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The Impact of ACES on Public Health Care Expenditures for Homeless People with Co-Occurring Substance Use and Mental Health Disorders

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Background

The Action Coalition to Ensure Stability (ACES) project helps people in Marion County who are homeless or at risk for homelessness and who have co-occurring substance abuse and mental health disorders. The mission of ACES is: "To provide new and improved levels of integrated services and resources to homeless persons with an addictive disorder, serious mental illness, and multiple problems. This mission is founded in the belief that all persons are remarkably resilient and capable of positive development when provided with community-centered support, truly defined by what is in their best interest." (<https://www.choicesteam.org/page/programDetails/alias/ACES&article=4764&prog=315>). Case management and care coordination in ACES is guided by these core values:

- 1.) "Services must be client centered, client directed and client driven, with the needs of the client being the most important factor in deciding the types of services provided."
- 2.) "Services must be community based, building on the strengths, natural supports, and resources of the client."
- 3.) "Services must respect and respond to the unique culture of each client."
(<https://www.choicesteam.org/page/programDetails/alias/ACES&article=4764&prog=315>)

Prior research suggests that homeless individuals with co-occurring substance abuse and mental health disorders face significant challenges which have a significant impact on the public service sector, primarily through shelter-related costs, increased utilization of emergency medical services, and frequent contact with law enforcement and the criminal justice system (Culhane, et al., 2002). From its inception, the ACES program has been described as a promising strategy for reducing the public service sector costs. This brief report summarizes findings from an analysis of the public health system charges incurred by ACES clients before, during, and after their enrollment in the program.

This brief report was prepared under contract by the author. The data for this report come from information compiled by Marc Rosenman, MD and Evgenia Teal, MA at the Regenstrief Institute using the Regenstrief Medical Record System (RMRS). Regenstrief maintains a set of information repositories, and provides access to the data in these repositories for the purpose of research and quality improvement. These repositories interoperate with other information sources, and may make use of the data and services of other organizations in providing results for a query. Regenstrief puts forth every effort to provide accurate and complete information, however extreme care must be exercised when using electronically extracted data, as inherent uncertainty may be involved. Much of the data in the repositories originates elsewhere, and Regenstrief cannot guarantee its correctness nor that any processing performed on these data is free from errors. Please direct questions to Eric R. Wright, Ph.D., Director, Center for Health Policy, School of Public and Environmental Affairs, Indiana University-Purdue University Indianapolis (IUPUI), 342 N. Senate Ave., Suite 300, Indianapolis, IN 46204; Phone: (317) 261-3031; FAX: (317) 261-3050; E-mail: ewright@iupui.edu.

Methods

In this study, patterns of health services utilization and charges were analyzed for a cohort of individuals before, during, and after their participation in ACES. Data on service utilization and charges within Wishard Health Services were analyzed in these categories: Emergency Department visits, treatment provided through Midtown Community Mental Health Center, and inpatient hospitalizations. Services provided through the Emergency Department and Midtown also were combined to serve as an estimate of total outpatient charges and service use. The principal data source was the Regenstrief Medical Records System (RMRS) for Wishard Health Services (including the Midtown clinics). The list of ACES clients and their enrollment and disenrollment dates were obtained from Choices, Inc., the administrative entity responsible for the ACES project.

The primary analysis involved, for each individual, 12 months of data from before ACES enrollment, 15 months of data while in ACES (15 months was the cohort's average length of stay in ACES), and 12 months of data from the period after disenrollment from ACES. We call these three periods the pre-ACES, ACES, and post-ACES periods, respectively. In general, RMRS data were available through September 1, 2004; thus, only those ACES clients who disenrolled before September 1, 2003 were included (n=49). These 49 individuals represent the sample used in the analyses presented here.

In a secondary analysis, ACES clients who disenrolled anytime before September 1, 2004 were included. This analysis included more clients (N=121), but, because of the possibility of missing data after September 1, 2004, focused only on the 12 months before ACES enrollment and the first 12 months in the ACES project. For these time frames, the data were generally consistent with the results for the 49 people described in the primary analysis.

ACES clients, who were by definition homeless and had coexisting mental health and substance abuse, often entered the ACES project because of a health or life crisis. During the initial months after enrollment, ACES engages the client and helps ensure coordination of health care and other services to meet the crisis. Thus, in the graphs that follow, we denote the first three months in ACES as the "Crisis/Engagement" period.

Findings

The average age of the 49 individuals who comprised the analysis sample was 40 years; 53% were men, 47% women, and 47% were African-American, 53% white or other. Average time in ACES for this group was 15 months (or 5 quarters).

Tables 1a and 1b present a detailed summary of both the charges and number of visits to the Wishard Emergency Department, Midtown Community Mental Health Center, total outpatient visits (i.e., Emergency Department and Midtown visits combined), and Wishard Hospital inpatient stays. Both the total number visits and total associated charges for these visits were much lower in the post-ACES period than in the pre-ACES period, suggesting that the program did have an impact on these individuals' patterns of public service utilization.

Compared to the pre-ACES period, total charges (inpatient plus outpatient) in the Wishard Health Services system were lower in the post-ACES period. Using a Wilcoxon signed-rank test, this difference

was statistically significant ($p < 0.05$). This represents a reduction of 75.2% from \$589,733 pre-enrollment to \$146,302 one year after disenrollment (See Figure 1). This equates to a \$443,431 reduction in charges from the pre-ACES period to the post-ACES period. If extrapolated to the 121 members included in the secondary analyses, the 75.2% reduction in charges would translate to a savings of approximately \$1.1 million.

Table 1a. Per Person Per Month Charges in Dollars (N=49)

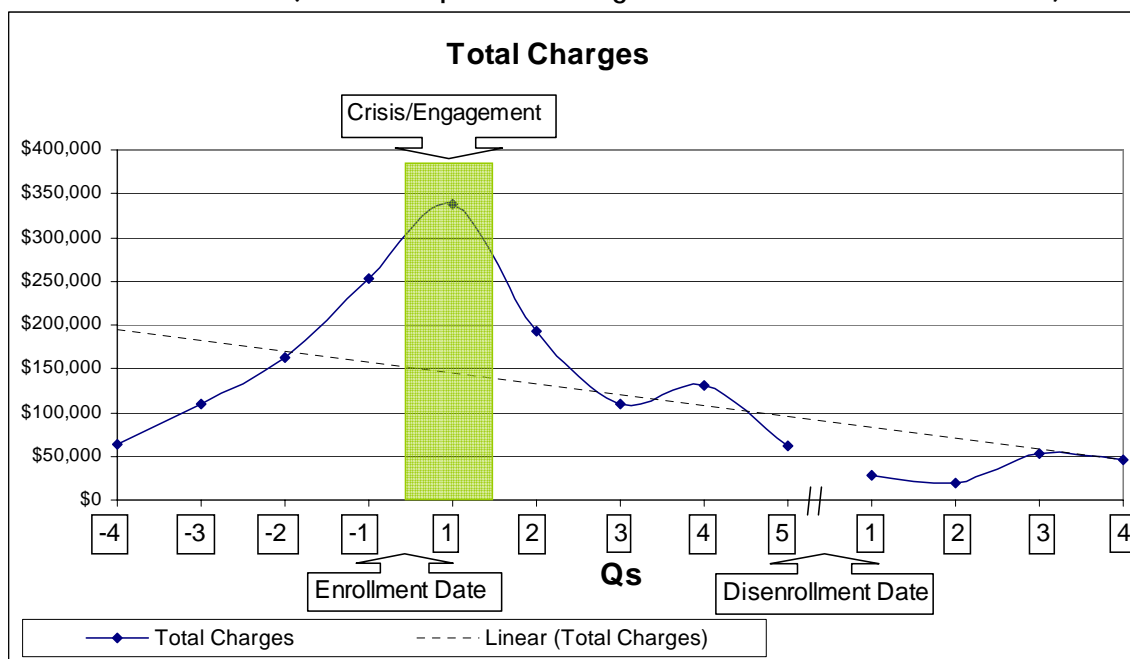
Period of Analysis	Emergency Department Outpatient Charges	Midtown Mental Health Outpatient Charges	Total Outpatient Charges (Emergency Department and Midtown are subsets of Total Outpatient)	Total Inpatient Charges	Total Charges (Total Outpatient + Total Inpatient)
Pre-ACES	89	617	799	204	1003
ACES	74	1098	1263	159	1421
Post-ACES	17	161	201	47	249

Table 1b. Per Person Per Month, Number of Visits (N=49)

Period of Analysis	Emergency Department Visits	Midtown Mental Health Outpatient Visits	Total Outpatient Visits (Emergency Department and Midtown are subsets of Total Outpatient)	Total Inpatient Visits
Pre-ACES	0.26	5.6	6.4	0.04
ACES	0.17	12.4	13.0	0.03
Post-ACES	0.06	1.5	1.7	<0.01

Figure 1 presents the total charges for all outpatient services (including Emergency Department and Midtown visits) as well as the inpatient services incurred by the study cohort of 49 ACES clients in the year prior to enrollment, the year following disenrollment, and while involved in the ACES program. A trend line computed to fit these data suggests that, over the three year study-period, there was a significant reduction in the aggregate amount of service as well as overall health care-related expenditures for the study cohort.

Figure 1.
Total charges 1 year prior to the enrollment date were \$589,733 and 1 year after disenrollment were \$146,302. (Blue line represents charges; black line is a linear trend line.)



Note: Total charges equals Total Outpatient charges plus Inpatient charges. Emergency and Midtown charges are included in the Total Outpatient category.

To evaluate whether this same general trend is true of the major types of health care services examined, we computed parallel figures for each of the major service categories. Figures 2a and 2b report the results for Outpatient services; Figures 3a and 3b for Emergency Room services; Figures 4a and 4b for Midtown Community Mental Health services; and Figures 5a and 5b for Inpatient services. Each of these graphs suggests a similar pattern of change between the pre-ACES and post-ACES periods. The graphs also demonstrate that after the initial crisis/engagement period, there is a consistent lowering of health care charges while the participant is in ACES. The linear trend lines in the figures below are included to help portray the downward utilization of expensive services and to average out the fluctuations that are demonstrated pre, during and post ACES in the blue charge lines.

Figure 2a.

Total number of outpatient visits 1 year prior to the enrollment date was 3767, and 1 year after disenrollment was 1016. (Blue line represents number of visits; black line is a linear trend line.)

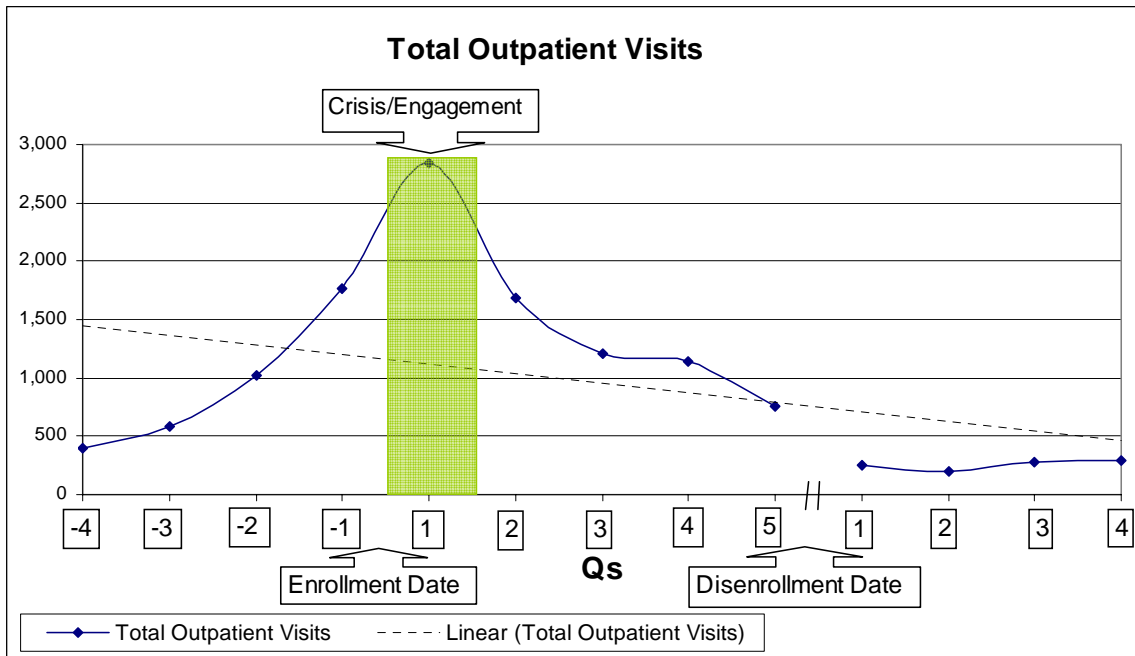
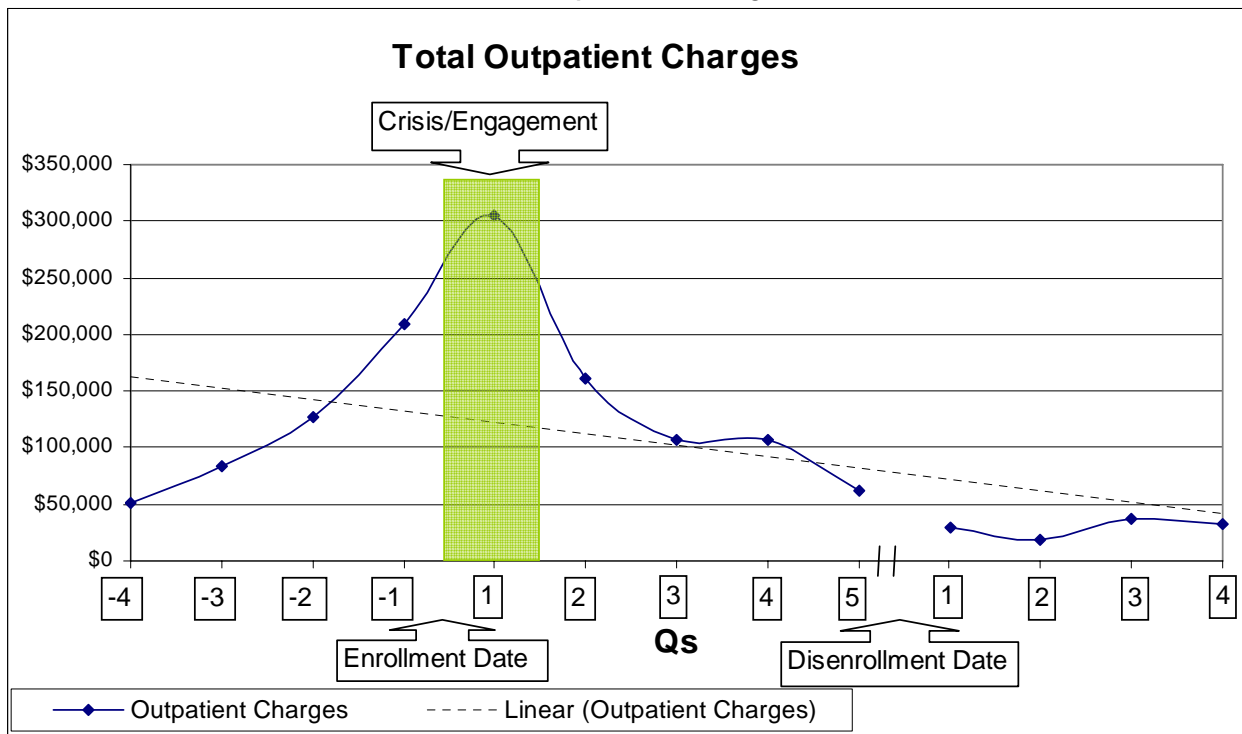


Figure 2b.

Total outpatient charges 1 year prior to the enrollment date were \$469,884, and 1 year after disenrollment were \$118,388. (Blue line represents charges; black line is a linear trend line.)



Note: Total Outpatient charges include Emergency Department and Midtown charges.

Figure 3a

Number of ER visits 1 year prior to the enrollment date was 151, and 1 year after disenrollment was 36. (Blue line represents number of visits; black line is a linear trend line.)

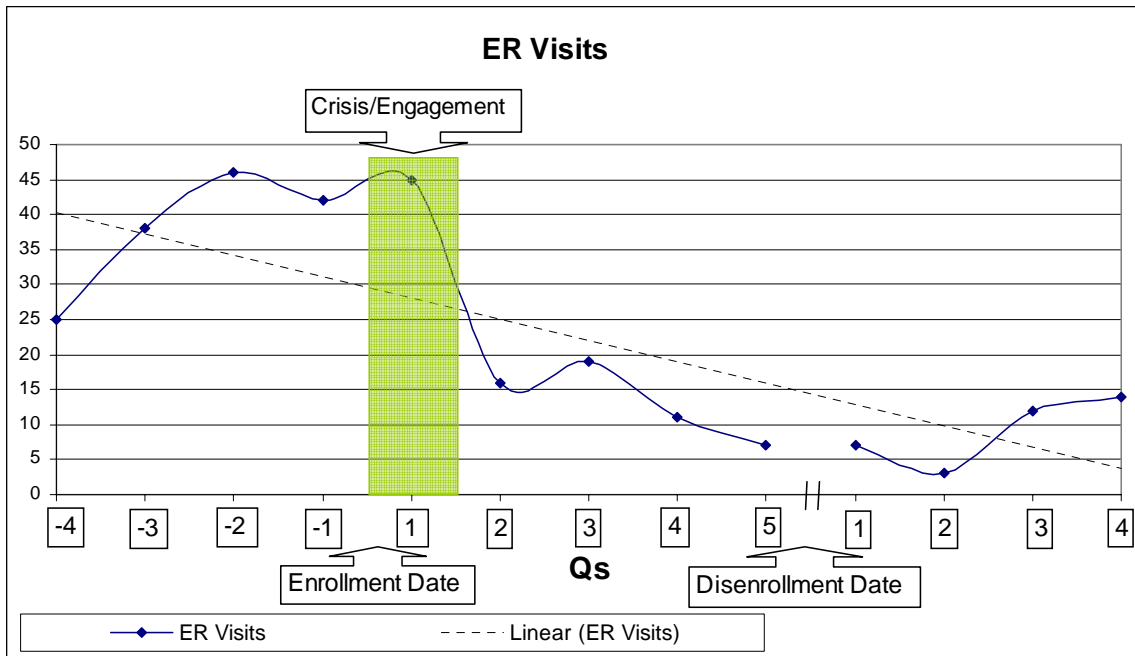


Figure 3b

ER charges 1 year prior to the enrollment date were \$52,316, and 1 year after disenrollment were \$9,935. (Blue line represents charges; black line is a linear trend line.)

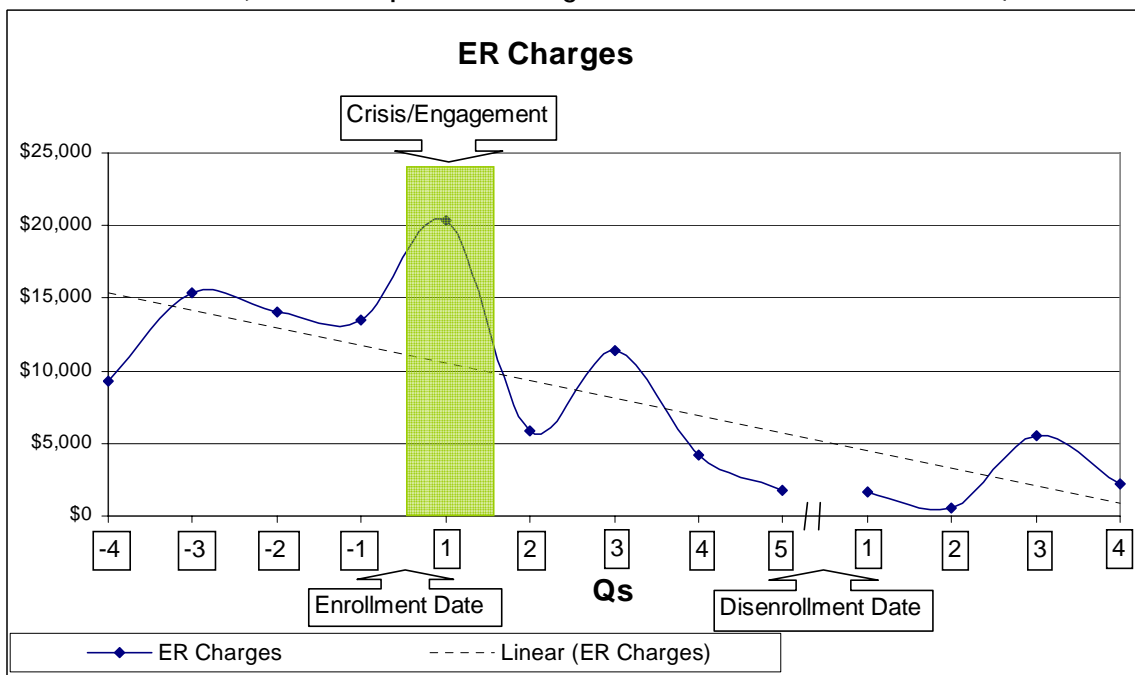


Figure 4a

Number of Midtown clinic visits 1 year prior to the enrollment date was 3289, and 1 year after disenrollment was 906. (Blue line represents number of visits; black line is a linear trend line.)

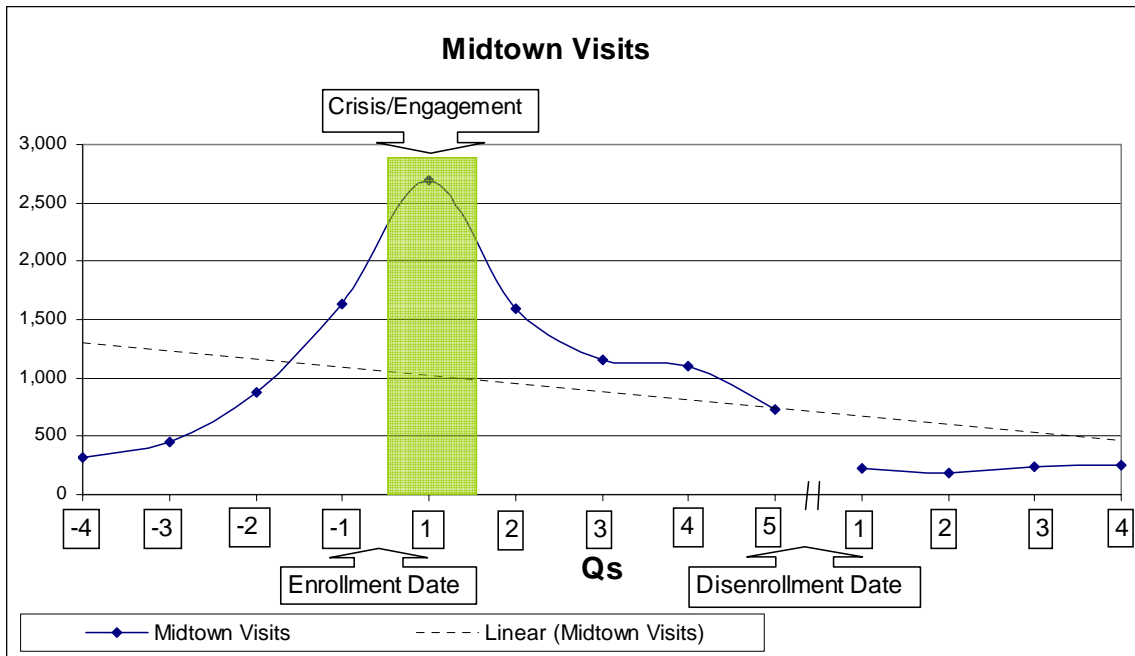


Figure 4b

Midtown charges 1 year prior to the enrollment date were \$362,735, and 1 year after disenrollment were \$95,001. (Blue line represents charges; black line is a linear trend line.)

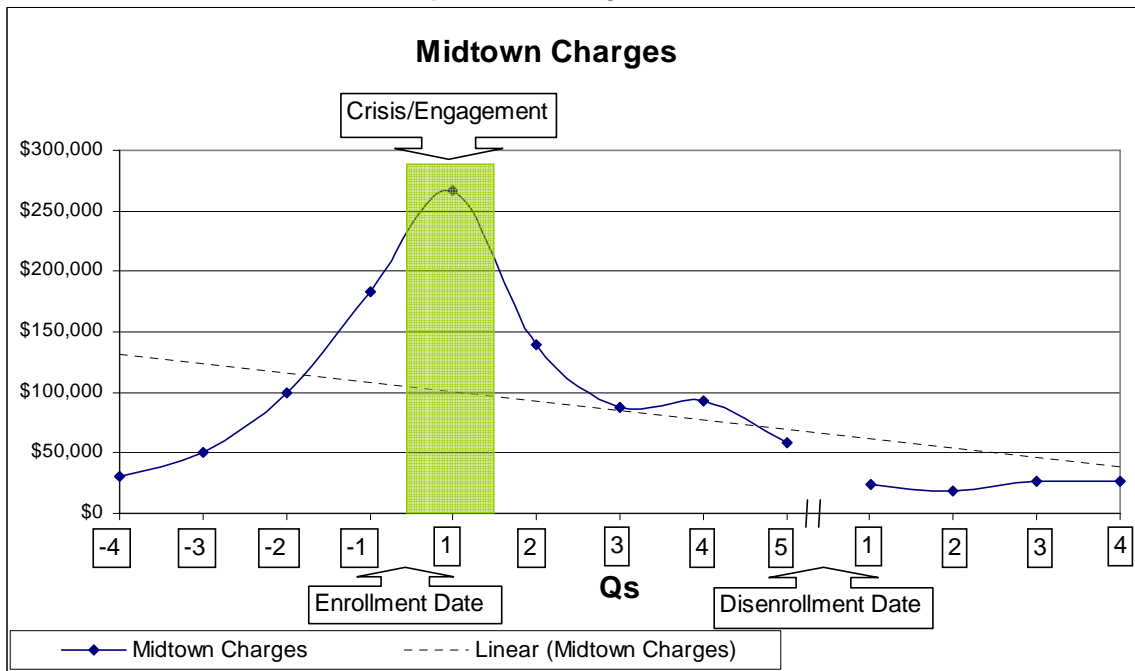


Figure 5a

Number of inpatient admissions 1 year prior to the enrollment date was 24, and 1 year after disenrollment was < 5. (Blue line represents number of visits; black line is a linear trend line.)

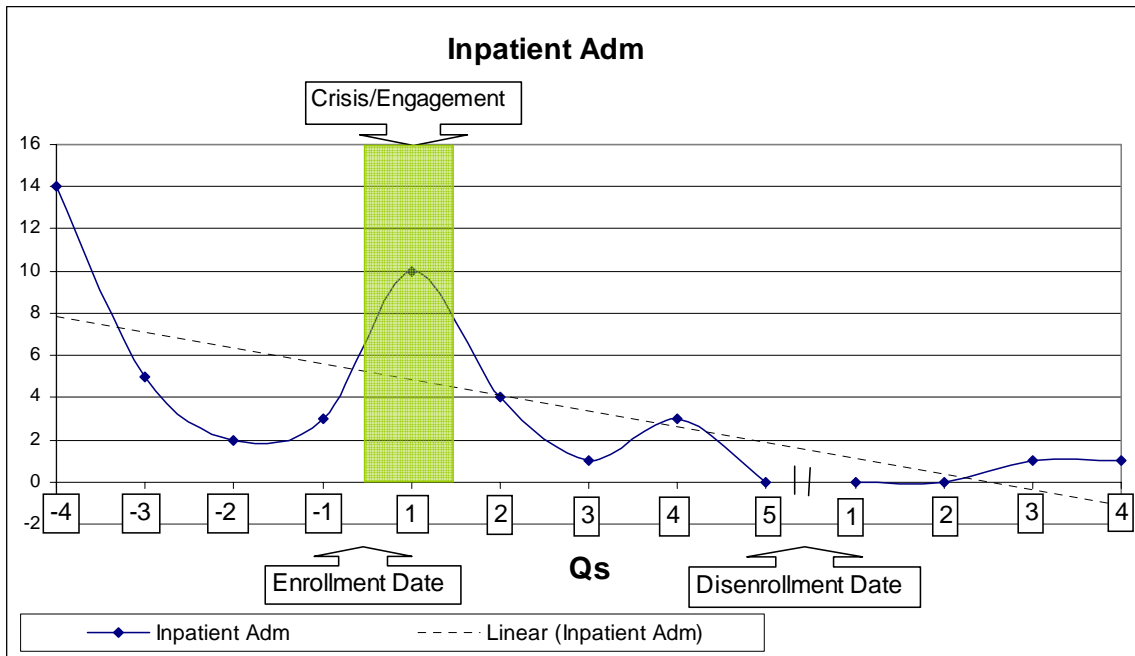
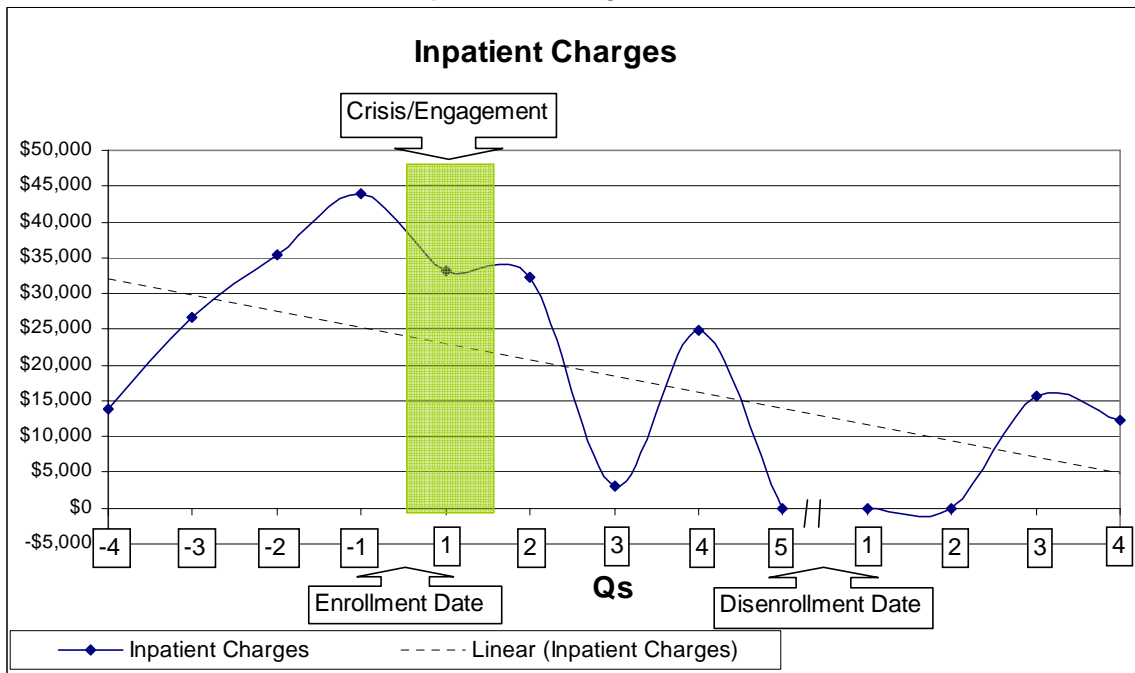


Figure 5b

Inpatient charges 1 year prior to the enrollment date were \$119,849, and 1 year after disenrollment were \$27,914. (Blue line represents charges; black line is a linear trend line.)



Conclusions

The patterns reported here generally mirror those of other studies (Culhane, et al., 2002). Chronically homeless persons living with mental health and/or substance abuse often use the most expensive types of public health care - emergency department visits and inpatient hospitalization (D'Amore, et al., 2001), which by themselves are unable to provide effective preventive care or coordination of services. Without an organized effort to coordinate and address a homeless individual's mental health and substance abuse needs, research suggests that these people will continue to have expensive and disjointed contact with the public health care system, as they continue to experience significant mental or physical health crises and as their overall health deteriorates.

In this sample, the ACES clients actually increased their use of health care services as they became engaged in an organized program, a pattern that has been observed in other studies as well (Rosenheck, et al., 1993). After this increase in use associated with the crisis/engagement period, downward trend in utilization of emergency and inpatient care was clearly evident both overall and across the major service categories, and this trend continued after discharge from the ACES program. Moreover, overall public medical system costs were significantly lower after their involvement with ACES. **Indeed, there was a 75.2% drop in overall charges comparing the pre-ACES and post-ACES periods.** While these pre-post data do not tell us for sure what would have happened in the absence of ACES (and we cannot rule out the possibility that the results shown could reflect regression to the mean, the effects of outliers, or other vagaries of retrospective data), it seems likely that without the organized effort by ACES to coordinate services, the homeless persons in this cohort would have been at higher risk and would have received more expensive care. Additional analyses are underway that is examining health care as well as other service utilization for a cohort of homeless individuals who are considered high-level users of the public healthcare system in Marion County. Nevertheless, the findings reported here suggest that the ACES program is an effective strategy for reducing public health care expenditures for homeless people who have co-occurring substance abuse and mental health disorders.

References

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