**Coping with Information Loss and the Use of Auxiliary Sources of Data: A Report from the NISS Ingram Olkin Forum Series on Unplanned Clinical Trial Disruptions**

[Silvia Calderazzo](https://arxiv.org/search/stat?searchtype=author&query=Calderazzo%2C+S), [Sergey Tarima](https://arxiv.org/search/stat?searchtype=author&query=Tarima%2C+S), [Carissa Reid](https://arxiv.org/search/stat?searchtype=author&query=Reid%2C+C), [Nancy Flournoy](https://arxiv.org/search/stat?searchtype=author&query=Flournoy%2C+N), [Tim Friede](https://arxiv.org/search/stat?searchtype=author&query=Friede%2C+T), [Nancy Geller](https://arxiv.org/search/stat?searchtype=author&query=Geller%2C+N), [James L Rosenberger](https://arxiv.org/search/stat?searchtype=author&query=Rosenberger%2C+J+L), [Nigel Stallard](https://arxiv.org/search/stat?searchtype=author&query=Stallard%2C+N), [Moreno Ursino](https://arxiv.org/search/stat?searchtype=author&query=Ursino%2C+M), [Marc Vandemeulebroecke](https://arxiv.org/search/stat?searchtype=author&query=Vandemeulebroecke%2C+M), [Kelly Van Lancker](https://arxiv.org/search/stat?searchtype=author&query=Van+Lancker%2C+K), [Sarah Zohar](https://arxiv.org/search/stat?searchtype=author&query=Zohar%2C+S)

Clinical trials disruption has always represented a non negligible part of the ending of interventional studies. While the SARS-CoV-2 (COVID-19) pandemic has led to an impressive and unprecedented initiation of clinical research, it has also led to considerable disruption of clinical trials in other disease areas, with around 80% of non-COVID-19 trials stopped or interrupted during the pandemic. In many cases the disrupted trials will not have the planned statistical power necessary to yield interpretable results. This work describes methods to compensate for the information loss arising from trial disruptions by incorporating additional information available from auxiliary data sources. The methods described include the use of auxiliary data on baseline and early outcome data available from the trial itself and frequentist and Bayesian approaches for the incorporation of information from external data sources. The methods are illustrated by application to the analysis of artificial data based on the Primary care pediatrics Learning Activity Nutrition (PLAN) study, a clinical trial assessing a diet and exercise intervention for overweight children, that was affected by the COVID-19 pandemic. We show how all of the methods proposed lead to an increase in precision relative to use of complete case data only.