Dudau et al. 2019).

Many scholars see coproduction as a transparent and collaborative decision-making process that can improve accountably in public resource use, service responsiveness, and trust in public institutions (Ostrom 1996; Gastil and Levine 2005; Nabatchi 2010; Cahn and Gray 2012). However, a systematic review shows that researchers and service providers often conceptualize and practice coproduction as a normative process without substantive impact on service outcomes and outputs (Voorberg et al. 2015). In the collaborative process, service users and providers share power and authority (Hasenfeld 1987; Quill and Brody 1996; Hardina et al. 2006). However, previous coproduction studies neglect to explore this intricate power relationship, even when examining the conditions and effects of coproduction in disadvantaged and stigmatized populations (Bovaird 2007; Cahn and Gray 2012).

More recently, with the relevant literature developing an intentional focus on the tensions between service users and providers, authors have proposed a new framework for the conceptualization of coproduction in relation to other service mechanisms and have theorized about the operation of multiple coproduction mechanisms in service fields. Park (2020) describes the evolution of three service provision mechanisms in the health and social service fields: provider-driven service production, user-driven service coproduction, and user-provider coproduction. Relying on providers' technical expertise and scientific, evidence-based practices, a provider-driven service production mechanism may result in effective care outcomes. But this top-down, potentially paternalistic approach may not incorporate a user's contextual information and preferences and may rely heavily on the user's compliance to prescribed interventions. Thus, this mechanism may result in poor experiential care, missing important social determinants of problems and disempowering users (Quill and Brody 1996; Coulter 2002; Atkins and Ersser 2008). Although a traditional provider-driven approach fails to satisfy user preferences and leverage contextual knowledge, a user-driven service-coproduction mechanism emphasizes preserving user autonomy and agency and provides responsive services. (Service production that is exclusively user driven may not exist. Although users may make major service decisions in this care model, they expect and rely on providers to offer congruent services.) Clubhouses and consumer-operated organizations in the mental health service field are exemplars of this mode of service provision (SAMHSA 2011). Many consumer-driven mental health service organizations encourage service users to define their own needs, invite users and their family members to take active roles in task forces, and voice their preferences in determining organizational processes and program offerings (Rogers et al. 1997; 2011). Though this

approach may result in providing congruent services preferred by users, the user-driven mechanism can impose substantial burdens on users, such as the need to research benefits and risks associated with different care options and to determine which care plan is most satisfying, effective, and safe in a given situation (Coulter 2002; Berwick 2009; Brudney and Lantos 2011).

THE USER-PROVIDER COPRODUCTION MECHANISM (OR PATIENT-CENTERED CARE)

Complementing strengths and weaknesses of previous provider-driven and user-driven mechanisms, a user-provider coproduction mechanism emerged. This approach has gained particular currency in the medical service field, and patient-centered care has been a normative mode of practice since the late twentieth century (Institute of Medicine 2001; Bradley and Kivlahan 2014). Many coproduction scholars point to “patient-centered care” as one of the most successful examples of the “user-provider coproduction mechanism” (Brandsen and Honingh 2016; Nabatchi et al. 2017), and I use these terms interchangeably. Many studies describe the user-provider coproduction mechanism as a collaborative process between service users and providers in settings where users have legitimacy and power over decision-making processes (Stewart et al. 1995; Brudney and Lantos 2011). For instance, patients and their family members are often invited to join end-of-life decision-making processes in hospice care settings, and parents and teachers collaboratively determine student education plans in special education settings (Teno et al. 2001; Burke 2013). In both cases, service users and providers engage in the deliberatively collaborative process on the basis of a shared understanding of the importance of both parties’ expertise (i.e., providers’ technical expertise and users’ experiential expertise) to make more effective, satisfying decisions. This intentional, deliberative, collaborative process requires working communication channels and mutual trust between users and providers that may not be available in every health and social service setting (Park 2020).

COPRODUCTION OF SUD TREATMENT

Following the medical service field’s emphasis on preserving user autonomy and shared decision-making (i.e., implementing user-provider coproduction mechanisms), the SUD treatment field is under growing pressure to engage users in the coproduction of services (Merrill et al. 2002; Bradley and Kivlahan 2014). Although both service users and providers recognize the need for a collaborative process, multiple barriers often hinder the use of user-provider coproduction mechanisms in this field. From the vantage point of service users (i.e., patients with SUD), collaboration with providers may facilitate access to diverse, effective, and safe treatment, as well as prevention and support services that can address multifaceted service needs. However, based on previous, paternalistic, provider-driven treatment experiences, users may be reluctant to collaborate with providers, fearing how shared information or authority will be used to further stigmatize, coerce, and disempower users (Carr 2010; Lloyd 2013). Providers also are aware of the need to incorporate users’ conditions, circumstances, and preferences in the diagnosis of core problems and proposals for effective interventions. However, providers may perceive users as untrustworthy and manipulative, based on users’ multiple relapse episodes and treatment plan violations (Merrill et al. 2002; Corrigan, Kuwabara, and O’Shaughnessy 2009). In circumstances with

pervasive mutual distrust and poor communication, an alternative mechanism may facilitate acollaborative process between service users and providers: peer coproduction (Park 2020).

THE PEER COPRODUCTION MECHANISM

Like many service fields addressing issues of stigmatized and vulnerable groups (e.g., mental health clinics, HIV-prevention service organizations, organizations serving refugees, domestic violence shelters, and organizations supporting formerly and currently incarcerated individuals), SUD treatment clinics hire many individuals with the firsthand experience of SUD (Thielemann and Stewart 1996; White 2014; Gregory, Nnawulezi, and Sullivan 2017; Meriluoto 2018). A person's experiential knowledge of addiction is a highly valued asset in the SUD treatment field, with its long tradition of peer-based care (Humphreys, Noke, and Moos 1996). Researchers and providers believe that staff with lived experience of SUD add unique value to the treatment process by building rapport with users, serving as role models, and providing social and emotional support that complements core treatment services offered in the clinics (Blum and Roman 1985). In addition to clinical roles, staff with lived experience have the potential to serve as mediators between users and providers by leveraging their dual identities as formal staff members of clinics and former service users (Gade and Wilkins 2013). Users may be more willing to work with someone who understands the daily challenges of abstinence and who shares their circumstances and needs than with someone who does not (Thielemann and Stewart 1996; Olmstead et al. 2007). Recovering staff can explain the rationale behind users' noncompliant behaviors to providers and share culturally sensitive approaches to working with users. Using their experience as living testimony, staff with such lived experience may be better able to persuade or encourage service users to follow a care plan suggested by providers.

The potential benefits of peer coproduction come with possible limitations and risks. First and foremost, staff with lived experience of SUD may not be good representatives of patients, putting their own interests and beliefs before those of users. Drawing on their own recovery experiences, staff with lived experience of SUD may promote a particular treatment modality and recovery model (Shipko and Stout 1993; Stoffelmayr, Mavis, and Kasim 1998) and may be reluctant to learn about innovative treatment techniques and recovery models (Dalali, Charuvastra, and Schlesinger 1976; Siassi, Angle, and Alston 1977).Thus, recovering staff may not be able to take into account patients' concerns and best interests objectively in assessment and treatment planning, instead imposing rigid and narrowly defined treatment standards—a potential misuse of their power (Hecksher 2007; Doukas and Cullen 2011). Furthermore, staff with lived experience of SUD may be perceived by patients as biased and coopted agents. Recovering SUD treatment center employees are subject to institutional pressures to promote certain values and care models that patients may not agree with. Their efforts to persuade patients to follow prescribed directions and guidelines (rather than promoting patient perspectives and concerns) may lead patients to perceive staff in recovery as agents infringing on their autonomy and representing the interests of clinics and other professional staff (Janssens et al. 2004). Also, in many health and social service settings, staff with user-group characteristics hold frontline positions, performing secondary or supportive functions (Leiby 1978; Wenocur and Reisch 2002).When staff with lived experience of SUD do not possess meaningful authority to alter organizational and service

processes, peer coproduction may not result in substantive changes in user care experiences (Smith and Lipsky 1995; Brodkin 2012).

A similar phenomenon can be observed in the mental health service field (Meriluoto 2018). A paternalistic, provider-driven mode of service provision dominated the mental health service field until the 1970s, when consumer and survivor groups started to claim the right to represent themselves (McLean 2000; Tomes 2006). Multiple environmental changes fueled the consumer-survivor movement, such as the deinstitutionalization trend, the emergence of new treatment options, and wide acceptance of health consumerism. The movement appealed to a wide range of stake-holders and legitimized various consumer-driven service options (e.g., mutual support groups, self-help organizations, and consumer-operated services; Goldstrom et al. 2006). In diverse mental health service settings, providers recovering from mental disorders serve as an important "bridge between the mental health system and the patient to improve service delivery" (Chinman et al. 2006, 185). However, as in the SUD treatment field, the innate power imbalance between consumers and providers is still a substantial barrier to participatory engagement in the mental health service field (Mead, Hilton, and Curtis 2001). For instance, when asking about users' preferences regarding treatment plans, providers can prescreen the options made available. In addition, like recovering staff in the SUD treatment field, providers recovering from mental health disorders may discourage the utilization of clinically effective treatment options based on their own and others' recovery experiences, which can harm users (Chinman et al. 2006).

POTENTIAL ASSOCIATIONS BETWEEN COPRODUCTION AND SERVICE PATTERNS

To demonstrate the importance and clinical implications of coproduction, I empirically examine how SUD treatment clinics' use of two coproduction mechanisms (i.e., patient-centered care and peer coproduction) in the service delivery phase is associated with organizational service availability and utilization patterns. This section describes the six services examined in this study and discusses the main hypotheses.

SERVICES POTENTIALLY ASSOCIATED WITH COPRODUCTION EFFORTS

This study tests the association of two coproduction mechanisms with the following six services (two for each group) that can facilitate patients' long-term recovery and reduce further harm.

Treatment Services—Engagement in aftercare services has proven effective in preventing relapse in patients, especially during the critical period shortly after the completion of treatment (Lash and Blosser 1999).Considering the high relapse rates among SUD patients (40–60 percent; NIDA 2014), aftercare programs are very important for promoting long-term recovery. Opioid maintenance therapy is an effective treatment option for continuing patient care and reducing heroin use (Mattick et al. 2009). Using a long-acting analgesic to opioids (e.g., methadone and buprenorphine), maintenance therapy not only reduces withdrawal symptoms and the likelihood of future relapse but also allows patients to maintain their daily lives in the communities where they reside (Center for Substance

Abuse Treatment 2005). Despite the introduction of new medications and field leaders' call for greater use of maintenance therapy, less than half of all SUD clinics have adopted medication-assisted treatments (Roman, Abraham, and Knudsen 2011).

Harm Reduction Services—Harm reduction is a pragmatic and evidence-based approach to minimizing preventable dangers to drug users and the public (Marlatt 1996; Coffin 2000). Unfortunately, harm reduction services are not readily available to many patients, partially because of a long history of abstinence-oriented approaches in the field and to concern about side effects (e.g., encouragement of drug use; Marlatt and Witkiewitz 2002).The current study investigates whether the practice of coproduction is associated with the distribution of condoms and written materials on overdose prevention.Users of injected drugs are at a substantial risk of contracting or transmitting HIV and hepatitis C, and overdose is one of the fastest-rising causes of death in the United States (Suryaprasad et al. 2014; NIDA 2019).

Ancillary Services—Patients with SUD often present secondary problems beyond addiction, including but not limited to homelessness, unemployment, behavioral disorders, and other acute and chronic health conditions (Bassuk et al. 1998; Grant et al. 2004; Flynn and Brown 2008; Compton et al. 2014). Because these issues can aggravate addictive behaviors and lead to relapse, many SUD treatment units provide various health and social services to meet such needs (Friedmann, Saitz, and Samet 1998; White 2014; Fraze et al. 2016).These support services have proven effective in promoting patients' functional improvement, treatment retention, and recovery outcomes (Mclellan et al. 1998; Flynn and Brown 2008; Duffy and Baldwin 2013). This article investigates the associations between coproduction mechanisms and patterns of both physical examination and transportation assistance services at SUD treatment centers.

COPRODUCTION AND SERVICE AVAILABILITY

Introducing or discontinuing service is an organization-level decision conditioned upon multiple organizational and environmental factors, such as an increase in regional patient admissions and availability of resources (Friedmann et al. 2003; Roman et al. 2011; D'Aunno et al. 2015). Stakeholder theory suggests that patients and frontline clinicians (with or without lived experience of SUD) will possess very little power or authority over SUD treatment centers' service provision decisions. Substance abuse disorder clinics exist in interdependent relationships with multiple stakeholders (e.g., patients, frontline staff, managers, public and private funders, and accreditation institutions) who can influence and be influenced by clinics' actions. For instance, clinics pay wages in exchange for service delivery by frontline staff, and consumers pay fees to clinics for treatment services they use. Depending on their ability to mobilize essential financial and political resources for clinic operations, some stakeholders may possess greater or lesser degrees of influence over important managerial and strategic decisions, such as offering or discontinuing services (Donaldson and Preston 1995; Phillips 2003; Freeman 2010). In many health and social service fields, service users and frontline workers possess relatively less power compared with stakeholders such as governments, insurance companies, investors, and professional

organizations, which are important sources of revenue and legitimacy (Emanuel and Emanuel 1996; Werhane 2000).

Furthermore, perhaps recognizing their lack of relative power over organization-level decisions, providers may be less interested in advocating for changes to their service offerings.The literature on street-level bureaucracy suggests that frontline workers use their discretion to mediate and reinterpret prescribed programs and services (Lipsky 1980). Particularly in health and social service settings, service providers have varying degrees of discretion to make adjustments using their field-level knowledge and experience (Hasenfeld 2010). However, the use of discretion is often conditioned upon incentives or penalties clinicians anticipate from their actions (Brodkin 2012).Thus, clinicians may be less inclined to exercise their limited resources (e.g., time and political assets) to participate in service offering decisions and advocate for service-offering changes when they anticipate their investment will not make a meaningful difference (Watkins-Hayes 2009). In other words, I expect that neither patient-centered care nor peer coproduction in the service delivery phase has a relationship with service availability patterns. In what follows, I summarize the hypotheses on the relationships between coproduction and service availability:

> **Hypothesis 1:** The practice of (or managers' emphasis on) patient-centered care will not have a statistically significant relationship with service availability patterns.
>
> **Hypothesis 2:** The practice of peer coproduction will not have a statistically significant relationship with service availability patterns.

COPRODUCTION AND SERVICE UTILIZATION

Patient-centered care may have a greater potential to influence patients' service utilization patterns than the availability of services. When clinicians recognize a patient's need for harm reduction services or a medication that is not offered by their organization, referring patients to other clinics or facilities offering those services might be an easier way to obtain them than trying to persuade supervisors, directors, and board members to introduce more responsive services within their own organization. However, when services that can satisfy a patient's needs are already available within a clinic, connecting patients to those services is a relatively achievable and less resource-consuming task. Thus, by leveraging staff members and patients' expertise in technical, contextual, and organizational domains, patient-centered care can help patients and clinicians come up with realistic and more beneficial treatment plans using a clinic's available services (Stewart et al. 1995; Brodkin 2012; Levesque, Harris, and Russell 2013).

> **Hypothesis 3:** When SUD treatment centers practice (or their managers have positive views on) patient-centered care, more patients will use services that can improve their long-term outcomes.

Peer coproduction may have mixed associations with service utilization patterns. In the street-level bureaucracy literature, representative bureaucracy theory suggests that staff members sharing marginalized identities with patients are more likely to exercise their discretion when an issue (e.g., recovery and access to responsive services) is salient, and their actions can directly benefit the patients (Meier 1993, 2019; Keiser et al. 2002; Meier

and Nicholson-Crotty 2006). Staff with lived experience of SUD are organizational actors with working knowledge of receiving and providing services. When they find a match between patients' needs and programs offered by their clinics, especially if they benefited from the programs personally, they may suggest that patients use existing services and programs to facilitate their long-term recovery (Humphreys et al. 1996; Hecksher 2007). However, recovering staff's efforts to connect patients with those services may be bounded by their relative power within clinics. Compared with peer staff members without SUD history, recovering staff are by and large less likely to receive medical and professional training and maintain credentials (Olmstead et al. 2007), which are important sources of legitimacy in the SUD field (Donaldson and Preston 1995; Phillips 2003; Freeman 2010; White 2014). And staff with lived experience of SUD are often hired as frontline staff with limited organizational power or authority (Carr 2011; White 2014). In other words, the influence of the peer coproduction mechanism on service utilization might not be actualized unless recovering staff members have significant influence or authority in organizational decision-making processes (Brass 1984; Meier 1993, 2019; Stöffelmayr et al. 1999).

> **Hypothesis 4:** When staff with lived experience of SUD possess meaningful influence within their organization, patients are more likely to use services that can improve their long-term outcomes.

When it comes to programs that many staff with lived experience of SUD may be ambivalent about (e.g., opioid maintenance and medications), peer coproduction is expected to have a negative association with service utilization rates, a potentially critical limitation of peer coproduction. Multiple philosophies of addiction and recovery coexist in the SUD treatment field, and staff with lived experience of addiction tend to have an eclectic orientation, recognizing diverse pathways to addiction and recovery (Humphreys et al. 1996; Walters and Rotgers 2012). However, many staff with lived experience in the field, particularly older, paraprofessional staff with alcohol use disorder history, have a strong commitment to the disease model of addiction, viewing SUD as a progressive disease requiring complete abstinence from all substances, including medications (Shipko and Stout 1993; White 2014).

> **Hypothesis 5:** When SUD treatment centers practice peer coproduction, patients are less likely to use maintenance treatment.

METHODS

DATA

This study uses 2017 National Drug Abuse Treatment System Survey (NDATSS) data, the seventh wave of a nationally representative, split-panel design survey of approximately 700 alcohol and drug abuse treatment facilities in the United States. Originating with a representative sample of outpatient opioid treatment programs (OTPs), the scope of NDATSS gradually expanded to include outpatient non-OTPs (in 2005) and inpatient and residential non-OTPs (in 2011). To maintain a representative mix of cross-sectional and panel samples, each wave replaces about a quarter of the previous wave's sample with new randomly drawn units (Chen, Wilson, and D'Aunno 2017). National frames are drawn from a list of public, nonprofit, and for-profit treatment programs across the United States,

assembled annually by the Substance Abuse and Mental Health Service Administration (SAMHSA). The sample is primarily stratified by service modality types (i.e., outpatient OTPs, outpatient non-OTPs, inpatient clinics, and residential clinics). A professional survey team reached out to both administrative directors and clinical supervisors of sampled agencies and collected a broad range of information on clinic administration, management, and services. The reliability and validity of the NDATSS data have been demonstrated in multiple studies (Pollack and D'Aunno 2010; D'Aunno et al. 2014). The response rate was 90 percent for the 2017 NDATSS data. Out of 730 sampled and eligible clinics, either a director or a supervisor of 657 clinics completed a portion of the survey. The NDATSS team constructed survey weights, which I use throughout the analysis to mitigate any biases from refusals and nonresponses and to maintain representativeness of sample (Chen et al. 2017).

COPRODUCTION VARIABLES

The 2017 NDATSS includes original survey questions developed for the current study. Using the original questions, I developed five coproduction variables capturing organizational use of patient-centered care and peer coproduction mechanisms.

Patient-Centered Care Variables—As proxies for clinics' patient-centered care, I use (1) a binary variable for whether clinics invite patients to participate in clinical decision-making processes and (2) a composite variable for shared decision-making and person-centered processes. The first variable captures clinics' explicit patient-engagement behavior, inviting patients into a regular meeting to discuss their care plan. The survey asked administrative directors whether their clinics have a "regular meeting of all treatment providers or a case conference to discuss treatment planning and progress of individual clients" and whether clients are "regularly invited to attend this planning meeting when their case is being discussed." The first patient-centered care variable identifies clinics that answered yes to both questions. The second variable measures the director's belief in and emphasis on patient-centered care practices. The 2017 NDATSS asked directors to what extent they agreed or disagreed with statements relevant to patient-centered care practices. A composite factor variable (alpha = 0.79) was drawn from 10 questions rated on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree; e.g., "We discuss with our clients multiple options for treating their substance use disorder"; "We help our clients understand all information provided"; and "We ask our clients which treatment option(s) he/she prefers"). To control for social desirability bias, the wording and structure of questions are adopted from two validated measures of a shared decision-making questionnaire (SDM-Q-Doc; Scholl et al. 2012) and person-centered care assessment tool (P-CAT; Edvardsson et al. 2010).

Peer Coproduction Variables—To capture various aspects of the peer coproduction phenomena, I used measures for (1) what proportion of direct clinical practice staff members (e.g., counselors, therapists) had lived experience of SUD, (2) whether a clinic had at least one senior staff with lived experience of SUD, and (3) whether staff with lived experience of SUD possessed equal or greater levels of influence over organizational decision-making processes than those without lived experience of SUD. The first peer coproduction variable captures recovering staff's important role in providing SUD treatment

services. It is important to mention that I am not assuming that all staff members with lived experience of SUD are so-called nonprofessionals or paraprofessionals (i.e., staff members without professional training or credentials). Despite facing multiple barriers, many recovering staff successfully acquire and maintain professional credentials, training, or both in the SUD treatment field (Olmstead et al. 2007; White 2014). Furthermore, provider-level information is not captured in the organization-level data used for this study. Although the first peer coproduction variable may reflect the potential of staff with lived experience of SUD to influence patients' end-service experiences, simply hiring more staff with lived experience of SUD as frontline clinicians may not result in more responsive service outputs—an outcome that may require granting staff with lived experience of SUD authority over organizational decisions.

In view of the limitation of the first variable, I generated the second and third variables. The second variable captures the presence of senior staff with firsthand SUD experience. Administrative directors provided statistics related to the proportion of senior staff members with lived experience of SUD. I recoded the variable into a binary variable (0 = no senior staff with SUD history; 1 = at least one senior staff with SUD history).The third variable measures the relative influence of staff with lived experience of SUD within their clinics. Directors answered the following question on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree): "Although individual personalities matter, in general, compared to staff without substance use disorder history, staff in recovery are more likely to influence strategic (organizational) decisions (i.e., target clients, budget, staff composition)." I recorded the variable into a binary variable, capturing whether staff with lived experience of SUD held equal or greater levels of influence on organizational and strategic decisions (1 = agree/strongly agree/neither agree nor disagree; 0 = strongly disagree/disagree).

SERVICE OUTCOME VARIABLES

My dependent variables include availability and utilization rates of six services that facilitate patients' long-term recovery and reduce further harms: opioid aftercare, opioid maintenance therapy, harm reduction services (distribution of condoms and educational material on overdose prevention), and ancillary services (physical examination and transportation assistance). Service availability is a measure of whether a clinic offers a service (1 = yes; 0 = no). Service utilization is a measure of the percentage of substance abuse patients who received the service in the past fiscal year (clinics that did not offer services were assigned zero values), ranging from 0 to 100 percent. Clinical supervisors provided information on service availability and utilization patterns.

CONTROL VARIABLES

I measured multiple factors that researchers have found influence the behavior and service output patterns of SUD treatment clinics (Blum and Roman 1985; Friedmann, Alexander, and D'Aunno 1999; D'Aunno 2006; Pollack and D'Aunno 2010; Friedman et al. 2016; Park et al. 2020).

Environmental Factors—To capture whether clinics were located in a Medicaid expansion state, I used the US Census Bureau's (2018) annual report on health insurance

coverage changes (1 = located in Medicaid expansion state; 0 = not located in Medicaid expansion state). As a measure of regional service demands, I used the number of SUD admissions in the counties where clinics were located (a continuous variable), available from the SAMHSA's report on SUD clinics in the United States (SAMHSA 2018).This variable is highly correlated (correlation > 0.8; $p < .05$) with the urbanity variable in the same report.

Organizational Structure—I control for and measure multiple organizational attributes, including service modality (categorical variable: outpatient OTPs, outpatient non-OTPs, inpatient clinics, and residential clinics); ownership (categorical variable: private for-profit, private nonprofit, and public); proportion of revenue from Medicaid and private insurance (continuous variables); affiliation with hospitals or mental health organizations (1 = yes; 0 = no); and accreditation status by either of the two main accreditation organizations, the Joint Commission or the Commission on Accreditation of Rehabilitation Facilities (1 = yes; 0 = no).

Manager Perception—This study captures manager perspectives on the extent of regional competition (1 = some/a great extent; 0 = no/a little extent); manager reliance on professional information sources (e.g., professional publications, conferences, associational meetings, and seminars; 1 = no extent; 5 = a very great extent); and manager endorsement of a 12-step treatment model (1 = great/very great extent; 0 = no/a little/some extent).

Patient and Staff Characteristics—I include multiple continuous variables on client characteristics (e.g., proportion of patients who are racial or ethnic minorities, female, have alcohol use disorder, have opioid use disorder, or have prescription opioid use disorder) and staff characteristics (e.g., average caseload, medical training).

ANALYTIC APPROACHES

I weighted survey data to ensure that descriptive statistics were nationally representative. I used multivariate logistic regression to predict service availability patterns. Given the left-censored nature of utilization variables, I applied multivariate Tobit regression to estimate the proportion of patients that used services tested in the article. Regression analyses included a wide range of control variables capturing the organizational attributes, manager perspectives, patient and staff characteristics, and environmental factors discussed previously in "Control Variables." To reduce bias from missing observations, I imputed missing values of predictor and control variables 30 times using the multiple imputation by chained equations method (Buuren and Groothuis-Oudshoorn 2010). To facilitate interpretation of the results and satisfy statistical assumptions, I standardized or log transformed multiple continuous variables (e.g., SUD patient admission in county, proportion of opioid use disorder patients). For analyses predicting opioid maintenance therapy service availability and utilization patterns, I did not control for the modality and accreditation status of clinics because of a collinearity issue, as most outpatient OTPs were clinics specially accredited and licensed to provide opioid maintenance therapy using methadone, a main medication in therapy (D'Aunno, Park, and Pollack 2019).

RESULTS

DESCRIPTIVE STATISTICS

In 2017, only about a quarter of SUD clinics regularly invited patients to discuss and make decisions about their care plans (see table 1). About a third of the SUD treatment workforce members were staff with lived experience of SUD. However, only 44 percent of clinics had at least one senior staff member with lived experience of SUD. At 45 percent of clinics, recovering staff had less influence on strategic decisions than colleagues in similar positions without lived experience of SUD. The majority of clinics treating those with SUD comprised outpatient non-OTPs (66 percent), followed by residential clinics (21 percent), outpatient OTPs (8 percent), and inpatient clinics (4 percent). Most SUD treatment services were delivered by private nonprofit (57 percent) and private for-profit (30 percent) clinics. The field drew almost half of its revenue from Medicaid (33 percent) and private insurance (16 percent).

Availability rates and utilization rates varied across six services (see table 2). Aftercare services were available at 63 percent of clinics, but only 33 percent of patients served by those clinics used aftercare services. Opioid maintenance therapy was available at 24 percent of clinics, and 55 percent of patients at these clinics used the service. As for harm reduction services, condoms and overdose prevention education materials were distributed at 31 and 69 percent of SUD treatment clinics, respectively, and 72 and 83 percent of their patients used them, respectively. Physical examinations were available at 56 percent of clinics, and the utilization rate was 69 percent. Finally, transportation assistance was available at 59 percent of clinics and the utilization rate was 46 percent.

ASSOCIATION OF COPRODUCTION WITH SERVICE AVAILABILITY

The patient-centered care composite variable is positively associated with greater odds of offering overdose-prevention educational materials (OR = 1.31; $p = .024$) and offering physical examinations (OR = 1.37; $p = .007$; see table 3). The proportion of staff with lived experience of SUD is negatively associated with the availability of opioid maintenance therapy. The odds of providing opioid maintenance therapy decreases by 45 percent (OR = 0.55; $p = .002$) as the proportion of treatment staff with lived experience of SUD increases by 1 SD, or 30 percent.

Multiple control variables are significantly correlated with clinic service availability patterns. For instance, both harm reduction services tested in this study are more likely to be offered in outpatient non-OTPs than in clinics specializing in other modalities. Compared with for-profit clinics, the odds of providing transportation assistance are much higher among nonprofit clinics (OR = 1.84; $p = .015$) and public clinics (OR = 3.15; $p = .002$). The odds of providing opioid maintenance therapy are significantly correlated with the composition of patients.

ASSOCIATION OF COPRODUCTION WITH SERVICE UTILIZATION

Patient-centered care and peer coproduction variables had meaningful relationships with service utilization patterns, particularly with harm reduction and ancillary services (see

table 4). For instance, the predicted proportion of patients using transportation assistance is 8 percent higher ($p = .009$) among clinics inviting patients to participate in the clinical decision-making process, while controlling for other factors. The patient-centered care composite variable is positively correlated with the proportion of patients using condoms (coeff. = 4.24; $p = .025$), education materials on overdose prevention (coeff. = 5.50; $p = .006$), and physical examination (coeff. = 6.18; $p < .001$). At clinics where staff with lived experience of SUD possessed an equal or greater level of influence on organizational or strategic decisions, patients were more likely to use condoms (coeff. = 6.56; $p = .038$) and transportation assistance (coeff. = 6.44; $p = .012$). In addition, the proportion of staff with lived experience of SUD is negatively correlated with use of maintenance therapy (coeff. = −6.89; $p < .001$).

Similar to service availability analysis results, various control variables are associated with the proportion of patients who used each service. For instance, greater proportions of patients used condoms and physical examinations when clinics were located in counties with more SUD patient admissions (a proxy of a high population density). Greater proportions of patients were expected to use transportation assistance when they were served by clinics that were publicly owned or that relied more on Medicaid income.

DISCUSSION

User inclusion in service processes aligns with the social work profession's mission to restore distributive justice and promises multiple benefits for a devolved and privatized welfare system. As such, there is a growing interest in and emphasis on coproduction—namely, efforts to engage users in service decision-making processes. Using nationally representative data, this article quantitatively demonstrates the SUD treatment field's use of two coproduction mechanisms in the service delivery phase: patient-centered care and peer coproduction. Overall, about a quarter of clinics regularly invited patients into their clinical decision-making processes. Staff with lived experience of SUD made up one-third of the SUD treatment field's workforce, but they often possessed lesser degrees of influence within their organizations.

COPRODUCTION'S POTENTIAL AND LIMITATIONS

The regression analysis highlights the potential and limitations of two co-production mechanisms. Confirming the earlier hypotheses, coproduction efforts in the service delivery phase had limited effects on clinics' service offerings. Although some significant associations with coproduction variables can be observed, service availability patterns are mainly correlated with other organizational factors, such as modality, ownership, staff and patient composition, and revenue sources. As stakeholder theory suggests, frontline clinicians (with or without lived experience of SUD) and patients do not seem to possess enough influence or authority to have much impact on service availability decisions, which may be more heavily dependent on powerful stakeholders' considerations and support (e.g., technical support from the government, private donor support for facility and equipment improvements and expansions, and other regional service providers' current and anticipated service offerings; Donaldson and Preston 1995; Phillips 2003; Freeman 2010). In addition,

frontline clinicians may not possess the subject matter expertise necessary to participate meaningfully in managerial decisions (e.g., ability to conduct financial analysis or regional market research). Although clinicians may recognize a need for new services, referring patients to other organizations already offering the service might be a more reasonable alternative to advocating for expanding service lines, given clinicians' relatively little power and limited resources. Patient engagement in earlier phases of service production (e.g., regional resource allocation or service design) may have greater potential to affect service availability patterns, which is a relationship deserving further investigation. A negative relationship between the proportion of clinical staff with firsthand SUD experience and the availability of opioid maintenance therapy seems to reflect a tendency for clinics providing maintenance therapy to hire staff with academic credentials and professional training to comply with strict accreditation guidelines; as a result, fewer people recovering from SUD are hired as staff (Olmstead et al. 2007; D'Aunno et al. 2019).

Coproduction variables are correlated with greater utilization of multiple services, particularly harm reduction and recovery services. Patient-centered care variables are associated with greater utilization of various harm reduction and supportive services. As clinicians are enlightened about the concerns and needs of patients either through collaboration or lived experience, they may encourage or enable patients to use available services. As I hypothesized, compared to advocating for and introducing a new service, connecting patients to a clinic's existing services may be a relatively more feasible and less expensive option from the clinician's vantage point. This could be accomplished by clinicians leveraging institutional resources and intraorganizational networks. Interestingly, patient-centered care efforts are not significantly correlated with the utilization of core services—namely, opioid maintenance therapy and opioid aftercare. Patients' use of treatment programs may be primarily determined by organizational capacity and guidelines or providers' expertise and knowledge, leaving little room for adjustments based on new information and perspectives gained through patient engagement. This relationship suggests that patient-centered care practices have great potential to enlighten clinicians on various social, political, and environmental determinants of patient outcomes and to accommodate patients' multifaceted needs (Marlatt and Witkiewitz 2002; Bradley and Kivlahan 2014; Centers for Disease Control and Prevention 2019).

Peer coproduction efforts have associations with greater utilization of two services: transportation assistance and condom distribution. Although these are important services contributing to patient well-being and continued access to treatment in meaningful ways, the results seem to demonstrate the peer coproduction mechanism's limited relationship with the utilization patterns of other services tested in this study. As hypothesized, the peer coproduction mechanism is positively associated with utilization rates only when staff with lived experience of SUD possessed levels of influence equal to or greater than staff without firsthand experience of addiction. Simply having more frontline or senior staff with lived experience of SUD may not be sufficient to influence patients' utilization of recovery support services (Lipsky 1980; Meier 1993, 2019; Brodkin 2012). Even if the concerns of patients are captured by staff with lived experience of SUD, clinics may lose opportunities to provide quality and responsive services when recovering staff are not integral players or do not possess meaningful levels of authority over organizational processes to advocate

within clinics. The relationship between the peer coproduction mechanism and maintenance therapy utilization is more concerning in the context of the current opioid crisis. Again, this relationship might reflect the reality that, to satisfy accreditation criteria, clinics offering opioid maintenance therapy are discouraged from hiring recovering staff, who often fail to maintain credentials (Olmstead et al. 2007; D'Aunno et al. 2019). It is also possible that staff with lived experience of SUD may be heavily committed to a particular recovery model and indifferent about offering any services other than peer support (Shipko and Stout 1993; White 2014). In this case, staff with lived experience of SUD might not serve as good proxies for patient concerns, instead undermining the core value and premise of peer coproduction and potentially hindering patients' long-term recovery.

STUDY LIMITATIONS

This study has several limitations. Despite its national representativeness, NDATSS is an organization-level survey based on directors' and clinical supervisors' responses and is vulnerable to measurement gaps and biases. Organization-level information helps us understand field-level trends; however, individual-level information and variances (e.g., individual provider characteristics and responsibilities, different behaviors and perspectives of managers with and without lived SUD experience, and how often and how long individual patients use various services) may better explain how coproduction efforts shape individual patient experiences and service output patterns. Also managers may not be the people best suited to reflect on the day-to-day operations and interactions in clinics. The lack of perspectives and experiences of frontline clinicians and patients, the main participants in the coproduction efforts I discuss, is a critical limitation of this study. In addition, the survey data capture coproduction in the service delivery phase only. Direct and indirect user engagement in service initiation or design phases may yield greater and more visible associations with service output patterns (Bovaird 2007; Alford 2009; Pestoff 2012). Given that providers may leverage regional resources and services to better accommodate patients' needs and concerns, information on referrals (e.g., scope, frequency, and destinations) is another missing dimension in this data set, especially those referrals made beyond the SUD treatment field. The current data also do not capture all services provided by SUD clinics that might be significantly associated with coproduction efforts, such as child care and job training. Also the findings from this US-based study may not be generalizable to other countries with different histories and configurations of the SUD treatment field. Finally, only associational relationships can be discussed with cross-sectional data. Future waves of data may help us investigate long-term trends and relationships among interest variables.

IMPLICATIONS

Despite its limitations, the current study has important implications for social work research and practice. Building on a framework conceptualizing operation of various service production modes in a service field and using nationally representative survey data on SUD clinics in the United States, this study empirically demonstrates the use of two coproduction mechanisms in the SUD field, and it establishes that these efforts can have a substantial influence on end services on which vulnerable users depend. By doing so, this study invites social work scholars to investigate diverse user-engagement mechanisms in various service settings and how those user-provider collaborations influence service

outputs and user experiences. Beyond the normative model of user-provider coproduction (e.g., patient-centered care), multiple alternative methods may exist (e.g., peer coproduction in the SUD treatment field), potentially shaped by environmental settings, organizational attributes, and characteristics of service users and providers. Because some coproduction methods may only operate in certain circumstances and otherwise could be harmful, critical assessments of working conditions and the impact of different coproduction efforts are recommended. In particular, qualitative studies on how service users and frontline service providers experience and conceptualize coproduction mechanisms (preferably in multiple service fields) are promising next steps. Extending the scope of research toward the other service production phases (e.g., design and evaluation phases) is another important domain of future research. Given the limited associations between coproduction in the service delivery phase and service availability, patients may have better odds of influencing their care experiences in more fundamental ways through engagement in the earlier service production phases.

The prevalence of coproduction efforts in a field serving one of the most stigmatized populations in the United States signals the potential of coproduction across health, social, and human service fields. Findings on the strengths and limitations of coproduction mechanisms are particularly helpful for managers and administrators implementing or developing different user-engagement efforts. One important takeaway from this study is that a single, perfect coproduction mechanism may not exist. Patient-centered care may enable patients to engage in and influence care decision-making processes by balancing clinician technical expertise and patient experiential expertise. However, patient-centered care practices in the service delivery phase are not associated with the availability or utilization of treatment programs, which are core functions of clinics. Peer coproduction could be an innovative way to close gaps in trust and knowledge in a field with limited trust between service providers and users. However, the mechanism shows very little relevance to service output patterns. Negative associations between the presence of staff with lived experience of SUD and the availability and utilization of opioid maintenance therapy may signal a potentially critical limitation of peer coproduction, discouraging patient access to evidence-based effective treatment options. Therefore, understanding the conditions that enable different co-production approaches and the impact of those efforts will be important for managers and administrators who want to leverage the strengths and mitigate the weaknesses of, and potentially combine, different coproduction mechanisms.

Finally, this study suggests the need for a more democratic process and interprofessional collaboration among staff members with various life experiences and expertise within human service organizations. Peer coproduction mechanisms are positively associated with utilization rates only when staff members with lived experience of SUD possess meaningful levels of authority in organizational processes. Hiring staff with diverse identities is a common and normative practice in many human service fields, based on the assumption that staff sharing marginalized identities with service users may better understand users' unmet needs and address biased service administration processes (Keiser et al. 2002; Hasenfeld 2010; Meier 2019). However, without substantive sharing of organizational authority and respect for expertise grounded in diverse backgrounds and experience, expecting staff members with marginalized identities to be agents of change and produce more responsive

services may be unrealistic. In other words, human service providers' mutually respected and empowered collaborative processes may be a necessary condition for coproduction.

Biography

Sunggeun (Ethan) Park is an assistant professor at the University of Michigan School of Social Work. With an overarching research question "How can health and social service organizations provide more responsive and effective services?" Park investigates how users' engagement in service decision-making processes (i.e., coproduction) and intraorganizational and interorganizational collaboration (e.g., interprofessional collaboration) influence organizational behaviors and shape the experience of vulnerable service users. As a scholar using organization as a main unit of analysis, his study spans multiple service fields, including, but not limited to, substance use disorder treatment, child and youth welfare, and HIV prevention. The author thanks Jennifer Mosley, Colleen Grogan, Steve Smith, Keith Humphreys, Harold Pollack, Jeffrey Brudney, James Blackburn, and anonymous reviewers for their comments on an earlier draft. This work was supported by the National Institutes on Drug Abuse (NIDA; no. R01DA034634). The contents are solely the responsibility of the author and do not necessarily represent the views of the US Department of Health and Human Services or NIDA.

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TABLE 1.

Descriptive Statistics of Coproduction and Control Variables (n = 657)

	Unweighted *N*	Weighted %
Patient-centered care variables:		
Invite patients into clinical decision-making processes	139	23
Clinical supervisors' value on patient-centered care practices (mean ± SD)		−.1 ± .9
Peer coproduction variables:		
Proportion of SwLE (mean ± SD)		33.3 ± 29.5
Presence of any senior SwLE	234	44
SwLE possess equal or greater influence over strategic decisions, compared to staff without SUD history	314	55
Control variables:		
Located in Medicaid expansion state	472	70
Total SUD patient admission in county (thousands) (mean ± SD)		14.0 ± 22.6
Service modality:		
OTP outpatient	213	8
Non-OTP outpatient	290	66
Inpatient	46	4
Residential	108	21
Ownership:		
Private for-profit	162	30
Private nonprofit	358	57
Public	90	13
Proportion of revenue from Medicaid (mean ± SD)		33.1 ± 33.3
Proportion of revenue from private/commercial insurance (mean ± SD)		15.5 ± 23.6
Owned by hospital or mental health facility	152	25
Accredited (JC or CARF)	377	53
Director perceives high competition	372	60
Director's reliance on professional information sources (mean ± SD)		3.4 ± .7
Clinical supervisor endorses 12-step treatment model	328	56
Number of SUD treatment service clients (hundreds) (mean ± SD)		5.6 ± 11.9
Proportion of racial/ethnic minority patients (mean ± SD)		39.5 ± 31.1
Proportion of female patients (mean ± SD)		41.3 ± 24.0
Proportion of alcohol use disorder clients (mean ± SD)		49.7 ± 26.8
Proportion of opioid use disorder clients (mean ± SD)		32.7 ± 32.3
Proportion of prescription opioid use disorder clients (mean ± SD)		27.6 ± 25.4
Proportion of involuntary patients (mean ± SD)		46.1 ± 34.8
Number of staff (full-time and part-time) (mean ± SD)		21.7 ± 36.9
Proportion of staff with medical training (i.e., MD, RN) (mean ± SD)		6.9 ± 12.5
Proportion of staff with nonmedical graduate degree (mean ± SD)		32.1 ± 27.1
Average caseload for clinical staff (mean ± SD)		30.4 ± 32.9

Note.—CARF = Commission on Accreditation of Rehabilitation Facilities; JC = Joint Commission; OTP = opioid treatment program; SUD = substance use disorder; SwLE = staff with lived experience.

TABLE 2.

Weighted Descriptive Statistics of Service Availability and Utilization Variables

	Availability of the Service	Utilization among Clinics Offering the Service
	Weighted % (Unweighted *N*)	Weighted Mean ± SD
Treatment programs:		
Opioid aftercare	63 (346)	32.8 ± 32.1
Opioid maintenance therapy	24 (250)	54.5 ± 40.5
Harm reduction services:		
Distribute condom	31 (221)	72.0 ± 35.0
Distribute educational material on overdose prevention	69 (444)	83.4 ± 29.2
Ancillary services:		
Physical examination	56 (367)	69.3 ± 36.0
Transportation assistance	59 (377)	45.9 ± 35.6

TABLE 3.

Coproduction's Association with Service Availability: Summary of Multivariate Logistic Regression Results

	Treatment Programs				Harm Reduction Services				Ancillary Services			
	Opioid Aftercare		Opioid Maintenance Therapy		Distribute Condom		Written Material on Preventing Overdose		Physical Examination		Transportation Assistance	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Patient-centered care variables:												
Invite patients into clinical decision-making processes	.93	.21	1.27	.37	1.08	.26	1.52	.43	.80	.20	1.27	.31
Clinical supervisors' value on patient-centered care practices	.96	.10	1.08	.15	1.22	.14	1.31 *	.16	1.37 **	.16	1.11	.12
Peer coproduction variables:												
Proportion of SwLE[a]	.88	.12	.55 **	.11	1.04	.16	1.13	.17	.94	.14	1.01	.14
Presence of any senior SwLE	1.13	.26	.92	28	1.23	.30	1.04	.29	.96	.25	1.02	.27
SwLE possess equal or greater influence	1.06	.20	1.06	.26	1.29	.26	.93	.20	1.05	.22	1.13	.23
Control variables:												
Medicaid expansion state	.80	.19	1.06	.34	.60	.16	1.00	.27	.90	.23	1.00	.25
SUD patient admission in county[b]	.98	.07	1.12	.10	1.30 **	.10	1.17	.10	1.20 *	.09	.90	.07
Service modality (ref. non-OTP outpatient)[c]:												
OTP outpatient	1.41	.39			.52 *	.15	.57	.20	.88	.26	.78	.24
Inpatient	.10 ***	.06			.27 *	.16	.28 *	.15	8.13 *	6.67	.19 **	.10
Residential	.69	.25			.40 *	.16	.36 *	.16	2.69 *	1.16	.95	.40
Ownership (ref. private for-profit):												
Private nonprofit	1.00	.25	1.71	.58	2.06 **	.57	1.40	.39	1.40	.38	1.84 *	.46
Public	1.11	.37	1.43	.63	2.17 *	.79	1.09	.41	1.23	.45	3.15 **	1.17
Revenue from Medicaid (%)[a]	1.02	.12	1.19	.19	1.05	.13	1.14	.16	1.23	.17	1.62 ***	.21
Revenue from private insurance (%)[a]	1.45 **	.19	1.26	.19	.67 *	.11	.80	.10	.88	.11	.86	.10
Owned by hospital or mental health facility	.82	.21	.42 **	.13	.85	.23	1.29	.38	.95	.26	1.44	.39
Accredited (JC or CARF)[C]	1.22	.27			1.06	.25	.70	.17	.95	.23	.78	.18

	Treatment Programs				Harm Reduction Services				Ancillary Services			
	Opioid Aftercare		Opioid Maintenance Therapy		Distribute Condom		Written Material on Preventing Overdose		Physical Examination		Transportation Assistance	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Perceived high competition	.82	.16	1.11	.29	.84	.18	.84	.19	1.16	.25	1.04	.22
Reliance on professional information sources	1.13	.15	1.32	.25	1.21	.18	1.49*	.24	.98	.14	1.12	.16
Clinical supervisor endorses 12-step treatment model	.89	.18	.58*	.15	.95	.21	.92	.22	.96	.21	1.01	.22
Number of SUD treatment patients[b]	.91	.09	1.22	.14	.96	.10	1.04	.12	.92	.09	1.19	.12
Racial/ethnic minority patients (%)[a]	.94	.10	1.13	.17	1.37**	.16	1.15	.16	1.06	.13	1.17	.14
Female patients (%)[a]	1.01	.10	1.06	.14	.97	.10	.74**	.08	.93	.10	.91	.10
Alcohol use disorder patients (%)[a]	1.00	.11	.54***	.08	.80	.10	.88	.11	.82	.10	.93	.11
Opioid use disorder patients (%)[a]	.92	.11	2.20***	.35	1.01	.13	1.17	.18	1.24	.16	1.16	.15
Prescription opioid use disorder patients (%)[a]	.95	.11	1.59**	.25	1.26	.15	1.34	.20	1.31*	.17	1.11	.14
Involuntary patients (%)[a]	1.27	.15	.44***	.07	1.07	.14	.85	.11	.83	.10	.96	.12
Number of staff[b]	1.03	.14	1.15	.18	1.25	.18	1.16	.17	1.41*	.21	1.46**	.21
Staff with medical training (%)[a]	1.15	.14	1.08	.16	.86	.11	1.03	.14	1.11	.15	.83	.10
Staff with nonmedical graduate degree (%)[a]	1.01	.11	.93	.13	1.26	.15	.86	.10	.79	.09	.96	.11
Average caseload for clinical staff (tens)	1.01	.05	1.16**	.06	1.05	.05	1.03	.06	.94	.05	.90*	.05
F-test	1.89**		5.58***		3.01***		2.29***		3.51***		2.84***	

Note.—CARF = Commission on Accreditation of Rehabilitation Facilities; JC = Joint Commission; OR = odds ratio; OTP = opioid treatment program; ref. = reference; SE = standard error; SUD = substance use disorder; SwLE = staff with lived experience.

[a]Standardized.

[b]Log transformed.

[c]Not controlled for opioid maintenance therapy because of high collinearity with OTPs.

*$p < .05$.

**$p < .01$.

***$p < .001$.

TABLE 4.

Coproduction's Association with Service Utilization: Summary of Multivariate Tobit Regression Results

	Treatment Programs				Harm Reduction Services				Ancillary Services			
	Opioid Aftercare		Opioid Maintenance Therapy		Distribute Condom		Written Material on Preventing Overdose		Physical Examination		Transportation Assistance	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Patient-centered care variables:												
Invite patients into clinical decision-making processes	2.77	2.78	.17	2.61	.60	4.04	6.84	4.32	−.12	3.78	7.93**	3.00
Clinical supervisors' value on patient-centered care practices	.54	1.29	−.24	1.26	4.24*	1.89	5.49*	1.98	6.16**	1.75	.13	1.38
Peer coproduction variables:												
Proportion of SwLE[a]	.54	1.83	−6.89***	1.63	2.06	2.40	.68	2.53	−1.99	2.29	−1.21	1.83
Presence of any senior SwLE	1.47	3.07	4.31	2.74	.62	4.06	−1.19	4.38	−1.20	4.00	2.80	3.22
SwLE possess equal or greater influence	2.46	2.34	.54	2.24	6.56*	3.29	1.11	3.43	−.11	3.23	6.44*	2.55
Control variables:												
Medicaid expansion state	−2.82	2.98	−2.48	2.82	−1.24	4.30	−.95	4.48	−1.02	4.06	−3.49	3.21
SUD patient admission in county[b]	−.54	.88	1.61	.82	4.48***	1.24	2.94	1.33	3.89**	1.18	1.04	.94
Service modality (ref. non-OTP outpatient)[c]:												
OTP outpatient	2.23	3.51			−14.76**	4.96	−9.86	5.29	−6.39	4.81	5.76	3.80
Inpatient	−10.83	5.95			−19.15*	8.28	−13.83	8.83	33.55***	8.10	.94	6.40
Residential	8.29	4.72			−22.00**	6.65	−8.23	7.09	27.48***	6.36	26.35***	5.10
Ownership (ref. private for-profit):												
Private nonprofit	−3.69	3.05	−7.67**	2.87	10.42*	4.25	2.19	4.46	−1.65	4.09	3.24	3.28
Public	−3.41	4.10	−5.14	3.88	10.40	5.82	.58	6.08	−4.03	5.48	9.69*	4.47
Revenue from Medicaid (%)[a]	.92	1.48	−.17	1.42	.54	2.10	2.69	2.14	3.17	2.03	10.26***	1.58
Revenue from private insurance (%)[a]	3.12*	1.42	−3.05*	1.39	−4.03	2.05	−3.84	2.17	−1.81	1.94	−.22	1.52
Owned by hospital or mental health facility	1.56	3.09	−6.29*	2.88	−1.10	4.32	4.34	4.54	1.91	4.14	1.48	3.34

	Treatment Programs				Harm Reduction Services				Ancillary Services			
	Opioid Aftercare		Opioid Maintenance Therapy		Distribute Condom		Written Material on Preventing Overdose		Physical Examination		Transportation Assistance	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Accredited (JC or CARF)[C]	−.50	2.81			.20	3.84	−4.37	4.05	.37	3.78	−5.94*	2.94
Perceived high competition	−3.29	2.48	1.15	2.30	−2.63	3.41	−3.16	3.60	−.01	3.30	1.99	2.61
Reliance on professional information sources	−.62	1.68	−.17	1.62	4.43	2.41	8.05**	2.50	.96	2.30	1.72	1.82
Clinical supervisor endorses 12-step treatment model	2.86	2.51	−11.02***	2.37	−.72	3.60	1.58	3.83	−.93	3.41	1.41	2.69
Number of SUD treatment patients[b]	−1.48	1.18	1.07	1.08	−2.24	1.68	0	1.87	−2.07	1.58	−1.45	1.28
Racial/ethnic minority patients (%)[a]	2.17	1.35	.08	1.29	6.48*	1.97	.80	2.06	.93	1.84	2.25	1.47
Female patients (%)[a]	−.69	1.22	1.34	1.13	−3.09	1.77	−5.76**	1.83	−1.32	1.66	−.92	1.33
Alcohol use disorder patients (%)[a]	1.74	1.38	−11.02***	1.23	−4.59*	1.99	−3.26	2.05	−6.31***	1.91	.16	1.46
Opioid use disorder patients (%)[a]	−.94	1.49	10.63***	1.37	−1.05	2.10	3.96	2.25	5.26*	2.07	2.21	1.64
Prescription opioid use disorder patients (%)[a]	.36	1.42	3.77*	1.36	4.92*	2.00	5.55*	2.20	3.50	1.92	1.86	1.54
Involuntary patients (%)[a]	1.15	1.44	−13.68***	1.26	−.83	2.11	−2.08	2.22	−5.51**	1.97	−1.25	1.56
Number of staff[b]	.17	1.61	−1.37	1.44	3.59	2.24	1.60	2.36	4.19	2.18	4.14*	1.75
Staff with medical training (%)[a]	1.22	1.42	−.40	1.30	−2.89	1.97	−.37	2.07	2.79	1.95	−1.95	1.57
Staff with nonmedical graduate degree (%)[a]	3.33*	1.38	−2.42*	1.25	2.14	1.91	−3.06	2.02	−2.92	1.87	.53	1.46
Average caseload for clinical staff (tens)	.23	.54	2.78***	.48	.75	.77	.47	.80	−.21	.73	−1.04	.58
F-test	1.88**		37.87***		4.95***		4.13***		10.65***		6.49***	

Note.—CARF = Commission on Accreditation of Rehabilitation Facilities; coeff. = coefficient; JC = Joint Commission; OTP = opioid treatment program; ref. = reference; SE = standard error; SUD = substance use disorder; SwLE = staff with lived experience.

[a]Standardized.

[b]Log transformed.

[c]Not controlled for opioid maintenance therapy because of high collinearity with OTPs.

*$p < .05$.

** $p < .01$.

*** $p < .001$.