

| records      | days | users  | depts | positions | devices | locations |
|--------------|------|--------|-------|-----------|---------|-----------|
| 19.8 million | 660  | 15,595 | 80    | 404       | 17,522  | 4,379     |

Figure 2.2: Table showing the size and other aggregate characteristics of the EMR login data.

clerks, and in doctors’ offices. This distribution of computers implies that healthcare workers do not have to travel just to login to the EMR system and therefore strongly suggests that locations of healthcare worker logins are well correlated with their daily activities.

We construct the contact networks in two steps. In the first step, we construct a detailed discrete spatial model of the UIHC space that allows us to determine spatial proximity of login locations; this information is critical to the contact network construction. The hospital model also allows us to estimate the mobility of healthcare workers, a measure that we use to inform vaccination policies. In the second step, we parse EMR login data and construct various contact networks based on several network generation parameters. These two steps are described in the next two subsections.

### 2.1.1 The Hospital Graph

Eleven buildings or permanent additions connected by corridors make up the main UIHC complex, which contains 3.2 million gross square feet and covers an area of about 13.8 acres. The straight-line distance from the northern end of the complex to the southern end is about 1,600 feet (roughly 0.3 miles or 3.6 blocks). The actual walking distance through the corridor system is about 2,000 feet.