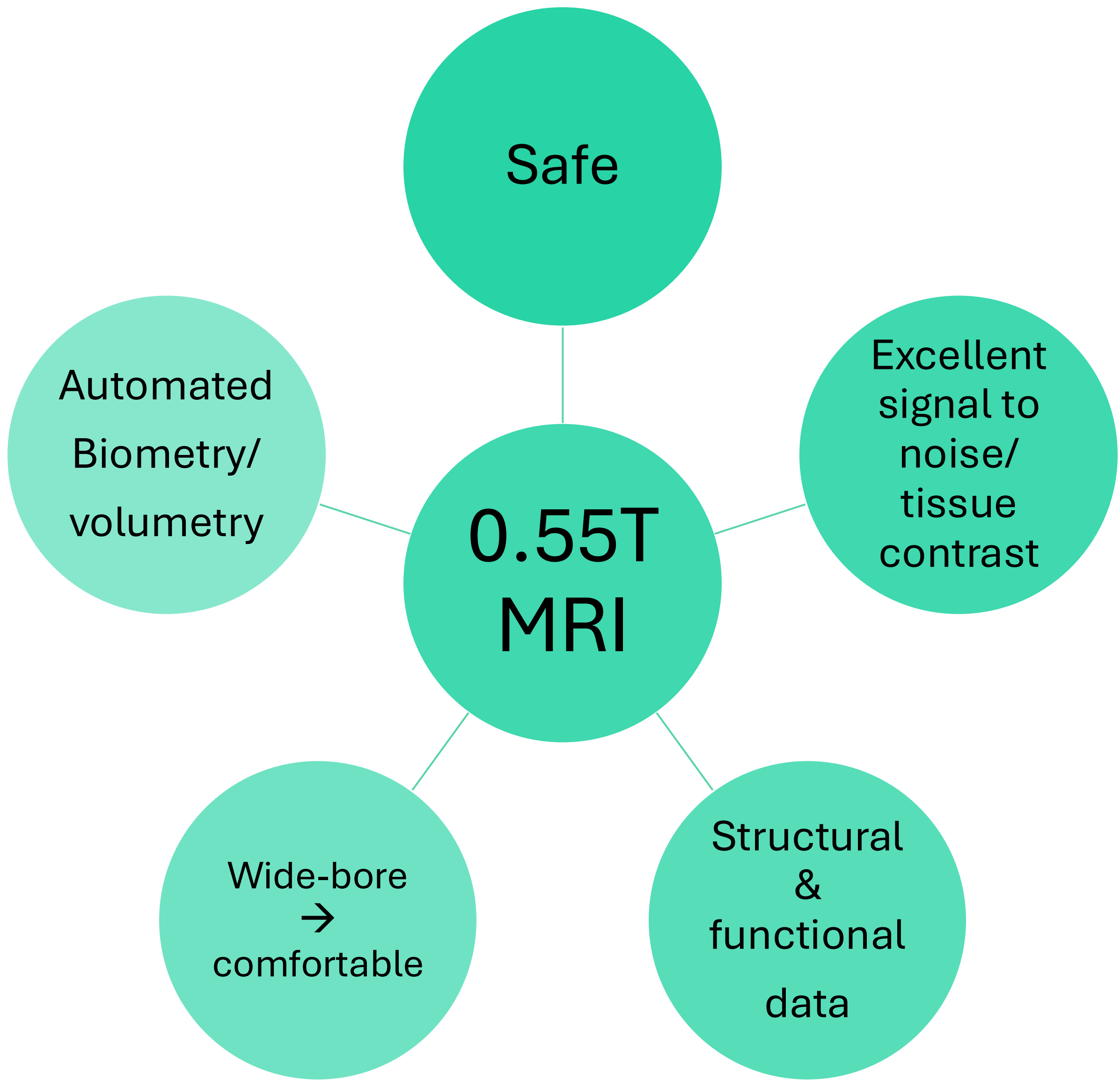


Aims

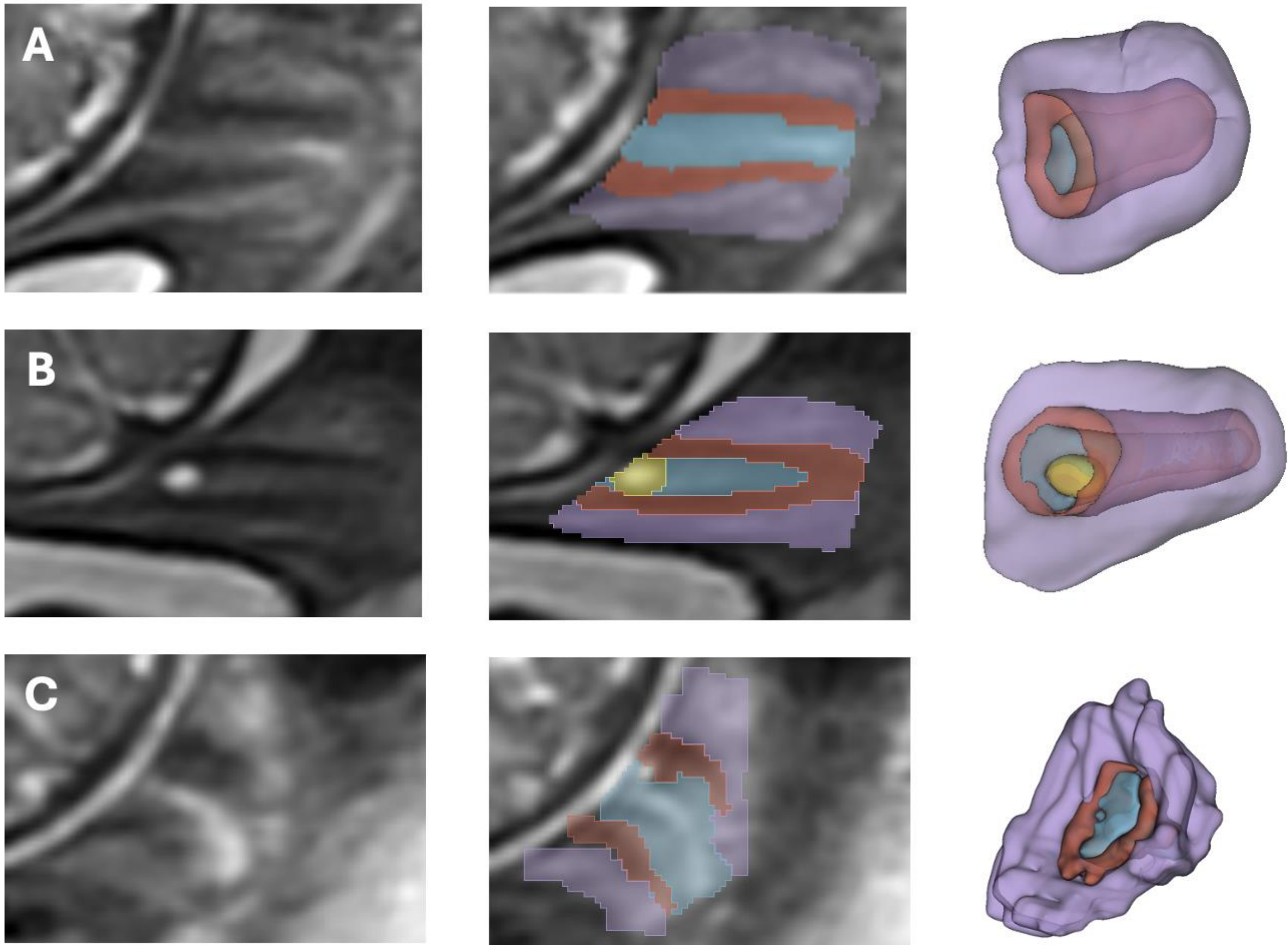
1. To automate MRI cervix biometry and volumetry measurements on low field 0.55T MRI
2. To see if these measures correlate with maternal demographics and birth outcomes

Background



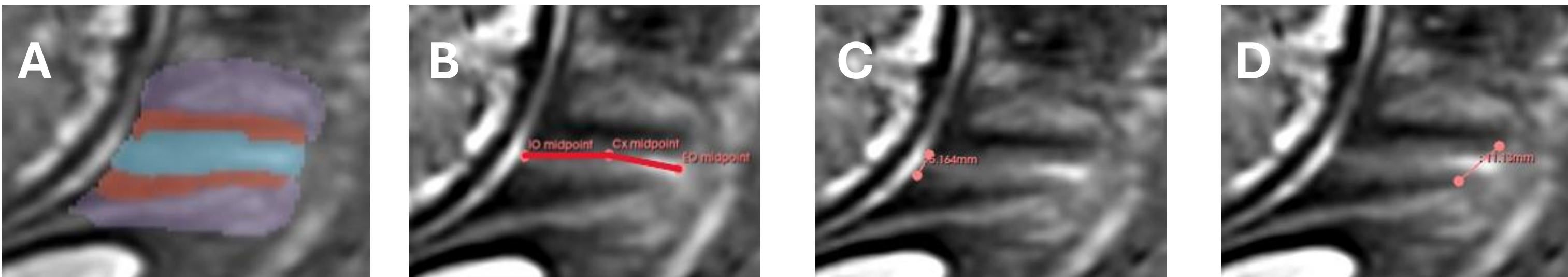
Method

- **98 women** planning their first vaginal birth were recruited to the MiBirth study (36-41w)
- 2D T2-weighted Turbo-Spin-Echo sequences
- Automated reconstruction and segmentation → 3D models
- Images scored for quality



A: Typical cervix, B: Endocervical cyst, C: Short cervix

- Cervical canal and stroma volumes automatically generated
- Cervical, internal os and external os lengths automatically calculated

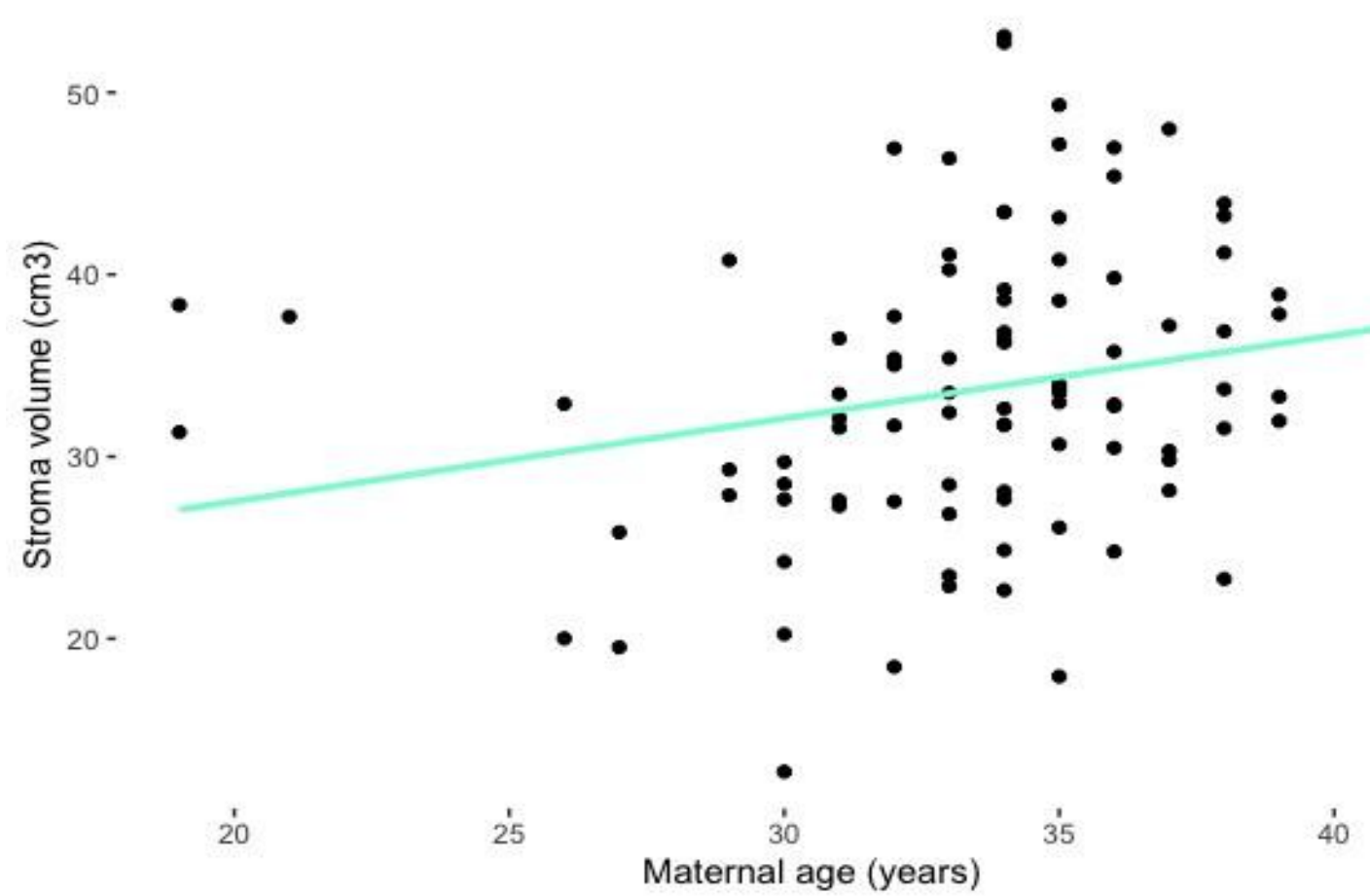


A: Segmentation, B: Cervical length, C: Internal os, D: external os

- Generalised linear regression models (GLMs) were used to assess correlations in ‘R’

Results

- **84.9% good/acceptable** quality reconstructions
- **100% excellent/good** automated segmentations
- Excellent interrater correlation manual vs automated measures
- Cervical stroma volume increased with maternal age (p=0.02)



- Increased total cervical volume → increased risk of caesarean

Variable	N	Odds ratio	p
Cervical length (mm)	87	0.94 (0.83, 1.06)	0.32
Cervical volume (cm3)	87	1.09 (1.01, 1.20)	0.04
Internal os diameter (mm)	87	0.86 (0.72, 1.01)	0.08
External os diameter (mm)	87	1.22 (0.95, 1.59)	0.13
Uterocervical angle (degrees)	87	0.98 (0.94, 1.01)	0.23

0.1 1 10100000

Conclusions

- Novel, accurate, automated system to assess MRI cervical biometry/volumetry in late gestation
- Late gestation cervical phenotype may be linked to birth outcomes