

VIDEO-DERIVED INSTRUMENT-USE DIVERSITY AS AN BEHAVIORAL MARKER OF INTRAOPERATIVE HEMOSTASIS

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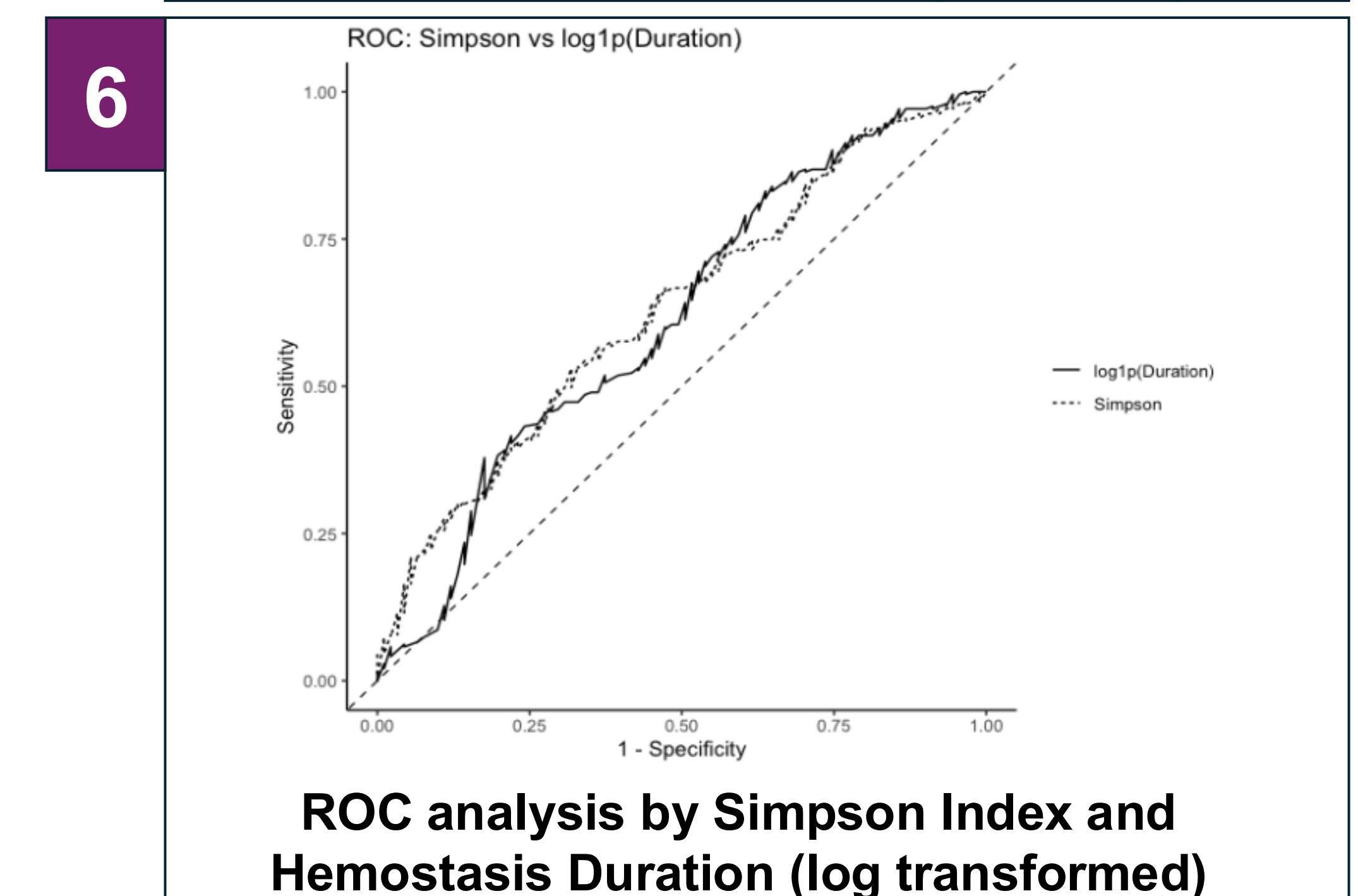
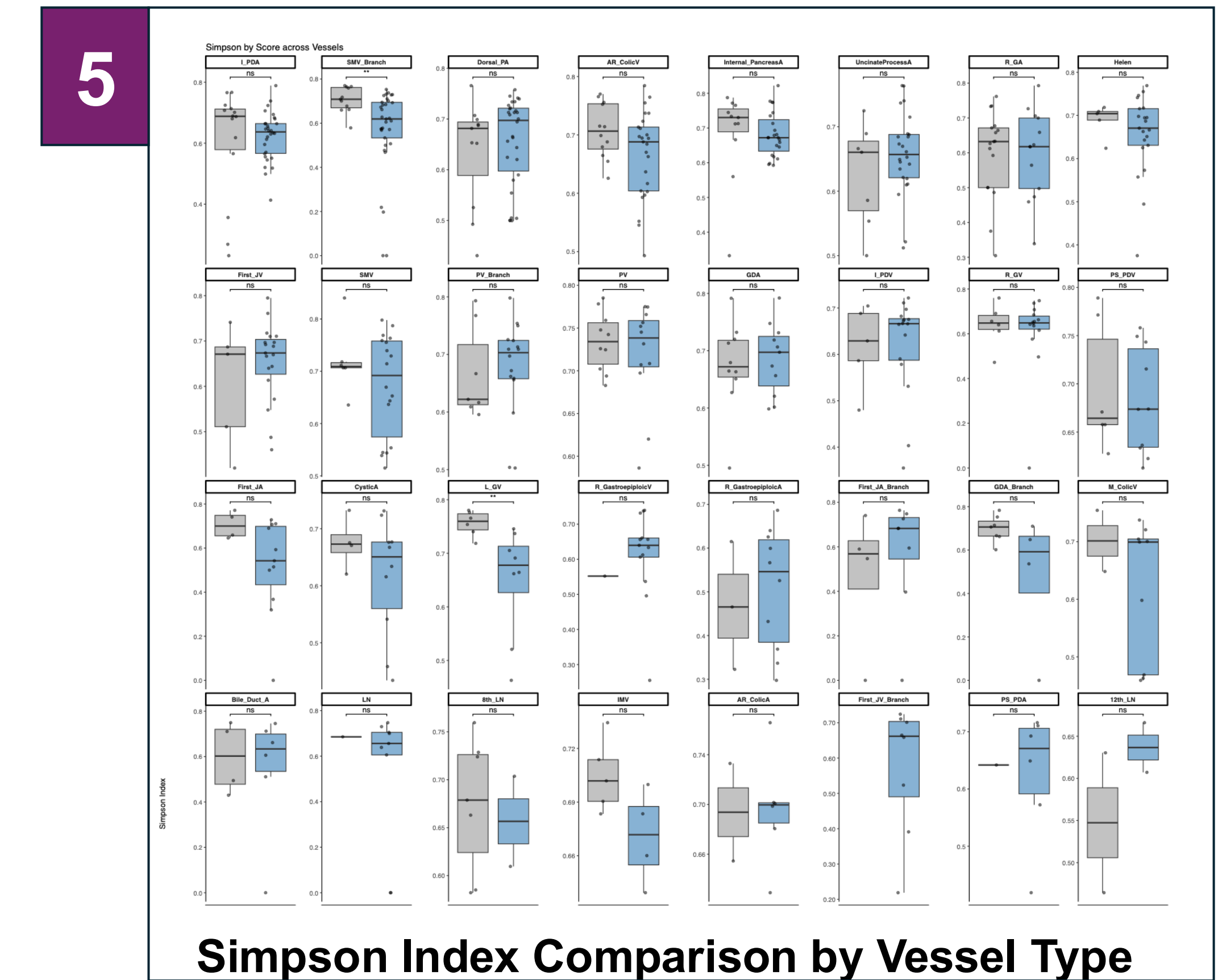
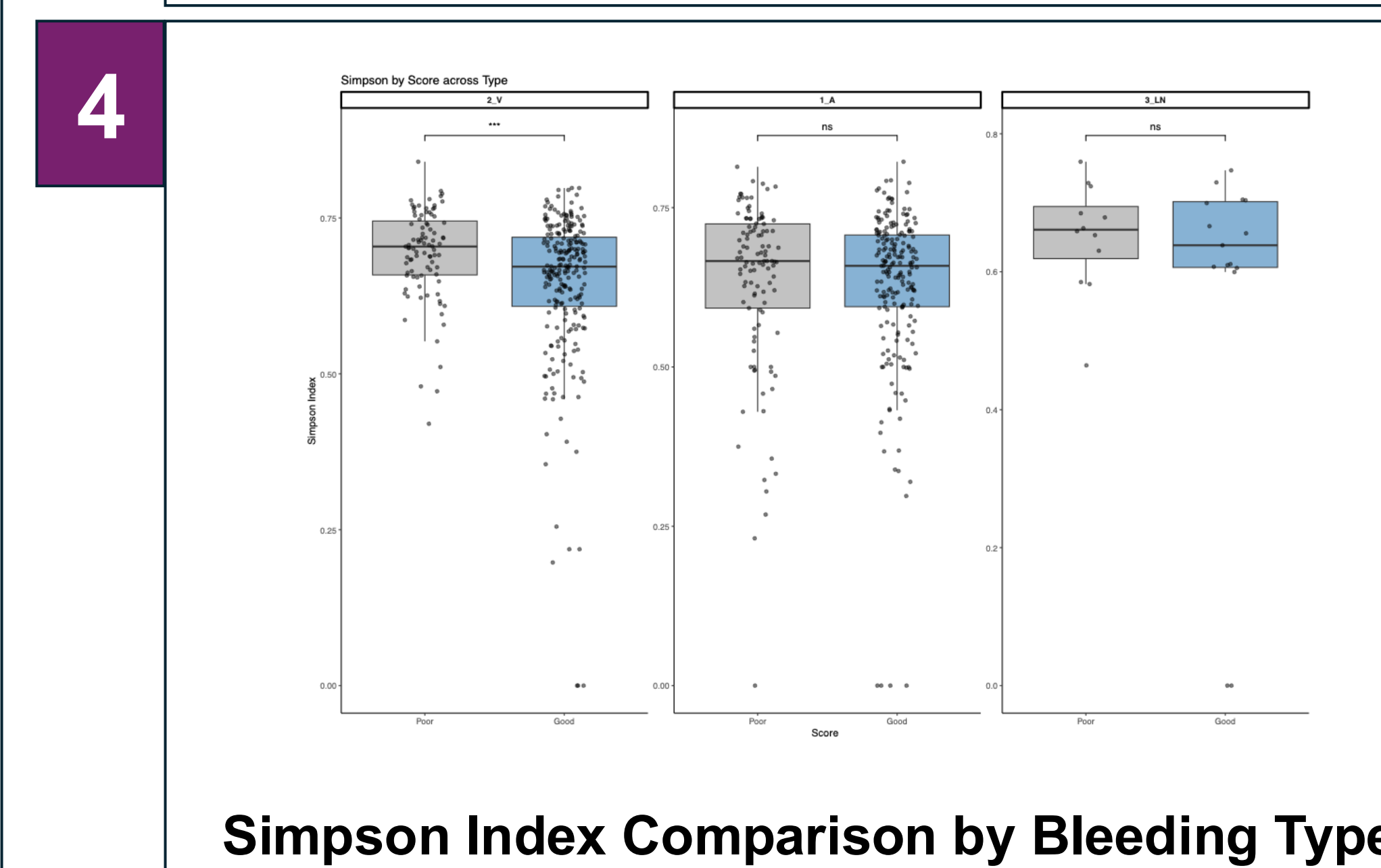
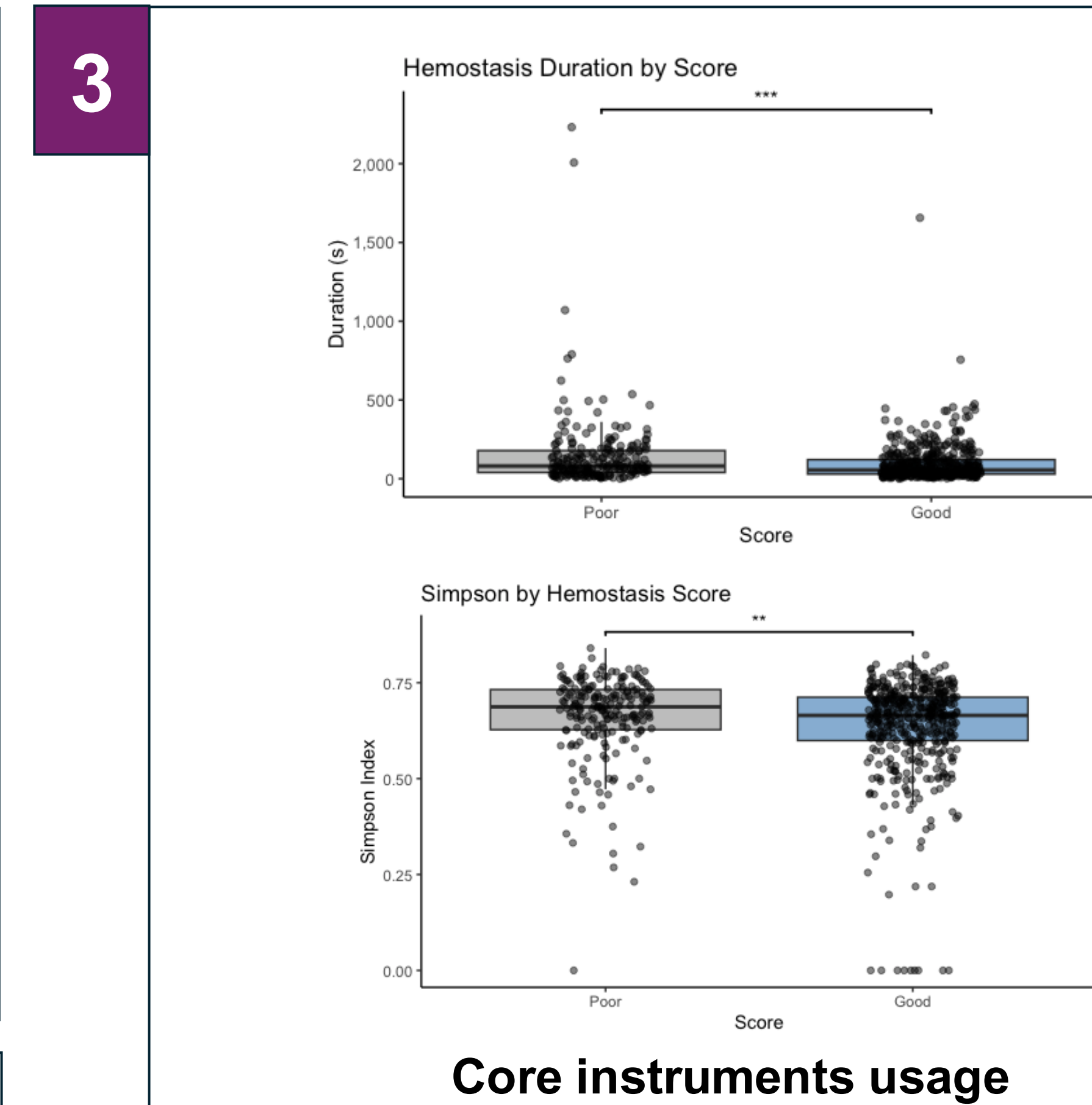
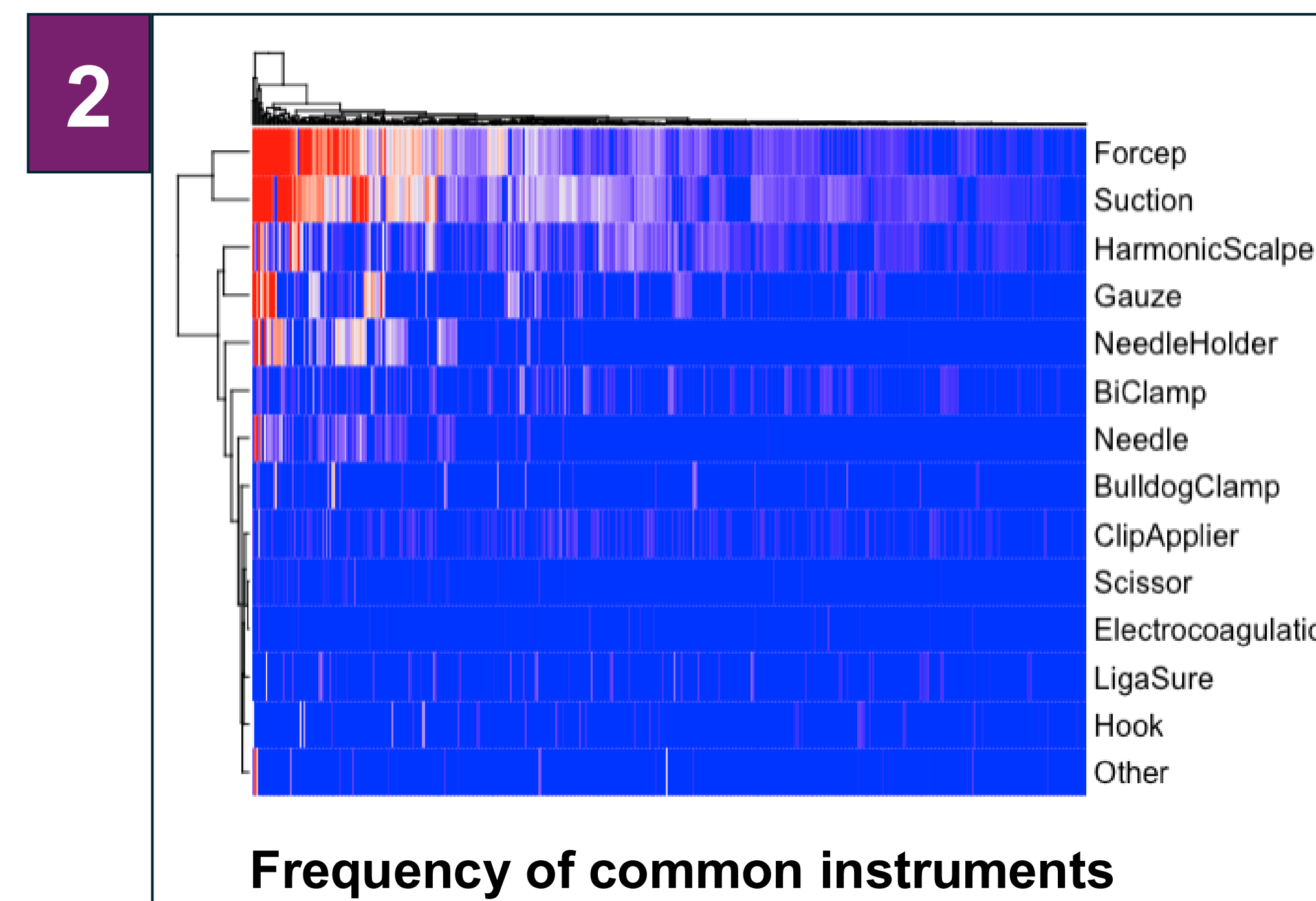
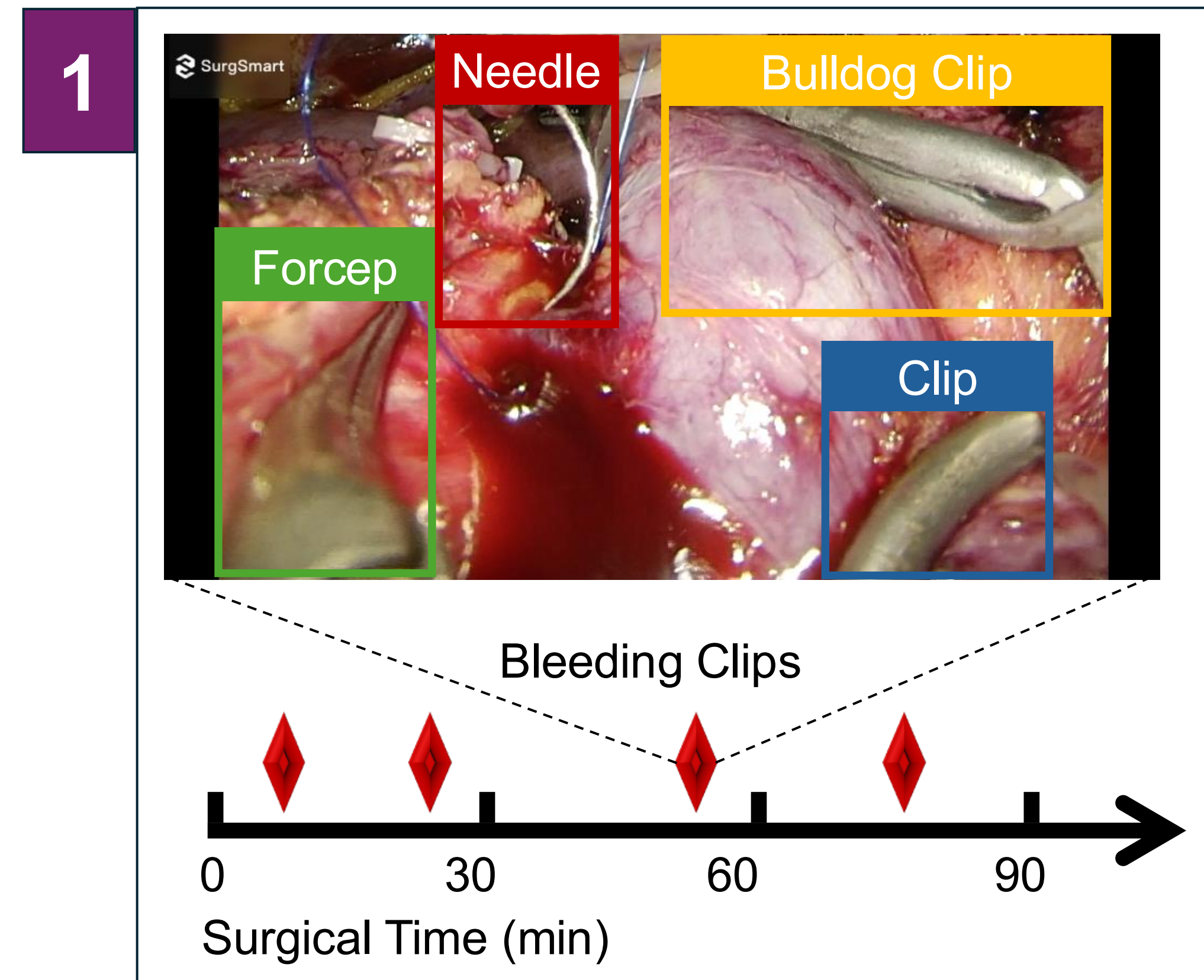
Background

- Effective intraoperative hemostasis is critical to surgical safety and quality
- No consensus, objective method to assess hemostatic performance from video
- Hypothesized instrument-use diversity could serve as a marker of strategy and skill

Methods

- 190 LPD videos from 15 hospitals (retrospective analysis)
- Manual annotations: active bleeding, vessel type (Arterial, Venous, Lymph Node), hemostasis rating (Good Hemostasis, GH, Poor Hemostasis, PH)
- SurgSmart instrument detection model (per-frame usage & duration)
- Univariable logistic regressions for venous subset
- Univariable logistic regressions (PH vs GH)

Results



Conclusion

- Video-derived instrument-use diversity is a promising, objective signal
- Particularly in venous bleeding, higher diversity correlates with worse surgeon ratings
- Enables future work including multivariable models, instrument clustering, machine learning, and linking to patient outcomes

