

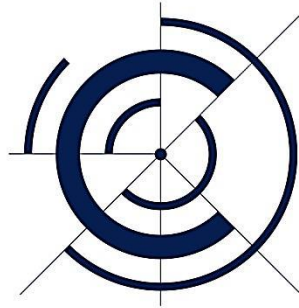


State of Iowa Outcomes Monitoring System

THE IOWA CONSORTIUM FOR SUBSTANCE ABUSE RESEARCH AND EVALUATION

**Year 19
Annual Outcome Evaluation Trend Report
November 2017**

With Funds Provided By:
Iowa Department of Public Health,
Division of Behavioral Health,
Bureau of Substance Abuse



**THE IOWA
CONSORTIUM**
FOR SUBSTANCE ABUSE RESEARCH AND EVALUATION

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Outcomes Monitoring System**

**Year 19 Annual Outcome Evaluation Trend Report
November 2017**

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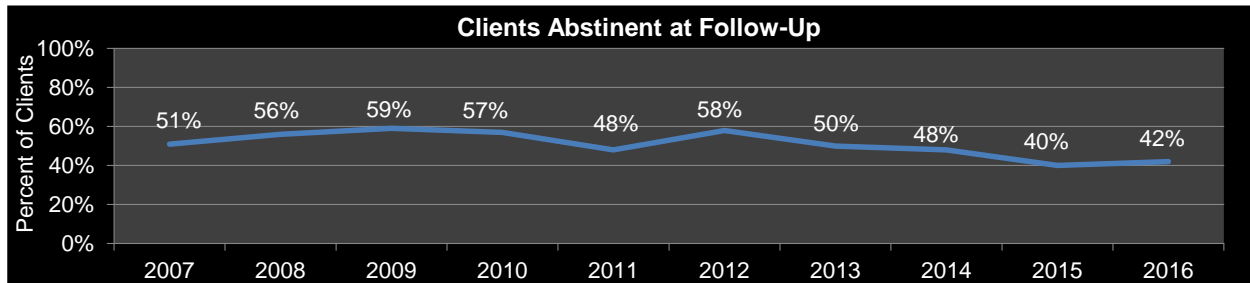
<http://iconsortium.subst-abuse.uiowa.edu/>

EXECUTIVE SUMMARY

The Iowa Consortium for Substance Abuse Research and Evaluation (Consortium) is under contract with the Iowa Department of Public Health (IDPH) for the Outcomes Monitoring System (OMS) project. The OMS project provides an independent evaluation regarding substance use disorder treatment outcomes in Iowa. The Consortium conducts follow-up interviews with randomly selected clients from IDPH-funded treatment agencies. The interviews occur approximately six months after discharge from the treatment program and provide follow-up data to determine outcomes as well as analyze changes between admission and follow-up. The Consortium has provided ongoing client sampling, recruitment, tracking, data collection, data analyses, and reporting since 1999. This Year 19 OMS trend report examines outcomes for clients admitted to substance use disorder treatment over a ten-year period between January 1, 2007 and December 31, 2016. Data for the most recent years, particularly 2016, have the potential to change as more follow-up interviews are completed.

Abstinence

The following figure presents the percentages of clients who reported no substance use during the follow-up period (the six months between discharge from treatment and the follow-up interview). Abstinence at follow-up ranged from 40% to 59% and significantly decreased from 2007 to 2016 (Wald Chi Square Test, $p < 0.001$).



Primary Substance

Admission: Alcohol was the most often reported primary substance at admission in all ten years. Marijuana was the second most common primary substance at admission from 2007 through 2012, then in 2013 it was methamphetamine. From 2014 through 2016 the percentages of clients reporting methamphetamine and marijuana as the primary substances at admission were similar. From 2007 to 2016 the likelihood of alcohol as the primary substance at admission significantly decreased and the likelihood of methamphetamine and opioids as primary substances at admission increased. There was no evidence that the use of marijuana as the primary substance at admission showed an increase or decrease.

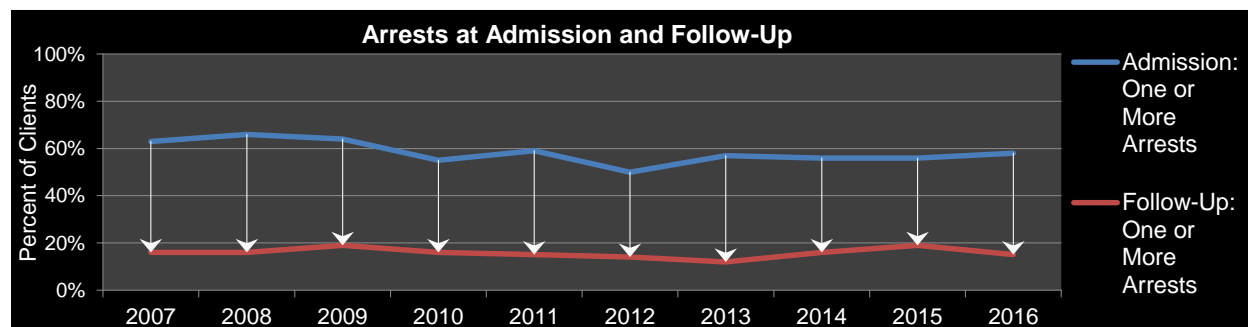
Follow-Up: Alcohol was the most often reported primary substance at follow-up in all ten years. Marijuana was the second most common primary substance reported at follow-up from 2007 through 2011 and 2014 through 2016. In 2012 and 2013, similar percentages of clients reported marijuana and methamphetamine as their primary substance. From 2007 to 2016, the likelihood of marijuana and methamphetamine as the primary substances at follow-up significantly increased. Over the ten-year period, there was no evidence that the use of alcohol or opioids as the primary substances at follow-up showed an increase or decrease over the ten-year period.



Age: Analyses were conducted on three age groups: 24 and younger, 25 to 34 years of age, and 35 and older. From 2007 to 2016, there were increasing trends across all three age groups reporting methamphetamine as the primary substance at admission and decreasing trends for all three age categories reporting alcohol as the primary substance at admission. Marijuana showed a statistically significant increase over the period for clients age 24 and younger, but this was not apparent in the older age groups. From 2007 to 2016, there were decreasing trends for clients age 24 and younger and for those 35 and older reporting alcohol as the primary substance at admission; however, this was not evident for clients age 25 to 34 years.

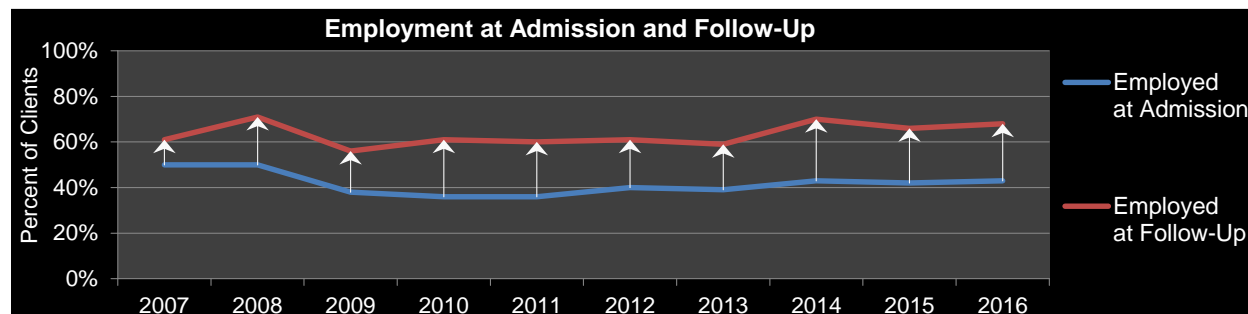
Arrests

For the question regarding arrests, the admission response refers to the 12 months prior to admission and the follow-up response refers to the six months following discharge. The majority of clients reported arrests at admission each year, ranging from 50% in 2012 to 66% in 2008. Over the ten-year period, fewer than 20% of clients reported arrests six months following treatment discharge.



Employment

Compared to admission, more clients were employed (full or part-time) six months following discharge from treatment. Over the ten years, an average of 63% of clients reported employment at follow-up compared to an average of 42% indicating employment at admission.



Abstinence, Arrests, and Employment at Follow-Up by Discharge Status

Over the ten-year period, clients who were successfully discharged were more likely to be abstinent during the six-month period from discharge to the follow-up interview and more likely to be employed at follow-up. Successfully discharged clients were also more likely to be arrest-free during the follow-up period.

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BACKGROUND

The Iowa Consortium for Substance Abuse Research and Evaluation (Consortium) is under contract with the Iowa Department of Public Health (IDPH) for the Outcomes Monitoring System (OMS) project. The OMS project provides an independent evaluation regarding substance use disorder treatment outcomes in Iowa. The Consortium conducts follow-up interviews with randomly selected clients from IDPH-funded treatment agencies. The interviews occur approximately six months after discharge from the treatment program and provide follow-up data to determine outcomes as well as analyze changes between admission and follow-up. The Consortium has provided ongoing client sampling, recruitment, tracking, data collection, data analysis, and reporting since January 1999.

OMS samples are drawn from clients who receive IDPH-funded drug or alcohol treatment in outpatient or residential treatment environments including for example, medically monitored residential, clinically managed residential, intensive outpatient, or outpatient. When comparing changes between project years, it is important to note from 2007 through 2012, the sample size was approximately 8% of the population of clients who receive IDPH-funded treatment. In January 2013, the sample size was increased from 8% to 10% of the available admission records for the client population admitted to treatment in a month. In September 2013, the sample size was increased from 10% to 15% and the sampling process changed to a completely random sample (not stratified). In July 2014, the sampling process was changed to pulling a sample of 15% or 120 clients, whichever is greater. Data collected prior to September 2013 were obtained through stratified random sampling procedures and are weighted to adjust for this process. Records pulled through a completely random sampling scheme are not weighted. Additionally, when comparing changes between project years, conservative analyses were performed and it was determined a change of seven percentage points or greater should be considered a statistically significant change.

This trend report examines outcomes for clients admitted to substance use disorder treatment during a ten-year period between January 1, 2007 and December 31, 2016. Data are reported by year of treatment admission, rather than year sampled or date the follow-up interview was completed. Data in trend reports are updated yearly and may differ from previous annual and trend reports. Factors contributing to differences include the collection of additional follow-up data (particularly for recent years), weighting adjustments, and changes and updates to IDPH data collection systems.

The statistical method used for analyses of some variables (e.g. abstinence, employment, hospitalizations) is logistic regression. This method assesses whether a variable, such as year of admission, relates to an increase or decrease in the outcome's chance of occurring. Logistic regression can also include other variables to "control" for changes. For example, to assess if arrests at follow-up goes up or down over time controlling for whether or not the clients were abstinent. This type of analysis utilizes the Wald Chi Square Test. Due to the large number of statistical tests and to focus on the more meaningful differences, statistical analyses resulting in p values of less than 0.01 are identified as statistically significant in this report. Due to rounding, percentages may not add up to exactly 100%.

Additional information about the OMS project including an overview of sampling procedures, client participation data, recruitment, tracking, and follow-up information can be found in annual reports for each respective year.



RECRUITMENT AND FOLLOW-UP

The recruitment rate for the OMS project is calculated using a denominator consisting of those individuals who were successfully recruited, those who declined participation, and non-recruited clients whom staff were unable to locate. Over the ten years, recruitment averages 66%. Clients declining participation in the OMS project averages 9% over the ten years.

Table 1. Recruitment

OMS Recruitment										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Clients in OMS Sample	972	957	793	896	937	879	1,217	1,311	1,493	1,379
Recruited Clients	616	640	572	573	643	544	639	581	741	718
Clients Declining Participation	73	86	41	50	53	83	173	200	165	125
Non-Recruited, Unable to Locate	135	118	126	198	169	184	313	414	440	308
Recruitment Rate	75%	76%	77%	70%	74%	67%	57%	49%	55%	62%

The number of follow-up interviews completed with clients ranges from 348 to 500 during the ten-year period. The follow-up rate calculation is based on recruited clients and consists of all clients who completed the follow-up interview; recruited clients who could not be located when their interview was due despite numerous phone calls, letters, and internet searches; and clients who decided not to take part in the interview after initially agreeing to do so. Recruited clients who were incarcerated (Consortium staff do not interview incarcerated individuals), deceased, and clients whose interview date had already passed when the Consortium received notification of their discharge date are excluded from the follow-up rate calculation. The follow-up rate averages 77% over the ten years.

Table 2. Follow-Up

OMS Follow-Up Interviews										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Follow-Up Interviews Completed	466	500	441	429	458	379	398	348	479	373
Recruited, Client Later Withdrew	10	15	14	5	17	17	28	13	11	18
Recruited, Unable to Locate	88	57	72	75	111	105	157	164	159	127
Follow-Up Rate	83%	87%	84%	84%	78%	76%	68%	66%	74%	72%

DESCRIPTION OF CLIENTS

Tables 3 through 6 present demographic information for clients in the OMS sample by year of admission. Data represent clients who provided answers to the questions. The actual number of clients may vary from question to question because some clients may not have responded to the question, data are missing, or data are coded as not collected or unknown.

Over the past ten years, the median age of clients in the OMS sample has ranged from 30 to 33 years of age. Analyses indicate the age of clients in the OMS sample is not increasing or decreasing over the ten-year period (Spearman's Correlation, $p > 0.01$).

Table 3. Age at Admission

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Median Age (years)	31	30	29	30	32	32	33	31	30	31

Over the ten-year period, on average 73% of clients in the OMS sample were male and 27% were female.

Table 4. Sex

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Male	70%	75%	73%	71%	73%	70%	70%	75%	77%	72%
Female	30%	25%	27%	29%	27%	30%	30%	25%	23%	28%

Table 5 presents race reported at admission for clients in the OMS sample who had responses for the question. The "other race" category includes clients who report Alaskan Native, Asian, Hawaiian or Pacific Islander, or anyone who indicates they are multi-racial.

Table 5. Race

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Caucasian/White	86%	89%	88%	88%	87%	88%	89%	85%	85%	86%
African American/Black	10%	9%	9%	8%	8%	9%	8%	9%	10%	9%
American Indian	1%	1%	1%	1%	2%	2%	1%	2%	2%	2%
Other Race	1%	1%	1%	0%	1%	1%	1%	1%	1%	1%

Note: Due to rounding, coding variations, and response options of unknown and not collected percentages may not add up to exactly 100%.

Table 6 presents the percentage of clients in the OMS sample who reported Hispanic or Latino ethnicity.

Table 6. Ethnicity

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Hispanic or Latino	4%	4%	4%	5%	5%	4%	6%	7%	7%	7%
Not Hispanic or Latino	96%	96%	96%	95%	95%	96%	94%	93%	92%	94%

Note: Due to rounding and coding variations, percentages may not add up to exactly 100%.

The treatment environments clients received recorded in the admission record by agency staff are displayed in Table 7. The majority of clients in the OMS sample were admitted to outpatient treatment each year, averaging 86% of clients over the ten-year period.

Table 7. Treatment Environment

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Inpatient	12%	15%	15%	13%	12%	11%	11%	15%	15%	18%
Outpatient	88%	85%	85%	87%	88%	89%	88%	85%	85%	82%

Note: Due to rounding, percentages may not add up to exactly 100%.

CHANGES FROM ADMISSION TO FOLLOW-UP

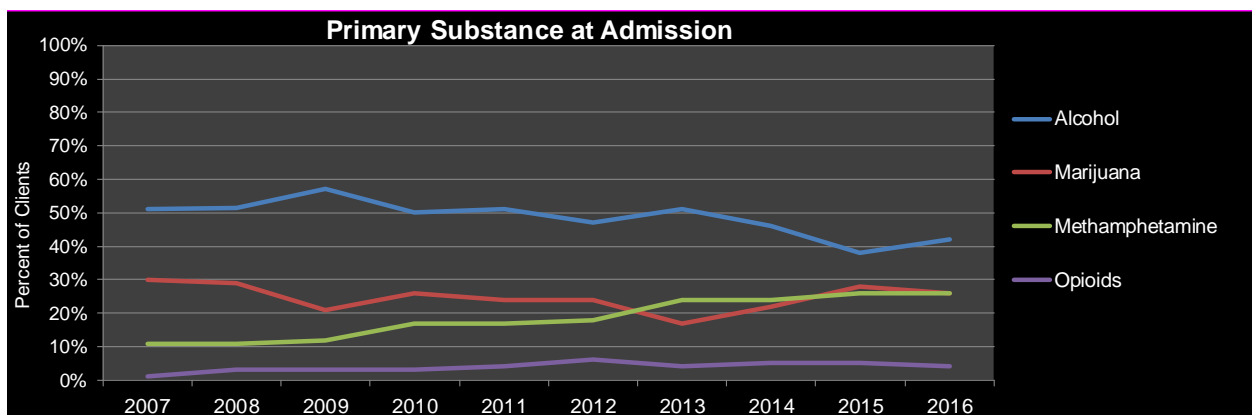
The figures in this section present admission and follow-up responses from clients who completed the follow-up interview. The follow-up interviews occur approximately six months after the client is discharged from treatment; therefore, the follow-up period refers to the six months between the client's discharge from treatment and the follow-up interview. Admission and follow-up data are client self-reported. Comparisons are only made for clients who had a response at both admission and follow-up. The number of clients may vary from question to question because some clients may not have responded to the question at admission or follow-up.



During the past ten years, alcohol has been the most commonly used primary substance at admission; from 2007 through 2011 and again in 2013 over half of the clients reported alcohol as the primary substance of use. From 2007 to 2012, marijuana was the second most commonly reported primary substance at admission. This changed in 2013 when nearly one-quarter of clients (24%) reported methamphetamine as the primary substance at admission and 17% of clients indicated marijuana was their primary substance. From 2014 through 2016, the percentages of clients reporting methamphetamine and marijuana as the primary substances were similar.

Over the ten-year period, the likelihood of alcohol as the primary substance of use at admission significantly decreased (Wald Chi Square Test, $p < 0.001$). However, the likelihood of methamphetamine as the primary substance of use at admission significantly increased (Wald Chi Square Test, $p < 0.001$), ranging from a low of 11% in 2007 and 2008 to a high of 26% in 2015 and 2016. Opioids as the primary substance at admission also significantly increased (Wald Chi Square Test, $p < 0.001$), ranging from 1% in 2007 to 6% in 2012. There was no evidence that the use of marijuana as the primary substance at admission showed an increase or decrease over the ten-year period (Wald Chi Square Test, $p = 0.99$). Although cocaine is not displayed in Figures 1 and 2 due to the low frequency almost mirroring opioid frequencies, cocaine as the primary substances of use at admission significantly decreased (Wald Chi Square Test, $p < 0.001$) from 2007 to 2016.

Figure 1. Primary Substance at Admission

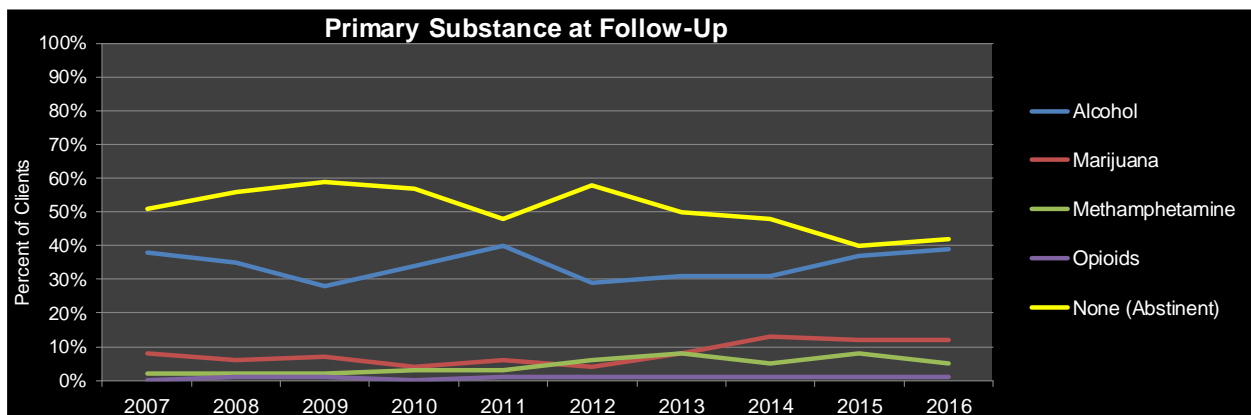


In all years, clients most often reported abstinence at follow-up. Of clients reporting substance use at follow-up, alcohol was the most common primary substance in all years. Marijuana was the second most common primary substance reported at follow-up in all years except 2012 and 2013 when similar percentages of clients reported marijuana and methamphetamine as their primary substance.

From 2012 to 2016, there was a sixteen percentage point decrease in clients reporting abstinence at follow-up (from 58% to 42%). During this time (2012 to 2016), there was a ten percentage point increase in clients indicating alcohol as their primary substance at follow-up (from 29% to 39%). There was also an eight percentage point increase in clients reporting marijuana as their primary substance at follow-up (from 4% to 12%) during this same time period.

Over the ten-year period, the likelihood of marijuana and methamphetamine as the primary substance of use at follow-up significantly increased (Wald Chi Square Tests, $p < 0.001$). The likelihood clients reported abstinence at follow-up significantly decreased over the ten-year period (Wald Chi Square Test, $p < 0.001$). There was no evidence that the use of alcohol, opioids, or cocaine as the primary substance at follow-up showed an increase or decrease over the ten-year period (Wald Chi Square Tests, alcohol: $p = 0.64$, opioids: $p = 0.03$, and cocaine $p = 0.46$).

Figure 2. Primary Substance at Follow-Up



At admission and follow-up, clients report up to three substances of use: their primary, secondary, and tertiary substances. Of clients completing a follow-up interview, Figure 3 presents the percentage of clients reporting one or more substances at admission. Over the ten-year period, an average of 41% of clients reported one substance, an average of 37% reported two substances, and an average of 23% reported three substances of use.

Figure 3. Number of Substances Reported at Admission

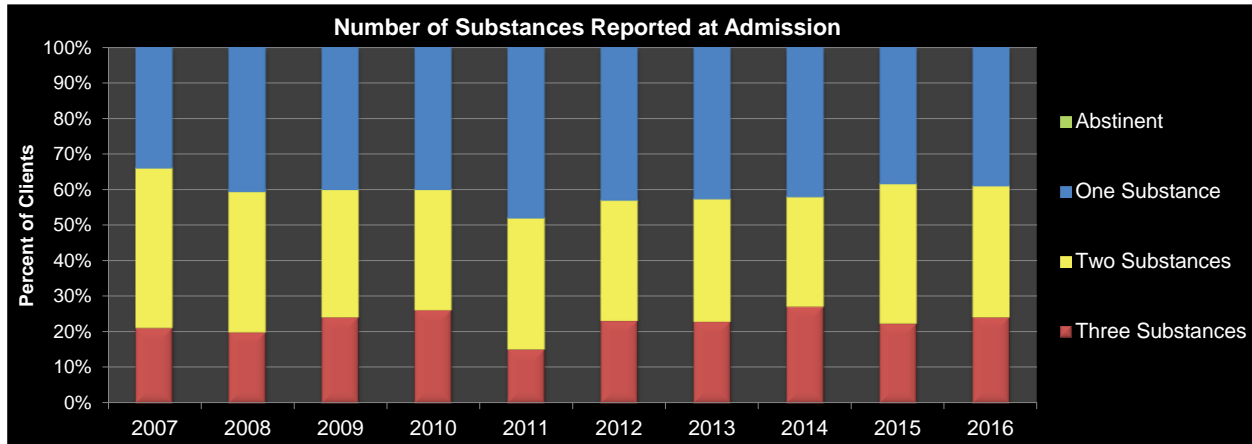
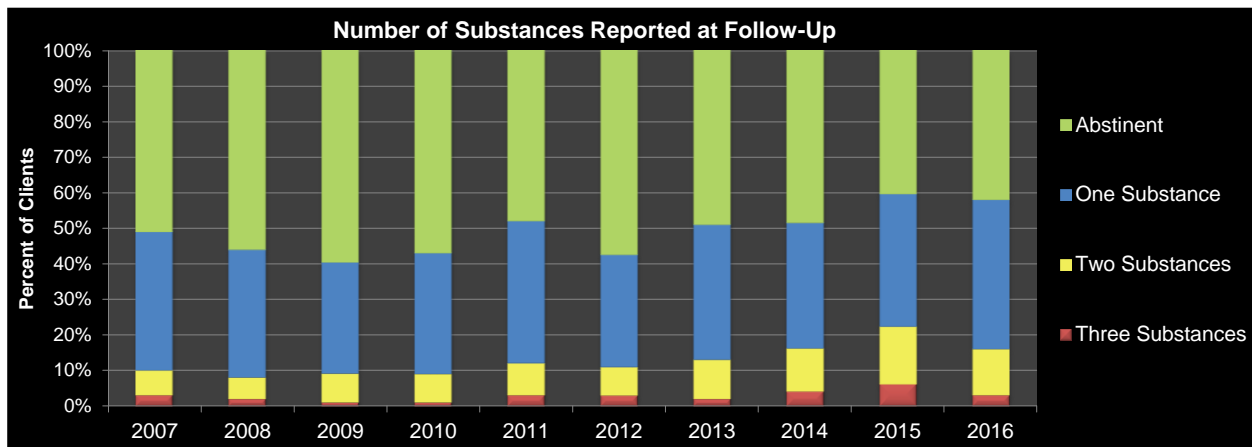


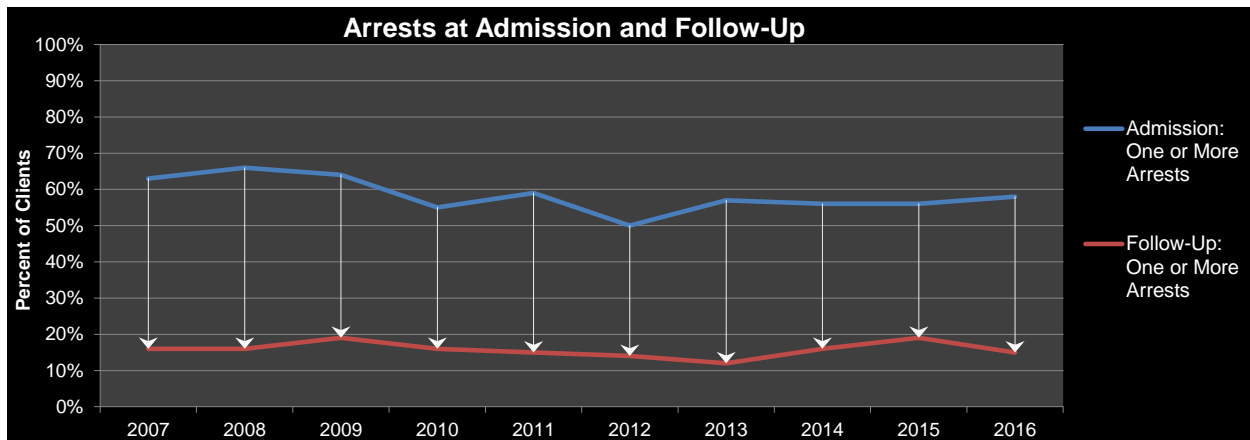
Figure 4 presents the percentage of clients reporting abstinence and one or more substances at follow-up. Over the ten-year period, an average of 51% of clients reported abstinence at follow-up. Six-months post-discharge, an average of 36% reported one substance, an average of 10% reported two substances, and an average of 3% reported three substances from 2007 to 2016. While increases in clients reporting one, two, and three substances at follow-up were correlated with the decrease in abstinence over the ten-year period (all $r < -0.75$, all $p < 0.02$), clients reporting two substances at follow-up significantly increased ($r = 0.89$, $p < 0.001$). There was no significant trend in reporting one or three substances at follow-up.

Figure 4. Number of Substances Reported at Follow-Up



For the question regarding arrests, the admission response refers to the 12 months prior to admission and the follow-up response refers to the six months following discharge. Clients reporting arrests at admission ranged from 50% of clients in 2012 to 66% in 2008. From 2007 to 2016, arrests reported at admission significantly decreased (Wald Chi Square Test, $p < 0.001$). At follow-up each year, 19% or fewer of clients reported arrests. There was no evidence that arrests at follow-up showed an increase or decrease over the ten-year period (Wald Chi Square Test, $p = 0.86$).

Figure 5. Arrests at Admission and Follow-Up



Employment (including full and part-time) at admission ranged from 36% in 2010 and 2011 to 50% in 2007 and 2008. Clients reporting employment at follow-up ranged from 56% in 2009 to 71% in 2008. Over the ten years, an average of 63% of clients indicated full or part-time employment at follow-up compared to an average of 42% of clients reporting employment at admission. From 2007 to 2016, there was no evidence the percentage of clients reporting employment at follow-up showed an increase or decrease over the ten-year period (Wald Chi Square Test, $p = 0.08$).

Figure 6. Employment (Full or Part-Time) at Admission and Follow-Up

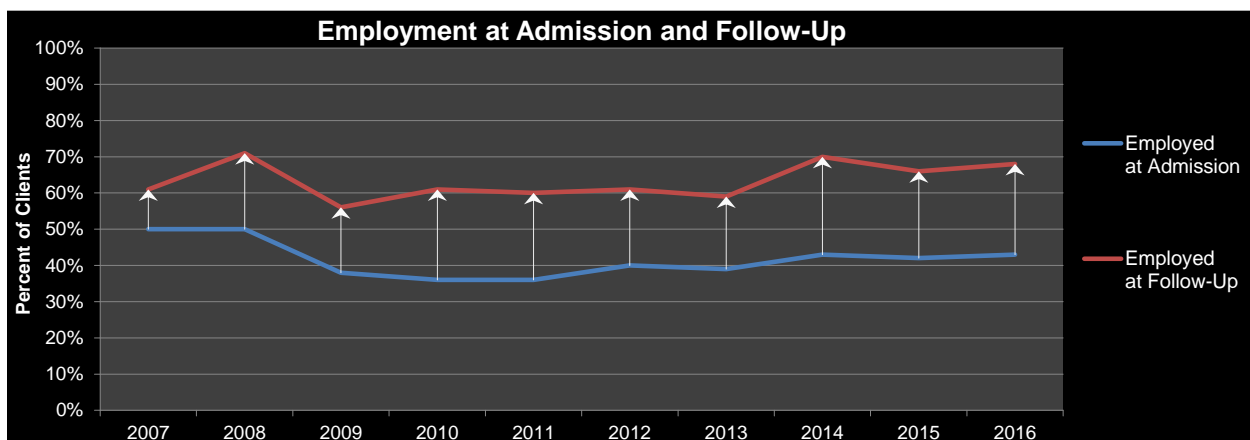
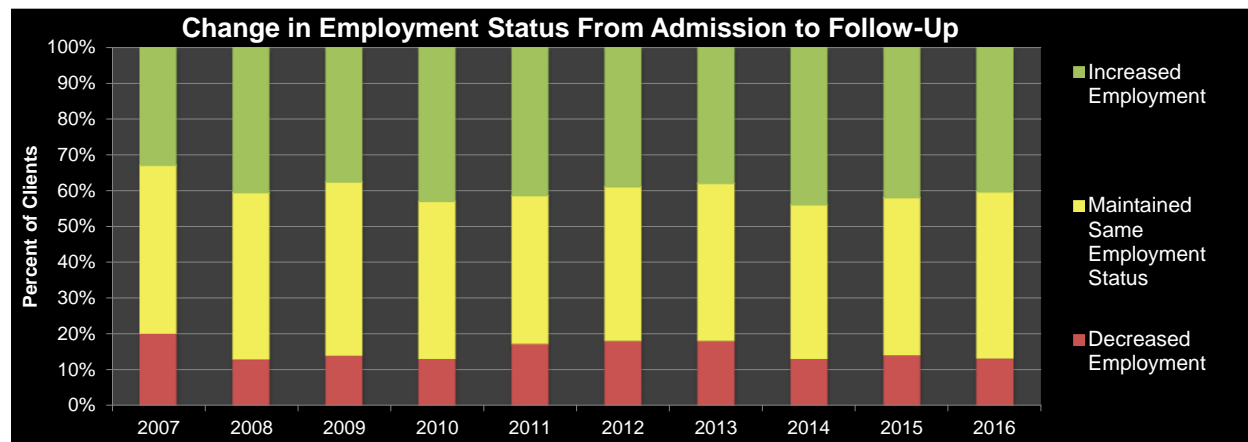


Figure 7 presents the change in employment status from admission to follow-up. Increased employment includes clients who changed from not being in the labor force or were unemployed at admission to having any employment at follow-up, or those who changed from being employed part-time at admission to full-time at follow-up. Decreased employment includes clients who changed from having any employment at admission to being unemployed or not in the labor force at follow-up, or those who changed from being employed full-time at admission to part-time at follow-up. Over the ten years, an average of 45% of clients maintained the same employment status, an average of 15% decreased their employment status, and an average of 40% increased their employment status.

Figure 7. Change in Employment Status from Admission to Follow-Up



An average of 40% of clients indicated they had not been employed in the six months prior to treatment admission over the ten years, with a high of 48% in 2010. At follow-up, one-quarter of clients (25%) reported not being employed since treatment discharge over all ten years, ranging from a high of 36% in 2009 to a low of 17% recently in 2016. From 2007 to 2016, an average of 57% of clients reported employment of four or more months at follow-up compared to an average of 42% of clients at admission indicating they were employed four or more months.

Figure 8. Months Employed at Admission and Follow-Up

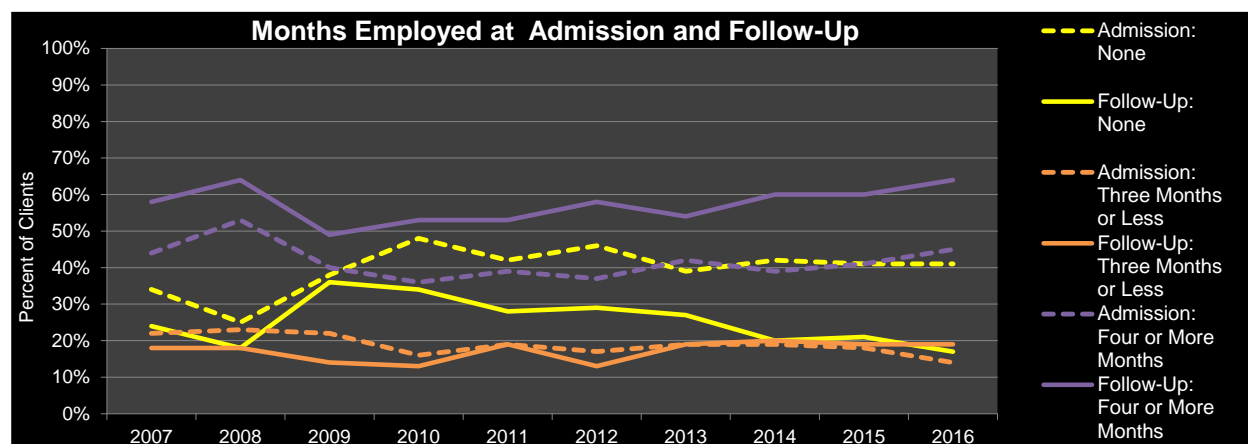
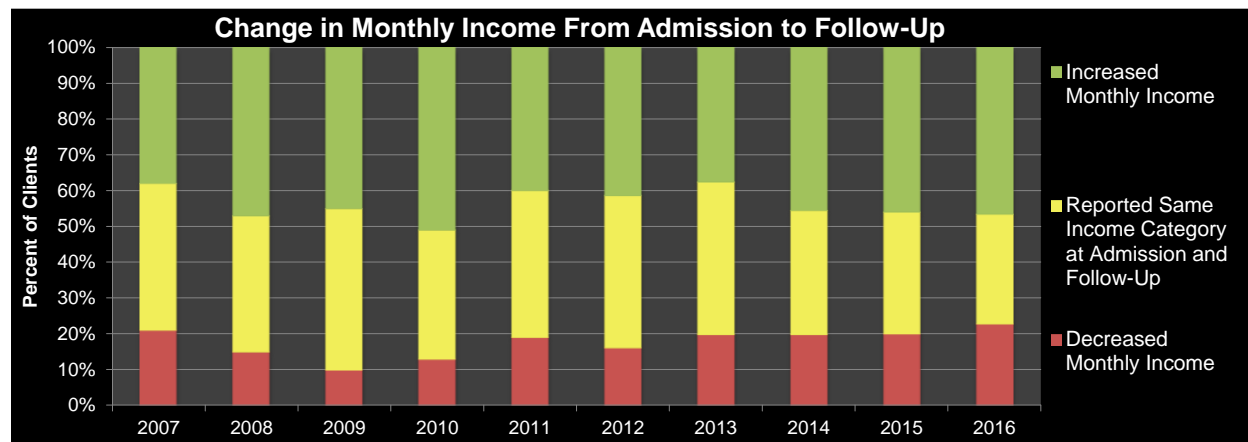


Figure 9 presents the change in taxable monthly income from admission to follow-up. There are five income categories: no income, \$500 or less, \$501 to \$1000, \$1001 to \$2000, and over \$2000. “Increased Monthly Income” indicates clients who moved from a smaller income category at admission to a larger income category at follow-up. “Decreased Monthly Income” represents clients who moved from a larger income category at admission to a smaller income category at follow-up. Over the ten years, an average of 44% of clients who completed follow-up interviews increased their income from admission to six-months post-treatment discharge, an average of 39% maintained the same monthly income category, and an average of 18% decreased their monthly income.

Figure 9. Change in Taxable Monthly Income from Admission to Follow-Up



In all ten years, fewer clients reported missing days of work or school due to substance use issues at follow-up compared to admission. The percentage of clients reporting they missed days of work or school for substance use related problems at admission ranged from 8% in 2010 to 17% in 2009; the range at follow-up was 1% in 2009 and 2010 to a high of 8% recently in 2016. There was a statistically significant decrease in the percentage of clients reporting days missed of work or school due to a substance use related problem at admission over the ten-year period (Wald Chi Square Test, $p < 0.001$). However, over the same period, there was a statistically significant increase in days missed of work or school at follow-up (Wald Chi Square Test, $p < 0.001$).

Figure 10. Days of Work or School Missed Due to a Substance Use Problem at Admission and Follow-up

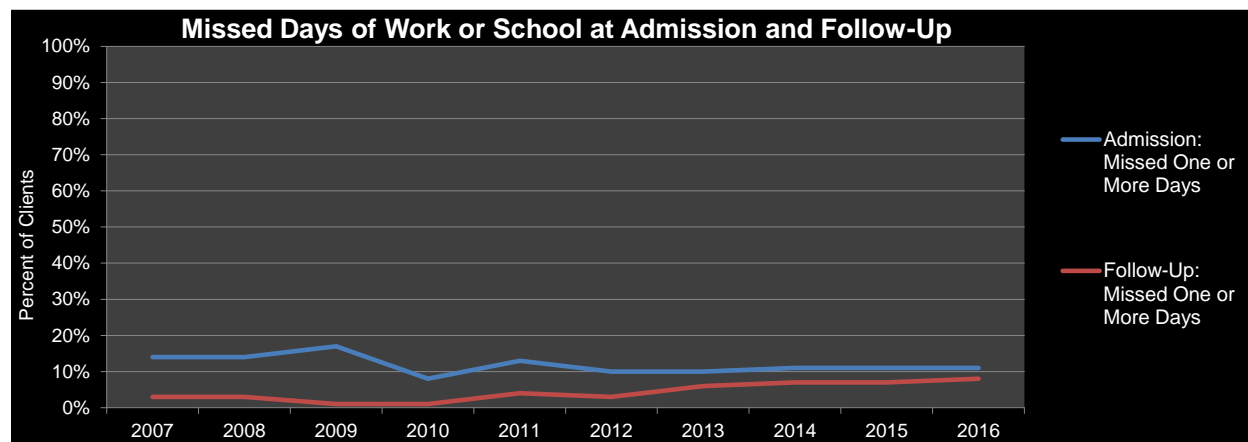
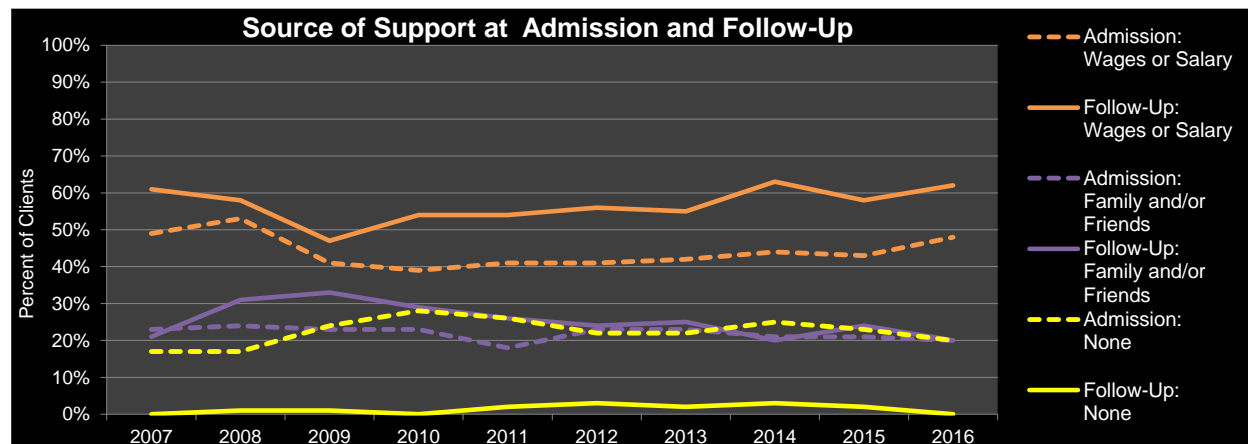


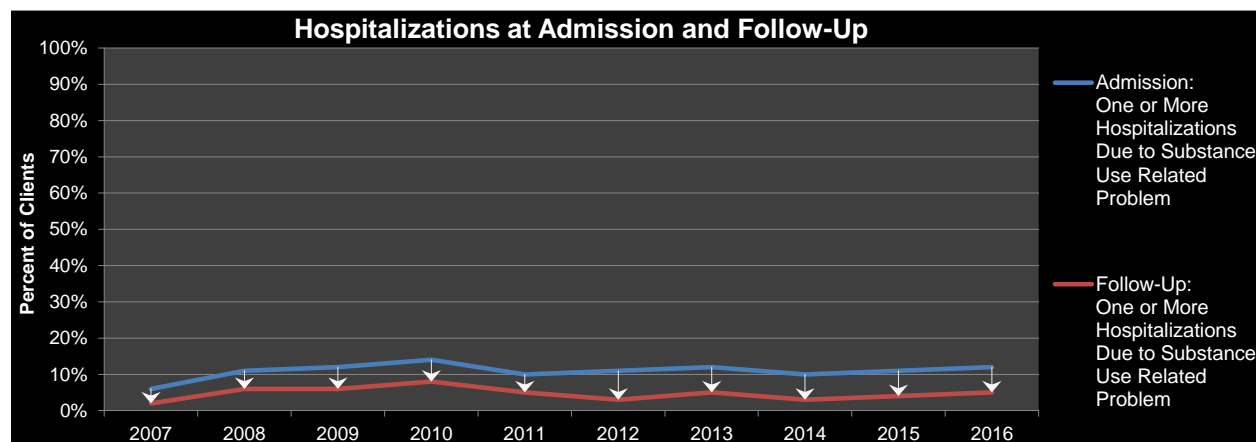
Figure 11 presents the three most commonly reported primary source of financial support categories indicated by clients at admission: none, wages or salary, and family and friends. Over the ten-year period, at admission and follow-up, clients most often reported wages or salary as the primary source of support, indicated by an average of 44% of clients at admission and an average of 57% of clients at follow-up. Over all ten years, similar percentages of clients at admission and follow-up reported relying on family and friends, averaging 22% at admission and averaging 25% at follow-up. From 2007 to 2016, an average of 22% of clients reported no primary source of support at admission, while the percentage of clients who indicated no income source at follow-up has remained at 3% or below.

Figure 11. Primary Source of Financial Support at Admission and Follow-Up



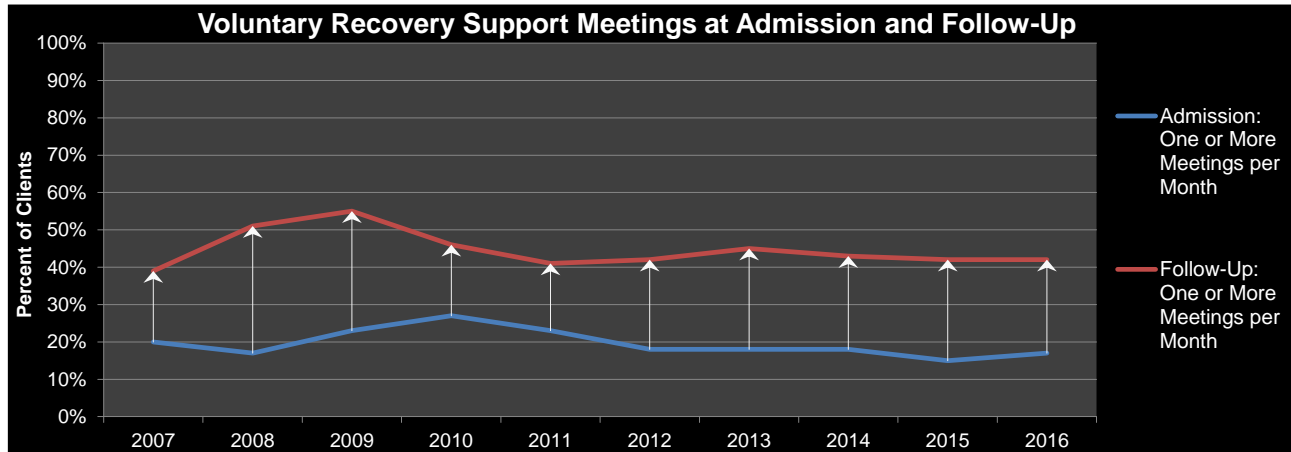
In all ten years, fewer clients reported substance use related hospitalizations at follow-up compared to admission. The percentage of clients reporting substance use related hospitalizations at admission ranged from 6% in 2007 and 2014 to 14% in 2010. The percentage of clients who indicated in follow-up interviews that they had been hospitalized for a substance use related problem during the six-month period from discharge to follow-up ranged from 2% in 2007 to 8% in 2010. There was no evidence the percentage of clients reporting hospitalizations due to a substance use related problem at follow-up showed an increase or decrease over the ten-year period (Wald Chi Square Test, $p = 0.69$).

Figure 12. Hospitalizations Due to a Substance Use Related Problem at Admission and Follow-Up



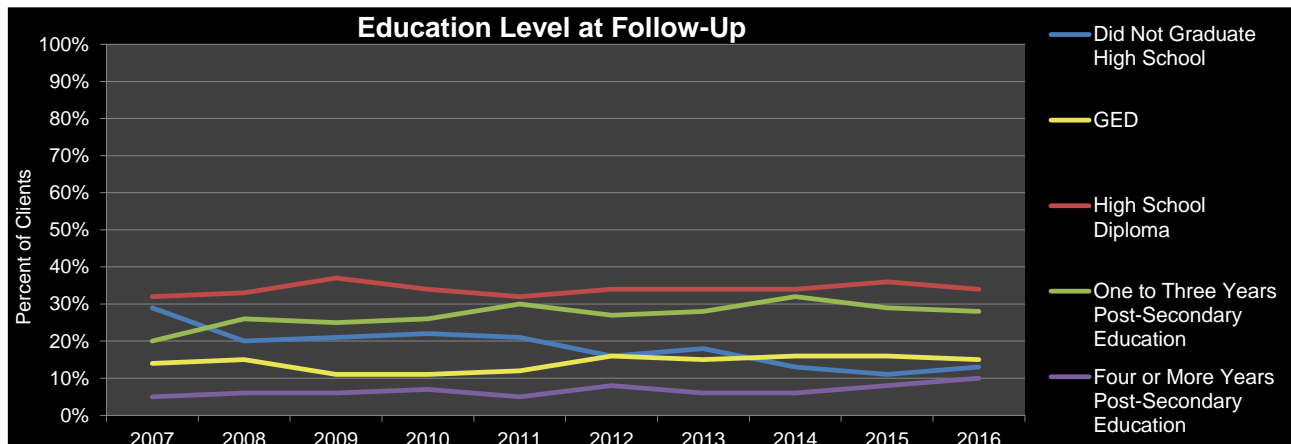
During the ten-year period, more clients reported attending voluntary recovery support meetings in the six months following treatment discharge compared to the six months prior to treatment admission. An average of one-fifth of clients (20%) over the ten-year period indicated they had attended at least one Alcoholics Anonymous (AA), Narcotics Anonymous (NA), or similar voluntary meeting per month in the six months prior to admission. At follow-up over the ten years, an average of 45% of clients reported attending meetings during the six months following discharge from treatment. There was no evidence the percentage of clients reporting attendance at voluntary recovery support meetings at follow-up showed an increase or decrease over the ten-year period (Wald Chi Square Test, $p = 0.02$).

Figure 13. Attendance at Voluntary Recovery Support Meetings at Admission and Follow-Up



Admission data are not included in Figure 14 since not all admission datasets provide a response category for a General Education Degree (GED). Therefore, admission and follow-up comparisons cannot be made because the GED question is specifically asked at follow-up. At follow-up each year, between 44% and 52% of clients reported a high school or equivalent level of education (GED). The percentage of clients who indicated they had not graduated from high school ranged from a high of 28% in 2007 to a low of 11% in 2015. Over the ten-year period, there was a statistically significant decrease in the percentage of clients reporting they had not graduated from high school (Wald Chi Square Test, $p < 0.001$). The percentage of clients reporting an education level beyond high school at follow-up has steadily increased from 28% in 2007 to 38% in 2016.

Figure 14. Education Level at Follow-Up



HARM REDUCTION

In addition to reporting on abstinence, changes in frequency of use may provide information regarding client outcomes following treatment. Some clients using alcohol and illegal substances are unable or unwilling to stop using alcohol and drugs. Harm reduction seeks to *reduce* negative consequences related to substance use rather than focusing on abstaining from all substances to minimize adverse health, social, and economic consequences.

Changes in frequency of use provides additional information regarding client outcomes following treatment. Since a client's primary substance may change from admission to follow-up, a simple comparison of frequency may not be a good representation (e.g. having one drink three to six times per week versus smoking methamphetamine three to six times per week). Therefore, Figure 15 presents data for a subset of the total group of clients who completed the follow-up interview who report using the same primary substance at both admission and follow-up. The "Increased Use" category presents the percentage of clients who indicated using their primary substance more often at follow-up than at admission. For example, a client may report using alcohol one to three times in the past month at admission and at follow-up report daily use, representing an increase in their frequency of use. "Maintained Same Use" represents clients reporting the same frequency of use of their primary substance at admission and follow-up. "Decreased Use" presents the percentage of clients who reported using their primary substance with less frequency at follow-up than indicated at admission.

Of clients reporting the same primary substance at admission and follow-up, over the ten-year period an average of 34% of clients increased their use, an average of 28% maintained the same use, and an average of 39% decreased their use from admission to follow-up. In six of the ten years (2009, 2011, 2012, 2014, 2015, and 2016) clients who reported use of the same primary substance at admission and follow-up most commonly indicated a decrease in use of their primary substance at follow-up compared to admission. In two of the ten years (2008 and 2013) clients reported using their primary substance more frequently at follow-up compared to admission. In 2007 and 2010, clients most commonly reported the same frequency of use of their primary substance at both admission and follow-up. There were no statistically significant trends across use categories over the ten-year period (Jonckheere-Terpstra Test, $p = 0.55$).

Figure 15. Change in Frequency of Use of Primary Substance: Clients Indicating Use of Same Primary Substance at Both Admission and Follow-Up

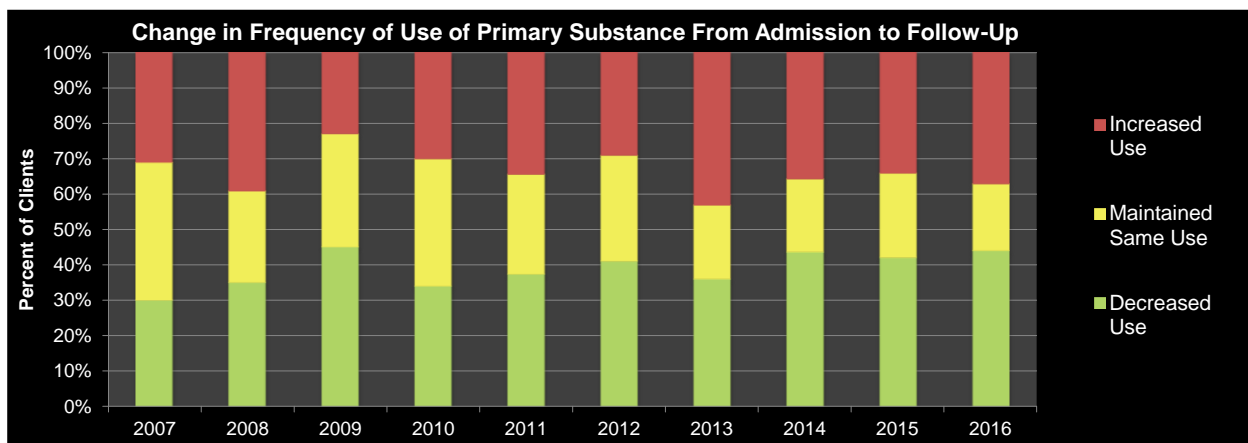
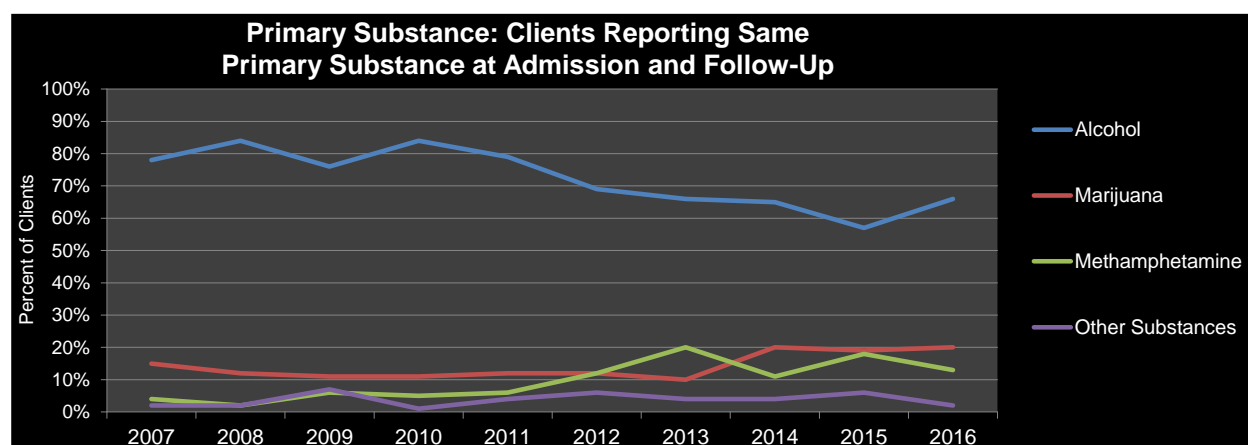


Figure 16 presents the primary substances at admission and follow-up for the subgroups of clients who reported the same substance at admission and follow-up. Over the ten-year period, an average of 72% of clients reported alcohol as the primary substance, an average of 14% reported marijuana, and an average of 10% reported methamphetamine as the primary substance at admission and follow-up. Fewer than 8% reported primary substances other than alcohol, marijuana, and methamphetamine at both admission and follow-up in all years.

Figure 16. Change in Frequency of Use of Primary Substance: Clients Indicating Use of Same Primary Substance at Both Admission and Follow-Up



Additional analyses were conducted for the subgroup of individuals who reported the same primary substance at both admission and follow-up. There was no evidence of a statistically significant difference between those who reduced their use, maintained the same use, or increased their use in terms of the following outcome variables at follow-up: arrests¹, employment², substance use related hospitalizations³, and attendance at voluntary recovery support meetings⁴. Analyses were also conducted with the three discharge categories: successful completion; terminated (clients discharged from the program due to noncompliance, lack of treatment progress, or client leaving); and neutral (this category includes, but is not limited to, managed care decision, referral to another program, incarceration, or death). There was no statistically significant difference in discharge status recorded by treatment agency staff and individuals who decreased use, maintained the same use, or increased their use from admission to follow-up (Wald Chi Square Test, $p = 0.47$).

¹ Wald Chi Square Test, $p = 0.37$.

² Wald Chi Square Test, $p = 0.72$.

³ Wald Chi Square Test, $p = 0.89$.

⁴ Wald Chi Square Test, $p = 0.47$.



OUTCOMES BY ABSTINENCE

The follow-up interviews occur approximately six months after the client is discharged from treatment; therefore, the follow-up period refers to the six months between the client's discharge from treatment and the follow-up interview. Abstinence refers to abstinence from all substances in the previous six months (follow-up period). Figure 17 presents abstinence reported at follow-up over the ten years. Figures 18 through 21 on the following pages examine abstinence at follow-up in relation to other variables at admission and follow-up.

Abstinence at follow-up ranged from 40% to 59% and significantly decreased from 2007 to 2016 (Wald Chi Square Test, $p < 0.001$).

Figure 17. Abstinence at Follow-Up

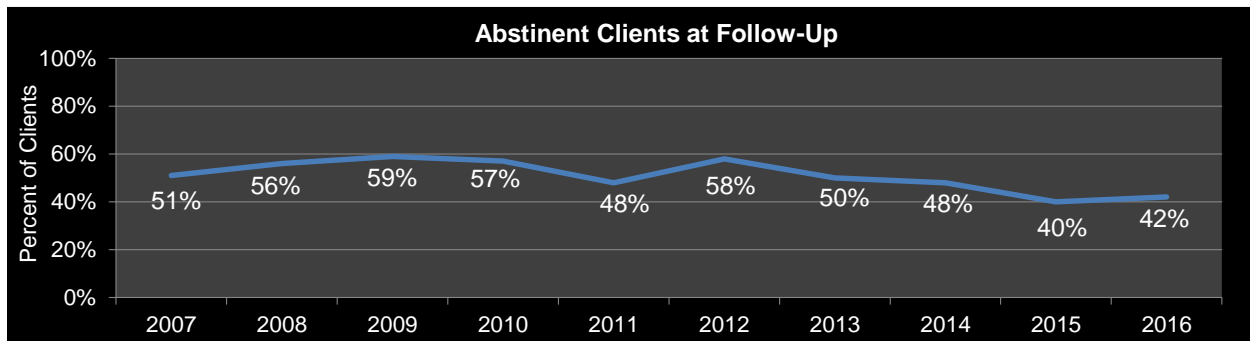


Figure 18 presents the three most commonly reported primary substances reported at admission (alcohol, marijuana, and methamphetamine) and abstinence at follow-up. All other substances were combined into one group for the statistical analyses and excluded from Figure 18 due to the low frequency of clients reporting other substances as their primary substance at admission. In Figure 18, the percentages represent the number of abstinent clients at follow-up out of the number of total clients who indicated each listed primary substance at admission. Regardless of primary substance reported at admission, there were statistically significant differences in abstinence at follow-up over time (Wald Chi Square Test, $p < 0.001$). Additionally, over the decade, there was a decrease in abstinence at follow-up for clients reporting alcohol, marijuana, and methamphetamine as the primary substances at admission (Wald Chi Square Tests, $p < 0.01$).

Figure 18. Primary Substance at Admission by Abstinence at Follow-Up

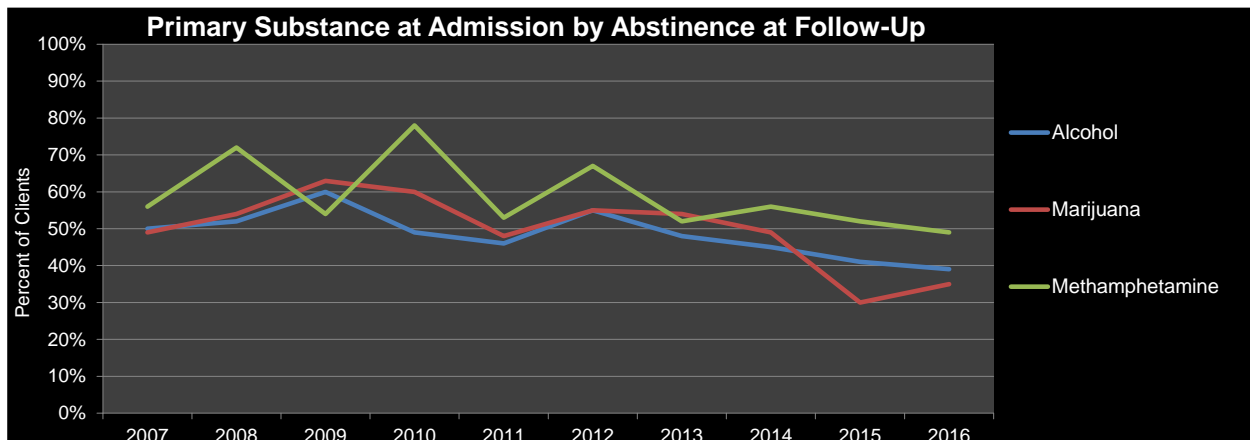
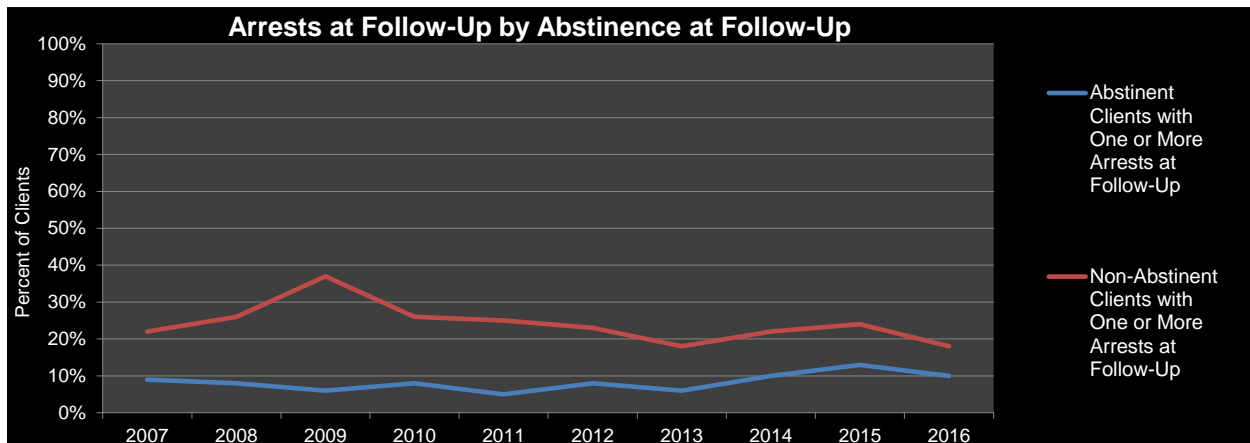


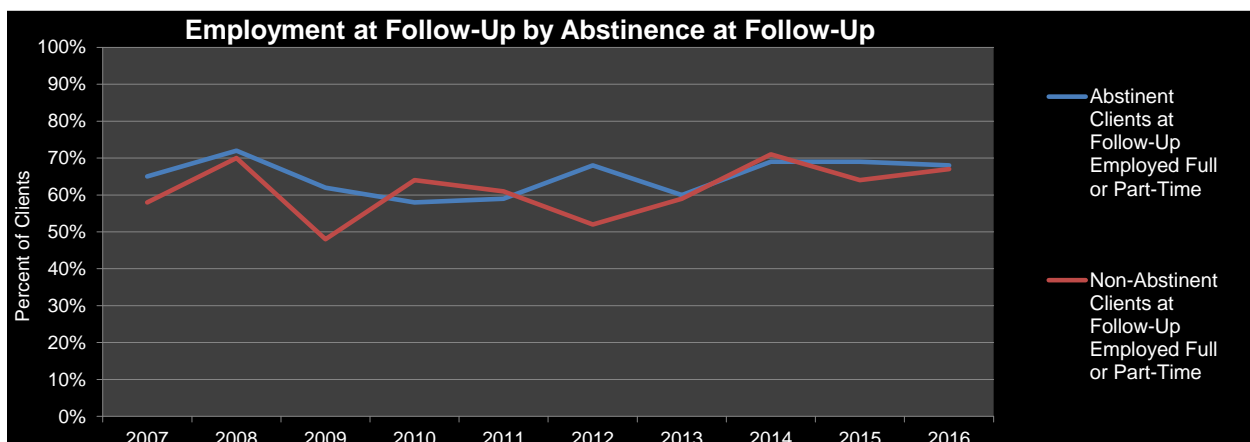
Figure 19 compares arrests during the follow-up period for those who were abstinent versus non-abstinent at follow-up. There was no evidence to suggest either an increasing or decreasing trend over the ten-year period for arrests at follow-up (Wald Chi Square Test, $p = 0.91$). However, clients who were abstinent at follow-up were less likely to be arrested during the follow-up period (Wald Chi Square Test, $p < 0.01$). There was also evidence of a convergence of the rates from abstinent and non-abstinent clients over time (Wald Chi Square Test, $p < 0.01$).

Figure 19. Arrests at Follow-Up by Abstinance at Follow-Up



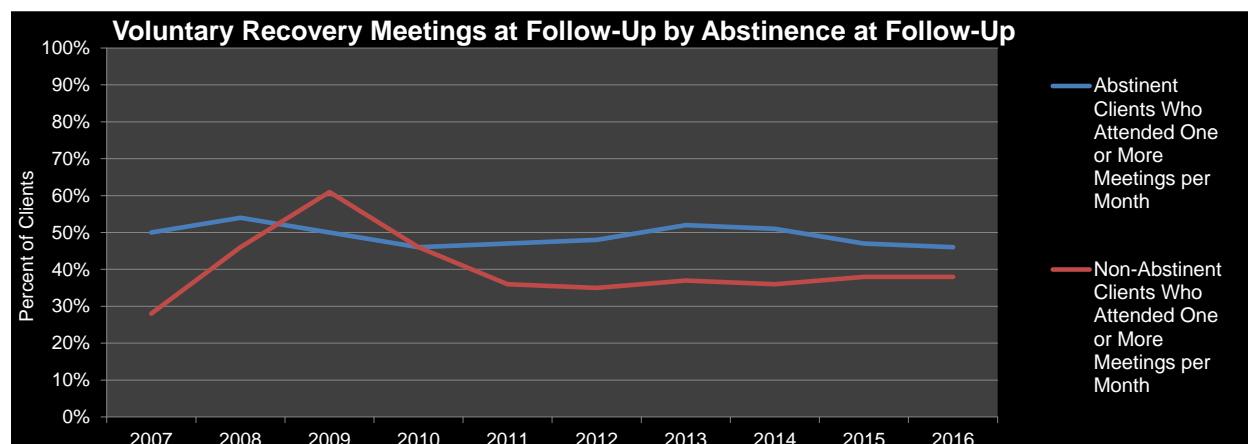
In Figure 20, the percentages represent abstinent clients reporting employment (full or part-time) at follow-up out of the total number of abstinent clients at follow-up. Also represented are non-abstinent clients reporting employment at follow-up out of the total number of non-abstinent clients. There was no evidence to suggest either an increasing or decreasing trend over the ten-year period for employment at follow-up (Wald Chi Square Test, $p = 0.05$). From 2007 to 2016, employment at follow-up was not associated with clients' abstinence (Wald Chi Square Test, $p = 0.02$).

Figure 20. Employment at Follow-Up by Abstinance at Follow-Up



In Figure 21, the percentages represent abstinent clients at follow-up who indicated they had attended at least one voluntary recovery support meeting per month since discharge out of the total number of abstinent clients. Also represented are non-abstinent clients at follow-up who indicated they had attended at least one recovery support meeting since discharge out of the total number of non-abstinent clients. There was no evidence to suggest either an increasing or decreasing trend in client reports of voluntary recovery support meeting attendance at follow-up for abstinent or non-abstinent clients (Wald Chi Square Test, $p = 0.07$). Clients who were abstinent at follow-up were more likely to have attended voluntary recovery support meetings compared to non-abstinent clients (Wald Chi Square Test, $p < 0.001$).

Figure 21. Voluntary Recovery Support Meetings Attended at Follow-Up by Abstinence at Follow-Up



OUTCOMES BY DEMOGRAPHICS

Outcomes by Sex

Figures 22 through 24 present selected outcome variables at admission and follow-up by sex.

The three primary substances clients reported most often were alcohol, marijuana, and methamphetamine. Figure 22 on the following page shows the percentage of males and females who completed the follow-up interview reporting these three substances at admission each year.

Over all ten years, males reported alcohol as the primary substance at admission more often than any other substance, ranging from 39% in 2015 to 57% in 2009. Females indicating alcohol as the primary substance at admission fluctuated between 28% recently in 2016 to 57% in 2009. From 2007 to 2016, there were statistically significant decreasing trends for both sexes reporting alcohol as the primary substance at admission (Wald Chi Square Tests, $p < 0.01$).

Over the ten years, an average of just over one-quarter of males (27%) and an average of one-fifth of females (20%) reported their primary substance at admission was marijuana. There was no evidence that the use of marijuana as the primary substance at admission showed an increase or decrease for either sex over the ten-year period (Wald Chi Square Tests, males: $p = 0.32$; females: $p = 0.08$).



There were statistically significant increasing trends over the ten-year period for both sexes reporting methamphetamine as the primary substance at admission (Wald Chi Square Tests, $p < 0.001$). In 2007 through 2012, an average of 13% of males reported methamphetamine as the primary substance at admission. However, there was a shift for males in the four most recent years from 2013 through 2016, an average of over one-fifth of males (22%) indicated their primary substance at admission was methamphetamine. During the ten-year time period, there was a 28 percentage point increase for females reporting their primary substance at admission was methamphetamine, from 15% in 2007 to 43% in 2016. There was no evidence to suggest statistically significant differences between males and females for alcohol, marijuana, or methamphetamine as the primary substances at admission (Wald Chi Square Tests, $p = 0.96$, $p = 0.32$, and $p = 0.09$ respectively).

Figure 22. Primary Substance at Admission by Sex

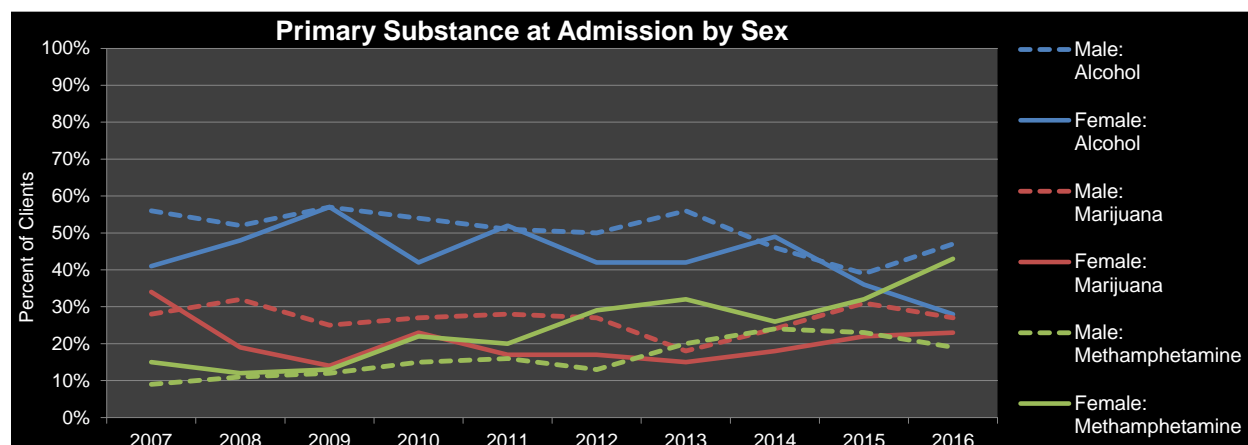


Figure 23 displays the percentage of males and females reporting abstinence at follow-up each year. Abstinence for males at follow-up ranged from 37% in 2015 to 59% in 2009. Females reporting abstinence at follow-up fluctuated between 43% recently in 2016 to 63% in 2011. The largest disparity between males and females occurred in 2011 when there was a 21 percentage point difference with 42% of males and 63% of females reporting abstinence at follow-up. Over the ten-year period, there was a decreasing trend in abstinence for both males and females (Wald Chi Square Test, $p < 0.001$). There were no statistically significant differences between males and females reporting abstinence at follow-up (Wald Chi Square Test, $p = 0.70$).

Figure 23. Abstinence at Follow-Up by Sex

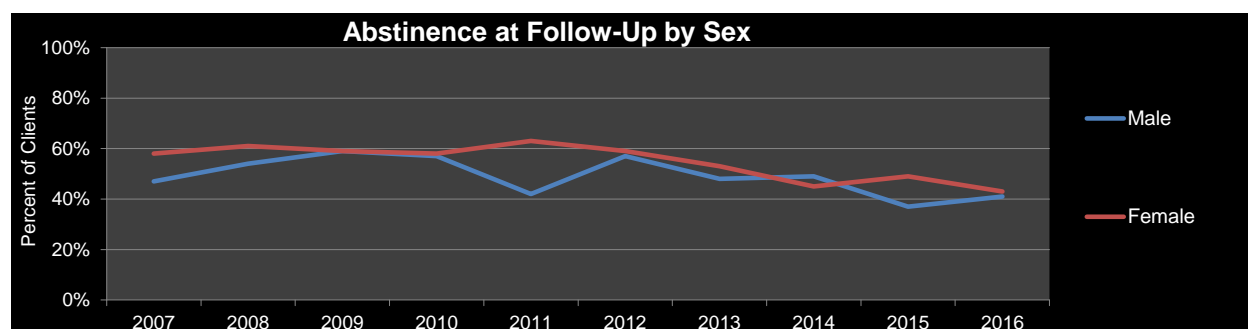
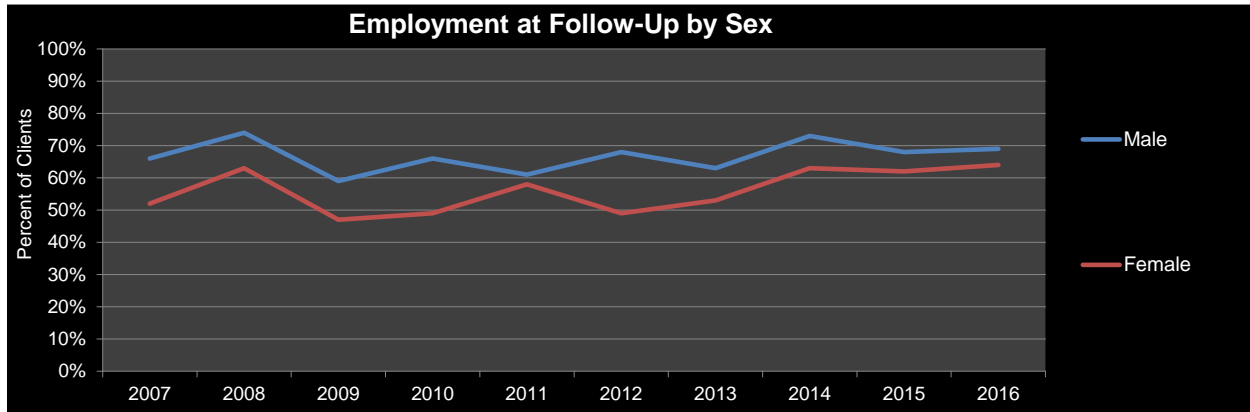


Figure 24 shows the percentage of males and females reporting full or part-time employment at follow-up. There was a statistically significant difference between males and females (Wald Chi Square Test, $p < 0.01$); males report employment at follow-up more often than females with males averaging 67% and females averaging 56% over the ten years. While there was no evidence that employment at follow-up showed an increase or decrease for males over the ten-year period (Wald Chi Square Test, $p = 0.88$), there was an increasing trend in employment for females from 2007 to 2016 (Wald Chi Square Test, $p < 0.01$). In 2007, just over half of females (52%) reported at employment whereas in 2016 nearly two-thirds of females (64%) indicated they were employed six-months following treatment discharge.

Figure 24. Employment at Follow-Up by Sex



Additional analyses were conducted on three additional outcomes reported at follow-up. There was no evidence of a statistically significant difference between males and females and arrests⁵, substance use related hospitalizations⁶, and attendance at voluntary recovery support meetings⁷.

Outcomes by Age

Figures 25 through 29 on the following pages present selected variables at admission and follow-up by age recorded at admission. Three age groups are presented: 24 years old and younger, 25 to 34 years old, and 35 years and older. The three most commonly primary substances at admission each year: alcohol, marijuana, and methamphetamine are presented in Figures 25 through 27. Of clients in the 24 years and younger age group, marijuana was the most commonly reported primary substance in six of the ten years (all years except 2007 through 2009, and in 2013 when alcohol was most commonly indicated). Alcohol was the most commonly reported primary substance by clients in the categories of 25 to 34 years of age and 35 and older in all years. Similar percentages of clients 25 to 34 years of age and 35 and older reported methamphetamine as the primary substance at admission over the ten-year period (24 and 21% respectively). An average of 8% of clients 24 and younger indicated methamphetamine was their primary substance from 2007 to 2016. There were no significant differences in the percentages of methamphetamine between age groups.

⁵ Wald Chi Square Test, $p = 0.21$.

⁶ Wald Chi Square Test, $p = 0.15$.

⁷ Wald Chi Square Test, $p = 0.16$.



Figure 25 shows the percentages of clients who completed follow-up interviews who reported alcohol as the primary substance at admission by age group. From 2007 to 2016, there were statistically significant decreasing trends for clients age 24 and younger and for those 35 and older reporting alcohol as the primary substance at admission (Wald Chi Square Tests, $p < 0.001$). There was no evidence that alcohol as the primary substance at admission showed an increase or decrease for clients age 25 to 34 years of age (Wald Chi Square Test, $p = 0.04$). An average of 41% of clients age 24 and younger, an average of 43% of clients age 25 to 34 years, and an average of 57% of clients age 35 and older reported alcohol as the primary substance at admission over the ten-year period. There was no evidence to suggest statistically significant differences between age categories and alcohol as the primary substance at admission (Wald Chi Square Test, $p = 0.13$).

Figure 25. Primary Substance at Admission by Age Group: Alcohol

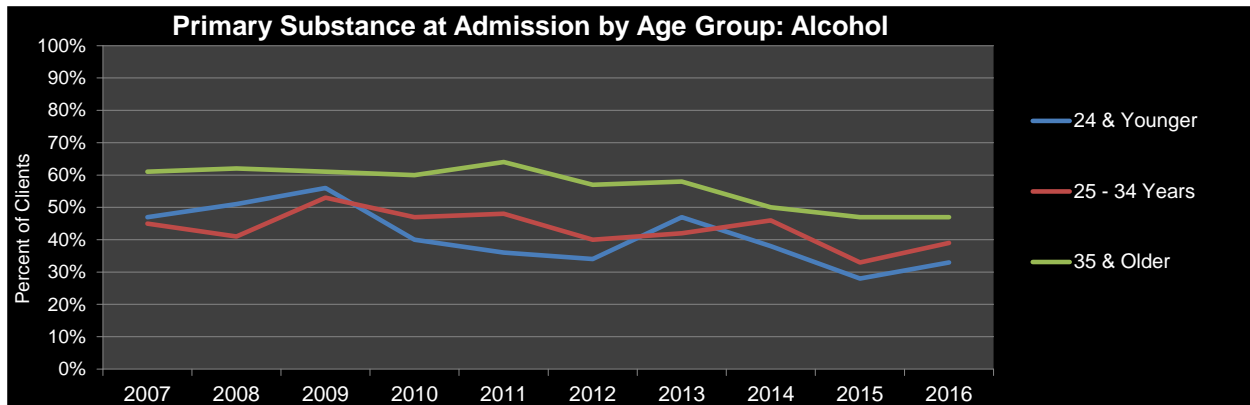


Figure 26 shows the percentage of clients completing follow-up interviews who reported marijuana as the primary substance at admission by age group. There was a statistically significant difference between age categories and marijuana as the primary substance at admission (Wald Chi Square Test, $p < 0.01$). An average of 45% of clients age 24 years and younger reported marijuana as the primary substance at admission over the ten years. An average of approximately one-quarter of clients (24%) age 25 to 34 reported marijuana as the primary substance at admission from 2007 to 2016. Fewer than 16% of clients age 35 and older indicated marijuana was their primary substance at admission in all years. There was a statistically significant increasing trend over the ten-year period for clients age 24 and younger reporting marijuana as the primary substance at admission (Wald Chi Square Test, $p < 0.01$). However, there was no evidence that marijuana as the primary substance at admission showed an increase or decrease for the 25 to 34 years of age and the 35 and older categories over the ten-year period (Wald Chi Square Tests, $p = 0.04$ and $p = 0.33$ respectively).

Figure 26. Primary Substance at Admission by Age Group: Marijuana

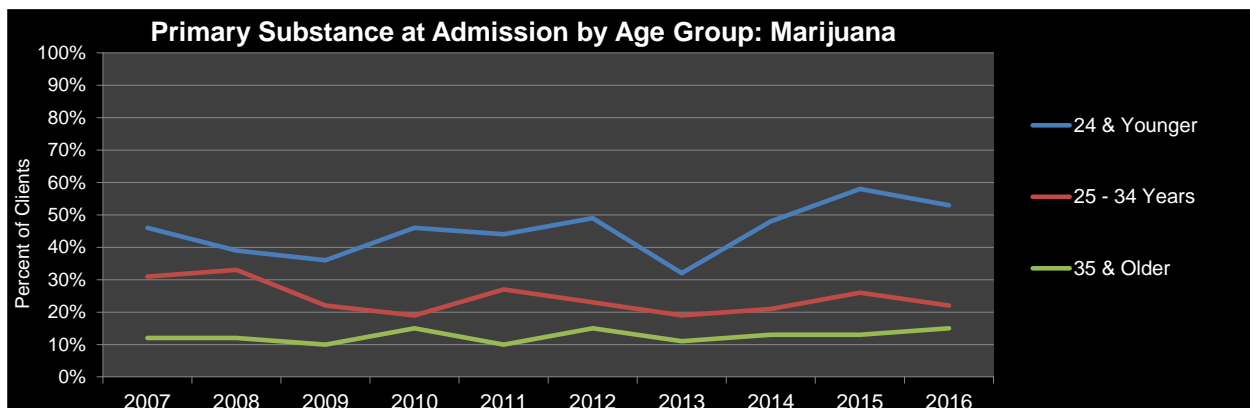


Figure 27 shows the percentage of clients completing the follow-up interview who reported methamphetamine as the primary substance at admission by age group. There were statistically significant increasing trends over the ten-year period for all three age groups reporting methamphetamine as the primary substance at admission (Wald Chi Square Tests, $p < 0.01$). From 2007 to 2016, there was an increase of six percentage points (from 6% to 12%) for clients 24 and younger and an increase of 11 percentage points (from 20% to 31%) for clients age 25 to 34 years of age. Similarly for clients age 35 and older, there was an increase of 18 percentage points (from 11% to 29%). There was no evidence to suggest statistically significant differences between age categories and methamphetamine as the primary substance at admission (Wald Chi Square Test, $p = 0.87$).

Figure 27. Primary Substance at Admission by Age Group: Methamphetamine

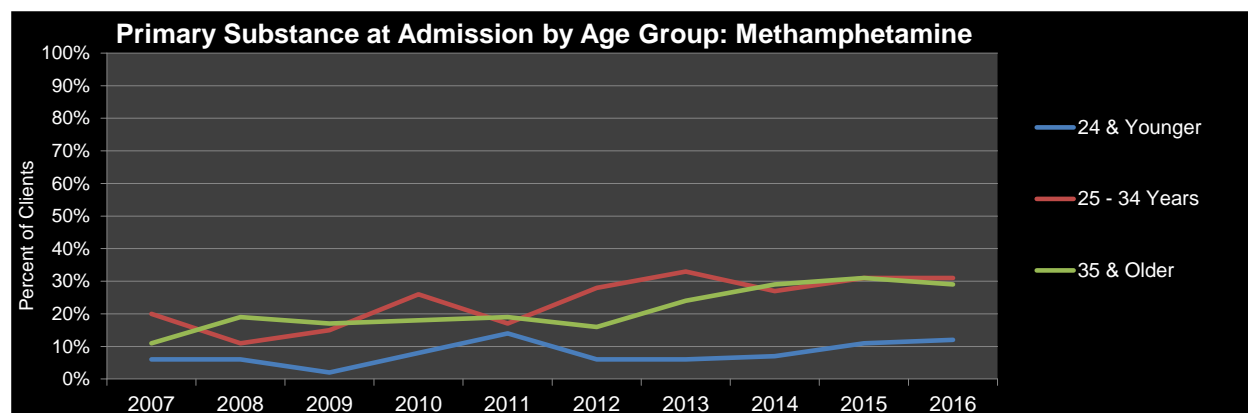


Figure 28 displays the percentage of clients in the three age groups reporting abstinence at follow-up each year. Abstinence at follow-up for clients age 24 and younger at follow-up ranged from 27% recently in 2015 and 2016 to 55% in 2009. Clients age 25 to 34 years reporting abstinence at follow-up fluctuated between 39% in 2014 to 64% in 2009. Abstinence for clients 35 and older ranged from 46% recently in 2015 and 2016 to 63% 2008, 2010, 2011, and 2012. Over the ten-year period, there was a decreasing trend in abstinence for all three age categories (Wald Chi Square Test, $p < 0.01$). There were no statistically significant differences between the three age groups and abstinence at follow-up (Wald Chi Square Test, $p = 0.87$).

Figure 28. Abstinence at Follow-Up by Age Group

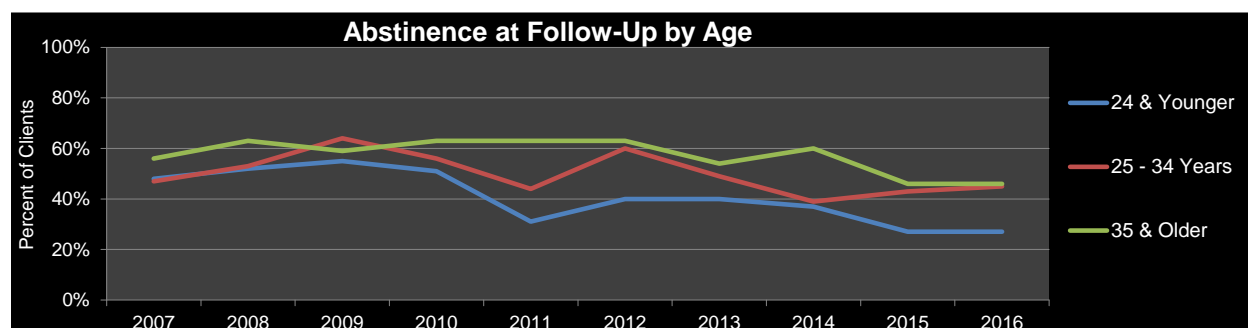
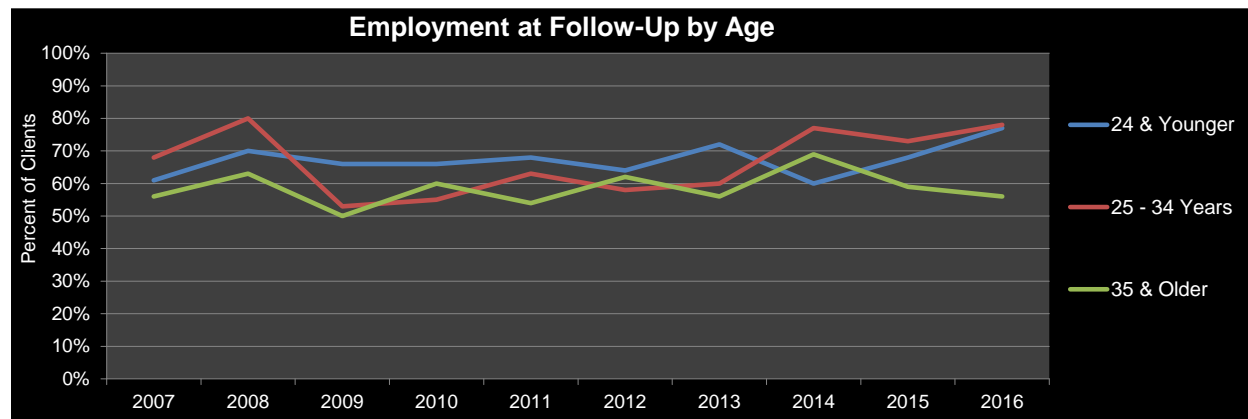


Figure 29 shows the percentage of individuals in the three age groups reporting full or part-time employment at follow-up. There was an increasing trend in employment from 2007 to 2016 for individuals 25 to 34 years of age (Wald Chi Square Test, $p < 0.01$). In 2009, just over half of clients (53%) age 25 to 34 reported employment at follow-up; this increased to over three-quarters of individuals (78%) in this age range indicating employment recently in 2016. There was no evidence that employment at follow-up showed an increase or decrease over the ten-year period for clients 24 years and younger (Wald Chi Square Test, $p = 0.06$) and for clients 35 and older (Wald Chi Square Test, $p = 0.79$). There were no statistically significant differences between the three age groups and employment at follow-up (Wald Chi Square Test, $p = 0.04$).

Figure 29. Employment at Follow-Up by Age



Analyses conducted on three additional outcomes reported at follow-up showed there was no evidence of statistically significant differences between the three age groups and arrests⁸, substance use related hospitalizations⁹, and attendance at voluntary recovery support meetings¹⁰.

DISCHARGE AND LENGTH OF STAY

Discharge Status

There are three discharge categories: successful completion; terminated (clients discharged from the program due to noncompliance, lack of treatment progress, or client leaving); and neutral (this category includes, but is not limited to, referral to another program, incarceration, or death). Over the ten-year period for all discharged clients in the OMS sample, an average of 52% of clients successfully completed treatment; an average of 39% were terminated from the treatment program; and an average of 9% were neutral discharges.

⁸ Wald Chi Square Test, $p = 0.11$.

⁹ Wald Chi Square Test, $p = 0.12$.

¹⁰ Wald Chi Square Test, $p = 0.71$.



Table 8 shows the discharge status for clients who completed the follow-up interview by year of treatment admission. Clients who were successfully discharged comprise the majority of the clients completing the follow-up interview, averaging 62% of interviewed clients over the ten years.

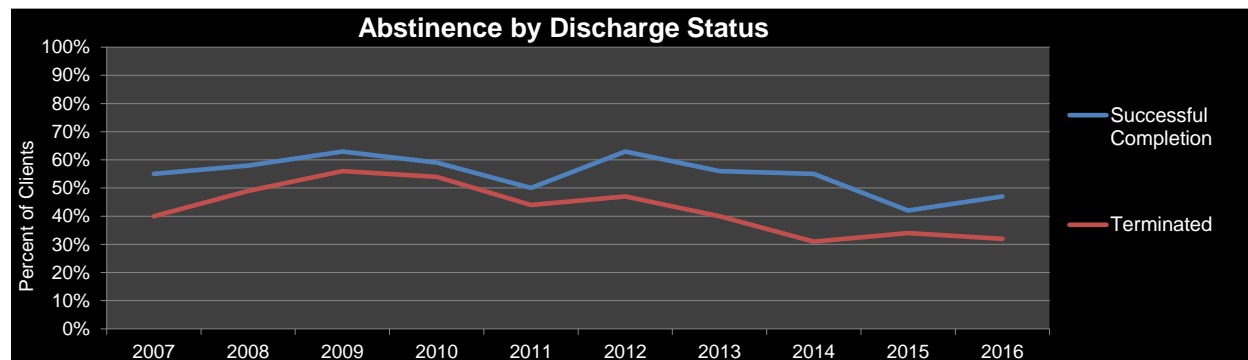
Table 8. Discharge Status for Clients Completing the Follow-Up Interview

Discharge Status: Clients with Completed Follow-Up Interviews										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Successful Completion	63%	63%	61%	66%	62%	63%	58%	61%	63%	56%
Terminated	32%	31%	33%	27%	36%	29%	33%	32%	30%	37%
Neutral Discharge	6%	6%	6%	6%	3%	8%	8%	8%	8%	7%

Figures 30 through 32 show three outcome variables for the follow-up interview (abstinence, no arrests, and employment) by treatment discharge status. Data for neutral discharges are not included in the figures due to the low number of clients with completed interviews (fewer than 9% of clients each year). It is important to note as shown in Table 8 above, clients who were successfully discharged comprise the majority of the clients interviewed in all ten years. Results for recent years, particularly 2016, may change as more follow-up interviews are completed with clients.

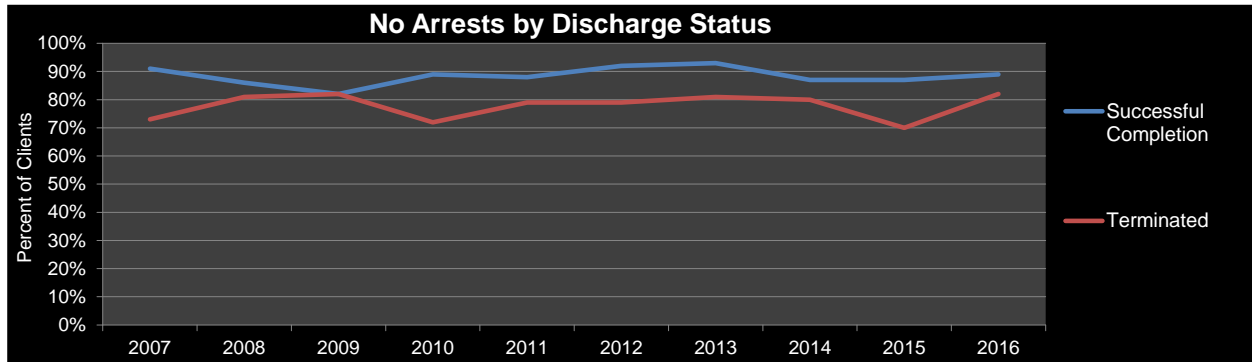
Figure 30 displays the percentage of clients reporting abstinence at follow-up by the two discharge categories each year. Over the ten-year period, clients who were successfully discharged were more likely to be abstinent at follow-up (Wald Chi Square Test, $p < 0.001$). Overall, abstinence has been declining for both successfully discharged clients and clients who were terminated (Wald Chi Square Test, $p < 0.001$).

Figure 30. Abstinence at Follow-Up by Discharge Status



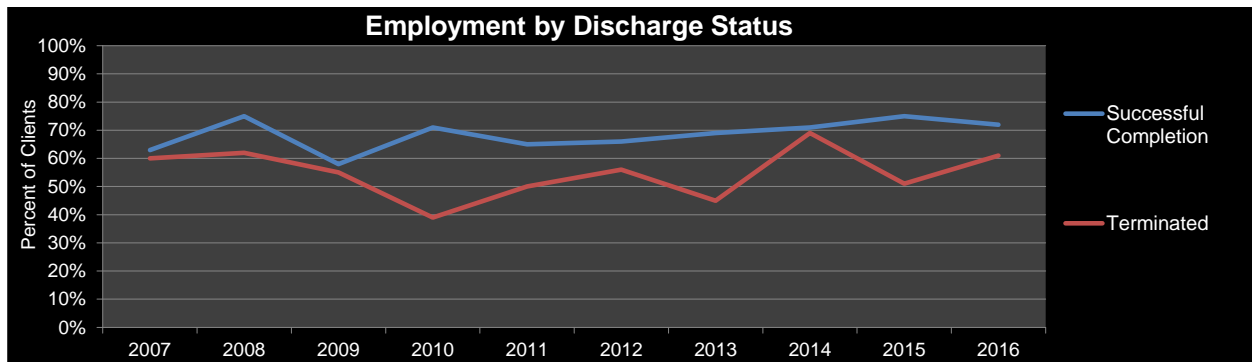
Clients who were successfully discharged were more likely to be arrest-free during the follow-up period (Wald Chi Square Test, $p < 0.01$). There was no evidence to suggest either an increasing or decreasing trend in arrests at follow-up for successfully discharged clients and clients who were terminated over the ten-year period (Wald Chi Square Tests, $p = 0.41$ and $p = 0.82$ respectively).

Figure 31. No Arrests at Follow-Up by Discharge Status



Clients who were successfully discharged were more likely to be employed at follow-up (Wald Chi Square Test, $p < 0.001$). Over the ten-year period, employment at follow-up has been increasing for successfully discharged clients (Wald Chi Square Test, $p < 0.01$); however there was no evidence to suggest either an increasing or decreasing trend in employment at follow-up for clients who were terminated (Wald Chi Square Test, $p = 0.95$).

Figure 32. Employment at Follow-Up by Discharge Status



Length of Stay

Length of stay is defined as the number of days from admission to treatment through discharge.

Data in Table 9 are drawn from all discharged clients in the OMS sample and presents the median length of stay (in days). Median length of stay for the three most often reported primary substances at admission by year are also shown. Results for recent years, particularly 2016, may change as more clients are discharged from treatment. The average median length of stay in treatment for all clients in the OMS sample over the ten-year period is 65 days and ranges from 53 days in 2008 to 77 days in 2012. Clients reporting alcohol as the primary substance at admission averaged 62 days in treatment from 2007 to 2016 (range 49 days in 2008 to 74 days in 2012). Over the ten-year period, clients reporting marijuana and methamphetamine averaged 71 days in treatment with ranges of 57 days to 86 days and 53 days to 85 days respectively.

Table 9. Primary Substance at Admission by Median Length of Stay

Median Length of Stay (Days)										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
All Clients in OMS Sample	57	53	63	65	69	77	69	65	69	64
Alcohol	54	49	51	62	63	74	71	64	67	64
Marijuana	57	58	76	70	65	86	69	70	73	79
Methamphetamine	76	53	77	75	85	77	70	64	70	56

Data in Table 10 presents the median length of stay in treatment (in days) by discharge status recorded by treatment agency staff for clients who completed the follow-up interview. Over the ten-year period, clients who were successfully discharged had an average median length of stay in treatment of 81 days; clients who were terminated and clients discharged for a neutral reason had median lengths of stays of 43 and 49 days respectively. Results for recent years, particularly 2016, may change (i.e., most likely, increase) as more clients are discharged from treatment.

Table 10. Discharge Status by Median Length of Stay

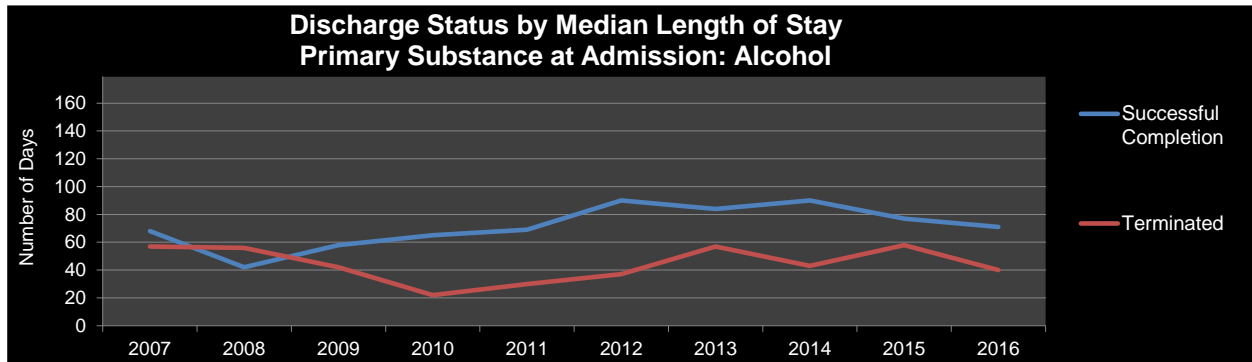
Median Length of Stay in Treatment (Days): Clients with Completed Follow-Up Interviews										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Successful Completion	79	62	69	83	81	96	92	95	85	71
Terminated	42	45	47	36	43	28	56	44	51	39
Neutral Discharge	54	34	56	42	52	46	58	54	46	50

Figures 33 through 35 on the following pages present the median length of stay in treatment (in days) by discharge status recorded by treatment agency staff for clients who completed the follow-up interview and reported the three most common primary substances at admission. Data for neutral discharges are not included in the figures due to the low number of clients completed interviews. It is important to note clients who were successfully discharged comprise the majority of the clients interviewed in all ten years. Results for recent years, particularly 2016, may change as more follow-up interviews are completed with clients.



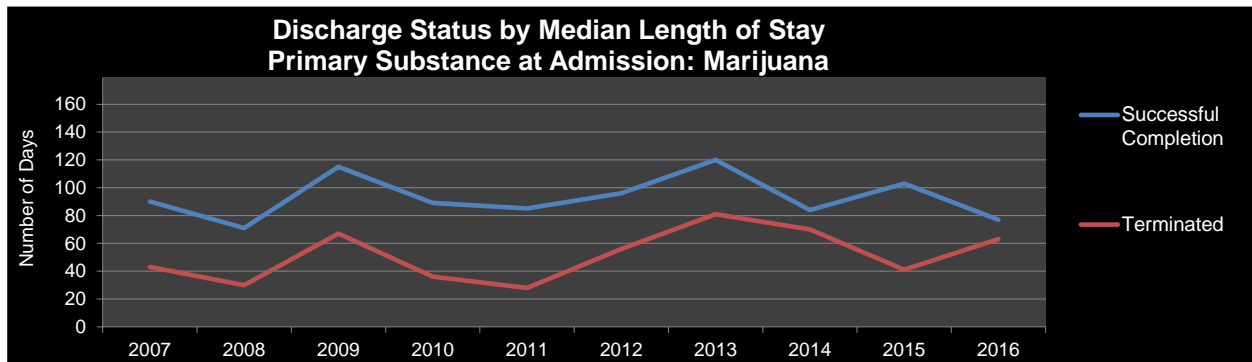
Over the ten-year period, clients who reported alcohol as the primary substance at admission and were successfully discharged had an average median length of stay in treatment of 71 days and clients who were terminated had a median length of stay of 44 days. In all years, except 2010, clients who reported alcohol as the primary substance at admission had longer median lengths of stay in treatment than those who were terminated.

Figure 33. Discharge Status by Median Length of Stay: Alcohol Primary Substance at Admission



From 2007 to 2016, clients who reported marijuana as the primary substance at admission and were successfully discharged had an average median length of stay in treatment of 93 days and clients who were terminated had a median length of stay of 52 days. In all years, clients who reported marijuana as the primary substance at admission had higher median lengths of stay in treatment than those who were terminated.

Figure 34. Discharge Status by Median Length of Stay: Marijuana Primary Substance at Admission



Over the ten-year period, clients who reported methamphetamine as the primary substance at admission and were successfully discharged had an average median length of stay in treatment of 106 days and clients who were terminated had a median length of stay of 41 days. In all years, except 2009, clients who reported methamphetamine as the primary substance at admission had higher median lengths of stay in treatment than those who were terminated.

Figure 35. Discharge Status by Median Length of Stay: Methamphetamine Primary Substance at Admission

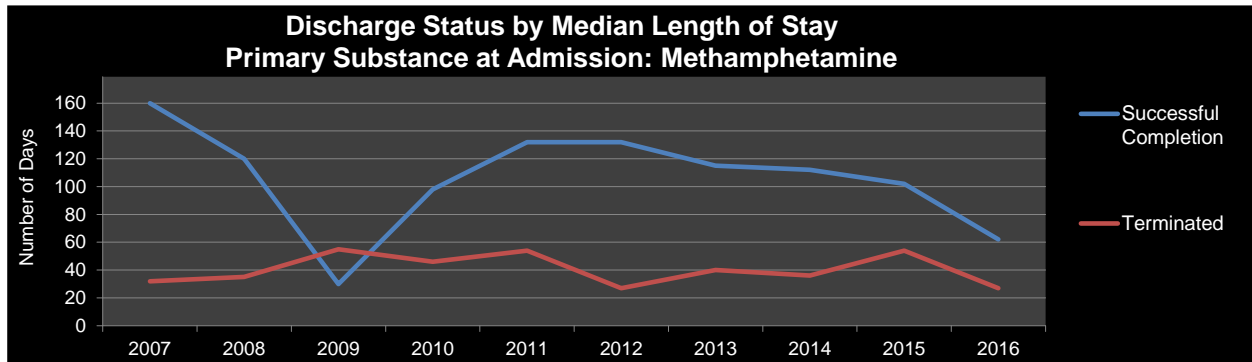
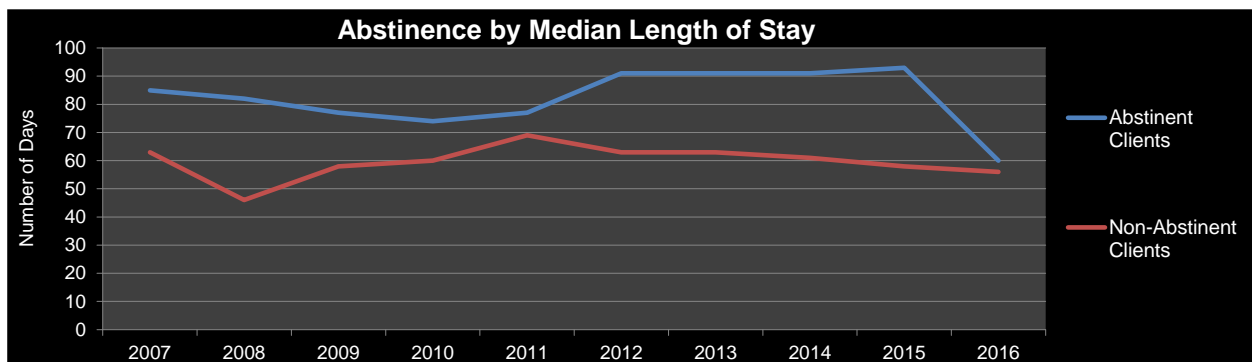


Figure 36 examines length of stay related to abstinence at follow-up. In six of the ten years there were statistically significant differences between length of stay and abstinence at follow-up: 2008, 2009, 2012, 2013, 2014, and 2015 (Jonckheere-Terpstra Tests, $p < 0.01$).

Figure 36. Abstinence at Follow-Up by Median Length of Stay



OMS PROJECT KEY CONCLUSIONS: 2007 — 2016

- ❖ The likelihood of methamphetamine and opioids as the primary substances of use at admission significantly increased, while the likelihood of alcohol and cocaine as the primary substances at admission significantly decreased.
- ❖ For clients age 24 and younger, there was an increasing trend for marijuana as the primary substance of use at admission.
- ❖ Abstinence at follow-up significantly decreased and the likelihood of marijuana and methamphetamine as the primary substances of use at follow-up significantly increased.
- ❖ Clients reporting abstinence at follow-up were less likely to be arrested and more likely to have attended voluntary recovery support meetings during the follow-up period compared to non-abstinent clients.
- ❖ Clients who successfully completed treatment were more likely to be abstinent at follow-up, more likely to be arrest-free during the follow-up period, and more likely to be employed full or part-time at follow-up.
- ❖ Males report full or part-time employment at follow-up more often than females.
- ❖ Although there was a significant decrease in the percentage of clients reporting days missed of work or school due to a substance use related problem at admission, there was a statistically significant increase in days missed of work or school at follow-up due to substance use related problems.

