

Replicate: Networked SIS Epidemics With Awareness

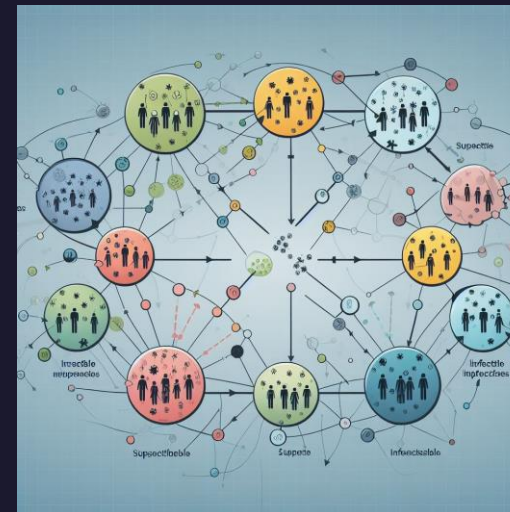
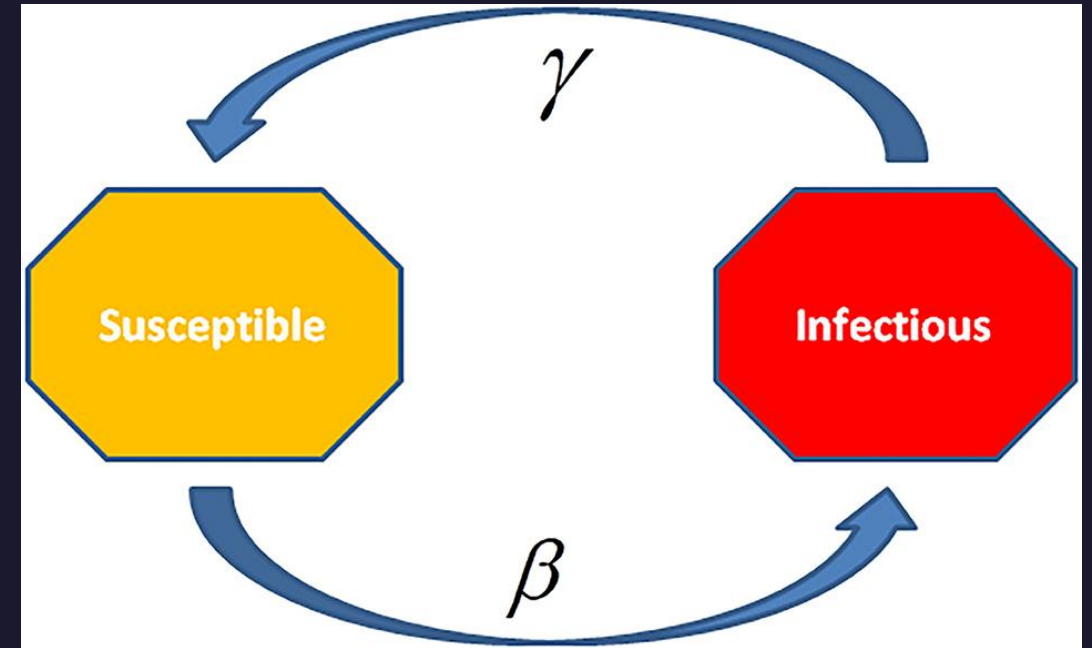
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Introduction

- SIS epidemics on networks
- Study effect of awareness & social distancing



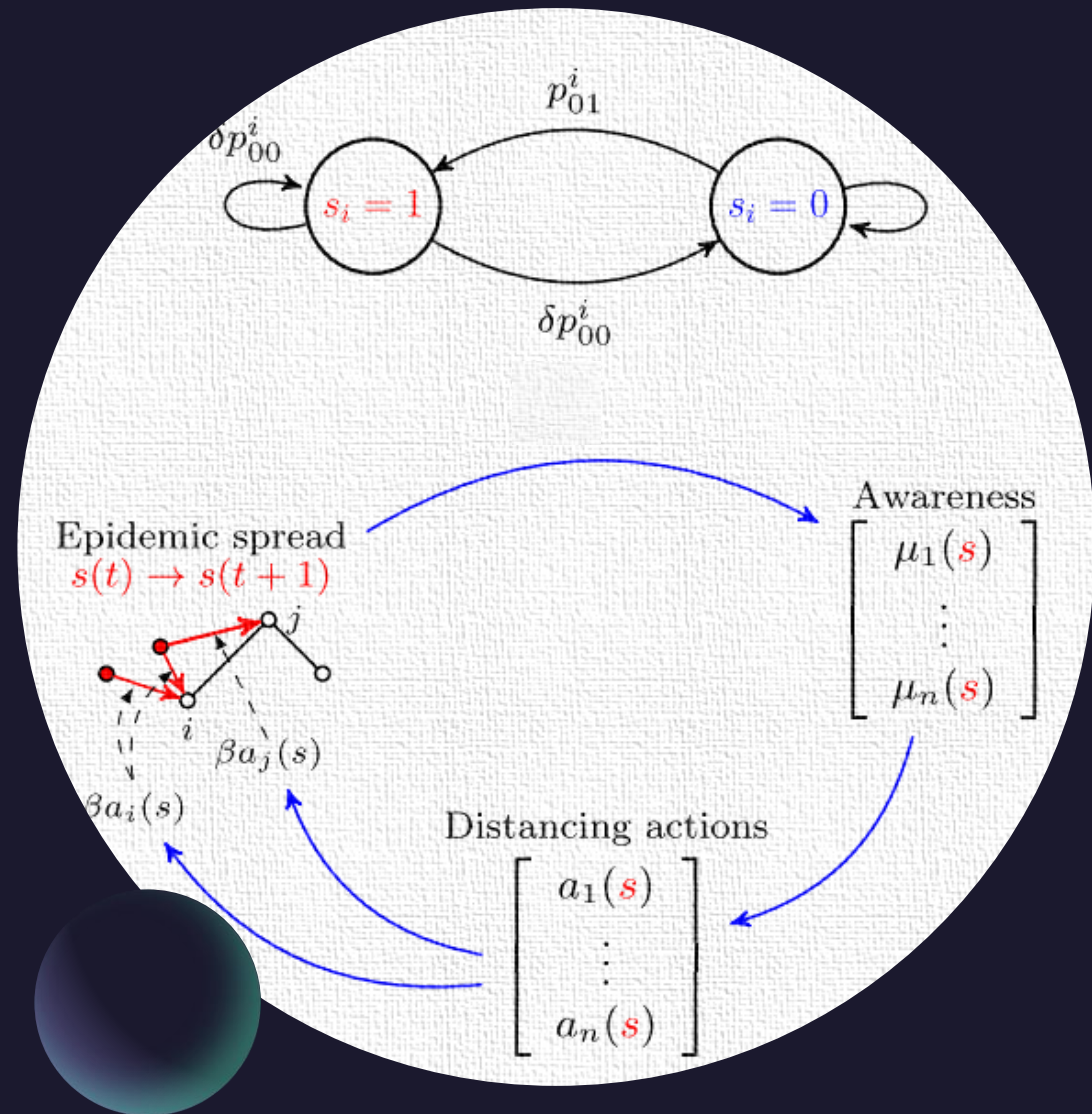
Model

- Nodes have local and global epidemic awareness
- Awareness leads to social distancing actions
- Reduces infection probabilities



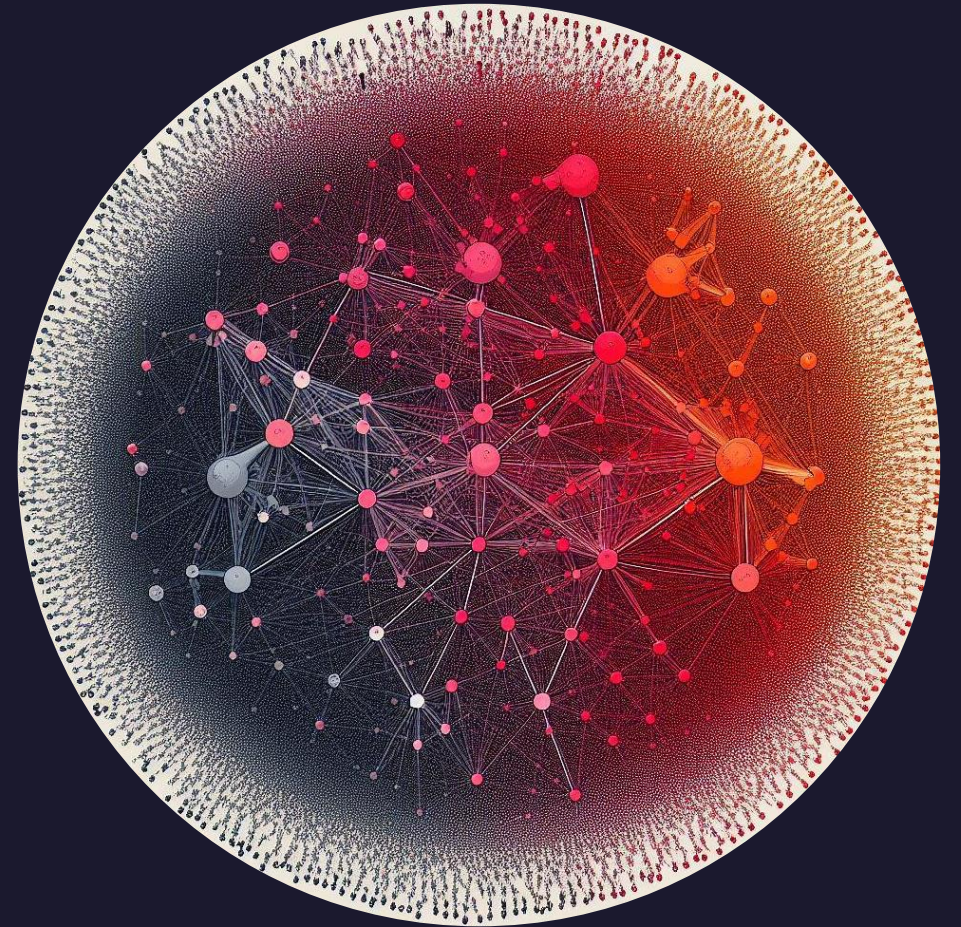
Mean-Field Approximation

- Maps stochastic dynamics to deterministic system
- Proves awareness doesn't change persistence threshold
- However, significantly reduces endemic infections reduces infection probabilities



Simulations


- Impact of awareness depends on network structure
- Local awareness proves most effective, global awareness the least



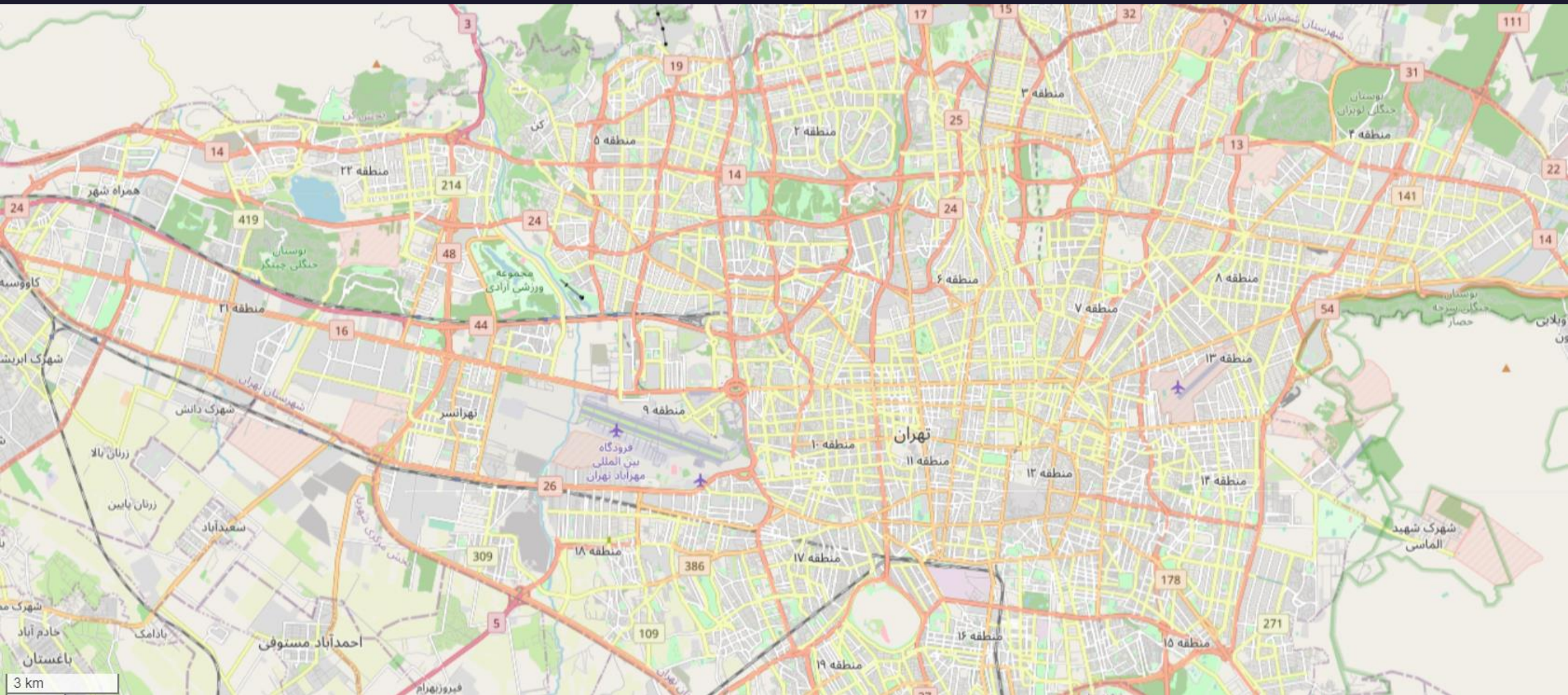
Conclusions

- Awareness can't change the threshold but controls infection levels
- Network structure mediates the impact
- Provides insights for implementing social distancing during epidemics

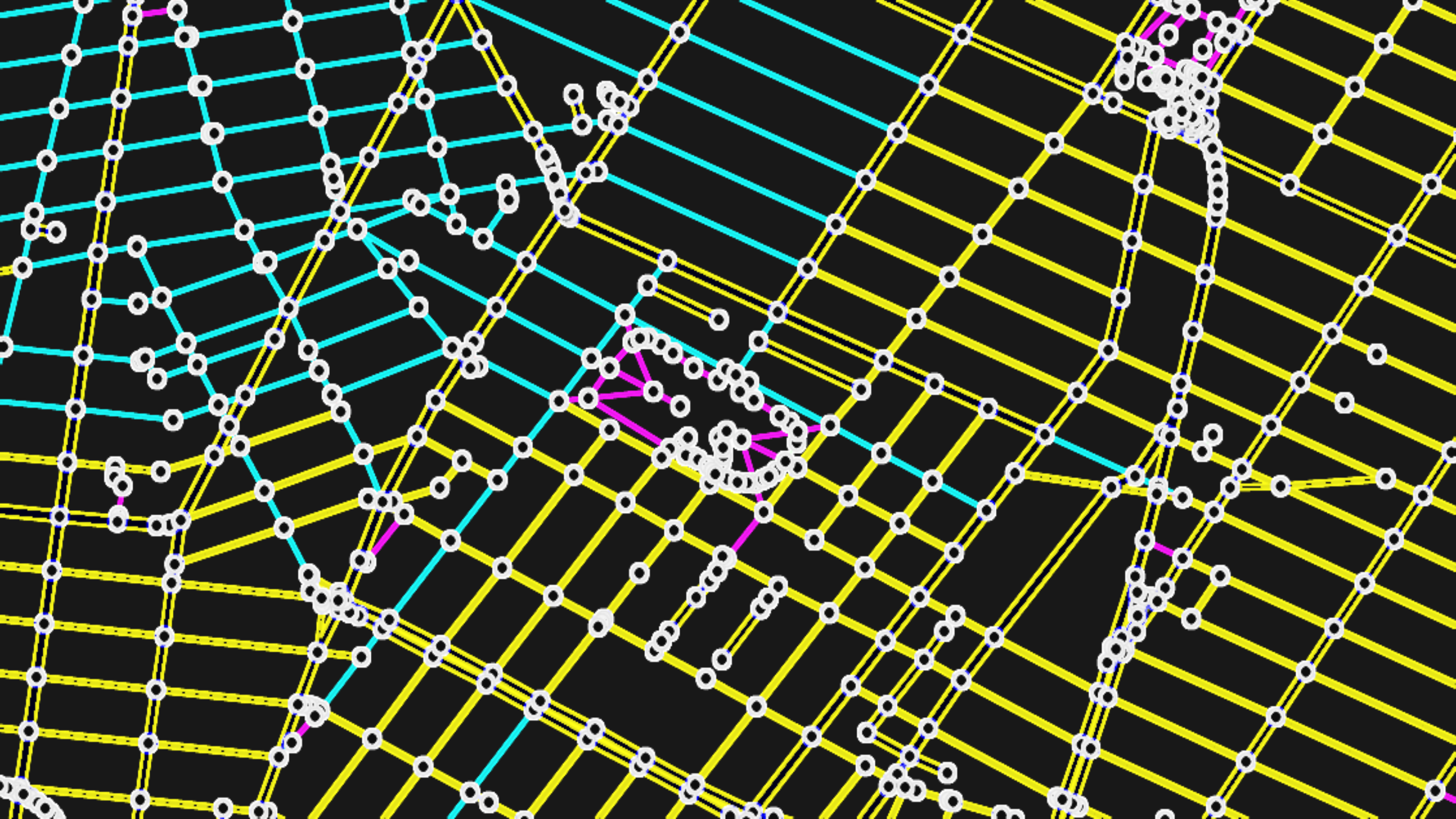




Road Graph of Tehran v_s Tokyo







Population Density

