**Index**

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

DAL Ys 249–53, 255–6, 262–6, 267
dynamic evaluations 94–8

and markets 89–94

types of 112

see also marginal cost of public funds (MCF)

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, QAL Y 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, DAL Ys 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/DAL Ys study 264–6

lifetime cost study (CM) 53–6

utility values study 240–42

Hochman, H.M. 336

Hornigren, 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

QAL Y , 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
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
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
see also cost-utility analysis (CUA);
equality, 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/DAL Ys 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); QAL Ys (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