

PUBLIC POLICY CAPSTONE

What Makes People Generally Satisfied with Mental Health Services?

:Findings of 2010 Consumer Satisfaction Survey
in Kentucky Community Mental Health Centers

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Table of Contents

	Page
Executive Summary.....	3
Problem Statement.....	4
Literature Review.....	6
Data Description.....	8
Method.....	13
Results	
A. Adult survey.....	14
B. Youth survey.....	22
Conclusion.....	28
Recommendations.....	29
References	
Appendix	

Executive Summary

Problem: In 2010, the Kentucky Cabinet for Health and Family Services, Department for Behavioral Health Developmental and Intellectual Disabilities (BHDID) conducted a survey to evaluate consumers' satisfaction with services delivered at the Community Mental Health Centers (CMHCs) in Kentucky. The purpose of this study is to identify factors that predict clients' perception on General Satisfaction using responses of the survey.

Research Design: Two separate logistic regression analysis were performed for adult and youth survey respondents, respectively. For the Adult survey, respondents' characteristics and their responses about several aspects of services were included as potential explanatory variables. For the Youth survey, since caregivers participated in the survey, their responses about several aspects of services that their children received, the youth patients' characteristics and medical/social backgrounds were used as explanatory variables.

Major Findings: In the Adult survey, responses to the domains of Access, Quality and Participation in Treatment Planning significantly affect clients' perception on General Satisfaction. In Youth survey, the domains of Access, Cultural Sensitivity, Participation in Treatment Planning and Social Connectedness are significantly associated with responses to General Satisfaction. Respondents who positively indicate those domains of services are more likely to answer positively as generally satisfied.

Recommendations: Based on the analysis in this report, improvement in certain domain of services, especially Access, Quality (Adult)/Cultural Sensitivity (Youth), Participation in Treatment Planning and Social Connectedness (Youth) that were shown to be related with "General Satisfaction" could increase the level of positive responses.

Problem Statement

In 2010, the Kentucky Cabinet for Health and Family Services, Department for Behavioral Health Developmental and Intellectual Disabilities (BHDID) conducted a survey to evaluate consumers' satisfaction with services delivered at the Community Mental Health Centers (CMHCs) in Kentucky. The survey was developed by the Mental Health Statistics Improvement Program (MHSIP) Advisory Committee of the Center for Mental Health Services (CMHS) and was designed to assess the clients' perspectives on public mental health services they have received. While adult clients answered the survey questions by themselves, minors required that their caregivers provide their survey answers. Two different survey forms were given to participants according to the patients' age. To simplify, in this report, those surveys for adult clients are referred to as "Adult survey" and those for youth caregivers are referred to as "Youth survey".

The purpose of this study is to scrutinize what factors affect clients' perception on "General Satisfaction". Do people positively respond as "generally satisfied" when the treatment outcomes are improved, or when they meet doctors quickly and conveniently without waiting in a long line? This report approaches the question by analyzing the relative association of General Satisfaction with responses to other survey questions. More specifically, the survey asks about several aspects of services they received, such as General Satisfaction, Access, Cultural Sensitivity (in Youth survey), Quality (in Adult survey), Participation in Treatment Planning, Outcomes, Functioning and Social Connectedness. Also, patients' characteristics such as gender, race and birthday were asked in the survey. The Youth survey asks additional questions about the youth patient's medical/social background. Because the analysis was performed only using

survey responses, findings in this report may not reflect all of the factors influencing General Satisfaction. Also, the survey was administered only to participants visiting a CMHC. Therefore, clients who are no longer receiving services are not included in the report, implying that the analysis might draw different conclusion otherwise.

Literature Review

History of The Survey

The Mental Health Statistics Improvement Program (MHSIP) was organized in the 1970s with representatives from three groups: federal, state and local government to address mental health data issues.¹ As the MHSIP community establishes rules for mental health data collection and nationwide project implementation, the membership expanded to advocacy groups and social service providers. After the MHSIP Task Force Report was issued in 1996², the state-level consumer-oriented mental health report card was developed and several states started conducting pilot studies of a mental health performance measurement system.⁹

In 1999, the 28 item MHSIP Consumer survey became the source for consumer perception of care indicator for the Center for Mental Health Services (CMHS) Uniform Reporting System.³ Also, the Youth Services Survey (YSS) and Youth Services Survey for Families (YSS-F) have been developed by the Virginia State Mental Health Agency (SMHA).³ In 2010, Kentucky BHDID conducted the YSS-F and Adult Consumer survey using the most recently revised form in which the domains of Social Connectedness and Functioning were added in 2008.⁴

The Survey Instrument

It is important to review whether the survey instrument is an appropriate tool to answer the research question: what makes people generally satisfied? In other words, whether the survey truly reflects respondents' perception of mental health services is a critical matter before

proceeding with analysis and recommendations sections. There have been several efforts to assess the reliability and validity of the survey. A pilot test of the survey was conducted by Minsky et al. with 101 consumers of mental health services in order to obtain the internal validity and reliability data.⁵ Approximately 76% of respondents indicated that questions were not too short or too long. More than 96% of people responded that the survey didn't include any irrelevant items or any difficult/unclear items. Also, Minsky et al. came up with alpha value of 0.95 in terms of reliability. (Usually 0.7 or above is acceptable standard¹⁹) Factor analysis that was done by Jerrell shows that 16 questions asking about three factors: access, quality/appropriateness and outcomes, are within an acceptable range of internal consistency level.⁶ To more closely approximate internal validity, completion of the Adult and Youth surveys in 2010 was voluntary and had no implications for appointments or services provided.^{4,7}

Data Description

The survey was administered at outpatient clinics operated by each CMHC. During a two week period each spring, the CMHC staff made the survey available to clients who arrived for outpatient appointments. Completing the survey was voluntary and had no implications for appointments or services provided. During the fiscal year 2010 (July 1, 2009 ~ June 30, 2010), 117,526 adult patients visited Kentucky CMHCs and 7,029 of them participated in the survey, resulting in a 5.98% penetration rate, while 58,875 youth patients visited and 3,242 caregivers participated, resulting in a 5.51% penetration rate. (Table 1)

Table 1. Statewide Survey Penetration Rate

	Adult Survey	Youth Survey
Number of Patient Served	117,526	58,875
Number of Surveys Returned	7,029	3,242
Penetration Rate	5.98%	5.51%

The Adult survey consists of 40 questions and 36 of them ask about several aspects of services provided in CMHCs and 4 of them ask about respondents' characteristics and background. The Youth survey consists of 41 questions and 27 of them ask about the services provided in CMHCs and 5 of them ask about youth patients' characteristics and background. For the Youth survey, there are 9 questions that ask about children's medical status and family/school condition.

1. Respondents’ characteristics and backgrounds: In the survey, respondents were asked about their birth date, gender and race. Ages on the dates when clients participated in the survey were obtained using Birth dates. Table 2-1 shows the percentage of Adult survey respondents with regards to their age, gender and race. Approximately 74% respondents were age 18 to 50, showing fairly even distribution within those age groups. In terms of race, a high rate (90%) of white respondents could be explained by a higher residency of Whites in Kentucky. In fact, this observation is consistent with the 2010 U.S. Census Bureau data showing that Kentucky consists of 89.2% white residents.¹⁰

Table 2-1. Adult Survey Respondents’ Characteristics

<i>Age of Adult Respondents</i>		<i>Gender of Adult Respondents</i>		<i>Race of Adult Respondents</i>	
18 - 30	24%	Male	40%	American Indian /Alaska Native	2%
31 - 40	25%	Female	60%	Native Hawaiian	0.1%
41 - 50	25%	Total	6,346	Asian	0.3%
51 - 60	19%			White (Caucasian)	90%
61 - 70	6%			Black (African - American)	7%
71 - 80	1%			Other	1%
≥ 81	0.2%			Total	6,222
Total	5,251				

Note that Youth survey respondents were asked about the characteristics of the youth patients, not that of respondents. There is no remarkable difference in race, compared to adult patients. (Table 2-2) However, unlike the children caregiver survey in which male child patients were 61% and female child patients were 39%, the adult consumer survey showed that 60% of the patients were female and 40% were male, respectively. This could be explained by the change in social position and exposure to specific mental health risks associated with gender. According to

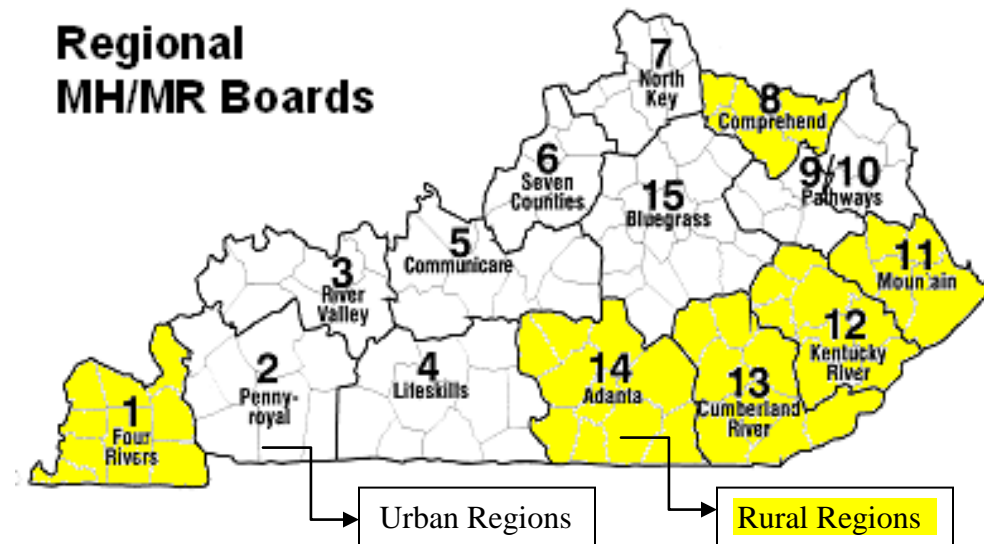
the World Health Organization (WHO), “gender specific risk factors for common mental disorders that disproportionately affect women include gender based violence, socioeconomic disadvantage, low income and income inequality, low or subordinate social status and rank and unremitting responsibility for the care of others.”¹¹

Table 2-2. Youth Survey Patients’ Characteristics

<i>Age of Youth Client</i>		<i>Gender of Youth Client</i>		<i>Race of Youth Client</i>	
≤ 10	47%	Male	61%	American Indian /Alaska Native	1%
11 - 17	53%	Female	39%	Native Hawaiian	0%
Total	2,446	Total	2,412	Asian	0.1%
				White (Caucasian)	87%
				Black (African - American)	8%
				Other	4%
				Total	2,335

2. Location of Services: In Kentucky, there are fourteen CMHCs and each serves a designated multi-county region. (Figure A) In order to analyze whether there is an association between responses to the domain of “General Satisfaction” and regional feature, fourteen regions were classified whether they belong to rural or urban regions. Kentucky is composed of 120 counties where thirty-five counties are classified as urban area and the remaining eighty-five counties are rural areas according to Urban-Rural Continuum codes (also known as Beale Codes) of Economic Research Services (ERS) in the Department of Agriculture.¹³ Because CMHCs provide mental health services at “region” base, a region might contain various counties with rural and urban continuum codes. For this project, a region that has at least one Metro county code (1, 2 or 3) is assumed to be an urban region. (Figure A)

Figure A. The Map of Mental Health Regions



3. Youth patients' Medical/Social Condition: For the Youth survey, respondents were asked about how the child is doing in family and school. Specific questions include:

- Is your child currently living with you?
- Has your child lived in any of following places in the last 6 months? (With parent(s), with another family member, Foster home, Crisis Shelter, Group home, residential treatment center, hospital, local jail, homeless, other)
- In the last year, did your child see a medical doctor (or nurse) for a health check up or because he/she was sick?
- Is your child on medication for emotional/behavioral problem?
- Is your child still getting services from this Center?
- How long did your child receive services from this Center?
- Was your child expelled or suspended during/since beginning services?

- Was your child expelled or suspended during the 12 months prior to that?
- Since starting to receive services, the number of days your child was in school is greater, less or about the same?

4. Domains: The surveys have seven core domains and each asks about a specific aspect of services provided. (Table 3)

Table 3. Primary Concerns Related to The Domain

Domain	Primary Concerns Related to the Domain
General Satisfaction	Services were, overall, satisfactory and preferable to other choices
Access	Staff availability, the range of service options and how quickly and conveniently services were received
Quality/Appropriateness (Adult survey applicable)	Cultural and linguistic access and whether services promoted recovery and continuity of care
Cultural Sensitivity (Youth survey applicable)	Cultural and linguistic access and whether staff were respectful
Participation in Treatment Planning	Clients' participation in planning services. For example, whether the patient, not staff, decided treatment goals
Outcomes	Services provided patients with positive changes in areas for which treatment was sought and minimal negative outcomes.
Social Connectedness	Services contributed to improving natural supports, which come from family or friends
Functioning	There was a positive effect on independent community living and decreasing distress caused by symptoms

Method

Comparison Percent Positive Responses

For each question, possible responses were arrayed on a five point scale that ranges from “strongly agree” to “strongly disagree”. For example, for a question, “I felt free to complain”, responders were able to choose one answer out of 6 choices: Strongly agree, Agree, Neutral, Disagree, Strongly disagree and Don’t know / not applicable. With regards to analysis, responses of “Don’t know / not applicable” are treated as missing values and not included in calculating percent responses of each question. Also, surveys with more than 1/3 of the items in the scale missing are excluded from the result of that scale.¹⁸

Logistic Regression

The responses of “Agree” and “Strongly agree” are considered as positive responses. In logistic regression, positive responses are coded as 1 and others (“Neutral”, “Disagree” and “Strongly disagree”) are coded as 0. These binary variables allow simple calculation of odds ratios that indicate the strength of association between an independent variable and the dependent variable, “General Satisfaction”. A logistic regression predicts general satisfaction using all possible explanatory variables in the survey, which are patients’ characteristics and responses about domains. Therefore, it is a multi-variable regression model. As conventionally known, the odds ratio indicates the relative strength of relationship between two variables. If the odds ratio is 1, it means there is no association between two variables. If the odds ratio is above 1, it indicates there is a positive relationship while the value below 1 indicates there is a negative relationship.¹³

Results and Findings

A. *Adult Survey*

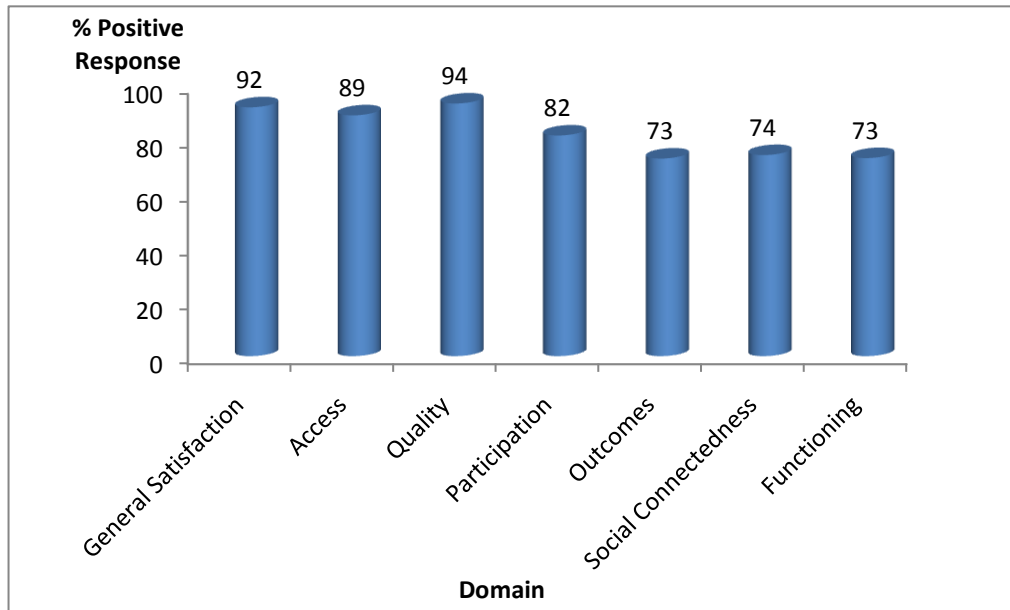
Using a multi-variable logistic regression model, significant factors that predict adult clients' perception of General Satisfaction have been identified. The summary of findings from Adult Survey is as follows:

- **Female respondents are predicted to answer more positively to General Satisfaction than male responders.**
- **“American Indian” is less likely to answer positively to General Satisfaction compared to “White” and “Black”.**
- **Age is not shown to be a significant factor on predicting responses to General Satisfaction.**
- **The domains of Access, Quality and Participation in Treatment Planning are significantly associated with the responses to General Satisfaction. Respondents who positively indicate those domains of services are more likely to answer positively as generally satisfied.**
- **The domains of Functioning, Outcomes and Social Connectedness are shown no significance in relationship with responses to General Satisfaction. Further analysis reveals that these three domains are significantly correlated with each other.**
- **By comparing percent positive responses and logistic regression results, a conclusion that respondents who are predicted to answer positively to Access and Quality perceive overall services generally satisfied.**

A-1. Comparison of Percent Positive Responses by Domain

Approximately 92% of participants responded positively on the domain of general satisfaction. (Figure B) This is a fairly high level relative to other domains, especially to outcomes (73%), social connectedness (74%) and functioning (73%). This report’s research question arises from figure B that shows a relative difference in percent response to General Satisfaction and Outcomes/Functioning. According to a t-test by which the categories are compared, the responses are statistically different. (data not shown)

Figure B. Comparison Percent Positive Response by Domain



A-2. Logistic Regression Predicting General Satisfaction

Next, we use multi-variable logistic regression to predict general satisfaction using respondents’ characteristics and domains.(Table 4) Female is shown to be more likely to respond positively on

General Satisfaction (odds ratio: 1.55>1). For race/ethnicity, compared to “White” and “Black”, “American Indian” responded less positively on General Satisfaction. (odds ratio 0.2 < 1)

Table 4. Logistic Regression Predicting General Satisfaction in Adult Survey

General Satisfaction	Odds Ratio	P > z	Marginal Effect (dy/dx)	P > z
<Domain>				
Access	11.65*	<0.001	0.21*	<0.001
Outcomes	1.75	0.120	0.02	0.184
Functioning	1.27	0.521	0.01	0.546
Participation in Treatment Planning	2.69*	0.001	0.05*	0.017
Quality	14.41*	<0.001	0.27*	0.006
Social Connectedness	1.75	0.050	0.02	0.102
< Characteristic>				
Rural	0.88	0.851	-0.004	0.855
Black	1.41	0.470	0.01	0.406
American Indian	0.21*	0.003	-0.10	0.081
Asian	Dropped [‡]			
Hawaiian/Pacific Islander	Dropped [‡]			
Other Races	0.68	0.646	-0.01	0.697
Female	1.55*	0.041	0.01*	0.048
Age 18-30	0.83	0.497	-0.01	0.515
Age 41-50	1.09	0.761	0.003	0.755
Age 51-60	1.26	0.532	0.01	0.501
Age 61-70	0.85	0.781	-0.01	0.795
Age 71-80	0.18	0.112	-0.12	0.384
Age > 81	Dropped [‡]			

*Odds ratio/marginal effect is significant at 95% confidence level.

[†] Variables of “White” and “Age 31-40” are a base group for the category (race and age) and omitted in the model.

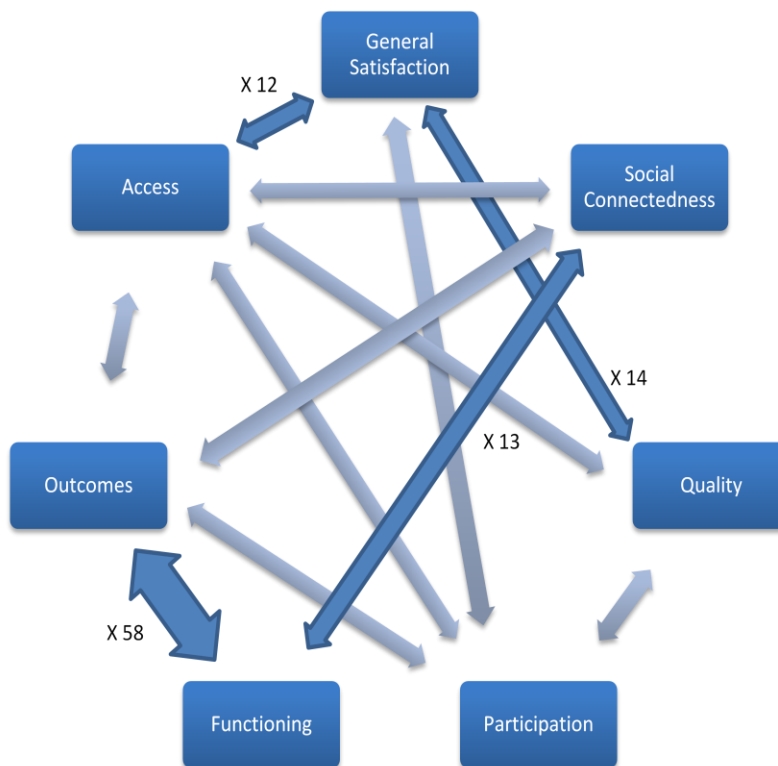
[‡] These variables are dropped from logistic regression model because maximum likelihood estimation is impossible. That is, whenever X=1, Y=1. This is probably because of small number of observation of the explanatory variable.¹³

Note: This logistic regression model includes 14 mental health regions as additional explanatory variables. The data are not shown in the table because, first, to simplify the results, second, significant difference among regions are shown in Figure D-2, and the data is mainly used for comparing two models, percent positive response and logistic regression. (A.3. Comparing two models)

Age (≥ 18) and regional characteristics (rural/urban) were not significantly related to responses to general satisfaction at 95% confidence level.

Further analysis was performed beyond the logistic regression to quantify the marginal effects of explanatory variables. (Table 4, right columns) According to the result, perception to Access and Quality significantly increase positive responses of General Satisfaction by 21% and 27%, respectively. In other words, if one responds positively about Access, then the person's probability of answering positively to General Satisfaction increases by 21%. Therefore, further

Figure C. Relationships among Adult Survey Domains



1. All arrows imply significant relationships. Bold arrows indicate odds ratios over 10 and other arrows indicate odds ratios less than 10.

analysis focusing on the domains could provide better understanding about factors associated with responses to general satisfaction. Figure C shows the strength of inter-relationships among responses to domains. This suggests that responses to General Satisfaction are more affected by responses to Access, Quality and Participation in Treatment Planning than other domains. Meanwhile, the domains of Outcomes and Functioning show no significant relationships with General Satisfaction but have strong association to each other. (Odds ratio 58 > 1) Also, the domain of Social Connectedness indicates a relatively strong relationship with functioning but is not significantly associated with General Satisfaction, while it is significant in the Youth Survey. (Table 3, 4)

A-3. Comparing Two Models

Responses of “Strongly agree” and “Agree” to general satisfaction were collected as positive responses and compared by region using percentages. (Figure D-1) As figure D-1 shows, region 1 and 2 have the lowest level of positive responses (87%) and region 13 has the highest level of positive responses. (96%) This result is only based on the respondents’ answers on survey question about General Satisfaction. That is, it is predicting the perception of clients to “General Satisfaction” only depending on responses to the question about the domain. However, as introduced in the beginning, the purpose of this study is to examine factors that would affect consumers’ perspective on General Satisfaction. To do that, logistic regression, by region, predicting General Satisfaction included possible explanatory variables, such as respondents’ characteristics and domains, and was compared to percent positive responses.(Figure D-2)

Figure D-1. Comparison by Region Using Percentage

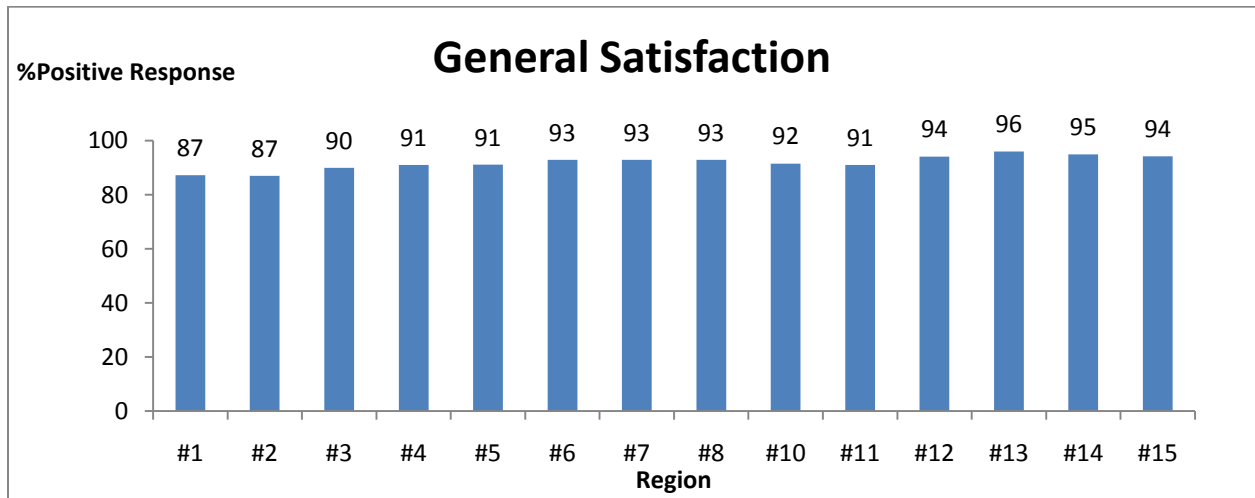
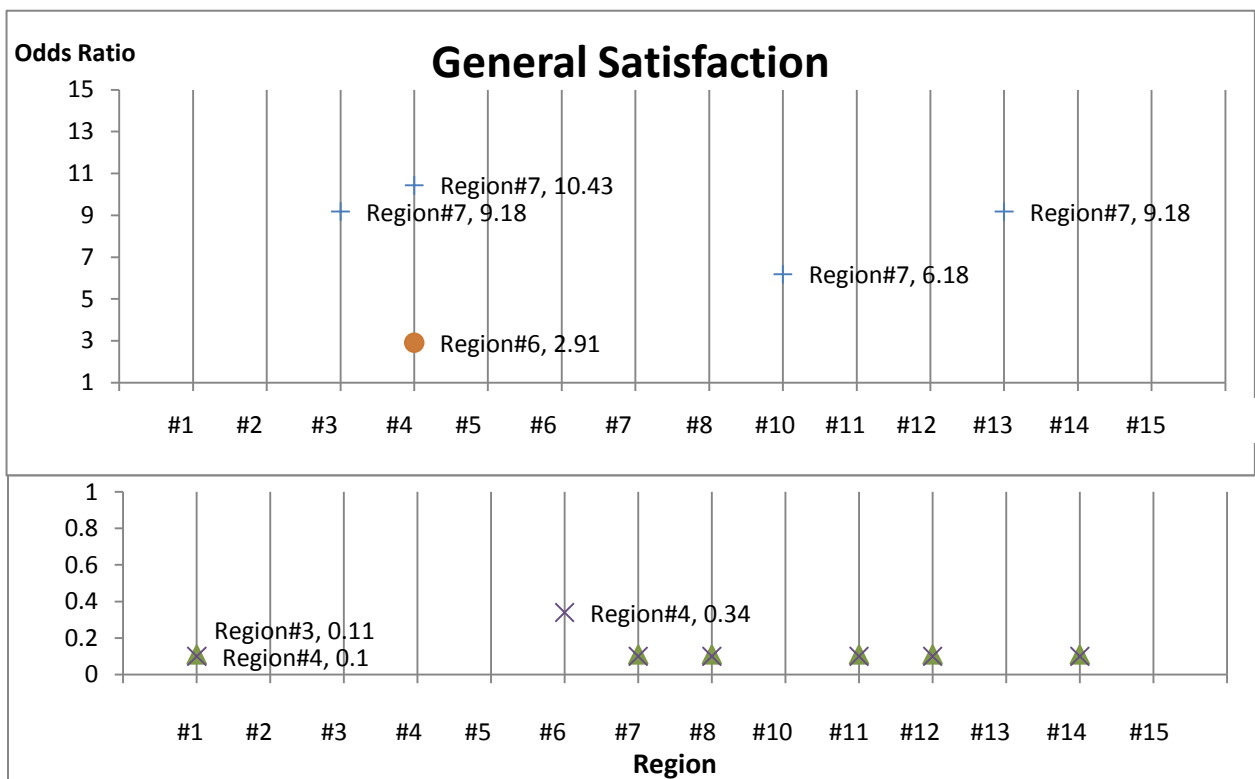


Figure D-2. Comparison by Region Using Odds Ratio

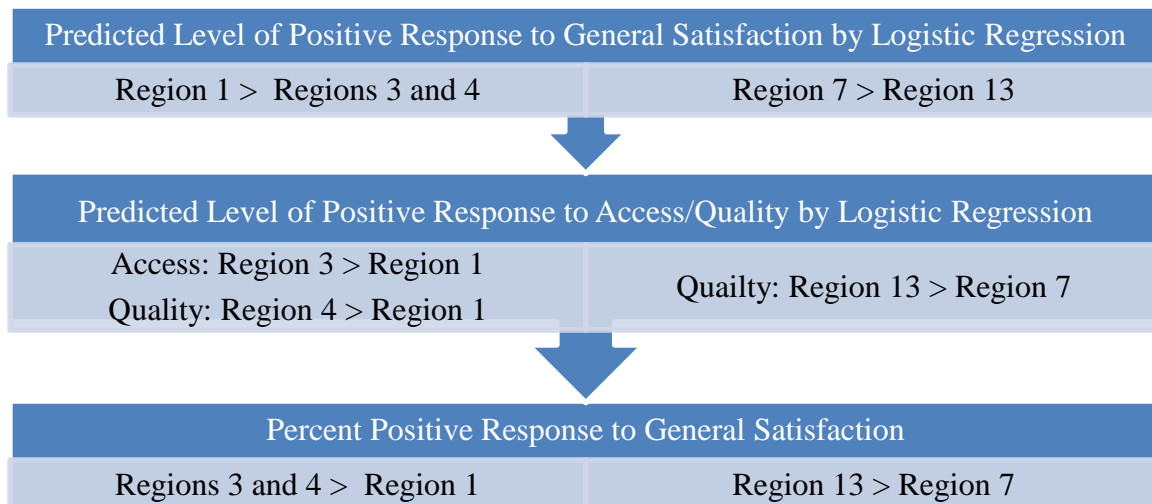


*How to read figure D-2?: Note that it is supposed to be read vertically, not horizontally. Fourteen logistic regressions by region were conducted and each region was omitted each time. X-axis (region) indicates an omitted variable in each regression. Therefore, read odds ratios comparing to each region in X-axis. For example, COMPARED TO REGION 1, region 3 and 4 are less likely to respond positively to General Satisfaction. COMPARED TO REGION 3, region 7 is more likely to respond positively to General Satisfaction.

According to figure D-2, region 13 has a lower percent of positive responses than region 7 because its odds ratio is greater than 1. Also, region 1 has a higher percent of positive response than region 3 and 4. However, these are not the case in figure D-1. Percent positive response of region 13 is actually the highest of all region totals and region 1 has the lowest level of percent positive response to General Satisfaction.

Why is it inconsistent? The difference between figures D-1 and D-2 is that figure D-2 is a result from the multi-variable regression where relationships among the explanatory variables are controlled. In figure D-1, responses to General Satisfaction are not controlled by multi-variable regression model and therefore, they are exposed to inter-variable relationships. That is, one regions' percent positive response of General Satisfaction (figure D-1) is higher than another due to respondents' pure perception on General Satisfaction or factors associated with the perception that have not been controlled in the regression.(figure D-2) Factors that have shown significant

Figure E. Percent Positive Response Explained by Prediction of Logistic Regression.



*What about other regions? Figure S only shows the cases where the logistic regression predicts different rankings from percent positive response. Other cases have shown that predicted rankings from logistic regression are consistent with percent positive response.

relationships with the domain of General Satisfaction would be likely to modify respondents' perception on that domain. Therefore, predicting General Satisfaction based solely on the frequency of survey answers to the domain leads to a different result when other variables are considered and controlled.

Regions that were predicted differently in logistic regression from percent positive response showed their associations to other domains such as access and quality. (Outcomes, functioning and Participation in Treatment Planning were shown no significant difference in predicting them by region) For example, region 1 is predicted to have higher positive response than region 3 and 4 in logistic regression (Figure D-2) but shows lower level percent positive response.(figure D-1) According to logistic regression results, regions 3 is more likely to answer positively to Access than region 1 (odds ratio > 1), and region 4 is more likely to answer positively to Quality. (odds ratio > 1) (figure E) This suggests that the responses of regions 3 and 4 to Access or Quality could modify the response to General Satisfaction. As a result, they are observed to have higher percent positive response to General Satisfaction when such variables are not controlled. The same interpretation applies to Region 13. Region 13 has the highest percent positive response (figure D-1) but the logistic regression finds that region 7 is more likely to have higher level of positive response than region 13. (figure D-2) Because region 7 is predicted to have less positive response to Access, that affects the response to General Satisfaction, resulting in lower percent positive response than region 13. (figure E)

B. Youth Survey

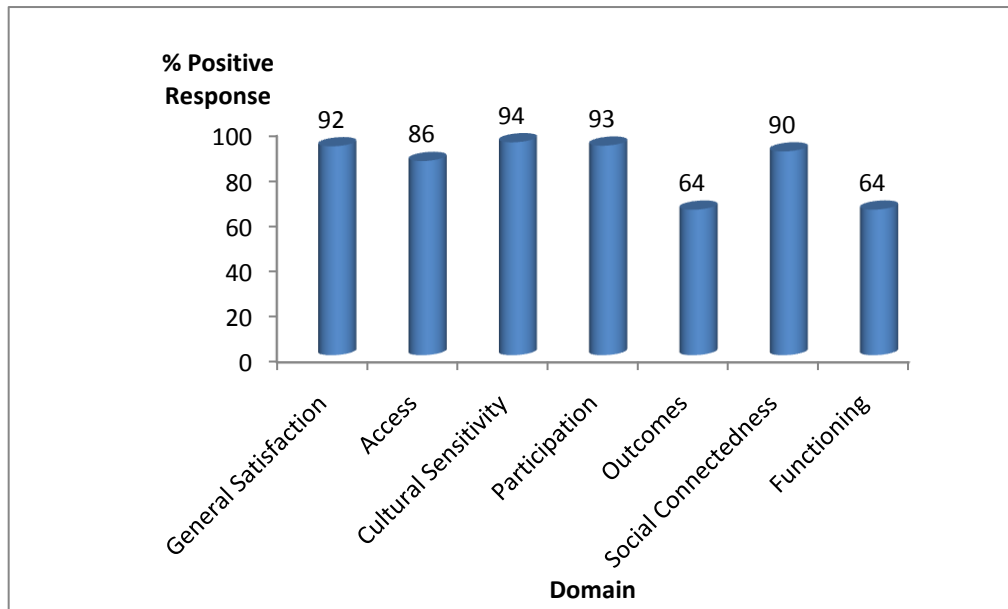
Using a multi-variable logistic regression model, those factors that predict youth patient caregivers' perception to General Satisfaction have been identified. Unlike the Adult Survey, the Youth Survey analysis finds responses to General Satisfaction are not significantly related with patients' characteristics such as race, age or gender. Note that because the survey asked about youth patients' characteristics, we don't know those characteristics of caregivers (respondents). If those are included in a future study, the model could reveal more meaningful information. The summary of findings from Youth Survey is as follows:

- **Gender, race, age and residency (rural/urban) are not shown to be a significant factor on predicting responses to General Satisfaction.**
- **Whether the youth patient lives with caregiver, places where the patient lived, the child's school attending status and Medicaid eligibility also are not a significant factor on predicting responses to General Satisfaction.**
- **Compared to the respondent whose child visited a medical provider (doctor or nurse) for a health check-up in the last year, those without health check-up is more likely to answer positively to General Satisfaction.**
- **The domains of Access, Cultural Sensitivity, Participation in Treatment Planning and Social Connectedness are significantly associated with the responses to General Satisfaction. Respondents who positively indicate those domains of services are more likely to answer positively as generally satisfied.**
- **The domains of Functioning and Outcomes are shown no significance in relationship with responses to General Satisfaction. Further analysis reveals that these domains are significantly correlated with each other.**

B-1. Comparison of Percent Positive Responses by Domain

Approximately 92% of respondents answered “agree” or “strongly agree” to questions about General Satisfaction. (figure F) It is a relatively close value with those responses of Cultural Sensitivity, Participation in Treatment Planning and Social Connectedness

Figure F. Comparison of Percent Positive Response by Domain



compared to that of Outcomes and Functioning. This gives an idea that some people who didn't respond positively to Outcomes or Functioning still indicated that they are generally satisfied. Further analysis would reveal which domains of services are significantly related with General Satisfaction.

B-2. Logistic Regression Predicting General Satisfaction

Youth patients' characteristics such as gender, race and age, caregivers' responses to service questions and nine questions about the children's social/medical status were included in a

Table 5. Logistic Regression Predicting General Satisfaction in Youth Survey

General Satisfaction	Odds Ratio	P > z	Marginal Effect (dy/dx)	P > z
<Domain>				
Access	4.39*	0.001	0.06	0.055
Outcomes	1.40	0.644	0.01	0.668
Functioning	3.15	0.110	0.03	0.222
Participation in Treatment Planning	6.61*	<0.001	0.09*	0.025
Cultural Sensitivity	7.11*	<0.001	0.10*	0.024
Social Connectedness	7.44*	<0.001	0.10*	0.014
<Characteristic/Background>				
Rural	5.46	0.168	0.03	0.134
Black	0.77	0.638	-0.01	
American Indian	0.34	0.341	-0.03	0.672
Asian	Dropped [‡]			
Other Races	0.45	0.157	-0.02	0.541
Female	1.13	0.707	0.002	0.310
Age 11-17	1.31	0.410	0.01	0.705
Medicaid	1.82	0.234	0.14	0.419
Living with caregiver <in last 6 months>	0.37	0.323	-0.01	0.348
Lived with family	0.57	0.324	-0.14	0.128
Lived at foster home	1.32	0.806	0.005	0.427
Lived at therapeutic foster home	Dropped [‡]			
Lived at Crisis Shelter	1.14	0.948	0.002	0.780
Lived at Group home	0.21	0.262	0.06	0.944
Lived at residential treatment center	0.61	0.690	-0.01	0.538
Lived at hospital	Dropped [‡]		0.749	
Lived at local jail	1.47	0.724	0.01	0.675
Homeless	Dropped [‡]			
Other places	Dropped [‡]			
<Last year's doctor visit>				
Hospital emergency room	4.88	0.252	0.02*	0.023
No health check up	3.56*	0.043	0.02*	0.004
<Mental health condition>				0
Currently on medication	1.87	0.073	0.01	0.115
Currently on service	0.18	0.148	-0.02*	0.004

Table 5-cont'd. Logistic Regression Predicting General Satisfaction in Youth Survey

General Satisfaction	Odds Ratio	Std. Err.	Marginal Effect (dy/dx)	P > z
<Service period >				
1-5 months	2.43	0.147	0.01	0.067
6 months – 1 year	1.48	0.527	0.01	0.477
More than 1 year	1.33	0.604	0.01	0.612
<School Attending>				
Expelled during service	0.58	0.259	≤ -0.01	0.191
More school attending after service	1.00	0.968	≤ -0.01	0.967

*Odds ratio is significant at 95% confidence level.

† Some variables are omitted in the model and considered a base group for the category.

1. “Age ≤ 10” is a base group of age variable.
2. “Lived with Parents” is a base for the variables about child’s living condition in the last 6 months.
3. “Clinic” is a base for the variables about last year’s doctor visit.
4. “Less than 1 month” is a base group of service period category.

‡ These variables are dropped from logistic regression model because maximum likelihood estimation is impossible. That is, whenever X=1, Y=1. This is probably because of small number of observation of the explanatory variable.¹³

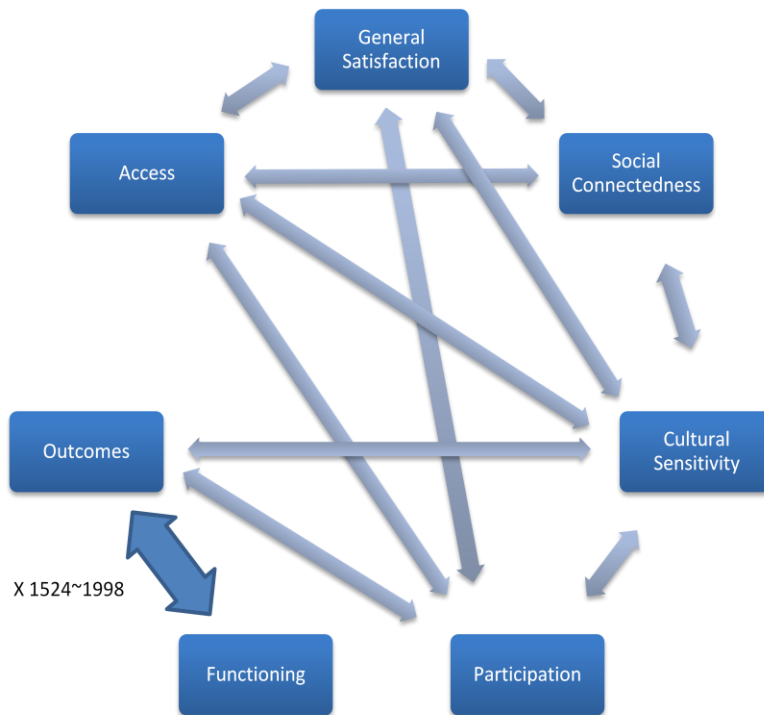
Note: This logistic regression model includes 13 mental health regions as additional explanatory variables. (Youth survey data for Region 8 were not collected) The data are not shown in the table in order to simplify the results. Because any significant difference in responses to General Satisfaction among regions was not observed, two models (percent positive responses and logistic regression) were not compared and the odds ratios of regions are not utilized in this report.

logistic regression as explanatory variables.(Table 5) According to the result, patients’ personal characteristics and their social status are not significant factors in predicting General Satisfaction.

The domains of Cultural Sensitivity and Social Connectedness have shown the strongest association with General Satisfaction (Odds Ratios: about 7 > 1). In fact, the marginal effects of both variables were quantified as approximately 10 percent. (Table 5, right columns) This is different from Adult Survey in which General Satisfaction has shown no significant relationship

with Social Connectedness. (Table 4) Further logistic regression analysis predicting other domains of services shows that Outcomes and Functioning, which are not significant predictors for General Satisfaction, have very strong correlation each other (Odds Ratio: 1524~1998 > 1). (Figure G) It is important to understand these relationships among the domains when improving certain aspect of services. For example, clients' perception on Outcomes in services could be affected by the services' Cultural Sensitivity, Participation in Treatment Planning and Functioning. Therefore, these domains should be taken into account for the strategy of improving Outcomes.

Figure G. Relationships among Youth Survey Domains



1. All arrows imply significant relationships. Bold arrows indicate odds ratios over 10 and other arrows indicate odds ratios less than 10.

Since the logistic regression model for Youth Survey didn't have a case that one region significantly predicts General Satisfaction over others, comparing percent positive response and logistic regression was not shown.

Conclusion

The purpose of this report is to study the factors that predict “General Satisfaction” to mental health services in Kentucky Community Mental Health Centers (CMHCs). Among the potential factors are: responses to other domain questions, patients’ characteristics such as gender, age, race, and service location, and youth patients’ social/medical background all were utilized for the analysis. The logistic regression result shows that responses to general satisfaction are more associated with responses to other domains than respondents’ characteristics. More specifically, in the Adult survey, Access, Quality, and Participation in Treatment Planning are stronger predictors of a “General Satisfaction” response than other domains of service and in the Youth survey, Access, Cultural Sensitivity, Participation in Treatment Planning and Social Connectedness are stronger predictors, suggesting that more attention to those domains of service could positively influence mental health care recipients’ perspectives about general satisfaction.

Recommendations

To begin with, it is important to note that the survey was to assess clients' perceptions of services so that the measure does not objectively capture the actual level of services received. The opinion of respondents would be subjective. Then, would it make sense to recommend improving certain fields of mental health services to satisfy patients?

"Satisfaction" is a relative term based on people's expectation about the services they would get. If "person A" expected low-level of services before going to a medical service provider and received mid-level of services, the person would be more likely to be satisfied because services provided exceed his expectation. However, if "person B" expected high-level of services and received same level services as "person A" did, "person B" would respond less positively. Therefore, it could be possible if a CMHC improves certain domain area which has strong relationship with the domain of "general satisfaction", then people recognize the relative difference in services, and be more satisfied.

Based on the analysis in this report, an improvement in certain domains of services, which has shown to be related with "General Satisfaction" could increase the level of positive responses. Although the Adult survey and the Youth survey were administered targeting different populations, both logistic regressions for each survey tells us that responses to General Satisfaction are significantly related with responses to three domains: Access, Quality(Adult Survey)/Cultural Sensitivity(Youth Survey) and Participation in Treatment Planning. Unlike the Adult Survey, the Youth Survey additionally includes the domain of Social Connectedness as one of the significant factors that predicts General Satisfaction.

1. Improve Access to Mental Health Care

a. Entry into services needs to be quick and convenient.

The location of services matters. Parking, public transportation and distance need to be convenient for clients. This could be achieved at the State level, as well as at the CMHC level. For example, the State could provide better public transportation system for those without cars, by communicating with local bus company. Also, the State might be able to subsidize or encourage CMHCs to practice a shuttle bus service either on demand or on a regular schedule. For CMHCs, they could reallocate parking spots in a way that clients could access easily and conveniently upon arrival.

b. Increase The Number of Staff Available and Service Options.

As a client perspective, if one is not able to receive services at his convenient time, the services may be no longer accessible to the person. Also, it is important to arrange a full range of service options so that clients feel they have received what they need. This may apply differently according to the regional features because each region has different level of demand and supply. It is possible that rural communities don't have enough psychiatrists and its CMHC has a limit serving the mental health care needs. This issue has to be addressed region by region, taking into account the adequate capacity of each CMHC.

2. Provide Services with Quality/ Cultural Sensitivity

a. Provide Services that Promote Recovery and Maximize Continuity of Care

This issue could be approached by patient education and compliance. A number of studies showed that patient compliance is one of the critical elements that could promote

recovery. To do that, appropriate information and assistance should be given to the patient. For example, mental health clients need to know about their rights and what side effects to watch out for. Also, respectful staff plays a large part in continuity of care. Not only do they encourage patients to take responsibility for complying with treatments, but it is also important that staff respect client's wishes about who is and who is not to be given information about their treatment.

b. Be Sensitive to Cultural Background

Cultural difference is one of the barriers that mental health clients face. In some cases, those with stigma issues may refuse to take further step of their treatment. These stigmas often concern their religious/spiritual beliefs and cultural background. Also, linguistic access is another barrier for people whose native language is not English. At CMHC level, these issues could be improved by those staff who understand different cultural backgrounds or by making printed information available in a variety of languages.

3. Participation in Treatment Planning Needs to Be Addressed

The patient (or caregiver for youth patient) is an essential partner for treatment planning, especially when establishing intermediate and short-term goals. This enables clients to better adhere to treatment regimens and attain to the goals. In fact, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and the Commission on Accreditation of Rehabilitation Facilities (CARF) require that medical providers involve patients in setting treatment goals and making decisions.^{14, 15} However, this could be challenging for several reasons, such as the patient's cognitive status and time constraint.¹⁶ For example, in some cases, the patient may not be in stable mental condition that they can make rational decision. Therefore, this needs to be further addressed with an integrated approach that includes other aspects of

services: access, quality/cultural sensitivity, outcomes. These domains are shown to have significant relationship with clients' perception on Participation in Treatment Planning. (Figure C, G)

4. Improve Social Connectedness for Caregivers

a. Increase Natural Supports and Social Activities for Caregivers of youth patients.

Studies show that the occurrence of depressive symptoms and mental health problems is higher among caregivers compared to the general population. Meanwhile, according to Social Connectedness and Health Survey (2008) by Mental Health America, about 93% of respondents indicated that having close relationships helped protect them from developing depression and other mental health conditions.¹⁷ Currently, however, Kentucky caregiver support services which include National Family Caregiver Support Program and Kentucky Family Caregiver Program are only limited to senior caregivers in eligibility. Because caregivers' role in treatment is primary and essential regardless of their age, those caregiver program benefits need to be expanded to a broader population. Also, current caregiver programs do not increase natural supports that come from friends and community. More integrated program such as case management for caregivers that could improve their Social Connectedness should be developed at the State/CMHC level.

In short, possible recommendations for improving General Satisfaction have been developed based on the logistic regression analysis. Greater attention to the domains of Access, Quality/Cultural Sensitivity, Participation in Treatment Planning and Social Connectedness that were shown to predict General Satisfaction could increase the level of overall positive responses.

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Appendix: Marginal Effects, Ordered Logistic Regression

Due to non-linear nature of logistic regression model, the magnitude of coefficient of the regression is often not useful. However, the marginal effects of the coefficients can be computed.

Tables I and III present the marginal effects in the probabilities.

Adult Survey

According to Table I, responses to Access and Quality have significant marginal effects on responses to General Satisfaction by 21% and 27%, respectively. In other words, if one

Table I. Analysis of Marginal Effects in Logistic Regression Predicting General Satisfaction in Adult Survey

General Satisfaction	dy/dx	Std. Err.	z	P > z
<Domain>				
Access	0.21*	0.04	5.27	<0.001
Outcomes	0.02	0.02	1.33	0.184
Functioning	0.01	0.01	0.60	0.546
Participation in				
Treatment Planning	0.05*	0.02	2.40	0.017
Quality	0.27*	0.10	2.76	0.006
Social Connectedness	0.02	0.01	1.63	0.102
< Characteristic>				
Rural	-0.004	0.02	-0.18	0.855
Black	0.01	0.01	0.83	0.406
Indian	-0.10	0.06	-1.74	0.081
Other Races	-0.01	0.03	-0.39	0.697
Female	0.01*	0.01	1.97	0.048
Age 18-30	-0.01	0.01	-0.65	0.515
Age 41-50	0.003	0.01	0.31	0.755
Age 51-60	0.01	0.01	0.67	0.501
Age 61-70	-0.01	0.02	-0.26	0.795
Age 71-80	-0.12	0.14	-0.87	0.384

*Marginal effect is significant at 95% confidence level.

responses positively about Access, then the person’s probability of answering positively to General Satisfaction increases by 21%. This is more dominant in an ordered logistic regression in which five answering scales are used instead of binary scales. That is, in contrast to using options of positive or non-positive responses, five scales from Strongly Disagree to Strongly Agree are considered. (Table II) The result suggests that those who positively perceive Access or Quality (especially, those who respond “Strongly Agree”) answer higher order options, “Strongly Agree” to the questions about General Satisfaction (Access coef.: 2.36 > 0, Quality

Table II. Ordered Logistic Regression Predicting General Satisfaction in Adult Survey

General Satisfaction	Coef.	Std. Err.	z	P > z
<Domain>				
Access	2.36*	0.13	18.82	<0.001
Outcomes	0.17	0.15	1.14	0.255
Functioning	-0.05	0.15	-0.37	0.709
Participation in Treatment Planning	0.02	0.15	0.14	0.889
Quality	1.86*	0.15	12.07	<0.001
Social Connectedness	0.04	0.10	0.40	0.686
< Characteristic>				
Rural	-0.29	0.26	-1.13	0.260
Black	0.01	0.17	0.06	0.956
Indian	-0.46	0.37	-1.26	0.209
Asian	0.09	1.14	0.08	0.935
Hawaiian/Pacific Islander	1.50	1.77	0.85	0.397
Other Races	0.53	0.47	1.14	0.254
Female	0.44*	0.09	4.87	<0.001
Age 18-30	-0.19	0.12	-1.60	0.110
Age 41-50	0.05	0.13	0.40	0.693
Age 51-60	0.26	0.14	1.81	0.071
Age 61-70	0.23	0.23	0.99	0.321
Age 71-80	-0.40	0.72	-0.55	0.580
Age 81-88	0.07	1.15	0.06	0.949

*Coefficient is significant at 95% confidence level.

coef.: 1.86 > 0) For personal characteristics, female participants are more likely to respond as “Strongly Agree” to General Satisfaction. (Female Coef.: 0.44 > 0)

Youth Survey

The marginal effects of responses to Participation in Treatment Planning, Cultural Sensitivity and Social Connectedness are shown significant. (Table III) Those who answer positively to these domains are nine to ten percent more likely to indicate positively to General Satisfaction.

Table III. Analysis of Marginal Effects in Logistic Regression Predicting General Satisfaction in Youth Survey

General Satisfaction	dy/dx	Std. Err.	z	P > z
<Domain>				
Access	0.06	0.03	1.92	0.055
Outcomes	0.01	0.02	0.43	0.668
Functioning	0.03	0.02	1.22	0.222
Participation in Treatment Planning	0.09*	0.04	2.24	0.025
Cultural Sensitivity	0.10*	0.04	2.26	0.024
Social Connectedness	0.10*	0.04	2.45	0.014
<Characteristic/Background>				
Rural	0.03	0.02	1.50	0.134
White				
Black	-0.01	0.01	-0.42	0.672
Indian	-0.03	0.06	-0.61	0.541
Other Races	-0.02	0.02	-1.01	0.310
Female	0.002	0.01	0.38	0.705
Age 11-17	0.01	0.01	0.81	0.419
Medicaid	0.14	0.02	0.94	0.348
Living with caregiver	-0.012	0.01	-1.52	0.128
<in last 6 months>				
Lived with family	-0.14	0.018	-0.80	0.427

Table III-cont'd. Analysis of Marginal Effect in Logistic Regression Predicting General Satisfaction in Youth Survey

General Satisfaction	dy/dx	Std. Err.	z	P > z
Lived at foster home	0.005	0.017	0.28	0.780
Lived at Crisis Shelter	0.002	0.03	0.07	0.944
Lived at Group home	0.06	0.11	-0.62	0.538
Lived at residential treatment center	-0.01	0.04	-0.32	0.749
Lived at local jail	0.01	0.01	0.42	0.675
<Last year's doctor visit>				
Hospital emergency room	0.02*	0.01	2.27	0.023
No health check up	0.02*	0.01	2.90	0.004
<Mental health condition>				
Currently on medication	0.01	0.01	1.58	0.115
Currently on service	-0.02*	0.01	-2.87	0.004
<Service period >				
1-5 months	0.01	0.01	1.83	0.067
6 months – 1 year	0.01	0.01	0.71	0.477
More than 1 year	0.01	0.01	0.51	0.612
<School Attending>				
Expelled during service	≤ -0.01	0.01	-1.31	0.191
More school attending after service	≤ -0.01	0.002	-0.04	0.967

*Marginal effect is significant at 95% confidence level.

The ordered logistic regression model of the Youth survey reveals that those who answer “Strongly Agree” to Access, Participation in Treatment Planning, Cultural Sensitivity and Social Connectedness are more likely to answer “Strongly Agree” to General Satisfaction. (Coefficients > 0) Some explanatory variables that are not significant in logistic regression turn to be significant in the ordered logistic regression. Especially, whether the youth patient lives with caregiver, doctor visit history or the service period has an effect on their answering “Strongly Agree” about General Satisfaction.

Table IV. Ordered Logistic Regression Predicting General Satisfaction in Youth Survey

General Satisfaction	Coef.	Std. Err.	z	P > z
<Domain>				
Access	0.93*	0.11	8.33	<0.001
Outcomes	0.24	0.45	0.54	0.592
Functioning	0.56	0.45	1.24	0.214
Participation in Treatment Planning	1.70*	0.15	11.42	<0.001
Cultural Sensitivity	1.45*	0.15	10.01	<0.001
Social Connectedness	0.75*	0.12	6.39	<0.001
<Characteristic/Background>				
Rural	-0.37	0.35	-1.06	0.289
Black	0.30	0.22	1.37	0.170
Indian	-0.68	0.51	-1.33	0.185
Asian	-0.72	1.61	-0.45	0.654
Other Races	-0.86*	0.29	-2.96	0.003
Female	0.17	0.12	1.45	0.147
Age 11-17	0.18	0.12	1.53	0.125
Medicaid	0.06	0.22	0.28	0.783
Living with caregiver	-0.78*	0.35	-2.22	0.026
<in last 6 months>				
Lived with family	-0.25	0.21	-1.21	0.225
Lived at foster home	0.07	0.35	0.21	0.830
Lived at Crisis Shelter	-0.35	0.68	-0.51	0.609
Lived at Group home	-1.16	0.65	-1.77	0.077
Lived at residential treatment center	0.82	0.43	1.27	0.203
Lived at local jail	0.12	0.31	0.38	0.706
<Last year's doctor visit>				
Hospital emergency room	0.76*	0.33	2.29	0.022
No health check up	0.31	0.20	1.54	0.123
<Mental health condition>				
Currently on medication	0.11	0.13	0.84	0.400
Currently on service	-0.27	0.30	-0.91	0.364
<Service period >				
1-5 months	0.46*	0.23	2.04	0.042
6 months – 1 year	0.47*	0.23	2.06	0.039
More than 1 year	0.25	0.20	1.24	0.214

Table IV-cont'd. Ordered Logistic Regression Predicting General Satisfaction in Youth Survey

General Satisfaction	Coef.	Std. Err.	Z	P > z
<School Attending>				
Expelled during service	0.07	0.15	0.43	0.667
More school attending after service	-0.04	0.04	-1.02	0.306