

CS-752

System Dynamics

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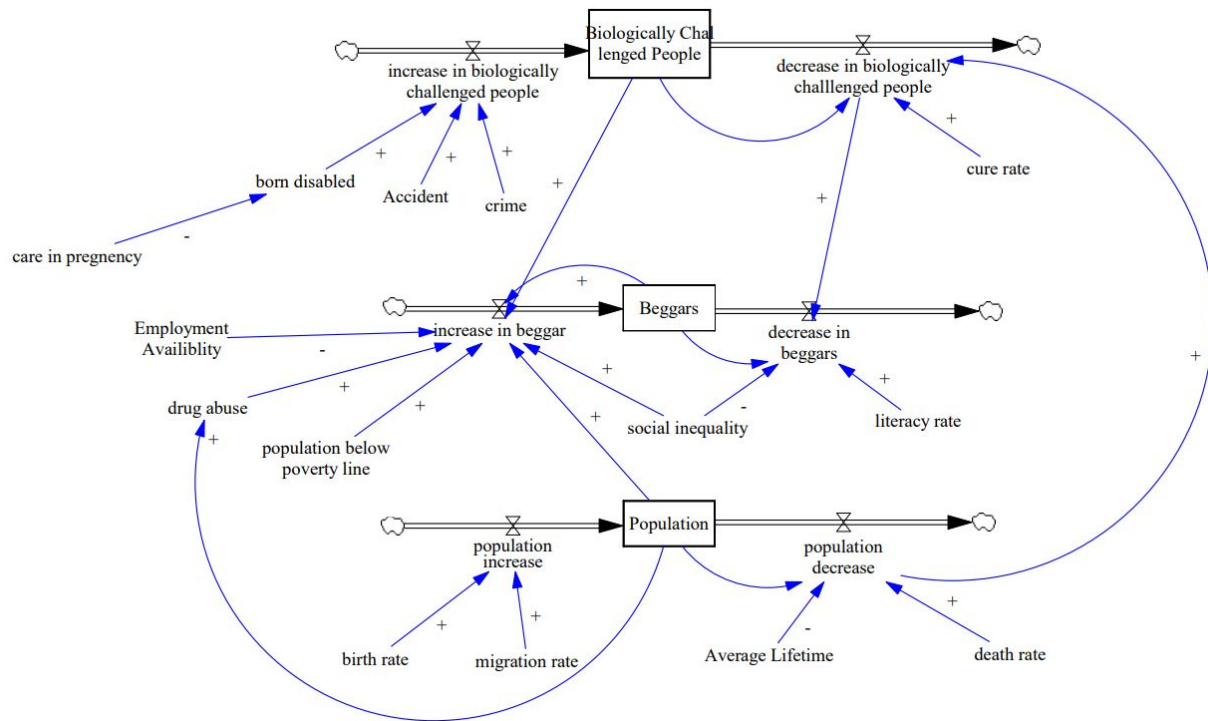
Computer Science & Engineering

2018-2019

Introduction

Begging is the most demoralizing social evil to society today. Beggary is considered as a socio-economic problem which dictates failure at both individual and system level in society. Beggary in India has emerged out as a profession in recent years. This has not only contributed as a financial burden on the country but also has given rise to the problems like corruption, increase in crime rate, problems related to health and sanitization among the people of our nation. There is not just one but multiple factors contributing to this problem. As a part of this project, we would like to dig on the facts and statistics on beggary in India. We as a team would like to study various articles and research papers related to this problem and try to understand the factors contributing to the problem in detail. Thereby studying the cause and effect relation using the system dynamics modelling techniques.

Model-1 (model_1.mdl)



Stocks:

1. **Beggars:-** This stock defines the population of beggars in India.

a. **Inflow:-** The inflow "increase in beggar" depends on various factors like:-

- Employment Availability:- If more employment is available, beggars will not grow
- Drug Abuse:- There is a direct connection between beggary and drug abuse.
- Population below poverty line:- The population BPL tends to involve in beggary
- Social Inequality:- The social inequality in India is an important factor leading to beggary.
- Population:- The Stock population directly increase the number of beggars in India.

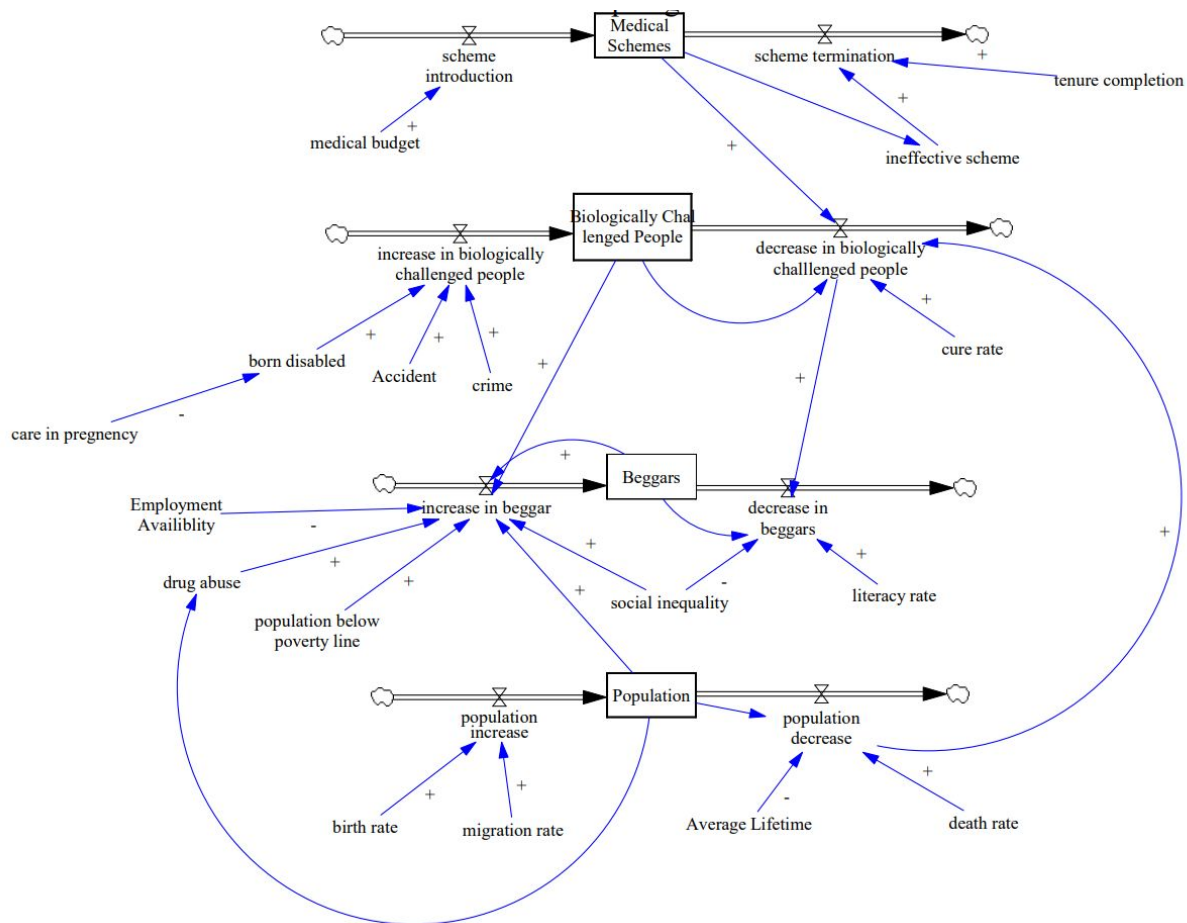
b. **Outflow:-** The outflow "decrease in beggars" depends on various factors like:-

- Social Inequality:- If there is less social inequality there will be less beggary
- Literacy Rate:- If more people are literate, they will be less attracted to beggary.
- Decrease in Biologically Challenged people:- If people are not biologically challenged they can work and will not be attracted towards beggary.

2. **Population:** This stock defines the overall population of India

- a. **Inflow:** The inflow “Population Increase” depends on various factors like:
 - i. Birth Rate:- The number of births per year which is defined as Birth Rate has a positive feedback loop with the inflow
 - ii. Migration Rate:- It is defined as the difference between the number of immigrants and the number of emigrants throughout the year. This has positive feedback loop with the the inflow
 - b. **Outflow:** The outflow “Population Decrease” depends on various factors like:-
 - i. Average Lifetime:- If a country have a low average lifetime, it will have a low population
 - ii. Death Rate:- It is defined as the number of deaths per year. Death rate directly decrease the population of the country
- 3. **Biological Challenged People:** This stock defines the number of people who are biologically challenged in India.
 - a. **Inflow:** The inflow “increase in biologically challenged people” depends on various factors like:-
 - i. Born Disabled: There are a high number of cases when children are born disabled
 - ii. Accident: A person can become biologically challenged if they met some accident.
 - iii. Crime: There are criminal activities involved leading to enforcing people into beggary by making them biologically challenged.
 - iv. Care in Pregnancy: If high care in pregnancy is taken, there will be low cases of birth defects.
 - b. **Outflow:** The inflow “decrease in biologically challenged people” depends on various factors like:-
 - i. Cure Rate: This variable defines the rate at which the disability is cured so that the person can work again.
 - ii. Population Decrease: If the overall population is less there will be less case of disability.

Model-2 (model_2.mdl)

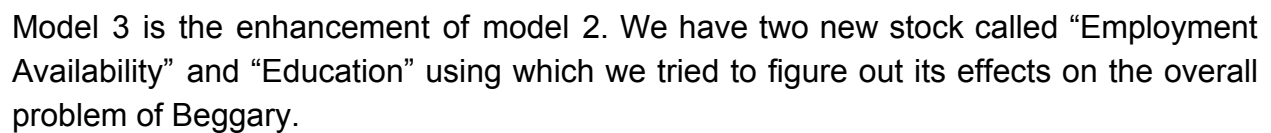


Model 2 is the enhancement of model 1. We have a new stock called “medical scheme” using which we tried to figure out the government how medical schemes can affect beggary.

New Stocks Added:

1. **Medical Schemes:** This stock defines the number of effective government schemes which focus on Medical welfare of the people.
 - a. **Inflows:-** The inflow “scheme Introduction” depends on various factors like:-
 - i. Medical Budget: This variable defines the overall healthcare budget of India.
 - b. **Outflow:-** The inflow “scheme Termination” depends on various factors like:-
 - i. Ineffective Scheme:- A scheme may fail and will be terminated because it was ineffective.
 - ii. Tenure Completion:- A scheme may be terminated because its tenure ends.

Medical schemes will directly decrease the population of biologically challenged people. If the government implement better schemes it will improve the healthcare of peoples and there will be less chance of disease and people will be cured at a high rate.



1. **Employment Availability:** This stock defines the number of available jobs currently in India.
 - a. **Inflows:-** The inflow “Employment created ” depends on various factors like:-
 - i. **startup:-** Startup leads to a high number of new jobs availability

- ii. organization:- Big organizations create new employment availability by means of new projects.
- iii. government schemes:- There are various government schemes that help people to be employed
- iv. leaves to work or tertiary education:- A person may create a startup and create new job opportunities
- c. **Outflows:-** The outflow “Employment consumed” depends on various factors like:
 - i. leaves to work or tertiary education:- When a person finishes his secondary education he can now apply and get a job.

2. Pool of primary school pupils:

- a. **Inflows:-** The inflow “Enrollments into primary school” is the direct count of the number of students being enrolled in primary schools in India
- b. **Outflows:-** The outflow “Enrollment into secondary school” is the number of students who have completed their primary school and are now enrolled in secondary school

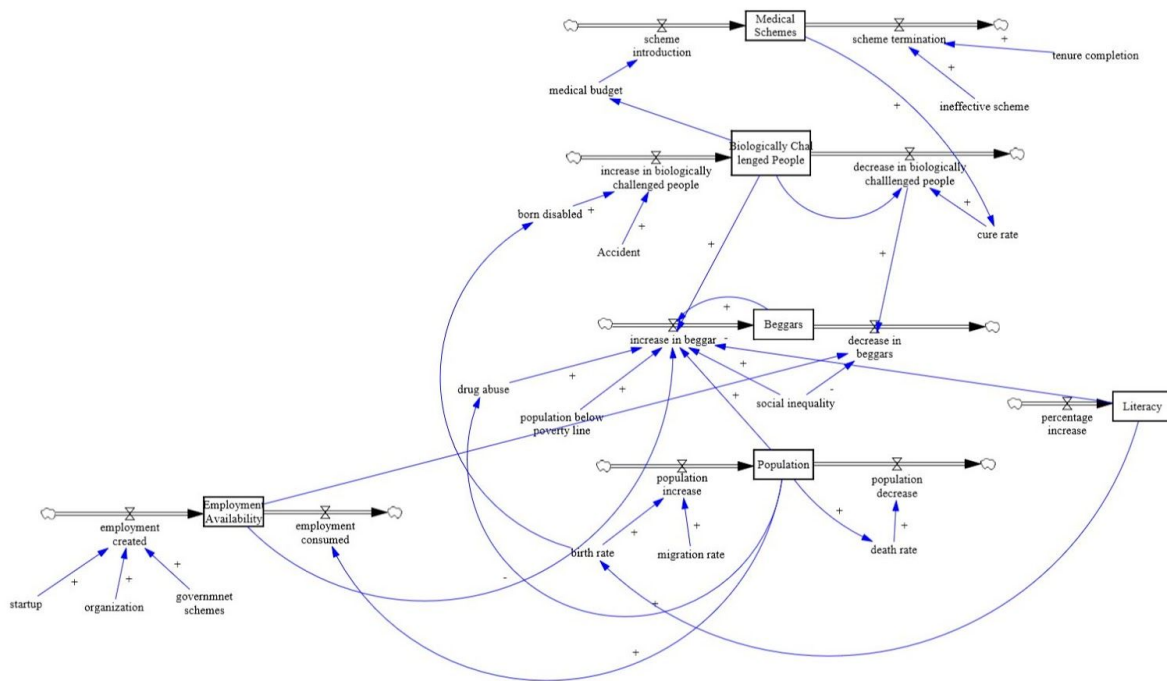
3. Pool of secondary school pupils:-

- a. **Inflows:-** The inflow “Enrollment into secondary school” is the number of students who have completed their primary school and are now enrolled in secondary school
- b. **Outflows:-** The outflow “leaves to work or tertiary education” is the number of students who are either going for work or higher education

Other Improvements:-

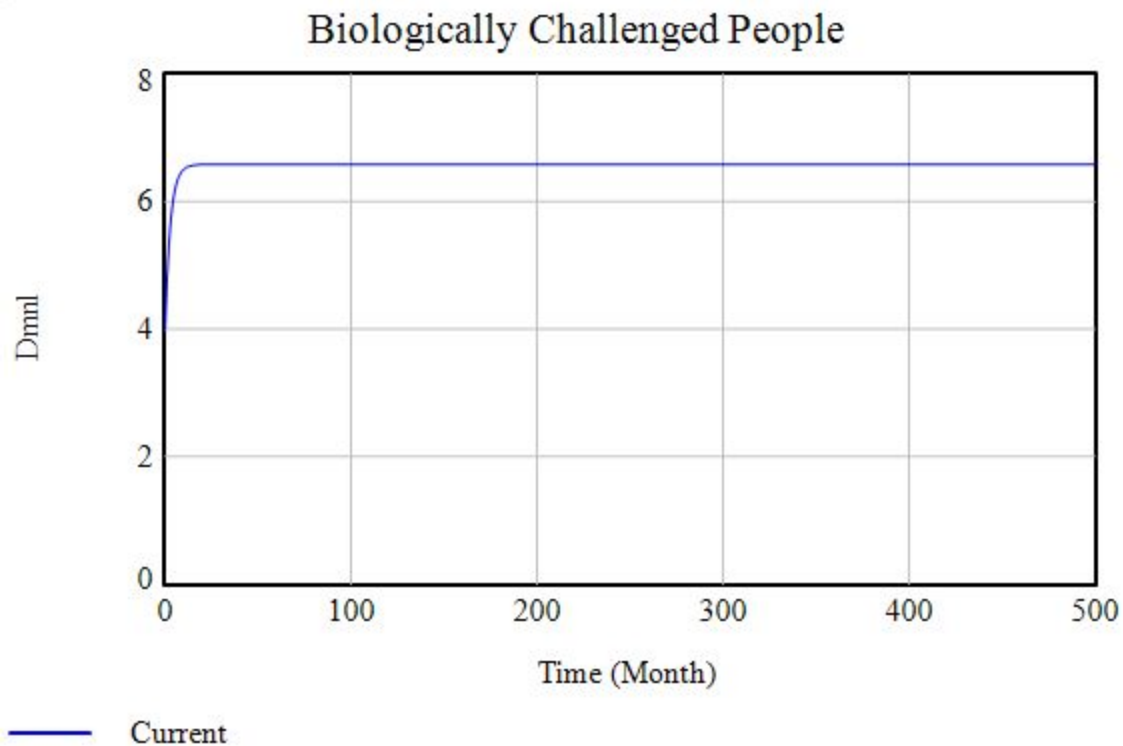
Employment availability and Education are important factors that result in a reduction of beggary. If people are more educated they will be less attracted to beggary. Also, if there is more employment, people will be less attracted to beggary.

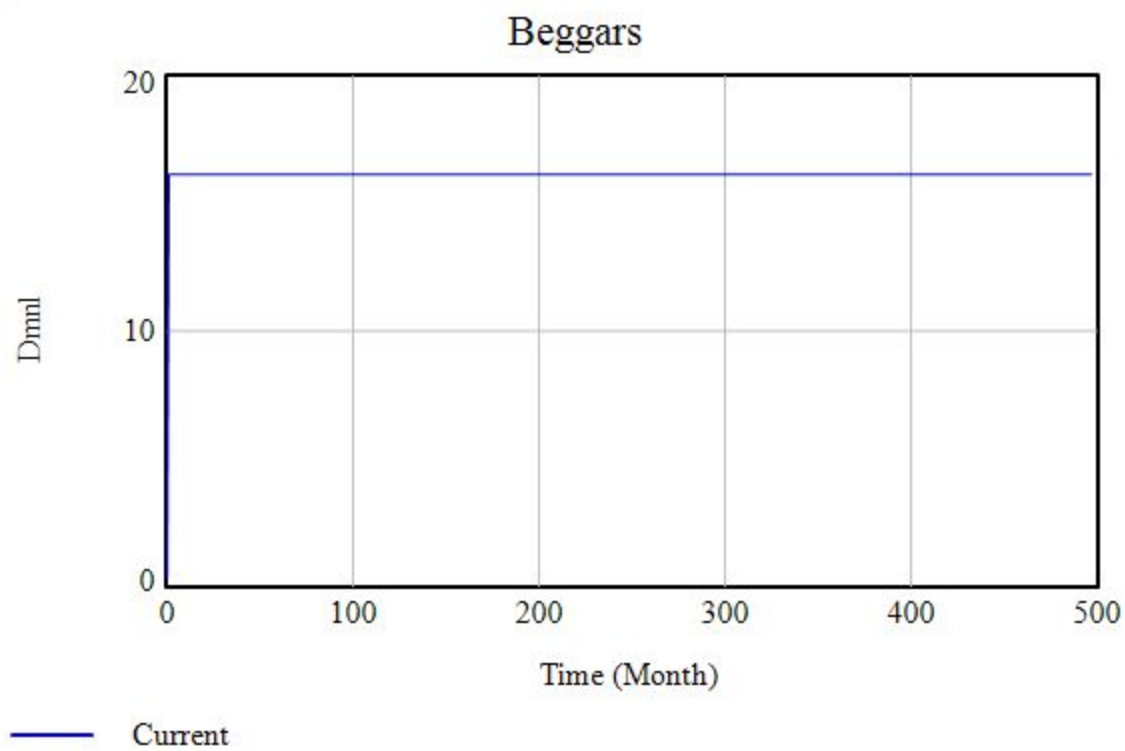
Below is the model after changes in the previous model.

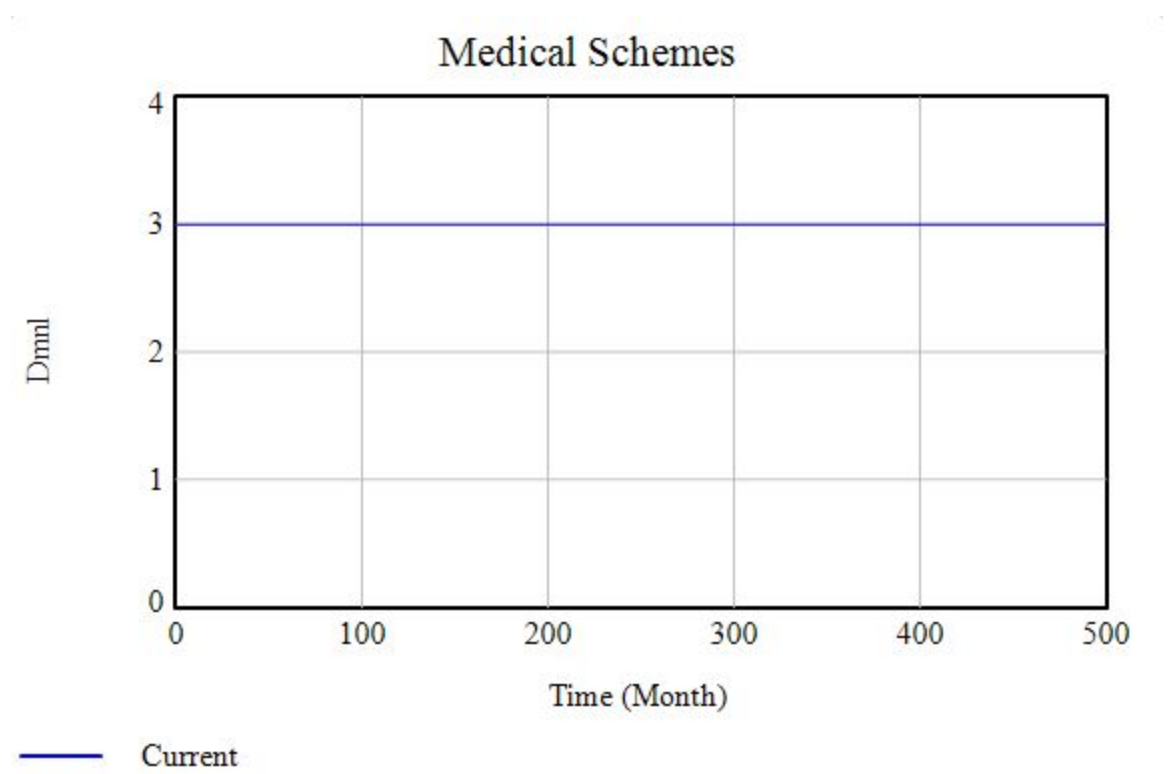
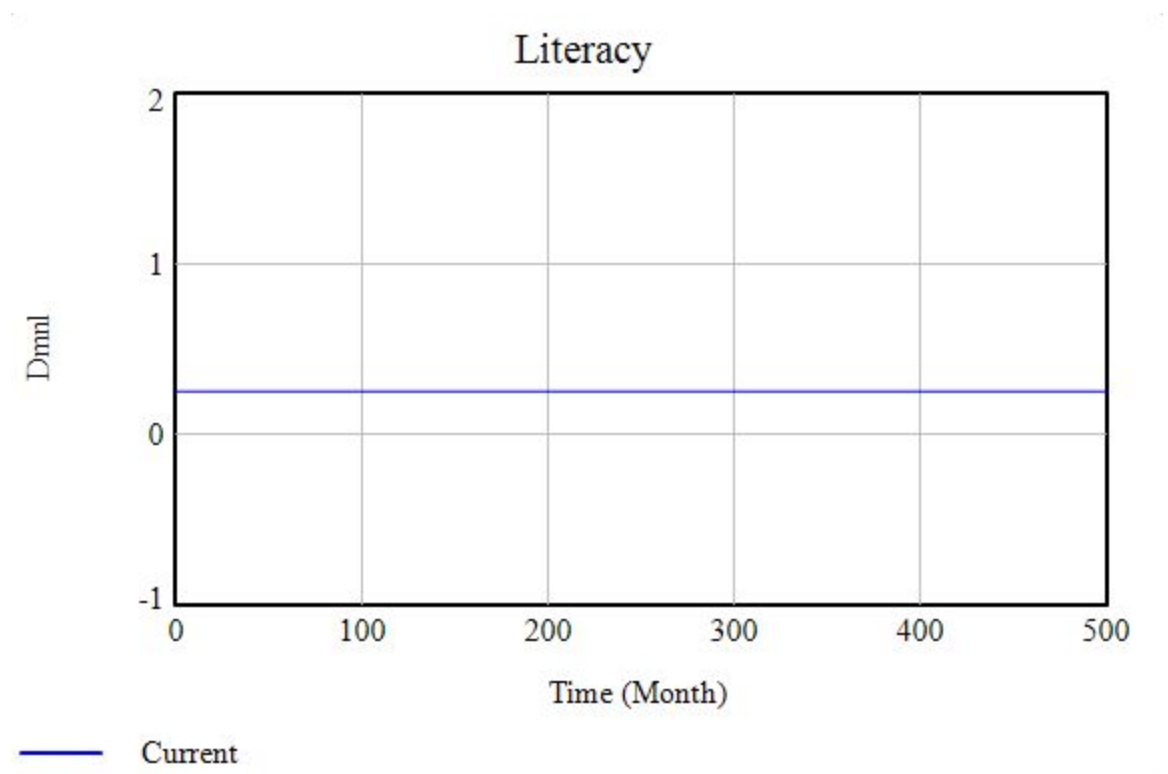


Intermediate Observations:

Below are the graphs plotted for each of the stock present in our model for 500-time steps.



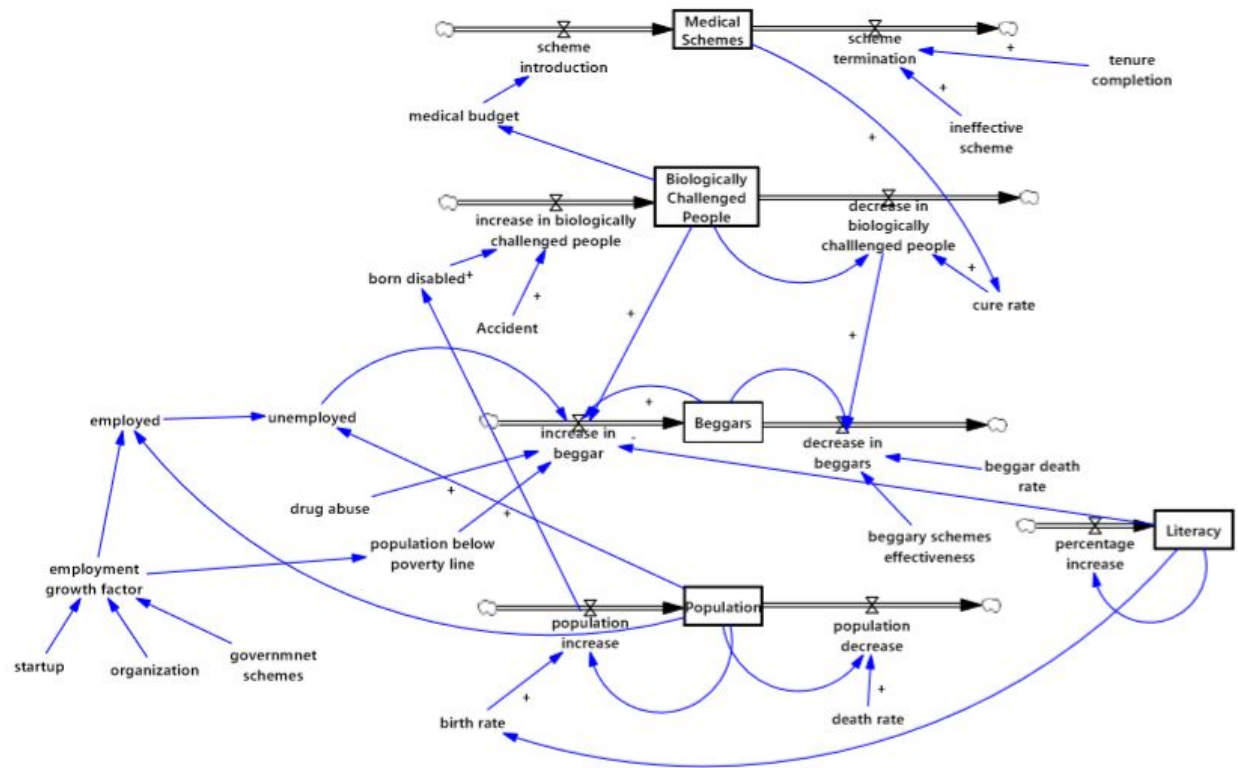




Final Model:

We have made many more significant changes to come up with our final model. We have replaced our employment stock with employed and unemployed variables.

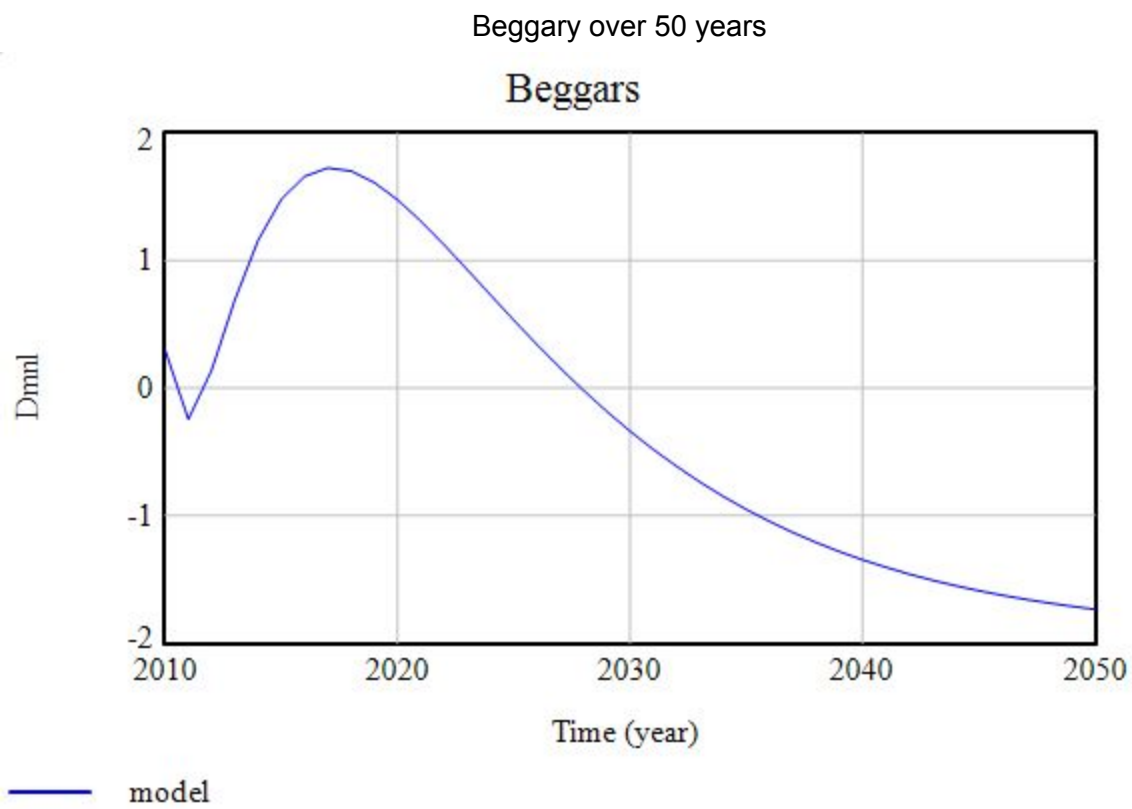
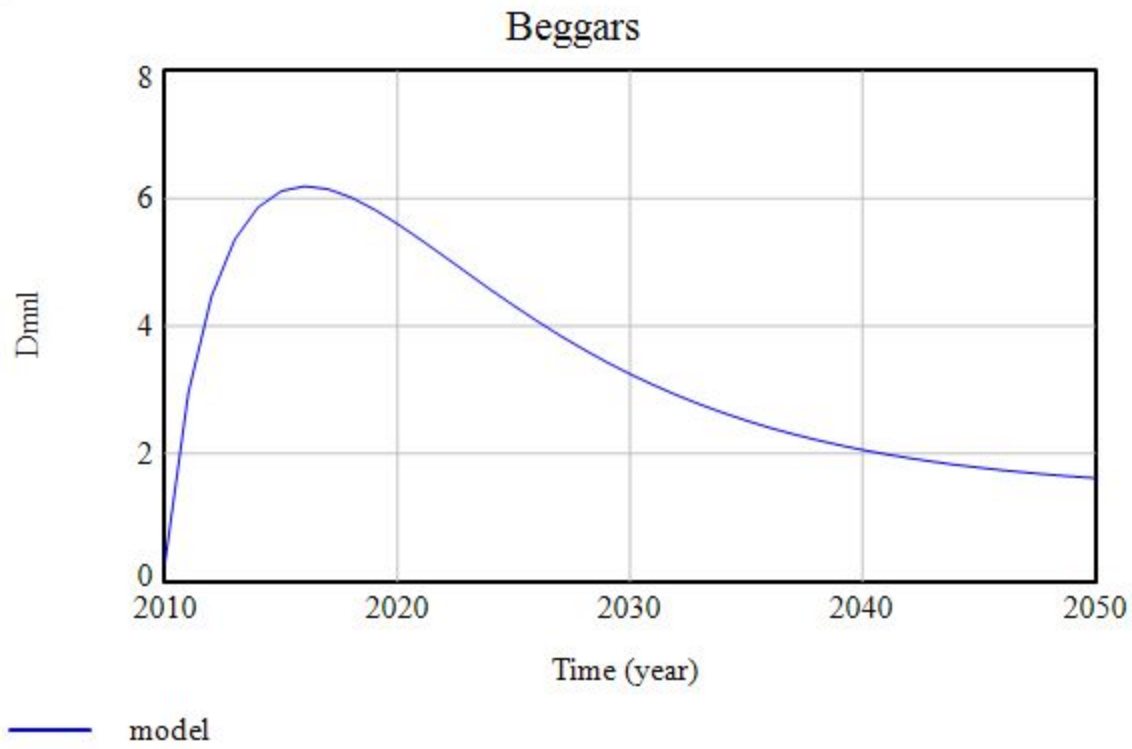
We have changed the model of population and many minor fixes to come up with this final model.



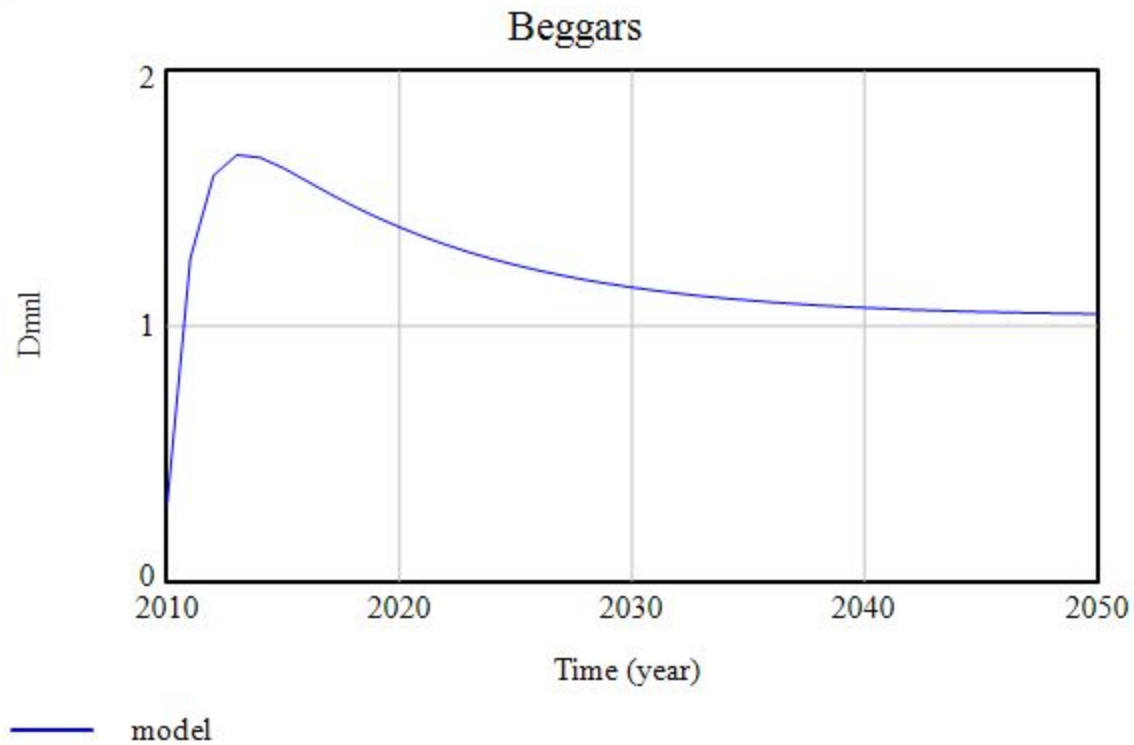
Final Observations:

As per our model simulation and assumptions, we have come to the following conclusions:

1. Unemployment has a direct and significant impact on the increase in beggary
2. Biologically challenged people directly contributes to beggary(considering they are below the poverty line)
3. Besides this government schemes also plays an important role in controlling beggary



On reducing Biologically challenged people



On reducing Unemployed people

As we can see from the above diagrams:-

1. On reducing unemployment, beggars have reduced from 1.8 to 1.2 in the year 2050
2. On reducing biologically challenged people, beggars have reduced from 1.8 to negative in the year 2050

References

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