

## One-view breast tomosynthesis vs two-view mammography: a methodological issue

### Authors' reply

We thank Xiang Fang and colleagues for their interest in our Article.<sup>1</sup> However, as already stated in the Article and by Fang and colleagues, a receiver operating characteristic (ROC) curve based on the data available in this study would be of questionable value and was thus not a predefined outcome measure included in the trial protocol. The reading data can be considered as binary: a recommendation to recall or not to recall the participant for further investigation. Because of this design, we would have been forced to base a ROC analysis on a single datapoint, which is essentially equivalent to fitting a curve to a single datapoint. In theory, the 1–5 reporting scale used in the Swedish screening programme (similar, although not identical to the Breast Imaging Reporting and Data System<sup>2</sup>) would provide more datapoints, but the practical difference between 1–2 (no recall) and 3–5 (recall) is substantial, and should be seen as a categorical rather than ordinal scale.<sup>3</sup> A ROC analysis should use at least semi-continuous ordinal data, which would have required us to, for example, ask participating radiologists to score the risk of malignancy on a 1–10 scale, something that is not done in clinical practice. Also, although ROC analysis provides estimates of sensitivity and specificity at a range of different operating points, for it to provide good estimates of clinical sensitivity and specificity, a reader must be well aware of which level on the scale represents a decision to recall.<sup>4</sup>

In summary, our data do not allow the construction of an ROC curve, short of fitting a curve to

a single datapoint, which we find mathematically and statistically dubious. Our data show the sensitivity and specificity at a single operating point, but that is the actual clinical operating point observed in the study. We hope this clarifies the issue.

SZ, KL, HS, and PT have received funding for travelling and speaker's fees from Siemens Healthcare GmbH. SZ, PT, MD, and DF have a patent (US 9 833 203) issued. All other authors declare no competing interests.

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