Auxiliary Tables to Accompany:

Willingness to Pay for Health Risk Reductions: Differences by Type of Illness

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Table 3M in this document reports additional descriptive statistics for the fitted distributions of WTP amounts reported in Table 3 of Cameron, DeShazo and Johnson (2010). It is important to keep in mind the following qualifications:

1. The choice scenarios proposed to respondents concerned private expenditures to reduce health risks of specific types. Given the wide variety of illness profiles proposed in the stated choice scenarios, it was essential for our models to accommodate the likelihood that individuals would assume they would not have to pay for these personal diagnostic tests if they actually suffered from the illness or injury, or if they died from the illness or injury. Likewise, while they might assume that they could maintain roughly their current income during a period of illness, death would terminate this income stream. For simulations concerning willingness to pay for public goods, however, the individual's future net income implications are less clear-cut. The footnote to the table explains the assumptions we make.

2. "Sudden death now" is an implausible illness profile for many of the diseases addressed in this study. In fact, none of the illness profiles offered to our respondents included sudden death now, because pretest subjects found it implausible that anything bad would happen to them in the near term if they were not sick at the moment. Thus the "sudden death now" illness profile is an out-of-sample prediction of our model, based on illness profiles in our stated choice scenarios that all had a minimum latency greater than zero. However, we provide these simulations of WTP for comparison with existing wage-risk studies, where "sudden death in the current period" is the implied scenario for choices based on prevailing mortality risks in different industries and occupations. It is crucial that these simulated WTP amounts for "sudden death now" isolate *only* the differences across illnesses in the value of the avoided lost life-years component of willingness to pay, for this maximum number of lost-life years (which obviously differ with the individual's age now). This is not the same thing as WTP to reduce the risk of a more-typical illness profile for the illness in question, which in most cases will involve some latency, a period of sickness, possibly some recovered-time, and only then some lost life-years.

3. The real distributions of illness profiles relevant to particular health threats for any affected population will involve varying periods of latency and varying numbers of sick-years. To illustrate how latency and sick-time can influence WTP, we include the simulations for an arbitrary profile involving ten years of latency, five years of illness with the specified disease, whereupon death occurs.

4. The low WTP amounts to reduce the risk of traffic accidents undoubtedly reflect many individual's inclinations to believe that they are better-than-average drivers and that accidents only happen to other people. However, we note that the story for traffic accident risks was different than for the other diseases in our choice scenarios. In particular, the costs were characterized as annualized costs of additional safety equipment on the respondent's vehicle. For long "latency" scenarios, respondents may have rejected the idea that any cost to upgrade their current vehicle would help, since the future time of the accident was beyond the length of time they would expect to be still be using their current vehicle. Respondents may have understood that this premium would have to be paid for *any* vehicle they owned, either now or in the future, to reduce their risk of injury or death in a traffic accident, but we have no way to be sure of this.

5. These predicted WTP amounts are also normalized on neutral values of perceived vulnerability to major illnesses, confidence in timely and effective health care, perceived controllability of different

types of risks, and the individual's subjective risk of experiencing each type of illness. All of these factors are allowed to shift the basic parameters of the model during the estimation phase, according to whether the data indicate that the main parameters are sensitive to these factors. For the simulated values of WTP in these tables, however, we benchmark the amounts as applying to individuals who have typical or neutral values for these ancillary variables.

6. The main feature of our models is that WTP is heterogeneous. The numbers in the table are relevant to an income level of $42,000 and a discount rate of 5%. Elsewhere, we explore the effect of different income assumptions and different discount rates on WTP as a function of the age of the individual (although those simulations do not differentiate by the type of disease). As needed, we can readily produce simulations of WTP at other income levels and for other discount rates, or for other illness profiles besides the limiting sudden death scenario or the single example of a non-sudden-death scenario calculated for this paper.

7. A further caveat is that the specifications employed in this paper do not differentiate by gender. Our state choice scenarios offered breast cancer illness profiles only to women and prostate cancer illness profiles only to men. However, the only place where gender enters into the estimating specifications in these models is that the assumed life expectancy presented to respondents in their choices scenarios reflected gender differences in life expectancy. Both life expectancies were characterized as being about eight years longer than actuarial life expectancies because pretest subjects discounted "early" deaths among their grandparents or parents and often rejected the actuarial life expectancy stated for them. The life expectancies assumed in these simulations are all the ones used for males of the age featured in the simulation, which were two years less than those for females.

8. We have simulated the same set of WTP estimates for females, presented in Table 3F. The difference reflect only these assumptions about modest differences in life expectancy, rather than any differences in the marginal utilities of sick-time, recovered time, or lost life-years, or the marginal utility of transformed net income, since these marginal utilities were constrained to be identical during estimation. For breast cancer, of course, the only evidence on coefficient differentials relative to heart disease is drawn from female respondents. For prostate cancer, the only evidence on coefficient differentials relative to heart disease is drawn from male respondents. Inspection of Table 3F reveals that WTP amounts differ minimally for 30-year-olds, where two more years at the end of life for females are discounted heavily. For 60-year-olds, however, WTP amounts differ by an amount on the order of $0.30 in the case of the sudden death scenario and about $0.40 in the scenario with latency. For 60-year-olds, the extra two years at the end of life for women is discounted less heavily.

9. In Table 3M, therefore, based on male life expectancies, the reader may wish to disregard the figures for breast cancer. Similarly, in Table 3F, based on female life expectancies, the reader may wish to disregard the figures for prostate cancer.

10. Our illness profiles that are most similar to the health threats considered in most wage-risk studies are the Heart Attack and Stroke cases. For these types of sudden deaths, our WTP to avoid sudden death, for a 45-year-old male with $42,000 in income, is probably as close as possible to a standard VSL estimate. The mean and median implied VSL for heart attack would be about $8.3 million and that for stroke would be $7.3 million.

TABLE 3M—WTP FOR A 10^{-6} RISK REDUCTION, BY HEALTH THREAT; TWO ILLNESS PROFILES, INCOME = $42,000, DISCOUNT RATE = 5%, MALE LIFE EXPECTANCIES (2003 U.S. DOLLARS: MEAN, (MEAN WITH NEGATIVE VALUES INTERPRETED AS ZERO), [MEDIAN]) [a]

Health Threat / Illness Profile	Sudden Death Now			10 year latency; sick 5 years, then death		
Age now	30	45	60	30	45	60
Heart Disease	4.61 (4.61) [4.52]	7.02 (7.02) [6.98]	7.73 (7.73) [7.59]	7.69 (7.69) [7.64]	5.79 (5.79) [5.76]	3.45 (3.45) [3.43]
Heart Attack	7.07 (7.07) [7.00]	8.28 (8.28) [8.17]	7.82 (7.82) [7.77]	7.60 (7.60) [7.51]	5.69 (5.69) [5.64]	3.34 (3.34) [3.32]
Breast Cancer	10.75 (10.75) [10.58]	8.91 (8.91) [8.85]	5.55 (5.55) [5.48]	10.02 (10.02) [9.97]	5.76 (5.76) [5.75]	1.38 (1.43) [1.35]
Prostate Cancer	6.79 (6.79) [6.77]	8.01 (8.01) [7.94]	7.54 (7.54) [7.50]	7.05 (7.05) [6.95]	5.13 (5.13) [5.09]	2.78 (2.78) [2.76]
Colon Cancer	3.80 (3.81) [3.78]	5.03 (5.03) [4.98]	4.56 (4.56) [4.49]	5.74 (5.74) [5.71]	4.41 (4.41) [4.37]	2.65 (2.65) [2.63]
Lung Cancer	2.23 (2.27) [2.21]	3.46 (3.46) [3.45]	3.00 (3.00) [2.96]	4.80 (4.80) [4.72]	2.88 (2.88) [2.85]	0.52 (0.58) [0.51]
…* smoker	7.86 (7.86) [7.76]	9.07 (9.07) [9.01]	8.61 (8.61) [8.53]	10.4 (10.4) [10.32]	8.50 (8.50) [8.42]	6.16 (6.16) [6.13]
Skin Cancer	0.60 (0.94) [0.62]	1.01 (1.12) [1.01]	-0.27 (0.41) [-0.29]	2.63 (2.63) [2.63]	0.74 (0.78) [0.73]	-1.60 (0) [-1.58]
Stroke	6.08 (6.08) [6.06]	7.30 (7.30) [7.21]	6.83 (6.83) [6.79]	6.15 (6.15) [6.07]	4.23 (4.23) [4.20]	1.88 (1.88) [1.88]
Respiratory Disease	1.24 (1.41) [1.23]	1.98 (2.00) [1.98]	1.02 (1.20) [1.07]	1.91 (1.94) [1.90]	0.69 (0.77) [0.70]	-0.98 (0.03) [-0.96]
…* smoker	5.33 (5.33) [5.32]	6.06 (6.06) [6.03]	5.11 (5.11) [5.12]	6.00 (6.00) [5.93]	4.78 (4.78) [4.73]	3.12 (3.12) [3.08]
Traffic Accident	0.89 (1.11) [0.86]	1.49 (1.53) [1.48]	0.48 (0.75) [0.49]	1.70 (1.71) [1.66]	-0.64 (0.10) [-0.66]	-3.23 (0) [-3.2]
Diabetes	4.97 (4.98) [4.91]	2.58 (2.60) [2.60]	-1.42 (0.22) [-1.40]	5.04 (5.04) [4.98]	1.77 (1.77) [1.76]	-1.66 (0) [-1.66]
Alzheimer's Disease	4.11 (4.12) [4.06]	4.27 (4.27) [4.20]	2.73 (2.74) [2.69]	5.17 (5.17) [5.13]	3.51 (3.51) [3.48]	1.40 (1.40) [1.41]

Note: Based on 1000 random draws from the asymptotically joint normal distribution of the estimated parameters. Simulations assume that for health risk reductions provided by public policies, respondents do not assume that they will be excused from paying for the policy if they get sick. Furthermore, if they die early from this illness, they do not factor into their implicit willingness to pay calculations the fact that if they die, they will earn no income but will not have to pay for the program. In this case, $cterm_i^j = yterm_i^j = pdvc_i^j$ .Specifically, the separate probabilities of getting sick, either with or without the risk reduction program, do not figure into the $WTP(\mu r)$ formula.

TABLE 3F—WTP FOR A 10^{-6} RISK REDUCTION, BY HEALTH THREAT; TWO ILLNESS PROFILES, INCOME = $42,000, DISCOUNT RATE = 5% , FEMALE LIFE EXPECTANCIES (2003 U.S. DOLLARS: MEAN, (MEAN WITH NEGATIVE VALUES INTERPRETED AS ZERO), [MEDIAN]) [a]

Health Threat / Illness Profile	Sudden Death Now			10 year latency; sick 5 years, then death		
Age now	30	45	60	30	45	60
Heart Disease	4.64 (4.64) [4.55]	7.14 (7.14) [7.11]	8.01 (8.01) [7.86]	7.74 (7.74) [7.69]	5.98 (5.98) [5.95]	3.86 (3.86) [3.85]
Heart Attack	7.10 (7.10) [7.02]	8.41 (8.41) [8.29]	8.10 (8.10) [8.05]	7.65 (7.65) [7.57]	5.89 (5.89) [5.83]	3.75 (3.75) [3.71]
Breast Cancer	10.78 (10.78) [10.62]	9.05 (9.05) [8.98]	5.82 (5.82) [5.75]	10.1 (10.1) [10.04]	5.98 (5.98) [5.97]	1.77 (1.79) [1.76]
Prostate Cancer	6.82 (6.82) [6.80]	8.13 (8.13) [8.06]	7.82 (7.82) [7.78]	7.10 (7.10) [7.00]	5.33 (5.33) [5.28]	3.19 (3.19) [3.16]
Colon Cancer	3.83 (3.83) [3.81]	5.15 (5.15) [5.10]	4.84 (4.84) [4.77]	5.79 (5.79) [5.76]	4.61 (4.61) [4.57]	3.06 (3.06) [3.03]
Lung Cancer	2.26 (2.29) [2.24]	3.58 (3.58) [3.57]	3.28 (3.28) [3.23]	4.85 (4.85) [4.78]	3.08 (3.08) [3.06]	0.93 (0.94) [0.92]
…* smoker	7.89 (7.89) [7.79]	9.20 (9.20) [9.12]	8.88 (8.88) [8.82]	10.46 (10.46) [10.37]	8.70 (8.70) [8.63]	6.57 (6.57) [6.53]
Skin Cancer	0.62 (0.96) [0.65]	1.14 (1.23) [1.14]	0.01 (0.55) [-0.02]	2.69 (2.69) [2.68]	0.94 (0.96) [0.93]	-1.19 (0.02) [-1.17]
Stroke	6.11 (6.11) [6.08]	7.42 (7.42) [7.33]	7.11 (7.11) [7.07]	6.20 (6.20) [6.12]	4.43 (4.43) [4.4]	2.29 (2.29) [2.29]
Respiratory Disease	1.27 (1.43) [1.25]	2.11 (2.12) [2.10]	1.31 (1.43) [1.35]	1.97 (1.99) [1.95]	0.89 (0.94) [0.91]	-0.57 (0.10) [-0.55]
…* smoker	5.36 (5.36) [5.34]	6.19 (6.19) [6.15]	5.39 (5.39) [5.37]	6.05 (6.05) [5.98]	4.97 (4.97) [4.93]	3.53 (3.53) [3.5]
Traffic Accident	0.91 (1.13) [0.89]	1.61 (1.64) [1.59]	0.73 (0.94) [0.74]	1.75 (1.75) [1.71]	-0.46 (0.14) [-0.46]	-2.88 (0) [-2.85]
Diabetes	4.99 (5.00) [4.94]	2.69 (2.71) [2.72]	-1.17 (0.29) [-1.16]	5.08 (5.08) [5.02]	1.95 (1.95) [1.93]	-1.34 (0.01) [-1.35]
Alzheimer’s Disease	4.13 (4.14) [4.09]	4.39 (4.39) [4.33]	3.01 (3.02) [2.96]	5.23 (5.23) [5.17]	3.71 (3.71) [3.68]	1.81 (1.81) [1.79]

Note: Based on 1000 random draws from the asymptotically joint normal distribution of the estimated parameters. Simulations assume that for health risk reductions provided by public policies, respondents do not assume that they will be excused from paying for the policy if they get sick. Furthermore, if they die early from this illness, they do not factor into their implicit willingness to pay calculations the fact that if they die, they will earn no income but will not have to pay for the program. In this case, $cterm_i^j = yterm_i^j = pdvc_i^j$ .Specifically, the separate probabilities of getting sick, either with or without the risk reduction program, do not figure into the $WTP(\mu r)$ formula.