Drugs and Gluttony

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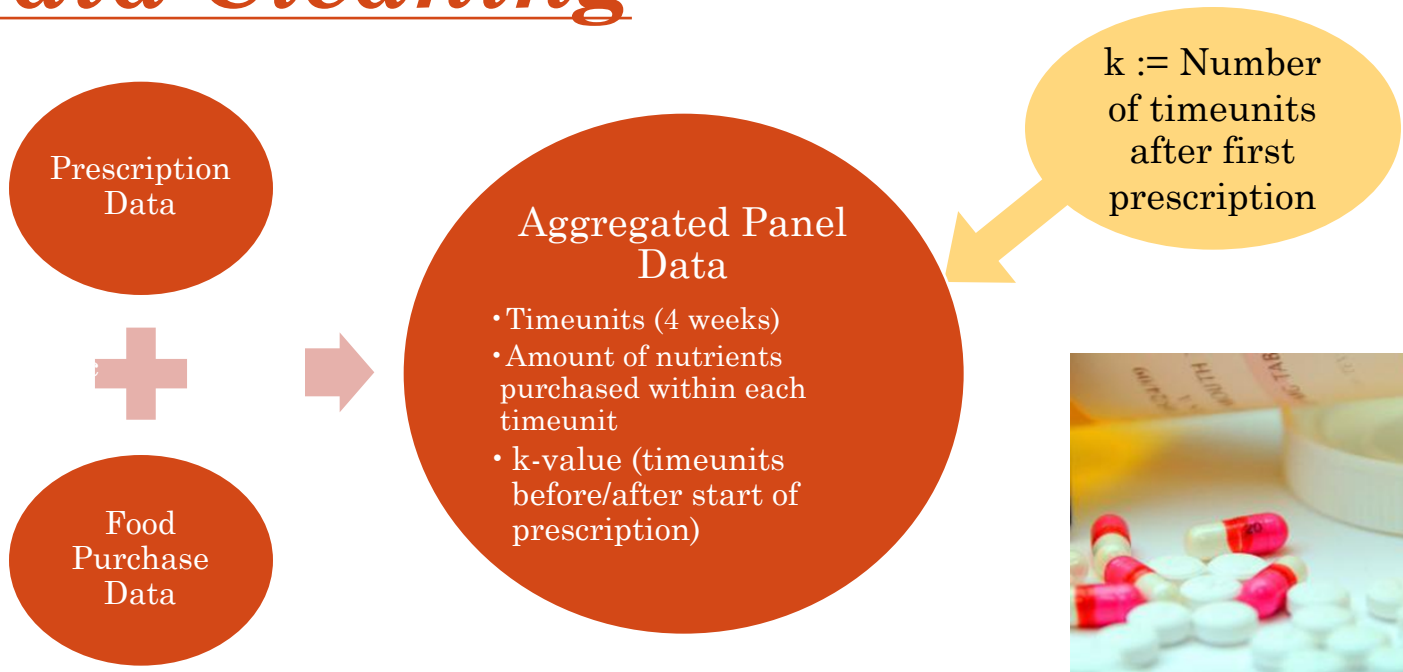
- How do people change their food purchasing habits when given a new prescription drug?
- We focused on the drug Metformin for Type II Diabetes
  - Laboratory studies indicate that this drug can cause decrease in appetite

Data Cleaning



Modeling

1. Original Model

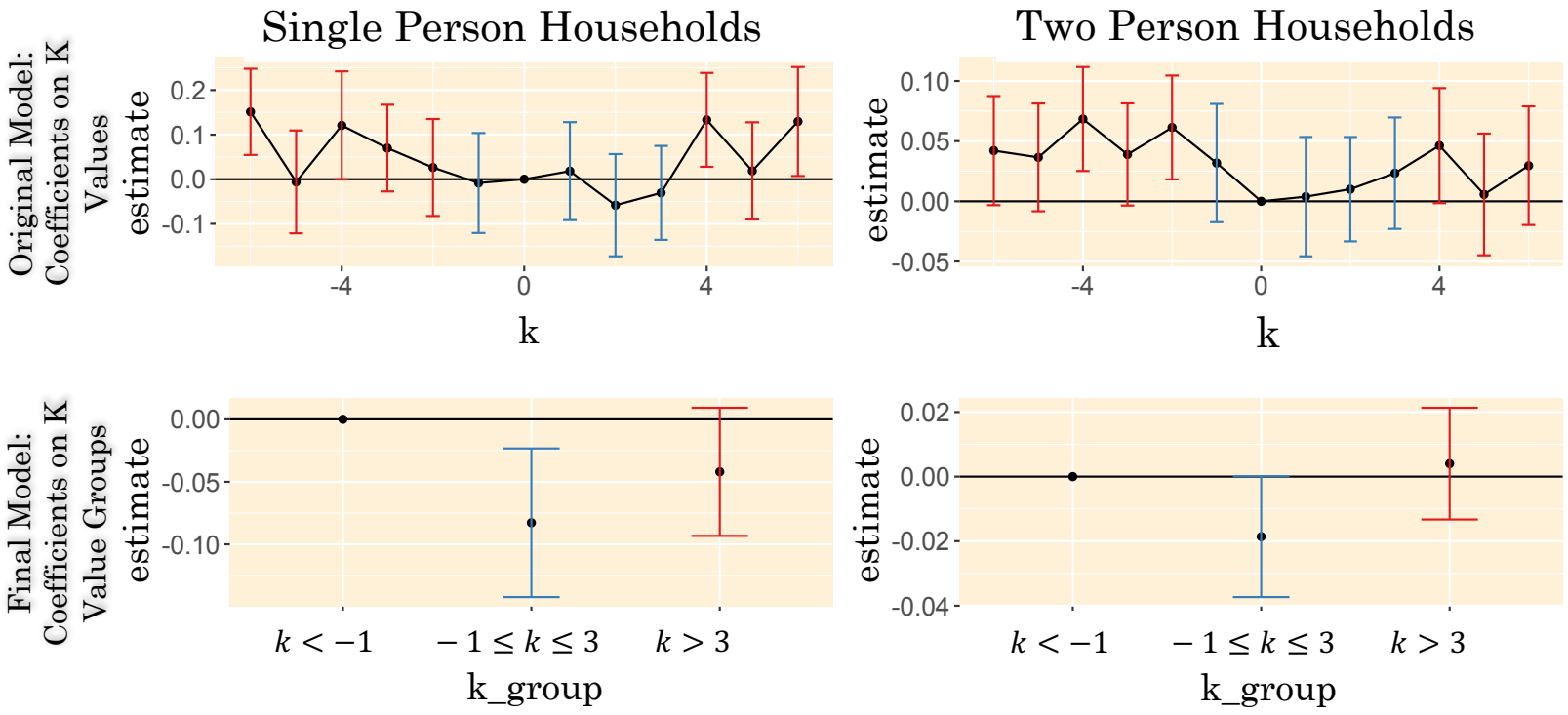
$$\log(Y_{i,t}) = \alpha_t + \gamma_i + \delta_{i,t}^{k}$$

$Y_{i,t}$: nutrients per time, person
α_t: indicator variable of timeunits
γ_i: indicator variable of individuals
$\delta_{i,t}^{k}$: indicator variable of k timeunits before/after start of prescription

2. Final Model

$$\log(Y_{i,t}) = \alpha_t + \gamma_i + B_1 I(k < -1) + B_2 I(-1 \leq k \leq 3) + B_3 I(k > 3)$$

$I(k)$: indicator variable of k within [-1,3] and before/after the range



Summary

- Results
  - We find a decrease in calories purchased starting 1 month before first prescription which persists until around 3 months after first prescription
    - Decrease begins before Metformin start date, it is likely driven by a diagnosis or other health event, not Metformin
  - In our data, the decrease is larger for single person households
    - For single person households averaging 2000 calories per day, we predict a 159 calorie per day decrease
    - For 2 person households averaging 4000 calories per day, we predict a decrease of approximately 74 calories per day
- Impacts
  - Results consistent with literature on diet changes following Diabetes diagnosis
  - With the analytics tools we built, future research can do further analysis for different kinds of drugs for different medication treatments