Evolution of chronical diseases (diabetes and hypertension) in Moramanga

Diabetes and hypertension (Chronical Diseases: CD) remain problem in public health;

When no screened and no treated ➔ complications ➔ death

- Statistical question: **What are the risk factors of CD in adults living in urban and rural areas in Moramanga?**

- Dynamical model question: **How can seeking treatment influence complication and mortality from CD in Moramanga?**

Aknowledgments: Haja – Sedera - Fifi - all E2M2 participants

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RESEARCH ARTICLE

Hypertension, a Neglected Disease in Rural and Urban Areas in Moramanga, Madagascar

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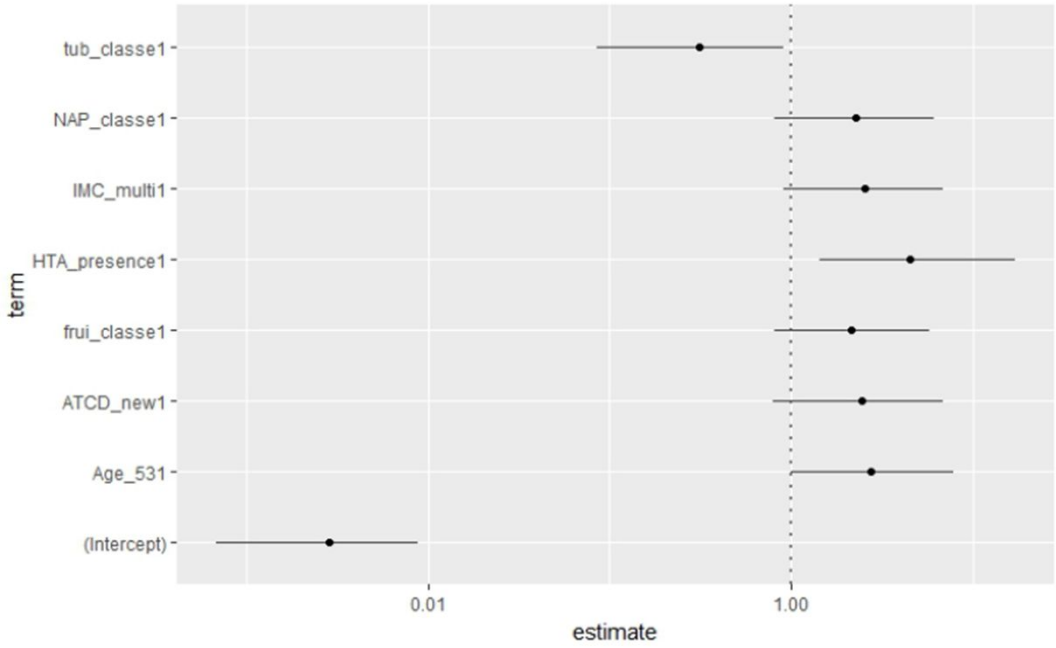
Statistical model question: What are the risk factors of CD in adults living in urban and rural areas in Moramanga?

8 392 participants from adults (≥ 20years old) living in urban and rural areas in Moramanga

Response variable: status (healthy / ill)

Distribution: binomial;
Link: logit



- **Predictor variables**: age, family background of hypertension or diabetes, smoking or alcoholic habits, practicing sport, residency (urban/rural)
- **R code**: glm (CD ~ class_age + HT_family + Diab_family + diet_habit + sport + residency, family = 'binomial')
- **Hypothesized outcome**: we anticipated that residency will not be associated with the status about CD, other characteristics are correlated

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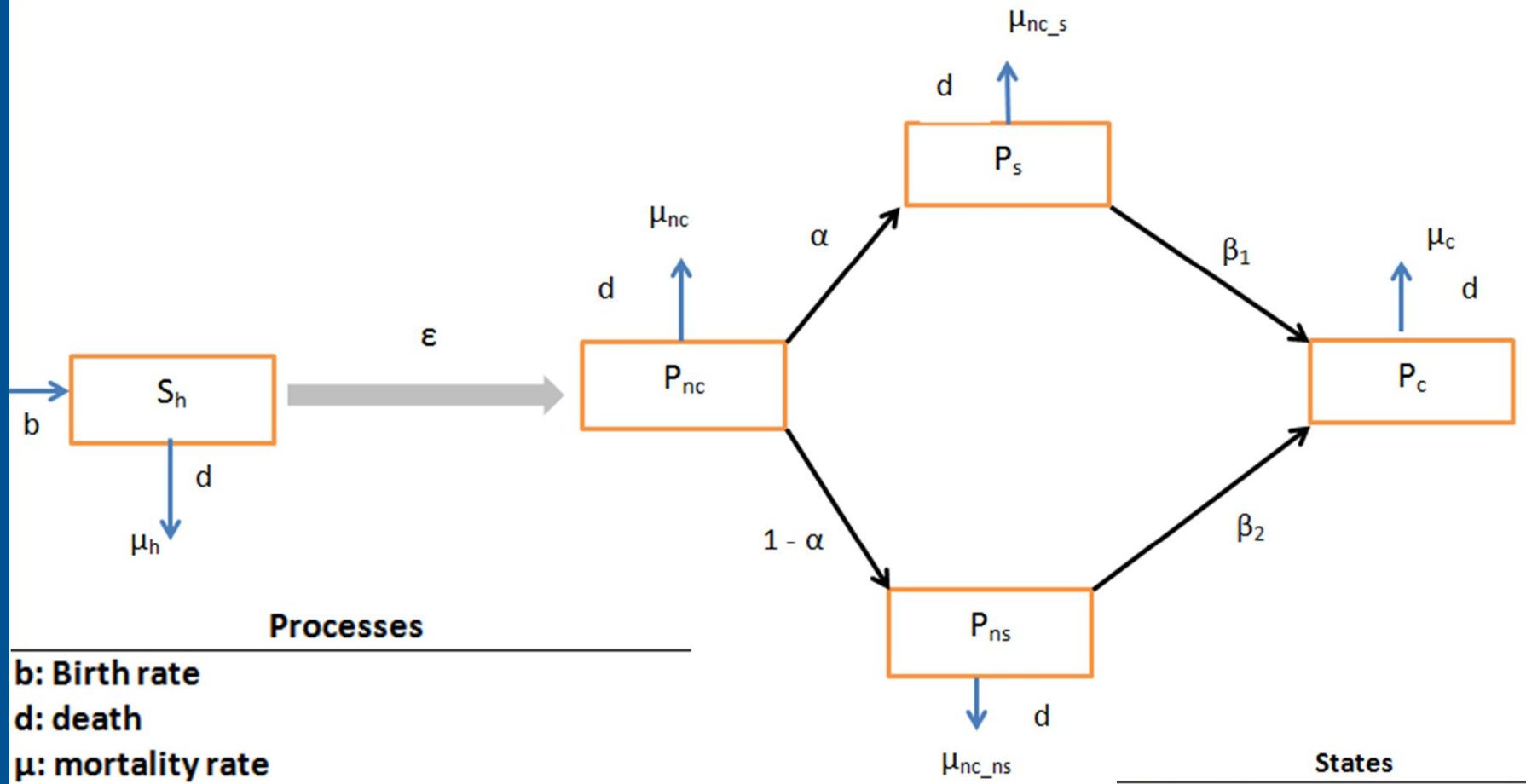
Dynamical model question: How can seeking treatment influence complication and mortality in Moramanga?



Processes

b: Birth rate
d: death
μ: mortality rate
ε : exposition
α : proportion who seek treatment
β_1: rate to become complicated in patients who seek treatment
β_2: rate to become complicated in patients who didn't seek treatment

States

Sh: healthy population susceptible
Pnc: Patients with no complication
Ps: Patients seek treatment
Pns: Patients didn't seek treatment
Pc: Patients with complication

Next steps

✓Complete complication information by supplemeting data from the current survey in the cohort population

✓ Dynamical model: study relevant mechanistic model which fit with the data

✓Epidemiological model: study what are the risk of dying from CD considering that dying from other cause is a competing risk

Thank you!