More Information

Index

abridged life tables, 73-6, 90, 381, 392 ABS DataLab, 115 absolute risk difference, 230, 291 see also attributable risk accuracy, 297-8 active surveillance systems, 19 additive interaction, 295, 296, 297 adiponectin, 283-4 adjusted rates, 51 aetiological study designs, 107-8 see also analytical study designs aetiology, 97 see also causation age, 124, 225, 294-5, 337-8 age-dependency, 51, 63 age-specific rates, 51, 65 age-standardised rates, 66-72, 81, 225 age structure, 51, 61–9, 72, 79, 86, 88-90, 225, 341, 380, 382, 385, 392 ageing of populations, 140, 225 aggregated data, 114 alcohol consumption, 170, 303 allocation bias, 327 allocation concealment, 255-6, 257 - 8alternative hypotheses, 264, 300 Alzheimer's disease, 63, 127 analytical cross-sectional studies, 106, 139, 161, 165-77 examples, 22, 167-8, 170, 284 analytical study designs, 21-2, 106-7, 165 see also aetiological study designs; analytical crosssectional studies; case-control studies: cohort studies: ecological studies annual rates, 49, 50 antagonism, 295 antenatal depression, 371 arthroscopy, 256 asbestos, 295-7 ascertainment bias, 325, 326, 328 association, measures of, see measures of association Association of the Nordic Cancer Registries (NORDCAN), 149 associations, 21, 170-7 asthma, 10, 361 attributable proportion, 292 attributable risk, 291-4 see also absolute risk difference attrition bias, 232, 233, 237, 238, 327-9, 340, 364, 401

Australia cancer in, 135-6, 148-9, 224-5, 303, 362 Cancer Institute NSW, 201 census data in, 140 Centre for Disease Control, 151 consumer regulation in, 11 COVID-19 in, 135, 151 Health-Adjusted Life Expectancy in, 84–5 health priorities in, 16 hepatitis A in, 209 hepatitis C in, 305 Human Research Ethics Committees, 266 Indigenous Australians, 16, 84–5, 125 influenza in, 8, 51–4, 124–5, 146 life expectancy in, 125 limb defects in babies in, 110–11 National Health and Medical Research Council, 305 National Health Survey, 139, 167, 177, 183 National Notifiable Diseases Surveillance System, 144, 145, 146 National Statement on Ethical Conduct in Human Research, 266 National Suicide and Self-Harm Monitoring System, 149 obesity in, 16, 362 population surveys in, 125, 139, 167 Potential Years of Life Lost in, 79 suicide in, 149 use of placebos in, 267 see also Oueensland: South Australia; Victoria Australian Bureau of Statistics (ABS), 52, 115, 139, 140, 177, 349 Australian Institute of Health and Welfare (AIHW), 79, 84, 135, 139, 149 Australian New Zealand Clinical Trials Registry, 334 autism, 305 babies, 108-12, 167-8 background rate, 230, 291 bar charts, 8 see also histograms bathtub analogy, 40-3, 59, 391 beneficence, 106 bias, 7-8, 322-34

in case-control studies, 204-9, 327, 328, 331, 333 in cohort studies, 230-6, 237-8, 327, 328, 329, 331, 333, 364 in randomised controlled trials, 327, 328, 329, 331, 333 see also measurement bias: selection bias big data, 4 biobanks, 193, 203 biological interaction, 295-7 blinding, 236, 250, 256-7, 333 block randomisation, 254 blood samples, 167 bone fracture, 287-8 Boolean operators, 368-9 Bradford Hill, Sir Austin, 95, 98 criteria for causation, 98, 289 brain cancer, 222 Brazil, 142-3, 284 breast cancer, 44, 51, 212, 303, 305, 311, 362, 391, 405 British Doctors Study, 95-7, 104 Broad Street Pump study, 15, 115, 130 - 1burden of disease, 38, 86, 140, 144 burden of disease studies, 38, 112-13, 114 cancer, 51 brain, 222 breast, 44, 51, 212, 303, 305, 311, 362. 391. 405 diet and, 178 leukaemia, 222 liver, 362 lung, 95-7, 135-6, 292, 295-7, 364-6, 367 mesothelioma, 295 registries, 148-9, 163, 201, 222, 237 reporting of, 224 Cancer Institute NSW (Australia), 201 cardiovascular disease, 16, 85, 96, 104, 116, 172, 202, 212, 218, 220, 223, 308 case-control studies, 22, 98, 107. 114, 191–210, 285, 328, 362 bias in, 204-9, 327, 328, 331, 333 compared with retrospective cohort studies, 219 definition of cases, 199-201 and epidemics, 191, 285 examples, 22, 108, 109, 194, 204, 286, 362

assessing potential for, 363-6

More Information

412 Index

case-control studies (cont.) identification of potential exposures, 192-3 internal validity, 324 and odds ratios, 193-9, 285 selection of controls, 201-3 strengths and limitations of, 209-10 case fatality, 42-4, 55-7, 135, 352, 390, 391 case-fatality rate, 56, 135, 178, 352, 381, 390, 391 case-fatality risk, 56 case reports, 21, 114, 129, 137 case series, 108, 114, 129, 137-8 cases, definition of, 199-201 causation, 98-9, 289-91 see also aetiology cause-specific mortality, 84 cause-specific mortality rates, 56 census data, 139-41, 151 Centers for Disease Control and Prevention (United States), 145 Centre for Disease Control (Australia), 151 chance, 334 childbirth, 50 children, 125, 222-3, 260-1 see also babies; young adults China, 17, 194, 295, 361 cholera, 15, 130-1, 286 cholesterol, 284 chronic conditions, 37 chronic obstructive pulmonary disease, 85 climate change, 183 clinical significance, 281, 304 clinical trials, 104, 107, 248, 324-5, 326, 334 see also randomised controlled trials (RCTs) cluster sampling, 164 Cochrane Collaboration, 363-4, 372 Cochrane Library, 252, 350 cohort life tables, 74–5, 76 cohort studies, 21, 98, 107, 114, 218-38, 287, 328, 362 bias in, 230-6, 237-8, 328, 329, 333 examples, 21, 95-6, 287-8, 362-3 internal validity of, 325 measuring outcomes in, 224-30 problems with reproducibility, 356 prospective, see prospective cohort studies and relative risk, 287, 289 retrospective, see retrospective cohort studies strengths and limitations of, 236 - 8colds, 7, 99 Rothman's model of causation, 290 - 1see also common cold

common cold, 9, 14, 98-99, 102-4, 106, 114, 394 see also colds communicable diseases as causes of death, 127 see also infectious diseases Community Intervention Trial for Smoking Cessation (COMMIT) (United States), 104 - 5community interventions (community trials), 23, 104-5, 107, 114 complete life tables, 73 computerised tomography (CT), 222 - 3concealment of allocations, 255-6, 257 - 8concurrent studies, see prospective cohort studies confidence intervals, 197-9, 204, 228, 260, 264, 286, 299, 301, 334, 350, 351, 352, 359, 367 confounders, 225, 294-5 confounding, 7-8, 184, 236, 334-41, 366-7 consent, informed, 268 CONSORT Statement, 353 conspiracy theories, 5 construct validity, 318-19, 320 consumer regulation, 11 content validity, 318, 320 Content Validity Index, 321 contingency tables (2 x 2 tables), 103, 170, 171 controls, selection of, 201-3 convenience sampling, 170 coronary heart disease, 85, 123 coronaviruses, 9 correlation, 178, 282-3 correlation coefficients, 283 covariate adaptive randomisation, 255 COVID-19, 3, 9 and alcohol consumption, 170 in Australia, 135, 151 bathtub analogy, 42-3 in children, 260-1 in China, 194, 295 and diabetes, 229-30, 291-2 growth in number of cases, 133 identification of earliest cases, 17 impact of ethnicity, 204 impact on healthcare workers, 221, 350-2, 362 impact on life expectancy, 73 impact on mental health, 161 incident v. prevalent cases, 40 in India, 191-2 International Classification of Diseases codes, 17 long, 371 long-term observations, 134-5 and loss of muscle-mass, 251 in Mexico, 251, 260-1, 350-2

and multi-organ dysfunction, 223, 227 as notifiable disease, 145 in older people, 151-2 Our World in Data platform, 148 personal protective behaviour, 5, 14, 221 polymerase chain reaction tests, 23.37 prevention, 14 rapid antigen tests, 23, 99 and respiratory disease, 228 role of epidemiology, 24-5 Rothman's model of causation, 291 in Saudi Arabia, 251 symptoms, 99 and thromboembolism, 362-3 treatments, 22-3, 251, 260-1, 363 in United Kingdom, 204, 221, 223, 227-8, 362-3 in United States, 151, 170, 221, 251 vaccines, 5-6, 14, 134, 135 variants, 134, 135 World Health Organization and, 17, 131-2, 145, 148, 150 in young adults, 151 see also SARS-CoV-2 criterion validity, 319, 320 critical thinking, 4–15 absence of, 5-6 analysing in, 6-10 application to scientific literature of, 349-50, 353 compared with uncritical thinking, 372 decision-making in, 14 evaluating in, 10-12 problem-solving in, 13-14 reasoning in, 12-13 cross-sectional studies, 107, 114, 361 analytical, see analytical cross-sectional studies data requirements, 182-3 descriptive, 21, 106 establishing associations in, 170 - 7examples, 21, 361 longitudinal, 177 strengths and weaknesses of, 169 - 70crossover randomised controlled trials, 250, 267 crude rates, 51, 64-5 Danish HIV Cohort Study, 287 data aggregated, 114 big, 4 census, 139-41, 151 collection of, 48-9 de-identified, 8

<u>More Information</u>

linkage of, 150 micro, 114 mortality, 16-17, 143-4 primary, 113-14, 137-9 secondary, 113, 114, 137, 139 - 44self-reporting of, 330, 331, 332, 333 standards for, 17 Declaration of Helsinki, 266 de-identified data, 8 dementia, 37, 40, 42, 43, 63, 127, 295 dengue, 190 Denmark, 287–8 depression, 63, 167, 232, 371 descriptive cross-sectional studies, 21.106descriptive epidemiology, 81, 113, 122 - 3collection and interpretation of data for, 136-51 importance of, 151-2 personal characteristics in, 124-9 place characteristics in, 129-33 purposes of, 152 time characteristics in, 133-6 see also burden of disease studies; health problems, identification of descriptive study designs, 20-1, 106 see also case reports; case series; cross-sectional studies, descriptive determinants of health, social, 24, 125, 165 diabetes, 16, 37, 40, 42, 167, 339 and COVID-19, 229-30, 291-2 type 1, 213, 388 type 2, 85, 339 diagnostic studies, 23 dichotomous scales, 99-100, 103 dichotomous variables, 100 diet, 178 direct marketing, 11 direct standardisation, 66-70 directed acyclic graphs (DAGs), 336-7 Disability-Adjusted Life Years (DALYs), 81-2, 86-7, 113, 142 Disability-Free Life Expectancy (DFLE), 81 disease, multicausal nature of, 161 - 2disease prevention levels, 43 disease surveillance, 4, 18-20, 133, 144-50, 151 systems, 19, 144-50, 151 Doll, Sir Richard, 95 dose-response relationships, 96, 289 double-blind randomised controlled trials, 250

drugs, safety testing of, 112 duration, 41, 42, 5, 55, 86, 87 E-values, 236 ecological fallacy, 116, 184 ecological studies, 22, 107, 114, 115, 161, 177-84, 361 effect modification, 295 election polling, 323-4 electronic health records (EHRs), 149 epidemic curves, 135 epidemics, 4, 135, 152, 190, 191, 285 epidemiological studies, 48, 95 see also study designs epidemiological transition, 24-5 epidemiology, 4, 24-5, 81 see also descriptive epidemiology; epidemiological studies; social epidemiology equipoise, 267 estimated resident population tables, 50 ethical perspectives, 103-4, 106, 223, 249, 265-8 Ethiopia, 286 ethnicity, 204 Eurostat, 69 evidence, synthesising of, 369-70 see also systematic reviews evidence hierarchy, 246, 247 experimental study designs, 20, 22-3, 103, 104, 106 compared with non-experimental study designs, 104, 106, 247 ethical perspectives, 103-4 see also clinical trials; community interventions (community trials) exposures, 12, 98, 102-3, 161, 192 - 3external validity, 299, 318, 324 feel-osophy, 5, 7, 349 FluNet, 147 follow-up studies, 177 see also cohort studies; experimental study designs food poisoning, 133 Framingham Heart Study, 104, 220, 232 France, 363 frequency counts, 35-44, 61-4 see also incident cases; prevalent cases gastrointestinal diseases, 191, 200 see also salmonellosis Germany, 108-10, 111 Global Burden of Disease study, 86, 144, 177, 183 Global Cancer Observatory, 149 Global Health Estimates, 141, 142, 150, 151, 184

Global Health Observatory, 150 Global Influenza Programme, 147 Global Influenza Surveillance and Response System (GISRS), 147 Golden Square, London, 130 Google Scholar, 349 graphs, 8 see also directed acyclic graphs (DAGs); Kaplan-Meier curves; scatter plots Graunt, John, 16-17, 73 gross domestic product (GDP) per capita, 178 handwashing, 5, 14, 234 Hawthorne effect, 233-4, 331, 332 - 3hazard ratio, 358 HDL-cholesterol, 284 Health-Adjusted Life Expectancy (HALE), 81–6 health expectancy measures, 86 health gap measures, 86 health priorities, setting of, 15-17 see also disease surveillance health problems, identification of, 122 see also descriptive epidemiology health sciences, 4, 6 healthcare workers handwashing in, 234 impact of COVID-19 on, 221, 350-2, 362 Healthy Life Expectancy (HLE), 81 healthy worker effect, 205, 232-3, 327, 329 hepatitis A, 209 hepatitis C, 288, 305, 339, 362, 371 hepatocellular carcinoma, 362 hierarchy of evidence, 246, 247 high blood pressure, 335 high-income countries, 127, 178, 237, 250 highly active antiretroviral therapy (HAART), 287-8 Hill, Sir Austin Bradford, see Bradford Hill, Sir Austin Hispanic people, 355-6 histograms, 135 see also bar charts HIV, 251-2, 258-9, 262-3, 287-8, 357-60 hospital admissions, 124, 149 hospital records, 149, 167, 193 Human Research Ethics Committees (HRECs), 266, 267, 268 human tissue banks, 193 hydroxychloroquine, 251, 272, 402 hypertension, 335 hypotheses, 99, 151-2, 161, 263-4, 300, 301

More Information

414 Index

hypothesis, 99, 131, 152, 154, 197, 263-5, 300-02, 383, 403, 405 incidence, 22, 37, 38, 55, 168-9 incidence rates, 21, 52, 224-5 see also age-standardised rates; person-time at risk incident cases, 37, 38, 40, 200 see also bathtub analogy India, 191-2 Indigenous Australians, 16, 84-5, 125 indirect standardisation, 70-2 individualistic fallacy, 116 infectious diseases, 11, 37, 43 see also communicable diseases inferences, 298-9 influencers, 10, 11 influenza, 10, 48, 133, 145, 146, 147-8,200 in Australia, 8, 51-4, 124-5, 146 vaccines, 14, 125 World Health Organization and, 147 information bias, see measurement bias informed consent, 268 injection drug use, 305, 339 Institute of Health Metrics and Evaluation (IHME), 84, 86 intent to treat analyses, 328 interaction, 116, 295-7 see also effect modification Interclass Correlation Coefficients, 321 internal validity, 299, 318, 324-5 International Classification of Diseases (ICD), 17 International Clinical Trials Registry Platform, 334 International Health Regulations, 145 internet, 11 see also online surveys; social media; websites interval scales, 100-1 isoniazid, 258-9, 262-3, 357-60 ivermectin, 251 Japan, 178 journals, scientific, see scientific iournals KAP scales, 167 Kaplan-Meier curves, 359 Kappa, 321 Kenya, 190 kidney (renal) disease, 183, 335 Lancet, The, 305

Lancet, Ine, 305 Lenz, W., 109, 110, 111 leukaemia, 222 life expectancy, 55, 72–6, 81, 125, 142, 178

health-adjusted, 81-6 life tables, 73-6, 81 Likert-type scales, 100 limb defects in babies, 108-12 Lind, James, 248-9 lines of best fit, 282-3 Literary Digest, 323–4, 326 liver cancer, 362 London, 15, 16-17, 115, 130-1, 138, 204 long COVID-19, 371 lopinavir-ritonavir, 363 loss to follow-up, 232, 326-7 low-income countries, 16, 127, 132, 151, 225, 237, 250 lung cancer, 95-7, 135-6, 292, 295-7, 364-6, 367 malaria, 190 Mantel-Haenszel technique, 236, 341 maps, 129–30 matching, 203, 328, 338 maternal mortality ratio, 132-3 McBride, William, 110-11 measles, 305 measles, mumps and rubella (MMR) vaccine, 305 measurement, 99-103 measurement bias, 333 see also Hawthorne effect: misclassification bias; observer bias; recall bias; self-report bias; social desirability bias measures of association, 171-7 see also prevalence odds ratio (POR); prevalence ratio (PR) medical records, 149, 167, 193 men, 95, 123, 125, 136, 138 meningococcal disease, 144, 145 mental health, 16, 161, 167 see also depression; stress mesothelioma, 295 meta-analyses, 112, 252, 334, 370 metabolic syndrome, 283-5 Mexico, 251, 260-1, 350-2 micro data, 114 middle-income countries, 132 migration, 167-8 misclassification bias, 331-2 MMR (measles, mumps and rubella) vaccine, 305 mpox, 377, 410 monkeypox, 138 morbidity, 55-6 see also duration; incidence; prevalence; severity mortality, 55, 84 see also case fatality; life expectancy; mortality rates mortality data, 16-17, 143-4 mortality rate ratio (MRR), 258, 259 mortality rate, 16, 49, 52, 55, 56 mpox, 377, 410

multi-level studies, 116 multi-organ dysfunction, 223, 227 multiplicative interaction, 295, 296-7 multivariate statistical techniques, 341 muscle-mass, loss of, 251 narrative reviews, 371 National Cancer Institute (NCI) (United States), 69, 104, 201 National Health and Medical Research Council (Australia), 305 National Health Service (United Kingdom), 222 National Health Survey (Australia), 139, 167, 177, 183 National Influenza Centres, 147 National Institute of Health American Association of Retired Persons (NIH-AARP) Diet and Health Study, 365 National Notifiable Diseases Surveillance System (NNDSS) (Australia), 144, 145, 146 National Nutritional Survey (Japan), 178 National Statement on Ethical Conduct in Human Research (Australia), 266 National Suicide and Self-Harm Monitoring System (Australia), 149 Nature, 357 New Mexico Elder Health Survey, 355-6 New Zealand, 139, 177, 334 nocebo effect, 257, 402 nominal scales, 99-100 non-communicable diseases, 127, 133 non-experimental study designs (observational study designs), 20-2, 103, 106 compared with experimental study designs, 104, 106, 247 examples, 15, 130–1 inadequate reporting of methods in, 356 matching of controls in, 328 STROBE Checklist, 353 systematic reviews of, 371 see also analytical study designs; descriptive study designs non-maleficence, 106 non-probability sampling, 163-4 non-response bias, 326, 328-9 Nordic countries, 149 normative values, 77 notifiable diseases, 144-5 notifiable diseases surveillance systems, 144-50, 151 null hypotheses, 263-4, 300-02, 383, 403, 405

More Information

number needed to treat (NNT), 258, 260, 261 - 3Nuremberg Code, 266 nutrition education, 251 obesity, 16, 124, 285, 335, 339, 362 observational study designs, see non-experimental study designs (observational study designs) observer bias, 333 odds ratio (OR), 21, 193-9, 258, 285 older people, 16, 51, 125, 151-2, 355-6, 363 online surveys, 164, 328 open randomised controlled trials, 250 OpenEpi, 302 operationalisation, 99 ordinal scales, 100 Organisation of Economic Cooperation and Development (OECD), 73, 76, 80 osteoarthritis, 256 osteoporosis, 287 Our World in Data platform, 148 outbreaks, see epidemics outcomes, 4, 98 p values, 197, 198, 299-301, 334 pandemic fatigue, 14 parallel randomised controlled trials, 250 passive surveillance systems, 19 see also notifiable diseases surveillance systems PCR (polymerase chain reaction) tests, 23, 37, 138 Pearson's correlation principal component analyses, 321 peer review, 12, 334 per protocol analysis, 327 period life tables, 74-6 period prevalence, 38, 168 person-time, 49, 221 person-time at risk, 224, 225-7 personal protective behaviour, 5, 14.221 phocomelia, 108-12 pilot studies, 321 pipe analogy, 47, 61, 64, 67 placebo effect, 257 placebos, 22-3, 256-7, 267 pneumococcal disease, 145 pneumonia, 17 point prevalence, 38 political perspectives, 18 polymerase chain reaction (PCR) tests, 23, 37, 138 population attributable proportion, 292 population pyramids, 61 population size, 37, 47, 61 population surveys, 125, 139, 167

populations, 61, 124, 162, 231 ageing of, 140, 225 health status of, 123 standard, 66 stratification of, 51 Potential Years of Life Lost (PYLL), 77-80 power, 264-5, 302-4 precision, 73-4, 298, 301 prevalence, 20-1, 55, 283 period, 38, 168 point, 38 prevalence odds ratio (POR), 173-4 prevalence proportion, 45-6 prevalence ratio (PR), 171, 172, 173-4, 283 prevalence surveys, 138-40, 167 prevalent cases, 38, 40, 200-1 see also bathtub analogy primary data, 113-14, 137-9 primary disease prevention, 43 primary studies, 252, 353 PRISMA Statement, 353 prisoners, 16, 305 probability sampling, 83-139, 140, 63 proportions, 45-6, 52, 283 prospective cohort studies, 219, 220-1, 223, 236, 237, 238 bias in, 232, 233, 234, 237, 327, 331.364 blinding in, 236 confounding in, 237-8 examples, 220, 221, 234, 350-2, 364-6, 367 prospective studies, 326-7, 329 see also prospective cohort studies; randomised controlled trials (RCTs) protective factors, 165 proxy respondents, 193 psychometric scales, 167 publication bias, 317, 333-4 PubMed, 350, 354, 368-9 guadruple-blind randomised controlled trials, 250 qualitative studies, 23, 361, 371 quality of life, 81 Queensland, 124-5, 145-6, 190 questionnaire surveys, 161, 162, 164, 167, 321, 328 random error, 334 random sampling, 83-139, 140, 63 randomisation, 248-9, 253-5, 267, 338 randomised controlled trials (RCTs), 23-2, 98, 114, 246-70, 362

bias in, 327, 328, 329, 331, 333 community-based, 251–2 CONSORT Statement, 353 cost to society of, 270 ethical perspectives, 265–8

examples, 251, 256, 258-9, 260, 262-3, 357-60, 363 external validity, 324 inadequate reporting of methods in, 356 internal validity, 324 methodological aspects, 253-65 outcome measures, 258-63 and relative risk, 288-9 RoB 2 tool, 363-4 strengths and limitations of, 268 - 70types, 250 rapid antigen tests (RATs), 23, 99 rates, 9, 46-54 adjusted, 51 age-specific, 51, 65 age-standardised, 66-72, 81, 225 annual, 49, 50 crude, 51, 64-5 incidence, 21, 52, 224-5 mortality, 16, 49, 52, 55, 56 standardised, 51 ratio scales, 101 ratios, 45, 51, 72 RCTs, see randomised controlled trials (RCTs) recall bias, 7, 207-8, 209, 331, 332 see also self-report bias Receiver Operating Characteristic (ROC) curves, 321-2 relationships, context for establishing meaningfulness of. 305 relative risk (RR), 21, 224, 227-30, 258, 259, 285, 287, 288-9 remission, 41-2, 55-6 renal (kidney) disease, 183, 335 reporting format for scientific papers, 353 abstract, 354 discussion and conclusions, 360 introduction, 354 methods, 354-7 results, 357-60 title, 353 reporting guidelines for study designs, 353, 367 representative samples, 83 reproducibility, 356-7 Reproducibility Project: Cancer Biology, 357 research protocols, 114 respiratory diseases, 7, 10, 228 retrospective cohort studies, 219, 222-4, 237, 238 bias in, 232, 233, 234, 236, 238, 328, 331 compared with case-control studies, 219 examples, 222, 223, 227 retrospective studies, see casecontrol studies; retrospective cohort studies

rhinoviruses, 99

More Information

416 Index

risk, 305–7 risk difference, see absolute risk difference risk factors, 4 risk reduction, see absolute risk difference RoB 2 tool, 363-4 Robinson, W., 116 ROC (Receiver Operating Characteristic) curves, 321-2 Rothman's model of causation, 289 - 91rural locations, 129 salmonellosis, 144, 145 sample size, 164, 264, 302-4 samples, 83, 162, 323 sampling, 83-139, 140-64, 170 sampling bias, see ascertainment bias sanocrysin, 249 sarcopenia, 355-6 SARS-CoV-2, 9, 251, 291, 362 see also COVID-19 Saudi Arabia, 251 scales of measurement, 99-101 scatter plots, 141, 282-3 Science, 357 scientific journals, 11-12, 301, 317, 334 see also scientific papers scientific literature application of critical thinking to, 349 - 50see also scientific journals; scientific papers scientific papers application of critical thinking to, 353 examples of interpreting, 351-2, 357-60, 364-6, 367 reporting format, see reporting format for scientific papers scientific question, choice of study design and, 361-3 scientific rigour, 249-8 scientific studies, 12 scurvy, 248, 249 SDGs (Sustainable Development Goals), 16, 125, 132, 141, 150 search terms, 368-9 secondary data, 113, 114, 137, 139 - 44secondary disease prevention, 43 selection bias, 7–8, 164, 204–7, 230-3, 237-8, 323-9 see also allocation bias; ascertainment bias; attrition bias; non-response bias; publication bias; survivor bias; volunteer bias self-report bias, 330 see also recall bias self-reporting of data, 330, 331, 332, 333

sensitivity, 321-2 severity, 22, 55, 86, 87 sex, 51, 124, 295, 324 sham surgery, 256-7 silicosis, 129 simple randomisation, 254 single-blind randomised controlled trials, 250 single-level studies, 115-16 small gestational age (SGA), 167-8 smoking, 95-7, 104-5, 124, 135-6, 292, 295-7, 324, 364-6, 367 Snow, John, 15, 115, 130-1, 289 social desirability bias, 233, 331, 332 social determinants of health, 24, 125, 165 social epidemiology, 124 social media, 10-11, 164 source populations, 231 South Africa, 258-9, 262-3, 357-60 South Australia, 8, 51-4, 183, 305 specificity, 321-2 spiders, white-tail, 207–8 standard populations, 66 Standardised Incidence Ratio (SIR), 72 Standardised Mortality Ratio (SMR), 72 standardised rates, 51 statistical significance, 299-302, 304 - 5stratification, 51, 65 stratified analysis, 341 stratified randomisation, 254-5, 338 streptomycin, 249 stress, 167, 170, 319-20 STROBE Checklist, 353 strokes, 85, 123 study designs, 20-3, 95, 361-3 reporting guidelines, 353, 367 see also experimental study designs; non-experimental study designs (observational study designs) suicide, 149 surveillance, disease, see disease surveillance surveys, see online surveys; population surveys; prevalence surveys; questionnaire surveys survivor bias, 205, 327, 329 see also attrition bias; healthy worker effect Sustainable Development Goals (SDGs), 16, 125, 132, 141, 150 Sweden, 361 synergism, 295 synthesis matrices, 370 synthesis study designs, see burden of disease studies; systematic reviews

examples, 9-10, 371 Taiwan, 234 target populations, 231 temporality, 98, 210, 218, 289 teratogens, 111 see also thalidomide tertiary disease prevention, 43 test-retest processes, 321 thalidomide, 108-12 therapeutic misconception, 268 see also volunteer bias thromboembolism, 362-3 time, 35–6, 102 tobacco, 95-7, 104-5 see also smoking triple-blind randomised controlled trials, 250 tuberculosis (TB), 249-50, 258-9, 262-3, 357-60 two-by-two tables (contingency tables), 103, 170, 171 type 1 errors, 264, 265, 302 type 2 errors, 264-5, 302 Uganda, 251–2 umbrella reviews, 371, 372 United Kingdom British Doctors Study, 95-7, 104 cancer in, 222 census data in, 140 COVID-19 in, 204, 221, 223, 227-8, 362-3 limb defects in babies in, 111 London, 15, 16-17, 115, 130-1, 138, 204 monkeypox in, 138 National Health Service, 222 vaccination for measles, mumps and rubella in, 305 United Nations Statistics Division (UNSD), 140 United States asthma in, 361 cardiovascular disease in, 104, 220, 232 census data in, 140 Centers for Disease Control and Prevention, 145 Community Intervention Trial for Smoking Cessation, 104-5 COVID-19 in, 151, 170, 221, 251 election polling in, 323-4 electronic health records in, 149 Framingham Heart Study, 104, 220, 232 limb defects in babies in, 109 liver cancer in, 362 lung cancer in, 364-6, 367 National Cancer Institute, 69, 104, 201

synthesising of evidence, 369-70

systematic reviews, 9, 10-372

More Information

Index 417

National Institute of Health American Association of Retired Persons Diet and Health Study (NIH-AARP), 365 National Toxicology Program, 363 New Mexico Elder Health Survey, 355-6 nutrition education in, 251 osteoarthritis in, 256 Public Health Service, 220 sarcopenia in, 355-6 tuberculosis in, 249 units of analysis, 106 units of observation, 106 University of Washington Health Science Library, 321 urban locations, 129

vaccine hesitancy, 14 vaccines, 14, 295 COVID-19, 5–6, 14, 134, 135 influenza, 14, 125 measles, mumps and rubella (MMR), 305 validity, 96, 297–9, 317–22 external, 299, 318, 324 internal, 299, 318, 324–5 ventilation, 7, 9–10, 14 Victoria, 167–8 viruses, 5–6, 7, 9–10, 14, 99 vital statistics, 140–1 vitamin C, 248 vitamin D, 260–1, 363 volunteer bias, 269, 326 *see also* therapeutic misconception

websites, 11 white-tail spiders, 207–8 WHO, *see* World Health Organization (WHO) women, 50, 123, 125, 136, 167–8, 303 workplaces, 319–20, 330 World Bank, 86, 127 World Health Organization (WHO), 8, 15–16, 55, 69, 141 and COVID-19, 17, 131-2, 145, 148, 150 definition of cases by, 199–200 Global Cancer Observatory, 149 Global Health Estimates, 141, 142, 150, 151, 184 and influenza, 147 International Clinical Trials Registry Platform, 334 population data repositories, 349, 368 World Health Statistics, 179 Wuhan City, China, 17

Years Lived with Disability (YLD), 86 Years of Life Lost (YLL), 86 young adults, 151, 222–3 *see also* children