

Anatomical Predictions using Subject-Specific Medical Data

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Baseline

0.8 year

1.7 years

2.3 years

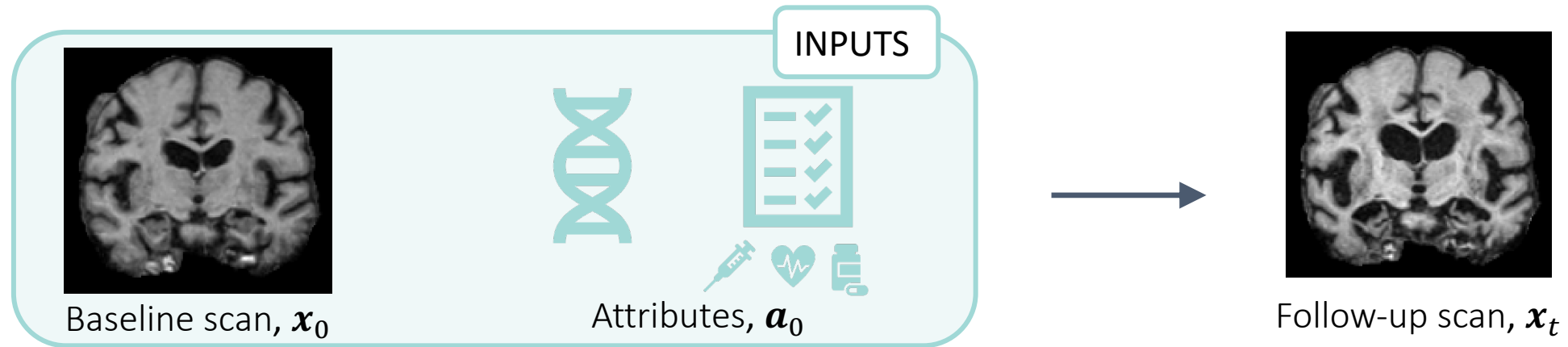
3 years

4 years

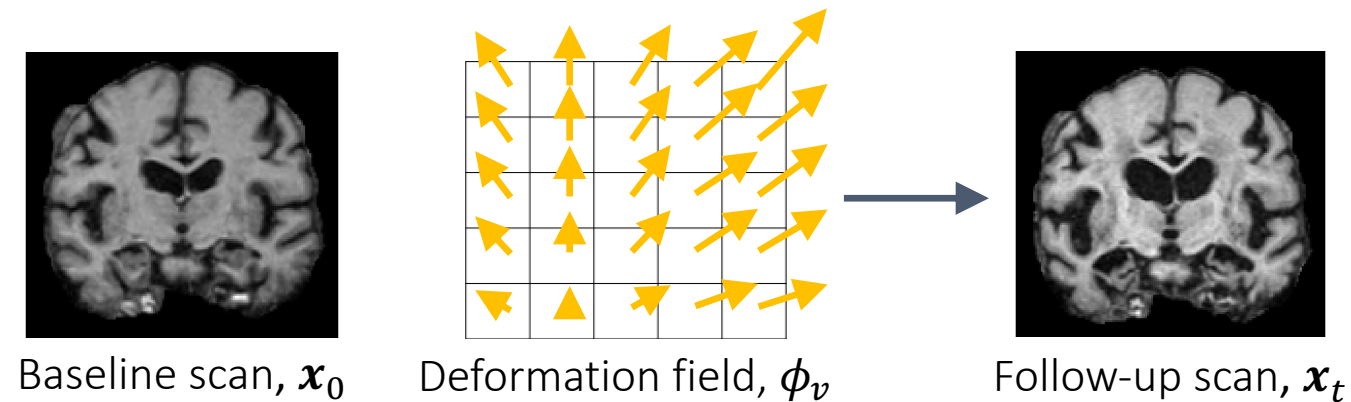
5.3 years



Model



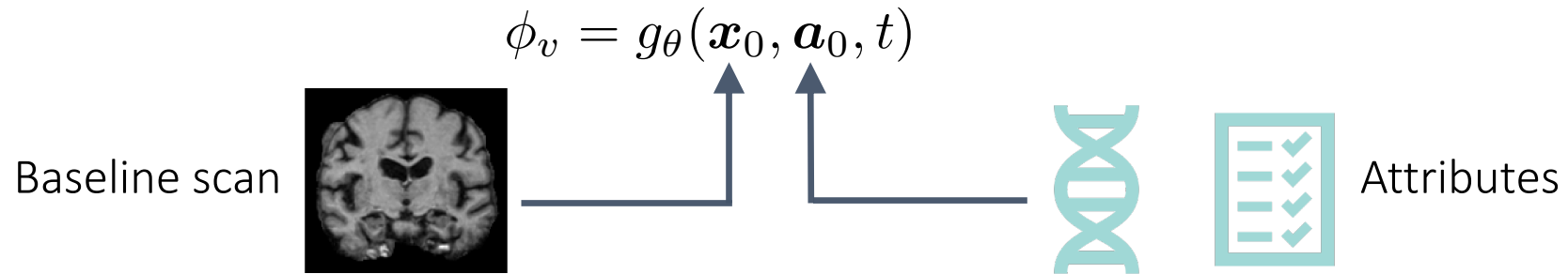
Evolution is captured by deformation field, ϕ_v :



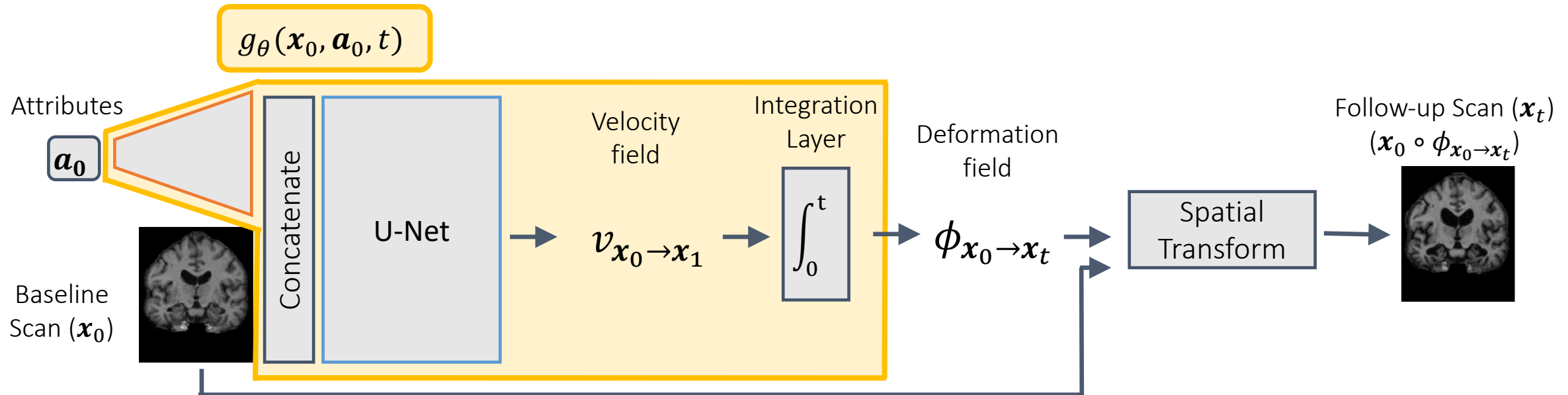
$$\mathbf{x}_0 \circ \phi_v + \epsilon = \mathbf{x}_t$$

Model

- Use convolutional neural network to predict ϕ_v

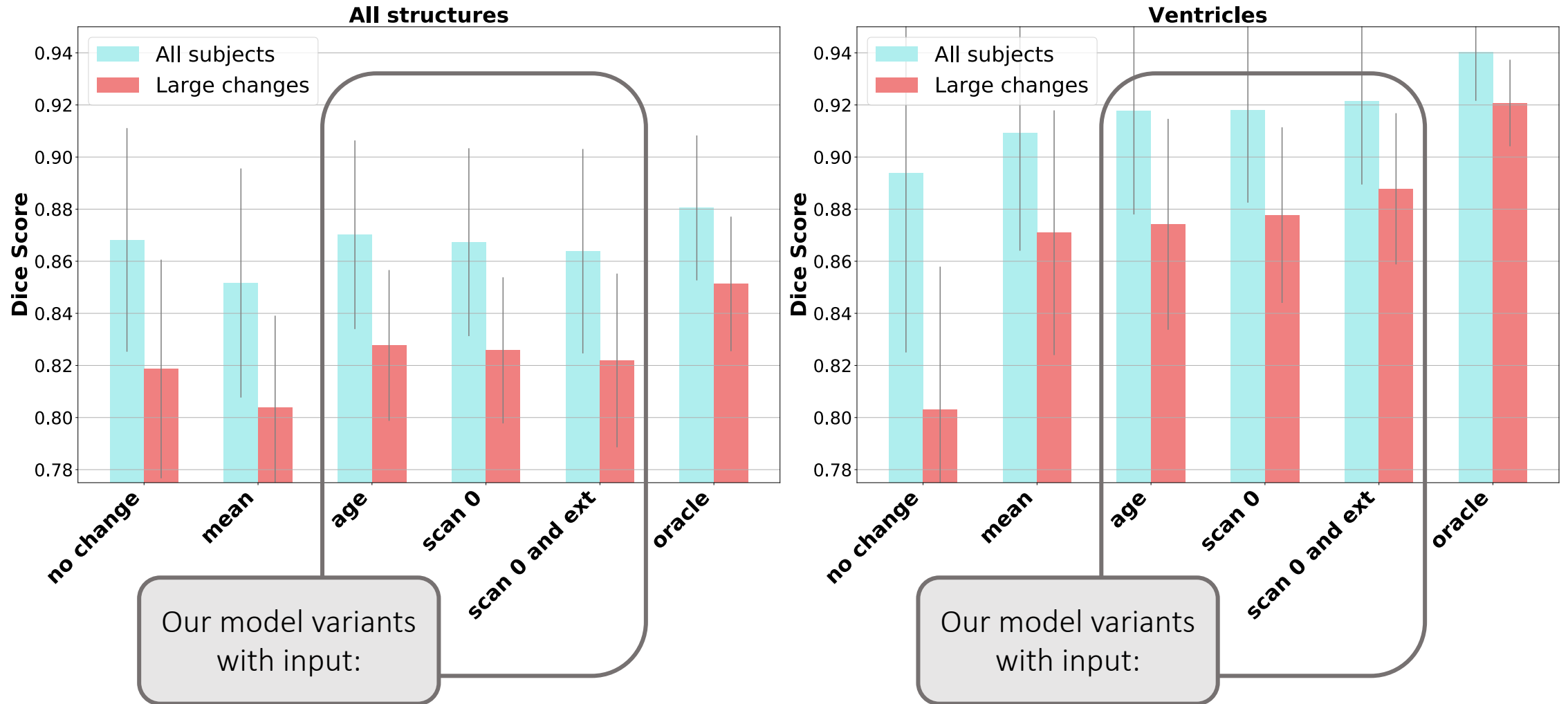


Architecture

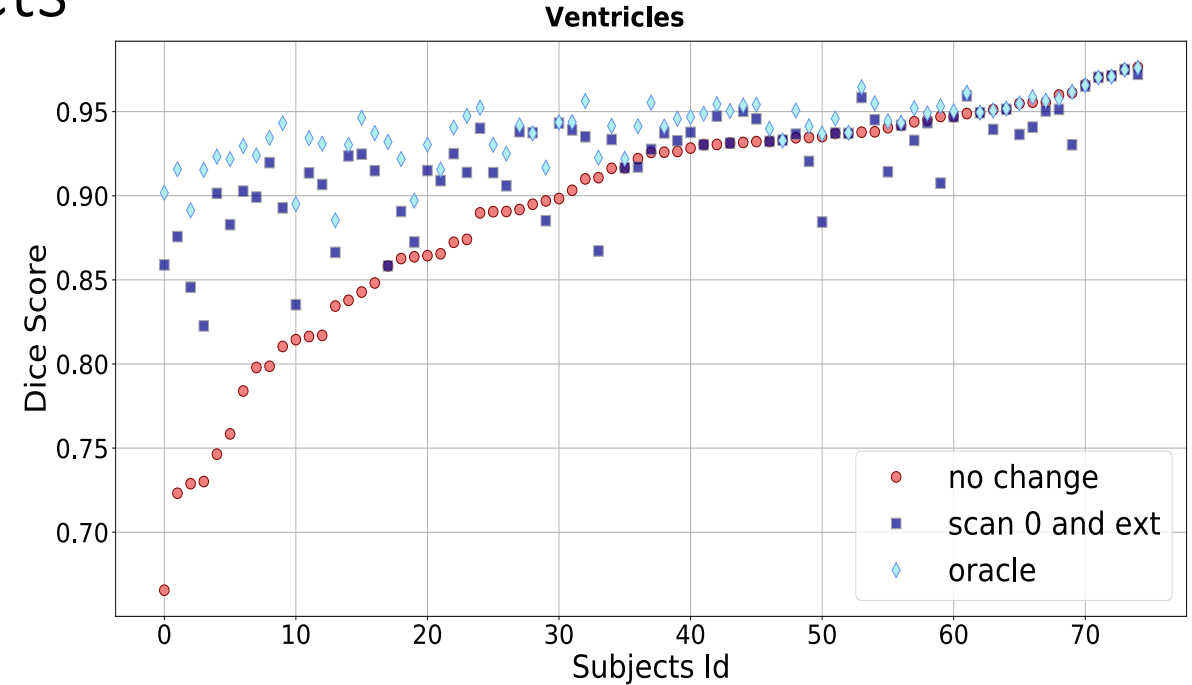
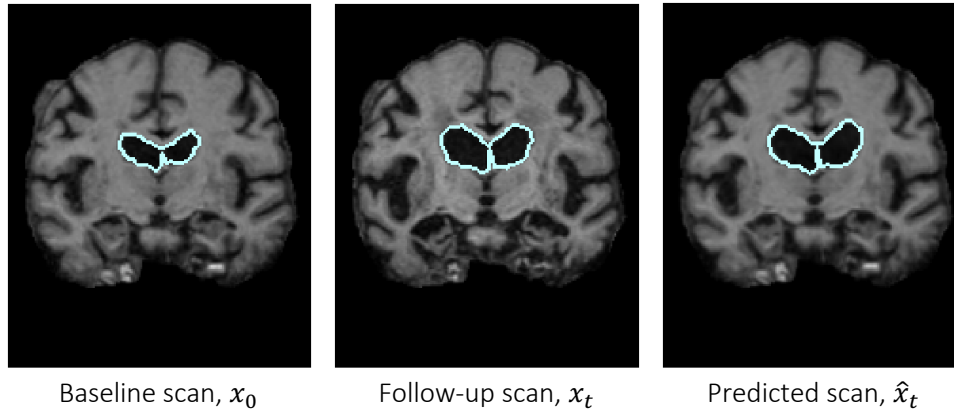


Experiments: More external data helps

- Experiments using the ADNI dataset



Large variation among subjects



Conclusion

- It is possible to predict anatomical changes
- Adding non image information helps
- In recent work, we have improved results
- Paper available at <https://arxiv.org/abs/2006.00090>

