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Modelling Future Migration: From Traditional to New Approaches

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Traditional Migration Models

❏ The Laws of Migration (Ravenstein, 1885)

Simple and Mechanistic

❏ Random utility framework -> Micro-founded macro gravity models, see e.g. Grogger and Hanson (2011); Bertoli and Moraga (2013); Beine et al. (2015).

Complex & Empirically, strong and significant effects of economic incentives.

❏ Criticisms

"Gravity models do not explain, and cannot predict, international migration dynamics" (Beyer, Schewe & Lotze-Campen, 2022)

"Migration models exposed significant shortcomings during the so-called 'refugee crisis' of 2015–2016" (Carammia, Iacus, & Wilkin, 2022)

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New Approaches

❑ FUME:

Better models for capturing temporal dynamics of international migration (Beyer, Schewe & Lotze-Campen, 2022).

❑ QuantMig:

Early Warning System for Monitoring Asylum-Related Migration Flows in Europe (Napierała et al., 2021).

❑ HumMingBird:

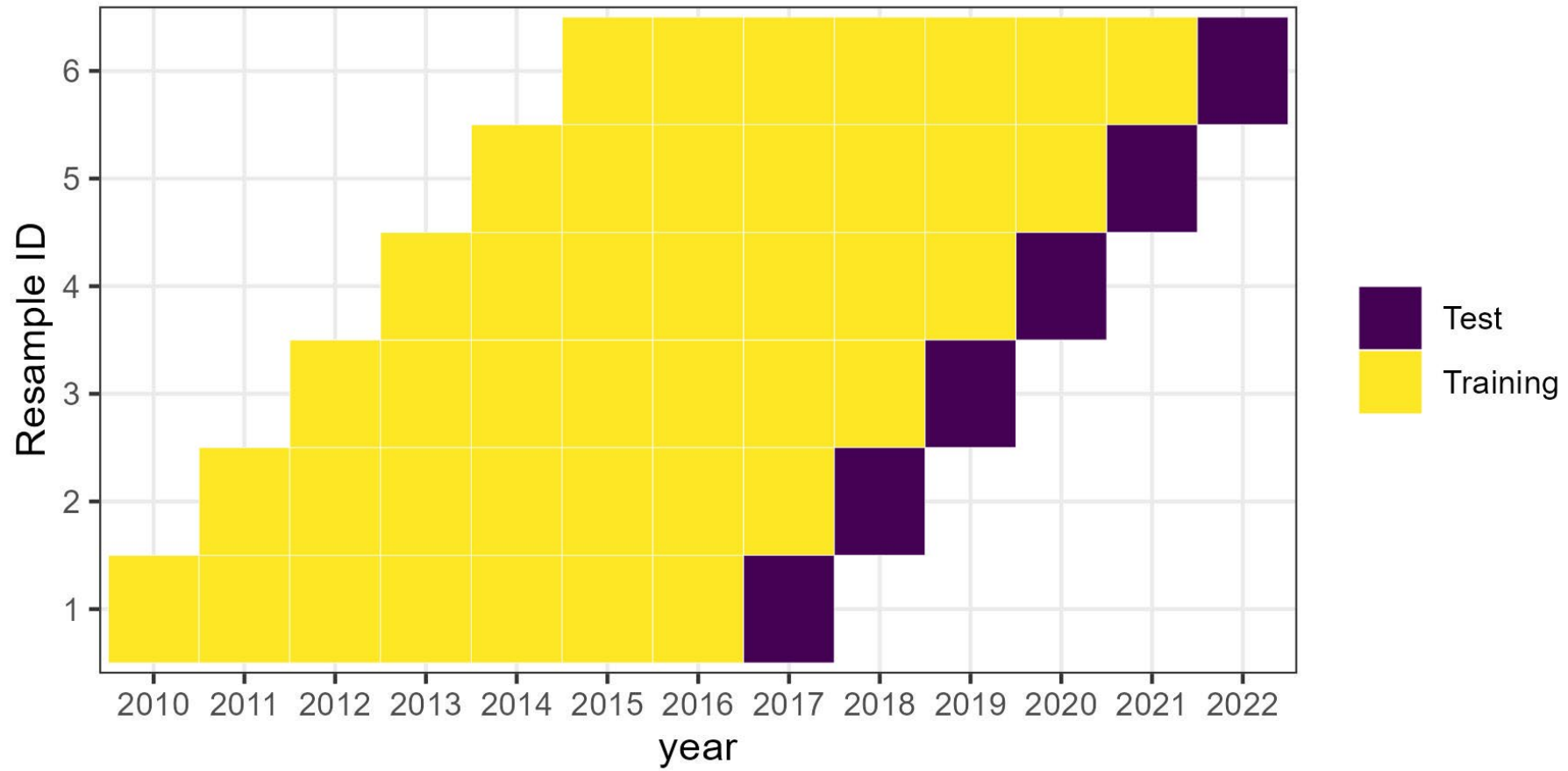We have lots of data, but no models yet…
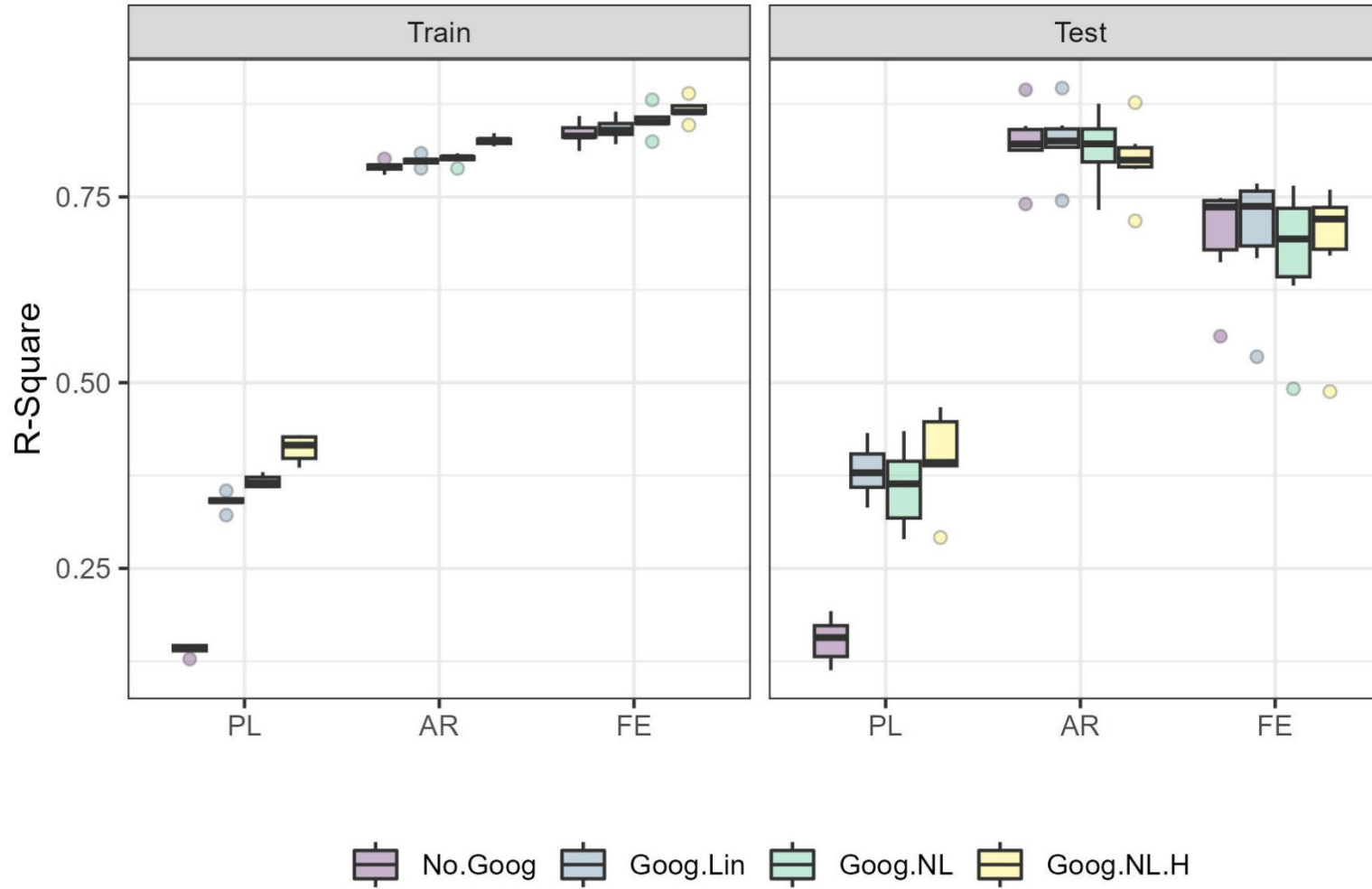
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Model Experiments

❑ Compare performances of different model classes

- Pooled model (PL)

- Autoregressive model (AR)

- Flow Fixed-effects model (FE)
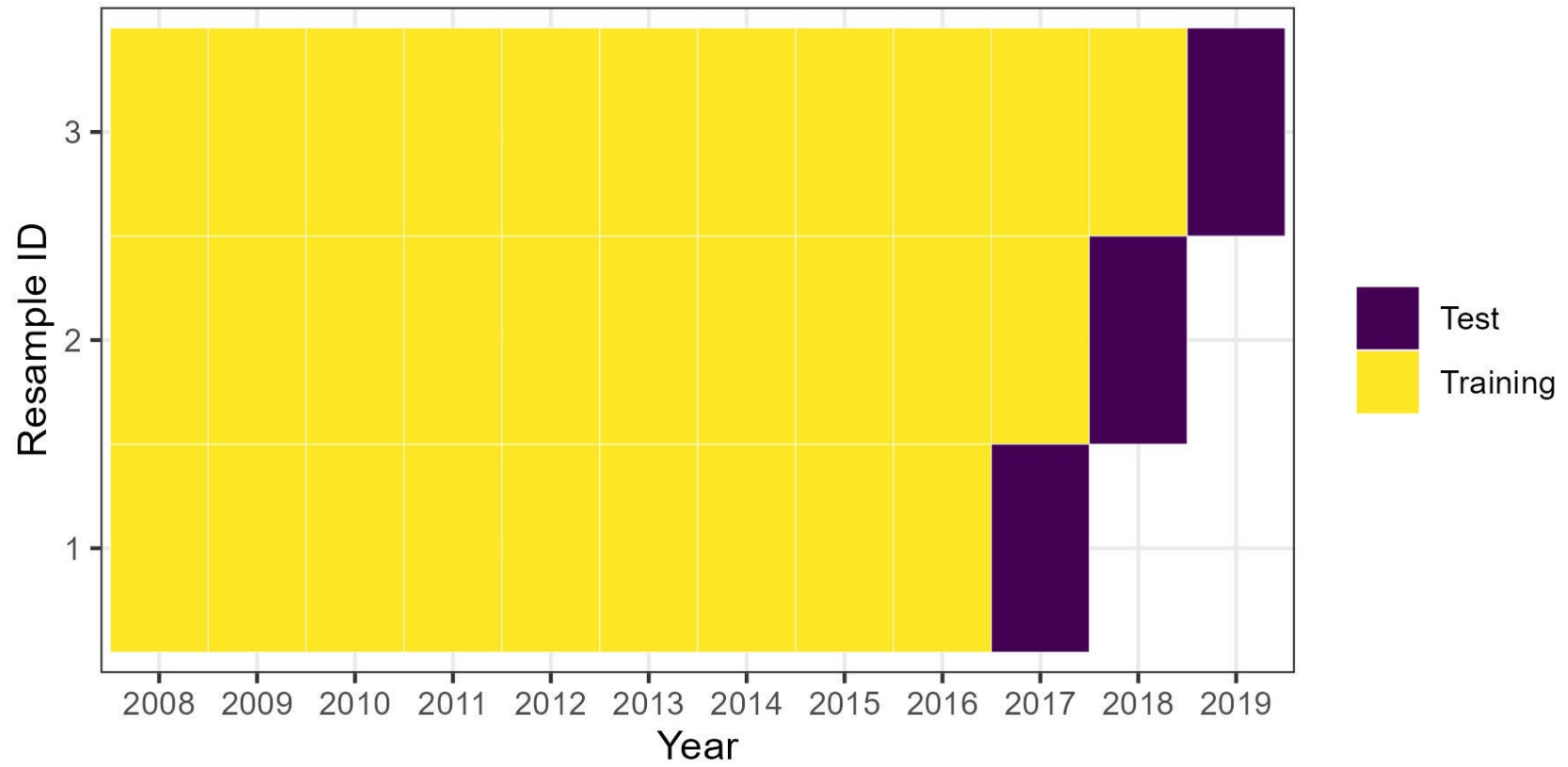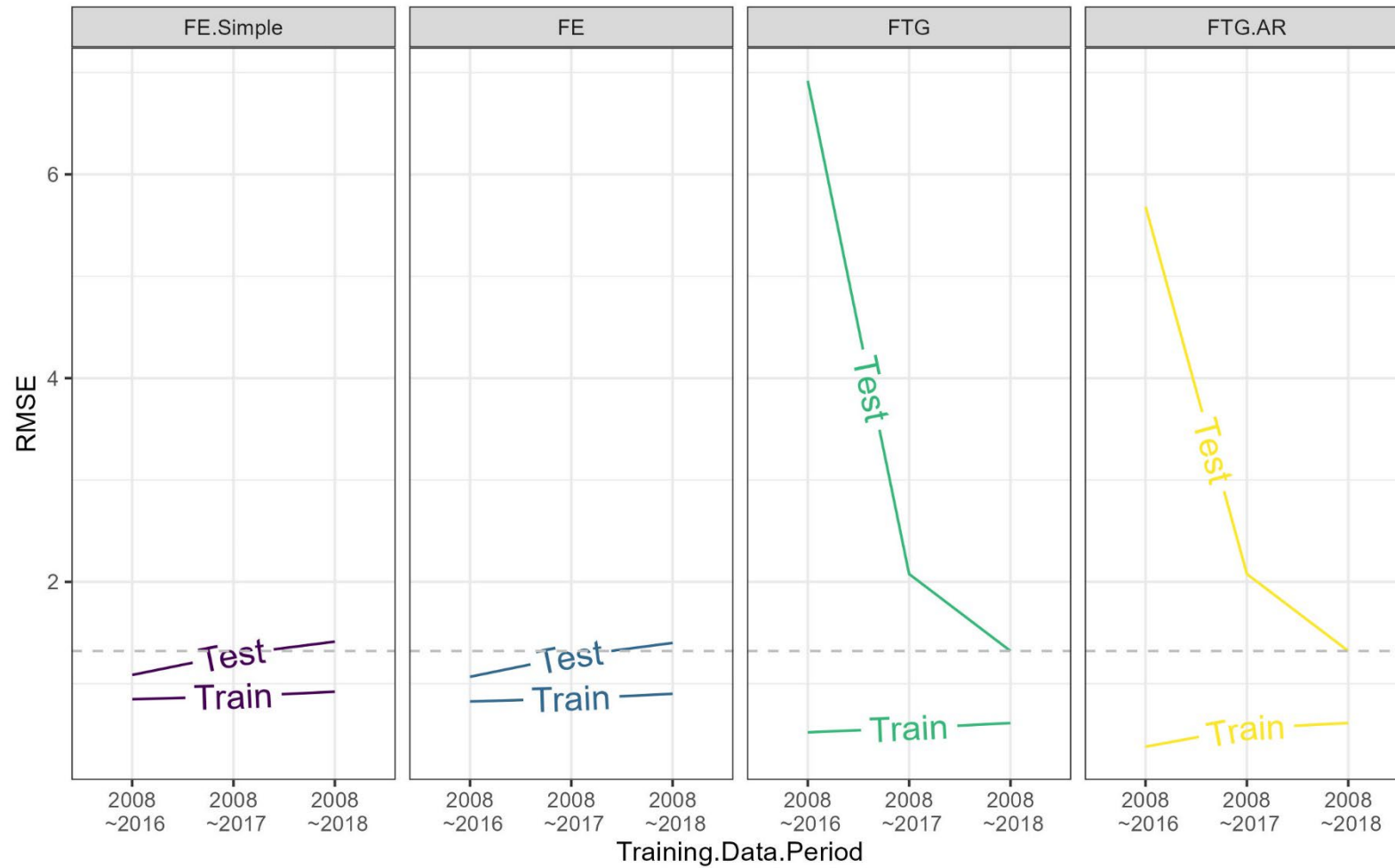
- Flow-specific Temporal Gravity Model (FTG)

Complexity

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Short Panel Data

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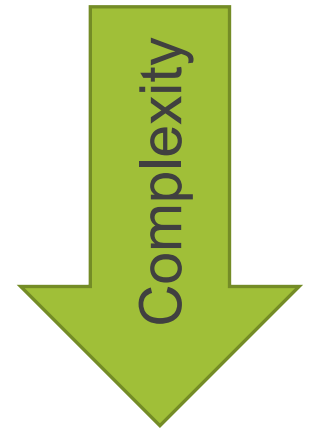
Models: PL vs. AR(1) vs. FE

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Longer Panel Data

Models: FE vs FTG

Summary

❑ In short panel data, AR(1) is the most balanced.

❑ In long panel data, FTG can outperform FE.

❑ As time-series migration data lengthens, FTG's predictions can be increasingly accurate, whereas the FE model becomes less predictive.

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