Kitsap Public Health District Parent Child Health Clients:

MSS Client Visits and Outcomes, Third Report

MSS Clients Closed Between January 1st, 2012 and December 31st, 2012

October 2013

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Kitsap Public Health District's Parent Child Health Program (PCH) nurses and behavioral health specialist enter all client data into Nightingale Notes, a web-based EMR that uses Omaha language. The following data are representative of all Maternity Support Services (MSS) eligible clients who were closed between January 1st, 2012 and December 31st, 2012. **A total of 352 MSS clients** were closed during this time.

Who are our clients?

Table 1 shows the demographics of the clients.

Table 1. MSS Client Demographics, Jan. 1, 2012 – Dec. 31, 2012

	Number	Percent
Age	351	
≤19 years	51	15%
19 to <24 years	88	25%
24 to <29 years	112	32%
29 to 34 years	69	20%
≥34 years	22	6%
Race (any ethnicity)	346	
White	265	77%
American Indian or Alaska Native	24	7%
Asian	11	3%
Black	19	5%
Hawaiian or other Pacific Islander	11	3%
Multiple races or other/unknown race	16	5%
Ethnicity (any race)	339	
Non-Hispanic	251	74%
Hispanic	88	26%
Marital Status	342	
Single	133	39%
Unmarried with domestic partner	71	21%
Divorced or separated	26	8%
Married	112	33%
Primary Language	339	
English	275	81%
Spanish	35	10%
Guatemalan dialect	15	4%
Tagalog	7	2%
Other	7	2%
Level of Education	305	
No education	3	1%
Less than high school	81	27%
High school graduate or GED	94	31%
More than high school	127	42%
Employment Status	330	
Unemployed*	222	67%
Employed**	108	33%
Housing	328	
In a rented apartment	92	28%
In a rented house	142	43%
In an owned house	63	19%
In a mobile home	13	4%
Subsidized housing	5	2%
Foster care or other	7	2%

*includes receiving disability, GAU-X, SSI, or SSDI; **includes on family or medical leave

Note: all categories have clients with missing data; the total number of clients served is 352

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- The average age of clients is 25.5 years.
- Almost 1 in 4 clients is non-White (any ethnicity) and 1 in 4 is Hispanic.
- A total of 1 in 3 clients is married. Of those that are not married, 31% are living with a domestic partner. A total of 42% of Hispanic clients are married compared to 29% of non-Hispanic clients.
- More than 1 in 4 clients have less than a high school education. A total of 48% of Hispanic clients have less than a high school education compared to 20% of non-Hispanic clients.
- After English, Spanish was the most common primary language with 10% of clients reporting it as their primary language.
- A total of 2 in 3 clients are unemployed.
- Only about 1 in 5 clients lives in an owned residence.

How many visits do our clients receive?

In-person visits with clients include assessments, home visits, and office visits. An assessment occurs at the first visit during pregnancy and at the first visit during the postpartum period. Assessments are always completed in-person but may be done at either a home or office location.

Visits per client: There were 1,060 total in-person visits completed, for an **average of 3.0 visits per client**. The following visits by type were completed: 556 assessments (an average of 1.6 per client), 435 home visits (an average of 1.2 per client), and 69 office visits (an average of 0.2 per client). Table 2 summarizes in-person visits.

Table 2. MSS Client In-Person Client Visits, Jan. 1, 2012 – Dec. 31, 2012

Type of in-person visit:	Total visits #	Total clients #	Average visits per client #
Assessment	556	352	1.6
Home Visit	435	352	1.2
Office Visit	69	352	0.2
Total	1060	352	3.0

Visits by client service level: All clients are designated a service level which determines the number of overall hours the nurse and/or behavioral health specialist can spend with the client. The three service levels are A-Basic, B-Expanded, and C-Maximum. These service levels are designated by the nurse or behavioral health specialist during an initial risk assessment, using WA State Department of Health criteria and can change during the course of services rendered if new issues are revealed or develop. For clients seen during both pregnancy and postpartum, the designated service level may be different during these two time periods. Table 3 shows the number and proportion of clients receiving nursing services during pregnancy, postpartum, or both.

Table 3. MSS Clients by Peripartum Stage, Jan. 1, 2012 – Dec. 31, 2012

	n	% of total clients
Clients with pregnancy service level only	122	35%
Clients with postpartum service level only	88	25%
Clients with pregnancy & postpartum service levels	142	40%
Total	352	100%

Overall, the following proportions of clients had as their highest service level: an "A"- 10%, a "B"- 14% and a "C"- 77%. (Note: clients who had service levels that changed from pregnancy to postpartum were counted only at the higher service level; this was the case for 15 clients, or 4% of the total client population).

As clients move from an "A" to a "B" and from a "B" to a "C", they are allowed more hours of in-person services. Table 4 demonstrates how those increased allowed hours translate into more average visits per client.

Table 4. MSS In-Person Client Visits by Service Level, Jan. 1, 2012 – Dec. 31, 2012

Designated service level:	Average # of visits per client
A- Basic	1.6
B- Expanded	2.0
C- Maximum	3.6

Figure 1 shows the proportion of visits by type- assessment, home visit, or office visit- and by service level. As the service level increases in severity the proportion of assessments decreases while the proportion of second visits (home or office) increases. For a "C" level only, the proportion of home and office visits together is greater than the proportion of assessments.

**Figure 1. MSS Client Visits by Type and by Service Level, Jan. 1, 2012 – Dec. 31, 2012**
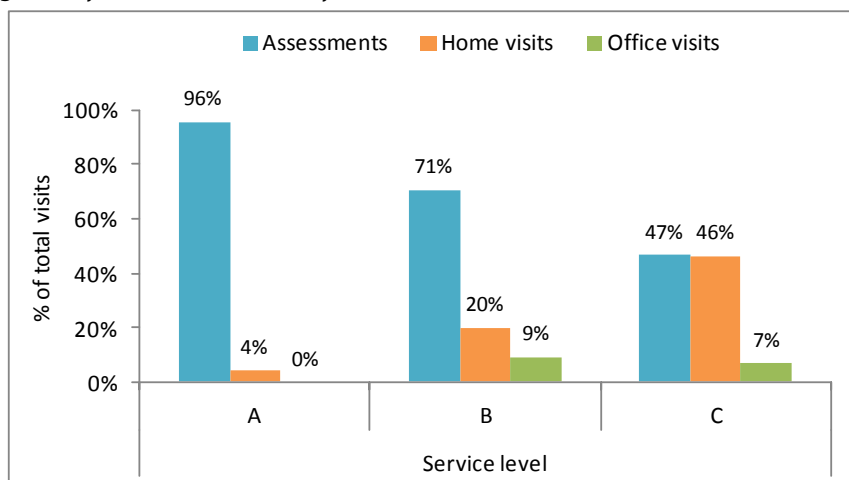
What problems are identified in our clients?

The nurse/behavioral health specialist identifies problems during in-person encounters. Problems with signs or symptoms are designated as actual problems, and problems with no signs or symptoms but a history of or other risk factor(s) present are designated as potential problems.

Problems per client: A total of 352 clients had 795 actual problems identified, for an **average of 2.3 actual problems per client**. Of those clients with an actual problem identified, there was a range of 1 to 6 problems. A total of 185 clients had 485 potential problems identified, for an **average of 1.4 potential problems per client** (n=352). Of those clients with a potential problem identified, there was a range of 1 to 6 problems.

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The number of actual problems identified per client increases as the designated service level goes from "A" to "B" and from "B" to "C". Figure 2 shows the total number of problems identified by severity of problem and by service level, and Figure 3 shows the average number of problems identified per client by severity of problem and by service level. "C" level clients have significantly more actual problems on average than both "A" and "B" level clients. "C" level clients have significantly fewer potential problems on average than both "A" and "B" level clients.

Figure 2. Total Problems for MSS Clients by Problem Severity and Service Level, Jan. 1, 2012 – Dec. 31, 2012
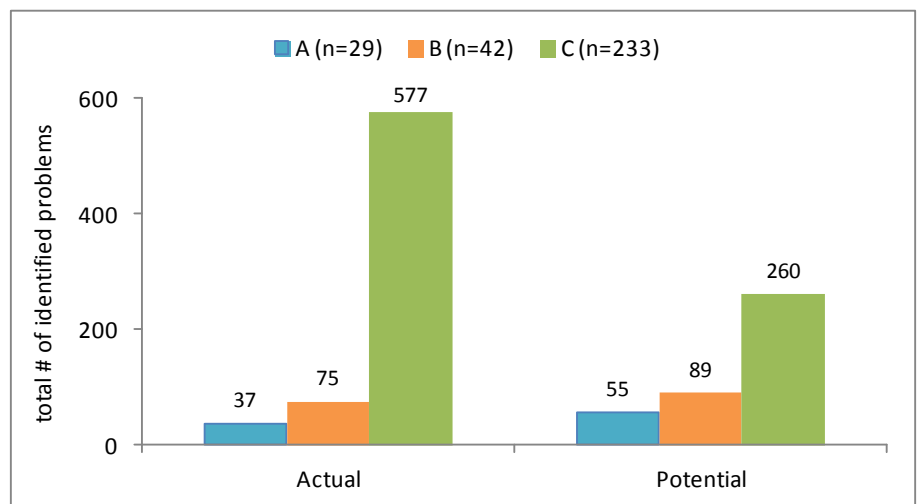
Figure 3. Average Problems per MSS Client by Problem Severity and Service Level, Jan. 1, 2012 – Dec. 31, 2012
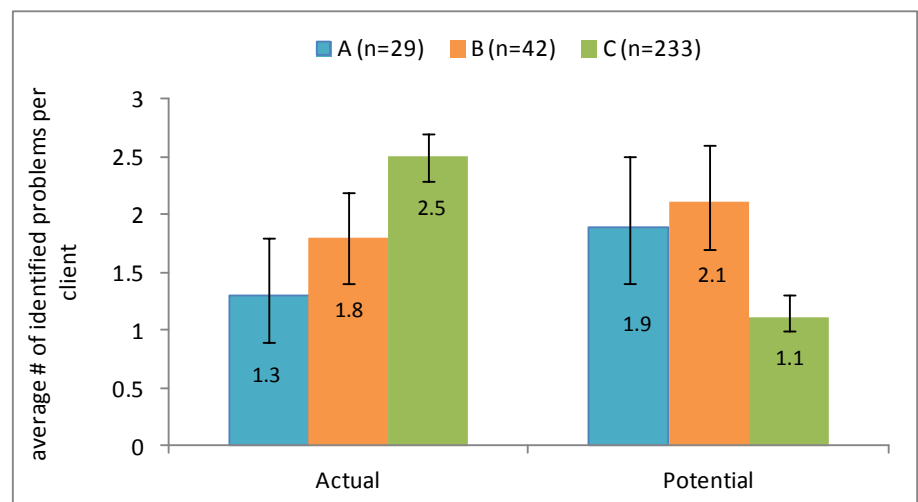
Top problems for clients: The top three actual problems identified for clients were **income, mental health, and substance use**. The top three potential problems identified were caretaking/parenting, pregnancy, and mental health. Table 5 shows the total number of clients for which each actual and potential problem was identified.

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Table 5. Problems Identified for MSS Clients by Problem Severity, Jan. 1, 2012 –Dec. 31, 2012

Actual (352 clients)	Potential (185 clients)
Income (n=352)	Caretaking/parenting (n=100)
Mental health (n=133)	Pregnancy (n=96)
Substance use (n=129)	Mental health (n=89)
Pregnancy (n=80)	Postpartum (n=72)
Postpartum (n=44)	Healthcare supervision (n=47)
Caretaking/parenting (n=17)	Substance use (n=39)
Healthcare supervision (n=16)	Residence (n=26)
Abuse (n=13)	Abuse (n=16)
Residence (n=7)	
Interpersonal relationship (n=3)	
Grief (n=1)	

The actual problem of income was identified for 100% of all clients, mental health for 38% of all clients, substance use for 37% of all clients, pregnancy for 23% of all clients (but 30% of clients seen during pregnancy), and postpartum for 13% of all clients (but 19% of clients seen during postpartum). Table 6 shows the proportion that each actual problem comprises of the total actual problems identified for all clients and the proportion of all clients for which each problem was identified.

Table 6. Actual Problems Identified for MSS Clients, Jan. 1, 2012 – Dec. 31, 2012

	# of times identified as actual problem	% of total actual problems identified	% of all clients for which problem was identified
Income	352	44.3%	100.0%
Mental health	133	16.7%	37.8%
Substance use	129	16.2%	36.6%
Pregnancy	80	10.1%	22.7%
Postpartum	44	5.5%	12.5%
Caretaking/parenting	17	2.1%	4.8%
Health care supervision	16	2.0%	4.5%
Abuse	13	1.6%	3.7%
Residence	7	0.9%	2.0%
Interpersonal relationship	3	0.4%	0.9%
Grief	1	0.1%	0.3%

- All clients had an actual problem of income.
- More than 1 in 3 of all clients had an actual problem of mental health.
- More than 1 in 3 of all clients had an actual problem of substance use.

What are the Knowledge, Behavior, and Status (KBS) outcomes of our clients?

Clients may be given a rating within three categories for each identified problem; these three categories are Knowledge (K), Behavior (B), and Status (S). The KBS ratings are given on a scale of 1 to 5, with "1" denoting the highest severity in that area and problem, and "5" denoting the lowest severity in that area and problem. A client may not have a "5" rating for Status, or the problem is no longer an actual problem.

For this analysis, only KBS ratings for actual problems were included. Also, only KBS ratings from clients with at least one actual problem identified and entered into their client record and who were seen at least one more time after the problem was identified were included. KBS ratings are only entered again after the initial assessment of a problem if a score in any one of the three KBS areas changes, and when the client is discharged (i.e. at the final visit). For example, a client may have an initial KBS rating for a particular problem and then may be seen and have that problem addressed at various visits, but if the KBS rating remains unchanged, then nothing will be entered again in the KBS portion of the client record until the client is discharged. Occasionally a client may be expected to be seen for a discharge visit, but the visit never happens. The client will only have one KBS rating even though more than one visit occurred. This analysis includes those clients for which this "no change" is the case. There were a total of **241 clients who were included in the analysis** based on the above criteria, 68.5% of clients.

Change in KBS ratings for all actual problems combined: Table 7 shows the average initial and final ratings for all actual problems in each of the KBS areas and whether the average rating showed a statistically significant increase from the initial to the final rating using a paired t-test.

Table 7. Average KBS Initial and Final Ratings for MSS Clients' Actual Problems, Jan. 1, 2012 – Dec. 31, 2012

	Average of initial ratings	95% confidence interval of initial ratings average	Average of final ratings	95% confidence interval of latest ratings average	p-value
Rating category					
Knowledge	3.07	3.01 - 3.13	3.31	3.25 - 3.38	<0.001*
Behavior	3.55	3.49 - 3.62	3.71	3.64 - 3.78	<0.001*
Status	3.34	3.28 - 3.40	3.54	3.49 - 3.60	<0.001*

*statistically significant change if p<0.05

In all three KBS area, the change from the initial rating to the final rating showed a statistically significant increase. Figure 4 shows this increase from the average initial rating to the average final rating for all actual problems.

Figure 4. Average KBS Ratings for MSS Clients' Actual Problems, Jan. 1, 2012 – Dec. 31, 2012
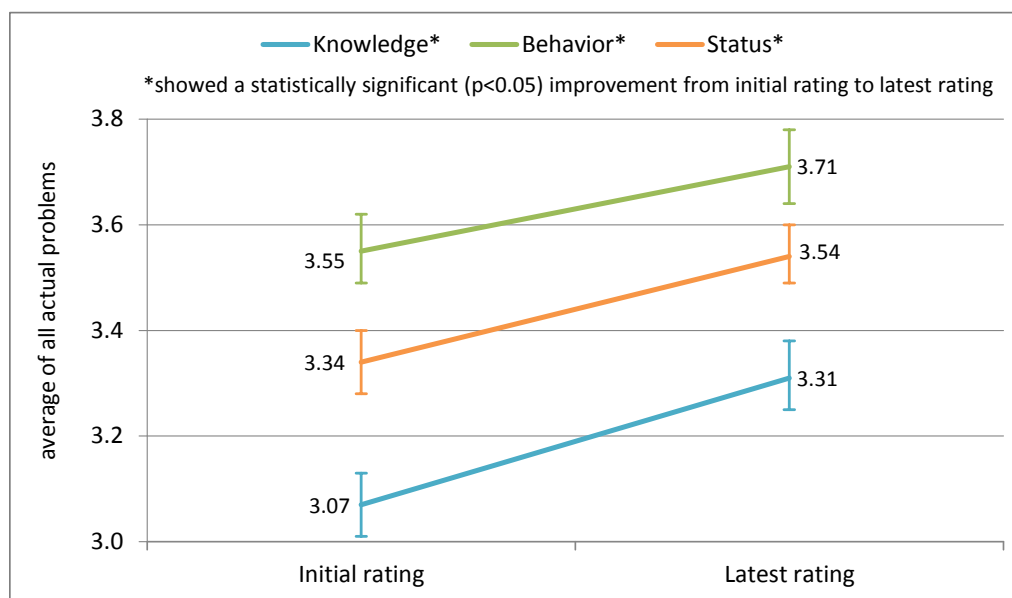
Change in KBS ratings by actual problem: Table 8 shows the change in KBS ratings from the initial rating to the final rating by problem (n=the number of clients identified with that problem who had at least one KBS entered into their client record and were seen at least one more time after the problem was identified). It also shows which KBS area(s) showed a statistically significant increase by problem (*p-value is <0.05).

Table 8. Average KBS Ratings for MSS Clients for Top Five Actual Problems, Jan. 1, 2012 – Dec. 31, 2012

	n	Rating category	Average initial rating	Average final rating	p-value
Income	234	K	3.16	3.37	<0.001*
		B	3.80	3.91	0.001*
		S	3.34	3.53	<0.001*
Mental health	91	K	2.91	3.33	<0.001*
		B	3.22	3.57	<0.001*
		S	3.26	3.63	<0.001*
Substance use	75	K	3.17	3.32	0.027*
		B	3.33	3.41	0.346
		S	3.48	3.58	0.073
Pregnancy	40	K	2.80	3.05	0.011*
		B	3.48	3.63	0.032*
		S	3.35	3.48	0.096
Postpartum	15	K	3.07	3.33	0.104
		B	3.33	3.47	0.634
		S	3.13	3.73	0.023*

*denotes statistically significant change (p<0.05)

- Both the income and mental health problems had statistically significant increases in the areas of Knowledge, Behavior, and Status.
- The pregnancy problem had statistically significant increases in the areas of Knowledge and Behavior.
- The substance use problem had a statistically significant increase in the area of Knowledge only.
- The postpartum problem had a statistically significant increase in the area of Status only.

Table 9 shows the change in KBS ratings from the initial rating to the final rating by service level for the top five actual problems (n=the number of clients identified with that problem who had at least one KBS entered into their client record and were seen at least one more time after the problem was identified). It also shows which KBS area(s) showed a statistically significant increase by problem and by service level (*p-value is <0.05). Service levels for a problem in which there were less than five clients are not included in the analysis.

Table 9. MSS Client Average KBS Initial and Final Ratings by Service Level for the Top Five Actual Problems, Jan. 1, 2012 – Dec. 31, 2012

		n	Rating category	Average initial rating	Average final rating	p-value
Income	Level A	14	K	3.57	3.64	0.336
			B	3.79	3.86	0.336
			S	3.86	4.00	0.165
	Level B	22	K	3.45	3.64	0.042*
			B	3.86	4.05	0.104
			S	3.73	3.82	0.162
	Level C	171	K	3.06	3.29	<0.001*
			B	3.77	3.87	0.011*
			S	3.21	3.43	<0.001*
Mental health	Level C	83	K	2.89	3.31	<0.001*
			B	3.20	3.55	<0.001*
			S	3.22	3.61	<0.001*
Substance use	Level B	6	K	3.50	3.67	0.363
			B	3.83	3.50	0.175
			S	3.50	3.50	--
	Level C	61	K	3.13	3.31	0.021*
			B	3.25	3.43	0.055
			S	3.46	3.59	0.059
Pregnancy	Level C	38	K	2.79	3.03	0.018*
			B	3.47	3.63	0.032*
			S	3.34	3.47	0.096
Postpartum	Level C	12	K	3.00	3.33	0.104
			B	3.25	3.42	0.615
			S	3.08	3.75	0.025*

*denotes statistically significant change (p<0.05)
note: service levels with n<5 were not evaluated for change

- The income problem had a statistically significant increase in the area of Knowledge for Level B clients and in the areas of Knowledge, Behavior and Status for Level C clients.
- The mental health problem had statistically significant increases in the areas of Knowledge, Behavior, and Status for Level C clients.
- The substance use problem had a statistically significant increase in the area of Knowledge for Level C clients.
- The pregnancy problem had a statistically significant increase in the areas of Knowledge and Behavior for Level C clients.
- The postpartum problem had a statistically significant increase in the area of Status for Level C clients.

Conclusions

- Hispanic clients are likely to have different needs than non-Hispanic clients. Compared to non-Hispanic clients, Hispanic clients are more likely to be married and to have different social support structures but are much more likely to have less education and speak Spanish as a primary language.

- Less than one-half of clients (40%) were seen during both pregnancy and postpartum, and more than 1 in 3 are seen during pregnancy only, suggesting retention of clients after delivery as an area of improvement.

- The average number of in-person visits for all clients is 3 visits. For a client who is designated an "A" level, she receives less than 2 in-person visits on average. Therefore, a substantial proportion of these clients are not receiving a second visit after the initial assessment to address areas of concern or recognized problems.

- Just over three-fourths of clients are designated a level "C". Most clients have a high level of needs to address to support positive maternal and infant outcomes.

- The top 3 actual problems are income, mental health, and substance use. While KBS ratings show a statistically significant increase from the initial to the final rating in all 3 areas for both income and mental health, there were only increases in the area of Knowledge for substance use. This suggests a need to understand the lack of increase in the areas of Behavior and Status and to find effective interventions.

- PCH staff should use these results to discuss whether data reflect their current practices and caseload and to then determine areas of improvement for client recruitment/retention, data entry standards and protocols, and nursing practice.

How do results from the three reports compare?

	Report 1 (8/09-12/10)	Report 2 (1/11-12/11)	Report 3 (1/12-12/12)
Number of clients*	406	258	352
Average number of visits per client	3.4	3.8	3.0
Proportion of clients at various service levels			
Level A	14%	16%	10%
Level B	23%	16%	14%
Level C	63%	67%	77%
Proportion of clients seen by peripartum stage:			
Pregnancy only	13%	24%	35%
Pregnancy and postpartum	50%	65%	40%
Postpartum only	39%	11%	25%
Average number of problems per client:			
Actual	2.6	2.5	2.3
Potential	2.2	2.3	1.4
Top three actual problems (% of all clients with problem)	Income (86%) Mental health (40%) Substance use (30%)	Income (92%) Mental health (37%) Substance use (33%)	Income (100%) Mental health (38%) Substance use (37%)
Top three potential problems	Mental health Caretaking/parenting Pregnancy	Pregnancy Caretaking/parenting Mental health	Caretaking/parenting Pregnancy Mental health
Statistically significant increase in KBS ratings for all actual problems combined	Yes (n=248)	Yes (n=187)	Yes (n=241)
Statistically significant increase for actual problem of…			
Income: Knowledge	Yes	Yes	Yes
Income: Behavior	Yes	No	Yes
Income: Status	Yes	Yes	Yes
Mental health: Knowledge	Yes	Yes	Yes
Mental health: Behavior	Yes	Yes	Yes
Mental health: Status	Yes	Yes	Yes
Substance use: Knowledge	Yes	Yes	Yes
Substance use: Behavior	No	No	No
Substance use: Status	No	Yes	No

*for the first report, the number of clients was determined by those who were opened during an approximate 17 month period (Aug 2009-Dec 2010), while for the other two reports, the number of clients was determined by those who were closed during a 12 month period. If for the first report only clients who were opened during Jan – Dec 2010 are included, the number would be 228.

- The number of average visits per client ranged from 3.0 to 3.8 among the three time periods. The lowest number of average visits per client was during the most recent time period.

- The proportion of clients designated a level C for their service level has increased during each time period.

- During the most recent time period, more clients were seen during pregnancy only and fewer clients were seen during both pregnancy and postpartum compared to the two previous time periods.

- The average number of actual problems per client remained about the same during the three time periods. The average number of potential problems per client was lower during the third time period compared to the first two time periods.

- The top three actual problems were the same during all three time periods (income, mental health and substance use). The proportion of clients with the actual problem of income and substance use increased during each time period.

- The top three potential problems were the same during all three time periods (pregnancy, caretaking/parenting, mental health).

- Statistically significant increases for KBS ratings among the top three actual problems of income, mental health and substance use were similar during the three time periods. The Behavior rating for substance use has never had a statistically significant increase.

Data Notes

- Clients who were closed between January 1st, 2012 and on or before December 31st, 2012 were included because their services were either completed or clients would have no longer been eligible for services, thus most accurately describing the total number of visits per client.
- Clients whose service level designation changed were included in the highest service level category that was entered; no client service levels decreased.
- Some client problems may have changed from actual (have signs/symptoms) to a different severity, such as potential or adequate, during their services. In these cases, the full improvement in the KBS scores would not be reflected because only actual problems were included in the KBS analysis.
- Paired t-tests at a 95% confidence interval were used to analyze the change in KBS ratings from the initial rating to the final rating.