Abstract

This paper provides estimates for a comprehensive set of social benefits and costs associated with the federal Housing Choice Voucher (Section 8) program. The impact categories for which we provide empirical estimates include the value of the voucher to recipients; additional services and public benefits induced by voucher receipt; improvements in children's health, education, and criminal behaviors; the costs of voucher provision; the labor supply impacts on voucher recipients; and community effects. These estimates rest largely on empirical analyses of the effect of voucher receipt on several recipient and taxpayer behaviors and outcomes that occur in the first year of voucher receipt. The analysis distinguishes benefits and costs accruing to program participants, nonparticipants—including taxpayers and property owners—and society as a whole. Our analysis suggests that the program is likely to meet the efficiency standard of positive net social benefits. © 2011 by the Association for Public Policy Analysis and Management.

INTRODUCTION

The Section 8 housing voucher program serves 2.1 million households that contain more than 5.2 million individuals. The primary objective of the program is to assist “very low-income families, the elderly, and the disabled to afford decent, safe, and sanitary housing in the private market.” (U.S. Department of Housing and Urban Development, 2010a, p. 1). Voucher recipients seek housing in the private rental market and use the voucher to subsidize their rent; the amount of the subsidy—the share of the rental charge covered by the voucher—depends on the family’s income. In this paper, we identify the primary categories of social benefits and costs of the Section 8 housing subsidy program and provide empirical estimates of them. We present our estimates on an annual, per-recipient-case basis. Our estimates primarily reflect behavioral changes and other impacts that occur in the initial year of voucher receipt and can best be interpreted as the change in social welfare that would result from an incremental expansion of the Section 8 program where new...
recipients previously sought housing only in the private market and received no type of government housing subsidy.\textsuperscript{2}

Research on the social benefits and costs of the Section 8 voucher program began in the early 1980s, when Weinberg (1982) described the direct benefits of the program and presented estimates of some of them. Reeder (1985) also estimated the direct benefits and costs of the Section 8 program and extended earlier work by estimating the changes in consumption patterns induced by the program and the distribution of benefits under the program. About two decades later, Johnson, Ladd, and Ludwig (2002) provided an outline of a benefit–cost analysis of housing mobility programs that enable low-income families living in public housing to move to higher-income neighborhoods and reviewed empirical evidence on the effects that they identify. They conclude that only a short-run, partial benefit–cost analysis of housing mobility programs is currently possible (see also Kutty, 2005). Our analysis provides estimates of both the direct and indirect benefits and costs associated with the Section 8 voucher program. We rely on the basic principles of welfare economic theory and adopt a comprehensive accounting framework that distinguishes effects on voucher recipients, other citizens (including taxpayers), and society as a whole.

THE SECTION 8 VOUCHER PROGRAM

The Department of Housing and Urban Development (HUD) currently provides housing assistance to low-income households through a variety of programs, including the Section 8 tenant-based voucher program. This program, operated by HUD in conjunction with over 3,000 local public housing authorities, serves more than 2 million households, over 1 million of which contain minor children (HUD, 2010b). To be eligible for the program, a voucher recipient must generally have an income below a specified percentage—50 percent for four-person households—of the median income of the county or metropolitan area in which the recipient lives. Having received a voucher, recipients are responsible for locating housing in the private market that meets a minimum standard of health and safety and is owned by a landlord who will accept a Section 8 voucher. Having located suitable housing, the recipient household generally contributes 30 percent of its income toward rent.\textsuperscript{3} The program subsidizes the difference between the tenant contribution and actual rent, up to a locally defined “fair market rent” payment standard.\textsuperscript{4} The flexible nature of the Section 8 voucher program, coupled with several features of its design, results in a program that has the potential to produce a wide variety of social benefits and costs.

BENEFITS AND COSTS OF SECTION 8 VOUCHERS

Table 1 presents our estimates of the annual per-case value of social benefits and costs attributable to Section 8 housing vouchers. These estimates are based on the results of a Monte Carlo analysis that explicitly accounts for the uncertainty inherent in the

\textsuperscript{2} Our estimates rest largely on a series of studies in which we have estimated the average annual impact of voucher receipt on a variety of living unit behaviors for a sample of new voucher recipients who entered the voucher program over a three-year period. The recipient unit behavioral responses we study include geographic moves, neighborhood quality, employment, earnings, and the receipt of a variety of public benefits. See Carlson et al. (2008a, 2008b, 2009), which present estimates of the effects of voucher receipt on these outcomes. The research strategy employed in these studies is described below. In constructing benefit and cost estimates for outcomes we have not explicitly studied, we draw on available literature.

\textsuperscript{3} See HUD (2010a). Each Public Housing Authority (PHA) must provide 75 percent of its vouchers to applicants whose incomes do not exceed 30 percent of the area median income.

\textsuperscript{4} This standard is set by HUD at the 40th (in some locations 50th) percentile of the local rental market, as calculated by the monetary value of leases commenced in the previous year. The payment standard is typically between 90 percent and 110 percent of area fair market rent.
construction of social benefit or cost estimates. For each component category, Table 1 presents the mean value returned by the simulation, with the standard deviation in parentheses below the mean. The categories are designed to be comprehensive, although there may be other effects that are not included. Our estimate of net social benefits is calculated by summing the simulation results for each of the component categories.

The following sections present the basis for each benefit and cost category included in the table as well as the calculation procedures used to produce the estimates in Table 1. As noted, the estimates are presented on a per-voucher-recipient case basis and are designed to value the social benefits and costs resulting from recipient behaviors and outcomes that occur in the first year of voucher receipt. When the first year of voucher receipt results in a discrete and permanent

---

5 Monte Carlo simulation involves conducting a specified number of trials—we conduct 100,000 trials—that perform a specified calculation. In each trial, all uncertain parameters are randomly drawn from specified probability distributions. All specific components used in the calculation of benefit and cost estimates in this analysis are described in greater detail as follows. Where applicable, we identify the distribution and applicable parameters assigned to each component.
change in a stock of human or physical capital, we estimate the discounted present value of the impact. As noted earlier, our estimates represent the change in social welfare that would result from an incremental expansion of the Section 8 program where new recipients previously sought housing only in the private market and received no type of government housing subsidy.6

The series of studies that underlie many of our benefit and cost estimates employ administrative records from the State of Wisconsin and data obtained from the U.S. Census Bureau. The analysis sample begins with all cases that applied for or received food stamp or Wisconsin Works (W-2) benefits—Wisconsin’s TANF program—between 2001 and 2003, yielding three separate calendar year cohorts. Within each cohort, two unique groups are formed, one composed of cases that first received a public rental subsidy in that year and the other made up of cases that did not. Then, these three calendar year cohorts are pooled to create the final estimation sample. To obtain a balanced comparison group that allows for valid inference regarding the effect of voucher receipt on the outcomes of interest, a propensity score matching procedure is used. Finally, using this balanced sample, the effect of voucher receipt on household composition outcomes and a variety of labor market and other behavioral outcomes is estimated using a difference-in-differences regression adjustment. A number of sensitivity analyses support the findings of this approach.7

6 This counterfactual precludes the use of empirical estimates from the Moving to Opportunity (MTO) experiment—perhaps the most studied voucher-based intervention—in estimating the benefits and costs of the Section 8 program. Although our estimates are relative to receipt of no subsidized housing assistance, all MTO estimates are relative to receipt of public housing assistance, as all MTO participants were receiving housing assistance at the time of their entry into the program. Hence, MTO participants did not experience an increase in effective household income because of the program, but our sample, which received no housing assistance prior to voucher receipt, did experience an increase in income as a result of voucher receipt. Related to this, because both public housing assistance and Section 8 receipt require recipients to contribute 30 percent of income toward rent, MTO participants did not experience a change in work incentives, while members of our sample did. Moreover, all participant households in MTO resided in large cities at the time of random assignment; our sample lived in a variety of settings. Furthermore, the demographic compositions of the samples differ significantly; our sample more closely resembles the national population of Section 8 recipients, whereas the MTO samples contain many more racial minorities than our sample. For these reasons, we do not rely on empirical estimates from MTO in this analysis.

A second prominent experimental analysis of the effects of voucher receipt is the Welfare to Work (WtW) evaluation, which was conducted by Abt Associates and is summarized in Mills et al. (2006). For outcomes studied by both WtW and Carlson et al. (2008a, 2009), the results of the two analyses are substantively similar. Like WtW, our work finds voucher receipt to have a negative effect on earnings in the years immediately after receipt, but concludes that this negative effect dissipates over time. Similarly, both studies find that voucher receipt stimulates moves to higher-quality neighborhoods, as measured by unemployment rates, households in poverty, and other indicators. Finally, both studies find voucher receipt to spur participation in other publicly provided programs. We use the results from the series of studies we have conducted for two primary reasons. First, the composition of our sample is more representative of the national population of voucher recipients than the WtW sample, which consisted entirely of households that (1) were either receiving TANF benefits or eligible to receive such benefits and (2) contained children. Second, using the results from the series of studies we have conducted provided us with greater flexibility during the execution of this benefit–cost analysis than we would have had if we used the results presented in Mills et al. (2006).

7 The identification strategy in these studies is multifaceted and begins with the matching of about 12,000 first-time voucher recipients to a pool of nearly 500,000 nonrecipients using propensity score techniques. The model we use to generate the propensity scores is extremely rich in covariates, and the matching procedure returns a sample that is balanced on dozens of observable dimensions. Using this matched sample, we then employ difference-in-difference regression adjustment to obtain our estimated effects. While we are very confident in the results presented in these studies, our identification strategy is subject to the standard selection-on-unobservables critique. As a result, we perform a number of sensitivity analyses that are designed to address lingering endogeneity concerns. These include restricting the sample to voucher recipients and using over-time variation in voucher receipt to identify the effect of voucher receipt on outcomes using a model containing case fixed effects, and comparing post-voucher outcomes for cases that received a voucher in 2001 to pre-voucher outcomes for cases that received a voucher in 2003. The results of these analyses, which are designed to address concerns regarding potential unobservable differences between voucher recipients and nonrecipients, are very similar to our propensity score-based analysis.

Journal of Policy Analysis and Management DOI: 10.1002/pam
Published on behalf of the Association for Public Policy Analysis and Management
Many of our estimates are based on data from a single state: Wisconsin. The diversity of the state coupled with the fact that the demographic profile of voucher recipients in Wisconsin is similar to the demographic profile of voucher recipients nationally suggests that our results may yield a reliable estimate of the national benefits and costs of the program.\(^8\) However, to the extent that other conditions—such as the rental and labor markets\(^9\)—may affect the benefits and costs of the Section 8 program, we cannot state unequivocally that our estimates represent national benefits and costs.

**Recipient Value of Section 8 Vouchers: Housing Subsidy and Security (Items 1 and 2 in Table 1)**

The annual monetary value of a Section 8 voucher equals the reduction in the rental payment—the market rental rate on the unit occupied minus the actual rent paid by the recipient household—for the housing unit in which recipients use the voucher. Using data and calculations from the Center for Budget and Policy Priorities (CBPP) (2008), we estimate the average monetary value of the voucher to recipients to be $4,738.\(^10\) Because of administrative costs—which we estimate to be $777 per voucher—the taxpayer cost per authorized voucher is somewhat higher than the monetary value for recipients. (See Appendix A\(^{11}\) for a more comprehensive discussion of administrative costs.) Taken together, we estimate the average taxpayer cost per authorized voucher to be $5,515, which is the sum of the average housing assistance payment of $4,738 and $777 in administrative costs.

Because the housing choice of the voucher recipient is likely to be distorted by a perceived marginal price of housing that is below the market price, the welfare gain associated with the receipt of the voucher is less than the monetary benefit. In Appendix B,\(^12\) we indicate the change in the consumption choice budget constraint caused by voucher receipt and present the related welfare analysis of the program. Drawing on estimates in the literature, we allow the welfare gain to vary uniformly from 80 percent to 100 percent of the monetary value of the voucher payment.

---

\(^8\) According to data on the HUD Web site “A Picture of Subsidized Housing,” the demographic profile of Section 8 subsidized households in Wisconsin is similar to that for the United States as a whole, with the only major difference being a lower proportion of Hispanics among recipients in Wisconsin (5 percent vs. 17 percent). In terms of other characteristics comparing Wisconsin to the United States: 12 percent versus 15 percent are two adults; 40 percent versus 36 percent are single adults; 49 percent versus 48 percent are female heads with dependent children; 20 percent versus 18 percent are disabled; 59 percent versus 56 percent are between ages 25 and 50; 18 percent are age 62 plus (both); 38 percent versus 42 percent are black; and 1 percent are Native American (both). See http://www.huduser.org/portal/picture2008/form_1s4.odbc.

\(^9\) Historically, both the rental vacancy rate and unemployment rate are somewhat lower in Wisconsin than they are nationally.

\(^10\) Our estimate of the monetary value of the voucher is a weighted average of the estimated cost per voucher calculated by CBPP for each housing authority in Wisconsin, including the Wisconsin Housing and Economic Development Authority (WHEDA). Deng (2005, 2009) calculates the subsidy value to Section 8 recipients by subtracting the rent paid by the tenant from the fair market rent of the unit. Our data do not contain an estimate of either the rent paid by the tenant or the fair market rent of the unit. Note that this estimate reflects only the value that voucher recipients place on the rental subsidy that results from voucher receipt, excluding values that recipients may place on other potential benefits of voucher receipt. We account for these other values separately in this analysis.

\(^11\) All appendices are available at the end of this article as it appears in JPAM online. See the complete article at wileyonlinelibrary.com.

\(^12\) All appendices are available at the end of this article as it appears in JPAM online. See the complete article at wileyonlinelibrary.com.
Under these assumptions, the Monte Carlo simulation returns a mean value of $4,264 as the welfare gain to the recipient. Because recipients are members of society, this benefit is also a welfare gain to society as a whole.

In addition to the welfare gain of the Section 8 voucher to recipients stemming from the reduction in rental payments, there will be an additional recipient gain equal to any unmeasured benefits associated with receipt of the voucher. For example, because of the 30-percent-of-income rental payment formula, voucher recipients are protected from variation in both the rent charged for a chosen housing unit (due to either landlord or market changes) and in the family’s own income. Thought of this way, a Section 8 voucher serves renters in the same manner as mortgage protection insurance, which pays the mortgage in case of the disability or death of the primary worker, aids homeowners. As a result, we value this benefit using the annual premium of a $25,000 term life insurance policy—the lowest level of coverage offered in the market—that would be charged to an individual with the characteristics of the average member of our sample. The market rate for such a policy is approximately $110 annually. To account for uncertainty, we allow this estimate to vary normally with a standard error of $25.

Recipient Value of Section 8 Vouchers: Increased Public Program Benefits (Item 3 in Table 1)

The process of securing a Section 8 voucher begins with the submission of an application to a housing authority. After submission, applicants are assigned to a waiting list that, in Wisconsin in 2008, averaged 27 months. When the applicant’s name rises to the top of the waiting list, the household meets with housing authority staff to learn the rules and requirements of the Section 8 rental program. After obtaining a voucher, the applicant searches for rental housing in the private rental housing market, and in the majority of cases, selects housing that is of higher quality and often in a better neighborhood than their previous housing. Taken together, receipt of a voucher, the associated location change, and the meetings with housing authority staff during the application process are likely to result in an increase in the public benefits received by recipient families. For example, recipients of Section 8 vouchers may

---

13 Although empirical research into the size of potential deadweight loss is not extensive, estimates do exist. In the most thorough study that has been conducted, Reeder (1985) concludes that the deadweight loss attributable to the distortion of housing consumption is about 17 cents to the dollar, a value included in our range. Slesnick (1996) estimates the distortion for hypothetical housing programs designed as restricted cash transfers. Currie and Gahvari (2008), citing Slesnick (1996), conclude that “the deadweight losses associated with in-kind transfers of food stamps and housing programs . . . are small” (p. 369).

14 The voucher recipient generally pays a constant 30 percent of income as rent, irrespective of the market- or landlord-generated rental rate attached to the unit.

15 In one sense, using the annual premium charged for a term life insurance policy may overstate the welfare gain provided by the stability and security imbued by a Section 8 voucher because the payout of a life insurance policy may be used for a variety of purposes (including payment of mortgage or rent), whereas a Section 8 voucher assures recipients that their housing payment will not exceed 30 percent of their income. In another sense, using the annual premium of a term life insurance policy may understate the welfare gain associated with the stability and security provided by a Section 8 voucher because life insurance policies only pay out in the event of death, which is a fairly rare event, especially for individuals with the average characteristics of individuals in our sample. Section 8 vouchers provide security against a much wider variety of events, a sampling of which includes the loss of employment and an increase in rent. Taken together, we are confident that the annual premium of a term life insurance policy with a $25,000 death benefit represents a valid and conservative estimate of the welfare gain stemming from the stability and security associated with Section 8 voucher receipt.

16 See Carlson et al. (2008a) and Mills et al. (2006), which conclude that voucher recipients tend to move to neighborhoods that are of higher quality along several dimensions. Note, however, McClure (2007), which suggests that gains in neighborhood quality from voucher receipt may be small.
become better positioned to secure subsidized child care services, given the potential change in neighborhood and the distribution of child care centers.

These increased benefits and services increase the well-being of participants, and hence of society as a whole. For both participants and society, this gain can be conceived of as the recipient value of the additional services (taking account of the deadweight loss), plus the consumer surplus associated with the increased receipt of in-kind benefits. We use average public program benefit values for all program participants to estimate the benefits that accrue to housing voucher recipients.17

Benefits from Increased Receipt of Welfare Benefits

In the year of first receiving a housing voucher, those who received the subsidy were about 3 percent more likely to receive benefits from Wisconsin’s welfare program (Wisconsin Works, or W-2) than matched comparison observations who did not receive a housing subsidy. In the Monte Carlo simulation we allow this effect to vary normally around its empirical mean of 3.0 by its empirical standard error of 0.4. As the first step in valuing this effect, we multiply the increased likelihood of receiving W-2 benefits by the total number of voucher cases in Wisconsin—27,000 in calendar year 2004—to obtain an estimate of the number of additional W-2 cases attributable to the Section 8 voucher program.

Our analysis of Wisconsin administrative data finds that, on average, the cost of W-2 benefits is $5,088 per year per recipient case. Administrative costs, including the costs of job training and counseling services, comprise a portion of this cost, and we allow them to vary uniformly from 8 percent to 12 percent of total costs. To calculate the total value of W-2 benefits attributable to Section 8 receipt, we multiply the increase in participants by the value of the W-2 benefits, excluding administrative costs, and divide by 27,000 to present the estimate in a per-case metric. The Monte Carlo simulation indicates that the mean annual financial value of the additional W-2 benefits per voucher recipient is about $137.

To the extent that W-2 benefits are in-kind (for example, job training services, counseling services), a consumer surplus gain accrues to W-2 beneficiaries in addition to the direct value of the cash transfer. In the absence of knowledge regarding the elasticity of demand for in-kind W-2 benefits among Section 8 recipients—and hence their willingness to pay for them—we allow the consumer surplus benefit estimates to range uniformly from 0.2 to 0.5 of the financial benefit. Assuming that one-half of the W-2 services are in-kind, the simulation returns a mean of $24 for the consumer surplus value. Taken together, the Monte Carlo simulation used to estimate total value of the increased W-2 benefits has a mean of $161, with a standard deviation of $22.18

Benefits from Increased Food Stamp Use

Because our analytic sample is derived from cases that applied for or received food stamps or W-2, we cannot use Wisconsin administrative data to estimate the effect of housing subsidy receipt on food stamp receipt. Because housing authority staff has little incentive to encourage continuous enrollment or reenrollment in the Food Stamp Program, we assume a small 4 percent increase in the likelihood of receiving

---

17 This decision is supported by the fact that some public programs, such as the Wisconsin TANF program (W-2), offer benefits that do not vary by family size or geographic location.

18 It could be argued that, in addition to the benefits themselves, the work experience that is required by the program, the complementary job training efforts, and the counseling are likely to lead to higher future productivity and earnings. We do not attempt to value this potential benefit.
food stamps attributable to receipt of a Section 8 housing voucher. In the Monte Carlo simulation we allow this estimate to vary normally with a mean of 4.0 and a standard error of 0.4. The average annual benefit level in 2004 for food stamp recipient assistance groups in Wisconsin was $2,100. (See Appendix A for details of this calculation.) Using a calculation procedure similar to that used to estimate W-2 benefits, the Monte Carlo simulation yields an annual average per-case benefit of $84.21

Benefits from Increased Use of Health Care Assistance

Estimates of the impacts of Section 8 voucher receipt in Carlson et al. (2008b) find that housing assistance recipients with and without minor children in the house are about 1 and 7 percentage points more likely, respectively, to participate in Medicaid and BadgerCare (the children's health insurance program, CHIP, in Wisconsin) than their matched comparisons who did not receive housing assistance. In the Monte Carlo simulation we allow the effects of Section 8 receipt on increased use of health care assistance to vary normally around these empirical means. The effects vary by their estimated standard errors, which are 0.2 percent and 2.0 percent for households with and without minor children, respectively. In our sample, about 36 percent of those receiving rent subsidies had no minor children; 64 percent had children. Assuming that these percentages apply to the overall population of cases receiving a rental subsidy in Wisconsin in 2004, we estimate that there were 9,720 rent subsidy cases with no minor child and 17,280 cases with minor children.

Because enrollment in the Wisconsin Medicaid/BadgerCare program is by individual, not by case, it is necessary to estimate the number of people likely to be receiving Medicaid in these cases. Relying on case composition patterns, we conclude that there are 10,109 people in the cases without children and 47,693 people in the cases with children. To calculate the increased number of individuals in households without children receiving health care assistance because of Section 8 receipt, we multiply the estimated effect of Section 8 receipt on increased public health care use by 10,109 (the number of adults in cases with no children). We perform a similar calculation for cases with children.

We estimate the benefits of Medicaid/BadgerCare coverage to be equal to the state costs of providing these benefits in 2004. In that year, annual Medicaid expenditures for non-institutionalized elderly and disabled people were $8,592 per person and $1,989 per person in families with children (Wisconsin Legislative Fiscal Bureau, 2005a, Table 32, Table 2005b, p. 5). Assuming that all individuals without children were elderly or disabled (a very plausible assumption because that is the only

19 The lack of an incentive to encourage enrollment in the Food Stamp Program stems from the fact that only increases in cash income lower the amount of the rental subsidy provided by a voucher, which may allow the housing authority to serve a larger number of cases. As a result, housing authority staff have an incentive to encourage enrollment in programs that increase cash income, such as W-2. Because food stamps do not increase cash income, housing authority staff have little incentive to encourage enrollment in the program. Our assumption of a slightly larger increase in food stamp than W-2 receipt reflects the fact that all families receiving a Section 8 voucher are likely to be eligible for food stamps, whereas only a subset are eligible for W-2. This increase is consistent with Harkness and Newman (2003), who find that housing assistance in private rental housing increases the likelihood of food stamp receipt nationally. This assumption is also tied to the idea that those receiving a voucher will have continuous interaction with the public system while those without a voucher, especially those with higher incomes and hence smaller potential food stamp benefits, may reduce their use of food stamps.

20 All appendices are available at the end of this article as it appears in JPAM online. See the complete article at wileyonlinelibrary.com.

21 We assume that any consumer surplus gain from additional in-kind support is offset by the utility loss associated with the constrained choice in the Food Stamp Program.

22 We multiply the number of cases times the average number of people in Medicaid cases (2.76 for cases with children and 1.04 for cases without children).
reason they would qualify for Medicaid), we multiply the estimated number of additional participants by $8,592 to obtain the total financial annual benefit for households without children. Assuming the cases with children contained no disabled individuals (not as likely, which makes this a lower-bound estimate of benefits), we multiply the estimated number of additional participants by $1,989 to obtain the total financial annual benefit for households with children. Allowing administrative costs to vary uniformly from 8 percent to 12 percent of the financial benefit, the Monte Carlo simulation yields a mean annual per-case benefit of $234. Adding in the consumer surplus associated with these gains, which we allow to vary uniformly from 0.2 to 0.5 of the financial value of the services received, the simulation returns a mean annual per-case estimate of the additional medical care benefits of $317 with a standard deviation of $82.23

Benefits from the Earned Income Tax Credit (EITC)

In the first year after receiving a housing subsidy, we estimate a decline in annual earnings of the casehead of about $600 (see Carlson et al., 2009). The effect of such an earnings decline on EITC benefits would depend on the casehead’s level of earnings before the housing subsidy began. Because of the way the EITC is structured, those with the lowest earnings would receive a lower EITC benefit if their earnings declined, and those with the highest earnings (but still eligible for an EITC benefit) would realize a higher EITC benefit if their earnings declined; those in the middle of that range would experience no change in EITC benefits if their earnings dropped. If we assume that housing subsidy recipients were positioned evenly across that continuum before they received a subsidy, then their net change in EITC benefits would be approximately zero.

Benefits from Increased Child Care Services

Our empirical analyses indicate that Section 8 voucher receipt leads to increased benefits from Wisconsin Shares (WS)—Wisconsin’s state-subsidized child care program—in two ways. First, voucher receipt induces some eligible households that previously did not participate in the public child care program to apply for and receive state-subsidized child care. In the Monte Carlo simulation this effect varies normally around its empirical mean (4.6) by its empirical standard error (0.6). In addition, due to movement to higher-quality—and higher-cost—child care services24 voucher recipients already participating in the state-subsidized child care program receive greater subsidy amounts. This increased subsidy among existing users is also allowed to vary based on our empirical estimates; the mean is $229 and the standard error is $138.

A lower bound to the value of increased child care services is the total financial value of the improved child care services minus both the amount the families actually pay for these services (the co-payment) and the costs of administering the program. In addition, any comprehensive accounting of benefits must include the consumer surplus that families experience because of the new or improved child care services.

23 These values likely underestimate the value of Medicaid and BadgerCare for two reasons. First, these values do not include the value that families place on the security of having health insurance, which could be substantial. Second, Medicaid and BadgerCare pay a far lower price per unit of medical care than is either billed directly to the patient or through private coverage. The consumer surplus is designed to at least partly deal with this underestimate.

24 Wisconsin subsidizes certified providers at 75 percent of the rate of licensed providers (provisionally certified receive only 50 percent of that rate). Providers who are neither licensed nor certified cannot receive state child care subsidies. Both programs require a background check of the provider; the licensing program sets higher standards and requires completion of at least two courses in early childhood education, written policies and procedures for staff, regular medical exams, and state inspection of facilities.
To estimate the value of the program-induced state-subsidized child care benefits, we multiply the estimated increase in participation by the number of voucher cases in Wisconsin—27,000—to obtain the total number of cases receiving WS benefits because of Section 8 receipt. We then multiply this by $7,462, which is the average amount spent by the state per WS recipient. Administrative costs are allowed to vary uniformly from 8 percent to 12 percent of the total financial value. Under this calculation procedure, the Monte Carlo simulation yields a mean per-case value of about $309. To value the increased subsidy amounts for households already participating in WS, we multiply the estimated subsidy increase presented above by 13,500—the number of Section 8 voucher recipients that are estimated to already receive child care benefits. Again allowing administrative costs to account for between 8 percent and 12 percent of the total value, the Monte Carlo simulation yields a mean per-case value of about $114. Hence, the mean per-case monetary value of annual child care services attributable to Section 8 receipt is estimated to be $423, with a standard deviation of $80.

In addition to this value of child care benefits per voucher recipient, a consumer surplus is generated for Wisconsin Shares child care beneficiaries. Following the earlier convention of allowing consumer surplus benefits to vary uniformly from 0.2 to 0.5 of the financial value of in-kind services received, and assuming that all of the state-subsidized services are in-kind, the simulation returns a mean per-case value of consumer surplus of $148 and a total per-case mean value of $572. The standard deviation of this estimate is $114.

Extensive research on the benefits and costs of early child care interventions suggests that the total present value of the benefits of these programs is 3 to 4 times the cost (Karoly, Kilburn, & Cannon, 2005; Heckman et al., 2010). In addition to the value of the direct child care services to parents, these gains include increased parental productivity owing to the reduction in child care needs, the parental and public good value of increased child achievement and schooling, the decreased probability of children’s future drug use and illegal activities, and the reduction of children’s needs for special education or grade repetition. Given our per-case cost estimate of about $400, existing research implies that the total social benefit of Wisconsin Shares is about $1,200 per case ($400 \times 3$). Of this amount, about $400 accrues to parents as the direct value of the child care services. This implies that about $800 is reflected in a variety of nonmonetary parental gains and public goods-type effects. If one-half of this $800 value reflects parental gains accounted for elsewhere (see below), the remaining $400 of benefits accrue more generally to society. To account for uncertainty, we allow this estimate to vary normally with a standard error of $100 and assign the mean value from the simulation to citizens other than voucher recipients in Table 1.

Recipient Value of Section 8 Vouchers: Benefits of Improved Child Educational Outcomes (Item 4 in Table 1)

Several features of voucher receipt are likely to result in improved educational outcomes for the children of recipient families, and these gains are attributable to the program. Because of program-induced changes in residential location and neighborhood, children of voucher recipients are likely to attend better schools. Moreover, the increase in public benefits and child care services is likely to increase child

---

25 This consumer surplus gain reflects the parental well-being gained by knowing that their child is being cared for in a safe and presumably educational environment where they have the opportunity to learn from and socialize with other children. It also reflects the parental well-being gain from the added continuity of care from having a child in regulated child care.

26 Specifically, we estimate the per-case cost of Wisconsin Shares to be $423 but use a rounded figure of $400 in our calculations.
achievement and years of schooling. Finally, voucher receipt results in increased family income, which has been found to improve educational outcomes.

In estimating and valuing these effects, we rely on two well-developed lines of research—one that links family income to children’s educational outcomes and another that links educational outcomes to labor market outcomes. In an oft-cited study, Duncan et al. (1998) estimate that for low-income families, a $12,500 increase in income that is sustained over a child’s full childhood increases the years of completed schooling by an average of 1.3 years for children aged 0 to 15 years.27 In the Monte Carlo simulation we allow this estimate to vary normally by its empirical standard error of 0.3.

We estimate the income increase attributable to Section 8 voucher receipt to be about $4,700, or about one-third of the $12,500 income increase in Duncan et al. (1998); hence, we divide the effect estimated by Duncan et al. by three. Because the Duncan et al. estimate is based on an income increase sustained over the first 15 years of childhood, we divide the resulting value by 15, assuming a constant annual effect of increased income on educational attainment. The resulting value is our estimate of the increase in years of completed schooling attributable to the first-year increase in family income from Section 8 receipt.28

Several well-known studies have estimated the earnings returns to completion of additional schooling (Ashenfelter & Krueger, 1994; Angrist & Krueger, 1991; see Card, 2001, for a summary of estimates). In these studies, completion of an additional year of schooling is generally found to increase earnings by approximately 10 percent; we allow this effect to vary uniformly from 8 percent to 12 percent in our Monte Carlo simulation. Performing separate calculations for males and females, we multiply this return by U.S. median male ($45,500) and female ($35,500) earnings in 2008,29 and in turn multiply the resulting values by the estimated increase in years of schooling to obtain the annual value of improved child educational outcomes attributable to voucher receipt. Assuming constant real earnings, we calculate the discounted present value of the earnings increase attributable to the increased years of schooling from the first year of Section 8 receipt over a working lifetime.30 The Monte Carlo simulation returns a mean value of $3,250 for men and $2,535 for women.

The average number of children per case in our sample is 1.5, or an average of 0.75 male and female children per case. Using these estimates, we calculate the per-case benefit by multiplying the mean lifetime value of the increased years of schooling for men and women by 0.75 and add the resulting values together to obtain the total per-case benefit. Because these earnings gains do not begin until the affected children attain working age, we discount this value, assuming that the children in

27 The $12,500 figure has been adjusted for inflation. Duncan et al. (1998) state that a $10,000 increase in income (1993 dollars) sustained over a full childhood increases the years of completed schooling by an average of 1.3.
28 In our Monte Carlo simulation, the mean estimate of the number of years of schooling completed because of the increased income provided by the first year of Section 8 voucher receipt is 0.03. This value is reached through three steps. First, in our Monte Carlo simulation we use the Duncan et al. (1998) estimate that a $12,500 income increase sustained over 15 years increases educational attainment by 1.3 years and allow it to vary around its empirical standard error of 0.3. Second, we divide the first-stage estimate by 3 to account for the fact that we calculate the annual income increase provided by a Section 8 voucher to be about $4,700—about one-third of $12,500. This step provides an estimate of the increase in attainment that could be expected if a child received a Section 8 voucher through the first 15 years of his or her life. In our Monte Carlo simulation the mean value of this estimate is 0.43. Third, we divide the second-stage estimate by 15 to account for the fact that we are only estimating the first-year impacts of voucher receipt. This step provides us with an estimate of the increase in attainment due to the first year of Section 8 voucher receipt. As noted above, the mean value of this estimate in our Monte Carlo simulation is 0.03.
30 This calculation assumes constant real earnings, a working lifetime of 45 years (age 20 to age 65), and a discount rate that varies uniformly from 2 to 6 percent in our Monte Carlo simulation.
Section 8 cases are evenly distributed from age 0 to 18 years. Estimated via Monte Carlo simulation, this calculation procedure yields a mean estimate of $2,417 per case. The standard deviation for this estimate is $1,009.31.

In addition to the private monetary benefits from improved educational outcomes, there are a variety of nonmonetary private and public benefits of increased schooling. These have been extensively studied, and a reasonable estimate is that the nonmonetary private and public benefits equal the private monetary benefits in the form of income gains. We assume that the nonmonetary benefits are equally divided between the private and the public components and assign an amount equal to one-half of the estimated income gain to voucher recipients and an equivalent amount assigned to nonrecipients. The results of the Monte Carlo simulation produce a mean value of $3,626 in total educational benefits for participants, $1,209 for nonparticipants, and $4,834 for society as a whole. These numbers, along with their respective standard deviations from the Monte Carlo simulation, are presented in Table 1.

**Recipient Value of Section 8 Vouchers: Benefits of Improved Child Health (Item 5 in Table 1)**

Many social interventions are credited with improving the health status of recipients, and the Section 8 program is no exception. Vouchers have the potential to enable recipients to relocate to higher quality housing in a more desirable neighborhood. Such relocations may ameliorate conditions that negatively affect both physical and mental health and provide improved access to health care facilities and providers. Because these program-induced changes seem more likely to affect the health status of children in Section 8 recipient families than that of adults, we focus on the potential gains of recipiency on children’s health.

To calculate the value of children’s health improvements from Section 8 voucher receipt, we rely on the link between the increase in family income from Section 8 receipt and children’s health status. As described above, we calculate this increase in income to be approximately $4,700. Depending on the income base, which is uncertain for our sample, this corresponds to an increase of 0.31 to 0.47 on a natural log scale; in the Monte Carlo analysis we allow the natural log of the income increase to vary uniformly over this range. We then relate this estimated income change caused by voucher receipt to estimates of the relationship between family income and children’s health.

Estimates of the relationship between family income and children’s health presented by Condliffe and Link (2008) are among the most convincing and current. We combine our estimated increase in income caused by voucher receipt with Condliffe and Link’s regression coefficient and standard error for the relationship between family income and child health (Table 8, column 1). This equation estimates the determinants of child health in 2002, controlling for the presence of pre-existing chronic conditions in 1997, an approach that strikes us as particularly appropriate for our voucher population.

---

31 See Appendix A for an alternative method of estimating this benefit. All appendices are available at the end of this article as it appears in JPAM online. See the complete article at wileyonlinelibrary.com.

32 Haveman and Wolfe (1984) and Wolfe and Haveman (2001) review this literature and present estimates of the value of several of these nonmarketed and public goods impacts. The nonmonetary private impacts they identify include gains from improved consumption (including fertility) choices, improved child quality, and improved coping skills; the social impacts include gains from greater community participation, decreased dependency, and increased charitable giving. See also Acemoglu and Angrist (2000).

33 The natural log of the average income increase is 0.47 if we use the average case-level earnings ($8,000) for our sample and assume that cases have no other source of income. If we assume that cases have $4,000 in non-earnings income, then the natural log of the income increase is 0.31.
Condliffe and Link’s results (2008, Table 8) show that a one-unit increase in log income reduces the probability of being in Good/Fair/Poor health (compared to Excellent/Very Good health) by 0.055. We use this estimate along with its standard error of 0.019 in our Monte Carlo simulation. Multiplying this estimate by the increase in log income attributable to Section 8 receipt provides the decrease in a child’s probability of being in Good/Fair/Poor health that is attributable to the first year of voucher receipt.

To value this improvement, we must assign values to being in Excellent/Very Good health and being in Good/Fair/Poor health. To assign these values we rely on work by Nyman et al. (2007) and Dow and Schoeni (2008). Dow and Schoeni calculate the value of a year lived in optimal health to be $100,000, which they describe as a conservative estimate. We take this to be the value of a life-year for children in our sample and use it as the basis for calculating the value of the improvement in health attributable to Section 8 voucher receipt. This figure encompasses the value of a life-year to the child, the family, and society in general. Nyman et al. (2007) provide point estimates and standard errors for utility weights for each of the five categories of self-rated health that are used by Condliffe and Link (2008). Using the utility weights and their standard errors from Nyman et al., the Dow and Schoeni estimates of the value of a life-year, and the estimate of the effect of voucher receipt on the probability of being in Good/Fair/Poor health caused by Section 8 receipt, we obtain a mean value of improved health of $255 per child. Given that there are, on average, 1.5 children per case in our sample, the average per-case value of improved children’s health attributable to Section 8 receipt in the Monte Carlo simulation is $383, with a standard deviation of $141, which we present in Table 1.34

Recipient Value of Section 8 Vouchers: Value of Reduced Crime and Substance Abuse (Item 6 in Table 1)

Another potential benefit from housing voucher receipt is reduced exposure to, and participation in, criminal behavior and substance abuse. Although a substantial literature has used information from the housing support experiments targeted at public housing residents (primarily MTO) to study the effect of voucher receipt on youth problem behavior and crime-related activities,35 we conclude that these results do not provide a reliable guide to assessing the impacts of Section 8 voucher receipt (see footnote 6). Hence, we employ an alternative procedure to estimate this potential gain attributable to Section 8 voucher receipt.

In particular, we rely on Carlson et al.’s (2008a) finding that receipt of a Section 8 voucher results in households living in neighborhoods with a lower average unemployment rate. We couple this finding with empirical estimates of the effect of neighborhood unemployment rates on the level of criminal activities and other information to value the reduction of exposure to, and participation in, criminal behavior and substance abuse attributable to voucher receipt. Movement to a neighborhood with a lower unemployment rate is likely to generate two distinct benefits. First, given the improved employment prospects for neighborhood residents, recipient households are likely to exhibit reduced probabilities of both being a crime victim and having household members who engage in activities that may lead to arrest and conviction. Second, nonparticipants are likely to benefit from a reduced probability of being victimized. Together, the benefits accruing to participants and nonparticipants comprise the societal benefit.

34 See Appendix A for a more detailed description of this calculation. In addition, these values include the estimated benefits from increased use of publicly provided health care discussed above. To avoid a double counting of benefits, the value of increased use of public health care is not included in the table entry that presents the estimated value from increased use of public programs (item 3 in Table 1). All appendices are available at the end of this article as it appears in JPAM online. See the complete article at wileyonlinelibrary.com.

We estimate voucher receipt to result in recipients living in neighborhoods with an unemployment rate that is, on average, 0.21 percentage points lower than the neighborhood unemployment rate for matched comparison cases; in the Monte Carlo estimation we allow this effect to vary around this mean by its standard error of 0.035.\textsuperscript{36} We couple this estimated effect with estimates of the effect of neighborhood unemployment rates on crime rates, which are taken from Lin (2008). This study provides point estimates and standard errors for the effect of neighborhood unemployment rates on the prevalence of several types of crime. We rely on these values to estimate the reduction in the prevalence of these criminal activities attributable to voucher receipt.\textsuperscript{37} We then combine these values with information on (1) aggregate crime levels, (2) the proportion of households receiving Section 8 assistance, and (3) estimates of the willingness-to-pay for reduced crime presented in Cohen et al. (2004) to generate estimates of the benefits of reduced crime attributable to Section 8 receipt. (See Appendix A \textsuperscript{38} for details of this calculation.) Estimated via Monte Carlo techniques, this calculation procedure yields a mean per-case value of $37 as the impact of the program-induced reduction in, and exposure to, criminal behavior.

In addition, there is literature suggesting that increased employment (reduced unemployment) is tied to a reduction in substance abuse. To account for this benefit, we merely double our small estimate of the value of crime reduction. Hence, our estimate of the full first-year crime reduction benefit attributable to receipt of a Section 8 voucher is, on average, $74 per case. This value, which is split evenly between recipients and taxpayers, is included in Table 1.

**Tax-Related (Financial and Excess Burden) Costs of Voucher Provision (Item 7 in Table 1)**

The full taxpayer and social cost of voucher provision includes two main components: (1) the financial costs associated with the operation of the Section 8 program, and (2) the potential welfare loss associated with the distortionary behavior induced by the taxation that provides the revenue used to fund the provision of vouchers—the “excess welfare burden” of taxation. Because the precise revenue stream used to support the Section 8 program is unknown, we use a range of values of the excess burden of the personal income tax found in the literature and assume the deadweight loss from other forms of taxation that may be used to fund the Section 8 program falls within this range.

Above we estimated the average taxpayer cost per authorized voucher for Wisconsin in 2008 to be $5,515. Parameter estimates of the marginal excess tax burden vary somewhat in the economics literature, but for the personal income tax they generally range from 0.10 to 0.35. Several studies present estimates that fall within this range.\textsuperscript{39} In our Monte Carlo simulation we allow this cost to vary normally with a mean of 0.2 and a standard error of 0.05. Applied to the average taxpayer cost per

\textsuperscript{36} Carlson et al. (2008a) found that one year after voucher receipt, Section 8 recipients had moved to neighborhoods with unemployment rates that were, on average, 0.21 percentage points lower than the unemployment rates in the neighborhoods of a group of matched comparison cases.

\textsuperscript{37} Lin (2008) uses an instrumental variables approach to estimate the effect of unemployment on crime, finding that unemployment rates are positively related to most types of crime. For example, Lin (2008) estimates that that a 1 percentage point decrease in the unemployment rate leads to approximately a 6 percent drop in property crime and a 1.6 percent drop in violent crime. These estimates are very similar to the 2-stage least squares estimates presented by Raphael and Winter-Ebmer (2001).

\textsuperscript{38} All appendices are available at the end of this article as it appears in JPAM online. See the complete article at wileyonlinelibrary.com.

authorized voucher, the simulation yields a mean value of $1,103 as the average welfare cost associated with the increased taxation required to finance the Section 8 program. In total, the Monte Carlo simulation estimates that the average welfare cost per authorized voucher is $6,618 ($5,515 + $1,103). This total is assigned to both taxpayers and society.

**Tax-Related Costs of Increased Voucher Recipient Public Program Benefits and Child Care (Item 8 in Table 1)**

In addition to the direct costs of the Section 8 program, taxpayers also incur costs related to the increased utilization of public benefits attributable to voucher receipt (e.g., food stamps, TANF, child care services, and public health insurance).\(^{40}\) Again, this cost includes both the required taxpayer payments and the excess welfare burden associated with the increased taxpayer costs.

As we have described, the annual total taxpayer funds required to pay for benefits from these programs that are attributable to these programs is $878 per case.\(^{41}\) Applying the randomly drawn excess burden estimate described above to the taxpayer funds required to pay for additional public program benefits, the Monte Carlo simulation returns a mean value of $176. Taken together, the simulation yields a mean per-case tax-related total cost of these expenditures of $1,055.

**Welfare Effects from Labor Market Responses of Voucher Recipients (Item 9 in Table 1)**

Recipients of Section 8 vouchers face altered labor market incentives related to the income-conditioned nature of the benefit structure in the program as described. Because the value of the voucher is reduced as work and earnings increase, recipients face an effective wage that is below the market wage; the substitution effect results in voucher recipients supplying fewer hours of work. The welfare costs of this distortion are borne by participants and, therefore, society.

In our analysis of the impacts of the Section 8 program, Carlson et al. (2009) estimated that voucher receipt results in a decrease in initial employment and earnings.\(^{42}\) Although the income effect of voucher receipt entails no change in social welfare for either voucher recipients or other citizens, the substitution effect does result in a distortion-induced change in labor supply that entails a “deadweight,” or social welfare, loss.

In Appendix C\(^{43}\) we present our detailed analysis of the welfare effects associated with this substitution effect; we use the estimated wage distortion relying on estimates in Carlson et al. (2009) and estimates of the elasticity of supply and demand that range from 0.5 to 3, which spans the range of empirical estimates. We conclude that the social loss varies between $50 per case per year and $290 per case per year, depending on the combination of supply and demand elasticities assumed. In the Monte Carlo analysis we allow the social loss to vary uniformly over this range. This

---

\(^{40}\) In theory, taxpayers may also incur costs related to the additional years of education attributable to voucher receipt. However, the small magnitude of the estimate (0.03 years of additional schooling), coupled with the low concentration of voucher recipients in schools, lead us to assume that the marginal cost of educating these students is zero, and is thus excluded from this analysis.

\(^{41}\) This includes the costs of W-2 ($137), food stamps ($84), Medicaid/BadgerCare ($234), and child care ($423).

\(^{42}\) The estimated decrease in earnings reflects the sum of the income effect (as the “income” of recipients rises due to the value of the voucher, more leisure time may be chosen) and the substitution effect (as the price of leisure falls because of the benefit reduction rate implicit in the structure of the program, recipients choose more of it).

\(^{43}\) All appendices are available at the end of this article as it appears in JPAM online. See the complete article at wileyonlinelibrary.com.
loss ranges from about 0.7 to 4.0 percent of total earnings, or from about 5 percent to 30 percent of the change in earnings attributable to the program.

Community Effects on Origin and Destination Neighborhoods (Item 10 in Table 1)

Several studies have analyzed the effect of the presence of Section 8 voucher recipients on neighborhood property values, with mixed findings. Through the mid-1990s, studies generally found that the presence of voucher households did not have a statistically significant effect on the price of single-family homes. This literature is reviewed in Galster, Tatian, and Smith (1999). Beginning in the mid-1990s, several important studies concluded that under certain conditions and with specific kinds of housing, the introduction of subsidized housing cases can have a negative impact on property values; this literature emphasized that context is important.44

At the end of the decade, Galster, Tatian, and Smith (1999) published a convincing study of the impact of Section 8 units on neighborhood property values, using unique data from Baltimore County, Maryland, and residents involved in the Section 8 program. They find that the presence of Section 8 units had a strong positive effect on the value of property located within 500 feet of the unit in “advantaged” neighborhoods—those with high-value, mostly white-owned properties that appreciated over time. In “vulnerable” neighborhoods—those with low- or moderately valued, mostly nonwhite-owned properties that declined in value—the presence of Section 8 units within 2,000 feet (4 times as far as the effect in advantaged neighborhoods) reduced property values. They conclude that “the impact on property values was complex and mixed, depending on neighborhood type, distance, and the number of nearby Section 8 sites and occupied units” (p. 911).45

The complexity of the results in previous studies is not surprising. Identifying the marginal impact of the introduction of a voucher recipient into a neighborhood on surrounding property values depends on several, difficult-to-observe circumstances and relationships. These include:

- The vacancy rate in the destination area (with vacancies, there is no displacement and the increased rental demand by voucher recipients may have a negligible or slightly positive effect on price);
- The short-run elasticity of housing supply in the area;
- The concentration of voucher recipients in the area prior to a move;
- The distance of the voucher recipient unit from owner-occupied homes in the area;
- Efforts of landlords to upgrade deteriorated units to make them eligible for a voucher recipient; and
- The specific characteristics of the area, including average property values and long-run trends in property values (the poverty rate in the area receiving the voucher recipient may proxy for this effect).

The empirical work by Galster, Tatian, and Smith (1999) best addresses the complexity inherent in identifying the effect of subsidized housing voucher residency on surrounding property values and convincingly demonstrates that the addition of a Section 8 voucher case has a positive effect on property values in advantaged areas,

---


45 Several subsequent studies have affirmed the importance of context when analyzing the effect of subsidized housing sites on surrounding property values (Susin, 2002; Santiago, Galster, & Tatian, 2001; see Freeman & Botein, 2002, for a review of the empirical literature).
but a negative effect in vulnerable areas.\textsuperscript{46} We rely on their estimates to calculate the average net change in property values in both vulnerable and advantaged areas attributable to the Section 8 program. (See Appendix A\textsuperscript{47} for details of this calculation.)

Consider, first, vulnerable neighborhoods, which we define as those with poverty rates above 11.7 percent, a value that is one county-level standard deviation above the 2000 Wisconsin poverty rate of 8.7 percent.\textsuperscript{48} Given this definition, our data show that there are 3,232 vulnerable block groups receiving 3,460 Section 8 cases in their first year of receipt. We assume that the movement of at least one Section 8 case is required for a reduction in property values in these neighborhoods. We combine an estimate of the negative effect on property values of a movement of a Section 8 case (based on Galster, Tatian, & Smith, 1999), the median value of owner-occupied housing in vulnerable neighborhoods, the number of such neighborhoods receiving at least one Section 8 case, the average number of households in the block group, the proportion of households that are owner-occupied, an estimate of the additional number of low-income families that moved into the neighborhood because of the program, and the number of Section 8 cases to obtain the aggregate per-case reduction in property values caused by the movement of a Section 8 case into a vulnerable neighborhood. Our Monte Carlo analysis yields a mean per-case reduction of property values in vulnerable neighborhoods of $2,726.

Second, consider advantaged neighborhoods, where Galster, Tatian, and Smith (1999) found a positive effect on the property value of units located within 500 feet of a Section 8 unit. We assume the poverty rate threshold for advantaged neighborhoods to be 5.7 percent, which is 1 standard deviation below the 2000 Wisconsin poverty rate of 8.7 percent. There are 1,482 such block groups that received a Section 8 case in our data; these block groups received 1,537 individual Section 8 cases. We again assume that the movement of at least one Section 8 case into an advantaged neighborhood is required for an increase in property values in these neighborhoods; Galster, Tatian, and Smith (1999) find an increase of 1 percent associated with such a move. In estimating this effect, we follow a procedure similar to that

\textsuperscript{46} There is a reasonable rationale for such differential impacts. First, there is likely to be a selection effect among Section 8 recipients with regard to their neighborhood choices. Recipients who relocate to advantaged neighborhoods may view the voucher as a way to obtain better employment prospects, better schools, and a safer environment. Such voucher recipients are likely to be quite good tenants. Indeed, residents of the advantaged neighborhoods are generally unaware of the presence of Section 8 recipients in their communities (see the Galster, Tatian, & Smith, 1999, discussion of focus groups). Galster, Tatian, and Smith conjecture that the efforts of landlords in upgrading units so as to successfully attract Section 8 voucher recipients may account for the positive impact of vouchers on property values in areas with more highly valued homes and robust growth in property values. They state:

Our stratified econometric results clearly showed that in higher-valued, white neighborhoods . . . the effect on sales prices within 500 feet is consistently positive. We speculate that this is due to the physical improvements to the dwelling made at the time of Section 8 occupancy, although we unfortunately have no direct evidence on this point from the focus group. We could go even further and speculate that it is precisely because the Section 8 unit in question was apparently renovated and/or then well maintained and there were no serious behavioral issues with the Section 8 household(s) that the respondents did not think of it as a subsidized site, given the stereotypes they held. (p. 909)

Section 8 recipients who move to vulnerable neighborhoods may view the voucher as little more than a rental subsidy. These recipients may not be as high-quality tenants as those who move to more advantaged neighborhoods. They describe the reason for this negative property value effect in vulnerable neighborhoods as follows: “[Focus group] respondents felt that these in-movers (Section 8 recipients) had different values and standards than the current residents desired for their neighborhood” (p. 908).

\textsuperscript{47} All appendices are available at the end of this article as it appears in JPAM online. See the complete article at wileyonlinelibrary.com.

\textsuperscript{48} We use the 2000 Wisconsin poverty rate because the block group data in our analysis are from the 2000 census. It is interesting to note that our definition of a vulnerable neighborhood is very similar to the vulnerable neighborhood threshold found by Galster, Cutsinger, and Malega (2008).
used in calculating the property value changes from the presence of additional Section 8 units in vulnerable neighborhoods. The Monte Carlo analysis yields a mean per-case increase in property values in advantaged areas of $1,563.

Combining our estimate of the case-level reduced property values in vulnerable neighborhoods ($2,726) with that of the case-level increased property values in advantaged neighborhoods ($1,563) results in an estimate of the net effect of the Section 8 program on destination neighborhoods of −$1,162, with a standard deviation of $1,828. We use this estimate in Table 1.49

CONCLUSION AND NET BENEFITS

The preceding sections described the procedures used to estimate the social benefits and costs of the Section 8 housing voucher program. Because we estimate all benefit and cost categories using Monte Carlo techniques, there is a distribution of estimates for each category. Table 1 presents the mean estimate, as well as the standard deviation of the distribution, for each benefit and cost category. Combining all benefit and cost categories returns a distribution of net benefit estimates. As we do for all benefit and cost categories, we present separate estimates for participants, nonparticipants, and society. For each of these groups, the mean and standard deviation of the distribution of net benefit estimates are presented in Table 1; histograms of these distributions are presented in Figure 1.

As expected, participants benefit substantially from the Section 8 program. The mean net benefit estimate for participants is $9,066 and the minimum and maximum estimates are $5,369 and $17,553, respectively. All net benefit estimates for nonparticipants, on the other hand, are negative. The mean, minimum, and maximum estimates are −$7,197, −$15,465, and −$695, respectively.

The overall level of social net benefits, however, is not as clear-cut. As Table 1 indicates, the mean estimate of societal net benefits returned by the Monte Carlo simulation is $1,869. However, the relatively large standard deviation—$2,760—indicates that there is a fair amount of uncertainty associated with this estimate; of the 100,000 trials in the Monte Carlo simulation, approximately 75 percent returned positive estimates of net benefits, while about 25 percent returned negative estimates. Further, the minimum and maximum estimates of net benefits are −$8,387 and $15,354, respectively. Taken as a whole, it seems likely that the Section 8 program meets the efficiency standard of positive net benefits, but such a conclusion cannot be stated with absolute certainty.

49 The preceding calculations are designed to estimate the effect of voucher receipt on property values in destination neighborhoods. In theory, the Section 8 voucher program could affect property values in origin neighborhoods as well. However, policy and research attention have focused almost exclusively on property value impacts in destination neighborhoods; no empirical work has estimated the effect of the Section 8 program on property values in origin neighborhoods. Estimating the impacts of the Section 8 program on both the origin and destination neighborhoods would require a general equilibrium analysis, which has not been undertaken. One study that can potentially bring some evidence to bear on this issue is Galster, Cutsinger, and Malega (2008). In this study the authors relate the proportion of households receiving public assistance and the neighborhood poverty rate to neighborhood property values. They find that increases in public assistance receipt and the poverty rate only exert a negative effect on neighborhood property values above a specific threshold. Applying the findings from Galster, Cutsinger, and Malega (2008) to this analysis would imply that the Section 8 program can only have a positive impact on property values in origin neighborhoods. This is due to the fact that voucher recipients, by definition, are recipients of public assistance. As a result, when they leave an origin neighborhood, the proportion of households receiving public assistance could only decrease or remain unchanged. Under this scenario, the Galster, Cutsinger, and Malega (2008) results would preclude a negative impact of the Section 8 program on property values in origin neighborhoods. This methodology, however, does not consider the possibility that the outmigration of voucher recipients from origin neighborhoods could result in a greater number of vacant housing units, which could depress property values in these neighborhoods. Given the competing theoretical considerations and the lack of any empirical evidence on this issue, we assume that Section 8 voucher recipients are replaced, on average, by families with similar socioeconomic characteristics and have no net impact on property values in origin neighborhoods.
Like any benefit–cost analysis, a number of caveats and limitations should be kept in mind when interpreting our results. First, although we attempt to provide empirical estimates for a comprehensive set of social costs and benefits of the Section 8 program, there are likely to be some omissions. For example, we did not attempt to estimate the value that taxpayers may place on the improved standard of living of voucher recipients for completely altruistic reasons. To the extent of the taxpayers’ willingness-to-pay to improve the standard of living of voucher recipients, the estimates we present above underestimate the true social value of the Section 8 voucher program. Similarly, we did not provide an empirical estimate of the impact of the Section 8 program on property values in origin neighborhoods. Although the direction of this effect is theoretically ambiguous, it is unlikely to be zero; our analysis does not reflect this reality.

Second, we employ Monte Carlo simulations to account for uncertainty inherent in estimating the benefits and costs of any social program. However, the Monte Carlo analysis primarily reflects uncertainty arising from the fact that much of the empirical work underlying our benefit and cost estimates are based on samples of voucher recipients, rather than the universe of voucher recipients. The Monte Carlo simulations do not reflect uncertainty regarding potential bias in the underlying empirical estimates. Although we have taken multiple steps in our work to eliminate the potential endogeneity between voucher receipt and the wide array of outcomes we study, we cannot claim that we have eliminated every potential source of bias in our estimates. For outcomes we do not study explicitly, we draw on high-quality published work that employs rigorous analytical techniques to estimate the

---

50 Specifically, we employ propensity score matching coupled with regression adjustment and estimate a variety of sensitivity analyses. This approach rules out bias from omitted variables that are either observed in our data or unobserved, but time-invariant. This approach does not eliminate the possibility that unobserved, time-varying characteristics are influencing the observed relationship between voucher receipt and the outcomes we study.
effects of voucher receipt. Again, though, we cannot be certain that the estimates presented in these studies are completely free of bias. Given these conditions, this study represents an attempt to advance housing policy analysis—and social policy analysis more generally—at least as much as it represents an attempt to provide definitive estimates of the social costs and benefits of the Section 8 voucher program.

DEVEN CARLSON is a Ph.D. Candidate in the Department of Political Science, University of Wisconsin–Madison.

ROBERT HAVEMAN is a Professor Emeritus of Economics and Public Affairs at the University of Wisconsin–Madison.

THOMAS KAPLAN is a Senior Scientist Emeritus at the University of Wisconsin–Madison.

BARBARA WOLFE is a Professor of Economics in the Department of Population Health Sciences, University of Wisconsin–Madison.

ACKNOWLEDGMENTS

The research presented in this paper was generously supported by a grant from the John D. and Catherine T. MacArthur Foundation. We gratefully acknowledge that support. We would like to thank five referees and the editor of this journal for their helpful and constructive comments. Discussions with Jens Ludwig and David Weimer on earlier drafts of this paper were also helpful. We would also like to thank Dan Ross for his work in securing, cleaning, and organizing the data, and Deborah Johnson for editorial assistance.

REFERENCES


APPENDIX A

Description of Calculation Algorithms

In this appendix, we present the assumptions underlying the estimates in Table 1. We also present the step-by-step details of some of the more complex benefit and cost calculations described in the paper.

Recipient Value of Section 8 Vouchers: Housing Subsidy and Security

As described in the body of the paper, our estimate of the recipient value of a Section 8 voucher is based on our estimate of the taxpayer cost per authorized voucher. We estimate the average taxpayer cost per authorized voucher to be $5,515, which is the sum of the average housing assistance payment of $4,738 and $777 in administrative costs. As noted in footnote 10, the estimate of the average housing assistance payment is based on data from CBPP.51 The $777 in administrative costs consists of an administrative payment of 9 percent to housing authorities ($426), the cost of self-sufficiency coordinators ($26), and the estimated cost of HUD management and administration ($325). More specifically, the cost of family self-sufficiency coordinators in 2008 was $49 million, which, when spread equally over all Section 8 households, is about $26. Total expenditures for management and administration at HUD in 2008 were $1,545,000,000. Assuming that the share of the HUD program budget for tenant-based rental assistance is the basis for assigning the costs of management and administration by HUD of Section 8 yields $325 per subsidized household.

Recipient Value of Section 8 Vouchers: Increased Food Stamp Use

We estimate the average annual benefit level for food stamp recipient assistance groups in Wisconsin to be $2,100. The estimate was calculated from the following data: (1) average monthly food stamp benefits in Wisconsin ($23.5 million), and (2) average monthly number of assistance groups (134,616). We divided $23.5 million by 134,616 and multiplied by 12 to obtain our estimate of $2,100. The data used in this calculation are at http://dhs.wisconsin.gov/em/rsdata/index.htm.

Change in Recipient Income Attributable to Voucher Receipt

The change in recipient income attributable to voucher receipt serves as the basis for several benefit and cost estimates in this analysis. Our calculation of the change in income attributable to voucher receipt in the first year consists of the following components: the monetary value of the rental subsidy provided by a voucher ($4,738); the monetary value of increased welfare benefits ($137); the monetary value of increased food stamp receipt ($84); the monetary value of increased health care services ($234); the monetary value of increased child care services ($423); and the decrease in earnings attributable to voucher receipt ($858). Taken together, these components provide an estimate of $4,758 as the average change in case-level income in the first year of voucher receipt.

Value of Increased Child Education

An alternative approach for estimating the value of improved educational attainment would rely on information from the MTO experiments. Using test score results for the Baltimore MTO site (Ludwig, Ladd, & Duncan, 2001), and impact estimates from Krueger (1999), Johnson, Ladd, and Ludwig (2002) suggest that a

51 The CBPP data used to calculate the average cost of housing assistance data are available from the authors upon request.
test score improvement of the magnitude found in Ludwig, Ladd, and Duncan (2001) implies an increase in the present value of lifetime earnings of about $8,500. This corresponds to a per-case value of approximately $12,750. See also Sanbonmatsu et al. (2006) and Leventhal and Brooks-Gunn (2004).

Value of Increased Child Health

To value the improvement in child health caused by the first year of voucher receipt, we assign values to being in Excellent/Very Good health and being in Good/Fair/Poor health. To assign these values we rely on work by Nyman et al. (2007) and Dow and Schoeni (2008). As noted in the body of the paper, Dow and Schoeni calculate the value of a year lived in optimal health to be $100,000, which they describe as a conservative estimate. We take this to be the value of a life-year for children in our sample. Nyman et al. (2007) provide point estimates and standard errors for utility weights for each of the five categories of self-rated health that are used by Condliffe and Link (2008). Using the utility weights and their standard errors from Nyman et al., the Dow and Schoeni estimates of the value of a life-year, and the estimate of the effect of voucher receipt on the probability of being in Good/Fair/Poor health caused by Section 8 receipt, we obtain a mean value of improved health of $255 per child.

Specifically, Nyman et al. (2007) calculate utility weights of 0.941 for Excellent health, 0.903 for Very Good health, 0.844 for Good health, 0.711 for Fair health, and 0.498 for Poor health. We use these estimates, along with their empirical standard errors, in our Monte Carlo simulation. Multiplying these estimates by the value of a life-year presented by Dow and Schoeni (2008), a life year in Excellent health would be valued, on average, at $94,100; Very Good health would be valued at an average of $90,300, and so on. However, Condliffe and Link (2008, Table 8) do not use all five health categories in their analysis. Instead, Condliffe and Link aggregate Excellent/Very Good into one category and Good/Fair/Poor into a second category.

To value these two categories, we calculate a weighted average on the Dow and Schoeni scale. This weighted average is based on the utility weights presented in Nyman et al. (2007) combined with the proportion of individuals reporting to be in each of the five health categories as presented in Table 1 of Condliffe and Link (2008). For example, to calculate the value of Very Good/Excellent health, we multiply the Nyman et al. (2007) value for Excellent health by the ratio of ([Excellent]/[Very Good + Excellent]) in Table 1 of Condliffe and Link (2008) and then add to that the Nyman et al. (2007) value for Very Good multiplied by the ratio of ([Very Good]/[Very Good + Excellent]) in Table 1 of Condliffe and Link (2008). The following table presents the data needed to calculate this weighted average. In the utility weights category, the standard errors are presented in parentheses to the right of the point estimates.

<table>
<thead>
<tr>
<th>Health Status</th>
<th>Utility Weight</th>
<th>Proportion in Category (PSID)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>0.941 (0.0015)</td>
<td>0.48</td>
</tr>
<tr>
<td>Very Good</td>
<td>0.903 (0.0015)</td>
<td>0.32</td>
</tr>
<tr>
<td>Good</td>
<td>0.844 (0.0020)</td>
<td>0.16</td>
</tr>
<tr>
<td>Fair</td>
<td>0.711 (0.0035)</td>
<td>0.03</td>
</tr>
<tr>
<td>Poor</td>
<td>0.498 (0.0085)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Using the calculation procedure outlined above, the Monte Carlo analysis yields a mean value of about $92,600 for a year lived in Excellent/Very Good health, while the mean value of a year lived in Good/Fair/Poor health is about $80,700. Next, we take the difference between the estimates of the value of health status—the mean of which is $11,900—and multiply it by the decrease in the probability of being in
Good/Fair/Poor health caused by Section 8 receipt. This calculation procedure returns a mean value of improved health of $255 per child. Given that there are, on average, 1.5 children per case in our sample, the average per-case value of improved children’s health attributable to Section 8 receipt in the Monte Carlo simulation is $383, with a standard deviation of $140, which we present in Table 1.

**Value of Reduced Crime and Substance Abuse**

To estimate the value of reduced crime attributable to Section 8 voucher receipt, five pieces of information are needed: (1) the effect of unemployment rates on crime, (2) the willingness-to-pay for reduced crime, (3) the number of crimes, (4) the proportion of households receiving Section 8 assistance, and (5) the reduction in neighborhood unemployment rates caused by Section 8 voucher receipt.

Lin (2008) uses an instrumental variables approach to estimate the effect of unemployment on crime. He finds unemployment rates to be negatively related to most types of crime. The following table presents the estimates, and their associated standard errors, for the seven main types of crime. We use these parameter estimates to generate values of the reduction in each type of crime caused by a 1 percentage point reduction in the unemployment rate in our Monte Carlo analysis.52

<table>
<thead>
<tr>
<th>Crime</th>
<th>Coef.</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burglary</td>
<td>0.061</td>
<td>0.030</td>
</tr>
<tr>
<td>Larceny</td>
<td>0.065</td>
<td>0.024</td>
</tr>
<tr>
<td>Auto theft</td>
<td>0.035</td>
<td>0.047</td>
</tr>
<tr>
<td>Murder</td>
<td>0.002</td>
<td>0.046</td>
</tr>
<tr>
<td>Rape</td>
<td>-0.028</td>
<td>0.030</td>
</tr>
<tr>
<td>Assault</td>
<td>0.007</td>
<td>0.040</td>
</tr>
<tr>
<td>Robbery</td>
<td>0.057</td>
<td>0.052</td>
</tr>
</tbody>
</table>


For estimates of the willingness-to-pay for reduced crime, we rely on values presented in Cohen et al. (2004). Using a contingent valuation method, the authors estimate the collective, per-crime, willingness-to-pay. We use these estimates to generate values of the willingness-to-pay for reduced crime in our Monte Carlo analysis.53

<table>
<thead>
<tr>
<th>Crime</th>
<th>WTP</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burglary/theft</td>
<td>$25,000</td>
<td>$2,000</td>
</tr>
<tr>
<td>Robbery</td>
<td>$232,000</td>
<td>$29,000</td>
</tr>
<tr>
<td>Assault</td>
<td>$70,000</td>
<td>$6,500</td>
</tr>
<tr>
<td>Rape</td>
<td>$237,000</td>
<td>$39,500</td>
</tr>
<tr>
<td>Murder</td>
<td>$9,700,000</td>
<td>$600,000</td>
</tr>
</tbody>
</table>

Source: Cohen et al. (2004).

Our estimates of the number of crimes are drawn from the annual Crime in Wisconsin report issued by the Wisconsin Office of Justice Assistance (Wisconsin Office of Justice Assistance [WOJA], 2009). The report shows that the following number of each type of crime occurred in Wisconsin in 2008. These numbers serve as the third component of the calculation we use to value the reduction in crime attributable to

---

52 These estimates are very similar to the 2SLS estimates presented by Raphael and Winter-Ebmer (2001).
53 Because Cohen et al. (2004) do not present an explicit estimate for auto theft, we use their estimate for robbery as the estimated willingness-to-pay for reduced auto theft.
Section 8 receipt. Because these numbers are reported with certainty, we do not vary them in the Monte Carlo simulation.

<table>
<thead>
<tr>
<th>Crime</th>
<th>Freq.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burglary</td>
<td>27,540</td>
</tr>
<tr>
<td>Larceny</td>
<td>116,205</td>
</tr>
<tr>
<td>Auto theft</td>
<td>11,540</td>
</tr>
<tr>
<td>Murder</td>
<td>147</td>
</tr>
<tr>
<td>Rape</td>
<td>1,120</td>
</tr>
<tr>
<td>Assault</td>
<td>9,117</td>
</tr>
<tr>
<td>Robbery</td>
<td>5,160</td>
</tr>
</tbody>
</table>

Source: WOJA (2009).

Our estimate of the proportion of households receiving Section 8 assistance draws on data from both HUD and the American Community Survey (ACS). HUD data indicate that approximately 27,000 households in Wisconsin receive voucher assistance. The ACS estimates that there are approximately 2.2 million households in Wisconsin. Combining these findings, we estimate that just over 1 percent of Wisconsin households receive voucher assistance. This number does not vary in our Monte Carlo simulation.

Finally, previous work done by the authors finds that one year after voucher receipt, Section 8 recipients had moved to neighborhoods with unemployment rates that were, on average, 0.2 percent lower (with a standard error of 0.035) than the unemployment rates in the neighborhoods of a group of matched comparison cases (Carlson et al., 2008a). We use this estimate, and its associated standard error, to generate values of the reduction in neighborhood unemployment for Section 8 families in our Monte Carlo analysis.

After generating the values for the Monte Carlo analysis for each of the five pieces of information described, we calculate the value of the reduction in crime attributable to Section 8 in the following manner. First, we multiply the reduction in crime attributable to a 1 percentage point reduction in the unemployment rate by the reduction in neighborhood unemployment rates for Section 8 families.54 Second, for each of the seven types of crime, we multiply the reduction in crime attributable to the reduction in the unemployment rate by the number of crimes. This gives us the reduction in the number of crimes attributable to lower neighborhood unemployment. Third, we multiply the reduction in the number of crimes by the willingness-to-pay for the reduction in crime. Finally, we multiply that number by the proportion of households receiving Section 8 assistance to get the final value of reduced crime attributable to Section 8 receipt. The following equation lays out the calculation more succinctly:

\[
\text{Value of reduced crime from S8} = (\text{Reduction in crime from reduced unemployment}) \times (\text{Reduction in unemployment from S8}) \times (\text{Number of crimes}) \times (\text{WTP for reduction in crime}) \times (\text{Proportion of S8 households})
\]

After performing this calculation for each of the seven types of crime, we sum the values for each type of crime to arrive at a total value for reduced crime attributable

54 This calculation is necessary because Lin’s (2008) estimates are based on a 1 percentage point reduction in unemployment. We find the effect of Section 8 on neighborhood unemployment to be smaller than that and, as a result, must adjust Lin’s estimates accordingly.
to Section 8 receipt. We then divide by the 27,000 voucher households to get a per-case estimate of the value of reduced crime attributable to Section 8 receipt.

Community Effects on Origin and Destination Neighborhoods

Relying on estimates in Galster, Tatian, and Smith (1999), we calculate the net change in property values attributable to the Section 8 program. Consider, first, vulnerable neighborhoods, which we define as those with poverty rates above 11.7 percent, a value that is 1 county-level standard deviation above the 2000 Wisconsin poverty rate of 8.7 percent. We use the 2000 Wisconsin poverty rate because the block group data in our analysis are from the 2000 census. It is interesting to note that our definition of a vulnerable neighborhood is very similar to the vulnerable neighborhood threshold found by Galster, Cutsinger, and Malega (2008).

Given this definition, our data show that there are 3,232 vulnerable block groups receiving 3,460 Section 8 cases in their first year of receipt. We assume that the movement of at least one Section 8 case is required for a reduction in property values in these neighborhoods. We combine an estimate of the negative effect on property values of a movement of a Section 8 case (based on Galster, Tatian, & Smith, 1999), the median value of owner-occupied housing in vulnerable neighborhoods, the number of such neighborhoods receiving at least one Section 8 case, the average number of households in the block group, the proportion of owner-occupied units in the block group, an estimate of the additional number of low-income families that moved into the neighborhood because of the program, and the number of Section 8 cases to obtain the aggregate per-case reduction in property values caused by the movement of a Section 8 case into a vulnerable neighborhood.

Based on estimates in Galster, Tatian, and Smith (1999), we allow the negative effect of the movement of a Section 8 case on property values to vary uniformly from 0 to 0.4 percent in the Monte Carlo simulation. (We assume the movement of cases beyond the first has no effect on property values; the maximum number of cases moving into a single block group is 4 and 3,029 of the 3,232 block groups received only one case.) We then multiply this value by the median value of owner-occupied housing in vulnerable neighborhoods to obtain the average reduction in property values caused by movement of a Section 8 case into a vulnerable neighborhood. Next, we multiply the average reduction in property values by 3,232, which is the number of vulnerable block groups receiving at least one Section 8 case. We then multiply this value by the number of households in the block group, which varies normally with a mean of 600 and a standard error of 50. Finally, we scale the resulting value by the proportion of property units that are owner-occupied in vulnerable neighborhoods. When divided by the number of Section 8 cases, this value represents the aggregate per-case reduction in property values caused by the movement of a Section 8 case into a vulnerable neighborhood. However, this calculation procedure implicitly assumes that none of these cases would have moved into a vulnerable neighborhood in the absence of the Section 8 program; such an assumption is clearly incorrect. Indeed, data from our sample indicate that while 28.4 percent of voucher recipients move to a vulnerable neighborhood, 22.3 percent of control group cases also move to a vulnerable neighborhood.

Assuming that these figures also apply to block groups, we conclude that approximately 21.5 percent of the 3,232 vulnerable block groups received a voucher recipient explicitly because of the Section 8 program; we allow this proportion to vary normally with a mean of 21.5 and a standard error of 5.0 in the Monte Carlo simulation. The final step in the calculation procedure involves multiplying the aggregate per-case reduction in property values by the proportion of block groups that receive a Section 8 case explicitly because of the program, which yields the Monte Carlo estimate of the mean per-case reduction of property values. Our Monte Carlo analysis yields a mean per-case reduction of property values in vulnerable neighborhoods of
$2,726. We assume that Section 8 voucher recipients are replaced by similar families in their origin neighborhoods; hence an analysis of effects of the program in the origin neighborhoods is unnecessary.

Second, consider advantaged neighborhoods, where Galster, Tatian, and Smith (1999) found a positive effect on the property value of units located within 500 feet of a Section 8 unit. We assume the poverty rate threshold for advantaged neighborhoods to be 5.7 percent, which is 1 standard deviation below the 2000 Wisconsin poverty rate of 8.7 percent. There are 1,482 such block groups that received a Section 8 case in our data; these block groups received 1,537 individual Section 8 cases. We again assume that the movement of at least one Section 8 case into an advantaged neighborhood is required for an increase in property values in these neighborhoods; Galster, Tatian, and Smith (1999) find an increase of 1 percent associated with such a move. In estimating this effect, we follow a procedure similar to that used in calculating the property value changes from the presence of additional Section 8 units in vulnerable neighborhoods.

In particular, we first multiply the estimated increase in property values caused by movement of a Section 8 case into an advantaged neighborhood by the median value of owner-occupied housing in these neighborhoods to obtain the average increase in property values caused by movement of a Section 8 case into an advantaged neighborhood. We then multiply the average increase by 1,482, which is the number of advantaged block groups receiving at least one Section 8 case. In the next step, we multiply this value by 0.25 of the number of households in the block group, which varies normally with a mean of 600 and a standard error of 50. We multiply by 0.25 to account for the fact that Galster, Tatian, and Smith (1999) find the positive impact of Section 8 households on property values in advantaged neighborhoods to extend only one-fourth as far as the negative impact of Section 8 households on property values in vulnerable neighborhoods. Finally, we scale the resulting value by the proportion of property units that are owner-occupied in advantaged neighborhoods. When divided by the number of Section 8 cases, this value represents the aggregate per-case increase in property values caused by the movement of a Section 8 case into an advantaged neighborhood. As was the case with vulnerable neighborhoods, this calculation procedure implicitly assumes that none of these cases would have moved into an advantaged neighborhood in the absence of the Section 8 program. Our data indicate that 12.6 percent of voucher recipients move to an advantaged neighborhood, but 10.7 percent of control group cases also move to such a neighborhood. Again, assuming that these figures also apply to block groups, we conclude that only about 15 percent of the 1,482 advantaged block groups received a Section 8 case explicitly because of the program; we allow this proportion to vary normally with a mean of 15.0 and a standard error of 2.5 in the Monte Carlo simulation. The final step involves multiplying the aggregate per-case increase in property values by the proportion of advantaged block groups that receive a Section 8 case explicitly because of the program. The Monte Carlo analysis yields a mean per-case increase in property values in advantaged areas of $1,563.

APPENDIX B

The Economic Welfare Effect of Voucher Receipt

In the standard analysis of the welfare effects of a Section 8 voucher, it is assumed that receipt of a voucher provides the recipient with the right to a subsidized price (see Reeder, 1985). Except in unique circumstances (e.g., a household occupying a unit renting exactly at fair market rent), the market price of housing exceeds the price perceived (and paid) by the recipient because of the subsidy; hence, relative to the situation without the voucher, the choice of the consumer is distorted; the value of the voucher to the recipient is less than the value of an equivalently costly grant of income. In this standard analysis, the taxpayer cost of providing the voucher...
The Benefits and Costs of the Section 8 Housing Subsidy Program

This standard welfare analysis fails to capture a number of the key characteristics of a Section 8 voucher, misrepresenting the with-voucher budget constraint. In particular, the program voucher does not directly subsidize the price of housing services chosen by the recipient; rather, it enables the recipient to purchase any level of housing services greater than minimum acceptable services (labeled “min” in Figure B1) to the level of fair market rent (FMR) in the community in which the recipient lives by spending 30 percent of their income. Additional units of housing above the minimum and less than FMR may be chosen by the voucher recipient at a zero incremental price. Moreover, beyond the level of FMR, the recipient family is able to purchase additional housing (up to 40 percent of their income) by paying the incremental market rent, without loss of the voucher.

In the diagram, the solid line represents the family’s budget constraint in the absence of the voucher. The level of housing service (HS) chosen by the family is given by the tangency of this budget constraint and the highest attainable indifference curve, and is shown as point A on the graph. Receipt of a Section 8 voucher shifts the family’s budget constraint to the series of dashed line segments. Between the minimum level of HS and the FMR, the family pays a constant 30 percent of their income. In this range, the marginal price of HS to the voucher recipient is zero. If the highest attainable indifference curve hits this budget constraint at the kink point such as B—a not unlikely outcome—the recipient’s choice of HS will be distorted, and there will be a net welfare loss.

However, it is possible that the voucher recipient would choose to purchase more housing than FMR by paying the market rent for HS greater than FMR. In this case, the family’s highest indifference curve would be tangent to the segment of the red budget constraint that is parallel to the original budget line, after the kink at point B. If the consumer’s equilibrium fell in this segment, the value of the voucher would be equal to an income grant reflected in this dashed budget constraint segment, and there would be no welfare loss. The cost of the voucher to taxpayers is just equal to its value to recipients.

In sum, the value of the voucher to a recipient is always less than or equal to the cost of the subsidy to taxpayers, depending on the equilibrium choice. If this analysis

Figure B1. Budget Constraint for Section 8 Recipients.
is applied to a large population of voucher recipients, the net welfare effect of the program aggregated over all recipients will be negative unless all recipients are observed to pay more than FMR for housing services.

APPENDIX C

Welfare Effects Due to Labor Supply Substitution Effect

To understand the welfare impact caused by the substitution effect on labor supply, consider a market demand curve for units of labor of the sort supplied by a Section 8 recipient. Given the (income-compensated) supply curve of labor, an equilibrium wage rate is observed. Because of the incentives in the program, the recipient faces a lower effective wage rate than the market wage rate; the value of the voucher is reduced as work and earnings increase, and this reduced voucher value is equivalent to a reduction in the market wage rate. Because of the perceived lower wage rate, voucher recipients will supply fewer units of work.

The area under the supply curve from the without-program level of work hours to the with-program level equals the gain in leisure from the decrease in work. It is equal to the change in work time multiplied by the wage rates at which leisure is valued. The area under the demand curve, however, reflects the change in the value of the output that would have been produced. It is equal to the change in work hours times the marginal output from the work change valued at the prices at which that output is valued. The relevant area under the demand curve exceeds that below the supply curve. This area is known as the deadweight loss triangle. It is this deadweight loss that equals the social loss attributable to the program-induced distortion.

The value of this loss clearly depends on the elasticity of demand, the elasticity of compensated supply, and on the resulting change in the effective wage rate faced by the recipient because of the program.

In the following analysis, we present estimates of the value of this loss making use of elasticity estimates that bound the reasonable range of values in the literature. Our loss estimates are for the initial year after receipt of the voucher. A more complete analysis would take account of earnings effects that extend beyond the first year after the receipt of a voucher. In presenting these estimates, we make the following assumptions:

1. Wage rate in the year prior to receipt $Y(p)$ is the same as the wage rate in the year of receipt $Y(r)$.
2. Estimates are only for the difference between year prior to receipt and year of receipt.
3. There is an equilibrium when the case works 1,035 hours per year at a wage rate of $7 per hour. (The $7 per hour estimate is assumed; we derived the number of hours from the average earnings of control group case in year of receipt.)

ESTIMATES FROM EMPIRICAL FINDINGS ON EARNINGS EFFECTS

Figure C1 illustrates the measure of the labor market-related welfare losses attributable to the Section 8 program, when we rely on our estimate of earnings changes attributable to the program.

Tables C1 and C2 provide estimates of the social welfare loss when the supply and demand curves are assumed to have elasticities of 0.5, 1, and 3.55 The change in

55 This range of values was obtained from Gruber and Saez (2002).
price (noted by the question marks in Figure C1) was determined by solving the following equation:

$$(\text{Change in quantity}/\text{Change in price}) \times (\text{Price}/\text{Quantity}) = E$$

In the above equation, the change in quantity is 146, the change in price is unknown, and the original price and quantity supplied are 7 and 1,035, respectively.

**Figure C1.** Deadweight Loss Estimates Based on Empirical Findings for Earnings (14.2 Percent Decline in Earnings, Calculated as “Treatment Effect” Divided by Mean Earnings of Control Group Cases in Year of Receipt).

**Table C1.** Estimated dollar value of social welfare loss.

<table>
<thead>
<tr>
<th>Elasticity of Supply</th>
<th>Elasticity of Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>288.35</td>
<td>216.23</td>
</tr>
<tr>
<td>216.23</td>
<td>144.10</td>
</tr>
<tr>
<td>168.19</td>
<td>96.07</td>
</tr>
</tbody>
</table>

**Table C2.** Estimated social welfare loss as a percentage of mean control group casehead earnings (top number in each cell) and as a percentage of the treatment effect in the year of receipt (bottom number in each cell).

<table>
<thead>
<tr>
<th>Elasticity of Supply</th>
<th>Elasticity of Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>3.98%</td>
<td>2.98%</td>
</tr>
<tr>
<td>28.13%</td>
<td>21.10%</td>
</tr>
<tr>
<td>2.98%</td>
<td>1.99%</td>
</tr>
<tr>
<td>21.10%</td>
<td>14.06%</td>
</tr>
<tr>
<td>2.32%</td>
<td>1.33%</td>
</tr>
<tr>
<td>16.41%</td>
<td>9.37%</td>
</tr>
</tbody>
</table>
The elasticity (\( E \)) is either 0.5, 1, or 3. Solving the equation provides us with the change in price, which can then be used to estimate the social welfare loss. For reference, the change in price for each elasticity is as follows:

- When \( E = 0.5 \), the change in price is 1.975.
- When \( E = 1 \), the change in price is 0.987.
- When \( E = 3 \), the change in price is 0.329.

These figures were used to calculate the social welfare loss estimates from the area of the DWL triangle; they are presented in the two tables.

Using this basis for estimating the labor market–related welfare effects of benefit receipt, we conclude that the social loss varies between $50 per case per year and $290 per case per year, depending on the assumed elasticity of demand. This loss is about 0.7 percent to 4.0 percent of total earnings, or from about 5 percent to 30 percent of the change in earnings attributable to the program.

If the elasticities of supply and demand are both equal to unity, this loss is shared equally by the worker (voucher recipient) and by the rest of society. We reflect this assumption in the entries in Table 1.