Supplemental Material for

Exploring the association of weather variability on *Campylobacter* - a systematic review

Published in Environmental Research, 2024

Corresponding Author Information
Erika Austhof, PhD MPH
barrette@arizona.edu

Data used in this study is available at the following link:
https://github.com/austhofe/Weather-Campy-Review

Supplemental Material

Table of Contents

Table 1. Inclusion and exclusion criteria

Inclusion and exclusion criteria for a systematic review exploring the effects of weather on *Campylobacter spp.* infections

Criteria	**Inclusion**	**Exclusion**
Date Range	Published up to September 1, 2022	Published after September 1, 2022
Study Design	Primary data analysis	Opinion; letters to the editor; case studies or reports; reviews (systematic, scoping, and/or meta-analyses)
Population	Humans	Animal-only studies; laboratory or diagnostic testing; environmental sampling without a connection to human illness
Publication Language	English	non-English
Publication Status	Peer-reviewed publication	Pre-prints
Outcome	Infection with *Campylobacter spp.* captured via surveillance (laboratory confirmation and reported to health authority or during a study), as part of an outbreak (study, ER or hospital visits), or via medical chart review	Diagnoses of other bacteria, viruses or parasites, toxins or other contaminants, non-enteric health outcomes (e.g. sepsis or wound infections)
Exposure (Weather Events)	Climate change, climate variability (El Niño, La Niña), global warming, extreme weather (temperature), precipitation events (flood*, rain*, storm), drought (arid*, water scarcity)	No connection to climate change or antecedent weather event, including only description or analysis of seasonal changes in infections
Study Results and Outcome	Studies exploring association between weather events and subsequent human enteric illness	Studies only exploring animal-environment connections without human health outcomes

Note: * indicate wildcards, which take the place of one or more characters in a search term strategy. For example “flood*” would also search for “flooding” or “flooded”

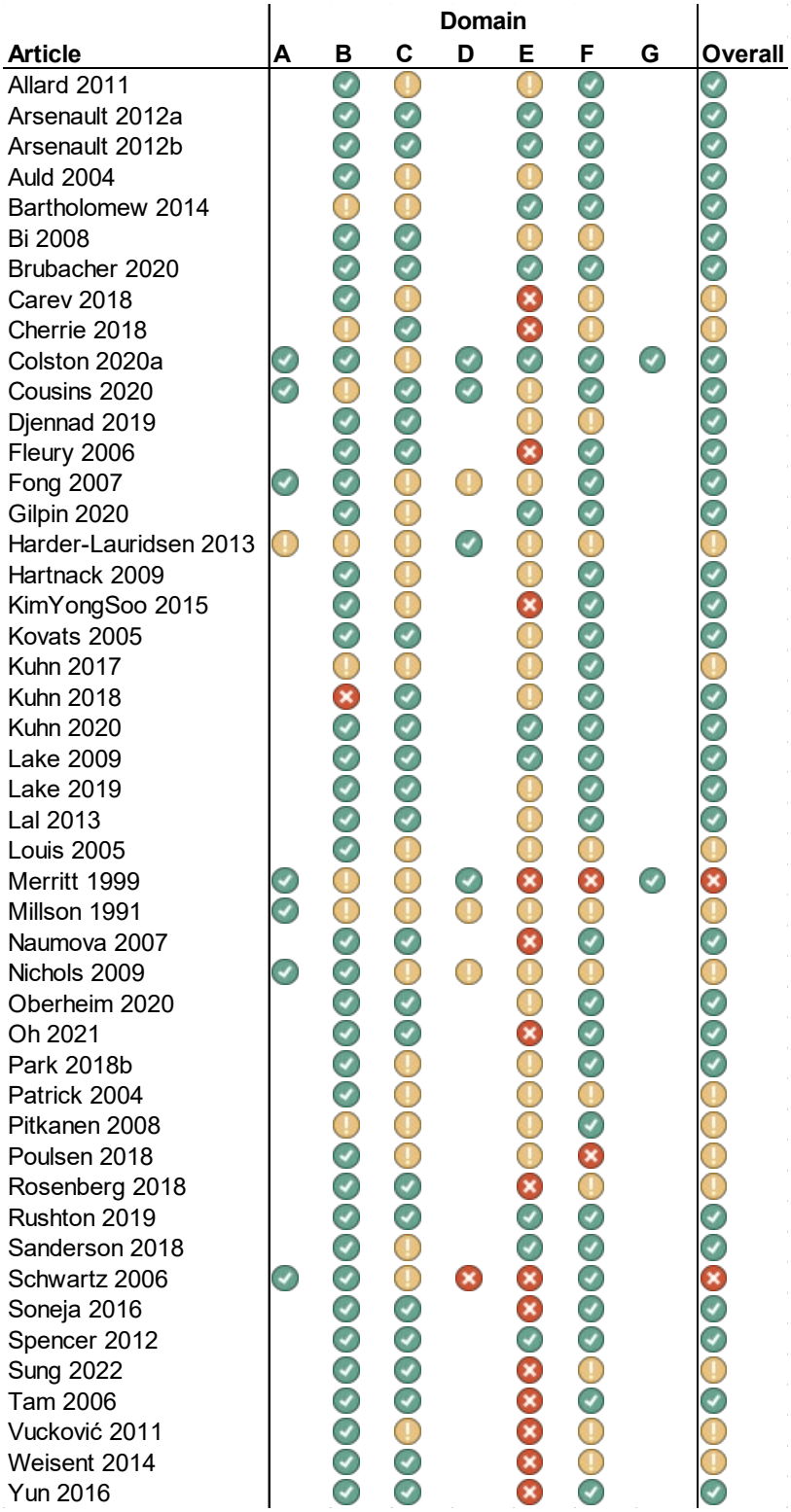
Table 2. Search Strategies

PubMed	Embase	GEOBASE	CABI Global Health	Ag and Env Database
("climate change"[MeSH Terms] OR "climate change"[Title/Abstract] OR "climate variability"[Title/Abstract] OR "global warming"[Title/Abstract] OR "extreme weather"[Title/Abstract] OR "extreme weather"[MeSH Terms] OR "flood*"[Title/Abstract] OR "floods"[MeSH Terms] OR "flash flood*"[Title/Abstract] OR "floodwater*"[Title/Abstract] OR "flood water*"[Title/Abstract] OR "monsoon*"[Title/Abstract] OR "rain*"[Title/Abstract] OR "storm"[Title/Abstract] OR "stormwater*"[Title/Abstract] OR "precipitation"[Title/Abstract] OR "drought"[Title/Abstract] OR "droughts"[MeSH Terms] OR "arid*"[Title/Abstract] OR "water scarcity"[Title/Abstract] OR "El nino"[Title/Abstract] OR "El Nino-Southern Oscillation"[MeSH Terms] OR "La nina"[Title/Abstract]) AND ("campylobacter"[MeSH Terms] OR "campylobacter"[Title/Abstract] OR "campylobacters"[Title/Abstract] OR "c jejuni"[Title/Abstract]) AND ("health*"[Title/Abstract] OR "one health"[MeSH Terms] OR "public health"[Title/Abstract] OR	(**'climate change'**:ti,ab OR **'climate variability'**:ti,ab OR **'global warming'**:ti,ab OR **'extreme weather'**:ti,ab OR **'flood*'**:ti,ab OR **'flash flood*'**:ti,ab OR **'floodwater*'**:ti,ab OR **'flood water*'**:ti,ab OR **'monsoon*'**:ti,ab OR **'rain*'**:ti,ab OR **'storm'**:ti,ab OR **'stormwater*'**:ti,ab OR **'precipitation'**:ti,ab OR **'drought'**:ti,ab OR **'arid*'**:ti,ab OR **'water scarcity'**:ti,ab OR **'el nino'**:ti,ab OR **'la nina'**:ti,ab) AND (**'campylobacter'**:ti,ab OR **'campylobacters'**:ti,ab OR **'c jejuni'**:ti,ab) AND (**'health*'**:ti,ab OR **'public health'**:ti,ab OR **'diseas*'**:ti,ab OR **'infectio*'**:ti,ab OR **'case*'**:ti,ab OR **'mortalit*'**:ti,ab OR **'morbidit*'**:ti,ab OR **'illness'**:ti,ab OR **'epidemic*'**:ti,ab OR **'outbreak'**:ti,ab OR **'injur*'**:ti,ab OR **'health status'**:ti,ab OR **'health impact*'**:ti,ab OR **'health effect*'**:ti,ab OR **'foodborne'**:ti,ab OR **'food-borne'**:ti,ab	(((("climate change" OR "climate variability" OR "global warming" OR "extreme weather" OR "flood*" OR "flash flood*" OR "floodwater*" OR "flood water*" OR "monsoon*" OR "rain*" OR "storm" OR "stormwater*" OR "precipitation" OR "drought" OR "arid*" OR "water scarcity" OR "El nino" OR "La nina") AND ("campylobacter" OR "campylobacters" OR "c jejuni") AND ("health*" OR "public health" OR "diseas*" OR "infectio*" OR "case*" OR "mortalit*" OR "morbidit*" OR "illness" OR "epidemic*" OR "outbreak" OR "injur*" OR "Health Status" OR "health impact*" OR "health	TI(("climate change" OR "climate variability" OR "global warming" OR "extreme weather" OR "flood*" OR "flash flood*" OR "floodwater*" OR "flood water*" OR "monsoon*" OR "rain*" OR "storm" OR "stormwater*" OR "precipitation" OR "drought" OR "arid*" OR "water scarcity" OR "El nino" OR "La nina") AND ("campylobacter" OR "campylobacters" OR "c jejuni") AND ("health*" OR "public health*" OR "diseas*" OR "infectio*" OR "case*" OR "mortalit*" OR "morbidit*" OR "illness" OR "epidemic*" OR "outbreak" OR "injur*" OR "Health Status" OR "health impact*" OR	(ti(("climate change" OR "climate variability" OR "global warming" OR "extreme weather" OR "flood*" OR ("flash flood" OR "flash flooding" OR "flash floods") OR "floodwater*" OR ("flood water" OR "flood waters") OR "monsoon*" OR "rain*" OR "storm" OR "stormwater*" OR "precipitation" OR "drought" OR "arid*" OR "water scarcity" OR "El nino" OR "La nina") AND ("campylobacter" OR "campylobacters" OR "c jejuni") AND ("health*" OR "public health" OR "diseas*" OR "infectio*" OR "case*" OR "mortalit*" OR "morbidit*" OR "illness" OR "epidemic*" OR "outbreak" OR "injur*"

"public health"[MeSH Terms] OR "diseas*"[Title/Abstract] OR "infectio*"[Title/Abstract] OR "case*"[Title/Abstract] OR "mortalit*"[Title/Abstract] OR "morbidit*"[Title/Abstract] OR "illness"[Title/Abstract] OR "epidemic*"[Title/Abstract] OR "epidemics"[MeSH Terms] OR "Disease Outbreaks"[MeSH Terms] OR "outbreak"[Title/Abstract] OR "injur*"[Title/Abstract] OR "Health Status"[Title/Abstract] OR "Health Status"[MeSH Terms] OR "health impact*"[Title/Abstract] OR "health effect*"[Title/Abstract] OR "foodborne"[Title/Abstract] OR "food-borne"[Title/Abstract] OR "waterborne"[Title/Abstract] OR "water-borne"[Title/Abstract] OR "Foodborne Diseases"[MeSH Terms] OR "Waterborne Diseases"[MeSH Terms] OR humans[MeSH Terms])	OR **'waterborne'**:ti,ab OR **'water-borne'**:ti,ab) AND [english]/lim	effect*" OR "foodborne" OR "food-borne" OR "waterborne" OR "water-borne")) WN KY) AND (English WN LA)	"health effect*" OR "foodborne" OR "food-borne" OR "waterborne" OR "water-borne")) OR AB(("climate change" OR "climate variability" OR "global warming" OR "extreme weather" OR "flood*" OR "flash flood*" OR "floodwater*" OR "flood water*" OR "monsoon*" OR "rain*" OR "storm" OR "stormwater*" OR "precipitation" OR "drought" OR "arid*" OR "water scarcity" OR "El nino" OR "La nina") AND ("campylobacter" OR "campylobacters" OR "c jejuni") AND ("health*" OR "public health*" OR "diseas*" OR "infectio*" OR "case*" OR "mortalit*" OR "morbidit*" OR "illness" OR "epidemic*" OR "outbreak" OR "injur*" OR "Health Status" OR "health impact*" OR	OR "Health Status" OR ("health impact" OR "health impacts") OR ("health effect" OR "health effects") OR "foodborne" OR "food-borne" OR "waterborne" OR "water-borne")) OR ab(("climate change" OR "climate variability" OR "global warming" OR "extreme weather" OR "flood*" OR ("flash flood" OR "flash flooding" OR "flash floods") OR "floodwater*" OR ("flood water" OR "flood waters") OR "monsoon*" OR "rain*" OR "storm" OR "stormwater*" OR "precipitation" OR "drought" OR "arid*" OR "water scarcity" OR "El nino" OR "La nina") AND ("campylobacter" OR "campylobacters" OR "c jejuni") AND ("health*" OR "public health" OR "diseas*"

			"health effect*" OR "foodborne" OR "food-borne" OR "waterborne" OR "water-borne"))	OR "infectio*" OR "case*" OR "mortalit*" OR "morbidit*" OR "illness" OR "epidemic*" OR "outbreak" OR "injur*" OR "Health Status" OR ("health impact" OR "health impacts") OR ("health effect" OR "health effects") OR "foodborne" OR "food-borne" OR "waterborne" OR "water-borne"))) AND (la.exact("ENG") AND PEER(yes))

Table 3. Cochrane risk of bias



Article	Domain A	B	C	D	E	F	G	Overall
Allard 2011		+	!		!	+		+
Arsenault 2012a		+	+		+	+		+
Arsenault 2012b		+	+		+	+		+
Auld 2004		+	!		!	+		+
Bartholomew 2014		!	!		+	+		+
Bi 2008		+	+		!	!		+
Brubacher 2020		+	+		+	+		+
Carev 2018		+	!		-	!		!
Cherrie 2018		!	+		-	!		!
Colston 2020a	+	+	!	+	+	+	+	+
Cousins 2020	+	!	+	+	!	+		+
Djennad 2019		+	+		!	!		+
Fleury 2006		+	+		-	+		+
Fong 2007	+	+	!	!	!	+		+
Gilpin 2020		+	!		+	+		+
Harder-Lauridsen 2013	!	!	!	+	!	!		!
Hartnack 2009		+	!		!	+		+
KimYongSoo 2015		+	!		-	+		+
Kovats 2005		+	+		!	+		+
Kuhn 2017		!	!		!	+		!
Kuhn 2018		-	+		!	+		+
Kuhn 2020		+	+		+	+		+
Lake 2009		+	+		+	+		+
Lake 2019		+	+		!	+		+
Lal 2013		+	+		!	+		+
Louis 2005		+	!		!	!		!
Merritt 1999	+	!	!	+	-	-	+	-
Millson 1991	+	!	!	!	!	!		!
Naumova 2007		+	+		-	+		+
Nichols 2009	+	+	!	!	!	!		!
Oberheim 2020		+	+		!	+		+
Oh 2021		+	+		-	+		+
Park 2018b		+	!		!	+		+
Patrick 2004		+	!		!	!		!
Pitkanen 2008		!	!		!	+		!
Poulsen 2018		+	!		!	-		!
Rosenberg 2018		+	+		-	!		!
Rushton 2019		+	+		+	+		+
Sanderson 2018		+	!		+	+		+
Schwartz 2006	+	+	!	-	-	+		-
Soneja 2016		+	+		-	+		+
Spencer 2012		+	+		+	+		+
Sung 2022		+	+		-	!		!
Tam 2006		+	+		-	+		+
Vucković 2011		+	!		-	!		!
Weisent 2014		+	+		-	!		!
Yun 2016		+	+		-	+		+

Cochrane risk of bias quality assessment for articles published up to September 1, 2022 and included in a systematic review exploring the effects of weather and climate change on *Campylobacter spp.* incidence

Legend: Green check, low risk; Yellow exclamation mark, some concerns; Red x, high risk. The Cochrane Risk of Bias reporting tool[14] was modified to indicate the exposure, and outcomes of interest. Questions for each domain include: A) Was selection of exposed and non-exposed cohorts drawn from the same population? B)Are you confident in the assessment of exposure (how climate change or the weather event was defined)? C) Are you confident the outcome of interest was not present at the start of the study (that the population didn't already have Campylobacter)? D) Did the study match exposed and unexposed for all variables that are associated with the outcome of interest, or did the statistical analysis adjust for those variables? E) Are you confident in the assessment of the presence or absence of confounding factors? F) Are you confident in the assessment of the outcome (how infection was determined)? G)Was follow-up of the cohort adequate?

Table 4. Modeling Approaches

List of modeling approaches across 28 articles included in the review which explained their model in the methods section of the paper.

- a two-segment piecewise linear regression model, Poisson Generalized Additive Model (GAM) model, 3- segment piecewise linear regression model
- binomial logistic regression
- Conditional logistic regression
- cross-correlation function of Trends module in SPSS
- generalized linear models
- generalized linear models (GLMs) with quasi-Poisson family and distributed lag non-linear models (DLNMs)
- generalized linear models with cluster-robust variance estimation
- Generalized linear models with quasi-maximum likelihood Poisson
- GIS analysis, Wavelet analysis, time series, cluster analysis
- linear mixed effects model, principal components analysis
- linear regression model
- Multiple regression analyses
- Multivariate negative binomial regression models utilizing generalized estimating equations offset by county population
- negative binomial regression
- Ordinary regression, conditional autoregressive model
- Poisson regression
- Regression analysis
- seasonal autoregressive integrated moving average
- sigmoid logistic model, linear regression
- standard Poisson regression, zero-inflated Poisson regression
- static time series model- univariate and bivariate models
- time-series adjusted Poisson regression model

- Time-series analysis, multiple regression
- Univariable and multivariable conditional logistic regression models, Univariable and Multivariable meta-regression methods
- univariate time series forecasting model, multivariable forecasting models

PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported Page #
TITLE			
Title	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	3
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	3
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	4, Supp Material 4
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.	4
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Supp Material 1-3
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.	4
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.	4,
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.	Supp Material 5-14
	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.	Supp Material 5-14
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.	4
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.	5
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)).	5
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	5
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	5
	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.	5
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	N/A
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	N/A

PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported Page #
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	4
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	5
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.	5, Figure 1
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	N/A
Study characteristics	17	Cite each included study and present its characteristics.	5
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Table 1
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.	5-7, Table 2, Table 3, Figure 2
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	5-7
	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.	5-7
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	N/A
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	N/A
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	5
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	5-7
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	7-10
	23b	Discuss any limitations of the evidence included in the review.	8-9
	23c	Discuss any limitations of the review processes used.	8-9
	23d	Discuss implications of the results for practice, policy, and future research.	9-10
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.	3
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	3
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	N/A
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	1
Competing interests	26	Declare any competing interests of review authors.	1

Section and Topic	Item #	Checklist item	Location where item is reported Page #
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.	4-5

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

Data extraction form

Please complete the survey below.

Thank you!

Excel Sheet Record ID

_____

Covidence #

_____

First author's last name

_____

Publication Year

_____

Title

_____

Outcomes of Interest

Which pathogen(s) are included in this paper? Exclude if none of these pathogens are specifically included, or have no results associated with them.

- ☐ Campylobacter spp.
- ☐ Salmonella spp. (non-typhoidal)
- ☐ Listeria monocytogenes
- ☐ Escherichia coli
- ☐ Bacillus cereus
- ☐ Clostridium perfringens
- ☐ Staphylococcus aureus
- ☐ Other

Please specify "Other":

_____

Where did the health data come from?

- ☐ Outbreak
- ☐ Routine or lab Surveillance
- ☐ Specialty Clinic
- ☐ Hospitalized
- ☐ Chart Review
- ☐ Other
- ☐ Not reported

Please specify "Other":

_____

Which climate change events were included as exposure variables?

- ☐ El nino
- ☐ La Nina
- ☐ Precipitation/Rain (avg, med, min, or max)
- ☐ Extreme flooding
- ☐ Hurricane or Typhoon
- ☐ Other extreme weather event
- ☐ Drought/Aridity
- ☐ Temperature (avg, med, min, or max)
- ☐ Extreme temperature or heat wave event
- ☐ Other

Please specify "Other extreme weather event":

_____

Please specify "Other":

_____

How did the study define their weather variables?

_____

Animal Data Sources

Did the study include animal data or land use data about animals?

- ◯ Yes
- ◯ No

How did the study define their animal variables?

_____

Study Design & Case Population Demographics

Study design

- ◯ Case Control
- ◯ Case Case
- ◯ Nested Case Control
- ◯ Retrospective Cohort
- ◯ Prospective Cohort
- ◯ Cross Sectional
- ◯ Ecological
- ◯ Disease/Economic Burden
- ◯ Case Series
- ◯ Not reported
- ◯ Other

Describe 'Other' study design

_____

Diagnosis method

- ☐ Culture
- ☐ PCR
- ☐ EIA
- ☐ Serology (IgG, IgM, IgA)
- ☐ WGS
- ☐ Self-reported FBD symptoms (diarrhea, vomiting, nausea, fever, etc.)
- ☐ Self-reported positive test result
- ☐ Other
- ☐ Not reported

Please specify "Other":

_____

Study period reported?

- ◯ Yes
- ◯ No

Start year

_____
([XXXX])

End year

_____
([XXXX])

Continent(s)	☐ North America ☐ South America ☐ Europe ☐ Asia ☐ Africa ☐ Australia ☐ Antarctica ☐ Other
Country If conducted in multiple countries or states, include all countries in a list, separated by a semicolon (e.g. Mexico; Paris, France; Arizona, Colorado, New Mexico, United States; Toronto, Canada).	_____
Total number of participants	_____
How was age reported?	☐ Minimum ☐ Maximum ☐ Average / Mean ☐ Median ☐ Not reported
Minimum	_____
Maximum	_____
Average / Mean	_____
Median	_____
Percentage of Female cases	_____ (%)
Did the authors aggregate their data to a larger time scale (e.g. weekly, monthly)?	◯ Yes ◯ No
Which time aggregation did they use?	_____
Which spatial scale did they use?	☐ Zip Code ☐ Census Block ☐ Census Tract ☐ County ☐ City ☐ Climate Division ☐ State ☐ Country ☐ Other ☐ Not Reported

Which spatial scale did they use?

_____

Which time lags did they include, if any?
If none, only concurrent, then leave blank.

_____

MOAs for analysis results

What type of model did they use?
If none, leave blank.

_____

Which covariates did they adjust for?
If not, leave blank.

_____

Did they stratify their results, if so, by what?
If not, leave blank.

_____

Did the study include a measure of association for the relationship between weather and FBD incidence? (%, OR, IRR, AR)

- ◯ Yes
- ◯ No

Measure(s) of association

Include the MOA for the unadjusted analysis between weather and incidence.

- ☐ Incidence Rate (IR)
- ☐ Odds Ratio (OR)
- ☐ Relative Risk (RR)
- ☐ Attack Rate (AR)
- ☐ Rate (%)
- ☐ Hazards Ratio (HR)
- ☐ Hospitalization Rate
- ☐ Mortality Rate
- ☐ Kaplan-Meier
- ☐ Case Count
- ☐ Case Fatality Rate (%)
- ☐ Other
- ☐ Not reported/No analyses with MOAs

Please specify "Other":

_____

Incidence Rate (IR)

_____

Odds Ratio (OR)

_____

Relative Risk (RR)

_____

Attack Rate (AR)

_____

Rate (%)

_____ (%)

Hazards Ratio (HR)

_____

Hospitalization Rate

_____

Mortality Rate

_____

Kaplan-Meier

_____

Case Count

_____

Case Fatality Rate (%)

_____
(%)

Other MOA

_____
(%)

95% Confidence Interval

_____
(Format: 1.50, 3.20)

Standard Error or Standard Deviation

_____
(Format: 0.00)

Did the study complete an adjusted analysis for animal or land use data?

For example, the unadjusted analysis looked at leve of rain and count of cases, and the adjusted analysis looked at density of brolier chicken operations.

- ◯ Yes
- ◯ No

Measure(s) of association

Include the MOA for the adjusted analysis between weather and incidence, adjusted for the level of animal/land use data.

- ☐ Incidence Rate (IR)
- ☐ Odds Ratio (OR)
- ☐ Relative Risk (RR)
- ☐ Attack Rate (AR)
- ☐ Rate (%)
- ☐ Hazards Ratio (HR)
- ☐ Hospitalization Rate
- ☐ Mortality Rate
- ☐ Kaplan-Meier
- ☐ Case Count
- ☐ Case Fatality Rate (%)
- ☐ Other
- ☐ Not reported/No analyses with MOAs

Please specify "Other":

_____

Incidence Rate (IR)

_____

Odds Ratio (OR)

_____

Relative Risk (RR)

_____

Attack Rate (AR)

_____

Rate (%)

_____
(%)

Hazards Ratio (HR)

_____

Hospitalization Rate

_____

Mortality Rate

_____

Kaplan-Meier

_____

Case Count

_____

Case Fatality Rate (%)

_____
(%)

Other MOA

_____
(%)

95% Confidence Interval

_____
(Format: 1.50, 3.20)

Standard Error or Standard Deviation

_____
(Format: 0.00)

Comments for other measures of association. Include other MOAs here, or notes on the above extractions.

_____

Comments

Did they mention any of these data limitations or challenges?

- ☐ data suppression or missingness
- ☐ data access issues (weren't able to get the time or spatial scale they needed)
- ☐ linking data with diverse datasets
- ☐ Other
- ☐ None reported

Other data challenges

_____

Comments?

_____

Reviewer initials

_____

QC initials

_____

Risk of Bias

Please complete the survey below.

Thank you!

1)	Was selection of exposed and non-exposed cohorts drawn from the same population?	◯ Definitely yes (low risk of bias) ◯ Probably yes ◯ Probably no ◯ Definitely no (high risk of bias)
2)	Are you confident in the assessment of exposure (how climate change or the weather event was defined)?	◯ Definitely yes (low risk of bias) ◯ Probably yes ◯ Probably no ◯ Definitely no (high risk of bias)
3)	Are you confident the outcome of interest was not present at the start of the study (that the population didn't already have FBD)?	◯ Definitely yes (low risk of bias) ◯ Probably yes ◯ Probably no ◯ Definitely no (high risk of bias)
4)	Did the study match exposed and unexposed for all variables that are associated with the outcome of interest, or did the statistical analysis adjust for those variables?	◯ Definitely yes (low risk of bias) ◯ Probably yes ◯ Probably no ◯ Definitely no (high risk of bias)
5)	Are you confident in the assessment of the presence or absence of confounding factors? Confounding factors could be animal health related, or other factors they took into account.	◯ Definitely yes (low risk of bias) ◯ Probably yes ◯ Probably no ◯ Definitely no (high risk of bias)
6)	Are you confident in the assessment of the outcome?	◯ Definitely yes (low risk of bias) ◯ Probably yes ◯ Probably no ◯ Definitely no (high risk of bias)
7)	Was follow-up of the cohort adequate? Follow-up is optional, but exposure should have occurred before the outcome. If the outcome was assessed once after the exposure occurred, select "Definitely yes." Select NA if no follow-up occurred, or study was cross-sectional.	◯ Definitely yes (low risk of bias) ◯ Probably yes ◯ Probably no ◯ Definitely no (high risk of bias)