

## The Spread of Smallpox in the Mayan Population during the 1500s

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Various theories exist concerning how and why the Mayan civilization collapsed around 800-900 A.D. Drought, war, famine, and disease are just a few. We do not have the evidence to prove these theories yet, but there is written history about the decrease of the Mayan population due to diseases such as smallpox, influenza and the measles after the Spanish arrived in Central America. There were approximately 7 million Mayan people when the Spanish arrived during the 1500s, and of that, about 90 percent of the Maya died from European diseases. Our goal for this project is to model the possible spread of smallpox in the Mayan population and take into consideration the migration of the people in a network of towns and the country. This model is different from the S-I-R (Susceptible/Infected/Recovered) differential model due to its incorporation of geographic information and the use of delayed differential equations.