

Assessing and Predicting Patterns of Adherence to Weekly SMS Surveys on HIV Risk and Symptoms among Youth

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Background

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- Because of the prevalence of mobile device ownership, public health researchers are using Short Message Service (SMS) for more tasks (e.g., medication reminders, health information, diabetes management)
- Self-reporting via SMS has increased, which can create an intensive longitudinal data set
- However, consistent self-reporting relies on voluntary participation and access to a mobile device capable of SMS
- How can we increase participation/adherence?

Purpose of the Analysis

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- Assess patient engagement by identifying clusters of adherence patterns to a weekly SMS survey
- Determine if there are participant characteristics that differentiate the clusters

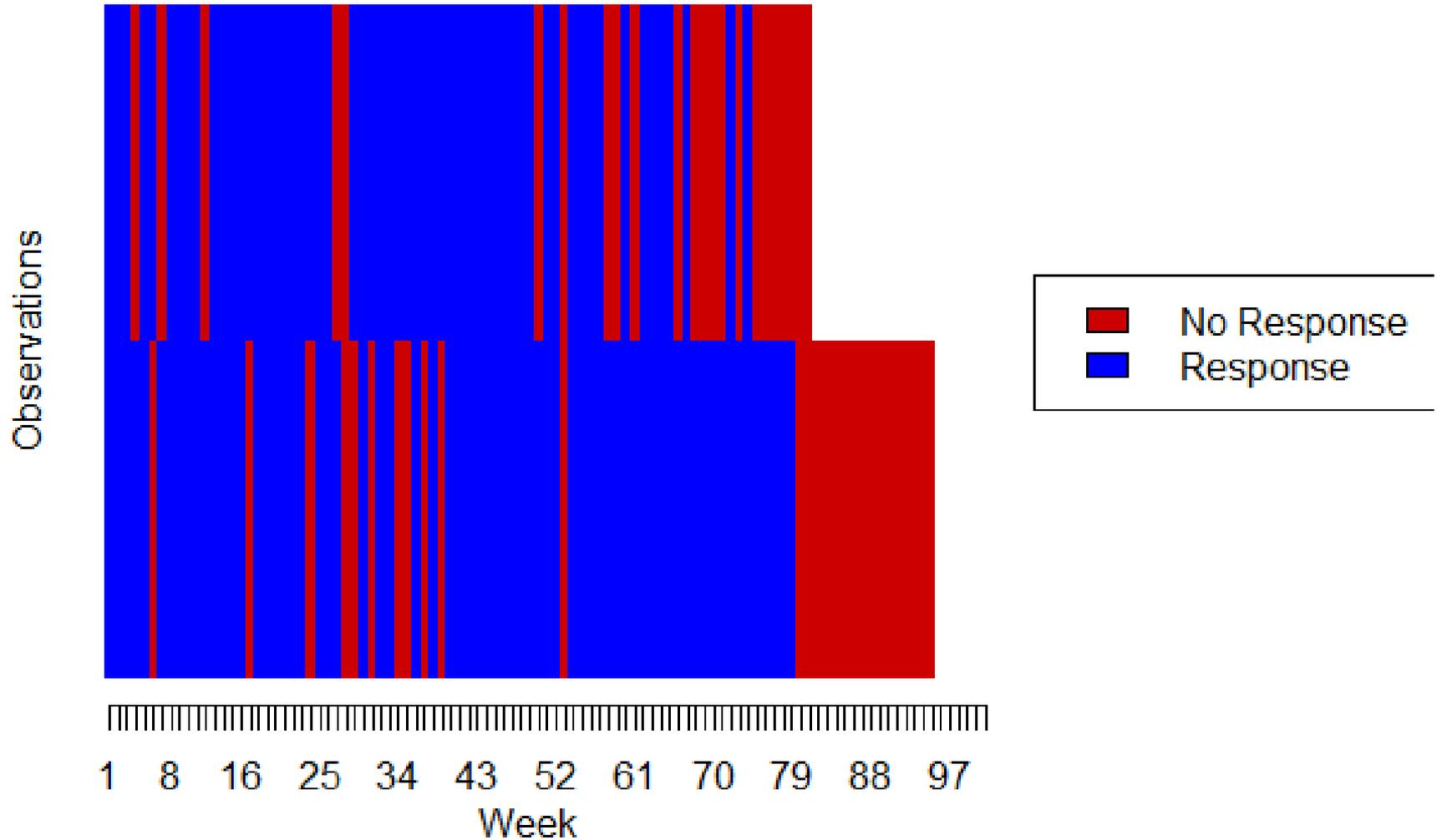
Method and Background of the Study

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- Intervention study designed to test effectiveness of different interventions on increasing preventive measures for youth at high risk of acquiring HIV
- Participants
 - 919 youth at high risk of acquiring HIV
 - Ages 14-24 ($M = 20.9$)
- Weekly SMS survey for 104 weeks that assessed HIV symptoms and risks
- Mixture hidden Markov model

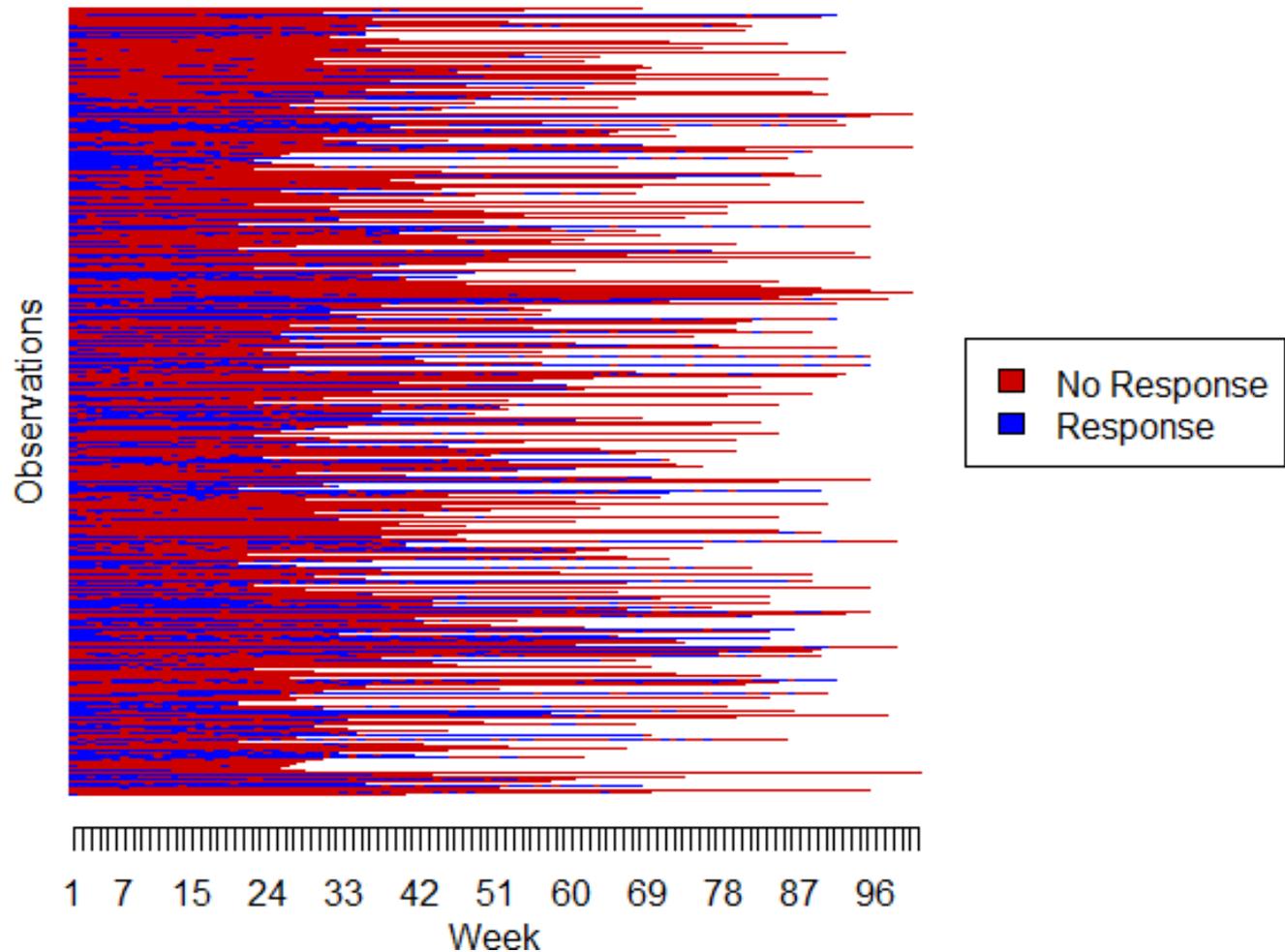
Sequence of Responses for Two Participants

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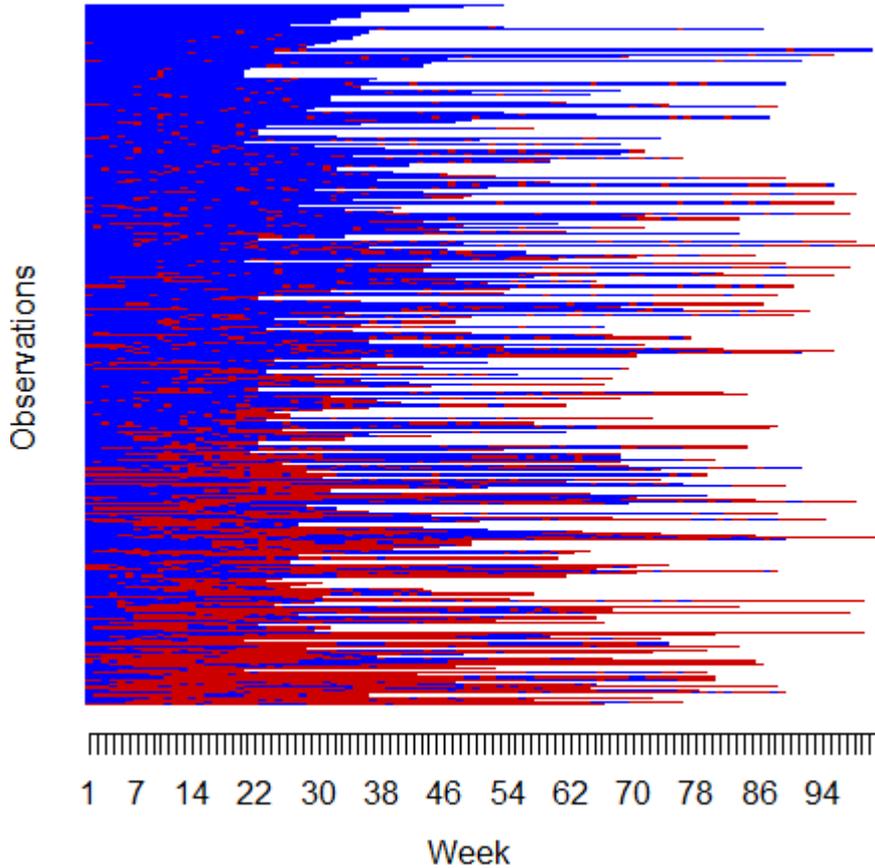
Sequence of Responses for All Participants

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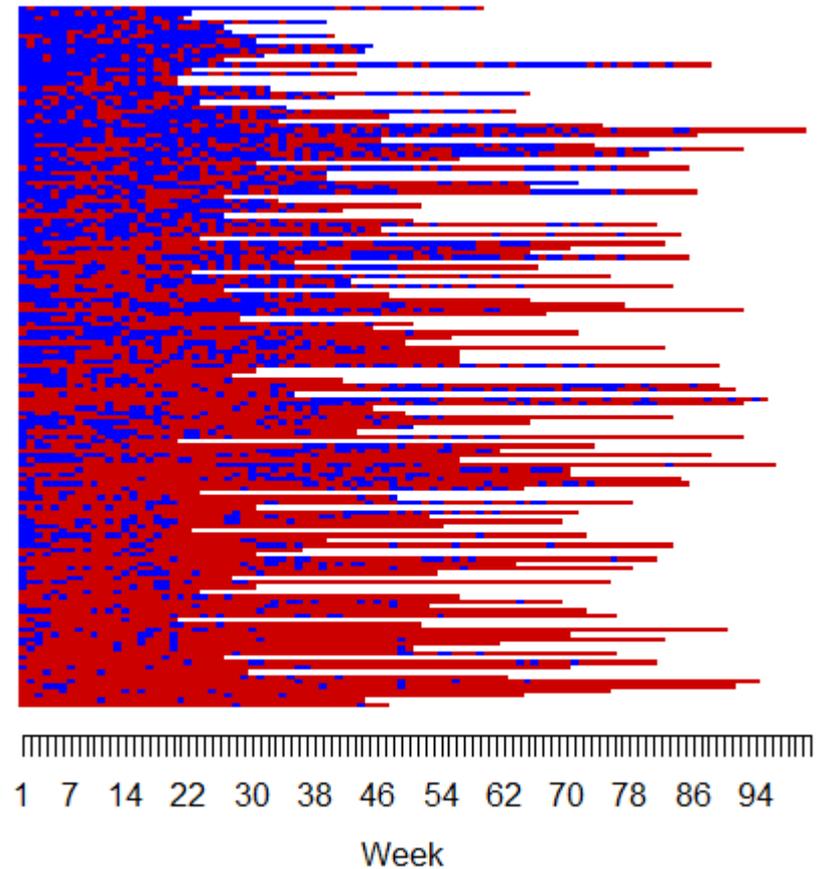


Results: How Many Clusters Are There?

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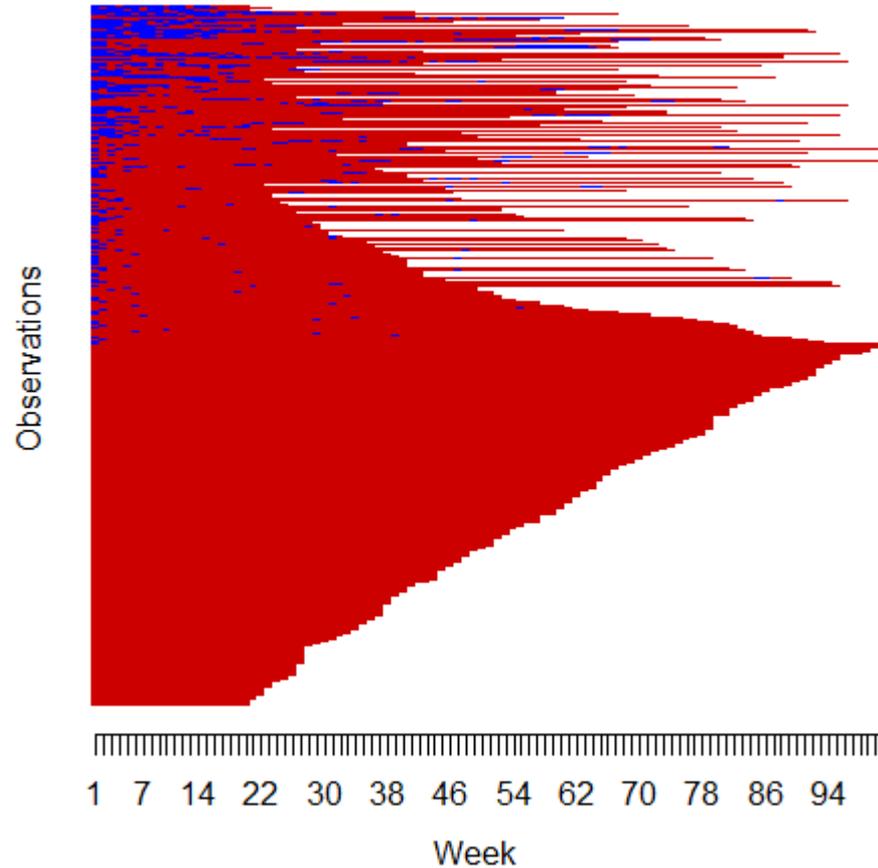
Active ($n = 312$)



Intermittent ($n = 149$)

Results: How Many Clusters Are There?

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Inactive ($n = 458$)

Results: What Describes the Clusters?

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- Ever been homeless
- Other predictors tested:
 - Intervention group
 - Age
 - Sex at birth
 - Sexual orientation
 - Race
 - Depression at baseline
 - Anxiety at baseline
 - Hazard drinking at baseline
 - Ever used drugs

Discussion

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- Provide mobile phones and mobile phone plans for participants to increase adherence
- Investigate other predictors that may be related to participation (e.g., SES, trauma)

Limitations

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- Listwise deletion to handle missing data on predictors
 - Future direction: explore other missing data handling options
- Exploratory
 - Generalizability/Replicability

Acknowledgements

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The logo for UCLA, consisting of the letters "UCLA" in a bold, blue, sans-serif font.

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The logo for ATN, featuring the letters "ATN" in a stylized, multi-colored font. The "A" is pink and red, the "T" is orange and red, and the "N" is purple and blue.

CHIPTS

Center for HIV Identification, Prevention
and Treatment Services

Questions?

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- hgunn@mednet.ucla.edu

Weekly SMS Survey Questions

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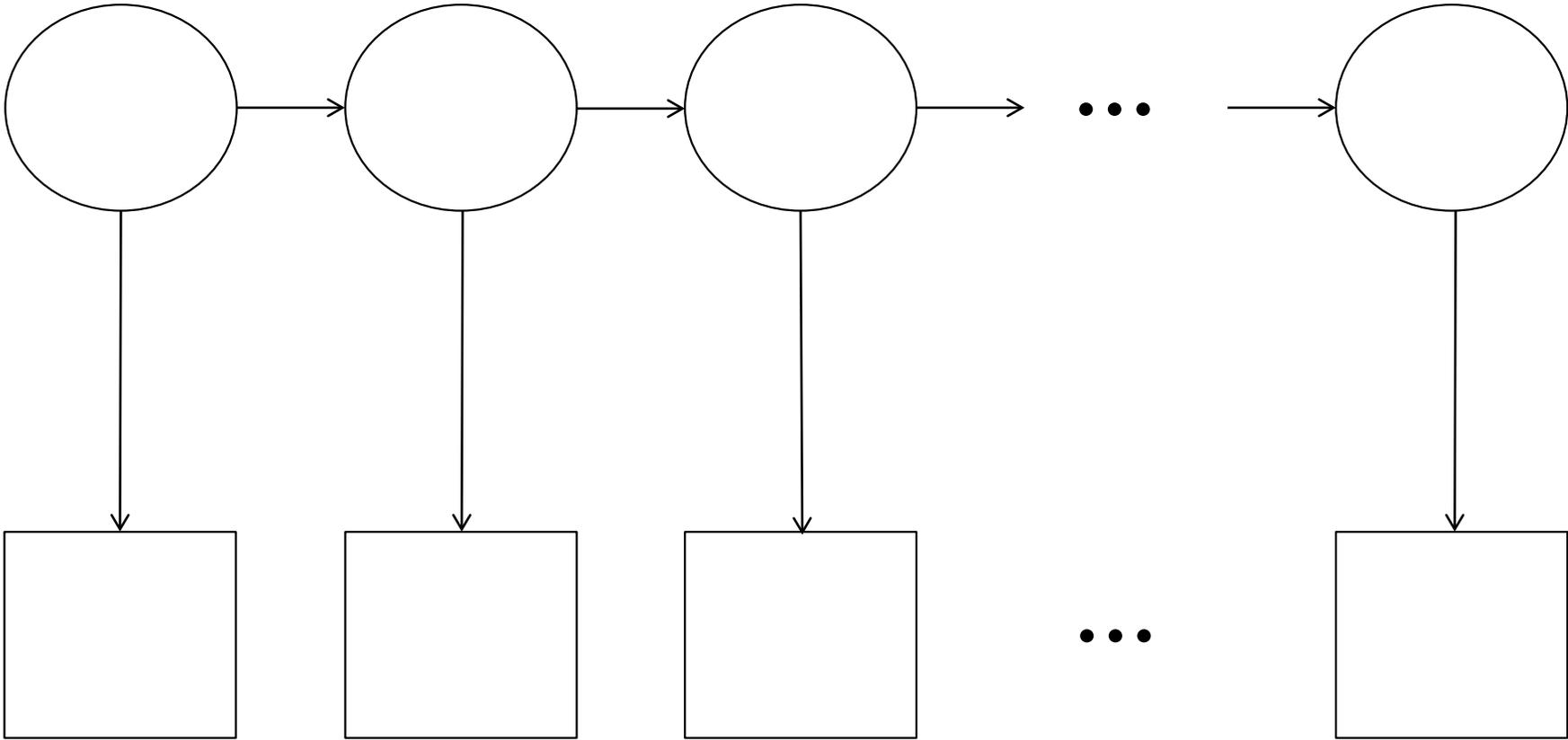
1. How many of these symptoms did you experience in the past 7 days - fever, headache, sore throat, swollen glands, rash, fatigue?
2. Have you had a fever, severe headache, sore throat, swollen glands, rash, extreme fatigue, vomiting/diarrhea, or no appetite in last week?
3. How many days did you feel sad or depressed in the past 7 days?
4. Did you have any genital itching/pain/discharge, burning during urination, lower stomach pain, or discomfort during sex?

Weekly SMS Survey Questions

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5. How many times did you have sex without using condoms in the past 7 days?
6. How many days did you use alcohol and/or drugs in the past 7 days?
7. How many days did you not have a place to sleep and/or not enough to eat in the past 7 days?
8. How many days did you miss taking medications in the past 7 days?

Mixture Hidden Markov Model (MHMM)



Fit Statistics

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# of classes	BIC
2 classes	27297
3 classes	27183
4 classes	27120
5 classes	27116
6 classes	27138

	Cluster 1	Cluster 2	Cluster 3
Cluster 1	.93	.04	.03
Cluster 2	.10	.83	.07
Cluster 3	.03	.05	.92

Sequence of Responses for All Participants

