

Minding the Gap: A Decomposition of Emergency Department Use by Medicaid
Enrollees and the Uninsured

(Running Title: A Decomposition of ED Use)

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Abstract

Objectives: To examine the differences in Emergency Department (ED) utilization between Medicaid enrollees and the uninsured.

Data and Methods: We use nationally representative data for adults age 19-64 from the 2004 Medical Expenditure Panel Survey (MEPS). We calculate descriptive statistics highlighting differences in means of observable characteristics and logit regressions describing differences in the effects of the characteristics between the two populations. We apply Blinder Oaxaca non-linear decomposition methods to quantify the effect that differences in observables between the groups have on the differences in ED utilization, as well as examine the magnitude of the effect of differences in behavior between the groups that might affect the disparity in utilization.

Results: 27 percent of Medicaid enrollees had an ED visit, while 10 percent of those who were uninsured the entire year had an ED visit. Roughly 50 percent of the utilization gap can be explained by differences in observable characteristics. Although observable characteristics account for just over half of the difference in ED utilization between Medicaid enrollees and the uninsured, there does not appear to be a major observable characteristic that contributes substantially to this difference.

Conclusions: Medicaid enrollees are more likely to have an ED visit than those who are uninsured all year. Decomposition analysis results show that differences in observable

characteristics or endowments between the two groups explain about half of the disparity in visits, suggesting that effects of observables between the groups such behavioral differences and care-seeking behaviors drive much of the differences in ED utilization.

Key Words: Emergency department use, decomposition, Medicaid, Uninsured

INTRODUCTION

Utilization of emergency department (ED) services in the United States has increased substantially in recent years, with recent estimates suggesting an 18 percent increase in the number of ED visits from 1994 to 2004. At the same time, the number of EDs has decreased by 12.4 percent.¹ Protection under the Emergency Medical Treatment and Active Labor Act (EMTALA) mandates that EDs provide stabilizing care to all patients who present in the ED regardless of their insurance status or ability to pay.² EMTALA is particularly important in highlighting the role of EDs as the ultimate safety net for the nation's 47 million uninsured, as research has well established that the lack of insurance presents a major barrier to accessing health services outside of the ED.³

A common myth is that that the uninsured are more likely than the insured to use the ED, despite recent empirical evidence demonstrating that the privately insured are just as likely as the uninsured to use the ED, and that the privately insured have been driving the recent growth in ED visits.⁴⁻⁶ Perhaps surprising, Medicaid beneficiaries are twice as likely as the uninsured or privately insured to have an ED visit.^{4,7,8} These differences in ED utilization patterns persist even after controlling for differences in health status, health system factors, and individual characteristics.⁹

The reasons for this discrepancy are not well understood. Earlier research has established that utilization of ED services, like many health services, is price-sensitive and higher levels of cost-sharing are associated with lower ED use.¹⁰⁻¹³ Medicaid patients, unlike the privately insured and uninsured, generally have little or no cost-sharing responsibilities for ED services.¹⁴ This lack of relative-price sensitivity may help partially explain higher ED use among Medicaid patients.

Limited access to health services outside of the ED has also been found to increase ED use.^{10,15} Both Medicaid enrollees and the uninsured face substantial barriers to accessing health care. A recent study found that Medicaid and uninsured patients had more difficulty securing follow-up appointments within seven days for a serious condition than the privately insured.¹⁶ For Medicaid patients, this reflects a larger trend of physicians' reluctance to treat or accept new Medicaid patients on an outpatient basis due to low reimbursement rates.¹⁷ Low Medicaid reimbursement and decreased Medicaid acceptance rates by physician have also been found to increase the probability of ED use by Medicaid adults.^{9,18} In addition to access issues and out-of-pocket payment sensitivity, the enrollment of less healthy individuals in certain Medicaid beneficiary groups, particularly the disabled, could be a driver in the discrepancy in ED utilization between Medicaid enrollees and the uninsured.¹⁹

This paper seeks to explore the difference in ED utilization by employing a decomposition approach to understand the contribution of factors associated with ED use. To our knowledge, this is the first study to decompose the gap in ED utilization and address the extent to which utilization discrepancy can be attributable to observable characteristics versus the effects of the observables. Our analysis confirms the higher probability of ED use by Medicaid enrollees compared to the other populations and explores what drives these differences in utilization. Specifically, we concentrate on Medicaid enrollees and the uninsured to examine whether differences in ED use are primarily explained by differences in population means of observable characteristics such as demographics, socioeconomic status, health status, access and attitudes toward health insurance on ED utilization, or if they are a result of the effect of behavioral differences.

Identifying the factors underlying the differences can help us understand whether the differences are simply due to observable characteristics of the enrollees themselves (e.g. gender, race, higher rates of disability and poor health), or if there is something fundamentally different in the behavior of the groups or in the effect of Medicaid coverage itself.

METHODS

We first present a figure highlighting the disparities in ED use for all populations. Next we present descriptive statistics of the demographics of the respective populations, illuminating the differences in observable characteristics. We present separate logit regressions for the Medicaid and uninsured populations to illustrate the differences in coefficients for these two groups- highlighting how the contribution of observables to the outcome differs between them. We then use the Blinder Oaxaca nonlinear decomposition method to decompose the total disparity in ED utilization into the percentage attributable to differences in observed characteristics and the percentage attributable to unexplained factors, or differences in the effects of the observables between the two groups.²⁰⁻²³ The Blinder and Oaxaca decomposition was initially used to explain the wage gap between whites and blacks and between males and females. Using this method, we can attribute the percentages of the total disparity that are associated with differences in specific observable characteristics.

Data

Data for this analysis come from the 2004 Medical Expenditure Panel Survey (MEPS). The sample size for the survey was 34,403 in 2004. We exclude children and the elderly from our analysis since pediatric ED visits have been found to be highly correlated with parent ED care-seeking behavior,²⁴ and the population over 65 is almost entirely covered by Medicare. This results in a sample of 18,745 adults between the ages of 19 and 64. Survey weights are included where indicated. We created five subgroups to characterize health insurance status for the entire year, including those who were privately insured the entire year, those who had Medicaid the entire year, those who were enrolled in other public insurance for all of 2004, those who were uninsured for each month of the year, and the remainder were categorized as “transitioners” or those who either gained, lost, or switched coverage type (e.g. public to private) during the year. We chose to restrict insurance status to full year status to mitigate the effects of individuals whose change in health insurance status may reflect changes in underlying health and ED utilization patterns.

Variables

The dependent variable is a binary variable reflecting any ED use in 2004. Explanatory variables addressing the predisposing, enabling, and need-related characteristics of Andersen’s behavioral model of health service use were included in the model.²⁵ The predisposing component encompasses variables that describe the propensity of individuals to use services, including age, sex, marital status, race/ethnicity, whether the individual had a particular provider or a routine appointment in the last year, and if they

feel they can overcome illness without help from a medically trained person. Beliefs and attitudes towards risk and health insurance that might influence the decision to choose health insurance or use services were also considered, including whether the respondent felt they needed health insurance, and if they are more likely to take risks than the average person. The enabling component describes the means that individuals have available to them for the use of services. These variables include the full year insurance categories discussed above, income as a percent of FPL, employment status, and educational attainment. The need component reflects the most immediate cause for health services use, including self-perceived health status, total number of chronic conditions, SSI receipt due to disability, and limitation of activities of daily living (ADLs) and instrumental activities of daily living (IADLs). We might expect individuals with greater need for health care to opt for Medicaid coverage (if eligible) over uninsurance and to use more services. Failure to control for severity of need, preferences, and risk tolerance could overstate the association of insurance status on use.²⁶

RESULTS

In 2004, over 27 percent of individuals enrolled in Medicaid all year had at least one ED visit, compared to 10.6 percent of those uninsured all year (Figure 1). This discrepancy persists, even when the disabled are removed from the sample. The average number of ED visits for Medicaid enrollees are 0.44, and 0.15 for the uninsured. Among those reporting at least one ED visit during the year, Medicaid enrollees averaged 1.62 ED visits compared to 1.44 ED visits by the uninsured (results not shown).

Medicaid enrollees and the uninsured also differ significantly on a number of observable characteristics that may affect ED use, suggesting two very different populations. Approximately 22 (n=4190) percent of the sample population is uninsured for the calendar year 2004 compared with 8 percent (n=1474) enrolled in Medicaid (Table 1). The survey-weighted descriptive statistics in Table 1 indicate the Medicaid population is both economically and statistically significantly more likely than the uninsured to be female, older, black, unemployed and very low income. In terms of need, the Medicaid population has more chronic conditions and is more likely than the uninsured population to be in fair or poor health, to need help with ADLs and IADLs and to be disabled.

The marginal effects from two separate survey-weighted logit regressions are presented in Table 2. The results in the first column are from a Medicaid only regression of a binary dependent variable indicating whether an individual had one or more ED visits in 2004; the second column includes only the uninsured population. Comparing and contrasting the marginal effects enable us to see how the effects of the observables contribute differently to the likelihood of ED use across the Medicaid and uninsured populations. In the Medicaid regression, being female, in fair or poor health and total number of reported chronic conditions all have significant positive effects on ED utilization, whereas increases in age are associated with a decrease in ED use. In the uninsured only model, being separated, needing help with IADLs, and total chronic conditions have a statistically significant positive relationship with ED use, whereas age, being Hispanic or Asian and not having an appointment in the last 12 months are negatively associated with the likelihood of a visit. Taken together, the regressions and

their marginal effects suggest that not only do the means of the observable characteristics differ, but the effects of the characteristics differ between the populations as well.

However, it is not clear how the different rates of ED utilization of Medicaid enrollees and the uninsured can be attributed to differences in the averages between the groups or differences in the marginal effects between the groups. The Blinder Oaxaca decomposition approach allows us to decompose the gap in ED utilization into two quantities of interest: the effects of the observables (the variables) and the effects of behavior/treatment (the coefficients). The method is sensitive to a number of factors, so we estimated various specifications. The results presented in Table 4 are the estimates from a model using the uninsured population as the referent category, with the explanatory variables randomly ordered.

The predicted probability of an ED visit for the Medicaid population is 0.27, and 0.10 for the uninsured, resulting in a “gap” of 17 percentage points. Of those 17 points, nine can be explained by the observables in the regression, or about 53 percent. Thus about half of the discrepancy in ED utilization can be explained by differences in the mean observable characteristics between the populations, and the other half is explained by differences in the effects of the observables on ED use. There is no single characteristic that drives these differences; rather each variable has a small contribution to widening or narrowing the gap. The contribution of each variable to the gap is equal to the change in average predicted probability from replacing the Medicaid distribution with the uninsured distribution of that variable while holding distributions of the other

variables constant.²⁰ Therefore, the sum of contributions from the individual variables is equal to the total contribution from all the variables evaluated with the full sample.

There is a large discrepancy in the populations in terms of presence of a documented disability. Less than one percent of the uninsured sample report receipt of SSI due to disability, compared to almost one-third of the Medicaid sample. Thus few data points are available to analyze the relationship of that characteristic for the uninsured population, which is likely why although the variable is shown to explain a non-trivial part of the gap, it is statistically insignificant. The relationship between chronic conditions and ED use decreases the gap by over 17 percent, the strongest explanatory relationship among all the variables. The mean of chronic conditions in the Medicaid population is more than twice that of the uninsured, 0.63 and 1.48 respectively.

Age and Hispanic ethnicity significantly enter the relationship, although neither have a large explanatory effect on the gap. Fair and poor health statuses taken together explain about 10 percent of the gap.

DISCUSSION

Medicaid enrollees are more than twice as likely as the uninsured to report and ED visit. The uninsured population in the sample is more likely than the Medicaid enrollees to be Hispanic, younger, have higher income, have full-time employment, married, and in excellent or very good health status. The disabled make up over one-third of the Medicaid sample and virtually none of the uninsured sample.

The descriptive statistics reveal two very different populations- many characteristics of the long term uninsured are significantly different from those of individuals who are enrolled in Medicaid for a year or more. It would be reasonable to expect that some of these population differences might be associated with higher probability of an ED visit. The decomposition analysis results indicate that only about half of the gap in ED utilization can be explained by differences in means of observable characteristics. These differences in effects of observables suggest that not only are Medicaid enrollees different from the uninsured, but as previous studies suggest, selection into Medicaid or the Medicaid coverage itself might influence the decision to use the ED. Possible explanations for the remaining disparity in ED use could be due to relatively low out of pocket costs, difficulty in accessing a provider outside of the ED and long wait times for an appointment, among other reasons. However, decomposition analysis cannot help explain whether it is these other attributes that drive the ED utilization gap.

There are several important limitations to this analysis. Additional factors that might affect access to services and thus ED use include measures of healthcare system capacity, variables which we are unable to control for here. Although they have been found to explain very little in decompositions on health service utilization differences across individuals,²⁷ they may have an effect on explaining differences in ED utilization. This analysis does not attempt to account for the selection of health insurance; the decision to select health insurance is not random. There are various reasons individuals might choose to enroll in Medicaid if eligible and those same reasons might also affect the decision to use the ED.

Although there is not a single variable or group of variables that can be attributed to explaining the gap, taken together our results provide evidence that unobservable characteristics, whether it be behavior, selection into Medicaid, or the effect of Medicaid coverage itself are important drivers of care-seeking behavior as it relates to the ED. Our results reinforce the importance for researchers to recognize the selection issues related to insurance status and utilization. Further research employing a propensity score matching or re-weighting analysis could be a step towards understanding the ED utilization gap while addressing selection issues.

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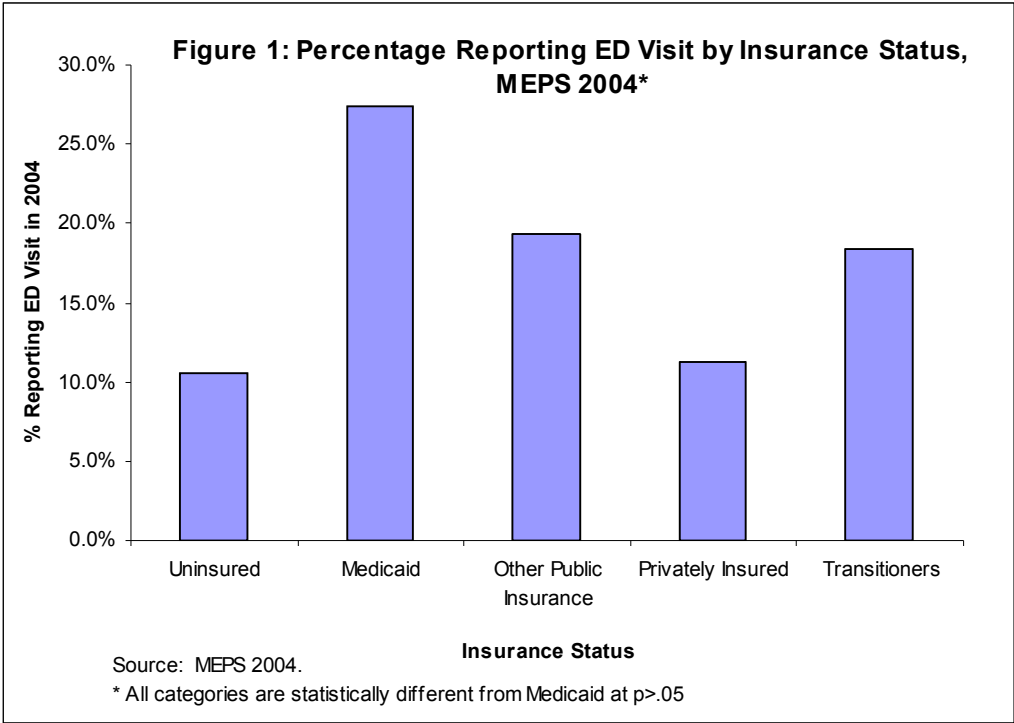


Table 1: Descriptive Statistics of Sample Population by Insurance Status, MEPS 2004

	Uninsured (n=4,190)	Medicaid (n=1,474)	Other Public Insurance (n=377)	Privately Insured (n=10,011)	Transitioners (n=2,693)
Female	0.42 *	0.68	0.50 *	0.52 * [^]	0.53 *
Age	36.88 *	39.93	48.25 *	41.84 *	36.38 *
Black	0.14 *	0.25	0.15 *	0.09 *	0.15 *
Hispanic	0.31 *	0.22	0.11 *	0.08 *	0.16 *
Asian	0.04	0.04	0.02	0.05 * [^]	0.05
Indian/Eskimo	0.01	0.02	0.06 *	0.01 *	0.01
Multiple Ethnicities	0.02	0.03	0.03	0.01 * [^]	0.02
White	0.49	0.45	0.64 *	0.76 * [^]	0.62 *
Disabled	0.00 *	0.29	0.08 *	0.00 *	0.02 *
Help with ADLs	0.01 *	0.10	0.07	0.01 *	0.02 *
Help with IADLs	0.02 *	0.19	0.19	0.02 *	0.05 *
Income less than 100% FPL	0.24 *	0.56	0.18 *	0.02 * [^]	0.18 *
Income 100-200% FPL	0.29	0.28	0.22	0.09 * [^]	0.24
Income 200-400% FPL	0.31 *	0.14	0.32 *	0.32 *	0.36 *
Income over 400% FPL	0.16 *	0.02	0.28 *	0.56 *	0.22 *
Employment, Part-time	0.15	0.13	0.11	0.11	0.15
Employment, Full-time	0.37 *	0.11	0.24 *	0.66 *	0.45 *
Employment, None	0.32 *	0.71	0.60 *	0.15 *	0.31 *
Employment, Self	0.16 *	0.05	0.06	0.09 * [^]	0.08 *
Married	0.40 *	0.30	0.55 *	0.67	0.42 *
Never Married	0.41	0.39	0.16 *	0.21 * [^]	0.38
Widow	0.03	0.03	0.10 *	0.02 * [^]	0.02 *
Divorced	0.13 *	0.20	0.15 *	0.10 *	0.14 *
Separated	0.03 *	0.07	0.04 *	0.01 *	0.03 *
Self-reported Health Status, Excellent	0.24 *	0.12	0.15	0.32 * [^]	0.27 *
Self-reported Health Status, Very Good	0.30 *	0.19	0.20	0.35 * [^]	0.31 *
Self-reported Health Status, Good	0.31	0.30	0.25	0.24 * [^]	0.37
Self-reported Health Status, Fair	0.11 *	0.24	0.25	0.06 * [^]	0.10 *
Self-reported Health Status, Poor	0.03 *	0.14	0.15	0.02 * [^]	0.05 *
More likely to take risks	0.46 *	0.34	0.35	0.31	0.42 *
Does not have a particular provider	0.15	0.18	0.21	0.11 *	0.12 *
No appointment within past 12 months	0.61 *	0.26	0.23	0.26 *	0.40 *
Feels health insurance unnecessary	0.29 *	0.15	0.11	0.13 * [^]	0.21 *
Can overcome illness w/o a health professional	0.39 *	0.27	0.25	0.31 * [^]	0.38 *
Number of chronic conditions	0.63 *	1.48	1.88 *	0.90 *	0.86 *
Education, College	0.17 *	0.08	0.24 *	0.44 *	0.25 *
Education, Post High School	0.15 *	0.10	0.18 *	0.19 *	0.19 *
Education, High School	0.38 *	0.43	0.40	0.31 * [^]	0.38 *
Education, Less than High School	0.30 *	0.38	0.18 *	0.07 *	0.18 *

Note: * Denotes significantly different from Medicaid at p<.05.

[^] Denotes Privately Insured significantly different from Uninsured at p<.05.

Source: Authors' calculation using MEPS 2004; estimates are calculated using survey weights provided by MEPS.

Table 2: Logit Estimates of the Probability of ED Visit by Insurance Status - Marginal Effects, MEPS 2004

	Medicaid All Year (n=1,474)		Uninsured All Year (n=4,190)	
	<u>Coefficient</u>	<u>SE</u>	<u>Coefficient</u>	<u>SE</u>
Female	0.061 *	(0.026)	0.016	(0.008)
Age	-0.004 *	(0.001)	-0.003 *	(0.000)
Black	0.014	(0.031)	0.015	(0.012)
Hispanic	-0.013	(0.030)	-0.051 *	(0.010)
Asian	-0.124	(0.065)	-0.073 *	(0.010)
Indian/Eskimo	-0.019	(0.094)	0.037	(0.044)
Multiple Ethnicities	0.097	(0.080)	-0.020	(0.027)
Education, Less than High School	-0.012	(0.047)	0.027	(0.017)
Education, High School	-0.047	(0.046)	0.010	(0.016)
Education, Post High School	-0.032	(0.054)	0.020	(0.020)
Income less than 100% FPL	0.220	(0.126)	0.023	(0.018)
Income 100-200% FPL	0.273	(0.169)	0.012	(0.016)
Income 200-400% FPL	0.220	(0.191)	-0.012	(0.016)
Employment, Part-time	0.047	(0.053)	-0.016	(0.011)
Employment, None	-0.032	(0.041)	-0.007	(0.010)
Employment, Self	-0.040	(0.073)	0.006	(0.015)
Never Married	0.020	(0.032)	-0.005	(0.010)
Widow	-0.058	(0.057)	0.055	(0.035)
Divorced	0.018	(0.037)	0.025	(0.016)
Separated	0.065	(0.050)	0.049	(0.026)
Self-reported Health Status, Very Good	0.077	(0.055)	0.005	(0.013)
Self-reported Health Status, Good	0.088	(0.048)	0.021	(0.013)
Self-reported Health Status, Fair	0.111 *	(0.055)	0.050 *	(0.020)
Self-reported Health Status, Poor	0.204	(0.066)	0.104 *	(0.040)
Does not have a particular provider	0.006	(0.031)	0.023	(0.012)
No appointment within past 12 months	-0.048	(0.027)	-0.031 *	(0.009)
Feels health insurance unnecessary	-0.019	(0.037)	-0.003	(0.011)
More likely to take risks	-0.006	(0.026)	-0.004	(0.090)
Can overcome illness w/o a health professional	-0.024	(0.032)	-0.009	(0.010)
Number of chronic conditions	0.050 *	(0.010)	0.018	(0.004)
Disabled	0.054	(0.030)	-0.035	(0.036)
Help with IADLs	-0.040	(0.037)	0.058	(0.036)
Help with ADLs	0.005	(0.049)	0.050	(0.052)

Source: Authors' calculation using 2004 MEPS; estimates are calculated using survey weights provided by MEPS.

* Indicates significant at $z < .05$.

Table 3: Non-linear Decomposition of the Difference in ED Use Between Medicaid and the Uninsured

Probability of ED Visit Medicaid	0.27
Probability of ED Visit Uninsured	0.10
Difference in ED Utilization between Medicaid/Uninsured	0.17

	Decomposition	SE	% of Contribution
Female	-0.005	(0.002)	-2.79%
Age	0.002	(0.001)	1.28%
Black	-0.002	(0.002)	-1.37%
Hispanic	-0.013	(0.003)	-7.44%
Asian	0.000	(0.000)	-0.08%
Indian/Eskimo	0.000	(0.000)	-0.20%
Multiple Ethnicities	0.000	(0.001)	0.22%
Education, Less than High School	-0.001	(0.002)	-0.75%
Education, High School	0.000	(0.000)	-0.09%
Education, Post High School	0.001	(0.001)	0.48%
Income less than 100% FPL	-0.009	(0.007)	-5.18%
Income 100-200% FPL	0.002	(0.003)	1.05%
Income 200-400% FPL	-0.003	(0.003)	-1.49%
Employment, Part-time	-0.001	(0.001)	-0.39%
Employment, None	0.004	(0.005)	2.13%
Employment, Self	0.001	(0.002)	0.41%
Never Married	0.001	(0.001)	0.41%
Widow	0.000	(0.000)	-0.28%
Divorced	-0.002	(0.001)	-1.32%
Separated	-0.002	(0.001)	-1.30%
Self-reported Health Status, Very Good	0.000	(0.001)	0.18%
Self-reported Health Status, Good	0.001	(0.001)	0.48%
Self-reported Health Status, Fair	-0.004	(0.001)	-2.46%
Self-reported Health Status, Poor	-0.013	(0.004)	-7.49%
Does not have a particular provider	0.000	(0.000)	-0.12%
No appointment within past 12 months	-0.013	(0.004)	-7.46%
Feels health insurance unnecessary	0.000	(0.001)	-0.20%
More likely to take risks	0.000	(0.001)	-0.23%
Can overcome illness w/o a health professional	-0.001	(0.002)	-0.85%
Number of chronic conditions	-0.030	(0.007)	-17.61%
Disabled	0.024	(0.028)	14.19%
Help with IADLs	-0.016	(0.009)	-9.70%
Help with ADLs	-0.008	(0.008)	-4.50%
Portion Explained by included variables			-52.48%

Source: Authors' calculation using 2004 MEPS.