

# Directions Home Independent Evaluator

## Evaluation of Directions Home Supportive Housing and the Use of Critical Service Systems: Preliminary Results

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### **Note**

The conceptualization of this study and most data collection occurred while James Petrovich, Ph.D. served as a research faculty member at the UTA School of Social Work. In August 2010, Dr. Petrovich relocated to the TCU Department of Social Work but will remain as the Principal Investigator on the study. Funding for this study part of the larger UTA / United Way of Tarrant County Directions Home Independent Evaluator contract.

### **Acknowledgements**

This assessment of service utilization is the product of formal research relationships with key community partners committed to understanding the health care needs of people who are homeless and their use of services:

#### JPS Health Network

Dr. Jay Haynes serves as Principal Investigator for the study protocol evaluating JPS medical records. His support was vital in obtaining institutional approval from JPS for the research. Dr. Haynes' knowledge and experience in serving this underserved and vulnerable population will continue to be essential in analyzing the sample's health care utilization records. Scott Rule, Vice President of Planning and Analysis, provided critical assistance in accessing study data.

#### MedStar

Emergency medical services data was obtained for this study under an inter-organizational agreement between MedStar and the UTA School of Social Work. James Petrovich, Ph.D., a faculty member at UTA oversees this research protocol. The support of MedStar – most notably Associate Director of Operations, Matt Zavadsky, and Paramedic Sean Burton - were essential in this aspect of the larger research effort.

#### United Way of Tarrant County

Funding for this study was provided by the United Way of Tarrant County. As administrator of municipal funding allocated to Directions Home, the United Way contracted with the UTA School of Social Work to evaluate programs and initiatives funded under the plan.

#### Research Personnel

Graduate interns Jessica Godin and Rebecca Valles from the UTA School of Social Work assisted in enrolling and interviewing research participants. Their assistance in this project was invaluable.

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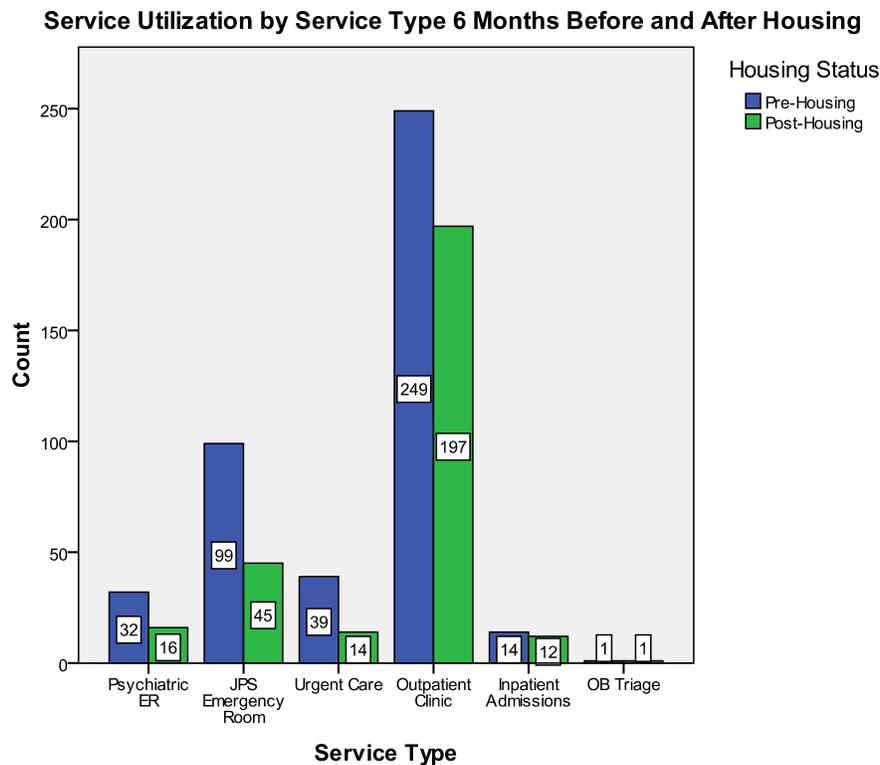
## Executive Summary

Prior research has demonstrated that supportive housing favorably impacts the use of critical service systems (medical, EMS, mental health and substance abuse, police, and criminal justice) and the fiscal costs associated with these services (Culhane et al., 2007). To provide a localized assessment of this intervention, a cost-impact assessment was conducted on a preliminary sample of 66 individuals housed in permanent supportive housing provided by Directions Home and Shelter-Plus-Care. The questions driving this research were:

1. Does the use of critical services systems change after individuals are placed in supportive housing?
2. What is the fiscal impact of these changes, if any?
3. Are these utilization changes and fiscal impacts meaningful?

### Findings

Initial analyses only included client records from John Peter Smith Health Network (JPS) and an estimation of MedStar, Inc. utilization. Findings indicate **utilization of JPS services decreased by 34%** comparing the 6-month periods before and after housing. **Five of six services saw reductions in utilization with psychiatric ER service utilization being reduced 50%, medical ER services by 55%, and urgent care visits by 64%. Community clinic visits were reduced by 20.9% and Inpatient Admissions by 14.3%. OB triage visits remained constant but this was also the least most frequently utilized service type (1 visit for each 6-month measurement interval).**



With reductions in service utilization, fiscal-impacts were also demonstrated. Overall, **JPS healthcare charges were reduced 24% (-\$191,404)**. However, this includes a 19% (+58,771) increase in inpatient charges after housing. Considering that inpatient services are provided at the discretion of a physician, this increase is considered to be based on medical necessity and is not considered a negative finding. **Evaluating psychiatric ER, medical ER and urgent care only, service utilization dropped by 56% with a reduction in charges of \$206,726 dollars.**

**Overall, a significant shift in the use of these 5 services was observed when comparing the 6 months before and after housing.**

Conservatively estimating that 75% of psychiatric and medical ER visits involved EMS transport, **Medstar utilization is estimated to have been reduced by 55 transports (34%)**. Using an average charge of \$1,505.00 per transport, the fiscal impact of this reduction is \$82,775. Combined with JPS, the **total amount of savings for 66 individuals placed in housing for 6 months is \$274,179.**

In the midst of these positive findings, the burden assumed by JPS in caring for people who are homeless is considerable. **Of the total charges (\$791,084) accumulated in the 6 months prior to housing, only 3% (\$27,057) were recouped.** This includes an average repayment rate of 20% for Medicaid, Medicare, and other government insurance. For the period after housing, **the increase in the proportion of total charges billed to Medicaid resulted in a higher total amount of repayment (\$27,899).** However, the Medicaid repayment rate remains low at 18%. For the period after housing, **only 5% (\$30,027) of the total amount billed (\$599,679) was recouped by JPS.**

Study limitations must be acknowledged. **The lack of randomization and lack of a control group precludes making a causal link between supportive housing and the service utilization changes and fiscal impacts identified in this study.** In other words, it is not possible to say that supportive housing *caused* these changes in service utilization. Other factors may also be involved. However, the findings of this research are consistent with the results of comparable studies demonstrating that **people who are placed in supportive housing use fewer acute medical services, overall health care-related charges appear to be reduced, and the impact of these fiscal-impacts offsets a portion of housing costs.**

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## Directions Home Independent Evaluator

### Evaluation of Directions Home Supportive Housing and the Use of Critical Service Systems: Preliminary Results

#### Introduction

Adopted in 2008, one of the main propositions underlying Fort Worth's Directions Home plan is that homelessness is expensive. A 2008 study of the cost of homelessness in Fort Worth estimated that more than 30 million dollars of public and private sector funding were spent responding to homelessness. However, **only one-third of funds were spent on services which could prevent or end homelessness in 2007. The remainder was spent on services reacting to or managing homelessness** (City of Fort Worth Planning and Development Department, 2008). These findings, analogous with research conducted in communities nationwide (Culhane and Byrne, 2010); supported the development of Directions Home and its focus on making homelessness rare, short-term, and non-recurring.

A key strategy of Directions Home is to increase the supply of permanent supportive housing. The plan proposes a locally-funded permanent supportive housing voucher program providing housing to at least 200 households who are homeless (Mayor's Advisory Commission on Homelessness, 2008). Underlying the selection of the permanent supportive housing model is that it is not only a humane intervention; it is also a cost-effective one as well. Studies conducted nationwide have demonstrated that **the use of emergency shelters, acute medical and psychiatric services and emergency medical services are often reduced after an individual is placed in housing. Reductions have also been noted in the frequency of interactions with law enforcement and criminal justice systems** (Culhane et al., 2007). Consequently, fiscal costs attached to the use of these service sectors have also been reduced. **In some cases, these savings have been found to offset a considerable portion of the costs for supportive housing** (Culhane et al.).

Considering the investment of the City of Fort Worth in Directions Home supportive housing, the UTA Independent Evaluator has undertaken a cost-impact assessment of this intervention. This study seeks to provide a localized assessment of service utilization before and after housing and, if any differences in utilization are observed, estimate the fiscal impact, and determine if fiscal impacts are meaningful.

**When reading this report, it is important to keep several considerations in mind:**

1. **These results are preliminary.** Consistent with existing research, this study proposed an assessment of service use of at least 12 months before and after housing. Given the need to provide an initial estimation of the fiscal-impact of this program, utilization data were requested for individuals who had been housed at least 6 months. It must be recognized that a longer timeframe is preferable in assessing trends in utilization and economic impacts.
2. **Only a portion of the individuals housed are included in this assessment.** As noted above, only individuals housed at least 6 months or longer were utilized for this initial assessment. However, not all eligible individuals were enrolled in the study. Contacting and enrolling housed individuals proved to be a time and labor-intensive process; thus, not all eligible participants

could be contacted and enrolled. **Despite these challenges, 66 housed individuals were contacted and agreed to participate in this study.**

3. **Not all individuals recruited to participate enrolled in the study.** Consistent with the voluntary nature of the study, individuals could decline to participate in the research. However, only 2 of the 68 approached declined to participate resulting in an acceptable refusal rate of 3%.
4. **These initial findings only include individual-level data provided by JPS.** Requests for records were made to all partnering agencies (JPS, MedStar, Fort Worth Police Department and MHMR of Tarrant County). However, only JPS provided data within the requested timeframe. It was possible, however, to make an estimation of MedStar utilization and fiscal impacts. MedStar did provide an estimation of the proportion of ER visits that would likely have required an ambulance for transport. Combining this estimate with an average charge for a basic EMS transport, it was possible to estimate utilization and economic impacts for this agency.
5. **It is possible study individuals may have obtained medical care through other providers.** In addition to JPS, a number of health care providers are located in Fort Worth and accessible to study participants. Notably, Baylor All Saints and Texas Health Harris Methodist Hospital also operate emergency rooms in the area, a common entry point for health care by people who are homeless or with limited income. However, anecdotal reports from MedStar staff indicate that most individuals who are homeless are taken to JPS for psychiatric or medical emergency care. Additionally, all but one participant in this study (98.5%) generated a JPS medical record in the 6 months before and/or after housing.
6. **Fiscal information is representative of CHARGES not COSTS.** The charges discussed in this report are the amounts individuals (or third party payers) are asked to reimburse for services received. It is not the actual personnel or material costs incurred in providing the service. In reality, the actual cost of providing health care services to the study population are less than the amount charged to the individual.
7. **Charges presented in this report include JPS facility charges but do not include physician charges.** Due to a data system limitation, physician charges could not be obtained for the study participants. Therefore, it is likely that a portion of the charges incurred by study participants have not been identified. Initial estimates are that including physician charges could raise the amount of total charges from 20% to 100% depending on the level of care.

**It is also important to keep these overall study limitations in mind as well:**

1. **Given the design of this study, a causal link between housing and service utilization cannot be made.** A more rigorous study design would have included the random assignment of individuals to a housing and control group. This would allow factors other than supportive housing, which could influence the use of services, to be factored into the analysis. Not being able to incorporate this procedure into this study, it is inappropriate to attribute any observed changes

strictly to the permanent supportive housing program alone. It is possible that other factors could be involved. However, it is important to note that many published supportive housing fiscal-impact studies do not utilize random assignment and a control group.

2. **These results should not be generalized to all people who are homeless in Fort Worth.** The City of Fort Worth has intentionally prioritized housing for people who are considered medically vulnerable. Given this focus, individuals prioritized for housing are considered to possess more chronic health conditions than those not prioritized. Therefore, as a population, medically vulnerable people may use health care services differently than those not considered vulnerable.

This is an important consideration as the community attempts to use research data to inform policy and funding decisions. In this case, these findings can be best understood as:

- a. **Speaking to the use of services by 66 vulnerable people placed in housing for at least 6 months**
- b. **Informative regarding the potential use of services and possible fiscal-impacts for other people who are vulnerable and placed in supportive housing**

The strengths of this study are that it utilizes a larger sample size than many other fiscal impact assessments. It also seeks to ultimately assess the use of a variety of service sectors (medical, emergency medical, mental health / substance abuse, law enforcement, criminal justice, and select homelessness assistance services) providing a broad evaluation of service use and any fiscal impacts.

### **Methodology**

Potential participants were initially identified using a list of individuals housed in the Directions Home permanent supportive housing program. A non-probability sampling approach was used to purposefully sample individuals continuously housed for 6 months or more on June 1, 2010. Additionally, participants were purposefully recruited based on demographic characteristics of gender and age in order to approximate the larger study population.

Noted previously, records maintained by the John Peter Smith Health Network were requested for 66 formerly homeless individuals living in Directions Home housing at least 6 months. Specific health care related data elements included:

1. Frequency of utilization of six distinct services (psychiatric ER, JPS emergency room, urgent care, community clinics, inpatient admissions, and OB triage).
2. Length of inpatient admissions (days)
3. Any diagnoses

Fiscal information was also requested. Data elements included:

1. Payer information (JPS Connection, Medicaid, Medicare)
2. Total charge for each service record

### 3. Any remittance received

Data was received from JPS in the form of an electronic spreadsheet which was then imported into SPSS, a statistical software package. Initially, descriptive statistics were used to describe the population, service utilization data, and fiscal data. These statistics include frequencies, means, range, sum, and more. Other statistical tests (T-Test, Chi-Square) were then used to determine if any differences noted before or after housing or in the distribution of specific services before or after housing could be considered statistically significant.

## Findings: Service Utilization and Costs of Care

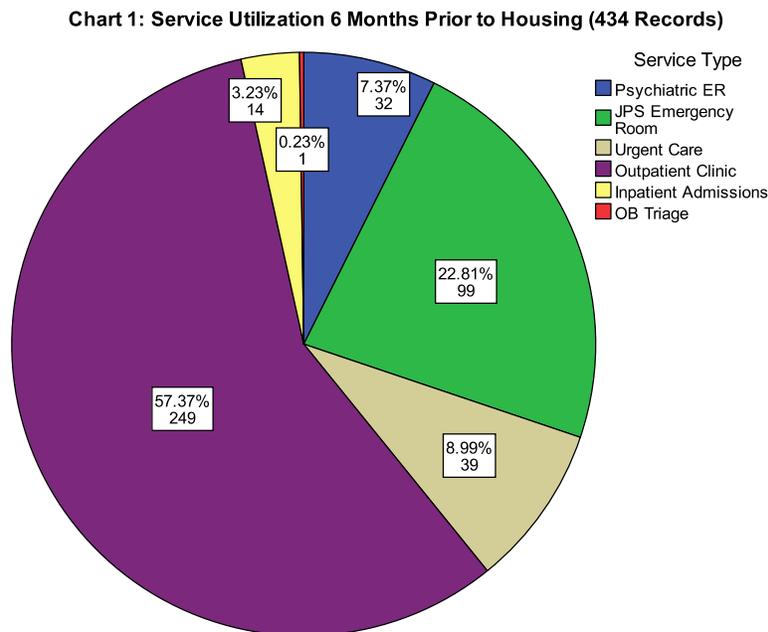
### Study Participants

Sixty-six individuals were included in the assessment. On average, these individuals had been housed for 265 days on June 1, 2010, the end-date used when requesting records from JPS. Females comprised 41% (n = 27) of the sample and males 59% (n = 39). The average age was 48.3 years old. When compared to all people housed under Directions Home permanent supportive housing, this sample appears similar in terms of average age and gender composition.

### Pre-Housing Service Utilization

In the 6 months prior to being housed, **434 distinct records were created for these 66 individuals** (mean = 3.27). A record is considered to be a distinct service experience with diagnostic codes and charges.

Chart 1 below indicates how these 434 records were distributed among the 6 distinct services (psychiatric ER, JPS medical emergency room, urgent care, off-campus clinic, inpatient admission, OB triage):

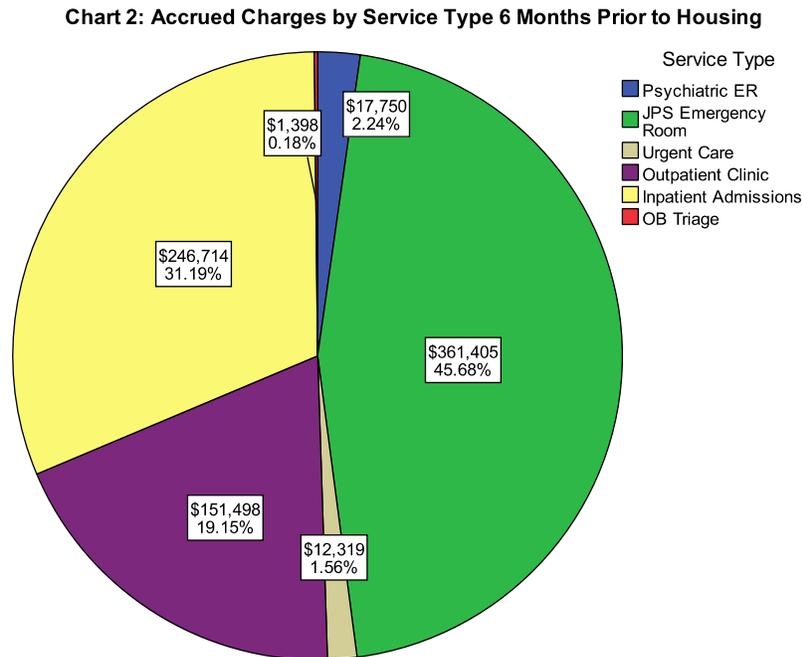


As noted in the chart above, **the most heavily utilized service prior to housing was outpatient clinics (249 visits)**. This service alone accounted for over half (57.37%) of the records generated. The next most

frequently used JPS service was the medical ER (n = 99, 22.81%) followed by urgent care (n = 39, 8.99%) and psychiatric ER (n = 32, 7.37%). The least frequently utilized services were inpatient admissions (n = 14, 3.23%) and OB Triage (n = 1, 0.23%).

### Pre-Housing Service Utilization Charges

Assessing the fiscal impact of service utilization **6 months prior to housing, total charges for all services was \$791,084**. On average, each of the 66 individuals utilized \$11,986 dollars worth of services. Chart 2 below indicates how these charges were distributed among the 5 services:



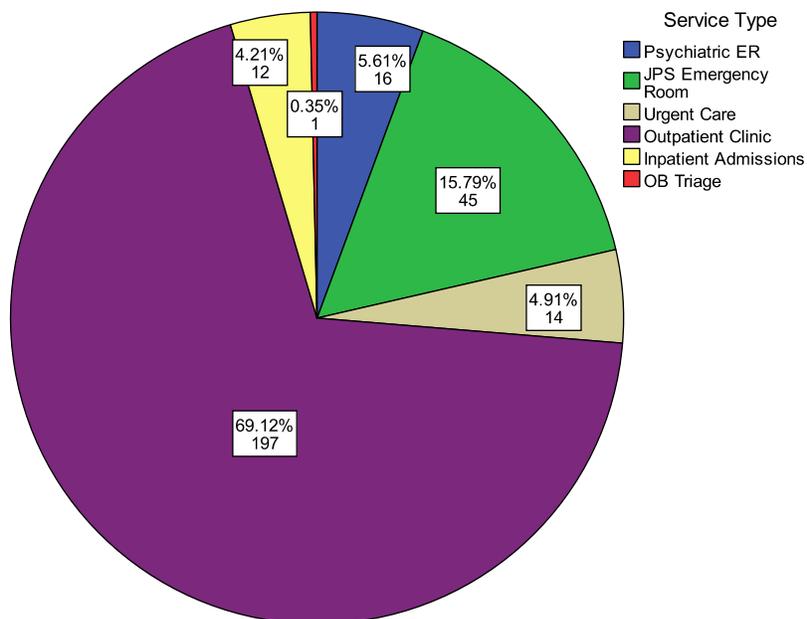
**Charges for clients visiting the JPS medical emergency room comprised almost one-half of the total charges (45.68%, \$361,405) in the 6 months prior to housing. However, they comprised less than one-fourth of the total services used. Inpatient admissions were the next most costly service used with 14 admissions accounting for \$246,714 or an average of \$17,622 per admission. The most commonly used service (n = 249), clinic visits accounted for just less than one-fifth (19.15%) of the total charges accumulated 6 months prior to housing (\$151,498).**

### Post-Housing Service Utilization

**In the 6 months after being housed, 285 distinct medical service records were created, a reduction of 34% (n = 149) versus the 434 records created in the 6 months prior to housing.** Chart 3 below illustrates how these 285 records were distributed among the specific service types. As with the period before housing, off-campus clinic visits were the most frequently utilized service; however, 52 (21%) fewer records were created for this service during the 6 months after housing. Showing more dramatic reductions, urgent care visits were reduced by 64%, psychiatric ER visits by 50% and medical ER visits by 55% in the period after housing. Finally, 2 fewer inpatient admissions were reported (reduction of 14%) while OB triage visits remained consistent with one visit being reported for both the period before and after housing.

An additional service utilization finding is that when compared to all services used, the proportion of off-campus clinic visits increased by nearly 12%. This appeared to represent a slight shift away from the use of acute emergency services (psychiatric ER, medical ER, and urgent care) for the 6 month period after housing.

**Chart 3: Service Utilization 6 Months After Housing (285 Records)**



**Summary of Pre and Post Housing Service Utilization**

Assessing service utilization 6 months before and after housing, reductions were noted for 5 of the 6 service categories included in this assessment. No reduction was observed for OB triage but this is the most infrequently used service with 1 visit being reported for both the pre-housing and post-housing intervals. Table 1 provides a comparison between these two measurement intervals:

**Table 1: Service Utilization Comparison Before and After Housing\***

Service	Pre-Housing (% of total)	Post-Housing (% of total)	Difference (% change pre – post)
Psychiatric ER Visits	32 (7.4%)	16 (5.6%)	-16 (50%)
JPS Emergency Room Visits	99 (22.8%)	45 (15.8%)	-54 (55%)
Urgent Care Visits	39 (8.99%)	14 (4.91%)	-25 (64%)
Outpatient Clinic Visits	249 (57.37%)	197 (69.12%)	-52 (21%)
Inpatient Admission	14 (3.23%)	12 (4.21%)	-2 (14%)
OB Triage Admissions	1 (0.23%)	1 (0.35%)	0 (0%)
Total	434 (100%)	285 (100%)	-149 (34%)

\* Percents may not total to 100 due to rounding

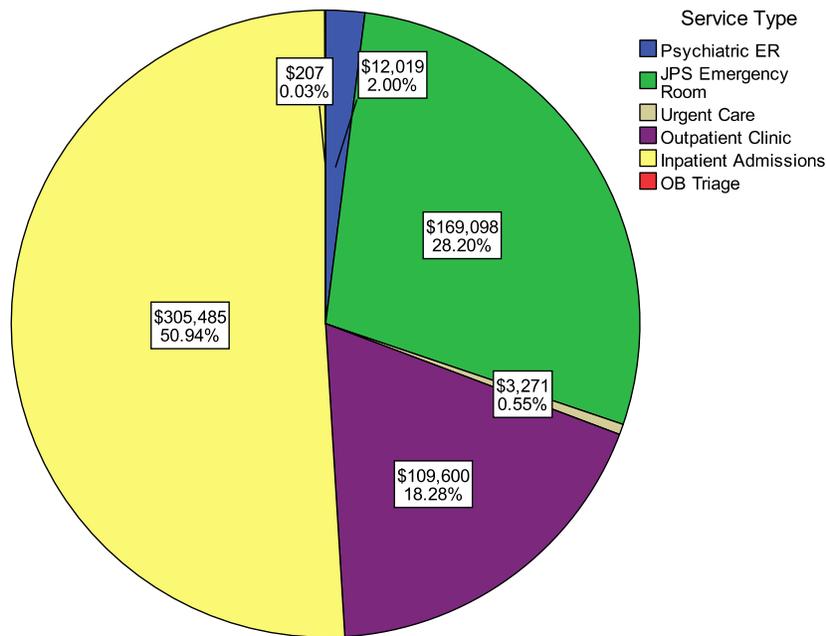
As noted in Table 1, **reductions in service use were largest for urgent care (64%), psychiatric ER (50%), and medical ER (45%)**. Additionally, off-campus clinic services also showed a reduction when pre and

post-housing periods were compared but use of this service increased proportionally when compared to all other services. In the 6 months prior to housing, clinic visits accounted for 57% of all services used. In the 6 months after housing, clinic services accounted for 69% (+12%) of all services used.

### Post-Housing Service Utilization Charges

Total charges in the 6 months after housing were \$599,680. Compared to charges incurred 6 months prior to housing (\$791,084), a reduction of \$191,404 was indicated. This represented a **reduction of 24% for the period after housing**. Chart 4 below presents how these charges were distributed among the specific service types:

**Chart 4: Accrued Charges by Service Type 6 Months After Housing**



### Summary of Pre and Post-Housing Service Utilization Costs

A comparison between accrued health care charges before and after housing is provided in Table 2 below. **Overall, a reduction of \$191,404 (24%) was noted.** For the 6 distinct service types, a reduction in charges was identified for all but inpatient admissions. For this service type, an increase of \$58,771 is indicated when pre and post-housing periods are compared. For the remaining service types, **medical ER costs demonstrated the largest overall reduction in charges (-\$192,307) or a reduction of 53%.** The next largest reduction was for off-campus clinic visits with a total reduction of -\$41,898. Compared to the cost of services utilized before housing, this was a 28% reduction. The remaining service types - psychiatric ER, urgent care, and OB triage - accounted for a total reduction of -\$15,610.

**Table 2: Service Utilization Cost Comparison Before and After Housing\***

Service	Pre-Housing (% of total)	Post-Housing (% of total)	Difference (% change pre – post)
Psychiatric ER	\$17,750 (2.2%)	\$12,019 (2.0%)	-\$5,371 (30%)

Service	Pre-Housing (% of total)	Post-Housing (% of total)	Difference (% change pre – post)
Medical ER	\$361,405 (45.7%)	\$169,098 (28.2%)	-\$192,307 (53%)
Urgent Care	\$12,319 (1.6%)	\$3,271 (0.55%)	-\$9,048 (73%)
Off-Campus Clinic	\$151,498 (19.2%)	\$109,600 (18.3%)	-\$41,898 (28%)
Inpatient Admission	\$246,714 (31.2%)	\$305,485 (50.9%)	+\$58,771 (19%)
OB Triage	\$1,398 (0.18%)	\$207 (0.03%)	-\$1,191 (14%)
Total	\$791,084 (100%)	\$599,680 (100%)	-\$191,404 (24%)

\*Percentages may not total to 100 due to rounding

### Payor Information

Payor information was included with the JPS health care cost data obtained for this study. Assessing the coding system used by JPS, 7 general payors were identified which were JPS Connection (JPS's own indigent health care program), Medicaid, Medicare, self-pay, government (other), self-pay / Medicaid pending and commercial insurance. Chart 5 below presents a comparison of charges accrued by individuals placed in the 6 months before and after housing.

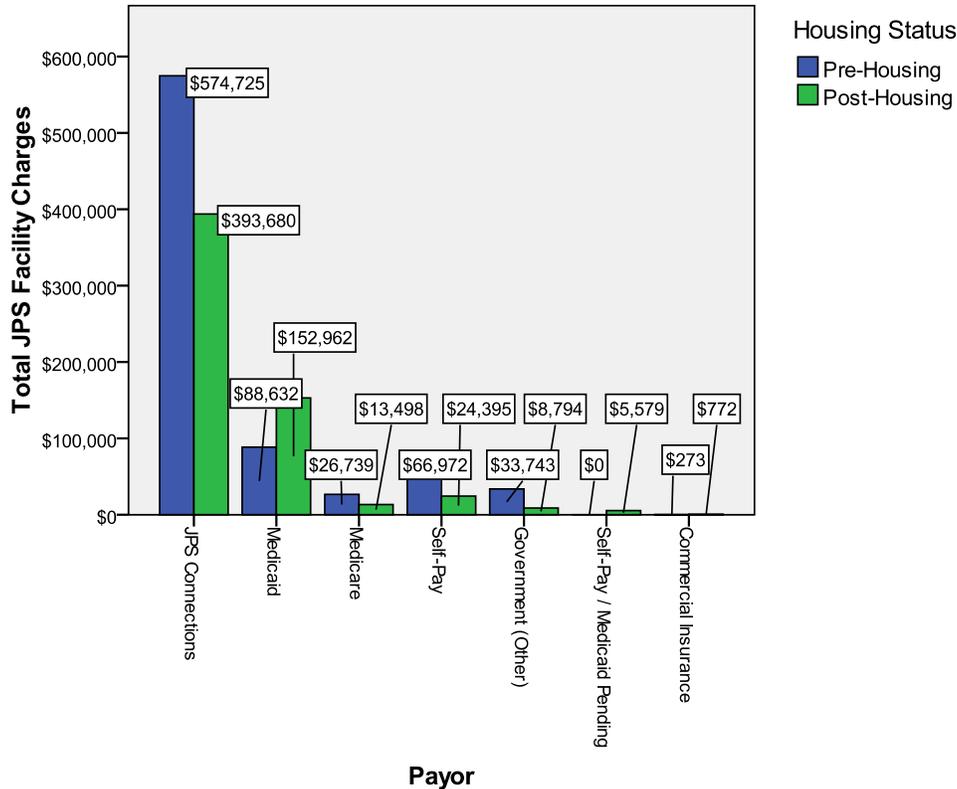
#### Pre-Housing

**Nearly three-quarters of the charges accrued by people who are homeless prior to housing was absorbed by JPS (\$574,725) through its Connection program. Only one individual who generated a medical record prior to housing reported possessing commercial insurance.** This is likely due to the high rate of employment and pervasive poverty among the study participants. Additionally, the low reimbursement rates of Medicaid, Medicare, and other government insurance programs appeared to have little impact on the amount of health care charges accrued by the sample. With repayment rates averaging only 20% of charges, the total amount recouped by JPS in the 6 months prior to housing was \$26,958. **Overall, less than 3% of the total charges (\$791,084) accrued by people who are homeless prior to housing were recovered by JPS.**

#### Post-Housing

Similar information was also obtained for the 6 months after individuals were placed in housing. Graph 5 indicates that not only was an overall reduction in created records and charges identified, but an increase existed in the amount of charges made to Medicaid and the subsequent amount reimbursed. **Prior to housing, \$88,623 (11%) of total charges (\$791,084) were billed to Medicaid. After housing this increased to \$152,962 (26%) of total charges (\$599,680).** While likely not the sole contributing factor, it is possible **the intensive case management offered to people in supportive housing may have contributed to individuals obtaining Medicaid.**

### Total Pre and Post Housing JPS Facility Charges by Payor



#### Emergency Medical Services (EMS)

Data regarding EMS utilization were obtained from MedStar and included pre- and post-housing utilization totals and an average charge for an EMS transport. **Overall, a 34% reduction in EMS use was observed** when pre- and post-housing measurement intervals were compared. **The estimated reduction in charges was \$82,775.**

**When this reduction in EMS charges was added with the reduction observed for JPS, the total was \$274,179.**

#### Next Steps in this Study

Noted previously, these results are considered preliminary:

1. Six-month measurement intervals were used for the pre and post-housing measurement intervals.
2. Sixty-six of the estimated 220 participants were included
3. Of the 4 data sources enlisted to participate in this study (JPS, MedStar, MHMR, Fort Worth Police Department), only JPS provided client-level data.
4. JPS Fiscal data included charges versus costs. However, these were the actual charges accrued by the 66 study participants during the pre- and post-housing measurement intervals.

5. Medstar fiscal data utilized an average charge for an EMS transport to determine overall pre- and post-housing charges.

**Participants continue to be enrolled in the study with a second analysis to be conducted in late 2010.**

This stage of the study will utilize a 12-month pre and post-housing measurement interval. It is also expected that all data sources will provide information for this assessment.

**Future analyses of JPS and Medstar data will also evaluate actual costs attached to providing services to the study sample.** The inclusion of these costs – in addition to charges - would provide a more accurate assessment of how the services utilized by the sample and any difference pre- and post-housing impacts facility expenses. **Additionally, estimates will be provided of physician charges for JPS services.** Noted previously, the charges attached to serving a study participant could increase as much as 100% when physician charges are included in the analysis. Therefore, for each service type an average physician charge will be determined. **If possible, actual physician costs will be included as well.**

For this initial assessment, it was not possible to utilize inferential statistics due to the smaller sample size (n=66). With a larger sample size, additional statistical analyses can be conducted to assess for correlational relationships between key study variables. Additionally, it will also be possible to test predictive statistical models which may help to explain which variables significantly contribute to changes in service utilization – including supportive housing.

Finally, representatives from the participating agencies will continue to assist in a thorough evaluation of the use of services by people living in supportive housing. Not only is it a goal of this research to evaluate the use of services and accompanying fiscal-impacts, but to also evaluate if individuals are obtaining appropriate care given diagnostic information obtained through the study. For example, standards of care exist for specific mental health or medical diagnoses including schizophrenia, bi-polar disorder, chronic obstructed pulmonary disease, etc. By evaluating the use of services within the context of these diagnoses, it may be possible to determine if individuals possessing certain conditions are receiving the appropriate level of care. These findings may inform efforts to outreach and engage individuals in services and/or identify barriers that may be present to obtaining services.

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