IS RESIDENCY PROGRAM SIZE CORRELATED WITH QUALITY PERFORMANCE WITHIN THE NEW YORK STATE HOSPITAL MEDICAL HOME DEMONSTRATION?

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RESEARCH QUESTION: Is there a correlation between the size of hospital residency programs and care coordination in the New York State Hospital Medical Home Demonstration?

BACKGROUND AND OBJECTIVES:
The Hospital Medical Home demonstration (HMH) was a healthcare quality and safety improvement program for New York State Medicaid members, overseen by the New York State Department of Health (NYS DOH) from 2013-2014. It was funded by the Centers for Medicare and Medicaid Services, providing up to $250 million to 60 teaching hospitals and over 150 of their outpatient department (OPD) sites. The primary focus of the demonstration was to improve the quality of care for Medicaid patients provided at residency training sites. This was done, in part, by teaching residents patient centered medical home (PCMH) concepts. Participating OPD sites were required to become recognized as high-level (level 2 or 3) PCMHs recognized by the National Committee for Quality Assurance (NCQA) and work on specific projects related to improving resident training, measuring health outcomes, and providing coordinated care. As part of their participation, sites were required to submit quarterly data for specific continuity, care transitions, care coordination, cultural competence, and quality measures to demonstrate their progress throughout the demonstration. Residency program size ranged from as few as six residents in a program to as many as 408 residents in a program.

Site-reported data was used to explore whether larger hospital residency programs, with their potentially better access to resources, had higher rates of performance on standardized measures as the demonstration progressed than from smaller programs. This research serves to test the hypothesis that residency program size is correlated with higher performance rates for the following selected measures: 1) The rate of resident continuity with their own patient panel 2) The rate of follow-up visits for high-risk patients with their assigned resident at the OPD within 48 hours of a hospital discharge 3) The rate of patients at the OPD with documentation of a medication reconciliation upon admission 4) The rate of timely transmission of transition records from the hospital to the OPD 5) The rate of prescriptions written in the preferred language of the patient for patients whose primary language is not English 6) The rate of referrals made to the specialist and not completed.

METHODS:
A Pearson's linear correlation test was performed using the reported rates from calendar-year quarter 3, 2013 through quarter 4, 2014 and the hospital residency program size that was reported to the NYS DOH at the beginning of the demonstration. This test was used to determine if there was a relationship between the size of the participating residency clinic and each of the six selected measures for each quarter of reported data. Quarters 1 and 2, 2013 data were not included because they were found to be incomplete. An alpha value of .05 was used to determine statistical significance.
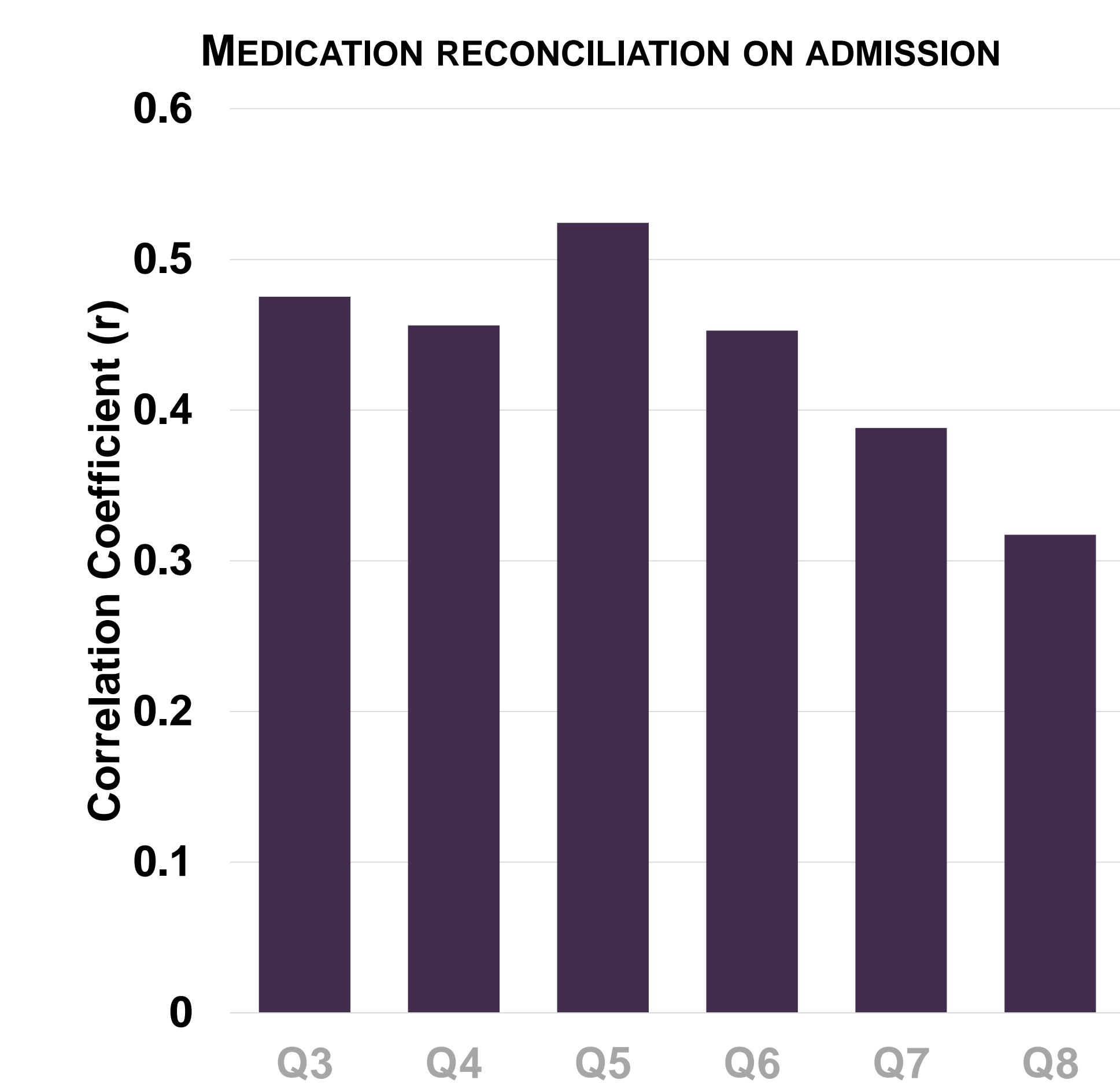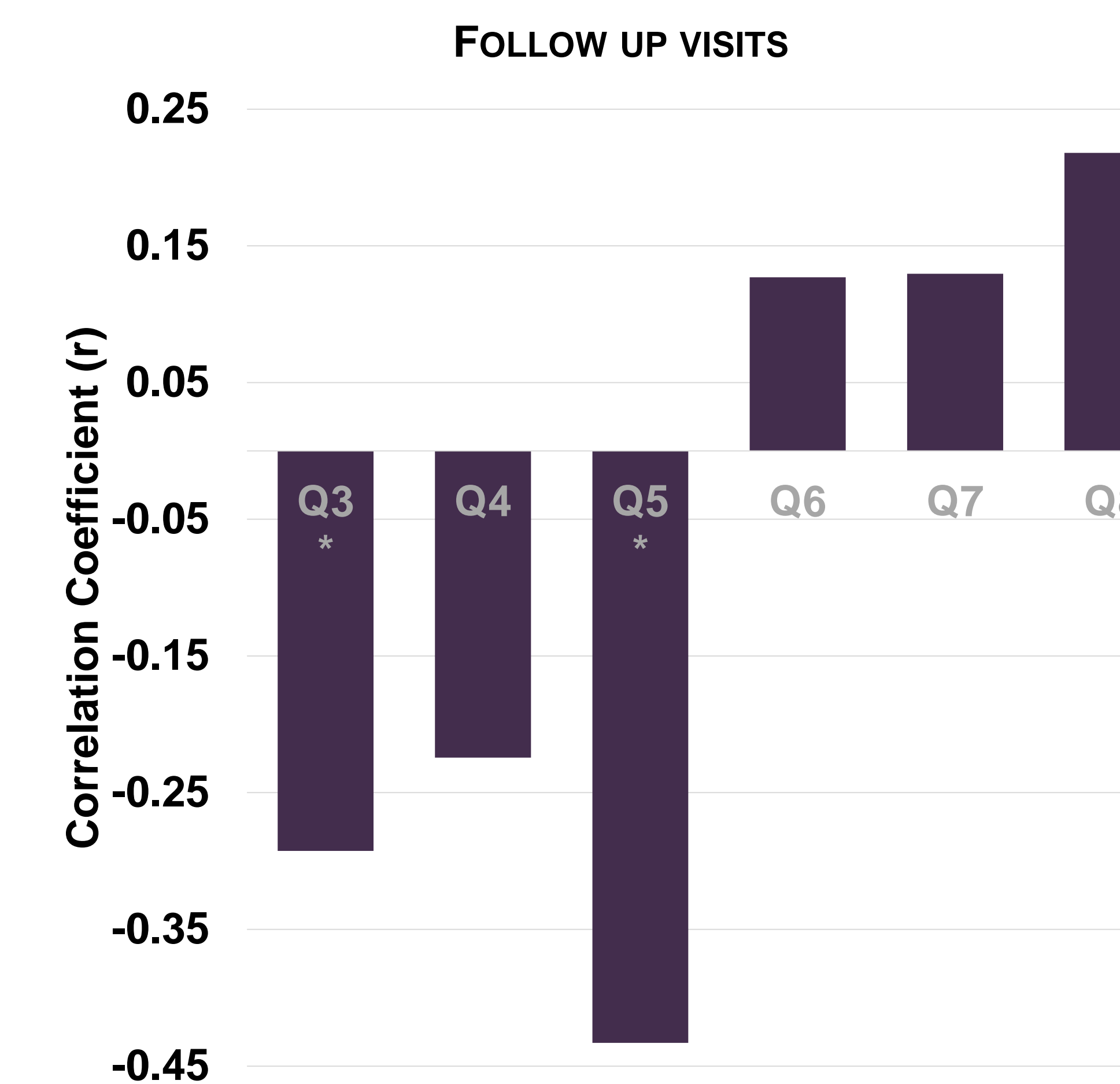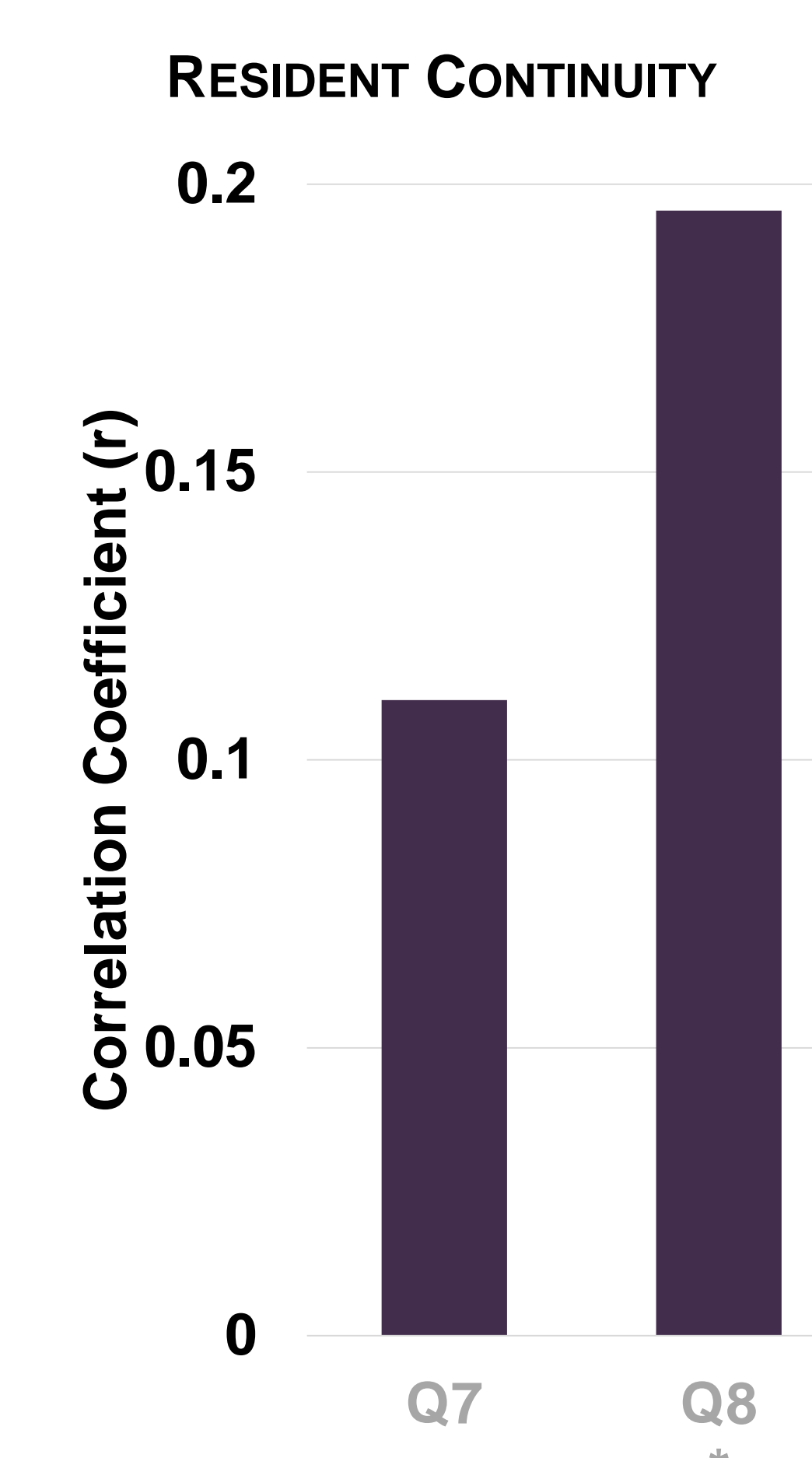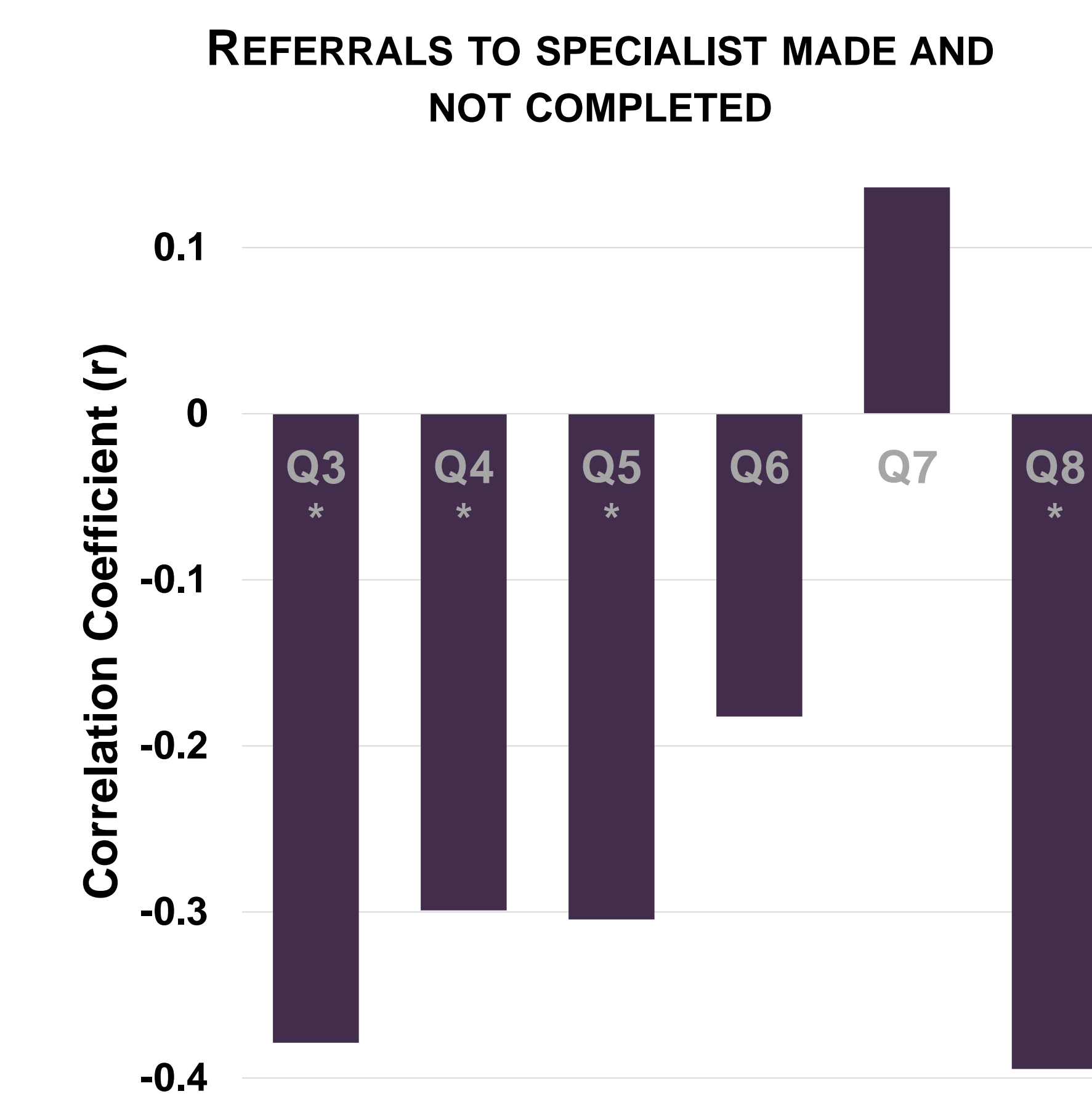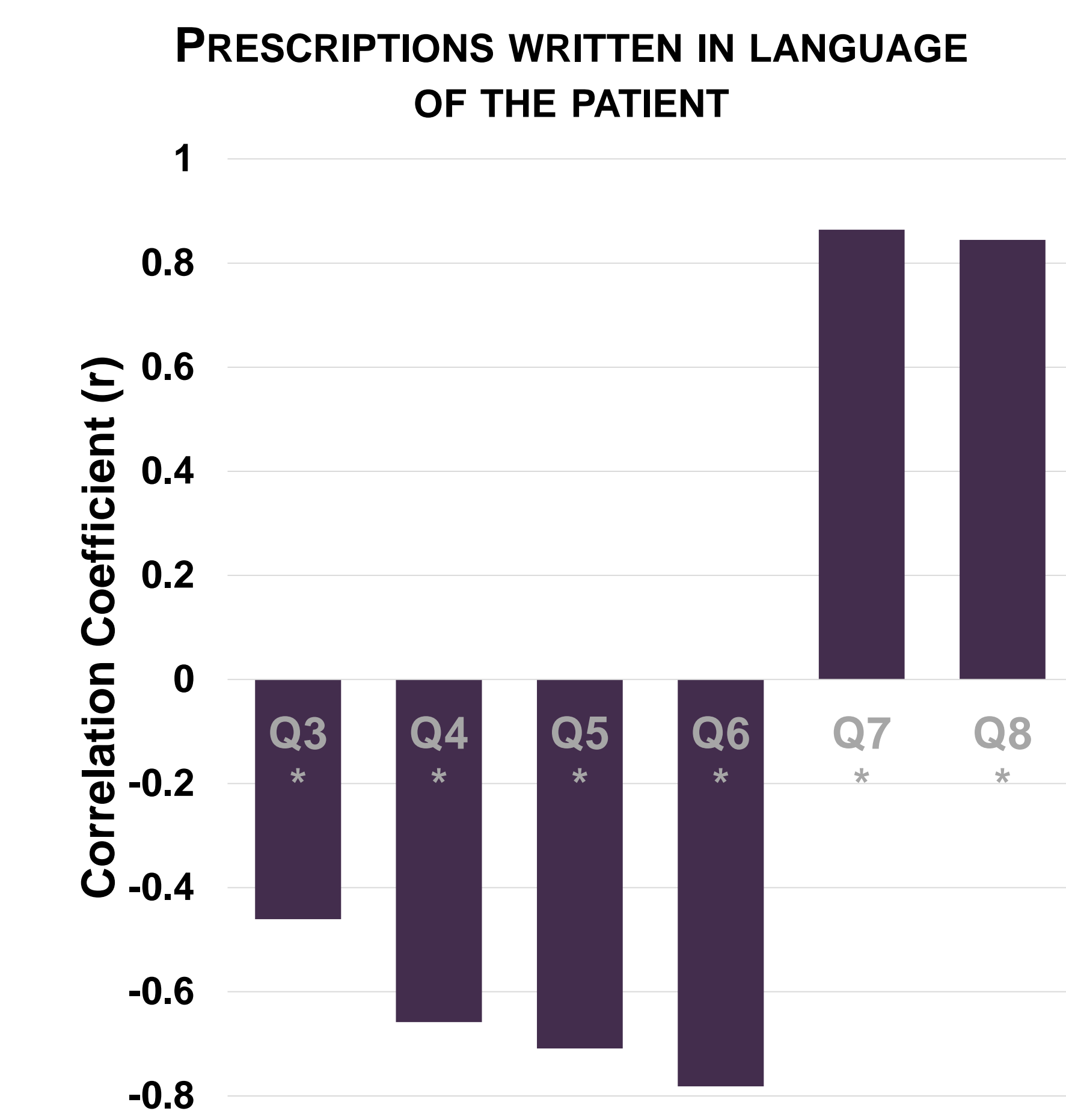
LIMITATIONS:
The data presented in this analysis was self-reported. A high volume of unreported rates limited the analyses to six of the demonstration's eight quarters. The resident continuity measure was developed later on in the demonstration and sites were only required to report this measure the last two quarters of the demonstration. Hospital OPD sites chose which projects to participate in and not all sites participated in all projects; therefore, hospital OPD sites were only required to report on measures pertaining to the projects in which they participated. This attributed to the variation in the number of sites that reported for each measure evaluated. Values considered outliers were also removed from the analysis, thereby decreasing the sample size. Nine sites dropped out of the project for various reasons, which explains the change in sample size of reported rates by quarter as well. Rates with smaller sample sizes may have less statistical power than those with larger sample sizes.

RESULTS: At the conclusion of the demonstration four measures showed there was a weak-to-moderate relationship, one measure showed a strong relationship, and one measure showed there was no relationship with hospital residency program size. *Indicates the correlation between two variables is significant (p value <0.05).

	Q3 (Sep 2013)	Q4 (Dec 2013)	Q5 (Mar 2014)	Q6 (Jun 2014)	Q7 (Sep 2014)	Q8 (Dec 2014)
	Correlation Coefficient (r) Probability (p) Sample size (n)	Correlation Coefficient (r) Probability (p) Sample size (n)	Correlation Coefficient (r) Probability (p) Sample size (n)	Correlation Coefficient (r) Probability (p) Sample size (n)	Correlation Coefficient (r) Probability (p) Sample size (n)	Correlation Coefficient (r) Probability (p) Sample size (n)
RESIDENT CONTINUITY Numerator: Patient visits at which resident saw his/her assigned patient Denominator: All patient visits	-	-	-	-	0.11039 (0.2130) 129	0.19541* (0.0265) 129
FOLLOW UP VISITS Numerator: Number of high risk Medicaid patients from the outpatient site discharged that completed a follow up PCP visit within 48 hours of discharge Denominator: All high risk Medicaid patients from the outpatient site discharged from an inpatient facility	-0.29260* (0.0103) 76	-0.22441 (0.0513) 76	-0.43296* (<0.0001) 76	0.12697 (0.2712) 77	0.12953 (0.2714) 74	0.21801 (0.0658) 72
MEDICATION RECONCILIATION ON ADMISSION Numerator: Number of patients from the outpatient site with documentation of medications reconciled on admission Denominator: Number of patients admitted from the outpatient site	0.47531* (<0.0001) 77	0.45617* (<0.0001) 77	0.52422* (<0.0001) 76	0.45275* (<0.0001) 77	0.38818* (0.0005) 77	0.31733* (0.0049) 77
TIMELY TRANSMISSION OF TRANSITION RECORD Numerator: Number of patients from the outpatient site for whom the specified transition record was transmitted from the hospital within 24 hours of discharge Denominator: Number of patients from the outpatient site discharged from an inpatient facility	0.28004* (0.0136) 77	0.43682* (<0.0001) 77	0.41568* (0.0002) 76	0.42376* (0.0001) 76	0.43088* (<0.0001) 77	0.37721* (0.0008) 76
PRESCRIPTIONS WRITTEN IN LANGUAGE OF THE PATIENT Numerator: Number of prescription labels not in English from prescriptions written in the outpatient site Denominator: Number of prescription labels written in the outpatient site for whom English is not the patient's preferred language	-0.46045* (0.0473) 19	-0.65818* (0.0022) 19	-0.70869* (0.0007) 19	-0.78172* (<0.0001) 25	0.86420* (<0.0001) 24	0.84464* (<0.0001) 25
REFERRALS TO SPECIALIST MADE AND NOT COMPLETED Numerator: Number of referrals from the outpatient site made and not completed Denominator: All referrals from the outpatient site	-0.37878* (0.0052) 53	-0.29907* (0.0313) 52	-0.30442* (0.0267) 53	-0.18232 (0.1913) 53	0.13630 (0.3504) 49	-0.39448* (0.0035) 53

*Indicates the correlation between the two variables is significant (p value <0.05)
The correlation coefficient (r) is a measure of the direction and strength of a linear relationship between two variables. The range of r is -1 to 1, where -1 is a perfect negative relationship and 1 is a perfect positive relationship between two variables. An r value of 0 indicates there is no relationship.

PRESCRIPTIONS WRITTEN IN LANGUAGE OF THE PATIENT

REFERRALS TO SPECIALIST MADE AND NOT COMPLETED

RESIDENT CONTINUITY

FOLLOW UP VISITS

MEDICATION RECONCILIATION ON ADMISSION

TIMELY TRANSMISSION OF TRANSITION RECORD

DISCUSSION:
The relationship between residency size and resident continuity may be interpreted as a positive result, that most programs have systems in place that enhance continuity of care in their OPDs, a core concept of PCMHs. Similarly, no significant relationship exists between residency program size and the rate of follow up care within 48 hours of hospital discharge. Many sites struggled to achieve high rates for this measure, indicating most hospital residency programs are struggling to implement a follow up care process, regardless of residency program size. The weak-moderate relationships between medication reconciliation upon hospital admission and timely transmission of transition records could mean other variables may be influencing these rates and should be investigated. Interestingly, the evolution of the rate of prescription labels written in the preferred language of the patient over time could indicate that larger programs had a difficult time coordinating policy changes to provide culturally competent care services, but ultimately were able to use their resources to transform more easily than smaller programs could. Lastly, the negative-moderate correlation between residency program size and referrals to specialists made and not completed is interpreted as larger programs have lower rates. It may indicate that larger programs have numerous, strong relationships with specialists, or greater access within their hospital system to coordinate care with specialists.

CONCLUSIONS AND FUTURE RESEARCH:
Although strong, moderate, and weak relationships do appear to exist between residency program size of HMH-participating hospitals and project quality measures, residency program size does not seem to have a consistent effect on the quality and coordination measures represented in this analysis. Further research will focus on what additional aspects of participating HMH sites could have had a linear relationship with desirable rates.

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