INCREASING RESPONSE RATES AND DATA QUALITY IN PERSONAL INTERVIEW SURVEYS WITHOUT INCREASING COSTS: AN APPLICATION OF CQI TO THE NHSDA

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1. INTRODUCTION

The general consensus among survey researchers is that in recent years there has been a decline in response rates for large, national personal visit surveys. Many national surveys require increased data collection efforts to maintain acceptable response rates, i.e. rates that are comparable to previous rounds (Groves and Couper, 1992). As part of Research Triangle Institute's (RTI) continuing effort to change this trend, we have developed a program of Continuous Quality Improvement (CQI) for our field staff. This paper will present the history, design, implementation, and results of the first year of this CQI program which was implemented for the 1995 National Household Survey on Drug Abuse (NHSDA). Many of the features of our CQI program are readily transferable to other national personal visit surveys.

2. BACKGROUND

The NHSDA is a nationwide survey on tobacco, alcohol, and other drug usage and health-related issues in the United States. The NHSDA currently is funded by the Substance Abuse and Mental Health Services Administration (SAMHSA), an agency of the United States Department of Health and Human Services (DHHS). RTI has been conducting this national survey under contract with SAMHSA since 1988. Beginning in 1992, the survey design changed to a continuous quarterly data collection effort. The quarterly design is scheduled to continue through the end of the 1996 NHSDA. Over this 5 year period, during each of the 20 calendar quarters, approximately 20,000 households will be screened resulting in approximately 5,800 interviews completed quarterly. RTI's national staff of supervisors and interviewers on the NHSDA spans 41 states and has totaled approximately 8-12 Field Supervisors (FSs) and 180-250 Field Interviewers (FIs) depending on the survey year and sample size.

With the implementation of the continuous quarterly data collection beginning in 1992, screening and interview response rates began to decline when compared to previous NHSDAs. Some decline in response rates was expected with the change to continuous quarterly data collection. Seasonality (weather problems, varying daylight hours, etc.) and restricted data collection windows (one quarter had to be closed out before the next could begin) created increased data collection pressures. However, response rates from 1992 to 1993 and from 1993 to 1994 showed downward trends that were greater than expected. As a result of these declining response rates, we utilized normal survey industry techniques (e.g., more callbacks, traveling interviewers, special refusal conversion attempts, etc.) which resulted in the investment of more resources and an overall increase in costs of the survey.

3. DESIGN

In the summer of 1994, we convened a task force of individuals drawn from RTI management, NHSDA project management, survey methodologists, statisticians, and programmer/analysts to investigate data collection improvement areas for the NHSDA. The task force held a series of meetings and several focus group sessions involving the NHSDA field supervisors. Based upon these discussions, we developed a program of CQI for NHSDA field interviewing. The objectives of this program were four-fold:

- To increase screening and interviewing response rates to their highest levels ever.
- To reduce costs and increase data quality.
- To provide the FSs and the FIs with the tools, resources, and support to achieve unprecedented gains in quality.
- To appropriately reward those FSs and FIs who were responsible for the improvements in proportion to their contributions to the program's objectives.

To achieve these objectives, NHSDA management staff planned a system of performance measurement, communication, and improvement that emphasized teamwork, numerical goals, and data-driven decision making. An important feature of this approach was a program of recognition and reward that is commensurate

with team performance on the key, critical success factors that define field interviewing quality. This was implemented through a team-building concept called "Together Everyone Achieves More" (TEAM), which incorporated basic Total Quality Management and Continuous Quality Improvement concepts.

4. IMPLEMENTATION

We implemented the TEAM concept at the start of Quarter 1 of the 1995 NHSDA. In cooperation with the eight NHSDA field supervisors, we organized 19 teams of 7-11 field interviewers working under the same field supervisor. We then specified a small number of quarterly goals for each team. These goals were well defined, numerical goals based on past best performances achieved for comparable assignment areas in previous rounds of the NHSDA. To help measure and achieve these goals we implemented a series of tools including bi-weekly reports, monthly newsletters, and field staff training modules. Data through September 30, 1995 indicates that it has reversed downward trends in screening and interview response rates.

We evaluated a team's performance based upon four measurements of performance quality called "success factors." These success factors were:

- **Screening response rate** (calculated based upon the number of completed screening forms received and processed at RTI)
- **Interview response rate** (calculated based upon the number of correctly completed questionnaires received and processed at RTI)
- **Overall cost per interview** (calculated upon a number of factors including hours per interview, miles per interview, miscellaneous field expenses per interview, and use of any travelling interviewers including mode of travel to get to the area and the cost of accommodations)
- **Quality Assessment Factors (QAFs)** (included other outcomes that contributed to low response rates, high costs, and poor quality such as verification results, receipt/edit problems, and overdue cases)

The specially designed performance reports were produced every two weeks and distributed to all field supervisors and field interviewers. These reports provided summary information for "each" team that allowed team leaders and team members to determine their teams' performance.

As the field staff received the bi-weekly performance reports, supervisors would conduct telephone conferences with the interviewers to identify areas of success and areas requiring attention to improve performance. Supervisors were authorized to arrange periodic team telephone conferences, a team call approximately every 5-6 weeks, where all members of the team could discuss problems they were encountering and allow the team to discuss possible solutions to resolve these problems. Supervisors reported disappointment in the group calls after just two rounds of calls and abandoned use of this communication tool, preferring to use the team reports during their weekly individual telephone conferences with their interviewers. Logistical difficulties trying to get 7 to 11 interviewers on a telephone conference call along with difficulties managing the group dynamics of the calls were reported as the major problem areas encountered.

We recognized and rewarded those teams that exceeded, achieved, or made significant progress toward their goals through monetary rewards, individual certificates of recognition, and peer group recognition via acknowledgment in the project's monthly newsletter, the *NHSDA News*. Details on the five level accomplishments and rewards system we used for the TEAM program are listed below:

- **Level 1 Accomplishment**: At the conclusion of the Evaluation Period, achieved ALL of the goals for ALL of the Success Factors; **Level 1 Reward**: a bonus of $300 for each TEAM member, plus a Certificate of Special Merit, plus names listed in a special edition of the *NHSDA News*.
- **Level 2 Accomplishment**: At the conclusion of the Evaluation Period, achieved goals for 3 out of 4 Success Factors; **Level 2 Reward**: a bonus of $100 for each TEAM member, plus a Certificate of Commendation, plus names listed in a special edition of the *NHSDA News*.
- **Level 3 Accomplishment**: At the conclusion of the Evaluation Period, the top 3 TEAMs having the greatest improvement in their overall performance score; **Level 3 Reward**: a bonus of $100 for each TEAM member, plus a Certificate of Commendation, plus names listed in a special edition of the *NHSDA News*.

- **Level 4 Accomplishment**: During the Evaluation Period, the "one" TEAM with the greatest improvement in overall performance from one quarter to the next; **Level 4 Reward**: a bonus of $100 for each TEAM member plus names listed in a special edition of the *NHSDA News*.

- **Level 5 Accomplishment**: Made commendable progress toward all goals; **Level 5 Reward**: names listed in a special edition of the *NHSDA News* plus a Certificate of Appreciation.

5. RESULTS

Screening and interviewing response rates are shown below for the NHSDA survey beginning in 1992 when the survey changed to a quarterly design.

NHSDA Year	Screening Response Rate	Interviewing Response Rate
1992	95.2%	82.9%
1993	93.6%	79.5%
1994	93.8%	78.7%
1995	94.3%	81.2%

Exhibit 1 graphs the screening and interviewing response rates from 1992 through 1995. Exhibit 1.1 shows the response rates experienced across the survey years by data collection quarter. Through the first year of the TEAM program, we have seen the best response rates since 1992. Improvements were seen in each of the calendar quarters from 1994 to 1995.

In addition to improvements in response rates, we have seen some encouraging results in the area of direct costs per completed interview. We calculated our costs per completed interview using data from interviewer production, time, and expense reports. These weekly reports include all interviewer charges for time, mileage, and miscellaneous expenses that are associated with completed interviews. Presented below are the average cost per completed interview for the NHSDA survey years since 1992. Please note that we have not adjusted these figures for inflation across the survey years.

NHSDA Year	Total Costs Per Completed Interview
1992	$74.20
1993	$83.65
1994	$89.74
1995	$87.24

We are encouraged to see the reduction in cost per completed interview from 1994 to 1995. Using the calculated reduction per completed interview from 1994 to 1995 of $2.50, with the field staff completing 18,000 interviews, this represents a reduction in field costs of approximately $45,000, a savings used to offset the costs associated with the TEAM program and performance awards distributed to deserving field personnel. Exhibits 2 and 2.1 graphically display the cost per completed interview information across the survey years and the data collection calendar quarters.

6. CONCLUSIONS / RECOMMENDATIONS

We have seen some encouraging results at the end of the first year of the TEAM program. We have seen the best response rates since 1992 as well as a reduction in field costs per completed interview from the levels experienced during the 1994 NHSDA. Continued evaluation of performance on the remainder of the 1995 NHSDA and throughout the 1996 NHSDA will allow us to determine if the TEAM program will continue to show increases in response rates along with decreases in operating costs. More research is required to determine if this approach to managing national personal interview surveys can be applied to other studies outside of the NHSDA project.

ACKNOWLEDGMENTS

We wish to identify and thank our RTI colleagues who participated with us on the task force responsible for designing the TEAM methodology: Paul Biemer (Chair), Chad Barker, Rachel Caspar, GG Frick, Kelly Wayne, and Michael Witt.

REFERENCES

Groves, Robert M., and Couper, Mick P. (1992). "Correlates of Nonresponse in Personal Visit Surveys." Proceedings of the American Statistical Association, Section on Survey Methods Research, pp. 102-111.

Exhibit 1: NHSDA -- Response Rates

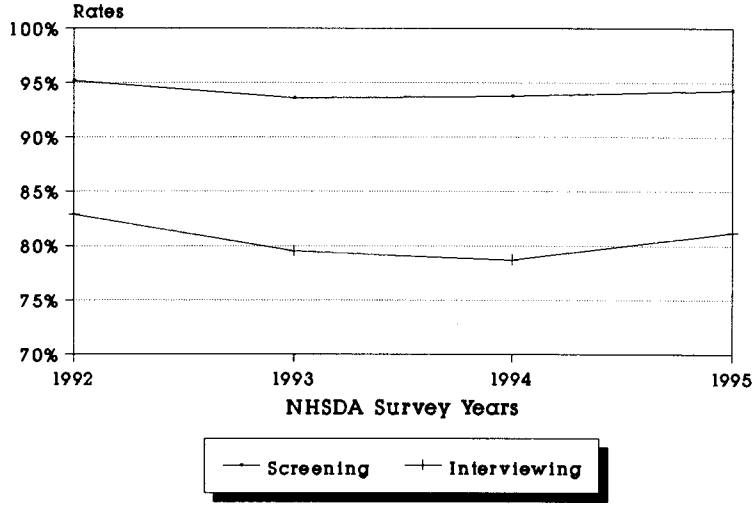
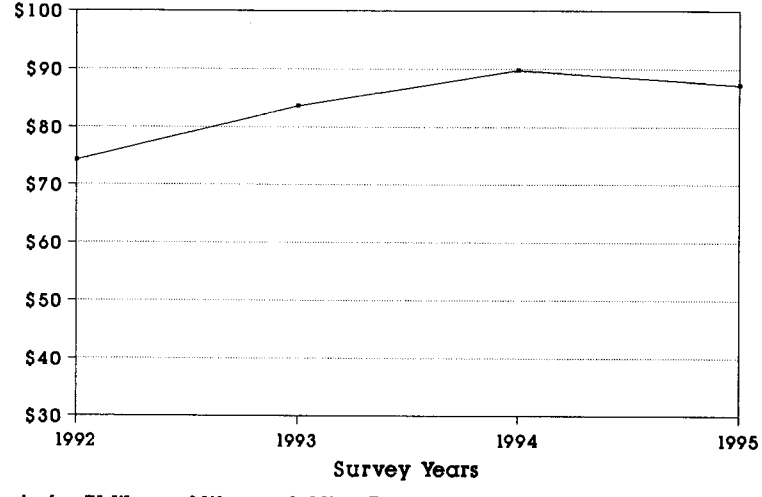


Exhibit 2: NHSDA -- Average Field Cost Per Completed Interview



Includes FI Wages, Mileage, & Misc. Exp.

Exhibit 1.1: NHSDA - Quarter 1
Response Rates

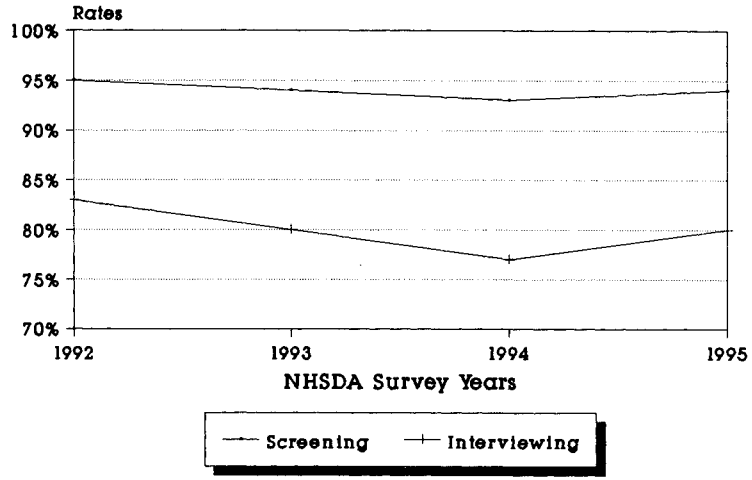


Exhibit 1.1: NHSDA - Quarter 2
Response Rates

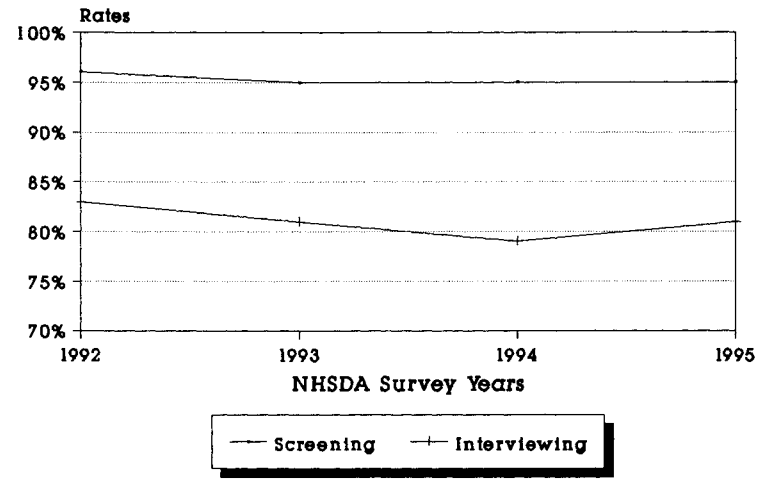


Exhibit 1.1: NHSDA - Quarter 3
Response Rates

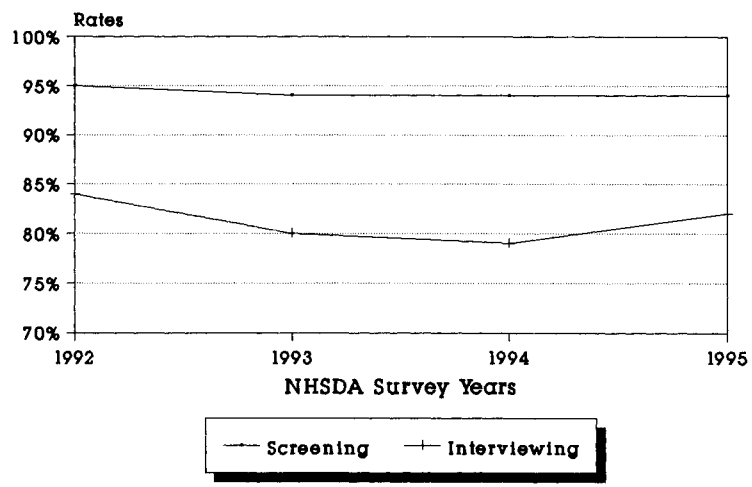


Exhibit 1.1: NHSDA - Quarter 4
Response Rates

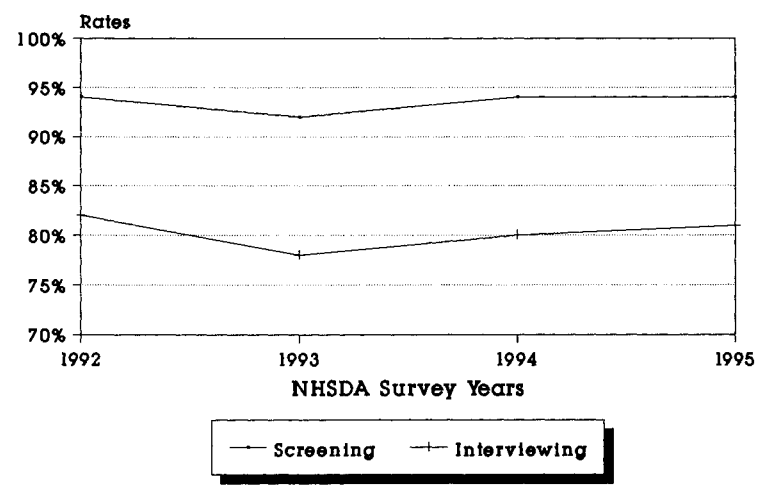
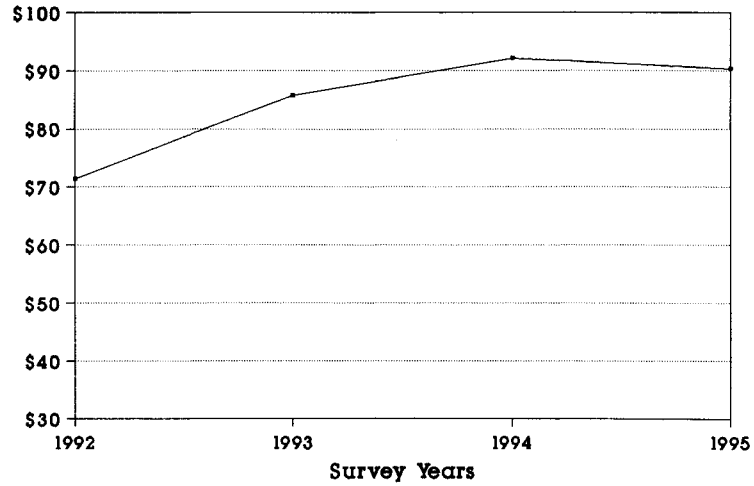
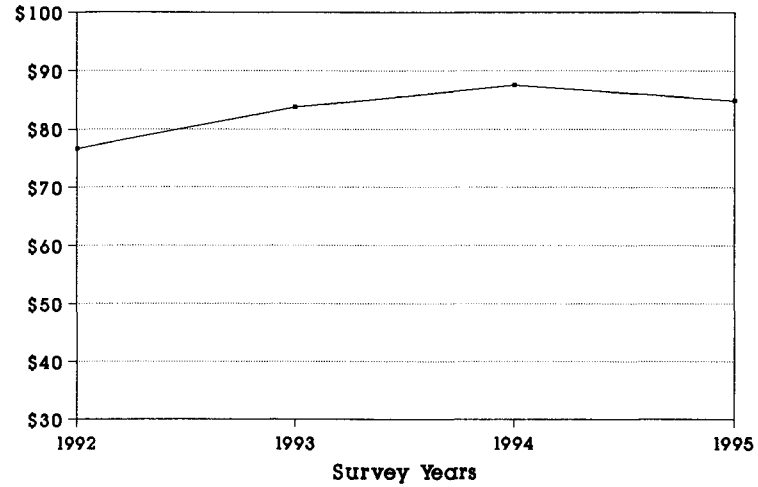


Exhibit 2.1: NHSDA -- Quarter 1 Average
Field Cost Per Completed Interview



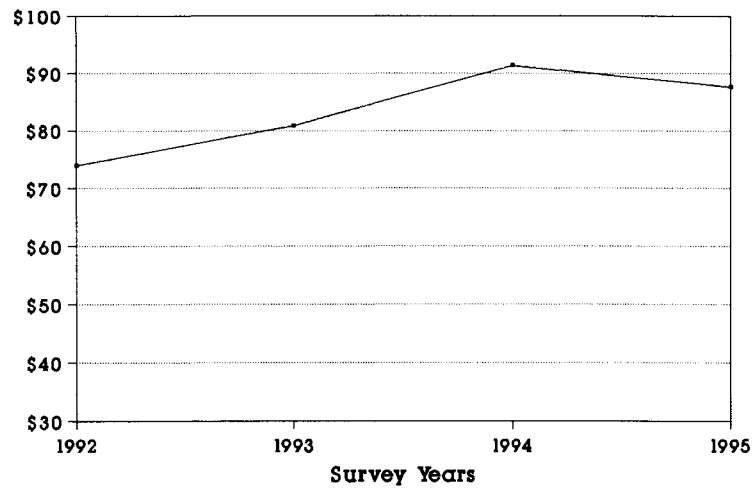
Includes FI Wages, Mileage, & Misc. Exp.

Exhibit 2.1: NHSDA -- Quarter 2 Average
Field Cost Per Completed Interview



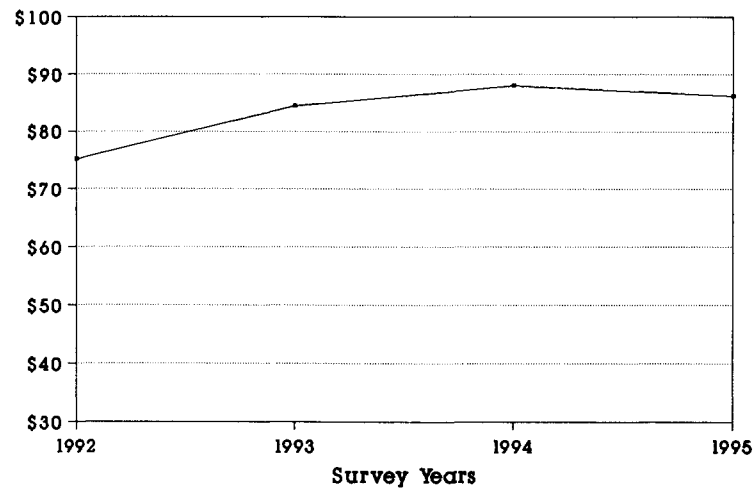
Includes FI Wages, Mileage, & Misc. Exp.

Exhibit 2.1: NHSDA -- Quarter 3 Average
Field Cost Per Completed Interview



Includes FI Wages, Mileage, & Misc. Exp.

Exhibit 2.1: NHSDA -- Quarter 4 Average
Field Cost Per Completed Interview



Includes FI Wages, Mileage, & Misc. Exp.