

# Justice System and Jail Overflow

## (CS 752-Spring 2023)

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# Problem Description

Home » India » 8 in 10 prisoners in India await trial, majority of jails overcrowded,...

India

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The annual India Justice Report, based on government data, found there was a sharp increase in arrests in 2021 over 2020; the population in India's 1,319 prisons grew by 13%.

**BISMEE TASKIN** 13 September, 2022 07:50 pm IST



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- For developing countries like India, **prison overcrowding** has serious implications for the administration of **justice**, as well as for the **human rights** of prisoners. Despite the well-established justice system, the justice delivery mechanism in India is often slow and plagued by numerous challenges, including an enormous backlog of cases, outdated laws, and a shortage of judges. This has led to a significant prison overcrowding problem in India, with many of its jails operating at more than their sanctioned capacity. A solution is needed to address this issue and prevent its harmful effects on prisoners, prison systems, and society as a whole.

# Motivation Why Justice System and Jail Overflow is a relevant and Interesting Topic

- Human Rights
- Financial Cost
- Social Justice
- Public Safety

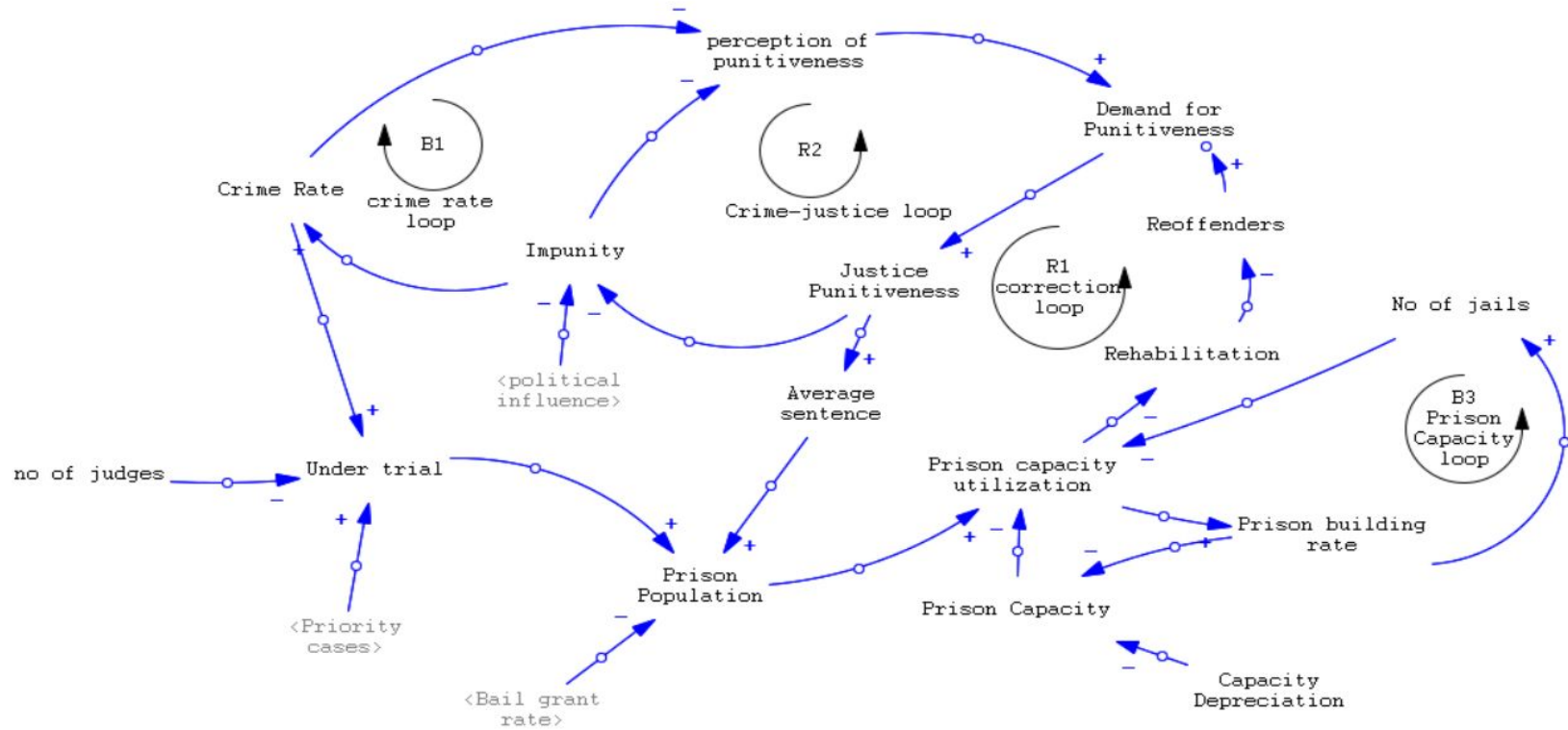
## FACTS AND FIGURES AT A GLANCE

### Prison overcrowding



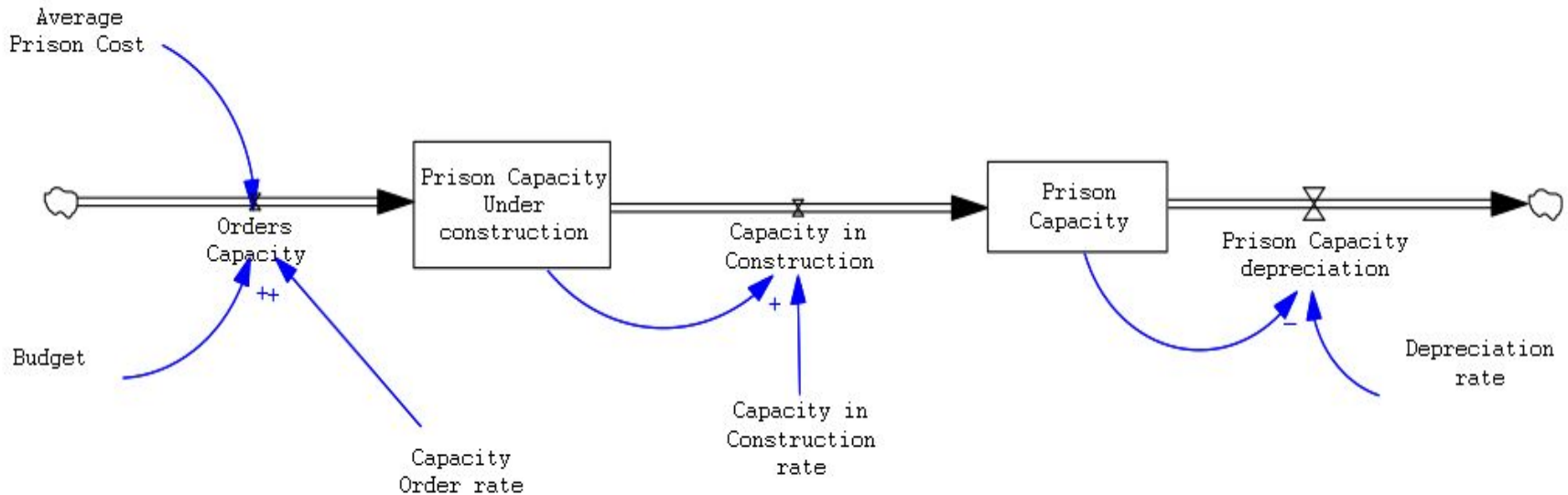


# Refined Causal Loop Diagram



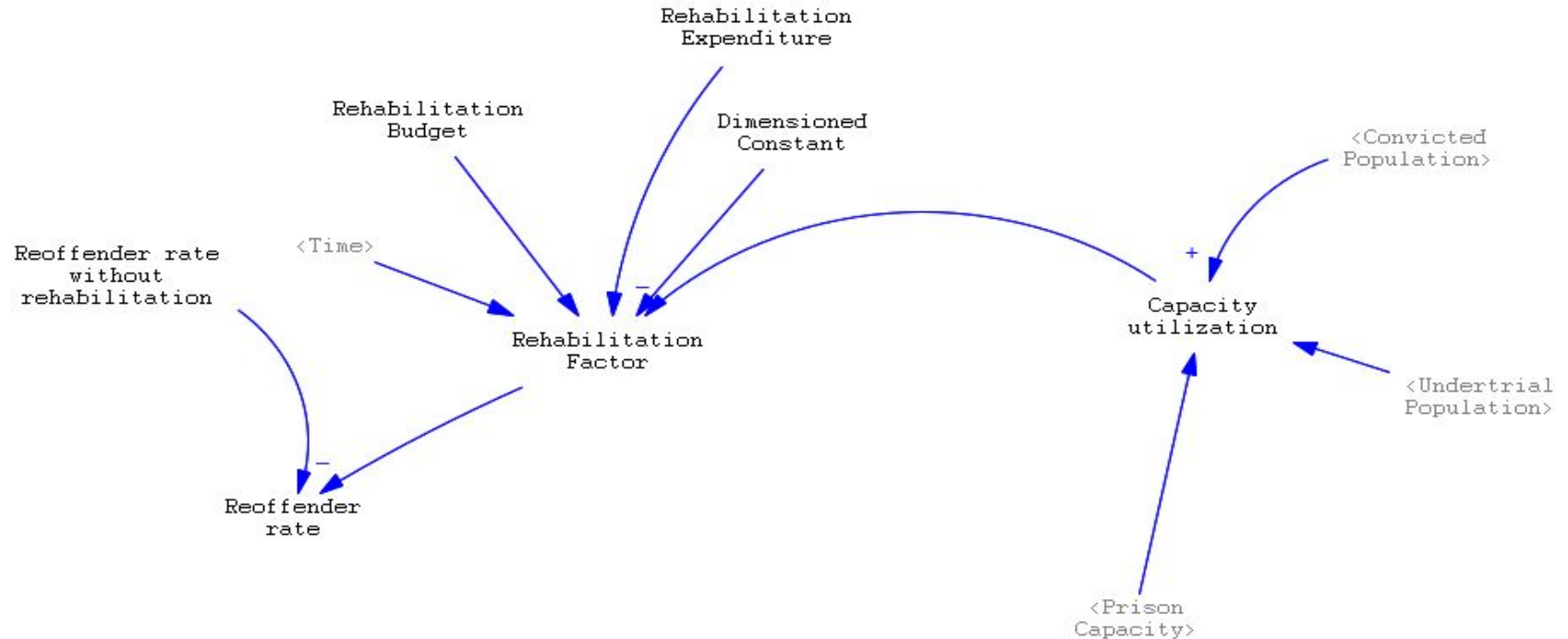
# Stock Flow Diagram

## View 2



# Stock Flow Diagram

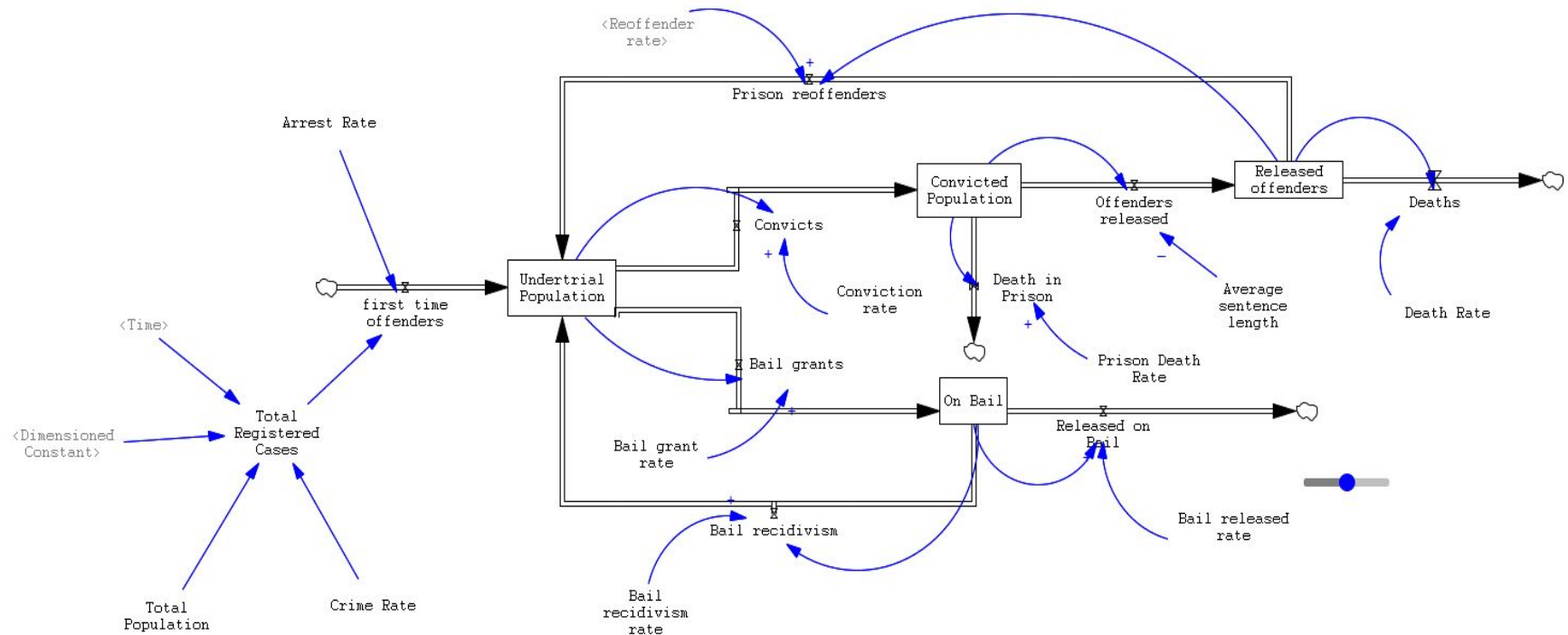
## View 3



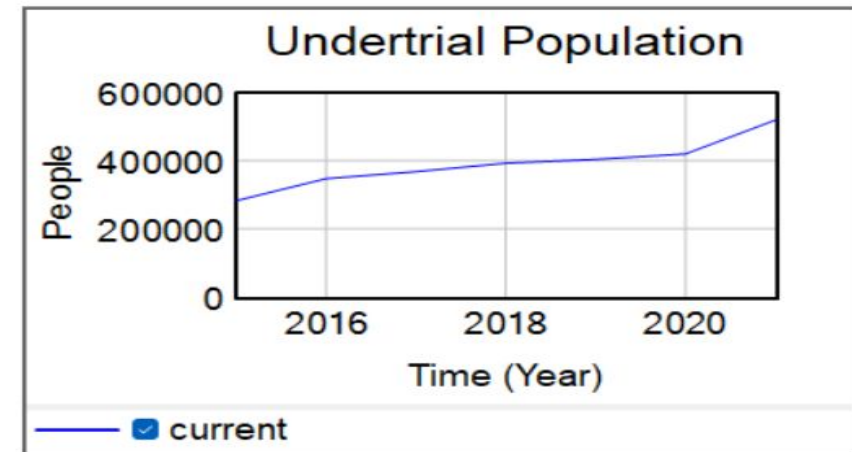
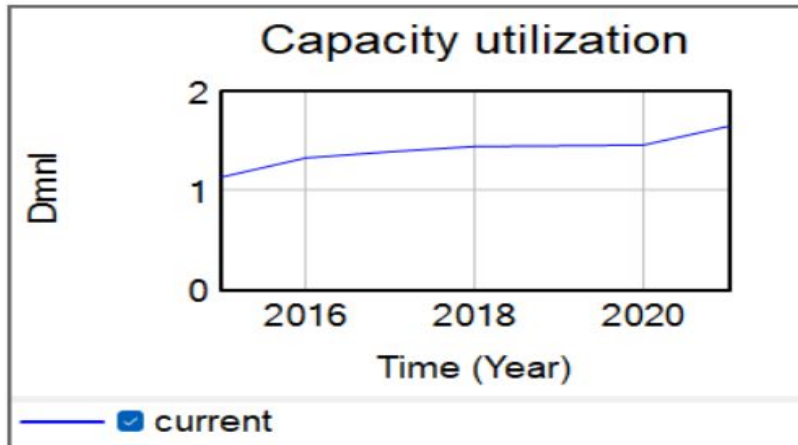
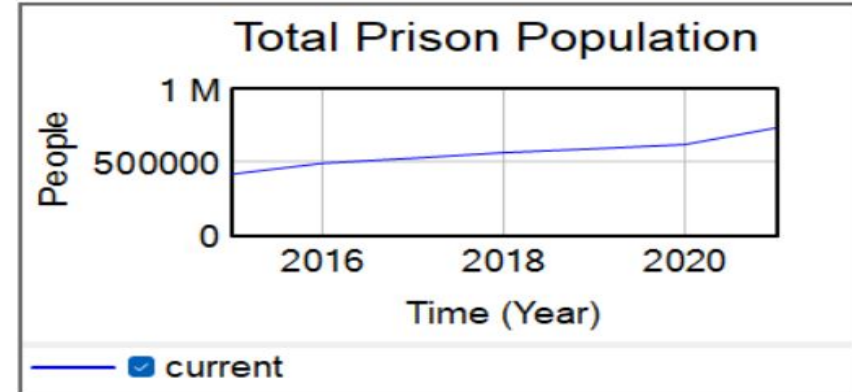
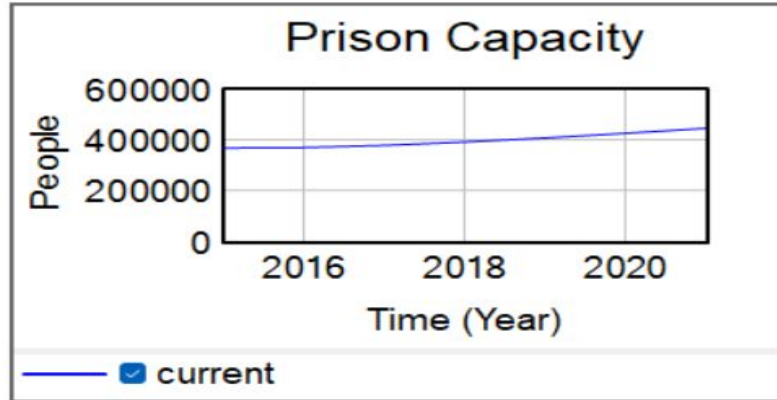


# Stock Flow Diagram

## View 1

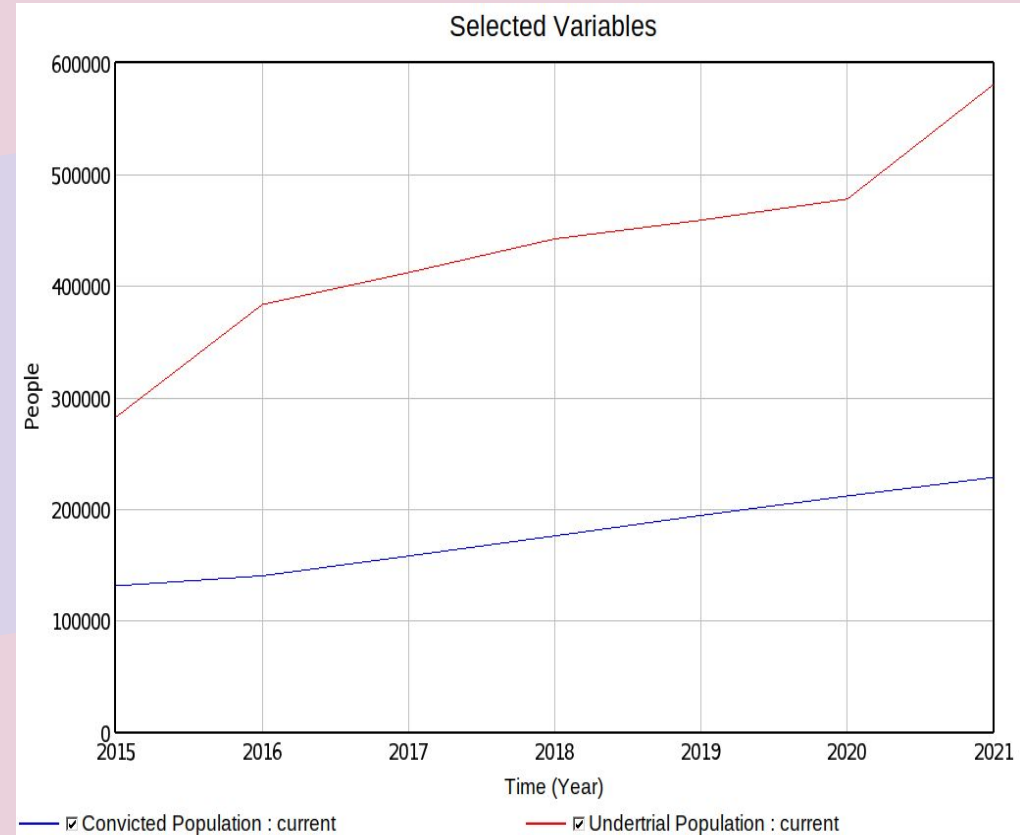


# Generated Graph



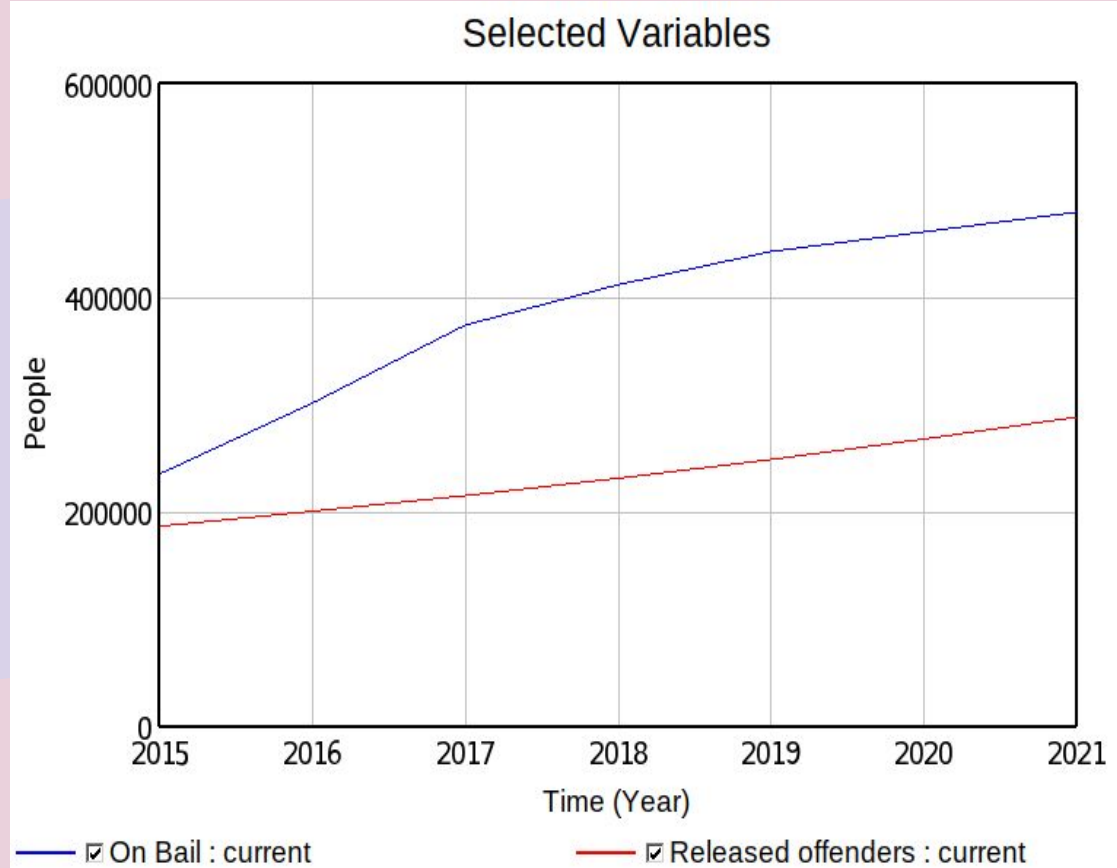
# Convicted vs Undertrial Population

According to the Prison Statistics India Report, 70% of Prison population is UnderTrial.



# Undertrial Bail granted vs Convicted Release

According to the News Report , 68% of undertrial prisoners were not aware of Section 436A of C.R.P.C.



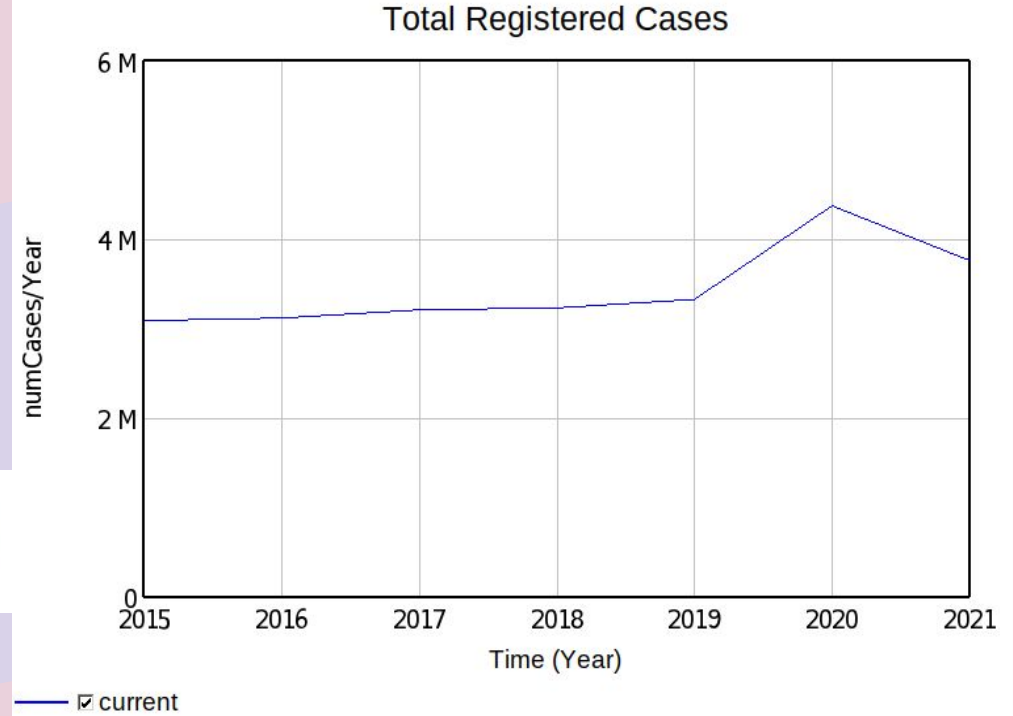
# Total Registered Cases and Crime Rate

According to the Prison Statistics India Report and National Crime Records Bureau Report(Crime In India),

- Registered Cases are increasing every year by 3%.
- Crime rate is increasing by 3.6%.

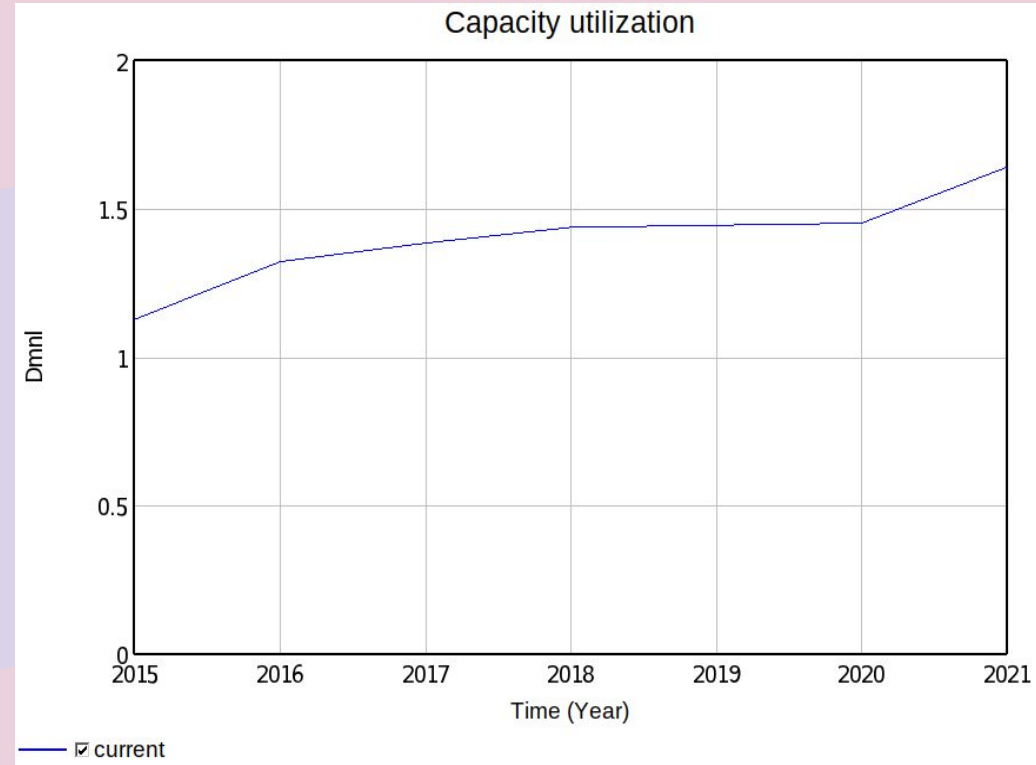
Formula For Crime Rate is :

$$\text{Crimerate} = \frac{\text{Total RegesteresCases}}{\text{Total Population}} * 10,000$$



# Prison Capacity Utilization

According to the Prison Statistics India Report ,  
Capacity utilization in Prison has been Greater  
than 100% for many Years.  
Capacity utilization is observed approximately  
150% for some Years.





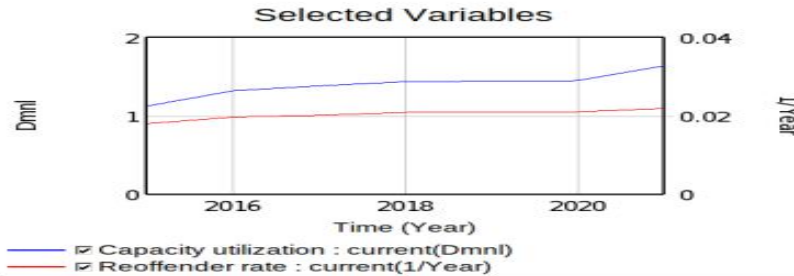
# Data Used

Year	cases reported	crime rate	Convicted Released	total undertrial released	undertrial released on bail	Reoffenders
2015	2949400	234.2	183653	1292357	1157581	5576
2016	2975711	233.6	198686	1312800	1170577	5,589
2017	3062579	237.7	194367	1445023	1315239	6,582
2018	3132955	236.7	192409	1535871	1427942	7865
2019	3225597	241.2	184962	1598218	1499028	6,756
2020	4254356	314	109516	1291504	1232469	3908
2021	3663360	268	91364	1469627	1395635	3,333

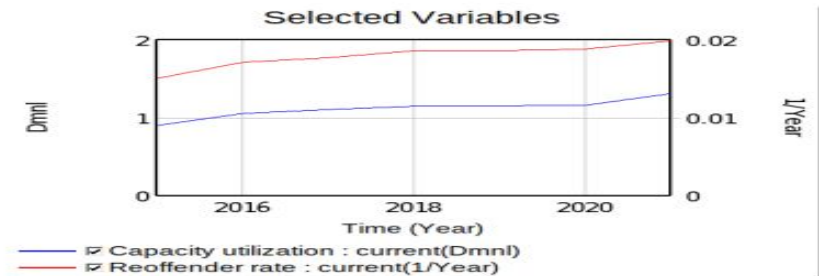
Year	No of Prison	actual capacity of prison	Prison population	Occupany rate	convicted	undertrial	detenues	others	Death
2015	1407	366781	419623	114.4	134168	282076	2562	817	1584
2016	1412	380876	433003	113.7	135683	293058	3089	1173	1655
2017	1361	391574	450696	115.1	139149	308718	2136	693	1671
2018	1341	397138	466802	117.5	139488	323537	2384	675	1845
2019	1351	400934	481387	120.1	144567	332916	3223	681	1764
2020	1306	414033	488511	118	112852	371848	3590	484	1887
2021	1319	425609	554034	130.2	122852	427165	3470	547	2116



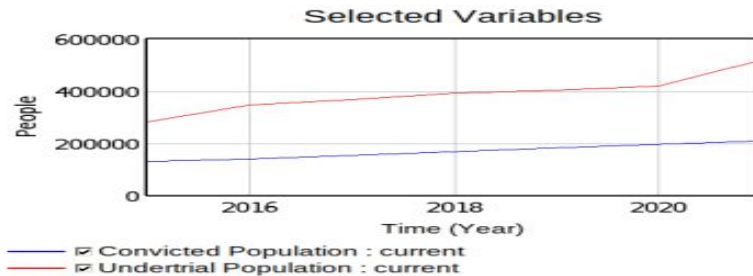
# Observations



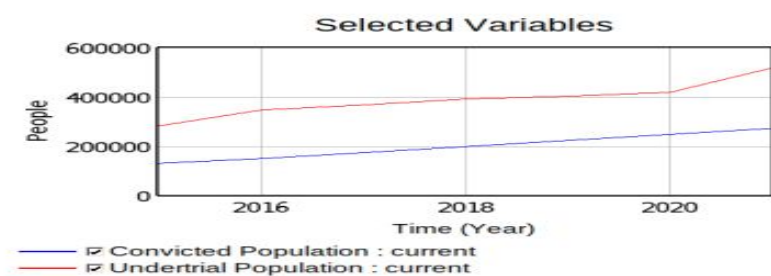
(a) Capacity utilization vs Reoffender Rate



(b) Capacity utilization vs Reoffender Rate (After decreasing Capacity utilization by 25%)



(c) Convicted Population vs Undertrial Population



(d) Convicted Population vs Undertrial Population (After Increasing Average sentence by 40%)

Figure 5.1: Capacity utilization and Average Sentence Length observed.



# Challenges Faced

- Resources
  - ◆ Lack of Research Paper Targeting Prison Overcrowding problem with respect to India
- Complex Nature of the Problem
  - ◆ Solution depends on sufficiently large number of factors such as government policies, Judiciary and awareness among citizen
- Difficult to compute some variable.
  - ◆ Variable like “Perception of Punitiveness, Justice Punitiveness, demand for Punitiveness, Impunity, Political and power Influence” are very difficult to Compute.
- Complexity of Model
  - ◆ Model became very complex to simulate on large factors. Computing all formulae became a road blocker.
- Couldn't load Data in Vensim.
  - ◆ Although, We Collected all the the data from 1998 to 2021 but later we found that we can't load data in Vensim PLE which was the biggest set back of this project.



# Conclusion

- Prison Overflow is a major problem in India and its important to understand dynamics of the criminal justice system and the impact of prison overcrowding on the overall justice system.
- Working on this project provides us a valuable framework for understanding and addressing the complex challenges facing our justice system today. By modelling the prison overflow problem using techniques such as Stock Flow Diagram we have learned the complexity of problem and how modelling a real life problem is challenge in itself.



# References

- **Prison OverCrowding: Finding Successful Policies to Manage Capacity Utilization** : System Dynamics Group Geography Department, University of Bergen, Bergen Norway.
- **Role Of Institutions In Fighting Corruption**: Part III Chapter 13 JUSTICE SYSTEM
- News : **Why are India's Jail so Overcrowded?**
- **Panel Reform International: OverCrowded**
- **Prison Statistics India Report**: From 1998 - 2021
- **National Crime Records Bureau** : From 1998 - 2021
- **Prison Problems In India : An Overview on the Constitutional and Legal Status**
- **OverCrowding in Prison**
- **The Problem of Prisoners:An Analysis**



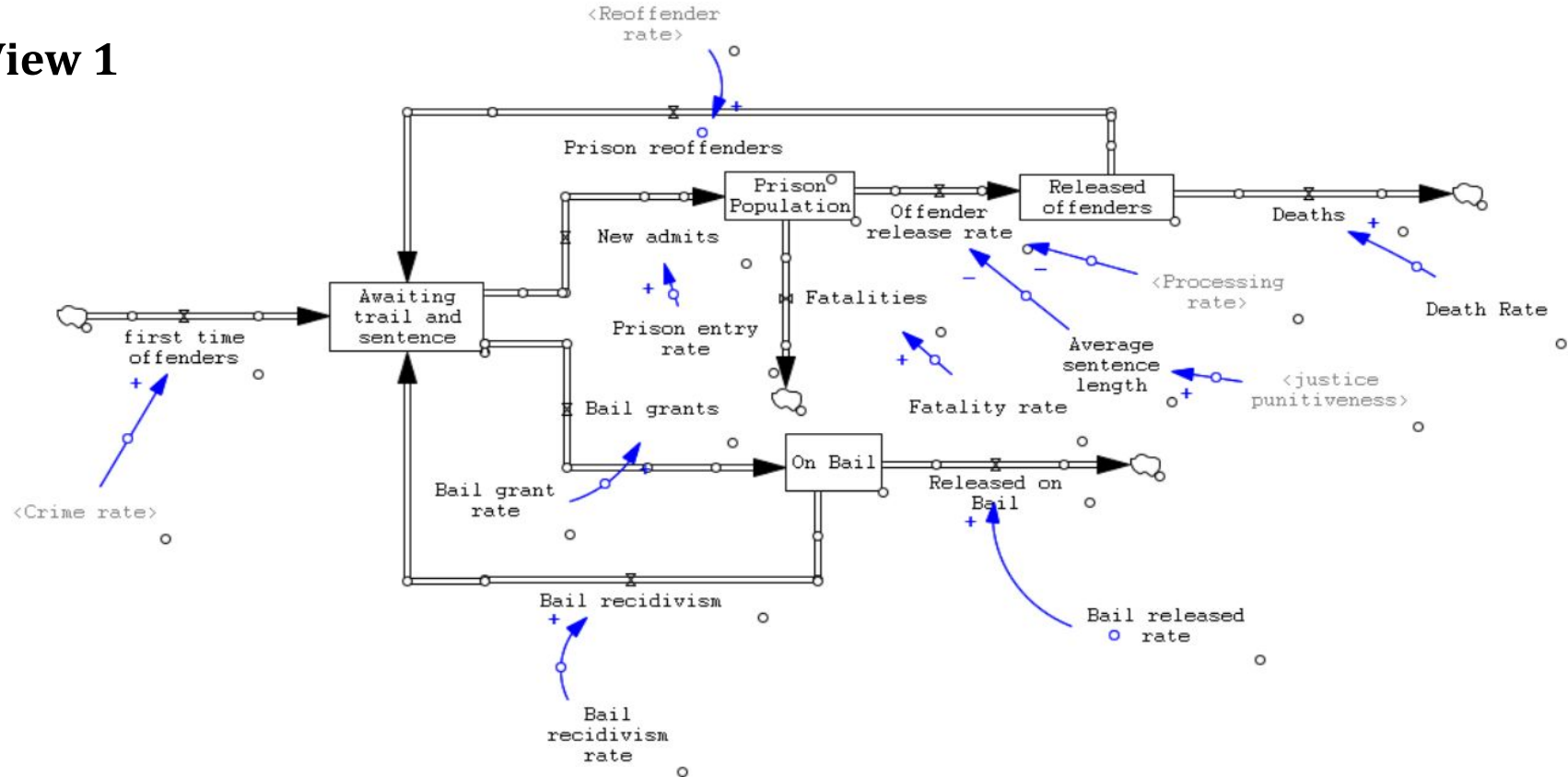
Thank you for listening!  
Questions?



## Backup Slide

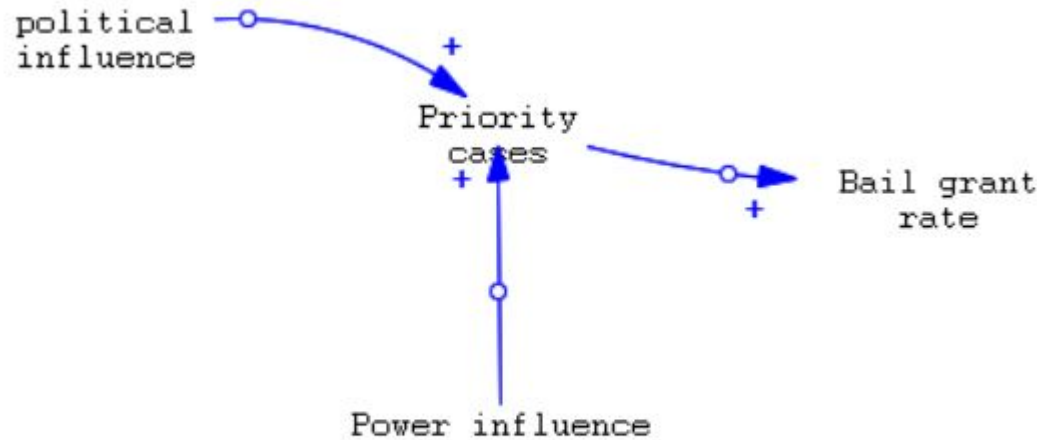
# Initial Stock flow Diagram

## View 1



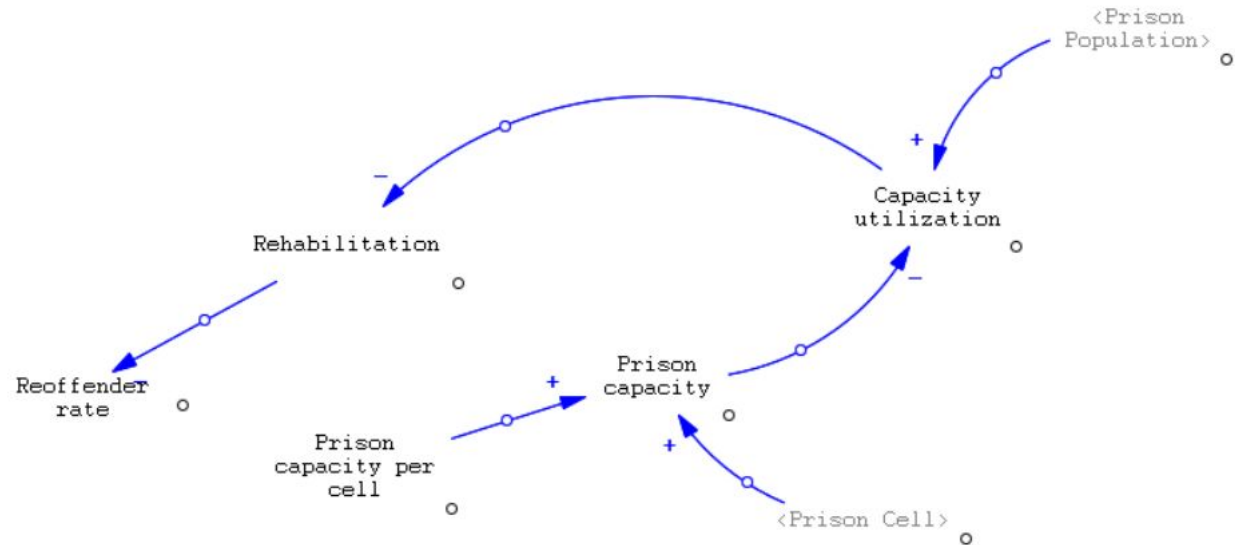
# Initial Stock flow Diagram

## View 2



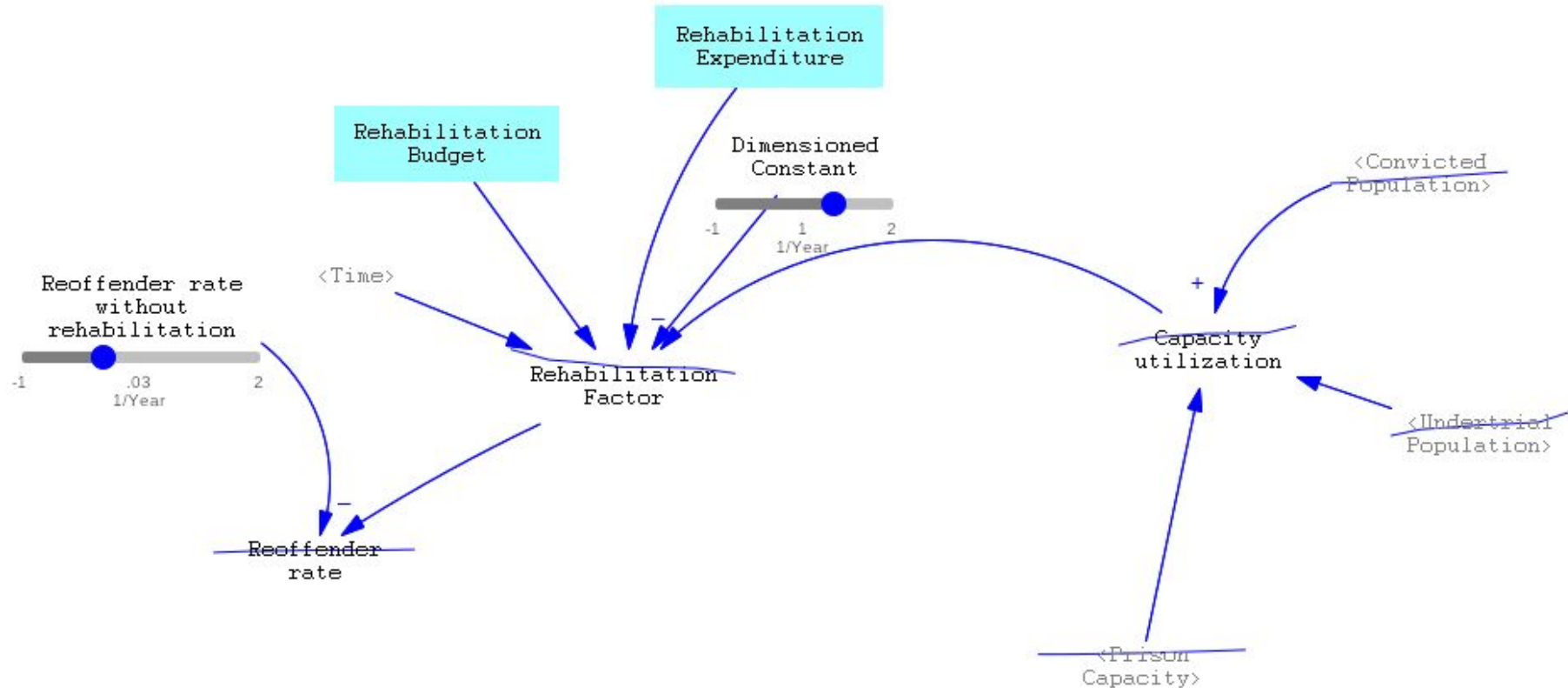
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## View 3

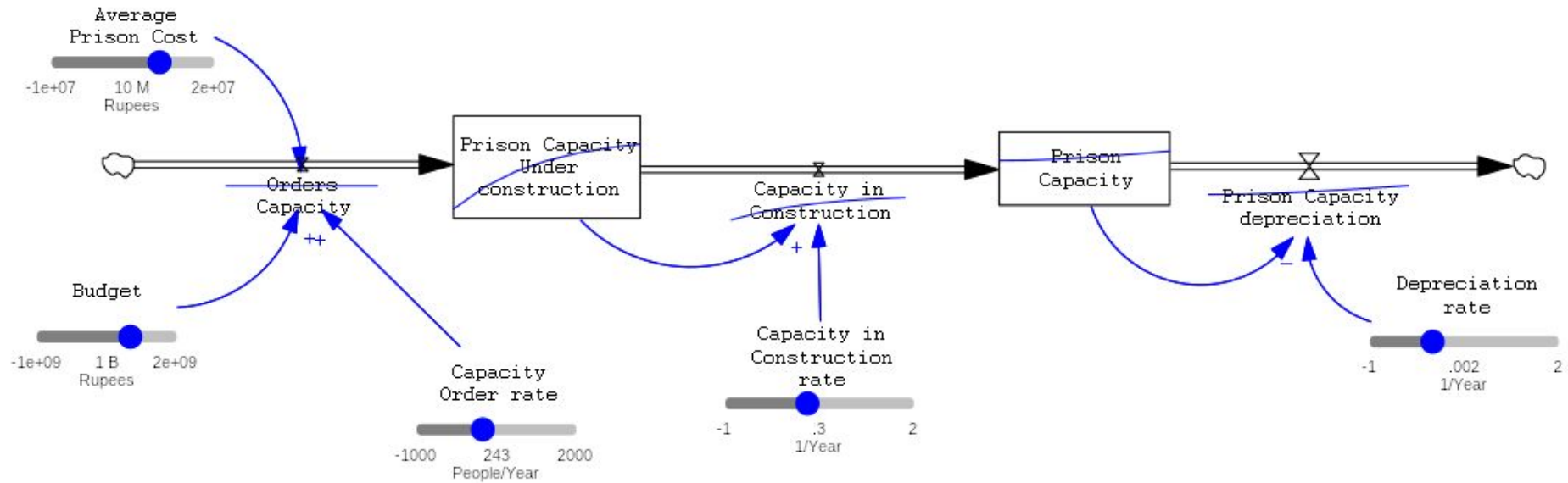




# Simulated Stock Flow Diagram



# Simulated Stock Flow Diagram



# Simulated Stock Flow Diagram

