Interaction and Telemarketers

EES 4760/5760
Agent-Based & Individual-Based Computational Modeling
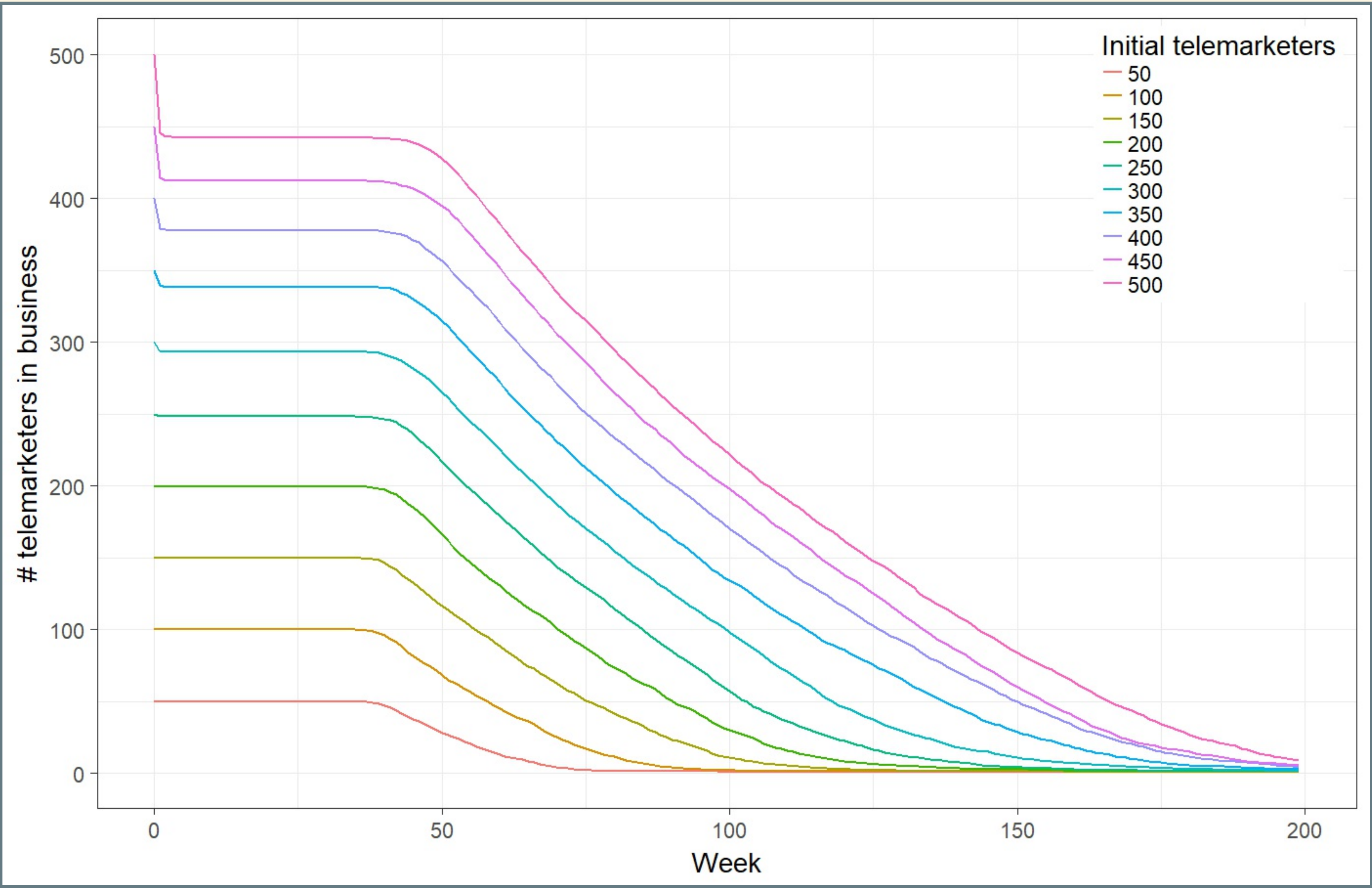## Jonathan Gilligan

Class #14: Thurs. February 22 2018

Getting Started

- Download the zip file https://ees4760.jgilligan.org/models/class_14/class_14_models.zip, which contains
  - NetLogo Library:
    - jg-tif.nls
  - NetLogo Models:
    - telemarketer_class_14.nlogo
    - telemarketer_class_14.nlogo
    - telemarketer_mergers_class_14.nlogo
    - telemarketer_mergers_class_14.nlogo
  - Behaviorspace Output:
    - telemarketer_class_14_vary_initial_telemarketers-table.csv
    - telemarketer_non-spatial_class_14_vary_initial_telemarketers-table.csv
    - telemarketer_mergers_class_14_vary_initial_telemarketers-table.csv
    - telemarketer_compare_class_14_model_comparison-table.csv
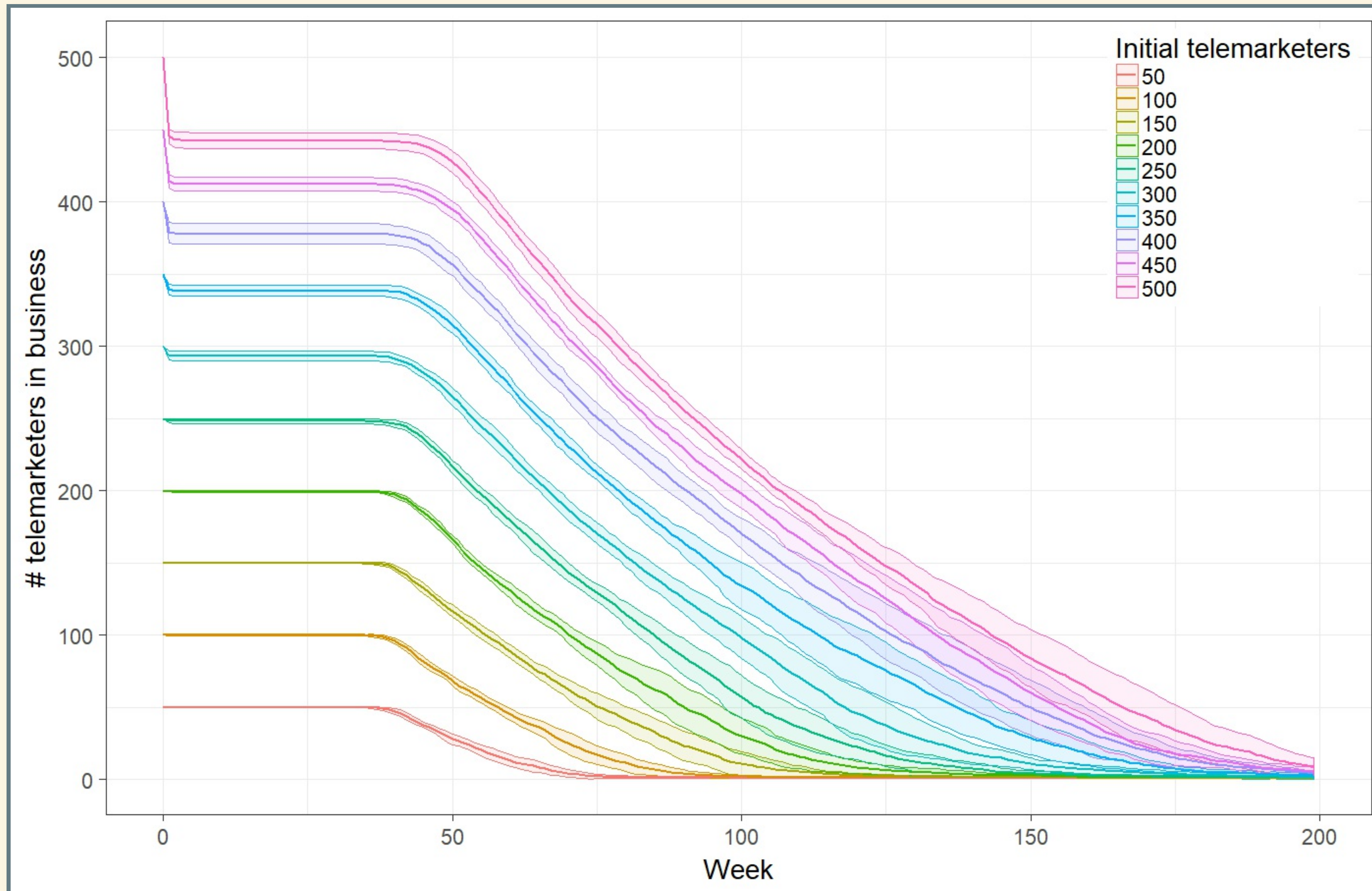
Telemarketer Model

- Telemarketing firms interact
  - Telemarketer calls patches
    - # patches proportional to size
    - Calls around 1/3 of patches in range
  - If patch has received a previous call that tick, it hangs up
  - If patch has not received a previous call that tick, it buys something
  - Interaction is indirect, mediated by patches
- Accounting:
  - Net profit = 2 × sales − 50 × size
  - If balance < 0, firm goes bankrupt
- Growth
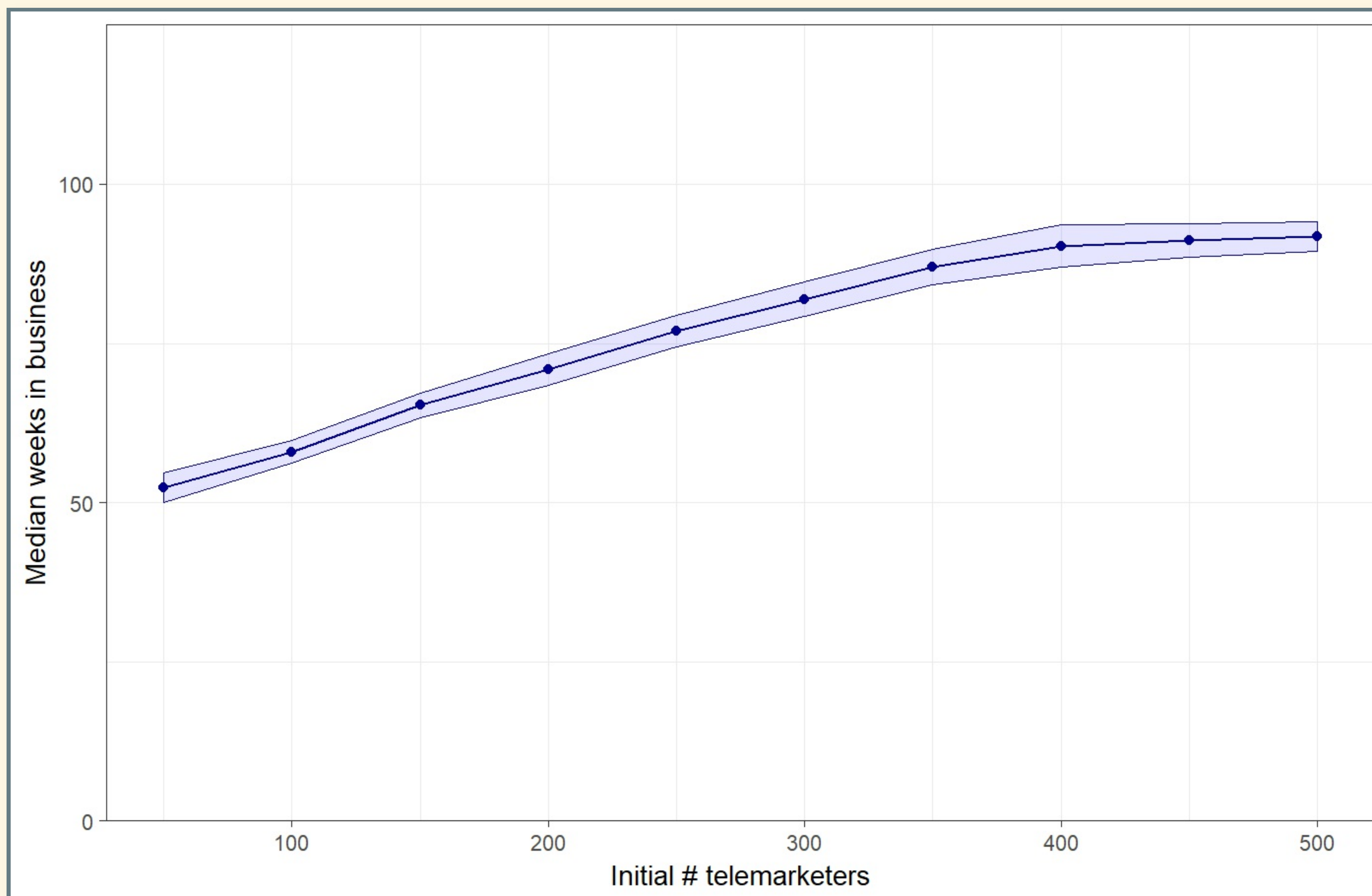 - If balance > growth threshold, firm grows proportional to excess balance

Results

Variation

Median Weeks in Business

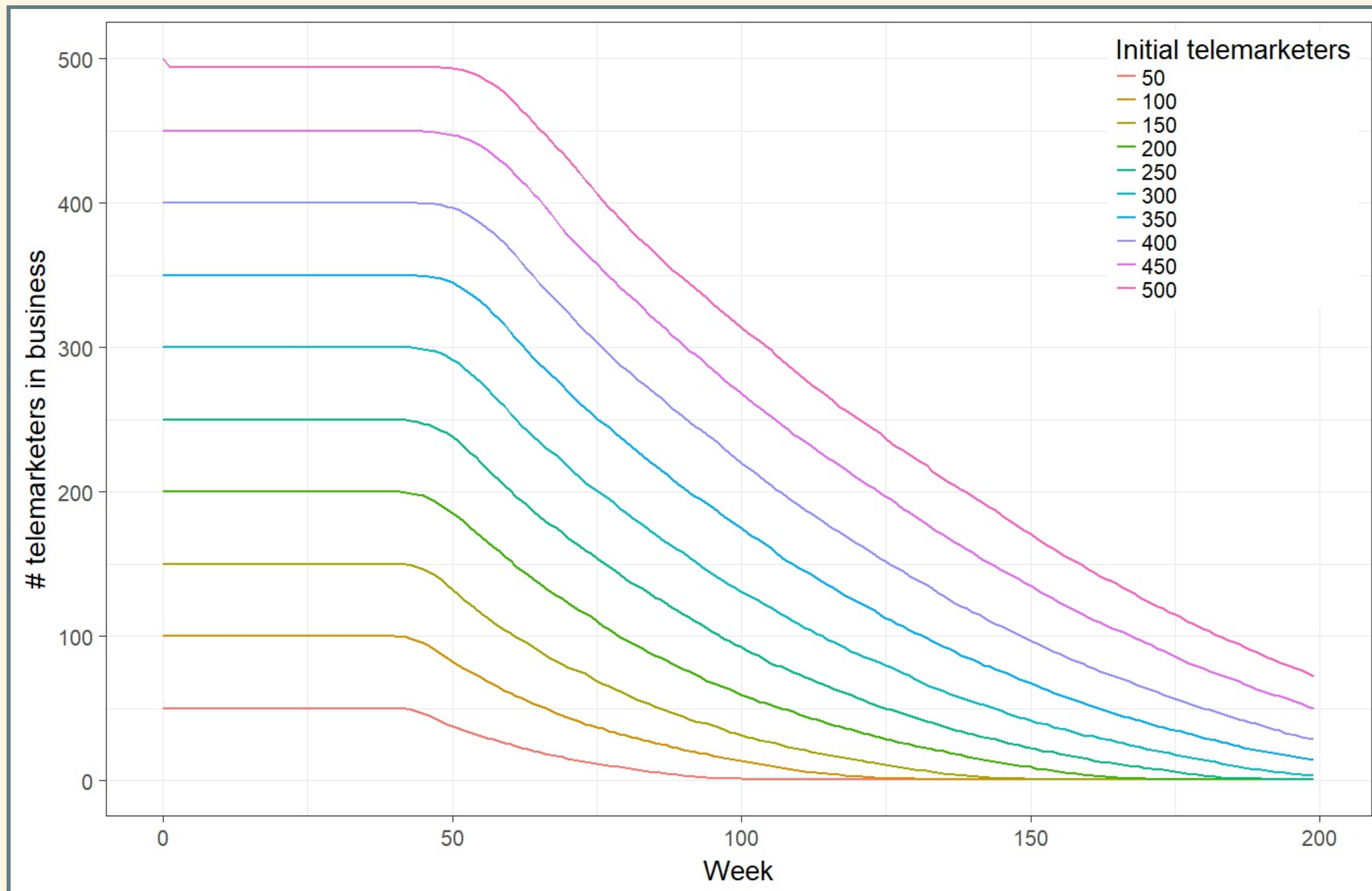# Non-Spatial Variant

Non-Spatial Variant

- As Wasellya develops, phone range increases.
- Telemarketers can call any patch
- How does this change things?

- Add a switch to the interface called "limit-calls?"

- Change the code in the submodel `make-calls` from
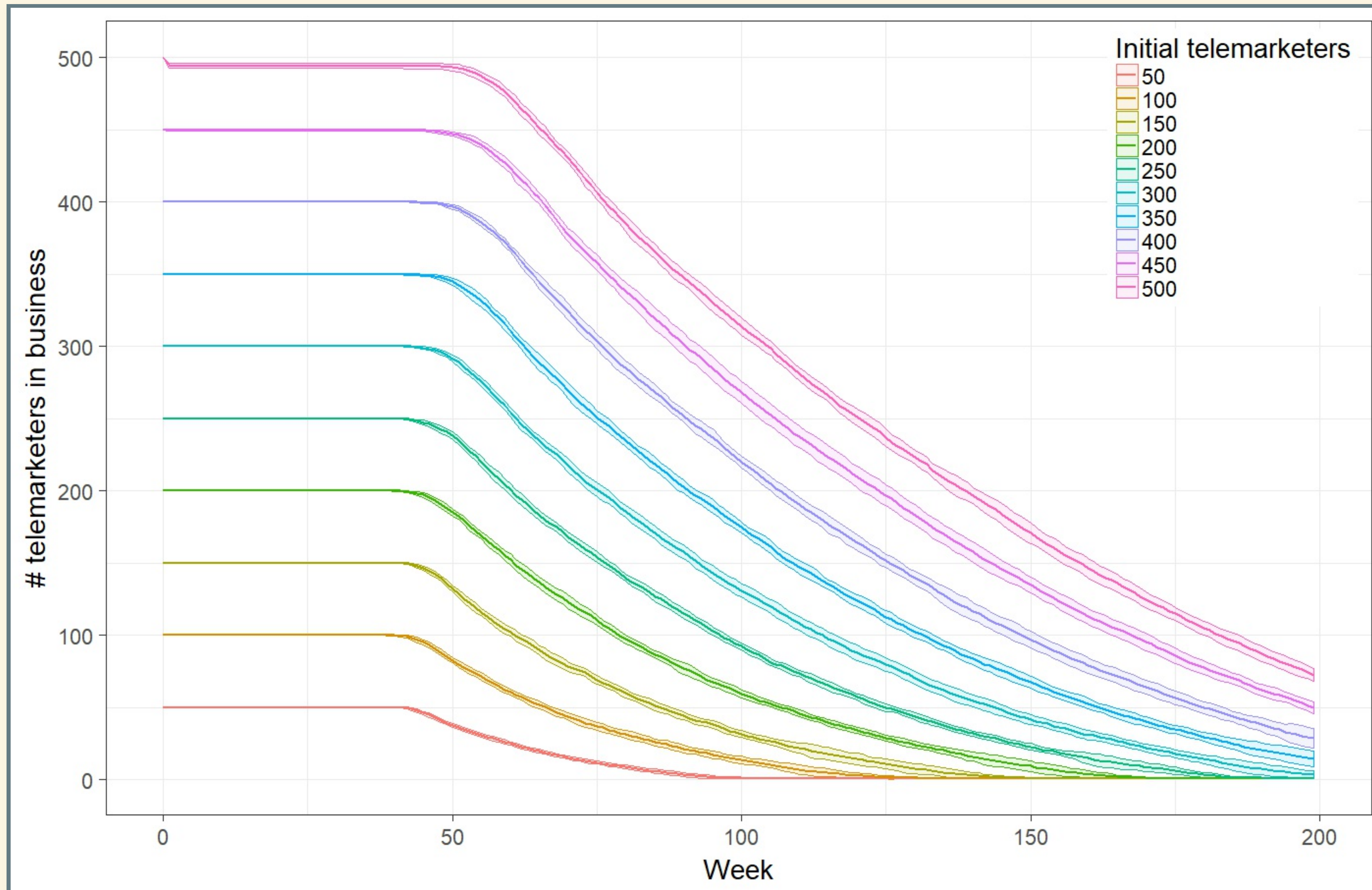
```
let customers patches in-radius r
```

to

```
let customers patches
if limit-calls?
[set customers patches in-radius r]
```
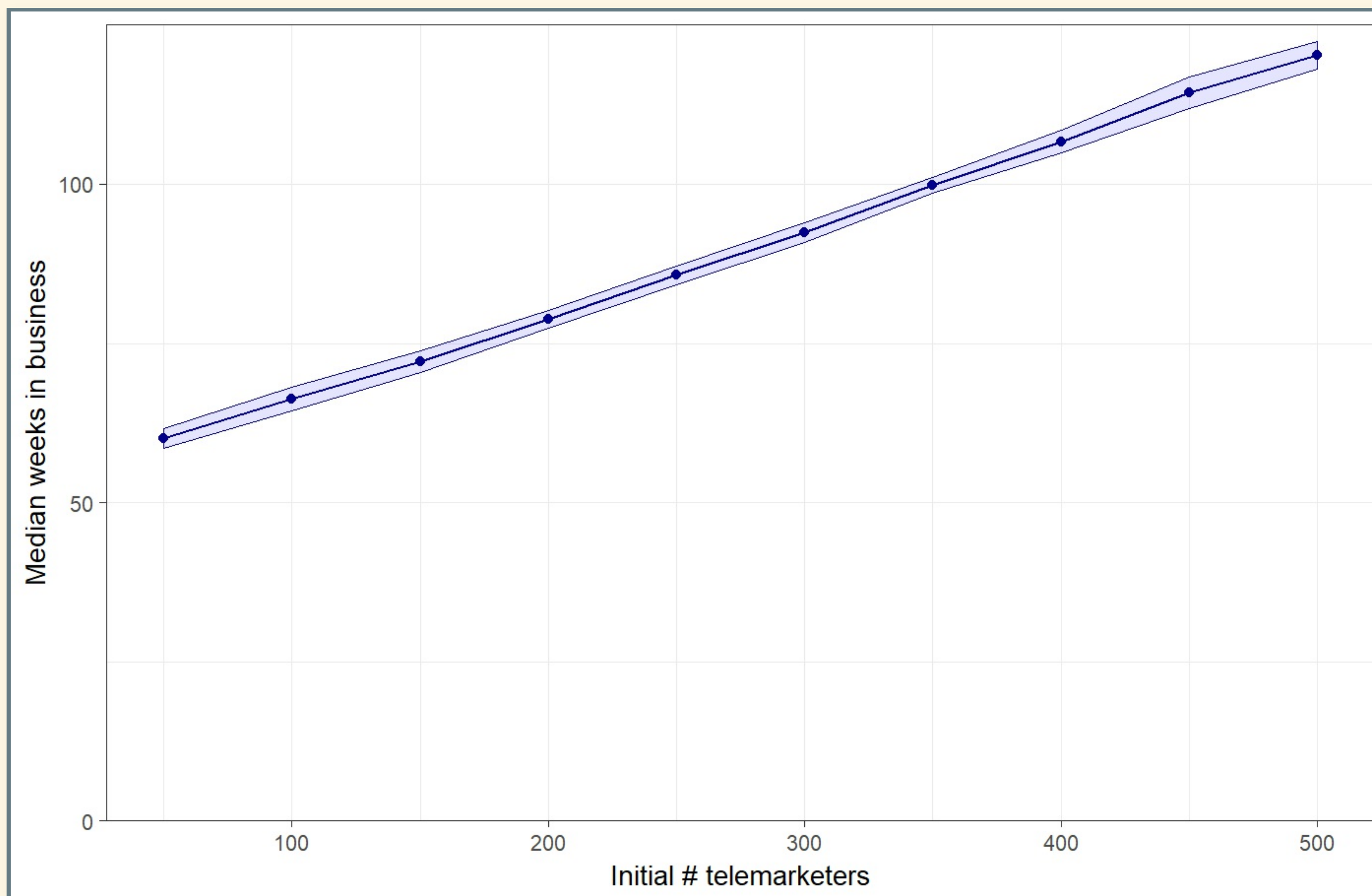
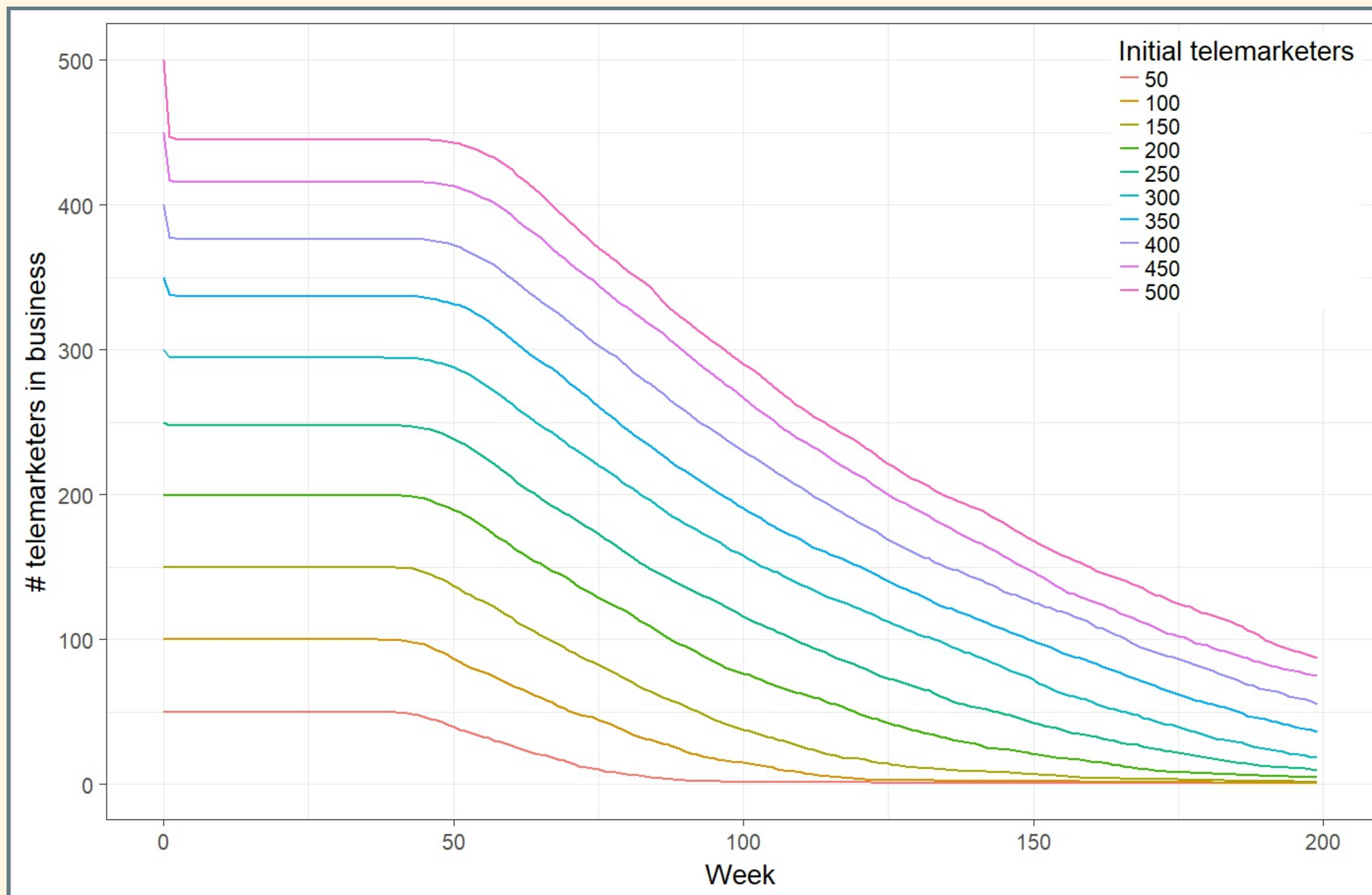# Survival of Businesses

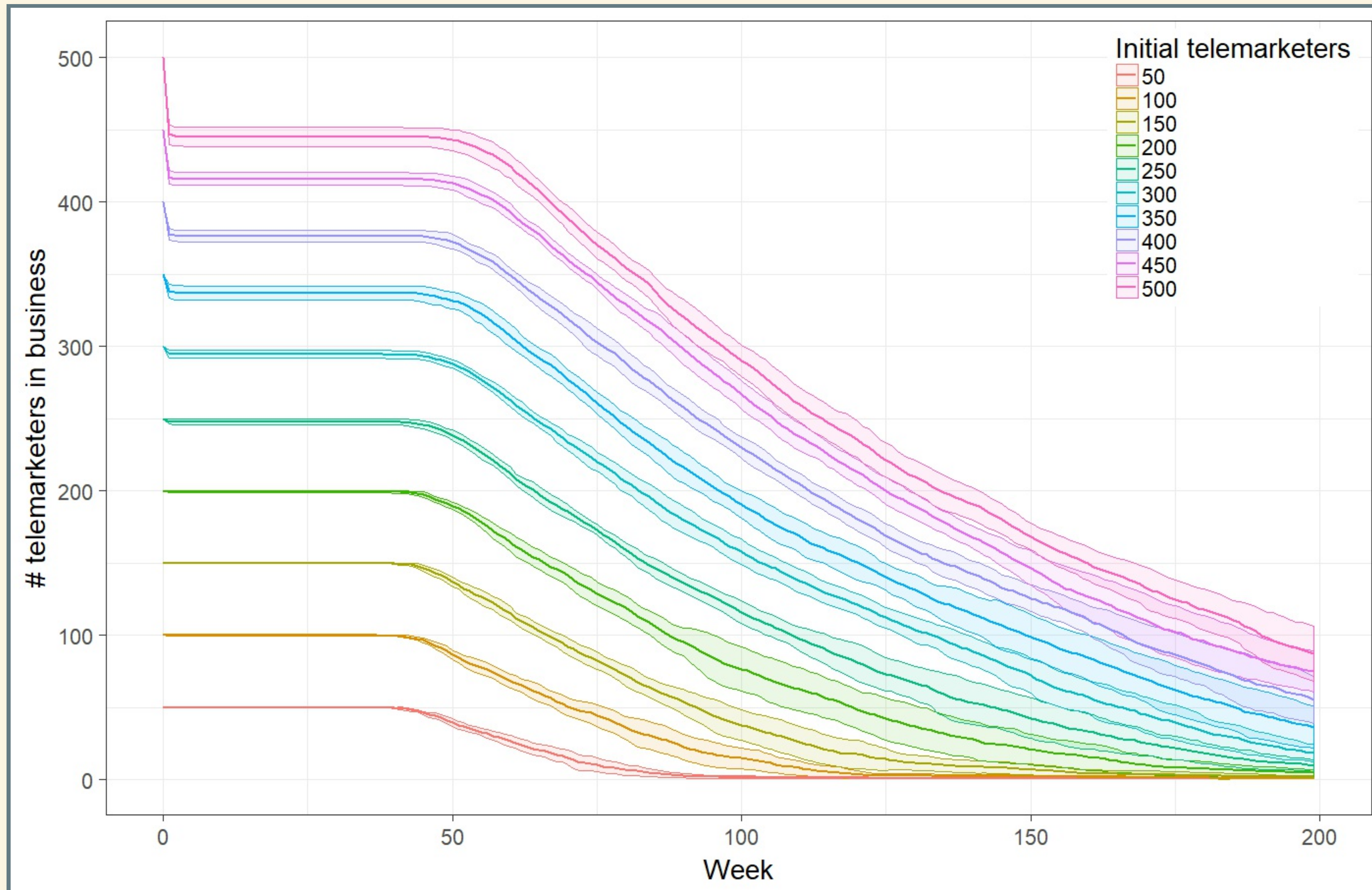# Variation

Median Weeks in Business

Mergers

- Instead of going bankrupt when the bank balance drops below 0, firms look for acquisition partner
  - Find a company that's bigger and has enough money to pay off deficit.
  - If it finds a parent, parent pays off deficit (child firm ends up with 0 balance)
  - In future turns, child pays parent 50% of its net profits.
  - In future, if child's balance becomes negative:
    - If parent has enough money, it pays child's deficit
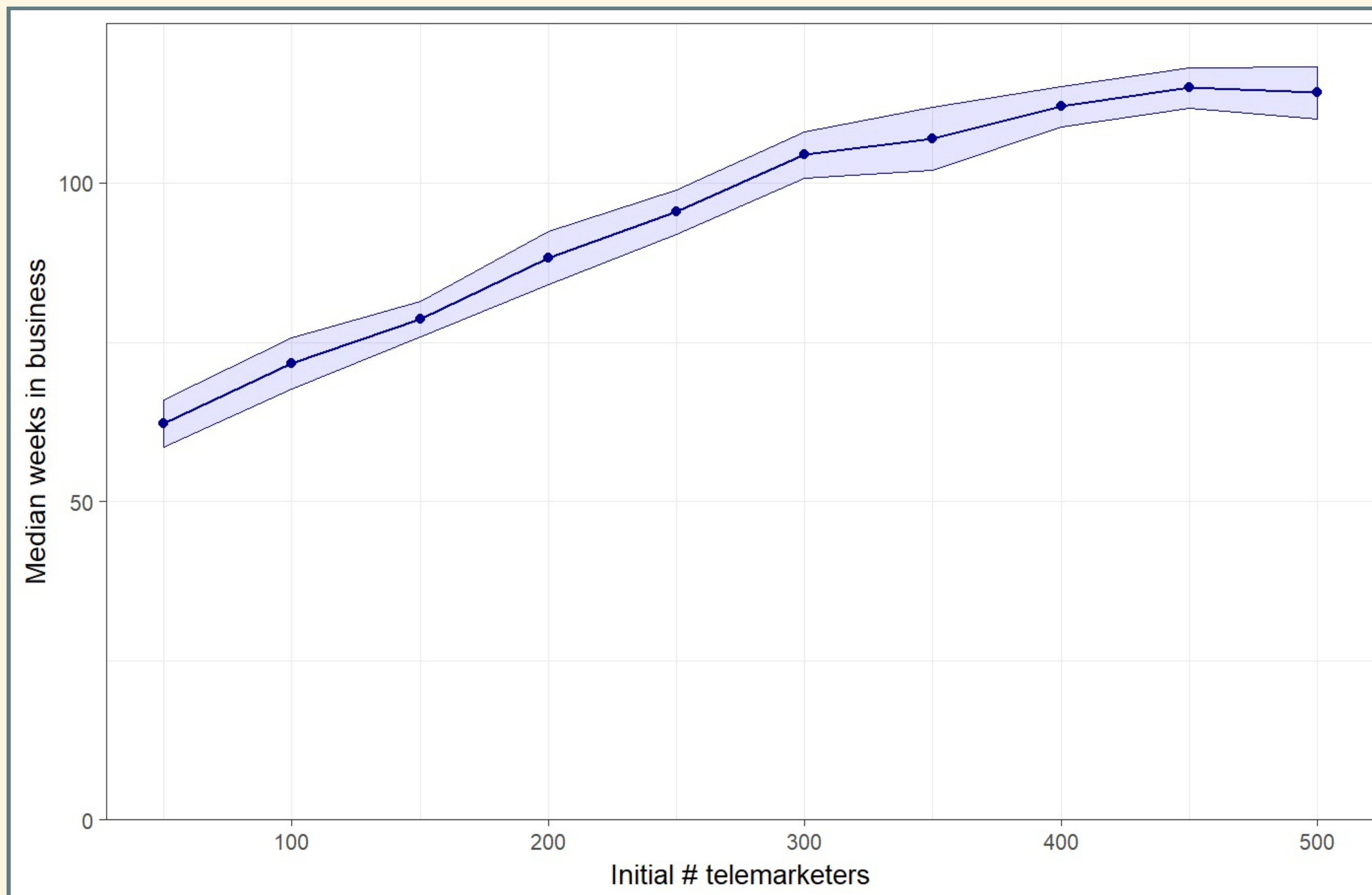   - If parent does not have enough money, child dies.

Results

Variation

Median Weeks in Business

Comparison of Models

Comparison of Models