

Implementation of a Direct-Mail FIT Program, Screen to Prevent Colon Cancer (STOP CRC), in Federally Qualified Health Centers

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BACKGROUND

- Evidence-based interventions can only be effective if successfully implemented; yet, little is known about the organizational factors that drive implementation success, particularly in busy health center practices.
- Screen to Prevent Colon Cancer (STOP CRC) a cluster randomized, pragmatic trial of a mailed FIT, aimed to increase colorectal cancer screening in 8 health centers (26 clinics) in Oregon and California.
- The intervention improved rates of screening overall¹, yet substantial variation was observed in the extent that health centers implemented the intervention (% of eligible adults who were mailed a FIT).
- We used the Consolidated Framework for Implementation Research (CFIR) model² and qualitative comparative analytics (QCA) and coincidence analysis (CNA) to identify the combination of conditions that distinguished health centers having high, medium, and low implementation levels.

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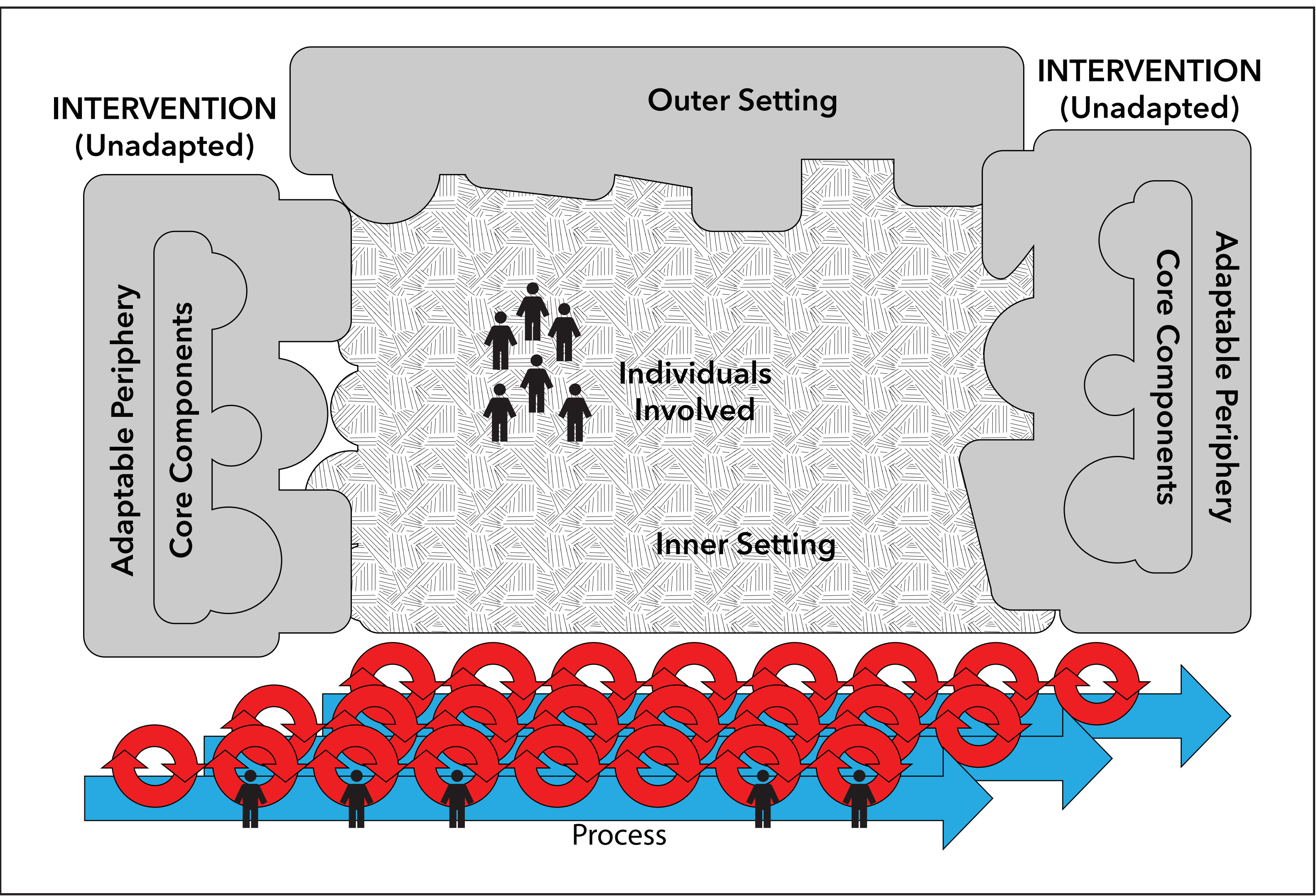
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METHODS

- We evaluated the following drivers of implementation success in the inner and outer settings:
- Inner Setting:**
- Program components:** specific intervention components delivered and adaptations made including a separate introductory letter, training and startup characteristics, types of Plan-Do-Study-Act cycles, lab location, centralized processing levels, staffing models, participation in project meetings, technical competency in the Electronic Health Record (EHR) tools, readiness, and maintenance efforts.
 - Clinic components:** health center characteristics (i.e. size and location), administration and leader-ship structure, alternative payment models, readiness for change and clinic growth.
- Outer Setting:**
- Program components:** other CRC screening initiatives, and delays and issues with the EHR.
 - Clinic components:** lab agreements and issues; types of FIT offered by the lab.
- Implementation Outcomes:**
- We defined implementation as the proportion of eligible patients who received a FIT kit mailing between June 2014 and February 2015.

- Data sources for components evaluated included:
- EHR data (mailings, phone calls, diagnoses, procedures, National Quality Forum)
 - Cost data provided by clinics included program compliance and fidelity questions
 - Surveys, staff, and leadership interviews at baseline and follow-up
 - Project participation data from meetings, EPIC work-order requests, logs for technical assistance, and training sessions



- We categorized the 8 health centers as having high, medium and low implementation levels, based on the proportion of eligible patients mailed a FIT.
- We applied Configurational Comparative Methods (CCMs) to look across all program and clinic components and identify the implementation conditions with the strongest connections to implementation outcomes. QCA and CAN were used in R³.
- Using prior theoretical knowledge to assess this condition-level output, we identified a handful of factors that could distinguish between high, medium and low implementation success. We used the multi-value CNA function with the R package "CNA" to generate models and final solutions.



stop

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RESULTS

- CCM analyses identified a two-factor solution that in combination perfectly distinguished between high vs medium vs low implementation with 100% consistency and 100% coverage. The two factors were Centralized Processing Level (values: HIGH; MIXED) and Separate Intro Letter (values: YES; NO).
- Health centers with high levels of implementation had centralized staff and mailed the introductory letter separate from the FIT kit. Health centers with medium levels of implementation had two solution pathways for: the combination of Centralized Processing Level = MIXED AND Separate Intro Letter = YES; or the combination of Centralized Processing Level = ADVANCED AND Separate Intro Letter = NO.
- Health centers with low levels of implementation had the combination of Centralized Processing Level = MIXED AND Separate Intro Letter = NO.
- All solutions could be directly verified in the dataset. The diversity index for this solution was 1; actual cases in the dataset represented all four configurations of these two dichotomous factors.

DISCUSSION

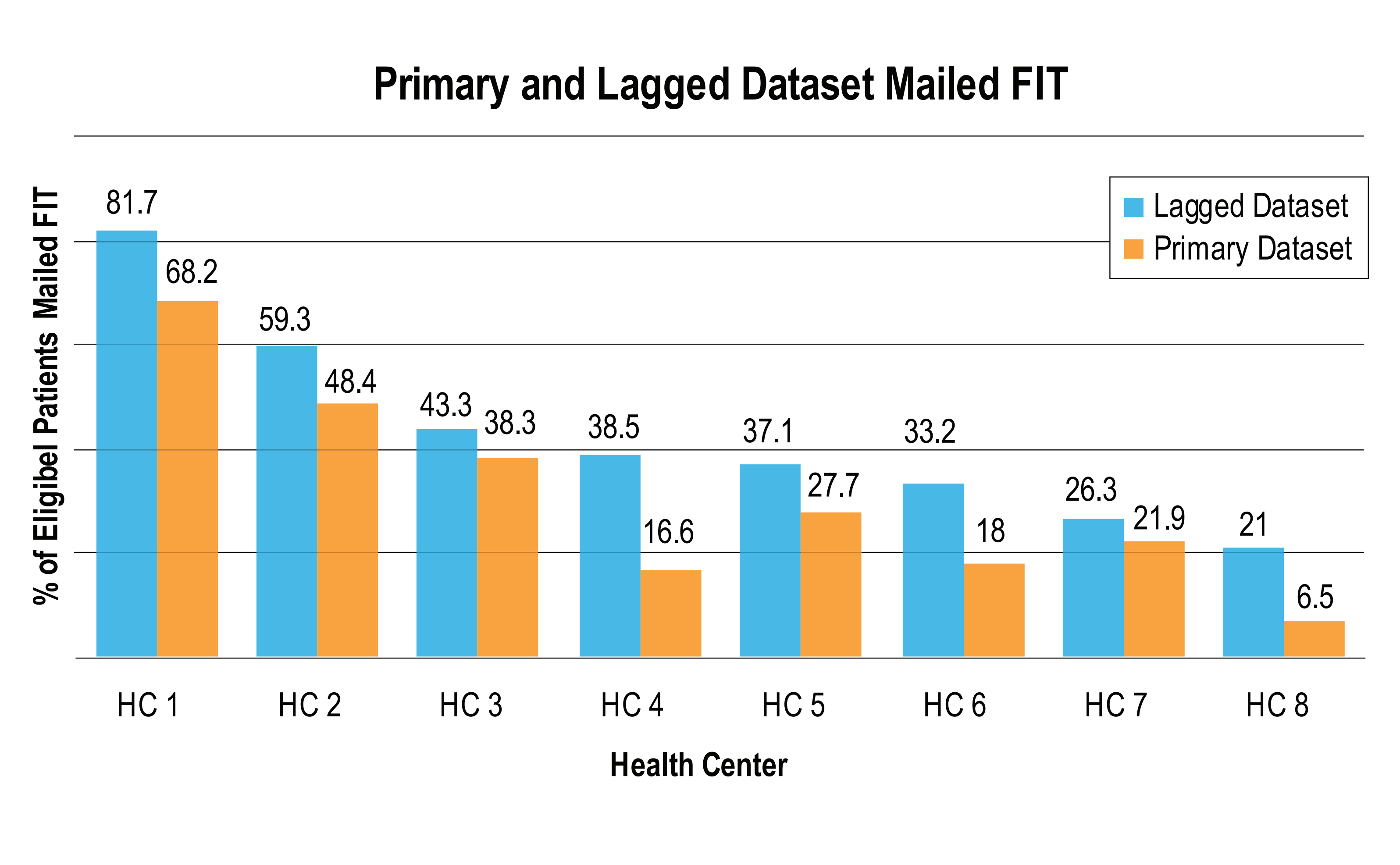
- Two factors explained high implementation success with 100% consistency: a centralized process for delivering intervention components with dedicated staff and the mailing of an introductory letter prior to the kit mailing.
- A centralized staffing model may have provided protected time for staff to implement the program. Health centers without centralized staff instead relied on multiple staff across diverse roles to deliver the program.
- The mailing of an introductory letter separately from the FIT kit may have reflected a strong commitment to deliver all components of the program and maximize its effectiveness.
- Contrary to expectation, staffing changes, clinic growth, training attendance did not predict implementation success.

CONCLUSION

- Using an innovative mathematical approach in which CCMs were applied to health services and implementation research, we took a large dataset and identified two key factors that in combination perfectly distinguished between high vs medium vs low implementation success with 100% consistency and 100% coverage.
- Applied use of CCM analyses can produce actionable findings to guide implementation and improve healthcare delivery.

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Real Program Components				
Health System	% Mailed FIT in Lagged Dataset	OUTCOME-CATEGORY	Separate Intro Letter Yes/No	Centralized Processing Level
1	81.7%	HIGH	Yes	Advanced
2	59.3%	HIGH	Yes	Advanced
3	43.3%	MED	Yes	Mixed
4	38.5%	MED	Yes	Mixed
5	37.1%	MED	Yes	Mixed
6	33.2%	MED	No	Advanced
7	26.3%	LOW	No	Mixed
8	21.0%	LOW	No	Mixed