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Objective (GPS) and subjective food environment as predictors of momentary food intake

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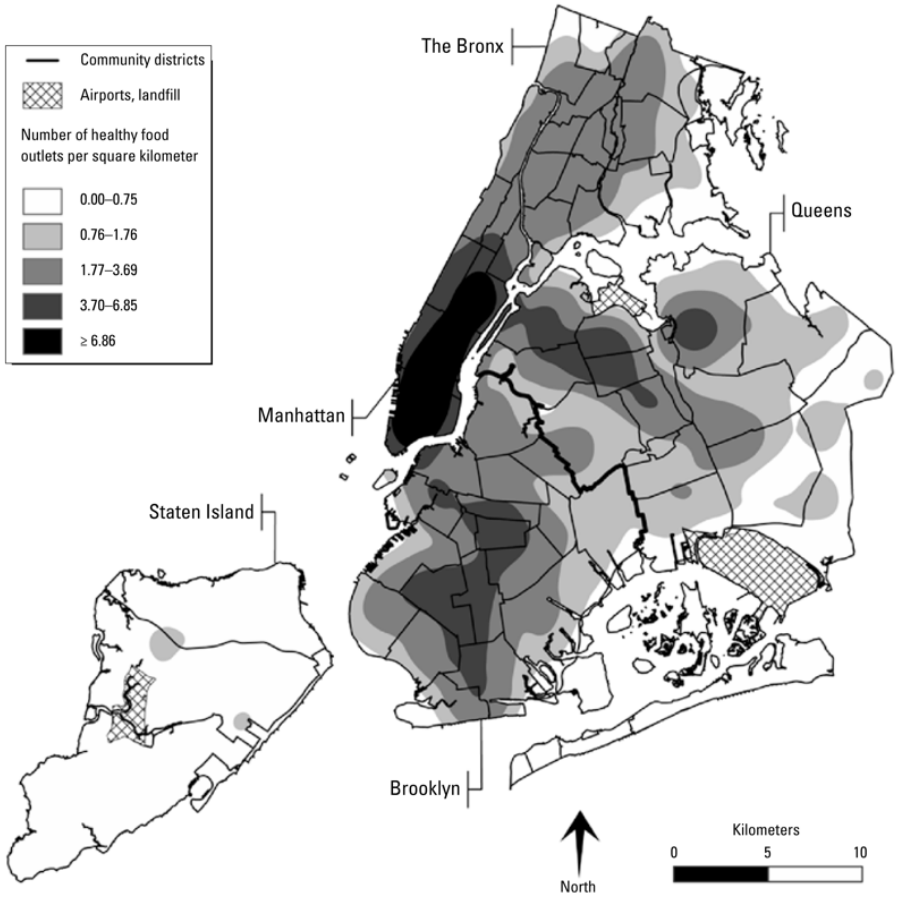
Obesity

- Incidence of obesity has risen dramatically in recent decades
- Australia
  - >25% of adults are obese (BMI $\geq$ 30)
  - >60% of adults are over-weight (BMI $\geq$ 25)
- Overeating is a major behavioural risk factor for obesity
- Reducing discretional eating is a key target for obesity prevention treatments

Hunger is not the only reason why we eat

- Social & environmental cues influence eating
  - 'If', 'what' & 'how much' we eat
- We are surrounded by cues in our day-to-day lives

Neighbourhood food environment: A risk factor for obesity



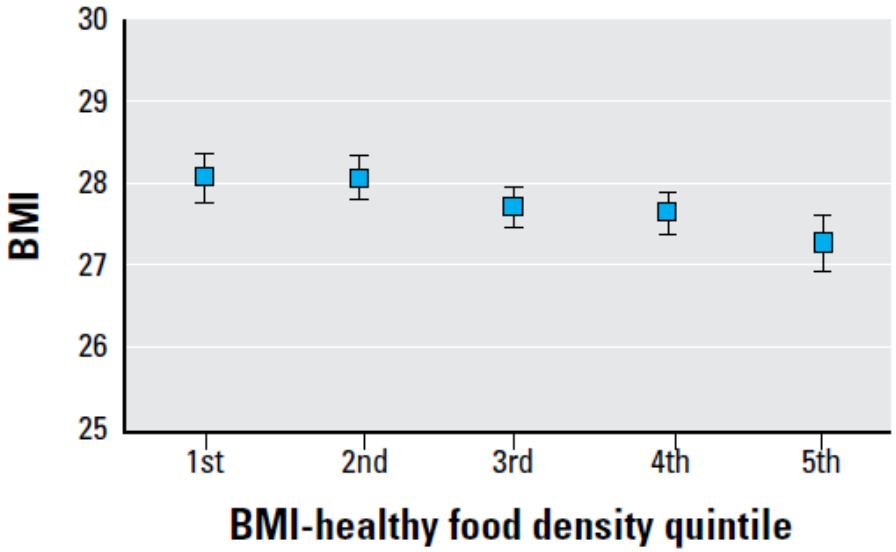
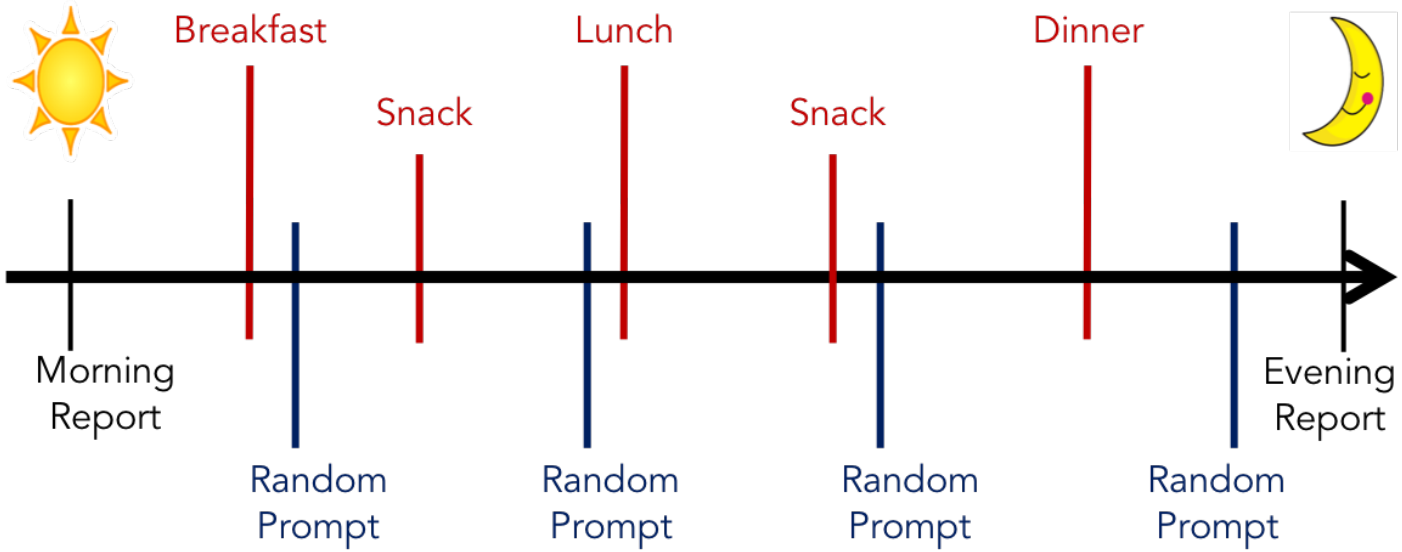


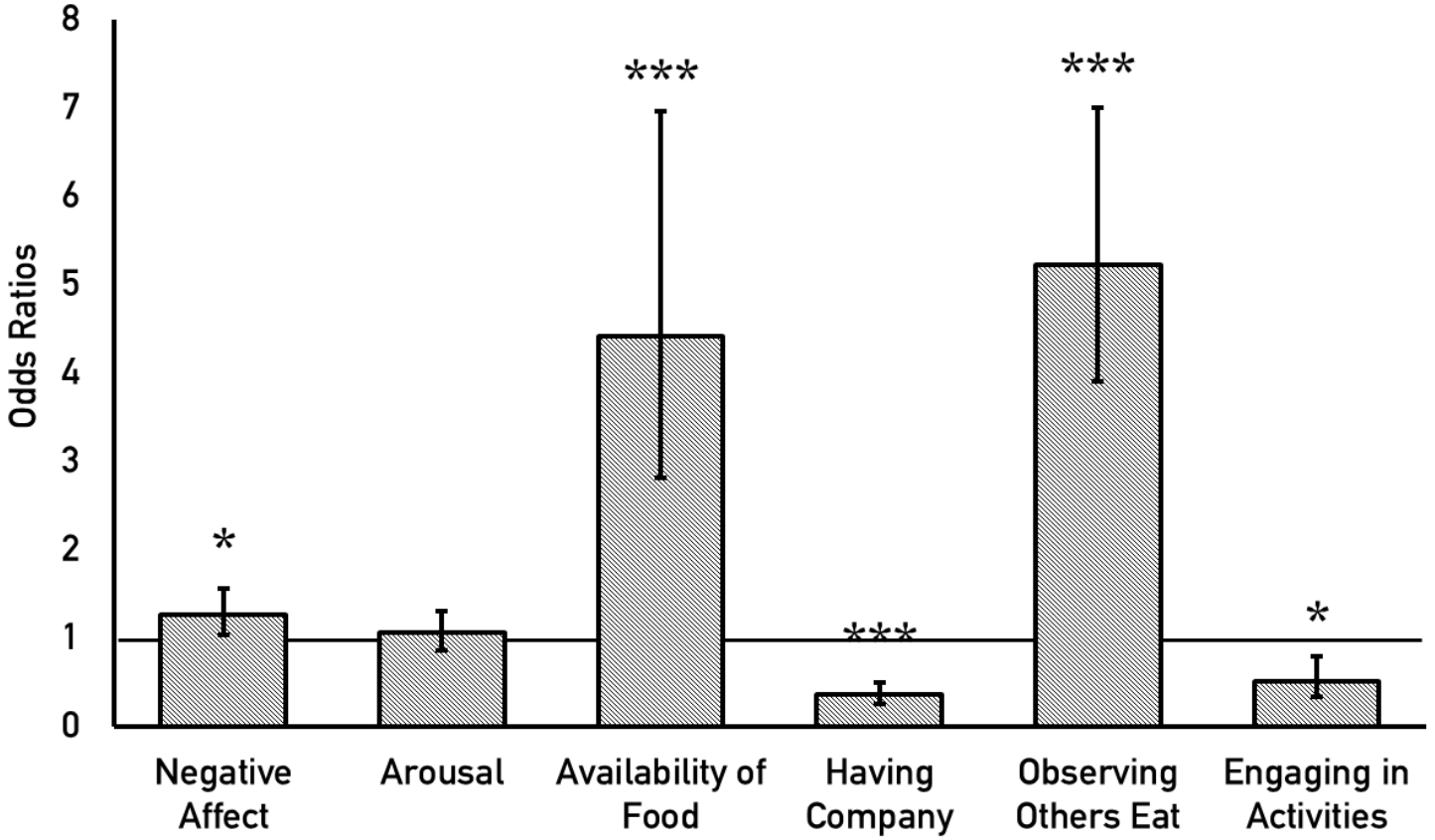
Figure 2. Adjusted mean BMI (± 95% CI) by BMI-healthy food density quintiles. Analysis is adjusted for the density of BMI-intermediate and BMI-unhealthy food outlets and for age, sex, race/ethnicity, education, neighborhood sociodemographic characteristics, and population density.

Rundle, A., Neckerman, K. M., Freeman, L., Lovasi, G. S., Purciel, M., Quinn, J., . . . Weiss, C. (2009). Neighborhood food environment and walkability predict obesity in New York City. *Environmental Health Perspectives, 117, 442-447. doi:10.1289/ehp.11590*

Real-time Assessment of Eating: Ecological Momentary Assessment



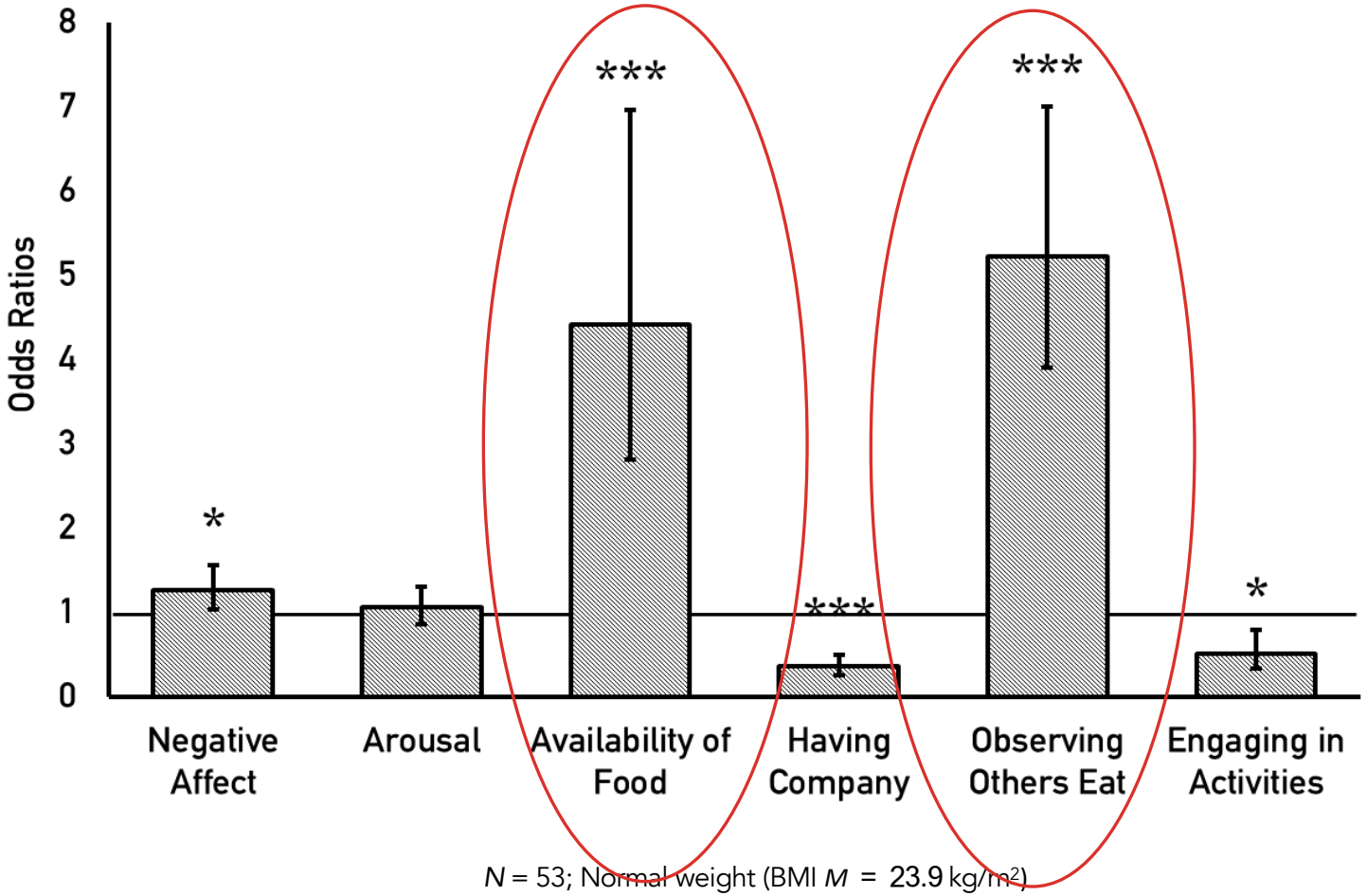
Momentary influences on everyday discretionary food choices



N = 53; Normal weight (BMI *M* = 23.9 kg/m^2)

Schüz, B., Bower, J., & Ferguson, S. G. (2015). Stimulus control and affect in dietary behaviours. An intensive longitudinal study. *Appetite, 87, 310-317. doi:http://dx.doi.org/10.1016/j.appet.2015.01.0020*

Availability of food is a particularly strong predictor of discretionary eating



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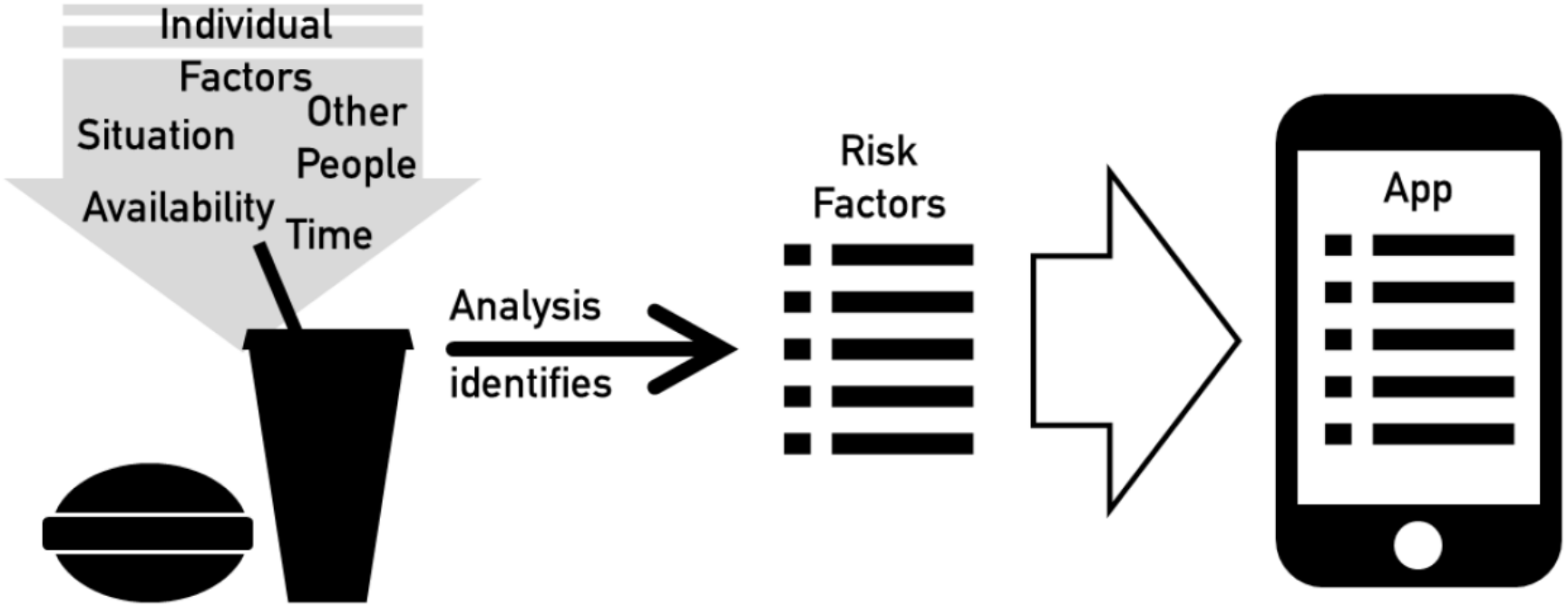
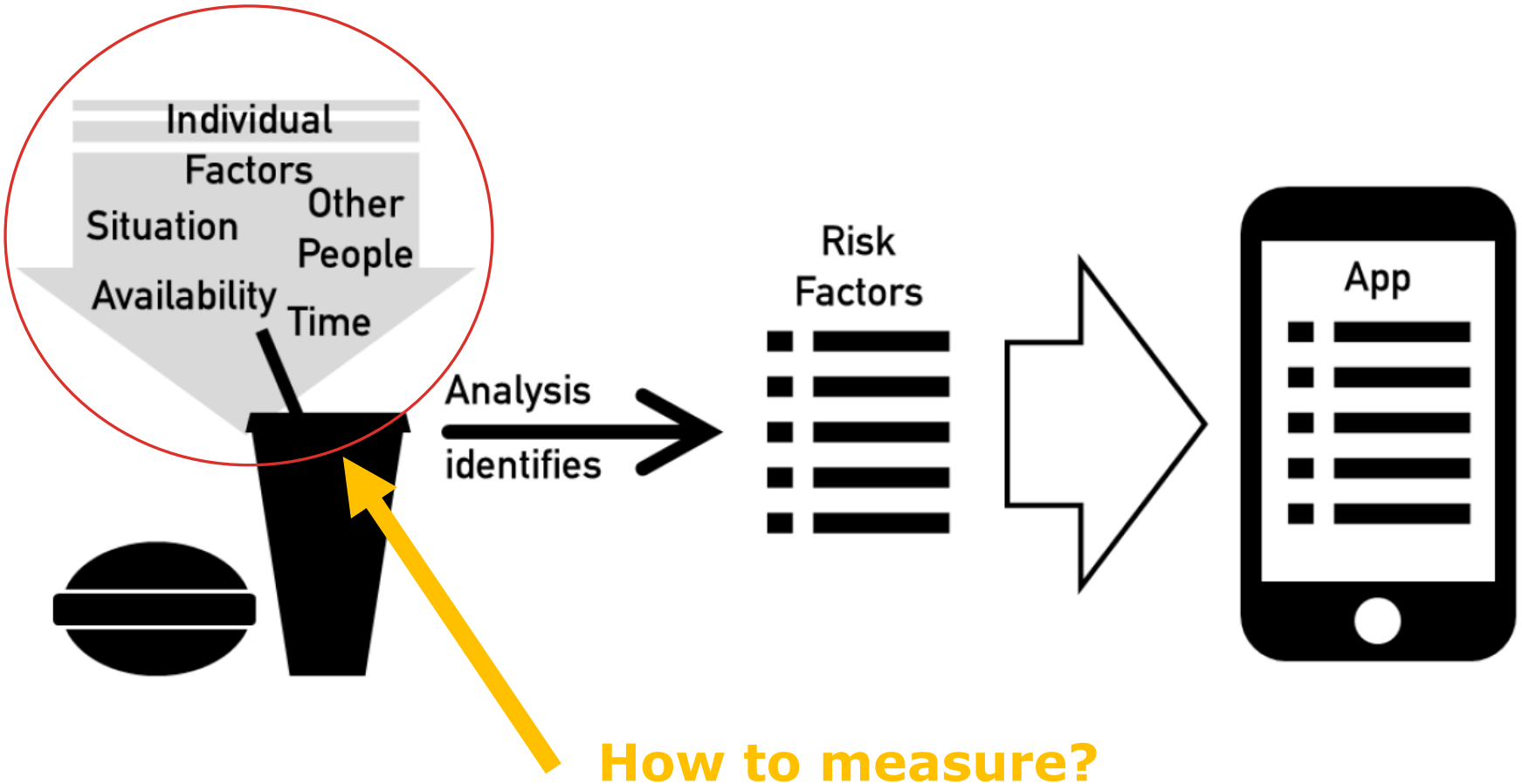
mHealth Apps: Interventions for healthy eating



mHealth Apps: Interventions for healthy eating



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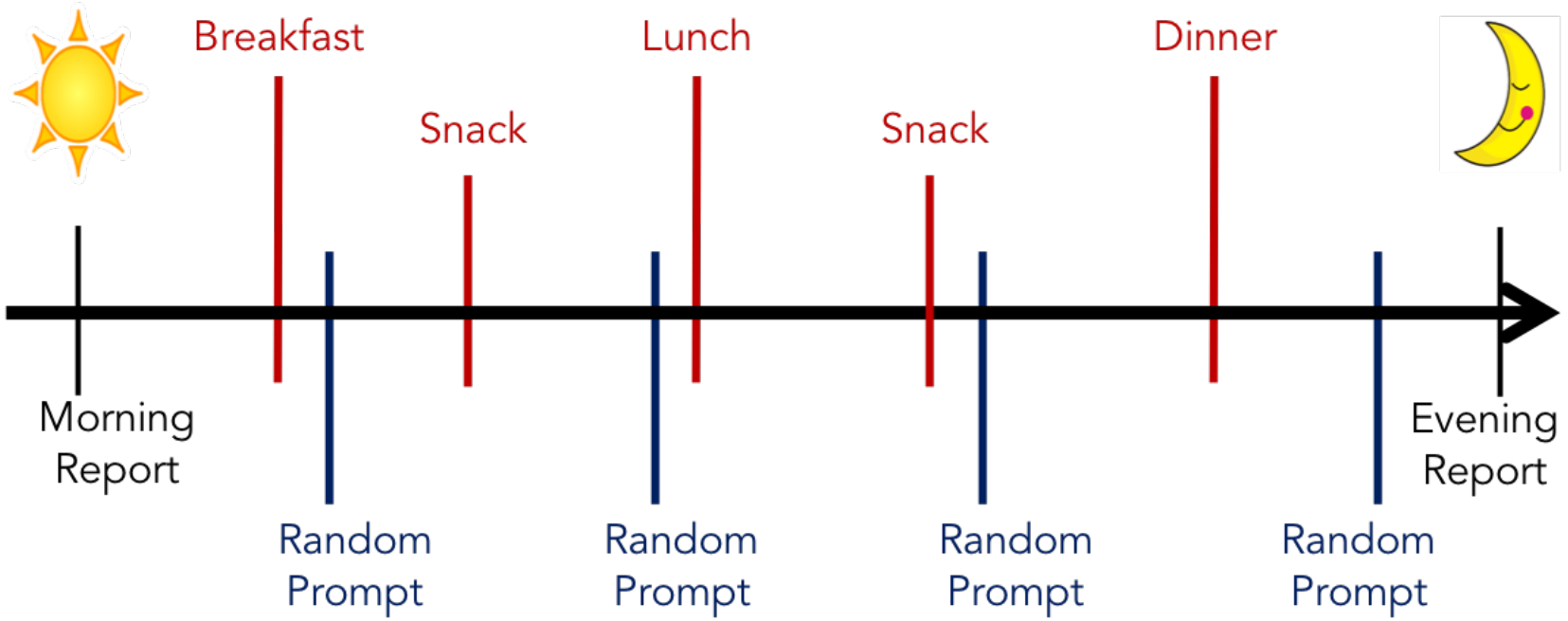
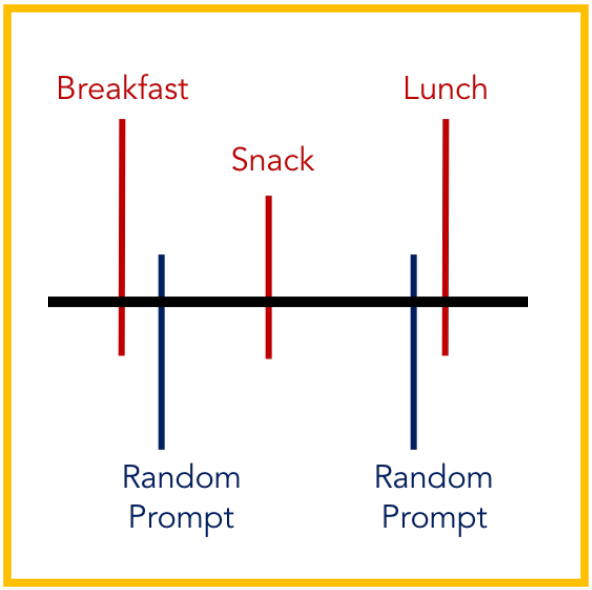
Objective

- Obtain subjective ("active") and objective ("passive") assessments of the food environment and examine associations with food intake
- 72 participants (BMI: 18.6-40.2)
- EMA monitoring for 14 days

Ecological Momentary Assessment





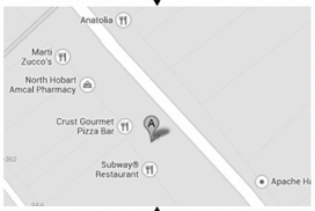
Subjective Assessment:

- How many food outlets can you see?
- Type of outlets?

Objective Assessment:

GIS Map: Distance to Food Sources

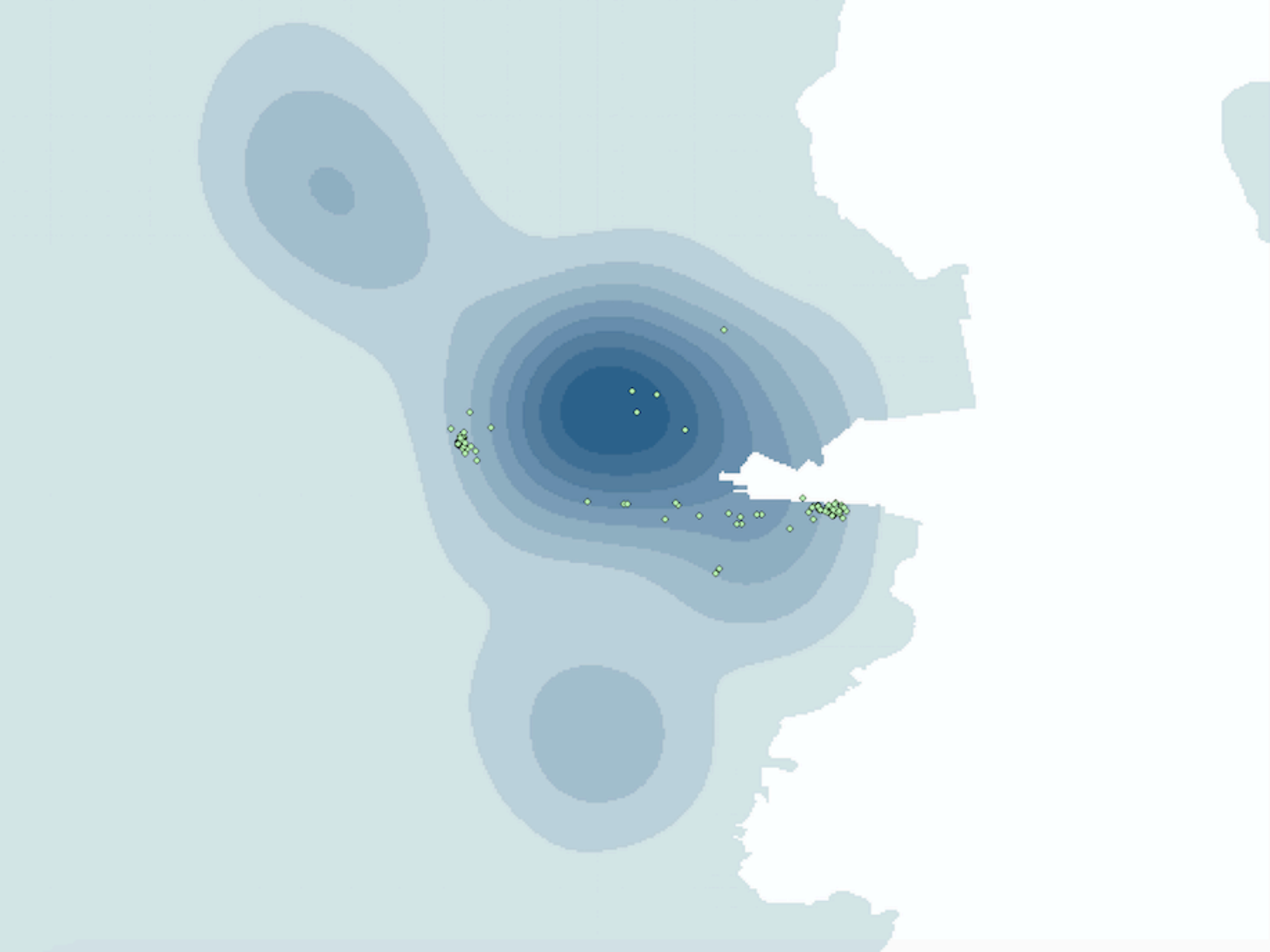
GIS Map: Density of Food Sources

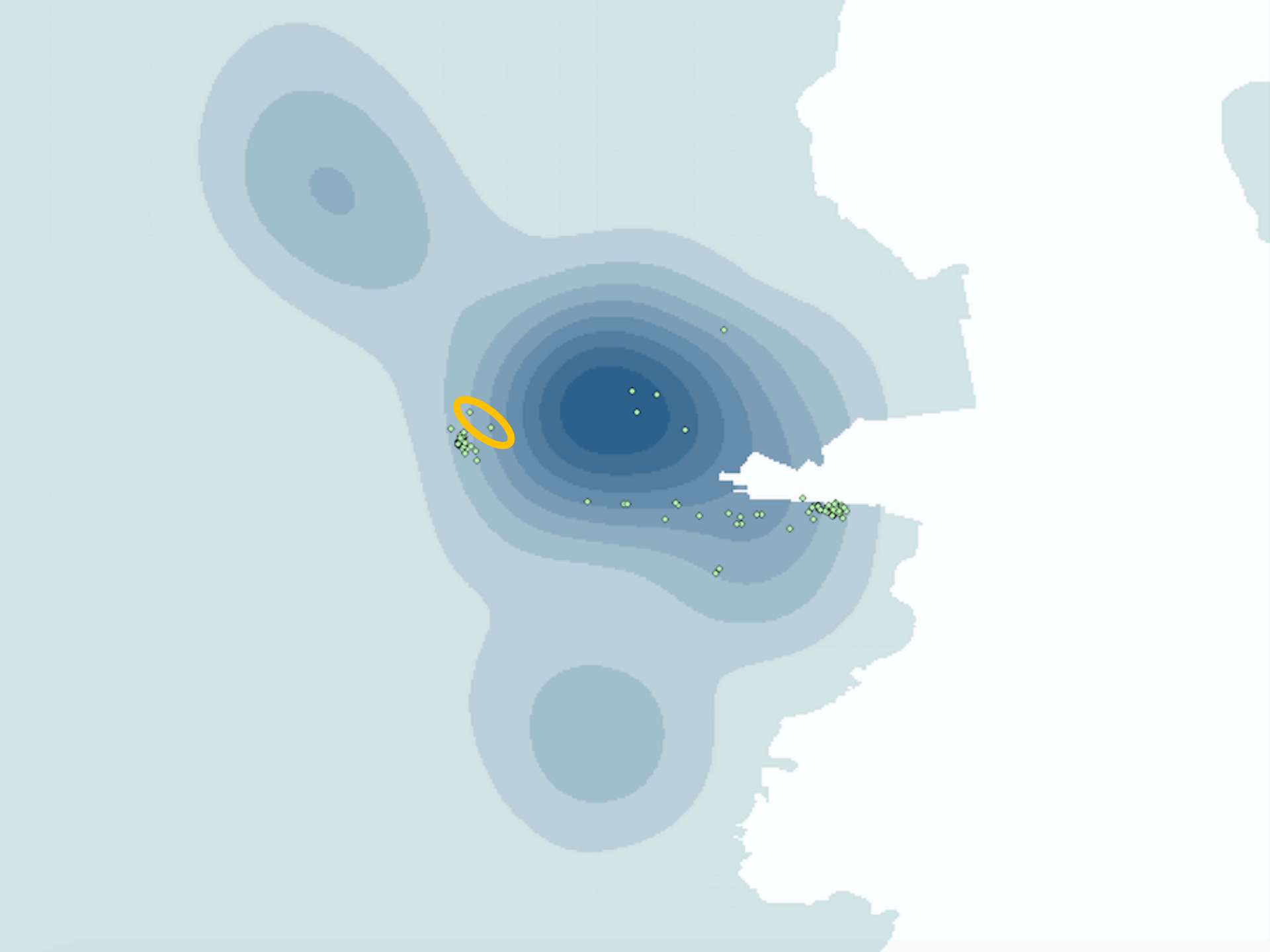


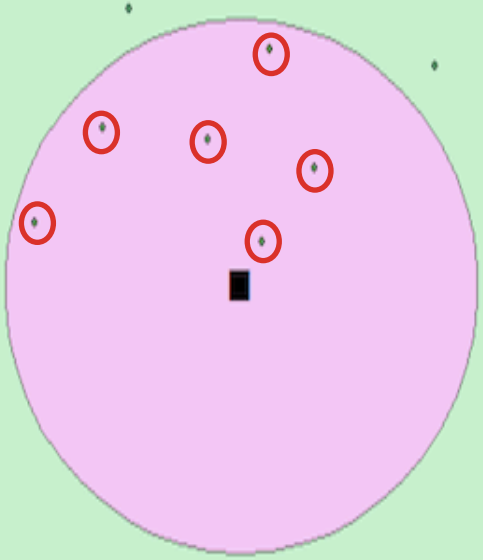
Data Integration

Location (recorded by EMA device)

-42.873938,147.31658

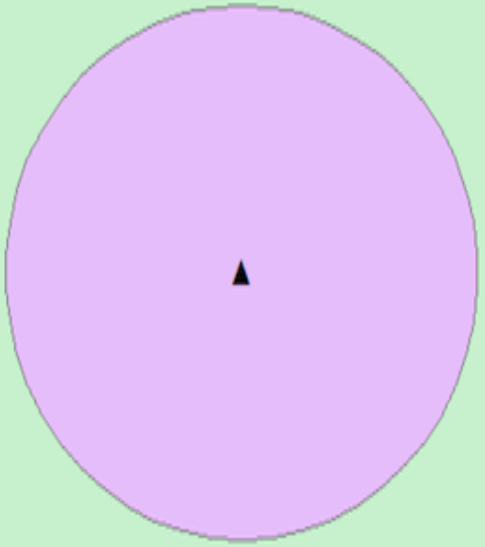




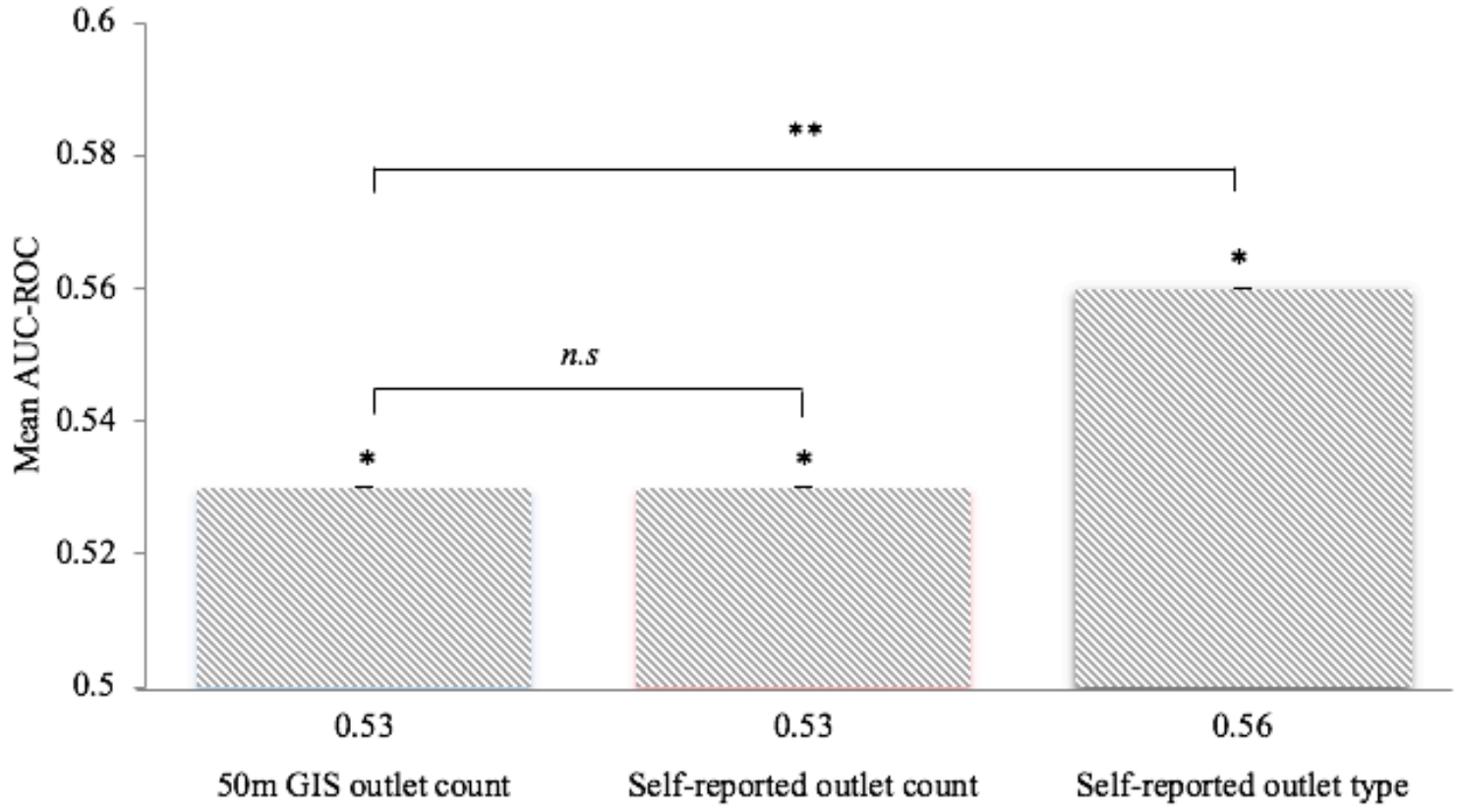


n= 6 (food outlets within 50m)

n= 0



Objective vs Subjective: Real-time number and type of food outlets predicts eating



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Discussion

- Food environment can predict eating
- Both subjective and objective outlet ***counts*** predictive of eating
  - No difference
  - Suggests that mHealth apps could utilize passive monitoring
- BUT subjectively assessed outlet ***type*** was a stronger predictor
  - Difficult to assess passively

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Future directions

- Find better ways of passively measuring the food environment
  - Accurate & detailed maps of food outlets
  - Consistent coding
- Assess additional environment features
  - Availability of food within each outlet
  - Store opening hours