



# TG1: Missing Data

Co-chairs: Katherine Lee and James Carpenter

STRATOS meeting, March 2023

# Overview

- Members
- Publications
- Presentations
- Papers in progress
- Future plans
- Website
- Next TG1 meeting

# Current TG members

- Kate Lee and James Carpenter (co-chairs)
- Melanie Bell, University of Arizona, USA
- Rosie Cornish, University of Bristol, Bristol, UK
- Els Goetghebeur, Ghent University, Belgium
- Joseph Hogan, Brown University, USA
- Rod Little, University of Michigan, USA
- Rheanna Mainzer, Murdoch Children's Research Institute, Melbourne, Australia
- Kate Tilling, University of Bristol, Bristol, UK

# Publications

1. Carpenter J and Lee KJ on behalf of STRATOS TG1. STRengthening the Analysis of Observational Studies (STRATOS): Introducing the Missing Data topic group (TG1). *Biometric Bulletin*, 2017. 34 (4); 11-13.
2. Lee KJ, Tilling K, Cornish RP, Little RJA, Bell ML, Goetghebeur E, Hogan JW, and Carpenter JR on behalf of the STRATOS initiative. Framework for the Treatment And Reporting of Missing data in Observational Studies: The TARMOS framework. *In Clin Epi*, 2021. 134; 79-88. 56 citations, DOI: [10.1016/j.jclinepi.2021.01.008](https://doi.org/10.1016/j.jclinepi.2021.01.008)
3. Litte RJ, Carpenter JR and Lee KJ on behalf of the STRATOS initiative. A comparison of three popular methods for handling missing data: complete case analysis, weighting and multiple imputation. *Sociological Methods & Research*, 2022. <https://doi.org/10.1177/0049124122111138>. 928 downloads; 3 citations

## ***TG1 affiliated publications***

[Hughes RA](#), [Heron J](#), [Sterne JAC](#), and [Tilling K](#). Accounting for missing data in statistical analyses: multiple imputation is not always the answer. [Int J Epidemiol](#). 2019 Aug 1;48(4):1294-1304. doi: 10.1093/ije/dyz032.  
306 citations.

# Sociological Methods & Research paper

- “ A comparison of three popular methods for handling missing data: complete-case analysis, weighting and multiple imputation “
- Led by Rod Little on behalf of TG1
- Aimed at level 1 / level 2
- DOI: <https://doi.org/10.1177/004912412211138>.
- Key practical messages on when to use MI, CC or IPW, in particular
  - Use MI when (a) information on incomplete cases for parameter of primary interest is substantial; (b) MAR is plausible; (c) specification checks on imputation models show face validity.

# Presentations

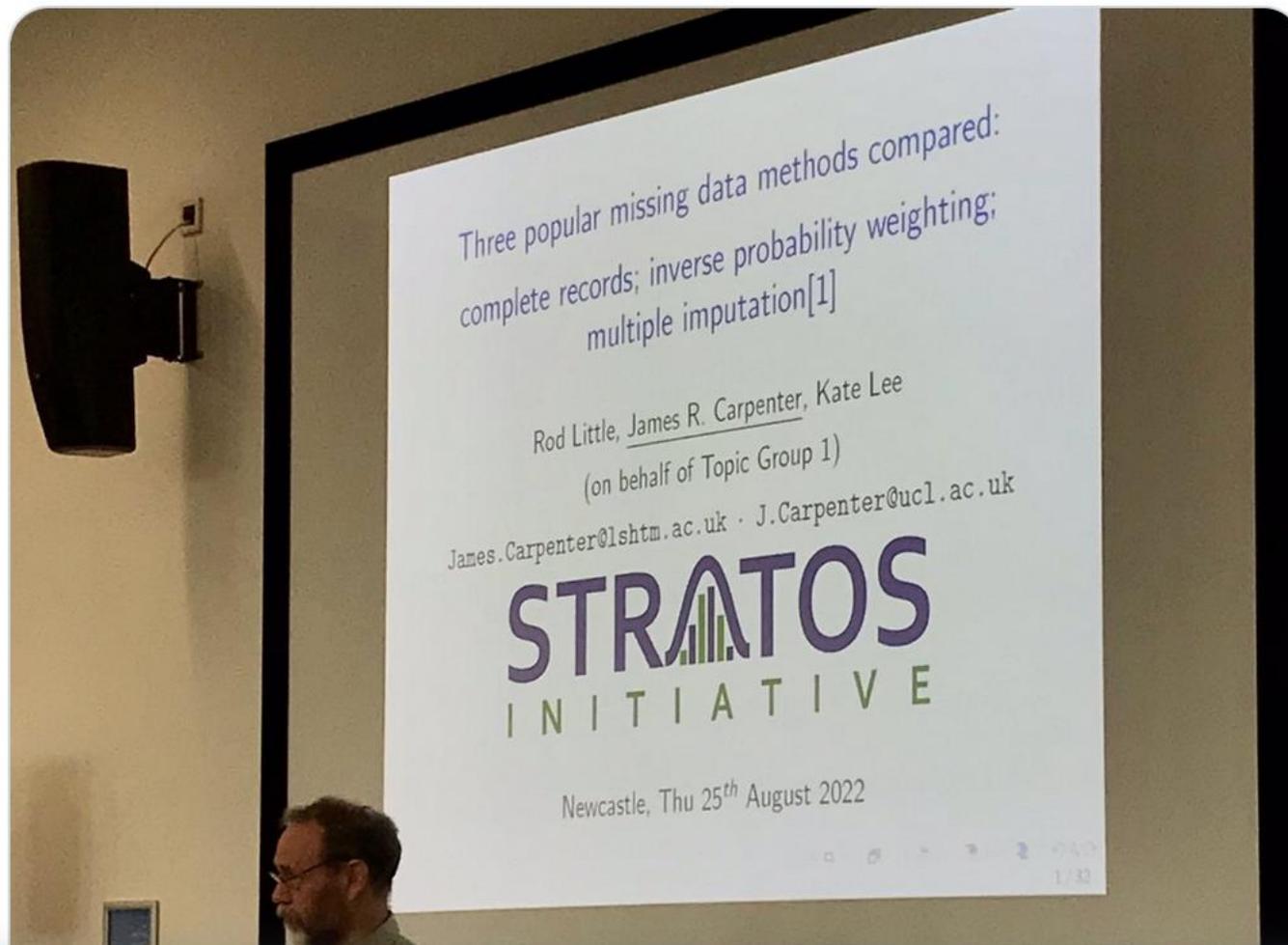
- “Framework for the Treatment And Reporting of Missing data in Observational Studies: The TARMOS framework” ISCB 2020, James & Kate
- “Modern concepts in the handling and reporting of missing data”, symposium, World Cong Epi, 2021 including talks on our two published papers (by Little and Cornish)
- “Three popular missing data methods compared: complete records; inverse probability weighting; multiple imputation” ISBCB 2023, James (generated some amusing twitter)



**Tim Morris** @tmorris\_mrc · Aug 25, 2022



My boss James Carpenter wins over the audience by starting with 'I've drawn the short straw by having to present this!' Then compares talking to the room about missing data as selling coal to Newcastle. Can't believe I didn't think of this joke.





**Sir Panda (Zad Rafi)**  @dailyzad · Aug 27, 2022



Replying to [@yudapearl](#) [@tmorris\\_mrc](#) and [@stratosinit](#)

perhaps you can use the do() operator to figure out the "WHY" of your constant need to interject on someone else's moment by mentioning how your revolutionary graphical approach to missing data would've richened their rewards



2



5



**Judea Pearl**  @yudapearl · Aug 27, 2022



Replying to [@dailyzad](#) [@tmorris\\_mrc](#) and [@stratosinit](#)

I believe I've answered this "WHY" question: Because I truly believe (or should I say believed) that the audience would have appreciated clarifying pending problems in the field. I am now ready to answer technical questions, and will leave ad hominem remarks to others.



1



1



[Show replies](#)



**Tim Morris** @tmorris\_mrc · Aug 27, 2022



Replying to @yudapearl and @stratosinit

I imagine he was being courteous, leaving space for you to present it at a future @stratosinit symposium



1



6



**Judea Pearl** @yudapearl · Aug 27, 2022



Replying to @tmorris\_mrc and @stratosinit

I can't imagine anyone not being courteous to me. But I am not talking etiquette. I am talking answering questions about missing data methods that cannot be answered by conventional frameworks. So, I enjoyed thinking how ecstatic the audience would have been with this progress.



1



**Sir Panda (Zad Rafi)** @dailyzad · Aug 27, 2022



Replying to @yudapearl @tmorris\_mrc and @stratosinit  
amazing.





Replying to [@yudapearl](#) [@tmorris\\_mrc](#) and [@stratosinit](#)  
amazing.



**Stephen John Senn** [@stephensenn](#) · Aug 27, 2022



Replying to [@yudapearl](#) [@tmorris\\_mrc](#) and [@stratosinit](#)

I was present. James gave a great talk and also has experience of what he talks about. Nor did he ever say “my assumptions must be true because if they aren’t, my beautiful theory which will revolutionise thinking would not work”.



## TG1 Paper in progress:

*Conducting and reporting sensitivity analyses for handling missing data.*

*Target journal: Journal of Clinical Epidemiology*

*(as a follow up to our first two papers, should be ready by ISCB)*

Rheanna Mainzer, Katherine J. Lee, Kate M. Tilling, Rosie P. Cornish, Roderick J.A. Little, Melanie L. Bell, Els Goetghebeur, Joseph W. Hogan, James R. Carpenter, on behalf of the STRATOS initiative.

# Future papers

1. Guidelines for reporting analyses with missing data –led by James
2. Sensitivity analysis for unobserved confounders –led by Rod
3. Overview of methods for conducting sensitivity analyses –led by Kate and Rheanna
4. Graphical methods for stating missingness assumptions or Rubin vs DAGs approach –led by Kate & James

Website: <https://www.lshtm.ac.uk/research/centres-projects-groups/missing-data#stratos>

The screenshot shows a web browser displaying the STRATOS website. The browser's address bar shows the URL <https://www.lshtm.ac.uk/research/centres-projects-groups/missing-data#stratos>. The website's navigation menu includes links for Welcome, Introduction, People, Software, DIA Missing Data, Multilevel MI, Sensitivity Analysis, and STRATOS (which is highlighted). The main heading is "STRATOS". A yellow "Share" button is visible on the left. The main text describes the Missing Data Topic Group as one of the 9 groups within the [STREngthening Analytical Thinking for Observational Studies \(STRATOS\) Initiative](#). Below this is a list of expandable sections: "Aims of the Missing Data Topic Group", "Members", "Publications", and "Presentations". On the right, a "Contact us" section provides information about funding, including ESRC Research M Programme, ESRC Research Development Initiative, and a Research Fellowship (RES-063-27-0257). It also mentions funding from the MRC (RES-189-25-0103) and MRC fellowships (G0900724 and MR/K02180X/1). At the bottom, it states that the site was formerly [missingdata.org.uk](http://missingdata.org.uk). A footer note says "If you wish to contact the topic group, please email [Katherine Lee](#)".

EXPLORE MORE CENTRES, PROJECTS AND GROUPS

Welcome Introduction People Software DIA Missing Data Multilevel MI Sensitivity Analysis **STRATOS**

# STRATOS

Share

The Missing Data Topic Group is one of the 9 topic groups within the [STREngthening Analytical Thinking for Observational Studies \(STRATOS\) Initiative](#). The objective of STRATOS is to provide accessible and accurate guidance in the design and analysis of observational studies. The guidance is intended for applied statisticians and other data analysts with varying levels of statistical education, experience and interests.

- Aims of the Missing Data Topic Group +
- Members +
- Publications +
- Presentations +

Contact us

We are grateful to (in tin order) [ESRC Research M Programme](#), the [ESRC Research Development Initiative](#), I Research Fellowship RES-063-27-0257, ESRC Funding scheme (grant RES-189-25-0103), MRC G0900724 and MRC fellow MR/K02180X/1 for support development and maintenance of this site.

This site was formerly [missingdata.org.uk](http://missingdata.org.uk)

If you wish to contact the topic group, please email [Katherine Lee](#).

13 of 10

# Next TG1 meeting

- Planning for a whole TG1 meeting at ISCB 2023 in Milan