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The Effect of Consumer Direction on Personal Assistance Received in Arkansas

Final Report

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EXECUTIVE SUMMARY

The traditional system of providing Medicaid personal care services (PCS) through home care agencies gives consumers few choices about how and when their care is provided. Because some agencies do not provide care on weekends or outside business hours, consumers may not receive care when they need it. Moreover, worker shortages make it difficult to ensure that beneficiaries receive all the care they entitled to. This study of Arkansas's Cash and Counseling Demonstration program, IndependentChoices, examines how this model of consumer direction changes the way that consumers meet their personal assistance needs.

Demonstration enrollment, which occurred between December 1998 and April 2001, was open to interested Arkansans who were at least 18 years old and eligible for personal care services under the state Medicaid plan. After a baseline survey, enrollees were randomly assigned to direct their own personal assistance as IndependentChoices consumers (the treatment group) or to receive services as usual from agencies (the control group). IndependentChoices consumers had the opportunity to receive a monthly allowance, which they could use to hire their choice of caregivers (except spouses) or to buy other services or goods needed for daily living. They could also call on counselors for support and advice about managing the allowance.

Outcome measures related to PCS use were drawn from computer-assisted telephone surveys; PCS expenditures and other Medicaid expenditures for the 12 months after enrollment were drawn from Medicaid claims data. Nine months after baseline, we asked consumers about the type, timing, and amount of personal assistance they received as well as any home or vehicle modifications and equipment purchases they made to meet their personal assistance needs. We used regression models to estimate program effects for 473 nonelderly and 1,266 elderly sample members, while controlling for a comprehensive set of baseline characteristics.

For both the elderly and nonelderly groups, IndependentChoices substantially increased the likelihood of receiving any paid personal care and increased the proportion receiving care during non-business hours. For the nonelderly only, it reduced the likelihood of having multiple paid caregivers, and increased the likelihood of receiving assistance with key types of personal care for which we observed a high level of unmet need at baseline. IndependentChoices also altered the way in which nonelderly consumers addressed their needs for assistance, decreasing the hours (both total and unpaid) of personal care they receive, but increasing the likelihood that they would make home or vehicle modifications or assistive equipment purchases.

The much greater satisfaction and fewer unmet needs of consumers in the treatment group (Foster et al. 2003) shows that nonelderly individuals were not disadvantaged by the decline in hours of care received. Consumers may hire more productive workers, decide how and when paid care is delivered, and purchase equipment or make modifications to meet their personal assistance needs – all of which can lead to more efficient care delivery under consumer direction.

IndependentChoices enabled more Medicaid beneficiaries to receive the paid assistance for which they were eligible, and to receive a greater proportion of the hours of care recommended that they would if agency care were the sole option. Because the program improved access to

care, PCS expenditures overall and per month of service were higher for treatment group members than for the control group during the 12 months after randomization. Consistent with CMS's budget neutrality requirements, treatment group costs per month of services were roughly equal to the cost that beneficiaries in the control group were expected to incur. However, control group costs per month of service were far lower than expected because they received only about two-thirds of the authorized hours in their care plans instead of the historic average of 86 percent. Medicaid costs for other services (including home health and nursing homes) were lower for the treatment group than for controls, but not enough lower to offset the higher PCS costs attributed to greater service provision. Future research will examine whether these expenditure patterns persisted over a longer follow-up period and will compare findings from Arkansas to those of the other two demonstration states, Florida and New Jersey.

Please see "The Effects of Cash and Counseling on Personal Care Services and Medicaid Costs in Arkansas," a November 19, 2003 Health Affairs web exclusive available at http://www.healthaffairs.org/1110_web_exclusives.php for important additional results produced after this report was written. These new results show that when costs for the second year after enrollment are examined, the savings in nursing home and other long-term care costs grow to essentially offset the treatment group's higher costs for personal care.

Traditionally, home care agencies have provided Medicaid personal care services (PCS). Agefoncies provide important benefits to consumers, but they sometimes limit consumers' choices about how and when their care is provided. Because many agencies do not provide care on weekends or outside normal business hours, consumers might not receive care when they need it. Some users complain that agency workers habitually arrive late or fail to complete their assigned tasks. Worse, worker shortages sometimes make it difficult to ensure that all beneficiaries receive the care they are entitled to.

Many states are addressing the potential shortcomings of agency services by giving interested PCS users control over the funds for their care. In 1999, there were an estimated 139 publicly funded, consumer-directed personal assistance programs in the United States (Flanagan 2001). Advocates for consumer-directed care believe that individuals, not agencies, are best suited to make decisions about the timing and type of care they receive and the workers they hire. However, critics of consumer-directed care are concerned that consumers might not use the funds intended for their care appropriately. They worry that consumers might receive inadequate or substandard care, since the workers they hire may not receive the training or supervision that agency workers do. In addition, critics feel that consumers may have difficulty finding back-up care. Finally, they are concerned that consumers might use a cash benefit to pay family members to provide care once provided free.

The national Cash and Counseling Demonstration permits the first rigorous comparison of PCS use under agency- and consumer-directed approaches. In this report, we examine how consumer direction changes the way individuals meet their personal assistance needs, using results from Arkansas' IndependentChoices, the first of the three demonstration programs to be implemented. Specifically, we explore how IndependentChoices affected the receipt, timing, amount, and type of PCS individuals receive. We also look at whether IndependentChoices

affected whether individuals modified their home or vehicle or purchased equipment or supplies to help them perform daily activities independently. Finally, we examine whether IndependentChoices affected expenditures for PCS, as well as for other Medicaid services.

BACKGROUND

A New Model of Medicaid Personal Assistance

About 1.2 million individuals receive disability-related supportive services in their homes through state Medicaid plans or home- and community-based waiver services programs (LeBlanc et al. 2001; and Kitchener and Harrington 2001).[1] Most receive services from government-regulated agencies, whose professional staff select, schedule, and monitor the quality of those services; but a growing percentage handle these responsibilities themselves (Velgouse and Dize 2000).

As one model of consumer-directed supportive services, Cash and Counseling provides consumers who volunteer for the program with a flexible monthly allowance that they may use to hire their choice of workers, including family members, and to purchase other services and goods (as states permit). Cash and Counseling requires that consumers develop plans showing how they would use the allowance to meet their personal care needs and provides counseling and fiscal assistance to help them plan and manage their responsibilities. Consumers who are unable or unwilling to manage their care themselves may designate a representative, such as a family member, to help them or to do it for them. These features make Cash and Counseling adaptable to consumers of all ages and with all types of impairments.

[1]Because some individuals may receive services from more than one program, the total number of users may be overestimated.

With funding from the Robert Wood Johnson Foundation (RWJF) and the Office of the Assistant Secretary for Planning and Evaluation (ASPE) of the U.S. Department of Health and Human Services (DHHS), the Cash and Counseling Demonstration and Evaluation was implemented in three states—Arkansas, Florida, and New Jersey. Because their Medicaid programs and political environments differed considerably from each other, the demonstration states were not required to implement a standardized intervention, although they did have to adhere to basic Cash and Counseling tenets, as summarized above. Because the states' resulting demonstration programs differed in their particulars, each program is being evaluated separately, by Mathematica Policy Research, Inc. (MPR).

Cash and Counseling in Arkansas

Arkansas designed IndependentChoices as a voluntary demonstration for adults who were at least 18 years old and who were eligible for PCS under the state's Medicaid plan. The state implemented the demonstration in order to assess the demand for, and practicability of, consumer-directed personal assistance in Arkansas. It also hoped that the program would be better than agencies had been at serving individuals during nonbusiness hours and in rural parts of the state, where agencies and agency workers were scarce (Phillips and Schneider 2002).

Enrollment and random assignment began in December 1998 and continued until the evaluation target of 2,000 enrollees was met, in April 2001.[2,3] The demonstration waiver

[2]To receive Medicaid PCS, an Arkansan must (1) be categorically eligible for Medicaid; (2) live in his or her own residence, or in community-based residence, group or boarding home, or residential care facility; and (3) have physical dependency needs related to the activities of daily living and a physician's prescription for personal care (Arkansas Medicaid Program 1998). Slightly more than 18,000 Medicaid beneficiaries received personal care services in Arkansas in 1998, when Cash and Counseling was introduced (Nawrocki and Gregory 2000).

[3]Arkansas enrolled and randomly assigned beneficiaries after April 2001, but not for the evaluation.

stipulated that, among Arkansas program enrollees, the ratio of "new" to "continuing" beneficiaries (defined by whether the beneficiary had Medicaid claims for PCS in the 12 months before enrollment) not exceed predemonstration levels. This stipulation arose from concern that the prospect of a flexible monthly allowance would induce demand for PCS and drive up costs. In fact, the ratio of new to continuing beneficiaries among enrollees was below historic levels in each year of the demonstration. In addition, Arkansas tried to avoid inducing demand for PCS by requiring prospective enrollees to agree to use agency services if they were assigned to the control group (although this agreement was not enforceable). Finally, only about 11 percent of those using Arkansas's Medicaid PCS benefit during the demonstration period chose to participate in IndependentChoices (Schore and Phillips 2002), indicating that there was not an excessive demand for the program.

While they were deciding whether to enroll in the demonstration, beneficiaries were told what their monthly allowance would be should they be assigned to the treatment group to direct their own PCS. Allowances were based on the number of hours in beneficiaries' Medicaid personal care plans.[4] For prospective enrollees already using PCS, existing care plans, which had been developed by agency nurses, were used to calculate the allowance. For those not yet using PCS, enrollment nurses developed the care plans, using the same state-mandated process required of agencies. For all enrollees, allowances were discounted to reflect the fact that, historically, the amount of services actually delivered by agencies was 10 to 30 percent less than the amount planned. In other words, discounting was meant to ensure that treatment group members' allowances were on a par with the expected cost of services that would likely be

[4]The number of hours in a Medicaid personal care plan depends on the beneficiary's physical limitations, needs, and other sources of paid and unpaid assistance. Special state authorization is needed for more than 64 hours of services per month.

received by similar control group members. The average allowance was $320 per month, based on care plans recommending an average of about 45 hours of services, and an average discounting factor of .86.

Beneficiaries who decided to enroll in the demonstration completed a baseline telephone interview, then were randomly assigned to one evaluation group or the other. After random assignment, control group members continued relying on agency services or, if newly eligible for Medicaid PCS, received a list of home care agencies to contact for first-time services. Treatment group members were contacted by an IndependentChoices counselor, who helped them develop acceptable written plans for spending their allowance. Arkansas consumers could use their allowance to hire their choice of workers (except spouses or representatives); nearly all consumers did hire workers, with about two-thirds hiring family members, and most others hiring friends (Schore and Phillips, 2002). They could also use their allowance to purchase other services or goods related to their personal care needs, such as supplies, assistive devices, and home modifications. They were required to keep receipts for all but incidental expenditures, which could not exceed 10 percent of the allowance. In addition, consumers were allowed to save a designated portion of the monthly allowance toward future purchases.

With very few exceptions, consumers chose to have the program's fiscal agents maintain their accounts, write checks, withhold taxes, and file their tax returns. Many also called upon program counselors for advice about recruiting, training, and supervising workers. These counseling and fiscal services were provided at no direct cost to consumers. In addition to helping consumers manage their responsibilities, counselors monitored consumer satisfaction, safety, and use of funds through initial home visits, monthly telephone calls, semiannual reassessments, and reviews of spending plans, receipts, and workers' time sheets (Schore and Phillips 2002).

EXPECTED EFFECTS OF INDEPENDENTCHOICES ON SERVICE USE

Under IndependentChoices, consumers had greater flexibility and autonomy in their choice of services than they did under the traditional system. Therefore, we expected that the way individuals would meet their personal assistance needs would differ for treatment and control group members in many areas. These include (1) whether the consumer received any paid assistance; (2) the number of caregivers, and their relationship to the consumer; (3) time of day or week the consumer received assistance; (4) number of hours of paid and unpaid assistance; (5) types of assistance (such as help with routine health care, eating, bathing, meal preparation, transportation); and (6) whether the consumer modified a home or vehicle or purchased equipment.

Recent research has examined the effect of consumer direction in the United States on unmet need and quality of care (Benjamin et al. 2000). However, few studies have directly investigated the effect of consumer direction in the United States *on service use.* Most such research has examined European programs. For example, an evaluation of a cash assistance program in the Netherlands found that individuals receiving cash could buy more hours of services than a randomly assigned control group because the cost of services purchased in the private market was lower than that the cost of services that agencies provided (Miltenburg et al. 1996). Other studies examined whether people used their cash allowance to substitute paid for unpaid care. Some studies found that consumers replaced paid caregivers with family and friends (Grana and Yamashiro 1987; and Osterle 1994). Other research, however, indicated that consumers did not choose to pay their former informal caregivers but continued to rely heavily on care provided by agencies or privately hired workers (Cameron and Firman 1995). In addition, the use of assistive equipment can influence the type and amount of human assistance received. For example, both Allen et al. (2001) and Hoening et al. (2003) found that the use of

assistive equipment reduced the number of hours of assistance that individuals with disabilities received.

Given the scarcity of studies and mixed evidence, we relied mainly on a priori reasoning to form our hypotheses. We expected that Cash and Counseling treatment group members would be more likely than control group members to be receiving paid assistance at followup, for two reasons: (1) agencies sometimes have a shortage of workers; and (2) some people might have signed up for IndependentChoices because they were only interested in the cash allowance option and had no intention of obtaining assistance from an agency if assigned to the control group. Given the flexibility of the monthly allowance, other hypotheses are that, compared with the control group, treatment group members would:

- Be more likely to receive paid assistance during the early morning, in the evening, and on the weekend
- Have more paid caregivers (since consumers might hire different people to meet their needs at various times of the day and week)
- Be more likely to purchase assistive equipment and supplies and to make home and vehicle modifications

It is difficult, however, to predict the direction of the impact of IndependentChoices for other outcome measures, because consumers could use their monthly allowance for a variety of purposes that have different implications for service use. In particular, it is unclear whether the hours of human assistance (paid, unpaid, and total) were likely to increase or decrease. For example, consumers could purchase equipment that might reduce the need for human assistance. On the other hand, hours of human assistance might increase if consumers could hire caregivers when agencies were having difficulty supplying workers.

Finally, the effects of the program on Medicaid expenditures are similarly difficult to predict. The program was designed to meet CMS's budget-neutrality criterion with regard to the

expenditures on PCS (and a few other related services). The per person per month cost for those receiving the cash allowance must be no greater than the historic per person per month cost for those receiving agency services. This study estimates program effects on quite different measures: Medicaid cost for PCS, and total Medicaid cost, for the entire sample. If the control group members are less likely to receive the PCS to which they are entitled or receive fewer hours than are cashed out for the treatment group, PCS expenditures will almost surely be higher for the treatment group. On the other hand, if the discount factor used is lower than the ratio of actual hours received to hours planned for the control group, PCS expenditures could be lower for the treatment group. Similarly, the effect on Medicaid expenditures for other services could be positive or negative. If those receiving the allowance are able to reduce the need for home health care or nursing homes by better meeting their PCS needs, their total Medicaid expenditures for other services will be lower than the control group's. However, if participants have a greater incidence of falls or adverse events because their workers are less well-trained than agency staff, acute care expenditures may exceed that of controls.

METHODS

Data Collection

Data for this analysis were drawn primarily from two computer-assisted telephone surveys of treatment and control group members or their proxy respondents. We constructed control variables from responses to the baseline survey and outcome variables related to PCS use from responses to the survey conducted nine months after each sample member's random assignment. We used Medicaid claims data to construct outcome variables related to PCS expenditures and other Medicaid services.

The baseline survey, administered between December 1998 and April 2001, was completed by 2,008 individuals. It collected data on demographic characteristics, health and functioning, use of paid and unpaid personal assistance, reasons for enrolling in the demonstration, work and supervisory experience, unmet need, and satisfaction with services.

The nine-month survey, administered between September 1999 and March 2002, was completed by 1,739 individuals—89 percent of the treatment group and 85 percent of the control group. We attempted nine-month interviews with all sample members or their proxies, including those of deceased sample members and consumers who disenrolled from IndependentChoices (many of whom had returned to traditional agency-directed services). We did this to preserve the comparability of the treatment and control groups and to obtain a complete picture of their experiences.

Although we encouraged sample members to respond to our surveys themselves if possible, the use of proxy respondents was widespread at baseline and followup. Proxies completed 57 percent of baseline interviews for elderly sample members and 24 percent for non-elderly sample members. At followup, they completed 71 percent of interviews for the elderly sample members and 29 percent for the non-elderly ones. Sample members used proxies because of cognitive or physical impairments or because they wanted the person who helped them make decisions about their care to respond to the surveys. In the latter case, if we could not gently persuade sample members to respond for themselves, we asked to interview the most knowledgeable proxy.

During analysis, we controlled for use of proxies at baseline (although it was similar for the treatment and control groups).[5]

Outcome Measures

Measures related to PCS use were constructed from the consumer nine-month follow-up survey. Medicaid expenditure measures were compiled from Medicaid claims data supplied by Arkansas.

Survey Based Outcomes

Our survey-based outcome measures are constructed from respondents' answers to questions about the type and amount of personal assistance services they received, as well as about home or vehicle modifications and equipment or supply purchases they made. Questions for this analysis pertain to two reference periods: (1) the most recent two weeks the consumer was at home (which we refer to as "the past two weeks"); and (2) the entire nine-month period since enrollment into the demonstration. Questions about the type and amount of human assistance received refer to the past two-week period, because these activities occurred frequently and would be difficult to recall accurately for longer periods. Questions about equipment and supply purchases or home or vehicle modification refer to the nine-month period since enrollment, because these events were likely to occur infrequently. Table A.1 provides a brief description of these outcome measures.

Several of these measures require further explanation:

[5]We controlled for proxy use at baseline, rather than at followup, to avoid endogeneity. Seventy-eight percent of sample members who used proxy respondents at followup also used them at baseline.

Hours of Total Assistance. The survey asked about the hours of help provided during the past two weeks by each caregiver for up to three visiting paid caregivers, three visiting unpaid caregivers, two live-in paid caregivers, and two live-in unpaid caregivers. Separate questions were asked about the hours the caregiver provided on tasks that were provided solely for the individual, as well as those provided for the entire household (such as the meal preparation, laundry, or housekeeping). To determine the total hours of help provided, we summed the hours of help provided, for both the individual and the entire household, across all (paid and unpaid) visiting and live-in caregivers.

Hours of Visiting Care. We calculated the hours each visiting caregiver provided by multiplying the number of visits during the past two weeks by the reported average time spent per visit. To obtain total hours of visiting care, we summed across all visiting caregivers.

Hours of Live-In Care. The hours of care that live-in caregivers provided is the sum of the hours each live-in caregiver provided for the individual and the hours each live-in caregiver provided for the household during the past two weeks, summed across all live-in caregivers.[6]

Hours of Paid Help Received. For each paid caregiver in the treatment group, the survey asked the number of hours of help the caregiver provided during the past two weeks and the number of those hours the caregiver was paid for. We summed the latter across paid caregivers to determine hours of paid help received for the treatment group. For paid caregivers in the control group, the survey asked only about the hours of work provided. We assumed that visiting agency workers were paid for all the help they provided to control group sample members. For the small number of workers for the control group that lived with the consumer, we imputed the

[6]An alternate way to measure hours would be to prorate the hours of household help by dividing by the number of members of the household at baseline. See the appendix for a discussion.

portion of total hours that were paid.[7] We summed this measure across all paid caregivers to determine hours of paid help for control group members.

Hours of Unpaid Help Received. We calculated the total hours of unpaid help received by subtracting the paid hours received from the total hours received (both measured as described above).

Receipt of Any Unpaid Care. A consumer who had any unpaid caregivers or had any paid caregivers who also provided unpaid help during the past two weeks is classified as having unpaid care. Because of the nature of the intervention, we had to determine whether a consumer had any paid caregivers who provided unpaid help somewhat differently for treatment and control group members. For treatment group members, if the number of hours a paid caregiver provided was greater than the number of hours that caregiver was paid for, then that caregiver was defined as having provided unpaid help. Not surprisingly, this was common, since paid workers are often family or friends. Because control group members were unlikely to be able to report reliably on the unpaid hours of their agency workers, we asked simply whether a paid worker spent time helping them for which the worker would not be paid.

[7]About 2 percent of elderly control group members and 8 percent of non-elderly control group members had paid live-in caregivers. These few paid live-in caregivers were paid by family members or another private source, were hired through Alternatives (another Medicaid waiver program), or worked for agencies. We imputed the paid hours of care that these live-in caregivers provided, based on the fraction of total hours that live-in workers for the control group were paid for, as reported on the Cash and Counseling Caregiver Survey. According to this survey, workers for the control group who live with the consumer are paid for about 28 percent of the hours of care they provided, while workers for the control group who do not live with the consumer are paid for about 88 percent of the hours of care they provided. (The 12 percent of hours for which visiting workers were not paid were provided by a handful of these visiting workers who were related to the consumer and provided large amounts of unpaid care.)

Medicaid Expenditure Outcomes

Expenditure measures were obtained from Medicaid claims data for the 12-month period after the individual enrolled in the demonstration. PCS expenditures for the control group were equal to actual hours of care delivered, multiplied by $12.36, the rate paid by Arkansas for agency services. Treatment group PCS costs for those receiving the allowance were equal to care plan hours (discounted to reflect historic differences between actual hours and care plan hours) times $8 per hour (for the allowance), plus monthly fees to cover counseling and fiscal agent services. The fees for the counseling and fiscal agent costs were set so that they would be covered, in the aggregate, by the difference between the $12.36 per care plan hour that Medicaid pays for consumers getting agency care and the $8 per hour paid for the allowance. Treatment group PCS costs also included payments for agency services consumers received after randomization but before they started receiving their cash allowance, and any agency services received by disenrollees after leaving the program.

Estimation of Program Effects

The impact estimates presented in our tables measure the effects of having had the *opportunity* to receive the cash allowance (by being assigned to the evaluation treatment group), rather than having actually received it. As noted, our results draw on the experiences of all treatment group members, including some who were not receiving the allowance (because they disenrolled or never developed a spending plan) but were receiving help from other paid sources. For example, many survey questions addressed respondents' care during a two-week period shortly before the interview. At that point, 731 treatment group members (83 percent) were receiving help from paid caregivers. These recipients included 99 (14 percent) who were

disenrolled from IndependentChoices.[8] Responses from these disenrollees pertained to care from home care agencies and other sources, rather than to care purchased with the IndependentChoices allowance. We did not exclude these disenrollees from the analysis sample because doing so could induce unmeasured, preexisting differences between the treatment and control groups. Avoiding such potential sources of bias was the very reason for requiring random assignment in the first place.

The results provide estimates of the effects of a *voluntary* consumer-directed program. Program effects could be very different if consumers were required to participate, or if they did not have the option of returning to the traditional program.

We used binary logit models to obtain estimates of program impacts for categorical outcome measures. For continuous outcome measures (such as hours of care or Medicaid cost), we used ordinary least squares regression models. The models controlled for the sample member's baseline measures of demographic characteristics, health and functioning, use of personal assistance, satisfaction with care and life, unmet needs, reasons for and year of enrollment, work and community activities, whether used a proxy respondent, and whether appointed a representative (shown in Table A.2). Use of these models ensures that any differences between treatment and control groups in these preexisting characteristics that may have arisen by chance

[8]Of the 154 treatment group members (17 percent) not receiving help from paid caregivers during the two-week reference period, 73 were deceased, 49 were disenrolled, 24 were enrolled but had not hired a paid caregiver, and 5 were not living at home for at least two weeks during the two months before the interview (for example, because of a hospitalization or nursing home stay). Three other treatment group members did not say whether they had paid assistance.

or by differentiated nonresponse do not distort our impact estimates and increase the precision of the program impact estimates.[9]

For categorical outcome measures, we measured impacts of IndependentChoices by using the estimated coefficients from the logit models to calculate average predicted probabilities that the binary dependent variable takes a value of 1, first with each sample member assumed to be in the treatment group, then in the control group. For continuous outcome measures, we measured impacts by calculating the treatment-control difference in predicted means. For both types of models, the p-value for the coefficient on the treatment group indicator was used to determine whether the treatment-control group difference was statistically significant. To be conservative, we conducted two-tailed statistical tests, even where we proposed directional hypotheses. For each outcome, we estimated our models separately for the elderly and non-elderly sample members, since impacts and the relationship of the outcomes to the control variables may differ for the two age groups.[10] We estimated impacts for other subgroups by including interaction terms for all the subgroups (including age) in a single model.

With 473 non-elderly cases and 1,266 elderly cases in the analysis sample, and each age group split nearly equally between treatment and control groups, we can be confident of detecting only sizable impacts for the non-elderly age group, but more moderate ones for the elderly age group. We have 80 percent power to detect impacts of 11.4 and 7.0 percentage points, respectively, for the two age groups for binary outcome variables with a mean of .50

[9]Total Medicaid expenditures, PCS expenditures, and non-PCS expenditures were predicted using ordinary least squares regression models. Due to the large fraction of the sample with zero nursing facility expenditures and zero home health expenditures, nursing facility expenditures and home health expenditures were predicted using tobit models.

(assuming two-tailed tests at the .05 significance level). For variables with a mean of .10 or .90, the detectable differences are 6.9 and 4.2 percentage points. While relatively small impacts may not be detected, policymakers may be relatively unconcerned about small effects in either direction.

Characteristics of Respondents to the Nine-Month Interview

As expected under random assignment, treatment and control group members were similar to each other (Table A.2). However, nonelderly and elderly sample members differed considerably on numerous measures and therefore, are displayed separately (Table 1). The analysis sample was predominantly white, female, and of limited education (54 percent of the nonelderly and 84 percent of the elderly had not graduated from high school). Roughly one-third lived alone, and about two-thirds described their area of residence as either rural or urban with high crime or poor public transportation, both of which could make recruiting caregivers difficult. Many sample members said they were in poor health and had functional limitations (for example, nearly two-thirds could not get in or out of bed without help). Most were allotted 12 hours or fewer of care per week in their Medicaid personal care plans. About 40 percent of the non-elderly sample members and 20 percent of the elderly ones were not receiving publicly funded home care at baseline, including that funded by Medicaid.

(continued)

[10]In some instances, we used an alternative model in which the sample was pooled across age groups; an interaction term (age group times treatment status) was used to distinguish impacts for nonelderly and elderly sample members.

TABLE 1

SELECTED BASELINE CHARACTERISTICS OF RESPONDENTS TO THE NINE-MONTH INTERVIEW, BY AGE GROUP
(Percentages)

Characteristic	Ages 18 to 64	Age 65 or Older
Age in Years		
18 to 39	27.1	—
40 to 64	72.9	—
65 to 79	—	49.9
80 or older	—	50.1
Female	67.7	82.2
Race		
White	64.6	60.1
Black	29.5	34.0
Other	5.9	5.9
Lives Alone	39.1	30.5
Did Not Graduate from High School	53.9	83.9
Area of Residence		
Rural	36.7	40.4
Nonrural but high-crime or lacking adequate public transportation	33.8	26.4
In Poor Health Relative to Peers	52.6	47.1
Could Not Get In or Out of Bed Without Help in Past Week	61.1	66.9
Not Receiving Publicly Funded Home Care	40.1	20.6
More Than 12 Hours of Care Per Week in Medicaid Personal Care Plan	48.0	34.7
Dissatisfied with Overall Care Arrangements	36.3	14.7
Appointed a Representative	27.3	48.6
Number of Respondents	**473**	**1,266**

SOURCE: MPR's baseline evaluation interview, conducted between December 1998 and April 2001, and the IndependentChoices program.

RESULTS

IndependentChoices substantially increased the likelihood that beneficiaries received at least some of the paid care for which they were authorized. Among elderly individuals living in the community, IndependentChoices increased the likelihood of receiving paid assistance during the past two weeks by 15.4 percentage points, from 78.8 percent for the control group to 94.2 percent for the treatment group (Table 2).[11] The increase for the non-elderly was even larger (26.7 percentage points), with 67.8 percent of control group members and 94.5 percent of treatment group members having at least one paid worker.

The increase in the likelihood of *paid* assistance was not accompanied by a decrease in the likelihood of *unpaid* assistance. In fact, while IndependentChoices had no effect on the likelihood that the non-elderly would receive unpaid assistance, it did increase the likelihood that the elderly would receive some unpaid assistance. We discuss effects on the amount of assistance caregivers provided later.

It is striking that nearly one-quarter of control group members living in the community received no paid assistance during the past two weeks (21.2 percent of the elderly and 32.2 percent of the nonelderly). The lack of any paid assistance among control group members is particularly pronounced among new applicants for home care (that is, those elderly and non-elderly individuals not receiving publicly funded home care services at the time of demonstration enrollment), with 51.0 percent not having a paid caregiver during the past two weeks (Table A.6). In contrast, only 8.1 percent of new applicants in the treatment group were not receiving paid assistance. Among those receiving publicly funded home care at enrollment, the effect of

[11]These results were not distorted by differences between the two groups in the proportion living in the community at the time of followup. (Those not in the community were living in a group home or nursing home, or they had died.) The likelihood of living in the community at the time of the follow-up interview—about 87 percent for the elderly and 95 percent for the nonelderly—was similar for treatment and control group members.

TABLE 2

ESTIMATED EFFECTS OF INDEPENDENTCHOICES ON LIKELIHOOD OF LIVING IN THE COMMUNITY AND RECEIVING ASSISTANCE DURING PAST TWO WEEKS

Outcome	Ages 18 to 64			Age 65 or Older		
	Predicted Treatment Group Mean (Percent)	Predicted Control Group Mean (Percent)	Estimated Effect (p-Value)	Predicted Treatment Group Mean (Percent)	Predicted Control Group Mean (Percent)	Estimated Effect (p-Value)
Lived in the Community[a]	93.1	95.7	–2.6 (.279)	86.1	87.8	–1.7 (.354)
Of Those Living in the Community:						
Received paid assistance[a]	94.5	67.8	26.7*** (.000)	94.2	78.8	15.4*** (.000)
Received unpaid assistance[a]	97.1	95.0	2.1 (.130)	93.7	90.5	3.2* (.067)
Among Those with Paid Care:						
Had multiple caregivers	17.9	36.7	-18.8*** (.000)	39.7	36.3	3.4 (.264)
Had paid visiting caregivers	75.6	92.3	-16.6*** (.001)	74.9	98.1	-23.2*** (.000)
Had paid live-in caregivers	28.1	14.6	13.5*** (.003)	37.9	3.4	34.5** (.000)

SOURCE: MPR's nine-month evaluation interview, conducted between September 1999 and March 2002.

NOTES: Means were predicted using logit models. The full sample used in the models predicting whether an individual lived in the community included 473 individuals ages 18 to 64 and 1,266 individuals age 65 or older.

[a]Effects estimated by pooling the two age groups and including an age*treatment status interaction term in the model.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

IndependentChoices was significant, but smaller. For this group, IndependentChoices decreased the percentage of consumers living in the community without paid assistance at nine months by 8.6 percentage points, from 13.7 percent to 5.1 percent.

IndependentChoices may have increased continuity of care for the non-elderly by reducing the likelihood of having multiple paid caregivers.

Among the non-elderly with paid caregivers, only 17.9 percent of the treatment group had multiple paid caregivers during the past two weeks, compared with 36.7 percent of control group members (Table 2). This finding was contrary to expectations, since we anticipated that treatment group members would hire different caregivers to help them at different hours of the day or on the weekend. Assignment of different agency workers and agency staff turnover probably account, in part, for the presence of multiple paid caregivers among the control group. By reducing the number of paid caregivers, IndependentChoices may have improved continuity of care for some of the nonelderly.

Because program rules allowed the hiring of family members and friends, the percentage of consumers with paid live-in caregivers increased sharply under IndependentChoices. Among those with paid care, 28.1 percent of nonelderly treatment group members (compared with 14.6 percent of nonelderly control group members) had paid live-in caregivers (Table 2).[12] Similarly, for elderly sample members with paid assistance, 37.9 percent of treatment group members had paid live-in caregivers, compared with only 3.4 percent of control group members.

[12]About half of the nonelderly control group members with paid live-in caregivers were enrolled in Alternatives, another Medicaid waiver program for adults with disabilities. Alternatives allows consumers to hire friends and relatives as caregivers. The others presumably are paying out of pocket for care received from a member of their household.

IndependentChoices addressed a key limitation of agency care: providing care during nonbusiness hours.

For the elderly sample, IndependentChoices increased the likelihood of receiving assistance during the evening by 5.0 percentage points (from about 68 to 73 percent; Table 3). Similarly, for the nonelderly sample, IndependentChoices increased the likelihood of receiving assistance on the weekend by 6.3 percentage points and during any nonbusiness hours (early morning, evening, or weekend) by 8.8 percentage points. Although the impacts are of modest size, these results suggest that the flexibility of the IndependentChoices benefit allowed some consumers to schedule needed care at hours when agencies often cannot provide it.[13]

IndependentChoices increased the likelihood that nonelderly consumers would receive certain types of assistance.

For the nonelderly, IndependentChoices increased the likelihood of receiving assistance (paid or unpaid) with each of the following tasks by 6 to 15 percentage points: eating, getting in and out of bed, toileting, bathing, other personal care, shopping, transportation, and other house and community needs (Table A.4). These increases represent 8 to 22 percent of the control group mean for these services. These results are consistent with those reported by Foster et al. (2003) in a companion study. Specifically, that study showed that IndependentChoices decreased the likelihood of reports of unmet need for personal care and activities around the house and community among nonelderly individuals but had no effect on unmet need for routine health care. Therefore, under IndependentChoices, nonelderly individuals appeared to be successful in purchasing care to resolve their unmet needs.

[13]Some of the consumers receiving care during nonbusiness hours may have preferred that the care be delivered during business hours. However, a companion report by Foster et al. (2003) shows that IndependentChoices greatly increased the likelihood that consumers were very satisfied with the times of day that their caregiver came.

TABLE 3

ESTIMATED EFFECTS OF INDEPENDENTCHOICES ON THE TIMING OF CARE RECEIVED DURING PAST TWO WEEKS

Outcome	Ages 18 to 64			Age 65 or Older		
	Predicted Treatment Group Mean (Percent)	Predicted Control Group Mean (Percent	Estimated Effect (p-Value)	Predicted Treatment Group Mean (Percent)	Predicted Control Group Mean (Percent)	Estimated Effect (p-Value)
Received Caregiver Assistance:						
In early mornings	55.1	49.9	5.1 (.207)	57.8	56.0	1.8 (.498)
On weekday evenings	80.2	75.0	5.2 (.153)	73.2	68.3	5.0** (.046)
On weekends	85.4	79.1	6.3* (.067)	78.2	76.2	1.9 (.406)
On weekday mornings/evenings or on weekends	90.7	81.8	8.8*** (.006)	80.2	78.2	1.9 (.392)

SOURCE: MPR's nine-month evaluation interview, conducted between September 1999 and March 2002.

NOTES: Means were predicted using logit models. The Ages 18 to 64 sample size is 473; the Age 65 or older sample size is 1,265. No more than five cases were lost to item nonresponse for any of these outcomes.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

For the elderly, IndependentChoices had little effect on the type of care received. While the estimate for likelihood of receipt of assistance with routine health care is positive and statistically significant, we find no significant effect on the likelihood of receipt of any other types of care (Table A.4). This estimated treatment-control difference on help with routine health care for the elderly may be due to chance. Statistically significant only at the 10 percent level, this result is not supported by a reduction in unmet need for routine health care (Foster et al. 2003).

IndependentChoices affected the way that people, particularly the nonelderly, met their personal assistance needs.

We explored whether IndependentChoices affected the total hours of care consumers received, the hours of care they received from different types of caregivers (visiting and live-in), and the hours of paid and unpaid care they received. Because the results differ substantively for elderly and nonelderly consumers, we discuss findings separately.

Hours of Care for Elderly Consumers. IndependentChoices had no discernible effect on the total (paid or unpaid) hours of care that elderly consumers received during the past two weeks, with both the treatment and control group receiving an average of more than 120 hours of care (Table 4). (The total hours of care received during the past two weeks—about nine hours a day—included nearly four hours a day that live-in caregivers spent on tasks that benefited the whole household.) When hours are broken down by live-in or visiting caregivers, the results suggest that elderly treatment group members did receive 7.4 fewer hours of visiting care than control group members.

When total hours for the elderly are divided between paid and unpaid, we see a statistically significant, positive treatment-control difference (4.5 hours) for paid hours and a negative difference (13.8) for unpaid hours. This perhaps suggests a very modest substitution of paid for unpaid hours of care for the elderly consumers, on average. The difference in the average hours

TABLE 4

ESTIMATED EFFECTS OF INDEPENDENTCHOICES ON THE HOURS OF CARE RECEIVED IN THE PAST TWO WEEKS

Outcome	Ages 18 to 64			Age 65 or Older		
	Predicted Treatment Group Mean	Predicted Control Group Mean	Estimated Effect (p-value)	Predicted Treatment Group Mean	Predicted Control Group Mean	Estimated Effect (p-value)
Total Hours Paid and Unpaid Care	96.7	119.8	-23.1** (.014)	124.0	133.3	-9.4 (.185)
Paid hours	23.1	23.0	0.2 (.959)	22.7	18.2	4.5*** (.001)
Unpaid hours	73.6	96.8	-23.2*** (.008)	101.3	115.1	-13.8** (.036)
Total (Paid and Unpaid) Hours Received from:						
Live-in caregiver for the individual	28.3	32.6	-4.3 (.291)	39.5	40.7	-1.2 (.703)
Live-in caregiver for household	37.9	47.6	-9.7** (.045)	54.0	54.7	-0.8 (.836)
Visiting caregiver	30.5	39.5	-9.0* (.061)	30.5	38.0	-7.4** (.018)

SOURCE: MPR's nine-month evaluation interview, conducted between September 1999 and March 2002.

NOTES: Means were predicted using ordinary least squares regression models. This analysis includes only those with complete data for each component of total hours. The Ages 18 to 64 sample size is 428 and the Age 65 or Older sample size is 1,111.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

of paid help for the elderly sample is due partly to treatment group members' being more likely than control group members to have *any* paid care. Even among those receiving paid assistance, however, the distribution of hours of paid care was different for treatment and control group members. Control group members were more than twice as likely as treatment group members to receive low levels of paid care. Among those who received paid assistance, 16.1 percent of treatment group members and 38.2 percent of control group members had fewer than 14 hours of paid care in the past two weeks—less than an hour a day (Table 5).

Hours of Care for Non-Elderly Consumers. IndependentChoices significantly reduced the hours of total assistance that non-elderly consumers received. Non-elderly treatment group members received an average of 96.7 hours during the past two weeks, 23.1 fewer than non-elderly control group members (Table 4). This difference in average total hours stems from the fact that only 10.7 percent of the treatment group received more than 210 hours of help during the past two weeks, compared to more than 19.7 percent of the control groups (Table 5). Total hours were reduced for both visiting and live-in caregivers. Specifically, non-elderly treatment group members received 9.0 fewer hours of care from visiting caregivers than did control group members during the past two weeks (Table 4). While IndependentChoices did not significantly affect the hours of care provided by live-in caregivers to meet the *personal* needs of nonelderly consumers, it did reduce by 9.7 hours the care that live-in caregivers provided for the consumer's *household*.

For the non-elderly sample, treatment and control group members received a comparable amount of *paid* care. However, among those receiving paid assistance, the distribution of hours of care received was different for treatment and control group members, with treatment group members less likely to get very high or low levels of paid care (somewhat similar to the pattern observed for the elderly sample). During the past two weeks, only 18.0 percent of non-elderly

TABLE 5

DISTRIBUTION OF HOURS OF CARE RECEIVED IN THE PAST TWO WEEKS

Outcome	Ages 18 to 64		Age 65 or Older	
	Treatment Group Predicted Mean (Percent)	Control Group Predicted Mean (Percent)	Treatment Group Predicted Mean (Percent)	Control Group Predicted Mean (Percent)
Total Help Received	**			
0 to 42 hours (0 to 3 per day)	38.1	36.3	34.8	34.1
43 to 126 hours (3 to 9 per day)	33.2	22.4	23.0	20.8
127 to 210 hours (9 to 15 per day)	18.1	21.5	19.9	20.8
210 or more hours (more than 15 per day)	10.7	19.7	22.3	24.3
Among Those with Paid Care, Received:	***		***	
1 to 14 paid hours (less than 1 per day)	18.0	31.1	16.1	38.2
15 to 70 paid hours (1 to 5 per day)	75.8	53.0	80.1	56.0
70 or more paid hours (5 or more per day)	6.2	15.9	3.9	5.8

SOURCE: MPR's nine-month evaluation interview, conducted between September 1999 and March 2002.

NOTES: This analysis includes only those with complete data for each component of total hours. For the distribution of total hours, the Ages 18 to 64 sample size is 428 and the Age 65 or Older sample size is 1,111. For the distribution of paid hours, the Ages 18 to 64 sample size is 310 and the Age 65 or Older sample size is 754.

***A chi-sq test indicates that the distribution of hours for the treatment group was significantly different from that of the control group at the .01 level.

**A chi-sq test indicates that the distribution of hours for the treatment group was significantly different from that of the control group at the .05 level.

treatment group members, compared to 31.1 percent of control group members, received less than an hour a day of paid care. At the other extreme, only 6.2 percent of treatment group members received more than five hours of paid care per day, compared with 15.9 percent of control group members (Table 5).

IndependentChoices significantly reduced the hours of *unpaid* care the non-elderly received. Treatment group members averaged 73.6 hours of unpaid care during the past two weeks, 23.2 hours fewer than control group members (Table 4). The fact that non-elderly consumers in the treatment group received fewer total hours of unpaid care than those in the control group might be troubling to those policymakers who believe that consumers might use their monthly allowance to pay for care that was once provided free. However, treatment group consumers might have needed fewer hours of human assistance because they used their monthly allowance to purchase goods and services that reduced their need for it at home. It is also possible that the workers they hired provided care more efficiently. Qualitative research suggests that some agency workers did not complete the tasks they were assigned (Eckert et al. 2002), leaving these tasks to be done by unpaid caregivers. Because the number of hours of personal assistance that consumers received does not necessarily reflect whether their needs for personal assistance were met, we examine other measures of service use below.

Purchase of Equipment and Modifications. For the non-elderly, IndependentChoices increased the likelihood of a consumer purchasing supplies or equipment or making home or vehicle modifications to meet his or her personal assistance needs during the nine-month period since enrollment. In particular, non-elderly treatment group members were 8.0 percentage points more likely than control group members to obtain equipment to help with personal activities and communications, such as specialized telephones, lifts, or emergency response systems (Table 6).

TABLE 6

ESTIMATED EFFECTS OF INDEPENDENTCHOICES ON HOME MODIFICATIONS AND EQUIPMENT PURCHASES OR REPAIRS

Outcome	Ages 18 to 64			Age 65 or Older		
	Predicted Treatment Group Mean (Percent)	Predicted Control Group Mean (Percent)	Estimated Effect (*p*-Value)	Predicted Treatment Group Mean (Percent)	Predicted Control Group Mean (Percent)	Estimated Effect (*p*-Value)
Since Enrollment:						
Modified house	30.1	26.2	3.8 (.338)	28.1	25.0	2.9 (.223)
Modified car or van[a]	2.7	5.1	–2.4 (.131)	3.6	2.5	1.1 (.299)
Obtained special equipment for meal preparation or housekeeping	20.9	15.6	5.2 (.140)	12.7	12.9	–0.2 (.901)
Obtained equipment to help with personal activities/ communication	29.3	21.2	8.0** (.043)	28.3	31.2	–2.8 (.263)
Repaired equipment used to help client	20.5	17.4	3.0 (.372)	12.3	13.1	–0.8 (.665)
Modified home or vehicle or purchased any equipment or supplies	60.2	49.6	10.7** (.013)	55.0	54.5	0.1 (.855)

SOURCE: MPR's nine-month evaluation interview, conducted between September 1999 and March 2002.

NOTES: Means were predicted using logit models. Because of differences in item nonresponse, the Ages 18 to 64 sample sizes range from 468 to 471, and the Age 65 or Older sample sizes range from 1,247 to 1,259.

[a]Effects were estimated by pooling the two age groups and including an age*treatment interaction term in the model.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

For almost every other measure we examined, the percentage of non-elderly treatment group members making a purchase or modification was higher than for non-elderly control group members. Most of these differences were not statistically significant, since the statistical power in the non-elderly subsample was limited. When these measures were considered together, however, IndependentChoices did have a significant impact: the proportion making *any* purchase or modification increased from 49.6 percent for control group members to 60.2 percent for the treatment group.

These results could partly explain why non-elderly treatment group members received fewer total hours of personal care than control group members. As mentioned earlier, other studies have found that the use of assistive equipment reduces the hours of human assistance that individuals receive (Allen et al 2001; and Hoening et al. 2003). Likewise, the purchases and modifications that treatment group members made may have reduced their need for human assistance. In contrast, IndependentChoices had no effect on equipment purchases and modifications for elderly consumers. This result is consistent with the finding that IndependentChoices did not significantly affect the total hours of care the elderly consumers received.

Impacts did not vary widely across subgroups.

For several key outcomes, we examined whether the effect of IndependentChoices was different for subgroups defined by whether sample members were new recipients of publicly funded home care, had unmet needs at baseline, and lived in rural areas. As discussed earlier, new recipients of publicly funded home care services were significantly more likely to experience an increase in the likelihood of receiving paid assistance than continuing home care users. Across other subgroups, there were rarely significant differences in impacts. The lack of

significant results is not surprising, since we would be able to detect only fairly sizable differences as a result of the small size of each subgroup. (See Tables A.6 through A.10 for subgroup results.)

Medicaid expenditures were larger for the treatment group because the control group received a smaller than expected share of the services authorized for them.

Control group members received less care than was authorized, resulting in annual PCS expenditures per non-elderly sample member that were $3,324 larger for the treatment group than for controls (Table 7). While PCS costs were more than twice as high under IndependentChoices, this large difference is not surprising, given the much higher proportion of treatment group members receiving paid care. Up to two-thirds of the cost difference is due to the difference in the proportion receiving care; the rest is due to treatment group care recipients having higher PCS costs than control group recipients.[14] The treatment group's higher cost per

[14] We estimate the allocation of the overall difference in cost between that which is attributable to the increase in the proportion receiving care and that which is due to higher cost per month of service received by using the following decomposition:

$$C_T - C_C = p_T * (cyr_T - cyr_C) + (p_T - p_C) * cyr_T - (p_T - p_C) * (cyr_T - cyr_C)$$
$$= \quad A \quad + \quad B \quad - \quad C$$

where T and C refer to treatment and control groups, C_T and C_C are mean Medicaid PCS cost for the year after enrollment for the two groups, p_T and p_C are the proportions receiving any Medicaid PCS during the year, and cyr_T and cyr_C are the mean Medicaid PCS cost per year for persons receiving these services. The first term (A) represents the difference in mean Medicaid PCS costs that would be observed if the difference were attributable solely to the difference in cost per recipient, that is, if $p_C=p_T$, the proportion of the control group receiving services were equal to the treatment group proportion. The second term (B) is the difference that would be attributable solely to the control group being less likely to get any services. This is the difference that would be observed if $cyr_C=cyr_T$, that is, if the control group had the same cost per recipient of services as the treatment group (care plan hours discounted at the historical average and multiplied by $12.36 per hour, the state mandated rate), but different proportions receiving care. The third term (C) is the effect of the interaction of the two types of differences. Thus, the proportion of the overall difference attributable to $p_C < p_T$ lies somewhere between B/(A+B-C) and (B-C)/(A+B-C). Using the unadjusted means for these variables we find A=$1581, B=$1999, and C=$564 for nonelderly adults, resulting in estimates of the share of the difference due to the difference in the proportion receiving care being no more than 66 nor less than 48 percent.

TABLE 7

ESTIMATED EFFECTS OF INDEPENDENTCHOICES ON MEDICAID EXPENDITURES DURING THE 12-MONTHS AFTER ENROLLMENT IN THE DEMONSTRATION

	Ages 18 to 64			Age 65 or Older		
Outcome	Predicted Treatment Group Mean ($)	Predicted Control Group Mean ($)	Estimated Effect (*p*-value)	Predicted Treatment Group Mean	Predicted Control Group Mean	Estimated Effect (*p*-value)
Overall Services						
PAS Expenditures	5,756	2,432	3,324*** (.000)	4,447	2,408	2,039*** (.000)
Non-PAS Expenditures	7,458	8,674	-1,216 (.146)	7,546	7,880	-334 (.286)
Total Medicaid Expenditures	13,215	11,107	2,108** (.017)	11,994	10,288	1,706*** (.000)
Selected Services						
Nursing Facility Expenditures[a]	91	324	-234* (.095)	704	603	102 (.460)
Home Health Expenditures[a]	758	1,060	-302* (.079)	340	357	-16 (.781)
PAS Expenditures Per Month Receiving Services	520	419	101** (.015)	421	344	78*** (.000)

SOURCE: Medicaid claims data.

NOTES: Total Medicaid expenditures, PAS expenditures, and non-PAS expenditures were predicted using ordinary least squares regression models. Due to the large fraction of the sample with zero nursing facility expenditures and zero home health expenditures, nursing facility expenditures and home health expenditures were predicted using tobit models. The Ages 18 to 64 sample size is 472, and the Age 65 or Older sample size is 1,266

[a]Effects were estimated by pooling the two age groups and including an age*treatment interaction in the model.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

recipient is due, in part, to their receiving PCS benefits for one more month on average,[15] but mainly to having more hours cashed out per month than the control group received. This last difference is reflected in the significantly higher cost per person month of PCS benefit received—$520 for treatment versus $419 for controls—a 24 percent difference. The difference is surprising because the two groups had equal average hours per week in their care plans at enrollment (about 12 hours), and included discounting of care plan hours to account for the historic discrepancy between planned and actual hours.

The higher cost per person month of PCS benefits for the nonelderly treatment group is due to the control group receiving a far lower proportion of the recommended care plan hours than was anticipated. During months in which they were receiving a cash benefit, Medicaid PCS costs for non-elderly treatment group participants were equal to about $12.36 per hour, times the number of hours in the care plan (about 52 per month, on average), multiplied by the applicable discount factor—that is, about $552 per month (= 52 * 12.36 * .86)—of which about $358 was to be for the monthly allowance and the remainder ($194) to cover counseling and fiscal agent costs. Average PCS costs per month of PCS benefit over the full 12 months were somewhat lower ($520 per month) because some treatment group members received agency services before developing a care plan and after disenrolling. This $552 is approximately what the non-elderly control group's cost was expected to be per month of service, on average. However, during months when they received PCS, control group members incurred costs of $419 per month, which was only about 65 percent of the cost that would have been incurred had beneficiaries received their authorized care plan hours ($419/12.36 * 52). Thus, treatment group costs per

[15]Treatment group members who received PCS benefits had them for about 10.6 months, on average, compared to 9.4 months for control group recipients.

month when receiving the cash allowance were nearly one-third (.86/.65 = 1.32) greater than control group costs of $419 per month of care received, due to the greater-than-normal undersupply of agency services to control group PCS recipients.

The higher PCS expenditures for the treatment group were partly offset by lower expenditures on non-PCS Medicaid services. In particular, for the non-elderly, spending on nursing facilities and home health was significantly lower for the treatment group than for the control group. The total annual non-PCS expenditure per person was $1,216 lower for the treatment group. Thus, the total annual Medicaid expenditure per non-elderly individual for PCS and non-PCS services combined was $2,108 higher for the treatment group.

For the elderly, the differences were in the same direction, but smaller: average annual PCS expenditures for the treatment group were $2,039 higher than for controls. About one-third to one-half of this differential was due to the higher proportion of treatment group members actually receiving paid care that had been authorized for them. Again, cost per month of PCS benefit was significantly larger (23 percent) for the treatment group. The increase in PCS expenditures was partly offset by a slight (though not statistically significant) decrease in the expenditures for other non-PCS Medicaid services ($334). Thus, total Medicaid expenditures per elderly beneficiary during the year after enrollment were $1,706 greater for the treatment group than for controls.

DISCUSSION

IndependentChoices had numerous impacts on the personal care-related goods and services that both elderly and non-elderly consumers received, although these impacts were more pronounced for the non-elderly. For the elderly, IndependentChoices met two key goals. First, it increased the percentage (by 15 percentage points) of elderly consumers receiving at least some

paid assistance during the past two weeks. Second, it increased the percentage receiving help on the weekends, thus overcoming an important limitation of agency care. IndependentChoices did not appear to affect the type of care or total hours of care that elderly consumers received; nor did it affect the likelihood that they would purchase equipment or make home modifications to meet their personal assistance needs.

IndependentChoices' impacts on the amount, timing, and type of care received were greater for non-elderly consumers. IndependentChoices increased the percentage of nonelderly consumers in the community receiving help from paid caregivers during the past two weeks by 26 percentage points. It also increased the likelihood that consumers would receive assistance (paid or unpaid) during nonbusiness hours (mornings, evenings, and weekends) and with a wide variety of tasks, including eating, getting in and out of bed, using the toilet, bathing, other personal care, shopping, transportation, and other activities around the house and community. The program decreased the likelihood of having multiple caregivers, which could improve the continuity of care. Finally, IndependentChoices affected the overall pattern of service use for non-elderly consumers. Compared with control group members, non-elderly consumers were more likely to purchase supplies or equipment or make home or vehicle modifications, but received substantially fewer hours of unpaid human assistance.

The higher treatment group costs for PCS were due to two factors: a shortage of agency workers, leading to a significant undersupply of services to the control group; and to some beneficiaries who apparently had no interest in agency services enrolling in the demonstration because of the flexible benefit. Both factors are shortcomings of the traditional system to adequately meet the needs of people who are eligible for PCS benefits. IndependentChoices set rates for the cash allowance and fees for the counseling and fiscal agent services so that costs for the program *per month of service* would be no greater for the treatment group than for the control

group, provided that the control group recipients actually received the same proportion of planned hours of care as Arkansas PCS recipients had received in 1997. That agencies delivered less than two-thirds of the recommended hours to care recipients—far less than the 86 percent average rate observed in 1997—suggests serious labor shortages. Directors of several large agencies confirmed this in special telephone interviews we conducted. The large proportion of "new" control group members who did not seek (or sought but did not receive) PCS also suggests problems with the traditional system, due to labor shortages in some cases and to real or perceived drawbacks to agency-supplied care in others. Since these services are free to beneficiaries, such drawbacks would appear to be fairly severe if some consumers and their families chose to forgo the offered services, despite the need for extensive care and the many hours of unpaid care received by most sample members.

IndependentChoices increased both the likelihood that consumers would receive any of the PCS services to which they were entitled, and the proportion of care plan hours they receive. While costs were higher for the treatment group in Arkansas, as a result of this improved access, it seems likely that the observed cost differences would be smaller in looser labor markets or in states where the average benefit is greater. For example, nearly one-fourth of consumers had care plans calling for six or fewer hours of care per week. Such consumers and their families may decide that getting these paid hours of care is not worth the trouble. Consumers entitled to 15 to 20 or more hours of care per week may be less likely to reject agency care, so there may be fewer eligible non-recipients of PCS for the program to attract in states with a more generous PCS benefit.

We also note that, if observed for a longer period of time than the first year of enrollment, the decline in non-PCS Medicaid costs incurred by beneficiaries enrolled in IndependentChoices may accelerate. For example, the higher probability of receiving paid services under

IndependentChoices may result in participants being less likely to have to move into a nursing home, or to later entry. While we saw modest evidence of that in the one-year follow-up period examined here, this effect could grow as beneficiaries become frailer and caregivers become more fatigued. Conversely, these limited first-year effects may disappear if hired caregivers tire of the new arrangement. Future analyses will investigate the effects on Medicaid costs during the second year of enrollment for the earliest enrollees.

Limitations

The randomized evaluation design ensures that the impact estimates are valid; thus, the limitations of the study do not cast doubt on the basic findings. Because our study pertained to one program in one state, however, our findings may not apply to all programs featuring consumer-directed care. Impacts may differ for programs with other features (for example, those that target children, allow spouses to be paid workers, or have more or less generous PCS benefits). Another limitation is that our findings can be generalized only to the extent that demonstration participants are representative of those who would enroll in an ongoing program. Those who volunteered for the demonstration may have been particularly dissatisfied with the traditional system or particularly well suited for consumer-directed care (perhaps more proactive in their approach to getting needed services); those who enroll in an ongoing program might be different. Finally, estimated program effects may depend, in part, on whether the local supply of home care workers in the area is adequate to meet the demand for services. Thus, the results may have been quite different for 2003 than they were for the 1999-2001 period studied here, when the labor market was tight.

Future Research

This report addresses only one aspect of consumer-directed care. A companion analysis (Foster et al. 2003) examines how IndependentChoices affected consumers' satisfaction with care, unmet needs, and adverse health events. Papers currently in progress will show in more detail how IndependentChoices affected the cost of PCS, as well as the total cost to Medicaid and Medicare for acute and long-term care. Future papers will estimate program the effects on informal caregivers, examine the experiences of workers hired by consumers, and describe implementation issues important to states. Finally, additional papers will assess the robustness and generalizability of the findings by examining the impacts of Cash and Counseling on adults in the other two demonstration states—Florida and New Jersey—and on children in Florida.

Implications for States Considering Consumer Direction

The results suggest that IndependentChoices increased access to care and the ability of consumers to purchase needed equipment and supplies. Findings from a companion paper (Foster 2003) indicate that the program also greatly increased consumer satisfaction. However, the results raise concerns about Medicaid costs. The large increase in the proportion of eligible beneficiaries receiving paid assistance at nine months is a welcome improvement if it is due to family members and friends providing care to consumers who would not have been able to get paid help without the demonstration, as a result of worker shortages. However, many control group members not receiving PCS at the time of enrollment may have declined to seek agency services because they were interested only in the monthly allowance option ("induced demand"). While this would suggest that the program was more desirable to consumers than the traditional program, it also suggests that the program may have increased state Medicaid costs by providing cash payments to individuals who (though they were entitled to services) would not have sought agency care.

Paid Assistance

We cannot fully sort out how much of the increase in the proportion receiving paid assistance was due to a worker shortage and how much to induced demand. That is, we do not know what proportion of control group members who did not receive paid assistance actually tried to get it. Consistent with the induced demand explanation, fully half of the control group members who were not receiving publicly funded home care at enrollment were still not receiving it nine months later, and the increase in the receipt of paid assistance was substantially higher for new than for ongoing home care users. However, this same pattern is what we would expect if worker shortages were a problem—the proportion of control group members not able to obtain agency care would be highest among new entrants to the home care system. Moreover, it appears that induced-demand was not widespread, since there was no large influx of new personal assistance users during the period of the demonstration. The ratio of new to continuing PCS users among IndependentChoices enrollees was never greater than the analogous ratio for PCS recipients in the year preceding demonstration startup. In addition, the fact that all demonstration enrollees had to agree that they would seek agency services if assigned to the control group may have prevented individuals not currently receiving PCS from enrolling if they were not willing to accept agency services. Perhaps the most compelling evidence in support of the worker shortage explanation comes from our interviews with agencies. These interviews suggested that worker shortages were common and at times severe in several of the agencies over the demonstration period, sometimes forcing agencies to turn away clients. Furthermore, the fact that agencies supplied a smaller-than-usual proportion of the hours authorized in the care plan suggests that they had insufficient staff to meet even the needs of their existing patients. However, while worker shortages are likely to account for some of the difference, the very high

rates of no service for new control group members suggests that some of the difference is due to induced demand.

Whatever the reason, IndependentChoices increased the likelihood that individuals would receive paid help with the services they need and to which they are entitled. The increase in the likelihood of receipt of paid assistance was encouraging to program officials in Arkansas, as increasing access to care in worker shortage areas was a key goal of the program. Whether this was because of the inability of agencies to supply the staff required or because some consumers preferred to rely solely on unpaid care, rather than accept agency care, may not be a major concern of states seeking to ensure that all Medicaid beneficiaries found to need services actually receive them.

Hours of Care

Non-elderly consumers may have used part of their monthly allowance to pay for care once provided free. The reduction not only in unpaid, but in total, hours of care received by non-elderly treatment group members would be disturbing if the decrease in hours had been accompanied by an increase in unmet need. However, results from a companion analysis of the effect of IndependentChoices on the quality of care (Foster et al. 2003) suggest that IndependentChoices *increased* the likelihood that non-elderly consumers received the help they needed, despite the fewer hours of human assistance received. Treatment group members reported fewer unmet needs than control group members with the same types of activities for which they reported receiving more assistance. Moreover, they were far more satisfied than control group members with their care, and the fewer hours did not result in an increase in any of the adverse health events we examined.

How might these non-elderly consumers manage to meet their needs better than control group members with substantially fewer hours? First, some consumers purchased equipment that may have decreased their need for caregiver assistance. For example, a consumer who buys a microwave oven may be able to prepare his own meals; another who buys a washing machine might be able to do her own laundry. IndependentChoices increased the percentage of non-elderly consumers making such purchases, and these purchases might account for their receiving fewer hours of care. Second, agency workers are often restricted from performing certain tasks, such as administering medication or providing transportation, while workers hired by the treatment group would not be thus restricted. Third, because a single caregiver can perform a variety of tasks in one visit, care may be provided more efficiently under consumer direction. For example, the hired family member may bathe the consumer and help him or her dress while the laundry is being done and a meal is cooking; some of these tasks may have been done independently by agency workers for the control group, while the family members did others. Such tasks as laundry and meal preparation might also be provided more productively under consumer direction, since the hired family member may already have had to perform these services for herself and other household members. Finally, under IndependentChoices, workers may have provided more or better care in a shorter amount of time.

The close personal relationship between consumer and paid family member or friend, and the consumer's control over the hiring process and over how tasks are carried out, was expected to lead to improvement in consumers' ability to get the support they felt they needed most. These results suggest that they did, and, for nonelderly adults, did so with fewer, but more productive, hours of human assistance.

Medicaid Expenditures

If Arkansas' experience is a reasonable guide, the increase in total Medicaid cost for PCS statewide due to induced demand is likely to be small. Only about 11 percent of the state's PCS benefit recipients chose the Cash and Counseling option, only 26 percent of these individuals were not already getting PCS at the time they enrolled in Cash and Counseling, and 68 percent of new PCS applicants would not have received PCS benefits had Cash and Counseling not existed (based on the Medicaid claims data of new PCS applicants assigned to the control group). Thus, the maximum increase in the number of people receiving Medicaid PCS benefits due to introducing a cash allowance option in Arkansas would be less than 2 percent (.11 * .26 * .68 = .019).[16] Even these costs appear to be offset somewhat, if not fully, by lower costs for home health, nursing home care, and other Medicaid costs for all enrollees. States interested in a Cash and Counseling type of program, but are concerned about costs, should monitor program enrollment for evidence of increases in the number of individuals receiving a PCS benefit; they also might limit the program only to individuals who have been receiving agency-supplied services for some time. However, careful attention to controlling costs per month for recipients may be sufficient for keeping overall program cost increases to a minimum. Furthermore, few states would choose to hold costs down by limiting Medicaid PCS recipients to two-thirds of the hours of care that assessment nurses say they need. Sizable gains in the quality of life for a nontrivial minority of beneficiaries eligible for PCS services may be achievable at little or no additional cost to Medicaid, if the program is planned carefully.

[16]This estimate is based on the following relationship: (number applying for IndependentChoices / number of PCS recipients)*(number new to PCS/number applying for IndependentChoices) * (number who would not have received traditional PCS/number new to PCS) = number who would not have received traditional PCS/number of PCS recipients in Arkansas.

REFERENCES

Allen, Susan, Andrew Foster, and Katherine Berg. "Receiving Help at Home: The Interplay of Human and Technological Assistance." *Journal of Gerontology*: *SOCIAL SCIENCES*. Social Science, vol. 56B, no. 6, 2001, pp. S374-S382.

Arkansas Medicaid Program. *Arkansas Medicaid Manual: Personal Care.* Revised 1998. available at [www.medicaid.state.ar.us/arkansasmedicaid/manuals/manlmain.htm]. Accessed March 25, 2002.

Benjamin, A.E. "Consumer-Directed Services at Home: A New Model for Persons with Disabilities." *Health Affairs,* vol. 20, no. 6, 2001, pp. 80-95.

Benjamin, A.E., Ruth Matthias, and Todd M. Franke. "Comparing Consumer-Directed and Agency Models for Providing Supportive Services at Home." Health Services Research, April 2000, vol. 35, no.1, pp. 351-366.

Cameron, K., and J. Firman. "International and Domestic Programs Using 'Cash and Counseling' Strategies to Pay for Long-Term Care." Washington, DC: National Council on the Aging, 1995.

Doty, Pamela, A.E. Benjamin, Ruth E. Matthias, and Todd M. Franke. "In-Home Supportive Services for the Elderly and Disabled: Comparison of Client-Directed and Professional Management Models of Service Delivery." Report to ASPE. U.S. Department of Health and Human Services and the University of California, Los Angeles, April 1999.

Doty, Pamela, Judith Kasper, and Simi Litvak. "Consumer-Directed Models of Personal Care: Lessons from Medicaid." *Milbank Quarterly,* vol. 74, no. 3, 1996, pp. 377-409.

Eckert, J. Kevin, Patricia M. San Antonio, and Karen B. Siegel. "The Cash and Counseling Qualitative Study: Stories from IndependentChoices in Arkansas." Draft report. Baltimore, MD: University of Maryland, Baltimore County, Department of Sociology/Anthropology, 2002.

Eustis, Nancy. "Consumer-Directed Long-Term Care Services: Evolving Perspectives and Alliances." *Generations,* vol. 20, no. 3, fall 2000, pp. 10-15.

Flanagan, Susan. "An Inventory of Consumer-Directed Support Service Programs: Overview of Key Program Characteristics." Presentation at the Cash and Counseling annual meeting, Arlington, VA, 2001.

Foster, Leslie, Randy Brown, Barbara Phillips, Jennifer Schore, and Barbara Carlson. "Improving the Quality of Medicaid Personal Assistance Through Consumer Direction: Findings from the Arkansas Cash and Counseling Demonstration." Princeton, NJ: Mathematica Policy Research, Inc., March 2003.

Grana, J.M., and Yamashiro, S.M. *An Evaluation of the Veterans Administration Housebound and Aide and Attendant Allowance Program.* Prepared for the Office of the Assistant Secretary for Policy and Evaluation, U.S. Department of Health and Human Services. Washington, DC: Project HOPE, 1987.

Hoening, Helen, Donald Taylor, and Frank Sloan. "Does Assistive Technology Substitute for Personal Assistance Among the Disabled Elderly?" *American Journal of Public Health*, vol. 93 no. 2, February 2000, pp. 330-337.

LeBlanc, Allen, Christine Tonner, and Charlene Harrington. "State Medicaid Programs Offering Personal Care Services." *Health Care Financing Review*, vol. 22, no. 4, summer 2001, pp. 155-173.

Miltenburg, Theo, Clarie Ramakers, and Jos Mensink. *A Personal Budget for Clients: Summary of an Experiment with Cash Benefits in Home Care in the Netherlands*. Nijemen, Netherlands: Institute for Applied Social Sciences, 1996.

Nawrocki, Heather, and Steven R. Gregory. *Across the States 2000: Profiles of Long-Term Care Systems.* Washington, DC: AARP, 2000.

Osterle, A. "Attendance Allowance Programs and the Socio-Economic Situation of Informal Careers: Empirical Results from Austria." Paper presented at the 6th Annual International Conference on Socio-Economics, Paris, July 1994.

Phillips, Barbara, and Barbara Schneider. "Moving to Independent Choices: The Implementation of the Cash and Counseling Demonstration in Arkansas." Princeton, NJ: Mathematica Policy Research, Inc., May 2002.

Schore, Jennifer, and Barbara Phillips. "Putting Consumer Direction into Practice: Implementing the Arkansas IndependentChoices Program." Princeton, NJ: Mathematica Policy Research, Inc., 2002.

Stone, Robyn. "Providing Long-Term Care Benefits in Cash: Moving to a Disability Model." *Health Affairs*, vol. 20, no. 6, 2001, pp. 96-108.

Stone, Robyn. "Consumer Direction in Long-Term Care." *Generations*, vol. 20, no. 3, fall 2000, pp. 5-9.

APPENDIX A

METHODS AND ADDITIONAL RESULTS

In this appendix, we provide methodological details and results that are not available in the text. We first describe our outcome measures and then discuss measurement issues pertaining to paid care, unpaid care, and the hours of care that live-in caregivers provided for the household. Finally, we present additional results, including (1) a description of the characteristics of the treatment and control groups at baseline, (2) a description of the workers that treatment group members hired, (3) the effect of IndependentChoices on the type of assistance received, (4) the effect of IndependentChoices on community service use, and (5) the effect of IndependentChoices on key outcomes for different subgroups.

OUTCOME MEASURES

As discussed in the text, we use data collected from the nine-month survey to construct outcome measures for this analysis. Questions for the analysis pertain to two reference periods: (1) the most recent two weeks during which the consumer was at home (referred to as "the past two weeks"), and (2) the entire period since enrollment into the demonstration. Table A.1 provides a description of the outcome measures.

MEASUREMENT ISSUES

Distinguishing Paid from Unpaid Care

It is difficult to construct comparable measures across the treatment and control groups of the number of unpaid caregivers or of the type and timing of unpaid care. Paid caregivers for the treatment group usually are family or friends who often provide many hours of unpaid care, whereas control group members generally have separate paid and unpaid caregivers. For example, about one-third of the elderly and the nonelderly control groups had three or more

TABLE A.1

DESCRIPTION OF OUTCOME MEASURES

In-Home Assistance from Caregivers During Past Two Weeks
Caregivers
Whether received assistance from paid caregivers (live-in, visiting, any)
Whether received any unpaid care
Whether had multiple paid caregivers
Relationship of caregiver to client
Hours of Paid and Unpaid Assistance
Provided by live-in caregivers for the household and for the individual
Provided by visiting caregivers
Timing of Assistance
Before/after business hours
Weekends
Type of Care Received
Receipt of types of in-home assistance (for example, with specific activities of daily living)
Equipment and Home Modifications Since Enrollment
Whether consumer: Obtained personal care supplies Modified his or her house Modified his or her car or van Obtained special equipment for meal preparation or housekeeping Obtained equipment to help with communication and personal activities Repaired equipment
Community Services Since Enrollment
Whether consumer: Moved to new place with staff to help Attended adult day care Attended community/recreational program Received home-delivered meals Used transportation services to visit the doctor Used transportation services to go other places Was told about community services through nurse, case manager, counselor, or social worker Had help arranging for services from family and friends

unpaid caregivers (where unpaid caregiver is defined as someone providing *only* unpaid care), whereas only 20 to 25 percent of treatment group members had three or more unpaid caregivers at followup. However, this comparison is misleading, because many consumers in the treatment group had paid caregivers who also provided unpaid assistance. Another definition of unpaid caregivers might include those who provided *any* unpaid care (as well as those who provided *only* unpaid care). Thirty-four percent of elderly treatment group consumers and 41 percent of nonelderly treatment group consumers had three or more caregivers who provided any unpaid care; these percentages are similar to the percentages of control group members having three or more caregivers who provided only unpaid care.[17]

Consumers would not be able to reliably identify the types of tasks or hours of care for which their caregivers were paid. Therefore, it is not feasible to construct measures that accurately reflect the type and timing of paid and unpaid care. For example, the survey asked consumers whether they received help from a paid worker during nonbusiness hours (before 8:00 A.M., after 6:00 P.M., or on the weekend), as well as whether they received assistance from an unpaid worker during those times. Because paid workers often provide unpaid help, we are unable to determine whether a paid worker actually was paid to provide assistance during particular periods. Suppose, for example, that under the traditional PAS program, an agency worker helps a client with household tasks from 4:00 P.M. to 6:00 P.M., and the client's sister helps from 7:00 P.M. to 9:00 P.M. by preparing dinner and helping him get ready for bed. Under IndependentChoices, the client's sister provides help from 5:00 P.M. to 9:00 P.M. by performing

[17]We were able to determine whether each paid caregiver provided unpaid care only for the treatment group. Control group members were not asked the number of hours for which their caregivers were paid, as their caregivers presumably would be paid by the agency for nearly all the hours of care provided.

household tasks, making dinner, and helping prepare for bed. The client pays the sister for two of the four hours of assistance that she provides.

In this example, the client would report in the survey that his sister, a paid worker, provided evening care. However, she would not necessarily have been paid for those hours. In fact, in this example, one could argue that the extra hours she provides under IndependentChoices replace the daytime hours that the agency worker provided under the traditional system. Likewise, it is not clear whether the sister was paid to perform household tasks, make dinner, or help the client get ready for bed. For this reason, we present results on the type and timing of care for all care, rather than separately for paid care and unpaid care.

Hours of Care Provided for the Household

One measure is the hours of care provided by live-in caregivers on tasks that benefited the household (such as laundry or meal preparation). We considered prorating these hours by dividing them by the number of members of the household. However, we could not prorate the hours of paid help, because we could not determine which hours of paid help were provided for the household, and which were provided for the individual. Therefore, for consistency across measures, we also did not prorate household hours. As a result of random assignment, the treatment and control groups had similar average household sizes. In interpreting the magnitude of our estimates of household hours, it is important to bear in mind that many of the hours of household help benefited the household as a whole, as well as the individual client. Likewise, the total hours of help that consumers received also includes the hours of help provided to the whole household.

ADDITIONAL RESULTS

Comparison of Treatment and Control Groups

As expected under random assignment, most characteristics of the treatment and control groups were similar, but many differed considerably by age group (Table A.2). Eight treatment-control differences among the 95 baseline characteristics were statistically significant at the .10 level. This number is roughly the number of false positives that would be expected to occur by chance, and none of the differences were large. In the nonelderly age group, only one treatment-control difference was statistically significant.

Workers Hired by Treatment Group Members

Most treatment group members hired at least one family member. Forty-seven percent of elderly treatment group members who had paid caregivers hired a child, and 21 percent hired another relative (Table A.3). Fourteen percent of nonelderly treatment group members hired a parent, 26 percent hired a child, and 25 percent hired another relative. Although about one-third of treatment group members hired only nonrelatives as paid caregivers, program staff and counselors reported that few treatment group members hired strangers (Phillips and Schneider 2002). About three percent of treatment group members used an advertisement to obtain paid caregivers, fewer than one percent used an employment agency to do so (Schore and Phillips 2002).

Types of Care Received

As discussed in the text, IndependentChoices affected the type of care received, but only for the nonelderly. Specifically, IndependentChoices increased the likelihood that nonelderly consumers would receive assistance (paid or unpaid) with each of the following tasks by 6 to 12 percentage points: eating, getting in and out of bed, toileting, bathing, other personal care,

TABLE A.2

BASELINE CHARACTERISTICS OF RESPONDENTS TO THE NINE-MONTH INTERVIEW (CONTROL VARIABLES), BY AGE GROUP AND EVALUATION STATUS
(Percentages)

Characteristic	Ages 18 to 64		Age 65 or Older	
	Treatment Group	Control Group	Treatment Group	Control Group
Demographics				
Age in Years				
18 to 39	24.3	30.0	—	—
40 to 64	75.7	70.0	—	—
65 to 79	—	—	49.1	50.8
80 or older	—	—	50.9	49.2
Female	67.9	67.4	81.9	82.5
Race				
White	67.2	61.7	59.5	60.8
Black	26.1	33.0	35.2	32.8
Other	6.6	5.2	5.3	6.4
Of Hispanic Origin[a]	1.2	0.9	1.4	0.8
Living Arrangement/Marital Status				
Lives alone	39.1	39.1	30.8	30.1
Lives with spouse only	8.2	7.4	9.0	9.1
Lives with others but not married or married and lives with two or more others	52.7	53.5	60.1	60.7
Education				
8 years or fewer	21.8	27.6	66.0	66.2
9 to 12 years (no diploma)	30.9	27.6	18.8	16.7
High school diploma or GED	25.9	25.4	12.2	14.1
At least some college	21.4	19.3	3.0	3.0
Described Area of Residence as:				
Rural	38.0	35.3	40.3	40.6
Not rural but high-crime or lacking in adequate public transportation	32.9	34.8	28.1	24.8
Not rural, not high-crime, having adequate public transportation	29.1	29.9	31.7	34.6
Health and Functioning				
Relative Health Status		*		
Excellent or good	20.6	19.1	21.7	18.6
Fair	31.4	23.3	31.6	33.6
Poor	47.9	57.5	46.6	47.7

TABLE A.2 *(continued)*

Characteristic	Ages 18 to 64		Age 65 or Older	
	Treatment Group	Control Group	Treatment Group	Control Group
Compared to Past Year:				
Health was better or about the same	49.4	49.6	45.5	47.0
Was more physically active or about the same	41.2	46.9	33.2	40.9***
Next Year, Expects Health to:				
Improve	18.5	21.3	13.9	14.3
Stay the same	38.7	36.5	27.0	28.0
Decline	30.0	30.9	39.3	41.0
Doesn't know	12.8	11.3	19.9	16.7
Not Independent in Past Week in:[b]				
Getting in or out of bed	61.3	60.9	65.7	68.1
Bathing	86.4	84.4	90.3	93.1*
Using toilet/diapers	61.7	55.2	67.4	67.8
Cognitively Impaired (Inferred)[c]	16.1	16.1	27.1	31.1
Use of Personal Assistance				
Received Any Help in Past Week with:				
Household Activities[d]	93.8	91.3	96.1	96.8
Personal Care[e]	84.0	83.5	89.4	90.3
Transportation[f]	70.0	68.3	57.8	59.9
Routine Health Care[g]	69.1	62.6	77.4	77.2
Used Special Transportation Services in Past Year	35.0	38.4	24.3	23.6
Modified Home or Vehicle in Past Year	35.0	35.2	39.8	36.6
Purchased Assistive Equipment in Past Year	30.2	27.0	31.1	33.4
Number of Unpaid Caregivers Who Provided Help in Past Week				
0	9.1	13.5	8.6	7.9
1	24.3	28.3	29.0	30.3
2	26.8	25.2	29.4	28.3
3 or more	39.9	33.0	33.0	33.6

TABLE A.2 *(continued)*

Characteristic	Ages 18 to 64		Age 65 or Older	
	Treatment Group	Control Group	Treatment Group	Control Group
Relationship of Primary Informal Caregiver to Client				*
Daughter or son	30.5	21.7	64.0	68.6
Parent	18.5	23.5	0.0	0.0
Spouse	6.2	6.5	5.0	4.2
Other relative	20.6	17.0	15.7	15.5
Nonrelative	15.2	17.0	6.5	3.4
No primary informal caregiver	9.1	14.4	8.7	8.3
Primary Unpaid Caregiver Is Employed	32.8	35.4	32.7	32.5
Length of Time with Publicly Funded Home Care:				
Less than 1 year	14.0	14.4	22.5	22.4
1 to 3 years	18.9	14.4	25.0	23.3
More than 3 years	17.7	17.8	22.5	22.8
Respondent said no care in past week, but program says current user	7.8	14.8	9.1	11.1
Not a current recipient	41.6	38.7	20.8	20.4
Number of Paid Caregivers in Past Week				
0	44.9	45.7	27.5	28.2
1	35.4	32.2	42.2	41.8
2	14.4	16.5	20.6	19.7
3 or more	5.4	5.7	9.7	10.3
Number of Hours Per Week in Medicaid Care Plan				
1 to 6	18.1	14.8	25.7	28.5
7 to 11	34.6	36.1	39.6	35.7
12 or more	47.3	49.1	34.7	35.7
Received Paid Help from Private Source in Past Week	11.5	13.5	14.4	11.9
Had Live-In Paid Caregiver[a]	1.2	2.2	1.7	1.1
Satisfaction with Paid Care				
How Satisfied with the Way Paid Caregiver Helped with Personal Care, Household Activities, Routine Health Care[d,e,g]				
Very satisfied	25.1	23.3	31.3	34.5
Satisfied	14.0	13.6	25.0	20.6
Dissatisfied	14.0	14.9	14.3	15.9
Did not receive help in past week	46.9	48.3	29.3	29.1
How Satisfied with Time of Day				

TABLE A.2 *(continued)*

Characteristic	Ages 18 to 64 Treatment Group	Ages 18 to 64 Control Group	Age 65 or Older Treatment Group	Age 65 or Older Control Group
Paid Worker Helped				
Very satisfied	13.6	13.6	22.1	23.5
Satisfied	9.9	12.3	19.6	17.2
Dissatisfied	18.2	17.1	15.5	16.7
Did not receive help in past week	58.3	57.0	42.7	42.6
How Satisfied with Overall Care Arrangements				**
Very satisfied	29.4	25.8	42.7	45.1
Satisfied	25.1	29.0	35.7	33.1
Dissatisfied	30.6	31.7	15.2	11.7
No paid services or goods in past week	14.9	13.6	6.4	10.2
Unmet Needs for Personal Assistance				
Not Getting Enough Help with:				
Household activities[d]	75.9	76.4	63.1	63.9
Personal care[e]	67.2	68.7	59.2	64.3*
Transportation[f]	58.1	57.8	40.9	45.0
Quality of Life				
How Satisfied with Way Spending Life				
Very satisfied	10.9	12.5	14.0	14.0
Satisfied	25.5	21.4	16.4	13.1
Dissatisfied	39.3	41.1	11.4	14.2
Question not asked of proxy	24.3	25.0	58.3	58.7
Attitude Toward IndependentChoices				
Being Allowed to Pay Family Members or Friends Was Very Important	86.4	85.7	85.9	85.9
Having a Choice About Paid Workers' Schedule Was Very Important	80.7	86.1	81.1	79.8
Having a Choice About Types of Services Received Was Very Important	88.1	86.5	84.9	86.9
Primary Informal Caregiver Expressed Interest in Being Paid	33.9	40.4	28.6	33.1*

TABLE A.2 *(continued)*

Characteristic	Ages 18 to 64		Age 65 or Older	
	Treatment Group	Control Group	Treatment Group	Control Group
Work Experience and Community Activities				
Ever Supervised Someone	44.4	37.3	24.0	25.1
Ever Hired Someone Privately	44.6	38.4	28.7	28.7
Ever Worked for Pay	83.1	76.5	84.1	85.6
Attended Social/Recreational Programs in Past Year	11.6	7.9	8.4	8.2
Attended Adult Day Care in Past Year	4.5	4.8	5.9	5.3
Other				
Proxy Completed All or Most of Survey	23.5	23.9	57.0	57.7
Appointed a Representative at Enrollment	25.9	28.7	46.4	50.8
Enrollment Month Was in:				
1998 or 1999	56.0	55.7	47.4	48.9
2000 or 2001	44.0	44.4	52.7	51.1
Sample Size	**243**	**230**	**642**	**624**

SOURCE: MPR's baseline evaluation interview, conducted between December 1998 and April 2001, and the IndependentChoices program.

[a]Because this characteristic was rare, we did not include it in our logit models.

[b]Needed hands-on or standby help or did not perform activity at all.

[c]We inferred the presence of a cognitive impairment if sample member appointed a representative upon enrollment and was physically or mentally unable to respond to the baseline survey.

[d]Household activities may include meal preparation, laundry, housework, and yard work.

[e]Personal care activities may include eating and bathing.

[f]Transportation may include transportation to a doctor's office, shopping, school, work, or social and recreational activities.

[g]Routine health care may include checking blood pressure or doing exercises.

*Difference between treatment and control groups significantly different from 0 at the .10 level, two-tailed test.
**Difference between treatment and control groups significantly different from 0 at the .05 level, two-tailed test.
***Difference between treatment and control groups significantly different from 0 at the .01 level, two-tailed test.

TABLE A.3

RELATIONSHIP OF PAID CAREGIVER TO CONSUMER, TREATMENT GROUP ONLY

Outcome	Ages 18 to 64 (Percent)	Age 65 or Older (Percent)
Had Paid Caregiver That Is:		
Child	26.4	47.2
Parent	13.9	0.2
Other relative	25.4	21.4
Had only unrelated paid caregiver	34.2	32.8

SOURCE: MPR's nine-month evaluation interview, conducted between September 1999 and March 2002.

NOTES: The treatment group sample size is 216 for consumers ages 18 to 64 and 515 for those 65 or older. Percentages sum to greater than 100 percent for the elderly because a few consumers hired their children *and* another relative.

shopping, transportation, and other house and community needs (Table A.4). These increases represent roughly 8 to 20 percent of the control group mean for these services.

Community Service Use

In general, treatment group members were no more likely than control group members to use community services (Table A.5*)*. Indeed, IndependentChoices *reduced* the likelihood that nonelderly consumers would receive home-delivered meals by 10 percentage points. This difference might be due to the fact that treatment group members had their paid caregivers prepare their meals, in order to obtain food that they liked. Alternatively, relative to control group members, treatment group members might have been less aware of meal delivery services. Ideally, consultants would have advised consumers in the treatment group about local services; however, IndependentChoices had no effect on whether a social worker, counselor, nurse, or case manager informed consumers about community services. This finding is consistent with findings in the report by Phillips and Schneider (2002) that many IndependentChoices consultants were unfamiliar with the services available in local areas, perhaps because there only about seven consultants covered the entire state.

Subgroup Effects

We wanted to assess whether IndependentChoices had larger (or smaller) effects for certain subgroups of consumers (other than the elderly and nonelderly). Specifically, we estimated program effects on key outcomes for subgroups defined by whether sample members:

- Were receiving publicly funded home care at baseline[18]

[18]We hypothesized that any experience with any publicly funded home care program—not merely that provided under the Arkansas state Medicaid plan—could affect the consumers' experience with consumer direction. The subgroup is defined accordingly.

TABLE A.4

ESTIMATED EFFECTS OF INDEPENDENTCHOICES ON THE TYPE OF CARE RECEIVED DURING PAST TWO WEEKS

Outcome	Ages 18 to 64			Age 65 or Older		
	Predicted Treatment Group Mean (Percent)	Predicted Control Group Mean (Percent)	Estimated Effect (*p*-Value)	Predicted Treatment Group Mean (Percent)	Predicted Control Group Mean (Percent)	Estimated Effect (*p*-Value)
Received Assistance with:						
Medicine	73.2	66.2	7.0 (.082)	69.7	69.6	0.1 (.961)
Routine health care	57.2	54.4	2.8 (.523)	54.4	49.6	4.6* (.096)
Eating	63.5	51.0	12.5*** (.003)	59.6	57.2	2.4 (.373)
Getting in and out of bed	63.1	54.3	8.8** (.026)	57.5	55.2	2.3 (.380)
Using toilet	54.1	45.7	8.5** (.043)	54.2	51.8	2.5 (.364)
Bathing or showering	87.3	80.8	6.6* (.057)	78.2	77.9	0.3 (.894)
Other personal care	83.8	68.9	14.9*** (.000)	74.3	72.8	1.5 (.547)
Bringing or preparing meals	88.9	85.2	3.8 (.238)	79.2	77.2	2.0 (.391)
Light housework	94.3	90.9	3.4 (.202)	83.4	82.6	0.8 (.699)
Shopping	90.8	84.0	6.8** (.032)	81.6	82.9	–1.3 (.538)
Transportation	80.2	68.5	11.7*** (.003)	58.2	55.9	2.3 (.397)
Other things around house or community	90.4	76.6	13.8*** (.000)	77.3	75.9	1.4 (.557)

SOURCE: MPR's nine-month evaluation interview, conducted between September 1999 and March 2002.

NOTES: Means were predicted using logit models. Because of item nonresponse, the Ages 18 to 64 sample sizes range from 470 to 473, and the Age 65 or Older sample sizes range from 1,258 to 1,261.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE A.5

ESTIMATED EFFECTS OF INDEPENDENTCHOICES ON COMMUNITY SERVICE USE

Outcome	Ages 18 to 64			Age 65 or Older		
	Predicted Treatment Group Mean (Percent)	Predicted Control Group Mean (Percent)	Estimated Effect (*p*-Value)	Predicted Treatment Group Mean (Percent)	Predicted Control Group Mean (Percent)	Estimated Effect (*p*-Value)
Since Enrollment:						
Moved to new place with staff to help	11.9	14.9	–2.9 (.321)	11.7	10.6	1.1 (.548)
Attended adult day care[a]	3.1	3.5	–.4 (.760)	5.4	5.7	-0.2 (.845)
Attended community/recreational program[a]	6.3	7.5	–1.3 (.479)	8.3	9.5	–1.1 (.474)
Received home-delivered meals	3.6	13.3	–10.2*** (.001)	45.6	47.6	–1.9 (.476)
Used transportation services to visit doctor	32.4	28.8	3.6 (.290)	17.3	19.8	–2.4 (.205)
Used transportation services to go other places	30.4	26.0	4.4 (.183)	14.6	17.6	–3.0* (.097)
Had help arranging for services from case manager	23.1	19.5	3.6 (.355)	38.1	34.1	3.9 (.147)
Had help arranging for services from family and friends	7.8	11.6	–3.9 (.197)	12.8	11.6	1.2 (.508)

SOURCE: MPR's nine-month evaluation interview, conducted between September 1999 and March 2002.

NOTES: Means were predicted using logit models. Because of differences in item nonresponse, the Ages 18 to 64 sample ranges from 463 to 471, and the Age 65 or Older sample ranges from 1,234 to 1,258.

[a]Effects were estimated by pooling the two age groups and including an age*treatment status interaction term in the model.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

- Lived in a rural area at baseline (self-described)
- Had unmet needs for help at baseline with personal care, household activities, or transportation (each examined separately)

We compared sample members who were and were not receiving publicly funded home care at baseline, as administrators might wish to target outreach and enrollment activities accordingly if this characteristic were associated with significantly different outcomes, on average. We examined effects on rural/nonrural subgroups because Arkansas has established the goal of improving personal assistance services for residents of rural areas, a group that home agencies sometimes are unable to serve (Phillips and Schneider 2001). Finally, we examined effects on subgroups defined by having or not having unmet needs because IndependentChoices might be expected to have the greatest impacts on people with the greatest needs, even though the program was not intended to meet *all* needs.

For each subgroup, we examined the effect of IndependentChoices on the following key outcomes:

- The total hours of care for the benefit of the consumer
- Whether the consumer received any paid care
- Whether the consumer received any care during nonbusiness hours
- Whether the consumer made any home or vehicle modification or purchased any supplies or equipment

We found a significant difference in impacts between subgroups for only one outcome measure (shown in Tables A.6 through A.10). Specifically, the impact of IndependentChoices on the likelihood of receiving any paid assistance was greater for new applicants for publicly funded home care services than for those who had received these services before the demonstration. The absence of significant differences between subgroups for the other outcome

TABLE A.6

ESTIMATED EFFECTS OF INDEPENDENTCHOICES ON KEY OUTCOMES FOR SUBGROUPS DEFINED BY WHETHER RECEIVING PUBLICLY FUNDED HOME CARE AT BASELINE

	Not Receiving Publicly Funded Home Care at Baseline			Receiving Publicly Funded Home Care at Baseline		
Outcome	Predicted Treatment Group Mean	Predicted Control Group Mean	Estimated Effect (*p*-Value)	Predicted Treatment Group Mean	Predicted Control Group Mean	Estimated Effect (*p*-Value)
Percentage Receiving No Paid Assistance (Among Those Living in Community)†††	8.1	51.0	–42.9*** (.000)	5.1	13.7	–8.6*** (.000)
Hours of Help Received	119.8	124.3	–4.5** (.489)	115.8	129.4	–13.6 (.207)
Percentage Receiving Care During Nonbusiness Hours	90.5	84.6	5.9** (.030)	79.6	77.3	2.3 (.237)
Percentage Making Any Home or Equipment Modification	55.9	57.9	–2.1 (.647)	56.1	51.7	4.3 (.118)

SOURCE: MPR's nine-month evaluation interview, conducted between September 1999 and March 2002.

NOTE: Sample sizes vary from measure to measure (from 1,535 to 1,737) because of item nonresponse and because the sample for one regression (predicting the receipt of paid assistance) was restricted to those living in the community.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.
†††Estimated effects for the two subgroups were significantly different from each other at the .01 level, two-tailed test.

TABLE A.7

ESTIMATED EFFECTS OF INDEPENDENTCHOICES ON KEY OUTCOMES FOR SUBGROUPS DEFINED BY WHETHER HAD UNMET HOUSEHOLD ACTIVITY NEEDS AT BASELINE

Outcome	Did Not Have Unmet Household Activity Needs at Baseline			Had Unmet Household Activity Needs at Baseline		
	Predicted Treatment Group Mean	Predicted Control Group Mean	Estimated Effect (*p*-Value)	Predicted Treatment Group Mean	Predicted Control Group Mean	Estimated Effect (*p*-Value)
Percentage Receiving No Paid Assistance (Among Those Living in Community)	4.3	21.8	17.5 (.000)***	6.9	26.3	–19.4*** (.000)
Hours of Help Received	108.6	124.9	–16.4 (.017)***	138.4	126.9	11.6 (.227)
Percentage Receiving Care During Nonbusiness Hours	85.7	78.1	7.5** (.019)	81.2	80.2	.1 (.448)
Percentage Making Any Home or Equipment Modification	57.3	55.4	1.9 (.675)	55.3	52.3	3.0 (.332)

SOURCE: MPR's nine-month evaluation interview, conducted between September 1999 and March 2002.

NOTE: Sample sizes vary from measure to measure (from 1,535 to 1,737) because of item nonresponse and because the sample for one regression (predicting the receipt of paid assistance) was restricted to those living in the community.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE A.8

ESTIMATED EFFECTS OF INDEPENDENTCHOICES ON KEY OUTCOMES FOR SUBGROUPS DEFINED BY WHETHER HAD UNMET PERSONAL CARE NEED AT BASELINE

Outcome	Did Not Have Personal Care Unmet Need at Baseline			Had Unmet Personal Care Unmet Need at Baseline		
	Predicted Treatment Group Mean	Predicted Control Group Mean	Estimated Effect (*p*-Value)	Predicted Treatment Group Mean	Predicted Control Group Mean	Estimated Effect (*p*-Value)
Percentage Receiving No Paid Assistance (Among Those Living in Community)	5.3	26.0	–20.7*** (.000)	6.2	23.9	–17.8*** (.000)
Hours of Help Received	114.1	137.0	–22.9*** (.001)	120.9	115.5	5.4 (.556)
Percentage Receiving Care During Nonbusiness Hours	83.3	76.8	6.4** (.029)	82.4	81.0	1.4 (.352)
Percentage Making Any Home or Equipment Modification	54.6	46.8	7.7* (.070)	56.8	57.3	–0.4 (.912)

SOURCE: MPR's nine-month evaluation interview, conducted between September 1999 and March 2002.

NOTE: Means were predicted using logit models. Sample sizes vary from measure to measure (from 1,535 to 1,737) because of item nonresponse and because the sample for one regression (predicting the receipt of paid assistance) was restricted to those living in the community.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE A.9

ESTIMATED EFFECTS OF INDEPENDENTCHOICES ON KEY OUTCOMES FOR SUBGROUPS DEFINED BY WHETHER HAD UNMET TRANSPORTATION NEED AT BASELINE

	Did Not Have Unmet Transportation Need at Baseline			Had Unmet Transportation Need at Baseline		
Outcome	Predicted Treatment Group Mean	Predicted Control Group Mean	Estimated Effect (*p*-Value)	Predicted Treatment Group Mean	Predicted Control Group Mean	Estimated Effect (*p*-Value)
Percentage Receiving No Paid Assistance (Among Those Living in Community)	7.8	27.2	–19.4*** (.000)	4.0	22.0	–18.0*** (.000)
Hours of Help Received	106.1	125.3	–19.2** (.019)	125.8	132.5	–6.8 (.372)
Percentage Receiving Care During Nonbusiness Hours	83.3	80.9	2.5 (.210)	82.6	77.7	4.4* (.074)
Percentage Making Any Home or Equipment Modification	59.0	54.4	4.5 (.174)	52.4	52.1	0.3 (.908)

SOURCE: MPR's nine-month evaluation interview, conducted between September 1999 and March 2002.

NOTE: Sample sizes vary from measure to measure (from 1,535 to 1,737) because of item nonresponse and because the sample for one regression (predicting the receipt of paid assistance) was restricted to those living in the community.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE A.10

ESTIMATED EFFECTS OF INDEPENDENTCHOICES ON KEY OUTCOMES FOR SUBGROUPS DEFINED BY RURAL OR NONRURAL RESIDENCE AT BASELINE

	Rural			Nonrural		
Outcome	Predicted Treatment Group Mean	Predicted Control Group Mean	Estimated Effect (*p*-Value)	Predicted Treatment Group Mean	Predicted Control Group Mean	Estimated Effect (*p*-Value)
Percentage Receiving No Paid Assistance (Among Those Living in Community)	6.1	25.9	–19.8*** (.000)	5.6	24.0	–18.3*** (.000)
Hours of Help Received	116.2	122.5	–6.4 (.372)	122.8	130.3	–7.5 (.392)
Percentage Receiving Care During Nonbusiness Hours	79.5	77.3	2.2 (.342)	84.7	80.8	3.9** (.041)
Percentage Making Any Home or Equipment Modification	55.2	51.8	3.4 (.366)	56.5	54.4	2.1 (.477)

SOURCE: MPR's nine-month evaluation interview, conducted between September 1999 and March 2002.

NOTE: Sample sizes vary from measure to measure (from 1,535 to 1,737) because of item nonresponse and because the sample for one regression (predicting the receipt of paid assistance) was restricted to those living in the community.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

measures is not surprising. Given the small size of the subgroups, we would be able to detect only fairly sizable impacts.

Nonetheless, we briefly discuss a few of subgroup findings that are suggestive of possible differences between subgroups. The estimates of IndependentChoices' impacts are often significant for subgroups without unmet personal care needs, without unmet household activity needs, and without transportation needs at baseline. For example, IndependentChoices significantly affected the likelihood that someone without unmet personal care would make a home modification or equipment purchase, but it had no effect on those with unmet personal care needs. Similarly, IndependentChoices significantly reduced the hours of care that those without unmet personal care needs, household activity needs, and transportation needs at baseline received, but it had no effect on the hours of care received by those who had unmet needs in these areas. It is possible that consumers who had unmet needs in these areas had little choice but to use their monthly allowance to purchase more hours of caregiver assistance, whereas those without unmet needs in these areas were able to take advantage of the flexibility of the cash allowance to make home modifications and equipment purchases.

Please see "The Effects of Cash and Counseling on Personal Care Services and Medicaid Costs in Arkansas," a November 19, 2003 Health Affairs web exclusive available at http://www.healthaffairs.org/1110_web_exclusives.php for important additional results produced after this report was written. These new results show that when costs for the second year after enrollment are examined, the savings in nursing home and other long-term care costs grow to essentially offset the treatment group's higher costs for personal care.