

## Summary of research proposal LROI

### Title:

Added value of novel regression discontinuity methods for arthroplasty registries



**Authors:** S van der Pas, RW Poolman, BW Schreurs

### Abstract:

The saying "correlation does not equal causation" is very well-known and when specified to arthroplasty registries, is usually taken to imply that it is impossible to answer causal questions like "which fixation type is optimal?" from the observational data collected in a registry. However one can be a bit more precise here: whether causal conclusions can be drawn depends on whether the data collection process in combination with the intended statistical analysis together meet the conditions to allow for causal conclusions. With registry data, this is often not the case or it is impossible to verify whether it is the case. However, a special research design, the regression discontinuity design, offers the rare opportunity to draw causal conclusions from observational data. This design requires minimal assumptions, but does impose an extra requirement on the data collection process: a cut-off needs to be employed in assigning treatment. Some Dutch hospitals use an age-based cut-off to decide on fixation type (e.g. patients older than 65 years receive cemented fixation and younger patients receive uncemented fixation in hip arthroplasty). In this study, the added value for orthopaedic data of newly developed extensions of the regression discontinuity design will be investigated.

**Approval date:** December 2020