

Analysis of Structural Connectome Development in Healthy Preterm Neonates

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1 Preterm Infants

Infants born prematurely are at high risk for brain white matter injury.

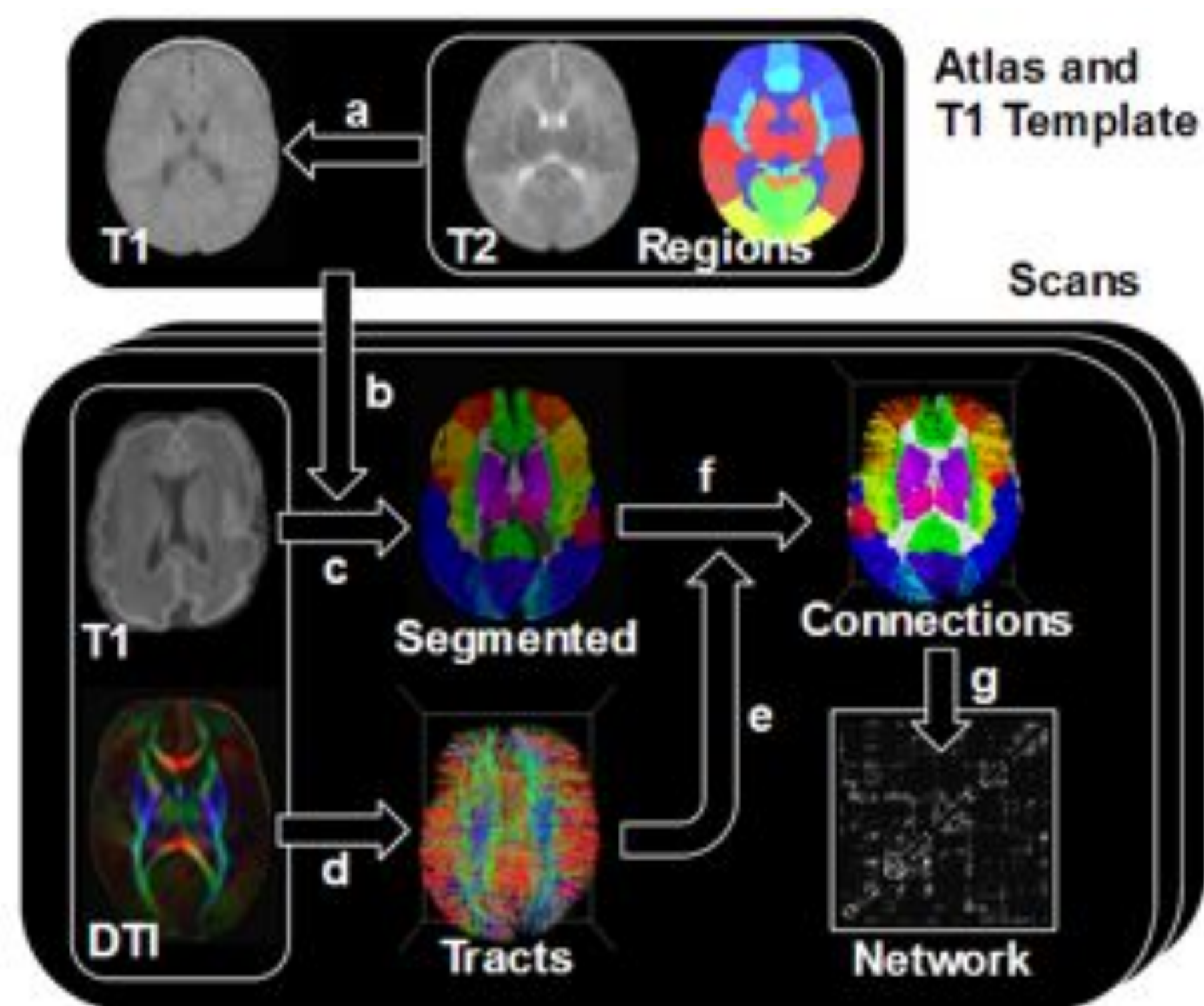


Connectome from diffusion MRI provides compact representation of whole brain connectivity.



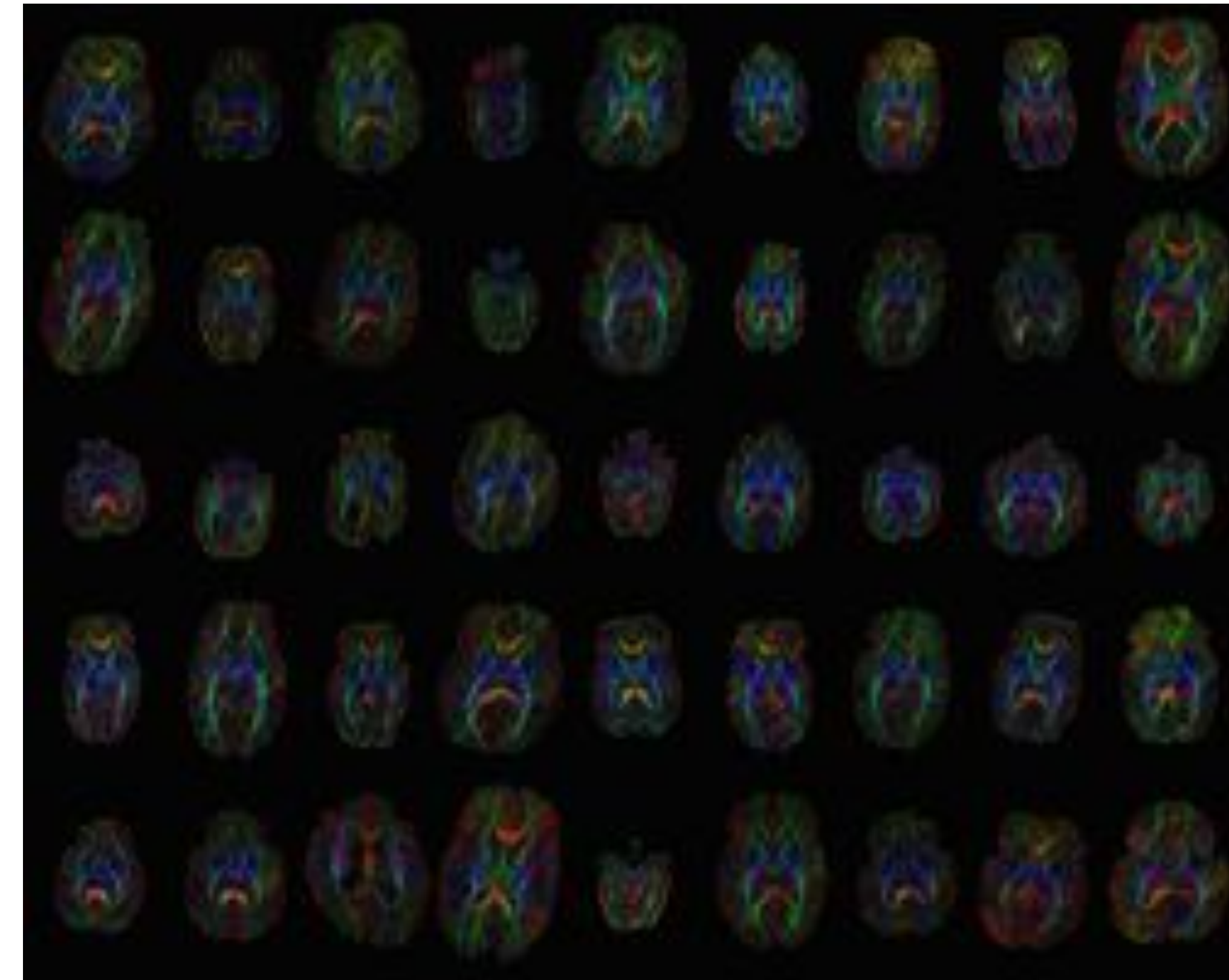
Healthy connectome development will enable early prediction of neurodevelopmental problems.

3 Method



2 Dataset

70 scans of healthy preterm infants used in study.

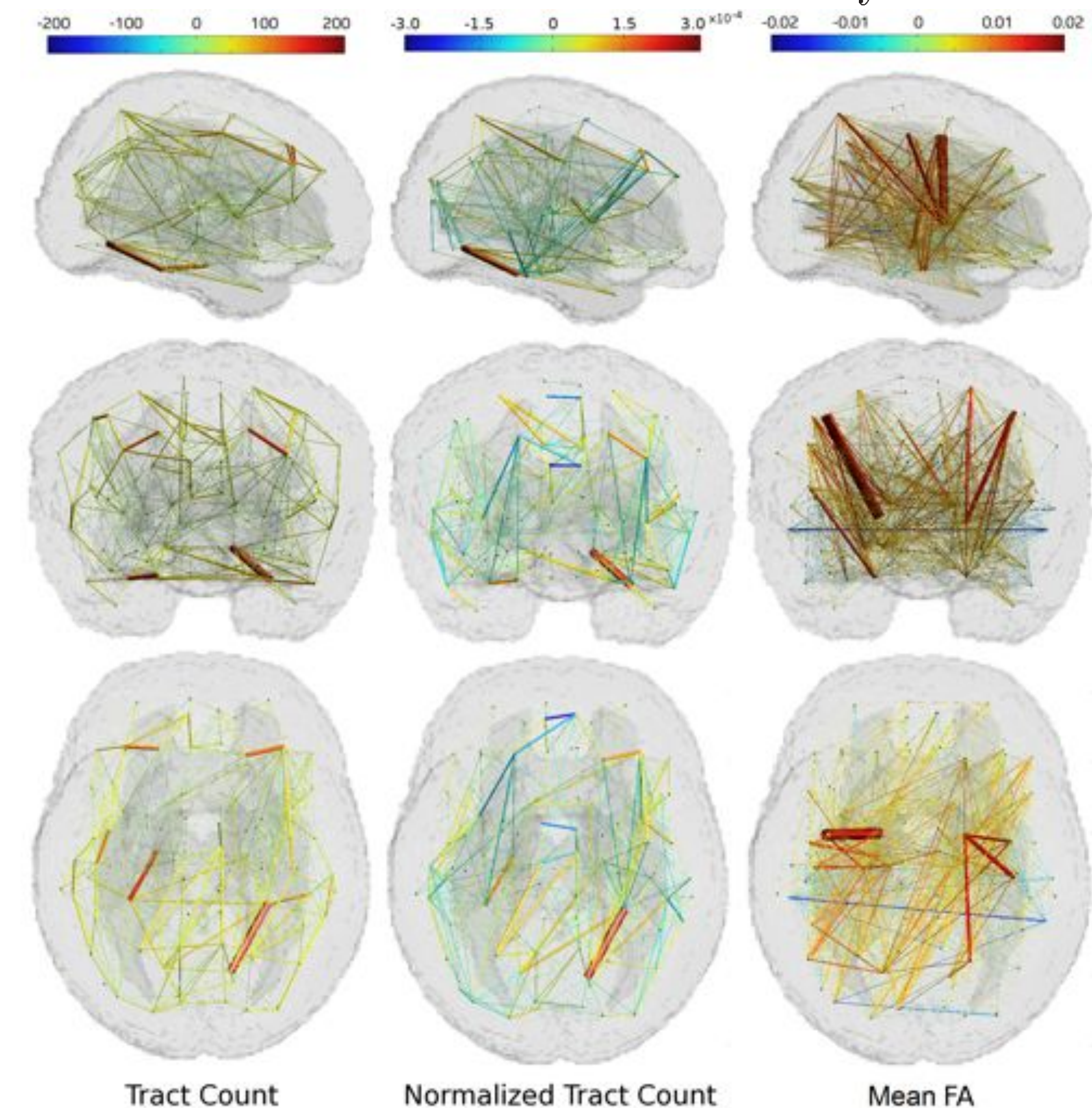


T1 MRI and DTI acquired at birth and term equivalent age.

	Counts			Post-Menst. Age (wks)			
	Total	M	F	Mean	SD	Min	Max
Subjects	47	28	19	28.19	2.12	24	32
Scans	70	40	30	35.8	5.29	27	45

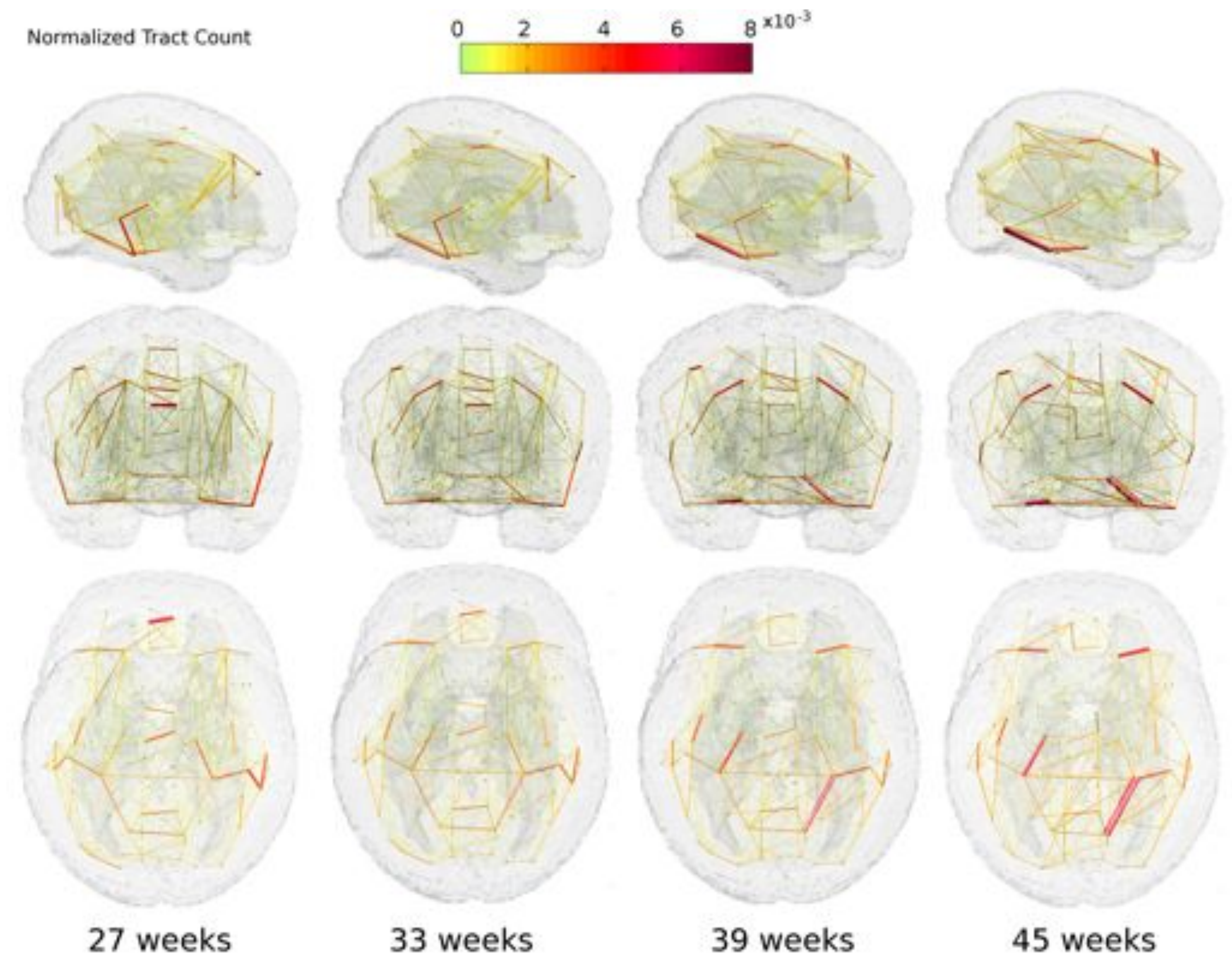
4 Development Trends

Development model slopes mapped spatially onto brain network for different connectivity measures.



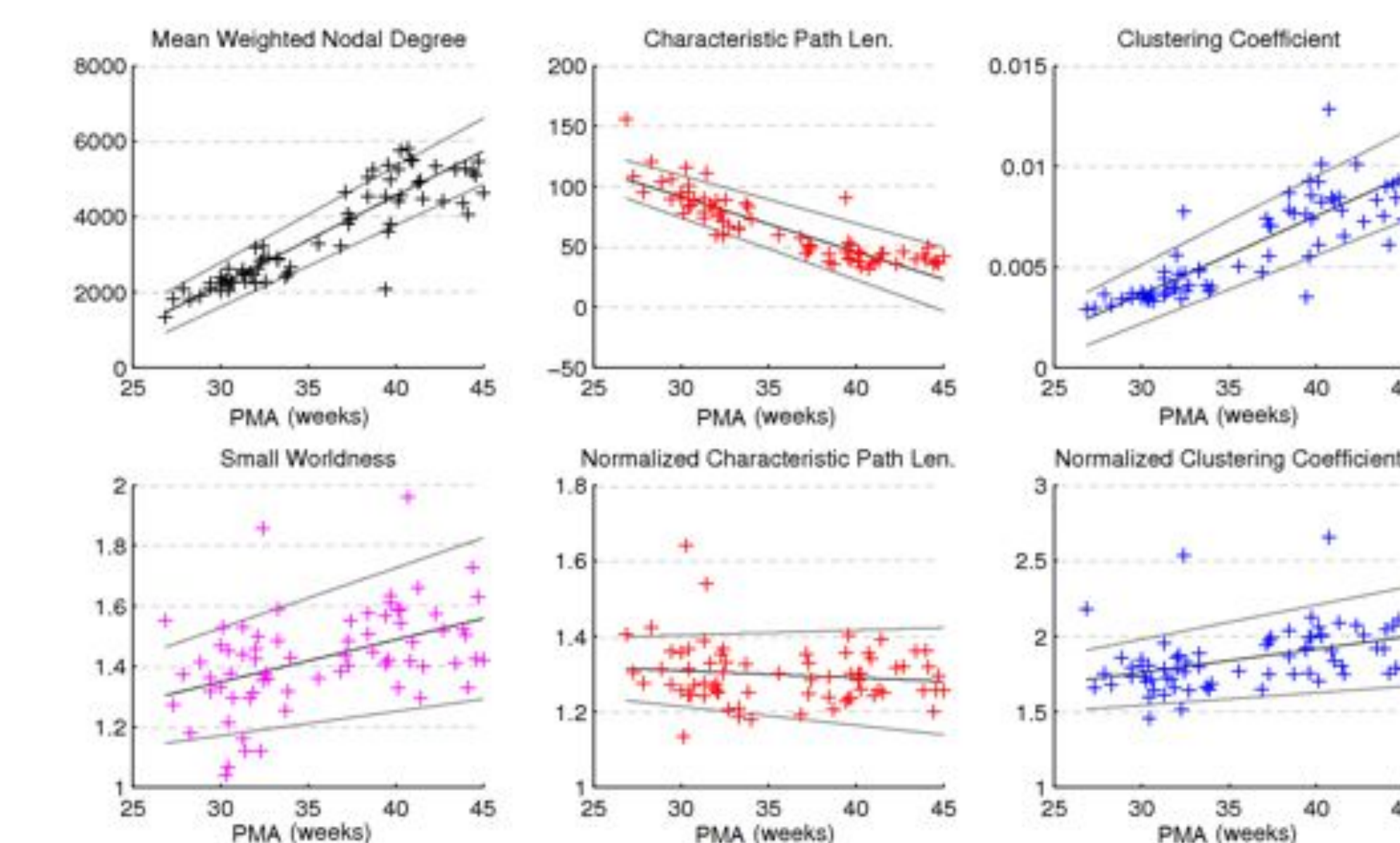
Brain topology changes rapidly at this age range.

5 Healthy Model



6 Network Measures

Measures of network integration and segregation used to summarize changes in network topology.



Small-worldness of brain networks significantly increase across age range.

7 Publication and Funding

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