The Effects of a Fee-Waiver Program on Health Care Utilization among the Poor: Evidence from Armenia

Nazmul Chaudhury

Development Research Group, World Bank

nchaudhury@worldbank.org

Jeffrey Hammer

Development Research Group, World Bank

jhammer@worldbank.org

Edmundo Murrugarra

Human Development Department / Europe and Central Asia, World Bank

emurrugarra@worldbank.org

World Bank Policy Research Working Paper 2952, January 2003

This paper was written as part of the Armenia Poverty Update and Public Expenditure Review. The authors thank the comments from Kari Hurt, Susanna Hayrapetyan, Nick Haazen and Toomas Palu.

Abstract

This study examines the impact of a fee-waiver program for basic medical services on health care utilization in Armenia. Due to the reduction in public financing of health services and decentralization and increased privatization of health care provision, private out-of-pocket contributions are increasingly becoming a significant component of health costs in Armenia. To help poor families cope with this constraint, the Government of Armenia provided a free-of-charge basic package service to eligible individuals in vulnerable groups, such as the disabled and children from single parent households. Drawing upon the 1996 and 1998/99 Armenia Integrated Survey of Living Standards (AISLS), which allows the identification of eligible individuals under this program, we estimate the impact of the fee-waiver program on utilization of health services, particularly among the poor. Across the two survey rounds utilization rates have indeed declined despite comparable levels of income, and this decline has occurred among both the poor and the rich, with average utilization falling by 12 percent between the two surveys. However, families with four or more children, the largest beneficiary group under the "Vulnerable Population" program, have decreased their usage of health care services in a disproportionate manner – 21 percent reduction in usage between the two survey rounds. This precipitous drop in health care usage by this vulnerable group despite being eligible for free medical services, suggests that the program just by itself was inadequate in stemming the decline in the usage of health services. We furthermore present evidence to suggest that the free-of-charge eligibility program is acting more like an income transfer mechanism, particularly to disabled individuals.

Contents

1. Introduction

The objective of this paper is to assess the effect of waiver instruments on health care utilization. Given the regressive effects of fees in health care utilization, governments implement waiver and exemptions to protect specific population groups or assure the delivery of specific services (Bitrán and Giedion 2002). Waivers in health care are generally intended to ensure the subsidized service for specific population groups, which could be determined using a number of criteria – depending on the country -- such as geographic location, ethnicity, or even poverty indicators. Exemptions, on the other hand, intend to guarantee the free delivery of specific services that, for instance, entail significant externalities. In practice, individuals that are waiver beneficiaries could also receive exempted services, such as a disabled receiving TB care. Armenia, as many other former Soviet Union countries, has both types of interventions. This paper uses the evidence from a targeted waiver program in Armenia in order to assess its impact on health care utilization among the uncovered.

The rest of the paper is organized as follows. Section 2 describes the evolution of the health care sector during the late nineties and the characteristics of the fee-waiver program in health care. Section 3 describes the data used and the caveats in comparison across different cross sections. Section 4 discusses the major findings regarding eligibility, morbidity, and health care utilization between 1996 and 1998/99. Section 5 presents the utilization model and discusses the results. Section 6 concludes the paper.

2. Health sector in Armenia and the fee-waiver program

This section describes the evolution of the health sector during the nineties and the implications in terms of access to health care, especially among the poor and other vulnerable populations. The transition process in Armenia involved the health sector in at least two dimensions. First, the overall decrease in public expenditures in health care during the early nineties affected the number of personnel, quality of services and the maintenance of the existing infrastructure. Even though the fall of real spending in social areas after independence was reversed in the late nineties, important effects on the supply quality of health services and on the demand for health care were observed. The declining quality of services associated with lower wages, lack of drugs and deteriorated infrastructure was accompanied by a significant decline in the number of patients and increased informal payments.

A second dimension is the market-oriented reform in the health sector, which involved a decentralization process and privatizations of some components of the system. Hospitals and polyclinics were converted into semi-private enterprises and the management of health care providers was decentralized allowing them to fix their health service prices, choose their mix between medical and administrative personnel, and allocate resources accordingly. In 1993 state health care institutions became state health enterprises, or semi-independent units that could generate their own revenues parallel to state budget financing. In 1995 hospitals and polyclinics were permitted to provide private services in addition to state funded ones,

providing them additional autonomy with self-decision on staffing (World Bank 2002a). The separation between health care delivery and financing was established through the creation of the State Health Agency (SHA) in 1998, responsible for purchasing services to providers (hospitals).[1] In order to contract out services a Basic Benefit Package was established.

The changes during the nineties represented the actual elimination of former free universal health care coverage since those allowed providers to generate their own revenues through OOP. As a result, the increased incidence of out-of-pocket expenditures -- and even worse, that of informal payments to medical and administrative staff[2] -- resulted in decreased health care utilization, especially among the poor. To respond, the government established a program that provided free of charge medical services based on two eligibility conditions: (i) the patient belongs to some vulnerable socio-economic categories; or (ii) the medical care is qualified as "urgent" by the medical staff.[3] The definition of the vulnerable groups actually corresponded to the system of categorical social assistance benefits inherited from the former Soviet Union. All costs of services (not including medications) under the program for the "Vulnerable Population" are covered by the government and expected not to exceed 30 percent of the provider's total annual budget. All other interventions are expected to be cover by the resources generated by the providers.

The eligibility to the vulnerable population program

The primary focus of this study is to examine the effect of a fee-waiver program on health care utilization in Armenia. Vulnerable population groups were officially defined as those disabled persons (according to three degrees of disability), war veterans, children under the age of 18 with one parent, orphans under the age of 18, disabled children under the age of 16, families with four or more children under the age of 18, families of war victims, prisoners, children of disabled parents, victims of the Chernobyl disaster, and catastrophe workers.

This paper uses the Armenia Integrated Survey of Living Standards (ISLS) for 1996 and 1998/99 in order to explore for factors that shape the demand for health care during this period of economic transition. In both surveys the eligibility criteria was expressed as belonging to one of the following five categories: (C1) disabled; (C2) orphan; (C3) families with four or more children under the age of eighteen; (C4) children under the age of eighteen with one parent; and (C5) children of disabled parents. These criteria result from specific questions since the survey was designed to support the social assistance system and needed to precisely identify those individuals.

---

[1] Besides the increased responsibility of the provider's managerial team, the decentralization also increased the political dependence to the local authorities, such as the opinion of the local governor (*marzpet*).

[2] About 91 percent of patients reported making informal payments in Armenia, the highest incidence among the countries surveyed in the Europe and Central Asia region (Lewis 2000).

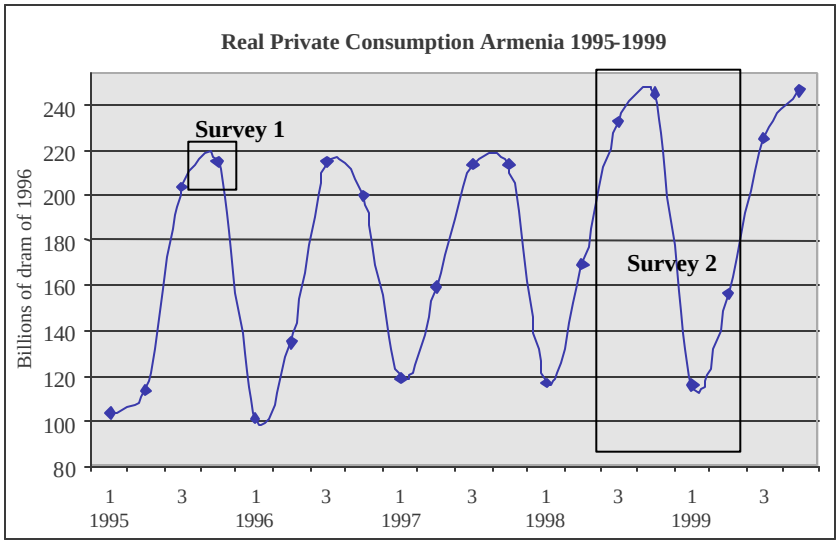
[3] Anecdotal evidence suggested that the subjective qualification of "urgency" affected the incidence of health care interventions and subsidies, providing free services to those not in urgency nor in vulnerable groups (Kurchiyan 1999; World Bank 2000).

3. Data sources and eligibility criteria

This study uses two household surveys from Armenia - the 1996 Armenia Living Standard Survey and the 1998/99 Armenia Integrated Survey of Living Standards (AISLS). The 1996 survey was conducted during November and December of 1996 with a sample size of 20,076 individuals and was nationally representative. The 1998/99 AISLS was carried out throughout a full year (July 1998 to June 1999) with a sample size of 15,632 individuals and covering all regions.

The two surveys are separate cross-sections, i.e., households/individuals cannot be tracked over time. The eligibility program that we focus upon in this study was already being phased in by late 1996/early 1997, and the eligibility program did not change substantially between November/December 1996 and July 1998/June 1999. Thus, we lack the base-line data to conduct a "before and after" program evaluation. However, given that program eligibility is exogenous, we can still examine the impact of the program on the two cross-sections (the eligibility program will the discussed more in details later on in this section). Also, while there were changes in the survey instrument between the two rounds, the morbidity module and the module from which we infer program eligibility, are consistent across the two rounds. Before examining health related issues, a discussion about the comparability of the two surveys is provided next.

Comparability of the two cross sections



A recent analysis of poverty discussed the difficulties in comparing poverty between two surveys in Armenia since the surveys differ in their sample design, survey period and questionnaire format (World Bank 2002a). For example, the measurement of poverty indicators is affected by the differences in the timing of the two surveys due to seasonality in consumption and the problems to construct comparable consumption aggregates.[4] The 1996 survey was conducted in the last quarter of 1996, coinciding with the peak of the consumption profile (see graph), compared to the 1998/99 AISLS.

[4] The 1996 Survey asked only about *expenditures, not consumption* during the month previous to the survey date. Moreover, information on expenditures for 1996 was not collected using the same questionnaire for all households. Some households responded to a more aggregate expenditure questionnaire, than others. International evidence indicates that this type of differences in questionnaire design leads to significant

To address the comparability problem, the mentioned report provided a limited comparison between the two Surveys under a number of restrictions. First, poverty indicators for 1998 were estimated only on information collected during the fourth quarter (October-November). Second, the 1996 poverty line with proper inflation adjustment was used, hence avoiding changes in the poverty line due to changes in its structure.[5]

These comparability problems also affect the analysis of this paper despite the identical health module because of the strong seasonality in morbidity observed in Armenia. The Armenian epidemiological profile indicates that respiratory diseases represent about half of the first diagnosis in Armenia (Ministry of Health 2000) despite the fact that mortality due to respiratory diseases has been declining and is only 5 percent of the total mortality.[6] To avoid seasonality in health status and health care measures, the paper mainly examines the 1996 survey and the corresponding fourth quarter for 1998 (evidence for the full 1998/99 survey is also provided).

4. Major changes in eligibility, morbidity and utilization

This section describes the evolution of program eligibility (the crucial variable to identify the impact of the program), morbidity, utilization and expenditures.

Changes in eligibility.

In 1996, 14 percent of individuals were classified as eligible; in November-December 1998 (henceforth referred to as ND98) 15 percent of individuals were classified as eligible; and in the full 1998/99, almost 17 percent of individuals were classified as eligible. The almost negligible change in the fraction eligible between 1996 and the comparable period in 1998 confirms the quality of the survey since there were no significant changes in the eligibility to the fee-waiver program during the period. Even though the eligibility criteria are not explicitly poverty targeted, those socioeconomic criteria have strong correlations with poverty. The evidence on eligibility by consumption quintiles confirms this since the poor were more likely to be classified as eligible in both surveys (see **Figure 1**). Given a similar eligibility income gradient, what are the patterns in health care utilization?

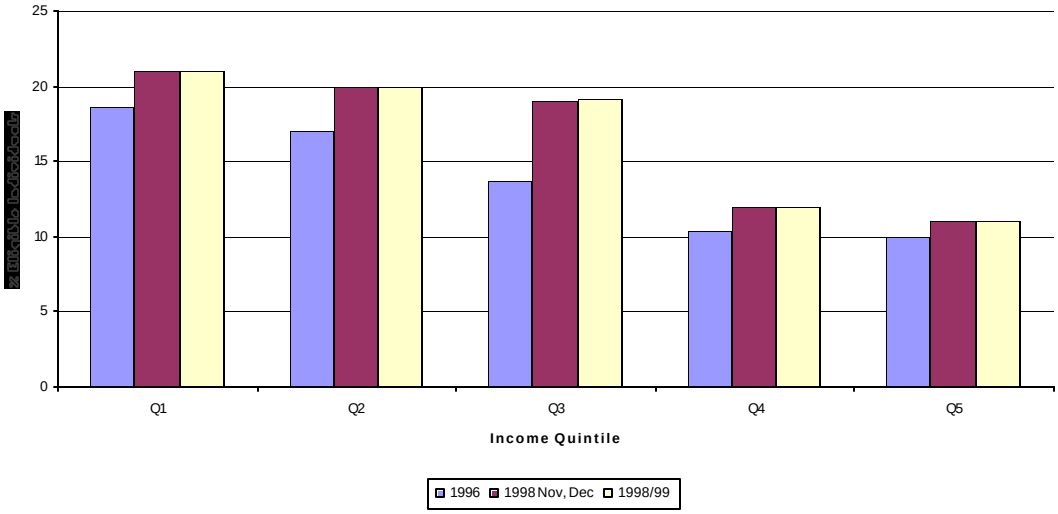
---

differences in consumption estimates between the two sub-samples and raises serious questions about their comparability (Olson and Lanjouw 2001). The 1998/99 AISLS on the other hand, collected information on both consumption and expenditures using the same format for all households.

[5] An additional adjustment was that instead of using per adult equivalent consumption (used for 1998/99), the comparison uses per capita consumption similar to that used in 1996.

[6] Other chronic diseases—such as cardiovascular, neurological, neoplasm, and kidney illnesses—represent a relatively small fraction of the first health care contacts. Cardiovascular diseases, however, represent 35 percent of the mortality for the population aged 0 to 64 in 1999. The incidence of infectious and parasitic diseases is less than 8 percent of cases, but evidenced a significant increase during the nineties (Ministry of Health 2000).

Figure1: Eligibility by Income



Changes in morbidity profiles and health care utilization

Both surveys contain information about self-reported morbidity. Individuals report whether they experience an illness within the last 30 days (preceding the survey). Self-reported morbidity measures tend to be associated with education, income and access to health care providers (Strauss and Thomas 1996), and in consequence better-off individuals tend to be more likely to report themselves as sick. However, while this relationship is linear in the first round, we observe a U-shaped relationship in the second round (i.e., the poorest and the richest individuals are more likely to report an illness – see **Figure 2**). We also find a small reduction in morbidity rates between the two samples: average morbidity in 1996 was 18.7 percent, while average morbidity in 1998/99 was 17.2 percent (average morbidity in ND98 was 14.5%).[7] Self-Reported morbidity rates tend to be higher for Eligible individuals compared to their non-eligible counterparts (see **Figures 3 and 4**).

While health care utilization (conditional upon being sick) tended to increase with wealth in the 1996 survey, the (simple graphical) relationship between utilization and wealth is not so clear-cut in the 1998/99 AISLS (see **Figures 5 and 6**). There was however, a significant reduction in health care utilization between the two survey rounds. Average utilization rate in 1996 was 50 percent, while the average utilization rate in 1998/99 was 36.6 percent (average utilization rate in ND98 was 36.8%).

[7] This paper does not attempt to explain the slight reduction in self-reported morbidity, although some evidence from the U.S. and Indonesia points that self-reported morbidity is affected by the price of health care observed in the locality (see Dow and others 1997).

Figure2: Changes in Self-Reported Morbidity Rates

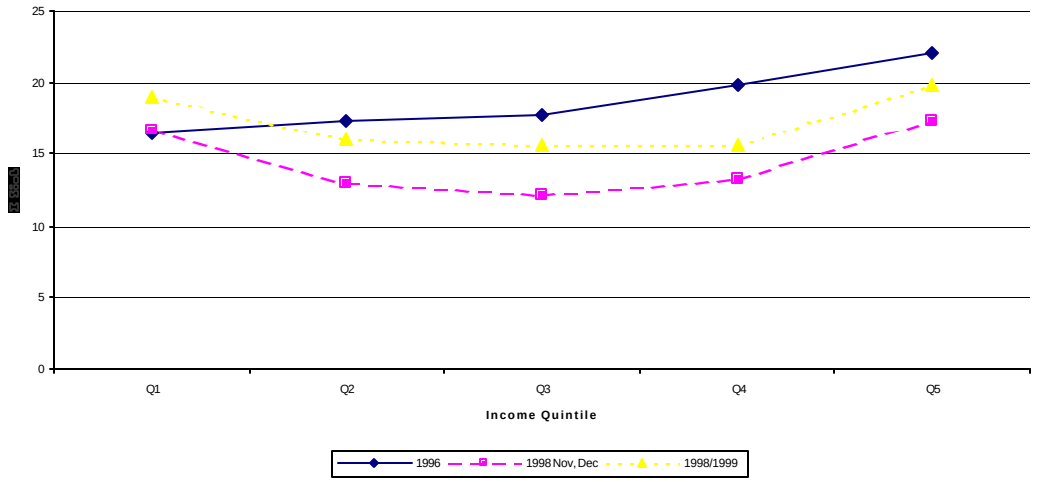


Figure 3: Morbidity Rates 1996

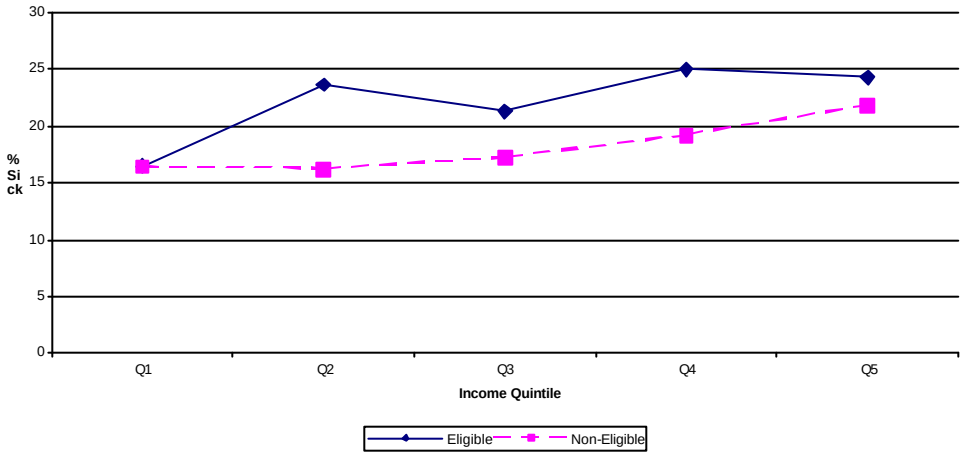


Figure 4: Morbidity Rates 1998/1999

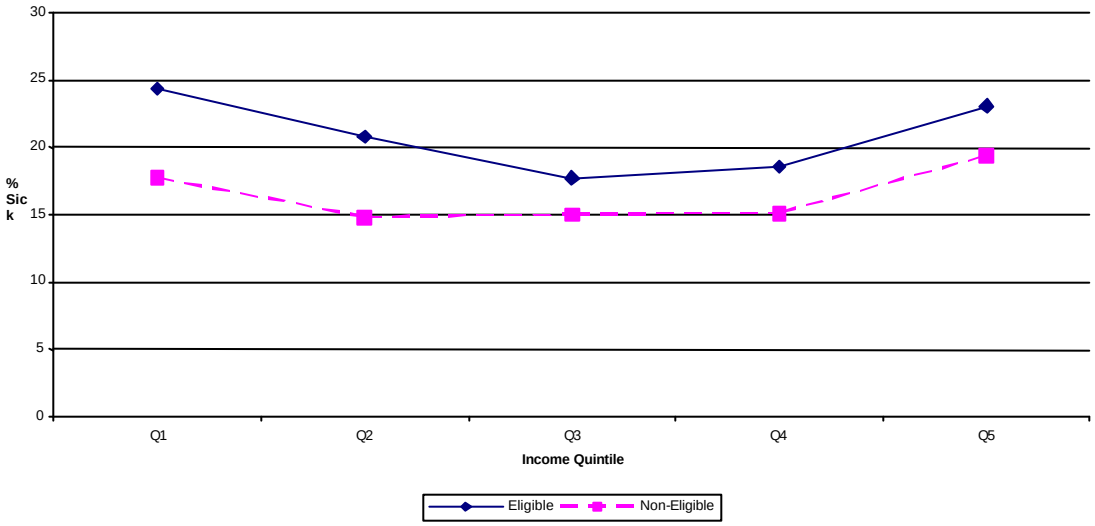


Figure 5: Health Care Utilization Rates 1996

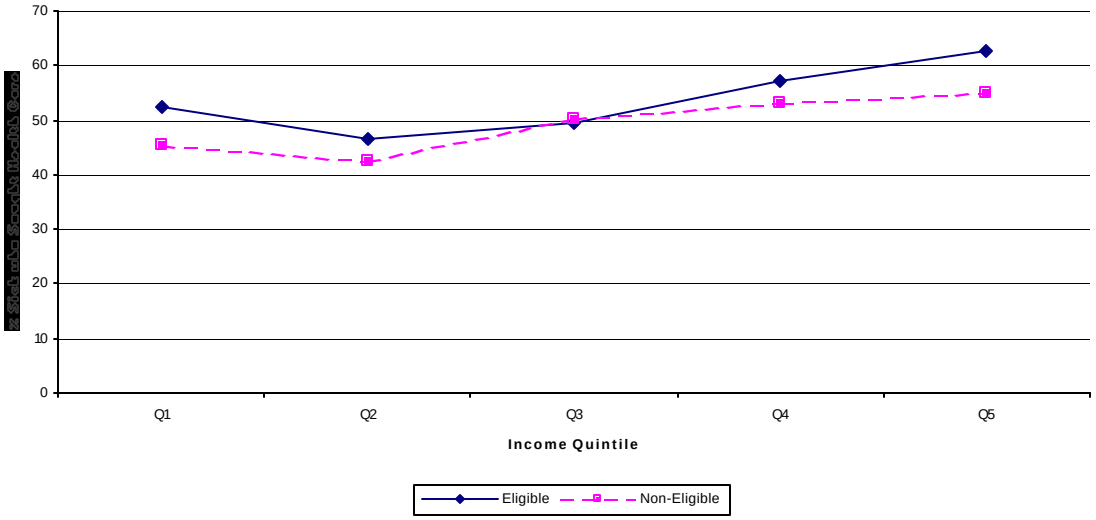
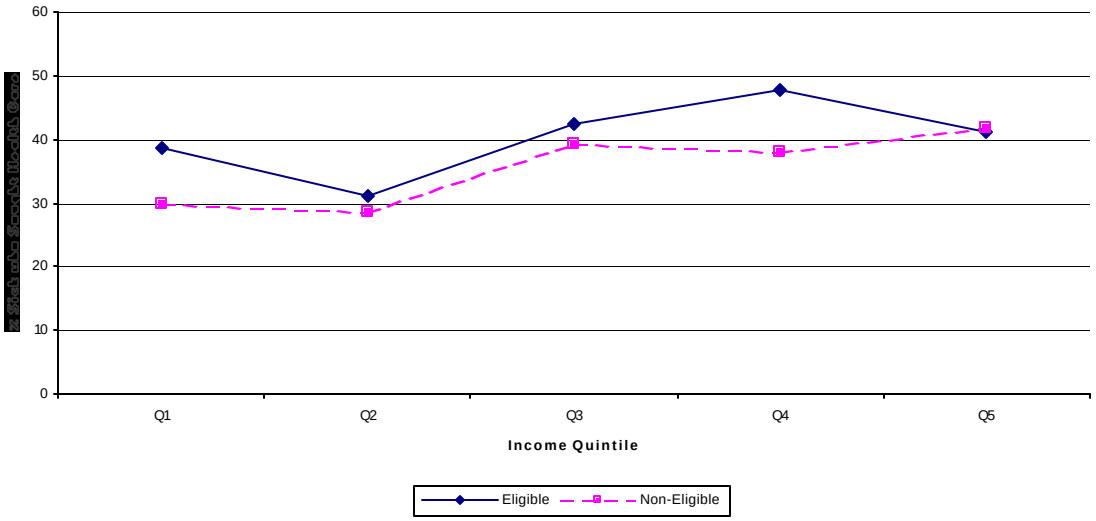


Figure 6: Health Care Utilization Rates 1998/1999



Which socioeconomic groups experienced largest declines in health care utilization (conditional on being sick)? Reduction in utilization was however, most pronounced among the rich (see **Figure 7**), and that effect was amplified among rich eligible individuals (see **Figure 8**).[8] If anything, in general, health care utilization by the poor seems to have increased. However, health care utilization rates fell for all eligible categories[9] across the two rounds (see **Table 1**). While the reduction in health care utilization by the disabled (-13%) was similar in magnitude to average reduction in the sample (-12%), utilization by individuals

[8] If the full 1998/99 AISLS is used to estimate this decline, a smaller drop is found because of the higher utilization during the winter period that was not captured by the 1996 survey.

[9] Orphans are left out due to extremely small sample size.

coming from families with four or more children (under 18) fell by 21 percent, despite the fact that this group was covered under the BBP program. We shall further explore this issue within a multivariate regression framework later on in this paper.

Figure 7: Changes in Health Care Utilization Rates

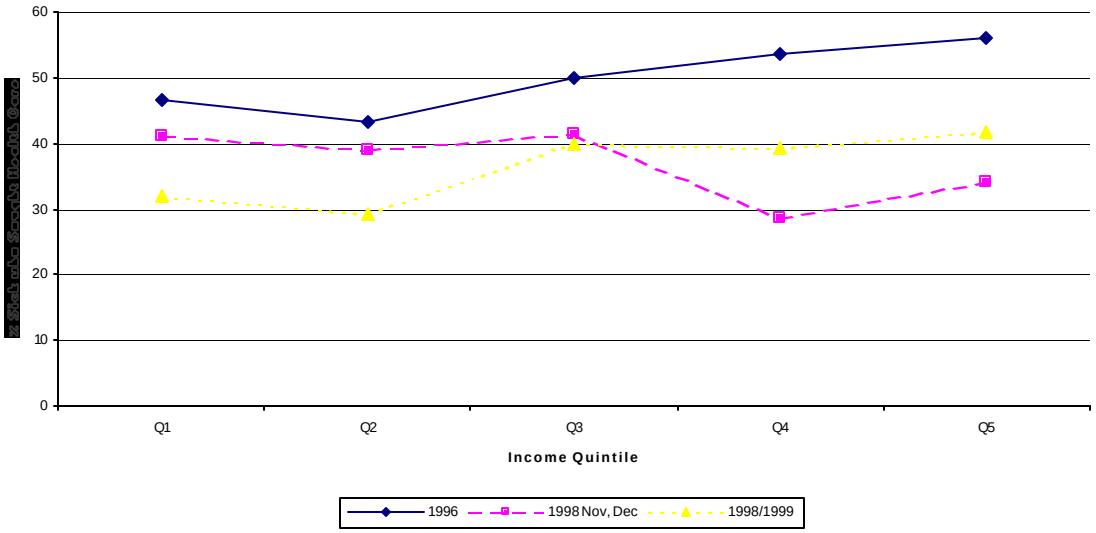


Figure 8: Health Care Utilization Rates 1996 vs 1998 (Nov, Dec)

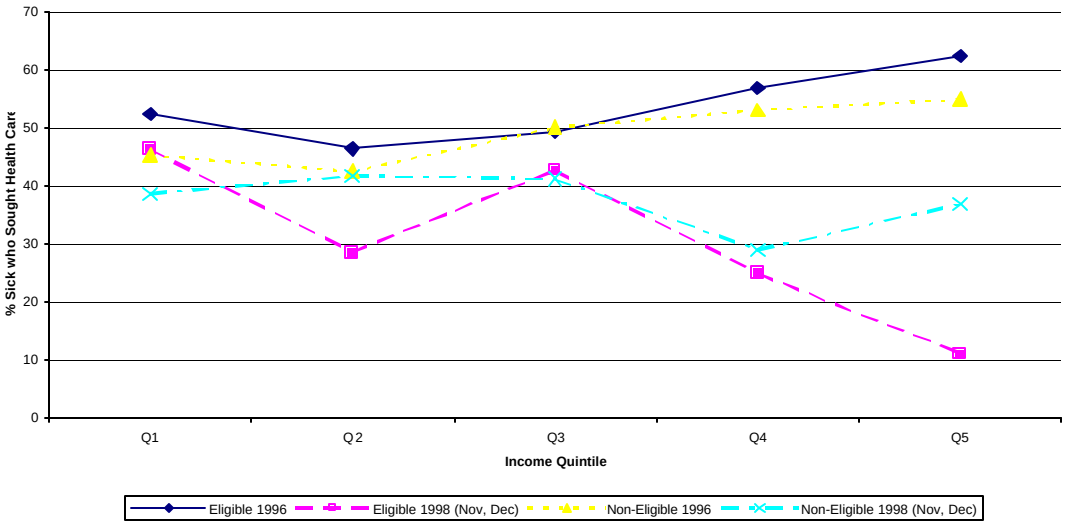


Table 1: Health care utilization by eligibility category in 1996 and 1998/99

	Utilization (%) 1996	Utilization (%) 1998/99
Disabled	59.4 (N=276)	47.3 (N=279)
Belong to a Family with = 4 children	48.5 (N=114)	27.6 (N=199)
Child from a single-parent HH	41.2 (N=17)	33.3 (N=24)
Child with a disabled parent	47 (N=100)	39.4 (N=66)

Service providers

Despite the significant decline in health care utilization, the decomposition of utilization by providers shows few changes between 1996 and 1998/99, even across quintiles. During both survey rounds, among the sick that sought health care, the majority of the visits were to polyclinics and hospitals (see **Figures 9 and 10**). For comparable facilities across the survey rounds (i.e., polyclinics, hospitals and diagnostic centers), only hospital visitations exhibit any systematic relationship with income (see **Figures 11 and 12**).

Overall, the proportion that sought health care in polyclinics experienced a small decline from 52 to 49 percent between 1996 and 1998/99.[10] This is consistent with the larger decline in Primary Health care utilization rates compared to Hospital utilization (World Bank 2002b). The poor are more likely to seek care in polyclinics (more than 60 percent). The fraction of users going into polyclinics decreases among the better-off households probably reflecting poorer quality of health care and access to other facilities (hospitals). Hospital care, on the other hand, represented about 28 percent of those seeking health care in both years, and the rich were more likely to go there than the poor in both years (38 and 36 percent for 1996 and 1998/99).

One of the few changes in utilization was the increase in *Other* sources of care. In 1996 *Other* (non specified) sources represented only 7 percent of those seeking care. In 1998/99 about 10 percent of patients went to other sources, including private doctors (particularly among the better off households).

[10] The share of Primary health care utilization in 1996 could be even larger is those covered by health posts (*fyelcher*) are included. In total, polyclinics and *fyelchers* represented 57 percent of health care according to the 1996 AILS.

Figure 9: Response to Morbidity - 1996

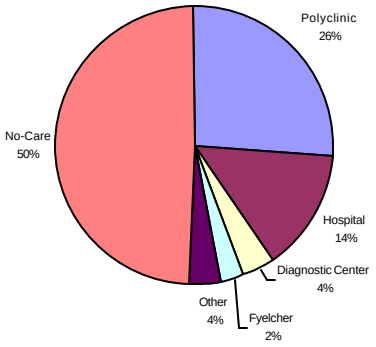


Figure 10: Response to Morbidity - 1998/99

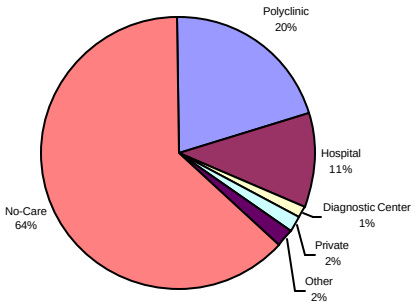


Figure 11: % Visits to a Facility by Income Quintile - 1996

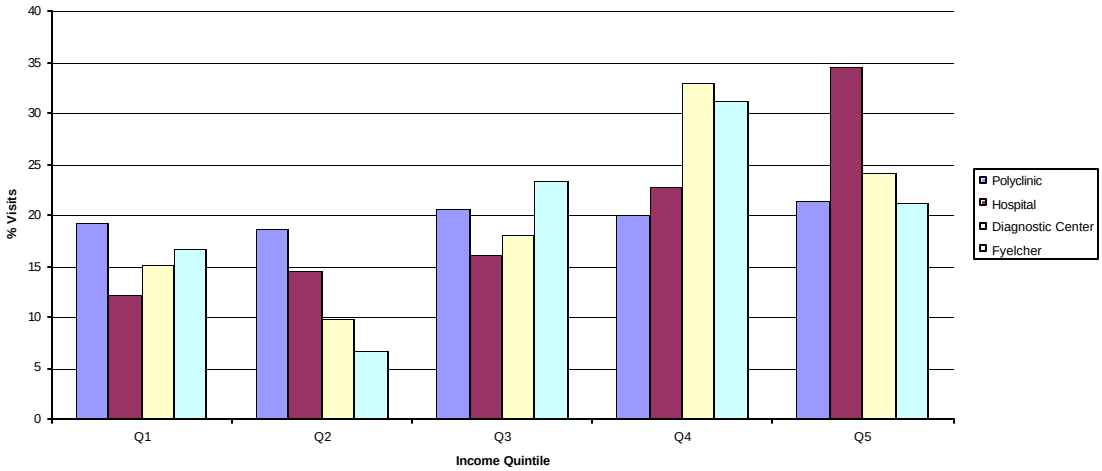
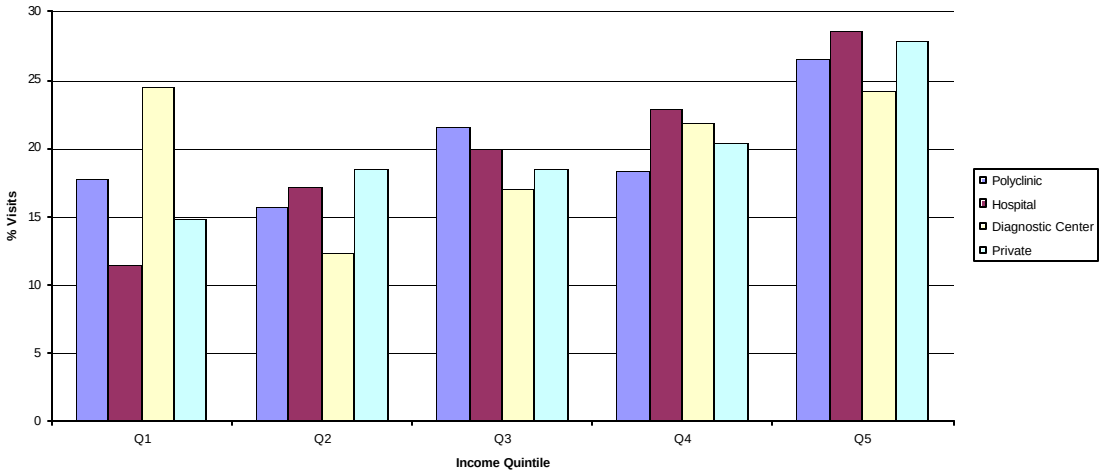


Figure 12: % Visits to a Facility by Income Quintile - 1998/99



Out-of-pocket payments and waivers

The fees charged to patients and the ability to waive those costs may affect the decision to choose some providers. About 64 percent of the patients paid for health care in Armenia (**Table 2**). The poor are less likely to pay for health care (about 40 percent) and chances of paying are even lower in polyclinics (34 percent). This may reflect the effects of the free-of-charge Basic Benefit Package. The BBP, despite of not being poverty targeted, may have covered the individuals with lower consumption if the vulnerable categories are associated with poverty. On the other hand, a better off individual could also have used the BBP to obtain free-of-charge health services if she were eligible (either vulnerable category or urgency). As the BBP covers only basic services, individuals were likely to be subject to other payments, mainly through informal mechanisms.

Table 2: Percent of patients that paid for services
(Percent)

Quintiles	Polyclinic	Diagnostic Center	Hospital	Private Doctor	Other	Total
1	34.0	75.0	44.4	80.0	33.3	39.4
2	50.4	18.2	68.3	64.3	40.0	52.5
3	58.5	71.4	66.7	100.0	14.3	59.6
4	75.8	100.0	77.4	76.2	40.0	76.1
5	69.7	100.0	87.5	69.0	6.7	75.3
Total	**59.9**	**75.5**	**74.8**	**74.4**	**23.1**	**64.1**

Polyclinics are the cheapest alternative for most patients. A sick individual from the poorest quintiles pays about 1,300 drams compared to 4,000 in a diagnostic center or 3,400 in a hospital. The expected cost (the cost weighed by the probability of being charged) is lower

in hospitals than in diagnostic centers or private doctors, explaining the choice of polyclinics and hospitals over other alternatives (**Table 3**).

Table 3: Average cost for patients that paid for services
(drams)

Quintiles	Polyclinic	Diagnostic Center	Hospital	Private Doctor	Other	Total
1	1,320	4,000	3,421	2,625	3,000	2,224
2	1,809	5,000	3,918	4,241	2,250	2,666
3	1,883	6,200	4,125	2,711	625	2,698
4	3,462	8,333	10,386	2,913	2,000	5,496
5	5,388	39,031	45,702	10,538	10,000	25,099
Total	**3,384**	**24,937**	**26,027**	**5,697**	**2,646**	**12,175**

The lower utilization and the choice of cheapest providers results in a regressive incidence of private expenditures. The poorest population quintile spends less than 2 percent of the private health care expenditures in Armenia. The richest quintile is responsible for almost 80 percent of the private expenditures. Inequality in private health expenditures, however, is not necessarily negative, since government intervention could be covering those poorest individuals. However, the BBP that is freely provided to some vulnerable groups does not cover drugs and pharmaceuticals. Share of expenditures in drugs represent about 20 percent for the overall population, but is almost 40 among the poorest quintiles (see **Table 4**).

Table 4: Distribution of private health expenditures
(Armenia 1998/99)

Health item	Share of total private expenditures by quintile (%)					Concentration index
	1	2	3	4	5	
Dental	0.0	5.3	5.1	13.2	76.4	0.718
Diagnostic	2.1	1.2	6.7	14.8	75.2	0.675
Treatment	1.4	2.8	2.8	9.0	83.9	0.755
Other	0.5	1.3	6.6	6.8	84.7	0.777
Drugs	3.0	7.3	11.8	20.5	57.4	0.512
Total	1.7	3.7	4.9	11.6	78.0	0.703
Memo item:						*Total*
- Percent spent on drugs	36.5	39.6	48.1	35.6	14.9	20.2
- Private expenditures (in thousands drams)	222.3	492.5	652.2	1,532.8	10,298.7	13,198.4

Source: ILCS 1998/99. Note: The table shows the sample.

What share of the government expenditure in health care is being captured by the poor? Individuals in the poorest quintile benefit only from 13 percent of total expenditures, compared to those in the richest quintile that capture almost 40 percent of the public resources

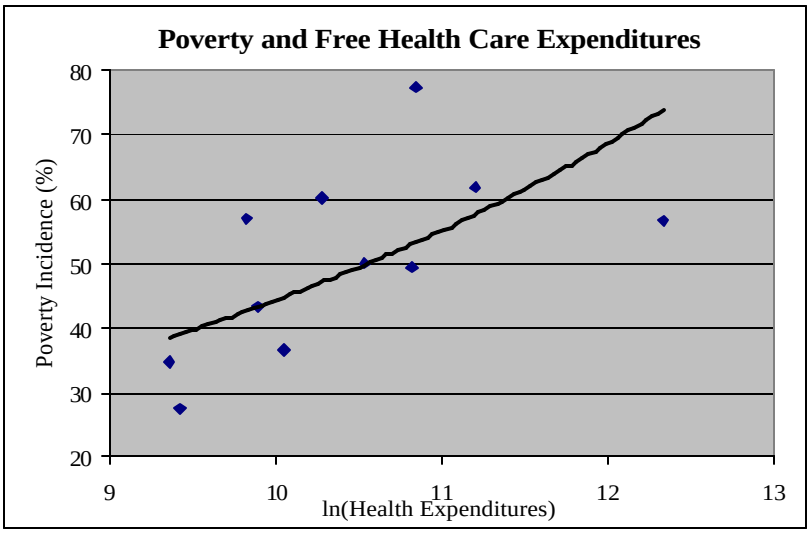
(see **Table 5**). Even though the individuals in the poorest quintiles are more likely to choose polyclinics as their major health care provider, most of the patients in the polyclinics are from the better-off households. This pattern is due to the differences in health care utilization across socioeconomic households, since individuals from better off households are more likely to seek health care once they are sick. In 1999, the government spent about 5 billion drams in polyclinics. Patients from the poorest quintile captured only 772 million compared to those in the richest quintiles that captured about twice that amount (1.4 billion). However, across different government health facilities, polyclinics represent the least regressive alternative. The concentration index for polyclinics (0.114) is less than one half than that of hospitals and other centers (0.276). Coincidentally, health care utilization in the poorest quintile (25.9 percent) is almost half of that of the richest (51.4 percent).

Table 5: Distribution of public expenditures in health (excluding private expenditures)
(million drams)

Program	Received by quintile					Total budget	Concentration index
	1	2	3	4	5		
Polyclinic	772.3	892.3	884.8	989.8	1,409.7	4,949.0	0.114
Diagnostic Center	190.7	524.5	333.8	286.1	1,001.4	2,336.5	0.276
Hospital	1,687.7	1,537.7	1,687.7	2,325.3	5,400.7	12,639.1	0.276
Total	2,650.8	2,954.5	2,906.3	3,601.2	7,811.8	19,924.6	0.236

Despite the regressive pattern of overall spending in the health sector, there is some evidence of a progressive pattern of public spending regarding the provision of the targeted program for the vulnerable. Evidence from the budget allocations during 1999 indicates that the allocation of free-of-charge services targeted to the vulnerable population has been positively associated with poverty incidence across regions (*marz*) in Armenia.

It should be noted that despite being eligible to free-of-charge care, individuals are required to contribute informal payments, posing an additional burden both to the poor and non-poor. This stems from the fact that providers are not being paid the entire cost of their expenses for their coverage of vulnerable groups, forcing them to cross-subsidize by charging higher fees to patients with higher incomes or directly charging (via informal methods) the eligible population (European Observatory 2001).



Self-reported health status and eligibility categories

While we find that health care utilization rates have declined between the two surveys, we do not have information on how this decline in utilization has actually effected adult or child health outcomes. We do, however, have information on self-reported health status. Respondents in both surveys were asked to rate their overall health status as "very well", "good", "normal", "not so good", or "bad". The use of this type of self-reported health status (often referred to as the Likert scale) has been shown to be a powerful predictor of subsequent of morbidity and mortality (Idler and Benjamini 1997). Our interest in this variable arises not as a predictor of future mortality, however, as a possible proxy for an individual's health status, and to examine how this self-reported measure has changed between the two surveys.

Self-reported health status (SRHS) using the same five-point scale was collected in both rounds. We only draw upon the SRHS of adults for our analysis. In the 1996 survey, for 75 percent of the respondents, information on SRHS is missing, thus, 1996 results incorporating this additional information is not necessary comparable to results using the full adult sample. Given that caveat, comparisons of average SRHS across the two rounds do not indicate a decline in self-reported health status. Comparing sample averages, in both rounds, self-reported health of eligible individuals were worse than that of non-eligible, self-reported health of women were worse than that of men, self-reported health of urban residents were worse than that of rural residents, and the self-reported health of the poor was worse compared to the rich. **Table 6**, for example reports the distribution of SRHS responses by eligibility. In both rounds, a disproportionate number of eligible individuals classify themselves as being in "bad" health.

Table 6: Distribution of self-reported health status
(Percent)

	Bad	*Not so good*	*Normal*	*Good*	*Very well*
Eligible 96	16.02	15.59	37.63	26.75	4.01
Non-Eligible 96	8.66	21.25	40.62	25.5	3.97
Eligible 98/99	11.39	15.66	48.36	22.47	2.12
Non-Eligible 98/99	5.3	17.04	54.13	20.82	2.71

For all subsequent presentation, we will decompose eligibility into its separate components given that we had previously noted that utilization rates and changes in usage differed according to the eligibility category. As we see in **Appendix Table A1**, families with four or more children, is the largest eligible group in the sample. In **Table R1** and **Table R2**, we present an ordered probit specification of the correlates of self-reported health status for the adult sample. Most studies in this literature find a negative association between SRHS and age and being female, and a positive association between SRHS and wealth (Case and Deaton 2002). Results from the 1996 round, indicate that SRHS in negatively associated with age,

gender and urban residence (there are also strong district effects), however, insignificant wealth effects. Results from the 1998/99 round are more in line with other finding in this literature – besides been negatively associated with age, being female and urban residence, SRHS is also positively associated with wealth.

While only disability is significant (negative) is the 1996 specification, both disability (negative) and belonging to a family with four or more children (positive) is significant in the 1998/99 specification. It should not come as a surprise that people classified as disabled would report themselves as being in poor health. The interpretation on the non-disability based category is not so intuitive. Families with four or more children tend to be poorer (even in non per-capita terms), poorer individuals tend to underreport morbidity spells and seek less health care. Health care usage in turn, can affect self-reported health status. Given that people who use the health care system are more likely to be better informed than non-users, in situations where lower-income individuals are less likely to use health care, the measurement error in SRHS will be amplified and systematically related to income (Strauss and Thomas 1998). Thus, we present results with and without including this variable given that we realize that by trying to compensate for our lack of information about innate healthiness, we might in turn introduce a systematic source of measurement error.

5. The Model of Demand for Health Care and Results

We first model the reduced form demand for health care (Grossmann 1972) as a function of program eligibility and individual, household and regional characteristics. Ideally, besides controlling for latent health status, we should also control for more detailed community infrastructure factors, and prices of medical services for particular services. We however, do not have such information available for this study[11]. In addition, the (exogenous) program eligibility indicator is included. We can express the structural equation underlying the observed behavior as:

$$P_i^* = l_i' E_i + a' I_i + b_i' H_i + f_j' R_j + e_i \qquad \textbf{(1)}$$

where P_i^* is the individual's net benefit from seeking health care, E_i is a binary indicator variable which takes on the value of 1 if the individual is eligible for subsidized/free health care, I_i is a vector of own characteristics, H_i is a vector of households characteristics, R_j is a vector of regional characteristics, and e_i is a normally-distributed error term with mean zero and variance s. We don't observe the latent variable P_i^*. We see only the results of the individual's evaluation of (2), which is manifest in the choice made by the individual to seek health care or not to seek health care:

$$P_i = 1 \text{ if } P_i^* > 0 \qquad \textbf{(2a)}$$

[11] We do have prices paid for medical consultation, however, given that the illness is not specified, and we are not modeling for any specific spells of illness, we do not include that information in this study.

$P_i = 0 \text{ if } P_i^* \pounds 0$ **(2b)**

We estimate (2a-b) as a probit model,[12] correcting for unspecified heteroskedasticity. The assumption that the error term is iid, is a rather strong one, given that we are not controlling for the unobserved (to the researcher) healthiness of the individual. As previously mentioned we present results both with and without inclusion of SRHS, which we attempt to use and a proxy for unobserved health status.

The dependent variable is "Sought Health Care if Sick" that on the value of one if the individual sought health care if sick (zero otherwise). The key eligibility variables for the analysis are a set of categorical dummies that take value of one when the individual belongs to one of the eligible categories (disabled, belong to a family with 4 or more children, child from a single parent household, child with a disabled parent).[13]

Other control variables include: household income quintile indicators[14] (the poorest quintile, Q1, is omitted); age group dummies (above 61 is the left out category in the adult specification; age 6-10 is the left out category in the child specification); Gender (takes on the value of 1 if the individual is female); Level of Education (primary level is the omitted categories); education of household head (which is only included in the 1998/99 child specification given that this information is missing in the 1996 survey); Urban-rural indicators and regional (*Marz*) dummies; and month Fixed-Effects (included only in the 1998/99 specification).

To examine the robustness of the results, the estimation of health care utilization is implemented on the adult sample only and the children sample separately. In Armenia, as well as many other former Soviet Union countries, a system of waivers and exemptions is present. Children under 18 years of age also qualify to receive medical care under a separate program targeted to this specific age group. To avoid confounding the effects of the waiver program from those of the child-targeted program, separate analyses are carried out. Since other programs already cover children, the fee-waiver program should not bind and hence have a smaller or negligible effect.

Besides estimating the utilization model, for the adult sample we also estimate a multinomial choice model of health care provider. We are particularly interested in what shapes the decision of individuals to seek health care in polyclinics and hospitals, the primary providers. The dependent variable in the multinomial specification is composed of six health care provider categories in both 1996 and 1998/99. In the 1996 specification those are (% number in parenthesis represent share of visits): Diagnostic Center (4.27%), Polyclinic

[12] Logit results are almost identical.

[13] As separate regressions are estimated for adults and children, these categorical dummies are mutually exclusive in each regression. *Disabled* and *belong to a family with 4 or more children*, appear in the adult regression specification. In the children's regression, *child from a single parent household*, and *child with a disabled parent* are also included.

[14] Consumption based measure of income – without incorporating health expenditures

(24.72%), Hospital (15.36%), Fyelcher (2.15%)[15], Other (4.2%)[16], and no health care (49.30%)which is selected as the comparison group. In the 1998/99 specification the choices are relatively similar: Diagnostic Center (1.88%), Polyclinic (21.55%), Hospital (12.50%), Private Provider (3.03%), Other (1.56%), and no health care (59.47%) which is selected as the comparison group.

Regression results[17]

We present regression results for two sub-samples: adults (age>=18) and children between ages 6 through 17).[18] We also ran the regressions without including household income quintiles, given that health and income are potentially simultaneously determined. Exclusion of income did not have any bearing on any of the salient findings in this analysis (results not reported).

As we see in **Table R3**, girls are 10 percent less likely to seek health care when sick compared to boys. Besides a weak urban effect, nothing else was significant in explaining the variation in utilization rates. In the adult specification, disabled individuals are 11 percent more likely to seek health care; less likely to do so if female (albeit at a 10% level of significance); health care usage increases with education and wealth; urban denizens are more likely to seek health care compared to their rural counterparts; and, there are strong district effects (Column 1, **Table R4**). We present results after inclusion of SRHS in Column 2 of Table R4, however, we do not give much credence to those results given information on SRHS is missing for most of the sample.

Unlike 1996 results, we no longer find any significant negative bias against girls in 1998/99 (**Table R5**), while on the other hand we now find that adult females are more likely to use health care (albeit significant at the 10% level – see **Table R6**). Disability is the only significant eligibility criterion in the child specification, and is robust to inclusion of SRHS. Education of household head is weakly significant, while seasonal and regional factors appear to be important determinants of health care utilization. In the adult specification without inclusion of SRHS, both disability and large family size are significant, albeit in opposite directions. Inclusion of SRHS somewhat weakens the significance of family size, however, the results still hold that suggest utilization decreases with family size and increases with disability. Wealth, education and seasonal factors also arise as significant determinants of adult health care usage.

---

[15] Health posts that may be reported as Diagnostic Centers or Polyclinics in 1998/99.

[16] Unspecified health care provider – there was no information on private providers in the 1996 survey.

[17] Variable interactions were included in both the probit and the multinomial logistic specifications (e.g., eligibility interacted with income), however, none of the interaction terms were significant in any of the adult or child specifications for (results not reported).

[18] We do not present regression results for children aged 5 and under. Besides seasonal and regional factors, nothing is significant in explaining differences in utilization rates. This reflects the existence of auxiliary health care programs/exemptions for children, and suggests that there is considerable regional variation in these programs.

Did the program work ?

The primary goal of this study was to help answer one fundamental question – did the program for the vulnerable population increase health care utilization in Armenia? Well, the answer primary hinges upon temporal and category factors, and first of all lets rephrase the question – was the program well targeted? In **Tables 7 and 8**, we present t-test results of whether or not there was a significant difference in mean reporting of illness, income, and self-reported health status across these groups. In 1998/99, disabled individuals were *both* more likely to be sick and more likely to be poorer. Hence, we can say that in 1998/99 the program was appropriately targeted to the disabled, health care utilization was positively associated with disability, thus, there was a progressive income transfer to the disabled. In 1996, disabled were more likely to be sick, however, were not more likely to be poorer. As pointed out earlier, it is difficult to compare incomes across the two surveys, and anyway, it appears that targeting improved over time regarding the disabled. Results from the multinomial regressions of provider choice in both survey rounds indicate that the disabled were more likely to seek health care in Diagnostic Centers and Hospitals (see **Tables R7** and **R8**). Belonging to a family with four or more children, was not significant in explaining any of the provider choice (These findings were robust to inclusion of self-reported health status - results not reported).

On the other hand, in 1998/99, even though families with four or more children were appropriately targeted, they were still less likely to utilize the health care system – when we did not observe the latter phenomenon (i.e., significantly less health care utilization) in 1996. We need more detailed institution and household level information to find out why this group is opting out of the health care system (e.g., are informal payments higher for some groups? is that in turn due to the fact that it is easier for the health facility to get reimbursed for some groups relative to others?).

Table 7: 1996 T-test comparisons

	More likely to self-report yourself as sick ? (full sample)	**More likely have less income ?** (full sample)	**More likely to have lower SRHS ?** (adult sample)
Disabled	YES	ns	YES
Families with 4 or more Children under 18	NO	YES*	ns
Children under 18 from a Single Parent Household	Ns	ns	.
Children under 18 with a Disabled Parent	Ns	ns	.

*Note: YES, NO - represents statistically significant differences ; ns - difference is not significant; * both in per-capita and non per-capita consumption and income terms*

Table 8: 1998/99 T-test comparisons

	More likely to self-report yourself as sick ? (full sample)	**More likely to have less income ?** (full sample)	**More likely to have lower SRHS ?** (adult sample)
Disabled	YES	YES	YES
Families with 4 or more Children under 18	NO	YES*	YES
Children under 18 from a Single Parent Household	Ns	YES	.
Children under 18 with a Disabled Parent	NO	YES	.

*Note: YES, NO - represents statistically significant differences ; ns - difference is not significant; ; * both in per-capita and non per-capita consumption and income terms*

6. Conclusion

The primary goal of the program for the vulnerable population -- which allowed certain vulnerable groups to seek 'free of charge' medical services-- was to mitigate against the decrease in health care utilization, particularly among the poor. Unfortunately, utilization rates have continued to fall – for *both* the poor and the rich. Despite comparable income levels, average utilization fell by 12 percent between the two surveys. This was most probably due to a confluence of factors – increase in formal user fees, increases in informal payments, and decline in quality of service delivery. Families with four or more children, the largest beneficiary group under the program, have decreased their usage of health care services in a disproportionate manner – 21 percent reduction in usage between the two survey rounds. This precipitous drop in health care usage by this vulnerable group despite being eligible for free medical services, suggests that the program just by itself was inadequate in stemming the decline in the usage of health services. The evidence suggests that this program worked as an income transfer mechanism for the disabled and that a more credible budget reimbursement process is needed to ensure any impact among the poor (who may more price sensitive).

There is no way of saying that would have happened to utilization rates among these groups if the program had not been in place. What we can say is that despite been poor, the fall in utilization rates among the disabled was similar to the sample average, and it is likely that this program helped to mitigate against further slippage in utilization rates among the disabled. There are suggestions (without empirical scrutiny) that recent policy changes in Armenia may actually have improved access to health care among the poor due to the expansion of the eligibility criteria. In 1999 the Government of Armenia implemented a major reform in their Social Assistance system moving from the categorical benefits as examined in this paper, to a poverty-targeted (means-tested) benefit program allocated at the household level (Poverty Family Benefit, PFB). The health sector in 2001 decided to include the PFB beneficiaries among those eligible for free health care services. If the program eligibility

expansion was accompanied by increased information about its use, proper institutional design that attenuates the incentive for informal payments, and improved quality standards, then coverage of the poor might actually have improved. This, however, remains as an unanswered empirical question.[19]

References

The word "processed" describes informally reproduced works that may not be commonly available through library systems.

Bitrán, R., and U. Giedion (2002) "User fees for health care: Waivers, exemptions, and implementation issues." June 2002. World bank. Processed.

Case, A., and A. Deaton (2002). "Consumption, health, gender, and poverty." Princeton University. Processed.

Dow, W., P. Gertler, R. Schoeni, J. Strauss, and D. Thomas (1997). "Health care prices, health and labor outcomes: Experimental evidence." Labor and Population Program Working Paper Series 97-01, RAND, Santa Monica, Calif.

European Observatory on Health Care Systems (2001) "Health Care Systems in Transition. Armenia 2001." Report N. EUR/01/5012669(ARM). [Retrieved on November 18, 2002 from http://www.who.dk/document/e73698.pdf]

Grossmann, M. (1972) "On the Concept of Health Capital and the Demand for Health." Journal of Political Economy 80(2, April): 223-55.

Idler, E. L., and Y. Benjamini (1997) "Self-rated health and mortality: a review of twenty-seven community studies." Journal of Health and Social Behavior 38(1): 21-37.

Kurkchiyan, M. (1999) "Report on Health Care in Armenia." Prepared for the World Bank. Processed.

Lewis, M. (2000) "Who is Paying for Health Care in Europe and Central Asia?" World Bank. Processed.

Ministry of Health (2000) "Health and Health Protection. Armenia 1999." Republican Center for Information and Analysis. Ministry of Health, Yerevan.

Olson, J., and P. Lanjouw (2001) "How to Compare Apples and Oranges: Poverty Measurement Based on Different Definitions of Consumption." Review of Income and Wealth, Series 47(1, March): 25-42.

Strauss, J., and D. Thomas (1996) "Measurement and Mismeasurement of Social Indicators." American Economic Review 86(2, May): 30-34.

_____ (1998) "Health, Nutrition, and Economic Development." Journal of Economic Literature XXXVI(2, June):766-817.

World Bank (2000) "Armenia: Institutional and Governance Review." Report No. 20269, April 5.

World Bank (2002a) "Armenia Poverty Update." Human Development Sector Unit. Europe and Central Asia Region. June. Processed.

World Bank (2002b) "Armenia Public Expenditure Review." Poverty Reduction and Economic Management Unit. Europe and Central Asia Region. June. Processed.

[19] We are planning to work with the latest round of the ISLS 2001 dataset to examine how changes in program design have effected health care utilization in Armenia.

Appendix Tables

Table A1: Composition of eligibility categories (Percent)

	1996		1998/99	
	Sample	Eligible	Sample	Eligible
Disabled	2.43	17.4	3.81	22.73
Belong to a Family with >=4 Children	8.92	62.85	9.77	57.36
Child from a Single Parent HH	0.57	3.6	0.94	5.11
Child with a Disabled Parent	2.90	15.72	2.89	14.47
Orphan	0.06	0.43	0.04	0.23

Table A2: Comparison of surveys 1996 and 1998/99

	1996	1998/99
Sample size	4,260 households	3,600 households
Field work	• 2 months: November-December 1996 • No significant inflation during the period.	• 12 months: July 1998- June 1999 • Inflation adjustment needed: Food = 7%; energy and telephone prices = 20%.
Major policy changes	None	• Elimination of energy subsidies. • Changes in social assistance programs
Expenditure information	• 75% of the sample responded aggregate *monthly* expenditures during the *last 30 days* • 25% filled a detailed *diary* on expenditures during the *last 30 days*.	• All households completed a diary with detailed expenditures during the last 30 days. • All households completed a section on Annual Consumption for a very limited list of items.

Table R1: Armenia 1996 Adult (>=18) Sample

Ordered Probit Regression

Dependent Variable

Self-Reported Health Status
1 = bad; 2 = not so good; 3 = normal; 4 = good; 5 = very well

Independent Variables

Eligibility Criterion	
Disabled	-1.145
	(9.98)**
Belong to a Family	0.024
With >=4 Children	(0.33)
Other Individual Characteristics	
Age 29-39	-0.323
	(6.04)**
Age 40-50	-0.590
	(10.56)**
Age 51-61	-0.937
	(14.78)**
Age > 61	-1.188
	(18.22)**
Female	-0.078
	(2.14)*
Secondary	0.075
	(0.95)
Special-Secondary	0.060
	(0.72)
Post-Secondary	0.140
	(1.63)
Household Wealth	
Q2	0.058
	(1.03)
Q3	0.094
	(1.58)
Q4	0.127
	(2.15)*
Rich	0.052
	(0.92)
Community Characteristics	
Urban	-0.262
	(5.02)**
Observations	3644
F-Test for Joint Significance	
Income Quartiles[$\chi^2(4)$]	5.23
Age Categories[$\chi^2(4)$]	406.91**
Education Categories[$\chi^2(3)$]	3.83
District Fixed-Effects[$\chi^2(10)$] (not reported)	64.9**

Robust z statistics in parentheses
* significant at 5%; ** significant at 1%.
Note: Coefficients are marginal probabilities.

Table R2: Armenia 1998/99 Adult (>=18) Sample

Ordered Probit Regression

Dependent Variable

Self-Reported Health Status
1 = bad; 2 = not so good; 3 = normal; 4 = good; 5 = very well

Independent Variables

Eligibility Criterion	
Disabled	-1.104
	(18.84)**
Belong to a Family	0.162
With >=4 Children	(3.67)**
Other Individual Characteristics	
Age 29-39	-0.416
	(13.47)**
Age 40-50	-0.714
	(22.09)**
Age 51-61	-0.955
	(23.77)**
Age > 61	-1.368
	(33.49)**
Female	-0.158
	(7.13)**
Secondary	-0.008
	(0.15)
Special-Secondary	-0.032
	(0.55)
Post-Secondary	0.088
	(1.47)
Household Wealth	
Q2	0.110
	(3.09)**
Q3	0.142
	(3.92)**
Q4	0.187
	(5.22)**
Rich	0.235
	(6.20)**
Community Characteristics	
Urban	-0.007
	(0.23)
Month Fixed-Effects	
August98	-0.065
	(1.10)
September98	-0.082
	(1.37)
October98	-0.067
	(1.16)
November98	0.053
	(0.93)
December98	-0.024
	(0.42)
January99	-0.087

	(1.57)
February99	-0.053
	(0.92)
March99	-0.118
	(2.09)*
April99	-0.029
	(0.51)
May99	0.001
	(0.01)
June99	-0.003
	(0.06)
Observations	10087
F-Test for Joint Significance	
Income Quartiles[$\chi^2(4)$]	43.67**
Age Categories[$\chi^2(4)$]	1290**
Education Categories[$\chi^2(3)$]	14.10**
Month Fixed-Effects[$\chi^2(11)$]	17.45^
District Fixed-Effects[$\chi^2(10)$] (not reported)	148.41**

Robust z statistics in parentheses
^ significance at 10%; * significant at 5%; ** significant at 1%.
Note: Coefficients are marginal probabilities.

Table R3: Armenia 1996 Children (>5 & <18) Sample

Probit Regressions

Dependent Variable	
Sought Health Care if Sick	
Independent Variables	
Eligibility Criterion	
Disabled	0.184
	(1.23)
Belong to a Family	-0.061
With >=4 Children	(0.89)
Child from a	0.082
Single Parent HH	(0.55)
Child with a	-0.081
Disabled Parent	(1.05)
Other Individual Characteristics	
Age 11-14	-0.076
	(1.55)
Age >=15	-0.116
	(1.41)
Female	-0.093
	(2.16)*
Secondary	0.010
	(0.10)
Special-Secondary	0.194
	(1.09)
Household Characteristics	
Q2	-0.069
	(0.99)
Q3	0.021
	(0.31)
Q4	-0.057
	(0.78)
Rich	0.036
	(0.53)
Community Characteristics	
Urban	0.106
	(1.76)^
Observations	583
F-Test for Joint Significance	
Income Quartiles[$\chi^2(4)$]	4.0
Age Categories[$\chi^2(2)$]	3.61
Education Categories[$\chi^2(3)$]	1.25
District Fixed-Effects[$\chi^2(10)$] (not reported)	11.85

Robust z statistics in parentheses
^ significant at 10%; * significant at 5%; ** significant at 1%.
Note: Coefficients are marginal probabilities.

Table R4: Armenia 1996 Adult (>=18) Sample

Probit Regressions		
Dependent Variable		
Sought Health Care if Sick		
Independent Variables		
	(1)	(2)
Eligibility Criterion		
Disabled	0.114	0.017
	(3.43)**	(0.31)
Belong to a Family	0.012	0.072
With >=4 Children	(0.26)	(0.83)
Other Individual Characteristics		
Health Status		-0.117
		(5.23)**
Age 29-39	-0.036	-0.061
	(0.94)	(0.89)
Age 40-50	-0.014	-0.158
	(0.38)	(2.43)*
Age 51-61	0.003	-0.104
	(0.08)	(1.56)
Age >61	-0.021	-0.096
	(0.59)	(1.47)
Female	-0.035	-0.054
	(1.72)^	(1.53)
Secondary	0.063	0.148
	(1.97)*	(2.56)*
Special-Secondary	0.066	0.076
	(1.86)^	(1.20)
Post-Secondary	0.089	0.204
	(2.33)*	(3.10)**
Household Characteristics		
Q2	-0.024	-0.006
	(0.73)	(0.11)
Q3	0.060	0.077
	(1.82)^	(1.39)
Q4	0.113	0.195
	(3.55)**	(3.55)**
Rich	0.138	0.158
	(4.42)**	(2.94)**
Community Characteristics		
Urban	0.114	0.084
	(4.15)**	(1.54)
Observations	2684	930
F-Test for Joint Significance		
Income Quartiles[$\chi^2(4)$]	39.06**	20.91**
Age Categories[$\chi^2(4)$]	1.78	6.70
Education Categories[$\chi^2(3)$]	5.71	12.96**
District Fixed-Effects[$\chi^2(10)$] (not reported)	40.68**	29.74**

Robust z statistics in parentheses
^ significant at 10%; * significant at 5%; ** significant at 1%.
Note: Coefficients are marginal probabilities.

Table R5: Armenia 1998/99 Children (>5 & <18) Sample

Probit Regressions

Dependent Variable

Sought Health Care if Sick

Independent Variables

	(1)	(2)
Eligibility Criterion		
Disabled	0.561	0.302
	(4.30)**	(2.04)*
Belong to a Family	0.068	0.038
With >=4 children	(0.77)	(0.43)
Child from a	0.046	0.056
Single Parent HH	(0.41)	(0.46)
Child with a	-0.100	-0.108
Disabled Parent	(1.14)	(1.23)
Other Individual Characteristics		
Health Status		-0.161
		(4.19)**
Age 11-14	-0.070	-0.094
	(1.22)	(1.70)
Age >= 15	-0.061	-0.094
	(0.87)	(1.40)
Female	-0.043	-0.053
	(0.81)	(1.02)
	(0.82)	
Education of HH-Head		
Secondary	-0.144	-0.150
	(1.49)	(1.52)
Special-Secondary	-0.041	-0.036
	(0.41)	(0.35)
Post-Secondary	0.024	0.048
	(0.21)	(0.41)
Household Wealth		
Q2	0.025	0.039
	(0.27)	(0.41)
Q3	0.151	0.171
	(1.69)	(1.91)
Q4	0.149	0.136
	(1.70)	(1.58)
Rich	0.201	0.261
	(2.19)*	(2.76)**
Community Characteristics		
Urban	0.250	0.244
	(3.25)**	(3.02)**
Month Fixed-Effects		
August98	0.337	0.398
	(1.99)*	(2.32)*
September98	0.002	0.017
	(0.02)	(0.12)

October98	-0.024	-0.032
	(0.18)	(0.24)
November98	0.165	0.264
	(1.00)	(1.53)
December98	0.224	0.283
	(1.48)	(1.86)
January99	-0.157	-0.064
	(1.38)	(0.52)
February99	-0.017	0.067
	(0.14)	(0.53)
March99	-0.218	-0.187
	(1.93)	(1.58)
April99	0.013	0.078
	(0.08)	(0.49)
May99	0.160	0.271
	(0.89)	(1.47)
June99	0.193	0.193
	(1.12)	(1.13)
Observations	389	389
F-Test for Joint Significance		
Income Quartiles[$\chi^2(4)$]	7.18	9.77*
Age Categories[$\chi^2(2)$]	1.67	3.56
Education Categories[$\chi^2(3)$]	7.42*	8.91*
Month Categories [$\chi^2(11)$]	30.9**	28.8**
District Fixed-Effects[$\chi^2(10)$] (not reported)	30.56**	25.74**

Robust z statistics in parentheses
* significant at 5%; ** significant at 1%.
Note: Coefficients are marginal probabilities.

Table R6: Armenia 1998/99 Adult (>=18) Sample

Probit Regressions

Dependent Variable

Sought Health Care if Sick

Independent Variables

	(1)	(2)
Eligibility Criterion		
Disabled	0.123	0.085
	(3.56)**	(2.38)*
Belong to a Family	-0.108	-0.081
With >=4 children	(2.28)*	(1.65)^
Other Individual Characteristics		
Health Status		-0.081
		(5.06)**
Age 29-39	-0.005	-0.041
	(0.11)	(0.98)
Age 40-50	-0.019	-0.060
	(0.46)	(1.46)
Age 51-61	-0.052	-0.104
	(1.24)	(2.46)*
Age >61	-0.008	-0.072
	(0.19)	(1.73)^
Female	0.040	0.037
	(1.77)^	(1.63)^
Secondary	0.053	0.064
	(1.28)	(1.55)
Special-Secondary	0.115	0.135
	(2.45)*	(2.87)**
Post-Secondary	0.176	0.201
	(3.48)**	(3.98)**
Household-Wealth		
Q2	0.024	0.029
	(0.66)	0.79)
Q3	0.120	0.125
	(3.24)**	3.36)**
Q4	0.087	0.091
	(2.35)*	2.46)*
Rich	0.096	0.109
	(2.74)**	3.07)**
Community Characteristics		
Urban	0.040	.037
	(1.30)	1.20)
Month Fixed-Effects		
August98	0.008	0.007
	(0.15)	0.13)
September98	0.039	0.040
	(0.74)	0.75)
October98	-0.072	0.082
	(1.29)	1.49)
November98	-0.033	0.036

	(0.59)	0.64)
December98	-0.111	0.114
	(2.12)*	2.18)*
January99	-0.093	0.086
	(1.89)	1.74)
February99	-0.139	0.126
	(2.93)**	2.64)**
March99	-0.160	0.158
	(3.29)**	3.25)**
April99	-0.076	0.075
	(1.40)	1.37)
May99	-0.004	0.012
	(0.07)	0.20)
June99	-0.039	0.036
	(0.70)	0.64)
Observations	2002	2002
F-Test for Joint Significance		
Income Quartiles[$\chi^2(4)$]	14.72**	6.33*
Age Categories[$\chi^2(4)$]	2.53	6.63
Education Categories[$\chi^2(3)$]	18.02*	2.80*
Month Categories [$\chi^2(11)$]	6.22**	3.01**
District Fixed-Effects[$\chi^2(10)$] (not reported)	0.80	14.38

Robust z statistics in parentheses
^ significant at 10%; * significant at 5%; ** significant at 1%.
Note: Coefficients are marginal probabilities.

Table R7: Armenia 1996 Adult (>=18) Sample

Multinomial Logit Regression

Dependent Variable: *Type of Health Provider Sought if Sick*
Note: No health care sought is the comparison group

Independent Variables	(1) Diagnostic	(2) Polyclinic	(3) Hospital	(4) Fyelcher	(5) Other
Eligible Category					
Disabled	0.736	0.346	0.750	-1.585	-0.218
	(2.53)*	(1.69)	(7.24)**	(1.36)	(0.40)
Belong to a Family with >4 Children	-0.144	-0.070	0.079	0.292	0.547
	(0.20)	(0.26)	(0.37)	(0.64)	(1.25)
Other Individual Characteristics					
Age 29-39	-0.081	0.036	-0.118	0.636	-0.859
	(0.42)	(0.11)	(0.57)	(2.04)*	(1.95)
Age 40-50	-0.289	0.209	-0.179	0.299	-0.253
	(1.41)	(0.66)	(0.92)	(0.77)	(0.77)
Age 51-61	-0.268	0.390	-0.154	-0.059	-1.035
	(0.78)	(1.60)	(0.69)	(0.10)	(3.58)**
Age > 61	-0.558	0.170	-0.165	0.507	-0.693
	(1.51)	(1.05)	(0.72)	(1.58)	(1.69)
Female	-0.378	0.013	-0.381	-0.204	0.052
	(2.16)*	(0.12)	(3.75)**	(1.07)	(0.26)
Secondary	0.227	0.197	0.198	0.851	0.177
	(0.68)	(1.40)	(0.89)	(1.41)	(0.49)
S-Secondary	0.386	0.251	0.140	0.678	0.087
	(0.74)	(1.95)	(0.52)	(2.49)*	(0.22)
Household Wealth					
Q2	-0.446	-0.033	0.001	-1.086	-0.178
	(1.51)	(0.17)	(0.01)	(2.01)*	(0.61)
Q3	0.441	0.148	0.430	0.049	0.208
	(1.24)	(1.25)	(1.35)	(0.07)	(0.46)
Q4	0.923	0.269	0.704	0.375	0.623
	(2.49)*	(1.69)	(2.79)**	(0.95)	(1.56)
Rich	0.608	0.151	1.177	-0.007	0.820
	(2.18)*	(0.52)	(3.80)**	(0.02)	(2.69)**
Post-Sec	0.679	0.299	0.106	-0.322	-0.176
	(1.49)	(2.38)*	(0.40)	(0.54)	(0.35)
Community Characteristics					
Urban	0.106	0.344	0.357	-0.823	0.530
	(0.32)	(1.26)	(1.25)	(0.89)	(1.25)
Constant	-2.891	-1.513	-1.856	-3.387	-2.830
	(4.05)**	(4.61)**	(5.45)**	(5.39)**	(7.40)**
Observations	2684	2684	2684	2684	2684

F-Tests for Joint Significance

Income=0[χ^2(4)]	22.86**	4.71	34.87**	21.83**	13.57**
Age=0[χ^2(4)]	5.14	18.19**	2.06	8.04**	40.45**
Edu=0[χ^2(3)]	6.76^	6.71^	1.27	6.61^	3.35
District=0[χ^2(10)]	17.20^	24.07**	37.06**	77.37**	34.68**
Fixed-Effects (not reported)					

Absolute value of z statistics in parentheses
^ significant at 10%; * significant at 5%; ** significant at 1%.

Table R8: Armenia 1998/99 Adult (>=18) Sample

Multinomial Logit Regression

Dependent Variable: *Type of Health Provider Sought if Sick*
Note: No health care sought is the comparison group

Independent Variables	(1) Diagnostic	(2) Polyclinic	(3) Hospital	(4) Fyelcher	(5) Other
Eligible Category					
Disabled	0.671	0.306	0.509	0.057	-0.359
	(3.78)**	(0.52)	(2.32)*	(0.11)	(0.47)
Belong to a family with >= Children	-0.329	-34.175	-0.746	0.628	-33.402
	(1.09)	(0.00)	(1.91)	(1.17)	(0.00)
Other Individual Characteristics					
Age 29-39	0.008	0.866	-0.281	0.116	0.288
	(0.03)	(1.25)	(1.10)	(0.20)	(0.33)
Age 40-50	0.048	-0.402	-0.289	-0.041	0.243
	(0.21)	(0.51)	(1.18)	(0.07)	(0.28)
Age 51-61	0.098	0.276	-0.936	-0.515	0.730
	(0.41)	(0.38)	(3.22)**	(0.78)	(0.86)
Age > 61	0.274	-0.398	-0.548	-0.187	0.976
	(1.22)	(0.52)	(2.19)*	(0.33)	(1.22)
Female	0.330	-0.105	0.060	0.005	0.186
	(2.56)*	(0.28)	(0.39)	(0.02)	(0.47)
Secondary	0.278	0.193	0.264	-0.223	0.342
	(1.18)	(0.27)	(0.88)	(0.40)	(0.50)
Special-Sec	0.623	-0.394	0.526	-0.435	1.015
	(2.42)*	(0.46)	(1.61)	(0.67)	(1.39)
Post-Sec	0.873	0.792	0.846	-0.145	-0.169
	(3.26)**	(0.95)	(2.48)*	(0.21)	(0.19)
Household Wealth					
Q2	0.296	0.988	-0.429	0.070	1.012
	(1.42)	(1.34)	(1.71)	(0.13)	(1.42)
Q3	0.673	0.956	0.218	0.414	0.834
	(3.27)**	(1.32)	(0.95)	(0.78)	(1.10)
Q4	0.503	0.892	0.109	0.187	0.627
	(2.46)*	(1.22)	(0.47)	(0.34)	(0.82)
Rich	0.580	0.727	-0.056	0.736	1.399
	(3.01)**	(1.00)	(0.25)	(1.49)	(2.02)*
Community Characteristics					
Urban	0.472	-0.690	-0.132	0.161	0.250
	(2.67)**	(1.31)	(0.64)	(0.36)	(0.46)
Month Fixed-Effects					
August98	-0.138	0.044	0.185	0.910	0.298
	(0.52)	(0.06)	(0.49)	(1.08)	(0.31)
September98	0.178	-0.712	0.393	0.736	-0.678
	(0.66)	(0.77)	(1.10)	(0.85)	(0.54)
October98	-0.863	-0.174	0.360	0.646	-0.515

	(2.58)**	(0.21)	(0.97)	(0.71)	(0.41)
November98	-0.199	-1.252	0.127	0.782	-33.501
	(0.68)	(1.08)	(0.32)	(0.87)	(0.00)
December98	-0.634	-0.916	-0.088	0.094	-33.372
	(2.18)*	(1.12)	(0.22)	(0.10)	(0.00)
January99	-0.583	-1.285	0.024	-33.557	0.642
	(2.13)*	(1.41)	(0.07)	(0.00)	(0.75)
February99	-0.768	-2.168	-0.628	0.036	0.963
	(2.84)**	(1.86)	(1.65)	(0.04)	(1.14)
March99	-1.272	-1.181	-0.043	0.084	-0.999
	(4.14)**	(1.41)	(0.12)	(0.09)	(0.79)
April99	-1.049	-0.954	0.464	0.743	0.458
	(3.19)**	(1.16)	(1.26)	(0.86)	(0.44)
May99	-0.222	-1.252	0.141	0.876	1.514
	(0.73)	(1.06)	(0.35)	(0.95)	(1.75)
June99	-0.299	-0.561	0.184	-33.385	0.296
	(1.00)	(0.60)	(0.48)	(0.00)	(0.29)
Constant	-2.207	-3.873	-1.296	-4.574	-5.340
	(4.48)**	(2.43)*	(2.39)*	(3.10)**	(3.48)**
Observations	2002	2002	2002	2002	2002
F-Tests for Joint Significance					
Income=0[χ^2(4)]	13.63**	2.21	6.88	3.06	4.80
Age=0[χ^2(4)]	2.88	7.13	12.10**	1.29	3.03
Edu=0[χ^2(3)]	17.09**	3.20	9.80**	0.57	4.57
Month=0[χ^2(11)]	44.70**	9.25	13.24	4.56	11.63
District=0[χ^2(10)]	19.45**	4.38	19.56**	5.70	3.47
Fixed-Effects (not reported)					

Absolute value of z statistics in parentheses
^ significant at 10%; * significant at 5%; ** significant at 1%.