

# Evaluating Cost Savings Associated with Los Angeles County's Mental Health Full Service Partnerships

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## Preface

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In 2004, California voters approved Proposition 63, which was signed into law as the Mental Health Services Act (MHSA). The MHSA made resources available to counties to support treatment for individuals with mental illness. MHSA-funded services are comprehensive in nature, but the current report focuses specifically on cost savings associated with Full Service Partnership programs implemented in Los Angeles County. The current analysis expands on our previous evaluation work examining the reach and outcomes of MHSA-funded programs (Ashwood et al., 2018). This work was conducted by the RAND Corporation and was funded by the Los Angeles County Department of Mental Health, in partnership with the California Mental Health Services Authority (CalMHSA).

### RAND Health Care

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### CalMHSA

The California Mental Health Services Authority (CalMHSA) is an organization of county governments working to improve mental health outcomes for individuals, families, and communities. Prevention and early intervention programs implemented by CalMHSA are funded by counties through the voter-approved Mental Health Services Act (Prop. 63). Prop. 63 provides the funding and framework needed to expand mental health services to previously underserved populations and all of California's diverse communities.

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# Summary

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## Background

In 2004, California voters approved Proposition 63, the Mental Health Services Act (MHSA). The MHSA levied a 1 percent tax on all California personal incomes over \$1 million, resulting in substantial new funding for mental health in the state. The intent of the act was to address the urgent need for accessible, recovery-based, community mental health services.

Key MHSA-funded services include Full Service Partnership (FSP) programs that are based on the assertive community treatment (ACT) and wraparound mental health services models for individuals with serious mental illness. These programs use a team approach to provide comprehensive, community-based psychiatric treatment, rehabilitation, and support for “whatever it takes” to move toward recovery and resilience for target populations (Cashin et al., 2008). FSP programs extend ACT programs by emphasizing housing first and explicitly calling for a client-driven and recovery-oriented focus (Spaite and Davis, 2005). The Los Angeles County Department of Mental Health (LAC DMH) contracted with FSPs throughout the county to manage the recruitment of clients and the coordination of efforts to address their needs.

California has a decentralized behavioral health system in which overall goals are set by the state, but treatment services are provided independently by its 58 counties. As a result, MHSA funding has been largely administered by California’s counties. The current evaluation focuses on Los Angeles County, which used MHSA funds to provide comprehensive services across the life span, including expansion of access to FSP services. This report focuses specifically on LAC DMH FSP programs for children, transition-age youth (TAY), and adults.

Our previous evaluation of MHSA-funded programs examined outcomes associated with utilization of FSP programs over a five-year time frame (2012–2016), during which 24,282 clients were served (Ashwood et al., 2018). That evaluation found that the FSP programs served a highly vulnerable population of people who tend to have severe psychiatric diagnoses, high rates of homelessness, and simultaneous problems with mental health, physical health, and social issues. Our analysis of available outcomes data found that FSP participation is associated with improvements in homelessness, criminal justice detention, behavioral health inpatient stays, connection to outpatient primary care, and employment among adults. The current analysis builds on that work by examining potential cost savings associated with these outcomes during the same five-year period (2012–2016). We examine the extent to which the costs associated with serving FSP clients are recouped via savings associated with those measurable outcomes.

## Approach

We estimated annual government spending associated with five outcome areas targeted by FSPs: homelessness, criminal justice detention, behavioral health inpatient stays, connection to outpatient *primary* care, and employment—each previously shown to change as a function of FSP participation (Ashwood et al., 2018). We examined the government cost savings from these outcomes over a five-year period (2012–2016), comparing spending during the 12-month interval prior to individuals’ enrollment in FSPs with the 12-month interval after FSP enrollment. We chose to compare these periods because, although we had data covering the period post-enrollment, we had data covering only the 12 months prior to enrollment, and we wanted to have comparable periods for the spending analyses.

We quantified these outcomes using a range of administrative data, including claims data from all payers and program data shared with the evaluators by LAC DMH. We then gathered associated costs (in 2018 U.S. dollars) from primary and secondary sources that reported annualized expenditures by county, state, and federal governments associated with support services among residents in Los Angeles County. The costs spent on these services are separate from expenditures from the FSP programs themselves. We estimated the change in annual spending on these outcomes between the year prior to enrollment and the year following enrollment and summed up the net financial change. Any decrease in spending is counted as savings on spending on these outcomes and can be thought of as an estimate of the financial impact of the FSP programs. Finally, we compared the net savings with the total program expenditures to estimate how much of total spending is recuperated through savings.

The perspective of the cost analysis was from the vantage point of the government—inclusive of county, state, and federal levels—over the five-year period, as these are the primary payers of support services for FSP recipients. Following primary analyses, we conducted a series of sensitivity analyses to test the robustness of our results to parameter misspecifications (i.e., we wanted to see how much the results would change if cost estimates were off target). We also forecast cost savings over the next five years based on three potential enrollment scenarios.

## Key Findings

We estimate that, over a five-year period, there were cost savings of \$82.9 million associated with the FSP outcomes we examined, representing a 24 percent reduction in non-FSP spending. More specifically, for the five outcomes studied, we estimate a reduction from \$345 million to \$262 million in service-related expenditures borne by the government among the 24,282 FSP beneficiaries.

The largest cost savings came from reductions in criminal justice detention (\$63.1 million in savings)—both in the percentage of individuals detained and the average duration in detention. In this domain, there was a 68 percent reduction in costs. This was followed by savings in spending on behavioral health inpatient stays (\$14.2 million, or 18 percent) and homelessness

(\$2.6 million, or 4 percent). When comparing cost savings by group (children, TAY, adults), we found that the largest cost savings in relative terms came from TAY (30 percent) and in absolute terms from adults (\$51.6 million). Cost savings were observed across four of the five outcomes examined. The exception was connection to outpatient primary care, where there was a 16 percent increase in costs; however, additional expenditures in primary care likely served to mitigate the risk—and associated costs—of inpatient care for physical health conditions, which were not measured, over the same period.

Sensitivity analyses explored the impact of potential variations in costs on savings. We found that the cost savings would be maintained even if we modified our assumptions about the cost of behavioral health inpatient stays (23 percent to 25 percent savings, depending on the cost scenario), duration of homelessness (21 percent to 24 percent savings), and duration of criminal justice detention (17 percent to 29 percent savings). Projected cost savings over the next five years ranged from \$143 million to \$202 million, assuming 3,500 to 7,000 new FSP enrollees per year over this period.

The average annual FSP program expenditure for 2012–2016 was \$13,807 per client. That means that the total expenditures for the first year of enrollment for the 24,282 enrollees were \$335.3 million. Our analysis was limited to a discrete set of outcomes and associated costs, and our estimates were intentionally conservative, but at the very least they indicate that 24.7 percent of the \$335.3 million spent on clients' first year in FSP programs was offset by savings, without accounting for indirect financial benefits of the outcomes examined, other potential financial benefits not associated with the outcomes we were able to measure, or any of the nonfinancial benefits associated with improved health, housing, and employment among beneficiaries. We were unable to measure all the financial benefits of FSP programs, and nonfinancial benefits, such as improved quality of life, cannot readily be quantified in dollars. Thus, this analysis necessarily underestimates the benefits.

## Recommendations

We were limited in our analysis to assess outcomes that are reliably measured in the FSP program data. We recommend that LAC DMH strengthen its data collection efforts by collecting data on a wider range of outcomes of interest, using multiple-item scales instead of single-item measures, and ensuring that data are collected at regular time intervals. These efforts would improve the value of the data for tracking changes in outcomes over time. We recommend improving measurement of client status over time through the key-event records, so that housing, education, and employment status may be measured more accurately. We also recommend improved items that more accurately capture social engagement and meaningful activity. Because many data collection procedures are state-mandated, advocacy may be needed at the state level to adjust data collection requirements.

## Conclusions

The current analysis found evidence that the investment LAC DMH has made in its FSP programs has yielded positive outcomes and resulted in a substantial decrease in spending on criminal justice detention and more-moderate decreases in spending on behavioral health inpatient stays and on clients who are homeless. There are nonfinancial benefits, such as improved mental health and quality of life, that complement the measured financial benefits. Both must be considered to fully describe the benefits of these programs.

## Acknowledgments

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## Abbreviations

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CalMHSA	California Mental Health Services Authority
ER	emergency room
FSP	Full Service Partnership
LAC DMH	Los Angeles County Department of Mental Health
MHSA	Mental Health Services Act
PCP	primary care provider
SSI	Supplemental Security Income
TAY	transition-age youth

# 1. Background

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## Los Angeles County's Investment in Full Service Partnership Programs

On November 2, 2004, California voters approved Proposition 63, now known as the Mental Health Services Act (MHSA). The MHSA levied a 1 percent tax on California personal income over \$1 million, resulting in substantial new funding for mental health in the state. The intent of the act was to address the urgent need for expanding accessible, recovery-based, community mental health services.

California has a decentralized behavioral health system in which services are directed by its 58 counties. As a result, MHSA funding largely supports programs that are directly administered by California's counties. The MHSA provided counties with guidance on how the funds were to be spent (Brown, Dooley, and Kent, 2016). Relevant to the current evaluation, 45 percent of funds were allocated to community services and supports, with the majority of this funding going to Full Service Partnership (FSP) programs.

California's FSP programs are rooted in assertive community treatment (ACT) approaches that provide comprehensive, community-based psychiatric treatment, rehabilitation, and support for "whatever it takes" to move toward recovery and resilience for target populations (Cashin et al., 2008; Gilmer et al., 2010). FSP programs extend ACT programs by emphasizing housing first and explicitly calling for a client-driven and recovery-oriented focus (Spaite and Davis, 2005). The housing-first model has been described and evaluated in the literature (see, e.g., Padgett, Gulcur, and Tsemberis, 2006). FSP programs provide a range of services, including housing, mental health services, and social supports (educational, vocational, and financial). These services aim to be client-centered and build on the existing strengths and resiliencies of clients. Long-term recovery and self-sufficiency are promoted through the development of the physical, emotional, and intellectual skills needed by people with mental illness. However, there has been wide variation in how FSP programs are actually implemented (Cashin et al., 2008; Gilmer et al., 2013).

The current evaluation focuses on Los Angeles County, which used some of its MHSA funds to greatly expand access to FSP programs. The Los Angeles County Department of Mental Health (LAC DMH) previously established FSP programs through Assembly Bill 2034, legislation that specifically funded demonstration programs for mentally ill adults who were homeless (LAC DMH, undated). MHSA funds allowed LAC DMH to build on that foundation by making FSP services available to children (ages 0–15), transition-age youth (TAY; ages 16–25), and adults (age 26 and older), as well as by providing client supportive services, such as rental subsidies, food, and clothing.

LAC DMH’s FSP programs have focused on individuals with severe mental illness who would benefit from intensive services. In addition to mental illness, LAC DMH FSP clients have significant psychosocial problems, including a history of homelessness, incarceration, frequent use of emergency rooms (ERs) or inpatient hospitals, and school failure. The program is client-driven, providing the services each client chooses to support wellness and recovery. The comprehensive care program provides mental health services and integrated substance use treatment for those who need it; peer and caregiver support groups; around-the-clock crisis care; and housing, employment, and education support.

As of fall 2018, LAC DMH is in the process of adding new FSP slots that strategically prioritize individuals just released from incarceration; homeless individuals; Intensive Service Recipients (ISRs), who are high utilizers of inpatient psychiatric services; and Housing for Health clients, vulnerable individuals who are both homeless and high utilizers of care.

## The Previous Evaluation

In our previous evaluation of LAC DMH’s MHS-funded programs, we found that FSP programs serve highly vulnerable clients who tend to have severe psychiatric diagnoses, high rates of homelessness, and simultaneous problems with mental health, physical health, and social issues. We analyzed available outcomes data and found that FSP clients experienced improvements in their life circumstances and functioning, including *decreased* rates of homelessness, criminal justice detention, and behavioral health inpatient stays. Adults also had increased rates of employment and connection to a primary care provider (Ashwood et al., 2018).

## The Current Analysis

The current analysis builds on the previous evaluation by examining the financial costs and savings associated with these FSP outcomes for children, TAY, and adults over a five-year time horizon (2012–2016), during which 24,282 clients were served. LAC DMH spent an average of \$13,807 per year on FSP programs from 2012 to 2016. This is equal to a total of \$335.3 million spent on all clients during their first year of enrollment. These programs are expensive because of the complexity of clients served and the “whatever it takes” philosophy. Many of these clients are coping with severe mental illness, housing insecurity, unemployment, and underemployment.

Although the primary focus of these programs is to improve the lives of the clients they serve rather than recuperating expenditures, LAC DMH sought to understand whether there are financial savings from these programs and how they relate to expenditures over this period. The breadth of services provided through these programs means that potential savings can occur across a number of areas. We estimate costs associated with each of the outcomes that are borne by the government (local, state, and federal) but are generally *separate* from the \$335.3 million in direct FSP expenditures over this period. We then compare changes in costs for each of the outcomes for FSP clients from the year prior to enrollment with the year following enrollment to

estimate potential savings from FSP participation. Finally, we compare the savings achieved with the total program expenditures to estimate how much of the expenditures are offset by savings. We also relate these cost savings to FSP direct expenditures (\$335 million) in the results and discussion. We expected to observe overall cost savings across outcomes, as well as outcome-specific cost savings for criminal justice detention, inpatient behavioral health stays, and employment. We also expected a modest increase in expenditures for housing subsidies as individuals transitioned out of homelessness, as well as an increase in outpatient primary care expenditures as individuals were connected with primary care providers.

## Purpose and Organization of This Report

This report describes the results of an objective, external evaluation of the outcomes, costs, and cost savings associated with MHSA-funded FSP programs for children, TAY, and adults. We outline our analytic methods in Chapter 2. In Chapter 3, we present costs and cost savings associated with five key program outcomes: homelessness, criminal justice detention, behavioral health inpatient stays, employment, and connection to outpatient primary care. Finally, in Chapter 4, we summarize our findings, draw conclusions, and make recommendations based on our results.

## 2. Methods

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We compared government spending on five important outcomes for FSP clients in the year prior to enrollment in an FSP with spending in the year following enrollment. As a first step, we used administrative data collected on FSP enrollees to measure five outcomes: homelessness, criminal justice detention, behavioral health inpatient stays, connection to outpatient primary care, and employment. We then combined these outcome measures with cost data from LAC DMH and from related literature to assess annual costs associated with each outcome for the local, state, and federal governments. We estimated the average annual spending per FSP client in the year prior to enrollment and in the year following enrollment over the 2012–2016 period. To estimate the potential financial impact of FSP programs, we estimated the change in average annual spending.

### Analytic Framework

The cost analysis was from the perspective of the government, meaning that we examined expenditures outlaid and recuperated at the county, state, and federal levels. We compared costs associated with outcomes before versus after program enrollment for the FSP clients to estimate the impact of FSP participation.

We compared the 12 months prior to enrollment with the 12 months following enrollment. We wanted to have comparable periods for our pre-post comparison so that spending amounts reflected the same period. We received data that covered the entire time that a client was enrolled in an FSP, and this extended for several years in some cases (Ashwood et al., 2018). However, we had data covering only 12 months of the pre-enrollment period, so we limited our post-period measurement to 12 months.

Conceptually, cost estimates were derived by multiplying unit-level costs per day for each outcome by the total annual person-days for each outcome. For example, we multiplied the cost per day of a behavioral health inpatient stay by the total number of behavioral health inpatient days in the year. The cost estimate post-enrollment was subtracted from the cost estimate pre-enrollment to derive cost savings or loss for each outcome, calculated by the following equation:

$$\sum_{i=1}^n (\text{Cost}/\text{Day}_{o,\text{post}} * \text{Person Days}_{o,\text{post}}) - \sum_{i=1}^n (\text{Cost}/\text{Day}_{o,\text{pre}} * \text{Person Days}_{o,\text{pre}}).$$

Here, costs are summed across individuals ( $i$ ) 1 through  $n$  for each outcome ( $o$ ) for each time period ( $pre$  and  $post$ ). Since we have pre and post data on all FSP enrollees, the number of individuals ( $n$ ) in each period is the same. The total pre-period costs are subtracted from the total

post-period costs to estimate cost savings. A negative value would represent cost savings, while a positive value would represent additional costs.

Cost ratios examined the ratio of post-period costs to pre-period costs, as specified in the following equation:

$$\sum_{i=1}^n (\text{Cost/Day}_{o,\text{post}} * \text{Person Days}_{o,\text{post}}) / \sum_{i=1}^n (\text{Cost/Day}_{o,\text{pre}} * \text{Person Days}_{o,\text{pre}}).$$

A cost ratio less than 1.0 represents cost savings between the two periods. For example, a ratio of 0.74 would represent 26 percent cost savings (1.00 – 0.74) following introduction of FSPs. By contrast, a cost ratio greater than 1.0 represents a loss: for example, a ratio of 1.26 would represent a 26 percent loss. A ratio of 1.0 would be cost-neutral. Final cost savings and cost ratios reported in Chapter 3 incorporate a small set of additional assumptions, such as the distribution of adults in congregate living versus independent living and state revenue received by the state among employed adults.

After estimating the change in government spending for a discrete set of outcomes between 2012 and 2016, we compare this change with the FSP program expenditures over this period. LAC DMH spent an average of \$13,807 per year per client from 2012 to 2016, for a total of \$335.3 million in the first year of enrollment in these programs during the period we observe.<sup>1</sup> If there are savings in government spending on these outcomes, we can estimate the amount of LAC DMH’s FSP program expenditures that are offset by these savings.

## FSP Program Outcomes

LAC DMH provided service and outcome data on clients who received FSP services in 2012–2016. Specifically, two data sources were provided: (1) the DMH Services Dataset, which includes claims for any mental health service regardless of payer (MHSA-funded services and non-MHSA-funded services), and (2) the DMH Program Dataset, including clinical assessments for clients receiving FSP services (for clients who were already in these programs and new clients). All data sets included a scrambled person identifier that linked an individual across data sources. We combined these data sources to estimate changes in program outcomes for FSP clients.

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<sup>1</sup> We calculated the average annual expenditure per client by taking the annual expenditures on FSP programs reported by LAC DMH (California Department of Health Care Services, 2018) and dividing by the total active clients in each year (Ashwood et al., 2018). We then calculated the total first year expenditures over five years by multiplying the average annual per client expenditure by the number of active clients in 2012–2106 (24,282).

## *Service Data*

We received service claims data for all clients receiving mental health services and crisis stabilization services from LAC DMH providers between 2012 and 2016. These data are generated by programs and services to all clients, regardless of payer. In addition, claims include information on diagnosis, type of procedure (e.g., therapy, case management), plan type (MHSA or non-MHSA source), and service delivery dates. Provider locations (including zip code) are also included in these data. These data do not include services provided by non-LAC DMH providers. We cannot observe services offered by private providers, for example.

## *Program Data*

In addition to the service claims data, we also received program data from LAC DMH that are specific to the FSP programs. These data were collected by LAC DMH and by FSP providers at baseline or entry into the program, at routine intervals during program participation, and at completion.

FSP data include enrollment information describing which program the client is enrolled in, as well as the dates of enrollment and disenrollment; baseline assessment data collected at entry and at three-month intervals by the FSP provider; and key-event-change data tracking changes in employment and living arrangements. The assessment data cover a range of topics, including social connections, health status, housing, education, employment, financial situation, health care service utilization, and interaction with the justice system. The baseline assessment also includes current living arrangement. Individual clients and episodes of care can be linked across the data sources.

## *Outcome Measures*

Although a large array of programmatic and service data were available, we focused analysis on a select set of measures, using three criteria: (1) the measure should reflect a primary outcome of the FSP program that was targeted for change, (2) the measure should have a direct economic corollary (meaning there is strong evidence in the literature that the outcome is associated with economic costs or economic benefits), and (3) this economic corollary should be associated with government-borne costs, such as subsidies and LAC DMH-supported programs, as our analysis assumes the government's perspective—at the county, state, and federal levels. With that in mind, the following five measures were quantified during a pre-period, prior to participation in FSP, and during a post-period, typically 12 months after the FSP start date (see Table 2.1):

- **Homelessness:** This measure considers whether FSP beneficiaries reported an interval of homelessness within the 12 months preceding their FSP start dates and the total duration (days) associated with this interval. We assumed that those in housing received a subsidy, and we restricted analysis to TAY and adults, as information was not available for

children. We expected an increase in spending on housing subsidies as more people are housed but a decrease in other spending that is a result of having homeless individuals, such as spending on police encounters or uncompensated ER care.

- **Criminal justice detention:** This measure considers reported criminal justice detention within the 12 months preceding the survey and the total duration (days) associated with this. We assumed that TAY detention was processed through juvenile hall, while adults were detained in jail and (for longer sentences) prison. We expected a decrease in spending on detention because FSP clients are able to avoid detention through case management and treatment.
- **Behavioral health inpatient stays:** This measure considers client self-report of one or more inpatient admissions for mental health or substance abuse within the 12 months preceding the survey and total duration (days) associated with inpatient stays. We expected a decrease in spending on inpatient behavioral care because clients receive mental health treatment through the FSP and are able to avoid hospitalization.
- **Connection to outpatient primary care:** This measure considers client self-identification of a primary care provider (PCP) at the time of completing the survey, at enrollment, and 12 months later. For simplicity, we assume that having a PCP translated into one additional primary care consultation in a given year. We expected an increase in spending on primary care because FSP clients engage with PCPs as a result of better health care management.
- **Employment:** This measure considers client self-report of current employment at the time of survey completion. For those not reporting employment, we assume that one-half receive unemployment insurance (based on a salary of \$18,000 per annum) and one-half receive a Supplemental Security Income (SSI) disability benefit. This assumption does not substantively affect cost estimates, as unemployment insurance and SSI benefits are close to equivalent when comparing low-wage earners and those with a disability. Nonetheless, we expected a decrease in spending on unemployment insurance and SSI as FSP clients gain employment.

**Table 2.1. FSP Outcomes**

Outcome	FSP Clients	Measurement Period	
		Pre	Post
Days homeless	TAY; adult	12 months pre-enrollment	12 months post-enrollment
Days in subsidized housing	TAY; adult	12 months pre-enrollment	12 months post-enrollment
Days in jail	Adult	12 months pre-enrollment	12 months post-enrollment
Days in juvenile detention	Child; TAY	12 months pre-enrollment	12 months post-enrollment
Days in behavioral health inpatient care	Child; TAY; adult	12 months pre-enrollment	12 months post-enrollment
Has outpatient PCP	Child; TAY; adult	At initial assessment	Final observed status
Days unemployed	TAY; adult	12 months pre-enrollment	12 months post-enrollment

## Net Financial Impact

### *Costing Approach*

To assign financial costs and benefits to each outcome, we first quantified the number of days individuals received government-supported services, before and after program participation. For homelessness, this included days in subsidized congregate and independent living, as well as time spent homeless or in unstable housing; for criminal justice detention, this included days in juvenile hall, jail, or prison; for medical care, this included days receiving behavioral health inpatient care; and for employment, this included days gainfully employed, seeking employment, and unemployed. Wherever possible, time estimates were based on primary data from LAC DMH, stratified by age group (children, TAY, adults).

As a subsequent step, we monetized time estimates based on an extensive inventory of cost information, annualized and adjusted to 2018 U.S. dollars based on sector-specific inflation rates from the Bureau of Labor Statistics (2013). Table 2.2 summarizes the estimates of cost to the government associated with each outcome. Supportive housing costs were based on a recent study by Hunter and colleagues (Hunter et al., 2017), in which supportive housing costs in Los Angeles County were derived from three sets of subsidies, a Housing Choice Voucher (HCV), a Flexible Housing Subsidy Pool (FHSP) voucher, and a U.S. Department of Housing and Urban Development–based Veterans Affairs Supportive Housing subsidy. Estimates were adapted for the current analysis using annual inflation rates specific to the Los Angeles County real estate market (Bureau of Labor Statistics, Western Information Office, undated). The costs of addressing homelessness are based on a recent study in Orange County, California, and include emergency health care and interactions with the criminal justice system (Snow and Goldberg, 2017).

For criminal justice detention–related costs, we based estimates on those recorded in California’s Department of Finance, Division of Juvenile Justice (Washburn, 2017), as well as the California’s Legislative Analyst’s Office’s annual incarceration costs (Legislative Analyst’s

Office, 2017), with linear extrapolation of expenditure growth from 2012 to 2016. Health care costs were documented from two vantage points: First, we examined costs incurred by Medicare and Medicaid through payment to a large state-level health system for a midlevel primary care consultation visit (Kaiser Permanente, 2018). Second, we examined the average hospital-adjusted per diem expense for inpatient behavioral care in Los Angeles County. Lastly, for employment-related expenditures, we captured state-level payments of unemployment insurance through California’s Employment Development Department (Employment Development Department, undated).

**Table 2.2. Sources for Cost Estimates**

<b>Outcome</b>	<b>FSP Clients</b>	<b>Cost Estimate</b>	<b>Source</b>
Days homeless	TAY; adult	\$7.06 per day <sup>a</sup>	Snow and Goldberg, 2017
Days in subsidized housing	TAY; adult	\$31.10 per day <sup>b</sup>	Hunter et al., 2017
Days in jail	Adult	\$187.15 per day <sup>a</sup>	Legislative Analyst’s Office, 2017
Days in juvenile detention	Child; TAY	\$698.85 per day <sup>a</sup>	Washburn, 2017
Days in behavioral health inpatient care	Child; TAY; adult	\$663.63 per day	Primary data provided by LAC DMH
Days unemployed	TAY; adult	\$24.44 per day <sup>a</sup>	Employment Development Department, 2018; Social Security Administration, undated

<sup>a</sup> Annual cost estimates converted to cost per day. Estimates adjusted for inflation to represent 2018 U.S. dollars.

<sup>b</sup> Monthly cost estimates converted to cost per day. Estimates adjusted for inflation to represent 2018 U.S. dollars.

We assumed that the changes we observed in outcomes were the result of FSP participation, based on two observations: First, the comparative time intervals (before versus after FSP participation) are separated by only a single year; second, FSP enrollees are individuals with chronic patterns of health and housing-security issues. Therefore, the marked changes observed in this narrow time frame are likely the result of the intervention, though we cannot make empirical claims using causal inference. The analysis also assumed a financial rather than economic lens, in that we focused on actual expenditures and did not incorporate in-kind donations, volunteer time, or opportunity costs. Available accounting sources from which we derived cost estimates did not maintain documentation of donations, volunteer time, and the like.

### *Sensitivity Analyses*

We performed a series of one-way sensitivity analyses to test the robustness of our results to potential misspecifications of key parameters that were derived from primary and secondary data sources. Based on our identification of primary cost drivers, we varied estimates in terms of (1) average cost per diem for receipt of behavioral health inpatient stays ( $\pm 50$  percent); (2) average

duration of homelessness in the past year ( $\pm 50$  percent), and (3) average duration in criminal justice detention ( $\pm 50$  percent). We selected  $\pm 50$  percent to account for a wide array of estimates observed in the literature regarding the parameters in question, as well as the significant variation in parameter values we observed over the five-year period of the evaluation (2012–2016). In addition, we projected estimated Los Angeles County costs for FSP over a five-year time horizon, based on three scenarios: (1) a conservative scenario that reflects a continuation of the existing growth rate of 3,500 new beneficiary slots per year, (2) one in which 5,000 new beneficiary slots are added each year over this period, and (3) one in which 7,000 new beneficiary slots are available each year, a generous scenario that assumes greater expansion over time—at double the rate over the past five years.

### *Vignettes*

Lastly, to contextualize these results, we present a series of case vignettes in Chapter 3. Each vignette depicts the potential costs incurred or saved among FSP recipients who demonstrate improved outcome trajectories over time. More specifically, we describe hypothetical scenarios for individuals with (1) a history of incarceration and recidivism, (2) a pattern of housing insecurity, (3) high past utilization of behavioral health inpatient services, and (4) chronic housing and health difficulties, based on the observed results.

### 3. Results: Outcomes and Costs of Full Service Partnerships

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#### FSP Outcomes: What Are the Changes in Service Utilization?

Over the five-year period (2012–2016), there were 24,282 FSP beneficiaries. Table 3.1 presents a summary of quantifiable outcomes of FSP participation, each of which reflects a statistically significant change ( $p < 0.05$ ). From before to after participation in FSP programs, the number of TAY clients reporting any period of homelessness declined from 19.1 percent to 11.3 percent; among adults, this figure declined from 45.1 percent to 29.0 percent. When examining criminal justice detention, we found that detention declined from 0.9 percent to 0.5 percent among children, 10.5 percent to 7.0 percent among TAY, and 17.0 percent to 8.5 percent among adults. In terms of health care utilization, behavioral health inpatient stays declined among children (19.1 percent to 13.8 percent), TAY (32.1 percent to 24.0 percent), and adults (20.9 percent to 16.7 percent), while connection to outpatient primary care increased among children (93.3 percent to 96.4 percent), TAY (64.8 percent to 65.5 percent), and adults (53.7 percent to 73.1 percent). Lastly, employment also increased—with 5.3 percent of adults reporting employment at initial assessment and 8.3 percent at final assessment.

#### Government and FSP Expenditures: What Are the Costs?

We estimated costs for recipients in the 12-month period prior to initiating the FSP program and in the subsequent 12 months, looking at comparative per capita expenditures in these two intervals. Government costs for the five outcomes studied were estimated at \$345 million total (2012–2016) before FSP participation, compared with \$262 million afterward. We assume that these costs overlap modestly with programmatic costs attributable to Los Angeles County’s FSP program during this period (\$335.3 million)—which includes mental health services (excluding inpatient care) and case management. However, it was not possible to disaggregate programmatic costs by the individual outcomes we report. Therefore, we assumed the bottom-up cost accounting approach described in Chapter 2 and focused reporting on costs associated with specific measurable outcomes prior to and following FSP program participation (see Table 3.2).

**Table 3.1. FSP Outcomes by Age Group, 2012–2016**

Outcome	Prevalence (%)		Average Duration (Days/Year)		Total Person-Days	
	Pre	Post	Pre	Post	Pre	Post
<b>Children</b>						
Criminal justice detention	0.9	0.5	78.0	47.2	5,438	1,828
Behavioral health inpatient stays	19.1	13.8	12.5	15.4	18,493	16,462
Connection to outpatient primary care	93.3	96.4	—	—	—	—
<b>TAY</b>						
Homelessness	19.1	11.3	201.3	294.8	168,982	146,409
Criminal justice detention	10.5	7.0	124.5	80.7	57,454	24,828
Behavioral health inpatient stays	32.1	24.0	21.4	21.4	30,191	22,573
Connection to outpatient primary care	64.8	65.5	—	—	—	—
<b>Adults</b>						
Homelessness	45.1	29.0	247.6	288.8	1,355,756	1,016,833
Criminal justice detention	17.0	8.5	125.5	54.8	259,028	56,553
Behavioral health inpatient stays	20.9	16.7	29.0	30.5	73,587	61,840
Connection to outpatient primary care	53.7	73.1	—	—	—	—
Employment	5.3	8.3	305.1	305.1	196,324	307,450

NOTES: Person-days are the total person-days for this outcome summed across all individuals. This is equivalent to the prevalence multiplied by the average duration per participant, multiplied by the total number of people in the age group. There are some differences between the rates reported here and rates of similar outcomes reported in an earlier report (Ashwood et al., 2018). These differences are due to two adjustments: (1) a focus on just the 12 months following enrollment and (2) differences in the population counted in the denominator. In this report, we are interested in duration for all outcomes, so we selected individuals for these calculations that had more-complete duration data and for whom we can observe a full 12 months following enrollment. In the prior report, we were mainly interested in status rather than duration and therefore included individuals with a more significant degree of missing data.

**Table 3.2. Average Annual Per Capita Expenditure, 2012–2016**

Per Capita Expenditure	Before Participation			After Participation			Difference		
	Child	TAY	Adult	Child	TAY	Adult	Child	TAY	Adult
Homelessness	—	\$7,106	\$3,009	—	\$7,157	\$2,776	—	\$51	\$233
Criminal justice detention	\$491	\$9,136	\$3,993	\$165	\$3,948	\$872	\$326	\$5,188	\$3,121
Behavioral health inpatient stays	\$1,584	\$4,559	\$4,022	\$1,410	\$3,408	\$3,380	\$174	\$1,151	\$642
Connection to outpatient primary care	\$107	\$75	\$62	\$111	\$75	\$84	\$4	\$0	\$22
Employment	—	—	\$8,449	—	—	\$8,162	—	—	\$287
Total	\$2,182	\$20,876	\$19,535	\$1,686	\$14,588	\$15,274	\$496	\$6,288	\$4,261

NOTE: Cost savings are indicated in green, and cost increases are indicated in red.

### Homelessness

Based on the level of homelessness we observed prior to participation, we estimated that the average per capita expenditure on supportive housing—among those who were not homeless—was \$7,106 per annum for TAY and \$3,009 per annum for adults. Following participation, we estimated that supportive housing costs rose slightly for TAY (from \$7,106 to \$7,157) and

declined slightly for adults (from \$3,009 to \$2,776). Among TAY, this figure rose slightly because we assumed that TAY who transitioned from homelessness to supportive housing were placed in congregate care, which is relatively expensive. Among adults, this figure declined slightly because we assumed that a percentage transitioned from homelessness to independent living with only a partial subsidy, thereby offsetting municipality-related costs associated with homelessness—such as policing costs, including homelessness liaison officers.

### *Criminal Justice Detention*

For juvenile detention (of children), the average per capita expenditure was estimated at \$491 per annum prior to FSP participation and \$165 per annum in the 12 months after participation. These figures are quite small because the absolute percentage of children in juvenile detention at either time point was small (<1 percent). By comparison, among TAY, juvenile hall expenditures declined from a per capita average of \$9,136 per annum before FSP participation to \$3,948 per annum after, because program participation was associated with significant decreases in frequency and duration of detention. Similarly, costs of detention in jail or prison for the average adult were estimated at \$3,993 per annum before the intervention and \$872 per annum in the post-period.

### *Health Care*

With regard to health care, we estimated that the decreased rates of behavioral health inpatient stays were associated with declines in costs: from \$1,584 to \$1,410 per capita among children, \$4,559 to \$3,408 per capita among TAY, and \$4,022 to \$3,380 per capita among adults. In contrast, we estimated the cost of connection to outpatient primary care to *increase* as a function of improved connections to PCPs: from \$107 to \$111 per capita among children, \$74.50 to \$75.30 per capita among TAY, and \$62 to \$84 per capita among adults.

### *Employment*

Lastly, for employment, we estimated a decline in state and federal costs as a result of improved income generation among adults. The cost was estimated at \$8,449 per capita before participation versus \$8,162 per capita subsequently.

## **Benefits of FSPs: What Are the Cost Savings?**

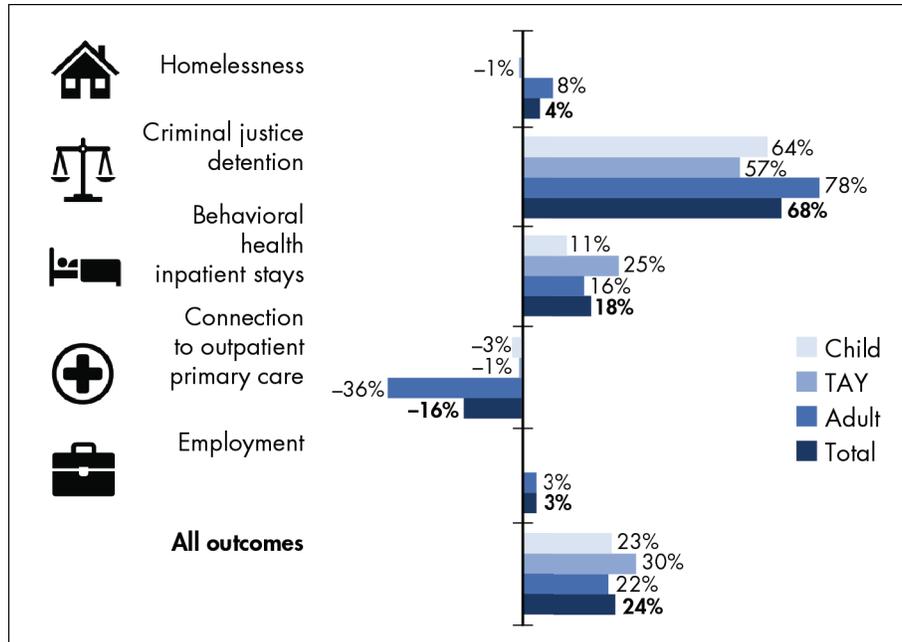
### *FSP Cost Ratios*

Taking into account comparative costs of specific government-supported services for clients in pre- and post-periods, we conclude that participation in an FSP results in a 24 percent reduction in costs related to the quantifiable outcomes examined (see Figure 3.1). Given the size of the service portfolio we have measured over the five-year period—\$345.2 million—this translates to savings of \$82.9 million (see Figure 3.2).

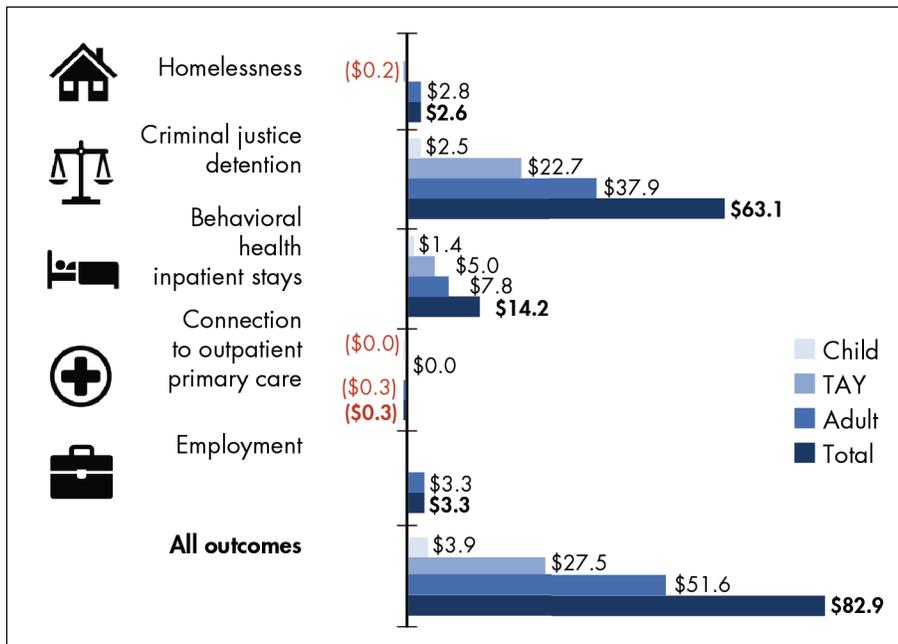
When examining cost ratios according to age group, we find that the largest cost savings are among TAY: 30 percent. The savings were 23 percent among child enrollees and 22 percent among adult enrollees (see Figure 3.1). This difference in savings by age group is in part driven by the fact that decreased criminal justice system detention and duration, as a function of FSPs, was greatest among TAY. By comparison, while the percentage of children in detention also declined, the numbers associated with this group were (unsurprisingly) much smaller (<1 percent).

We also calculated savings by individual outcome. Note that these savings rates should be interpreted carefully. For example, we estimate that costs associated with connection to outpatient primary care increased by 16 percent, connoting that FSP was cost-additive in this domain. However, the benefits conferred by primary care are likely to have greatly reduced the need (and cost) of behavioral health inpatient stays and general health care needs—which would drive up cost savings, particularly over a longer time horizon than we observe. We found that the savings for criminal justice detention was 68 percent, by far the largest; for homelessness, this figure was 4 percent. Both findings connote that FSP programs yielded cost savings in these domains within the first year of program participation. For unemployment insurance and SSI disability benefits among adults, we similarly observed 3 percent cost savings.

**Figure 3.1. Percentage Change of Cost Savings over Five Years (2012–2016), by Outcome**



**Figure 3.2. Cost Savings in Millions over Five Years (2012–2016), by Outcome**



### *Sensitivity Analyses and Projections*

Costs and outcomes of care can change over time, leading to changes in the savings rates. We examined how the savings would change under a range of different assumptions. We varied three parameters by  $\pm 50$  percent: (1) cost per day for receipt of behavioral health inpatient stays, (2) average duration of homelessness, and (3) average duration in criminal justice detention. In the first case (cost of behavioral health inpatient stays), the range for the overall savings for FSP was 23.3 percent to 24.9 percent, with \$75.8 million to \$90.0 million in savings. In the second (duration of homelessness), the savings ranged from 20.9 percent to 23.5 percent, with \$68.4 million to \$85.5 million in savings. In the last scenario (duration of criminal justice detention), the savings varied from 17.2 percent to 29.2 percent, with \$51.4 million to \$114.5 million in savings accrued.

Based on the figure of 24.0 percent cost savings, we forecasted the potential cost savings to the government over the next five years, contingent on the number of new enrollees. We also conservatively examined the first 12 months of enrollment and assumed that the number of graduates and disenrolled would match enrollment rates over this period. First, given the existing enrollment rate of 3,500 new enrollees per year between 2012 and 2016, the continuation of this rate projected out over a five-year time horizon would result in \$59.8 million of additional savings, over and above existing savings reported at current enrollment levels (\$82.9 million). In the event that FSP achieved 5,000 new enrollees per year over the next five years (LAC DMH is adding approximately 5,000 slots in the current year), we estimate that this would result in \$85.4 million of additional savings. Lastly, in the event that enrollment accelerated to an average of

7,000 new enrollees per year over this five-year period (twice the historical rate), cost savings would be an additional \$119.5 million, pushing total cost savings during the five-year period above \$200 million.

### *Case Vignettes*

These case vignettes are meant to portray potential trajectories of individuals, based on observed results. The names and accounts do not reflect real people but are instead meant as examples of the types of individuals that FSP aims to reach.

#### History of Incarceration

Lucas is a 19-year-old male who has a history of encounters with law enforcement dating back to childhood—when he spent his early adolescence in and out of juvenile hall and foster care. Prior to FSP, Lucas had spent 126 days between the ages of 17 and 18 in juvenile detention. These 126 days cost the state of California \$88,055. At 18, Lucas struggled to hold employment in the three months prior to enrollment in FSP, requiring \$2,231 in subsidies.

A year into his FSP, Lucas has a job at a local construction company. The job pays \$18 per hour, enough to pay rent and cover the cost of food. Lucas no longer qualifies for state subsidies and instead contributes approximately \$3,200 in federal and state income taxes. Additionally, Lucas has avoided altercations with law enforcement. **The cost savings are \$93,485.**

#### Pattern of Homelessness

Imani moved to Los Angeles from Chicago six years ago, at the age of 29, after falling out with her family. She was unable to find stable employment or develop a strong support network; therefore, she has couch surfed and slept in public spaces and shelters for several years. Over the year prior to FSP, Imani was homeless for 276 days. State subsidies and municipality-related services totaled \$1,948 over this period.

A year into Imani's FSP, she is enrolled in a housing-first program that provides supportive individual housing that subsidizes her monthly contribution to rent. This has cost the state \$3,109 over this period. A case manager has also helped Imani identify part-time employment at a public library, which she uses toward rent and food. **The cost savings are -\$1,161.**

#### High Mental Health Service Utilization

Mateo is 14 and has lived in Los Angeles with his mother since he was three, when she separated from Mateo's father and moved to California. At the age of 11, Mateo was diagnosed with bipolar disorder and panic disorder, making it difficult for him to form friendships or perform well in school. Panic attacks have caused Mateo to miss significant amounts of time from school, and he has had several psychotic episodes. On three occasions, this led Mateo to spend time in an adolescent acute residential treatment program (AARTP), lasting an average of 20 days. Over the year prior to his enrollment in an FSP, Mateo received acute care twice—one

was an overnight visit at an ER and one was for a longer duration at an AARTP, for a total of 24 days. Medicaid paid \$14,458 for this care.

Since enrolling in his FSP, Mateo has had more routine behavioral health visits through his PCP—once a month for the past several months. This has cost the government \$805 in Medicaid; however, Mateo has only had one overnight visit to the ER (\$664) for a panic attack during this period and no inpatient care at AARTP. **The cost savings are \$14,458.**

#### High Mental Health Service Utilization and Homelessness

Sara is 53 years old. Thirty-one years ago, Sara was diagnosed with schizophrenia, a debilitating, severe mental illness. Most of the time, Sara sleeps in shelters and, when necessary, on the street. Prior to enrolling in an FSP, she had few support services to address her condition but was occasionally placed in involuntary inpatient services at Gateway Hospital in Los Angeles. In the 12 months before FSP enrollment, Sara had spent ten months in shelters and on the street (\$2,147 in state costs) and two months at Gateway (\$39,818 in Medicaid costs).

Since enrollment in an FSP, Sara has been placed in community-based supportive housing for individuals with disabilities. This has cost \$17,027. However, her utilization of behavioral health inpatient stays has declined significantly: She has only been admitted for one week of inpatient care in the past year (\$4,645). **The cost savings are \$20,292.**

## 4. Discussion, Conclusions, and Recommendations

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Building on our previous evaluation of MHSA-funded programs in Los Angeles County (Ashwood et al., 2018), the current analysis examined the costs and benefits associated with FSP programs over a five-year period spanning 2012–2016, the most recent period for which complete data were available at the time of our initial evaluation. We identified measurable outcomes for the LAC DMH FSP programs and estimated changes in those outcomes for FSP program clients. We then assigned monetary values to the outcomes, to the extent possible, that represented spending by the county, state, and federal governments to address the needs of the population that is served by FSPs, and we estimated the financial impact on the government for each outcome.

### What We Learned

Overall, based on the costs and benefits of the program outcomes examined, we found evidence of a savings of 24 percent, compared with spending before enrollment in an FSP program. Another way to think about this is that, for every dollar that was spent addressing homelessness, criminal justice detention, behavioral health inpatient care, connection with outpatient primary care, and employment for FSP clients prior to enrollment in an FSP, 24 cents are saved for FSP clients after enrollment. This reduction in spending is primarily driven by savings from decreased spending on incarceration and detention, as well as behavioral health inpatient stays. The size of benefits varies by population and outcome.

We found evidence of cost savings across all three groups examined—children, TAY, and adults. In relative terms, the savings were largest among TAY: 30 percent. This is largely because detention of juveniles is more expensive than adults; juvenile criminal justice detention declined from 10.5 percent of TAY, with an average of 125 days per stay before FSP participation, to 7.0 percent of TAY, with an average of 80.7 days per stay after participation. In terms of juvenile detention–related expenditures, this resulted in savings of \$22.7 million over the five years. In absolute terms, savings were largest among adults (\$51.6 million). This was due to a larger population in prison and more-frequent utilization of behavioral health inpatient stays (compared with other groups) before FSP participation, as well as significant declines thereafter. Among adults, the savings were 22 percent.

Looking at the different measurable outcomes examined, the largest savings were for criminal justice detention (\$63.1 million), and the largest increase in spending was for primary care utilization (\$300,000). However, it is possible that the increased primary care utilization, although cost-additive, may be associated with downstream reductions in costs that we were unable to measure. For example, in some instances regular preventive health care may lead

patients to avoid more costly interventions down the road (e.g., Maciosek et al., 2010; Musich et al., 2016).

The total net financial savings from the outcomes we evaluate for FSP clients served from 2012 to 2016 is \$82.9 million. This is an underestimate of the total benefits from these programs, since we cannot readily measure all financial benefits and much of the impact of the changes we observe is nonfinancial. Furthermore, the benefits to FSP clients may last longer than the 12 months we evaluated, and the associated savings may increase. Improved well-being from stable housing or improved treatment may last longer than a year and lead eventually to other changes, such as starting a job or avoiding incarceration. Changes in employment, connections to outpatient primary care, and behavioral health inpatient stays may all lead to longer-term financial benefits in terms of savings or revenue.

We took a conservative approach to our financial estimates that focused on direct benefits associated with the measured outcomes and did not measure indirect potential benefits. We have already mentioned that there could be reduced intervention costs associated with increased connections to outpatient primary care. Similarly, we assumed that reduction in homelessness has short-term direct financial benefits in terms of modest municipality-based costs, such as reduced policing needs, social service provision, and sanitation costs (e.g., Toros, Stevens, and Moreno, 2012). Our estimates are based on the average costs to municipalities in Orange County, including all homeless, not just those with mental health disorders that are the focus of FSPs. These measures may have higher costs to the local government (Snow and Goldberg, 2017). Likewise, increased employment in the short term may lead to longer-term employment and higher lifetime earnings, as well as higher tax revenue for the government. Our approach did not attempt to measure these kinds of indirect financial benefits.

Our analysis also did not include nonfinancial benefits, such as improvements in the quality of life of program participants. Many of the outcomes that FSP programs seek to improve cannot be readily associated with a dollar value. For example, we are able to compare the changes in costs associated with housing for someone who is homeless, but we are not able to compare changes in well-being from such a change. What is the financial benefit of the reassurance of having a roof over your head? Similarly, it is impossible to quantify the benefits associated with such outcomes as increased stability and social connection. As we describe above, LAC DMH spent an average of \$13,807 per year per client from 2012 to 2016, for a total of \$335.3 million in the first year of enrollment in these programs during the period we observed. We estimate that LAC DMH has achieved positive changes in several specific outcomes as a result of this spending, and it received at least \$83 million in return during the period we observed. Although this is a considerably lower amount than the total amount spent, it does not represent the total value of the changes—economic or otherwise—and does not include benefits beyond the first year of enrollment.

## Limitations

There are several limitations to our evaluation. We have already pointed out that we have focused on the immediate financial benefits associated with the outcomes LAC DMH measured and thus did not capture downstream financial benefits or nonfinancial benefits.

Further, there were limitations in what outcomes were measured and how they were measured. LAC DMH did not measure every relevant outcome, and we were unable to capture financial benefits associated with outcomes that LAC DMH did not measure. For instance, such outcomes as reduced suicide rates have large returns on investment (Ashwood et al., 2015; Doran et al., 2016), but LAC DMH did not have available data for all relevant outcomes. This is likely true for health care needs met more generally and longer-term improvements in health as a result of stable housing and medical care—which would likely produce greater cost savings. In focusing on specific costs and benefits associated with measured outcomes over this narrow time horizon, we acknowledge that there are costs and benefits that we could not include in the analysis.

In addition, many of the available outcome measures are based on assessment data that rely on self-report. In addition, the key-event-change data that track housing, employment, and detention changes might not capture all changes that an individual experiences, since the data rely on clients reporting these changes to the providers or the providers closely tracking these changes.

Because of limitations in the available cost data, we have occasionally incorporated estimates for costs of programs from other settings and adjusted these estimates to apply to Los Angeles County. When possible, we have been conservative in how we apply these estimates. One potential exception is individual self-reports of having a PCP. For simplicity, we assumed that this was associated with one additional primary care visit per year; however, it is possible that increased visits to PCPs led to further medical testing, labs, and prescriptions that we were unable to capture in our data.

Most of the money spent on FSP programs is for mental health services, case management, and coordination of services. A small amount (\$3,000 to \$4,000 per client) may be used for client services, which includes food, clothing, and temporary housing. We are not able to estimate how much of these funds was spent on specific items and therefore could not capture housing expenditures that would offset the estimated savings on housing.

We have also assumed that the improvements we observe among FSP recipients are due to participation in FSP programs. It is possible that other factors may explain part of the changes—for example, statewide changes in detention policies, such as Proposition 47, which was introduced in 2014. To the extent that improvements among FSP recipients are attributable to non-FSP activities, cost savings would be equivalently reduced.

## Recommendations

We were limited in our analysis to outcomes that are reliably measured in the FSP program data. We described above some of the limitations of these data. As detailed in our previous evaluation report (Ashwood et al., 2018), we recommend that LAC DMH strengthen its data collection efforts by collecting data on a wider range of outcomes of interest, using multiple-item scales instead of single-item measures, and ensuring that data are collected at regular intervals. Linking additional medical care records, such as Medicaid encounters or commercial claims that might not occur at county facilities, would improve the ability to measure health outcomes. These efforts would improve the value of the data for tracking changes in outcomes over time. Because many data collection procedures are state-mandated, advocacy may be needed at the state level to adjust data collection requirements.

## Conclusions

The current analysis found evidence that the investment LAC DMH has made in its FSP programs has yielded positive outcomes on homelessness, criminal justice detention, behavioral health inpatient stays, and employment, which resulted in a 24 percent reduction in non-FSP spending. Total FSP program expenditures from 2012 to 2016 were \$335.3 million. Against this backdrop, our analysis was limited to a discrete set of outcomes and costs, and our estimates were intentionally conservative, but at the very least indicate that 24.7 percent of the \$335.3 million spent on FSP programs was offset by savings. This figure does not account for indirect financial benefits of the outcomes examined, other potential financial benefits not associated with the outcomes we were able to measure, or any nonfinancial benefits, such as improved mental health and quality of life.

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