Understanding how epidemics spread in a system is a crucial step to prevent and control outbreaks, with broad implications on the system’s functioning, health, and associated costs. One important ingredient to consider is the pattern of disease-transmission contacts among the elements, however its time-varying nature and possible delays in providing updated records may hinder its use. By focusing on time-varying contact patterns relevant for disease transmission, here we explore how their (full or partial) knowledge can be used to better understand the conditions of epidemic invasion and identify targeted interventions for its control.