
Turning HOPE into Opportunity

*An Analysis of Employment Barriers, Outcomes, and
Outcome Predictors for Clients Enrolled in
The HOPE Program between 2002-2005*

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A Way to Work. A Way to Grow.

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Executive Summary

Hard-working individuals hoping to build better lives for themselves and their families have long found opportunities in New York City. While possessing that same desire, New Yorkers living in poverty too often find the road to opportunity blocked by seemingly insurmountable obstacles. As a result, these individuals fall deeper into poverty, thereby depriving the larger community of valuable talents and contributions.

Since 1984, low-income New Yorkers determined to build better, more prosperous lives have turned to The HOPE Program for assistance. By blending vocational, educational and social services with a lifelong commitment to an individual's success, HOPE helps clients address the root causes of poverty and position themselves to find, keep and grow careers.

HOPE succeeds with individuals frequently deemed "hopeless" by other agencies, employers and society at large. In 2005, nearly 60% of the clients who enrolled in HOPE's job readiness program had a history of substance abuse, and over half lacked a high school diploma or GED. Almost half had a criminal record and some 40% had not worked for at least two years. Furthermore, a sizable majority of clients faced at least three serious employment barriers upon enrollment in HOPE's core job readiness program. Given the severity of those obstacles, HOPE clients – absent help – likely would fail to access opportunities.

When offered the right support, however, HOPE's clients thrive. Between 2002 and 2005, nearly 70% of those who completed HOPE's program found jobs – jobs that paid, on average, a starting wage of \$9.50 an hour. Moreover, HOPE graduates proved to be loyal, productive workers, as illustrated by the fact that nearly 85% of the individuals placed into jobs were still working six months later.

HOPE's success rates have held steady despite sustained enrollment growth and the increasing severity of clients' employment barriers. Between 2002 and 2005, the average number of employment barriers confronting HOPE clients rose from 2.1 to 3.5. Compared to the earlier period studied (1998-2001), male students represented a greater percentage of the students who enrolled in HOPE, thereby leading to more students with criminal records, substance abuse histories and no home of their own. Meanwhile, more female clients were receiving public assistance or had pressing childcare needs relative to the earlier generation of clients.

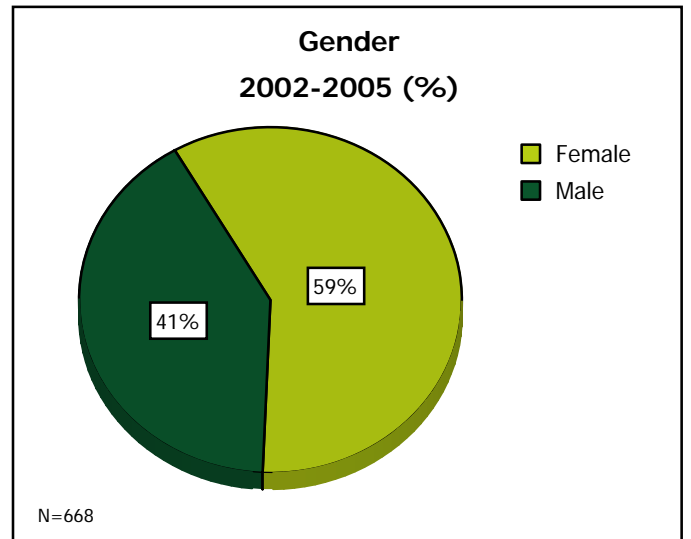
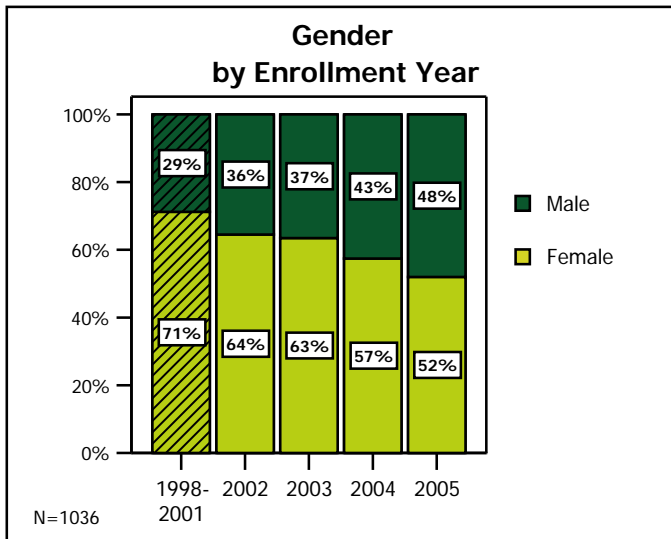
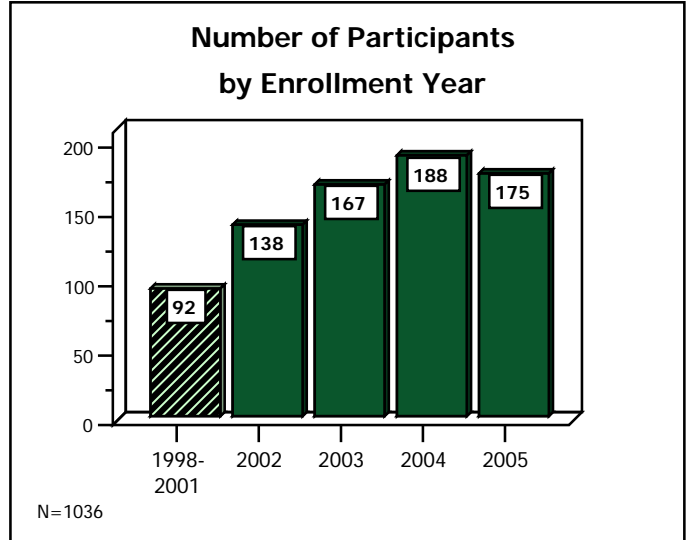
A variety of sometimes intertwined factors influenced a client's chances of completing HOPE's job readiness program and succeeding in the labor market. A rigorous statistical analysis of client outcomes between 2002 and 2005 found that clients who were younger than age 30, or who lacked a high school diploma or who had no work history were much less likely than other clients to complete the program. Similarly, clients who missed more than ten days of class were less likely to find a job.

The research report *Turning HOPE into Opportunity* offers a three-part analysis of HOPE's clients. First, the report profiles the demographic characteristics, employment barriers and program outcomes of clients enrolled between 2002 and 2005. Second, the report compares the characteristics of those clients to the characteristics of those enrolled between 1998 and 2001. Finally, the report presents a sophisticated statistical analysis of the factors and client characteristics that were predictive of individual success. Taken together, these findings demonstrate that, with the right support, determined New Yorkers, no matter how poor, can build better lives for themselves and their families.

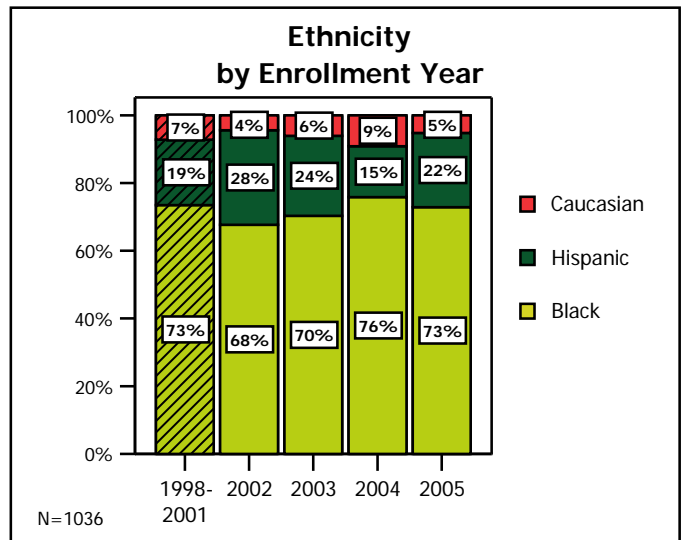
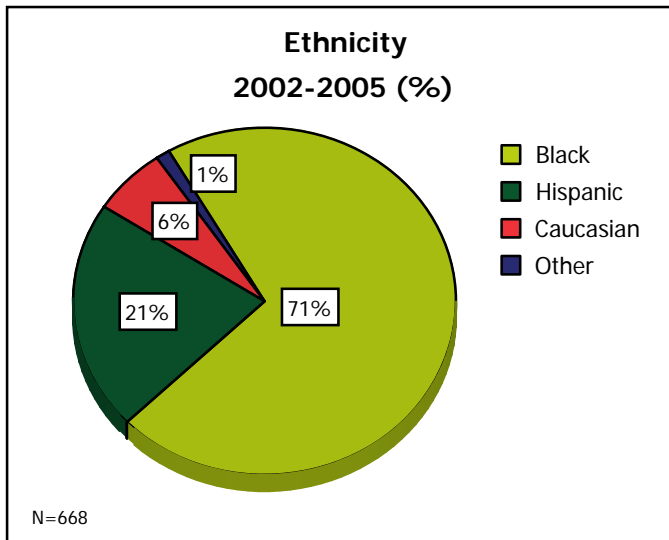
I. Client Profile

I.1 Demographics

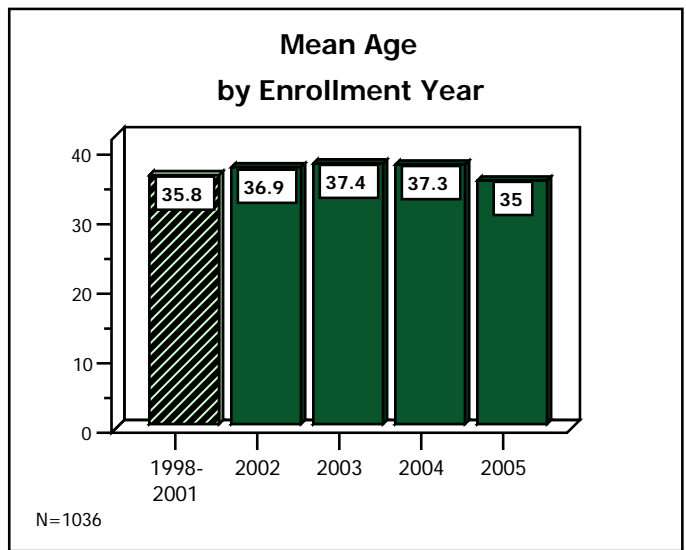
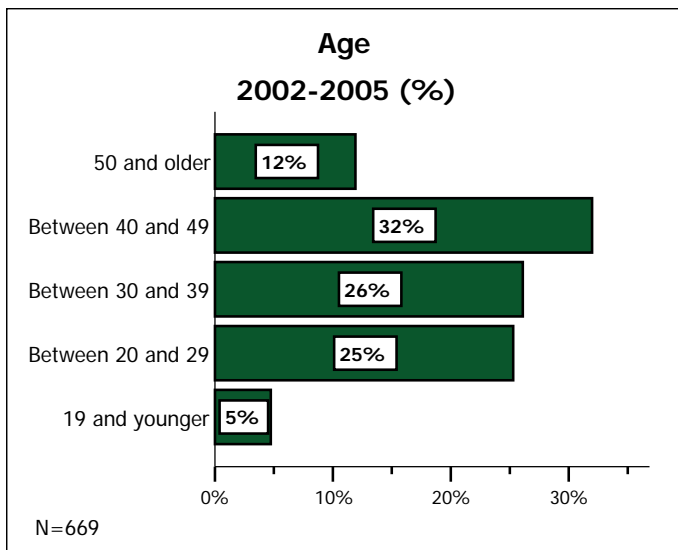
- During 2002-2005, the average annual number of students enrolled in The HOPE Program's job readiness program was 167. This represented an increase of more than 80% compared to the 1998-2001 average.
- In addition to the enrollment increase, there were changes in the clients' demographic characteristics. In 2005, the number of male clients almost equaled that of female clients, while female clients previously had made up the majority of enrollees.



- Black students constituted the largest ethnic group, followed by Hispanics. Clients' ethnic composition remained fairly stable during the period from 1998 to 2005.

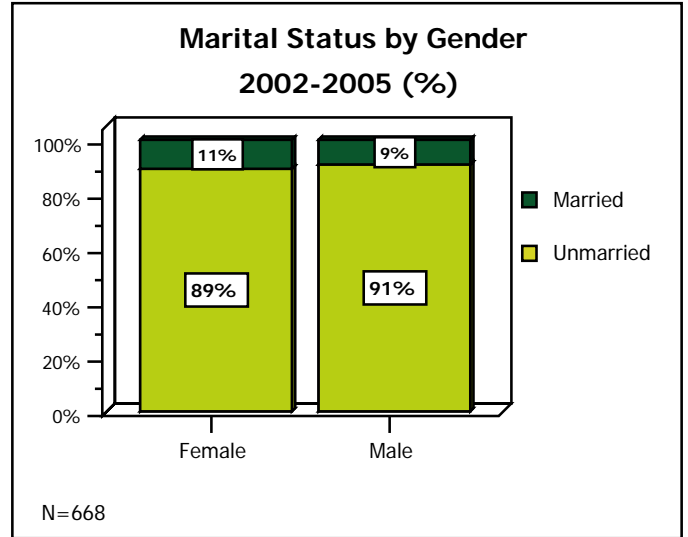
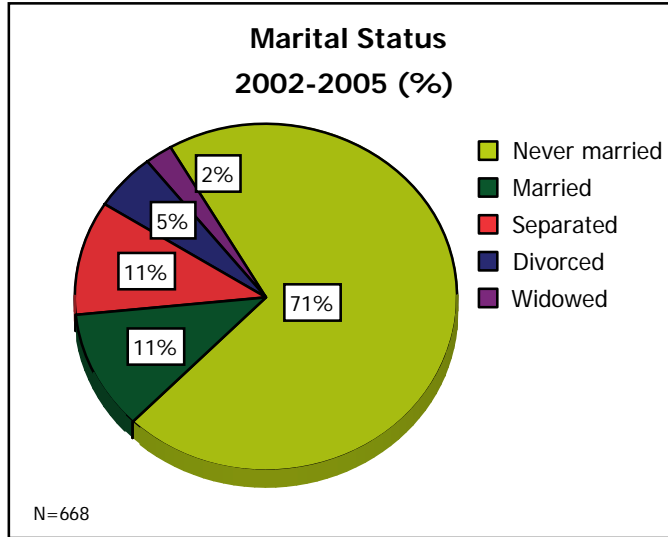


- Students' ages ranged from 17 to 66 with an average age of 36.6. In 2005 there was a slight drop in average age.



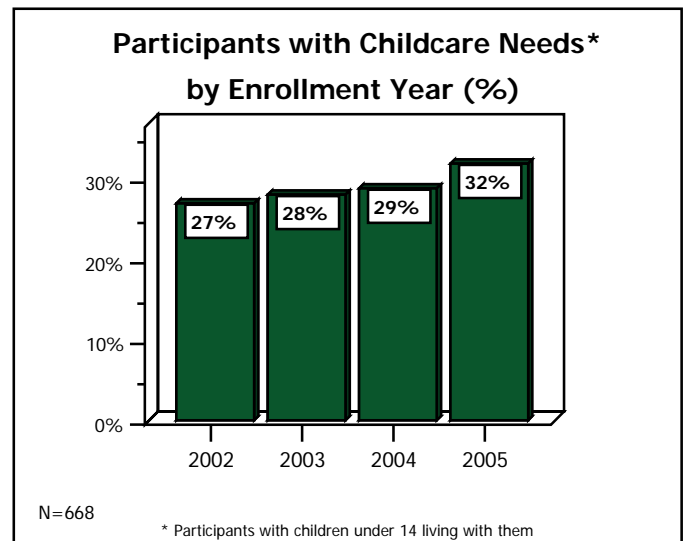
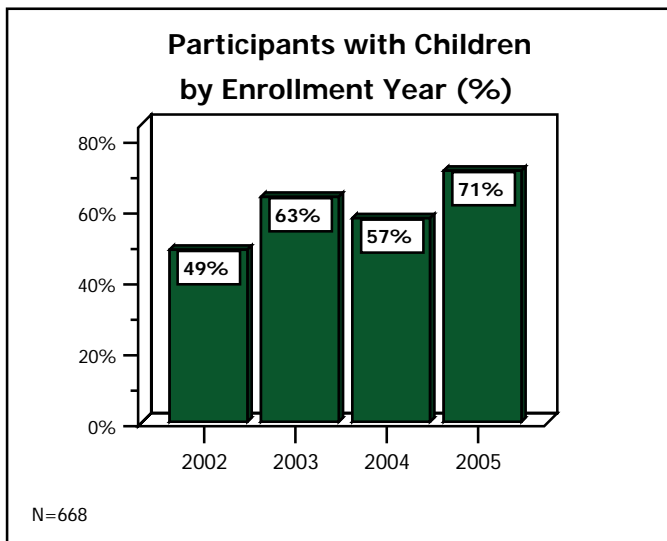
I.2 Family Characteristics

- More than 70% of HOPE clients had never been married. Men and women were equally likely to be unmarried.

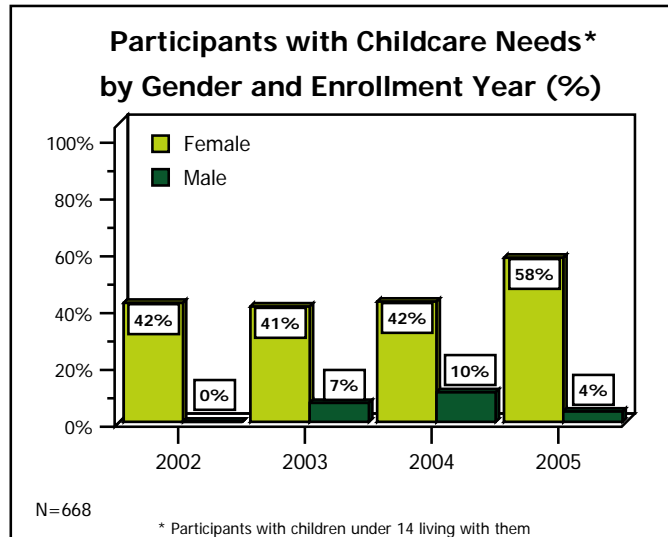


I.2.1 Participants with Childcare Needs

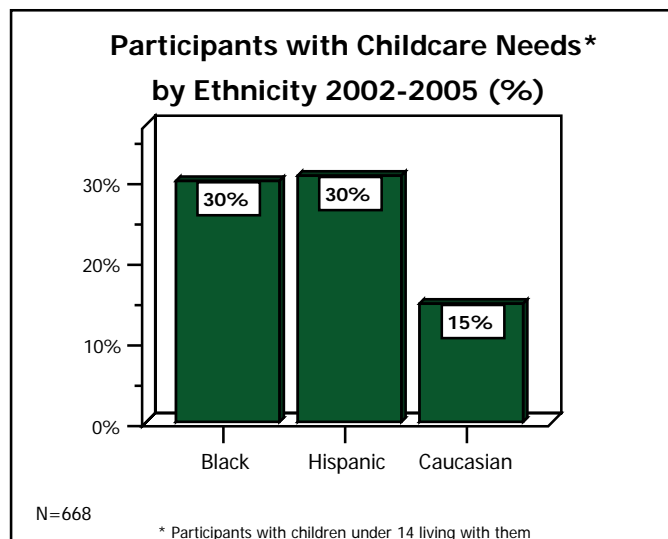
- There was an uneven increase in the percentage of clients with children and a slight increase in the percentage of clients with childcare needs, defined as clients having children under 14 living with them.



- The increase in clients with childcare needs was more marked for female clients. In fact, 58% of female clients who enrolled in 2005 had childcare needs compared to 42% in 2002.

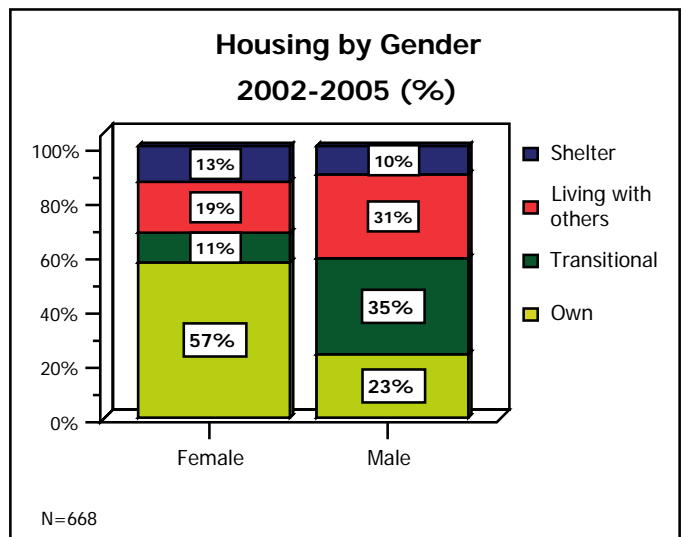
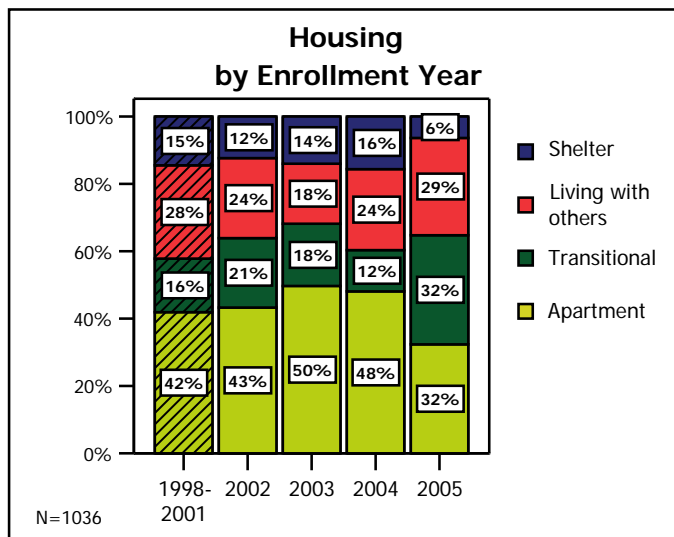
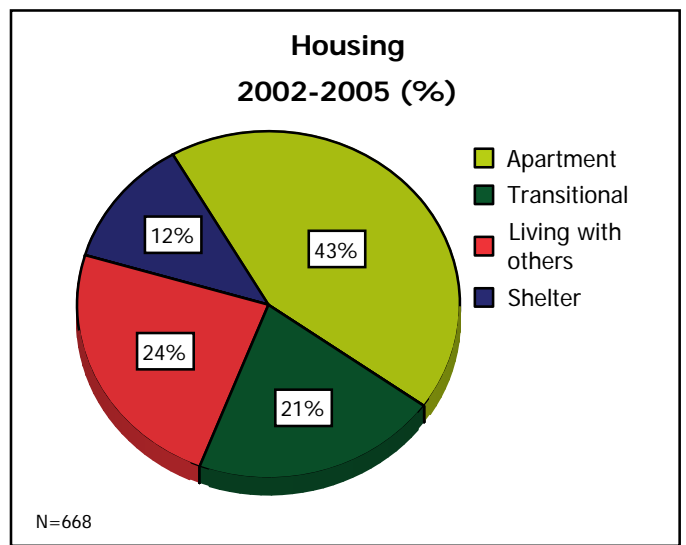
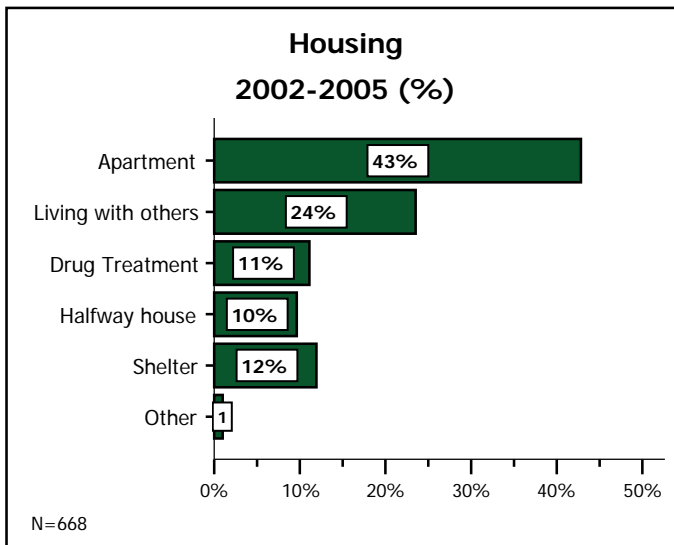


- The percentage of clients with childcare needs was greater for Hispanic and black students than for Caucasians.

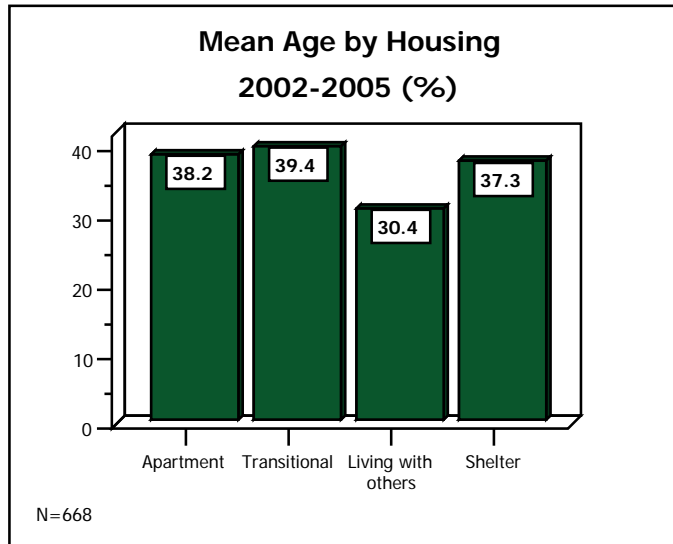


I.3 Housing Information

- The percentage of clients who lived in apartments at the time of enrollment declined in 2005 and the percentage who lived in transitional housing (meaning drug treatment facilities or halfway houses) increased.
- Clients who lived in transitional housing tended to be male. This was consistent with the higher incidence of substance abuse histories and past convictions among male students.

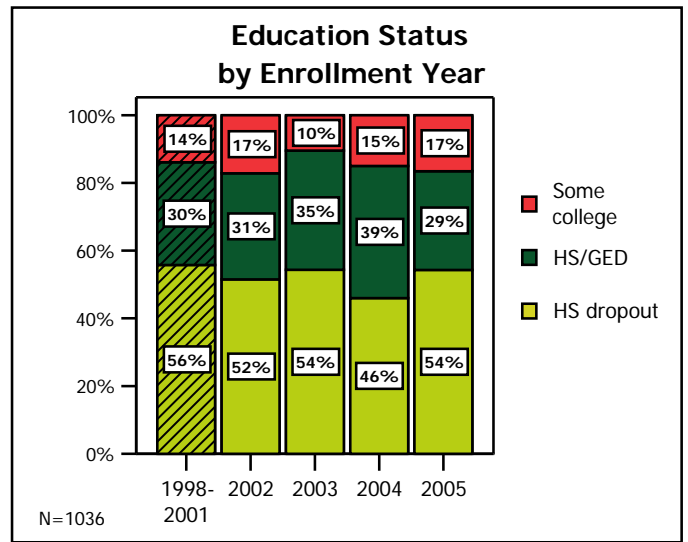
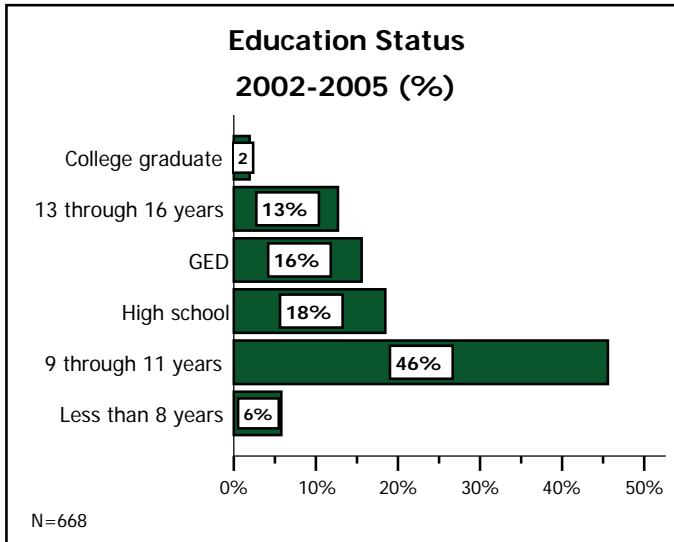


- On average, clients who were living with others at the time of enrollment tended to be younger than those with other housing arrangements.

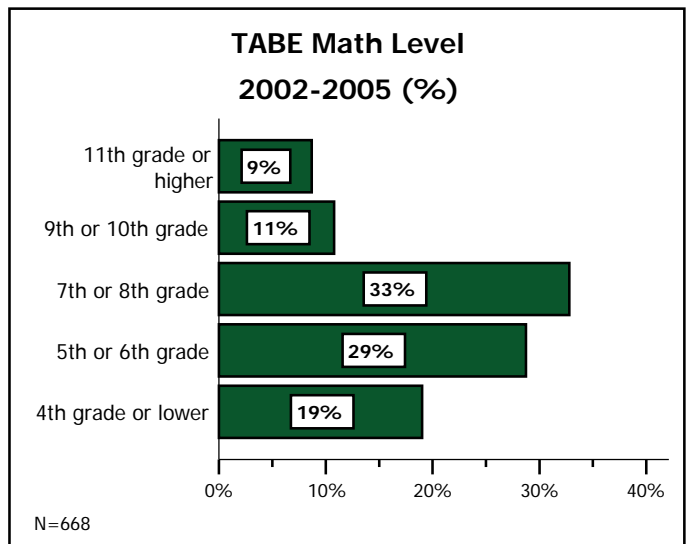
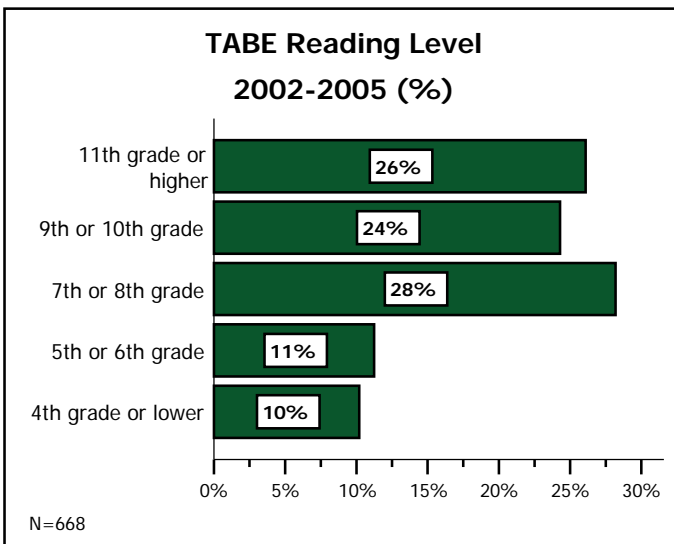


I.4 Educational Information

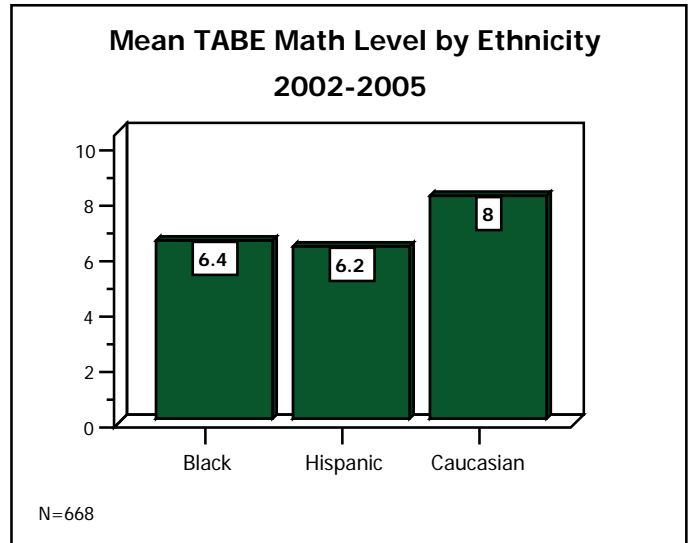
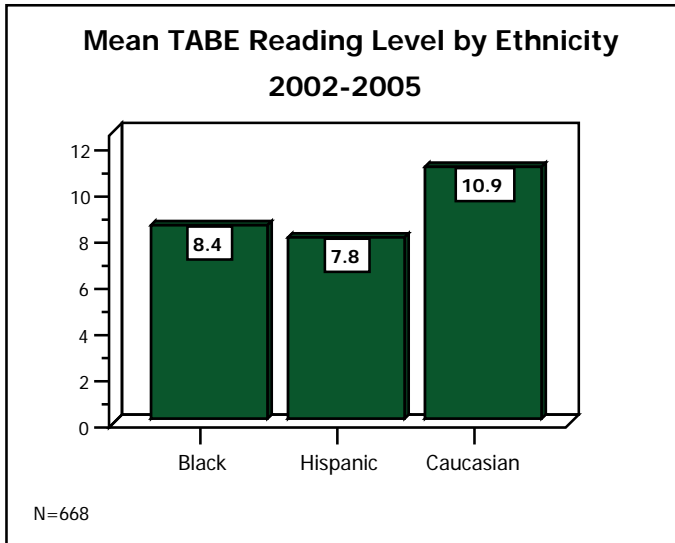
- More than half of HOPE's clients did not have a high school diploma or GED while approximately one-sixth had more than a high school education. These characteristics remained fairly constant over the past four years and were comparable to those found during the 1998-2001 period.



- The Test of Adult Basic Education (TABE) for reading and math is given to all enrollees upon entering HOPE. At intake, the average enrollee was reading at the 8th grade level with 21% reading at or below the 6th grade level. The average math score was at the 6th grade level with 19% of clients performing at or below the 4th grade level.

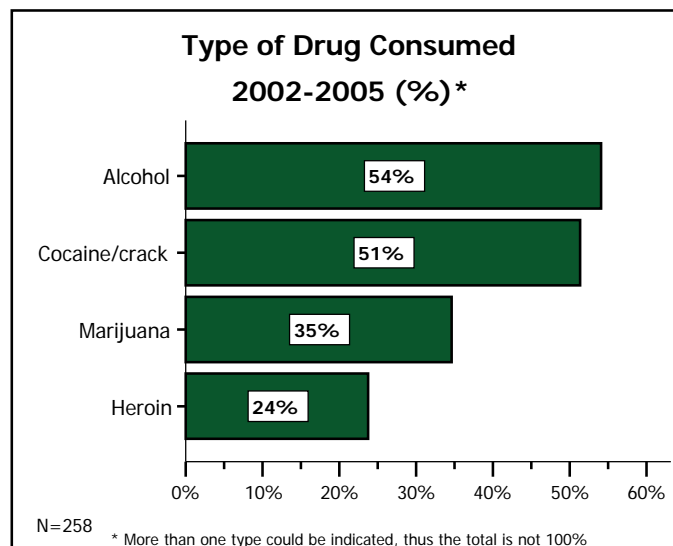
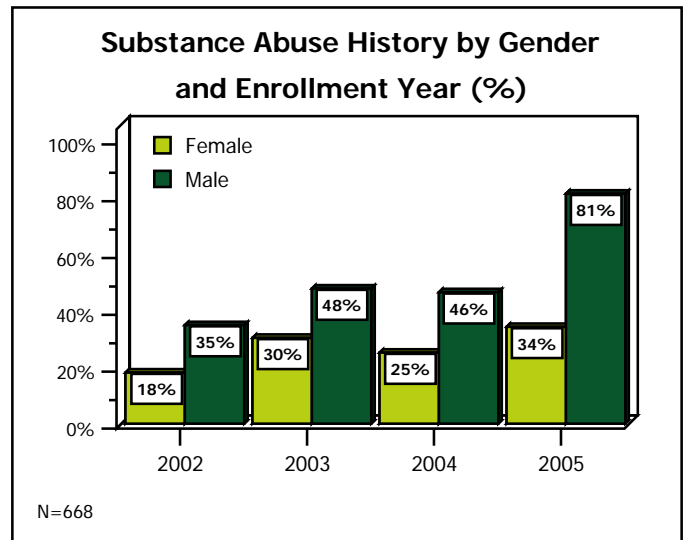
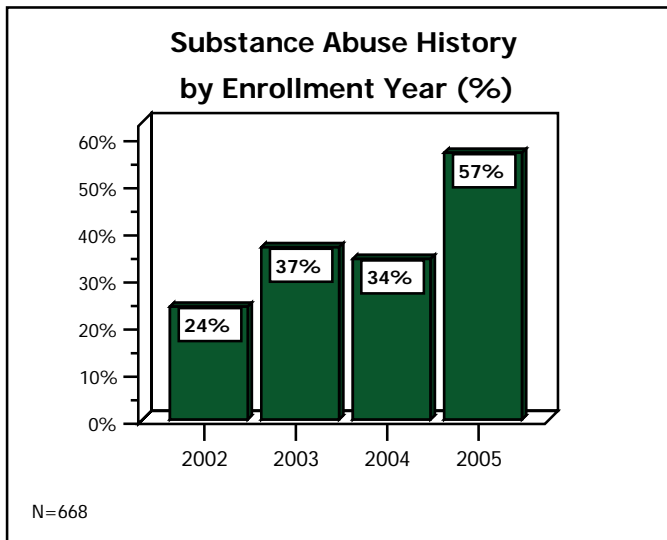


- On average, black students performed better on both tests than Hispanic students. Caucasians performed better on both tests than other ethnic groups.



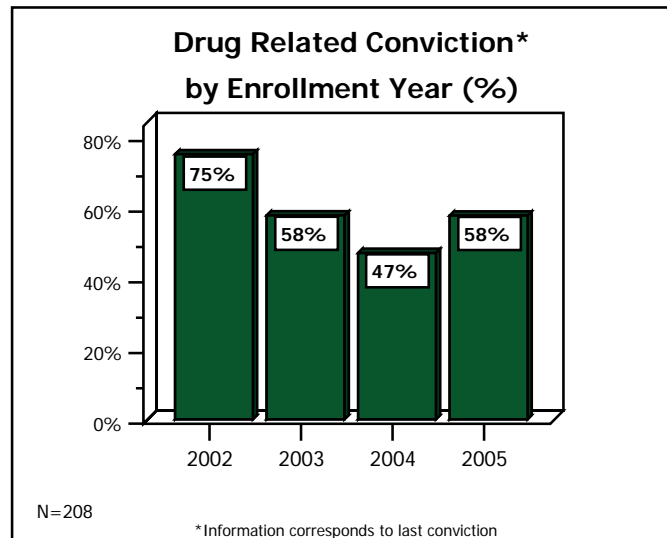
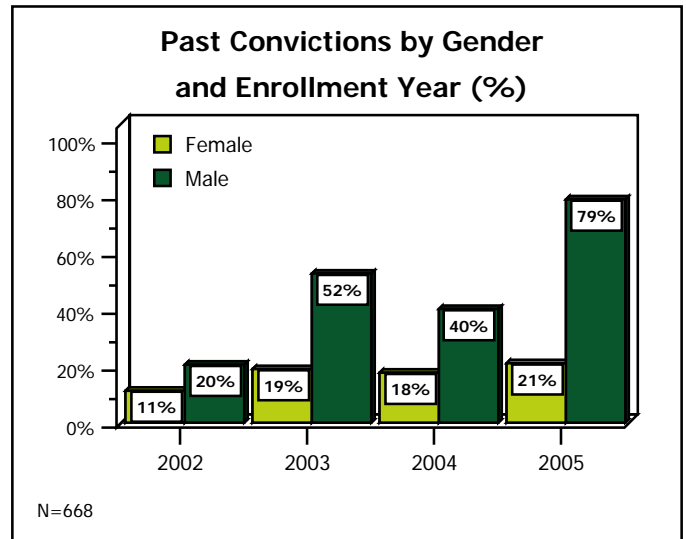
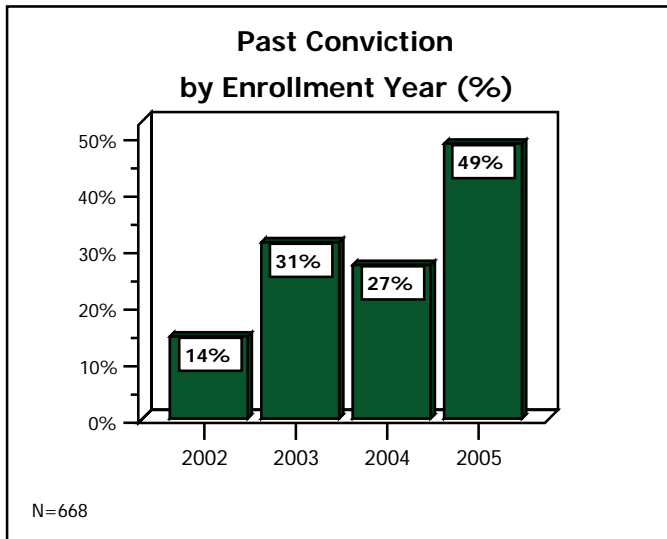
I.5 Substance Abuse History

- There was a marked increase in the percentage of clients with histories of substance abuse, rising from 24% in 2002 to 57% in 2005.
- The recent increase was seen primarily in male students. In fact, 81% of the male clients who enrolled in 2005 had histories of substance abuse.

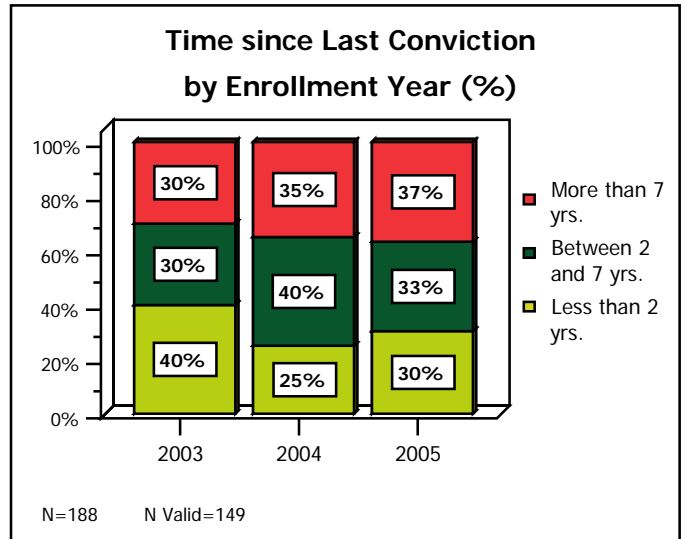
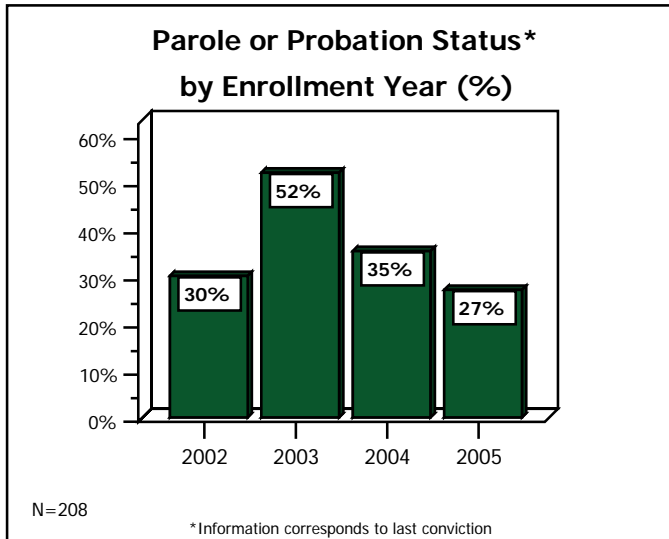


I.6 Past Convictions

- Since 2002, participants with past convictions grew from 14% to nearly half of total enrollees in 2005. This increase primarily affected male clients and paralleled the increase in the percentage of male clients with histories of substance abuse. For more than half of the students who enrolled in 2005 with past convictions, their most recent conviction was for a drug-related crime. (The interrelationship is highlighted by the fact that 84% of the students with past convictions who enrolled in 2005 also had substance abuse histories, while 72% of the students who enrolled with substance abuse histories also had past convictions.)

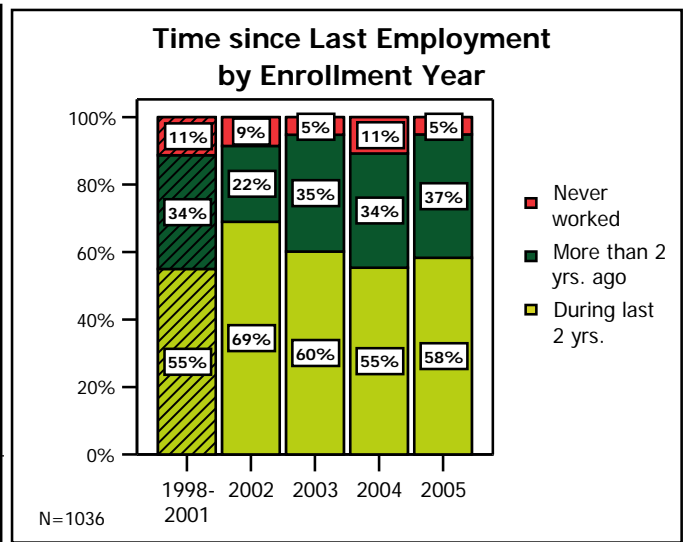
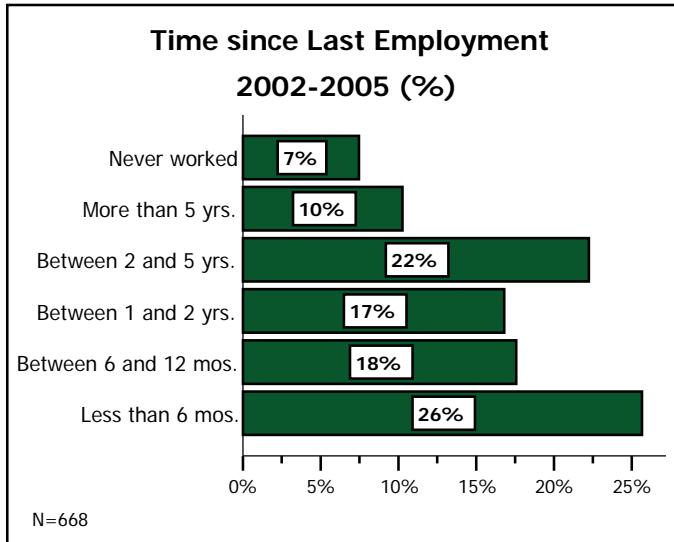


- In 2004 and 2005, nearly 30% of participants with past convictions were either on parole or probation when they enrolled in HOPE. This was down from approximately half in 2003.
- Compared to 2003, a higher percentage of students in 2004 and 2005 had more than seven years since their last conviction and a smaller percentage had less than two years since their last conviction.

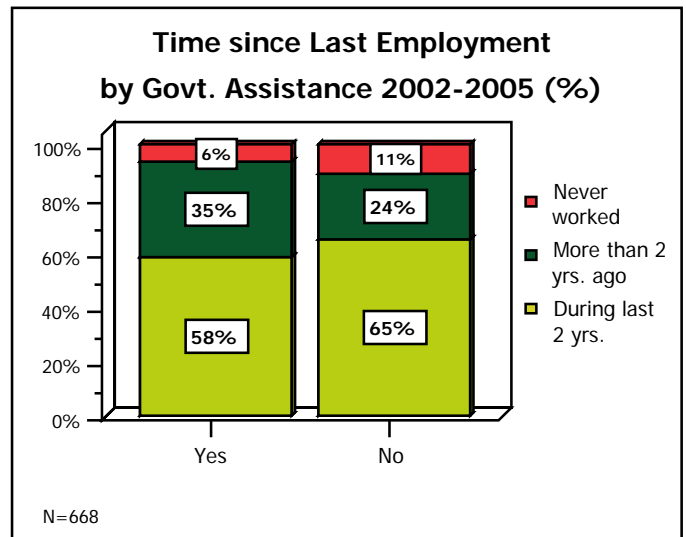
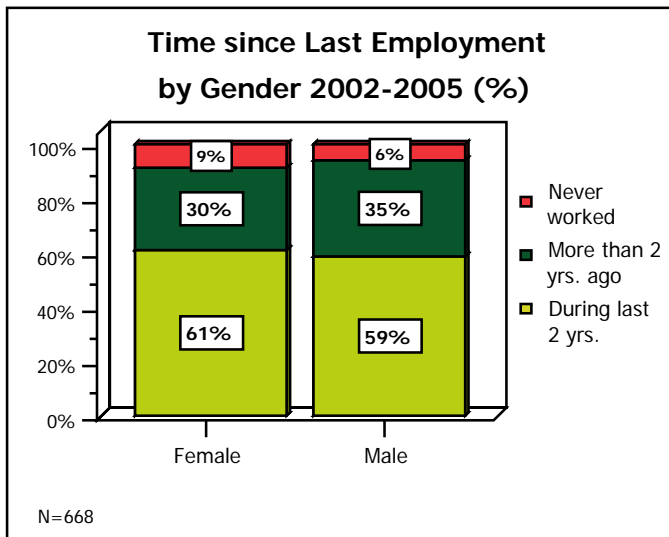


I.7 Employment History

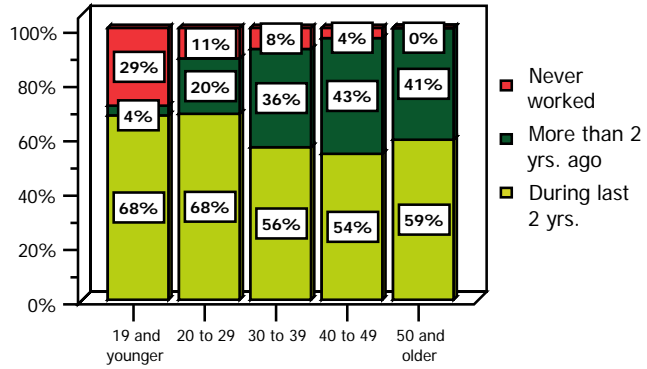
- The percentage of clients who had worked during the two years prior to enrollment fell from 69% in 2002 to 58% in 2005. The rest of the clients either had not worked within the last two years or had no work experience at all. Overall, this distribution is comparable to what was found among students who enrolled in the 1998 – 2001 period.



- There were almost no differences in employment history by gender. The lack of recent work experience was more common among clients who did not rely on any form of government assistance, clients over 30 years of age, and clients with a history of convictions.

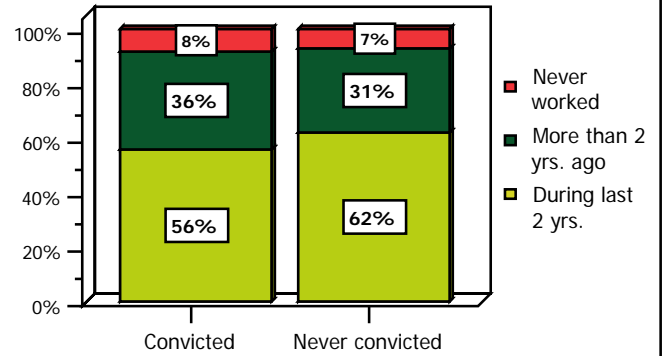


**Time since Last Employment
by Age Group 2002-2005 (%)**



N=668

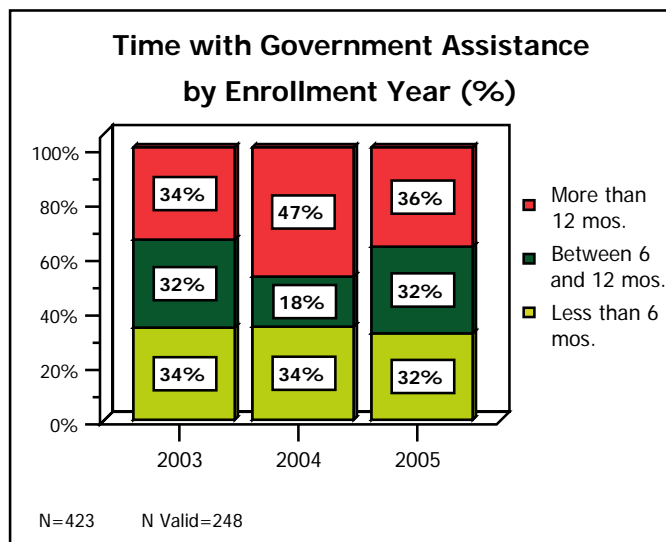
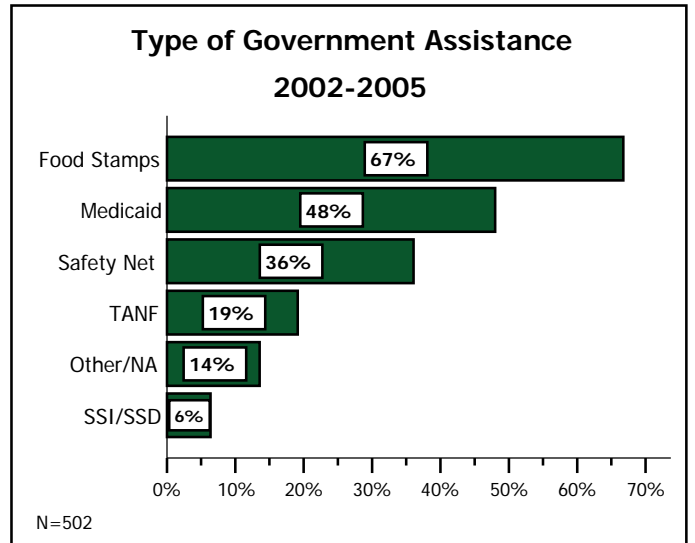
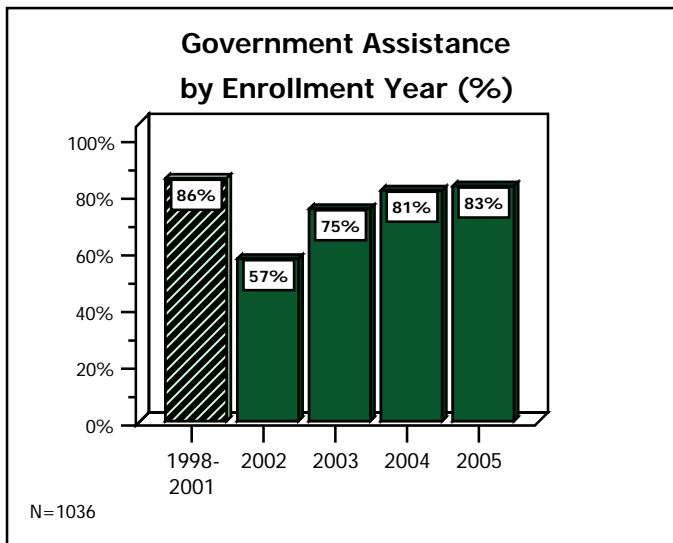
**Time since Last Employment
by Past Conviction 2002-2005 (%)**



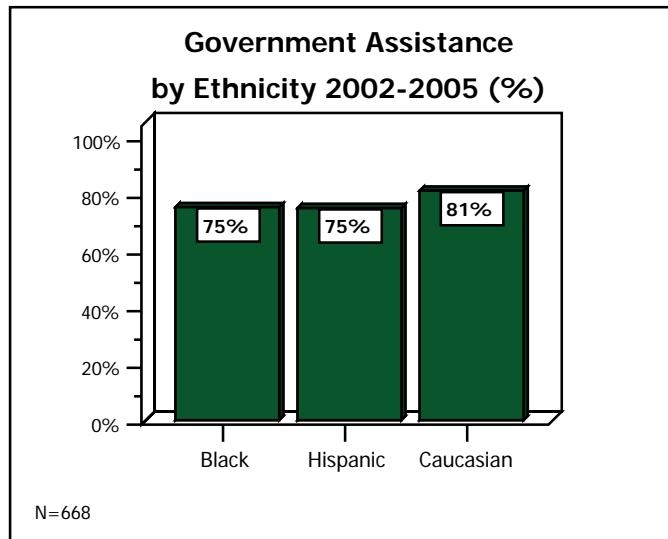
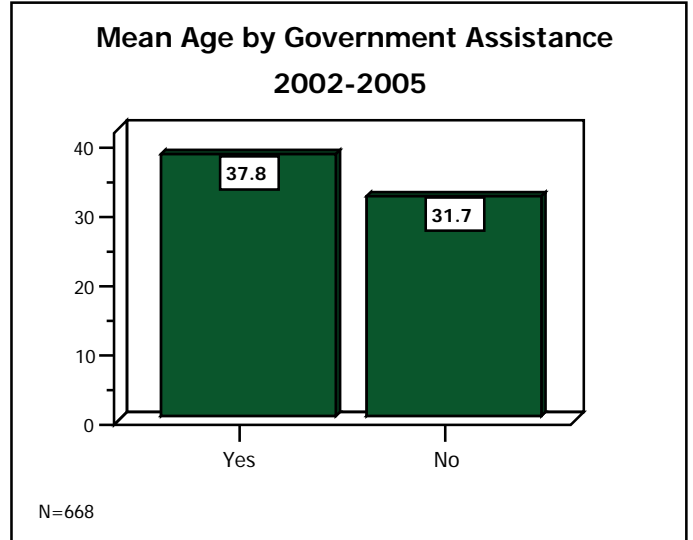
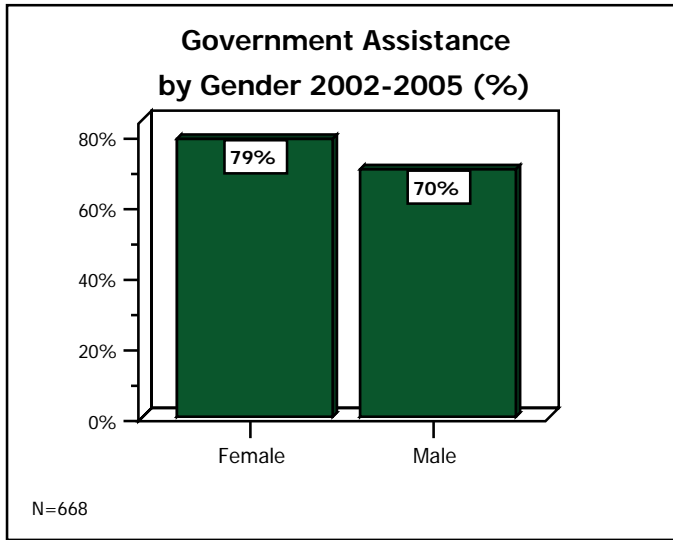
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I.8 Government Assistance

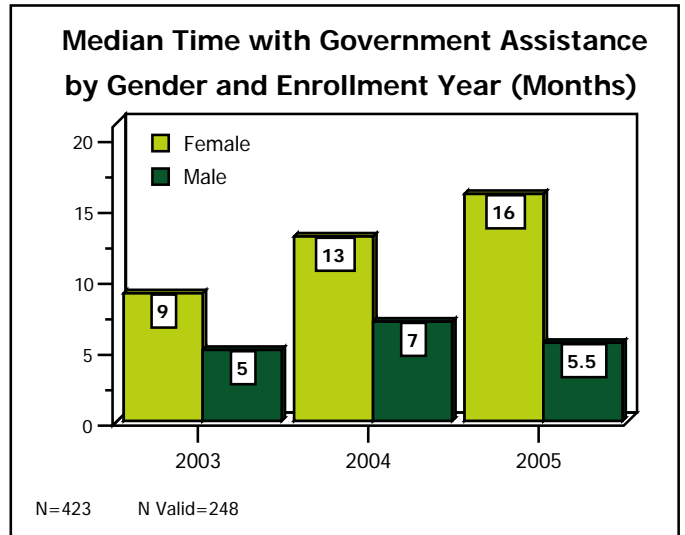
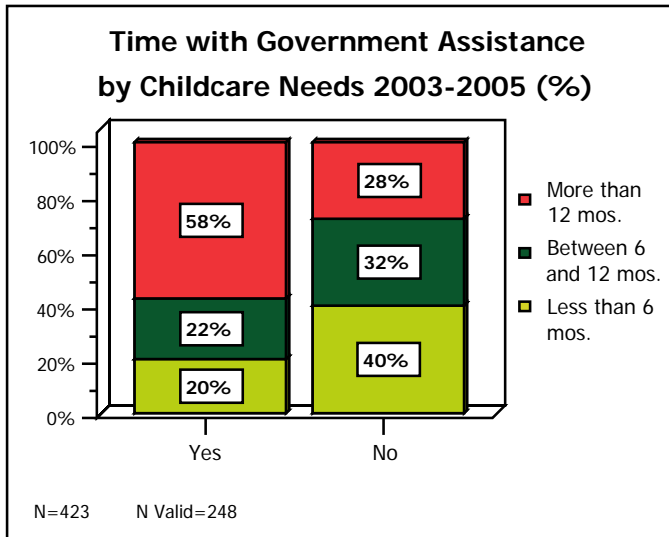
- The percentage of clients receiving some form of government assistance increased from 57% in 2002 to 83% in 2005. The percentage for the last two years, however, is in line with the findings in the 1998-2001 study. The most common forms of assistance were Food Stamps, Medicaid, and Safety Net Public Assistance grants.
- The time on some form of government assistance (information gathered since 2003) varied over the 2003-2005 period but did not show any consistent trend.



- Compared to male enrollees, a higher percentage of female clients received government assistance. On average, clients who received government assistance tended to be older. Ethnicity was not a factor in the receipt of government assistance.

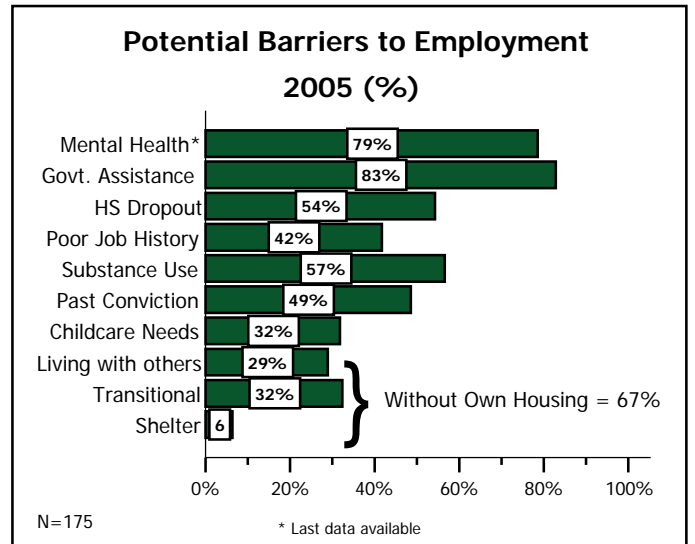
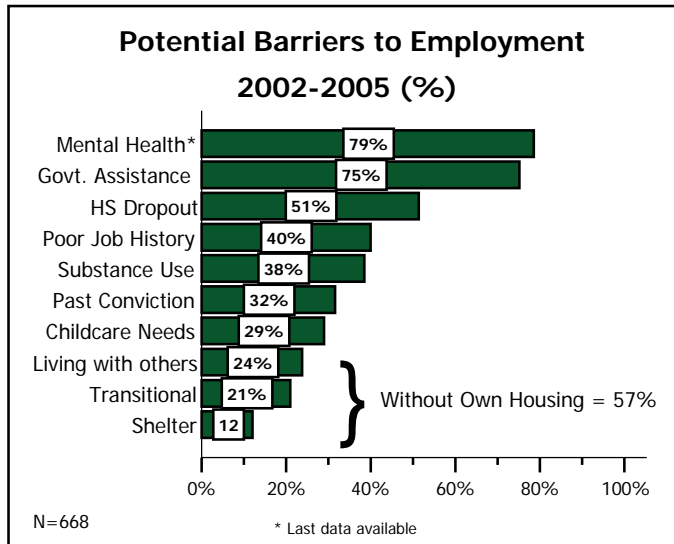
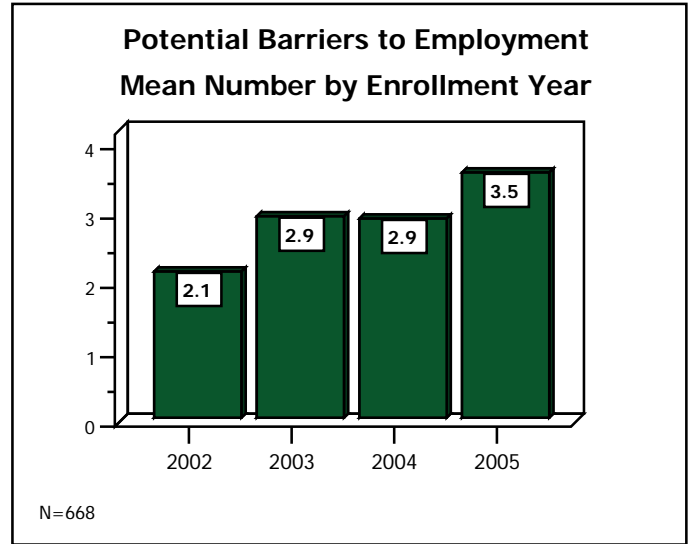


- Clients with childcare needs received government assistance for longer time periods. Female clients spent more time receiving government assistance, and female clients' time receiving government assistance tended to increase over the 2003-2005 period. (The median was used to prevent extreme cases from distorting the results.)

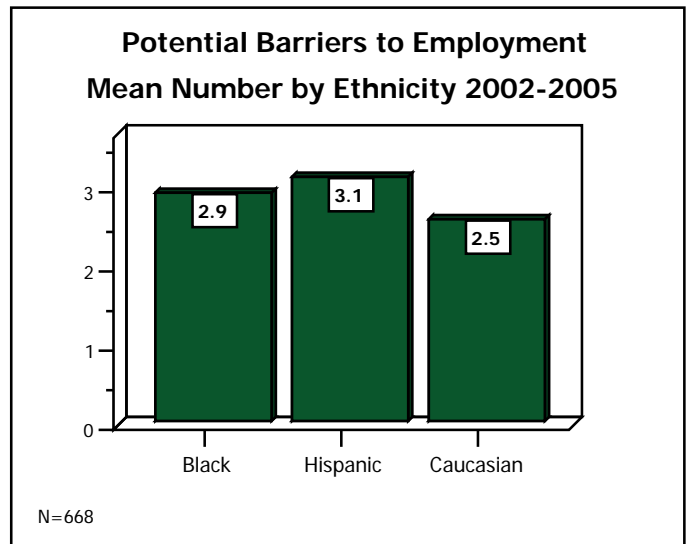
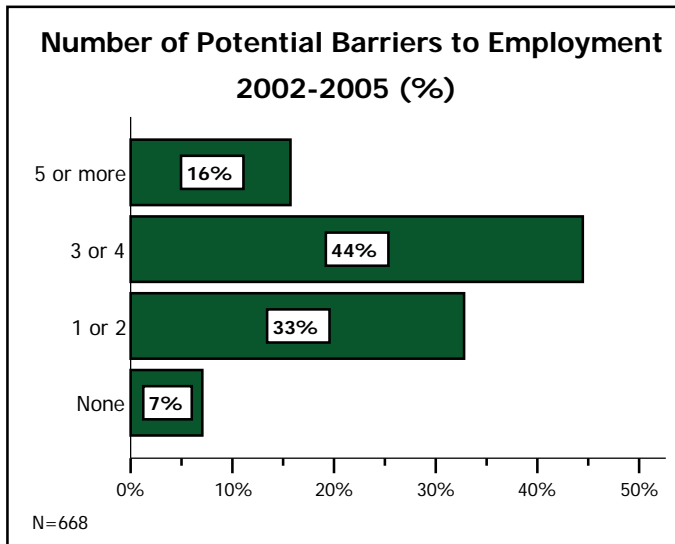


I.9 Potential Barriers to Employment

- Several of the previously described client characteristics may constitute barriers to employment.
- During the period studied, there was a 67% increase in an individual client's average number of potential barriers to employment, up from 2.1 in 2002 to 3.5 in 2005.
- The four potential barriers that increased the most were: substance abuse histories; past convictions; childcare needs; and receipt of government assistance.
- The mental health data were based on a special study and have not yet been analyzed to show annual changes.



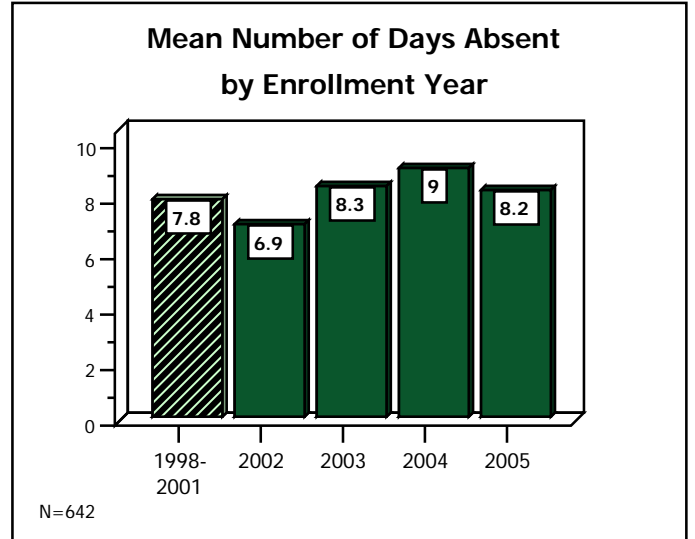
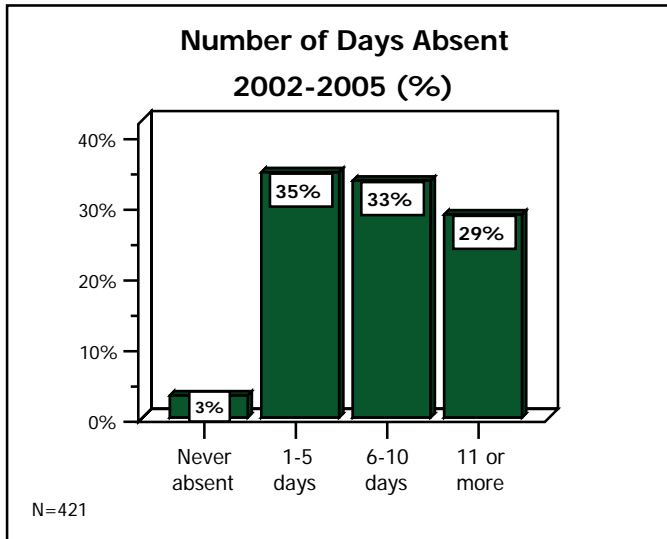
- During the period 2002-2005, 93% of the students had at least one potential barrier to employment, and 60% had three or more.



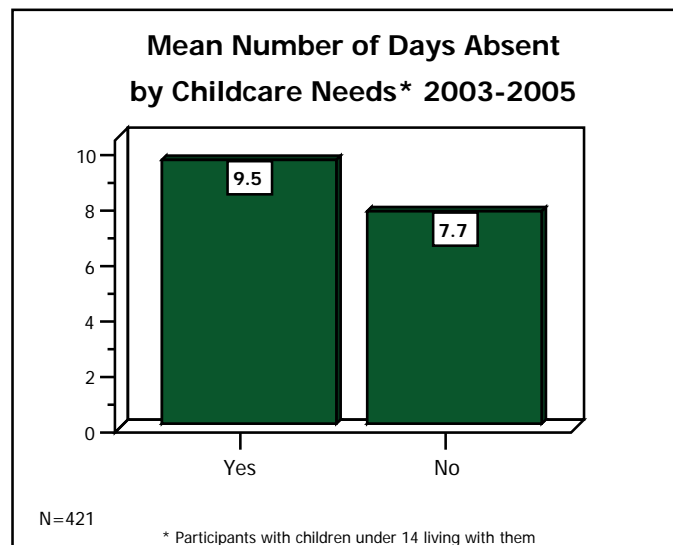
II. Program Services

II.1 Attendance

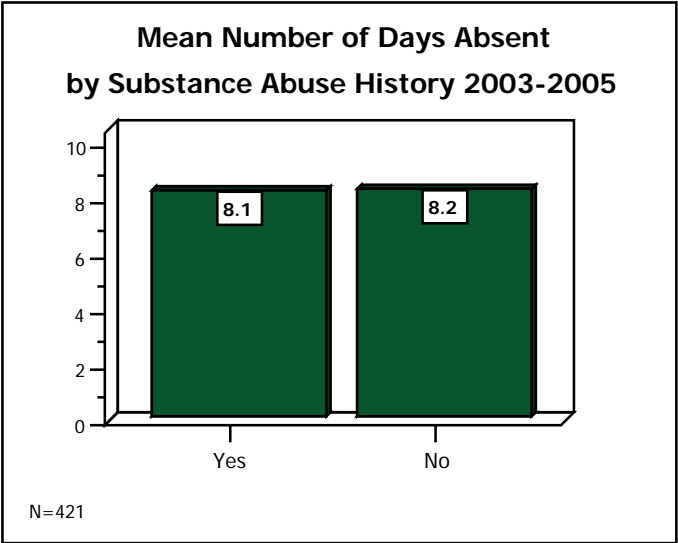
- Only students who completed the program were included in the analysis of attendance.
- More than 70% of the clients were absent 10 days or less. The mean number of absences for 2005 enrollees was 8.2 days.



- Students who needed childcare had more absences. As previously noted, more female clients had childcare needs than males.



- There was no difference in absenteeism by substance abuse history.

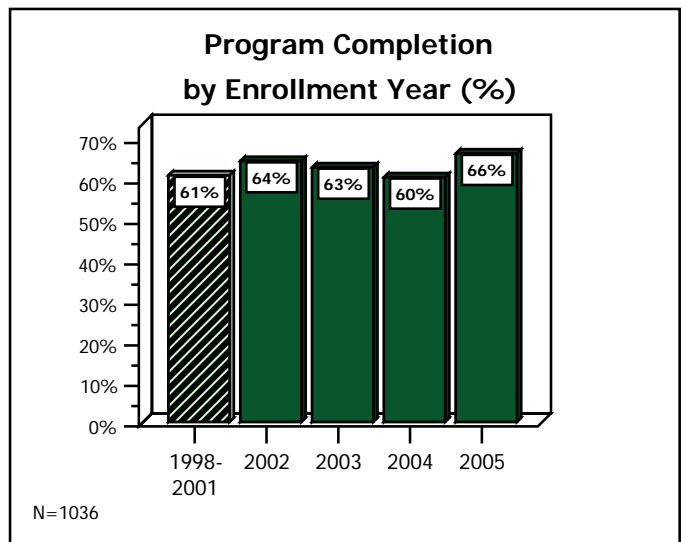
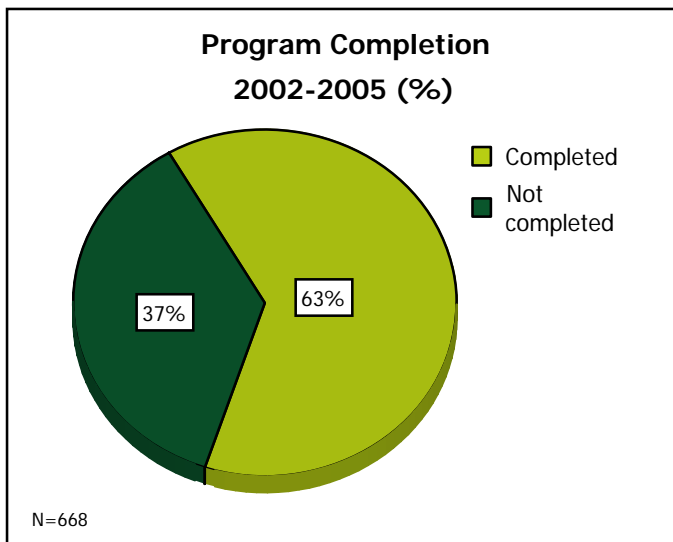


III. Outcomes

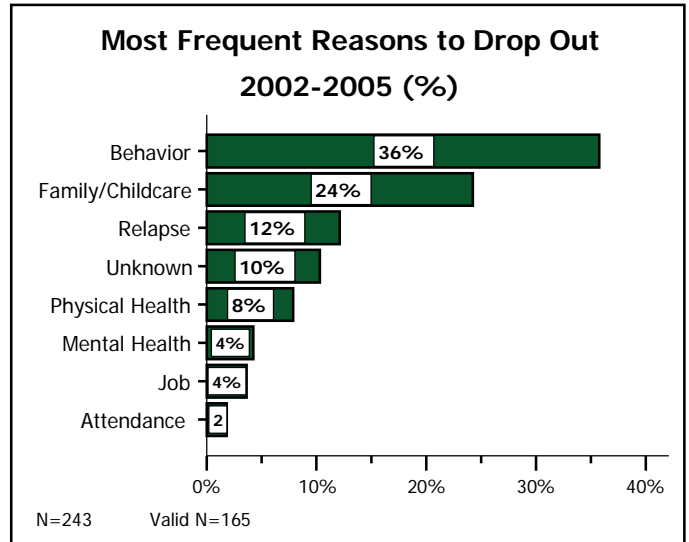
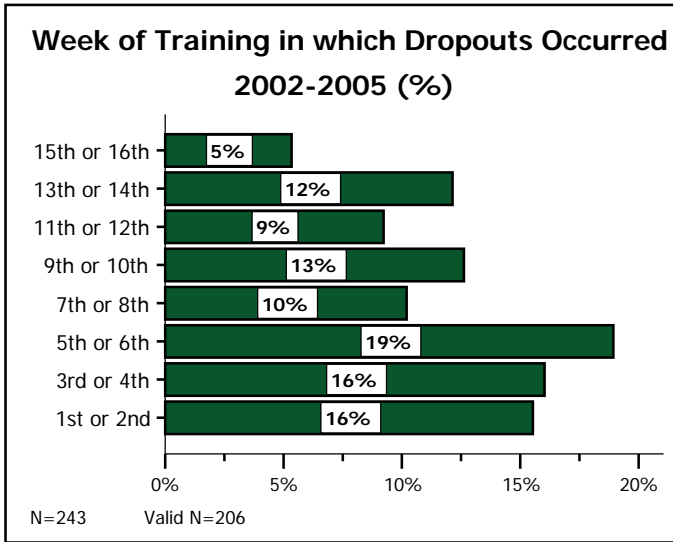
- This section describes client results with respect to three outcomes -- program completion, job placement, and job retention -- in the aggregate and for clients with specific potential barriers to employment. Given that the average HOPE client has 3.5 potential barriers to employment, individual clients would be included in the analyses of outcomes at various potential barriers without necessarily identifying those barriers that are predictive of performance. Section IV looks at the predictive value of various client characteristics.

III.1 Program Completion

- Program completion refers to the percentage of students who completed the classroom training portion of the program.
- Almost two-thirds of the clients who enrolled in the training completed the program. This percentage remained relatively stable during 2002-2005 and was slightly higher than that for the 1998-2001 period.

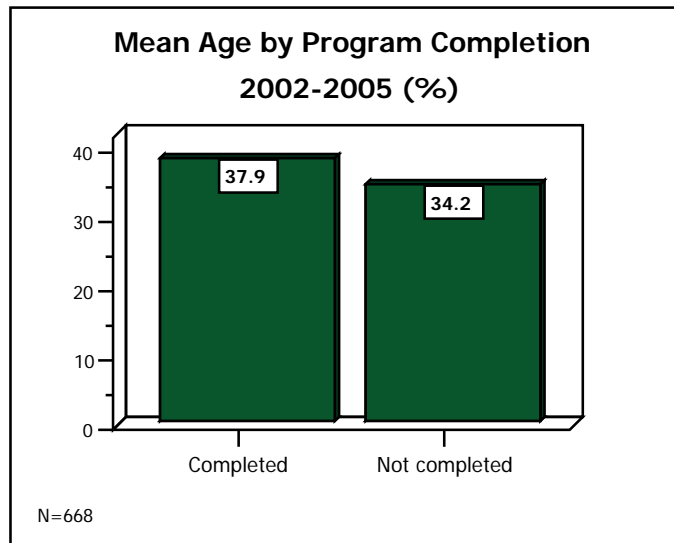
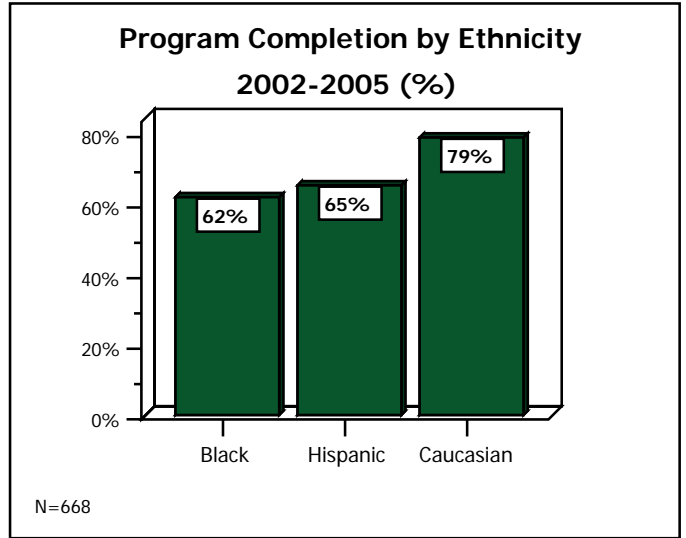
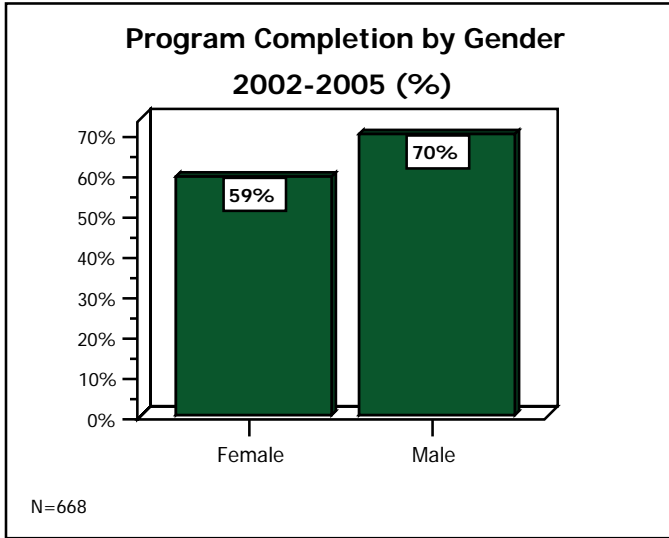


- Clients who dropped out of the program mostly did so between the 1st and 6th week of training.

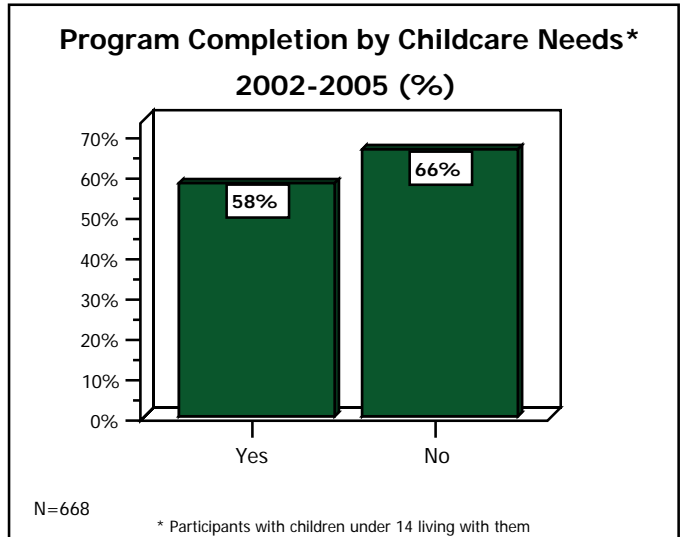
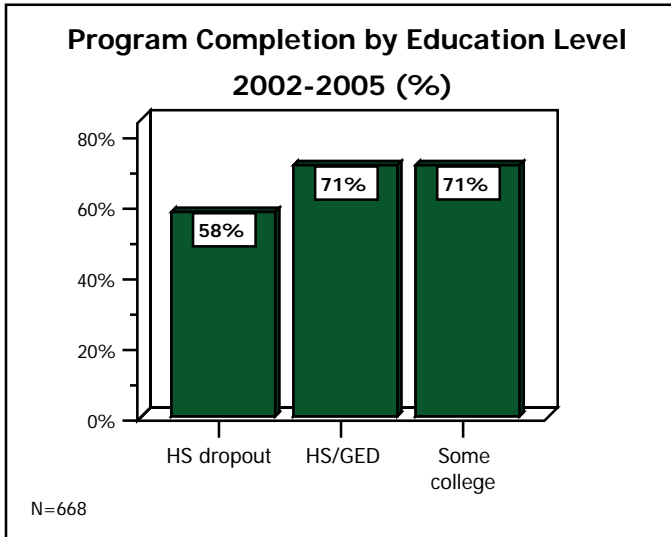
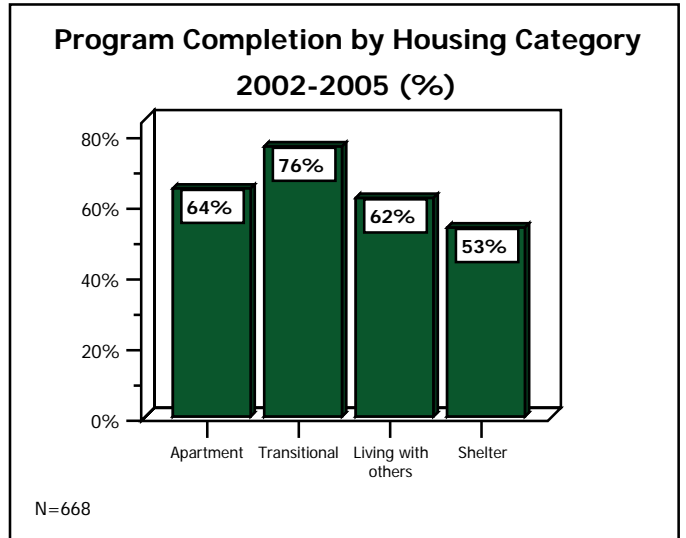
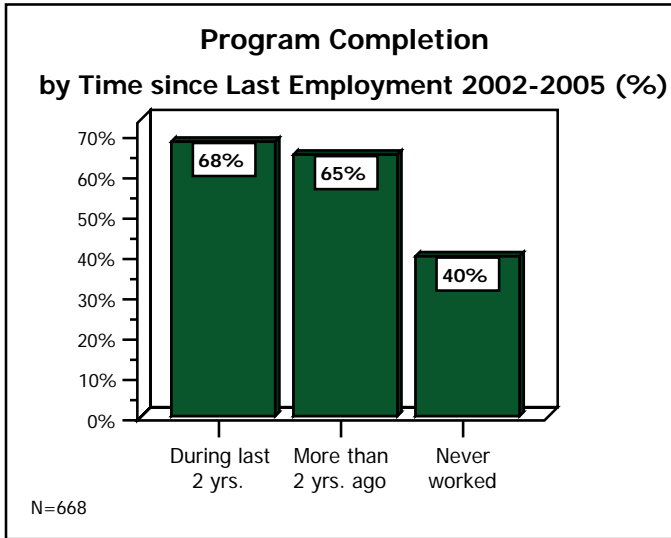


III.1.1 Program Completion and Client Characteristics

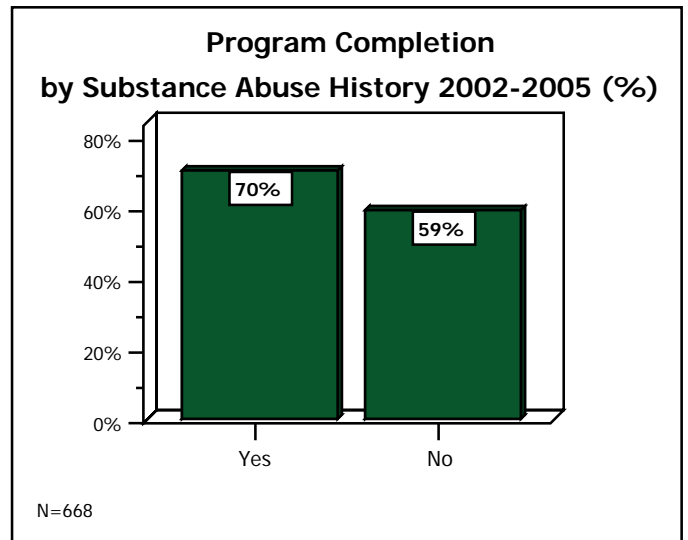
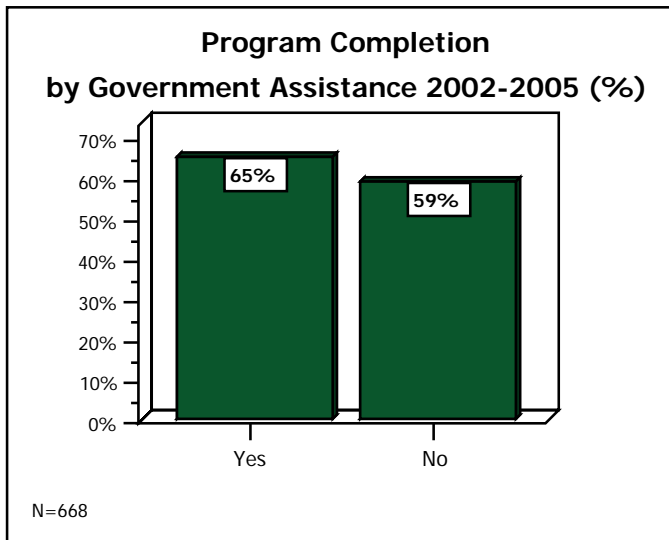
- The percentage of male students completing the program was somewhat greater than that of female students. On average, clients who completed the program were older than those who did not. Caucasians had higher program completion rates than other groups.



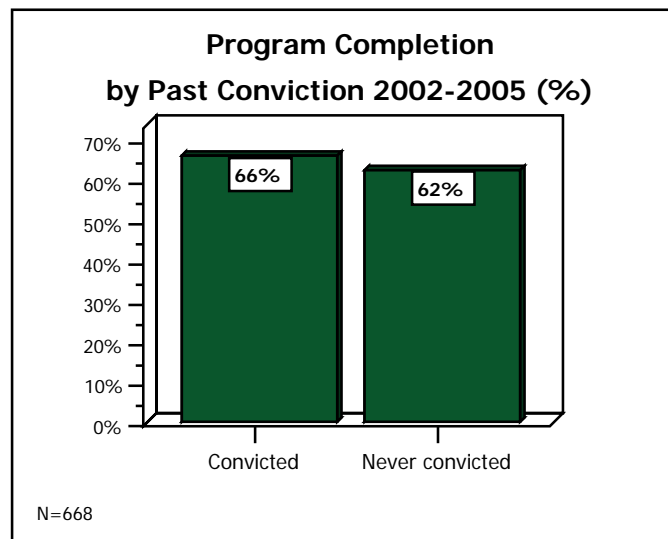
- Dropouts were most common among clients who:
 - Had never worked before
 - Lived in shelters at enrollment
 - Were high-school dropouts
 - Had childcare needs



- On the other hand, clients receiving government assistance or who had substance abuse histories did better in terms of program completion.

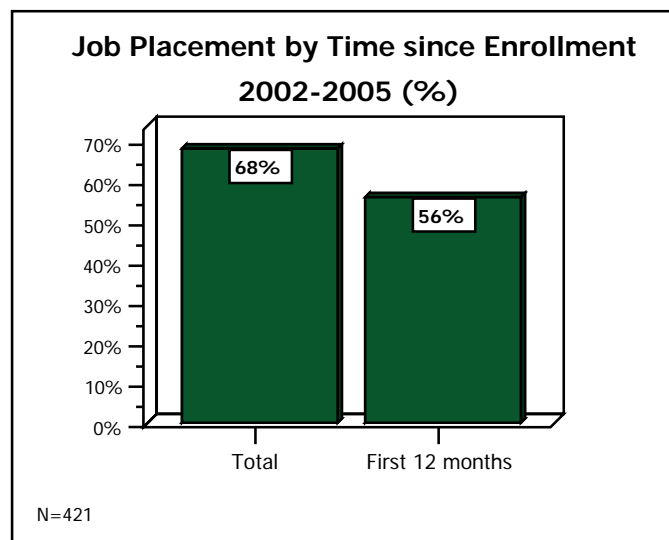
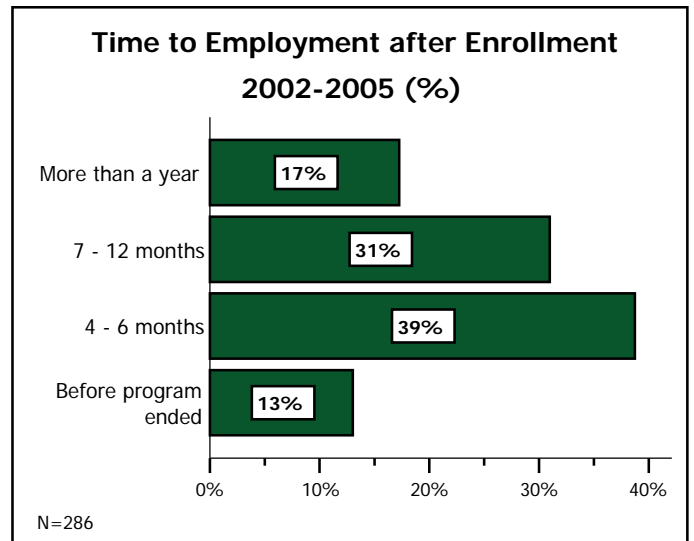
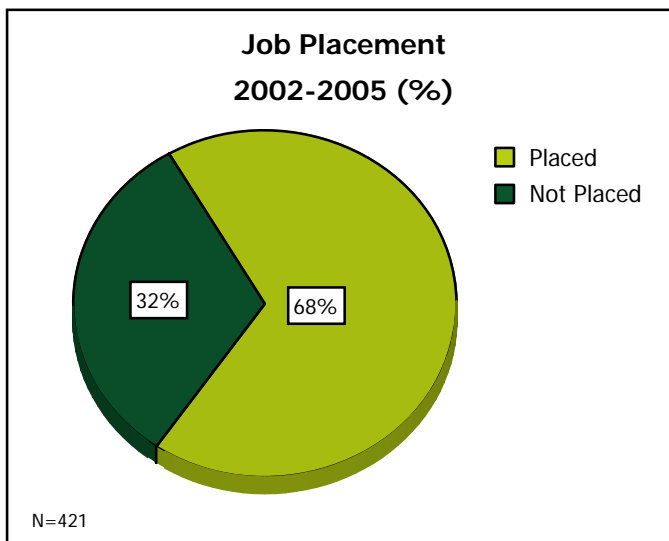


- Finally, there was only a small difference in program completion by whether or not clients had past convictions.



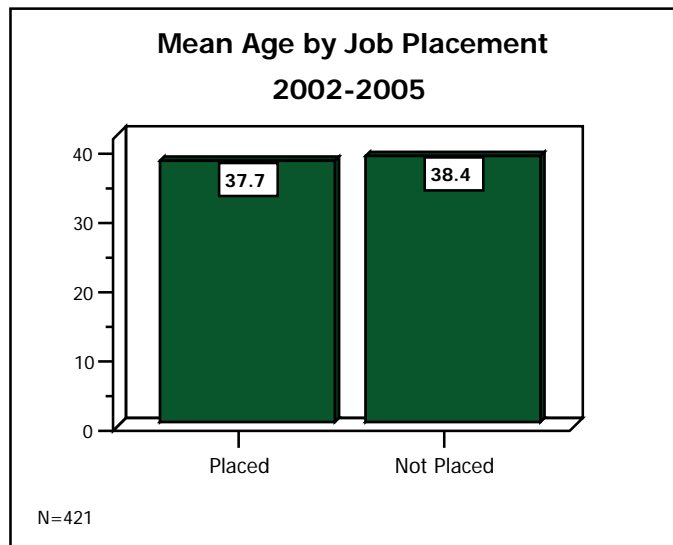
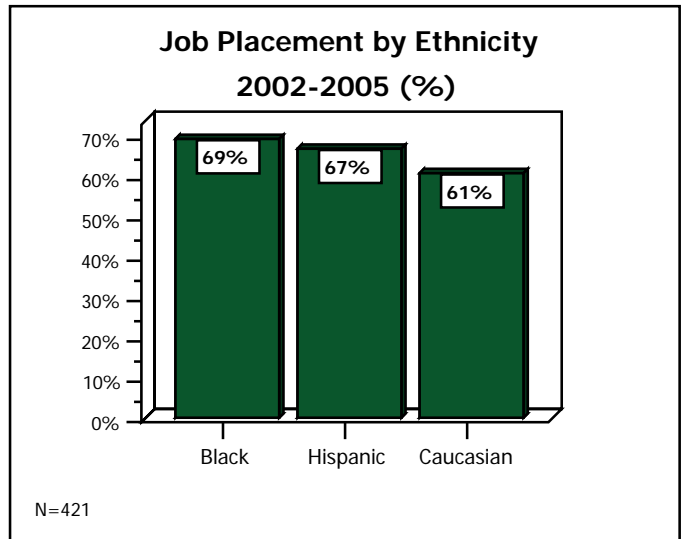
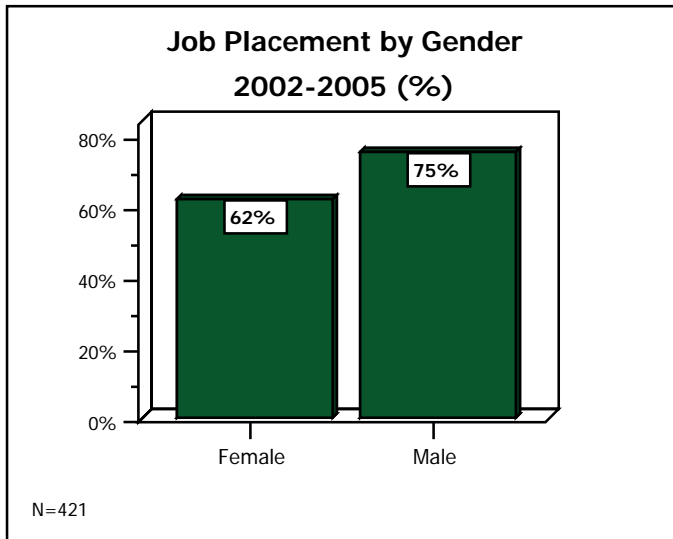
III.2 Job Placement

- Job placement refers to the percentage of students who completed the program and were placed in jobs. During the period 2002-2005, 421 students completed the program.
- 68% (286) of program completers were placed in jobs. During this period, even more job placements were made because some students were placed in more than one job.
- 56% of program completers were placed in jobs within one year of enrollment, an additional 12% were placed after one year.

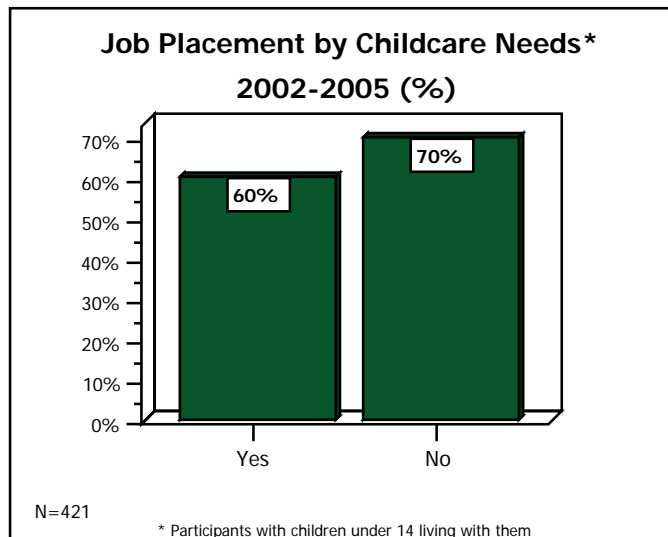
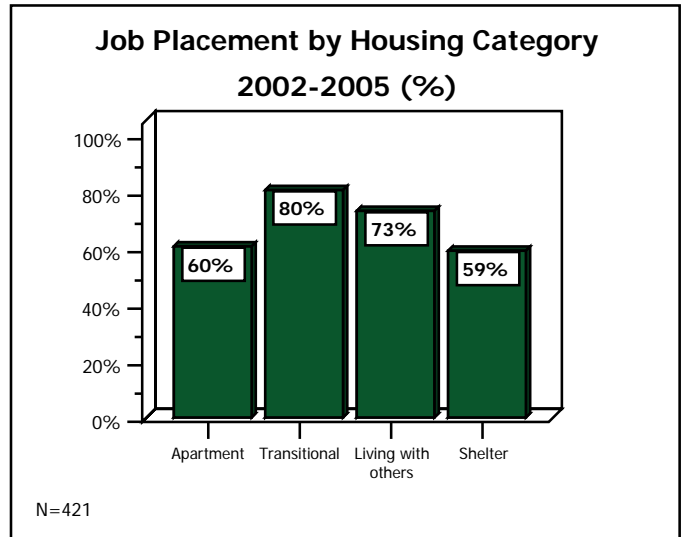
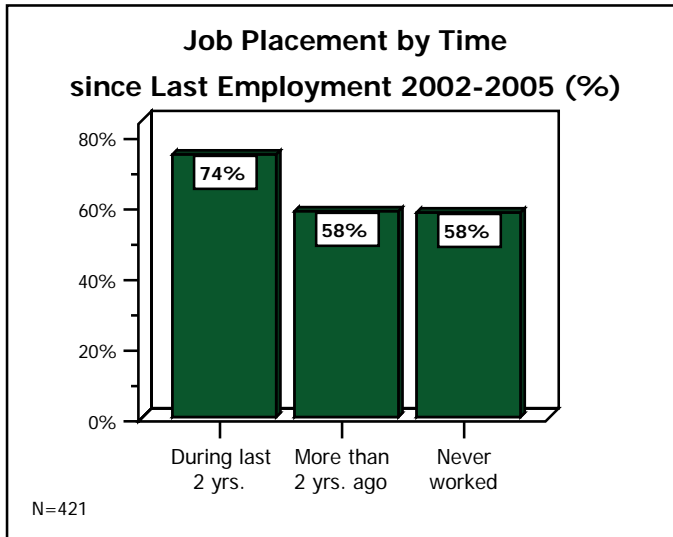


III.2.1 Job Placement and Client Characteristics

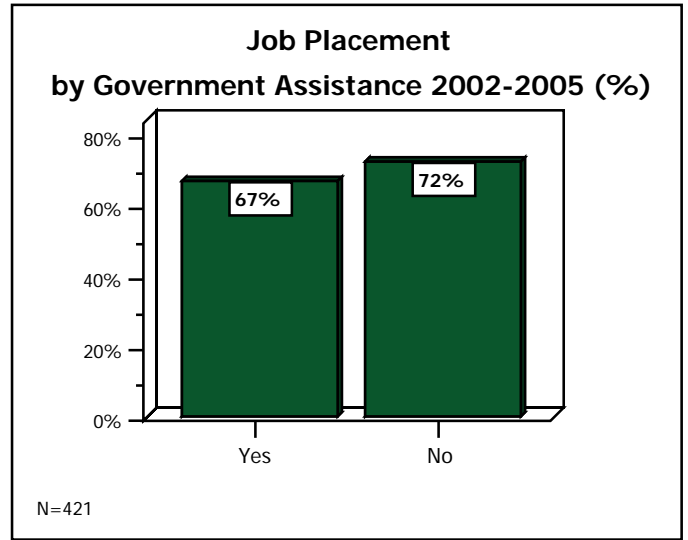
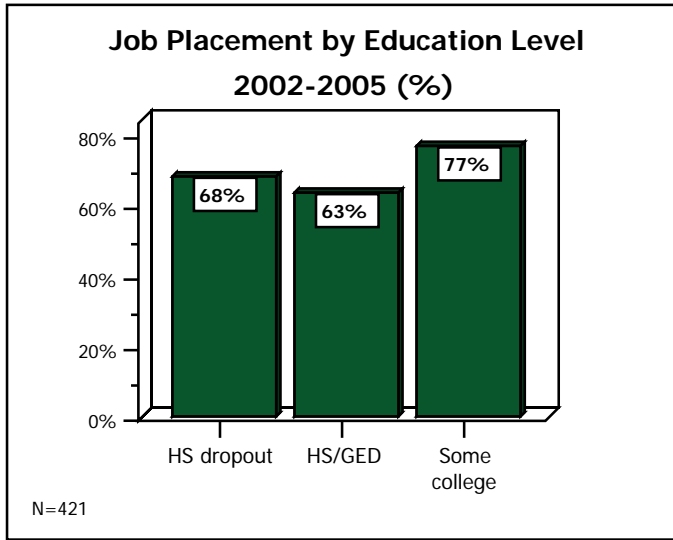
- For students enrolled during 2002-2005, 68% of program completers found jobs. As with program completion, a higher percentage of male students than female students were placed in jobs. Differences by age or ethnic group were not as marked.



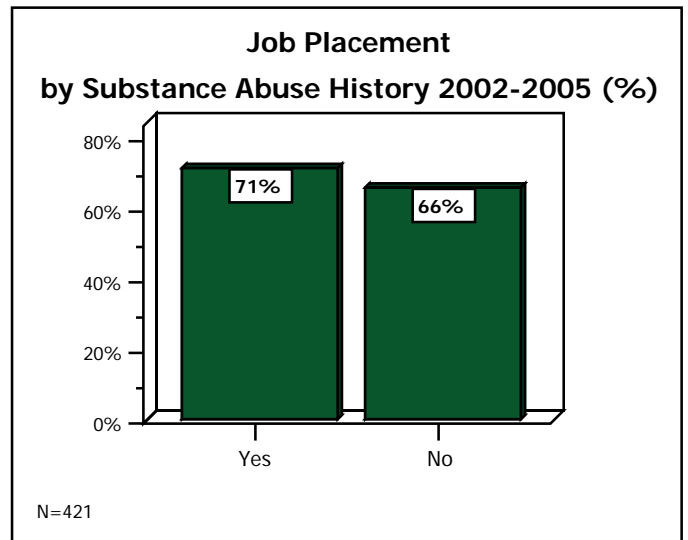
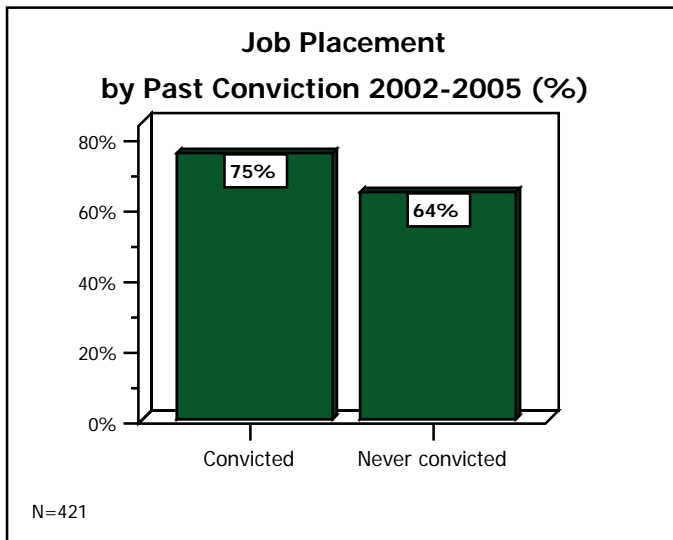
- There were important differences in job placement by job history, housing at enrollment, and childcare needs. Clients who had relatively recent job experience, clients who at enrollment were living in transitional housing or with others, and clients who had no childcare needs had better job placement rates than clients without those characteristics.



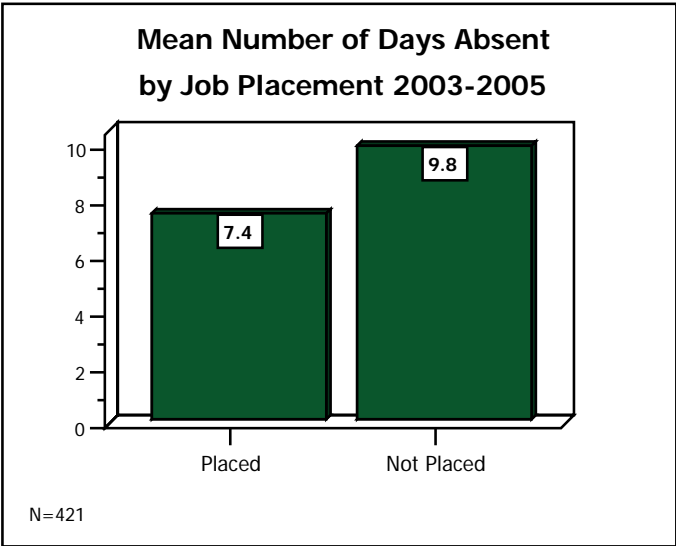
- In the case of educational level and government assistance, the differences were small with the exception of job placement for those with some college.



- Job placement was higher among students with past convictions and, to a lesser extent, with substance abuse histories.

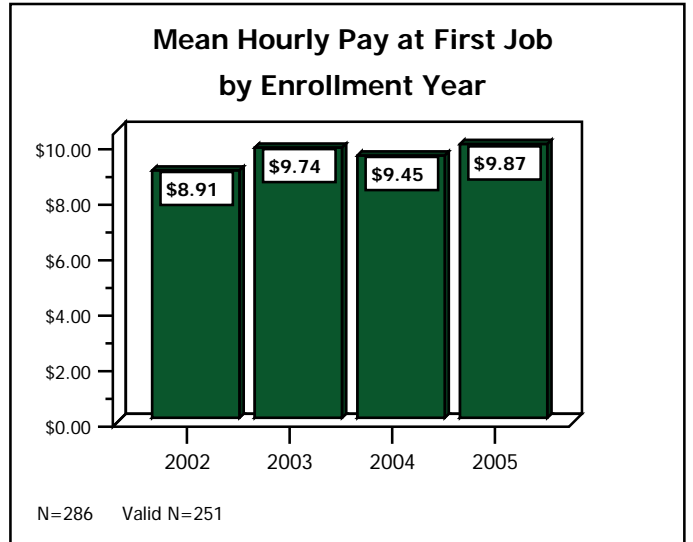
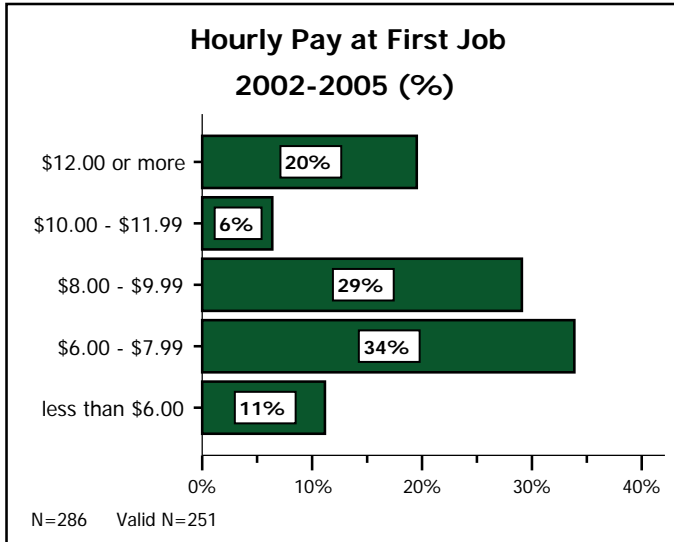


- Job placement rates were also higher for students with better attendance.

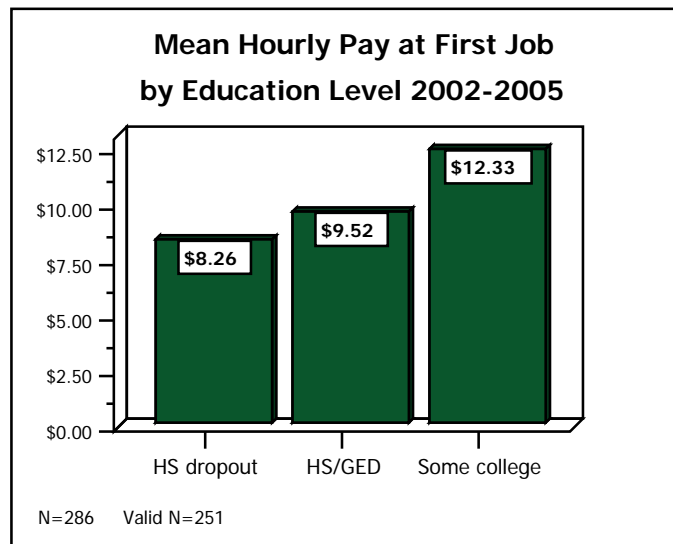


III.2.2 Salary at First Job

- The average hourly pay at clients' first job was \$9.50. Wages remained fairly stable during 2002-2005.

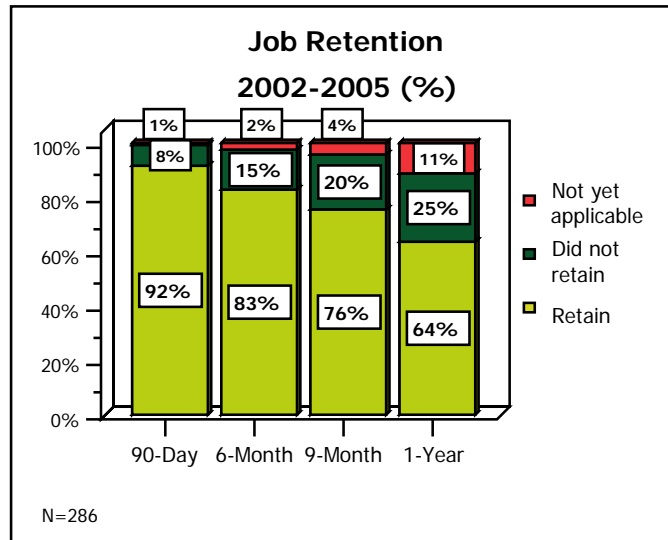


- Although it was unrelated to job placement rates, educational level was associated with entry level salaries. Students with high school diplomas or GED's earned slightly more than one dollar an hour more than those who dropped out of school. The wage differential increased to nearly three dollars for clients who had at least some college.

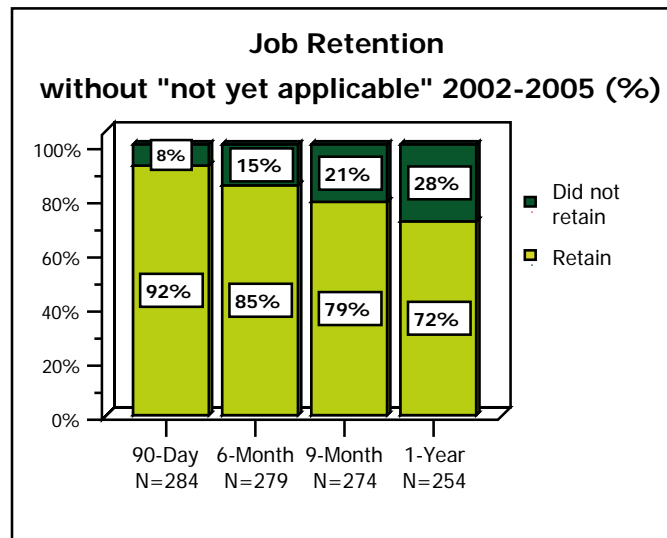


III.3 Job Retention

- Job retention refers to the percentage of students who retained a job for a specified amount of time. As a reference, a total of 286 students were placed in jobs during the 2002-2005 period.
- Job retention was evaluated at four different points: 90 days; 6 months; 9 months; and 1 year. Naturally, as longer job retention benchmarks were considered, the percentage of clients for whom the measure was not yet applicable increased (for example, many clients who enrolled in 2005 were too recently placed for a one-year retention measure to apply).

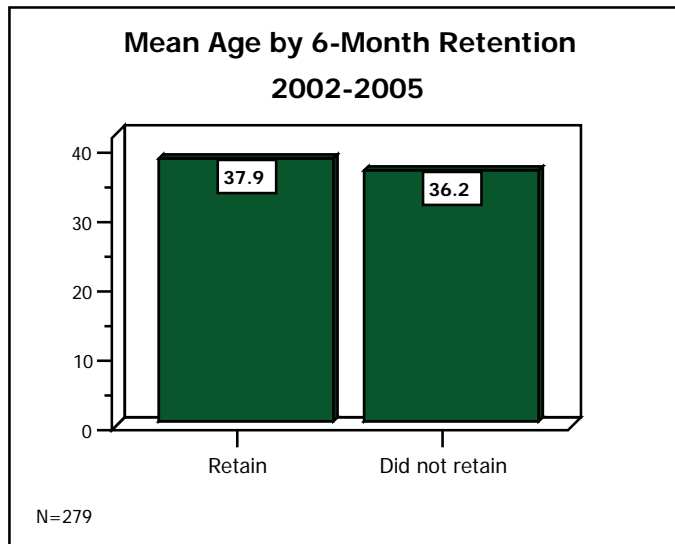
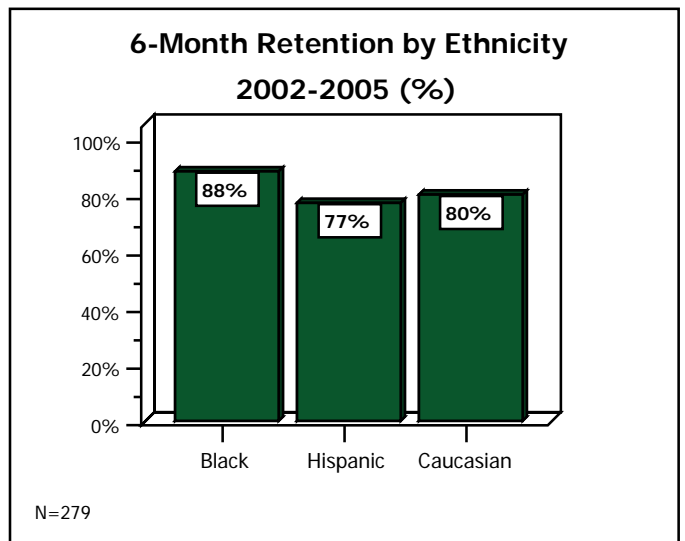
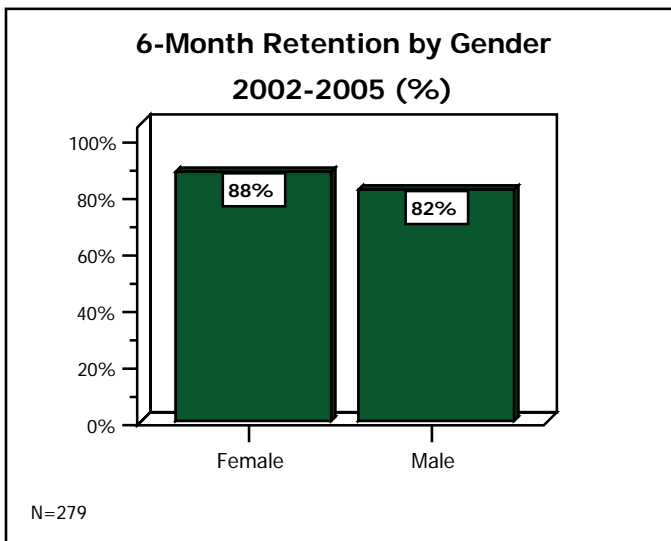


- Excluding from the analysis those students for whom the measure was not yet applicable, the percentage of clients who retained their jobs went from 92% for 90-day retention to 72% for 1-year retention.

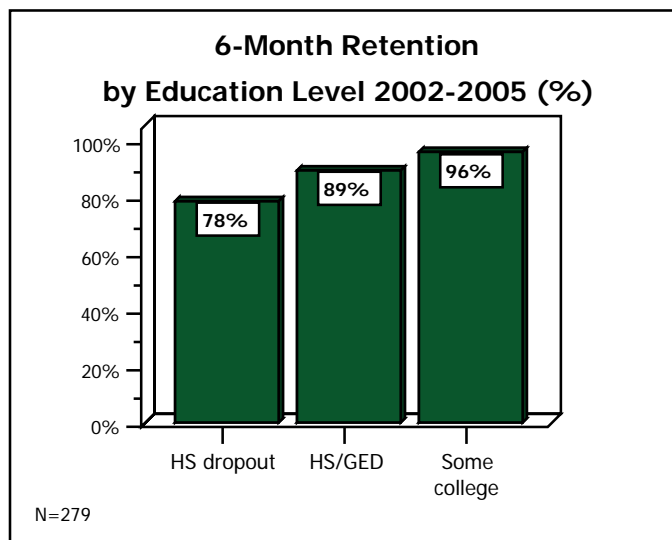
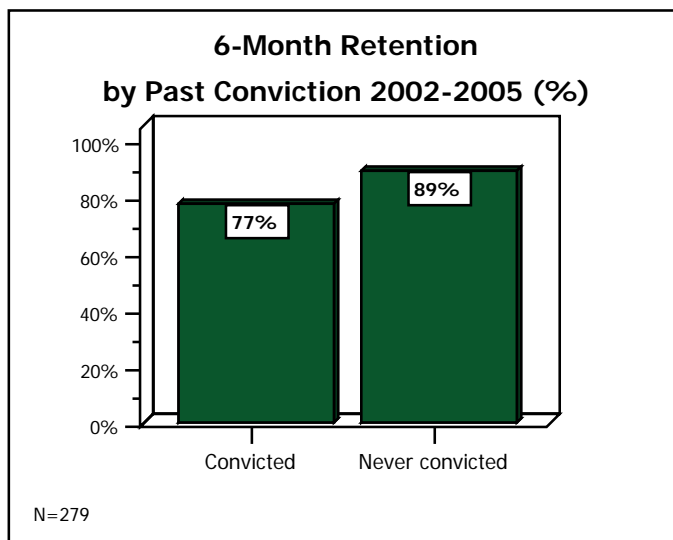


III.3.1 Retention and Client Characteristics

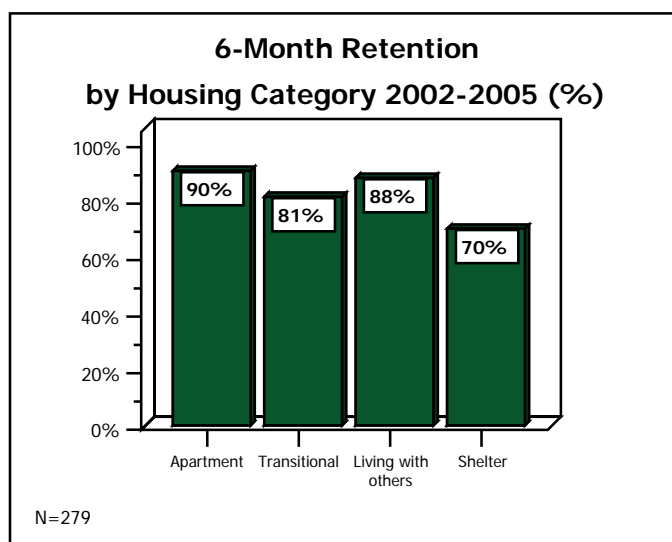
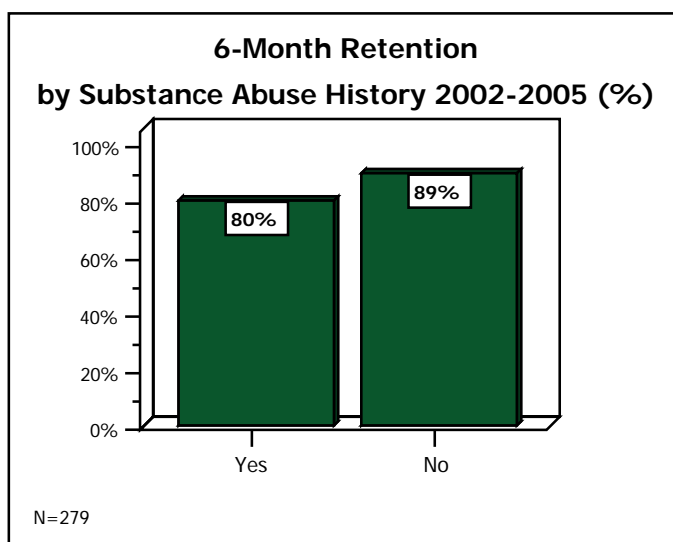
- In order to compare retention outcomes by client characteristics, the 6 month benchmark was chosen because it is the highest benchmark that incorporates data for clients who enrolled in 2005. Because the 6 month measure is not yet applicable for some 2005 enrollees, the total number of clients included in the comparisons is 279 (as opposed to 286, the total number of clients who got a job). Excluding those for whom the benchmark was not applicable, 85% of HOPE graduates who were placed retained their jobs for at least six months.
- Unlike program completion and job placement, job retention for female clients was better than for male clients. Looking at ethnicity, black clients had the highest retention rates. There were almost no differences in job retention by clients' age.



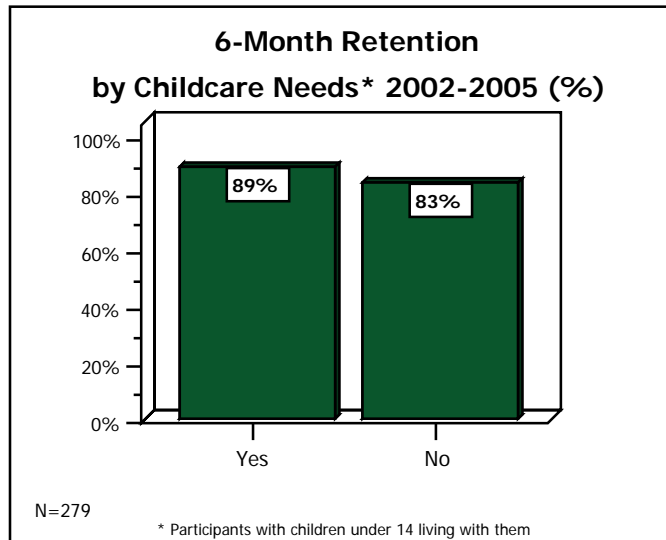
- Only 77% of clients with past convictions kept their jobs for at least six months compared to 89% of those without past convictions. Clients with at least some college performed considerably better than clients with less education.



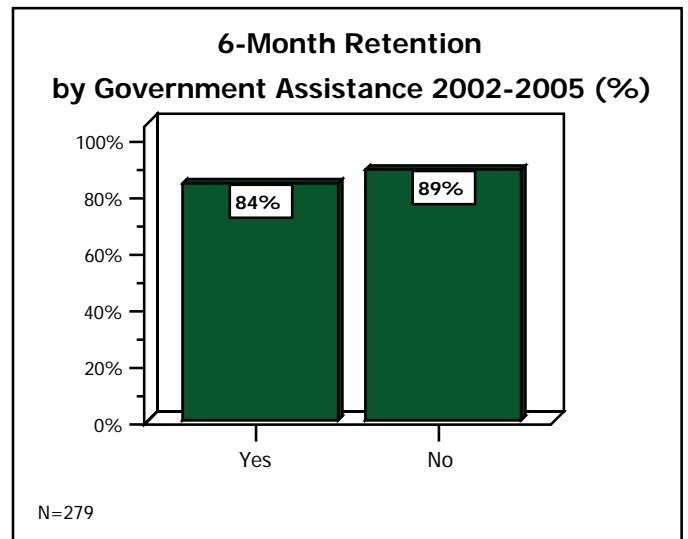
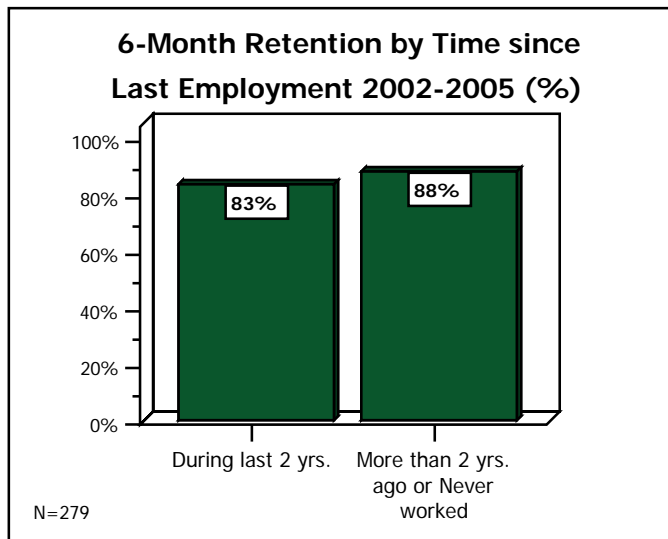
- Only 80% of clients with substance abuse histories kept their jobs for six months compared to 89% for those who had not abused substances.
- Retention results varied by housing category at enrollment. While students who lived in transitional housing at enrollment performed better in terms of program completion and job placement, they were slightly below average at six-month retention; students who lived in shelters at enrollment had the worst results at six-month retention.



- Graduates with childcare needs who found jobs kept them at greater rate than those who did not need childcare.



- Graduates who had worked more than two years ago or had never worked and who found jobs kept them at higher rates than those who had worked recently. Graduates who were receiving government assistance and who found jobs were not as successful at retaining the jobs as those not receiving government assistance.



IV. Program Outcomes and Client Characteristics: A Multivariate Approach

- The previous sections compared program outcomes for clients who differed in certain characteristics (potential employment barriers) by considering one characteristic at a time. Because clients had more than one barrier, it was not appropriate to use that analysis to determine the importance of each characteristic in predicting outcomes. For example, if a client had a poor work history as well as a history of substance abuse and convictions, the outcomes for that client would appear in three bar graphs, and one would not be able to tell which if any of those characteristics was, in fact, a significant predictor of the outcome.
- In order to evaluate the importance of each characteristic in predicting outcomes, it was necessary to compare program outcomes between clients who differed only in the characteristic of interest and who were identical in all other aspects (economists express this idea as “holding everything else constant”). A multivariate technique facilitated this comparison. (See Appendix for technical details.)
- The subsections below present the expected predictive differences in the probability of completing the job readiness training program, of obtaining a job, and of retaining that job for six months for a group of selected characteristics. Besides the point estimate, 68% and 95% confidence intervals are presented (thick and thin lines, respectively). In other words, the graphs present two pieces of information: (a) how large (and in which direction) was the difference in the probability of achieving the specific outcomes for clients who differed only in the characteristic of interest; and (b) how certain one could be given the information available. When the lines representing the confidence intervals for an estimate cross zero, it is said that the difference is not “statistically significant” at that confidence level, that is, one cannot rule out a difference of zero.
- When considering each client characteristic individually, 7 out of a total of 17 characteristics were found to be statistically significant at the 95% confidence level in predicting client outcomes. On average, HOPE clients had 3.5 characteristics which could constitute barriers to employment. The combinations of factors that HOPE clients exhibited increased not only the complexity of the clients’ issues but also the probabilities of success or failure. In order to get a clearer picture of the combined effect of several characteristics, the average predictive difference in the probability of each outcome was evaluated for hypothetical clients with three sets of combined characteristics. The results are presented in the last subsection.
- The table on the next page summarizes the findings of the entire multivariate analysis.

Potential Barriers to Employment as Predictors of Outcomes

POTENTIAL BARRIER	COMPLETION RELATIVE TO HOPE AVERAGE	PLACEMENT RELATIVE TO HOPE AVERAGE	6-MONTH RETENTION RELATIVE TO HOPE AVERAGE
HS Dropout	↓↓	↔	↓↓
Never Worked	↓↓	↓	↑
Absent more than 10 days	NA*	↓↓	↓
Female	↓	↓	↔
Age: 30 and under	↓↓	↔	↔
Not Worked within 2 Years	↓	↓↓	↑
Past Conviction	↓	↔	↓
Shelter	↓	↔	↓
Substance Abuse History	↔	↔	↓
Gov. Assistance	↔	↔	↔
Childcare Needs	↔	↔	↔
Age: over 42	↑	↔	↔
Living with Others	↔	↑	↔
Some College	↓	↑	↑↑

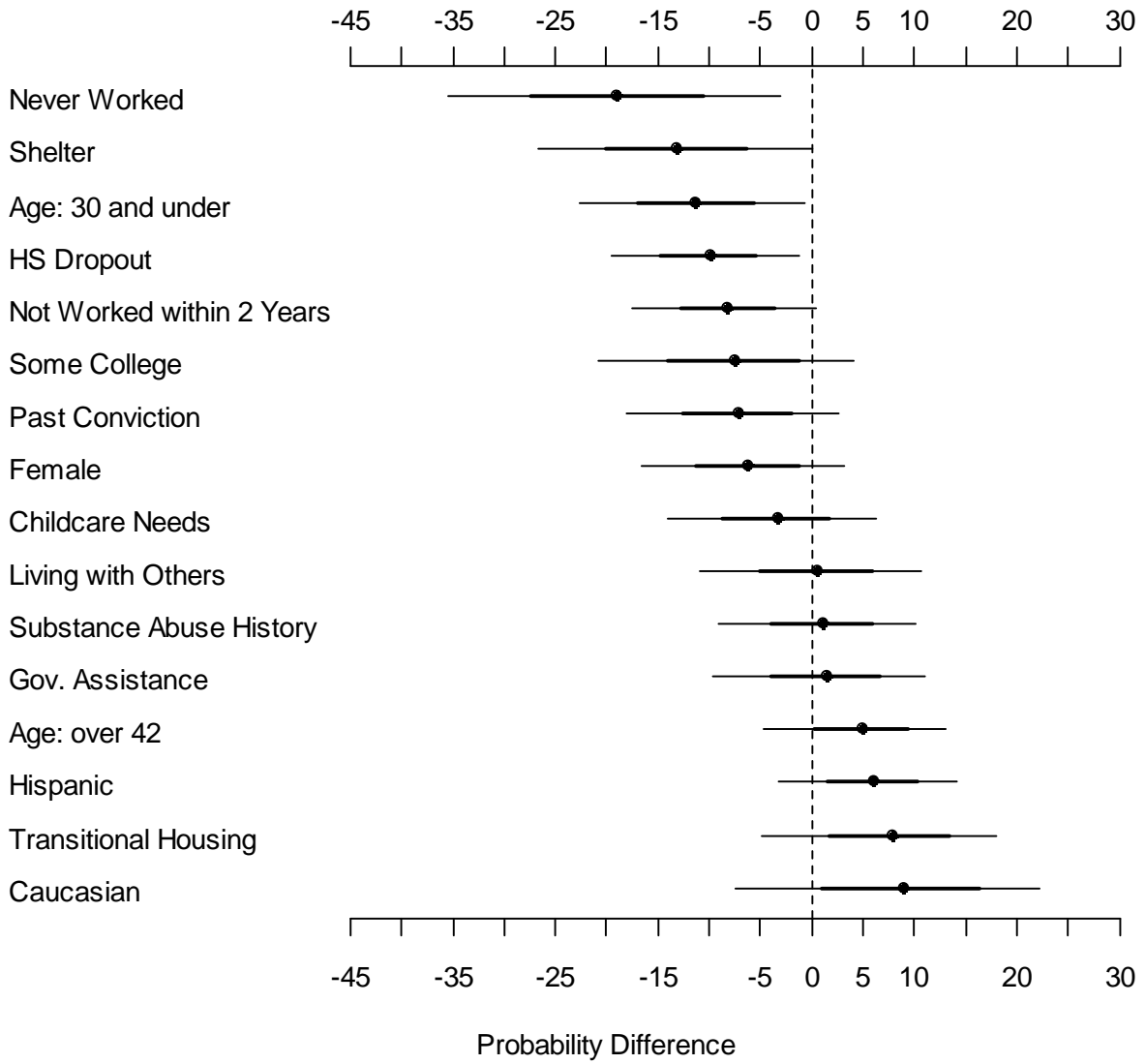
** Only students who completed the training were included in the analysis of attendance.*

- ↑↑ or ↓↓ Difference statistically significant at 95% confidence level
- ↑ or ↓ While not statistically significant, considerable evidence of difference
- ↔ No evidence of difference

IV.1 Program Completion

- The graph below presents the expected predictive difference in the probability of completing the program for a group of selected characteristics.
- Work history was important in predicting program completion. The probability of clients completing the program if they had not worked for two years or more from the time of enrollment was 11 percentage points lower than that of clients who had worked during the last two years (and were identical in all other characteristics considered). The probability difference increased to 19 percentage points for those who had never worked compared to the same group. The confidence intervals were fairly large for this group, probably because they were heterogeneous in some characteristics that this analysis did not study.
- Clients living in shelters at enrollment also had a substantially lower chance of completing the program (13 percentage points difference compared to those living in their own housing). Again, confidence intervals were quite large, probably due to the small number of clients in that category. Clients living in transitional housing, on the other hand, tended to have an advantage in program completion, though the difference was not statistically significant. Finally, there was no evidence that living with others made any difference in program completion.
- Younger clients (age 30 and under) had an 11 percentage points lower probability of completing the program compared to those age 31 to 42. Older clients (more than 42 years old), on the other hand, tended to have a greater probability of completing the program, though in this case the difference was not statistically significant.
- Clients with some college tended to have a lower probability of completing the program, but the differences were not statistically significant.
- Clients with past convictions tended to have a lower probability of completing the program, but the differences were not statistically significant.
- Clients with childcare needs seemed to have a slight disadvantage in program completion, but the difference was not statistically significant (not even at the 68% confidence level).
- Hispanics and Caucasians tended to perform better than blacks in program completion, though the findings were not conclusive. The considerably large confidence interval for Caucasians was probably due to the small number of clients in that ethnic group.
- There was no evidence that government assistance or drug abuse history made any statistically significant difference regarding program completion.

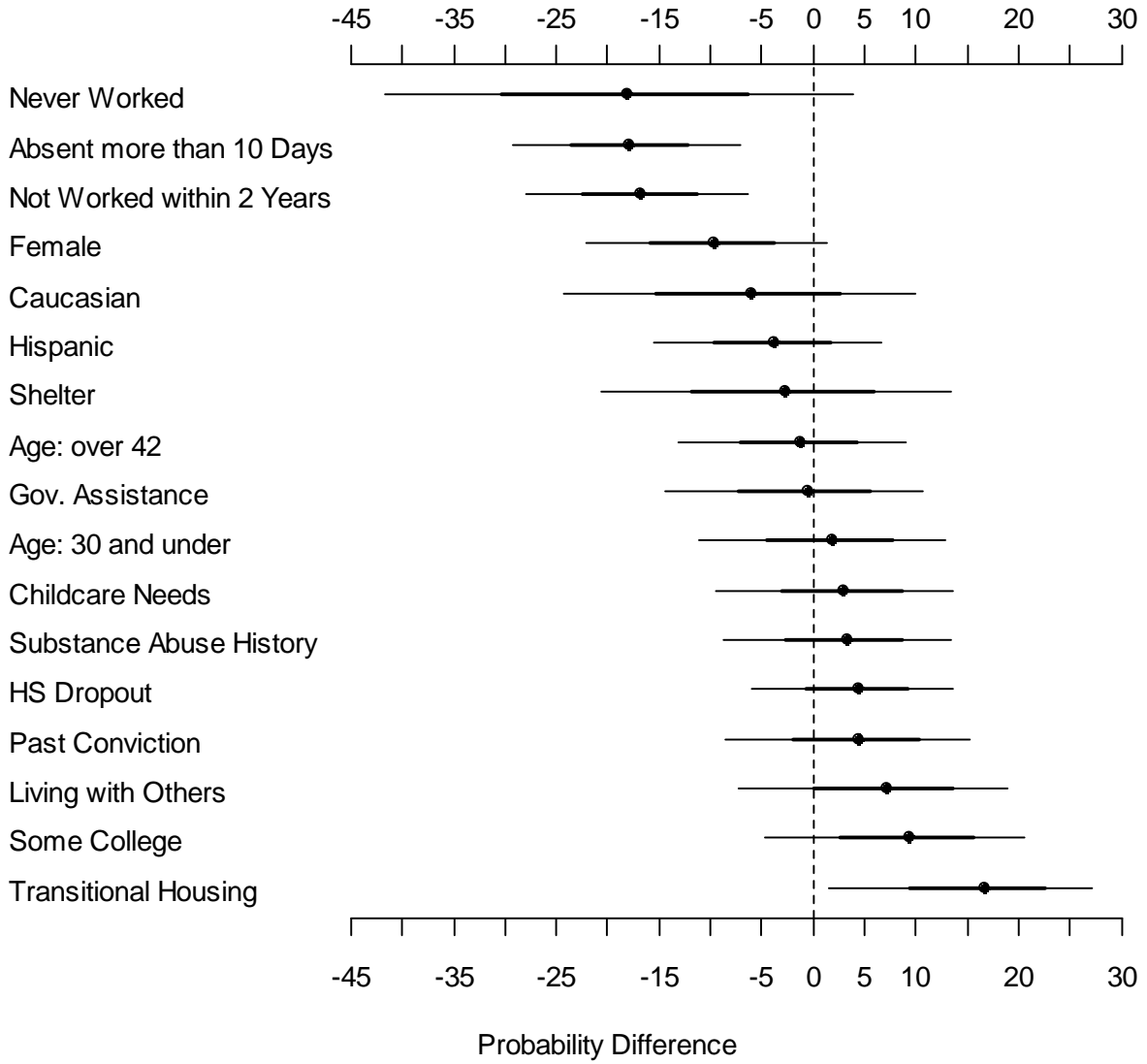
Average Predictive Difference in the Probability of Program Completion



IV.2 Job Placement

- The graph below presents the expected predictive difference in the probability of getting a job (among clients who completed the Job Readiness Program) for a group of selected characteristics.
- Work history was important in predicting job placement. Clients who had not worked for two years or more at enrollment had a 17 percentage point lower probability of getting a job compared to those who had worked during the last two years (and were identical in all other characteristics considered). The probability difference increased to 18 percentage points for those who had never worked compared to the same group. The estimate for the latter difference had large confidence intervals, and in fact, was not statistically significant. This is probably due to the fact that this group was heterogeneous regarding characteristics that this analysis did not take into account.
- Clients who had been absent more than 10 days during the Job Readiness Program had substantially lower chances of getting a job (18 percentage points difference compared to clients who had been absent 10 or fewer days).
- Looking at the impact of housing, clients who lived in transitional housing at enrollment had a better chance of getting a job compared to those who lived in apartments (17 percentage points). Clients who lived with others also tended to have an advantage compared to the same group, though in this case the difference was not statistically significant. Clients who lived in shelters, on the other hand, appeared to have a slight disadvantage regarding job placement though the difference was clearly not significant (not even at a 68% confidence level).
- Clients with past convictions, drug abuse history or childcare needs appeared to have a certain advantage in job placement though the differences were not significant (not even at a 68% confidence level).
- There also seemed to be a considerable, though not statistically significant, smaller chance of getting a job for female clients (-10 percentage points).
- Clients with some college had an advantage compared to clients with just High School or GED. The difference was not significant, however, probably due to the small number of clients in that category. Curiously enough, High School dropouts also seemed to have an advantage in job placement though the difference was clearly not significant (not even at a 68% confidence level).
- There was certain evidence that black clients had better job placement rates than either Hispanics or Caucasians, though the evidence was not conclusive.
- There was clearly no evidence that age or government assistance made any difference in job placement.

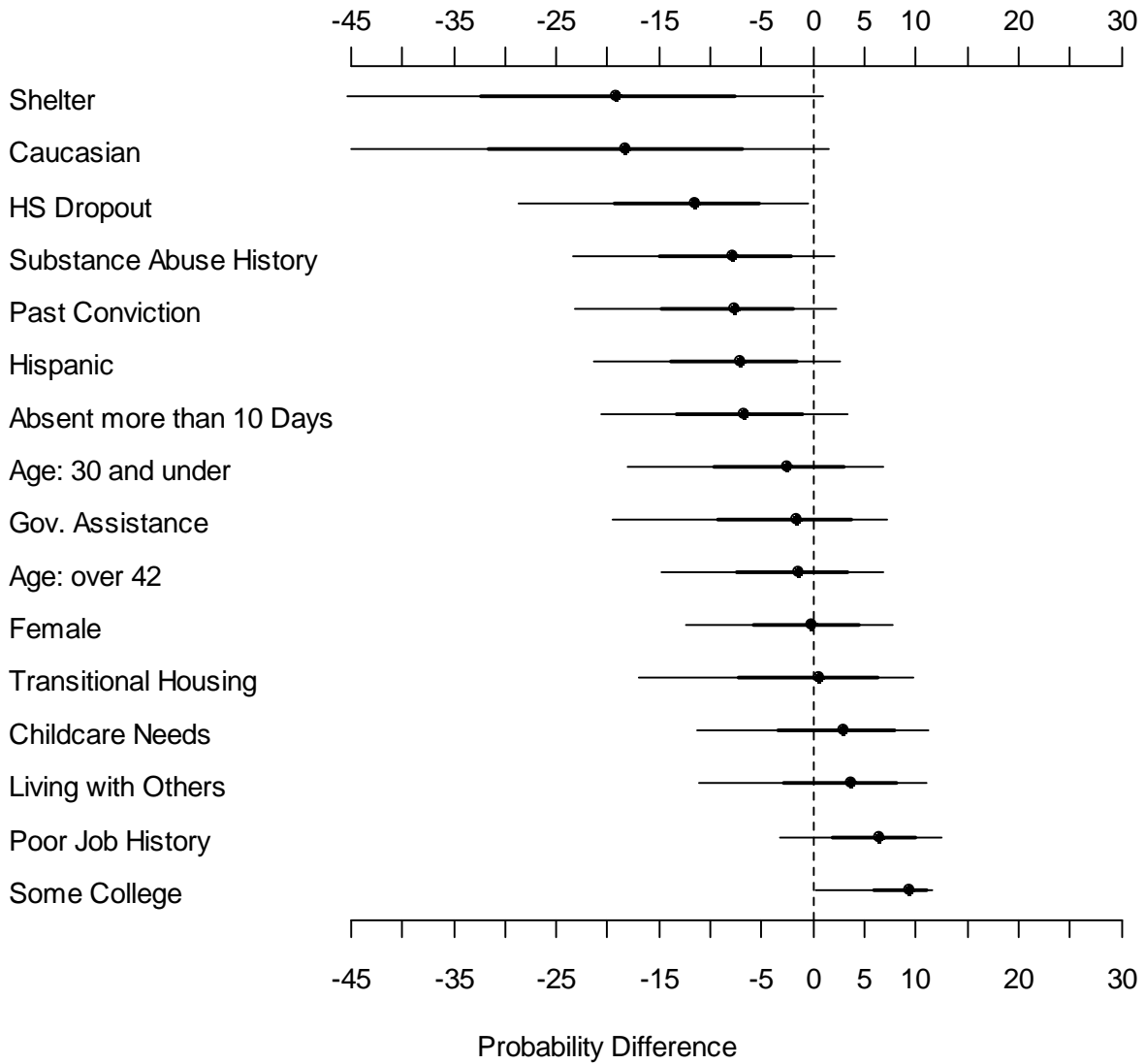
**Average Predictive Difference
in the Probability of Getting a Job
(conditional on having completed the Program)**



IV.3 Job Retention

- The graph below presents the expected predictive difference in the probability of retaining the job for at least 6 months (among clients who were placed in jobs) for a group of selected characteristics.
- Clients' educational background had a substantial importance in predicting job retention. High School dropouts had 11 percentage points lower probability of retaining jobs compared to clients who completed High School or GED, while clients with some college had 9 percentage points greater probability of retaining their jobs.
- Clients living in shelters at enrollment tended not to retain their jobs, though the estimate of the difference was quite imprecise due to the small number of cases in that category. There was no evidence that living in transitional housing at enrollment made any difference in job retention and, though clients living with others tended to have a slight advantage, this difference was clearly not statistically significant (not even at 68% confidence level).
- Hispanics and Caucasians tended to perform worse than blacks in job retention, though the differences were not statistically significant. The large confidence interval for Caucasians was due to the small number of clients in that ethnic group.
- Clients with past convictions, substance abuse histories, or more than 10 absences during the Job Readiness Program tended to have a lower probability of retaining the job, though the differences were not statistically significant.
- There was no evidence that gender, age, or government assistance made any difference in job retention.
- Clients who had been unemployed two years or more at the time of enrollment or had never worked were aggregated in the same category (poor job history) due to the extremely small number of cases in the latter group. Clients in this new category were estimated to have a greater probability of retaining the job, though the difference was not statistically significant. The result is counter-intuitive, however, and may be related to the considerably worse performance of this group in program completion and job placement. Given that performance, we can hypothesize that we are evaluating retention for only highly motivated clients in this category (or clients who differ in some other unmeasured characteristic).

**Average Predictive Difference
in the Probability of Retaining the Job for at least Six Months
(conditional on having gotten a Job)**



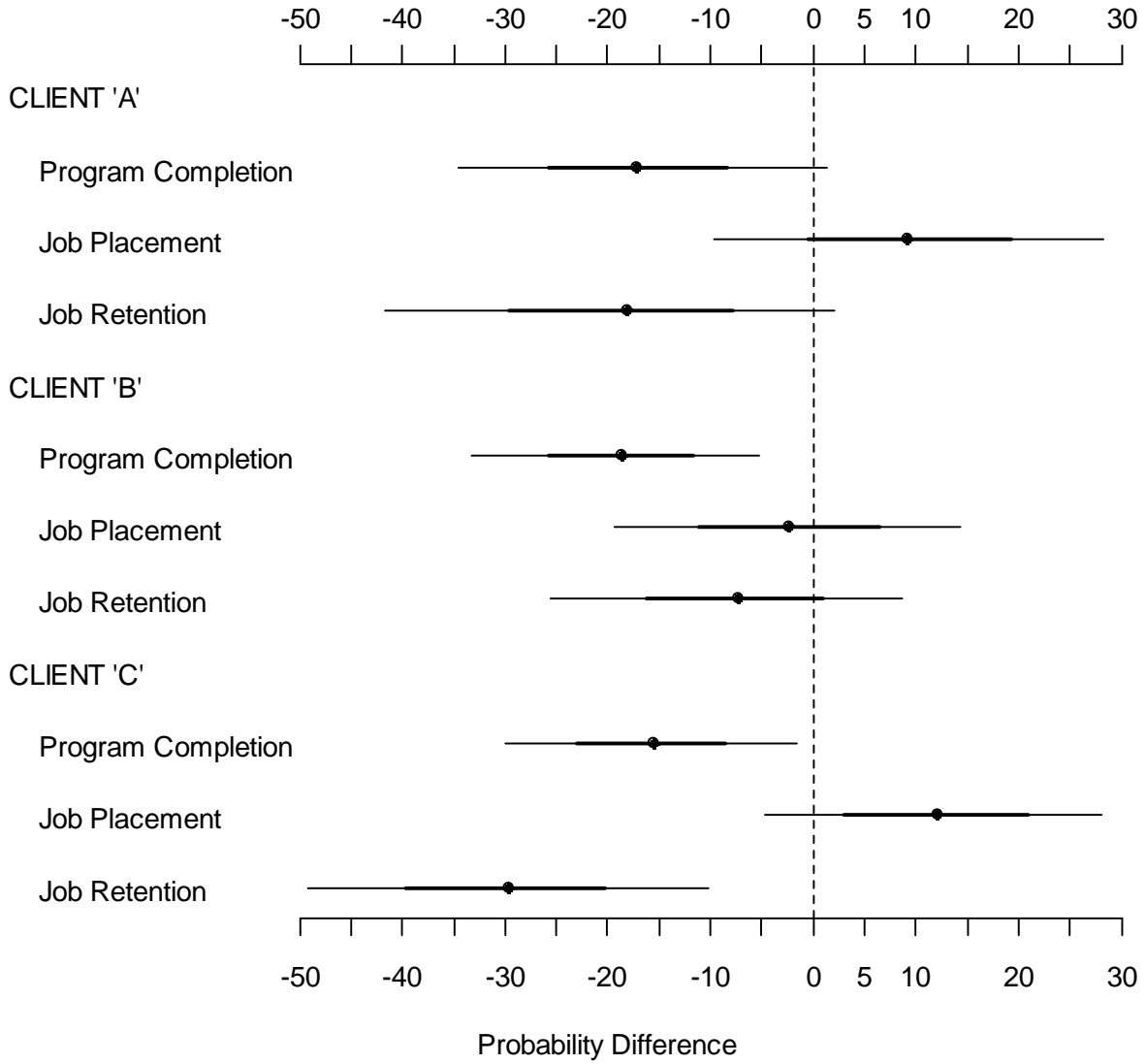
IV.4 Client Outcomes and Selected Combinations of Characteristics

- As mentioned earlier, when considering each client characteristic separately, seven out of 17 characteristics were statistically significant in predicting client outcomes. Again, on average, HOPE clients had 3.5 characteristics which might constitute barriers to employment.
- In order to get a clearer picture of the combined effect of several characteristics, the average predictive difference in the probability of each outcome was evaluated for hypothetical clients with three sets of combined characteristics:
 - **Client A:** Age 30 and under, substance abuse history, past convictions
 - **Client B:** Female, childcare needs, high school dropout
 - **Client C:** Substance abuse history, past convictions, high school dropout

In other words, clients who had each set of characteristics were compared to clients who did not have those specific characteristics but were the same in the other characteristics studied.

- Client A, a younger client (30 and under) who had a substance abuse history and past convictions had an 18 percentage point lower probability of completing the program and a 19 percentage point lower probability of retaining a job for at least six months compared to clients who did not have those characteristics. A zero difference, however, could not be completely ruled out at a 95% confidence level, though it seemed unlikely. On the other hand, this client tended to have a certain advantage in getting a job, though the difference was clearly not significant (not even at a 68% confidence level).
- Client B, a female client with childcare needs and no high school diploma had a 19 percentage point lower probability of completing the program, compared to clients who did not have those characteristics. There was no evidence of a difference in job placement, and though she seemed to have a certain disadvantage in retaining the job, the difference was clearly not significant (not even at a 68% confidence level).
- Client C, a client with a substance abuse history, past convictions, and no high school diploma had a 15 percentage point lower probability of completing the program and a 29 percentage point lower probability of retaining a job. On the other hand, this client tended to have a higher probability of getting a job (13 percentage points), though the difference was not statistically significant.

**Average Predictive Difference in the Probability of Completing the Program,
Getting a Job and Retaining the Job for at least Six Months
for Clients with Selected Combination of Characteristics**



Appendix

Outcomes and Client Characteristics: A Multivariate Approach

- Section IV presents the results of three logistic regressions. Each regression modeled the probability of occurrence of a certain outcome (completing the program, getting a job, retaining the job) as a function of a series of covariates. The GLM function of R version 2.4.0 (R Development Core Team, 2006) was used to fit the logistic regression. The summaries of the results for those regressions are presented below.
- In addition to the covariates explicitly mentioned in the respective sections, a linear tendency for class number was used. This covariate allows the comparison of different cohorts of students, isolating the effect of the differences in time-opportunity to accomplish the outcome.
- The logit model is multiplicative rather than additive when considering the output variable in the original scale. This means that the effect of each input variable in the output variable (in its original scale) depends on the value of all the other covariates. In order to summarize the individual predictive importance of each input variable (in a way comparable to that of the coefficients in a linear regression), the average predictive difference was used. Average predictive difference is calculated by first evaluating the predicted value for each client given the parameters of the model and the values of each covariate for a 'high' and a 'low' value of the input of interest and then averaging the differences between these two quantities (see, for instance, Gelman et al., 2006).
- Though asymptotically equivalent, the Wald test and Likelihood-ratio test showed somewhat different results in specific samples. Both results are included below, though the conclusions in the report and the confidence intervals (except for three sets of combined characteristics) are based on the latter.
- Confidence intervals for the average predictive difference for the three sets of combined characteristics were estimated using 1000 simulations. Simulated coefficients were drawn from a multivariate normal distribution with mean, variance and covariance matrix taken from the fitted model (Gelman, 2006, page 143).

Program Completion Model

```
Call:
glm(formula = Completed ~ Female + Under31 + Over42 + Hispanic +
     White + HSDropout + SomeCollege + HaveNotWorked2years + NeverWorked +
     DrugAbuse + PastConviction + Gov.Assistance + ChildcareNeeds +
     LivingWithOthers + Transitional + Shelter + CLASS, family = binomial)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-2.1245	-1.1984	0.6826	0.9008	1.5694

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)	
(Intercept)	1.996508	0.930531	2.146	0.0319	*
Female	-0.301788	0.239547	-1.260	0.2077	
Under31	-0.517090	0.249095	-2.076	0.0379	*
Over42	0.258204	0.248217	1.040	0.2982	
Hispanic	0.301876	0.233480	1.293	0.1960	
White	0.461304	0.429601	1.074	0.2829	
HSDropout	-0.491652	0.218193	-2.253	0.0242	*
SomeCollege	-0.377070	0.307504	-1.226	0.2201	
HaveNotWorked2years	-0.395244	0.212615	-1.859	0.0630	.
NeverWorked	-0.875489	0.370872	-2.361	0.0182	*
SubstanceAbuse	0.054109	0.243820	0.222	0.8244	
PastConviction	-0.349147	0.249986	-1.397	0.1625	
Gov.Assistance	0.077571	0.262378	0.296	0.7675	
ChildcareNeeds	-0.161273	0.247954	-0.650	0.5154	
LivingWithOthers	0.031184	0.269597	0.116	0.9079	
Transitional	0.412684	0.331848	1.244	0.2136	
Shelter	-0.592815	0.302130	-1.962	0.0497	*
CLASS	-0.006564	0.011275	-0.582	0.5604	

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 707.09 on 553 degrees of freedom
Residual deviance: 657.94 on 536 degrees of freedom
AIC: 693.94

Number of Fisher Scoring iterations: 4

Job Placement Model

```
Call:
glm(formula = Placed ~ Female + Under31 + Over42 + Hispanic +
     White + HSDropout + SomeCollege + HaveNotWorked2years + NeverWorked +
     DrugAbuse + PastConviction + Gov.Assistance + ChildcareNeeds +
     LivingWithOthers + Transitional + Shelter + Absentmore10 +
     CLASS, family = binomial)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-2.3781	-1.0319	0.5798	0.8539	1.6258

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)	
(Intercept)	5.67302	1.28997	4.398	1.09e-05	***
Female	-0.51177	0.30120	-1.699	0.089295	.
Under31	0.10518	0.34173	0.308	0.758246	
Over42	-0.06615	0.30235	-0.219	0.826820	
Hispanic	-0.20482	0.29812	-0.687	0.492050	
White	-0.31910	0.45861	-0.696	0.486562	
HSDropout	0.23468	0.27206	0.863	0.388369	
SomeCollege	0.51520	0.38951	1.323	0.185938	
HaveNotWorked2years	-0.86860	0.26715	-3.251	0.001148	**
NeverWorked	-0.93251	0.58005	-1.608	0.107913	
SubstanceAbuse	0.17612	0.31585	0.558	0.577116	
PastConviction	0.24332	0.34334	0.709	0.478510	
Gov.Assistance	-0.02890	0.34616	-0.083	0.933463	
ChildcareNeeds	0.16569	0.33145	0.500	0.617159	
LivingWithOthers	0.36482	0.36490	1.000	0.317412	
Transitional	0.92945	0.44369	2.095	0.036185	*
Shelter	-0.13298	0.42837	-0.310	0.756229	
Absentmore10	-0.90227	0.26674	-3.383	0.000718	***
CLASS	-0.05711	0.01564	-3.652	0.000260	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 461.66 on 365 degrees of freedom
Residual deviance: 403.60 on 347 degrees of freedom
AIC: 441.6

Number of Fisher Scoring iterations: 4

Job Retention Model

```
Call:
glm(formula = Retained ~ Female + Under31 + Over42 + Hispanic +
     White + HSDropout + SomeCollege + HaveNotWorked2years + DrugAbuse +
     PastConviction + Gov.Assistance + ChildcareNeeds + LivingWithOthers +
     Transitional + Shelter + Absentmore10 + CLASS, family = binomial)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.0128  0.1946  0.3649  0.5735  1.4296

Coefficients:
                Estimate Std. Error z value Pr(>|z|)
(Intercept)      5.384600   2.099211   2.565  0.0103 *
Female           -0.009296   0.469767  -0.020  0.9842
Under31          -0.233992   0.551483  -0.424  0.6714
Over42           -0.128477   0.497260  -0.258  0.7961
Hispanic         -0.633357   0.468594  -1.352  0.1765
White            -1.365992   0.745618  -1.832  0.0669 .
HSDropout        -0.950212   0.470524  -2.019  0.0434 *
SomeCollege       1.825924   1.108579   1.647  0.0995 .
HaveNotWorked2years 0.624473   0.465461   1.342  0.1797
SubstanceAbuse   -0.723103   0.497266  -1.454  0.1459
PastConviction   -0.686546   0.487581  -1.408  0.1591
Gov.Assistance   -0.160362   0.587411  -0.273  0.7849
ChildcareNeeds    0.292155   0.584977   0.499  0.6175
LivingWithOthers  0.370154   0.625807   0.591  0.5542
Transitional      0.057952   0.635854   0.091  0.9274
Shelter          -1.322067   0.716710  -1.845  0.0651 .
Absentmore10     -0.567241   0.458555  -1.237  0.2161
CLASS            -0.026149   0.023951  -1.092  0.2749
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 206.34  on 239  degrees of freedom
Residual deviance: 168.70  on 222  degrees of freedom
AIC: 204.7

Number of Fisher Scoring iterations: 6
```

Likelihood ratio test: Program Completion Model

Anova Table (Type II tests)

Response: Completed

	LR	Chisq	Df	Pr(>Chisq)
Female	1.5910	1	1	0.20718
Under31	4.3332	1	1	0.03738 *
Over42	1.0858	1	1	0.29739
Hispanic	1.7019	1	1	0.19205
White	1.2237	1	1	0.26863
HSDropout	5.1719	1	1	0.02295 *
SomeCollege	1.4844	1	1	0.22309
HaveNotWorked2years	3.4573	1	1	0.06297 .
NeverWorked	5.6439	1	1	0.01752 *
SubstanceAbuse	0.0493	1	1	0.82431
PastConviction	1.9623	1	1	0.16127
Gov.Assistance	0.0871	1	1	0.76792
ChildcareNeeds	0.4227	1	1	0.51557
LivingWithOthers	0.0134	1	1	0.90789
Transitional	1.5627	1	1	0.21127
Shelter	3.8271	1	1	0.05043 .
CLASS	0.3394	1	1	0.56016

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Likelihood ratio test: Job Placement Model

Anova Table (Type II tests)

Response: Placed

	LR	Chisq	Df	Pr(>Chisq)
Female	2.8950	1	1	0.0888537 .
Under31	0.0949	1	1	0.7580704
Over42	0.0479	1	1	0.8268044
Hispanic	0.4688	1	1	0.4935177
White	0.4770	1	1	0.4897900
HSDropout	0.7440	1	1	0.3883851
SomeCollege	1.7978	1	1	0.1799778
HaveNotWorked2years	10.7405	1	1	0.0010482 **
NeverWorked	2.4901	1	1	0.1145651
SubstanceAbuse	0.3115	1	1	0.5767388
PastConviction	0.5027	1	1	0.4783027
Gov.Assistance	0.0070	1	1	0.9334149
ChildcareNeeds	0.2507	1	1	0.6166141
LivingWithOthers	1.0090	1	1	0.3151474
Transitional	4.5029	1	1	0.0338381 *
Shelter	0.0961	1	1	0.7565778
Absentmore10	11.5234	1	1	0.0006872 ***
CLASS	14.3831	1	1	0.0001491 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Likelihood ratio test: Job Retention Model

Anova Table (Type II tests)

Response: Retained

	LR	Chisq	Df	Pr(>Chisq)							
Female	0.0004	1	1	0.98421							
Under31	0.1799	1	1	0.67144							
Over42	0.0669	1	1	0.79586							
Hispanic	1.7879	1	1	0.18118							
White	3.0997	1	1	0.07831 .							
HSDropout	4.4069	1	1	0.03579 *							
SomeCollege	3.9297	1	1	0.04744 *							
HaveNotWorked2years	1.9011	1	1	0.16795							
SubstanceAbuse	2.1433	1	1	0.14319							
PastConviction	2.0258	1	1	0.15465							
Gov.Assistance	0.0759	1	1	0.78292							
ChildcareNeeds	0.2525	1	1	0.61530							
LivingWithOthers	0.3541	1	1	0.55182							
Transitional	0.0083	1	1	0.92739							
Shelter	3.3328	1	1	0.06791 .							
Absentmore10	1.4913	1	1	0.22202							
CLASS	1.2127	1	1	0.27079							

Signif. codes:	0	'***'	0.001	'**'	0.01	'*'	0.05	'.'	0.1	' '	1

Average Predictive Difference: Program Completion

	Point	16 %	84 %	2.5 %	97.5 %
Never Worked	-18.9	-27.5	-10.6	-35.5	-3.0
Shelter	-13.1	-20.0	-6.3	-26.7	0.0
Age: 30 and under	-11.3	-17.0	-5.7	-22.7	-0.6
HS Dropout	-9.9	-14.7	-5.4	-19.6	-1.3
Not Worked within 2 Years	-8.1	-12.8	-3.7	-17.5	0.4
Some College	-7.5	-14.1	-1.3	-20.8	4.1
Past Conviction	-7.2	-12.6	-2.0	-18.1	2.7
Female	-6.1	-11.3	-1.2	-16.6	3.1
Childcare Needs	-3.3	-8.7	1.7	-14.1	6.2
Living with Others	0.6	-5.0	5.9	-10.9	10.6
Substance Abuse History	1.1	-3.9	5.8	-9.1	10.0
Gov. Assistance	1.6	-3.9	6.6	-9.6	11.1
Age: over 42	5.0	0.2	9.3	-4.8	13.0
Hispanic	6.1	1.5	10.4	-3.2	14.2
Transitional housing	8.0	1.7	13.5	-5.0	18.0
Caucasian	9.0	1.0	16.2	-7.4	22.1

Average Predictive Difference: Job Placement

	Point	16 %	84 %	2.5 %	97.5 %
Never Worked	-18.1	-30.4	-6.3	-41.7	3.8
Absent more than 10 days	-17.9	-23.6	-12.3	-29.2	-7.1
Not Worked within 2 Years	-16.8	-22.4	-11.3	-28.0	-6.3
Female	-9.6	-15.8	-3.8	-22.0	1.3
Caucasian	-6.1	-15.3	2.5	-24.3	10.0
Hispanic	-3.8	-9.7	1.7	-15.6	6.6
Shelter	-2.7	-11.8	5.8	-20.6	13.4
Age: over 42	-1.2	-7.1	4.2	-13.1	9.1
Gov. Assistance	-0.5	-7.3	5.5	-14.3	10.7
Age: 30 and under	1.9	-4.5	7.8	-11.1	12.8
Childcare Needs	3.0	-3.1	8.7	-9.5	13.5
Substance Abuse History	3.3	-2.7	8.7	-8.8	13.4
HS Dropout	4.5	-0.7	9.3	-6.0	13.5
Past Conviction	4.5	-1.9	10.3	-8.6	15.2
Living with Others	7.2	0.1	13.6	-7.2	19.0
Some College	9.4	2.5	15.5	-4.7	20.6
Transitional housing	16.7	9.5	22.6	1.4	27.1

Average Predictive Difference: Job Retention

	Point	16 %	84 %	2.5 %	97.5 %
Shelter	-19.2	-32.4	-7.7	-45.4	1.1
Caucasian	-18.2	-31.5	-6.9	-45.1	1.5
HS Dropout	-11.5	-19.4	-5.2	-28.7	-0.6
Substance Abuse History	-7.8	-15.0	-2.2	-23.3	2.0
Past Conviction	-7.7	-14.8	-2.0	-23.2	2.2
Hispanic	-7.1	-13.8	-1.6	-21.4	2.6
Absent more than 10 days	-6.7	-13.3	-1.1	-20.6	3.2
Age: 30 and under	-2.5	-9.7	2.9	-18.1	6.9
Gov. Assistance	-1.7	-9.4	3.7	-19.5	7.2
Age: over 42	-1.4	-7.5	3.4	-14.8	6.8
Female	-0.1	-5.7	4.4	-12.3	7.8
Transitional housing	0.6	-7.2	6.2	-17.1	9.8
Childcare Needs	3.0	-3.4	7.8	-11.3	11.1
Living with Others	3.6	-2.9	8.2	-11.2	11.1
Poor job history	6.4	2.0	9.9	-3.2	12.5
Some College	9.3	5.8	11.0	0.2	11.5

Average Predictive Difference: Clients with Selected Combination of Characteristics

	point	16%	84%	2.5%	97.5%
CLIENT 'A' - Program Completion	-17.6	-25.9	-8.0	-34.2	0.8
CLIENT 'A' - Job Placement	9.1	-1.2	19.8	-12.0	29.6
CLIENT 'A' - Job Retention	-18.7	-30.0	-7.8	-42.9	1.1
CLIENT 'B' - Program Completion	-18.6	-25.6	-11.5	-31.4	-5.3
CLIENT 'B' - Job Placement	-1.6	-10.6	6.7	-18.8	14.9
CLIENT 'B' - Job Retention	-7.6	-16.3	0.5	-24.8	9.3
CLIENT 'C' - Program Completion	-15.8	-22.9	-8.1	-29.4	-1.0
CLIENT 'C' - Job Placement	12.5	3.3	20.0	-6.0	28.6
CLIENT 'C' - Job Retention	-29.3	-39.2	-20.6	-49.5	-9.8
CLIENT 'A': Age 30 and under, Substance Abuse History, Past Convictions					
CLIENT 'B': Female, Childcare Needs, High School Dropout					
CLIENT 'C': Substance Abuse History, Past Convictions, High School Dropout					

Bibliography and Resources

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R Development Core Team (2006). R: A language and environment for statistical computing. R Foundation