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Research Article

The Kansas PEAK 2.0 Program Facilitates the Diffusion of Culture-Change Innovation to Unlikely Adopters

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Abstract

Purpose of the Study: Recent studies have shown that nursing homes adopting culture change are disproportionately not-for-profit and CCRC-affiliated, with greater quality of care. Through the lens of diffusion-of-innovation theory, we examined whether Kansas' Medicaid pay-for-performance program PEAK 2.0, which incents the adoption of person-centered care (PCC) and worker empowerment, succeeded in its goal of spreading adoption to atypical- as well as typical-adopting nursing homes.
Design and Methods: We conducted a retrospective cohort study of 349 nursing homes in the state during PEAK 2.0's existence, 2012–2016. We constructed a data set combining state program data, provider characteristics from CMS data sets, and other demographic information from the 2010 Census. With a series of logistic regression models, we tested whether program joiners differed from nonjoiners by profit status and other demographic factors, as well as quality-related and case-mix factors.
Results: We found that in PEAK 2.0's first year, 2012, adopters were more likely to be not-for-profit and part of a CCRC, with higher occupancy rates and greater quality. However, by 2013 these associations became marginal, and in 2014 and 2015, we found no differences between program joiners and nonjoiners.
Implications: The results show that by PEAK 2.0's third year, the program—with its large financial incentive and other potentially important characteristics—succeeded in attracting a large set of nursing homes whose demographics were representative of those in the state. This is important because other studies have found that the adoption of PCC is associated with improved health and well-being for residents.

Keywords: Nursing homes, Value-based purchasing, Medicaid, Pay-for-performance, Person-centered care

Nursing home operators are notoriously slow to innovate or act as early adopters of evidence-based practices (Castle, 2001; Rahman, Applebaum, Schnelle, & Simmons, 2012). Organizations that rapidly adopt new practices are typically less bureaucratic and less regulated, with a horizontal staffing structure, uncommitted funds and other resources, and a well-educated and highly skilled staff (Rahman et al., 2012; Rogers, 2003). Nursing homes (NHs) are nearly the exact opposite: They are highly regulated and have strict staff hierarchies, few extra resources, and a direct care staff that is relatively uneducated and poorly compensated. Their care practices undergo "evolutionary," incremental change, largely as a result of evolving rules and regulations (Rogers, 2003), but they rarely

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undergo more systemic, "revolutionary" changes (Burke, 2014; Greiner, 1998).

Several recent, national-scale studies have provided evidence that the thorough adoption of nursing home "culture change" significantly improves residents' quality of care and quality of life (Grabowski, O'Malley, et al., 2014; Miller, Lepore, Lima, Shield, & Tyler, 2014). The goals of culture change include the extensive adoption of person-centered care (PCC) for residents, the flattening of staff hierarchies and empowerment of frontline workers, and the improvement and rigorous use of quality measures (Koren, 2010). A major subset of culture change's aims are encompassed by PCC, which in turn includes incorporating resident choices, preferences and direction into care and all aspects of nursing home life involving residents; fostering close relationships among residents, staff, families, and the community; and making the environment home-like (Bryant, Stone, & Barbarotta, 2009; Koren, 2010). As would be expected from the adoption of these tenets, practices that were convenient for institutional-model nursing homes such as the prevalent use of physical restraints have been found to decline as the implementation of PCC takes place (Miller, Lepore, et al., 2014). These multiple points of evidence indicate that adoption of PCC should be considered a best practice in nursing homes, if not an evidence-based practice.

Thoroughly adopting PCC, as in the facilities included in the Grabowski and Miller studies above, is a challenge as it requires myriad systemic changes to daily procedures with residents, staffing models and practices, and the environment. Not surprisingly, although many nursing homes have made care somewhat more person centered, for example, by introducing greater resident choice over the food they eat, only 13% of nursing homes in a recent national study were found to be comprehensive adopters (Tyler, Lepore, Shield, Looze, & Miller, 2014).

The nursing homes that adopt PCC and other tenets of culture change to a high degree are not representative of U.S. nursing homes more generally. They are much likelier to have the following traits:

- Not-for-profit status.
- CCRC affiliation.
- Larger size, with higher occupancy rates.
- A higher proportion of private-pay residents and fewer Medicaid residents.
- Greater quality of care as evidenced by fewer health-related survey deficiencies.

(Grabowski, Elliot, Leitzell, Cohen, & Zimmerman, 2014; Miller, Looze, et al., 2014), similar to what has been found for nursing home care innovators more generally (Castle, 2001). These discrepancies between typical and atypical culture-change adopters are important because they mean that residents in higher-resource, nonprofit nursing homes may benefit disproportionately from PCC, whereas those in lower-resource, for-profit homes may experience

inferior quality of care and quality of life. Consistent with that, it has been found that residents' perception of their degree of choice in everyday life, as provided them through PCC, correlates positively with their overall dissatisfaction or satisfaction with care (Bangerter, Heid, Abbott, & Van Haitsma, 2016).

Recognizing the benefits of PCC, leadership in the state of Kansas developed a new policy meant to encourage broad adoption of these practices in nursing homes. In 2002, the state legislature approved the Promoting Excellent Alternatives in Kansas Nursing Homes, or PEAK 1.0, which recognized homes displaying excellence in adopting PCC and rewarded them with a one-time financial gift of $300 (Bryant et al., 2009). Contrary to the program's goals, however, few facilities were found to merit recognition (Ewert & Thurness, 2016).

In light of the failure to attract homes using the small-award and recognition incentives of PEAK 1.0 as well as the limited ability to apply a consistent and sustainable standard for the practices of PCC, the PEAK 2.0 program was inaugurated in 2012. This program employs a substantial Medicaid pay-for-performance (P4P) incentive to promote the thorough adoption of PCC and worker empowerment across nursing homes statewide, including atypical adopters. The escalating financial incentive begins at $0.50 per Medicaid resident per day for homes in the earliest levels of the program, and it increases progressively as homes implement PCC and worker empowerment (henceforth referred to as "PCC") to greater degrees, up to $4.00 per Medicaid resident per day. The P4P program appears to be achieving its aim of widespread participation among the state's approximately 350 NHs: In its first year, 2012–2013, 122 homes participated; in 2013–2014, 157 homes participated; in 2014–2015, 224 homes participated; and in 2015–2016, 229 facilities participated.

The PEAK 2.0 program consists of three core components: structured education and training on well-defined principles and practices, the objective evaluation of progress, and the escalating financial incentive. Homes with little or no experience with adopting PCC are assigned to the "Foundation" level the first year they participate, which consists of a year of structured education and training. At the end of their Foundation year, they present an "action plan" detailing how they will adopt PCC in one of four major program areas—Resident Choice, Homelike Environment, Empowering Employees, and Meaningful Life—the next year at Level 1. Level 1 homes often begin with the area of Resident Choice and propose implementing greater choice over food options and availability as well as over sleeping and waking times. During Level 2, participating homes strive to implement PCC in all program areas. In Levels 3–5, they demonstrate sustainability of their adoption of PCC in all program areas. (For more on PEAK program areas and other information, please see http://www.he.k-state.edu/aging/outreach/peak20/2016–17/peak-handbook.pdf.)

An important program feature is the objective evaluation of progress. To determine the next year's level for participating homes, staff from Kansas State University's Center on Aging evaluate each home's progress on achieving the aims of their action plans during an in-person or videoconference meeting using an instrument developed for the program's four main areas of PCC. The meetings must include at least two direct care workers as well as two or more management staff from each participating home.

Conceptual Model

We studied whether the program succeeded in attracting nursing homes that reflected the demographics of homes in the state, rather than those of typical culture-change adopters, through the lens of Rogers' diffusion-of-innovation theory (Rogers, 2003). This theory has been influential in public health and social science research, though its use has been less frequent in the long-term care field. It describes the process of individuals' or organizations' adoption of any new idea or practice, termed an "innovation." Individuals and organizations do not adopt new policies or procedures at the same high rate no matter how strong the evidence base. Instead, for any given sample presented with adopting something new, the adoption process spreads through innovators (comprising less than 3% of the sample), early adopters (the next ~13% of the sample), early-majority adopters (the next 34%), late-majority adopters (the next 34%), and finally laggards (the last 16%; Rogers, 2003). Figure 1 illustrates these groups as defined by Rogers and shows the sigmoidal curve for net adoption of an innovation that eventually reaches the theoretical maximum for a population of 100% adoption.

The theory specifies four components that influence whether a new innovation will reach a "critical mass" and be adopted to a self-sustaining level: (a) the innovation itself, (b) one or more communication channels through which knowledge of the innovation is spread, (c) the social context
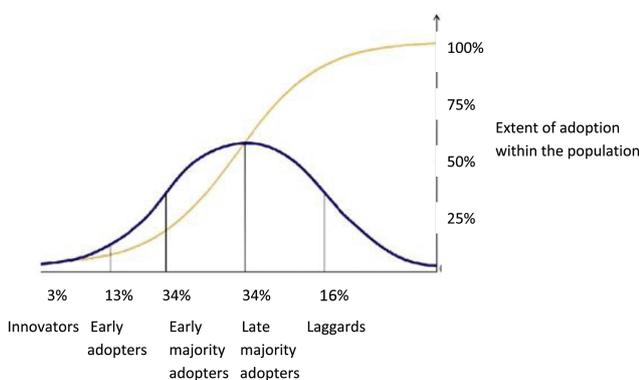
Figure 1. Normal curve showing the characteristics of the innovation-adopting population as defined by Rogers (2003), and sigmoidal cumulative distribution curve showing the total number of adopters as the adoption spreads. Note that innovators, early adopters, and early-majority adopters comprise the first 50% of the sample of adopters. Late-majority adopters and laggards comprise the remaining 50%.

in which it is adopted, and (d) the time over which adoption occurs. Several major features of the PEAK 2.0 program, reflecting the fundamentals of implementation science, may serve to enhance the diffusion of PCC innovation in one or more of the four areas. We briefly discuss these features of PEAK 2.0 as they relate to each component of Rogers' model.

The Innovation

The innovation can be any new idea or practice, and in the case of culture change, it is an intervention. Public health and social science research has shown that interventions with certain characteristics are more likely to be adopted, particularly in the case of organizations that are resistant to change. Interventions that include increasing participants' self-efficacy for the new procedures (Dearing, 2009), for example, and for which there is ample social support (Rahman et al., 2012; Rogers, 2003), are likelier to be adopted by late adopters and laggards. PEAK 2.0 provides substantial social support to program participants. For example, management staff, nurses, and aides in participating homes are provided with extensive education and training during the Foundation year, markedly increasing their understanding of the innovation (Cornelison, Hermer, & Doll, 2017). Moreover, the fact that PCC is implemented in a stepwise fashion accords with the theory's specification that elements of the intervention should be able to be tried on a limited basis (Rogers, 2003). Participating in the program also brings tangible results even in the first year, as suggested by Rogers, such as the notable Medicaid reimbursement.

Communication Channels

Knowledge of the intervention and its benefits, if any, must be spread through one or more communication channels. In the past, knowledge about culture change has typically been spread via mass communication channels such as conferences attended by nursing home management and by journal articles and toolkits. Unfortunately, mass communication modes such as these are generally insufficient for a resistant organization to adopt deep change (Rahman et al., 2012). PEAK 2.0 differs in that the knowledge is communicated via multiple channels, including learning modules completed during the Foundation year, with regular opportunities for feedback by program staff. Program staff also conduct four Zoom meetings with diverse members of Foundation-level staff at each nursing home during that year, and early-level homes are required to visit a high-level mentor home, reinforcing the knowledge gained during the Foundation.

The Social System

Every innovation spreads or fails to spread within a social context. Especially for organizations resistant to change, interventions that include more interpersonal communication are more likely to be implemented (Rogers, 2003).

Participating in PEAK 2.0 generates ample interpersonal communication between facilities and program staff as well as within and across participating nursing homes.

Additionally, the PEAK 2.0 program actively modifies participating organizations' social systems to better promote adoption. For instance, the program requires that the homes assemble change teams that solicit input and generate buy-in from residents and staff and that these teams include at least two fully engaged CNAs. Similarly, at least two CNAs are required to provide feedback during the annual evaluations, theoretically contributing to their empowerment.

Time

Knowledge of a new idea or practice can be spread a single time, for example, by a presentation at a conference, or over a more extended period. Organizations that resist change generally need exposure to the new idea over a greater length of time (Rogers, 2003). Throughout each program year and especially for early-level homes, PEAK 2.0 requires completing many activities and enacting several new practices for participating homes over time. This further operationalizes their understanding and implementation of PCC. An additional temporal factor may be contributing to the program's diffusion is the fact that the program has now operated for 4 years, allowing considerable "word of mouth" to have taken place. Indeed, since the first year when 122 facilities joined, 107 more facilities have joined. From 2013 to 2015, late-majority adopters may have increasingly determined that participating was "the right thing to do," a belief which research has shown is a major reason later adopters finally choose to adopt an innovation (Dearing, 2009).

Thus, numerous features of PEAK 2.0 may be responsible for the program's success at garnering participation of a majority of the state's nursing homes. An important open question, however, is whether the program has achieved substantial participation not only by typical culture-change adopters such as not-for-profit homes that are part of a CCRC but also by atypical culture-change adopters such as for-profit homes, in which care may be of lower quality (Comondore et al., 2009; Feng, Fennell, Tyler, Clark, & Mor, 2011; Smith, Feng, Fennell, Zinn, & Mor, 2007) and in greater need of quality-improving innovations. We tested two hypotheses regarding those program goals.

Hypothesis 1: By the most recent program year, 2015–2016, PEAK 2.0 would draw significantly more participants than the original recognition program, PEAK 1.0, did in its final program year, 2011. Related to this, PEAK 2.0 would lead to adoption of PCC even among late-majority adopters, that is, with the program enrollment significantly exceeding 50% of the state's nursing homes.

Hypothesis 2: At the beginning of the PEAK 2.0 program in 2012, participating homes would

resemble typical culture-change adopters—for example, being disproportionately not-for-profit, with higher baseline quality—but increasingly through subsequent program years, PCC would diffuse, through homes engaging in increasing levels of PEAK 2.0, to more atypical adopters—for-profit homes with lower baseline quality and more Medicaid residents—that otherwise might not have begun the thorough adoption of PCC.

Design and Methods

Study Design

We conducted a retrospective cohort study. For the first hypothesis, we compared the proportion of homes joining PEAK 1.0 in 2011 to the proportion joining in 2015–2016, as well as compared that latter number to the proportion marking the beginning of late-majority adoption, 0.50. For the second hypothesis, we analyzed the properties of homes that joined the program each year from 2012 to 2016.

Data set Construction

For the first hypothesis, we obtained the identities of program participants in the last year of PEAK 1.0, 2011, as well as program participants in the most recent year of PEAK 2.0, 2015–2016. We also obtained publicly available information on the total number of nursing homes in the state those 2 years.

To test our second hypothesis, we first constructed a data set that contained nursing home covariate data—profit status, number of beds, occupancy, and other features that have been found to distinguish culture-change adopters from nonadopters—for each PEAK 2.0 program year from 2012–2013 to 2015–2016. Data on all nursing homes in the state between 2012 and 2015, including those that were Medicaid or Medicare certified and those that were not, were obtained from a combination of the Kansas Department for Aging and Disability Services (KDADS), KSU Center on Aging, and CMS's Nursing Home Compare database. From KDADS and the KSU Center on Aging, we obtained all homes in the state each year as well as which homes participated each program year. From Nursing Home Compare's Provider Information Files for each year, we obtained facilities' provider numbers, zip codes, total number of certified beds, total number of residents and hence occupancy, profit status (from which we constructed the binary variable nonprofit), and percentages of Medicaid, Medicare and private-pay/private-insurance residents. We obtained the number of reported health deficiencies for each year from the Deficiencies files available through Nursing Home Compare. As a measure of resident case mix, we used the proxy measure of expected total hours of RN, LPN and aide staffing, summed across the expected hours for each role, from the Nursing Home Compare Staffing data files, because the expected-total-hours measure was determined by

the number of residents at each acuity level for each home. We constructed county-based Hirfindahl–Hirschfeld indices (HHIs) for each nursing home's county using OSCAR/CASPER data on each nursing home's percentage of beds in its county. We derived a measure of how urban or rural each facility's zip code was using 2010 U.S. Census data.

We defined a year as starting in April and ending in March of the following year, to align the covariate data with PEAK 2.0 program years. (April was when homes submitted their action plans and began implementing the new year's goals in one or more program domains, and their success was evaluated between February and April of the subsequent year.) For health deficiencies, a measure of nursing home quality, we used data from April to December of each year so that no homes were surveyed twice. If a home was not surveyed in that period, we used the most proximate survey result from the subsequent 6 months. (U.S. nursing homes are surveyed every 9–15 months.)

Our outcome variables, JOIN2012, JOIN2013, JOIN2014, and JOIN2015, came from PEAK 2.0 program data and were binary. For JOIN2012–JOIN2015, homes were assigned a 1 if they joined during that program year, a 0 if they were not already participating and they had not joined that year, and a missing value if they were already participating, having joined in a previous year. This was so that we could compare joining homes with the sample not joining, excluding homes that had joined previously and whose demographics would be biased by the characteristics of homes joining in the initial program years, to better compare the demographics of nonjoining and joining homes each program year.

Statistical Analyses

For the first hypothesis, we used EpiTools (AusVet Animal Health Services, Sydney, Australia) to perform two-sample z-score-based proportion tests. We compared the proportion of homes recognized by PEAK 1.0 in 2011 and the total number of homes in the state that year with the proportion of homes participating in PEAK 2.0 in its most recent program year, 2015–2016, and the total number of homes in the state at that time. We also compared the 2015–2016 proportion and total number of NHs to the proportion of 0.50, representing the x-axis value in Figure 1 at which late-majority adopters began joining the program.

For the second hypothesis, using Stata v. 12 (StataCorp, Austin, TX), we performed a series of multivariate logistic regression analyses with the outcome variables of JOIN2012, JOIN2013, JOIN2014, and JOIN2015 separately, to determine whether there were any demographic differences between joiners and nonjoiners each year of the program.

Results

Hypothesis 1: Proportions of Homes Participating in PEAK 2.0 Versus PEAK 1.0

During the final year of PEAK 1.0, 7 out of 366 homes earned recognition for their implementation of PCC (constituting participation in the program). In contrast, during the 2015–2016 year of PEAK 2.0, 229 out of 349 homes participated. The proportion test on the proportion of NHs participating in the final year of PEAK 1.0, 2011 (0.019), versus the proportion participating in the most recent year of PEAK 2.0, 2015–2016 (0.660), revealed that a far greater proportion of homes participated in the last year of PEAK 2.0 (z = 18.2, $p < .0001$). A slightly greater number of homes applied for recognition in 2011—55—than were chosen to merit recognition. Nonetheless, a far greater proportion of homes participated in the last year of PEAK 2.0 than the proportion applying for recognition in the last year of PEAK 1.0 (z = 13.9, $p < .0001$).

The proportion test comparing state NHs participating in the most recent program year, 2015–2016, to the proportion defining the beginning of late-majority adopters in Rogers' theory, 0.50, revealed that a significantly greater proportion than 0.50 (0.66) participated in the last program year (z = 4.3, $p < .0001$). This indicated that by definition, many late-majority adopters had been drawn into the program.

Hypothesis 2: PEAK 2.0 Program Joiners Versus Nonjoiners by Year

Our comparisons of nursing homes (a) that joined the PEAK 2.0 program each year from 2012–2013 to 2015–2016 with (b) those that both did not join that year and were not already participating in the program allowed us to determine whether any disparities that arose during earlier years of the program persisted, as well as whether any new disparities developed. Table 1 presents the results of the analysis with the dependent variable JOIN2012. During that year, several disparities distinguished joining homes from nonjoining homes. Joining homes were significantly more often not-for-profit (odds ratio [OR] = 2.21, $p = .002$) and part of a CCRC (OR = 2.30, $p = .01$), with slightly but significantly higher occupancy (OR = 1.04, $p = .001$). Furthermore, their quality of care appeared to be higher because their total number of survey health deficiencies was lower than in homes that did not join PEAK that year (OR = 0.92, $p < .0005$).

By 2013, these disparities began to lessen, as can be seen in Table 2. Joining homes were no longer distinguished by profit status or a lower number of health deficiencies. Moreover, homes that joined the program that year were only marginally more likely to be part of a CCRC (OR = 2.30, $p = .09$). Finally, they had marginally lower odds of chain ownership (OR =.37, $p = .09$).

By 2014, there were almost no differences between joining and nonjoining nursing homes (Table 3). Joining homes had marginally fewer health deficiencies (OR = 0.96, $p = .10$). Profit status, CCRC affiliation, and other factors no longer differed significantly or marginally between the groups.

In 2015, as Table 4 shows, it can be seen that there were no statistically significant or even marginal differences in the demographics of joining versus nonjoining homes.

Table 1. Characteristics of the Nursing Homes Joining Versus Not Joining the PEAK 2.0 Program in Its First Year, 2012

Covariate	2012: Homes joining (N = 134) vs not joining (N = 317)		
	OR	CI	*p* Value
AIDEHRD	0.89	0.60, 1.32	.56
LPNHRD	0.67	0.33, 1.37	.28
RNHRD	0.72	0.35, 1.48	.37
EXPECTED TOTAL STAFFING HOURS	1.13	0.52, 2.37	.75
CHAIN (1,0)	0.99	0.60, 1.65	.98
CCRC FACILITY (1,0)	2.30	1.22, 4.32	.01**
NONPROFIT (1,0)	2.21	1.32, 3.69	.002**
BEDCERT	0.998	0.992, 1.01	.99
PERCENTAGE OCCUPANCY	1.04	1.01, 1.06	.001**
PERCENTAGE MEDICARE	0.99	0.96, 1.04	.94
PERCENTAGE MEDICAID	0.99	0.97, 1.03	.92
PERCENTAGE OTHER	0.98	0.95, 1.01	.27
PERCENTAGE Urban	1.00	0.99, 1.01	.84
HHI	1.00	1.00, 1.00	.89
TOTAL HEALTH DEFICIENCIES	0.92	0.88, 0.97	.001**

Notes: CI = confidence interval; HHI = Hirfindahl–Hirschfeld indices; OR = odds ratio. The reference group was nonjoiners. Logistic regression revealed that this year, participating homes were likelier to be nonprofit, to be part of a CCRC, and to have greater occupancy. AIDEHRD = aide hours per resident day, LPNHRD = LPN hours per resident day, and RNHRD = RN hours per resident day. The expected total staffing hours for each nursing home are a sum of expected RN, LP, and aide hours based on case-mix index, and we have used it as a proxy for that measure. BEDCERT = number of Medicare- or Medicaid-certified beds. **A significant difference with $p < .01$.

Table 2. Characteristics of the Nursing Homes Joining Versus Not Joining or Already Participating in the PEAK 2.0 Program in 2013

Covariate	2013: HOMES joining (N = 26) vs not joining (N = 195)		
	OR	CI	*p* Value
AIDEHRD	1.20	0.58, 2.50	.65
LPNHRD	2.26	0.69, 7.46	.18
RNHRD	0.20	0.24, 1.63	.13
EXPECTED TOTAL STAFFING HOURS	0.98	0.20, 4.90	.98
CHAIN (1,0)†	0.37	0.60, 1.65	.09†
CCRC FACILITY (1,0)	2.30	0.88, 10.9	.09†
NONPROFIT (1,0)	0.91	0.31, 2.67	.86
BEDCERT	1.01	0.99, 1.02	.23
PERCENTAGE OCCUPANCY	1.02	0.98, 1.07	.36
PERCENTAGE MEDICARE	1.00	0.94, 1.07	.96
PERCENTAGE MEDICAID	0.98	0.93, 1.02	.34
PERCENTAGE OTHER	0.97	0.92, 1.01	.17
PERCENTAGE URBAN	0.993	0.98, 1.01	.41
HHI	1.00	1.00, 1.00	.23
TOTAL HEALTH DEFICIENCIES	1.02	0.95, 1.09	.66

Notes: CI = confidence interval; HHI = Hirfindahl–Hirschfeld indices; OR = odds ratio. Again, the reference group is nonjoiners. The logistic regression results showed that there were only two marginally significant differences between joiners and nonjoiners. Joiners were likelier to be part of a CCRC, although not part of a chain. AIDEHRD = aide hours per resident day, LPNHRD = LPN hours per resident day, and RNHRD = RN hours per resident day. The expected total staffing hours for each nursing home are a sum of expected RN, LP, and aide hours based on case-mix index, and we have used it as a proxy for that measure. BEDCERT = number of Medicare- or Medicaid-certified beds.
†A marginal difference, with $p < .10$.

Discussion

In support of our first hypothesis, we found that many more nursing homes participated in PEAK 2.0 than the original PEAK program. In PEAK 1.0's last program year, 2011, 7 out of 366 homes were selected for participation, and only 55 of 366 applied to participate. In contrast, in PEAK 2.0's most recent program year, 2015–2016, 229 out of 349 homes had joined the program. This number not only

Table 3. Characteristics of the Nursing Homes Joining Versus Not Joining or Already Participating in the PEAK 2.0 Program in 2014

| Covariate | 2014: Homes joining (*N* = 56) vs not joining (*N* = 139) | | |
	OR	CI	*p* Value
AIDEHRD	0.84	0.48, 1.47	.53
LPNHRD	0.65	0.17, 2.50	.53
RNHRD	0.36	0.09, 1.39	.14
EXPECTED TOTAL STAFFING HOURS	0.69	0.21, 2.27	.54
CHAIN (1,0)	0.81	0.35, 1.50	.64
CCRC Facility (1,0)	1.50	0.44, 5.10	.51
NONPROFIT (1,0)	1.24	0.53, 2.93	.62
BEDCERT	0.99	0.99, 1.01	.91
PERCENTAGE OCCUPANCY	1.01	0.98, 1.04	.51
PERCENTAGE MEDICARE	0.98	0.94, 1.03	.42
PERCENTAGE MEDICAID	0.98	0.94, 1.01	.34
PERCENTAGE OTHER	0.98	0.94, 1.01	.24
PERCENTAGE URBAN	0.99	0.98, 1.01	.21
HHI	1.00	1.00, 1.00	.56
TOTAL HEALTH DEFICIENCIES	0.96	0.90, 1.01	.10[†]

Notes: CI = confidence interval; HHI = Hirfindahl–Hirschfeld indices; OR = odds ratio. With the logistic regression results, there were no significant or even marginal differences between homes joining that year and homes not participating, though TOTAL HEALTH DEFICIENCIES approaches marginal significance. AIDEHRD = aide hours per resident day, LPNHRD = LPN hours per resident day, and RNHRD = RN hours per resident day. The expected total staffing hours for each nursing home are a sum of expected RN, LP, and aide hours based on case-mix index, and we have used it as a proxy for that measure. BEDCERT = number of Medicare- or Medicaid-certified beds.
[†]A marginal difference, with *p* < .10.

Table 4. Characteristics of the Nursing Homes Joining Versus Not Joining or Already Participating in the PEAK 2.0 Program in 2015, Fourth Year of the Program and the Last Year Analyzed

| Covariate | 2015: Homes joining (*N* = 37) vs not joining (*N* = 110) | | |
	OR	CI	*p* Value
AIDEHRD	0.57	0.27, 1.29	.13
LPNHRD	0.40	0.08, 2.02	.27
RNHRD	0.41	0.09, 1.92	.26
EXPECTED TOTAL STAFFING HOURS	0.70	0.23, 2.15	.53
CHAIN (1,0)	1.93	0.67, 5.56	.22
CCRC FACILITY (1,0)	0.76	0.13, 4.42	.76
NONPROFIT (1,0)	1.12	0.38, 3.32	.83
BEDCERT	1.000	0.998, 1.016	.74
PERCENTAGE OCCUPANCY	0.98	0.95, 1.02	.30
PERCENTAGE MEDICARE	0.99	0.92, 1.05	.70
PERCENTAGE MEDICAID	0.98	0.92, 1.03	.40
PERCENTAGE OTHER	0.97	0.92, 1.03	.35
PERCENTAGE URBAN	0.99	0.98, 1.00	.11
HHI	1.00	1.00, 1.00	.76
TOTAL HEALTH DEFICIENCIES	0.96	0.90, 1.03	.30

Notes: CI = confidence interval; HHI = Hirfindahl–Hirschfeld indices; OR = odds ratio. The logistic regression results revealed that there were no significant or even marginal differences between nursing homes joining the program in 2015 versus those not joining or already participating. AIDEHRD = aide hours per resident day, LPNHRD = LPN hours per resident day, and RNHRD = RN hours per resident day. The expected total staffing hours for each nursing home are a sum of expected RN, LP, and aide hours based on case-mix index, and we have used it as a proxy for that measure. BEDCERT = number of Medicare- or Medicaid-certified beds.

far exceeded the number that participated in PEAK 1.0, but it included many so-called late-majority adopters. Furthermore, we found strong support for our second hypothesis, that early PEAK 2.0 program joiners—innovators, early adopters, and some early-majority adopters—would display characteristics of typical PCC adopters, but that by its last program year, program joiners would include many late-majority adopters whose traits much more clearly reflected those of NHs in the state. In 2012–2013, joining homes were disproportionately not-for-profit and part of a CCRC, with greater baseline quality of care. By the 2015–2016 program year, however, joiners resembled those homes that still had not joined the program on every measured characteristic. With well over 50% of homes in the state participating by that time, the PEAK 2.0 program had drawn in many late-majority adopters.

Related to this progression within the joining population from innovators to late-majority adopters, the demographics of participating nursing homes came to resemble the demographics of state nursing homes overall. In 2015, for example, 54% of nongovernment-owned nursing homes in Kansas were for-profit, and that year 56% of homes participating in PEAK 2.0 were also for-profit. Given the multiple, consistent reports in the literature of PCC adopters differing on profit status, CCRC affiliation and health care quality, among other traits (Grabowski, Elliot, et al., 2014; Miller, Looze, et al., 2014), it is promising that in only 4 years, joining facilities came to resemble nonjoining facilities so fully.

These findings are compelling, and they suggest that the Medicaid financial incentive contributed to the program's spread to atypical adopters. The program provides $0.50–$4.00 per member per day for homes at successively higher levels. A nursing home at Level 1 with 100 Medicaid residents, earning $0.50 per member per day, would earn $18,000/year in the program, and a nursing home at the highest level, Level 5, would earn $144,000/year for the same number of Medicaid residents. By contrast, the financial incentive in the state's earlier PEAK program, a recognition award of $300, was associated with a much lower participation rate. Thus, in designing the PEAK 2.0 P4P program, the Kansas Department for Aging and Disability Services wanted a far greater percentage of state nursing homes to adopt PCC and succeeded in getting the legislation for the program passed in Kansas' statehouse.

With many prior culture-change innovators, facility leaders have provided the initial motivation and indeed inspiration to adopt PCC (Bryant et al., 2009). Over time, however, other staff members may come to recognize the virtues of culture change, leading to an enhanced and more distributed intrinsic motivation to continue the implementation of PCC in a given facility. This dynamic has been noted by organizational psychologists (Amabile, 1993). Anecdotal evidence from the management at participating homes indicates that the financial incentive, an extrinsic motivation, often plays a similar role: It is frequently one of the main reasons that facilities initially join, but the other benefits associated with

PCC adoption become more rewarding over time and make continued participation "worth it." Still, it is an open question whether widespread PCC adoption would occur without a substantial financial incentive, as well as whether PCC would be sustained in Kansas' adopting homes were the P4P financial incentive to be discontinued. From a policy perspective, it will be important for program analysts to determine whether the extrinsic reward is frequently replaced by intrinsic reward after an epiphany about the benefits of PCC for residents and staff has taken place because it will indicate what might be required of the state government financially to arrive at self-sustaining levels of PCC.

It will also be important to understand why a substantial number of state facilities, currently one third of the facilities in Kansas, have not joined the program despite the financial incentive. The KSU's Center on Aging recently interviewed staff from 20 randomly selected nonparticipating homes and found that a common reason for not joining was a lack of understanding of what participating in the program entailed. This finding suggests that better education and marketing of the program need to take place for the remaining late-majority and laggard would-be adopters to decide to join. It may also be the case that they need a boost in self-efficacy or other social support to join, consistent with findings that members of rigid, bureaucratic organizations often need greater social support to adopt any innovation (Rogers, 2003). A further reason concerns the costs of adopting PCC to the program's specifications. One administrator in a Level 3 home reported that her facility's dining costs were more than twice as high as before joining because they need to keep over twice the food in stock to accommodate residents' preferences and the availability of choices (S. Hageman, personal communication). This administrator said that even at the Level 3 incentive rate, the overall costs of implementing PCC exceeded the incentive payout. Such knowledge may have spread to other homes in the state. Still another reason some homes have cited for not joining is that they are overwhelmed with crises such as not being able to retain a director of nursing, which does not permit them to pursue nonessential improvements to care. Finally, laggard homes may simply be resisting change. Research on the diffusion of innovations suggests that the process of convincing laggard organizations to join will be difficult, as their leaders tend to be highly skeptical of the value of change, resistant to change-agents, and reliant on traditions and rules (Rahman et al., 2012; Rogers, 2003).

If the evidence were both stronger and better disseminated about the benefits of adopting PCC, it would likely speed its diffusion. An ongoing study of the PEAK 2.0 program's effects on residents' health and well-being, and another on staff members' turnover and retention, may provide much of the additional evidence needed. In earlier large-scale studies indicating that adopting culture change is associated with improved outcomes for residents and staff, the effect sizes were generally modest. The facts that PEAK 2.0 participants are instructed on PCC in a regular fashion and that the same

standards are used to judge adoption across all participating homes, may reveal stronger benefits of adopting PCC.

Although further research is needed about the relationship between PCC implementation and resident and staff outcomes, our finding that Kansas' program successfully spread PCC adoption to atypical adopters such as for-profit NHs should encourage policymakers to consider similar value-based purchasing models in their states. Until very recently, culture-change adoption mostly occurred in high-resource nursing homes (Grabowski, Elliot, et al., 2014; Miller, Looze, et al., 2014). Culture change was considered interesting as a boutique model (Bryant et al., 2009), but its relevance to most NHs—nearly 70% of which are for-profit (Harris-Kojetin et al., 2016)—was unclear. Reflecting this, most states had culture-change coalitions, but very few had enacted state programs to incent adoption widely (Bryant et al., 2009). One reason was that it was previously believed that strongly implementing PCC entailed substantial up-front costs for providers (e.g., Jenkens, Sult, Lessell, Hammer, & Ortigara, 2011), greatly limiting the pool of potential adopters in the absence of massive state aid. However, in the year-end evaluations it has been found that some homes in the PEAK 2.0 program have succeeded well at creating a homelike environment—typically a costly aspect of adopting PCC—with relatively small capital layouts.

There are several limitations to this study. Not only was it observational, but participating and nonparticipating homes were self-selected. It is therefore possible that although joiners and nonjoiners became statistically identical on all measured characteristics, factors other than the ones we observed distinguished them. For example, joiners may have had a higher profit margin, another factor that sometimes distinguishes adopters from nonadopters (C. Bishop, personal communication), which would be consistent with our finding of greater occupancy rates in 2012–2013 program joiners. The observational nature of the study also reduces the ability to draw causal inferences, and we cannot be certain that the reduction of observed differences between the nursing homes derived from the PEAK 2.0 program's financial incentive or even from the PEAK 2.0 program at all. The rapid increase in participation between 2011 and 2012, however, argues against that. Furthermore, here we analyzed participation, not level of adoption. As the program is designed, it takes at least 7 years for facilities to progress from the Foundation Level to Level 5. Given that the program has only operated for 4 years, most homes in the program are at Level 1 or Level 2, implementing PCC in 4–8 (out of 12) major areas, and a sizable minority of homes are at the Foundation level. They have joined a program that was intended to yield full adoption of PCC in all program areas at Level 3 as a minimum, but there is no guarantee that all facilities will arrive there. Finally, although the program has data on facilities' implementation plans (from their action plans) and their achievement in those domains and cores each year (from the in-person or videoconference evaluations), we have not analyzed and presented those data here. It is possible that

although a representative sample of the state's homes have joined the program, late joiners may not implement PCC to the same degree over time as early adopters. However, for that analysis, more program years will need to have passed.

What we have established, however, is that initial-to-moderate-stage adoption of PCC and employee empowerment can occur over time even among more traditional nursing homes, following the trajectory outlined by Rogers. Other studies have found that culture-change adoption is associated with better outcomes for residents and employees. As the primary funders of nursing homes, state governments should re-examine whether to invest in bringing these tenets of culture change to their nursing home residents.

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Conflict of Interest

None of the authors has a conflict of interest regarding the work presented here.

References

Amabile, T. M. (1993). Motivational synergy: Toward new conceptualizations of intrinsic and extrinsic motivation in the workplace. *Human Resource Management Review*, **3**, 185–201.

Bangerter, L. R., Heid, A. R., Abbott, K., & Van Haitsma, K. (2016). Honoring the everyday preferences of nursing home residents: Perceived choice and satisfaction with care. *The Gerontologist*. Advance online publication. doi:10.1093/geront/gnv697

Bryant, N., Stone, R. I., & Barbarotta, L. (2009). *State investments in culture change: Case study of how states supported culture change initiatives in nursing homes* (p. 19). Washington, DC: American Association of Homes and Services for the Aging, and the Institute for the Future of Aging.

Burke, W. W. (2014). *Organization change: Theory and practice* (2nd ed.). Washington, DC: Sage.

Castle, N. G. (2001). Innovation in nursing homes: Which facilities are the early adopters? *The Gerontologist*, **41**, 161–172.

Comondore, V. R., Devereaux, P. J., Zhou, Q., Stone, S. B., Busse, J. W., Ravindran, N. C.,…Guyatt, G. H. (2009). Quality of care in for-profit and not-for-profit nursing homes: Systematic review and meta-analysis. *BMJ*, **339**, b2732. doi:10.1136/bmj.b2732

Cornelison, L., Hermer, L., & Doll, G. (2017). Cognitive barriers impeding the adoption of person-centered care in nursing homes. Manuscript in preparation.

Dearing, J. W. (2009). Applying diffusion of innovation theory to intervention development. *Research on Social Work Practice*, **19**, 503–518. doi:10.1177/1049731509335569

Ewert, J., & Thurness, C. (2016). Results of satisfaction surveys from Kansas nursing homes. Wichita, KS: Kansas Department for Aging and Disability Services.

Feng, Z., Fennell, M. L., Tyler, D. A., Clark, M., & Mor, V. (2011). The care span: Growth of racial and ethnic minorities in US nursing homes driven by demographics and possible disparities in options. *Health Affect (Millwood)*, **30**, 1358–1365. doi:10.1377/hlthaff.2011.0126

Grabowski, D. C., Elliot, A., Leitzell, B., Cohen, L. W., & Zimmerman, S. (2014). Who are the innovators? Nursing homes implementing culture change. *The Gerontologist*, **54**(Suppl. 1), S65–S75. doi:10.1093/geront/gnt144

Grabowski, D. C., O'Malley, A. J., Afendulis, C. C., Caudry, D. J., Elliot, A., & Zimmerman, S. (2014). Culture change and nursing home quality of care. *The Gerontologist*, **54**(Suppl. 1), S35–S45. doi:10.1093/geront/gnt143

Greiner, L. E. (1998). Evolution and revolution as organizations grow. *Harvard Business Review*, 1–11.

Harris-Kojetin, L., Sengupta, M., Park-Lee, E., Valverde, R., Caffrey, C., Rome, V., & Lendon, J. (2016). Long-Term Care Providers and services users in the United States: Data from the National Study of Long-Term Care Providers, 2013–2014. *Vital Health Stat 3*, x–xii; 1–105.

Jenkens, R., Sult, T., Lessell, N., Hammer, D., & Ortigara, A. (2011). Financial implications of THE GREEN HOUSE model. *Senior Housing & Care Journal*, **19**, 3–22.

Koren, M. J. (2010). Person-centered care for nursing home residents: The culture-change movement. *Health Affect (Millwood)*, **29**, 312–317. doi:10.1377/hlthaff.2009.0966

Miller, S. C., Lepore, M., Lima, J. C., Shield, R., & Tyler, D. A. (2014). Does the introduction of nursing home culture change practices improve quality? *Journal of the American Geriatrics Society*, **62**, 1675–1682. doi:10.1111/jgs.12987

Miller, S. C., Looze, J., Shield, R., Clark, M. A., Lepore, M., Tyler, D.,…Mor, V. (2014). Culture change practice in U.S. Nursing homes: Prevalence and variation by state Medicaid reimbursement policies. *The Gerontologist*, **54**, 434–445. doi:10.1093/geront/gnt020

Rahman, A. N., Applebaum, R. A., Schnelle, J. F., & Simmons, S. F. (2012). Translating research into practice in nursing homes: Can we close the gap? *The Gerontologist*, **52**, 597–606. doi:10.1093/geront/gnr157

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York: Free Press.

Smith, D. B., Feng, Z., Fennell, M. L., Zinn, J. S., & Mor, V. (2007). Separate and unequal: Racial segregation and disparities in quality across U.S. nursing homes. *Health Affairs (Millwood)*, **26**, 1448–1458. doi:10.1377/hlthaff.26.5.1448

Tyler, D. A., Lepore, M., Shield, R. R., Looze, J., & Miller, S. C. (2014). Overcoming resistance to culture change: Nursing home administrators' use of education, training, and communication. *Gerontology & Geriatrics Education*, **35**, 321–336. doi:10.1080/02701960.2013.837049