

Wider determinants of health: Systematic map of meta-analyses: methods

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The map includes systematic reviews with meta-analysis published since 2022 which report on associations between a wider determinant (environment, employment, education, socio-economic status) and any health status outcome. Records were coded on the basis of titles and abstracts only by a single reviewer.

Searching

We searched one source (MEDLINE). The search strategy was as follows.

Database: Ovid MEDLINE(R) ALL <1946 to February 17, 2026>

Search Strategy:

- 1** [Controlled terms relating to social determinants] (0)
- 2** "Access to Healthy Foods"/ or "Air Pollutants"/ or "Built Environment"/ or "Career Mobility"/ or "City Planning"/ or "Economic Factors"/ or "Economic Stability"/ or "Economic Status"/ or "Educational Status"/ or "Employment"/ or "Environment Design"/ or "Environmental Exposure"/ or "Environmental Pollutants"/ or "Environmental Pollution"/ or "Food Assistance"/ or "Food Deserts"/ or "Food Insecurity"/ or "Food Security"/ or "Housing"/ or "Housing Instability"/ or "Housing Quality"/ or "Income"/ or "Job Security"/ or "Light Pollution"/ or "Low Socioeconomic Status"/ or "Neighborhood Characteristics"/ or "neighborhood safety"/ or "Noise"/ or "Parks, Recreational"/ or "Poverty"/ or "Poverty Areas"/ or "Public Assistance"/ or "Public Housing"/ or "Residence Characteristics"/ or "Rural Health"/ or "Social Capital"/ or "Social Class"/ or "Social Deprivation"/ or "Social Determinants of Health"/ or "Social Factors"/ or "Social Marginalization"/ or "Social Mobility"/ or "Social Planning"/ or "Social Security"/ or "Social Segregation"/ or "Social Status"/ or "Social Welfare"/ or "Sociodemographic Factors"/ or "Socioeconomic Disparities in Health"/ or "Socioeconomic Factors"/ or "Suburban Health"/ or "Traffic-Related Pollution"/ or "Unemployment"/ or "Urban Health"/ or "Urban Renewal"/ or "Workforce Diversity"/ or "Working Conditions"/ (723944)
- 3** [social determinants: title and author keywords] (0)
- 4** (Sociodemographic* or "socio-economic*" or "socioeconomic*" or (((social or economic) and (determinant* or circumstance*)) or "SES" or societal or neighborhood* or neighbourhoood* or poverty or wealth or economy or housing or "school environment" or ((school or work*) and (policy or policies)) or careers or debt)).ti,kf,ot,bt. or (environment* and determinant*).ti,ot,bt. or (environmental adj1 determinant*).kf. (155816)
- 5** (income not (econom* or nation* or country or countries or LIC or LMIC*)).ti,ot,bt. (17904)
- 6** ("social status" or "social class" or "social mobility" or "social position*" or "Social Gradient*" or "social stratification" or "social difference*" or "social differentials" or "social characteristic*" or "social deprivation" or "social disadvantage" or "social disparities" or "social disparity" or "social factors" or "social inequat*" or "social inequities" or "social influences" or "social structure*" or "social advantage*" or "social regeneration" or "social context" or "social correlates" or "social capital" or "social marginali*" or "socially depriv*" or "socially advantag*" or "socially disadvantag*" or "socially marginali*").ti,kw,ot,bt. (21308)
- 7** (economic and (condition* or status or depriv* or disadv* or advant* or regeneration* or disparities or margin* or character* or influence* or insecurit* or stability or instability or hardship or recession* or downturn* or dependen* or independen* or factor* or determinant* or security*)).ti,kw,ot,bt. (8857)

- 8** (((household* or individual* or family or families or personal) and (income or expenditure* or financ*)) or "universal income" or "basic income" or "material deprivation" or "financial hardship").ti,kw,ot,bt. (6538)
- 9** ("education status" or "educational status" or "education level" or "educational level" or "Educational Achievement" or "Educational Attainment").ti,kw,ot,bt. (6301)
- 10** (((work* or job or jobs or employment) and (environment* or pattern* or conditions* or secure or insecure)) or ("shift work*" or "shift pattern*" or "gig economy" or "temporary work*")).ti,kw,ot,bt. (20350)
- 11** ((workforce or workplace*) and (divers* or inclusion or equalit* or unequal* or equit* or inequit*)).ti,kw,ot,bt. (1432)
- 12** ("labor market" or "labor force" or "labour market" or "labour force" or unemployment or "non employment" or "out of work" or "not in work" or "not in employment" or "not employed" or unemployed or NEET or furlough or (employ* adj1 (status or stable or unstable or stability or instability or insecure or secure or security or insecurity))).ti,kw,ot,bt. (8953)
- 13** ((work* or job or jobs) and (stable or unstable or stability or instability or security or insecurity)).ti,kw,ot,bt. (1941)
- 14** ("career mobility" or "occupational mobility").ti,kf,ot,bt. (230)
- 15** ("food bank*" or "food assistance" or "food aid" or "food stamp" or "food stamps" or "food program*" or "community pantr*").ti,kf,ot,bt. (1194)
- 16** ((food* and (access* or availability or environment* or infrastructure* or afford* or sustainabl*)) or obesogenic or "nutritional environment*" or (farmer* adj1 markets) or "community garden*" or ((fruit or vegetable) and environment*) or (food* and takeaway*) or "food choice*" or "food growing" or (local and food*) or "urban food*" or "garden space*" or (allotment* and (food or fruit or vegetable* or garden*))).ti,kw,ot,bt. (17279)
- 17** ("food desert*" or "food swamp*" or "food secur*" or "food insecur*").ti,kf,ot,bt. (11596)
- 18** ("built environment*" or "physical environment*" or "green space*" or "blue space*" or greenspace* or bluespace* or greenness or greening or "green environment*" or "green infrastructure*" or "outdoor environment*" or "street connectivity" or "land use mix" or "urban space*").ti,kf,ot,bt. (9934)
- 19** ("Environmental Pollut*" or "Air pollut*" or (Outdoor* and "particulate matter") or (air and "particulate matter") or "clean air").ti,kw,ot,bt. (38708)
- 20** ("natural environment" or parks or "open space*" or "recreational space*" or "outdoor space*" or "park improvements" or "recreational infrastructure" or "recreational facilities" or "open public space*" or "open public areas").ti,kf,ot,bt. (3583)
- 21** ((transportation and infrastructure*) or (travel and infrastructure*) or "organisational travel" or "road safety" or (traffic and (prevention or calming or speed* or exposure* or noise or pollut*)) or (speed* and cameras) or (pedestrian* and infrastructure*) or (cycling and infrastructure*) or walkability or "Public Transport*" or "Active travel" or "Active transportation" or "residential traffic").ti,kf,ot,bt. (8492)
- 22** ("social environment" or "social variation" or "social fragmentation").ti,kf,ot,bt. (1910)
- 23** (residential adj1 (Depriv* or Characteristics or change* or density)).ti,kw,ot,bt. (68)
- 24** (gentrification or urbanisation or urbanization or "urban upgrading" or urbanicity).ti,kf,ot,bt. (7515)
- 25** ("community structure*" or (community and infrastructure*)).ti,kf,ot,bt. (8916)
- 26** ("living environment*" or "fuel poverty" or "cold homes" or ((fuel or energy or refurb*) adj3 homes)).ti,kw,ot,bt. (701)
- 27** (((household* or individual* or family or families or personal) adj1 (income or expenditure)) or "universal income" or "basic income" or "material deprivation" or "financial

hardship").ti,kf,ot,bt. (2964)

28 ("city planning" or "town planning" or "urban planning" or "spatial planning" or "social planning").ti,kf,ot,bt. (1820)

29 ("social welfare" or "social security" or "welfare assistance" or "welfare program*" or "financial aid" or "public spending" or "public subsid*" or "public financ*").ti,kf,ot,bt. (6567)

30 ((light* and pollution) or "light at night" or "artificial light*" or "residential lighting" or "street lighting").ti,kf,ot,bt. (2151)

31 ((noise or noisy) and (environment* or pollution or exposure*)).ti,kw,ot,bt. (4997)

32 ((crime or antisocial or violent or violence) and (neighborhood* or neighbourhoood* or communit*)).ti,kf,ot,bt. (3532)

33 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 (339657)

34 [social determinants: abstract, title and author keywords] (0)

35 (("wider determinant*" adj2 health) or (determinant* adj2 "population health") or (place* adj2 determinant* adj2 health)).ti,ab,kf,ot,bt. (369)

36 (((Sociodemographic* or "socio-economic*" or socioeconomic*) adj5 (determinant* or health* or status or class or classes or mobility or position* or factors)) or ((Sociodemographic* or "socio-economic*" or socioeconomic*) adj5 (Gradient* or stratification or difference* or differentials or characteristic* or depriv* or disadvantage* or disparit*)) or ((Sociodemographic* or "socio-economic*" or socioeconomic*) adj5 (inequal* or inequit* or influence* or structure* or advantage* or regeneration or context* or correlat* or marginali*))).ti,ab,kf,ot,bt. (218717)

37 ((area or "area level") adj1 (characteristics or environment* or disadv* or advant* or regeneration* or disparities or stability or instability or safety or depriv* or margin*)).ti,ab,kf,ot,bt. (4849)

38 ((urban or residential or suburban or city or cities or slum or slums or rural or area or "area level") adj3 (renewal or regeneration or environment or depriv*)).ti,ab,kf,ot,bt. (15399)

39 (Salutogenesis or "salutogenic environment").ti,ab,kf,ot,bt. (741)

40 35 or 36 or 37 or 38 or 39 (233714)

41 [social determinants: all search strands] (0)

42 2 or 33 or 40 (1025696)

43 [meta analysis terms] (0)

44 (metaanaly* or "meta regression" or metaregression or (quantitative* adj2 synthesis*)).ti,ab,kf,ot,bt. (27135)

45 "meta analy*".ab. /freq=2 (145707)

46 "Preferred Reporting Items for Systematic Reviews and Meta-Analyses".ab. (27223)

47 45 and 46 (9450)

48 ("meta analy*" not "Preferred Reporting Items for Systematic Reviews and Meta-Analyses").ab. (300450)

49 "meta analy*".ti,kf,ot,bt. (268962)

50 "meta analysis".pt. (225316)

51 "meta-epidemiological".ti,ab,kf,ot,bt. (463)

52 44 or 47 or 48 or 49 or 50 or 51 (390919)

53 [terms for observational study design and synthesis] (0)

54 (longitudinal or "Natural experiments" or epidemiological or observational or Epidemiology or (cohort* adj studies) or "case control studies" or correlat* or causal*).ti,ab,kf,ot,bt. (3919009)

55 ("COSMOS-E" or STROBE or MOOSE or "Newcastle-Ottawa Scale" or "ROBINS-E").ab. (18465)

56 (determinants or exposure* or "risk factor*" or relationship* or predictor* or

differential*).ti,kw. (1129298)

57 exp epidemiologic studies/ (3614607)

58 "CROSS-SECTIONAL studies".ti,ab,kf,ot,bt. (20559)

59 ((relationship* adj between) or (link* adj between) or association or associated or etiolog* or aetiolog* or "assessment of").ti,ab,kf,ot,bt. (8572656)

60 54 or 55 or 56 or 57 or 58 or 59 (12677415)

61 [terms for statistical analysis] (0)

62 (pooled* or regression* or "effect size*" or "funnel plot*" or "forest plot*" or "harvest plot*" or "publication bias" or "odds ratio*" or "fixed effect*" or "mixed effect*" or "random effect*" or "risk ratio" or "correlation coefficient" or "confidence interval*").ti,ab,kf,ot,bt. (2261206)

63 [terms for systematic reviews and umbrella reviews] (0)

64 (review or synthesis or systematic or umbrella or "metareview" or "meta-review" or ((overview* or "synthesis" or "systematic" or evidence) and "reviews")).ti. (1343904)

65 ((research adj2 review) or (evidence adj2 review) or (literature adj2 review) or (systematic adj review) or (research adj2 synthesis) or (evidence adj2 synthesis) or (literature adj2 synthesis) or (systematic adj2 synthesis) or "data extraction" or "literature search*" or (systematic adj2 search*)).ti,ab,kf,ot,bt. (728275)

66 ("umbrella review" or "metareview" or "meta-review").ti,ab,kf,ot,bt. (3827)

67 ("Overview of reviews" or "Review of Reviews").ti,ab,kf,ot,bt. (1696)

68 (systematic adj overview*).ti,ab,kf,ot,bt. (2108)

69 "systematically review*".ti,ab,kf,ot,bt. (31028)

70 ("bibliographic search*" or "database search*" or "electronic search" or "handsearch*" or "hand search*" or "keyword search*" or "literature search*" or "search term*" or "overview study" or "review articles" or "review studies").ti,ab,kf,ot,bt. (172510)

71 ((review adj5 (intervention* or studies or trials or effect* or empirical or reports)) or ((database* adj3 search*) and (systematic* or review or synthesis))).ti,ab,kf,ot,bt. (336124)

72 ((review adj5 (intervention* or studies or trials or effect* or empirical or reports)) or ((database* adj3 search*) and (systematic* or review or synthesis))).ti,ab,kf,ot,bt. (336124)

73 ((research adj2 review) or (evidence adj2 review) or (literature adj2 review) or (systematic adj review) or (research adj2 synthesis) or (evidence adj2 synthesis) or (literature adj2 synthesis) or (systematic adj2 synthesis) or "data extraction" or "literature search*" or (systematic adj2 search*)).ti,ab,kf,ot,bt. (728275)

74 systematic review.pt. (319643)

75 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74 (1732003)

76 42 and 60 and 62 and 75 (4116)

77 (("review" or "synthesis*") adj5 ("epidemiolog*" or "observation*" or "longitudinal" or "cohort" or causal* or correlat*)).ti,ab,kf,ot,bt. (44195)

78 52 and 60 (240873)

79 60 and 62 and 75 (134843)

80 62 and 77 (6782)

81 78 or 79 or 80 (267424)

82 42 and 81 (8590)

83 limit 82 to yr="2022 -Current" (3406)

Screening

All records were screened on title and abstract by a single reviewer. The criteria were:

- 1) Is the study a systematic review of primary studies?

- Include reviews explicitly described as ‘systematic’ and/or reporting clear inclusion criteria. Exclude protocols. Exclude studies reporting meta-analysis but which do not report searching for studies. Retain systematic reviews of reviews but do not include at this stage.
- 2) Does the review include quantitative observational data on associations between determinants and outcomes?
 - Exclude reviews of effectiveness of interventions. Exclude reviews of prevalence of outcomes alone, unless they also contain data on determinants / risk factors.
 - 3) Does the review measure (a) wider determinant(s) of health?
 - Include any measure at area or community level, or relating to the built or social environment. Exclude factors to do with the natural environment only (e.g. temperature). Exclude national-level factors (e.g. inequality, GDP).
 - Include individual socio-economic status or any economic or employment-related factor, including educational status and housing- or residence-related measures. Exclude ethnicity, gender, migration status and any other individual demographic characteristics.
 - Exclude studies that measure these factors but report only a narrative synthesis, not a meta-analysis. Exclude studies that analyse wider determinants only as moderators of some other relationship. Exclude studies which report one or two wider determinants but whose main focus is elsewhere (e.g. individual risk factors).
 - 4) Does the review report (a) health outcome(s)?
 - Include any physical or mental health status outcome (mortality, incidence/prevalence of disease, any measure of health functioning). Exclude behaviours, attitudes. Exclude service utilisation or uptake. Exclude task performance (but include cognitive outcomes if clinically relevant, e.g. dementia). Exclude non-humans.
 - 5) Does the review include data from high-income countries?
 - As defined by the World Bank. Exclude reviews likely to include mainly data from LMICs, even if all countries are included in principle.
 - 6) Does the review report a meta-analysis?
 - Only include abstracts which clearly report pooling data quantitatively (whether or not the results are reported in the abstract itself).

The MEDLINE search returned N=3,401 records; a further N=3 were included from initial scoping, for a total of N=3,404. After screening, N=742 records were included in the map.

Coding

Codes for broad categories of determinants and outcomes were applied to abstracts by one reviewer only. Codes were not exclusive (i.e. records could receive multiple codes if they investigated more than one determinant or outcome). The codes for determinants were as follows:

- Environmental factors
 - Air pollution
 - Other environmental toxin exposures
 - Second-hand smoke
 - Noise

- Light pollution
- Neighbourhood characteristics (e.g. green space, walkability)
- Electromagnetic fields
- Other environmental factors
- Socioeconomic status
 - Individual-level
 - Area-level
- Employment
 - Unemployment
 - Shift work
 - Other (e.g. working hours)
- Education
 - Individual educational attainment
 - Parental educational attainment
- Other
 - Food insecurity
 - Any other determinant

The codes for outcomes were as follows:

- Mortality (all-cause)
- Outcomes in clinical populations undergoing treatment (e.g. comorbidities, treatment outcome, disease-specific mortality, return to work)
- Cardiovascular
- Cancer
- Diabetes / obesity / metabolic
- Mental health
- Respiratory (e.g. asthma, COPD)
- Pregnancy / perinatal / reproductive (e.g. fertility, any pregnancy / birth outcome, congenital disorders, any gynaecological outcome)
- Neurological / cognitive (e.g. dementia, epilepsy, Parkinson's)
- Hearing
- Sleep
- Allergies
- Autism spectrum
- Infectious disease
- Vaccine response
- Pain
- Dental / oral
- Endocrine (e.g. thyroid function)
- Other