

Refusal Rates

Despite the PI—the incentive payment designed to cover the worst-case out-of-pocket cost a family on a given plan could anticipate—refusals to enroll did differ significantly by plan (see Table 2.2). From the participant's perspective, the expected monetary gain was greatest in the 25 percent coinsurance plans; nonetheless, refusal rates were significantly lower on the free-care plan.¹³ However, the refusal rates did not affect the distribution of sample member characteristics within plans, so plan comparisons were left unbiased. The data shown in Table 2.3 for adults indicate that the only nominally statistically significant difference (at 5 percent)

between the participants on the free-care and other plans is that the proportion of females is lower on the free-care plan than on the cost-sharing plans, although the value for cholesterol level is close to significance. Among the 20 comparisons made in Table 2.3, however, one would be expected to fall in the 5 percent critical region by chance even if there were no true differences between the groups. In any event, all analyses reported below (other than those reporting simple plan means) control for gender, and thus adjust for any bias this differential refusal may cause. Table 2.4 shows the analogous results for children. No differences are significant at the 5 percent level. (For more details on the measures of health described in Tables 2.3 and 2.4, see Chapters 6 and 7.)

A different test for bias is to compare the characteristics of those who refused the enrollment offer with those who accepted. These data are shown by plan in Table 2.5. Those in families who refused the free plan and the 95 percent plan were more likely to be older, and on all plans but the free plan those who refused were more likely to have less education. The number who refused, however, is sufficiently low that these differences do not appear as significant in Table 2.3. In any case, all our analyses other than comparison of simple plan means control for age and education.

With refusal rates averaging 15 percent among the plans, it is reasonable to ask whether the population that enrolled was representative of the nonelderly community. Carl Morris (1985) analyzed data gathered on the baseline interview, and compared the sample enrolled with the sample that completed the baseline interview but was not enrolled, along the following dimensions: physician visits; self-reported health status; self-reported worry attributed to health; self-reported pain attributed to health; age; income; and whether the individual had insurance coverage. These comparisons should

Table 2.2 Percentage of refusals, by plan

Plan	Refusal rate (%)
Free	8
25 and 50% coinsurance	11
95% coinsurance	25
Individual Deductible	17

Note: One can reject the null hypothesis of no difference among the plans at the $p < 0.01$ level.

detect bias that might have been caused either by refusal at any stage or by our inability to obtain details about the person's insurance coverage, which precluded making an offer to enroll.

For the key *dependent* variables analyzed below—physician visits, health status, worry, and pain—the comparison between the group enrolled and the group not enrolled showed smaller differences than would be expected at random. Among the *explanatory* variables analyzed, Morris showed that families that enrolled had a higher proportion of children than families that did not enroll. All analyses reported below (other than comparison of simple plan means) control for this difference, either by restricting the analysis to children or by including age as an explanatory variable.

Attrition

Like initial refusal rates, attrition rates during the Experiment varied by plan (Tables 2.6 and 2.7). The proportion of adults who completed the Experiment and exited after the planned three- or five-year period varied from 94.7 percent on the free-care plan to 84.6 percent on the 95 percent coinsurance plans, a difference that is statistically significant at the 1 percent level. The proportion of children who completed the Experiment is also higher on the free-care plan: 96.7 percent versus 91.7 on all the cost-sharing plans; this difference is also significant at the 1 percent level.

Because all analyses could produce distorted results if those leaving the Experiment prematurely were sicker or healthier than those who did not, it is reassuring that virtually all the differential attrition by adults occurred for reasons unrelated to health.¹⁴ Specifically, attrition from death, institutionalization for health reasons, and becoming eligible for Medicare by virtue of becoming disabled are at low levels (1–2 percent) on all plans, and the rates by plan do not vary significantly. In the analysis of health outcomes, data were recovered from 77 percent of those who left the Experiment prematurely and from 85 percent of those who left prematurely and did not die. Hence, data loss from attrition poses negligible problems for the health outcome analyses described in Chapters 6 and 7.¹⁵

The analysis of demand is not as sensitive to the problem of attrition as is the analysis of health status, because data were available on utilization up to the time of exit. Thus, we could test whether the rate of use by those who left the Experiment prematurely differed from the rate of use by those

Table 2.3 Values on demographic, study, and health status measures at enrollment, by type of experimental insurance plan, persons 14 years of age or over^a

Variable and brief description ^b	Cost-sharing plans					<i>t</i> -test value ^d
	Family Deductible	Individual Deductible	Other cost sharing	Total cost sharing ^c	Free plan	
No. of enrollees ≥ 14 years of age	759	881	1,024	2,664	1,294	
Mean age (years)	32.8	33.6	33.8	33.4	33.3	-0.0
Gender (% female)	56.1	53.8	53.5	54.4	52.2	-2.1
Race (% nonwhite)	20.8	18.3	17.4	18.9	16.6	-0.5
Mean family income adjusted for family size (000s of 1991 \$)	30.3	32.9	32.2	31.8	31.2	-0.5
% hospitalized in year before enrollment	11.5	12.0	11.2	11.6	11.7	0.1
Mean no. of physician visits in year before enrollment	4.49	4.80	4.23	4.51	4.55	0.2
Mean education (years)	11.9	12.0	12.0	12.0	11.8	-1.4
% taking enrollment screening examination	59.1	58.6	57.8	58.5	62.5	1.6
% enrolled for 3 years	69.8	71.3	67.4	69.5	68.9	-0.3
Physical functioning (mean score, 0-100)	89.6	89.1	88.7	89.1	88.9	-0.2

Role functioning (mean score, %)	94.8	91.8	91.9	92.8	93.1	0.3
Mental health (mean score, 0–100)	73.8	73.7	75.0	74.2	74.7	0.9
Social contacts (mean score, 0–100)	72.8	72.3	72.1	72.4	72.5	0.1
General health perceptions (mean score, 0–100)	70.5	69.4	71.1	70.4	69.7	-1.2
Smoking scale (mean score, 1–2.20)	1.29	1.32	1.30	1.30	1.29	-0.7
Mean standardized weight (kg)	71.5	71.0	71.3	71.3	71.3	0.0
Mean cholesterol level (mg/dl)	207	206	205	206	202	-1.9
Mean diastolic blood pressure (mm Hg)	75.2	75.4	75.3	75.3	74.6	-1.4
Functional far vision (mean no. of lines)	2.28	2.42	2.39	2.37	2.33	-0.9
Risk of dying (mean score)	0.99	1.12	1.05	1.05	1.04	-0.6

a. Values are adjusted for differences according to site.

b. For demographic data, table entries include everyone with valid enrollment data. For health measures, the mean score for enrollees excludes persons who did not have valid enrollment data because of missing data or the study design (e.g., they were not assigned to an initial screening examination). See Chapter 6 for a description of the health measures and family size adjustment to income.

c. Values represent equally weighted averages of the three types of cost-sharing plans.

d. Difference between free and total cost-sharing plans.

Table 2.4 Raw values of demographic, study, and health measures of children age 0–13 at enrollment, by type of experimental insurance plan^a

Variable and description ^b	Free plan	Cost-sharing plans	<i>t</i> -test value ^c
No. of enrollees	599	1,245	
Mean age (years)	7.1	7.2	0.54
Gender (% male)	52	52	-0.23
Race (% nonwhite)	21	25	1.37
Mean family income adjusted for family size and site (1991 \$)	24,300	26,400	1.65
Mean education of mother (years)	11.8	11.9	0.84
% of children hospitalized in year before enrollment	7.5	7.1	-0.30
Mean no. of physician visits in year before enrollment	3.3	3.1	-0.86
% taking physical screening examination	64	60	-1.56
% enrolled for three years	69	70	0.38
Role limitations: % limited	3.1	3.4	0.30
Mental Health Index (mean score, 0–10)	6.2	6.1	-0.97
General Health Index (mean score, 0–10)	5.9	5.9	0.20
% with low hemoglobin levels	8.6	9.8	0.66
% bothered by plant allergies	9.8	7.7	-1.02
Functional far vision (mean in Snellen lines; higher score represents poorer vision)	2.8	2.8	-0.49
% with hearing impairments	8.6	5.6	-1.46
% with suspected fluid in middle ear	27.9	25.6	-0.66

a. Because the allocation to the free-care plan did not differ markedly by site, these values are not adjusted for site differences in the allocation by plan. For site-specific values, see Valdez (1966), app. E.

b. For demographic data, entries include everyone with valid enrollment data. For health measures, the mean score for the enrollment sample excludes children not assigned to an initial screening examination or missing data. See Chapters 6 and 7 for a description of the health measures.

c. Test of difference between cost-sharing and free plans.

Table 2.5 Characteristics of families in Seattle and Massachusetts, age 14 or over, that accepted and refused enrollment offer, by plan^a

Characteristic	Free plan		25 and 50%		95%		Individual Deductible		F value ^b
	Accept	Refuse	Accept	Refuse	Accept	Refuse	Accept	Refuse	
Education (years)	12.6	12.1	12.6	11.7 ^c	12.8	12.0 ^c	12.7	11.7 ^c	0.2
No. of physician visits in past year	4.3	4.6	3.6	3.9	3.7	4.5	4.5	3.8	0.9
Income (000s of 1991 \$) ^d	31.3	39.0	30.7	27.6	30.7	34.7	31.6	31.0	2.2
% hospitalized in past year	10.6	9.2	9.2	13.2	10.0	13.2	12.3	13.7	0.5
% male	49.3	42.6	48.8	40.5	46.0	43.0	49.7	44.2	0.2
Age (years)	29.1	39.8 ^c	29.8	29.9	28.0	34.1 ^c	28.6	30.6	2.4
% black	0.9	0.0	2.1	0.5	2.6	0.4	2.2	0.0	0.1
Health Index ^e	9.9	9.8	9.9	9.8	10.0	9.9	9.9	9.6	0.9
No. of families	332	20	234	66	194	65	264	62	
% of families	94	6	78	22	75	25	81	19	

a. Sample consists of individuals in families in Seattle and Massachusetts. (Dayton and South Carolina data for refusals are not available.) Variables are averaged within families; averages presented are averages across families.

b. *F*-tests are for differences between plans. They have 3 and *n* degrees of freedom, where *n* ranges between 1,186 and 1,229, because of missing data. The *F*-value for significance at the 5% level is approximately 2.60 and at the 10% level approximately 2.08.

c. $p < 0.05$, using *t*-test.

d. 1973 dollars adjusted to 1991 dollars using the all-items Consumer Price Index.

e. The Health Index is the sum of responses to one question about the amount of pain (from 1 equals a great deal to 4 equals none), one question about the amount of worry (from 1 = a great deal to 4 = none), and one self-rated health question (1 = poor, 2 = fair, 3 = good, 4 = excellent).

Table 2.6 Numbers of adult enrollees who completed study and reasons for noncompletion, by plan

Category of participation	Family Deductible		Individual Deductible		Other cost sharing		Total cost sharing		Free plan		Grand total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total enrolled	759	100.0	881	100.0	1,024	100.0	2,664	100.0	1,294	100.0	3,958	100.0
Completed enrollment and exited normally	642	84.6	772	87.6	926	90.4	2,340	87.8	1,225	94.7	3,565	90.1
Left experiment voluntarily	83	10.9	53	6.0	43	4.2	179	6.7	5	0.4	184	4.7
Terminated for health reasons ^a	3	0.4	11	1.3	13	1.3	27	1.0	15	1.2	42	1.1
Terminated for non-health reasons ^a	24	3.2	34	3.9	31	3.0	89	3.3	38	2.9	127	3.2
Died	7	0.9	11	1.3	11	1.1	29	1.1	11	0.9	40	1.0
Recovered for health analysis ^b	94	80.3	69	63.3	84	85.7	247	76.2	54	78.3	301	76.6

a. Participation ended because the person no longer fulfilled criteria for eligibility. Health reasons included becoming eligible for disability Medicare and being institutionalized; nonhealth reasons included joining the military and failing to complete data-collection forms.

b. Recovered from enrollees in each plan who did not exit normally. See Chapter 6 and Brook et al. (1984). Percentages in this row use denominator of those not exiting normally.

who did not. We found that, with the exception of use by those who died (1 percent of those initially enrolled), there was no statistically significant difference in the rate of use between those who did and those who did not complete the Experiment.¹⁶

Not surprisingly, use by those who died exceeded use by others. Those who died, however, constituted such a small subsample (for example, a total of 11 people on the free-care plan throughout the Experiment) that we could not conduct a meaningful test of whether the effect of plan differed in that group.

The Group Health experimental group, which was drawn entirely from those not previously enrolled at Group Health, received a different type of offer from the participants in the fee-for-service plans.¹⁷ In the case of the fee-for-service plans, participants were always better off financially from joining the Experiment. Indeed, unless they did not find the monetary payment for completing questionnaires enough to counteract any distaste for filling them out, or did not trust our assurances of confidentiality, or simply did not want to participate, there was no reason to refuse.

We asked the Group Health experimental group, however, to change sharply the terms on which they could see their previous physician(s). Although they paid no out-of-pocket charge for care they received at Group Health, they had to pay 95 cents on the dollar for any care received outside Group Health, except for emergency care outside the area or for services that Group Health did not deliver, such as dentistry or chiropractic. We therefore expected refusals among the Group Health experimental group to be much higher than among the other groups. In fact the

Table 2.7 Number of children who completed Experiment and reasons for noncompletion, by plan

Category of participation	Free plan		Cost-sharing plans	
	No.	%	No.	%
Total enrolled	599	100.0	1,245	100.0
Completed study normally	579	96.7	1,141	91.7
Voluntarily left study early	1	0.2	73	5.9
Terminated from study ^a	19	3.2	26	2.1
Died ^b	0	0.0	5	0.4

a. Participation ended because family no longer fulfilled criteria for eligibility.

b. Three deaths resulted from accidents (fire and asphyxia), one from murder, and one from epileptiform seizure with anoxia.

refusal rate among the Group Health experimental group was only two percentage points above the refusal rate among the cost-sharing plans in Seattle (a difference that is not statistically significant at conventional levels). Possible bias in the Group Health sample from refusal and attrition is discussed further in Chapter 8.

We conclude that neither refusal of the enrollment offer nor withdrawal from the Experiment subsequent to enrollment caused any appreciable bias. Thus, the design, especially the use of the Participation Incentive and the Completion Bonus, and the enrollment techniques were successful in their primary intent—obtaining a sample that was representative of the sites selected for the Experiment, except for intentional differences and the higher proportion of children. (For further discussion of refusal and attrition issues, see Newhouse et al. 1987.)