

Supplementary Table 1. Comparison of Kaiser Permanente studies examining associations between portal or secure email use and clinical services utilization

Supplementary Figure 1. Matched cohort mean after hours clinic visits and hospitalizations per month

Supplementary Figure 2. Matched cohort mean scheduled telephone and emergency department visits per month

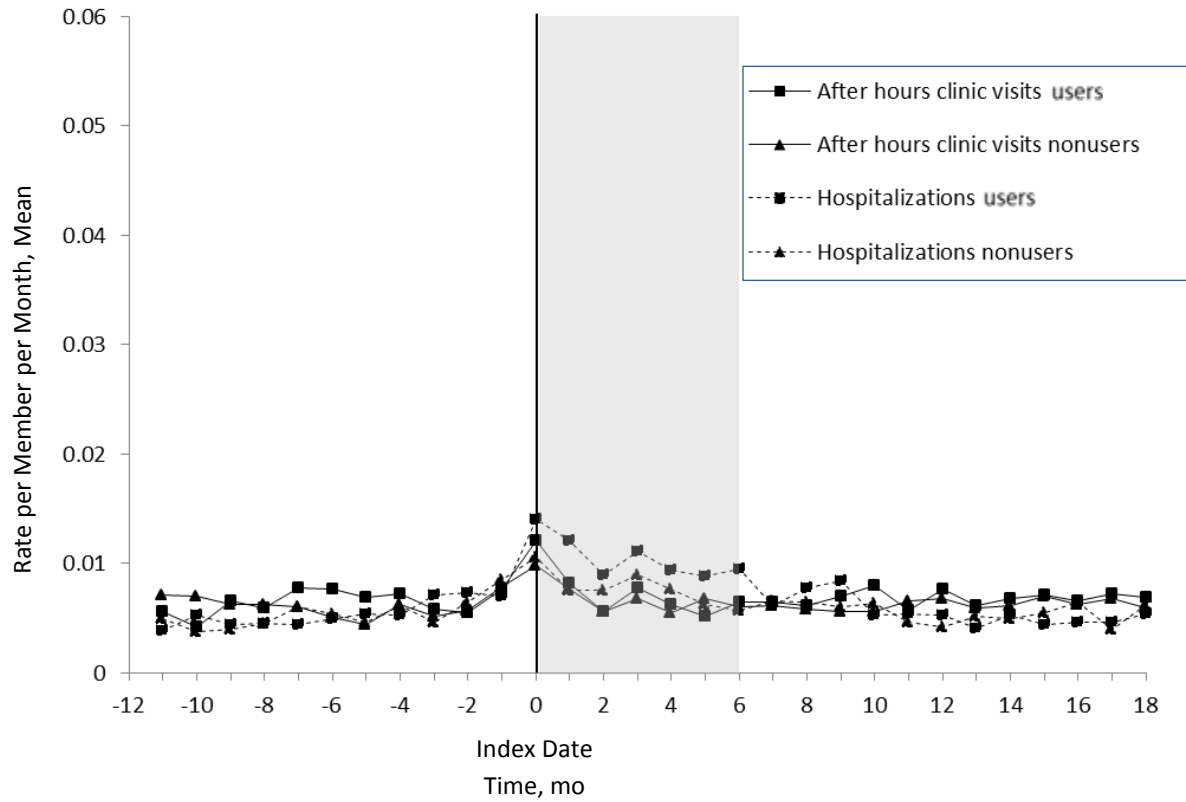
Supplementary Figure 3. Effect of matching method on differences in utilization over time

Supplementary Table 1. Comparison of Kaiser Permanente studies examining associations between portal or secure email use and clinical services utilization

	Zhou et al., 2007 ¹⁹	Palen et al., 2012 ²⁶	Meng, 2014
Years since portal initiation	3	1- 4	4 - 6
Eligible members registered, %	6	25 (year 1) 54 (year 4)	54 (year 4) 66 (year 6)
Portal function assessed	≥ 1 use of any function	≥ 1 use of any function	First use of secure email
Study design	Matched retrospective cohort	Propensity-matched retrospective cohort	Propensity-matched retrospective cohort
Matching variables	Age, sex, selected chronic conditions, primary care provider	Age, sex, number of chronic illnesses, baseline office visits	Index month and year, age, sex, benefit type, DxCG risk score, number of chronic illnesses, distance from the nearest medical office, baseline utilization of office, urgent care, and emergency department visits, patient-initiated and scheduled telephone calls, and inpatient admissions
Study population			
Total users, n	4686	87,206	360,138 (≥ 13 years)
Matched cohort, n	3201	44,321	9,345
Time periods studied before and after index use/ portal registration	3-14 months before 2-13 months after	1-11 months before 1-12 months after	1-12 months before 7-18 months after
Study outcomes	Primary care office visit and telephone contact rates	Rates of office visits, telephone encounters, after-hours clinic visits, ED visits, and hospitalizations	Rates of office visits, patient-initiated phone calls, scheduled telephone visits, after hours clinic visits, ED visits, and hospitalizations
Findings	Office visits decreased and telephone contacts increased among cases and controls with statistically significant difference in differences favoring portal use for both.	Among portal users, increases in office visits, telephone encounters, after-hours clinic visits, ED visits, and hospitalizations.	Decreased patient-initiated telephone calls after the index date among secure patient-clinician email users and non-users. No other differences within or between user and nonuser groups.

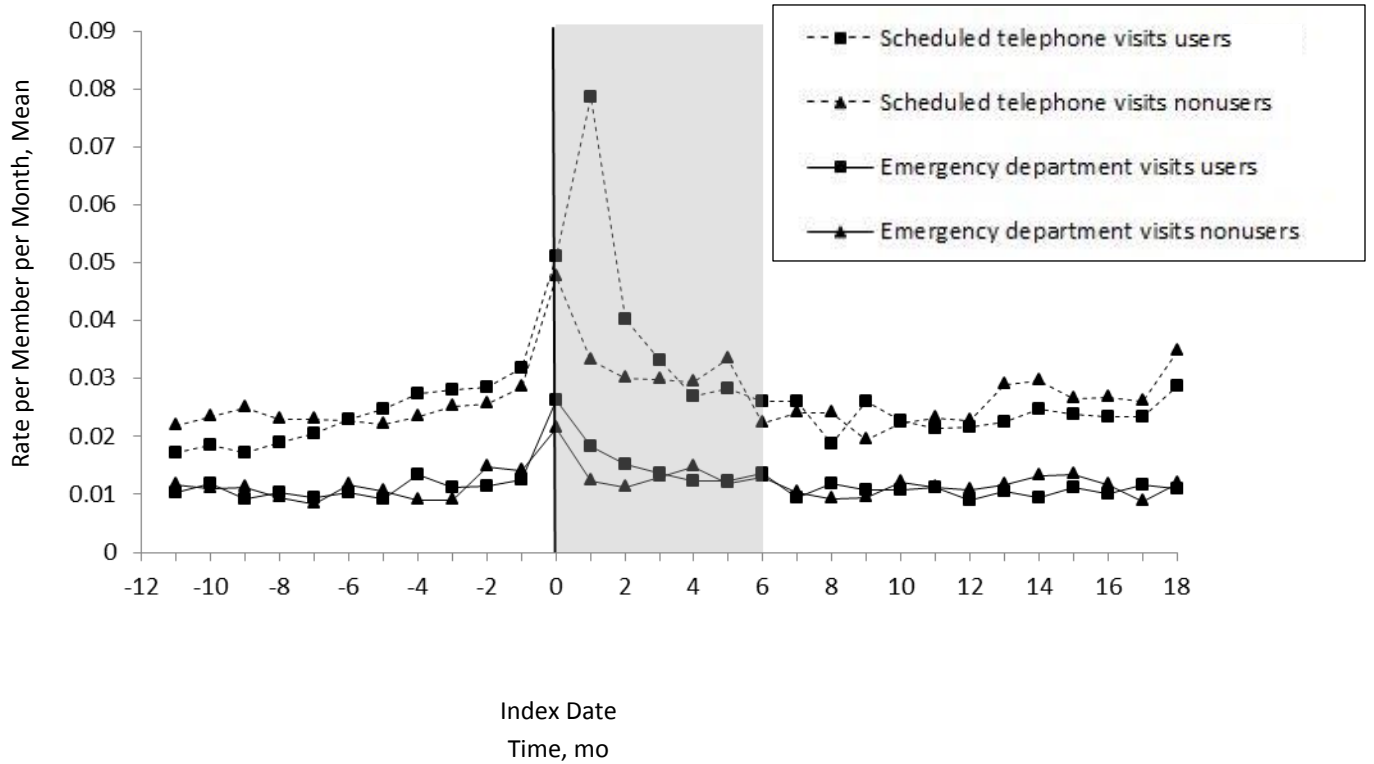
Abbreviations: ED, emergency department; PKMPY, per 1000 members per year; PMPY, per member per year

Supplementary Figure 1. Matched cohort mean after hours clinic visits and hospitalizations per month



Note: Each data point represents mean office visits from the preceding month. The tinted area indicates the period from which data were excluded for the rates reported in Table 2.

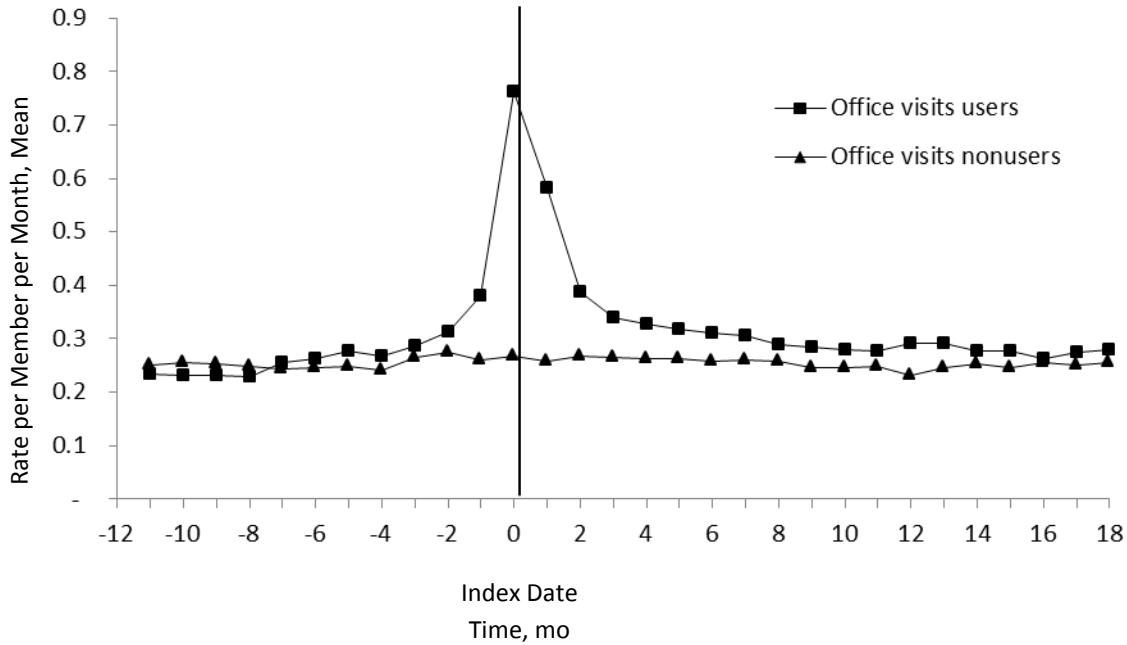
Supplementary Figure 2. Matched cohort mean scheduled telephone and emergency department visits per month



Note: Each data point represents mean office visits from the preceding month. The tinted area indicates the period from which data were excluded for the rates reported in Table 2.

Supplementary Figure 3. Effect of matching method on differences in utilization over time

3a. Matching on baseline office visits in 12 months before the index date



3b. Two-step matching on all baseline utilization in first 11 months of pre period and month before the index date

