of coworkers for cashiers in a grocery store to study peer effects on productivity. This is only a small sample of literature on social networks. A substantially broader treatment can be found in [79, 33].

Commonly, social networks are modeled as a graph $G = (V, E)$, with vertex set V, representing some population, and edge set E, representing relationships within this population. Modeling social networks in this way allows the use of network analysis techniques to understand these social relationships.

One of the major discoveries from analysis of these graph models of social networks was discovery of the "small-world" property by Watts and Strogatz [109]. The "small-world" property of social networks is a formalization of the conjecture by Milgram and suggests that any two individuals are separated by only a few connections, despite participating in a network that is only sparsely connected. Watts and Strogatz also showed that social networks tend to be highly clustered, with pairs of vertices sharing many of the same neighbors (i.e., your friends are also friends). Many social networks, such as the graph of the web, also evince a signature heavy-tailed degree distribution where a majority of vertices have a low degree and a few vertices have a very high degree [11]. More recently, Girvan and Newman [46] showed that a number of social networks have strong *community structure*. A more global property of clustering, strong community structure suggests that there are densely connected clusters (communities) of vertices and very few connections between clusters [81, 29].

Since disease spreads through close-proximity contact between individuals, social networks defined by physical proximity can provide valuable insights into how