Electronic Prescription Through EHR and National Prescription Adoption in Selected States: A Public Policy Impact on the Quality of Care

Health Science and Technology Department - M.S. Health Informatics

Darnett Osbourne Nickle - Kelly Fast, MS, RHIA, Faculty Co-Investigator

Abstract

Purpose: This research aimed to investigate the correlations between e-Prescription through EHR and national e-Prescription adoption in selected states. It looks at how public policy initiatives could have influenced the quality of care through electronic prescribing.

Methods: Pearson correlation in RStudio was used to determine correlations between variables.

Results: The correlation coefficient for both higher and lower-ranking states ranged from 0.98 to 1, $P < 2.2e^{-16}$.

Conclusion: E-Prescription through EHR positively correlated with national e-Prescription adoption in selected states. Public policy supporting e-Prescription adoption and e-Prescription through EHR could impact the quality of care.

Introduction

Quality care is patient-focused and is the extent to which health services increase the chance of desired health outcomes. Quality care effectively reduces harm while meeting the identified needs of patients and populations and is, therefore, a public policy issue. Consequently, governments enact policies and programs to foster better health outcomes and quality of care. Because prescription contributes to the quality of care, the US government has supported the national e-Prescription adoption through the Center of Medicare and Medicaid Services (CMS) EHR incentive program. This meaningful use incentive program likely impacted total national e-Prescription adoption and e-Prescription through EHR (HealthIt.gov)[2]. The total e-Prescription refers to all prescribers or providers actively on the Surescripts network (Chaffee) [1]. In contrast, total e-Prescription through EHR refers to those providers who actively prescribe using an EHR network.

Figure 1. *US Total e-Prescription Adoption and e-Prescription through EHR in Selected States*
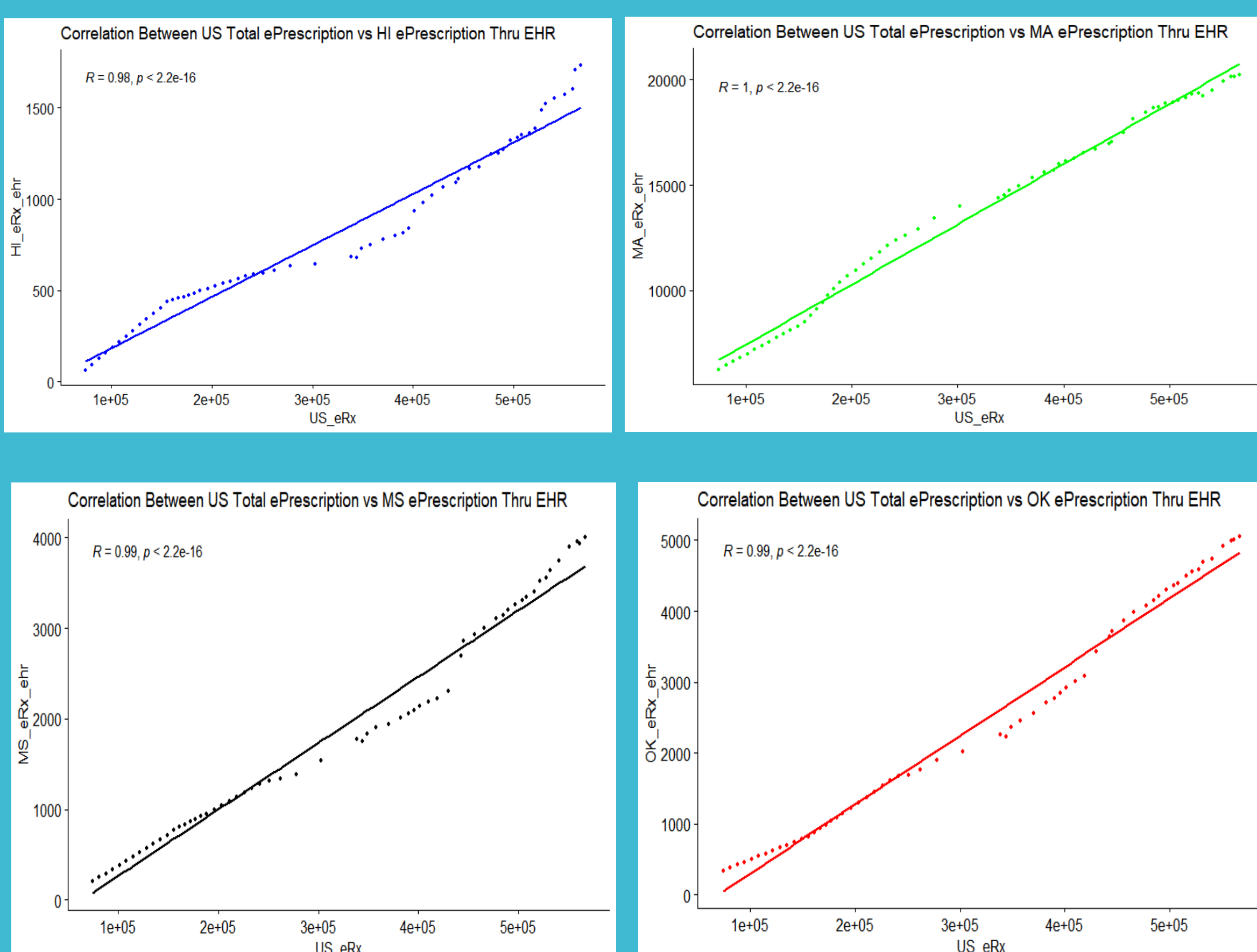
Methods and Criteria

1. The data was cleaned and all blank data cells removed.
2. Two separate Excel files were created ("epres" and "epres_X") to analyze the data.
3. Data file "epres" was used to calculate the monthly change in total e-Prescription and e-Prescription thru EHR for the national data and the data from the selected states.
4. Plots using R were created to illustrate the monthly growth for e-Prescription and e-Prescription thru EHR over the year periods 2009-2013.
5. Correlation coefficients using R were calculated for monthly change in e-Prescription and ePrescription thru EHR using the Pearson approach, for the selected regions. Pearson correlation was used for given the linear relationship between the two variables.
6. Data file "epres_X" was used to calculate the correlation coefficient the total e-Prescription for the US and each of the selected states.
7. Summary statistics for the dataset was also presented.

Results

➢ The correlation coefficient between the US total e-Prescription adoption and e-Prescription through EHR in selected states ranged from 0.98 to 1. $p < 2.2e^{-16}$. Figure 1.
➢ The correlation coefficient of the percentage change in total e-Prescription vs e-Prescription thru EHR ranged from 0.92 – 0.99 across the states. Figure 2.
➢ Monthly Change in Total e-Prescription to Change in e-Prescription thru EHR: In HI, MS, OK and US total, the monthly change in total e-Prescription (pcttoteRx) adoption fluctuated widely, as with percentage change in total e-Prescription through EHR (pcttoteRxehr). The state of MA was the only one in which pcttoteRx and pcttoteRxehr mirrored each other. Figure 3.
➢ The number of providers prescribing through EHR systems increased while total e-Prescription increased nationally.

Figure 2. *Percentage Change in Total ePrescription vs ePrescription Thru EHR*
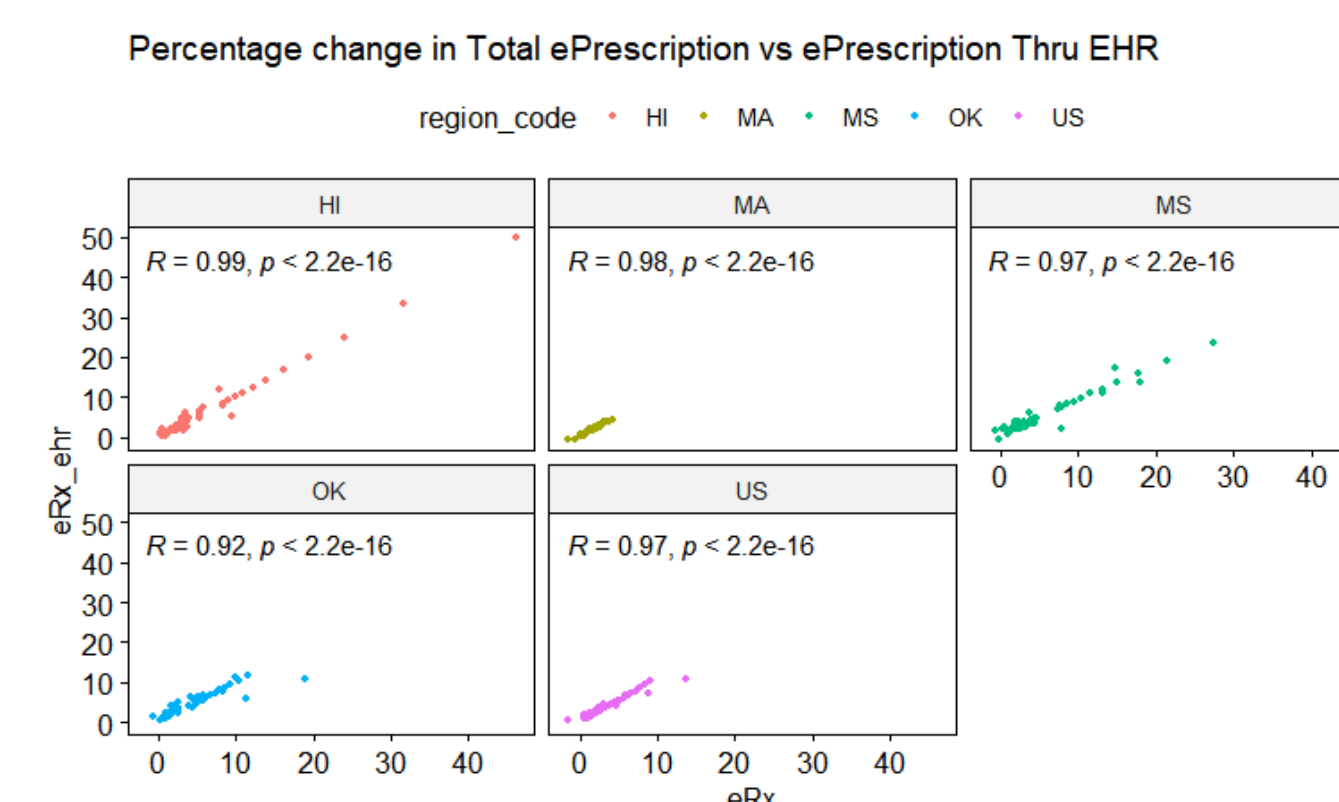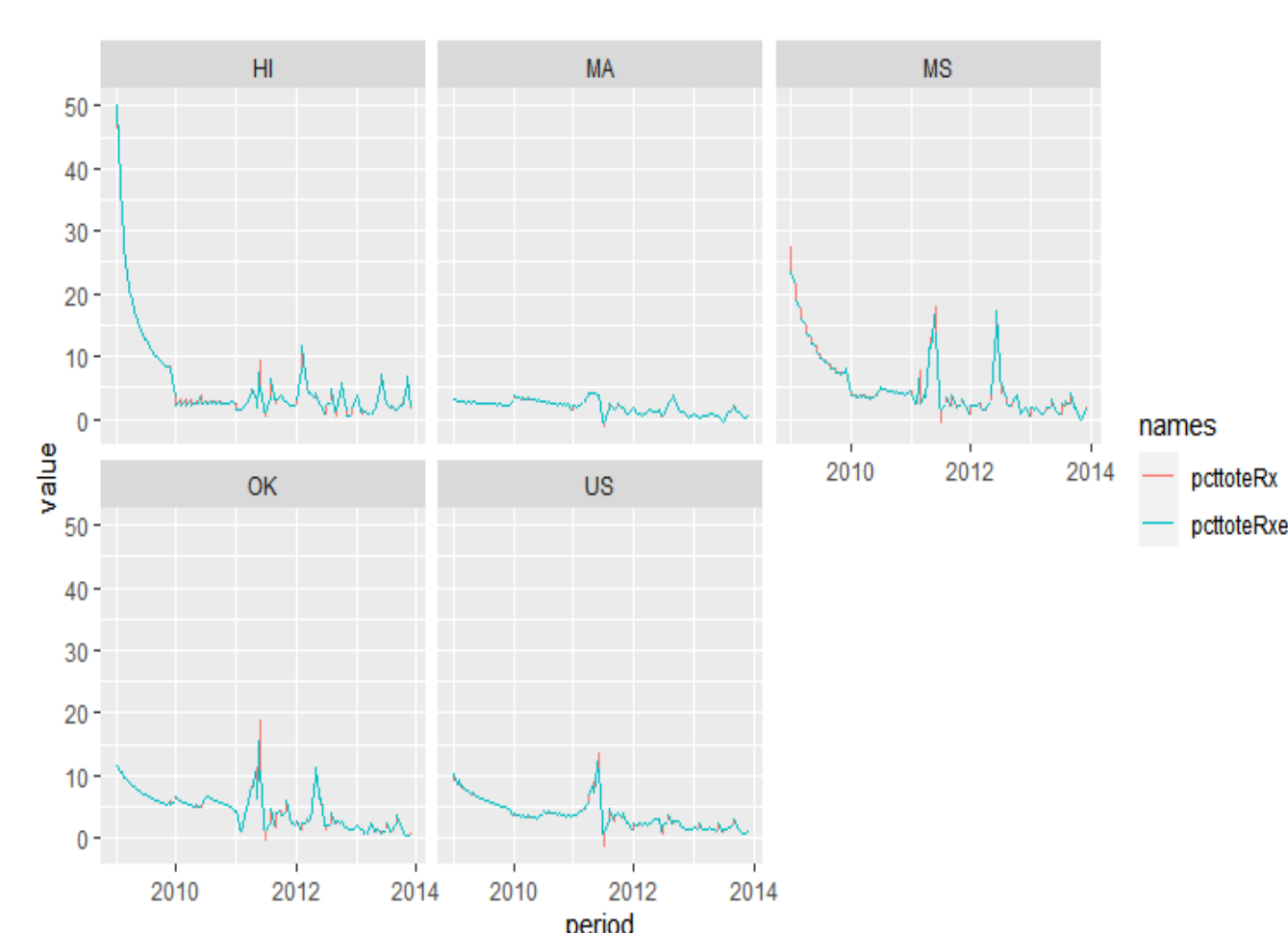.

Figure 3.

Monthly Change in Total e-Prescription to Change in e-Prescription EHR

Discussion

➢ Regression coefficient ranged from 0.98 to 1 and the $p < 2.2e^{-16}$ across the states.
➢ Total national e-Prescription adoption had a positive effect on electronic prescribing through EHR. ($p < 2.2e^{-16}$, $p < .05$).
➢ The number of providers prescribing through EHR increased.
➢ E-Prescription adoption was supported by a public policy initiative.
➢ HITECH, financial incentives was awarded for meaningful use of certified EHR.
➢ An impact of public policy on e-Prescription and the quality of care across states.
➢ Fluctuations in the monthly percentage change in total e-Prescription and change in e-Prescription through EHR, provides details regarding providers' responses to the financial incentives.

Conclusions

This study explores and compares correlations between e-Prescription through EHR and national e-Prescription adoption in selected states. There was a strong positive correlation between total e-Prescription adoption and e-Prescription through certified EHR systems. In all four states, the regression coefficient ranged from 0.98 to 1, and the p-value of $p < 2.2e^{-16}$ is p-value <.05. The public policy supporting e-Prescription adoption could have influenced greater use of electronic prescriptions throughout multiple states irrespective of states' healthcare rankings.

Public policy could be a valuable tool to enhance the quality of care. Stakeholders should do quality research in developing effective public policy and to evaluate possible connections between existing public policy and quality care outcomes. One limitation of the study is that access to treatment through electronic prescription is narrow and does not guarantee the quality of care or desirable health outcome. Also, this study did not include data on providers who prescribed through stand-alone EHR systems. This could be the subject of a future study.

References

[1] Chaffee, M. (2021). *CMS should proceed with EPCS requirement without another delay.* Surescripts. https://surescripts.com/news-center/intelligence-in-action/opioids/cms-should-proceed-with-epcs-requirement-without-another-delay

[2] HealthIT.gov (2014). *Electronic prescribing adoption and use by state.* https://www.healthit.gov/data/datasets/electronic-prescribing-adoption-and-use-state