Table 3: FSA Contributions by Income

Income (Dollars)	Optimal FSA (Dollars)	Optimal FSA (Naïve) (Dollars)
$25,000	$115	$18
$29,859	$131	$18
$35,000	$147	$18
$40,000	$163	$18
$45,000	$179	$18
$50,000	$194	$18

Table 4: FSA Contributions by Marginal Tax Rates

Marginal Tax Rate (Percentage)	Optimal FSA (Dollars)	Optimal FSA (Naïve) (Dollars)
25	$105	$0
30	$115	$0
35.65	$131	$18
40	$149	$48
45	$179	$84
50	$222	$141

Source: Bhattacharya, Schoenbaum, and Sood (2002)

Table 7: Estimated Price Elasticity of Demand[*]

ICD-9 Group	Price Elasticity Evaluated at:		
	0.75*E[Price]	1.5*E[Price]	2.5*E[Price]
I	-0.22	-0.21	-0.19
II	-0.12	-0.12	-0.12
III	-0.37	-0.33	-0.28
IV	-0.16	-0.16	-0.15
V	-0.31	-0.30	-0.28
VI	-0.33	-0.29	-0.25
VII	-0.54	-0.45	-0.38
VIII	-0.38	-0.35	-0.32
IX	-0.29	-0.27	-0.25
X	0.0052	0.0071	0.028
XII	-0.31	-0.28	-0.27
XIII	-0.19	-0.19	-0.18
XVI	-0.19	-0.18	-0.17

* Demand is measured as number of outpatient visits in a given year

Source: Bhattacharya, Vogt, Yoshikawa, and Nakahara (1996)

Appendix: Glossary of ICD-9 Codes

ICD-9 Code	Description of Category
I	Infectious Diseases
II	Neoplasms
III	Endocrine, Nutritional, Immune System, and Metabolic Disease
IV	Diseases of Blood and Blood Forming Organs
V	Mental Disorders
VI	Diseases of the Nervous System and Sense Organs
VII	Diseases of the Circulatory System
VIII	Diseases of the Respiratory System
IX	Diseases of the Digestive System
X	Diseases of the Genitourinary System
XI	Complications of Pregnancy, Childbirth, and the Puerperium
XII	Diseases of the Skin and Subcutaneous Tissue
XIII	Diseases of the Musculoskeletal System and Connective Tissue
XIV	Congenital Anomalies
XV	Certain Conditions Originating in the Perinatal Period
XVI	Symptoms, Signs, and Ill-Defined Conditions
XVII	Injury and Poisoning

Table 3.3   Predicted mean annual use of medical services for a standard population (standard errors in parentheses)[a]

Plan	Probability of any medical use (%)		Probability of any inpatient use (%)		Medical expenses per person (1991 $)	
	Mean	t vs. free	Mean	t vs. free	Mean	t vs. free
Free	86.7 (0.67)	—	10.37 (0.42)	—	1,019 (43)	—
25%	78.8 (0.99)	−6.69	8.83 (0.38)	−2.74	826 (38)	−4.05
50%	74.3 (1.86)	−6.33	8.31 (0.40)	−3.57	764 (43)	−4.91
95%	68.0 (1.48)	−11.57	7.75 (0.35)	−4.80	700 (35)	−6.74
Individual Deductible	72.6 (1.14)	−10.69	9.52 (0.53)	−1.28	817 (45)	−3.78

a. Estimates are predicted values from the four-equation model. Medical services exclude dental and outpatient psychotherapy. The predictions are for the enrollment population carried forward through each year of the Experiment. The standard errors are corrected for intertemporal and intrafamily correlation. These t-statistics are larger than those one would compute from the standard errors shown in Table 3.2 because use of the standard errors ignores the positive covariance between the two predicted plan means from the shared $X\beta$ term. The difference in expenses between the 25% and 50% plans is significant at the 5% level ($t = 1.97$), and between the 50% and 95% plans is significant at the 6% level ($t = 1.93$). The parameter estimates underlying these predictions are available in Manning et al. (1988).

TABLE 5.3 ARC PRICE ELASTICITIES OF MEDICAL SPENDING

Coinsurance Range %	Outpatient			Total Outpatient	Hospital	Total Medical	Dental
	Acute	Chronic	Well				
0–25	0.16	0.20	0.14	0.17	0.17	0.17	0.12
	(0.02)	(0.04)	(0.02)	(0.02)	(0.04)	(0.02)	(0.03)
25–95	0.32	0.23	0.43	0.31	0.14	0.22	0.39
	(0.05)	(0.07)	(0.05)	(0.04)	(0.10)	(0.06)	(0.06)

Note: Standard errors are given in parentheses. For their method of computations, see Keeler, Buchanan, Rolph, et al. (1988).

Source: Keeler, Buchanan, Rolph, et al. (1988).

Source: Phelps (2002)

Table 3.5 Predicted annual use of medical services by age group for a standard population[a]

Plan	Probability of any medical use (%)		Probability of any inpatient use (%)		Medical expenses (1991 $)	
	Mean	*t* vs. free	Mean	*t* vs. free	Mean	*t* vs. free
Children (<18)						
Free	84.0	—	5.33	—	454	—
25%	75.1	−6.72	4.98	−0.55	376	−2.16
50%	70.3	−6.48	4.62	−1.13	366	−2.20
95%	63.5	−11.64	4.23	−1.81	309	−4.10
Individual Deductible	68.5	−10.68	5.86	+0.63	392	−1.42
Adults						
Free	88.6	—	13.9	—	1416	—
25%	81.4	−6.63	11.5	−2.92	1143	−3.70
50%	77.1	−6.19	10.9	−3.64	1045	−4.80
95%	71.2	−11.37	10.2	−4.69	975	−6.07
Individual Deductible	75.6	−10.57	12.1	−1.89	1117	−3.63

a. Predictions for all years of the study for the enrollment population carried forward for all years of the study. Standard errors corrected for intertemporal and intrafamily correlation.

Table 3.4 Predicted annual use of medical services by income group for a standard population[a]

	Income groups				
	Lower third	Middle third		Higher third	
Plan	Mean	Mean	t vs. lower third	Mean	t vs. lower third
Probability of any use (%)					
Free	82.8	87.4	4.91	90.1	5.90
25%	71.8	80.1	5.45	84.8	6.28
50%	64.7	76.2	4.35	82.3	4.86
95%	61.7	68.9	3.96	73.8	4.64
Individual Deductible	65.3	73.9	6.09	79.1	/7.09
Probability of any inpatient use (%)					
Free	10.63	10.14	-0.91	10.35	-0.35
25%	10.03	8.44	-2.95	7.97	-2.75
50%	9.08	8.06	-1.78	7.77	-1.66
95%	8.77	7.38	-2.79	7.07	-2.46
Individual Deductible	9.26	9.44	+0.31	9.88	+0.68
Expenses (1991 $)					
Free	1,033	965	-1.78	1,060	+0.53
25%	891	771	-3.17	817	-1.47
50%	800	721	-1.89	773	-0.49
95%	762	648	-3.09	691	-1.41
Individual Deductible	798	778	-0.57	878	+1.38

a. Predictions for the enrollment population carried forward for all years of the study.
Standard errors corrected for intertemporal and intrafamily correlation.

Table 5.20   Effect of cost sharing on preventive care, adults

| Age group and type of care | Free plan | Percent with any preventive care in 3 years | |
		Family coinsurance plans	Individual Deductible
Males 17–44			
Preventive care	27.2	23.1	17.2[a]
Males 45–64			
Preventive care	39.1	27.4	18.8[a]
Females 17–44			
Pap smears	72.2	65.8	54.8[a]
Preventive care	83.7	76.9[b]	71.1[a]
Females 45–64			
Pap smears	65.0	52.8[b]	50.0[b]
Preventive care	76.9	65.3[b]	68.6

a. Significantly different from the free plan ($p < 0.01$).
b. Significantly different from the free plan ($p < 0.05$).

Source: Newhouse (1993)

Table 5.21   Effect of cost sharing on preventive care, children

Age and type of care	Free plan	Percent with any preventive care in 3 years	
		Family coinsurance plans	Individual Deductible
0–6 years			
Immunizations	58.9	48.7[a]	50.4
Preventive care	82.5	73.7[a]	77.9
7–16 years			
Immunizations	21.2	21.7	16.1
Preventive care	64.8	59.6	53.2[a]

a. Significantly different from the free plan ($p < 0.05$).

Table 5.15   Number and percentage of all antibiotics and rate of use per person per year, by diagnostic category and insurance plan

Diagnostic category	Free plan (N = 1,935)			Cost-sharing plans (N = 3,830)			Ratio of free to cost sharing (95% confidence interval)[a]
	Number of antibiotics purchased	%	Number per person enrolled in plan	Number of antibiotics purchased	%	Number per person enrolled in plan	
All viral conditions	320	17	0.17	321	16	0.08	1.97 (1.70, 2.28)
Acute upper respiratory infection	195	10	0.10	222	11	0.06	1.74 (1.45, 2.09)
Influenza	43	2	0.02	39	2	0.01	2.18 (1.42, 3.35)
Cough	19	1	0.01	13	1	0.003	2.89 (1.43, 5.84)
Throat pain	20	1	0.01	22	1	0.01	1.80 (0.98, 3.29)
Chronic rhinitis	15	1	0.01	10	<1	0.003	2.97 (1.34, 6.60)
Viral rashes, exanthems	28	2	0.01	15	1	0.004	3.69 (1.98, 6.89)
All viral-bacterial conditions	301	16	0.16	382	19	0.10	1.56 (1.36, 1.80)
Acute pharyngitis	191	10	0.10	245	12	0.06	1.54 (1.28, 1.85)
Acute laryngitis	14	1	0.01	21	1	0.01	1.32 (0.67, 2.59)
Acute bronchitis	96	5	0.05	116	6	0.03	1.64 (1.26, 2.14)
All bacterial conditions	905	49	0.47	919	45	0.24	1.95 (1.81, 2.10)
Respiratory conditions	337	18	0.17	412	20	0.11	1.62 (1.42, 1.85)
Nonrespiratory conditions	568	31	0.29	507	25	0.13	2.22 (2.00, 2.47)
All other conditions	289	16	0.15	356	17	0.09	1.61 (1.39, 1.86)
Total[b]	1,857	98[b]	0.96	2,046	97[b]	0.53	1.80 (1.75, 1.86)

a. Taylor's series 95% confidence intervals; ratio and confidence intervals calculated using 8 significant digits.

b. Numbers shown for the four main diagnostic categories do not sum to the total because diagnoses were unknown for 42 claims on the free plan and 68 claims on the cost-sharing plans.

Table 5.3 Response to plans, by diagnosis[a]

Diagnosis	Annual visits per 10,000 persons		Visits on cost-sharing plans as a proportion of visits on free plan
	Cost-sharing plans (25%, 50%, 95%, Individual Deductible)	Free plan	
More urgent diagnoses			
Fracture/dislocation	134	168	0.80
Miscellaneous serious trauma[b]	57	67	0.85
Asthma	30	83	0.36
Otitis media	40	78	0.51
Chest pain/acute heart disease	59	57	1.04
Cellulitis/abscess/wound infection	36	39	0.92
Surgical abdominal disease[c]	42	38	1.11
Head injury	36	33	1.09
Urinary tract infection	22	43	0.51
Acute eye injury/infection	34	34	1.01
Obstetrical	29	31	0.94
Allergic reaction	26	26	1.00
Acute alcohol/drug related	27	20	1.35
Burn, second degree/complicated	19	22	0.86
Visits with any of the above diagnoses	991	1,280	0.77[d]

Table 5.2   Annual rate of emergency department visits resulting in
hospitalization[a]

Plan	Visits per 1,000 persons[b]	% of free plan
Free	32 (3.5)	100
25%, 50%, and 95%	21 (2.1)[c]	67
Individual Deductible	22 (3.5)[c]	68

a. Visit rates shown are simple means.

b. Figures in parentheses are the standard errors of the mean uncorrected for intrafamily or intertemporal correlation. The true standard errors are slightly larger.

c. $p < 0.05$ for the contrast with the free plan.

Table 3.24 Comparison of expenditure on ambulatory medical and mental health care per enrollee (standard errors in parentheses)[a]

Plan	Ambulatory medical care[b]		Ambulatory mental health care	
	Sample mean ($)	% of free plan	Mean expense ($)	% of free plan
Free care	488 (17)	100	42.20 (7)	100
25% medical/ 25% mental[c]	379 (28)	78	28.40 (7)	67
25% medical/ 50% mental[d]	362 (35)	74	32.20 (13)	76
50% medical/ 50% mental[d]	308 (24)	63	13.10 (8)	33
95%	282 (18)	58	18.10 (5)	43
Individual Deductible	353 (20)	72	47.70 (11)	113

a. Mental health services defined using diagnosis or procedure (conservative definition). Results from Manning et al. (1986b). The sample is the same as that in Table 3.22. The results for ambulatory medical care differ from those in Table 3.2 because the sample excludes the first year of experience in Dayton on the 95% and Individual Deductible plans. This maintains comparability with the mental health results; the first year of experience in Dayton is excluded on those plans because outpatient mental health services were not covered. Dollars are 1991 dollars.

b. Excludes all inpatient and dental expenses.

c. Medical coinsurance rate = 25%.

d. Ambulatory mental health coinsurance rate = 50%.

Table 3.12 Predicted steady-state annual use of dental services by income tertiles for a standard population for free and 95% plans[a]

Plan	Low-income tertile		High-income tertile		
	Mean	t vs. 95%	Mean	t vs. 95%	t vs. low
Free					
Probability of any use (%)	57.8	5.91	74.7	4.59	9.17
Visits/enrollee	1.69	4.75	2.05	3.31	4.43
Expenditure ($)	317	2.76	339	3.23	1.02
95% plan					
Probability of any use (%)	39.8	—	61.3	—	6.04
Visits/enrollee	1.16	—	1.63	—	3.44
Expenditures ($)	216	—	234	—	0.61

a. Standardized population is all participants present at enrollment. t-statistics adjusted for intrafamily and intertemporal correlation. Expenditures standardized to January 1984 dollars using the dental fee component of the CPI and brought forward to 1991 using the overall CPI. Low-income tertile had family incomes below $26,400 in 1991 dollars; high-income tertile had family incomes above $38,400.

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Percent of Costs Paid by Insurance	Per Capita Outpatient Expenditure (Yuan/Year)
0	15.36
10	17.16
20	18.96
30	21.12
40	23.52
50	26.04
60	29.52
70	33.12
80	36.96

Source: Cretin, et al (1988)