

Identifying influential pandemic regions using graph signal variation

November 9, 2022

1 Graph Preliminaries

1.1 Graph Basics

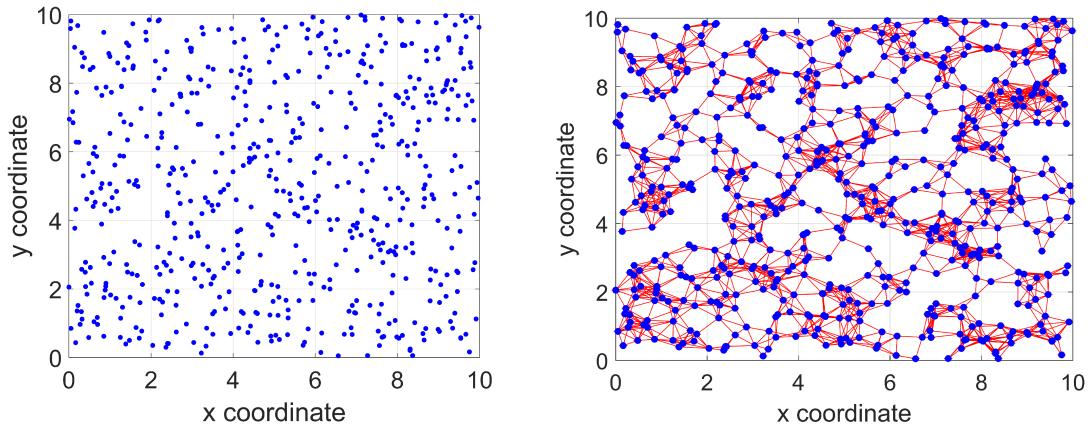


Figure 1: **a)**: Nodes **b)**: Graph

1.2 Graph Signal

- 2 Case 1: Single Perturbation, $\kappa = 0.0001$**
- 3 Case 2: Single Perturbation, $\kappa = 0.1$**
- 4 Case 3: Double Perturbation, $\kappa = 0.0001$**
- 5 Case 4: Double Perturbation, $\kappa = 0.1$**

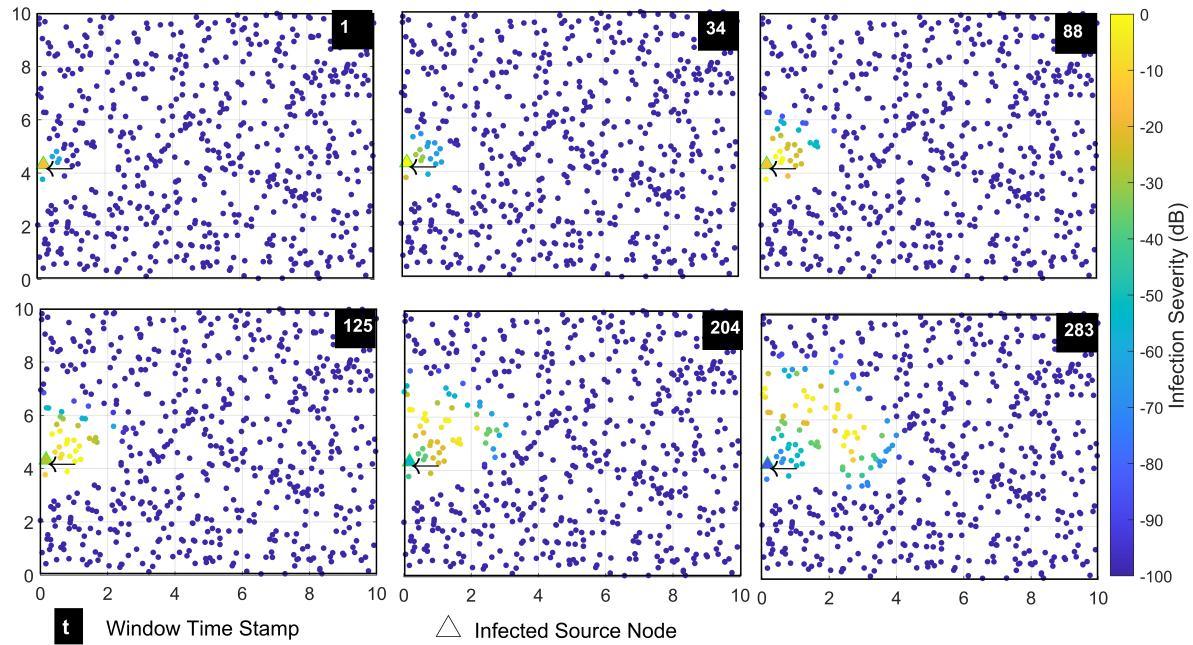


Figure 2: Raw data of single perturbation for $\kappa = 0.0001$

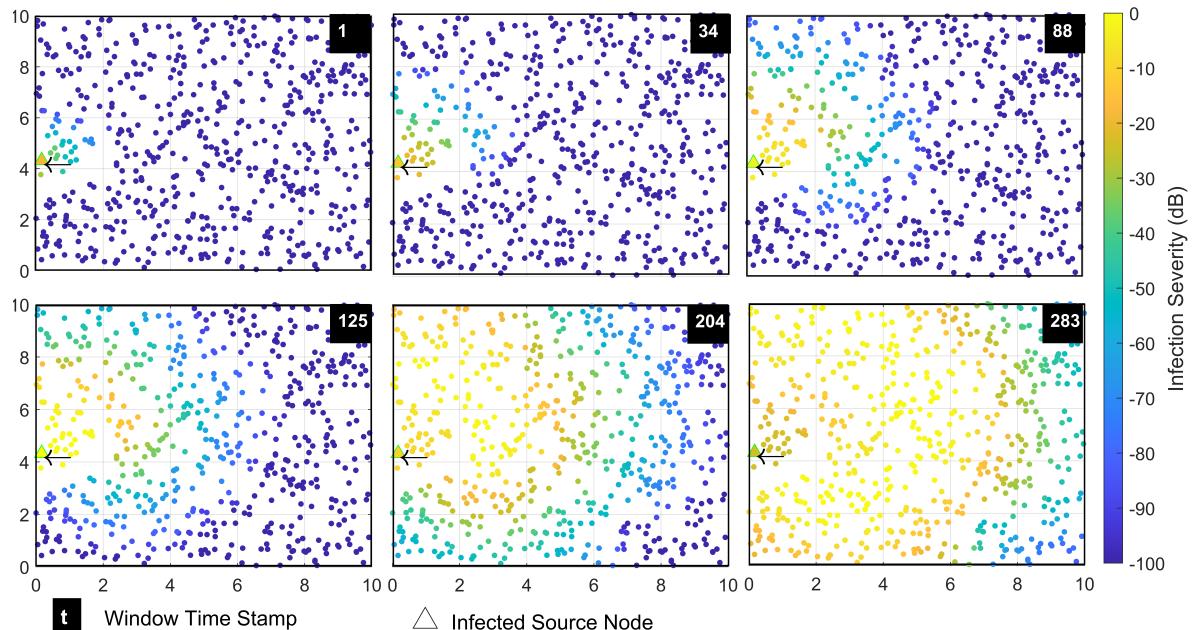


Figure 3: Raw data of single perturbation for $\kappa = 0.1$

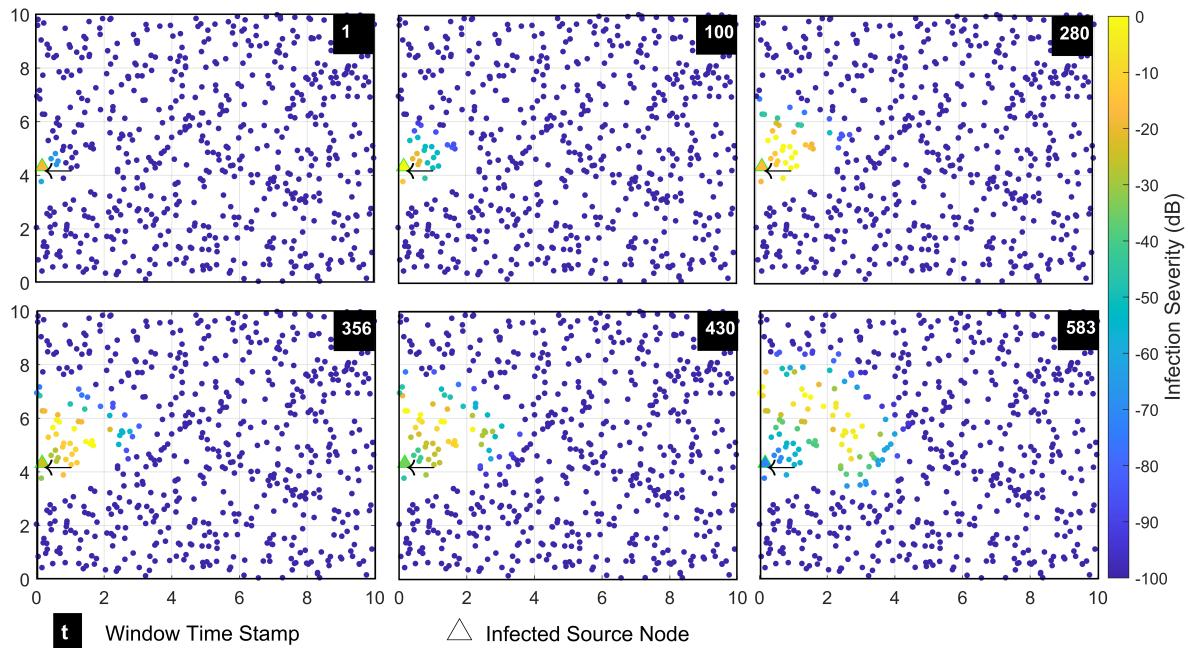


Figure 4: Raw data of double perturbation for $\kappa = 0.0001$

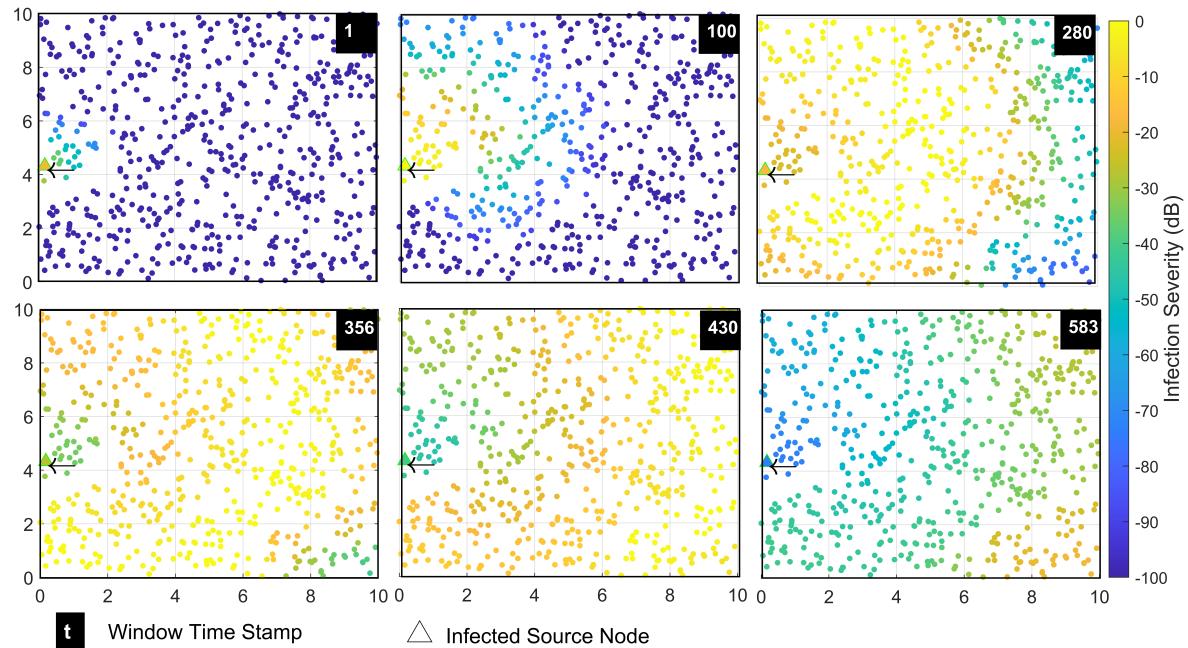


Figure 5: Raw data of double perturbation for $\kappa = 0.1$

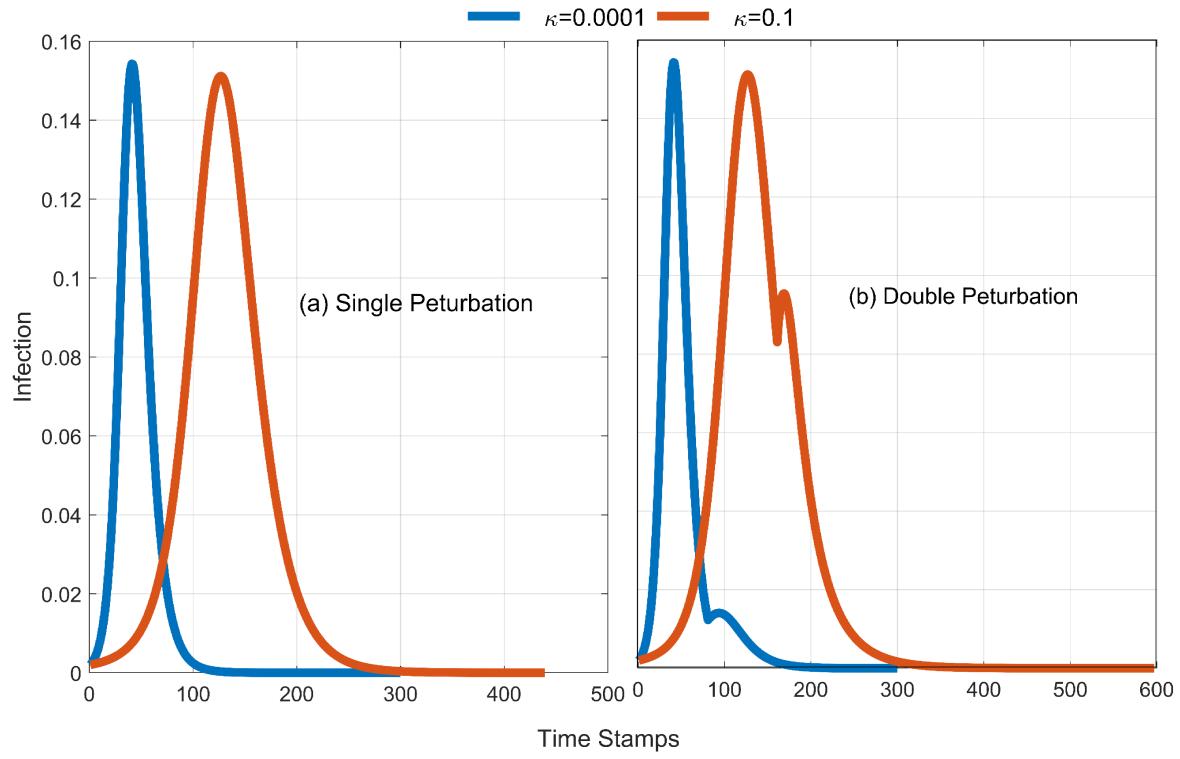


Figure 6: Temporal evolution of infection at source node 588 a) Single perturbation b) Double perturbation

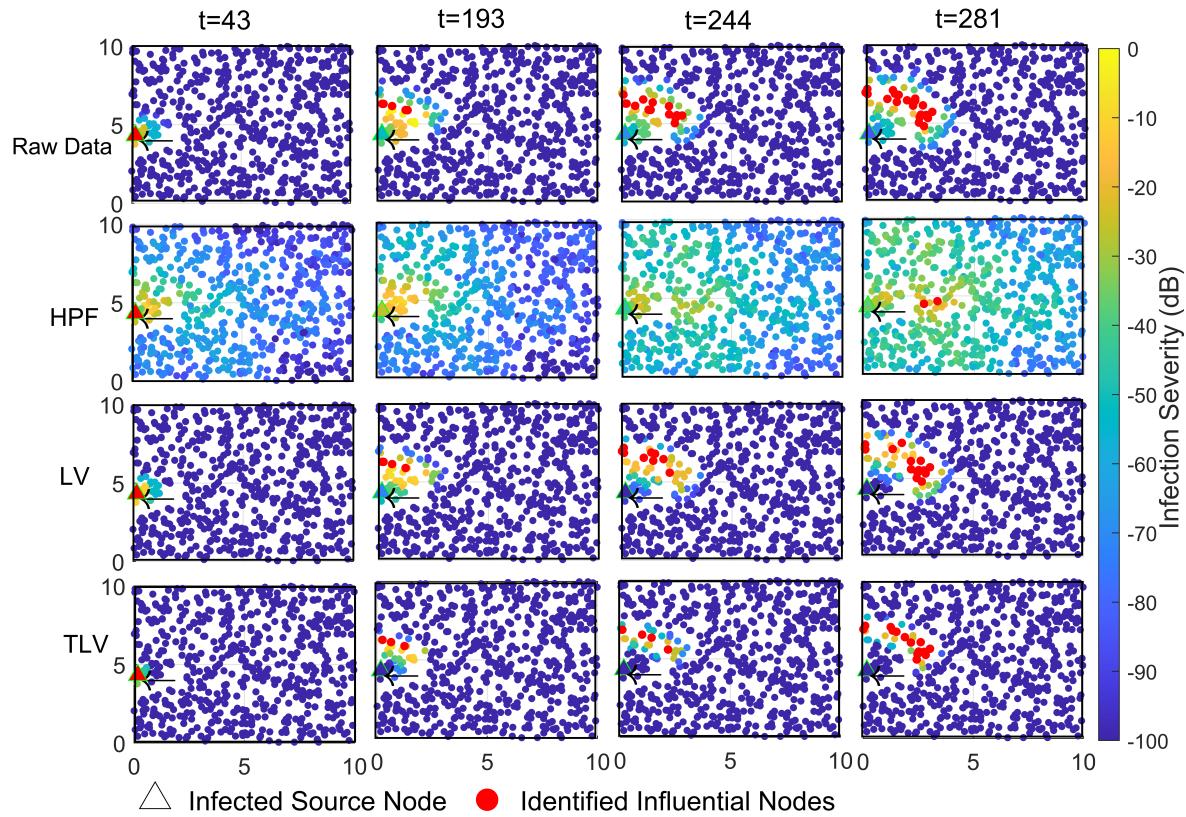


Figure 7: Case1: Illustration of Raw data, HPF, LV, and TLV

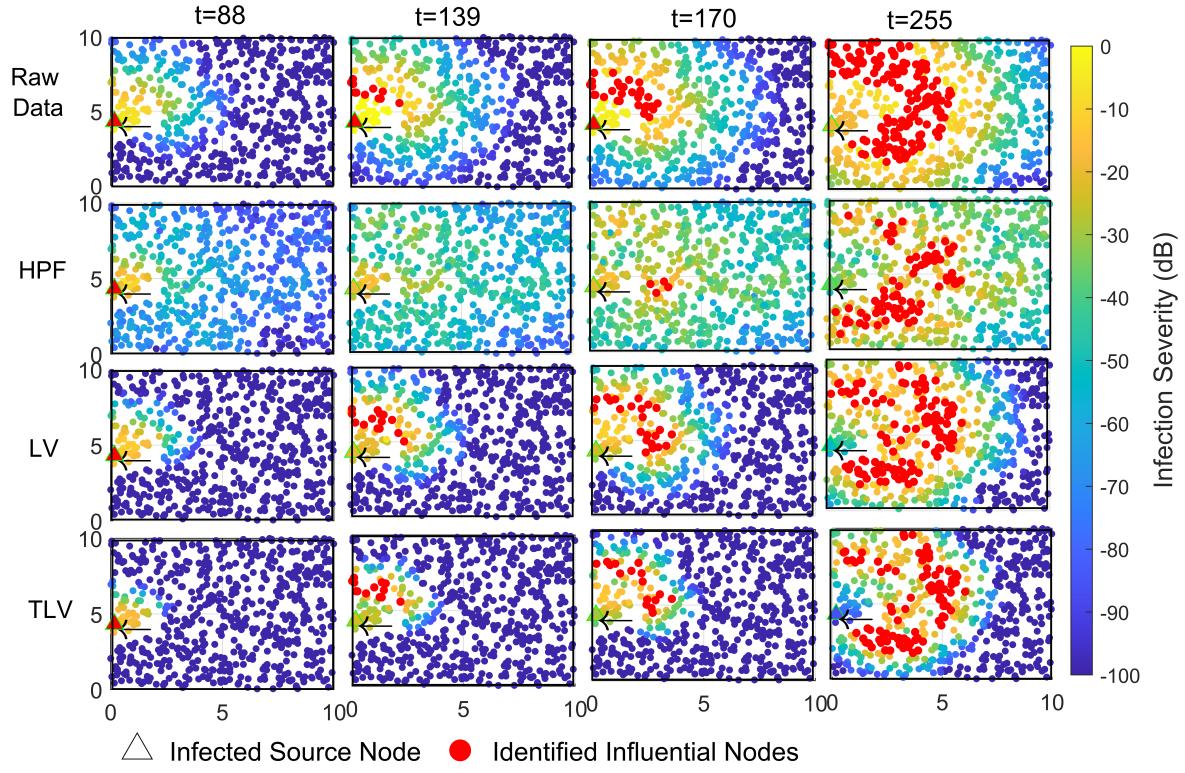


Figure 8: Case2: Illustration of Raw data, HPF, LV, and TLV

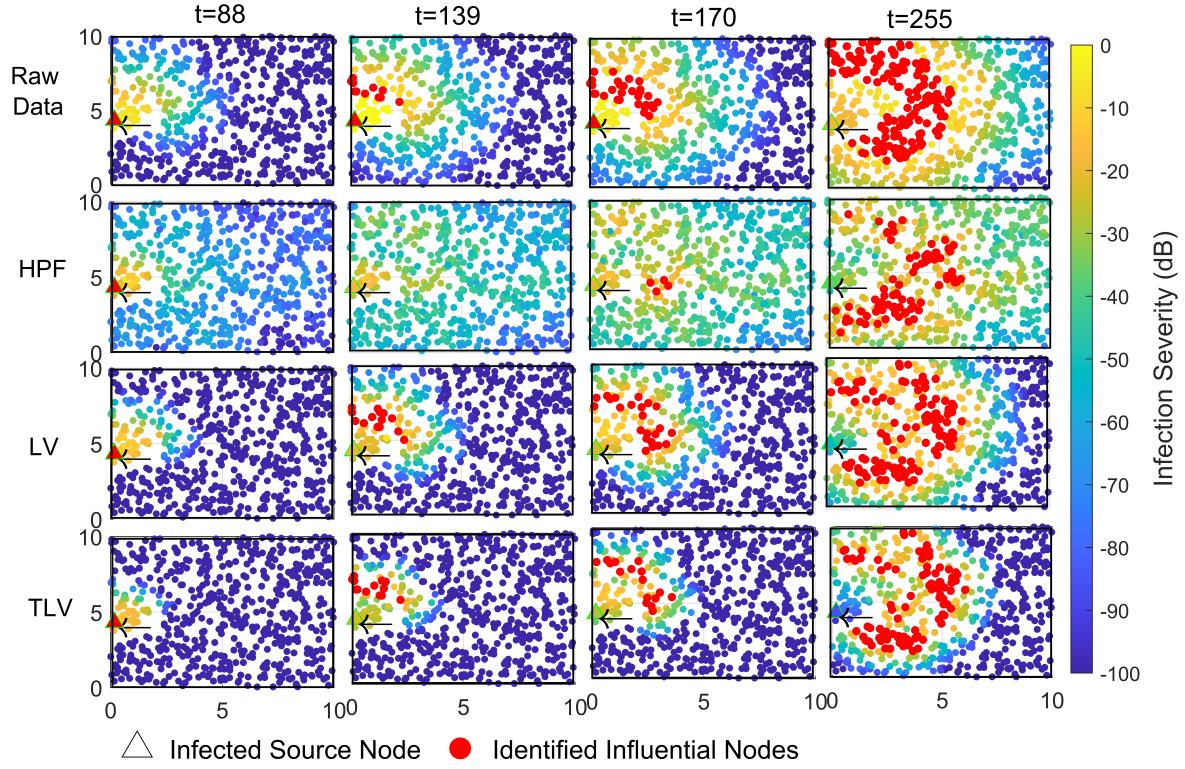


Figure 9: Case3: Illustration of Raw data, HPF, LV, and TLV

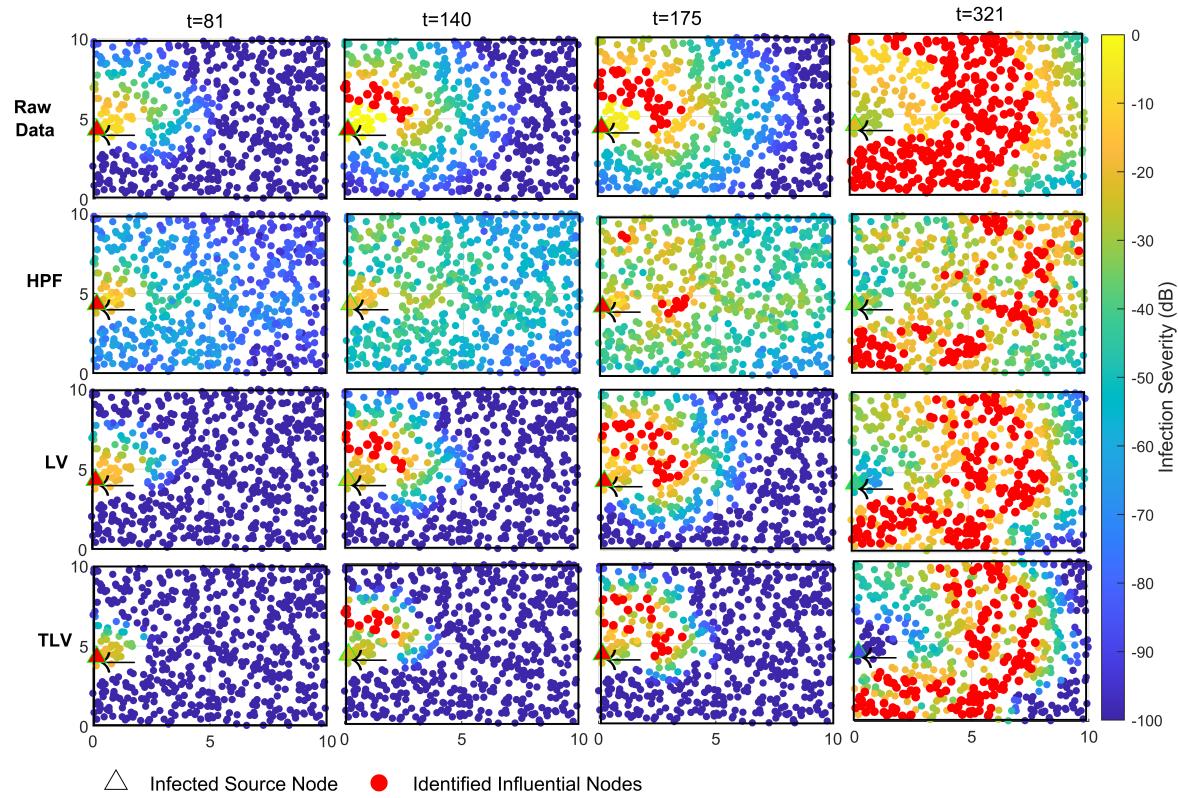


Figure 10: Case4: Illustration of Raw data, HPF, LV, and TLV