

# SYSTEMATIC REVIEW AND BENCHMARKING OF US BUDGET IMPACT ANALYSES

Waldeck M<sup>1</sup>, Liu R<sup>2</sup>, Kumar VM<sup>3</sup>, Botteman M<sup>2</sup>

<sup>1</sup>New York University, New York, NY, USA, <sup>2</sup>Pharmerit International, Bethesda, MD, USA, <sup>3</sup>Institute for Clinical and Economic Review, Boston, MA, USA

## OBJECTIVES

- To conduct a systematic review of full-text, peer-reviewed, US-based pharmacotherapy budget impact analyses (BIAs) to provide preliminary benchmarks for BIA results in terms of per-member per-month costs (PMPMCs)
- To assess how results of BIAs have been interpreted by BIA authors

## CONCLUSIONS

- Published PMPMC estimates are clustered within a few cents (**Fig. 2**)
- These estimates are invariably largely interpreted as acceptable (**Fig. 3**)
- Without pre-specified agreed-upon benchmarks defining what PMPMC is acceptable, BIA authors should only report actual values and refrain from providing qualitative judgements regarding PMPMC acceptability
- Research is needed to develop benchmarks to help interpret US BIA results

## BACKGROUND

- Payers commonly require BIAs to support formulary placement decisions
- BIAs estimate the change in total expenditures for the treatment of an entire target population after introduction of a new healthcare technology, with results most often expressed as total budget impact and impact on PMPMCs
- Cost-effectiveness analyses often rely on the use of thresholds (e.g., \$150,000/QALY gained in the US, £30,000/QALY gained in the UK) to define what is “acceptable value for money.” These thresholds may be arbitrary, debated, and possibly wrong, but they are recognized as starting points for interpretation.
- When conducting BIAs, such thresholds do not exist. Therefore, the interpretation of BIA results is hampered by the lack of pre-specified thresholds against which PMPMC can be evaluated. As a result, author-provided conclusions regarding BIA “acceptability” may be misleading

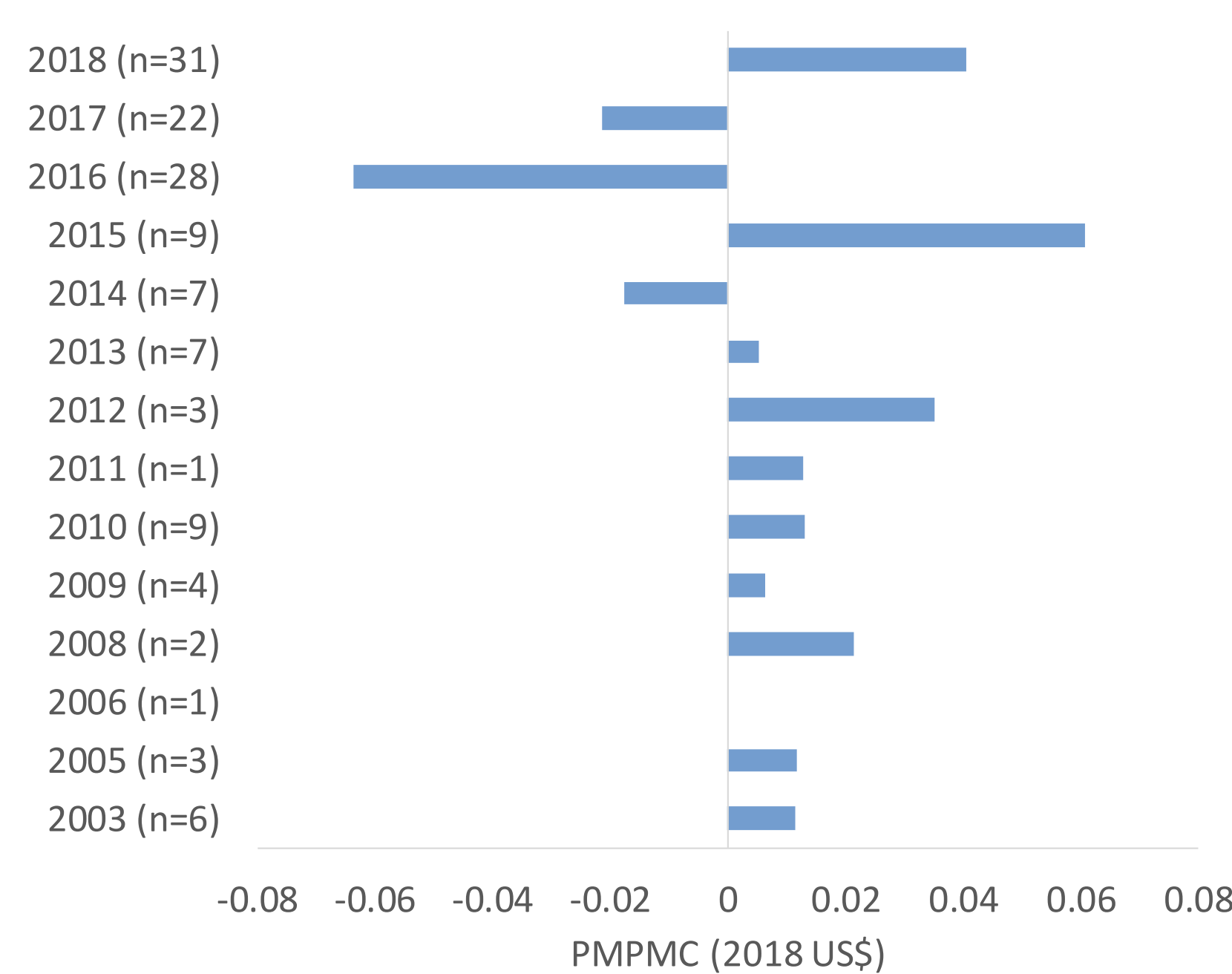
## METHODS

- Systematic PubMed searches (01/2003-10/2018) were conducted to identify published peer-reviewed BIAs from a US payer perspective that reported PMPMCs associated with the introduction of new pharmacotherapies
- All PMPMC estimates were inflation-adjusted to 2018 US dollars
- Cumulative distribution of PMPMC estimates (overall and averaged by article) was examined
- Associations between reported PMPMCs and study characteristics (publication year and indication) and BIA authors’ qualitative judgments of their results were evaluated descriptively

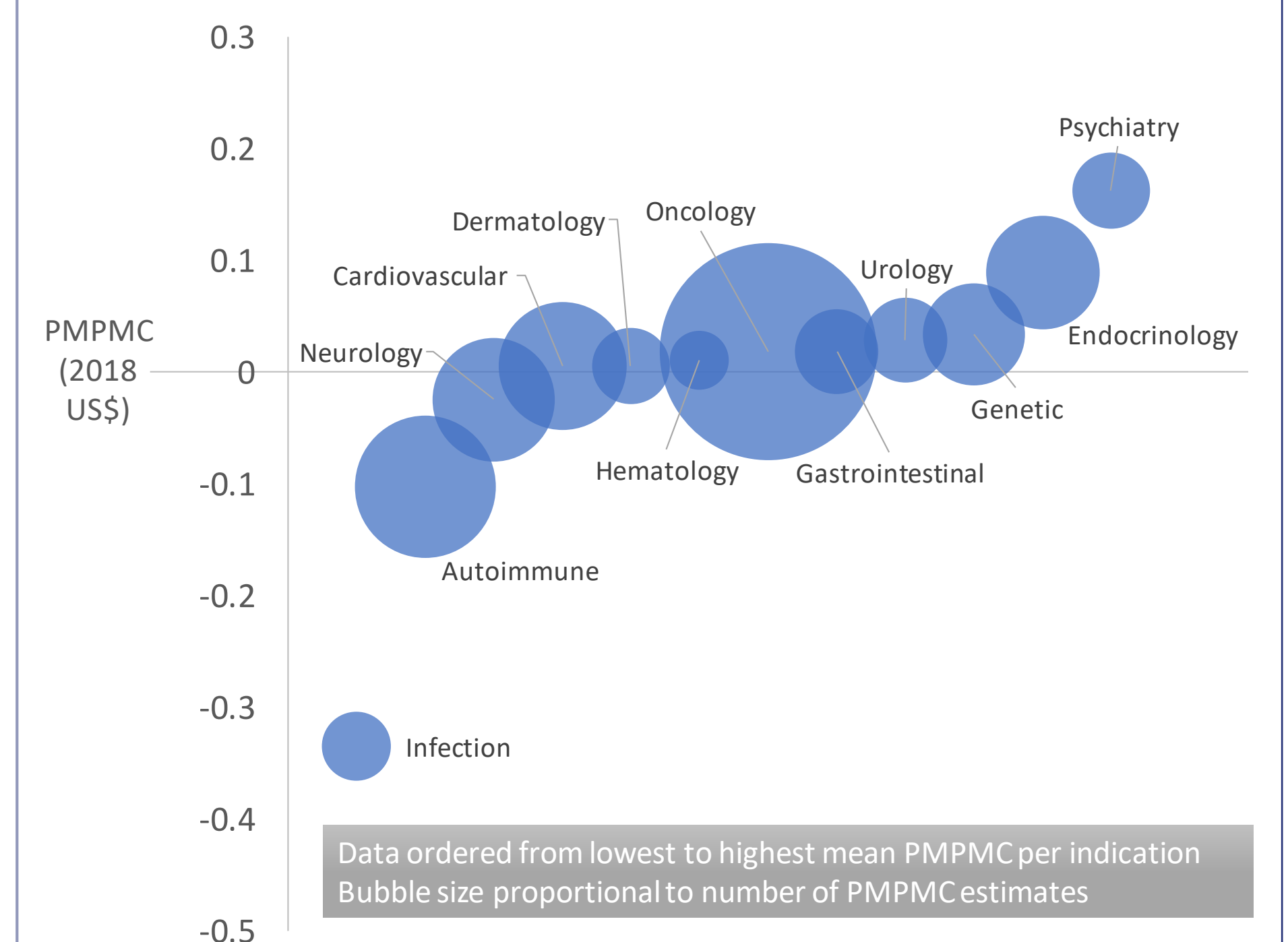
## RESULTS

- We identified 49 BIAs reporting 133 PMPMC estimates (some studies reported multiple PMPMCs in different populations/indications/payers/years). Of these 49 publications, 55% were published in/after 2015, comprising 69% of the 133 PMPMC estimates (**Fig. 1A**)
- Of all 133 reported PMPMC estimates, the most common indications were oncology (33%), autoimmune disease (13%), and cardiovascular disease (10%) (**Fig. 1B**)
- The median (interquartile range [IQR]) of the 133 PMPMC estimates was \$0.013 (\$0.003-\$0.043) (**Fig. 2**)
- Among PMPMC estimates  $\geq$ \$0 (n=104), 80% were reported along with interpretations (n=83), among which “modest,” “small,” or “minimal” were the most commonly used terms to describe result acceptability (**Fig. 3**)

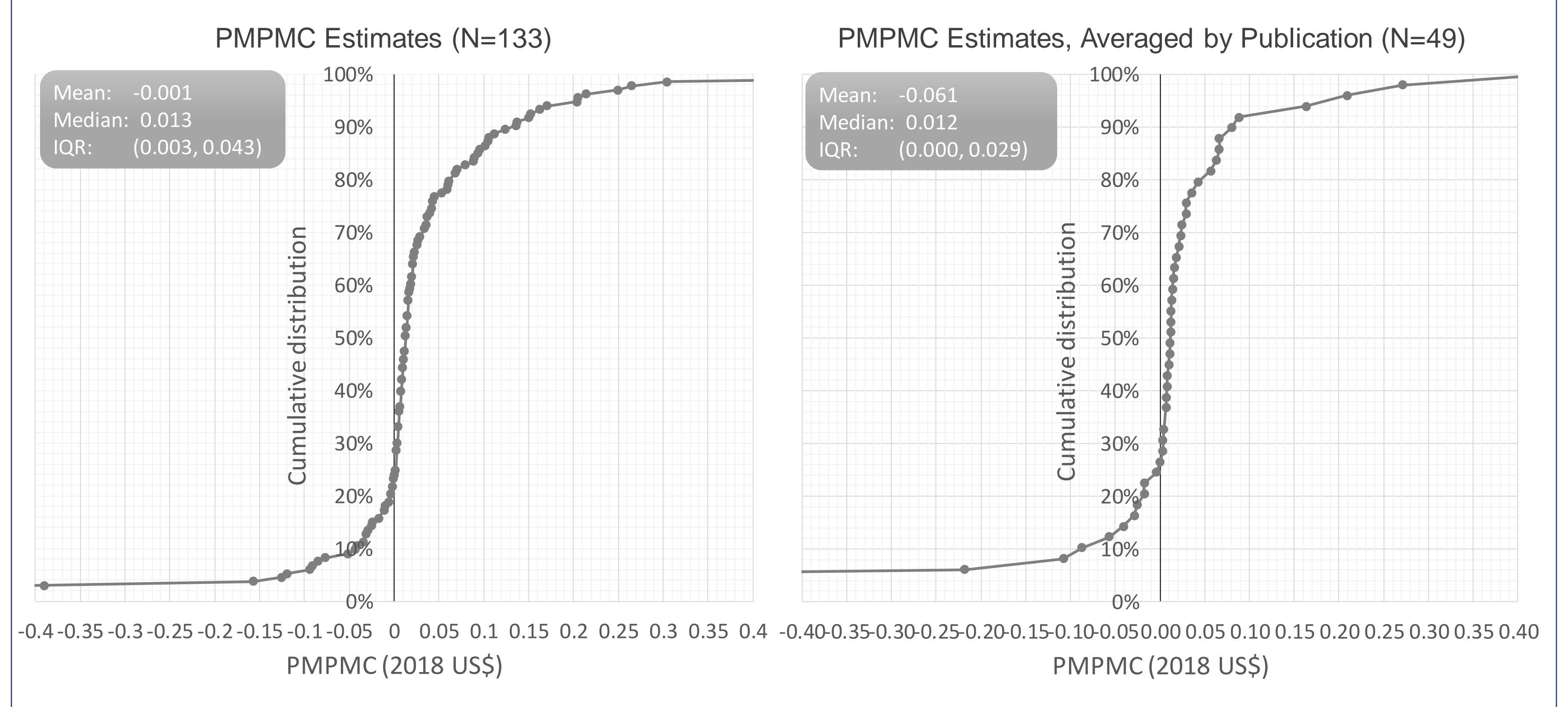
**Fig. 1A | Mean PMPMC by Year (N=133)**



**Fig. 1B | Mean PMPMC by Indication (N=133)**



**Fig. 2 | Cumulative Distribution of PMPMC Estimates**



**Fig. 3 | BIA Authors’ Interpretations of PMPMCs, by quartiles (N=104)**

