Physician's Usage of Mobile Clinical Applications in a Community Hospital

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Abstract

We analyze twenty-two months of usage data of mobile clinical applications by approximately 200 physicians in a community hospital in southwestern Pennsylvania in the United States. Applying a novel, semi-parametric, group-based, statistical methodology, we obtain developmental trajectories depicting how usage evolves from initial 'trial' adoption to long-term institutionalization. The analysis of trajectories of physician usage patterns indicate that physicians who began using the system within the first three months of deployment were heavier and more stable, routine users. Voluntariness of use and the availability of multiple channels of access to clinical information may also have impacted adoption of the technology.

Keywords:

Mobile, PDA, Developmental trajectory analysis

Introduction

In June 2006, a community healthcare system located in southwestern Pennsylvania in the United States deployed a secure wireless PDA based client-server solution, called the Mobile Clinical Access Portal (MCAP), providing on-line clinical data accessible from PDAs through any WIFI or broadband connection point. MCAP provides access to 266 clinical applications such as entering patient prescriptions, accessing medical histories, electronic prescribing, placing lab orders, checking lab results, reviewing patient summary data and other related functionality. In this study, we investigate adoption and usage of MCAP over a two-year period by approximately 200 physicians.

Methods

Developmental Trajectory Analysis (DTA) is a semi-parametric, group-based, statistical approach describing the course of a developmental behavior over age or time by identifying groups of distinctive developmental trajectories. In this study, we use DTA to help identify groups of similar users (similar patterns of usage over time) of MCAP and to identify demographic characteristics within each group that are statistically related to mobile application adoption and usage over time.
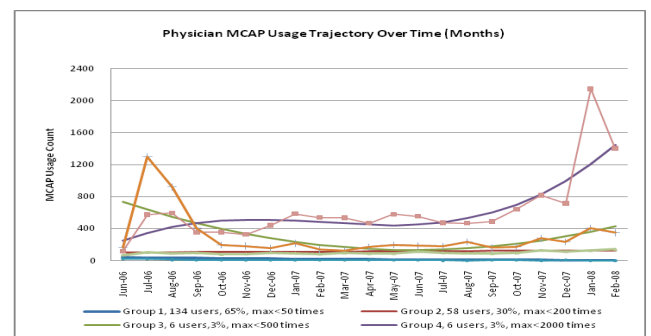
Results

Figure 1 – DTA Results for MCAP usage

Figure 1 depicts the optimal number of four distinct groups identified by DTA for 204 physicians. Group 1 is the largest, consisting of 134 out of 204 physicians (65%), with maximum monthly usage less than 50 times. This large group of physicians appears to be unenthusiastic about MCAP, perhaps relying more heavily on other channels of access such as desktop computers in their offices. Group 2 is the second largest, with 58 out of 204 physicians (30%), using MCAP between 50 to 200 times per month. This group shows statistically significant positive relationships between group membership and being a specialist and between group membership and being an identified early user of MCAP (received and used the PDA in the first 3 months of deployment of the service). Groups 3 and 4, with only 6 physicians in each group, respectively, included routine, heavy users of the technology.

Conclusion

In summary, DTA shows the trajectory patterns of physician users of a newly deployed mobile clinical system. The results indicate that the early recruits are more likely to adopt the system and be stable, heavy and routine users than the later participants. Further study is needed to understand and delineate the characteristics of these users that impact adoption.