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Methods for Calculating Life Expectancy at Birth for Small Areas: A Systematic Review

Métodos para calcular la esperanza de vida al nacer en áreas pequeñas: una revisión sistemática

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Supplementary Material

Methods for calculating life expectancy at birth for small areas: a systematic review

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1. Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) checklist.

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Yes
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Yes
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	3-6
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	4
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	6-7
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	6
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Yes
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	6-7
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	6-7
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	7
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	7

1. Continued.

Section and Topic	Item #	Checklist item	Location where item is reported
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	7
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	NA
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	6-18
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	6
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	6
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	6-7
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	NA
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	NA
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	NA
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	NA
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	8
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	8
Study characteristics	17	Cite each included study and present its characteristics.	7
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Yes
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	8-18
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	18
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	9-18
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	9-18

1. Continued.

Section and Topic	Item #	Checklist item	Location where item is reported
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	NA
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	NA
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	NA
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	19-26
	23b	Discuss any limitations of the evidence included in the review.	19-26
	23c	Discuss any limitations of the review processes used.	19-26
	23d	Discuss implications of the results for practice, policy, and future research.	19-26
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	6
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	7
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Yes
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	26
Competing interests	26	Declare any competing interests of review authors.	26
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	7-18

Source: Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I, Hoffmann, T. C., Mulrow, C. D., et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ (2021) 372: n71. doi: 10.1136/bmj.n71

2. Data collection forms.

var_name	description	answer
	identification	
ID	ID article	
journal_name	journal name	
article_language	article language	
authors	authors	
year_publication	year publication	
year_submission	year submission	
	design characteristics	
country_study	country of stydy	

2. Continued.

var_name	description	answer
geographical_study_area	study geographic clipping	
year_study	year of study	
target_population	target population	
study_type	type of study	
data_type	type of data	
range_population_size	interval of the population size to which the method was applied	
funding	research funding	
	componensts	
objective	objective	
methods_literature_review	methods mentioned in the literature review	
main_methods_used	main methods used	
descripition_methods	description of methods used	
software_recommendation	software recommendation	
software_name	sogtware name	
package_recommendation	package recommendation	
package_name	package name	
comparison_methods	comparison between methods	
outcome_life_expectancy_birth	outcome life expectancy at birth	
outcome_mortality_rates	outcome mortality rates	
outcome_rate_last_age_group	outcome rate for the last age group	
outcome_infant_mortality	outcome infant mortality	
confidence_interval_calculated	confidence interval is calculated	
	analysis domain	
sex	sex identification	
sex_category	sex categories	
color_race	identification	
color_race_category	color race categories	
ethnicity	ethnicity identification	
ethnicity_category	ethnicity categories	
age_group	age group identification	
age_group_category	age group categories	
observation_category_1	category for observation	
observation_1	observation	
observation_category_2	category for observation	
observation_2	observation	
observation_category_3	category for observation	
observation_3	observation	
observation_category_4	category for observation	
observation_4	observation	

3. Quality assessment by study

Study	Items Assessed						
	Is the problem to be solved well defined?	Is the definition of the research object clear?	Is there discussion of alternative methodologies?	Have the methodologies applied by the authors been described in detail?	Are the databases used in the paper well specified?	Was the question of the paper answered by the methodology used?	Does the author provide sufficient materials for full reproducibility of the results?*
(Alexander, Zagheni, & Barbieri, 2017)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Anggreyani, Indahwati, & Kurnia, 2016)	Yes	Yes	No	Yes	Yes	Yes	Yes
(Arias, Bastian, Xu, & Tejada-Vera, 2021)	Yes	Yes	No	Yes	Yes	Yes	No
(Arias, Escobedo, Kennedy, Fu, & Cisewki, 2018)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Baffour & Raymer, 2019)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Barman & Choudhury, 2017)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Congdon, 2014)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Dwyer-Lindgren et al., 2022)	Yes	Yes	No	Yes	Yes	Yes	Yes
(Eayres & Williams, 2004)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Gonzaga & Schmertmann, 2016)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(Hrzic, Vogt, Brand, & Janssen, 2023)	Yes	Yes	No	Yes	Yes	Yes	Yes
(Jonker et al., 2012)	Yes	Yes	No	Yes	Yes	Yes	No
(Justino, Freire, & Lucio, 2012)	Yes	Yes	No	Yes	Yes	Yes	No
(Kim et al. 2020a)	Yes	Yes	No	Yes	Yes	Yes	No
(Kim, Lim, Kang, & Khang, 2020)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Kulkarni, Levin-Rector, Ezzati, & Murray, 2011)	Yes	Yes	No	Yes	Yes	Yes	No
(Lu, Hanewald, & Wang, 2021)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Manuel, Goel, & Williams, 1998)	Yes	Yes	No	No	Yes	Yes	No

3. Continued.

Study	Items Assessed						
	Is the problem to be solved well defined?	Is the definition of the research object clear?	Is there discussion of alternative methodologies?	Have the methodologies applied by the authors been described in detail?	Are the databases used in the paper well specified?	Was the question of the paper answered by the methodology used?	Does the author provide sufficient materials for full reproducibility of the results?*
(Melix et al., 2020)	Yes	Yes	No	Yes	Yes	Yes	Yes
(Neupert, Fernandez Menjivar, & Fernandez Castilla, 2019)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Olatunde, White, & Smith, 2010)	Yes	Yes	No	No	Yes	Yes	No
(Paredes & Silva, 2017)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Perez-Panades, Botella-Rocamora, & Martinez-Beneito, 2020)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Picazzo-Palencia, Flores Segovia, & De La Cruz-Maldonado, 2018)	Yes	Yes	No	Yes	Yes	Yes	No
(Puig & Ginebra, 2022)	Yes	Yes	Yes	Yes	No	Yes	No
(Rachet et al., 2015)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Rashid et al., 2021)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(Rodríguez López et al., 2022)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Rose & Nagle, 2017)	Yes	Yes	No	Yes	Yes	Yes	No
(Ruther, Leyk, & Buttenfield, 2017)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Sacco, Williams, & L. Queiroz, 2021)	Yes	Yes	No	Yes	Yes	Yes	No
(Santos et al., 2020)	Yes	Yes	No	Yes	Yes	Yes	Yes
(Schmertmann & Gonzaga, 2018)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(Seaman, Mitchell, Dundas, Leyland, & Popham, 2015)	Yes	Yes	No	Yes	Yes	Yes	Yes

3. Continued.

Study	Items Assessed						
	Is the problem to be solved well defined?	Is the definition of the research object clear?	Is there discussion of alternative methodologies?	Have the methodologies applied by the authors been described in detail?	Are the databases used in the paper well specified?	Was the question of the paper answered by the methodology used?	Does the author provide sufficient materials for full reproducibility of the results?*
(Swanson, 1989)	Yes	Yes	No	No	Yes	Yes	No
(Swanson, 2019)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Swanson & Baker, 2019)	Yes	Yes	No	Yes	Yes	Yes	No
(Swanson, Kposowa, & Baker, 2019)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Swanson & Tedrow, 2022)	Yes	Yes	No	Yes	Yes	Yes	No
(Talbot, Done, & Babcock, 2018)	Yes	Yes	No	Yes	Yes	Yes	Yes
(Tsimbos, Kalogirou, & Verropoulou, 2014)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Wakefield et al., 2019)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(H. Wang, Schumacher, Levitz, Mokdad, & Murray, 2013)	Yes	Yes	No	Yes	Yes	Yes	No
(H.-C. Wang, Yue, & Chong, 2018)	Yes	Yes	Yes	Yes	No	Yes	No
(H.-C. Wang, Yue, & Wang, 2019)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Wilson, 2018)	Yes	Yes	Yes	Yes	Yes	Yes	No
(Yue, Wang, & Wang, 2021)	Yes	Yes	Yes	Yes	No	Yes	No

** "Sufficient materials" in this context means readily available code or spreadsheet.*

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