

Index

- age
 - and DALYs 250, 251–2, 255–6
 - and QALYs 253–5, 261–2, 267–8, 330
 - and valuation of time 308–9
- AIDS *see* HIV
- alcohol and driving *see* drinking and driving, external costs
- alcohol treatment programs
 - benefits and effects, measurement of 160–62
 - as example of conjoint analysis (CA) 298–9
 - as example of revealed preference approach 152–3
- arthritis elimination study (WTP) 338–9
- Ashton, T. 48–51
- asymmetric information, use of agents 222
- average costs
 - and marginal costs 60–61, 73–4, 83
 - per diem* method 63
 - and perfect competition theory 66–7
 - relationship to charges 69–70
- Ballard, C.L. 120–21
- Bayoumi, A.M. 240–42
- Bleichrodt, H. 234–8
- Bombardier 233
- Boyle, M.H. 26, 204–6
- Brent, R.J.
 - alcohol treatment programs study 152–3, 160–62
 - case management programs study 132–4, 335–8
 - community psychiatric care study 130–31
 - and discount rate, for effects 168
 - and federal valuation of inpatient psychiatric care 158–60
 - and numbers effect/third social objective 333–4
 - physician charges study 80–81
 - psychiatric hospitals study 127–9
 - social discount rates, country estimates 180–84
 - and social value estimates 79
 - state MCF estimates 121–2, 123–4
 - and time as numeraire 280, 290–92
 - and valuation of benefits/effects 150–51, 326
- Brown, G.C. 238–40
- Browning, E.K. 135
- Cairns, J.A. 188
- cardioverter defibrillator study (CEA) 186–8
- Cartwright, W.S. 312–15
- case management programs study, psychiatric care 131–4, 335–8
- category rating scale (RS) 228–9, 243–4
 - case studies 232–8, 258–9
- CBA *see* cost-benefit analysis (CBA)
- CEA *see* cost-effectiveness analysis (CEA)
- Chang, R.W. 213–15
- charges, and costs 69–71, 84–5
 - costs-to-charge ratios (RCC) 70–71, 74–6
- Churchill, D.N. 222, 224–5
- Clark, R.E. 132
- CM *see* cost-minimization (CM)
- community psychiatric care and marginal cost of public funds (MCF) study 129–31
- confidence intervals 188–9, 190
 - explanation of 175
- conjoint analysis (CA) 298–9
 - case studies 318–20
- Conley, B.C. 278–9
- consultations, charges relating to 81

- consumer satisfaction, and taxation 118
- consumer sovereignty 222–3
 assumption of 13, 100, 103, 350
 and occupational risk 288–9
 violating 296–7, 309–15
 and willingness to pay (WTP) 296–7, 309–15
- consumer surplus 74–5
- consumption benefits, valuation of 285–6
- contingent valuation (CV) 298
 case studies 272, 300, 315–17, 320, 338–9
- Cook, J. 15–17
- ‘corner solutions’ 97
- cost-benefit analysis (CBA) 6–8, 271, 293–4
 basics of 11–14
 benefits, components of 271–2
 CM as 43–5
 converting CEA into, methods 149–53, 155–62
 converting CUA into, methods 279–83
 efficiency measurements in 13–14
 and external effects 325–6
 human capital approach 273–9, 284–7, 291, 292
 intangibles, measurement of 272–3, 285–6
 justification for 11–12
 and marginal cost of public funds (MCF) 112–16
 optimal output level, establishing 41–3
 social perspective in 12–13
 strengths of 206, 351–2
 time as numeraire 280, 290–92
 utility values, whose to use 222–3
 vs. CUA 202–4, 205–6
see also equity, and cost-benefit analysis (CBA); revealed preference approach; willingness to pay (WTP)
- cost curves
 and economic theory 33–9
 long run 32, 36–9
 short run 32, 34–6
 U-shaped 66
- cost-effectiveness analysis (CEA) 8–9, 141, 163–4, 189–90, 349–50
 basic model 143–6
 ‘benchmark ratios’, role of 187
 case studies 154–62, 178–88, 210–13
 and CM 45–6, 48–50
 conversion to CBA, methods 149–53, 155–62
 ‘cost-effective’, uses of term 162–3
 cost-effectiveness ratios 146–9, 176–8, 187
 costs, which to include 141–2
 cut-off ratio 149–51, 155–8
 discounting in 165, 166–73, 178–84, 190
 effects, which to include 143
 limitations of 141, 194
 marginal cost of public funds (MCF) valuation method 150–51, 158–60
 Panel on Cost-Effectiveness in Health and Medicine, recommendations 196–8, 221
 preferred alternative, stages in finding 185–6
 and sampling error 176–8, 184–6
 and sampling variation 166
 vs. CUA 193–4
- cost-minimization (CM) 10, 349
 case studies 35–6, 37–9, 51–6, 89, 94–8, 103–5
 as a CBA 43–5
 and CEA 45–6, 48–50
 and economic theory 33–41
 identical output condition 48–9, 58–9
 importance of 58
- cost-utility analysis (CUA) 9–10, 216–18, 350
 basic principles 196–202
 case studies 15–17, 26, 204–16
 conversion to CBA, methods 279–83
 cost-utility league tables/program comparisons 194–6, 206–10, 214–15, 216, 217
 and priority setting 199–202
 vs. CBA 202–4, 205–6
 vs. CEA 193–4
see also equity, and cost-utility

- analysis (CUA); QALYs (quality adjusted life years); utilities measurement, cost-utility analysis (CUA)
- costs
- allocation methods 61–3
 - and competitive markets 64–7
 - definition of 31–2, 51–2
 - and economic theory 33–41
 - and non-competitive markets 67–9
- costs-to-charge ratios (RCC) 70–71
- comparison with relative value units (RVU) 74–6
- CUA *see* cost-utility analysis (CUA)
- Cullis, J.G. 306–8
- Culyer, A.J. 67–8
- DALYs (disability adjusted life years) 249
- and age 250, 251–2, 255–6
 - and equity 249–50, 267
 - and global burden of disease 252–3, 264–6
 - HIV impact study 264–6
 - measurement of 250–52
 - sleeping sickness treatment study 262–4
- decision-making, individuals, myopia in 166–7
- deep-vein thrombosis study (CEA) 154–5
- defibrillator study (CEA) 186–8
- demand curve, theoretical derivation of 64–5
- diagnostic related group (DRG)
- categories, costing and evaluating 74–6
- Dickey, B. 130
- direct costs/benefits, definition of 6
- disability states classifications 226–7, 234, 251
- disabled persons, valuation of quality of life improvements 218, 221
- discount rates 189
- in choice of industry of employment 178–80
 - and economic theory 166–8
 - effects *vs.* costs 171–2, 190
 - individual, survey and statistical analysis 188–9
 - recommended 172–3
 - social, country estimates 180–84
 - vaccination studies 106–7
- discounting 33, 58
- of benefits, in CEA 168–71
 - in CEA 165, 166–73, 178–84, 190
 - discount factors 39–41
 - internal rate of return 107
 - and lifetime disease costing 53–6
 - need for 165
 - present value 39–41
- disease, measuring global burden of 252–3, 264–6
- disease control/prevention 94–8
- schistosomiasis control study (CM) 94–8, 103–5
 - sleeping sickness treatment/DALYs study 262–4
 - syphilis prevention study (CBA) 284–6
 - see also* HIV; vaccination programs
- distribution weights (CBA) 328–32, 348–9
- case studies 335–9
- Dolan, P. 257–8, 325–6, 333
- Donaldson, C. 315–17
- Doubilet, P. 162–3
- Dranove, D. 61
- drinking and driving, external costs 89–91
- and taxation 98–100
- drug users treatment studies (WTP) 272, 300, 312–15, 331
- Drummond, M.F. 5, 142, 172–3, 193–4, 206–10, 221
- economic efficiency, definition of 301
- economies of scale 39, 72–4
- and overhead costs 61
 - and program evaluation problems 95–7
- economies of scope 63, 72–4
- Eddy, D.M. 198–9, 210–13, 215, 257, 335
- effect, definition of 64, 143
- elasticity *see* price elasticity of demand
- employment, choice of
- occupation/risks study 178–80, 287–90
- Epstein, J.F. 313

- equity, and cost-benefit analysis (CBA)
 323–8, 348–9
 case studies 335–47
 distribution weights 328–32, 335–9,
 348–9
 numbers effect 332–5, 340–43,
 348–9
 and weighted cost-benefit criterion
 327–8, 343–7, 349
- equity, and cost-utility analysis (CUA)
 246–7
 and age 250, 251–2, 253–6, 261–2,
 267–8
 case studies 259–66
 DALYs 249–53, 255–6, 262–6, 267
 person trade-off (PTO) 256–9,
 260–62, 266, 268, 324–5, 332–3
 QALYs 247–8, 253–5, 260–62,
 266–8, 323–5
- estrogen use study 225
- evaluation
 components of 5–6
 definition of 4–5
 need for 3–4
 types of 6–10
 uncertainty in, methods of handling
 189
- excise taxes 117–18
- external costs 86–9, 109–10
 case studies 98–107, 325–6, 331
 dynamic evaluations 94–8
 and markets 89–94
 types of 112
see also marginal cost of public
 funds (MCF)
- ‘fair innings’ argument, QALY weights
 255
- financial evaluations, weaknesses of
 74–5
- Fingarette, H. 160
- Finkler, S.A. 69, 83, 84
- fixed costs 32, 34–6
 difficulty in defining 51–2
- Forester, T.H. 291
- French, M.T. 227, 283
- Fryback, D.G. 281
- gallstone treatment study (CUA)
 15–17
- Garbacz, C. 320
- Garber, A.M. 149–50, 151, 155–8, 196
- Gardiner, J. 186–8
- Gatsonis, C. 25
- gender weights, DALYs 249–50
- Gerard, K. 216
- Gertler, P.J. 328, 329, 343–7
- Getzen, T.E. 25
- Gold, M.R. 142, 173, 196
- Grannemann, T.W. 72–4
- Greegor, D.H. 23–4
- Grob, G.N. 129–30
- Gwatkin, D.R. 253
- Hadley, J. 77–9
- Hadorn, D.C. 201
- Hannum, R.J. 92, 100–103, 106–7
- Harper, D.R. 46–8
- Harris, J. 255
- health states
 index/matrix 226–7, 234
 rankings/utilities measurement
 methods study 234–8
- healthy life years (HeaLYs) 264–6
- healthy-years equivalent (HYE) 231
- Hellinger, F.J. 55, 56
- hepatitis B utility value study 227, 283
- hip arthroplasty study (CUA) 213–16
- Hirth, R.A. 281–2
- HIV
 global burden/DALYs study 264–6
 lifetime cost study (CM) 53–6
 utility values study 240–42
- Hochman, H.M. 336
- Horngren, C.T. 61, 62
- hospital costs 84
 and charges 69–71
 estimating 72–4
- hotel costs 63
- Hsiao, W.C. 76–9
- Hull, R. 63, 154–5
- human capital (HK) approach 14, 27,
 272, 293, 350–51
 benefits, measures of 273–4
 case studies 284–7
 Conley model 278–9
 life, valuation of 291, 292
 Linnerooth model 276–8
 and mental health 275, 286–7
 QALY, valuation of 282

- and willingness to pay (WTP) 275–9, 294
- Hurley, S. 54–6
- Hyder, A.A. 264–6
- hypertension
 - prescription/over-the-counter medicine study (WTP) 310–12
 - treatment sites study (CEA) 17–19, 146–9, 165–6
- immunization programs *see* vaccination programs
- implantable cardioverter defibrillator (ICD) study (CEA) 186–8
- in vitro* fertilization study (WTP) 318–20
- income
 - distribution weights (CBA) 328–32, 335–9, 348–9
 - and incidence of communicable diseases 253
 - and price elasticity of demand 328–9
 - and risk trade-off 275–9, 287–90
 - and tax-transfer system 327
 - user fees/benefit losses study 343–7
 - utility of 149–50, 155–8, 302–3, 330–32
 - and willingness to pay (WTP) 317–20, 338–9
- indirect benefits/costs, definition of 6
- indirect costs, importance of inclusion 15–17
- information
 - asymmetric, use of agents 222
 - and consumer sovereignty 100, 103, 288–9, 297
- inputs, optimal mix, and CM 36–9
- insurance, effect on relative charges 78–9
- intangibles, measurement of 272–3, 285–6
- interest rates, market, as discount rate 166–7
- intergenerational equity 167–8, 169
- internal rate of return, definition of 107
- interval estimates 166
- Japanese encephalitis vaccination study (CBA), sensitivity analysis 108–9
- Jerrell, J.M. 132
- Johannesson, M. 260–62, 326, 330–31
- joint/overhead costs 61–3
- Kaplan, R.M. 193, 196, 200, 201, 218, 222, 234
- Keeler, E.B. 170–71, 172
- kidney treatment, utility values studies 220, 221, 226–22, 224–5
- Kind, P. 207, 226–7, 234, 257
- Klarman, H.E. 193, 284–6
- Klevit, H.D. 200
- knee arthroplasty study (CM) 35–6, 37–9, 51–3
- labor supply, and taxation 125–6
- law of diminishing marginal utility 64–5
- law of diminishing returns 34–6, 37
- length of stay (LOS) 51–3
 - costs related to 63
- life expectancy
 - and DALY weights 249–50
 - and QALY weights 254–5, 330–31
- life expectancy discount rate (LEDR) 168
- lifetime consumption expenditure 106
- lifetime disease costing 53–6
- Lightwood, J.M. 40–41
- Lindsay, C.M. 306
- Linnerooth, J. 276–9
- literature, use as utility values
 - measurement source 226–7
- Llewellyn-Thomas, H. 233
- Logan, A.G. 18–19, 146–9, 165–6
- long run cost curves 32, 36–9
- marginal benefits/costs 41–3, 44–6
 - importance of 58
 - and monopolies 68–9
 - and perfect competition theory 64–7
 - time factors 94–7
 - see also* marginal costs
- marginal cost of public funds (MCF) 112–14, 136–7
 - case studies 122, 124–34, 135, 158–60, 335
 - and economic theory 117–20
 - estimates of 120–22, 123–4

- marginal cost of public funds (MCF)
(*continued*)
health care evaluations, special role
in 114–16
and valuation of ‘effects’ 150–51,
158
- marginal costs
and average costs 60–61, 73–4, 83
importance of 52–3
and overhead costs 61
see also marginal benefits/costs
- marginal utility, law of diminishing
64–5
- markets
competitive, and costs 64–7
and external costs 89–94
and measurement of ‘intangibles’
272–3
non-competitive, and costs 67–9
- Martin, S. 297, 304
- Maynard, A. 206
- Medicaid 130, 199–200, 217
- Medicare, charge system 76–9
- Mehrez, A. 231
- Meltzer, H.Y. 56–7
- meningitis vaccination valuation study
(CM) 89
- mental health
mental hospital patients, earnings as
valuation tool 275
programs study (CBA) 286–7
schizophrenia treatment studies
56–7, 184–6
see also psychiatric care, and
marginal cost of public funds
(MCF)
- miscarriage management study (WTP)
318, 319
- Mishan, E.J. 274
- monopolies 67–9
- Moore, M.J. 178–80, 287–90
- Murray, C.J.L. 249–50, 251, 256
- Musgrove, P. 89
- National Health Service (NHS)
nursing home/hospital care study
(WTP) 315–17
waiting lists/times 303–9
- National Traumatic Occupational
Fatality (NTOF) project 289–90
- need
as alternative to demand, for
evaluations 312–15
as defined by medical experts 312,
313
definition of 256
- neo-natal intensive care study (CUA)
26, 204–6
- Neuhauser, D. 23–5
- Nord, E. 232–4, 256, 257, 324, 328,
332–3, 340–43
- numbers effect, and equity 332–5,
340–43, 348–9
- nursing home/hospital care study
(WTP) 315–17
- O’Brien, B.J. 176–8
- occupation choice/risks study 178–80,
287–90
- Olsen, J.A. 260, 261, 266
- opportunity cost 31–2
and QALY league tables 216
surgical ward study 46–8
of time 50, 303–5, 308–9
- ordinal scale, explanation of 237
- ‘Oregon plan’ 199–202, 210–13, 217,
218, 334–5
- outcomes, importance of precise
estimates 25
- output, definition of 64
- over-the-counter/prescription drugs
study (WTP) 309–12
- overhead/joint costs 61–3
- Panel on Cost-Effectiveness in Health
and Medicine, recommendations
196–8, 221
- Pareto improvements 301, 334
- Patrick, D.L. 256
- Pauly, M.B. 202–4
- Peabody 250, 252
- per diem* method, average costs 63
- ‘person-service units’ (PSUs) 211–13
- person trade-off (PTO) 256–9, 268,
324–5, 332–3
case studies 260–62, 266, 340–43
- personal judgment, by analysts 225
- Phelps, C.E. 98–100, 149–50, 151,
155–8, 196

- physician services
 estimating resource cost of 76–9
 social value of 79–81
- Pigou, A.C. 166
- poliomyelitis vaccination study (CBA) 105–7
- Politi, C. 251–2, 262–4
- prescription/over-the-counter drugs study (WTP) 309–12
- present value 39–41
- price elasticity of demand 80
 and excess burden of
 taxation/marginal cost of public funds (MCF) 119–20
 and income 328–9
- price mechanism
 competitive markets 64–7
 non-competitive markets 68–9
- private goods, definition of 299
- privatization study, psychiatric hospitals 127–9
- production function 34, 36, 37, 38
- productivity
 and discount rate 172
 growth, and indirect cost estimates 107
- Propper, C. 297, 305, 308–9
- psychiatric care, and marginal cost of public funds (MCF)
 case management programs study 131–4, 335–8
 community care study 129–31
 inpatient care, federal valuation 158–60
 privatization of psychiatric hospitals, study 127–9
see also mental health
- public funds, cost of *see* marginal cost of public funds (MCF)
- public goods 95
 and willingness to pay (WTP) 272, 299–300
- QALYs (quality adjusted life years) 9, 193, 350
 and age 253–5, 261–2, 267–8, 330
 benefits, deriving from price of 283
 calculation of 198–9
 price of, deriving from measure of benefits 281–2, 294
 using for benefits and costs 280
 weights 247–8, 254–5, 260–62, 266–8, 323–8, 330–31
see also cost-utility analysis (CUA); equity, and cost-utility analysis (CUA); utilities measurement, cost-utility analysis (CUA)
- Quality of Well-Being (QWB) Scale 198–9, 200, 242–3
- Read, J.L. 233
- relative value units (RVU)
 comparison with costs-to-charge ratios (RCC) 74–6
 and hospital department costs 70–71
- research expenditure, evaluation of 105–6, 107
- resource allocation, possible methods 11
- resource based relative value (RBRV) 76–9
- returns to scale 39, 73, 83–4
see also economies of scale
- revealed preference approach 152–3, 160–62, 164, 297
 choice of occupation/risks study 178–80, 287–90
- Revicki, D.A. 56–7
- Rice, D.P. 131
- Richardson, J. 233
- Ried, W. 231
- risk
 and discount rates 178–80
 and income trade-off 275–9, 287–90
- Rosser, R. 207, 226–7, 234, 257
- Russell, L.B. 196
- Ryan, M. 318–20
- Sackette, D.L. 220, 221
- sample selection bias 50–51, 56
- sampling error
 and cost-effectiveness ratios 176–8, 184–6
 and statistical theory 173–6
- Schimmel, V.E. 74–6
- schistosomiasis control study (CM) 94–8, 103–5
- schizophrenia treatment studies 56–7, 184–6

- senior companion program (SCP) study (WTA/WTP) 320
- sensitivity analysis 108–9
recommended rates to be used in 172–3
- service departments, cost allocation 61–3
- short run cost curves 32, 34–6
- Shwartz, M. 70–71
- side-effects
hypertension treatment sites study 17–19
valuation of 225, 309
- Siegel 178, 184–6, 187, 196
- Siraprapasiri, T. 108–9
- sixth stool guaiac protocol 4, 23–5
- sleeping sickness treatment/DALYs study 262–4
- smear tests (cervical cancer), costs and effects 163
- smoking cessation study 40–41
- social costs 87
childhood vaccination programs study 100–103
and taxation 98–100
see also marginal cost of public funds (MCF)
- social security benefits and marginal cost of public funds (MCF) study 122, 124–7
- social time preference rate (STPR) 167–8
- Spearman rank correlation coefficient, explanation of 237
- speed limit study (CBA) 290–92
- Squire, L. 168, 331–2, 335
- standard deviation, explanation of 173–4
- standard error, explanation of 175
- standard gamble (SG) 229–30, 231, 243–4
case studies 213–15, 232–42
- Stason, W.B. 225
- statistical significance 176, 188–9, 190
- step-down allocation method 62–3
- Stern, S.H. 35–6, 37–9, 51–3
- stigma, valuation of 286
- stool study *see* sixth stool guaiac protocol
- sunk costs 60–1
- supply curve, theoretical derivation of 65–6
- surgical ward study (opportunity cost) 46–8
- switching values 88–9, 99–100, 108–9
- syphilis prevention study (CBA) 284–6
- taxation
and drinking and driving 98–100
excess burden of 117–20, 135, 136
and income redistribution 327
and labor supply 125–6
optimal commodity taxes 91, 98–100
rates of, importance 135
see also marginal cost of public funds (MCF)
- Temin, P. 309–12
- Thaler, R. 312
- Thompson, M.S. 338–9
- time
opportunity cost of 50, 303–5, 308–9
rationing by, and willingness to pay (WTP) 303–9, 322
treatment delay, and loss of benefits 306–9
as valuation unit 280, 290–92, 297
- time trade-off model (TTO) 230–31, 243–4
case studies 220, 224, 232–42
- topical hydrocortisone, prescription/over-the-counter study (WTP) 309–10, 311
- Torrance, G.W. 194–5, 204, 220, 221, 223, 225, 230, 233
- total hip arthroplasty (THA) study (CUA) 213–16
- transfer payments 115–16, 136
case management programs 132–4, 335–8
and distribution weights 335–8
in privatization 127
social security benefits 122, 124–7
- trypanosomiasis (sleeping sickness) treatment/DALYs study 262–4
- Tsuchiya, A. 254, 256
- Ubel, P.A. 258–9, 333
- ulcer treatment study (CEA/CM) 48–51

- user fees (Peru) study 343–7
 utilities measurement, cost-utility
 analysis (CUA) 219, 243–4
 case studies 220, 222, 224–5, 232–42
 category rating scale (RS) 228–9
 duration, as a factor 220, 242–3,
 244
 measurement stages 219–20
 methods 228–31, 232–8, 243–4
 sources, for establishment of values
 225–8
 standard gamble (SG) 229–30, 231
 statistical accuracy 223–5
 time trade-off model (TTO) 230–31
 utility values, whose to use 221–3
 see also equity, and cost-utility
 analysis (CUA); QALYs (quality
 adjusted life years)
- utility
 of income 149–50, 155–8, 302–3,
 330–32
 law of diminishing marginal 64–5
- vaccination programs
 childhood, social costs/vaccination
 rates study 100–103
 external benefits 91–4
 Japanese encephalitis study (CBA),
 sensitivity analysis 108–9
 meningitis, valuation study (CM) 89
 poliomyelitis study (CBA) 105–7
- Vaillant, G.E. 160
 Van Hout, B.A. 170, 171
 variable costs 32, 34–6
 Viscusi, W.K. 165, 172, 178–80,
 287–90
 vision acuity utility values study
 238–40
 Von Neumann, J. 230
- Wagstaff, A. 246, 248
 waiting lists/times, rationing by 303–9
 walking ability study (PTO) 340–43
- Weimer, C. 94–8, 103–5
 Weinstein, M.C. 142, 143–6, 169–70,
 171–2, 196, 221, 225
 Weintraub, W.S. 82
 Weisbrod, B.A. 105–7, 275, 286–7
 ‘well year’, definition of 193
 Wildasin, D.E. 122, 124–7, 135
 Williams, A. 255, 323
 willingness to accept (WTA) 301–3,
 320
 willingness to pay (WTP) 14, 321–2
 advantages of 351
 case studies 272, 300, 309–20, 331,
 338–9
 and compensation tests 301,
 315–17, 334
 as comprehensive measure of
 benefits 272
 Conley model 278–9
 and consumer sovereignty 296–7,
 309–15
 and demand curve 64–5
 direct estimates 309–10, 311,
 312–15, 322
 and economic efficiency 301
 and human capital approach 275–9,
 294
 and income 317–20, 338–9
 indirect estimates 310–12, 322
 life, valuation of 274, 275–9, 287–90
 Linnerooth model 276–8
 and psychiatric patients 275
 and public goods 272, 299–300
 QALY, valuation of 282
 and rationing by time 303–9, 322
 valuation methods 297–9
 see also revealed preference
 approach
- World Bank, global disease study
 252–3
 Wyatt, R.J. 4
 Zarkin, G.A. 272, 300, 325, 331