DSEM workshop

Jessica Schaaf & Michael Aristodemou

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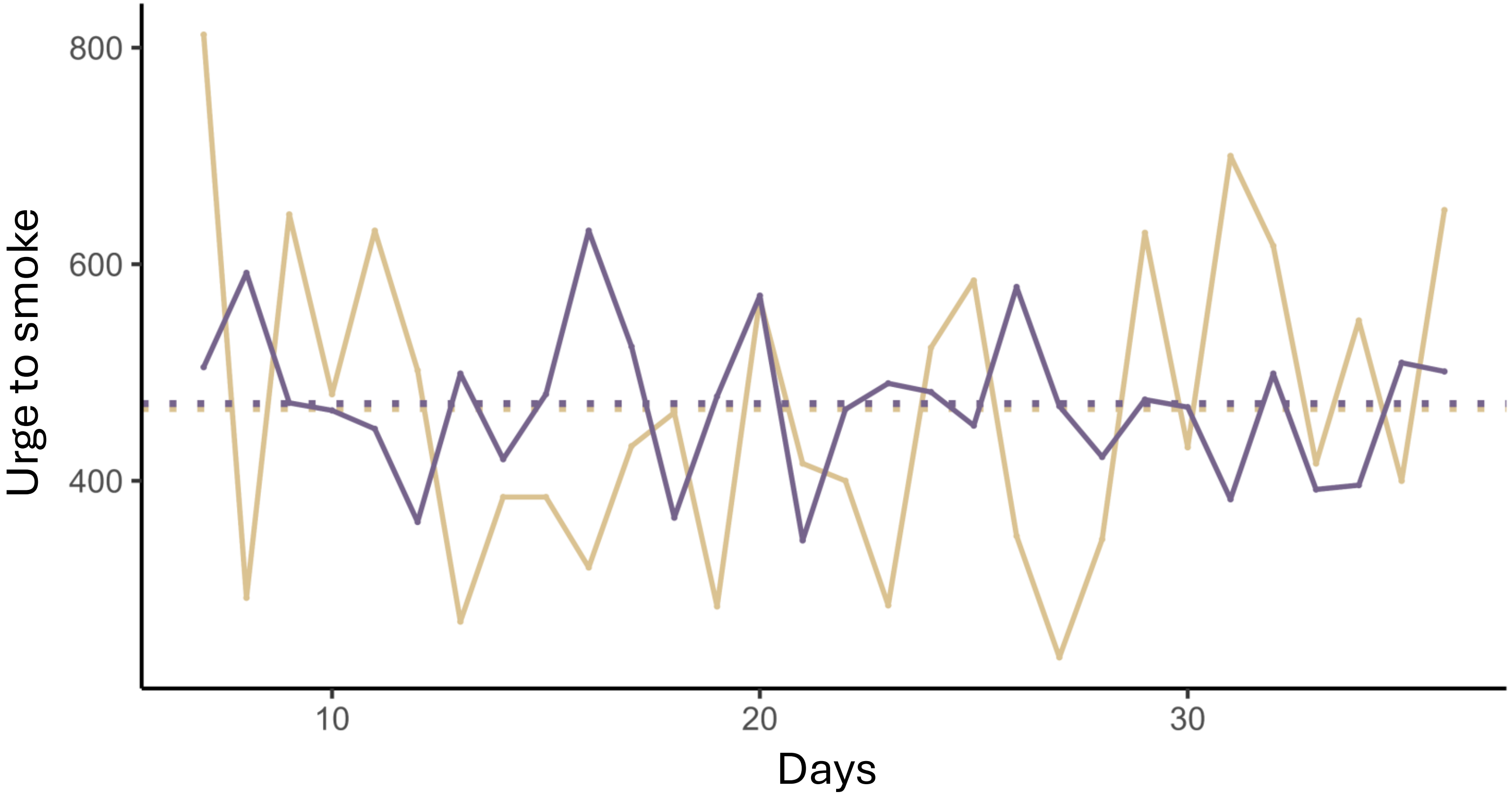
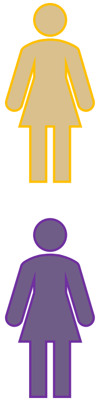
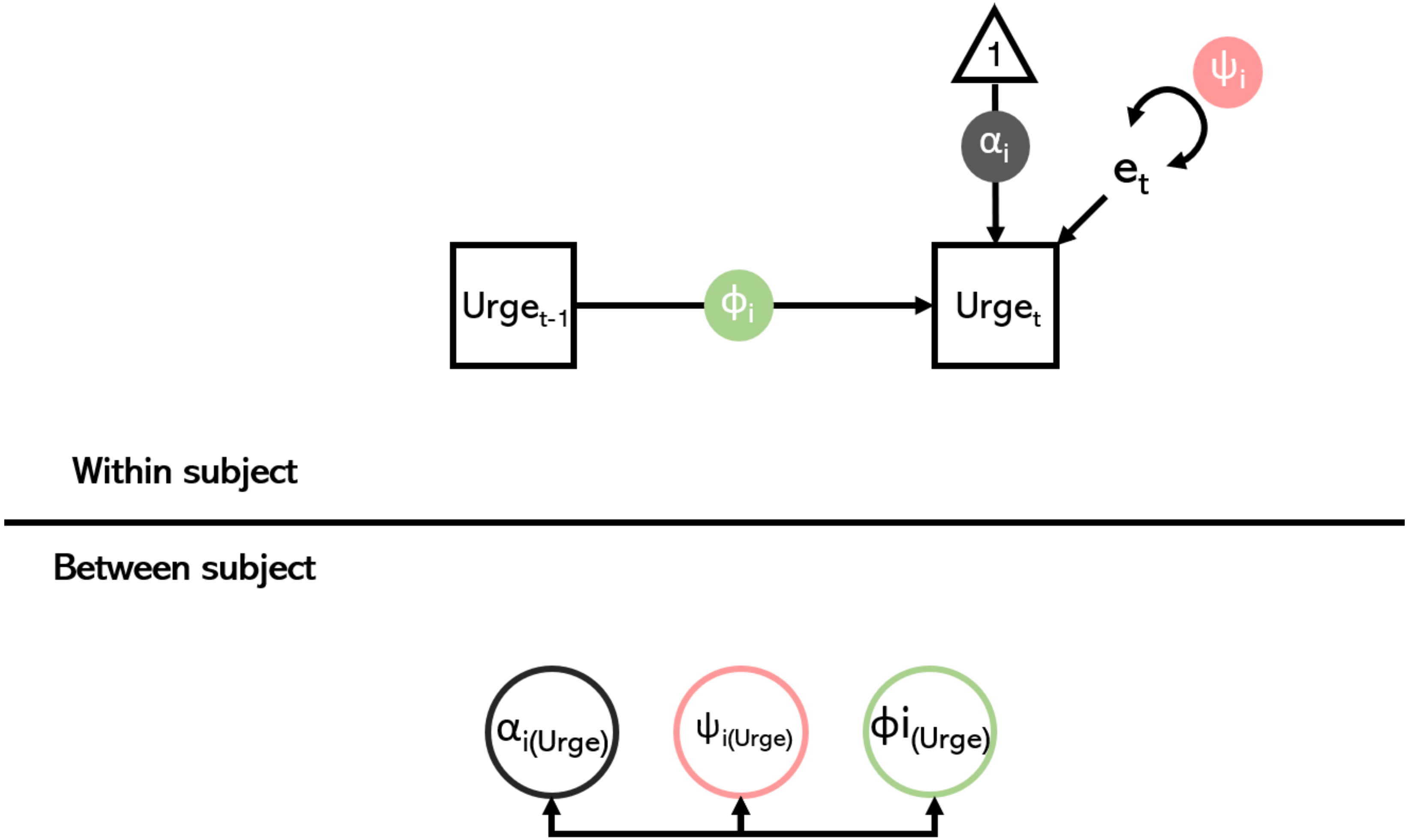
So, you have time series data

- Time series (t > 9*)
- 1 or more people

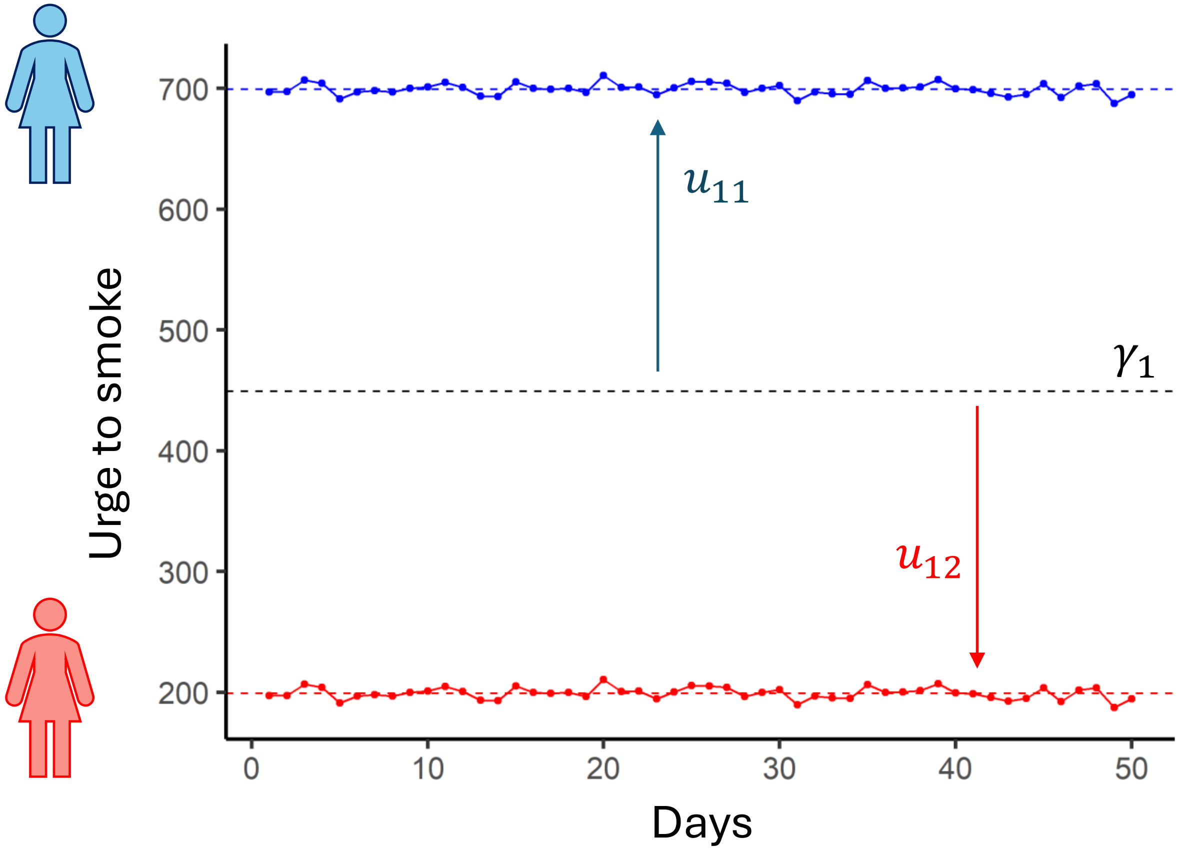


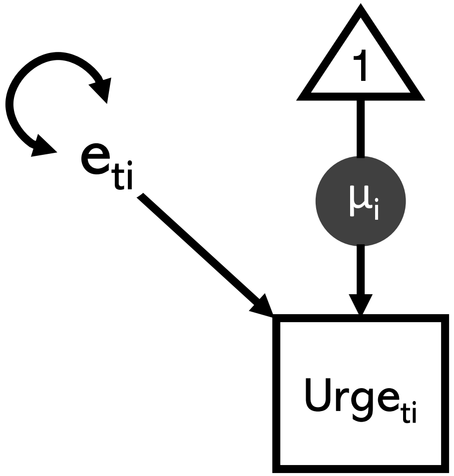


Intro to Dynamic Structural Equation Modeling



MEAN URGE

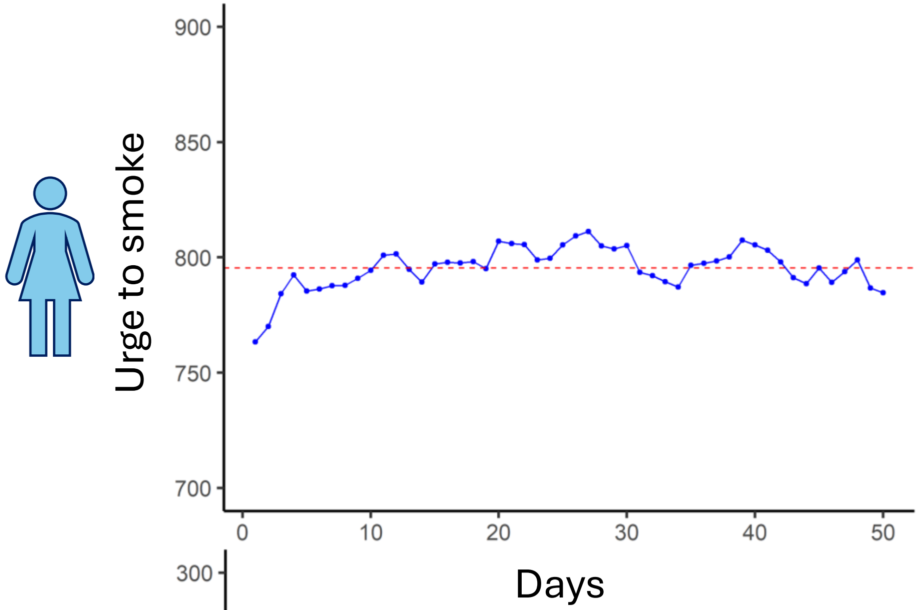




$$Urge_{ti} = \mu_i + e_{ti}$$

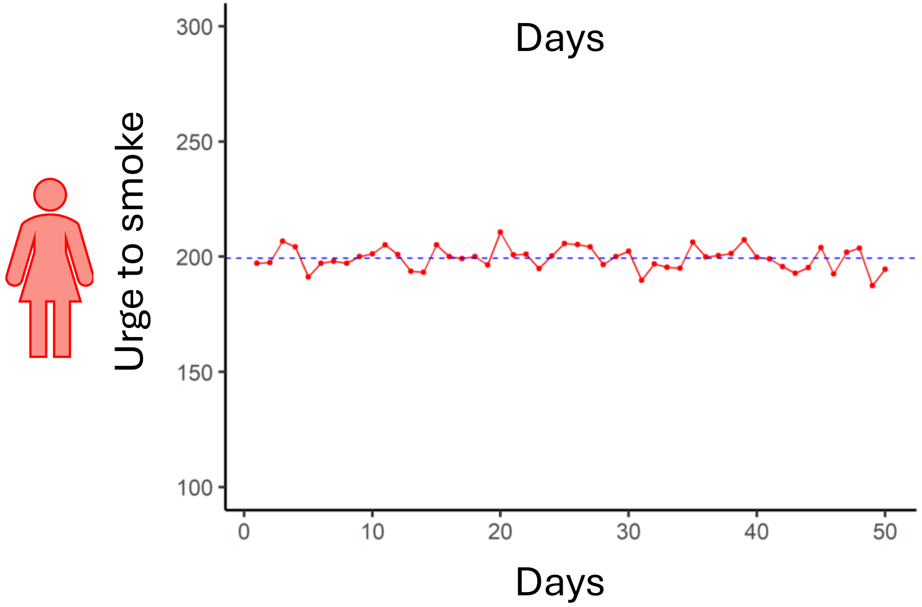
$$\mu_i = \gamma_1 + \upsilon_{1i}$$

Autoregression (AR-1)



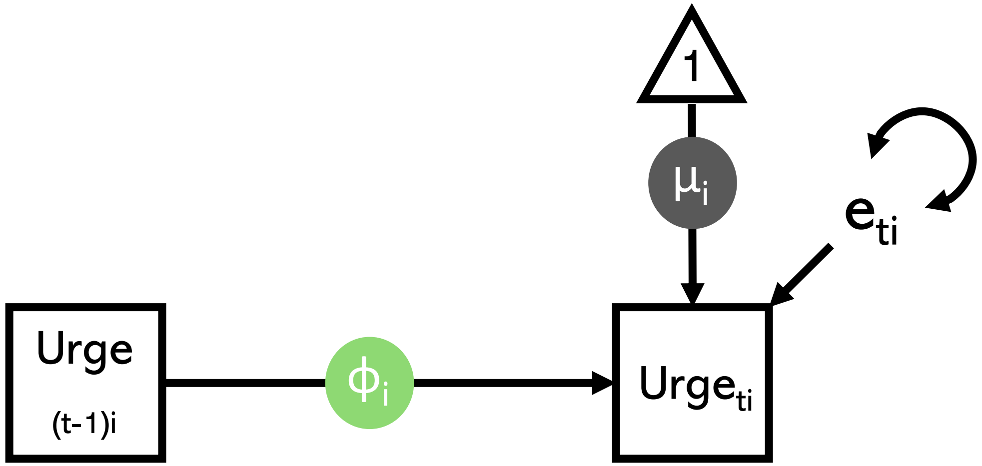
High

φ



Low

φ

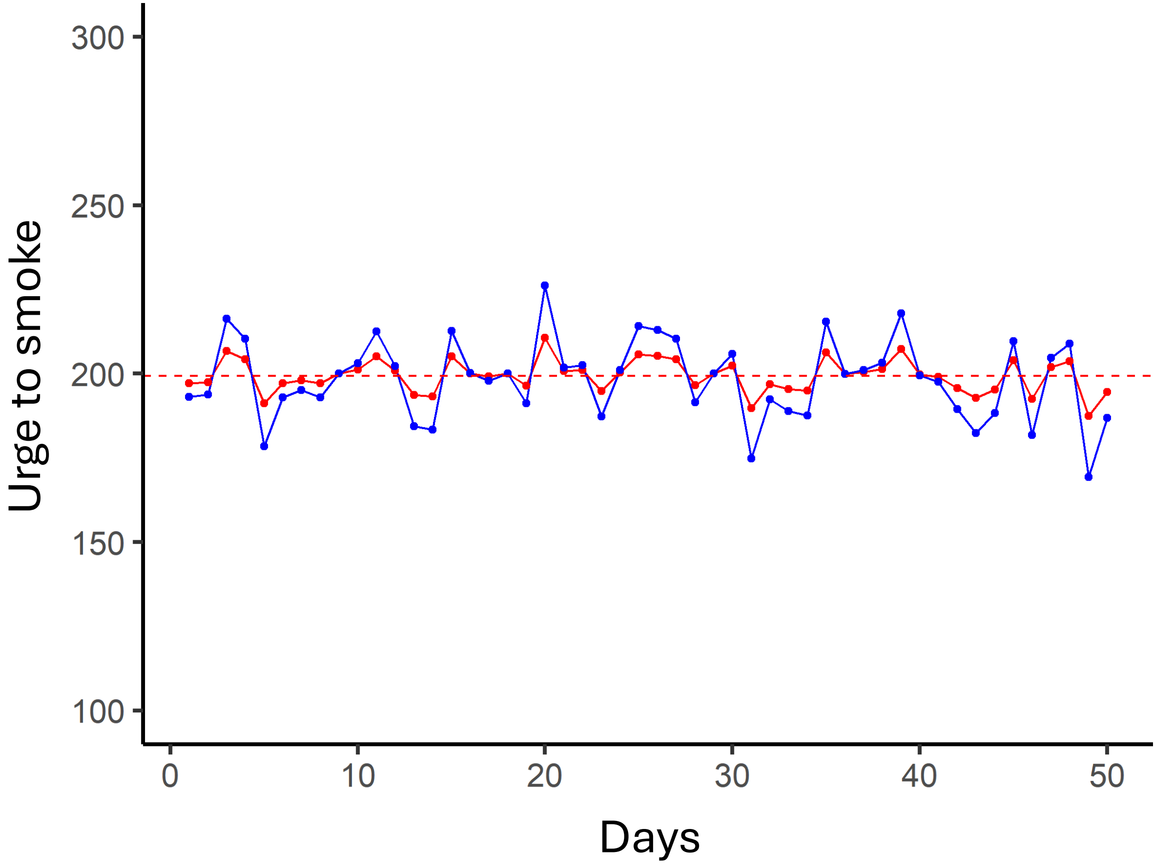


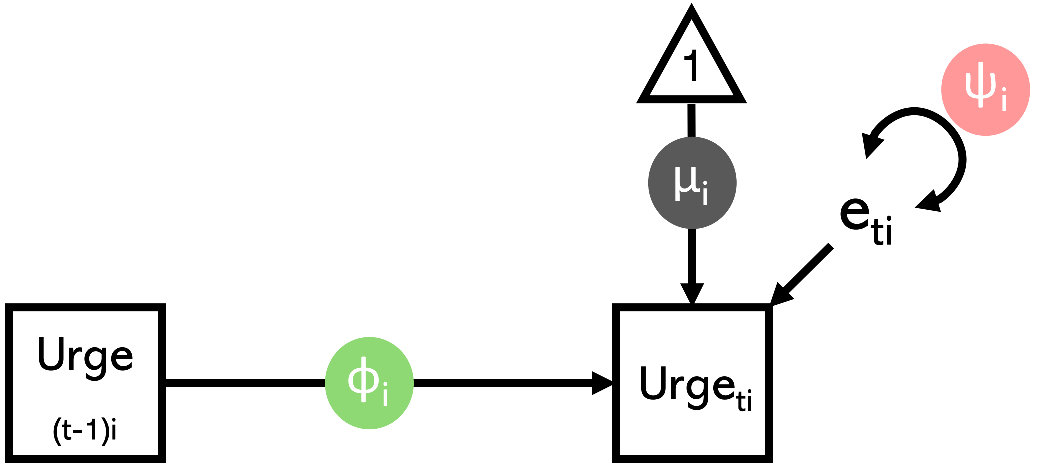
$$Urge_{ti} = \mu_i + \varphi_i(Urge_{(t-1)i} - \mu_i) + e_{ti}$$

$$\mu_i = \gamma_1 + \upsilon_{1i}$$

$$\varphi_i = \gamma_2 + \upsilon_{2i}$$

Innovations (day-to-day variability in urges)





$$Urge_{ti} = \mu_i + \varphi_i(Urge_{(t-1)i} - \mu_i) + e_{ti}$$

$$e_{ti} \sim N(0, \psi_i)$$

$$\mu_i = \gamma_1 + \upsilon_{1i}$$

$$\varphi_i = \gamma_2 + \upsilon_{2i}$$

$$\psi_i = exp(\gamma_3 + \upsilon_{3i})$$

DSEM in Stan: Why Stan?

- Free (!)
- Flexible
- Bayesian estimation
- Interface with popular languages (e.g., R, Python, Julia)
- Active support (online community, Stan guides)

Workshop: First steps

1. Go to: https://github.com/mearistodemou/DSEM_workshop
2. Grab “workshop_assignment.html” from “Assignments” folder
3. Open New R Script
4. Go through exercises
5. Click “Show/Code” to get the answer
6. Feel free to ask questions