

# Planning for and using non-randomised studies of interventions in public health evidence synthesis

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<https://methods.cochrane.org/nrsi/>



The Cochrane Non-Randomized Studies for Interventions Methods Group to advise the Steering Group to set a policy/formulate guidance about the inclusion of non-randomised studies (NRS) of the effectiveness of health care interventions in Cochrane Reviews. Our group aspires to help individual reviewers to carry out reviews which include NRS; in the future we hope to identify and assign a member of the group to each Cochrane Review.

**Cochrane News**

- ♦ Cochrane Convenes Plenary Session: register now!
- ♦ Ivermectin: Cochrane’s most talked about review so far, ever. Why?
- ♦ Cochrane Convenes: interview with John Lavis
- ♦ Cochrane Library Editorial - Anticholinergic drugs and dementia: time for transparency in the face of uncertainty
- ♦ Co-Chair Tracey Howe to present at launch of the UN Decade of Healthy Ageing Platform

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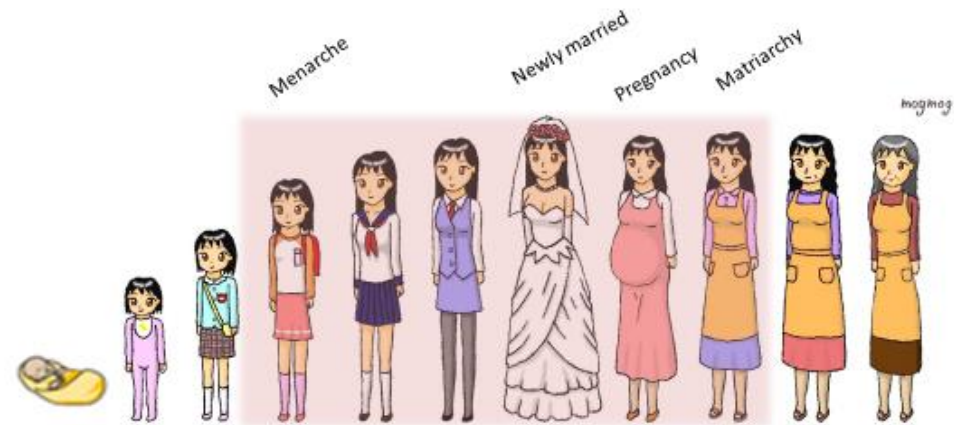
Barney Reeves  
Beverley Shea  
Hugh Sharma  
Waddington  
George Wells

# SR questions on which NRSI are needed

## Universality



## Sub-groups



## Harms



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## Long-term impacts



Hugh Sharma Waddington

## Exposures



# Two early examples of NRSI

“No experiment could have been devised which would more thoroughly test the effect of water supply on the progress of cholera than this, which circumstances placed ready made before the observer. **No fewer than three hundred thousand people were divided into two groups without their choice, and, in most cases, without their knowledge; one group being supplied with water containing the sewerage of London.**” Snow (1855, p.75).

“It was decided that the original area was too large to be dealt with under one scheme, and it was therefore divided into two portions. For convenience a line of division was decided upon which ran along a street called ‘Smithfield’. **There was in the first place, a population transferred from slum dwellings to a modern, self-contained housing estate. There was, further, a second population that continued to dwell in slum houses and served as a control.**” M’Gonigle and Kirby (1937)

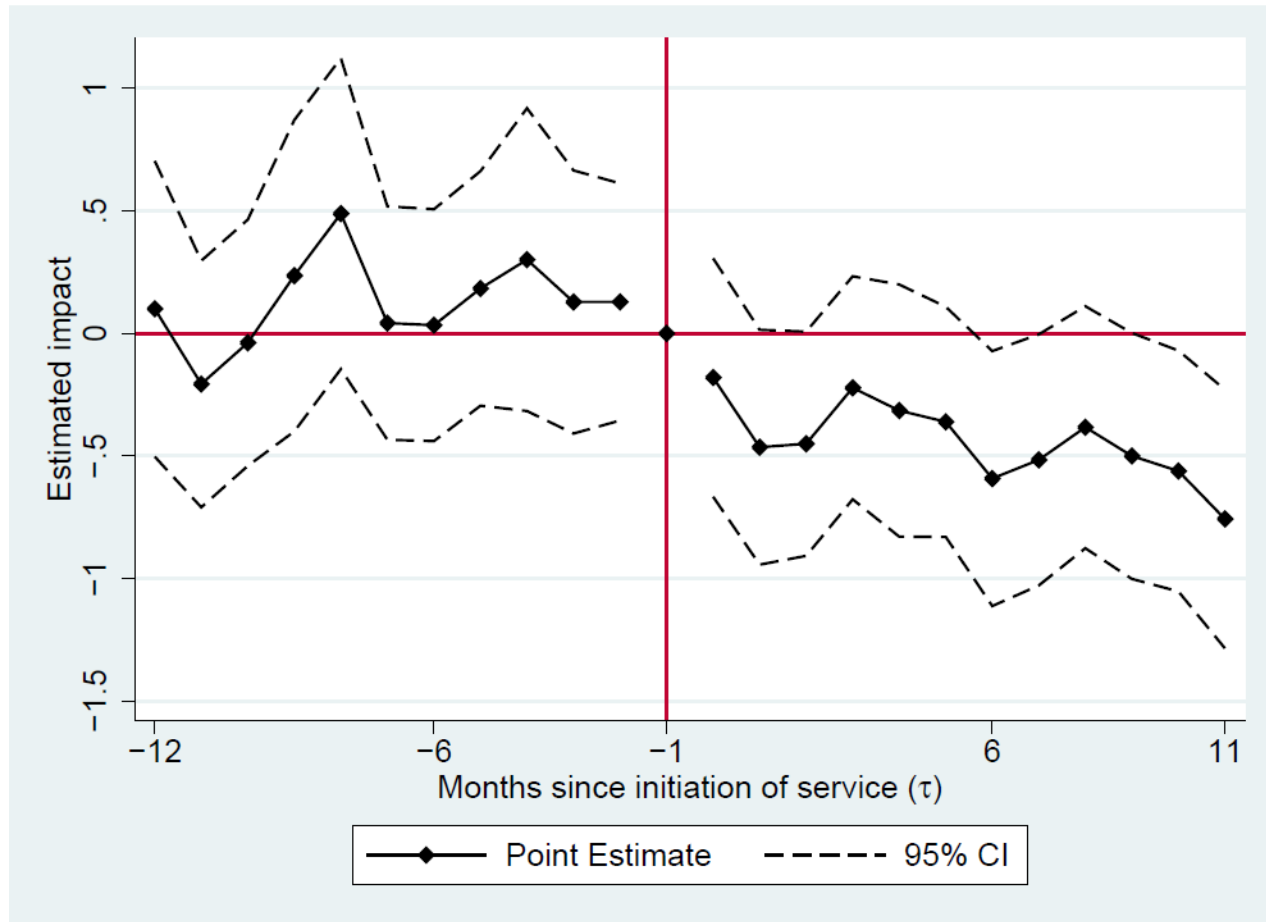


Source: The Guardian



Source: Stockton-on-Tees Borough Council

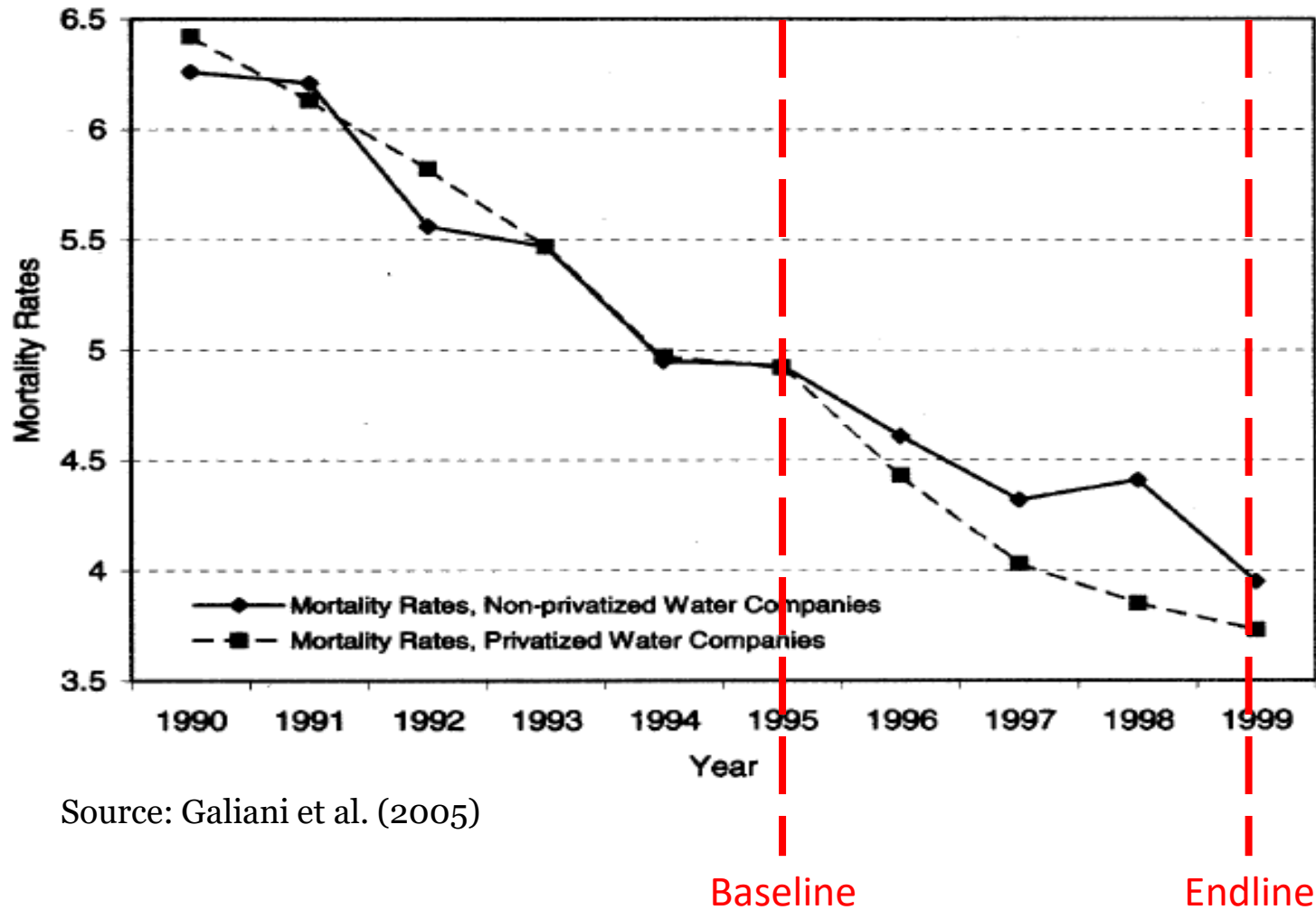
# More recent examples: interrupted time series



Village water supply connection at  $t=0$  by Gram Vikas NGO in Odisha, India, on diarrhoea morbidity

Internal replication study evidence suggests ITS more accurate for data 6 periods before and after intervention (Fretheim et al., 2015)

# Difference studies (e.g. difference-in-differences)

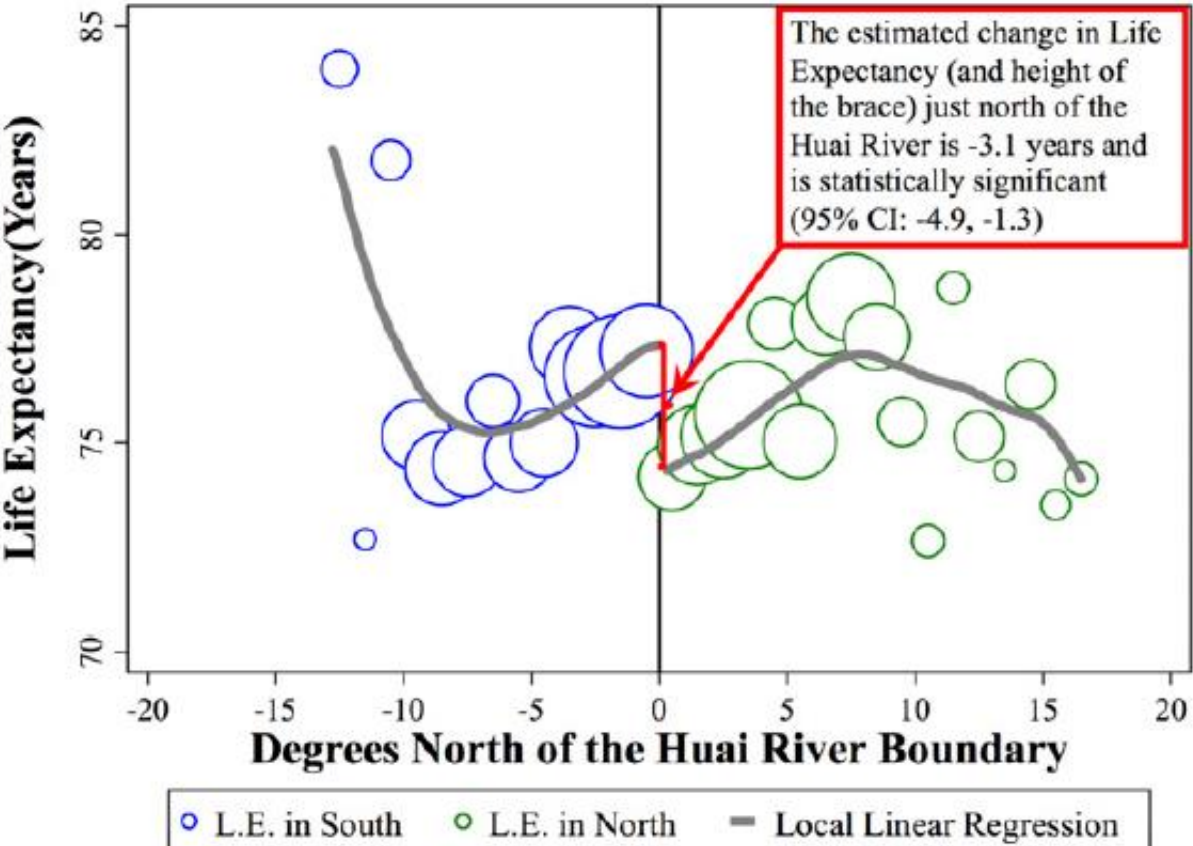
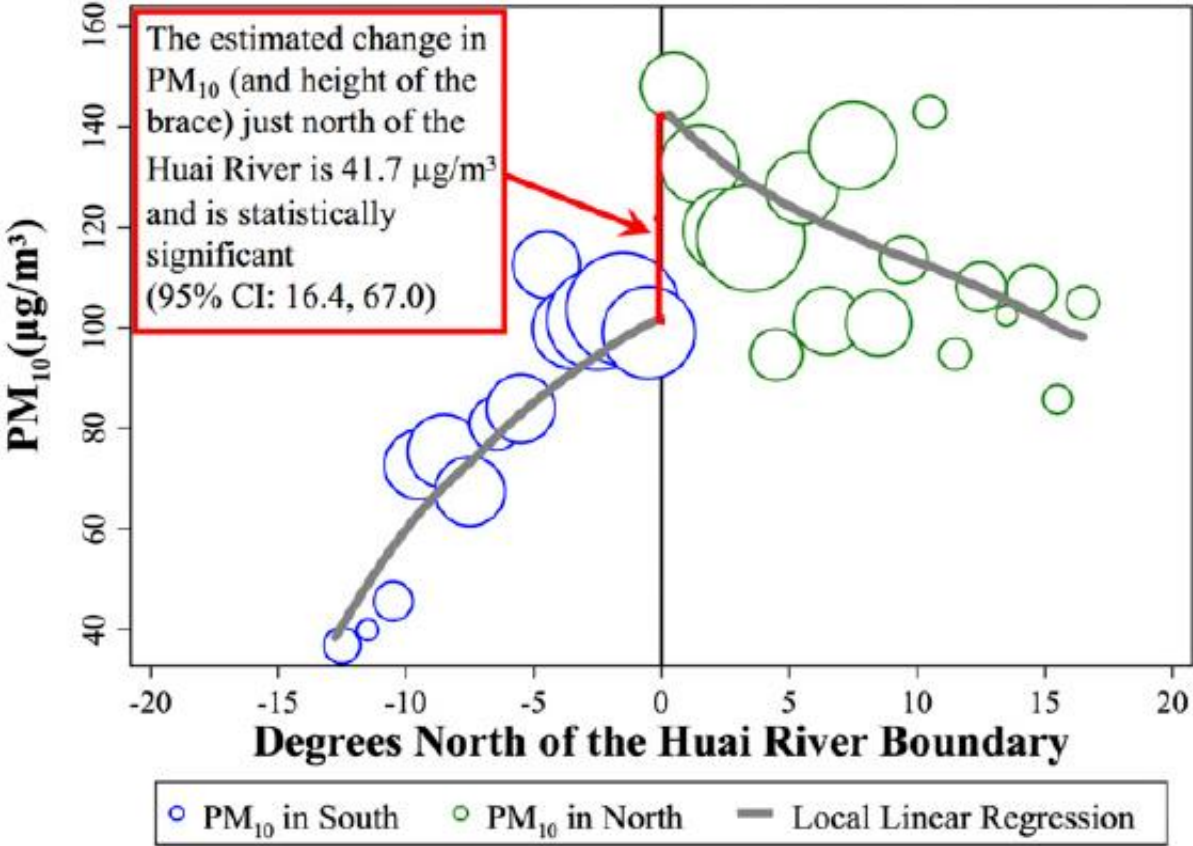


Source: Galiani et al. (2005)

Water utility privatisation  
by municipal governments  
in Argentina

Pre-test data presented  
equal trends in outcomes

# Discontinuity design



Source: Ebenstein et al. (2017)

# Evidence mapping helps define review scope (PICOS)

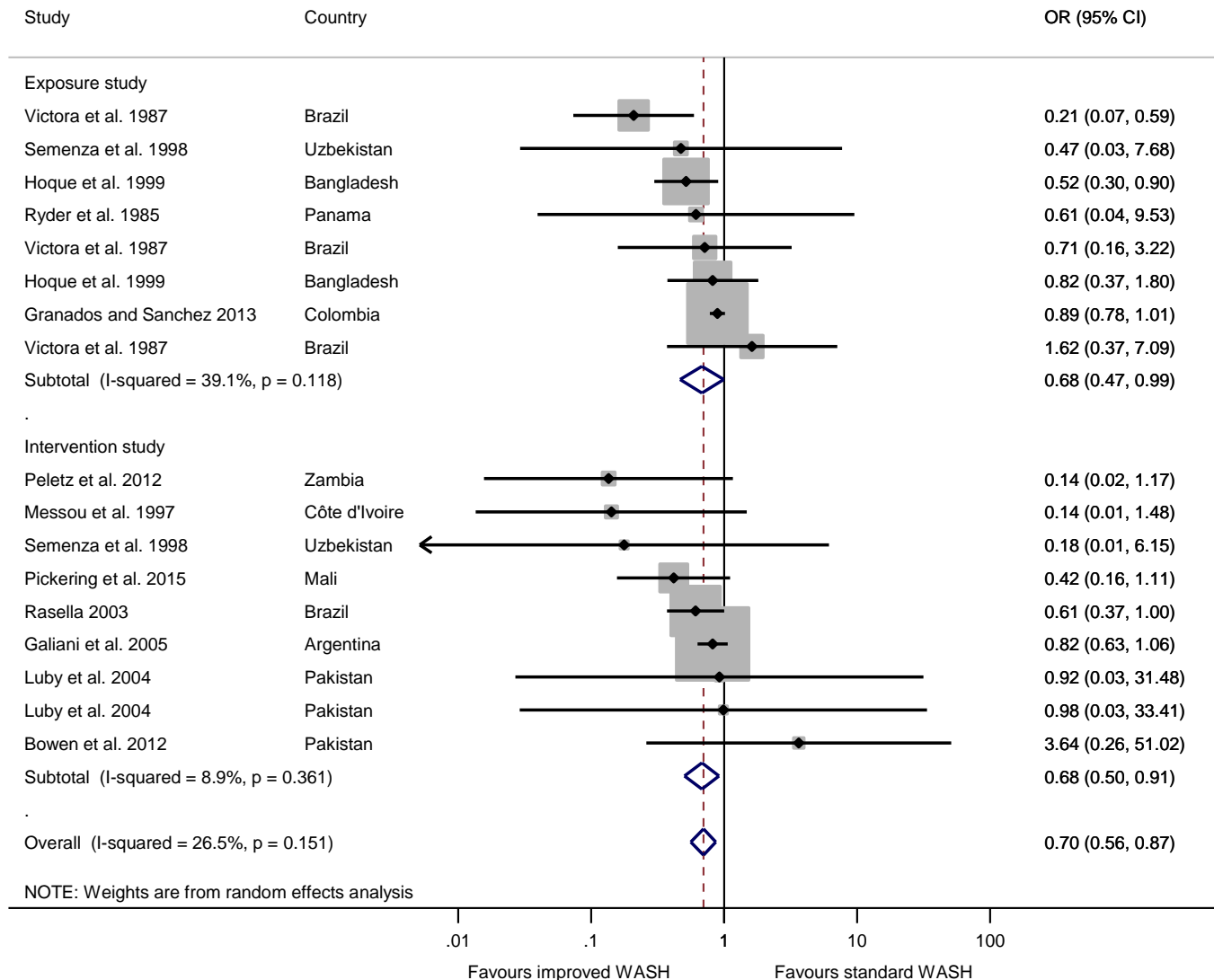
Water, Sanitation, and Hygiene (WASH) Evidence Gap Map: 2018 update



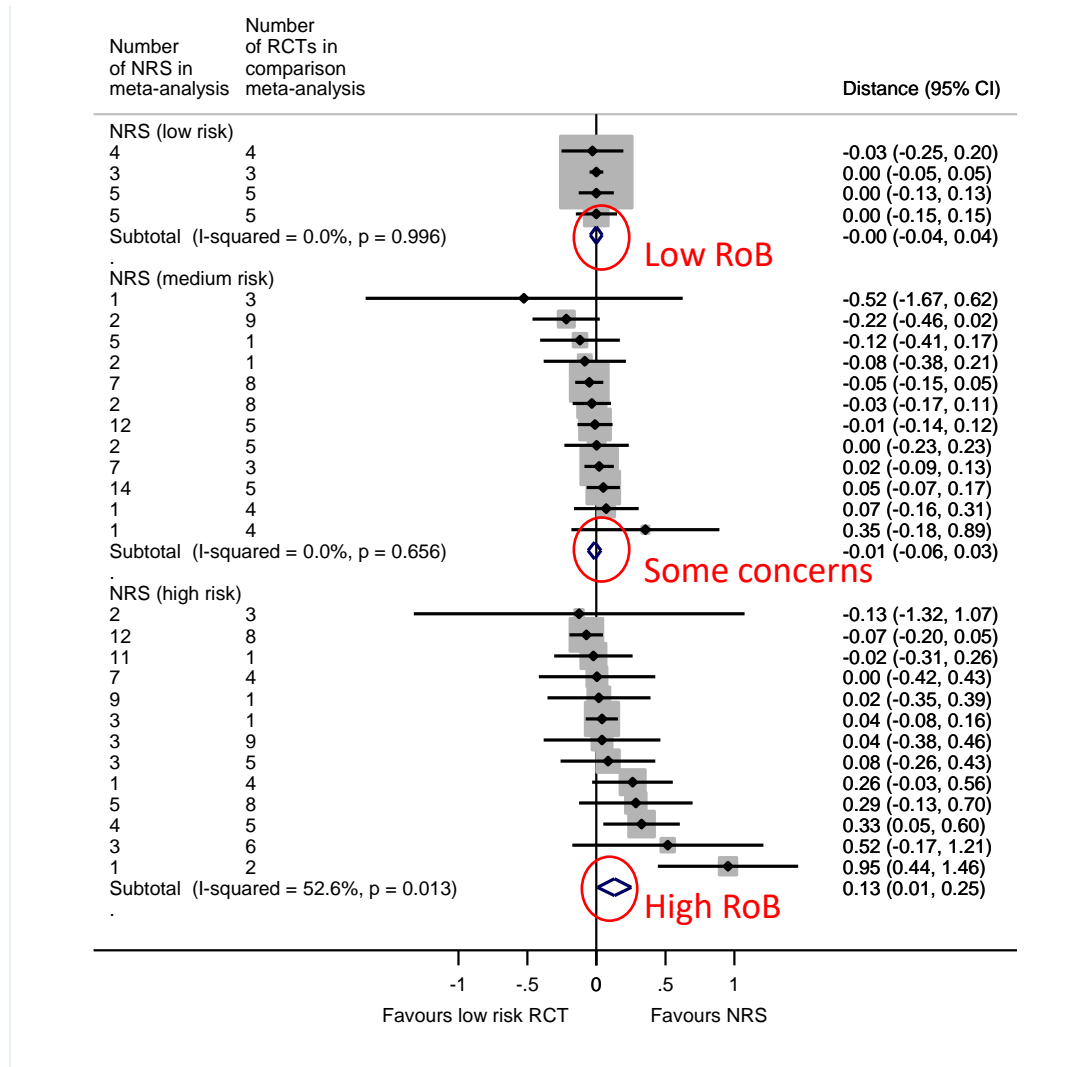


# PICO versus PECO: WASH and child diarrhoea mortality

- Usually expect different effect size because of 'funnel of attrition' (White, 2014)



# Meta-epidemiological evidence on bias in NRSI



- Review of 20 Campbell Collaboration International Development Group (IDCG) SRs incorporating RCTs and NRSI
- NRSI include quasi-experimental approaches (e.g. DID, RDD, matching)
- Each SR-MA used IDCG risk-of-bias tool to determine RoB and reported subgroup pooled effects
- Meta-epidemiology made pair-wise comparison of pooled effects of RCTs versus NRS

Thank you!

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