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
cardiodeverter 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
CEA see cost-effectiveness analysis (CEA)
CBA see cost-benefit analysis (CBA)
Chang, R.W. 213–15
drugs, 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
cost-effectiveness analysis (CEA) 8–9, 141, 163–4, 189–90, 349–50
basic model 143–6
‘benchmark ratios’, role of 187
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); QAL Ys (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
depth-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, 38
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
schistomiasis 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 costs 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. 216
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
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, 222, 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
Neuhauer, 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
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/risk 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
schistomiasis control study (CM) 94–8, 103–5
schizophrenia treatment studies 56–7, 184–6

Index
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
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