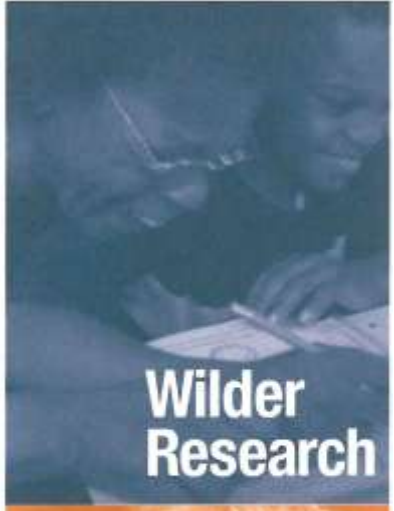

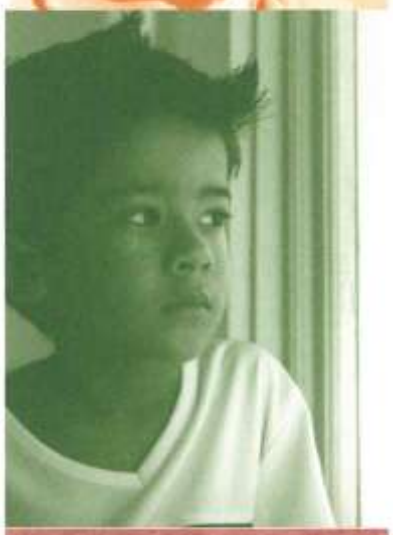

Return on investment in supportive housing in Minnesota

Funded by John D. and Catherine T. MacArthur Foundation, final report

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Return on investment in supportive housing in Minnesota

Final report

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Wilder Research
www.wilderresearch.org

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While the Minnesota Department of Human Services provided data for this study, it does not thereby endorse the study's methodology or conclusions.

Introduction

Over 10,000 persons are homeless in Minnesota on any single night (Wilder Research, 2010). Supportive housing, which in 2010, during the full year, served an estimated 14,600 adults in Minnesota, offers services designed to allow these homeless persons to live as independently as possible. The literature on evaluations of supportive housing programs shows that these interventions have a positive impact on outcomes for participants, tax-supported government programs, and society (Martinez & Burt, 2006; Rosenheck, 2000). However, costs of allocating resources (public and private) into these housing programs to accomplish these outcomes is high, and, to this point, the net benefits based on the economic value of the outcomes have remained largely unmeasured.

The purposes of this study are to estimate the return on investing in supportive housing in Minnesota and to compare the relative economic value of the benefits of supportive housing programs for families, single adults, and unaccompanied youth with their associated costs. In addition, we report the economic value that accrues to taxpayers as well as to society by adding in the wage gains for individuals after entering supportive housing.

This report begins with an overview of supportive housing programs and services, the populations they serve, and the costs of those programs and services. Then, based on expenditure data obtained from state agencies and demographic data from the Minnesota Homeless Management Information System (HMIS) on a random sample of 575 supportive housing residents in 48 randomly selected programs, we describe the costs and savings associated with supportive housing programs, including costs or savings connected with mental health and chemical health treatment, employment, income supports, and incarceration. In addition, using conservative assumptions, we calculate tax revenues associated with wage gains. Using the dollar values of the costs and savings generated by residents in supportive housing programs, we calculate the return on investment (ROI) in supportive housing programs associated with families, single adults, and youth; the public ROI, and the ROI for the state as a whole.

The final section delineates the assumptions, methods, analytical steps, and statistical tests we used to calculate the supportive housing costs and benefits in Minnesota. In brief, most of the calculations use actual individual-identified quarterly wages and program expenditures, allowing us to compute the dollar values when each person was homeless relative to when he or she was in supportive housing. The statistical differences in dollar values between the two time periods represent the marginal effects or impact parameters of supportive housing. In the aggregate, these parameters provide the average quarterly and annualized total costs or savings associated with the entry into supportive housing.

An 18-month companion outcomes study by Wilder Research, funded by the F.R. Bigelow, The Jay and Rose Phillips Family, and The Minneapolis Foundations and Minnesota Housing, began early in 2010 and is examining the impact of supportive housing on the lives of the people served.

Summary and implications

Return on investment in supportive housing

Based on expenditure data obtained from Minnesota state agencies and demographic data from the Minnesota Homeless Management Information System (HMIS) on a random sample of 575 supportive housing residents in 48 programs:

- Taxpayers make at least $123 million per year, with a return of 1.44 to 1 in public funding for supportive housing.
- The ROI to society, taking into account total program costs and increases in individual wages, is 1.32 to 1.

These are conservative estimates that don't include potential cost savings from improved health, reduced emergency room use or inpatient hospitalizations, or any child-related outcomes.

Costs to operate supportive housing programs

On average, supportive housing programs spent about $398,000 to operate in 2010, totaling an estimated $304 million to serve adults and unaccompanied youth. The costs and benefits of serving children are not included in this study.

On average, the annual cost per adult served is $20,762. Adults in families have a slightly higher average cost per adult of $21,730, amounting to $187 million. The average per person cost of providing supportive housing to single adults (no children) is close to the overall average, with a total cost of $99 million. Serving unaccompanied youth, on average, costs about $15,000 per youth (ages 21 or under), totaling to $18 million per year.

Transitional and permanent supportive housing programs report having fairly similar services and costs per participant.

Investments

Public funds account for an estimated $281 million of the annual funding for supportive housing in Minnesota.

The per person public funding is about the same for single adults and adults with children, averaging about $20,000, but the total for adults in families is higher, $175 million compared with $97 million for single adults. The total public funds for unaccompanied youth is about $9 million, with a lower average per person taxpayer contribution of nearly $8,000.

Private funders contribute an estimated total of $45 million in volunteer time and in-kind donations for supportive housing in Minnesota annually. Amounts for private gifts and foundation grants are not available or included in these figures.

Benefits and savings relative to costs

While use of income supports and mental health services cost nearly $58 million more in the year after entering supportive housing than the year before, those costs are offset by larger savings in avoiding crime and incarceration.

Supportive housing residents in Minnesota generated $462 million in the year after entering supportive housing, with 88 percent going to the public or taxpayers and 12 percent benefiting individual residents due to wage gains.

Increased use of mental health services by single adults ($14.9 million) and income supports ($42.8 million) by all residents cost nearly $58 million more in the year after entering supportive housing than the year before. Food assistance accounts for half of the increased income support costs. Supportive housing may have a stabilizing effect, making it possible for participants to apply for and get assistance. Regular users may also receive larger amounts of cash assistance.

These additional costs are offset by large crime-related savings due to the odds of being convicted of a crime dropping from 48 percent to 14 percent after entering supportive housing, resulting in an average savings in incarceration costs of $16,347 the first year after entry, reaching a total one-year savings of $453 million.

- Adults in families gain the most with regard to increased wages ($36 million), produce the only net decrease or cost savings in chemical dependency service use (nearly $6 million) in the first year after supportive housing entry, and provide the largest net benefit to taxpayers ($247 million), with a return of 1.41 to 1 in public funding for supportive housing.

- Single adults have the lowest wage benefit ($8 million) and the largest cost to taxpayers ($29 million), with a return of 1.09 to 1 in public funding for supportive housing.

- Unaccompanied youth gain a relatively high wage benefit ($13.4 million) and only add cost to taxpayers due to increased use of food supports ($6.2 million), with a return of 7.1 to 1 in public funding for supportive housing. However, this high ROI for youth in supportive housing should be interpreted with caution because of limitations in the survey method for collecting funding data from the programs.

A. One-year net costs and savings of supportive housing residents ($ millions)

	Single adults	Adults in Families	Youth	Total
Wages	8.2	35.88	13.37	57.44
Tax revenues	.385	1.69	.629	2.7
Diversionary Work	--	--	--	--
MFIP cash	--	(1.18)	--	(3.46)
MFIP food	--	(1.85)	--	(5.45)
Emergency Assistance	(.35)	--	--	(1.02)
General Assistance	(.41)	--	--	(.83)
Group Residential Housing	(7.3)	--	--	(14.9)
Minnesota Supplemental Assistance	(.61)	--	--	(.61)
Food Support	(5.7)	(4.6)	(6.2)	(16.52)
Mental Health Treatment	(14.92)	--	--	(14.92)
Chemical Dependency Treatment	--	5.88	--	5.88
Crime	134.46	247.044	71.71	453.2
Total	113.76	282.86	79.51	461.5

Note: *The total is more than the sum of the subgroups because the subgroup categories are fixed and the total takes into account changing household compositions and eligibility for income support programs.*

B. One-year net benefits and savings relative to costs and funding ($ millions)

	Single adults	Adults in Families	Youth	Total
Individual benefits (wages)	8.2	35.88	13.37	57.44
Taxpayer benefits (taxes)	.385	1.69	.629	2.7
Savings to taxpayers	134.46	252.92	71.71	459.1
Costs to taxpayers	(29.29)	(7.63)	(6.2)	(57.7)
Net benefits to taxpayers	105.56	246.98	66.14	404.1
Net benefits and savings	113.76	282.86	79.51	461.5
Total operational cost	99	187	18	304
Total public funding to supportive housing	97	175	9.3	281.3
Total contributions from other funders	16	27	1.4	45
Return on public funding	1.09 to 1	1.41 to 1	7.1 to 1	1.44 to 1
ROI to society	.99 to 1	1.32 to 1	4.1 to 1	1.32 to 1

Profile of supportive housing programs and residents in Minnesota

Supportive housing is a method of providing housing with services for formerly homeless people who have barriers to maintaining long-term housing, thus making recovery and reintegration into community life possible (The National Center on Family Homelessness [NCFH], 2009). Services provided by such programs may range widely but are generally intended to help reduce housing barriers and increase residential stability. Supportive housing may be configured in two ways:

Time-limited or transitional supportive housing is limited by program or funding requirements, and the residents are required to participate in case management services to help them find and be able to maintain regular housing in the community by the end of the specified amount of time, usually 24 months or less.

Permanent supportive housing, which has no time limits specified, is generally intended for those with barriers likely to require long-term services. Programs are required to offer services; however, not all residents are required to participate.

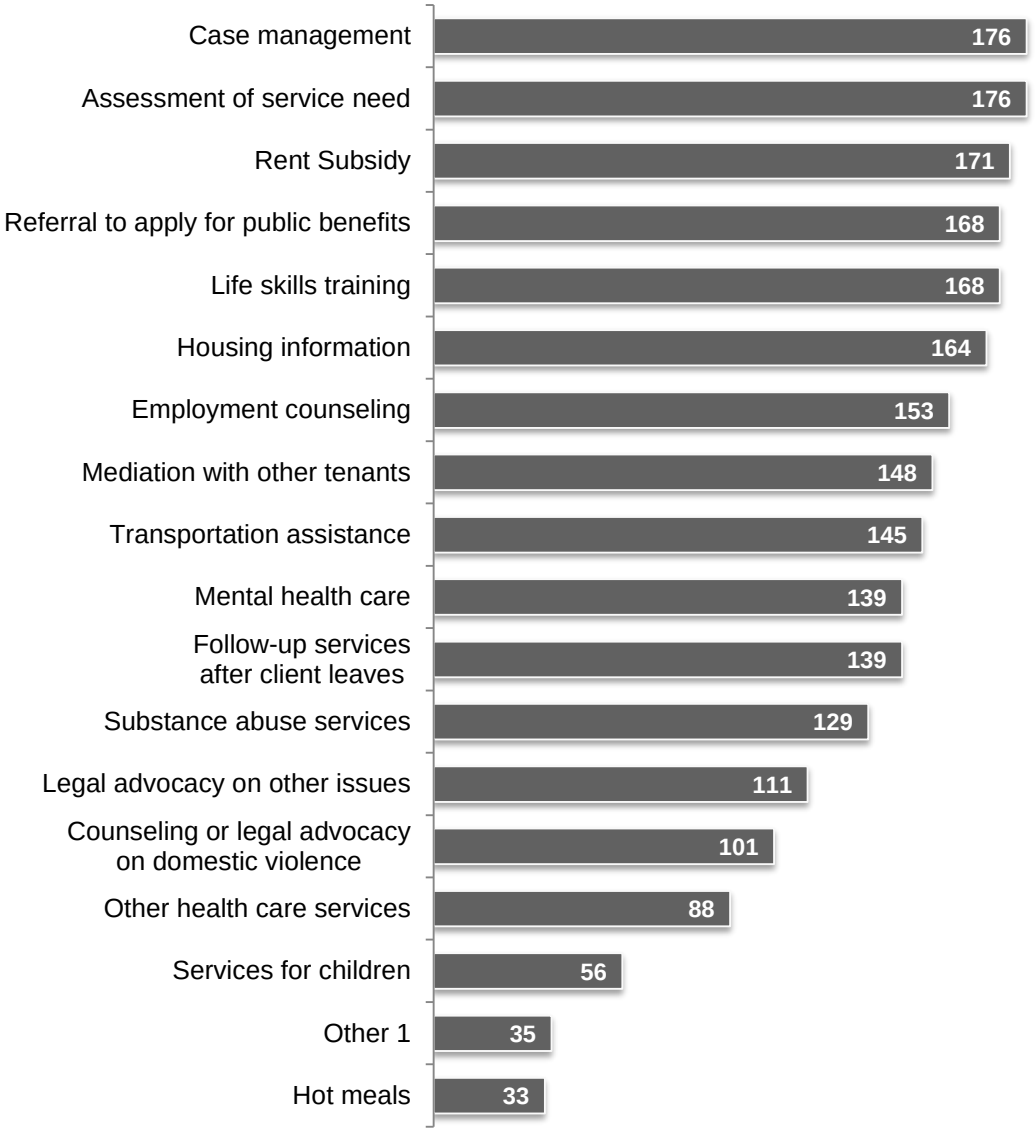
Supportive housing programs and services in Minnesota

Minnesota has an estimated 396 supportive housing programs, which served an estimated 14,600 adults throughout 2010 – 4,832 single adults (33%), 8,600 adults in families (59%), and 1,168 youth (8%).

This profile of services provided by supportive housing programs in Minnesota is from a Wilder Research survey conducted with a sample of 179 programs in 2007 as part of the companion outcomes study. These programs offered from 4 to 18 different services, averaging 13 services. About two-thirds of them provided a dozen or more services.

The most common services provided include assessment, case management, rent subsidy, life skills training, and referrals to apply for public benefits. The number and type of services are fairly similar for transitional and permanent supportive housing.

1. Mean number of services provided in supportive housing



Profile of supportive housing residents

The sample of 575 supportive housing residents drawn from the Minnesota Homeless Management Information System is two-thirds (67.5%) female with an average age of 34.

The sample of 575 residents consists of 305 single adults, 226 adults in families, 34 unaccompanied youth, and 10 unclassified. About half are single adult males (29%) or females (24%) without children. Adults with children make up 39 percent, primarily single mothers with children. About 7 percent are unaccompanied youth. About 2 percent are other household types.

The largest racial groups are white (45%) and black (37%), followed by Native American (5%).

The sample is almost an equal number of permanent supportive housing residents and transitional housing residents. On average, transitional housing program participants are older, have slightly more education, and, at entry, are more likely to be employed (one-third vs. one-fifth of permanent supportive housing residents).

Program costs of supportive housing

The economic resources for funding supportive housing come from many sectors of society. Taxpayers, via their federal, state, and local governments, contribute to supportive housing through taxes, public grants, direct transfers, or subsidies. Private donors provide monetary support to programs and volunteer their time to work for the programs. In addition, participants may pay user fees or rent that partially finance the operation of the supportive housing programs. Depending on the perspective from which the return on investment (ROI) is estimated, each of the cost elements must be accounted for as an outflow or an inflow of money.

Figure 2 shows the cost and revenue items used in this ROI analysis. Using (-) for cost or outflow and (+) for benefit or inflow, the figure shows if each item is a cost or a benefit for the various sectors within society. Other parts of society include individuals and philanthropic organizations.

2. Supportive housing costs and sources of revenues

Cost item	Programs	Participants	Taxpayers	Other funders	Society
Costs					
Operational costs	(-)				(-)
Revenues					
User fees	(+)	(-)			
Federal, state, local government funding	(+)		(-)		
Other	(+)			(-)	
In-kind donations	(+)				(-)
Value of volunteers' work	(+)				(-)

From the programs' perspective, operational costs are an outflow (-) of money. These direct costs include rent paid for facilities, utilities, wages and salaries, and professional services. To obtain the returns from the program's perspective, the program revenues are netted out by operational costs.

Participants in the programs do not bear operational costs directly, but through user fees, when and if these are charged. Participants accrue other indirect costs such as lost income and health care costs, but these costs are accounted for in other sections of this report. Similarly, taxpayers do not accrue costs of programs directly, but through any public money allocated to the programs.

User fees are an inflow of money to the program, but they represent a cost for the participants. In-kind donations and volunteer work are counted as revenues for the programs, yet they may need to be added as costs to society since these items are usually not included in the operational costs, but are in fact economic costs associated with the generation of the outcomes.

Cost analysis of supportive housing programs in Minnesota

We surveyed the 48 Minnesota supportive housing programs in our study about their costs and revenue structure during the period 2008-2010, and 38 responded. Figure 3 contains the mean costs and revenues per program calculated from this sample of providers.

On average, programs report spending $397,930 to operate every year, ranging from less than $50,000 to more than $1 million, depending on the number of persons served. On the other hand, the operational costs were not correlated with the type and number of services provided (either directly by the program or indirectly by referring participants to other providers). We found that the variation of services and types only account for 5 percent of the variation in the total operational costs of the program or the cost per participant.

On the revenue side, programs collect user (resident) fees of around $137,000 per year. Public funds account, on average, for about $398,000, with the Minnesota state government being the major contributor.

3. Mean costs and revenues of supportive housing programs in Minnesota for 2008-2010 (2010 constant dollars)

	Mean
Operational costs per program	$397,930
Revenues:	
User fees	$136,873
Public funds	$398,112
In-kind donations (annually)	$43,644
Value of volunteers' work (annually)	$21,305

Figure 3 shows the mean costs per person and total annual costs for supportive housing residents overall and the weighted averages for the three groups of supportive housing residents in this study based on their proportion in the study sample of residents.

Overall, programs paid an average annual cost per person of $20,762. This average cost is in the range of the per person costs estimated in other studies in this field (The Lewin Group, 2004).

Adults in families have a slightly higher average cost, amounting to $187 million. The average per person cost of providing supportive housing to single adults (no children) is close to the overall average, with a total cost of $99 million. Serving unaccompanied youth, on average, costs about $15,000 per youth (ages 21 or under), and cost $18 million per year.

The total annual operational costs of supportive housing for adults and unaccompanied youth, then, is an estimated $304 million. The costs and benefits of serving children are not included in this study.

4. Mean per participant and total costs of supportive housing programs in Minnesota by service populations, 2008-2010 (2010 constant dollars)

	Single Adults	Adults in Families	Unaccompanied youths	Overall
Mean operational cost per person	$20,409	$21,730	$15,090	$20,762
Total operational cost (millions)	$99	$187	$18	$304

Note: *The overall mean is weighted or proportional based on the sample of residents.*

Taxpayers' contribution

As shown in Figure 5, public funds account for an estimated $281 million of the annual funding for supportive housing in Minnesota.

The per person public funding is about the same for single adults and adults with children, averaging about $20,000, but the total for adults in families is higher, $175 million compared with $97 million for single adults. The total public funds for unaccompanied youth is about $9 million, with a lower average per person taxpayer contribution of nearly $8,000.

Contributions from private funders

Figure 5 also shows that private funders contribute an estimated total of $45 million in volunteer time and in-kind donations for supportive housing in Minnesota annually. Amounts for private gifts and foundation grants are not available or included in these figures.

5. Mean per person and total revenues of supportive housing programs in Minnesota, 2008-2010, by service populations (2010 constant dollars)

	Single Adults	Adults in Families	Unaccompanied youths	Overall
Mean public funds per person	**$20,119**	**$20,295**	**$7,930**	**$18,780**
Total public funds (millions)	**$97**	**$175**	**$9.3**	**$281.3**
In-kind donations (annually)	$2,335	$1,793	$701	$1,886
Value of volunteers' work (annually)	$995	$1,349	$533	$1,166
Total per person contributions from other funders	**$3,330**	**$3,142**	**$1,234**	**$3,052**
Total contributions from other funders (millions)	**$16**	**$27**	**$1.4**	**$45**

Note: *The overall means are weighted or proportional based on the sample of residents.*

The costs and savings generated by residents in supportive housing programs

Employment and wages

Stable housing is associated with job retention and personal income (Bassuk, et al, 2006; Culhane, 2010). Homeless individuals with employment barriers tend to be unemployed and remain so for longer periods than individuals participating in supportive housing. Consequently, the earned wages of homeless individuals are expected to be higher after they enter supportive housing. The increased wages are a benefit for supportive housing participants and to the society as a whole since these people would likely not have found and retained their jobs if they were not in supportive housing.

Using wage data from the Minnesota Department of Employment and Economic Development (DEED), we estimate that supportive housing participants experience an average net increase in their total wages of $4,093 during the first year after entering supportive housing, compared to the wages they earned during one year prior to entering supportive housing.

6. Net increase in wages one year after entering supportive housing by population

Average (pooled sample)	Single adults	Adults with children	Unaccompanied youth
$4,093	$1,695	$4,172	$11,453

Figure 6 shows the estimated net increases in wages for each of the study populations after one year. Unaccompanied youth experience the highest increase in wages after entering housing among all the subpopulations with an improvement of $11,453 after the first year. The net gain in wages of individuals in families during the first year after entering housing reaches $4,172. Single adults experience the lowest increase in wages of the three subpopulations, with about $1,695 net increase during the first year after entering supportive housing.

The total additional wages that supportive housing participants earned in the first year after entering reaches $57.4 million, with adults in families $35.9 million of that total.

7. Total additional wages after one year associated with participation in supportive housing

	Single adults	Adults with children	Unaccompanied youth	Total
Additional average wages after one year	$1,695	$4,172	$11,453	$4,093
Total additional wages	$8,192,325	$35,876,620	$13,373,282	$57,442,226

Since participants are highly likely to be unemployed in the immediate period before entering supportive housing program, any improvement in employment during the next year would generate a big net increase in wages. Using a two-year average wage prior to entering a supportive housing program yields a more conservative, and likely more sustainable, net wage increase but a lower total additional wages of $19 million in the first year.

Tax revenues

As participants in supportive housing programs regain employment stability and increase their income, taxpayers also benefit from increased tax revenues that participants are now able to pay. However, the income level of participants is relatively low, even after recuperating their economic productivity. Most participants were already under the second income decile of the state, which includes incomes below $49,824.

To obtain an estimate of the additional tax revenues that supportive housing participants contribute as taxpayers we use the effective tax rates for Minnesota for the second decile of income ranges among the population. The Minnesota Department of Revenue estimates the effective tax rate on income for this sector of the population to be 2.6 percent, while the effective tax rate on sales to individuals is estimated as 2.1 percent.

In Figure 8 we apply the effective tax rate for the second decile to the additional annual wages that supportive housing participants earn after entry to the programs. On average, during the first year after entering the programs, participants pay $156 more in taxes than they would have paid if they had not entered the program.

8. Additional income tax and sales tax revenues after first year per study participant

	All participants	Single adults	Adults with children	Unaccompanied youth
Income tax	$103	$44	$108	$298
Sales tax	$53	$36	$88	$241
Average taxes per person	$156	$80	$196	$538

Taxpayers received an additional $1.5 million in revenues from income tax and $1.2 million in revenues from sales taxes for a total of $2.7 million attributable to supportive housing after one year.

9. Additional total income tax and sales tax revenues after first year

	Single adults	Adults with children	Unaccompanied youth	Total impact
Income tax	$213,000	$932,792	$347,705	$1,493,497
Sales tax	$172,039	$753,409	$280,839	$1,206,287
Additional total taxes	$385,039	$1,686,201	$628,544	$2,699,784

Income support programs

This section includes programs for which families are eligible – Diversionary Work Program, Minnesota Family Investment Program, and Emergency Assistance – and programs for single adults – General Assistance and Group Residential Housing Program. Adults in this study are categorized as single adults or adults in families based on their status at entry to supportive housing as recorded in HMIS. However, because their family status may change and may not be updated in HMIS, they may have incurred costs in programs for which they were not eligible at the outset. These overlaps are taken into account in the statistical analyses as detailed in Figures 18-31 in the methods section of this report. Because of these overlaps, we report both the net totals and the net subtotals for just the groups eligible for the income supports. This section also looks at cash assistance for food support for which singles and families are eligible.

Diversionary Work Program

Diversionary Work Program (DWP) provides employment services to move low-income parents immediately to work, diverting many from the Minnesota Family Investment Program (MFIP). DWP cash benefits last a maximum of four months in a 12 month period.

DWP expenditures were about $248,000 less for supportive housing residents in the first year after entering than the year before; however, those savings are not statistically significant and therefore not attributable to supportive housing.

Minnesota Family Investment Program cash assistance

The Minnesota Family Investment Program, or MFIP, is the state's welfare reform program for low-income families with children. Parents are expected to work and are supported in working. Most families can get cash assistance for only 60 months.

MFIP expenditures had a net increase or additional cost to taxpayers of $1.18 million in the year after adults with children entered supportive housing relative to the amount of MFIP payments for these individuals in the year prior to entering supportive housing. The net total increase for all MFIP expenditures was $3.5 million.

MFIP food assistance

This food assistance program is just for families receiving MFIP. People not on MFIP that qualify for food assistance get it directly from the Food Support Program. Minnesota has a federal waiver to combine food assistance with MFIP family cash assistance, so this food assistance portion of MFIP is not considered a separate program. However, because food assistance payments data were available separately, they are reported that way in this report.

Based on payments data from the Minnesota Department of Human Services (DHS) before and during use of supportive housing, the estimated aggregate net increase or additional cost is $1.85 million for food assistance to MFIP families in the first year after entering supportive housing. The net total increase for all MFIP food assistance was $5.45 million.

Emergency Assistance

Emergency Assistance, which comes from federal Temporary Assistance for Needy Families (TANF) funds, serves low-income families with a minor child, a pregnant woman, or a non-custodial parent of a minor child receiving assistance. Emergency

assistance funds can only be used for non-recurrent, short-term, specific crisis situations or episodes of need. They cannot be used to meet ongoing needs, and cannot extend beyond four months.

Emergency Assistance (EA) expenditures had a net increase or additional cost to taxpayers of $347,280 in the year after adults with children entered supportive housing relative to the amount of EA payments for these individuals in the year prior to entering supportive housing. The net total increase for all EA payments was $1.02 million.

General Assistance

The General Assistance (GA) Program provides monthly cash grants for income-eligible single adults and childless married couples who are unable to work. Program participants must fit at least one of the 15 categories of eligibility related to illness or injury as specified in state statutes. After subtracting certain income disregards, a single person must have net income less than $203 per month, and a couple must have net income less than $260 per month.

General Assistance expenditures had a net increase or additional cost to taxpayers of $407,204 in the year after single adults entered supportive housing relative to the amount of GA for these individuals in the year prior to entering supportive housing. The net total increase for all GA expenditures was $830,000.

Group Residential Housing

Group Residential Housing (GRH) is a state-funded income supplement program that pays room-and-board costs for low-income adults who have been placed in a licensed or registered setting with which a county human service agency has negotiated a monthly rate. To receive a GRH payment, a person must meet certain eligibility requirements, including being aged, blind, or over age 18 and disabled according to the criteria used by the Social Security Administration. In addition, there are maximum income and assets that a person can have. Counties administer the GRH program for the state and are responsible for determining eligibility.

Group Residential Housing expenditures had a net increase or additional cost to taxpayers of $7.3 million in the year after single adults entered supportive housing relative to the amount of GRH for these individuals in the year prior to entering supportive housing. The net total increase for all GRH payments was $14.9 million.

Minnesota Supplemental Assistance

Minnesota Supplemental Aid (MSA) is a state-funded program that provides a monthly cash supplement to people who are aged, blind or disabled and who receive federal Supplemental Security Income (SSI) benefits. Some recipients who do not receive SSI because their other income is too high may still be eligible for MSA if they meet MSA eligibility criteria and their income is below the MSA standard.

MSA also allows special needs payments to qualified MSA participants for medically prescribed diets, guardian or conservator service fees, or shelter costs for clients relocating from an institution into the community. Special once-a-year funding may be available for emergency situations when a person or family member lacks basic need items, such as a lack of shelter or food, and that lack threatens the person's or family's health or safety.

Expenditures for Minnesota Supplemental Assistance had a net increase or additional cost to taxpayers of $612,000 in the year after single adults entered supportive housing relative to the amount of MSA for these individuals in the year prior to entering supportive housing.

Food Support

Food Support is the county-run, federal Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps, which issues electronic food support benefits to help Minnesota citizens with low incomes get the food they need.

Based on payment data from DHS before and during use of supportive housing, the average quarterly per household additional cost to the state for cash assistance for food is highest for unaccompanied youth ($107), followed by single adults ($98) and adults in families ($79).

The estimated aggregate net increase or additional cost is $16.52 million for Food Support assistance in the first year after entering supportive housing.

Mental health services

In Minnesota, 59 percent of adults who are homeless for at least a year have a serious mental illness; 35 percent report symptoms of traumatic brain injury, and 38 percent report having cognitive disability (Wilder Research, 2009).

Minnesota Health Care Programs, which include Medical Assistance and MinnesotaCare, help pay for all or some medical bills for people who cannot get or afford health insurance through their job; do not have insurance because they are unemployed, have a disability, or chronic condition and need help paying for care and services they need to live at home;

or do not have insurance for a variety of other reasons. There are rules about income limits, assets, other insurance coverage, and other factors.

Based on payment data from DHS before and during use of supportive housing, the average quarterly per capita additional cost to the state for mental health services is $171 in the first year after entering housing. In terms of subpopulations, single adults, on average, are the most costly to the state, with an additional per capita quarterly cost of $255 for mental health services after entering supportive housing. The average additional costs for both adults with children and unaccompanied youth are smaller and are not attributable to supportive housing.

The estimated aggregate net increase or additional cost is $14.92 million for mental health services in the first year after entering supportive housing.

Chemical health treatment

Based on Minnesota Health Care Programs payments data from DHS for inpatient and outpatient settings including regional treatment centers where the primary diagnosis associated with the claim is related to chemical dependency treatment services before and during use of supportive housing, the average quarterly per capita cost to the state for chemical health services is $72 less in the first year after entering housing. In terms of subpopulations, adults in families, on average, save the state the most, with an average per capita quarterly cost of $100 less for chemical health services after entering supportive housing. The average expenditures for both single adults and unaccompanied youth do not change significantly after entering supportive housing.

Overall, supportive housing residents' use of chemical dependency services represent a net decrease or cost savings of about $5.88 million in the first year after supportive housing entry.

Crime and incarceration

Crimes trigger costs across society. Crime victims suffer psychological and material losses. Taxpayers pay for law enforcement, courts, and incarceration. This section of the report is based on data available from state agencies on all types of convictions and the cost of incarceration. Individual-level data on the other costs are not currently collected by official sources. Consequently, we acknowledge that the actual costs of crime and thus the savings that supportive housing may produce may be significantly greater than the estimates presented here.

To measure the impact of supportive housing on incarceration costs, we first estimate the marginal costs that the state pays for incarcerating one more inmate. Then we compute

the impact of supportive housing on the likelihood of being convicted. Finally, we estimate the difference in incarceration costs that can be associated with participation in supportive housing. See the methods section for details.

We estimate that adding one inmate increases the state's annual expenses by $47,751, based on data from the Minnesota Department of Corrections on the inmate population and total expenses of security facilities for the last ten years in Minnesota.

Criminal records from the Bureau of Criminal Apprehension of Minnesota (BCA) for our study sample of 575 supportive housing participants show that about 48 percent of them have a conviction for any type of offense. (This includes misdemeanors and less serious crimes and does not imply, therefore, that nearly half of the participants are dangerous criminals.) Moreover, we find that the odds of conviction in the first year after entering supportive housing are 29 percent of the odds for any single year before entry into supportive housing. That is, someone is 29 percent as likely to be convicted while in supportive housing as he or she would be when not in supportive housing. This implies that the chance of a conviction is reduced from 48 percent to 13.8 percent after entering supportive housing. Figure 10 shows the estimated reduction in the chance of conviction for the subgroups.

The one year expected cost of incarceration for a typical prisoner, then, is $22,920 (48% x $47,751), compared with $6,573 for a participant in supportive housing. Thus, the average savings in incarceration costs associated with supportive housing reaches $16,347 the first year after entering a program.

Figure 11 shows that, on average, providing supportive housing to unaccompanied youth generates the largest crime-related savings of $32,000 per year, more than double for the single adults and adults with children, because of much higher conviction rates before entering supportive housing.

The total savings in incarceration costs attributable to entering supportive housing reaches $453 million per year.

10. Odds of criminal conviction and incarceration after entering supportive housing

	All	Single Adults	Adults with children	Unaccompanied Youths
Odds ratio of conviction after entering supportive housing	0.29	0.28	0.46	0.18
Conviction rate	48%	42%	58%	82%
Estimated conviction rate after supportive housing	13.8%	11.6%	26.6%	14.8%

11. One year per person savings in incarceration costs after entering supportive housing

	All	Single Adults	Adults with children	Unaccompanied Youths
Costs when not in supportive housing	$22,920	$20,055	$27,696	$39,156
Costs after entry	$6,573	$5,526	$12,696	$7,089
Savings	$16,347	$14,529	$15,000	$32,067

12. Total savings in incarceration costs one year after entering supportive housing

	Single Adults	Adults with children	Unaccompanied Youths	Total
Savings	$134,460,576	$247,044,205	$71,705,243	$453,210,024

Total savings and ROI by service population

Figure 13 shows the costs and savings for each type of expenditure for the three service populations. In total, residents generate $462 million in the year after entering supportive housing, with 88 percent going to taxpayers and 12 percent benefiting individual residents due to wage gains. While use of income supports and mental health services cost nearly $58 million more in the year after entering supportive housing than the year before, those costs are offset by larger savings in avoiding crime and incarceration.

13. One-year net costs and savings of supportive housing ($ millions)

	Single adults	Adults in Families	Youth	Total
Wages	8.2	35.88	13.37	57.44
Tax revenues	.385	1.69	.629	2.7
Diversionary Work	--	--	--	--
MFIP cash	--	(1.18)	--	(3.46)
MFIP food	--	(1.85)	--	(5.45)
Emergency Assistance	(.35)	--	--	(1.02)
GA	(.41)	--	--	(.83)
Group Residential Housing	(7.3)	--	--	(14.9)
Minnesota Supplemental Assistance	(.61)	--	--	(.61)
Food Support	(5.7)	(4.6)	(6.2)	(16.52)
Mental Health Treatment	(14.92)	--	--	(14.92)
Chemical Dependency Treatment	--	5.88	--	5.88
Crime	134.46	247.044	71.71	453.21
Total	113.76	282.86	79.51	461.5

Note: *The total is more than the sum of the subgroups because the subgroup categories are fixed and the total takes into account changing household compositions and eligibility for income support programs.*

As summarized in Figure 14:

- Adults in families gain the most with regard to increased wages ($36 million), produce the only net decrease or cost savings in chemical dependency service use (nearly $6 million) in the first year after supportive housing entry, and provide the largest net benefit to taxpayers ($247 million), with a return of 1.41 to 1 in public funding for supportive housing.

- Single adults have the lowest wage benefit ($8 million) and the largest cost to taxpayers ($29 million), with a return of 1.09 to 1 in public funding for supportive housing.
- Unaccompanied youth gain a relatively high wage benefit ($13.4 million) and only add cost to taxpayers due to increased use of food supports ($6.2 million), with a return of 7.1 to 1 in public funding for supportive housing.

14. One-year net benefits and savings relative to costs and funding ($ millions)

	Single adults	Adults in Families	Youth	Total
Individual benefits (wages)	8.2	35.88	13.37	57.44
Taxpayer benefits (taxes)	.385	1.69	.629	2.7
Savings to taxpayers	134.46	252.92	71.71	459.09
Costs to taxpayers	(29.29)	(7.63)	(6.2)	(57.71)
Net benefits to taxpayers	105.56	246.98	66.14	404.08
Net benefits and savings	113.76	282.86	79.51	461.5
Total operational cost	99	187	18	304
Total public funding to supportive housing	97	175	9.3	281.3
Total contributions from other funders	16	27	1.4	45
Return on public funding	1.09 to 1	1.41 to 1	7.1 to 1	1.44 to 1
ROI to society	.99 to 1	1.32 to 1	4.1 to 1	1.32 to 1

The return on public funding in supportive housing is at least $123 million per year, with a return of 1.44 to 1 (net benefits and savings of $404 million minus total public funding of $281.3 million and net benefits and savings divided by total public funding).

The ROI to society, taking into account total program costs and increases in individual wages, is 1.32 to 1 (net benefits and savings of $461.5 million divided by total operational costs $304 million plus other private contributions not included in operational budgets of $45 million for a total of $349 million).

These are conservative estimates that don't include potential cost savings from improved health, reduced emergency room use and inpatient hospitalizations, or any child-related outcomes.

The high ROI in supportive housing for youth should be interpreted with caution because of limitations in the survey method for collecting funding data from the programs. These data limitations also do not permit an accurate comparison of the ROI for transitional supportive housing relative to permanent supportive housing.

ROI assumptions and methods

Background studies on costs and cost savings of supportive housing

Program level studies

Schinka, Francis, Hughes, LaLone, and Flynn (1998) examine the differential effectiveness and costs of treatment for patients with moderately severe substance dependence assigned to inpatient treatment or to a supportive housing setting. In this study supportive housing is temporary housing that allows a patient to participate in an intensive hospital-based treatment program. Participants were assessed at baseline and at two-month follow-up. The study concludes that the use of supportive housing alternatives appears to provide an opportunity for substantial cost savings for Veterans Affairs patients with substance dependence disorders. The weekly per patient cost for participants in inpatient treatment (hospital) was $1,674, nearly 85 percent higher than the weekly cost for the supportive housing patients ($899).The cost of a successful treatment for the inpatient group was $9,524, whereas for the supportive housing group, it was $4,291, a difference of more than 100 percent.

Moore (2006) estimates the cost of providing community based therapeutic care and case management to adults experiencing chronic homelessness and multiple disabling conditions using a pre-post analysis. Results show that pre-enrollment cost for health care and incarcerations per client was $42,075, while during the first year after enrollment the cost of these items was $16,108. According to Moore, the estimated cost savings derived from the existence of the Community Engagement Program reach $4.7 million. In a study of long-stay patients discharged from Philadelphia State Hospital after 1988, Rothbard, Kuno, Schinnar, Hadley, and Turk (1999) estimated that the direct cost of community outpatient treatment was $60,000 per person annually versus $130,000 at the hospital. These costs include health and behavioral health services as well as residential accommodations. This analysis suggests that most former long-stay patients are able to live in residential settings while receiving community outpatient treatment.

Dickey, Latimer, Powers, Gonzalez, and Goldfinger (1997) conducted a study to evaluate the costs under two different housing conditions: Evolving Consumer Households (a state mental health agency caring for adults who are homeless and mentally ill) or Independent Living apartments. After a random assignment of individuals to each housing type, the researchers followed the costs associated to each participant for the next 18 months. The authors found that treatment and case management costs did not vary by housing type, but housing costs were significantly higher for those assigned to Evolving Consumer Households.

Elsewhere, O'Connell and Swain S. (2005) in a five-year prospective study (1999-2003) in Boston tracked the cost of health care of 119 homeless persons. They found that there were 518,384 emergency room visits and 871 medical hospitalizations, with an average annual health care cost $28,436 for homeless persons. However, the average annual health care costs for those in cohort who obtained housing was $6,056. This implies that there is cost savings of $22,436 per individual.

While following 20 previously homeless individuals during the *one year after* entering supportive housing, a study in Seattle found that inpatient admissions reduced from 57 inpatient admissions/329 hospital days to 13 inpatient admissions/56 hospital days, emergency visits reduced from 191 visits to 50 visits, and sobering center visits went down from 349 to 11 visits. In terms of costs, there was an aggregate reduction in cost of services. For example, because of fewer visits by these formerly chronically homeless individuals to medical centers, sobering centers, and other crisis-treatment services, there was an estimated cost savings of $3.2 million.

An evaluation of a Hearth Connection supportive housing pilot for homeless people with highly complex needs, including medical problems, mental illness, and chemical dependency (NCFH, 2009) found a small impact on the overall service costs for participants relative to the comparison group but "desirable shifts in the types of mainstream services used." The costs for single adults increased; while the costs for adults in families were offset.

System level studies

Hamilton (2009) presents a study that includes total expenditures for two major categories (medical, criminal and justice) and shelter for housed and homeless individuals on Cape Cod, Massachusetts. The study tracked 51 individuals over the course of a one-year period. The medical charges reached $593,635 for housed individuals while the homeless accrued charges of $1,051,900. Cost related to criminal justice and legal services for the housed were $5,580 and $72,680 for the homeless. Shelter and housing costs reached $393,154 in the case of housed individuals, compared to $138,405 estimated for the homeless. The study documented that the annual average cost of housed individuals was 12 percent less than the cost of the homeless subpopulation.

In a study analyzing the costs of the Denver Housing Collaborative, Perlman and Pavernsky (2006) report an average reduction of $7,755,919 in health costs per participant during the two-year period, a reduction of 44.6 percent. Incarceration costs declined 76 percent, with average savings of $1,371. Jail nights declined 61 percent. Emergency shelter costs declined to $0 after entering the program. Total cost savings for the 24 month period declined $599,356 or 72.95 percent, an average cost saving of $31,545 per participant.

Culhane, Metraux, and Hadley (2002), in a seminal article, assess the impact of public investment in supportive housing for homeless persons with severe mental disabilities. Using data on individuals placed in housing facilities in New York City between 1989 and 1997, the authors report that before placement, homeless people with severe mental illness used about $40,449 per person per year in services (1999 dollars). Placement was associated with a reduction in service use of $16,282 per housing unit per year. Annual unit costs are estimated at $17,277, for a net cost of $995 per unit per year over the first two years. The costs represented assistance provided by the federal, state, and city governments to nonprofit housing service providers and are not a comprehensive summary of all costs associated with the housing services studied.

Sample development

The sample was developed in conjunction with the companion outcomes study being conducted by Wilder Research. First, we compiled and unduplicated a list of all known housing programs providing supportive housing. We then used this list of 396 programs to determine that the programs in the Homeless Management Information System (HMIS) could serve as a sampling frame. Among programs willing to participate, we drew a random sample of 48 programs stratified by transitional or permanent supportive housing and by type of population served – singles only, families only, youth serving, and mixed populations, roughly one in eight programs per type. The final step was to randomly select a total of 600 residents from the 48 programs. Of these, 575 consented to be in the study – 305 single adults, 226 adults in families, 34 unaccompanied youth, and 10 unclassified.

Estimating costs and revenues of supportive housing

Using self-reported data from 38 programs, we calculated the estimated mean operational costs and revenues using the following formula:

$$MeanCostPerParticipant_p = \sum \frac{\left(\frac{Cost_{ip}}{Served_{ip}}\right)}{P_p}$$

Where, *p* is the type of subpopulation served: single adults, adults in families, and youths.

Costit, is the total operational costs of program *i* serving subpopulation *p*.

Served_ip, is the total number of individuals served by program *i* of type *p*.

And *P* is the number of programs serving subpopulation *p*.

The overall cost per participant is the weighted average of the mean costs per participant for each type of program/subgroup, using these proportions or weights of the subgroups in the total population of 14,600 adults and unaccompanied youth in supportive housing: 4,832 single adults (33%), 8,600 adults in families (59%), and 1,168 youth (8%). The total costs and revenues are obtained by multiplying the per participant cost by the subgroup totals.

Analytical steps and statistical tests

In this ROI in supportive housing in Minnesota, we use actual wages and state agency expenditures for a sample of 575 individuals to calculate cost and savings that can be attributed to supportive housing. These costs and savings may start occurring right after homeless individuals or families enter programs and span for several years in the future. In this study, however, we calculate the savings or costs for just the first year of residing in supportive housing. We assume that in the absence of supportive housing, participants would have remained homeless.

This study does not make any causal claims. However, the analyses of the impacts of supportive housing described below do assume that costs and savings can be attributed to supportive housing by comparing, on a case by case basis, each participant's economic data over time, before (when homeless) and after entering supportive housing. Having the participants serve as their own comparison group assumes that participants are similar to non-participants. Any differences due to time-invariant characteristics (e.g., region, race, gender) are controlled through fixed-effect estimation techniques. This analytic approach does not remove all bias, however, because participants and non-participants may also differ in time-varying characteristics (e.g., prices, weather, government policies), which are not controlled through the fixed-effect technique.

Wages

The net increase in wages due to supportive housing is the difference in wages between what was earned after entering supportive housing and what would have been earned had the same individual not entered the supportive housing program. In other words, each participant's previous information is used to construct a comparison group. This strategy assumes that the wages of non-participants (a true control group) would fluctuate similarly to the wages of the participants during the time prior to program entry. Furthermore, it is assumed that the wages of participants would fluctuate similarly to non-participants should they have remained without supportive housing.

Given these assumptions, we set up a fixed-effects model using the total wages for the two years prior and after entering housing as the dependent variable and a dummy

variable indicating participation in the program as the only time-varying covariate. The model is depicted as:

$$Y_{it} = \alpha_i + \beta H_{it} + \varepsilon_{it}$$

Where, Y_{it} is the total wages earned by individual *i* in period *t*. Period *t* is indexed with value one if the individual has already entered supportive housing, and zero if the individual has not entered the program. Since we are using a two-year time frame for the analysis, we specify Y_{i0} as the total wages earned during the two years prior to supportive housing and Y_{i1} as the total wages earned two years after entry to the program. The variable H_{it} is a dummy variable that equals one if t=1 and zero if t=0. Thus, it reflects before and after participation in housing.

The model is estimated using fixed-effects and thus the parameter *beta* is interpreted as the change in the total wages earned during a two-year period associated with entering housing. Under the assumptions noted above, *beta* is the two year impact of supportive housing on individual earned wages.

The total benefits in personal wages that participants gain from receiving supportive housing is obtained by applying the marginal per person impact of housing on wages from the econometric model described above to the total number of participants in supportive housing. This is a net benefit since we are assuming that participants would not have experienced this increase in wages if they had not entered housing.

15. Fixed-effect results: Wages before and after entering supportive housing

	(1) 1 before - 1 after
after	3994.1***
	(4.98)
_cons	5381.0***
	(12.62)
N	386
adj. R^2	

t statistics in parentheses
* $p < 0.05$, *** $p < 0.001$

16. Change in wages during year after entering housing by population

	(1) Average impact (pooled sample)	(2) Single adults	(3) Individuals in families	(4) Unaccompanied youth
after	4093.0***	1695.3	4171.7***	11453.4***
	(5.99)	(1.91)	(4.29)	(5.23)
_cons	3695.5***	3572.7***	3669.3***	4283.3***
	(11.31)	(7.20)	(7.56)	(3.84)
N	520	211	252	51
adj. R^2				

t statistics in parentheses
*** $p < 0.001$

17. Change in wages two years after entering housing by population

	(1) Average impact (pooled sample)	(2) Single adults	(3) Individuals in families	(4) Unaccompanied youth
after	2609.0*	-461.3	3036.1*	10907.7**
	(2.15)	(-0.20)	(2.21)	(2.84)
_cons	9794.1***	11039.5***	8821.0***	8928.2***
	(13.94)	(9.21)	(9.24)	(4.82)
N	482	191	235	50
adj. R^2				

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Income supports

This section shows the results of the fixed-effect statistical calculations for income support programs. First, the changes in payments after entering supportive housing are tested for significant change relative to before entering supportive housing by matching expenditure data with date of entry into supportive housing. The data consist of 32 quarters (2003-2010) for the 575 randomly selected participants, with 18,272 observations. The fixed-effects model is as follows:

> Consider the multiple linear regression model for individual i = 1, ..., N which is observed at time periods t = 1, ..., T (T= 32 quarters).
>
> $$B_{it} = \alpha_0 + \alpha_1 H_{it} + V_i + u_{it}$$
> (1)
>
> Where B_{it} is the benefits received by participants, H_{it} is a vector of explanatory variables, including supportive housing, α is a vector of parameters, v_i is participant-specific effect and u_{it} is an idiosyncratic error term.
>
> Averaging this equation for each supportive housing participant, we have
>
> $$\overline{B}_i = \alpha_1 \overline{H}_i + v_i + \overline{u}_i$$
> (2)
>
> Subtracting (2) from (1), we have
>
> $$B_{it} - \overline{B}_i = \alpha_1 (H_{it} - \overline{H}_i) + u_{it} - \overline{u}_i$$
> (3)

Then, if the results can be attributed to supportive housing, we use the impact parameter of supportive housing for each program from a pooled regression and weight by the proportion of valid cases of adults in families (34%) or single adults (49%) to derive the net impact of supportive housing entry on payments to eligible single adults or families.

18. Diversionary Work Program, impact of supportive housing after one year: Pooled individuals

Average quarterly increase	1.445 (2.647)
Constant	7.280*** (0.186)
Observations	18,272
Number of Participants	575
R-squared	0.000

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

19. Minnesota Family Investment Program (cash assistance), impact of supportive housing after one year: Pooled individuals

Average quarterly increase	59.21*** (19.50)
Constant	151.8*** (1.368)
Observations	18,272
Number of Participants	575
R-squared	0.002

Robust standard errors in parentheses

*** p<0.01

20. Total impact of supportive housing on MFIP cash assistance after one year

	Pooled estimates ($)	Adults in families portion ($)
Quarterly average	59	20
Total per quarter	864,466	293,918

21. Minnesota Family Investment Program (food assistance), impact of supportive housing after one year: Pooled individuals

Average quarterly increase	93.23***
	(18.66)
Constant	133.2***
	(1.309)
Observations	18,272
Number of Participants	0.007
R-squared	575

Robust standard errors in parentheses

*** p<0.01

22. Total impact of supportive housing on MFIP food assistance after one year

	Pooled estimates ($)	Adults in families portion ($)
Quarterly average	93	32
Total per quarter	1,361,158	462,793

23. Emergency Assistance, impact of supportive housing after one year: Pooled individuals

Average quarterly increase	17.49**
	(8.874)
Constant	19.23***
	(0.623)
Observations	18,272
Number of Participants	575
R-squared	0.001

Robust standard errors in parentheses

*** p<0.01, ** p<0.05

24. Total impact of supportive housing on EA after one year

	Pooled estimates ($)	Adults in families portion ($)
Quarterly average	17.49	6.00
Total per quarter	255,354	86,820

25. General Assistance, impact of supportive housing after one year: Pooled individuals

Average quarterly increase	14.23** (5.843)
Constant	49.08*** (0.410)
Observations	18,272
Number of Participants	575
R-squared	0.001

Robust standard errors in parentheses

*** p<0.01, ** p<0.05

26. Total impact of supportive housing on General Assistance after one year

	Pooled estimates ($)	Single adults portion ($)
Quarterly average	14.23	7
Total per quarter	207,758	101,801

27. General Residential Housing, impact of supportive housing after one year: Pooled individuals

Average quarterly increase	255.2*** (45.75)
Constant	239.4*** (3.210)
Observations	18,272
Number of Participants	575
R-squared	0.008

Robust standard errors in parentheses

*** p<0.01

28. Total impact of supportive housing on Group Residential Housing Payments after one year

	Pooled estimates ($)	Single adults portion ($)
Quarterly average	255.20	125
Total per quarter	3,725,920	1,825,701

29. Impact of supportive housing on Minnesota Supplemental Assistance after one year

	Single adults	Adults in families
Quarterly average	10.48*** (3.819)	6.774 (4.302)
Constant	9.258*** (0.284)	13.96*** (0.293)
Observations	8,896	6,176
Number of participants	278	193
R-squared	0.005	0.002

Robust standard errors in parentheses

*** p<0.01

30. Impact of supportive housing on Food Support payments after one year

	Single adults	Adults in families	Unaccompanied youth
After 1 year supportive housing entry	97.64*** (21.80)	78.78*** (22.31)	106.5* (57.96)
Constant	132.7*** (1.622)	114.9*** (1.517)	105.4*** (1.811)
Observations	8,896	6,176	768
Number of participants	278	193	24
R-squared	0.010	0.006	0.005

Robust standard errors in parentheses

*** p<0.01, * p<0.1

31. Total Impact of supportive housing on Food Support after one year ($)

	Single adults	Adults in families	Unaccompanied youth	All participants
Quarterly average	97.64	78.78	106.5	283
Total per quarter	1,425,544	1,150,188	1,554,900	4,130,632

Mental health services

32. Impact of supportive housing on mental health service expenditures after one year

	Single adults	Adults in families	Unaccompanied youth	All participants
Quarterly average	255.4** (103.5)	56.82 (45.42)	42.08 (47.70)	171.4*** (63.55)
Constant	292.8*** (5.262)	92.75*** (2.111)	80.18*** (0.621)	200.1*** (2.950)
Observations	8,928	6,176	768	16,608
Number of participants	279	193	24	519
R-squared	0.001	0.000	0.000	0.001

Robust standard errors in parentheses

*** p<0.01, ** p<0.05

Chemical health treatment

33. Impact of supportive housing on chemical dependency expenditures after one year

	Single adults	Adults in families	Unaccompanied youth	All participants
Quarterly average	-58.86 (37.42)	-100.4*** (22.90)		-71.82*** (23.69)
Constant	143.2*** (1.903)	104.0*** (1.064)	2.766 (0)	120.9*** (1.100)
Observations	8,928	6,176	768	16,608
Number of participants	279	193	24	519
R-squared	0.000	0.001	0.000	0.000

Robust standard errors in parentheses

*** p<0.01

Crime and incarceration

We used a least squares regression analysis to estimate the cost of adding one inmate.

We used a logit panel regression to estimate the change in odds of being convicted of a crime before and after entering supportive housing. The total cost savings from crime reduction associated with supportive housing is obtained by applying the average per person savings to the number of supportive housing participants.

Data was pulled from these sources for this analyses:

- MCORP Website: https://iforums.doc.state.mn.us/site/mcorp/default.aspx
- MCORP Backgrounder:

https://www.doc.state.mn.us/publications/backgrounders/documents/01-09MCORP.pdf

- Facility Reentry Programming Backgrounder:

https://www.doc.state.mn.us/publications/backgrounders/documents/08-08FacilityReentryProgramming.pdf

The impact of supportive housing on incarceration costs assumes that any type of conviction is equivalent to an incarceration, which may overestimate costs. However, since we are not including other cost items in our cost benefit analysis such as court costs

(which are in fact correlated with convictions and arrests), victimization costs, or even small jail costs, our estimation of the costs is conservative, even after assuming that convictions are equivalent to incarceration. Moreover, other studies have used similar assumptions (Aos, 2001).

34. Log of odds ratios of incarceration

	(1) convicted	(2) convicted	(3) convicted	(4) convicted
convicted				
supportive housing	-1.249*** (-8.57)	-1.289*** (-5.03)	-0.780** (-2.78)	-1.709† (-1.48)
_cons	-2.117*** (-18.70)	-1.976*** (-10.87)	-2.363*** (-9.95)	-1.658** (-3.04)
lnsig2u				
_cons	-0.223 (-0.91)	-0.701 (-1.24)	-0.235 (-0.50)	-13.43 (-0.16)
N	3058	968	770	55
adj. R^2				

t statistics in parentheses
†p<0.15, *** $p < 0.001$

35. Odds of incarceration

	Single Adults	Adults in Families	Unaccompanied Youths	All participants
Odds ratio of conviction after supportive housing:				
[Prob. Conviction After ÷ Prob. Conviction Before]	0.28**	0.46**	0.18*	0.29***
Assumed conviction rate (all populations)	42%	58%	82%	48%
Estimated conviction rate after supportive housing	11.6%	26.6%	14.8%	13.8%
*N***	968	770	55	3058

* $p < 0.15$, ** $p < 0.01$, *** $p < 0.001$
** *N:* number of observations used in the logit regression. The sum of the observations used in the regressions for each population does not add up to the "All" category due to missing demographic information on some individuals in the subpopulations.

Methods for estimating costs and savings in the absence of actual wage and expenditure data

This section of the report describes alternative methods developed by Wilder Research to derive the economic valuation of various supportive housing outcomes. The initial ROI study plan was linked to another Wilder Research study of supportive housing in Minnesota, examining the status and needs of residents. These results were to be used to calculate the *incidence rates* for various conditions, or the ratio of the number of participants having a given homeless-related condition to the total number of participants in supportive housing, and the *parameter impacts*, or the effect (positive or negative) of an outcome as a consequence of supportive housing. Then, we were going to monetize or assign dollar values to the outcomes to arrive at an aggregate savings or cost.

However, the other study had several delays and scheduling changes that would have delayed the completion of this study by a year or more. Consequently, we shifted our approach from estimating long-term ROI based on monetized self-reported conditions and outcomes to a short-term ROI based on actual wages and expenditure data obtained from state agencies.

Valuation of child welfare outcomes

Supportive housing likely has a positive effect on child welfare by providing more stable housing and indirectly reducing child abuse and neglect and foster care placements. One parameter of interest that can reasonably be attributed to supportive housing is the difference in the proportion of children in supportive housing that end up in foster care and the proportion of homeless youth in Minnesota that go to foster homes. We can multiply this impact by the number of children in the HMIS system/supportive housing. In Minnesota, 53 percent of all homeless youth had lived in foster homes.[1] Then, using the number of children that would have received foster care services and cost per day per youth, we can compute the potential reduction in costs of providing foster care.

[1] Data from the U.S. Department of Health and Human Services shows that 25 percent of youth who enter the foster care system are taken care of by relatives. This implies that 75 percent would not receive foster care but some type of public service.

36. Valuation of child welfare

Child welfare includes the following specific outcomes:

- Incidence and recurrence of child abuse and/or neglect
- Incidence of child abuse and/or neglect in foster care
- Permanency for children in foster care
- Time in foster care to reunification without increasing reentry

ROI logic and assumptions

Initial assumption is that supportive housing has a positive effect on children welfare by providing more stable housing and indirectly by reducing harmful behavior of adults towards children, for example by improving drug and alcohol abuse of parents and guardians.

OUTCOME MEASUREMENT AND ESTIMATION METHODOLOGY

Step I Calculation	Number of youth in HMIS system/ supportive housing.	×	% of homeless youth in MN that go to foster homes	-	{Number of children in supportive housing} – {Number of children in supportive housing that end up in foster care}	=	Number of children that would have received foster care services

Economic valuation: Children welfare

Calculation	Number of children that would have received foster care services	×	Cost of foster care per youth	=	Reduced cost in foster care service
Data source	HMIS/Homeless baseline		* Cost of Foster Care = Average length of stay in foster care in MN x [Foster care maintenance in MN + Administrative cost (assumed 10% of maintenance)] – in 2010 Dollars.		

Valuation of crime reduction

Our assumption is that individuals are less likely to commit crimes when they are in supportive housing than when they are homeless. Also, criminals, including those who are homeless, impose costs upon themselves and to the society in general due to lost/damaged property, psychological damages, and payment by taxpayers for the costs to the criminal justice system, such as court and incarceration costs. In this social ROI we use measures of reduced crime rates, the number of convictions, and cost per crime to arrive at the potential reduction in costs to the justice and law enforcement systems.

Figure 37 outlines outcome measurement and the economic valuation of the costs of crime. In the first step, we compute the change in the number of convicted persons due to participation in supportive housing programs in Minnesota. To do this, we multiply the total number of previously homeless persons entering supportive housing by the impact parameter. This parameter consists of an estimation of the difference between the crime rate among homeless persons and the crime rate among supportive housing participants. There are two possible sources for the impact parameter. It can be calculated using the sample of participants in supportive housing constructed by Wilder Research, or it can be taken from comparable impact studies.

In the second step, we compute the benefit of participating in supportive housing by multiplying the change in the number of convictions due to participation in supportive housing programs in Minnesota by the cost to the justice system per conviction. This benefit is equivalent to the total reduction in costs to the justice system in Minnesota. In this framework we only consider costs to the judicial system, i.e. incarceration costs and not necessarily costs that individuals impose on society in general due to lost/damaged property or psychological damages to crime victims.

37. Valuation of crime reduction

Crime outcomes include convictions, arrests, cost to victims, etc.

ESTIMATION METHODOLOGY

			Outcome measurement		
Calculation	Estimated number of participants in supportive housing in Minnesota.	×	Parameter(s) of the impact of supportive housing on the outcome of interest. Example: supportive housing reduces convictions of participants by 10%.	=	Change in the number of convictions due to participation in supportive housing programs in Minnesota
Data source	Estimated population of supportive housing participants		The ROI uses two sources for the impact parameters: Wilder's own impact study of supportive housing and secondary data from comparable impact studies. Data from a sample of approximately 550 participants in the sample of supportive housing programs		
			Economic valuation: Crime		
Calculation	Change in the number of convictions in supportive housing programs in Minnesota	×	Cost to the justice system per incarceration/conviction	=	Change in the criminal justice costs in Minnesota due to participation in supportive housing programs
Data source	Data from the Criminal Justice Department and other public entities.				

Valuation of improved mental health

Improved mental health is a benefit that applies across the board to potentially all types of supportive housing. By providing care on a regular basis, serious or chronic illnesses may decline and potentially save costs to individuals, the public, and the society. We translate into dollar terms improved mental health using the reduction in mental health episodes due to supportive housing participation and cost per person per mental health episode.

In order to arrive at the impact associated with improved mental health, we estimate the difference of the average number of episodes among a sample of supportive housing participants before and after entering the housing programs. We also use parameters from previous studies that show the impact of housing programs on the number of mental health episodes on homeless people as benchmarks for our own estimations. Then we use data on mental health issues from the sample of supportive housing participants in Minnesota to estimate the probability of mental health problems.

The impact parameter (the difference between the average number of mental health episodes among homeless persons and the incidence rate of mental health episodes among supportive housing participants) are multiplied by the estimated number of supportive housing participants in Minnesota to obtain the net reduction in mental health episodes among supportive housing participants.

Next, we determine the economic valuation of the reduction in cost of mental health episodes in Minnesota due to participation in supportive housing programs by multiplying the reduction in mental health episodes due to supportive housing participation by *cost per person per episode.* Figure 38 shows the specific economic valuation of improved mental health associated with supportive housing.

Note: This same methodology applies to reduced use of emergency room services.

38. Valuation of improved mental health

This outcome includes reduced episodes of mental health problems

ESTIMATION METHODOLOGY

			Outcome measurement				
Calculation	Estimated number of participants in supportive housing in Minnesota.	×	Incidence rate of mental health among supportive housing participants (SHPs), i.e. there is a probability that, say, 50% of the SHPs would have mental health episode.	×	(Average # of episodes of homeless persons - # of episodes for SHP)	=	Reduction in mental health episodes/ treatments due to supportive housing participation
Data source	HMIS data		Sample of 550 SHPs Sources of data for the impact parameters: Wilder's own impact study of supportive housing & secondary data from comparable impact studies.				
			Economic valuation: Mental Health				
Calculation	Reduction in mental health episodes/treatments due to supportive housing participation	×	Cost per person per mental health episode	=	Reduction in cost mental health episodes in Minnesota due to participation in Supportive Housing programs		
Data source	Wilder Homeless survey; DHS, Chemical Dependence Division; Criminal Justice Department; and Hospitals and housing programs; and other public agencies.						

Valuation of reduced substance abuse

We translate into dollar terms reduced incidence rates of substance abuse among participants in supportive housing and the cost of treating these conditions. As shown in Figure 39, first, we compute the number of supportive housing participants reducing substance abuse. To do this, we multiply the total number of previously homeless persons entering supportive housing by the proportion of addicts in supportive housing. We then multiply the results by the difference between the number of yearly substance abuse treatments for homeless persons and number of yearly substance abuse treatments for individuals in supportive housing. In the second step, we compute the benefit of participating in supportive housing by multiplying the number of reductions in substance abuse treatments by the cost of treating substance abuse (chemical dependency, alcohol, or tobacco use) per individual. This benefit is equivalent to the total costs saved.

Valuation of improved income

We assume that supportive housing improves employability and income of participants. Figure 40 shows the methods for calculating increased income due to supportive housing.

39. Valuation of reduced substance abuse

This outcome includes chemical dependence related outcomes such as use of marijuana, cost to victims and society, etc.

ESTIMATION METHODOLOGY

Outcome measurement							
Calculation	Estimated number of participants in supportive housing in Minnesota.	×	Proportion (%) of addicts	×	{Number of yearly treatments per homeless person} – {Number of yearly treatments per person in supportive housing}	=	Reduction in number of substance abuse treatments
Data source	Data from a sample of approximately 550 SHPs		Sources of data for the impact parameters: Wilder's own impact study of supportive housing & secondary data from comparable impact studies.				
Economic valuation: Chemical dependence							
Calculation	Reduction in number of substance abuse treatments	×	Cost per person of treating *substance abuse* per visit	=	Costs of *substance abuse* avoided/saved due to participation in Supportive Housing Programs in Minnesota.		
Data source			DHS – Chemical Dependence Division; Criminal Justice Department and Hospitals and housing programs, and other public agencies.				

Impact parameter is the difference between the number of yearly treatments per homeless person and number of yearly treatments per person in supportive housing.

***Note**: We multiply the impact parameter by proportion of addicts to compensate for and minimize the error based on the assumption that all homeless persons entering supportive housing sober/reduce chemical dependency. Weighing this calculation by this rate is therefore consistent with the conservative approach usually taken to calculate ROI.*

40. Valuation of income

This outcome may be seen in form of *improved employment and income.*

ROI logic and assumptions

Assumptions in the human capital approach include:

1) Participants in the program will live to average life expectancy.

2) Individuals will be in the labor force and productive during their expected lifetime in accordance with the current pattern of the labor force participation for his/her sex, ethnicity, and educational level. (Rhoads, 1980).

ESTIMATION METHODOLOGY

Outcome measurement & economic valuation of increased income due to supportive housing

Calculation	Estimated number of participants in supportive housing in Minnesota.	×	Proportion of supportive housing participants with jobs	×	Parameter(s) of the impact of Supportive Housing on wages/earnings. e.g. $\frac{\sum(w_2 - w_1)}{n}$	×	=	Increased income due to participation in supportive housing programs
Data source	Data from a sample of approximately 550 participants sample of programs		The ROI uses two sources for the impact parameters: Wilder's own impact study of supportive housing (Baseline survey) and secondary data from comparable impact studies.					
Data source	DEED, Survey of Supportive housing programs							

* *{$W_2 - W_1$} = Increased income ≡ Difference between gross incomes received while participating or during exit and estimated income while homeless or during time of entry of supportive housing.*

With the assumption that individuals will be in the labor force and productive during their expected lifetime, we compute the lifelong earnings.

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