

Project Example

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Example: Task 4 (Simulate Epidemics)

- Task set 4: Simulate epidemics
 - a) SIR model
 - b) SIS model
 - c) SIRS model
 - d) Epidemics and network structure
- Report & Code
 - The tasks you finished
 - Results and Analysis
 - Conclusion

Example: Report (Task 4)

Report

Abstract

Section 1:

The tasks you finished

- a) Which task set you are working on?
- b) How you conduct your analysis to finish those tasks?

Section 2:

Results and Analysis

- a) Use tables and graphs.
- b) Use quantitative values.
- c) What conclusions you could make from the results?

Section 3:

Conclusion

- a) Summarize your findings.

Report: Section 1

Report

Abstract

Section 1:

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Report: Section 1

Section 1:

The tasks you finished

- a) Which task set you are working on?
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1. Please tell readers **data statistics (related to your task)** and **analyzing tools**

Nodes	75879
Edges	508837
Nodes in largest WCC	75877 (1.000)
Edges in largest WCC	508836 (1.000)
Nodes in largest SCC	32223 (0.425)
Edges in largest SCC	443506 (0.872)
Average clustering coefficient	0.1378
Number of triangles	1624481
Fraction of closed triangles	0.0229
Diameter (longest shortest path)	14
90-percentile effective diameter	5

Table 1: Data statistics



Report: Section 1

Section 1:

The tasks you finished

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-

2. Please tell readers your **Task Selection** and **what you do (subtasks) specifically**

Task set 4: Simulate epidemics

- a) SIR model*
- b) SIS model*
- c) SIRS model*
- d) Epidemics and network structure*

e.g., We have simulated SIR, SIS, and SIRS models. We also analyze the effect of network structure from the facet of initial adopters' selection...

Report: Section 1

Section 1:

The tasks you finished

a) Which task set you are working on?

b) How you conduct your analysis to finish those tasks?

3. You are recommended to summarize your experiment plans/purpose here.

e.g., The main objective of this project is to observe how long the epidemic would progress until it stops infecting anyone and what are the deterministic factors behind...

We would mainly focus on the following factors that are suspected to have impact on the epidemic duration, which are...

Report: Section 2

Report

Abstract

Section 1:

The tasks you finished

- a) Which task set you are working on?
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Section 2:

Results and Analysis

- a) Use tables and graphs.
- b) Use quantitative values.
- c) What conclusions you could make from the results?

Section 3:

Conclusion

- a) Summarize your findings.

Report: Section 2

Section 2:

Results and Analysis

- a) Use tables and graphs.
 - b) Use quantitative values.
 - c) What conclusions you could make from the results?
-

Subsection 2.1: SIR model

Subsection 2.2: SIS model

Subsection 2.3: SIRS model

Subsection 2.4: Epidemics and Network Structure

Report: Section 2.1

Section 2:

Results and Analysis

- a) Use tables and graphs.
 - b) Use quantitative values.
 - c) What conclusions you could make from the results?
-

Subsection 2.1: SIR model

1. Briefly introduce the model and your **parameters**

e.g., tell us the contagion probability that you choose; tell us the initial states of nodes (such as how many are susceptible)...

Report: Section 2.1

Section 2:

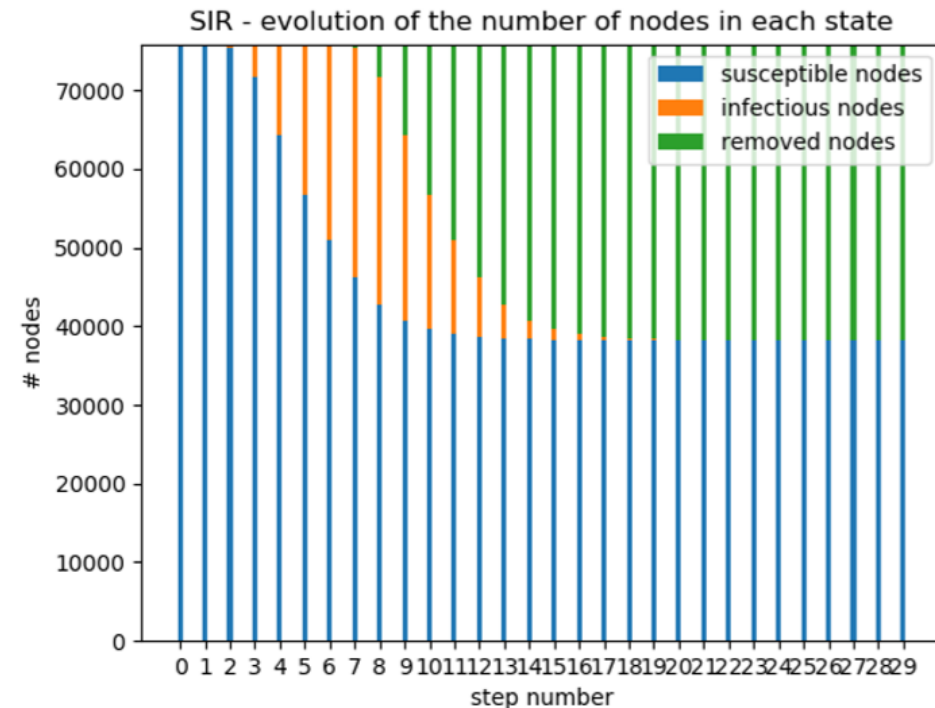
Results and Analysis

- a) Use tables and graphs.
- b) Use quantitative values.
- c) What conclusions you could make from the results?

Subsection 2.1: SIR model

2. The **Evolution of the States** of Nodes

e.g., fix contagion probability, draw the relationship between node states and time, and analyze/describe the figure.



Report: Section 2.1

Section 2:

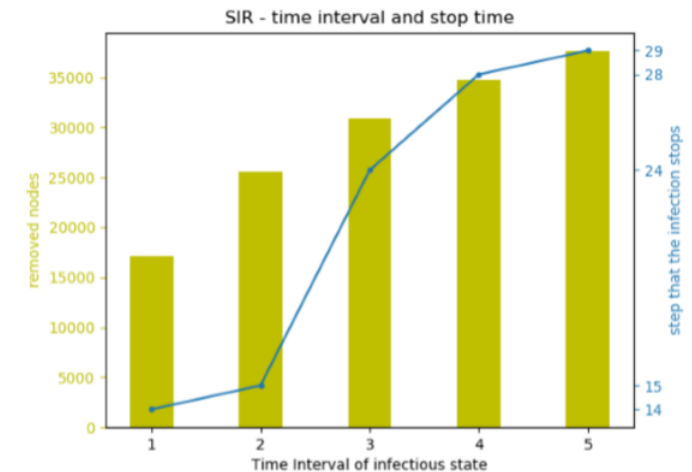
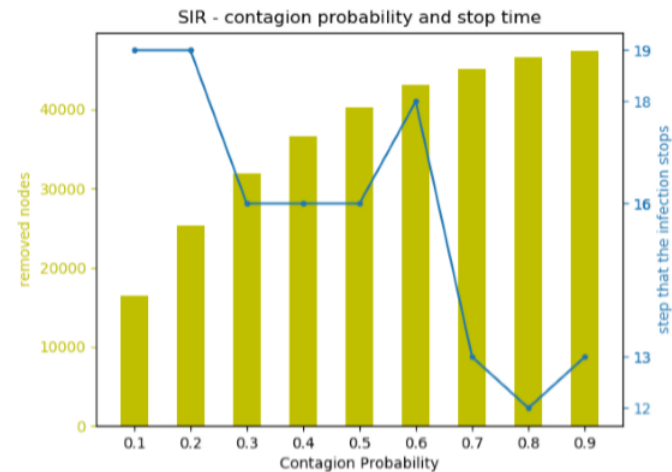
Results and Analysis

- a) Use tables and graphs.
- b) Use quantitative values.
- c) What conclusions you could make from the results?

Subsection 2.1: SIR model

3. Parameter Sensitivity Analysis

e.g., for different contagion probability/time interval of Infectious state , what's the difference?



Report: Section 3

Report

Abstract

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Section 2:

Results and Analysis

- a) Use tables and graphs.
- b) Use quantitative values.
- c) What conclusions you could make from the results?

Section 3:

Conclusion

- a) Summarize your findings.

Report: Section 3

Section 3:

Conclusion

a) Summarize your findings.

Please summary the conclusions in Section 2 and try to deduce some **high-level** conclusions.

e.g., Compare SIR, SIS SIRS models and find that:

SIS and SIR are similar, where higher contagion probability as well as longer infectious interval will cause faster spread of the disease.

But for SIRS model, as time goes on, the number of infectious nodes almost remain unchanged while the number of susceptible and removed nodes are oscillating. And the contagion probability has little influence on the spread of disease.

Code

- Please remember to submit your code zip file.
- Please make sure the code is runnable
- If possible, try to make it clean and clear...