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THE HEALTH AND EARNINGS OF
REJECTED DISABILITY INSURANCE APPLICANTS

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ABSTRACT

Applicants for Social Security Disability Benefits who fail to pass the medical screening form a natural 'control' group for beneficiaries. Data drawn from the 1972 and 1978 surveys of the disabled done for the Social Security Administration show that fewer than 50% of rejected male applicants work. Typical earnings of those that do are less than 50% of median earnings for other men their age. These data cast doubt on recent econometric work which suggests that the disincentive effects of DI have been substantial.

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The postwar period has seen a dramatic increase both in the availability and in the generosity of income maintenance programs targeted at the disabled. The Social Security Disability Program (DI) was enacted into law in 1956. Originally, in order to qualify for DI benefits an individual had to be over the age of 50 and to suffer from an impairment that could "be expected to result in death or be of long, continued and indefinite duration." In 1960 individuals under the age of 50 were made eligible, and in 1965 the definition of disability was liberalized to allow those without permanent disabilities to qualify. In 1972 the waiting period required before an applicant for DI could start receiving benefits was reduced from 6 to 5 months, and the work history requirement was effectively eliminated with the introduction of Supplemental Security Income.¹ At the same time that eligibility requirements for DI were being relaxed, benefit levels were being increased,² so that by the mid-1970's typical after-tax replacement rates reached 60%. When dependents' benefits are included³, the total compensation can easily replace all of a worker's lost earnings.

With the increasing availability and generosity of disability benefits, the DI rolls grew rapidly during the 1960's and 1970's. In 1960 208,000 workers were awarded benefits. By 1975 this figure had risen to 592,000. During the same time period the fraction leaving the roles each year declined from 20% to 13%.⁴ With a rising number of awards and a declining termination rate, by 1980, 2.9 million workers (3% of the working-age population) were receiving DI benefits. Total benefits paid out exceeded 15 billion dollars or 20% of those paid out for retirement benefits. With the rapidly expanding roles, there was an increased concern that the social security administration was losing control over the system and that many of those awarded DI benefits might not, in fact, be disabled according to the legal definition of the term.⁵

¹ Both DI and SSI are administered by the Social Security Administration. DI provides benefits to disabled workers in amounts related to the disabled worker's former wages in Social Security-covered employment. SSI provides cash assistance for the needy aged as well as to the needy blind and disabled, with no requirement that they have worked in covered employment. As a needs-based program, SSI provides payments based on the amount of other income available to an individual.

² DI benefits are calculated in essentially the same fashion as Social Security retirement benefits, and have been subject to the same changes in benefit levels.

³ DI recipients receive dependents' benefits under the same circumstances as do Social Security retirement benefit recipients.

⁴ DI beneficiaries leave the roles for three reasons. Roughly 15% recover and either leave the roles voluntarily or are terminated after a medical review. Another 35% die while on the roles. The remaining 50% are transferred to the retirement program when they reach the age of 65. The proportion leaving the roles for each of these three reasons was dropping.

⁵ Largely as a response to such concerns, Congress passed legislation in 1980 designed to tighten administrative control over the determination of medical eligibility for DI benefits. The Reagan administration accelerated the implementation of the law. Between 1980 and 1982 the number of new awards dropped 25%, while more than 20% of those on the roles had their cases reviewed and were terminated. Many of those who had their benefits terminated appealed their cases. Of those that appealed, a majority won reinstatement. A growing concern that many of those being terminated were, in fact, disabled, and that due process was not being followed led courts in 20 states to order that those states take over the review process, while in 9 others moratoriums were ordered. Finally, in 1984 Margaret Heckler, the secretary of HHS, agreed to a moratorium on terminations pending the enactment and implementation of legislation with revised guidelines. The new legislation was enacted in 1984, with review beginning again in 1986.

During the same time period that DI was growing rapidly, the proportion of older men out of the labor force doubled. Table 1 reports participation rates for 45 to 54 and 55 to 64 year-old men for selected years. Between 1955 and 1985, the labor force participation rates for men 45 to 54 years old dropped 4.5 percentage points from 96.5% to 92.0%, and the participation rates for men 55 to 64 years old dropped 19.1 percentage points from 87.9% to 68.8%. The decline in participation rates of these older men matched almost exactly the increases in the proportion of older men receiving DI benefits (see Table 1). These parallel trends suggest a causal connection, with the availability of generous disability benefits inducing older men to leave the labor force in order to qualify for benefits.⁶ The implication would seem to be that many of those receiving disability benefits are, in fact, capable of work – that the social costs of disability insurance have been high and the target efficiency low.

Recent econometric studies appear to confirm this view. The common strategy has been to employ regression techniques to compare the labor force participation rates of those with high replacement rates (those whose potential DI benefits would replace a relatively large fraction of their pre-disability earnings) to those with low replacement rates. The difference in the participation rates between these two groups is taken to be an estimate of DI's impact. Researchers following this kind of strategy have typically concluded that DI has had very large disincentive effects, inducing a virtually one-for-one drop in participation rates.⁷

This approach is likely to overestimate the impact of DI on labor force attachment. Since replacement rates for DI are decreasing functions of past earnings, it is difficult to determine whether it is generous replacement rates or low earnings that induce individuals to leave the labor force. This is fundamental, since there are a variety of reasons to expect that those with low earnings would be the ones most likely to leave the labor force regardless of DI. We should, therefore, suspect that the coefficient on the replacement ratio is, at least to some extent, picking up these other effects and thus exaggerating the causal impact of DI itself. Haveman and Wolfe (1984b) try to avoid the endogeneity of the replacement rate by utilizing a procedure that initially predicts disability benefits as a function of exogenous information, and then incorporates these predicted values in the final estimating equations. The problem with this strategy is that it is hard to have faith in the legitimacy of the exclusion restrictions required in order to generate instruments.

The purpose of this paper is to draw attention to an alternative source of evidence on the

⁶ For both DI and SSI an individual must not be gainfully employed in order to qualify for benefits. Gainful employment has ordinarily been defined in terms of earning more than a stipulated amount—\$300/month during the 1980's.

⁷ The estimates of Parsons (1980a, 1980b, 1982) and Slade (1984) imply that DI can account for the entire postwar decline in the labor force attachment of older men – with the apparent implication that virtually all beneficiaries would be working were DI not to exist. Leonard's (1979) results have usually been interpreted as supportive of Parsons'. (See Section III for a discussion of this issue.) Haveman and Wolfe (1984a, 1984b) represent the dissenting voice, having produced estimates that imply substantially smaller disincentive effects.

disincentive effects of DI. Such evidence comes from considering individuals who apply for DI but fail to pass the medical screening necessary to qualify for the program. This rejected pool provides a natural control group for the beneficiaries. The assumption (documented below) is that rejected applicants are healthier and more capable of work than those who were accepted. Thus, their labor force performance should provide an upper bound for what could be expected of beneficiaries. It is thus startling that, even among prime-aged men, fewer than 50% of rejected applicants return to sustained work, and that the earnings of those that do are roughly 30% below pre-disability levels and more than 50% below those for other men their age.

I infer from these facts that less than half of those on DI would work were they not receiving benefits. Recall that the drop in participation rates has more than matched the rise in the proportion of older men on DI. Thus DI accounts for substantially less than half of the post-war decline in the participation rates of older men.

Yet if DI can account for less than half of the drop in labor force participation we are left with a number of questions. What accounts for the other half? What would the counterparts of the men now receiving DI have been doing prior to DI's existence? In the last section of this paper I try to answer these broader questions by taking a closer look at the historical record. I argue that the record suggests that DI has pulled a substantial number of its beneficiaries from a population that would have been out of work regardless of whether or not DI was available. Evidence for this conclusion comes from the fact that before DI existed (or before it had grown to its current size), there was a sizable population of older men who both identified themselves as disabled and who were out of the labor force. The natural assumption is that these men, or their counterparts in subsequent cohorts, would be among those on the DI rolls. A coherent picture of DI thus emerges. While it seems likely that DI has had some impact on the labor force attachment of older men, it also seems likely that DI has successfully targeted resources to the genuinely disabled.

The remainder of this paper proceeds as follows: In Section I, I document the facts relating to rejected applicants. In Section II, I discuss objections to the inferences I am drawing from these facts. Section III reconciles the evidence on rejected applicants with that from previous studies which have suggested large disincentive effects. In Section IV, I review the historical evidence and conclude with a summary of the argument.⁸

I. The Evidence on Rejected DI Applicants

The data on rejected applicants come from the 1972 Survey of Disabled and Non-Disabled Adults (SDNA) and the 1978 Survey of Disability and Work (SDW).⁹ Both surveys oversampled

⁸ Understanding the nature and functioning of the Social Security Disability Insurance Program is an important prerequisite for any evaluation of the evidence on its disincentive effects. I have included a brief description of the way in which DI operates in an appendix.

⁹ Both surveys were done by the Census Bureau for the Social Security Administration. Detailed descriptions

the disabled. In the 1972 survey those that had been identified as disabled in the 1970 census were oversampled, while the 1978 survey oversampled DI beneficiaries and applicants rejected in 1977.¹⁰ Each survey asked respondents a variety of labor force, income and health questions, as well as whether they had ever applied for or received DI benefits. The survey data were then matched with the Social Security earnings history for each respondent.¹¹

Table 2 compares employment rates for rejected applicants to those of other men their age.¹² As the vast majority of DI beneficiaries are over the age of 45,¹³ I have limited my attention to this group. To ensure that the sample I consider will have been disqualified on medical grounds, I restrict my attention to those rejected applicants who had a sufficient earnings history to qualify for DI benefits.¹⁴ To ensure that current behavior is reasonably representative of the longer run, I restrict my attention to men who applied at least 18 months prior to the survey.

The two surveys tell very similar stories. Despite the fact that one must have a history of working in order to qualify for DI, less than one-third of the rejected applicants were working at the time of the surveys and less than 50% worked sometime during the previous year. Of those who did work sometime during the previous year, less than 50% worked for the full year (≥ 50 weeks). These low employment levels are not simply functions of the fact that the typical applicant is nearing retirement age. Employment rates for rejected applicants remain below 50% even if we restrict our attention to men under the age of 55.¹⁵

In addition to employment rates, Table 2 also reports information on earnings for rejected applicants. Median annual earnings for the rejected applicants that did work sometime during the year were less than half the median of their able-bodied counterparts, while median weekly earnings were less than three-quarters of those for their able-bodied counterparts. To compare the

of these two surveys can be found in *Users' Manual for the 1972 Survey of Disabled and Nondisabled Adults: Description and Documentation* (1979) and Barry Bye and Evan Schechter, *Technical Introduction, 1978 Survey of Disability and Work*, (1982).

¹⁰ These differences in sampling schemes make cross-year comparisons difficult.

¹¹ Among men 45-64 years old, 94% of the 1972 survey respondents and 99% of the 1978 survey respondents were matched to their social security earnings history.

¹² Men who either by their own account or by administrative record were identified as receiving DI benefits were classified as DI beneficiaries; men who reported having applied for DI benefits but who but were not receiving DI benefits were classified as rejected applicants.

¹³ During the period studied less than 20% of DI beneficiaries were under the age of 45. (1986, *Social Security Bulletin; Annual Statistical Supplement*, Table 98).

¹⁴ To qualify for DI benefits a man must have worked for 20 of the 40 quarters that preceeded the quarter during which he became disabled. To identify covered applicants, I used respondents reports' to identify in which year they had become 'disabled' and then used the earnings history to determine if they have worked in covered employment during 20 of the 40 quarters preceeding that year. For men not correctly matched to earnings histories, I assumed that those who reported having been employed prior to the onset of their health limitations would have been covered.

¹⁵ For men 45 to 54 years old, 48.9% of those applicants rejected in the 1972 survey and 36.7% of those in the 1978 survey were employed as of the survey week.

pre- and post-application earnings I used the Social Security earnings history. Simple tabulations showed that among the rejected applicants that did work some time during 1971 (1977), 69% (60%) experienced a decline in real annual earnings.¹⁶ To estimate the average earnings drop I calculated the earnings differential between rejected applicants and non-applicants two years prior to the year of application, and again for the same individuals for the last available year of data, the year prior to the surveys.¹⁷ The change in this differential gives an estimate of the drop in earnings that the applicant experiences, with the non-applicant 'control' group allowing me to net out growth that could be attributed to either economy-wide or cohort-wide earnings growth. The change in the log differential ranged from .807 in the 1972 survey to .795 in the 1978 survey, implying a drop in earnings for those who continue to work of about 55%.¹⁸

The demographic evidence reported in Table 2 gives the clear impression that those men who apply for DI benefits (beneficiaries and rejected applicants alike) tend to be less educated and are more likely to be non-white than the comparably aged non-applicants. This finding is really not very surprising. The less educated and non-whites tend to be in worse health¹⁹ and to be in more demanding jobs than the overall population.²⁰ Lastly, the relative rewards for returning to work will be smaller for these groups.

The 1972 and 1978 surveys contain both the respondents' own assessment of the degree to which health limits their ability to work and their responses to other more specific questions about their health. The vast majority of the rejected applicants report important health limitations on their ability to work. Over 50% report that health prevents them from working altogether (I will refer to this group as the severely disabled), while roughly 90% report that their health at least limits the kind or amount of work they can perform (I will refer to this group as the partially disabled). Over 85% report being incapable of either doing any work or of doing the same kind of work they did before their health limitation began. While there are many reasons to be suspicious of self-reported

¹⁶ Comparisons were between earnings two years prior to the application for DI benefits and earnings in 1971 or 1977. Samples were restricted to those with positive earnings in both years. Pre-application earnings were adjusted using the CPI.

¹⁷ For the control group I used the representative strata of each survey, randomly assigning 'application' years. Since Social Security earnings are truncated above, the equations I estimated were tobit, with an upper truncation point that varied with the year. Since my interest was in the change in earnings for those who did work, I restricted my analysis to those with positive earnings. The actual equations run used the natural logarithm of Social Security earnings as the dependent variable and age, age squared, age cubed and year dummies as controls.

¹⁸ As an alternative check on these results, for rejected applicants, I compared median earnings from two years before the application to those as of 1971 or 1977. I adjusted the pre-application earnings upwards using the average hourly earnings of production workers. These calculations showed drops in earnings of between 40 and 44%.

¹⁹ See Grossman (1976).

²⁰ Social Security Administration regulations explicitly recognize this possibility. In marginal cases, Disability Examiners are expected to take account of an applicant's education and occupational history in determining an applicant's eligibility for DI.

work limitations,²¹ reports of specific conditions should be considerably less subjective. Table 2 shows that rejected applicants are substantially more likely to report suffering from any of a variety of specific conditions than are their able-bodied counterparts.²²

Independent evidence on the work capacity of rejected DI applicants is also available. In a 1969 study conducted for the Social Security Administration by Saad Nagi, independent panels evaluated the work potential of a sample of DI applicants.²³ These panels included doctors, psychologists, and occupational and vocational counselors. They were authorized to enter the homes of applicants, to conduct any of a variety of tests, and to collect any information they felt relevant to the study case. In short, it is hard to imagine having available any more reliable information on a person's health or work capacity.

The Nagi teams evaluated applicants on an eight-point scale ranging from "fit for work under normal conditions" to "not fit for work." Table 3 shows the Nagi study's eight point evaluations of work capacity for both SSA allowances and denials. According to these evaluations, many rejected applicants do suffer substantial health limitations. Of the population denied benefits, 35.6% were found incapable of any work, and another 12.3% were only capable of work at home or in sheltered environments. Only 33.7% were capable of work under normal conditions. The proportion of the rejected applicants that the Nagi teams determined were incapable of work lines up very closely with the proportion we found who do not, in fact, work. Thus it seems natural to infer both that the rejected applicants are in fact in poor health, and that this is the reason they do not go back to work.

If the majority of those disability insurance applicants who have been denied benefits do not return to regular work, it is quite natural to wonder how they survive. Table 4 provides a partial answer to this question. Using the Social Security surveys, I tabulated sources of income for rejected DI applicants. I report the proportion of men receiving each kind of income together with the average amount received (for those who did receive income from the source). These were computed separately according to whether the respondent worked at all during the year prior to the survey, and also included tabulations on DI beneficiaries and on the overall population. Table 4 shows that a large number of rejected applicants, especially those who do not go back to work, do

²¹ These last tabulations are probably best thought of as one tailed-tests. Were we to have found only a small percentage of the rejected applicants claiming that they were disabled, we would have trouble maintaining that their weak attachment to the labor force reflected health. Finding what we do is compatible with both a story that emphasizes the importance of poor health in explaining the behavior of rejected applicants and one that emphasizes the role of poor health as a justification for early retirement.

²² In 1972 respondents were asked: "Here is a list of conditions...Which of these conditions particularly bother you?" In 1978 they were asked "Which of the following conditions or illnesses do you have NOW that a doctor has told you about?" The questions were a bit different as were the lists of conditions. I aggregated the more than 38 specific conditions into 10 more combined categories according to their diagnostic category. Still the differences between the two questions imply that these aggregated categories will not be completely comparable across groups.

²³ The Nagi team's evaluations were done at the same time as were the Social Security Administration's.

receive some kind of public income maintenance, mostly from programs that target the disabled. The availability of alternative sources of income helps explain why more of these individuals do not return to work. What is crucial for using rejected applicants as a control group, however, is the question of whether the sources of income available to the rejected applicants would be available for beneficiaries were they not on DI. What we see is that for most sources of non-labor income, the DI beneficiaries are at least as likely to be receiving some as are the rejected applicants. The major exceptions to this pattern are the state-run welfare programs (e.g. Aid to the Permanently and Totally Disabled (APTD), Supplementary Security Income (SSI), and General Assistance), but these are, to a large extent, substitutes for DI, and there is no reason to believe that DI beneficiaries would be any less likely to be eligible for these programs than are the rejected applicants.²⁴

The numbers reported in Table 2 are comparable to those reported on a number of occasions by staff researchers for the Social Security Administration.²⁵ The most recent example is a 1976 study where Ralph Treitel used administrative records to follow up applicants initially denied benefits in 1967.²⁶ Of the men who had been denied benefits on medical grounds, 13.8% had died by 1973. (This compares to roughly 7% for the comparably aged population.)²⁷ Another 16.1% had reached retirement age, and only 36.2% had any Social Security earnings the previous year. Of those with earnings, only 52% had earnings above \$3600 (median Social Security earnings in 1972 for prime aged men were above \$9000).²⁸ Furthermore, 39.7% of the rejected applicants had not worked at all in the four years after having been denied benefits, and only 24.1% had worked for as much as three-quarters of the time. For men under 50, the picture was only slightly better. By 1973, 8.0% of these men had died (as compared to 2.4% for the population²⁹). Thus mortality rates for the rejected applicants were once again more than twice that for the comparably aged population. Only 51.7% had any Social Security earnings the previous year, 25.9% had not worked at all in the four years after they were denied benefits, and only 33.0% had worked for as much as three quarters of the time.

²⁴ The observant reader will note that not every man identified as a DI beneficiary reports receiving Social Security Disability Benefits. Transfer income is notoriously poorly reported and this, presumably, is just another indication of this problem. At the same time, as long as the under reporting does not systematically vary with beneficiary status the, qualitative impression we get from the data should be accurate.

²⁵ Goff (1970), Smith and Lilienfeld (1971), Treitel (1976).

²⁶ Unfortunately, this work has not been updated with data from the 1970's or 1980's.

²⁷ 7% represents the weighted average of the 5 year mortality rate reported in the 1967 *Vital Statistics*, where the weights represent the fraction of New DI beneficiaries as of 1967 falling into 5-year age categories. 7% overstates the actual 5-year mortality rate for the comparably aged population for two reasons: 1) New beneficiaries tend to be somewhat older than rejected applicants, 2) the cross-sectional mortality tables tend to overstate true cohort mortality.

²⁸ Restricting attention to denied applicants who were under the age of 60 as of 1967, 10.7% had died by 1973, only 41.7% had worked some time during the previous year, and 44.0% of those with some earnings had earned incomes below \$3600.

²⁹ See the preceding footnote for a description of how the 2.4% was calculated.

In some ways, Treitel's data are better than the surveys used for Table 2. His samples are much larger (75,633 cases). Since they come from administrative records there is no need to worry about self-reporting biases. Moreover, he could follow his cohort for a full five years. The impression we draw from his tabulations is, if anything, stronger than what can be derived from my own. Fewer men are working, they earn less, and both of these effects appear to be permanent. These differences can be largely accounted for by the fact that by using retrospective information, I eliminate those who were the worst off - those who had died by the survey year. Of those still alive and of working age in Treitel's sample, 46.8% worked some time during 1972. This number is in line with the numbers I arrived at for the proportion of rejected applicants who worked some time during the year prior to the survey (45% in 1972, 40.4% in 1978).

Relying either on the disability surveys or on Treitel's tabulations, the conclusion is that less than 50% of the rejected DI applicants work. As long as the Social Security Administration screening procedures are even partially effective, this finding should be viewed as a conservative upper bound on the proportion of DI beneficiaries who would work were they not receiving DI. While there has been much concern over the ambiguity and arbitrariness of the Social Security Administration's medical screenings, no one has seriously suggested that it is completely ineffective. The tabulations reported in Table 2 show that beneficiaries are more likely to report themselves severely disabled and are more likely to claim that they suffer from any of a variety of specific conditions than are the rejected applicants. The Nagi results reported in Table 4 show DI beneficiaries twice as likely to be incapable of regular work as are their rejected counterparts. The hardest evidence on the effectiveness of DI screening comes from mortality data. For example, Treitel (1976) reports that even adjusting for age, applicants accepted onto DI were more than twice as likely to die within five years after their initial determinations as those rejected.³⁰ Viewed together, these pieces of evidence certainly seem to suggest that DI beneficiaries are in substantially worse health than are the rejected applicants.

The employment rate of rejected applicants as an upper bound on the potential employment rate of beneficiaries has implications for how much of the drop in participation rates DI can explain. Some illustrative calculations will clarify this point. In 1980, 4.2% of the total male population between the ages of 45 and 54 was on DI. According to the 1978 survey, 50% of the rejected applicants in that age range were in the labor force. Thus we calculate that in 1978 DI was removing less than 50% of 4.2%, or 2.1% of the men this age from the labor force. This 2.1% is 40% of the 5.3 percentage point drop in participation that this age group experienced. For 55 to 64 year olds we find a similar pattern. The 1978 survey shows that 34% of rejected applicants in this age range were in the labor force, while 11.3% of this age group were on DI. If 34% of this

³⁰ Overall, 39.7% of the allowances as against 13.8% of the denials had died by 1973. For applicants under the age of 50, the comparison was 27.2% vs. 8%, for those 50 to 59 it was 42.4% vs. 14.6%, and for those 60 to 64 it was 46.7% vs. 24.6%.

11.3% were to work, they would add 3.8 percentage points to the labor force participation rate. This 3.8% is roughly 25% of the 15.8 percentage point drop that actually occurred.

The data on rejected applicants suggest that most DI applicants do, in fact, suffer impairments that limit their ability to work. While my evidence does suggest that a portion of DI applicants are quite capable of gainful employment and return to jobs where they earn as much as they did prior to their application, the vast majority either do not work or have earnings well below their pre-disability levels. Under the conservative assumption that DI beneficiaries, in the absence of DI, would work no more than rejected applicants do, DI cannot be responsible for most of the decline in the labor force participation rates of older working-age men.

2. Some Objections

So far I have been maintaining that what accounts for the low earnings and labor force attachment of rejected applicants is health limitations on their ability to work. Along with this interpretation it is quite natural to presume that the rejected applicants do better in the labor market than would beneficiaries, were the latter not receiving DI benefits.

There are, however, two alternative explanations for the weak labor force attachment of rejected DI applicants. One possibility is that the behavior of rejected applicants does not reflect what it would have been were they never to have applied for DI benefits. Another is that rejected applicants differ from beneficiaries in characteristics unrelated to health, and that it is these characteristics that lead to the low labor force attachment of this group. Either of these two possibilities poses a potential problem for my maintained hypothesis that rejected applicants are a conservative control group for beneficiaries. The next two subsections discuss each of these possibilities in turn.

A. The Effect of the Application Decision on Employment.

There are a variety of reasons to think that the behavior of rejected DI applicants may not be comparable to what it would have been had they not applied for DI benefits. One reason might be that some rejected applicants still hope to qualify. Some do appeal their initial decisions while others simply re-apply. While this rationale might explain why some rejected applicants do not return to work, it is harder to see how it could explain the low earnings of those who do. Furthermore, if this were a major part of what was going on, we would expect that over time, rejected applicants would return to work. However, there is no evidence of this effect in either my own or Treitel's data. Treitel actually has the data to do separate tabulations for men that neither appealed nor found their way onto DI by re-applying. The proportion among this group who work is only slightly higher than it is for rejected applicants as a whole (40.9% of those that had not appealed their decisions and 44.9% of those who had neither appealed their decisions nor successfully reapplied worked some time during 1972. These figures compare to the overall figure of 36.2%).

Alternatively, we might imagine that the very act of applying could affect an applicant's willingness or ability to work. This could occur for a variety of reasons. The time that applicants must spend waiting for a determination could cost them both general and specific human capital. Employers may be unwilling to hire men - especially older ones - in ill health and with some indication of a weak attachment to the labor force.

Although each of the effects mentioned in the last paragraph is probably real, it is hard to imagine that they, rather than ill health, provide the major explanation for the low earnings and labor force attachment of rejected applicants. Though it is true that older workers who lose their jobs typically have a more difficult time finding new jobs than do younger workers, available evidence suggests that few of those men under the age of 60 who lose their jobs leave the labor force.³¹ Nevertheless, employment rates are low even among the younger rejected applicants.

In addition, it is possible to gauge the importance of the processing delay for limiting applicants' job prospects by looking at the time that application for DI actually involves. The Social Security Administration keeps records of the dates that individuals apply for benefits and when they become entitled to them (5 months after the date on which the applicant became disabled, as determined by the Social Security Administration). This information clearly indicates that most individuals apply for benefits some months after becoming disabled,³² when they are already out of work. It then takes about two months for the initial determination to be made.³³ It seems doubtful that by delaying their search for work by a few months, applicants significantly reduce their employment prospects.

B. Alternative Factors Influencing Reemployment Prospects of Rejected Applicants.

There are a large number of reasons why older working-age men might leave the labor force. Some presumably do leave for poor health, but others may simply be tired of working or face poor labor market prospects. (For convenience, I will refer to this second 'group' as poorly motivated.) Such men might find DI an attractive alternative and apply for benefits. Applicants for DI would therefore include those who are poorly motivated as well as those in poor health.

This situation does not, in and of itself, invalidate my conclusion that rejected applicants are at least as likely to return to work as beneficiaries would be in the absence of DI. The variety of

³¹ For example, Diamond and Hausman (1984), using the NLS data, find that only 2.0% of men 50 to 54 and 10.5% of men 55 to 59 leave the labor force after having been involuntarily terminated from their jobs. Parnes, Gagen and King (1981) find that for men 55 to 70 in 1976 the proportion of those in the labor force was no lower among those who had involuntarily lost their jobs in the previous 10 years than it was among men who had not.

³² Leiby (1979) reports that, between 1968 and 1978 the average filing delay was 7.71 months, with little year-to-year variation.

³³ For the past few years the average length of time between the application for DI and the initial determination has ranged from 60 to 70 days (Social Security Administration, 1985). Appeals involve much more time, but less than 30% of applicants initially denied benefits appeal.

factors affecting the behavior of rejected applicants could also be expected to influence beneficiaries (were they not receiving benefits). A problem could arise in a situation where the Social Security examiners accepted the disabled but rejected the poorly motivated. In this situation, beneficiaries would tend to be in poor health but well motivated, and rejected applicants would tend to be in good health but poorly motivated. If, in addition, the poorly motivated were less likely to work than those in poor health, then we would conclude that the labor force attachment of rejected applicants understates the labor force potential of beneficiaries.

There is little reason to believe that among the eligible population, the Social Security examiners take explicit account of anything other than health and work capacity.³⁴ Still, if health and motivation are negatively correlated amongst the applicant population, selection based on poor health would also imply selection in favor of the highly motivated. While health and motivation are probably not negatively correlated in the overall population, the self-selection of applicants could generate this kind of correlation in the applicant pool.

To see this more concretely, imagine that there are two kinds of men who apply for DI benefits: those who are in poor health (the disabled) and those that are poorly motivated (the lazy). In this situation, knowing that an applicant is not in poor health implies that he must be lazy (and vice versa). There would, therefore, be a negative correlation between these two factors within the applicant population. Now imagine that the medical screening is effective, thus permitting the disabled to pass the medical screening to get onto DI while the lazy do not. Effective screening implies that the rejected applicants are lazy but not disabled, while the beneficiaries are disabled but not lazy. Regardless of whether there are actually two distinct populations, as long as both health and other factors such as motivation affect a man's decision to apply for DI benefits, knowing that an applicant is in relatively good health raises the odds that he is poorly motivated. The correlation between health and motivation will tend to be less positive or more negative amongst the applicant pool than it is among the overall population.

To get some notion of the merits of the above scenario, we can use the 1972 and 1978 surveys to identify non-health differences between the rejected applicants and beneficiaries. Table 2 has already confirmed that, while applicants tend to have less education and are less likely to be white than non-applicants, the differences between rejected applicants and beneficiaries on these scores are small.

The Social Security earnings history allows us to compare the pre-disability earnings and employment experience of rejected applicants and beneficiaries. The typical DI beneficiary had earned substantially less than had other men his age even before applying for benefits (37% lower in 1972 and 24% lower in 1978). The difference between beneficiaries and rejected applicants was,

³⁴ Social Security examiners follow detailed rules and regulations that are written to emphasize "medically determinable (emphasis added) physical and mental impairment[s]".

however, quite small in comparison (40% vs 37% and 33% vs. 24%).³⁵ To compare the pre-disability work attachment of the two groups, I used the information from the Social Security earnings record to calculate the number of quarters of Social Security-covered employment applicants had experienced in the 10 years prior to their application. In 1972 the median number of quarters worked in covered employment for beneficiaries was 36.5 as against 32.4 for rejected applicants. In 1978 the difference was again about one year (38.8 vs. 35.7). Both the earnings and the quarters of coverage data do show differences between rejected applicants and beneficiaries, with the beneficiaries showing both somewhat higher pre-application earnings and somewhat more of an attachment to the work force than did rejected applicants. However, these differences are not dramatic.

We do see some indication in these tabulations that rejected applicants differ from beneficiaries in ways unrelated to health, but it seems unlikely, at least to me, that these relatively small differences can swamp the rather large differences in health between the two groups. Perhaps the most convincing evidence here is Nagi's: his teams found that 80.8% of allowances as against 49.9% of the denials were incapable of gainful work (see table 3).

3. Other Research

The data on rejected applicants suggest that DI has had much smaller disincentive effects than a variety of cross-sectional studies have seemed to suggest. In this section I consider possible explanations for these discrepancies. Parsons' 1980a article is the best known but not the only example of this work. Using data on men who were between the ages of 48 and 62, Parsons estimates a labor force participation equation with a measure of the DI replacement rate as one of his explanatory variables. His coefficient estimates imply an elasticity of non-participation with respect to benefit levels of .63, and imply that DI has induced more than 5% of men this age to withdraw from the labor force.

As mentioned in the introduction, an important limitation of this approach is that the replacement ratio is a decreasing function of past earnings. We cannot tell from Parsons' work whether it is those with low earnings or high replacement ratios who are leaving the labor force. This distinction is fundamental, since most theories of why some work while others do not would predict that those with low earnings would be the ones less likely to work. Moreover, individual wages and earnings are themselves in part functions of previous work history, and the replacement ratio will pick up some of this heterogeneity. These problems are not specific to Parsons' work but are endemic to the use of cross-sectional data. Still, they should lead us to suspect that his coefficients overestimate the true impact of DI itself.

³⁵ For both rejected applicants and beneficiaries, after adjusting for inflation using average hourly earnings of production workers, I computed median earnings two years prior to their application. These medians were then compared to those of men 50-54 in 1970 (for the 1972 survey) and 1975 (for the 1978 survey).

Some illustrative calculations will give an indication of the potential magnitude of this problem. Using the 1972 survey, I follow Parsons as closely as possible. I restrict my attention to men who worked for at least one quarter in covered employment during 1966 and who were between the ages of 48 and 62 in 1972. For this sample I compute both average earnings (through 1966) and potential disability benefits (the, so called PIA), using the schedule applicable as of 1966.³⁶ I then estimate non-employment probabilities as a function of the log of the replacement ratio, age and different health indicators.³⁷

Results are reported in Table 5. The first three columns come close to replicating Parsons' results. Depending on what measure of health I use, I estimate elasticities of non-participation with respect to the replacement ratio ranging between .24 and .72. These estimates are remarkably close to Parsons' .63. In the 4th through 6th columns I restrict my sample to those who have never applied for DI benefits. The estimated coefficients move little, with two out of three of the estimated elasticities rising somewhat.³⁸ For this population of non-applicants I have estimated effects very close to those Parsons does despite the fact that in this case there can be no possible causal connection between high benefit levels and labor force withdrawal. While these estimates do not prove that DI had little impact on participation rates, they do seem to suggest that estimates using this kind of specification should not be interpreted causally.

Studies that focus on either applications or program participation, rather than on labor force participation, typically obtain results that imply much smaller disincentive effects than those of Parsons. Leonard (1979), using some of the same data that I do, estimates that for 45 to 54 year-old men a 10% increase in benefits will induce a 3.5% increase in the number of DI beneficiaries. While an elasticity of DI participation with respect to benefit levels of .35 looks quite close to the .63 elasticity that Parsons reports, what this means in terms of labor force participation depends on how an impact on program participation translates into an impact on labor force participation. If it is assumed that each of the beneficiaries attracted by the higher benefits would have been working were they not receiving DI benefits, then each new beneficiary means one less labor force participant. But to convert this one-for-one change in the number of labor force participants into an elasticity, it is necessary to take into account the fact that there are more than twice as many older men out of the labor force as there are men the same age on DI. Even assuming that all

³⁶ To calculate average earnings I used the same one that the Social Security Administration would in calculating the average monthly earnings (the AME) for the purpose of benefit determinations. Programs to calculate both the AME and the PIA were kindly provided by Daniel Feenberg. The code was originally based on the summary of the law that appears each year in the Statistical Supplement to the *Social Security Bulletin*.

³⁷ I also eliminate individuals whose average monthly earnings were below \$20. This restriction on outliers had no qualitative impact on my results.

³⁸ In specifications not reported I allowed the log of the social security benefits and average earnings to have separate coefficients. Doing so had a negligible effects on log-likelihood statistics changing them by at most .5. Individual coefficients were always of the 'correct' sign but were often insignificant (It seems clear that Parsons faced the same problem. See footnote 10 Parsons (1980a).).

of those who were attracted to DI by higher benefits would have otherwise been working, the .35 elasticity of program participation with respect to benefit levels implies something less than a .16 elasticity of labor force non-participation with respect to benefit levels.³⁹ Leonard's results thus seem to imply non-participation elasticities of at most one quarter of those of Parsons.⁴⁰

Studies using aggregate time series statistics on applicants (Lando et. al. 1979, Halpern 1979) have estimated that a 10% increase in DI benefits will raise applications by roughly 5%. Assuming that the new applicants are no less likely to pass the medical screening than were those already on the program, this 5% increase in applications should translate into a 5% increase in the number of beneficiaries but a less than 2.5% increase in the number of older men out of the labor force. If, as seems likely, the new applicants would be less likely than the earlier ones to pass the medical screening, this 2.5 should be decreased correspondingly. Either this 2.5 or Leonard's 1.6 is substantially below Parsons' 6.3.

To summarize, no one has disputed the claim that there are disincentives and social costs associated with DI. The questions are about magnitudes. Data on rejected applicants give estimates of magnitudes in line with much other research in this area. The real contrast is with the cross-sectional econometric estimates, but there are independent reasons to believe that these overestimate true effects.⁴¹

4. The Historical Record

So far I have argued that data on rejected disability insurance applicants suggest that no more than half of DI beneficiaries would work were it not for DI, and, thus, that DI can account for no more than 50% of the postwar drop in the participation rates of older men. Yet if these claims are valid, how is it possible to account for the trends in labor force participation and program growth? What would the counterparts of those men currently on DI have been doing before DI existed? If DI cannot account for the drop in participation, what does? What accounts for the dramatic growth in DI that occurred during the 1960's and 1970's? Without plausible answers to these questions the foregoing analysis may appear unconvincing. In this section I will address these broader issues.

If those currently receiving disability benefits are truly incapable of gainful employment we should expect to find during the 1950's and 1960's--before the major growth of DI--a sizable pro-

³⁹ In 1972 there were 2.23 45 to 54-year-old men out of the labor force for every one on the DI rolls: $.35/2.23 = .16$.

⁴⁰ Leonard translates program participation into labor force participation differently than I have. Using annual time series data, he runs a regression of labor force non-participation rates on DI participation rates, finds a coefficient of above 1 and concludes that DI has induced a more than 1 for 1 decrease in participation. Leonard himself does not seem to put much stock in these time series results.

⁴¹ My purpose in this section has not been to give an extensive review of the literature, but rather to put my tabulations on rejected applicants within the context of the existing literature. For a much more extensive review of the literature, see Leonard (1986).

portion of men reporting themselves disabled and either out of work or not in regular employment. On the other hand, if many of those currently receiving disability benefits are perfectly capable of work, we would expect to find many of their counterparts working in the period before DI existed. In this case we would expect to find many fewer men reporting themselves disabled and out of work in the period before the expansion of DI. Two surveys of the disabled during the early postwar years suggest the truth is closer to the former than the latter pattern.

In September 1949 two relevant questions were included in the Current Population Survey:

First of all, I would like to check persons (in this household) who aren't able to do their regular work or other duties today because of illness or disability.

Is there anyone else (in the household) under 65 years old with a physical or mental condition that allows him to work only occasionally or not at all?

For each person identified as disabled, the enumerator asked the duration of the disability. 3.7% of men 45 to 54 years old and 8.0% of men 55 to 64 years old had been disabled for at least 6 months. Were their counterparts on DI 30 years later, they would have accounted for roughly 75% of the older men receiving benefits. Not all in this group were out of work (78.4% were), nor would all of them have qualified on technical grounds. (Over 96% of these men had been working at the time that they became disabled, so it can be presumed that many would have had a sufficient work history to qualify for DI.)⁴² Depending on exactly what assumptions are made about the portion of the 1949 disabled who would have counterparts currently on DI, it is probably advisable to adjust the 75% downward somewhat. Still, what these numbers show is that before DI existed there was a stock of older men who were both disabled and out of work. Their counterparts should constitute a substantial portion of those currently receiving DI benefits.

In 1966 the Social Security Administration surveyed the disabled.⁴³ By that year DI had grown to about one-half of its maximum size with 2.0% of 45 to 54 year old men and 5.8% of 55 to 64 year old men receiving benefits (in 1979 4.3% of 45 to 54 year old men and 11.5% of 55 to 64 year old men received benefits). According to the survey 36.4% of 45 to 54 year old and 55.1% of the 55 to 64 year old severely disabled men were receiving some kind of Social Security Benefits.⁴⁴ Another 46.3% of the severely disabled 45 to 54 year olds and 32.7% of the severely disabled 55 to 64 year olds had

⁴² The above tabulations are from Moore and Sanders (1950).

⁴³ The 1966 survey was conducted using a two-stage procedure. A mail survey was used to screen for the disabled, and then, for those identified as disabled, an in depth personal interview was conducted. The sample for the mail survey included population frames from the Current Population Survey (CPS), the DI rolls, the welfare rolls, and the population denied DI benefits. For a detailed description, see Haber (1967). I am grateful to Harold Luft for having provided me with copies of the 1966 survey and to Mordechai Lando for having provided me with the survey instrument.

⁴⁴ The 1966 survey does not allow me to distinguish between Social Security retirement and disability benefits. All of those benefits going to men under the age of 62 will be disability benefits as will a large portion of the benefits going to men between the ages of 62 and 64.

never applied for Social Security benefits.⁴⁵ Again, not all of these men were out of work, but the majority were (93.6% of the 45 to 64 year old severely disabled nonapplicants were out of work as of the survey week, 60% did not work at all during the year preceding the survey). Furthermore, of those that did work the vast majority either worked part-time (56% reported usually working less than 35 hours per week) and/or part of the year (76% reported working less than 50 weeks during 1965). Not all of these men would have qualified for DI benefits but many could have – 42% of the non-applicants and 82% of those denied benefits had a sufficient earnings history to qualify for benefits.⁴⁶ It seems clear that as of 1966 there was a rather large population of potential DI beneficiaries – men who were eligible for benefits who were not regularly employed and who were not yet receiving benefits.

What were these men living on? Unfortunately, the 1949 November CPS contained no information on sources of income. We do know that as of 1950 more than half a million working-aged individuals were receiving general assistance.⁴⁷ Another half million were receiving welfare benefits specifically targeted at the disabled such as Aid to the Permanently and Totally Disabled.⁴⁸ Beyond this there were probably two hundred thousand severely disabled individuals receiving Veterans benefits.⁴⁹ These numbers would seem to imply that many of the 1.3 million men identified in the CPS as severely disabled were probably receiving some kind of public income support.⁵⁰

The Social Security's 1966 survey of the disabled does include information on income sources. According to this survey, 65.4% of the severely disabled 45 to 64 year old men not receiving Social Security benefits were still receiving some kind of public income maintenance.⁵¹ Furthermore, of

⁴⁵ Unless otherwise stated the source for these tabulations will be the author's computations using the 1966 survey. Frequencies are based on weighted counts.

⁴⁶ The version of the 1966 survey in my possession does not have the information to determine eligibility. The numbers in the text come from Frolich (1970).

⁴⁷ Table 221 in the 1986 *The Social Security Bulletin; Annual Statistical Supplement* shows .523 million general assistance cases as of 1950. General assistance, a state run program, is not specifically targeted at the disabled, but we can assume that many who were on the rolls were in fact there because of being disabled. As of this date, roughly 40% of those going onto general assistance reported the proximate cause as being disability (Social Security Bulletin, 1950). This probably understates the proportion of those on general assistance who were disabled, both because the disabled would be less likely to leave the program and because some of those who were disabled wouldn't have identified this as the reason they were going onto general assistance.

⁴⁸ In this category I include recipients of public employee disability benefits together with those receiving Aid to the Blind or Aid to the Permanently and Totally Disabled. Numbers are from Tables 210 and 165 in the 1986 *The Social Security Bulletin; Annual Statistical Supplement*.

⁴⁹ As of 1950 there were over 2 million men receiving Veterans Disability Benefits, but probably not much more than 10% were, in fact, severely disabled. The numbers are based on those reported in Table 175 of the 1986 *The Social Security Bulletin; Annual Statistical Supplement*.

⁵⁰ The above figures are derived from the 1986 *The Social Security Bulletin; Annual Statistical Supplement*.

⁵¹ Since income sources are for 1965, I have, for these tabulations, restricted my attention to those men for whom the onset of their health limitation was prior to 1965. I have included as public income maintenance Aid to the Permanently and Totally Disabled (24%), AFDC (6%), other welfare (2%), Veterans disability benefits (15%), public employee disability benefits (6%), unemployment insurance benefits (6%) and workers compensation (2%).

the 61% who were married (spouse present) almost half had wives that worked. Finally, although few of these men worked full-year or full-time, a fairly large number did work at least part-time.

As an indication of the relative importance of these different sources of income, for married men, the men themselves contributed on the average about 17% of the family's incomes, their wives contributed about 29% and 41% came from public income maintenance. Median yearly family income for this group amounted to \$2735. (The Current Population Survey shows the median family income for comparably aged married men that year was \$8044.)⁵² For unmarried men the men themselves contributed 21% of the total, while public income maintenance contributed 71%. Median family income for this group was \$1212. (Median income for 45 to 64 year old single men in 1965 was \$5200.)

The simple historical trends presented in the introduction to this paper appeared to suggest that DI was drawing from a population which would otherwise have been gainfully employed. A closer look at the historical record suggests that DI was, to a large extent, drawing from a population already out of work. What DI did was to substitute a federal earnings related program for the more meager state run programs that already existed.⁵³

The historical record is quite consistent with the previously presented information on rejected DI applicants, which found that less than 50% of DI beneficiaries would work were they not receiving benefits. This analysis indicates that, before DI existed or before it had grown to its present size, there was a sizable population of men both disabled and out of work. In 1949, for example, 5.6% of all males 45 to 64 years of age reported themselves disabled. Assuming that two thirds of the counterparts of the 5.6% would be on DI 30 years later, this population could therefore account for 50% of the current DI population.⁵⁴ Similarly, in 1966 there seemed to be a population of men identified as severely disabled, but who had not applied for DI benefits. This population was of comparable size to the one already receiving benefits. Thus it seems likely that much of the growth of DI that occurred between 1966 and 1979 came from this population.⁵⁵

⁵² This number is based on the author's tabulations using the March 1966 Current Population Survey Tape.

⁵³ The federal role varies across programs. DI operates under a uniform set of rules and regulations set out by Congress and the Social Security Administration, though these are administered by each state. Benefits and administrative costs are borne solely by the federal government. With Aid to the Permanently and Totally Disabled, states designed their own programs subject to federal guidelines both in terms of what constituted disability and in terms of benefit schedules. Costs were shared approximately equally between the federal government and the states. With general assistance, the states set their own guidelines and bear the full costs. With SSI, the federal government determines eligibility standards and minimum benefit amounts, while states are allowed to supplement these amounts. (See the *Social Security Handbook*, 1982)

⁵⁴ By 1979, the year that DI reached its peak size, 7.5% of 45 to 64 year old men were receiving DI benefits. While not all severely disabled men were receiving DI benefits in 1979, more than two-thirds were. 10.8% of this age group were identified by the National Health Interview Survey as severely disabled (see Wilson and Drury (1981)). We have seen that virtually all those on DI report themselves severely disabled. Thus we calculate that in 1979 $7.5\% / 10.8\% = 70\%$ of the older severely disabled men were receiving Disability Benefits.

⁵⁵ The reader may assume that with the improvement in medical technology the health status of the population should have improved, but this is not necessarily so. For one thing, to the extent that medical advances have

What can account for DI's rapid growth during the 1960's and 1970's? There are four factors to which I think this growth can plausibly be attributed. First, evidence suggests that, partly through the government's efforts, knowledge of the program was spreading.⁵⁶ Second, *dejure* and probably *defacto* eligibility standards were being relaxed over this period of time. Third, the relative attractiveness of benefits rose substantially over this period of time. Fourth, norms as to what constitutes a health problem may have been changing.⁵⁷ While the third and fourth of these effects would certainly suggest that DI drew from the working population, the first two are compatible with the view that DI drew from a population already out of work.

If DI can explain only a part of the postwar drop in participation rates, what explains the rest? Answering this question is beyond the scope of this paper. Nonetheless it is worth noting that labor force participation rates have been falling throughout the century. During the first half of the century these trends were concentrated among men over the age of 65, while in more recent years they have been concentrated among men in their fifties and early sixties.

Conclusion

Data on rejected DI applicants seem to provide clear, direct evidence that DI beneficiaries are on the whole disabled, and that many of them would not be working even if they were not on DI. We saw that there were other interpretations of the weak labor force attachment of rejected applicants, but also saw that the available evidence seems to support an interpretation that emphasizes health. There were two remaining puzzles: how to explain what seemed to be a preponderance of evidence suggesting substantial disincentive effects, and how to explain the historical trends. In section 3 I argued that the evidence pointing to large disincentive effects either had been misinterpreted or is flawed. Cross-sectional work focusing on participation has produced the large estimates, but here we have ample reason to believe that these effects exaggerate the true causal effects. Research that has focused on the program has produced estimates of substantially smaller disincentive effects,

meant lower age-specific mortality rates, we would expect to find that the surviving population would tend to be more frail. This effect could be non-trivial. Life tables show that 3.9% of men 60 years old in 1980 would not have been alive in 1970 while 5.4% would not have been alive in 1950 (see Poterba and Summers, (1986)). Similarly, to the extent that medical advances have led to a de-institutionalization we would expect this to increase the proportion of the disabled in the noninstitutionalized population, the basis for the labor force statistics. I suspect this effect is quite small. Psychiatric drugs have probably had the largest such impact. According to the census, 1.58% of 55-59 year old men were institutionalized in 1960, 1.13% in 1970 and .83% in 1980. Thus, the de-institutionalization of the mentally ill can account for, at most, a one percentage point decrease in labor force participation rates. On the other hand, we would also expect that changes in medical technology would have led both to decreases in the incidence of certain diseases and to increases in the functional capacity of those in poor health. Furthermore, we would expect that changes in the work place would have lowered the physical demandingness of jobs. Which of these various effects dominates is probably impossible to determine. (see Wilson and Drury (1981)).

⁵⁶ In 1962-1963, 17% of working heads of households reported that they knew that cash benefits were available for disabled workers (Katona, (1965)). In 1978, 66% of the comparable population reported knowing the same thing.

⁵⁷ It is this last view that seems to dominate the non-economic literature (see, for example, Verbrugge (1984)). An economist might very well want to interpret these changing standards as income or wealth effects.

effects whose magnitudes are very much in line with those suggested by the evidence presented in this paper. In section 4 I turned my attention to the historical record. Closer examination of available postwar data suggested that DI has pulled a substantial number of its beneficiaries from a population that would have been out of work regardless of the availability of DI.

Data on rejected DI applicants together with available historical information present a consistent picture. It is a picture that suggests that most of those on DI suffer from substantial health limitations on their ability to work, and that less than half would be working even in the absence of DI. Though there are reasons to question the interpretations of this information that I have favored, it does seem to provide direct evidence on the potential disincentive effects of DI, and should cast doubt on the large estimated effects drawn from cross-sectional studies.

Though I have been arguing that, by and large, DI is successfully targeting its intended beneficiaries, this is a far cry from saying that the program is beyond improvement. None of the above evidence can answer questions about what, on the margin, would be the precise impact of changing benefit levels or screening stringency on the composition of either the applicant or beneficiary pools. Answering such policy-relevant questions clearly requires a kind of data we simply do not have. In fact, it is hard to imagine that we could possibly get credible answers to these particular questions in the absence of actual social experiments.⁵⁸

One might want to read a methodological point into this paper. To study behavioral responses to social programs (e.g., disability insurance, unemployment insurance, workers' compensation), researchers have often used replacement rates, potential benefits or other program parameters as explanatory variables, even when these variables could not plausibly be taken to be exogenous.⁵⁹ This paper should underline the potential dangers in such exercises. The results of such exercises simply cannot be informative about any causal relationship between program design and behavioral response.⁶⁰

More generally, I believe we have been seduced by our training in regression techniques to believe that, with the arbitrary addition of a few extra controls or a dubious instrument, we can turn non-experimental into experimental data. At the same time we learn of the potential biases involved in econometric estimation, we also learn of techniques sometimes available for undoing these biases. What we seem not to learn is that not every disease has a cure, nor will every cure improve our patient's health. Too often we take potential problems seriously only when our

⁵⁸ In fact 1980 legislation authorized the Social Security Administration to "develop and carry out experiments and demonstration projects...including such methods as a reduction in benefits based on earnings, designed to encourage the return to work of disabled beneficiaries." Despite planning by the Social Security Administration, a combination of administrative hurdles and budgetary pressures has prevented any such demonstration projects from being carried out.

⁵⁹ For example, the program variables typically are functions of the past behavior of the potential beneficiaries.

⁶⁰ I am, quite obviously, not the first to make this point. See, for example, Welch (1977) and Ashenfelter (1983).

estimates contradict our priors. The absurdity is that we then take the results of such a strategy as “strong support” in favor of “the [i.e., our] theory”.

To repeat Edward Leamer’s (1983) message, perhaps we should think of ourselves as Sherlock Holmeses piecing together bits of evidence to develop our story rather than as experimental scientists measuring an effect. Since no data, in the end, can ever be informative about the magnitude of the specification error involved in our estimates, we should put an emphasis on natural or quasi experiments in which we can be fairly confident that what generates the variation in our explanatory variables is exogenous to the process we are studying. We should also look beyond our noses, beyond the data we begin analyzing, for bits and pieces of evidence that either support or contradict the story we are telling. The point is not completely to disclaim econometric methodology, but rather to make the obvious (if often forgotten) point that, without either a natural or actual experiment generating exogenous variation in our explanatory variables, there is little that econometric techniques can do to generate credible results.

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Appendix 1: The Social Security Disability Insurance Program

The Social Security Disability Insurance Program provides early retirement benefits for working-aged men and women who are found to be incapable of gainful employment. To be eligible an individual must have worked in 'covered' employment for 5 of the 10 years preceding the onset of his or her disability.¹ The major groups excluded by this provision are government workers who have their own programs and individuals who have always shown a weak attachment to the labor force. Until 1974 this latter group had to rely on state-run and financed general assistance or on Aid to the Permanently and Totally Disabled. Since 1974 they have been eligible for SSI.²

Social Security Disability and Retirement benefits are calculated in the same way. Monthly benefits rise as a function of past earnings, but less than proportionately. Since the mid 1970's the typical worker in his or her 50's could expect to have about 60% of after tax earnings replaced. In contrast, a worker earning the maximum taxable amount could expect to have about 40% of those earnings replaced, while a worker earning close to the minimum wage would get something over 70% of his or her earnings replaced. Dependents of beneficiaries also receive benefits usually amounting to 50% of those of the primary beneficiary. These dependents' benefits can easily push the effective after-tax replacement ratio up to 100%.³

Since 1972 DI beneficiaries who have been on the rolls for two years become eligible for medicare. DI beneficiaries often also qualify for other transfer income, including Veterans Benefits, Workers' Compensation and Government Disability. In some cases (e.g. Workers Compensation or Government Disability benefits), there are offsets built in so that if total transfer income exceeds 80% of a beneficiary's pre-disability earnings SSDI benefits are reduced accordingly; in other cases (e.g. for Veterans' Benefits) there are no such provisions.⁴ As an indication of the extent of these overlaps, the 1978 Survey of Disability and Work shows more than 50% of DI beneficiaries receiving some other kind of transfer income, with the average amount for those receiving some almost matching average DI benefits.

The statutory definition of disability requires that the worker must be unable "to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment...of such severity that he is not only unable to do his previous work but cannot, considering his age, education and work experience, engage in *any* (emphasis added) substantial gainful work."⁵

¹ Exceptions are made for those who become disabled before turning 30.

² SSI replaced state-run APTD programs with a national program. The effect was to make the program both more available and more generous.

³ These figures come from A. Haeworth Robertson (1975)

⁴ A more complete description of the interrelations between various programs can be found in either Vroman (1983) or Burkhauser and Havenian (1982).

⁵ The exact wording is "...any substantial gainful work which exists in the national economy, regardless of whether such work exists in the national economy." This wording was added by Congress in 1967 to clearly distinguish

The determination of whether an applicant meets the medical requirements for disability involves a sequential process. The local Social Security office accepts the application, verifies that the applicant isn't currently engaged in gainful activity and then forwards the relevant medical information to the State Disability Determination Service (DDS). There the applicant's record is evaluated by a two-person team, at least one of whom is a doctor, and the initial determination is made. Historically somewhat over 50% of applicants have been denied benefits at this level.⁶ Applicants who are rejected can appeal their cases first to an Administrative Law Judge (ALJ) and then through the District Court system, but by far the majority of determinations are made at the initial level.⁷

Once on DI, a worker will be followed to make sure that he or she continues to qualify for benefits. The individual's Social Security earnings file is monitored to make sure the individual doesn't go back to work.⁸ Furthermore, all beneficiaries who have not been specifically deemed permanently incapable of work have their cases reviewed every three years.⁹ If an individual's medical condition improves, or if there are medical advances that are capable of ameliorating the conditions in question, he or she will lose benefits. In order to encourage beneficiaries to return to work, those who do so voluntarily are considered to be engaged in trial work. They continue to receive benefits for one year and continue to maintain the right to reinstatement for one more. Medicare coverage continues for three. As of the late 1970's roughly 15% of those receiving DI benefits left the rolls each year. Of these, 15% were terminated because it was determined that they no longer met the medical listings, another 50% reached retirement, age and 35% died while on the rolls.¹⁰

While the basic structure of the way that DI operates has remained the same since it was originally enacted into law in 1956, there have been important increases in both the availability and generosity of benefits since that time. In 1960 individuals under the age of 50 first became eligible for benefits while in 1965 the definition of disability was liberalized to allow those without permanent disabilities to qualify. At the same time benefits rose more rapidly than wages.¹¹

During the 1960's and early 1970's, the number of workers being awarded DI benefits rose rapidly. In 1960, 208,000 workers were awarded benefits. By 1975 this figure had risen to 592,000.

DI from unemployment insurance.

⁶ Since the late 1970's there has been a downward trend in the proportion of DI applicants passing the initial screening. In recent years roughly 70% of applicants were initially denied benefits.

⁷ In 1981 64.7% of all allowances were made at the initial level (Lando et. al., 1982).

⁸ More precisely, individuals are allowed to work as long as they do not earn more than a stipulated amount (currently \$300 per month).

⁹ These reviews, called "Continuing Disability Investigations" (CDI's) have been the center of much controversy lately. I will come back to them in the next section.

¹⁰ *Social Security Bulletin, Annual Statistical Supplement*, selected years.

¹¹ Between 1960 and 1980 replacement rates for average earners rose more than 50% from .33 to .51 (U.S. Congress House Committee on Ways and Means, 1985), while beneficiaries became eligible for Medicare benefits.

At the same time, largely due to administrative overloads,¹² the proportion of DI beneficiaries being reviewed dropped with the consequence that the proportion leaving the rolls each year through recovery also dropped by more than 50% from 3.2% in 1967 to 1.5% in 1976.¹³ With a rising number of awards and a declining termination rate, DI expanded rapidly through the 1960's and early 1970's. In 1960 roughly half a million workers were receiving DI benefits. 15 years later over 2 million were. The program was doubling every seven years. As a result of both the growth in the number of beneficiaries and in the average payment per beneficiary the DI trust fund was nearing bankruptcy by the mid 1970's. Actuarial projections put it in deficit as of 1978.

With the rapidly expanding roles, there was an increased concern that the social security administration was losing control over the system and that many of those getting on DI might not, in fact, be disabled according to the legal definition of the term. This concern was magnified by a number of phenomena turned up by congressional committees. Wide discrepancies were discovered between the proportion of claimants denied benefits both across states and across ALJ's. There was an almost twofold difference between the most liberal and the most stringent states in terms of the proportion denied benefits.¹⁴ Discrepancies across ALJ's was even more dramatic, with some judges almost never reversing the initial determination while others usually would.¹⁵ Finally a 1981 GAO report suggested, based on the medical reexamination of random sample 3154 DI beneficiaries, that as many as 20% of the DI beneficiaries might not be entitled to benefits.

In 1980 Congress passed legislation designed to tighten administrative control over DI. There were several major features of the law¹⁶:

1. The Social Security Administration had always reserved the right to review initial state DDS determinations before they were transmitted to the applicant, but during the 1970's were reviewing only 5% of cases. The 1980 amendments required that they review a full two-thirds of the successful applications. Moreover, to enforce some kind of administrative control over ALJ's the secretary of HHS was empowered to appeal ALJ rulings that were favorable to the applicant.

2. Prior to 1980 the law provided for disability determinations to be performed by State agencies under an agreement negotiated by the State and the Secretary of HHS. The 1980 amendments required that disability determinations be made by State agencies according to regulations of the Secretary. It also required the Secretary to issue regulations specifying performance standards to be followed in performing the disability determinations. The provision further provided that

¹² Increases in the number of workers applying for DI benefits were not matched with anything like proportional increases in the number of DDS examiners.

¹³ Actuarial Study No. 81

¹⁴ Wise, undated

¹⁵ During 1980, 34% of judges reversed the initial determinations less than 50% of the time, while another 15% reversed the initial determinations over 70% of the time (Ways and Means Committee Print 97-3, 1981).

¹⁶ See "Social Security Disability Amendments of 1980," *Social Security Bulletin*, 1981.

if the Secretary found that a state agency was failing to make disability determinations consistent with regulations that the Secretary should terminate the State's authority and take over the determinations himself.

3. Before the 1980 law the only beneficiaries targeted for CDI's were those who had conditions that were likely to improve over time. The 1980 law stipulated that all beneficiaries should be reviewed, and that all but the ones deemed to have permanent disabilities should be reviewed every 3 years. Moreover, as practice had evolved, beneficiaries would not be terminated unless there was evidence of actual improvement. The 1980 law changed this so that the standards used in the CDI's became identical with those concurrently being used while initially evaluating claimants.

Several provisions of the 1980 bill were designed to encourage the return to work of DI beneficiaries. Under the old law, a beneficiary would have his or her benefits terminated 12 months after returning to substantial gainful activity. The 1980 amendments extended the trial work period from 12 to 24 months. Medicare benefits were extended to cover the 36 months after cash benefits cease for a beneficiary who voluntarily returns to work. The law also eliminated the 24 month waiting period for eligibility for Medicare benefits for those becoming reentitled to benefits.

The 1980 amendments also authorized the waiver of benefit requirements to allow demonstration projects by the Social Security Administration to test ways in which to stimulate a return to work by DI beneficiaries. The Social Security Administration's Office of Research and Statistics designed demonstration projects involving reductions in the benefits offsets for individuals who decided to return to work and changes in medicaid eligibility requirements. Due mostly to the difficulty that the Social Security Administrations Office of Systems foresaw in the administration of these demonstration projects, they were never carried out.

The 1980 law left much discretion to the administration. The Reagan administration accelerated the mandated reviews. The number of new awards dropped 25% between 1980 and 1982, while the number of CDI's increased by over 4-fold and the number of terminations by 5-fold. In two years' time 25% of beneficiaries had their cases reviewed and over 40% of these individuals had their benefits terminated. Many of those who had their benefits terminated appealed their cases. Of those that appealed a majority won reinstatement. A growing concern that many of those being terminated were, in fact, disabled, and that due process was not being followed led courts in 20 states to order that those states take over the review process, while in 9 others moratoriums were ordered.¹⁷

Finally, in 1984 Margaret Heckler, the secretary of HHS, agreed to a moratorium on CDI's pending the enactment and implementation of legislation with revised guidelines for CDI's. The new legislation was enacted in 1984, the regulations promulgated in late 1985, and the review process

¹⁷ House of Representatives, 1984.

was started again in 1986. The 1984 legislation shifted the burden of proof onto the Social Security Administration to show that beneficiaries' health had improved sufficiently to allow them to return to work. It also called for a moratorium on the reevaluations of the most troublesome cases, those that involved mental impairments and those that involved pain, until sensible guidelines could be developed for these cases. Finally it provided that an individuals' benefits should be continued pending appeal. The effects of this new legislation have yet to be felt.¹⁸

Given the controversy over DI and the screenings used to determine an individuals' initial and continued eligibility, it makes sense to review what is known about the reliability of disability determinations. A number of much-publicized GAO reports have suggested that many of those on the DI rolls are in fact able-bodied. I will argue that a careful look at the available evidence suggests a quite different picture.

Both Congress and the Social Security Administration have been concerned about the reliability of DI screening since the program's inception and, as a result have commissioned a variety of studies of the issue. Different studies have had somewhat different focuses. A 1980 study by Sal Gallichio and Barry Bye (GB) of the Social Security's Office of Research and Statistics examined the degree of consistency in initial decisions across states. They arranged for pairs of teams across eight states (chosen to be representative) to evaluate a random sample of 504 recent claims. The probability of disagreement within state' ranged from 5.1% to 16.8% averaging 12.0%. The probability of disagreement between states ranged from 11.0% to 21.5% with an average of 15.6%.

Two studies have examined the eligibility of those already on the DI roles. A 1971 study by Robert Smith and Abraham Lillienfeld (SL) included re-evaluations by the Social Security Administration of a sample of over 1000 applicants from Baltimore. Applicants were re-assessed under the same eligibility requirements and medical standards and non-medical guides as those used in the initial determination. At the time of the reassessment, the disability examiners were instructed to evaluate each case by using current medical data, the up-to-date earnings record and the information reported by the applicant on the interview schedule as to current health and work status. The applicant's disability status from the previous determination was excluded from consideration in the reassessment. 19.5% of those whose applications were accepted were determined as ineligible on the re-assessment whereas 23.6% of those originally denied benefits were determined to be eligible.

A second study was conducted by the Social Security Administration during 1979 and 1980. The Social Security Administration selected over 3000 cases that were representative of the DI population as of April 1979, collected medical evidence, and in some cases interviewed beneficiaries about their impairments. Based on this evidence, Social Security Administration examiners determined that about 20% did not meet current eligibility standards.

¹⁸ See Katharine Collins and Anne Erffe (1985) for a discussion of the 1984 legislation

None of these studies get to the issue of the validity of DI screening nor do they give us any sense of why there might be discrepancies between initial and re-evaluations. A 1969 study by Saad Nagi is helpful on this point. In the Nagi study independent panels evaluated the work potential of a sample of DI applicants. These panels included doctors, psychologists, and occupational and vocational counselors. They were empowered to enter applicants' homes to conduct any of a variety of tests and to collect any information they felt relevant to the case. Moreover, in their deliberations they were not bound by the legal definition of disability. In short, it is hard to imagine having available any better information on a person's health or work capacity.

The teams evaluated applicants on an eight point continuum ranging from "fit for work under normal conditions" to "not fit for work." Table 3 in the text reproduces a table from the Nagi Study comparing the clinical teams eight point evaluations of work capacity with SSA allowance-denials. It is interesting to observe that even regarding those parts of the clinical teams' evaluations that would seem to be non-borderline there is a 30 to 40% margin of difference. For example, of those found by the clinical team to be fit for work only at home 30.5% had nevertheless been denied benefits. On the other hand of those found by the clinical teams to be fit for work under special circumstances, 36% received DI allowances.

The Nagi study also allows us some insight into the limitations of the screening process. First, the study suggests that the vast majority of DI applicants do suffer significant health limitations. Only 9 out of the 2,454 applicants studied were deemed fit for work under normal circumstances, with another 165 deemed fit for specific jobs including their own former job under normal conditions. Another 261 were deemed fit for specific jobs, excluding former jobs, under normal conditions. Thus under 20% of the applicants were deemed to be fit for some kind of work under normal conditions. Second, among applicants the DDS's have considerable difficulty distinguishing the more from the less deserving. They have particular difficulty in evaluating cases that involve either multiple impairments, or ones that involve psychological or vocational components.

What about the General Accounting Office reports that have generated the impression that many on DI are ineligible for benefits? These reports presented evidence in such a way as to maximize this impression. In a 1976 General Accounting Office study 10 State agencies were asked to evaluate 221 cases. The GAO study reports complete agreement in only 21.7% of the cases, but gives the reader no information on binary comparisons. Complete agreement on 21.7% of cases is compatible with binary discrepancies in as few as 16% of the cases.¹⁹ Other GAO work has suggested that roughly 20% of those receiving DI benefits are ineligible. This sounds like a rather high number until we realize that what it means is that on re-examination 20% of beneficiaries are

¹⁹ Suppose that in all cases where there is a discrepancy this involves one hold out. This implies that of the 45 possible binary comparisons, 9 would involve disagreements, while 36 would involve agreements. Thus we calculate that 88.3% of the time 20% of the cases have discrepancies, while in 21.7% of the time none do.

deemed to be capable of work. This is precisely the kind of magnitude we would expect given the SL or GB results.

The evidence on the reliability and validity of the medical screening required to qualify for DI benefits is quite consistent. Roughly 20% of DI beneficiaries were judged ineligible for benefits. This seems to have been true for beneficiaries admitted during the 1960's as well as for beneficiaries admitted during the 1970's. Since even with exactly the same evidence different determination teams seem to disagree 15% of the time, this 20% figure would seem to be more a reflection of ambiguities in the initial determination than dramatic but unnoticed recoveries among beneficiaries. Moreover, Nagi's evidence would suggest that many of the 20%, even if there is some ambiguity about whether they meet the criteria used to establish eligibility for DI, do, in fact, suffer major impairments. The qualitative evidence would suggest that discrepancies arise not because there is much question about the evidence but because there are disagreements over whether an impairment is of sufficient severity to qualify the claimant as legally disabled. While there may be a social cost involved in the ambiguity of such decisions the available evidence suggests quite clearly that the vast majority of DI beneficiaries suffer severe health limitations.

With generous benefits and an only very imperfect screening mechanism it would seem likely that SSDI would have had at least some disincentive effects. At the same time, I think that the very large disincentive effects that have been suggested in published work on the subject are much too large to be believable. In this paper I present simple direct evidence that does suggest that there have been some disincentive effects but suggest magnitudes more in line with those suggested by the clinical and legal research mentioned in this appendix.

**Table 1: Percentage of Men In The Labor Force
And Percentage On DI**

age year	45-54		55-64	
	% in LF	% on DI	% in LF	% on DI
1955	96.5	0.0	87.9	0.0
1960	95.7	0.8	86.8	3.5
1965	95.6	1.8	84.6	5.3
1970	94.3	2.5	83.0	7.1
1975	92.1	3.9	75.6	10.4
1980	91.2	4.2	72.1	11.3
1985	92.0	4.0	68.8	10.5
Δ 1955-1980	-4.5	4.0	-19.1	10.5
	(1)	(2)	(3)	(4)

Note: odd-numbered columns are civilian labor force participation rates. Even-numbered columns are the number of disabled worker beneficiaries currently receiving benefits at the end of the calendar year divided by the non-institutionalized population.

Universe: Civilian non-institutionalized population.

Sources: Sources: Employment and Earnings, The Social Security Bulletin Annual Statistical Supplement, various years.

Table 2: Employment, Earnings and Other Characteristics of Rejected Disability Insurance Applicants

	1972			1978		
	Popula- tion	Rejected Applicants	Benefi- ciaries	Popula- tion	Rejected Applicants	Benefi- ciaries
labor supply						
% employed	77.7	32.6	3.2	69.3	28.7	2.3
% worked 71/77	91.9	45.0	7.5	86.7	40.4	5.5
% full year (≥ 50 weeks) ^a	76.8	47.4	31.4	83.5	41.2	22.2
% full time (≥ 35 hours) ^a	95.4	75.9	23.0	92.4	79.6	38.3
earnings among positive earners						
median annual earnings 71/77 ^b	\$9000	\$4000	\$700	\$14000	\$5300	\$1000
median weekly earnings ^b	175	120	25	300	218	70
demographics						
median age	58.7	57.9	58.1	53.8	55.6	58.3
median education	11.0	8.1	8.1	11.7	9.2	9.1
% non-white	8.9	17.6	11.2	10.4	13.2	12.4
% married	87.8	77.3	83.6	87.2	74.3	79.9
% reporting work limitations						
% severely disabled	12.0	50.5	92.7	14.3	64.0	97.0
% partially disabled	14.8	39.2	6.9	13.2	26.4	1.9
% capable of the same kind of work as before health limitation	-	14.5	0.7	-	11.0	0.8
% with health condition						
musculoskeletal	22.3	40.0	41.1	17.6	58.6	51.3
cardiovascular	28.8	56.4	60.4	21.0	58.6	67.4
mental/nervous	6.8	16.4	27.4	5.1	26.3	31.0
respiratory	6.7	22.7	26.7	6.0	26.3	28.2
digestive	9.6	21.3	24.7	9.1	15.0	21.3
neurological	0.7	2.2	6.7	0.6	1.5	3.2
urogenital	2.4	4.9	6.5	3.0	6.8	7.5
cancer	3.7	6.2	6.9	2.8	2.3	7.7
endocrine	6.9	8.8	9.9	4.6	11.3	15.9
blind	3.8	10.7	11.1	2.3	13.5	13.4
median year applied for DI	-	68.7	67.0	-	74.5	74.4
number of observations	2779	273	590	1272	136	1722

^a A a percent of those who worked in 1971/1977.

^b Restricted to those with positive earnings.

Note: Counts for the rejected applicants are unweighted, whereas those for the population are weighted.

Universe: Civilian non-institutionalized men aged 45-64.

Source: Author's tabulations using the Social Security Administration's 1972 and 1978 Surveys of the Disabled.

Table 3: Final Determinations of Disability and the Clinical Team Evaluations of Work Capacity of Applicants

Work Capacity	Final Determinations				Total	
	Allowance		Denial		No.	%
	No.	%	No.	%	No.	%
Fit for work under normal conditions	-	-	9	1.0	9	0.4
Fit for specific jobs, including former job, under normal conditions	23	1.5	142	15.0	165	6.7
Fit for specific jobs, excluding former job, under normal conditions	94	6.2	167	17.7	261	10.6
Fit for work under special conditions	92	6.1	90	9.5	182	7.4
Can work part-time under normal conditions	82	5.4	84	8.9	166	6.8
Can work under sheltered conditions	134	8.9	87	9.2	221	9.0
Can work at home only	66	4.4	29	3.1	95	3.1
Not fit for work	1019	67.5	336	35.6	1355	55.2
Total	1510	100.0	944	100.0	2454	100.0

Source: Derived from Saad Z. Nagi, *Disability and Rehabilitation: Legal, Clinical, and Self-Concepts and Measurement* (Columbus: Ohio State University Press, 1969), p. 94.

Table 4: Sources of Income for Disability Insurance Applicants

Income source	1971							
	Population		Rejected Applicants				Beneficiaries	
	%	mean	Worked in 1971		Didn't Work 1971		%	mean
Total Family Income	100.0	13413	100.0	9765	100.0	4087	100.0	3745
Earnings*	92.0	12787	100.0	8296	36.9	3579	45.4	3640
Own Earnings	91.9	10826	100.0	6732	0.0	-	7.5	1854
Wife's Earnings	42.5	5110	48.4	3102	32.9	3909	39.0	3856
Public Income Maintenance	25.7	3086	52.9	3463	83.2	4039	99.0	6131
Social Security	8.9	1742	25.6	1373	52.4	1730	98.0	2300
P.I.M. net of Social Security	19.9	2404	33.1	2714	51.0	2683	46.7	3822
Veterans Benefits	8.5	1384	13.2	2177	22.2	1833	30.0	2116
Workers Compensation	2.2	619	3.3	1374	2.0	2154	4.3	1971
Welfare	2.0	1740	8.3	1854	28.2	2026	9.5	2949
APTD	1.0	998	4.1	1117	18.8	1148	8.2	902
AFDC	0.6	1737	3.3	1417	4.0	1725	2.4	1178
Other Welfare	0.9	1121	3.3	1685	7.4	698	2.2	674
Government Disability	3.3	4207	3.3	5597	3.4	1840	5.3	2745
Unemployment Insurance	3.7	843	8.3	1052	2.0	292	0.7	1027
Private Pensions Etc. ^b	8.0	2631	8.3	1109	16.1	2668	20.3	2309
Asset Income	39.3	1371	22.9	2493	20.1	1864	22.4	1236
Number of Observations	4817		122		149		590	

Income source	1977							
	Population		Rejected Applicants				Beneficiaries	
	%	mean	Worked in 1977		Didn't Work 1977		%	mean
Total Family Income	100.0	17784	100.0	13472	100.0	8272	100.0	10737
Earnings*	86.5	17337	100.0	10659	46.9	6060	46.1	6689
Own Earnings	86.5	14486	100.0	7027	0.0	-	5.5	2924
Wife's Earnings	41.6	6872	32.7	7230	39.5	4939	33.0	5999
Public Income Maintenance	37.5	3409	68.5	3481	90.1	4748	99.8	3796
Social Security	16.2	3329	42.6	3309	70.4	3997	99.3	4359
P.I.M. net of Social Security	27.5	2706	37.0	2800	44.4	3390	50.2	2917
Veterans Benefits	9.6	1648	11.1	1285	16.1	2199	27.6	2039
Workers Compensation	2.6	2806	3.7	- ^c	8.6	3790	5.6	4651
Welfare	4.3	1964	9.3	3002	17.3	2740	12.2	1573
SSI	2.8	1910	5.6	- ^c	12.4	2174	9.8	1274
AFDC	0.9	1734	7.4	- ^c	6.2	2353	2.2	1893
Other Welfare	1.2	1188	0.0	- ^c	2.5	- ^c	2.0	1120
Government Disability	2.3	6784	0.0	- ^c	4.9	- ^c	2.0	6430
Unemployment Insurance	9.7	1241	14.8	2297	3.7	- ^c	2.4	1028
Other Benefits	2.8	4332	1.9	- ^c	1.3	- ^c	7.6	3285
Private Pensions Etc.**	21.8	2976	23.6	1874	28.4	3121	37.4	3572
Asset Income	53.9	942	30.9	416	28.4	321	38.2	603
Number of Observations	1272		55		81		1722	

* Includes earnings from all household family including children and other relatives.

^b Includes sick pay, company and individual insurance, retirement pensions, disability pensions and annuities.

^c Less than five observations.

Table 5: Probability of Non-Employment

	applicants and non-applicants			non-applicants		
	Age	.090 (.011)	.079 (.011)	.079 (.012)	.036 (.016)	.034 (.016)
$\ln(\text{replacement rate})^a$	1.016 (.247)	.334 (.190)	.617 (.267)	.645 (.345)	.420 (.351)	.535 (.351)
Specific Health Conditions ^b			x			x
Self Reported Work Limitation		1.861 (.109)			.647 (.135)	
log likelihood	-1351.2	-1181.3	-1218.2	-760.2	-748.9	-745.6
Number of Observations		2311			1813	
% employed		70.8			85.1	
elasticity of non- participation with respect to benefits ^c	.719	.236	.437	.549	.357	.455

^aDefined as the PIA/AME. See the text for details.

^bThe same ten conditions as listed in Table 5 and 6.

^cEvaluated at the sample proportion: $\hat{\beta} \times \% \text{Employed}$.

Note: Parameters are logit coefficients. Standard errors appear in parentheses.

Universe: Civilian non-institutionalized men aged 48-62 in 1972.

Source: Authors tabulations using the Social Security Administration's 1972 Survey of the Disabled.