Online communities exhibit dynamic social phenomena that, if understood, can both influence the design of technical platforms and inform theories about general social dynamics. With increasing popularity, online games provide a rich recording of social dynamics that can contribute to understanding human behavior. This dissertation studies two phenomena of social dynamics at large-scale using data traces from online games. The first phenomenon is team formation and the second is players mobility between gaming servers. This dissertation first presents a framework for collecting data from online gaming through crawling. We examined several hypotheses about team formation using a large, longitudinal dataset from Battlefield 4, a popular team-based game. Then, we formulated the team formation behaviors into a sign prediction problem. We classified interactions in online team-based games into different classes. Finally, we presented a data-driven study focused on characterizing and predicting the mobility of players between gaming servers in two popular online games, Team Fortress 2, and Counter Strike: Global Offensive. We built predictive models for the growth and the pace of player mobility between gaming servers.

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