LEAD Program Evaluation:
Criminal Justice and Legal System Utilization and Associated Costs

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Executive Summary

- **Background:** LEAD is a prebooking diversion program that offers low-level drug and prostitution offenders harm reduction-oriented case management and legal services as an alternative to incarceration and prosecution.

- **Purpose:** This report describes findings from a quantitative analysis comparing outcomes for LEAD participants versus "system-as-usual" control participants on criminal justice and legal system utilization (i.e., jail, prison, prosecution, defense) and associated costs.

- **Findings:**
    - The cost of the LEAD program averaged $899 per person per month. However, these costs included program start-up and decreased to $532 per month towards the end of the evaluation.
    - Across nearly all outcomes, we observed statistically significant reductions for the LEAD group compared to the control group on average yearly criminal justice and legal system utilization and associated costs.
        - **Jail bookings**: Compared to the control group, LEAD program participants had 1.4 fewer jail bookings on average per year subsequent to their evaluation entry.
        - **Jail days**: Compared to the control group, the LEAD group spent 39 fewer days in jail per year subsequent to their evaluation entry.
        - **Prison incarceration**: Compared to the control group, the LEAD group had 87% lower odds of at least one prison incarceration subsequent to evaluation entry.
        - **Misdemeanor and felony cases**: There were no statistically significant LEAD effects on the average yearly number of misdemeanor cases. Compared to control participants, however, LEAD participants showed significant reductions in felony cases.
        - **Costs associated with criminal justice and legal system utilization:** From pre- to postevaluation entry, LEAD participants showed substantial cost reductions (-$2100), whereas control participants showed cost increases (+$5961).

- **Interpretation of findings:**
    - LEAD program costs were commensurate with another supportive program for homeless individuals in King County. It should be noted that LEAD program costs

will vary widely across communities depending on LEAD participant characteristics (e.g., prevalence of homelessness) and community factors (e.g., cost of living, Medicaid coverage).

- Compared to system-as-usual controls, LEAD participants evinced meaningful and statistically significant reductions in criminal justice and legal system utilization and associated costs.

- **Next Steps:** This report is one in a series being prepared by the University of Washington LEAD Evaluation Team over a two-year period. The next report will be released in Winter 2015/2016 and will report on within-subjects changes among LEAD participants on psychosocial, housing and quality-of-life outcomes following their participation in LEAD.

Introduction

Background

With nearly 2.2 million adults incarcerated, the US imprisons more of its population than any other country in the world.[1,2] Nonviolent offenders comprise more than 60% of those incarcerated, with drug offenders accounting for almost half.[3] Crime statistics for 2013 reveal that the largest numbers of arrests, approximately 13%, were for drug abuse violations.[4] Arrest and incarceration for sex work offenses is also common, with 56,600 offenses recorded in 2012.[4] The overall incarceration rate is increasing exponentially—by 240% since 2008—and this is particularly so among drug offenders.[3,5]

Prosecution and incarceration of drug and prosecution offenders overtaxes the criminal justice and legal systems. This increased burden is translated into increased cost, which has been estimated at over one trillion dollars in the past four decades.[6] There is, however, little or no evidence to suggest that the current system of prosecution and incarceration results in improved public safety, reduced drug use, or decreased recidivism.[2,5-7] Instead, offenders cycle in and out of jail so frequently, this phenomenon is often referred to as a "revolving door".[8]

In response to this long-standing problem, policy-makers are seeking alternatives to prosecution and incarceration.[9,10] For example, Washington State legislators recently directed policy analysts to identify evidence-based programs for drug offenders that reduce strain and associated costs on the legal and criminal justice systems. The Law Enforcement Assisted Diversion (LEAD) program, which was introduced to reduce recidivism among low-level drug and sex work offenders, represents an example of one such program.

Description of the LEAD Program

The LEAD program was established in 2011 as a means of diverting those suspected of low-level drug and prostitution criminal activity to case management and other supportive services instead of jail and prosecution. The primary aim of the LEAD program is to reduce criminal recidivism.[a] Secondary aims include reductions in criminal justice service utilization and associated costs as well as improvements for psychosocial, housing and quality-of-life outcomes. Because LEAD is the first known pre-booking diversion program of its kind in the United States, evaluation is critically needed to inform key stakeholders, policy makers, and other interested parties of its impact. The evaluation of the LEAD program described in this report represents a response to this need.

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[a] Note: Because the LEAD program was launched as a pilot without sufficient resources to engage all possible participants within the planned catchment area, this evaluation did not focus on community- or neighborhood-level impact on crime. It is, however, possible that an approach that changed individual behavior, if later taken to scale with full commitment from all operational partners, would have neighborhood- or community-level impact.

For the purpose of the evaluation, the implementation phase of this project occurred from October 2011 through July 2014. The Seattle Police Department's (SPD) officer shifts for squads making referrals to LEAD were randomly divided into 'red- and greenlight' shifts. Offenders who were encountered during greenlight shifts in the LEAD catchment area (i.e., Belltown neighborhood) were screened for project eligibility by officers on duty and, provided they met inclusion criteria and completed the intake process, they were diverted to the LEAD program at point of arrest instead of undergoing standard jail booking and criminal prosecution. A smaller number of individuals were referred by officers as 'social contacts.' Social contacts were individuals who were eligible for the LEAD program due to known recent criminal activity, but were recruited by officers outside of a criminal incident during a greenlight shift within the original LEAD catchment area. Both arrest and social contact referrals to LEAD required that participants were suspected of narcotics or prostitution activity and met other program criteria (see Purpose and Methods section below for inclusion criteria).

Interested individuals were referred to a LEAD case manager to complete an intake assessment. This assessment entailed items evaluating participants' substance-use frequency and treatment, time spent in housing, quality of life, psychological symptoms, interpersonal relationships, and health status. After completing the intake process, participants received case management through Evergreen Treatment Services' (ETS) REACH homeless outreach program, which connected participants with existing resources in the community (e.g., legal advocacy, job training or placement, housing assistance, counseling). Case management is provided using low-barrier, harm-reduction style, which entails meeting participants 'where they are at' in their communities and in their own motivation to change as well as engaging participants with compassion and unconditional positive regard.[11] Additionally, case managers had access to funds to provide financial support for the fulfillment of participants' basic needs (e.g., motel stays, housing, food, clothing, treatment, and various additional items and services). Other key program features included coordination of prosecution strategy in any other pending criminal cases participants had in local courts and assistance with miscellaneous civil legal problems. Subsequent to their entry into the LEAD program, participants completed additional one-on-one interviews with their case managers.

Eligible individuals who were arrested 1) during redlight shifts or 2) in non-LEAD neighborhoods—areas adjacent to Belltown that were not a part of the LEAD program but were patrolled by the same officers—were processed through the criminal justice system as usual (e.g., jail booking, criminal charges). These participants served as the control group in the current evaluation. Individuals arrested in non-LEAD neighborhoods were included in the control group to increase the pool of participants while avoiding skewing the composition of the control group as the number of amenable, qualifying control participants available in the original catchment area decreased over time. All participants were recruited by the same officers using the same criteria.

Overall Program Evaluation Aims

The overall program evaluation is assessing the ability of the LEAD program to meet the following aims.

- *Specific aim 1* is to test the relative effectiveness of the LEAD program compared to the 'system-as-usual' control condition in reducing criminal recidivism (i.e., arrests and charges).

- *Specific aim 2* is to test the effectiveness of the LEAD program compared to the 'system-as-usual' control condition in reducing publicly funded legal and criminal justice service utilization and associated costs (i.e., prosecution, public defense, jail, prison) prior and subsequent to evaluation entry.

- *Specific aim 3* is to test within-subjects differences on psychosocial and housing variables prior and subsequent to LEAD program entry.

Subsequent to a March report detailing recidivism findings from specific aim 1, the current report reviews utilization and cost findings from specific aim 2. A further report documenting findings for specific aim 3 will be released in Winter 2015/2016.

Purpose and Methods

Purpose

The purpose of this report was to analyze the LEAD versus system-as-usual effects on average yearly criminal justice and legal system utilization (i.e., prosecutor, public defense, jail, prison) and associated costs stemming from charges and incarcerations accrued prior versus subsequent to participants' entry into the evaluation.

Participants

Participants in LEAD included 318 adults who were suspected of low-level drug or prostitution offenses. Based on whether law enforcement contact was made during a red- or greenlight shift and whether it occurred in the LEAD catchment area, participants were either assigned to the LEAD (*n* = 203) or control (i.e., booking as usual; *n* = 115) conditions. At the time of referral, 146 of the LEAD participants were under arrest, and 57 were suspected of qualifying criminal activity but were referred outside of an alleged criminal incident as social contacts.

All LEAD participants were suspected of recent violations of the uniform controlled substances act (VUCSA) and/or prostitution offenses and were deemed eligible for the program by SPD officers. SPD considered individuals ineligible if they met any of the following criteria:

- The amount of drugs involved exceeded 3 grams, except where an individual was arrested for delivery of or possession with intent to deliver marijuana or possession, delivery or possession with intent to deliver prescription controlled substances (pills).
- The individual did not appear amenable to diversion.
- The suspected drug activity involved delivery or possession with intent to deliver (PWI), and there was reason to believe the suspect was dealing for profit above a subsistence income.
- The individual appeared to exploit minors or others in a drug dealing enterprise.
- The individual was suspected of promoting prostitution.
- The individual had a disqualifying criminal history as follows:
    - Without time limitation: Any conviction for murder 1 or 2, arson 1 or 2, robbery 1, assault 1, kidnapping, Violation of the Uniform Firearms Act (VUFA) 1, any sex offense, or attempt of any of these crimes.
    - Within the past 10 years: Any conviction for a domestic violence offense, robbery 2, assault 2 or 3, burglary 1 or 2, or VUFA 2.
    - The individual was already involved in King County Drug Diversion Court or Mental Health Court. This exclusion criterion served to ensure the LEAD program was not combined with other models of intervention and case management.

The control group included only individuals arrested by LEAD-referring officers who would have been considered eligible for referral to LEAD had the arrest occurred during a greenlight shift in a LEAD catchment area. Individuals who would not have met LEAD referral criteria were not included in the control group. There was no penalty to officers for excluding individuals from the evaluation based on the inclusion/exclusion criteria. Officers completed forms for each arrest documenting these decisions.

Measures

The evaluation team obtained all necessary IRB exemptions and data sharing agreements from the appropriate entities. With the assistance and guidance of the LEAD Policy Coordinating Group and the LEAD Evaluation Advisory Committee, the evaluation team obtained demographic and program data from the LEAD case management team and from the Seattle Police Department LEAD records. Data on charges were extracted by the King County Prosecuting Attorney's office from the FBI's National Crime Information Center (NCIC) and were given to the evaluation team for analysis. These included criminal charges that occurred during the LEAD evaluation time frame: the pre-entry window comprised charges accrued between October 1, 2009 through individual participants' entry into the evaluation, and the post-entry window comprised charges accrued on the day of participants' entry into the evaluation through July 31, 2014. Charges were collapsed for a given day to represent felony and misdemeanor cases that would have been processed through the legal system.

The cost of public defense associated with misdemeanor and felony charges was estimated as 1/400th and 1/100th of the full-time equivalent (FTE) of a public defender, respectively.[b] According to estimations provided by the Department of Public Defense Deputy Director, the full cost of an attorney was estimated to be $215,156 per year (including associated support staff and indirect costs); thus, misdemeanors were assigned a cost of $538, and felonies were assigned a cost of $2152. Given the relative parity of attorney staffing and costs between public defense and prosecution, the costs of the King County Prosecutor and Seattle City Attorney, as relevant, were conservatively estimated to be equal to those of the public defense costs for both misdemeanors and felonies. It was determined to be neither feasible nor useful to calculate court costs because court capacity would be reallocated to civil cases if criminal caseloads were to decrease.

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[b] Full-time public defense attorneys in King County are expected to handle approximately 100 felonies per year and 400 misdemeanors per year. Thus, the cost per case is either 1/100 of the cost of an attorney for a felony or 1/400 of the cost of an attorney for a misdemeanor.

Data on jail bookings, days spent in jail, and use of supplementary jail services (i.e., medical, psychiatric, and one-on-one guarding) were compiled by Looking Glass Analytics using data from the King County Department of Adult and Juvenile Detention (KCDAJD) record system. Costs for jail services were the contract rates paid by the City of Seattle. The incarceration dates for prison placements were provided by the Washington State Department of Corrections, and prison costs were estimated using average daily bed cost by institution.

We estimated LEAD program costs using three primary sources, including 1) monthly expense reports obtained from Evergreen Treatment Services' REACH homeless outreach program detailing LEAD personnel and operating costs as well as costs associated with LEAD client assistance, 2) annual salary and benefit reports provided by the King County Prosecutor's Office based on the fixed costs associated with review and coordination of LEAD participants' nondiverted cases, and 3) annual salary and benefit reports provided by the Public Defender Association associated with fixed costs of LEAD project management and legal services to LEAD participants.[c]

Data Analysis Plan

Overview. The goal of this evaluation was to test LEAD effects on average yearly criminal justice and legal system utilization and associated costs.

Group allocation. Randomized controlled trials represent the gold standard in evaluation. A cluster randomization schema[12] was originally proposed for the LEAD evaluation, such that individuals arrested during specified greenlight shifts in the original catchment area would be randomized to receive LEAD, and individuals arrested during redlight shifts in the original catchment area would be randomized to the system-as-usual control condition.

LEAD, however, was implemented in a real-world setting. Thus, changes to the originally proposed evaluation design were made to ensure LEAD's success on the ground. First, having a pathway for social contacts (i.e., individuals who were encountered on a greenlight shift within the original catchment area, were suspected by officers of recent drug or prostitution activity, had been arrested for these offenses in the past, and met the same inclusion criteria) to enter the LEAD program was deemed necessary from a policy and policing standpoint. Because they were all subject to the same inclusion criteria, LEAD participants recruited via social contacts and arrest diversion were very likely drawn from the same population (see analyses comparing these groups below). Second, after the evaluation began, operational partners recognized that there was a limited number of potential participants in the originally planned catchment area.

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[c] The numbers used in our calculations of program costs are based on 2014 budget levels and have been adjusted to account for prior year estimates. Annual prosecution fixed program costs were estimated at $153,805. This figure represents salary and benefits for one full time employee at a Senior Deputy level 2. Annual Public Defense program costs were estimated at $119,195. This number was calculated based on approximate annual cost of LEAD project management and legal services, which included .1FTE of Policy Director, .1FTE of Program Director, .3FTE of Project Supervisor, and .4FTE of LEAD Legal Services Attorney, plus associated benefits and overhead.

Over time, most of these individuals were approached for program involvement, which left a dwindling number of individuals available for the comparison group. Thus, to accommodate the need for an adequate and comparable control group, redlight areas (in addition to redlight shifts) were added to the evaluation. This ensured adequate representation of amenable and qualifying participants in the control condition to make up for the initial catchment area's relatively small population.

After careful consideration, a nonrandomized controlled design was employed for the evaluation of LEAD to accommodate these deliberate and important program implementation features. According to federal standards, nonrandomized controlled designs are consistent with the early intervention development and evaluation exemplified by the LEAD program.[13] Further, high-quality nonrandomized controlled evaluations that account for potential confounds show similar effect sizes and widely correspond to outcomes of randomized controlled trials.[14] In fact, the current University of Washington evaluation team used a nonrandomized controlled design in a prior, well-regarded evaluation of the 1811 Eastlake Housing First program in Seattle.[15-21] In that evaluation, it was decided that real-world considerations would contraindicate a randomized controlled design, because it was deemed impractical and unethical to withhold essential social services (i.e., housing) from individuals in the community.[20]

Despite its appropriateness for the current evaluation, a nonrandomized controlled design can result in intervention and control group imbalances and biases (e.g., selection bias).[22,23] We therefore employed both methodological and statistical approaches to avoid these problems. First, LEAD officers received focused instructions and training to ensure participants recruited to all groups were representative of the same population. Second, all control and LEAD participants had to meet the same set of inclusion criteria. The fulfilment of these criteria was systematically documented in participant files. Third, the same officers were involved in recruitment of both LEAD and control participants. Finally, we employed a statistical approach called propensity score weighting to balance the intervention and control groups, which increases confidence in the causal impact of the intervention effect.[23]

Propensity score weights. We used generalized boosted regression to estimate propensity scores for all eligible participants. This type of regression employs an automated, data-adaptive algorithm that fits several models by way of a regression tree and then merges the predictions of these various models. The advantage of generalized boosted regression is that it is computationally fast to fit; handles various types of data distributions; and takes into account interaction terms. In addition, it is invariant to one-to-one transformations of the independent variables; thus, the raw, log, and exponentiated variants lead to the same propensity score adjustments.[24]

Next, we created two weighting variables: one for estimating the average treatment effect (ATE) and one for estimating the average treatment effect for treated participants

(ATT).[23] ATE may be considered to be a between-subjects' difference or the average effect of moving an untreated population to a treated population.[25] Alternatively, treatment effects may be considered at the individual or within-subjects level. The ATT may be considered to be the average effect of treatment for those who receive the treatment—in this case LEAD.[25] Both types of propensity scores are relevant for the current analysis because, if considered effective, LEAD a) would be applied widely to the larger population of drug and sex work offenders (reflected in ATE) and b) is a highly tailored, individual-level intervention whose effects on treated participants, which are reflected in ATT effects, would be important to track as well. Both propensity score weights were thus used in analyses and reported on in the results section.

Propensity score analyses comprised three steps. First, we generated the propensity scores using generalized boosted regression. Where p is the propensity score, the ATE is $1/p$ for LEAD participants and $1/(1-p)$ for control participants. ATT is equal to 1 for treated participants, and $p/(1-p)$ for control participants. Second, we used ATE and ATT weights to conduct balance checks, which comprised a series of ordinary least squares, gamma, logistic and multinomial logistic regressions testing whether propensity scores improved the balance between the control and LEAD groups. Finally, we used the ATT and ATE as sampling weights in the primary analyses.

Primary analyses. Using SPSS 19 and Stata 13, descriptive analyses were conducted to describe the overall evaluation sample. LEAD program costs were calculated by summing REACH case management costs (e.g., LEAD personnel, operating expenses and client assistance) and LEAD-related prosecution and defense costs, dividing by the number of LEAD participants participating in the program each month, and then multiplying by 12 to create an estimated average yearly cost for each individual participating in the LEAD program.

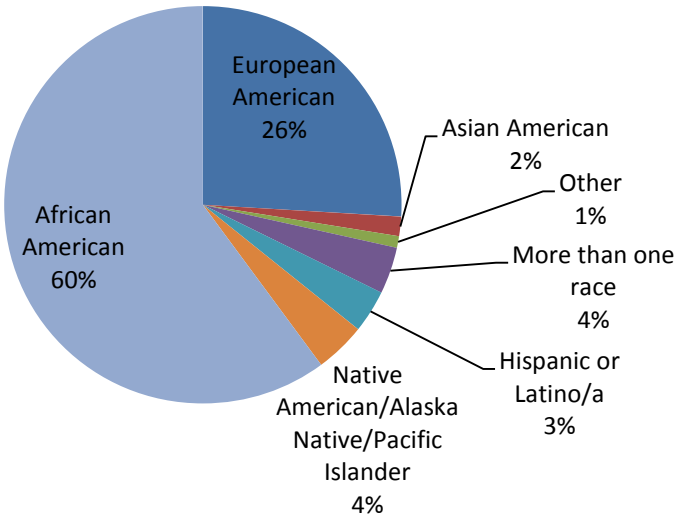
Ordinary least squares and logistic regression models were used to test the effect of group (i.e., LEAD vs system-as-usual control) on pre- to postevaluation-entry changes on average yearly criminal justice and legal system utilization and cost outcomes. Utilization outcomes included the yearly average number of bookings, jail days, prison days (dichotomized due to rarity), and legal cases (felonies and misdemeanors) for crimes committed. Criminal justice and legal system cost outcomes were the average, yearly estimated costs associated with felony and misdemeanor charges (i.e., prosecution and public defense) as well as jail (i.e., bookings, jail days, supplementary guarding, psychiatric and medical services) and prison time. Alphas were set to $p = .05$, indicating statistically significant results. Confidence intervals were set to 95%.

Results

Overall Sample Description

Participants (*N* = 316) had an average age of 40.12 (*SD* = 11.86) years and were predominantly male (34.18% female; *n* = 108). The racial and ethnic diversity of the overall sample is shown in Figure 1.

Figure 1. Ethnic/racial backgrounds of participants



Group Differences at Baseline

Wilcoxon rank-sum and Pearson chi-square tests indicated significant group differences on demographic variables at baseline (see Table 1 for descriptive statistics) between LEAD and control participants. Further, of the original evaluation sample (*N*=318), 11 participants died during the 5-year evaluation, including 9 LEAD participants (4.43%) and 2 (1.74%) control participants. This group difference was not statistically significant, $X^2(1, N = 318) = 1.60$, $p = .21$. It should be noted that LEAD participants' deaths were systematically documented, whereas control participants' deaths were not. These individuals were included in analyses,[d] and death

[d] There were two exceptions involving individuals who died during the postevaluation period. These individuals were removed from the present analyses because they died early on (<6 months) into the postevaluation period, which could bias outcomes based on yearly averages. Further, in some analyses, they represented outliers that placed undue influence on outcomes. That said, analyses both including and excluding these individuals indicated the same effects.

was used in propensity scores and subsequent weighted analyses. As shown in Table 1, there was only one significant group difference on baseline criminal justice and legal system utilization and costs (i.e., average yearly jail days).

Table 1. Baseline values by group

Variables	LEAD Group *n* = 202 Mean(*SD*)/%(*n*)	Control Group *n* = 114 Mean(*SD*)/%(*n*)	z/X^2	*p*-value
Age	41.72 (11.19)	37.28 (12.51)	-3.15	.002
Gender	39% (78) female	26% (30) female	4.90	.027
Race/ethnicity			19.50	.003
American Indian/Alaska Native/Pacific Islander	6% (13)	0% (0)		
Asian American	1% (1)	4% (4)		
Black/ African American	55% (112)	68% (78)		
European American	27% (54)	25% (28)		
Hispanic/Latino/a	5% (10)	1% (1)		
More than one race	4% (9)	3% (3)		
Other	1% (3)	0% (0)		
Death	4% (8)	1% (1)	2.50	.11
Years prior to evaluation entry	3.29 (.63)	3.05 (.52)	-3.56	<.001
Average yearly arrests	1.42(1.49)	1.38(1.70)	-.75	.45
Average yearly jail bookings	1.65(1.77)	1.36(1.79)	-1.96	.051
Average yearly jail days	32.44(41.02)	24.87(42.52)	-2.28	.02
Average yearly prison days	5.91(25.31)	3.88(18.34)	-.31	.76
Average yearly misdemeanor cases	.59(.86)	.60(.90)	-.31	.76

Average yearly felony cases	.21(.31)	.21(.33)	-.29	.77
Average yearly costs of criminal justice and legal system utilization (dollars)	$6,863($7,978)	$5,734($8,222)	-1.77	.08

Note: Percentages may not total 100% due to rounding.

Propensity Score Balance Check

To balance the groups on the baseline factors listed above, we constructed propensity scores and their associated ATE and ATT weights. Next, we conducted a check of the group balance after the ATE and ATT weights were applied. Table 2 below shows the balance check results. Nonsignificant values indicate propensity scores successfully balanced the LEAD and control groups for these variables. Findings indicated that both ATE and ATT performed moderately well in balancing the groups; thus, we report findings for both ATE and ATT in this report.

Table 2. Group balance check following application of propensity score weights

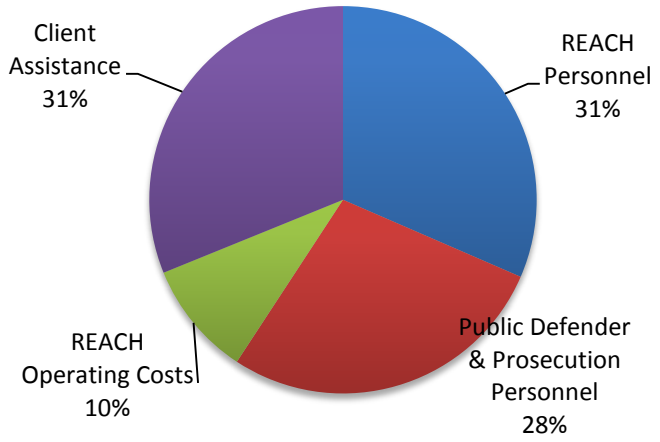
Covariates	Significance level of group imbalance (*p*-value)	
	ATE	ATT
Age	.03*	.09
Gender	.06	.10
Race/ethnicity (reference: European American)		
African American	.29	.38
Other race/ethnicity	.09	.07
Died	.14	.12
Years prior to evaluation entry	.01*	.01*
Average yearly arrests	.54	.29
Average yearly jail bookings	.16	.12
Average yearly jail days	.18	.17
Average yearly prison days	.71	.63
Average yearly misdemeanor cases	.79	.66
Average yearly felony cases	.63	.43

Note: * $p < .05$. See Table 1 for mean values of the imbalanced variables prior to propensity score generation.

Cost of the LEAD Program

LEAD program costs were estimated over the first 29 months of operation and averaged $899 per participant per month or $10,787 per year. Figure 2 provides a breakdown of costs associated with launching and operating the LEAD program during this time.

Figure 2. LEAD costs by expense type



The larger category of LEAD client assistance costs comprised the following:[e]

- 56% Motel/interim housing
- 18% Rental/housing
- 10% Other client expenses
- 5% Food and clothing
- 5% Education/training
- 4% Bus tickets
- 1% Identification expenses
- < 1% Group supplies
- <1% Remuneration
- <1% Costs associated with treatment

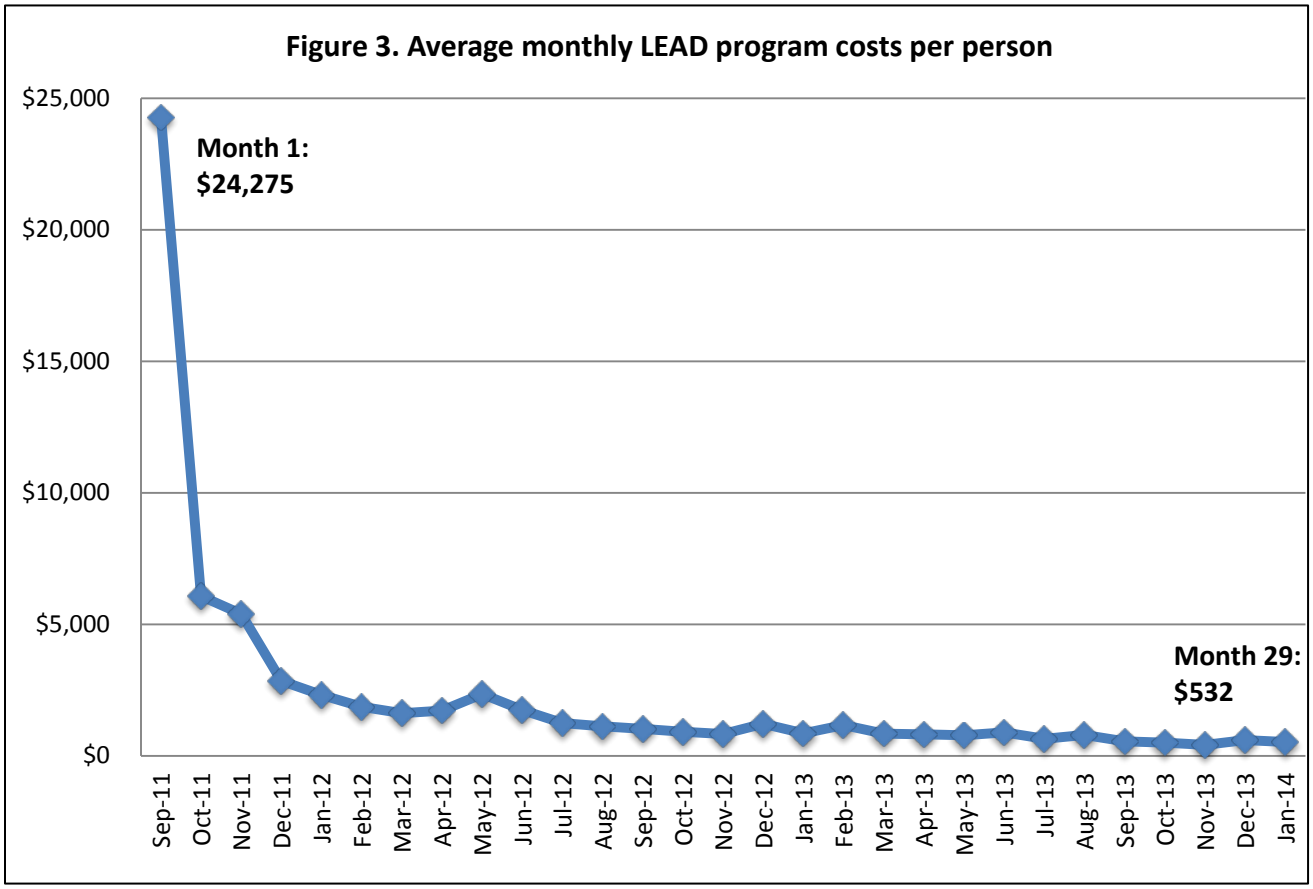
REACH operating costs associated with LEAD comprised the following:

- 40% Administrative Costs
- 16% Telecommunication

[e] These percentages do not take into account the first 7 months of REACH client assistance costs because these data were not broken down into the categories described here until Month 8.

- 15% Office Space
- 10% Project Vehicle Expenses
- 9% Office Supplies and Equipment
- 7% Local Travel
- 3% Computer and Tech Support

It is important to note that these figures represent operating costs for the first such program of its kind. Thus, as shown in Figure 3, the initial monthly costs per person were higher as the program started and recruited its first participants. After the initial start-up period, operating costs plateaued as more LEAD participants were referred to the program and as client assistance spending became more efficient.

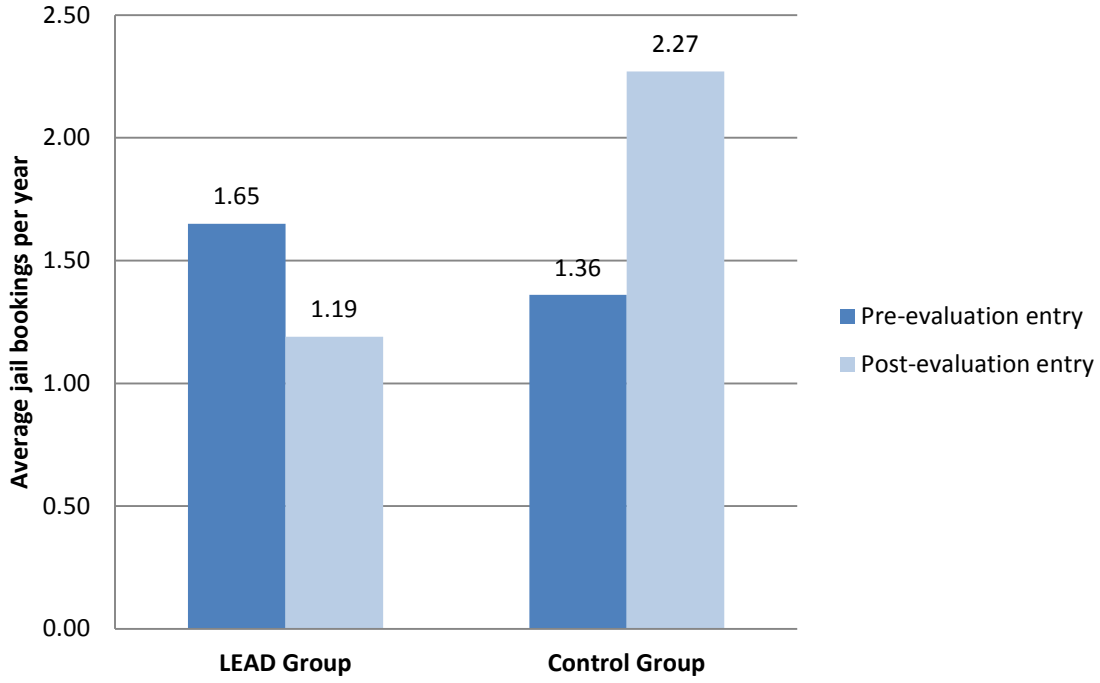


LEAD Effects on Criminal Justice and Legal System Utilization

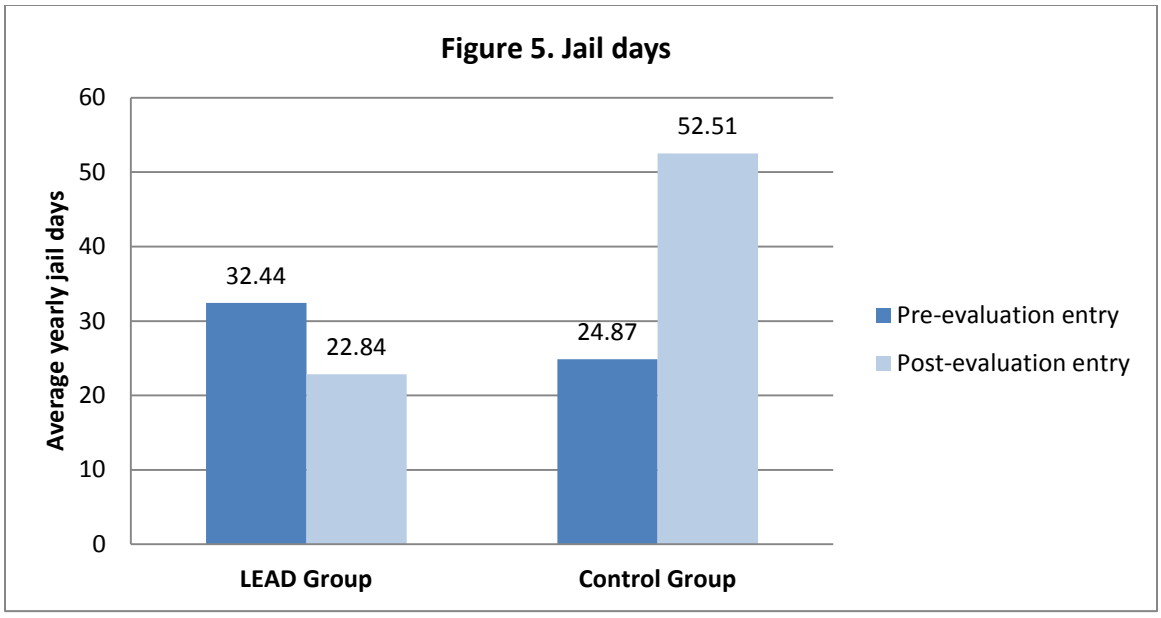
LEAD effects on jail bookings. The average treatment effect (ATE) model testing overall group effects on pre- to postevaluation changes in jail bookings was significant, $F(1, 314) = 31.25$, $p < .001$, $R^2 = .10$. The ATE indicated that, compared to control participants, LEAD

participants showed a significant reduction of 1.4 jail bookings subsequent to program entry (*B* = -1.40, *SE* = .25, $p < .001$, β = -.31). The ATT model, which indicated the treatment effect for LEAD participants alone, was also significant, $F(1, 314) = 30.69$, $p < .001$, $R^2 = .10$. Compared to control participants, LEAD participants showed a significant reduction in jail bookings subsequent to program entry (*B* = -1.43, *SE* = .26, $p < .001$, β = -.31). See Figure 4 below for the average yearly number of jail bookings both prior and subsequent to evaluation entry. See Appendix A for full output.

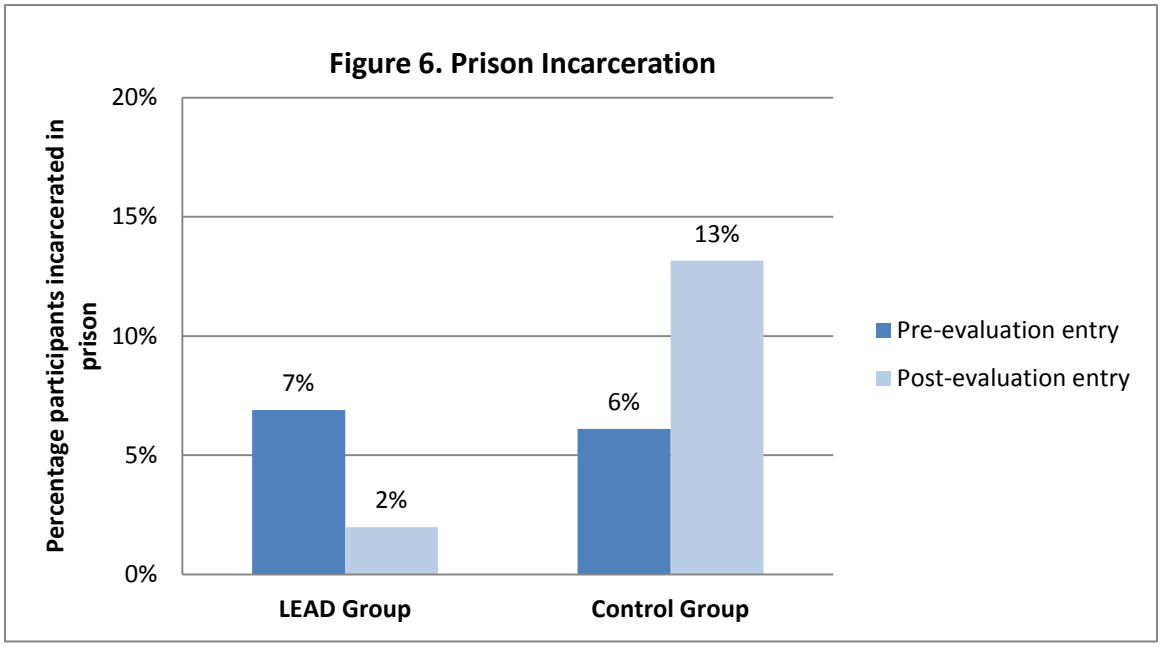
Figure 4. Jail bookings



LEAD effects on jail days. The average treatment effect (ATE) model testing overall group effects on jail days was significant, $F(1, 314) = 28.71$, $p < .001$, $R^2 = .10$. The ATE model indicated that, compared to control participants, LEAD participants showed a significantly greater reduction in jail days subsequent to program entry (*B* = -39.07, *SE* = 7.29, $p < .001$, β = -.32). The ATT model, which indicated the treatment effect for LEAD participants more specifically, was also significant, $F(1, 314) = 26.66$, $p < .001$, $R^2 = .11$. This model similarly indicated that LEAD participants showed a significant reduction in jail days subsequent to program entry (*B* = -40.60, *SE* = 7.86, $p < .001$, β = -.33). See Figure 5 for the average yearly number of jail days both prior and subsequent to evaluation entry.

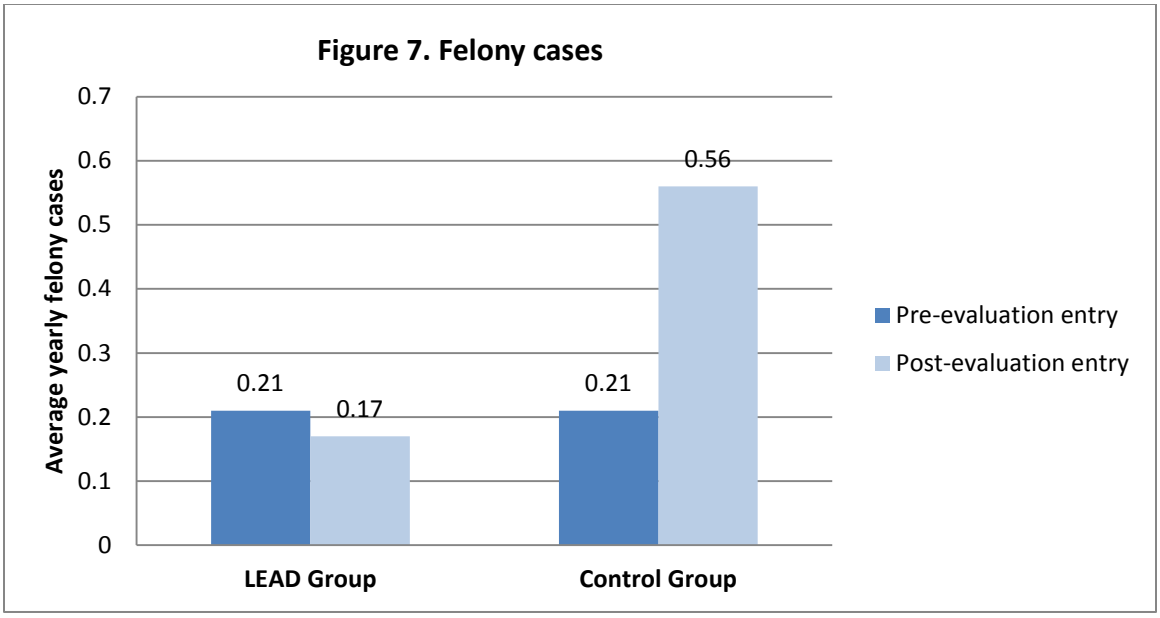


LEAD effects on prison days. The ATE model showed a significant group effect for average yearly number of prison days, Wald $X^2(2, N = 316) = 12.42$, $p = .002$. There was a significant group effect (*OR* = .13, robust *SE* = .07, $p < .001$), which indicated that, compared to control participants, LEAD participants had 87% lower odds of being incarcerated in a Washington State prison subsequent to program entry. The ATT model, which indicated the treatment effect for the LEAD participants specifically, was also significant, Wald $X^2(2, N = 316) = 12.72$, $p = .002$. Results indicated the LEAD group's similarly lower odds of incarceration in prison subsequent to LEAD involvement (*OR* = .12, robust *SE* = .07, $p < .001$). See Figure 6 below for the percentage of participants incarcerated prior and subsequent to evaluation entry.



LEAD effects on number of misdemeanor and felony cases. The models testing changes in the number of misdemeanor cases prior and subsequent to evaluation entry were not statistically significant (*p*s > .24). When we considered group differences for average yearly felony cases, however, the ATE model was significant, $F(1, 314) = 38.69$, $p < .001$, $R^2 = .13$. The ATE model indicated that, compared to control participants, LEAD participants showed a significant reduction in felony cases subsequent to program entry ($B = -.41$, $SE = .07$, $p < .001$, $\beta = -.36$). The ATT model, which indicated the treatment effect for LEAD participants specifically, was also significant, $F(1, 314) = 38.26$, $p < .001$, $R^2 = .13$. This model similarly indicated that LEAD participants showed a significant reduction in the average number of felony cases per year ($B = -.42$, $SE = .07$, $p < .001$, $\beta = -.36$). See Figure 7 below for the average yearly number of felony cases both prior and subsequent to evaluation entry.

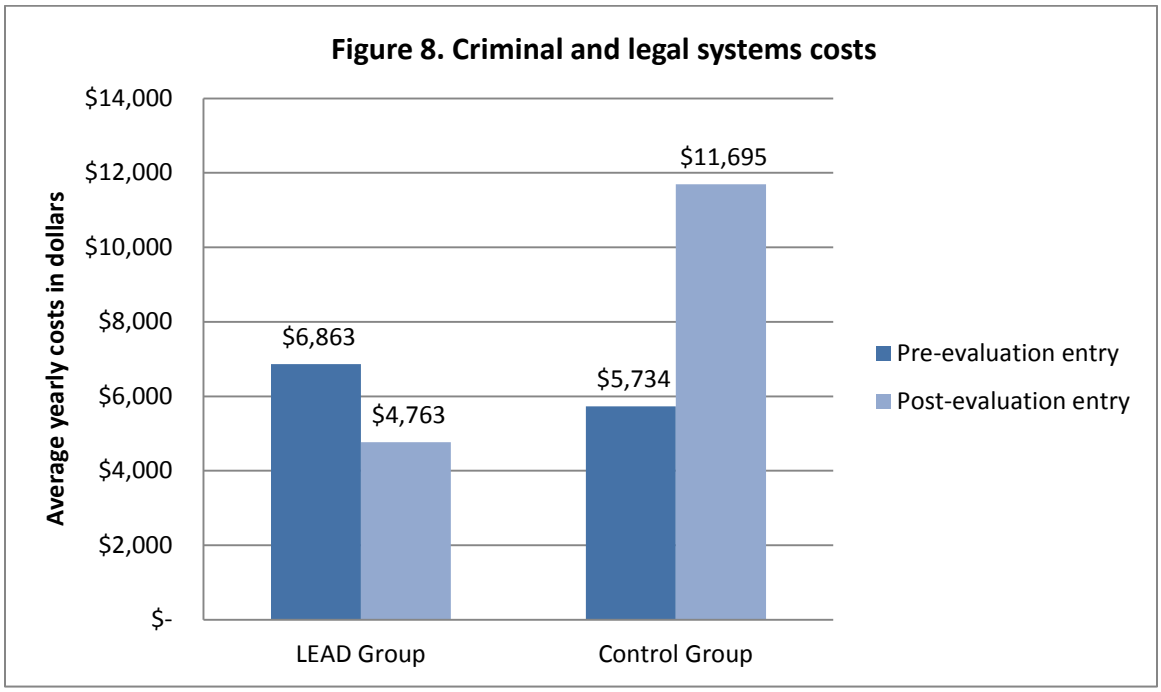
Figure 7. Felony cases



LEAD Effects on Costs Associated with Criminal Justice and Legal System Utilization

We considered the group effect on the pre- to postevaluation entry changes on some criminal justice and legal system costs (i.e., prosecution, defense, jail and prison). The ATE model was significant, $F(1, 314) = 43.98$, $p < .001$, $R^2 = .15$. After propensity score weighting was taken into account, LEAD participants showed a significant reduction in criminal justice and legal system costs compared to control participants ($B = -8.55$, $SE = 1.29$, $p < .001$, $\beta = -.39$). The ATT model, which indicated the treatment effect for LEAD participants more specifically, was also significant, $F(1, 314) = 40.83$, $p < .001$, $R^2 = .15$. This model similarly indicated that LEAD

participants showed a significant reduction in costs subsequent to program entry (*B* = -8.95, *SE* = 1.40, $p < .001$, β = -.39). See Figure 8 below for average yearly costs.



Discussion

The LEAD program is reaching a diverse population that has experienced the street-to-jail-to-street revolving door. Findings indicated that LEAD is associated with positive effects for criminal justice and legal system utilization and associated costs.

LEAD Program Costs

Averaged over the first 29 months of operation, the LEAD program cost approximately $899 per participant per month ($10,787 per participant per year). LEAD program costs were within the range of another program offering housing and supportive services to homeless individuals in King County (e.g., single-site Housing First).[20] Analysis of LEAD program expenditures indicated that the average monthly cost per participant decreased over time. This decrease occurred as the program moved past its initial start-up phase, recruited greater numbers of participants, became more efficient in client assistance spending, and benefited from Medicaid expansion due to the Affordable Care Act (ACA).

It should be noted that these analyses reflect the cost of the first LEAD program implemented in King County, Washington with a specific priority population. Thus, these cost findings may not be directly generalizable to other communities. When considering the cost of initiating LEAD, it is important to take into account various factors that can impact implementation costs. For example, in the present program, 56% of all client assistance dollars went towards motel/interim housing costs, which reflects both the high prevalence of homelessness in this community's priority population as well as King County's high cost of living. Thus, depending on the characteristics of a given community's priority population for LEAD and on other factors (e.g., communities' ability to provide permanent versus temporary housing, rental/housing market values, salary ranges dependent on cost of living, extent of Medicaid coverage for services), program costs may vary widely. It is also important to consider that initial start-up costs of the LEAD were relatively high; however, as the program expanded, the average monthly cost per participant decreased precipitously. These points and others should be taken into consideration when interpreting these findings and projecting costs of LEAD implementation for other communities.

LEAD Effects on Criminal Justice and Legal System Utilization and Costs

Although there was no statistically significant LEAD effect on number of misdemeanor cases, LEAD participants showed significant decreases across average yearly felony cases, King County jail bookings, jail days, and Washington State prison days. In contrast, the system-as-usual control participants showed increases across these utilization variables. These group differences translated into both statistically significant and operationally meaningful LEAD effects on costs associated with criminal justice and legal system utilization.

These positive findings are likely due to features of the LEAD program. LEAD case managers work from a low-barrier, harm-reduction orientation, which entails meeting participants 'where they are at' in their communities and in their own motivation to change. Additionally, all LEAD participants receive proactive case management that supports fulfilment of basic needs, including housing stability, job attainment, and enrollment in drug and alcohol treatment. Further, LEAD participants' case managers coordinate with prosecutors to ensure nondiverted cases are managed to support and not compromise LEAD intervention plans.

The observed reductions in criminal justice and legal system utilization outcomes and associated costs correspond to the literature on other harm reduction oriented supportive programming for marginalized and homeless populations. For example, research on harm-reduction oriented supportive housing (e.g., Housing First) has likewise indicated that a harm-reduction style paired with instrumental support is associated with lower use of publicly funded systems utilization and associated costs.[15,20,21,26]

Other potential explanations for these findings, however, should be explored. First, it is important to address the statistically significant increases in the control group's utilization of publicly funded services subsequent to evaluation entry. The Seattle West Precinct was subject to policy changes during the LEAD evaluation time period, which could have affected both the LEAD and control groups' number of arrests and charges and thereby resulting jail time, prison days and legal cases. It is therefore possible that more focused enforcement—and not necessarily increased criminal activity—was responsible for increases across utilization outcomes in the control group. These larger, systemic changes, however, would not account for the LEAD group's drop in utilization, which would have been expected to reflect the same environmental conditions as the control group.

Another potential explanation for these findings is that officers could have made intentional decisions to avoid arresting LEAD participants, which would have impacted subsequent criminal justice and legal system utilization and associated costs. Upon further consideration, however, this explanation is not highly probable. Only approximately 40 of 1,300 SPD officers were involved in the LEAD program. Further, few—if any—officers outside of the LEAD squads were aware of participants' group assignments. There were neither department-wide communications/trainings about the program nor system flags visible to officers that would signal LEAD participation. Thus, we are confident the observed LEAD effects are not primarily due to intentional differences in decision-making by SPD officers.

Limitations

This evaluation's limitations should be noted. First, given real-world implementation realities, the originally planned randomization schema was relaxed, and a nonrandomized controlled design was employed in its place. To increase confidence in the causal impact of LEAD versus the system-as-usual control condition, both methodological and statistical

approaches were used to balance the control and LEAD groups. For example, LEAD officers were trained on the application of the inclusion/exclusion criteria, and they made a systematic effort to identify qualifying LEAD and control participants using the same criteria. Further, there was no penalty to officers for excluding individuals from the evaluation based on the inclusion/exclusion criteria. LEAD squads were also consistent over the course of the evaluation for both control and LEAD groups; thus, the same officers were responsible for assessing all participants' inclusion/exclusion criteria over the course of the evaluation. Finally, we reduced the influence of potential selection bias using propensity score weighting, which is a statistical technique designed to ensure greater balance across groups and thereby decrease bias due to potentially confounding variables. The propensity scores balanced the groups on variables aside from years included in the evaluation. Thus, we accounted for this factor by primarily analyzing average events per year, which placed all participants' outcomes on the same scale. Although not a panacea, these methodological and statistical measures were used to achieve greater group comparability.

Second, descriptive sample analyses indicated some significant baseline differences between LEAD and control groups. Specifically, the LEAD group comprised more female and older participants. However, since the groups were comparable in terms of recent criminal history, this difference does not seem likely to account for changes in utilization and associated costs. It is also worth noting that there was a higher proportion of African Americans in the control condition. Past arrest data suggest that drug arrests in the south end of the West Precinct were more likely to involve African-Americans than those in the Belltown neighborhood. The south end was, however, not included in the LEAD catchment area, and these participants were instead included in the control condition. Thus, the observed imbalance is more likely due to preexisting factors rather than officer behavior. Fortunately, this as well as all other baseline group demographic differences—except the ATE for age—were successfully balanced by the propensity scores.

Finally, it should be noted that there are some specific features of the geographical location of the LEAD program and this evaluation that may not generalize to other areas that implement LEAD. For example, 80% of the LEAD participants in this evaluation were homeless, which may have resulted in different types of system utilization and associated costs than in communities where this is not the case. Moreover, the costs of the programming (e.g., housing, salaries) discussed in this report are based on the cost of living in King County, Washington, which is high relative to other areas in the US. Further, this LEAD implementation was started before the ACA was implemented. Therefore, in some communities where ACA is currently available, programming costs may not be as high as those featured in this report. By the same token, in communities where the ACA has not been enacted, LEAD programming may be more expensive because those communities would bear more of the program costs. Taken together, the costs of implementing LEAD programming in this report are representative of a specific set

of circumstances in a specific geographic location and may differ across communities and across time.

Conclusions and Future Directions

Findings indicated positive effects of the LEAD program on reducing average yearly criminal justice and legal system utilization and associated costs. The limitations of the current evaluation were ameliorated using both methodological and statistical approaches, which increased our confidence that the LEAD effects were due to the program itself and not other potentially confounding factors.

This report is one in a series being prepared by the University of Washington LEAD Evaluation Team over the next two years. The next report, which we plan to release in Winter 2015/16, will describe our evaluation of within-subjects changes among LEAD participants on psychosocial, housing and quality-of-life outcomes.

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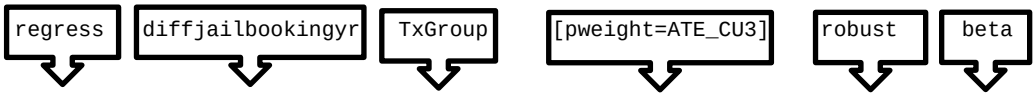
APPENDICES

Appendix A. Primary outcome analysis output

APPENDIX A. Primary outcome analysis output

Key for abbreviations used in this output



regress	diffjailbookingyr	TxGroup	[pweight=ATE_CU3]	robust	beta
Analysis type: ordinary least squares regression or logistic regression	Outcome: Diff=difference score Jailbooking = variable Yr = yearly average	Predictor: TxGroup= treatment group (LEAD vs control)	Propensity score weighting (ATT or ATE)	Robust standard errors	"beta" requests standardized coefficients (β); "OR" requests odds ratios

```
. regress  diffjailbookingyr TxGroup [pweight=ATE_CU3], robust beta
(sum of wgt is   5.5671e+02)

Linear regression                                       Number of obs =     316
                                                        F(  1,   314) =   31.25
                                                        Prob > F      =  0.0000
                                                        R-squared     =  0.0983
                                                        Root MSE      =  2.1228

------------------------------------------------------------------------------
             |               Robust
diffjailbo~r |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
     TxGroup |  -1.399279    .250299    -5.59   0.000                -.3135321
       _cons |   .9484339   .1961587     4.84   0.000                        .
------------------------------------------------------------------------------

. regress  diffjailbookingyr TxGroup [pweight=ATT_CU3], robust beta
(sum of wgt is   3.5187e+02)

Linear regression                                       Number of obs =     316
                                                        F(  1,   314) =   30.69
                                                        Prob > F      =  0.0000
                                                        R-squared     =  0.0992
                                                        Root MSE      =  2.1415

------------------------------------------------------------------------------
             |               Robust
diffjailbo~r |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
     TxGroup |  -1.432631   .2586106    -5.54   0.000                -.3149615
       _cons |   .9717461   .2068964     4.70   0.000                        .
------------------------------------------------------------------------------

. regress  diffjaildaysyr TxGroup [pweight=ATE_CU3], robust beta
(sum of wgt is   5.5671e+02)

Linear regression                                       Number of obs =     316
                                                        F(  1,   314) =   28.71
                                                        Prob > F      =  0.0000
                                                        R-squared     =  0.1037
                                                        Root MSE      =  57.546

------------------------------------------------------------------------------
             |               Robust
diffjailda~r |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
     TxGroup |  -39.07051   7.291718    -5.36   0.000                -.3219773
       _cons |   29.55008   6.296545     4.69   0.000                        .
------------------------------------------------------------------------------
```

```
. regress  diffjaildaysyr TxGroup [pweight=ATT_CU3], robust beta
(sum of wgt is   3.5187e+02)

Linear regression                                       Number of obs =     316
                                                        F(  1,   314) =   26.66
                                                        Prob > F      =  0.0000
                                                        R-squared     =  0.1072
                                                        Root MSE      =  58.114

------------------------------------------------------------------------------
             |               Robust
diffjailda~r |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
     TxGroup |  -40.60103   7.863443    -5.16   0.000                -.3274562
       _cons |   31.00829   6.942364     4.47   0.000                        .
------------------------------------------------------------------------------

. logistic  dpostprisondays dpreprisondays TxGroup [pweight=ATE_CU3], robust or

Logistic regression                               Number of obs   =        316
                                                  Wald chi2(2)    =      12.42
                                                  Prob > chi2     =     0.0020
Log pseudolikelihood = -132.90814                 Pseudo R2       =     0.1073

------------------------------------------------------------------------------
             |               Robust
dpostprisondays | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------+--------------------------------------------------------------
 dpreprisondays |   2.479554    2.04799     1.10   0.272     .4912731    12.51481
       TxGroup |   .1262714   .0744457    -3.51   0.000     .0397615    .4010022
         _cons |    .147758   .0424465    -6.66   0.000     .0841445    .2594634
------------------------------------------------------------------------------

. logistic  dpostprisondays dpreprisondays TxGroup [pweight=ATT_CU3], robust or

Logistic regression                               Number of obs   =        316
                                                  Wald chi2(2)    =      12.72
                                                  Prob > chi2     =     0.0017
Log pseudolikelihood = -79.752652                 Pseudo R2       =     0.1183

------------------------------------------------------------------------------
             |               Robust
dpostprisondays | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------+--------------------------------------------------------------
 dpreprisondays |   2.599391   2.227129     1.11   0.265     .4848103    13.93707
       TxGroup |   .1194716   .0712399    -3.56   0.000     .0371279    .3844405
         _cons |   .1526166   .0443973    -6.46   0.000     .0862941    .2699123
------------------------------------------------------------------------------

. regress  diffmiscase_v2yr TxGroup [pweight=ATE_CU3], robust beta
(sum of wgt is   5.5671e+02)

Linear regression                                       Number of obs =     316
                                                        F(  1,   314) =    1.36
                                                        Prob > F      =  0.2438
                                                        R-squared     =  0.0044
                                                        Root MSE      =  1.0702

------------------------------------------------------------------------------
             |               Robust
diffmiscas~r |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
     TxGroup |  -.1423044   .1218601    -1.17   0.244                -.0664593
       _cons |   .0014021   .0921303     0.02   0.988                        .
------------------------------------------------------------------------------
```

```
. regress  diffmiscase_v2yr TxGroup [pweight=ATT_CU3], robust beta
(sum of wgt is   3.5187e+02)

Linear regression                                       Number of obs =     316
                                                        F(  1,   314) =    1.37
                                                        Prob > F      =  0.2422
                                                        R-squared     =  0.0042
                                                        Root MSE      =  1.0487

------------------------------------------------------------------------------
             |               Robust
diffmiscas~r |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
     TxGroup |  -.1371447   .1170487    -1.17   0.242                -.0647334
       _cons |  -.0001085    .087918    -0.00   0.999                        .
------------------------------------------------------------------------------

. regress  difffelcase_v2yr TxGroup [pweight=ATE_CU3], robust beta
(sum of wgt is   5.5671e+02)

Linear regression                                       Number of obs =     316
                                                        F(  1,   314) =   38.69
                                                        Prob > F      =  0.0000
                                                        R-squared     =  0.1274
                                                        Root MSE      =  .53619

------------------------------------------------------------------------------
             |               Robust
difffelcas~r |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
     TxGroup |  -.4090761   .0657639    -6.22   0.000                -.3569815
       _cons |   .3681407   .0558226     6.59   0.000                        .
------------------------------------------------------------------------------

. regress  difffelcase_v2yr TxGroup [pweight=ATT_CU3], robust beta
(sum of wgt is   3.5187e+02)

Linear regression                                       Number of obs =     316
                                                        F(  1,   314) =   38.26
                                                        Prob > F      =  0.0000
                                                        R-squared     =  0.1328
                                                        Root MSE      =  .53642

------------------------------------------------------------------------------
             |               Robust
difffelcas~r |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
     TxGroup |  -.4231262   .0684039    -6.19   0.000                -.3643847
       _cons |   .3800053   .0587442     6.47   0.000                        .
------------------------------------------------------------------------------

. regress  diff_th_avgcost TxGroup [pweight=ATE_CU3], robust beta
(sum of wgt is   5.5671e+02)

Linear regression                                       Number of obs =     316
                                                        F(  1,   314) =   43.98
                                                        Prob > F      =  0.0000
                                                        R-squared     =  0.1486
                                                        Root MSE      =  10.245

------------------------------------------------------------------------------
             |               Robust
diff_th_av~r |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
     TxGroup |  -8.545401     1.2885    -6.63   0.000                -.3855001
       _cons |     6.4661   1.088174     5.94   0.000                        .
------------------------------------------------------------------------------
```

```
. regress  diff_th_avgcost TxGroup [pweight=ATT_CU3], robust beta
(sum of wgt is   3.5187e+02)

Linear regression                                      Number of obs =     316
                                                       F(  1,   314) =   40.83
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.1539
                                                       Root MSE      =   10.41

------------------------------------------------------------------------------
             |               Robust
diff_th_av~r |      Coef.   Std. Err.      t    P>|t|                     Beta
-------------+----------------------------------------------------------------
     TxGroup |  -8.949846   1.400676    -6.39   0.000                -.392276
       _cons |   6.849874   1.217925     5.62   0.000                       .
------------------------------------------------------------------------------
```