Coinsurance, The Price of Time, and the Demand for Medical Services
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THE effect of coinsurance on the demand for medical services has been debated for many years. Some assert that it helps control total expenditures by giving consumers a stake in how much medical care is purchased. Others assert that coinsurance is irrelevant to choice, since the physician makes the decisions about using medical services for his patients. Persons attempting to predict expenditures under various national health insurance plans are naturally interested in how coinsurance affects demand for services. The evidence we present in this paper decisively rejects the assertion that coinsurance is irrelevant to choice; coinsurance clearly does affect the demand for services. Moreover, as we shall show, the impact of coinsurance varies across medical services in a systematic fashion depending upon the time price of the service.

In a longer, more detailed version of this paper (Phelps and Newhouse 1973) we have derived expressions relating the responsiveness of demand for medical care services to coinsurance, market prices for medical care, and time costs. In the remainder of this section we sketch the assumptions underlying those derivations. We assume that consumers maximize a utility function in "other goods" (x) and health status (H) subject to a budget constraint. Medical care (h) is a homogeneous commodity that can be purchased in the market at a price of p per unit, and x can be purchased at a price of one per unit. There is a production function for H which uses h and time inputs (t). Denote the opportunity cost for time as w per unit of time, and let T be the amount of productive time available to the person. T = T₀ - t, where T₀ is total time available and is fixed.

The consumer's level of health is considered random. This induces him to purchase insurance. The insurance contract specifies a coinsurance rate—the consumer pays C per cent and the insurer pays (100 - C) per cent of all incurred expenses during the period. We are not concerned here with the selection of C (Phelps 1973), but how the consumer reacts to a random loss, given his insurance policy. Assume that C has been previously chosen, or is imposed; in either event, C is fixed, and the premium (or tax) is prepaid. The total price is then the sum of the money price per unit C * p and the time-price w * t per unit.

II. Theoretical Results

Of interest are relationships between demand for medical care and the various price components, p and C, and also w and t. We have shown (Phelps and Newhouse 1973) that

\[ \eta_{ho} \approx \eta_{hp} \approx \frac{C \cdot p}{C \cdot p + w \cdot t} \]

where \( \eta_{ho} \) is the elasticity of demand for h with respect to C, \( \eta_{hp} \) is the elasticity of demand for h with respect to \( p \), and \( \epsilon \) is the total-price elasticity. The approximations are due to income effects (from premium changes), which we have shown to be of small importance empirically.

Similarly,

\[ \eta_{hw} \approx \eta_{ht} \approx \frac{w \cdot t}{C \cdot p + w \cdot t} \]

where \( \eta_{hw} \) is the elasticity of h with respect to w, and \( \eta_{ht} \) is the elasticity of demand with respect to time per unit of h.\(^1\) Except for the income effects from premium changes, the time-

\(^1\) We assume \( \partial T/\partial h \) is zero. Relating this assumption means that a term should be added to \( \eta_{hw} \) although this does not affect any of the subsequent results. See Grossman (1972).
price and the money-price elasticities sum to the total-price elasticity.

These relationships show how one may estimate the own-price elasticity of demand for a good by observing response to different coinsurance rates. Additionally, a relationship between response to coinsurance and response to time costs is given implicitly, which allows one to consider effects of changes in travel time to facilities and queues in the office in estimating demand for medical care services.

These expressions assume medical care is a single homogeneous commodity. Clearly there are various medical services. To take account of this and to derive refutable hypotheses, we make the additional assumption that total-price elasticities are equal across various medical services.2

The following implications can then be drawn:

1. Goods with proportionally high time-price components and nearly complete insurance coverage (C near zero) will show relatively small money-price and coinsurance elasticities and relatively high time-price elasticities. Changing the location of a clinic whose services are free is an example of such a situation. Hospital days might also be an example, although if one is seriously ill enough to be hospitalized, the opportunity cost of time, w, will generally fall and with it the time-price.

2. Goods with a proportionally small time-price and poor insurance coverage will be more sensitive to money-price or insurance-coverage changes. Physician home visits are an example of such a service.

3. The effects of a given coinsurance change will differ across services, depending upon the size of the time-price component of total price.

4. In models that specify constant elasticities, one must take care to specify whether it is the total-price elasticity or the money-price elasticity that is constant. If total-price elasticities are said to be constant, then money-price elasticities fall as C approaches zero, and time-price elasticities rise correspondingly.

5. One may infer time-price elasticities from money-price elasticities, if the appropriate levels of the two types of prices are known and if the total price elasticity of the service in question is known (and vice versa). Also, one may infer 𝜖 if either 𝜂ₚ or 𝜂₀ are known and C⋅Δ and w⋅t are both known.

6. The responsiveness of demand to coinsurance rates, money prices, and time prices may vary with the size of the illness observed, since the total-price elasticity may vary with the size of the loss. This problem is assumed away in our empirical work for lack of data, but is important in estimating the cost of "catastrophic" insurance.

7. Those with lower time costs will be more sensitive to coinsurance changes than others (if 𝜖 is the same across income groups). Testing this implication is beyond the scope of this paper. If those with low time values are more sensitive to coinsurance, improving coverage will increase the share of medical services consumed by that group. If queues also increase because of supply restrictions, the increased time price will have its strongest effects on those with high time prices, reducing their share of resources consumed.

In what follows we test the first five implications, as well as measure the elasticity of demand as best we can from existing data.

### III. Empirical Evidence: Three Studies in Economics Journals

Three recent studies by economists of the price elasticity of demand for medical services all yield much higher estimates than we present below (Davis-Russell 1972, Feldstein 1971, Rosett-Huang 1973). Summary measures of the price elasticities from these studies exceed 0.5. In this section we briefly review this literature.3

The first two studies use state data; Davis-Russell (D-R) use a cross section of states in 1969, while Feldstein uses a time series of state cross sections from 1958 to 1967. Because of the nature of their data, D-R are forced to specify the amount of insurance as the percentage of the population insured in a state, and in addition they enter the gross price paid. Price elasticity is inferred from the latter vari-

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2 Conditions under which this is true are outlined in Phelps and Newhouse (1973).

3 The reader should note that in all of our empirical evidence we denote price elasticities as positive. A more detailed discussion of all these papers is contained in Newhouse and Phelps (1974b).
able. Feldstein uses a modified form of this specification. Underlying this specification is an individual demand curve with a dummy variable for insurance coverage. This dummy variable has a negative covariance with the true variable (the actual coinsurance rate), and this negative covariance has been shown to induce an inconsistency in the coefficient of gross price. One estimate of the magnitude of the inconsistency is that it equals a factor of two or more (Newhouse and Phelps 1974b).

Additionally, these two studies use aggregate data. For estimates from such data to remain stable over time, the coefficients for individuals making up the aggregate must be identical (or randomly distributed through time from the same distribution), or the distribution of the explanatory variable in the population must remain unchanged. A primary reason for generating evidence on elasticities is to estimate the effects of national legislation which would alter the distribution of insurance. Hence, the case for a stable relationship must rest on the assumption that all individuals have identical response functions over all coverage levels (or that their responses are randomly distributed over time), an assumption about which there is little or no evidence.

Unlike the two previous studies, the study by Rosett-Huang (R-H) uses household level data. Unfortunately, the data (the 1960 Survey of Consumer Expenditure) aggregate different kinds of medical services, some of which are covered by insurance and others not covered. Since covered services typically make up a larger proportion of larger expenditures, this induces a bias away from zero in the estimated elasticities. In Newhouse and Phelps (1974b) we show that R-H's methodology applied to one set of data overstates elasticities by nearly an order of magnitude.

We conclude that there is little firm information in the economics literature on demand elasticities for medical care. If anything, there is a consensus that demand elasticities are large. Elasticities this large are of great significance for policy purposes. For example, R-H estimate that there is an 80% increase in demand as coinsurance is decreased from 25% to zero.4 With expenditures on medical care approaching $100 billion and national health insurance legislation pending in Congress, it is obviously important to establish the magnitude of these elasticities. Next we present some new evidence and use data that are not in the economics literature to estimate the average arc-elasticity in the range of 0% to 25% coinsurance.

IV. Other Empirical Evidence

Total Medical Expenditures

We have gathered different sources of data, some published, some original, allowing us to compute the elasticity of demand for \( h \) with respect to \( C \).5 Our first source of data shows the premiums charged by four insurance companies to insure a representative group of persons. The insurance covered all expenditures except mental and dental treatment, subject to a lifetime maximum of $25,000 (with a $1,000 annual reinstatement provision). We asked for quotes from actual experience, over as broad a range of deductibles and coinsurance as was possible. In table 1 we show the ratio of premiums for various coinsurance rates; these ratios were independent of the deductible, although the dollar amount of the premiums differed among the companies. We converted the premiums for each company to an index (20% coinsurance equals 1.00). These indices, plus an index if there were no change in demand as coinsurance changed, are shown in table 1.

<table>
<thead>
<tr>
<th>Coinsurance Rate</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>If No Change in Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>.94</td>
<td>.91</td>
<td>.92</td>
<td>.91</td>
<td>0.9375</td>
</tr>
<tr>
<td>20</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>15</td>
<td>1.09</td>
<td>1.08</td>
<td>1.08</td>
<td>n.a.</td>
<td>1.0625</td>
</tr>
<tr>
<td>10</td>
<td>1.18</td>
<td>1.17</td>
<td>1.17</td>
<td>n.a.</td>
<td>1.125</td>
</tr>
</tbody>
</table>

We fitted a linear equation to these data, predicting the values of the index (I) as a function of \( C \), where \( C \) ranges over the values 0.10 to 0.25. This equation is

\[
I = 1.34 - 1.68C \\
R^2 = .993. \quad (3)
\]

The fit is nearly perfect. The predicted values

4 This is a fitted value from their equation 26 with the error term set at zero and family income set at the median value for 1960 ($5991).

5 Our use of all of the studies considered in this section is described in more detail in Phelps and Newhouse (1973).
of I for 25% and 10% coinsurance rates are 0.92 and 1.17.

In Phelps and Newhouse (1973) we derive the formula for converting these predicted premium ratios into the insurance companies' perceived change in demand for services, given the change in coinsurance. Approximately, we compute the change in premium if utilization did not change and attribute the residual to increased utilization. The implied elasticity of demand is 0.07 between 25% and 10% coinsurance. Also the elasticity falls with C; it is 0.12 between 25% and 20%, 0.08 between 20% and 15%, and 0.04 between 15% and 10%. The decrease in elasticities between 25% and 10% is consistent with constant total price elasticities and \( \eta_{t0} \) falling with C (implication 4 above). Our estimates assume that there is no self-selection of lower coinsurance rates by "sickly" groups; if there is, our estimates are further from zero than the "true" effect of coinsurance. Self-selection cannot explain the falling pattern of elasticities, however.

A summary measure of arc elasticity can be misleading as to the true change in demand when the ranges over which the elasticities are computed differ. We therefore use a standardized interval to compute arc elasticities throughout the paper. For this purpose we have chosen a range we regard as policy relevant — 25% to zero coinsurance. Using equation (3) over this range, the estimated arc elasticity is 0.043. This represents a 12% increase in total medical expenditure as the coinsurance rate decreases from 25% to zero. We next derive an independent estimate of price elasticity for total medical expenditure by computing and then aggregating the price elasticities of individual medical services.

**Physician Services**

In 1967, a 25% coinsurance rate for outpatient physician services was introduced for a large group of individuals in Palo Alto. Before that, the coinsurance rate had been zero. Observations on 2567 individuals during the first full year before the coinsurance (1966) and the first full year after the coinsurance (1968) were obtained by Scitovsky and Snyder (1972). Analysis of those data yields an arc elasticity of 0.14 for office visit expenditures (Phelps and Newhouse 1972). For ancillary services (X-ray, lab tests, and so on) the elasticity was 0.07.

These data also show that home visit expenditures decreased much more than office visits; the computed arc elasticity for such expenditures was 0.37 (Scitovsky and Snyder, table 10). Since time costs are essentially zero for home visits, the higher elasticity of demand for home visits is strong evidence supporting our theory of time-price and money-price responsiveness (implications 1, 2 and 3 above); in addition, because \( t \approx 0, \epsilon \approx .37 \) by (1).

Other data from a university student health service also support our theory (Simon and Smith 1973). With a change in the location of the clinic, mean travel time for students increased from 5–10 minutes (before the change) to 20 minutes, and monthly visits to the clinic fell. An equation explaining monthly visits was estimated, with a dummy variable equal to one for the 14 months after the change in location and a trend variable as explanatory variables. The result was

\[
y = 1789 - 489 \text{ (distance dummy)}
\]

\[
-6 \text{ (time trend)}
\]

\[
(4)
\]

where \( E(y) = 1491.4, R^2 = .37, \text{ Durbin-Watson} = 1.99, F(2,34) = 9.799. \)

Using estimated change in visits of 489, and changes in travel time of 10 and 15 minutes, the time-price elasticities at the mean of the time trend (18.5) are 0.28 and 0.51, respectively. There was no money price charged to the students, so the sole price was a time price. By implication 1, the observed elasticity should be higher than the coinsurance elasticity in the Palo Alto data at \( C = 0 \), which it is.\(^7\)

Using this study we can also estimate \( \epsilon \), as well as the value of time in an office visit (implication 5). To do so we assume that actual service time at the clinic is 15 minutes. (We have no data.) Thus, total service time is 30 minutes, or about twice the average travel time. From (2) this would imply that \( \epsilon \) is twice \( \eta_{t0} \), or about 0.79 (using the midpoint of the range).

We thus have two values for \( \epsilon \), the 0.37 estimate from the Palo Alto home visit data and 0.79 from the student clinic data. These are

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\(^6\) Visits estimated from Simon and Smith, figure 1.

\(^7\) The coinsurance elasticity in the Palo Alto data at \( C = 0 \) is less than 0.14. Our result holds unless waiting time at the clinic is very large relative to travel time.
dissimilar cases, since one involves no time price and the other no money price. From these values, we can estimate the time cost implicit in the Palo Alto office visit data. Using (1), with the estimate of \( \eta_{PC} = .14 \) and the average money price \( (C \cdot p) \) of $3.36, the implicit value of time from these two values of \( \epsilon \) ranges from $5.19 to $16.06. Although the estimated range is large, these values are within reasonable expectation, thus lending support to our theory. The point of policy interest is that for conceivably large values, we can estimate the time cost implicit in the estimate of \( \epsilon \), the time cost is estimated to be a significant and substantial proportion of the total cost of medical care, and will rise in importance as \( C \) goes to zero. Thus, we can expect time to act as a strong rationing device in the absence of money prices (see also Acton 1973).

There are also Canadian data available on utilization of physician services, but these cannot properly be used to derive an elasticity of demand. Unlike the Palo Alto case, where the insureds constituted a small fraction (16%) of the medical group's practice, in Canada the insurance coverage of entire regions was changed. Thus, supply effects may have played a role. (We assume that the university student clinic could adjust its physician supply quickly in response to a change in demand and therefore that supply effects are not important in those data.) However, Canadian data do show the same pattern for home and office visits as the Palo Alto data — when a copayment of about 40% was introduced, office visits declined 17% and home visits 60% (Phelps and Newhouse 1973) — thus supporting the theory of demand presented above.

**Hospital Services**

Heaney and Riedel (1970) provide data which can be used to compute the elasticity of demand for non-maternity hospital services. They studied changes in hospital utilization when Blue Cross in Connecticut offered groups a change from indemnity insurance (paying $15 per day for hospital care) to full semi-private coverage in 1966–1968.\(^8\) There may have been some self-selection present in those groups opting for the change. If so, our elasticities are overstated.

The data show changes in admissions and average length of stay for those who changed their coverage, comparing utilization six months before and six months after the more complete insurance was introduced.

We estimate that a $15 payment by the Blue Cross represents an average coinsurance rate to the consumer of 31% for admissions and 57% for length of stay.\(^9\) The full semi-private plan, of course, represents a zero coinsurance rate. As discussed above, we wish to obtain standardized results by having all elasticities refer to the 25% to zero coinsurance range. To do this, we must interpolate. Fitting a straight line to the two observed points for admissions and patient days and interpolating, the estimated arc elasticity for patient days over the zero to 25% range is 0.07 (0.05 for admissions and 0.02 for length of stay).

Note that this is a lower bound on the elasticity for patient days over the zero to 25% range which was completely covered in both the indemnity and the full coverage plans. Therefore, the average coinsurance rate for admissions in the indemnity plan was \( \frac{35.20 - 15.00}{35.20} = 57\% \). Since ancillary services which were completely covered in both the indemnity and the full coverage plans, therefore, the average coinsurance rate relevant to the length of stay variable is approximately \( \frac{35.20 - 15.00}{35.20} = 57\% \).

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\(^8\) These results may be properly interpreted as demand elasticities because the change in demand this caused appears to have been small relative to total demand in Connecticut. From data in Heaney and Riedel, it appears that the coverage of some 600,000 persons was changed, or

\(^9\) Using average patient revenue per day for Connecticut hospitals in 1967 of $65.89 (Hospitals (1968), p. 442), and noting that room and board charges are on average 53.5% of total hospital charges (Health Insurance Association of America (1968), table 3), one can infer that the average room and board charge facing these persons was $35.20. The remainder of the bill consisted of ancillary services which were completely covered in both the indemnity and the full coverage plans. Therefore, the average coinsurance rate for admissions in the indemnity plan was \( \frac{35.20 - 15.00}{65.89} \approx 33\% \). Since ancillary services are concentrated at the beginning of a hospital stay, they are likely to be negligible on the marginal day. Hence, the coinsurance rate relevant to the length of stay variable is approximately \( \frac{35.20 - 15.00}{35.20} = 57\% \).
penditure elasticity with respect to coinsurance since no adjustment for changes in resources used per patient day is included. Newhouse and Phelps (1974a) present data indicating that increases in resources demanded per day may make the expenditure elasticity 0.09 or 0.10.

A second study of hospital utilization (Williams 1966) showed differences in demand under two Blue Cross plans in 1964 — one with full payment for hospital days, and the other with a $4 per day copayment. Table 3 shows the results.

The arc elasticity of patient days per 1000 is 0.07, over a coinsurance range of 0 to 0.12. Of more interest is the elasticity of resource use per subscriber, since this is closer to the concept of an expenditure elasticity. The elasticity of resource use is 0.04, over the coinsurance range of 0 to 0.12. When we extrapolate this to the 0 to 0.25 coinsurance range, our estimate is 0.08, quite close to the 0.09 to 0.10 figure obtained from the Connecticut hospital study. Thus, hospital resources (patient days and price per day) show a slightly lower elasticity than physician office visits, although the two are quite similar.

### Prescription Drugs

A study using 1962 data from Windsor, Ontario, showed the effects of insurance on demand for prescription drugs (Greenlick and Darsky, 1968). Prescription Services Incorporated (PSI) offered prescriptions at $.35 per prescription. The average price per prescription was $3.78, so the effective average coinsurance rate was 0.09 (varying with the price of the prescription). Per capita utilization of those with the PSI plan was compared with utilization by a random sample of the community. The comparison is shown in table 4.

From these data we compute an arc elasticity for drug expenditures of 0.40 over the range 0.09 to 1.00. There may be considerable self-selection into this drug insurance program, in which case the 0.40 figure is biased away from zero. Fitting a line to the two points and extrapolating, the arc elasticity of expenditures in the zero to 25% range is 0.07.

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### Table 3. Hospital Use Under Different Coinsurance Plans

<table>
<thead>
<tr>
<th>$/Day Copayment</th>
<th>Effective Coinsurance Rate</th>
<th>Patient Days/1000</th>
<th>Adjusted Benefits Per Case</th>
<th>Benefits Per Patient Day</th>
<th>Average Stay</th>
<th>Admissions Per 1000</th>
<th>Medical Resources Per Subscriber</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.00</td>
<td>0.0</td>
<td>1310</td>
<td>$261.00</td>
<td>31.11</td>
<td>8.39</td>
<td>156.14</td>
<td>40.75</td>
</tr>
<tr>
<td>$4.00</td>
<td>0.12a</td>
<td>1129</td>
<td>$245.80</td>
<td>29.44</td>
<td>8.35</td>
<td>135.21</td>
<td>37.75c</td>
</tr>
</tbody>
</table>

Source: Williams (1966). The data are from plan D, adjusted for age and sex. Coinsurance rates for plans A, B, and C are not available, and only unadjusted data are available for plan E.

a 0.12 is $4 divided by the average benefit of $29.44 plus the $4 copayment.

b The medical resources per subscriber for the $4.00 per day copayment plan included $245.80 benefits per case plus 8.35 x $4.00, the average payment by subscribers, or $279.20 per admission. Applying the admissions rate of 135.21 per 1000 gives resources per subscriber of $37.75, as shown.

c The Williams' data underestimate the change in demand for resource intensive hospitals caused by a change in coinsurance, since those in the copayment plan as well as those in the no-copayment plan faced zero marginal cost from choosing higher cost-per-day hospitals. In fact, if there is a trade-off between resources per day and number of days, one would expect the copayment group to use more resources per day, which was observed (including in the measure of resources the $4 copayment). The 0.08 figure from the Williams' data might therefore best be compared with the 0.07 figure from the Heaney-Riedel data.

### Table 4. Prescription Expenditures With and Without Drug Insurance in 1962 in Windsor, Ontario

<table>
<thead>
<tr>
<th></th>
<th>Communitya (age adjusted)</th>
<th>PSI (age adjusted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenditures Per Person</td>
<td>$8.29 (6.89–9.69)</td>
<td>$16.64</td>
</tr>
</tbody>
</table>

Source: Greenlick and Darsky (1968), p. 2125.
a Sample for community data; 95% confidence limits in parentheses.

Data from the British National Health Service support this estimate (Myers 1972). The data show the total number of prescriptions filled annually for thirteen years and the price charged per prescription. The patient's price varied from zero to 2.5 shillings during this period. We converted this to a coinsurance rate using total drug expenditure data. The coinsurance rate varied from 0 to 0.23. The fitted equation from the data (where \( y = \text{real expenditure on prescriptions} \)) was

\[
y = 63.36 - 53.16 \times \text{(coinsurance)} + 4.49 \times \text{(time trend)} \quad (t = 9.16) \quad (5)
\]
where \( E(y) = 92.41, E(C) = .129, R^2 = .996, \) Durbin-Watson = 1.60. Using (5) at \( C = 0 \) and \( C = .25, \) the estimated arc elasticity at the average of the time trend (7.5) is 0.07, identical to the estimate from the Windsor data in this range.

**Dental Services**

We have obtained insurance premium data (from one carrier) on premiums charged to cover certain dental services at 20% and zero coinsurance rates. Services included examination, prophylaxis, and X-rays not more frequently than once every six months. These data were analyzed similarly to the premium data for total services, and the arc elasticity was found to be 0.13. Extrapolated to the zero to 25% range, it is 0.16. Lest this be thought of as a “small” response, the increase in services is 38% as the coinsurance rate falls from 25% to zero.

**Aggregation Across Services**

One can derive an average elasticity by aggregating across services using expenditure weights. The normalized budget shares of hospital services (including inpatient physician visits), physician office visits, ambulatory ancillary services, physician house calls, and prescription drugs are 0.68, 0.14, 0.06, 0.01, and 0.11, respectively (Newhouse, Phelps and Schwartz, (1974) based on data in Cooper and Worthington (1973)). Using these budget shares and elasticity estimates of 0.10 for hospital services, 0.14 for physician services, 0.07 for ambulatory ancillary services, 0.37 for physician house calls, and 0.07 for prescription drugs, we obtain an arc elasticity in the 25% to zero coinsurance range of 0.10, compared to 0.04 obtained from the insurance company data cited earlier. Part of this difference may be due to self-selection. But, given the approximations involved, we feel this is reasonably close agreement. Moreover, the rough agreement of two quite different methods of calculating this figure adds substantially to the confidence one can place in an overall elasticity estimate of 0.1 in this coinsurance range.

Our two estimates should be viewed against the elasticities of 0.5 or more found in the economics literature cited above. We pointed out earlier that the difference between our estimates and those in the economics literature could be due to an upward inconsistency in those studies. Another proposed explanation is that behavior is based on the average insurance coverage in an area, so that our methods underestimate the change in demand which would result if everyone’s coverage was changed (Ginsburg-Manheim 1973). While this argument cannot be dismissed a priori, there is no unambiguous evidence supporting it and some evidence to the contrary (Newhouse and Phelps 1974b). A third possible explanation of the discrepancy is that our data come from a lower (but probably more relevant) range of coinsurance. Other estimates we have made, using data with ranges similar to those in the economics literature, partly support this third explanation (Newhouse and Phelps 1974a).

Finally, our results use the assumption of linear demand curves (to extrapolate or interpolate results into the 0.25 to zero coinsurance range), while much of the economics literature uses constant elasticity demand curves. We do not know how sensitive the results in the literature are to this assumption; because our results generally come from observations of two points, we are not well equipped to test for differences in functional form. However, we believe our results are accurate for the ranges given; because most of our data come from approximately the zero to 25% coinsurance range, the chance for large error from interpolation or extrapolation seems minimal. And in cases where we have two estimates for the same service (hospital and drugs), there appears to be sufficient consistency between our estimates to support the assumption of a linear demand curve.

**V. Conclusions**

The data generally support our theory of demand for health care services. Services with a relatively high time price, especially physician office visits, exhibit relatively low coverage (or price) elasticities and relatively high time price elasticities assumption used in other studies is an implicit assumption that \( e \) rises as \( C \) falls, an assumption that we obviously cannot test with our data (see implication 4, above).
price elasticities (implications 1 and 3). Services with a relatively high money price such as home visits, show considerably higher own-price elasticities (implications 2 and 3). Money-price elasticities appear to fall with coinsurance rates (implication 4). Table 5 summarizes our results, and table 6 points up the discrepancy between our results and those in the economics literature.

In our introductory remarks, we noted that some persons feel coinsurance is irrelevant to decisions about consumption of medical services, because physicians make all the relevant choices. The results presented here are strong evidence against that hypothesis. Consistently, across a number of studies based upon diverse data, coinsurance has been found to exert an impact on utilization of various services. Particularly for the data not based on insurance premiums, however, our estimates may be biased away from zero by self-selection.

REFERENCES


