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NZ International Research in Early Childhood Education Journal
Volume 21, No. 1, 2018, pp. 100 - 111

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Original Evaluation Paper

Increasing early childhood education enrolment and attendance rates in South Auckland, New Zealand

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Abstract

This paper reports on a project to increase enrolment and attendance rates at seven early childhood education (ECE) centres in socio-economically deprived areas of Auckland, New Zealand, between January and June 2014. Participating centres used Breakthrough Series collaborative methodology with the Model for Improvement (Langley et al., 2009) to develop and test change ideas according to local context. Enrolment and attendance data were collected weekly using a custom-designed spreadsheet which provided centres with individualised data and aggregated overall project data. Data were analysed using run charts. Overall median enrolment increased from 76.4% to 88.9%, and overall median attendance increased from 44.9% to 59.2%. The project showed that staff in ECE centres can use Breakthrough Series Collaborative methodology with the Model for Improvement to increase enrolment and attendance rates without extra government funding. The project also built the capability of ECE centre staff to effect improvement, reducing future need to procure external expertise to lead change. This approach to change can contribute to closing the gaps in ECE attendance among socio-economic and ethnic groups who typically have lower rates of participation.

Key words: Enrolment, attendance, improvement methodology, participation, socio-economic deprivation, ethnicity.

Introduction

In New Zealand there is wide variation in the levels of educational success among different population groups, with those at the lower end more likely to be from Māori, Pacific Island or lower socio-economic status (SES) backgrounds (NZQA, 2015). Children who do not participate in ECE, or who attend regularly for less than one year, are disproportionately from these same groups (Mitchell, et al., 2013).

Unlike most other countries in the OECD, nearly all of NZ's ECE services are publicly funded privately owned services. ECE services in New Zealand must be licensed as in compliance with regulations by the Ministry of Education to operate (Education Counts, 2016a). Having a licence entitles ECE services to funding, which was estimated in 2010 by the Ministry of Education to cover approximately 83% of the cost of each child's attendance at the centre (Ministry of Education, 2010). Centres also obtain revenue from fees and charges to families and other sources such as community donations.

Over the past decade there has been a strong policy focus on increasing the number of children in ECE and the time they spend in ECE prior to starting school, along with increasing the supply of child places. The introduction of the 20-Hours Free ECE policy in 2007 for 3 to 5 year old children made ECE more financially affordable for many families. This was followed by the Government making 'promoting participation' its major policy goal for ECE, supported by promotional campaigns and setting a Better Public Service target

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of 98% of children participating in ECE in the year before starting school by 2016 (Ministry of Social Development, 2012).

It was identified that proportionately more children starting school without prior participation lived in the most deprived areas of New Zealand, including Northland, parts of Auckland, and Gisborne (Ministry of Education, 2012). Of these areas, Auckland is the most densely populated and accounts for almost half of the non-participating children in New Zealand (Ministry of Education, 2012). The socio-economically deprived areas of South Auckland are the most vulnerable to low participation. The Manukau and Manurewa-Papakura wards of South Auckland had between 250 to 450 children (between 10.8% and 28.8%) starting school without prior participation in the year ending March 2012, compared with between zero and 100 in most other wards of the city (Ministry of Social Development, 2012; Education Counts, 2017). These areas include the ethnically diverse suburbs of Clendon and Weymouth, which have high numbers of Māori and Pacific Island families. Despite these suburbs having a large population of 0-4 year olds (Stats NZ, 2014), at the time of the project there were only eight early childhood services (seven all-day services and one sessional service), with licensed places for up to 319 children. Baseline data from ECE centres which participated in the current study suggested that these centres struggled to maintain full enrolment and regular attendance.

In 2010 the Government implemented policy incentives to encourage ECE participation in low SES areas, namely through participation incentives under the ECE Participation Programme of 2010 (Mitchell, et al., 2013). The total package for this programme of work was $91.8 million to cover a four year period (Ministry of Education, 2010). By January 2014, the Participation Programme had 78 projects with 1,343 children enrolled. As a result of these interventions, prior participation rates for Māori children rose from 88.8% in 2007 to 90.3% in June 2012, and for Pacific Island children from 83.6% to 86.2% (Mitchell, et al., 2013). However, these rates continued to lag behind the 2012 participation rates for European children (97.9%) and for New Zealand children in total (94.7%) (Mitchell, et al., 2013).

In 2012, the Ministry of Education established its Early Learning Taskforce (ELTF) to focus on achieving the Government's 98% prior participation target. The ELTF contracted Ko Awatea to build the capability of early childhood education services in Clendon and Weymouth to achieve sustained changes in practice to meet the 98% participation target. Ko Awatea is the centre for innovation and improvement at Counties Manukau Health, a public healthcare provider that covers the South Auckland region.

Methods

Seven of the eight ECE centres in Clendon and Weymouth participated in the project, which ran between January 2014 and June 2014. Enrolment and attendance data from the Ministry of Education was used to identify the target areas. This data showed a disparity between the numbers of children that regularly attended ECE prior to starting school of 71.2% compared with the national prior participation rate of 95.7% (Education Counts, 2017).

Seven centres in the target areas had voluntarily approached the ELTF in early January 2014, prior to the start of the Early Learning project, seeking support to address this disparity. The centres were concerned about their attendance patterns because two privately-owned services were expected to open in the area later in the year. These would cater for 150 licensed child spaces and were perceived as competition by existing centres in the area. The seven centres which approached the ELTF were invited to participate in the Early Learning

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project by the ELTF project lead, who presented the project to the centres as an opportunity to apply an improvement science approach to the problem.

The project team comprised the ELTF project lead, a project manager and an improvement advisor from Ko Awatea, and staff from the centres. Four centres were represented by a single staff member (head teacher or centre manager) and three were represented by two staff members (head teacher and centre manager/administration officer). The ELTF project lead provided subject matter expertise on early childhood education, and the project manager and improvement advisor provided expertise in improvement science methodology. This included setting the structure of the project and training participants in the use of tools and methods for collecting and analysing data, such as driver diagrams, the Model for Improvement and run charts.

Driver diagrams provide a visual representation of the factors needed for a system to achieve its aim (Bennett & Provost, 2015). The Model for Improvement enables teams to set specific aims and measures, then develop and test change ideas using plan, do, study, act (PDSA) cycles (Langley et al., 2009). A run chart is a simple statistical tool used to understand whether the variation in the performance of a measure is random or not random. It is useful in detecting when improvements have occurred (Perla, Provost & Murray, 2011; Ott, 1975).

The project was structured as a collaborative using the Breakthrough Series Collaborative Model for Achieving Breakthrough Improvement (BTS) developed by the Institute for Healthcare Improvement (Institute for Healthcare Improvement, 2003). This methodology has been used extensively to effect improvement in the healthcare sector (Palmer, Bycroft, Healey, Field & Ghafel, 2012; Kilo, 1998; Gray, et al., 2015; Institute for Healthcare Improvement, 2004). The BTS model comprised an introductory engagement session, where centres learned about the project, followed by three learning sessions interspersed with action periods.

During the learning sessions, which were held at the Ko Awatea Centre in South Auckland between January and June 2014, staff from the centres received coaching in the use of quality improvement tools and shared experiences and ideas with other centres. Six centres were represented at the sessions by one teacher, and two centres were represented by a teacher and the centre manager. The action periods provided an opportunity for centres to test their change ideas in practice.

All centres worked on both their enrolment rate and their attendance rate during the course of the project. However, enrolment and attendance were approached as two separate workstreams, with a specific aim, measures and change ideas developed for each workstream. At Learning Session (LS) 1, the centres chose to focus on either enrolment or attendance first. All except one centre opted to start with a focus on their attendance rate.

Each centre set an individualised aim and created a driver diagram identifying the factors that would drive improvement. During LS 1, the centres' driver diagrams were combined into two overall project driver diagrams for enrolment and attendance (Figures 1 and 2).

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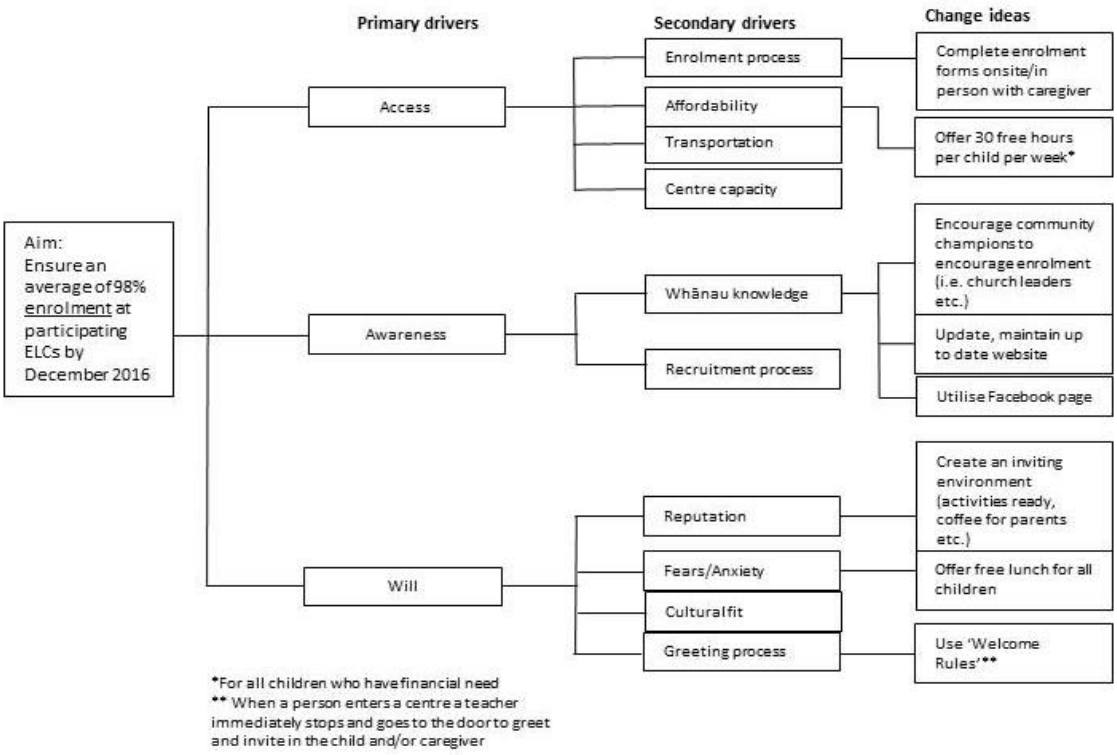

FIGURE 1. Driver diagram: Enrolment

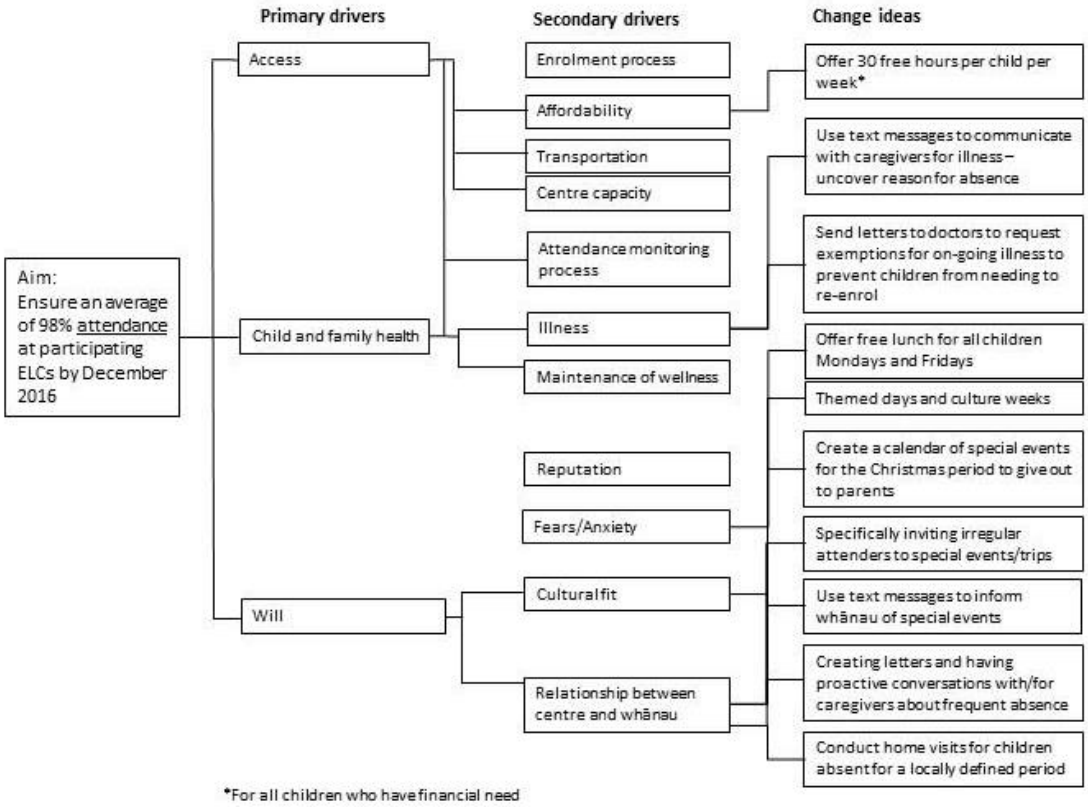

FIGURE 2. Driver diagram: Attendance

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Each centre's improvement journey was based on making changes to day-to-day operations within existing resource constraints. At Learning Session 1 centres were taught methods to learn whether their theories of what would improve enrolment and attendance functioned in practice. These methods primarily included the Model for Improvement and the run chart. Following LS 1, Ko Awatea and ELTF facilitated a creative session where centres generated change ideas that aligned with each of the factors they had identified as the drivers of improved enrolment and attendance. These ideas were then developed and tested in practice using PDSA cycles to learn if they produced the desired results. At LS 2, participants shared successful change ideas using storyboards. These ideas stemmed from the many ideas tried, some of which failed and were abandoned, some of which were adapted in practice and some which seemed functional without additional local adaptation. At LS 3, centres shared their results and were coached on strategies for embedding change ideas into practice. The importance of continuing to monitor data was emphasised.

During action periods between learning sessions, centres used the Model for Improvement to develop and test change ideas. All learning sessions built capability in using the Model for Improvement. This methodology enabled centres to develop and test change ideas that would work in the local context of each centre. Each centre identified its own change ideas based on local data collection, input from subject matter experts and the experiential knowledge of those working with in the centre. Change ideas are shown in Figures 1 and 2.

In addition to attending the learning sessions, centre staff had regular weekly one-on-one meetings with the project manager, improvement advisor and project lead for additional coaching, education and support.

Data collection and analysis

Centres used enrolment and attendance data they were already collecting in accordance with Ministry of Education reporting requirements to establish a baseline. Although the centres were reporting this data to the Ministry, prior to the Early Learning project they were not analysing it or using it themselves to understand their own performance.

To measure enrolment, centres collected weekly data on the number of licenced places occupied with an enrolled child, hours open each day, total booked hours for the week and number of unique children booked per week. This data was used to calculate the percentage of licenced hours booked for the week, full time equivalent children booked per week and average booked hours per child per week. To measure attendance, centres collected weekly data on the total attendance hours and the number of unique children who attended for the week. This data was used to calculate the percentage of licenced hours attended during the week and average hours attended per child per week. In addition, some centres collected non-standard data (data collected by a single centre only, in addition to the common measures described above) as required to enable them to better understand an individual area of focus. Centres collected data from January to June 2014.

Centres entered data into a custom-designed Excel spreadsheet which provided centres with individualised data and the ability to aggregate overall project data. The spreadsheet automatically generated graphs, in the form of run charts, to make any changes in enrolment and attendance rates easily visible. Ko Awatea provided three personalised workshops for each centre during the first three weeks of the project to train centre staff in using Excel and understanding data. This was supplemented by additional coaching and regular site visits from the improvement advisor and project manager as required. Data were collated weekly to show aggregated enrolment and attendance across all centres. Data were adjusted to account for the varying opening hours of the centres.

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Ethics

The privacy of families and of children at the centres involved in the project was addressed as part of the enrolment form for participating ECE centres, and parental consent was sought for any activities that directly involved children. No individual child or family has been identified as part of the project.

No pressure was applied by the Ministry of Education to coerce centres to participate. All centres approached had voluntarily requested support from the ELTF prior to the start of the Early Learning project to improve their enrolment and attendance rates, and they were keen to participate.

The emphasis of the project was on collaboration to achieve improvement in enrolment numbers and attendance. Although some centres achieved greater improvement than others, there were no punitive repercussions for perceived poor performance.

Commercially sensitive information was protected because the centres themselves, not the Ministry of Education or Ko Awatea, controlled the sharing of their data. Centres could thus choose to share data or keep it confidential, as they saw fit. Results data presented in this paper is anonymised.

Results

Data are presented in small multiples to allow the reader to see overall performance combined with the individual performance of each centre that engaged in the improvement journey (Tufte, 2001). Overall, enrolment performance increased from the baseline median of 76.4% to 88.9% over 13 weeks. At the start of the centre-based projects, based on available data, the seven participating centres had a median enrolment of 76.4%. The highest-performing centre at baseline topped out at a median performance of 83.4%.

Six of the seven centres collected, analysed, displayed and used enrolment data to lift enrolment, with all six showing dramatic improvements in performance (Figure 3).

The performance of the attendance measure saw similar overall improvement, moving from a baseline median of 44.9% to an improved median of 59.2% (Figure 4). All centres collected and reported data on attendance, with six of the seven centres collecting enough data to inform their journey with regard to increasing attendance (Figure 4).

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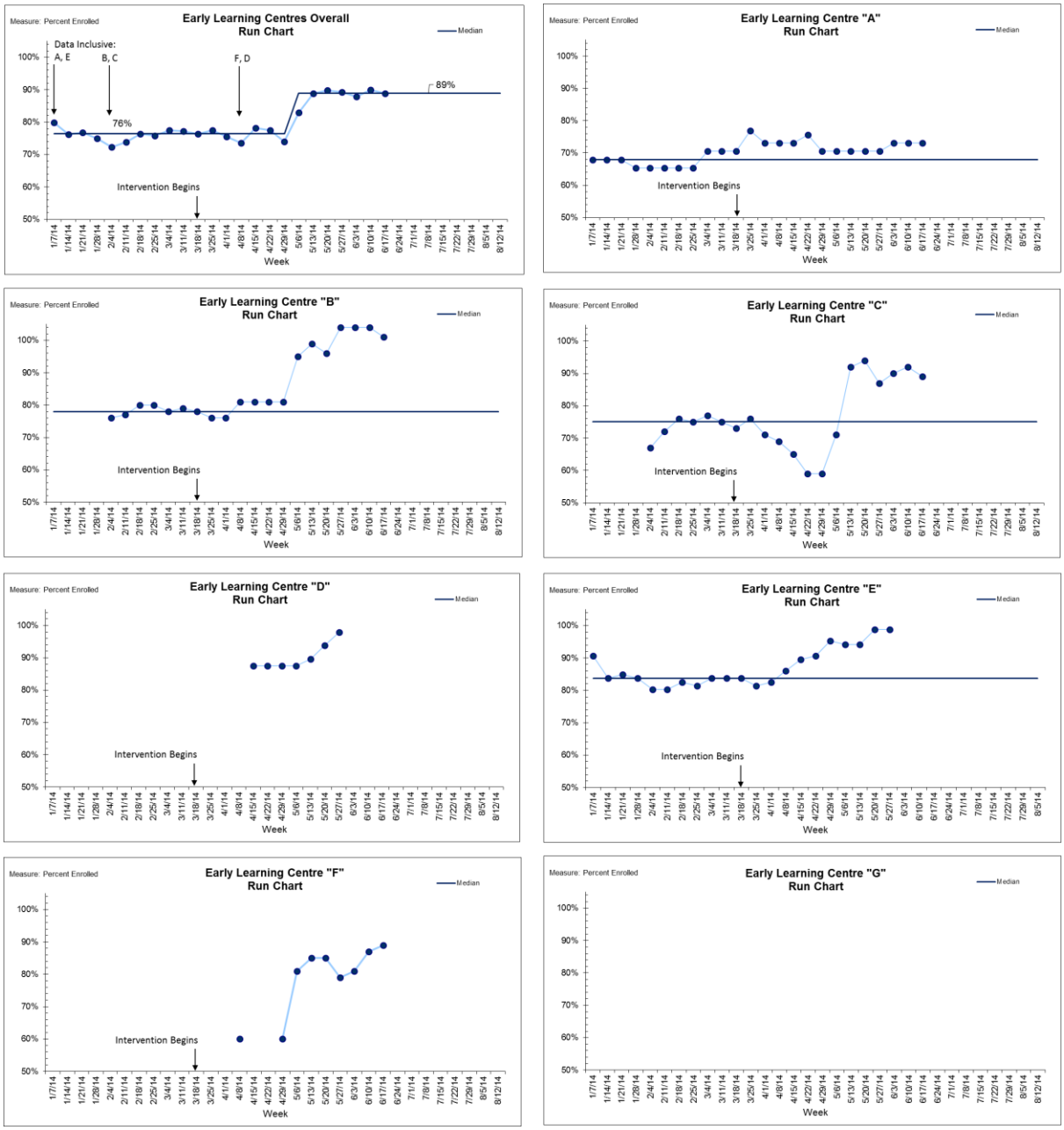

FIGURE 3: Enrolment performance overall and by centre

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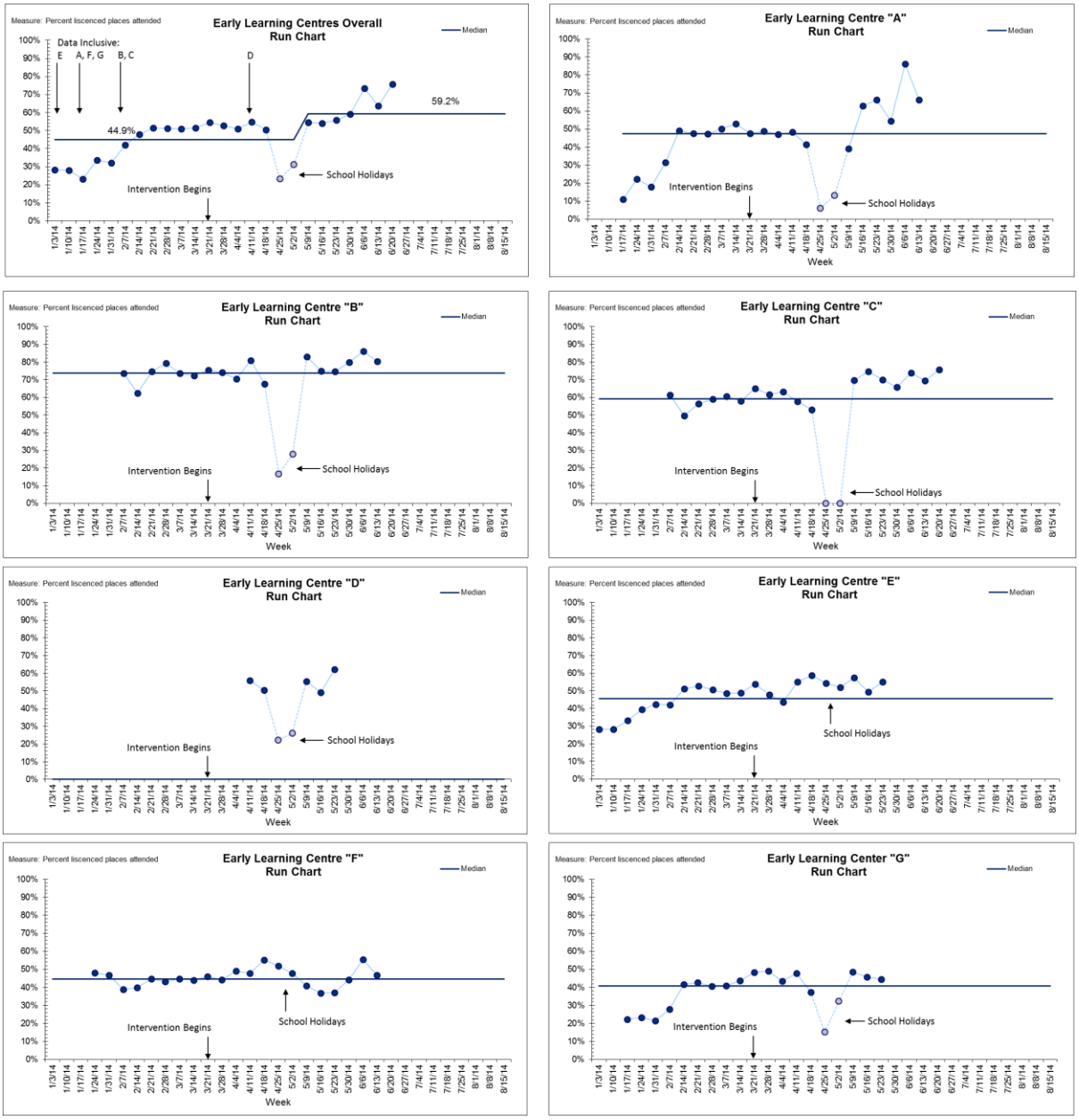

FIGURE 4. Attendance performance overall and by centre

Discussion

In the Ministry of Education's Early Learning project, ECE centres used the BTS with Model for Improvement methodology to increase overall enrolment from a median of 76.4% to a median of 88.9%, and overall attendance from a median of 44.9% to a median of 59.2%.

Numerous studies demonstrate the effectiveness of the BTS with the Model for Improvement as an improvement methodology in the healthcare sector (Palmer et al., 2012; Kilo, 1998; Gray, et al., 2015; Institute for Healthcare Improvement, 2004). However, there is little evidence for its effectiveness in the education sector. The Networked Improvement Communities collaborative in the United States (US) used this methodology to improve mathematics results and build teacher effectiveness in participating US schools and colleges,

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but to our knowledge there are no published studies that apply this methodology to increase enrolment and attendance in an ECE setting (Bryk, Gomez, Grunow & LeMahieu, 2015). Work in the healthcare sector attributes the success of the methodology to its flexibility, its scope for adapting changes to the local context, its focus on developing improvement capability in frontline staff, learning collaboratively, and PDSAs that require specific aims and measures (Institute for Healthcare Improvement, 2003; Gray, et al., 2015). The Early Learning project shows that these features can also support success in improving enrolment and attendance rates in early childhood education.

The Model for Improvement provided a mechanism for teams to adapt their theory of change in response to local learning. The PDSA cycles and tracking data on purpose-designed spreadsheets enabled centres to understand which ideas to adopt or adapt, and which to abandon. The spreadsheets made changes in enrolment and attendance rates easily visible and attributable to the PDSA cycles underway at the time.

The collection and use of data on enrolment and attendance was not standard practice for most participating centres. In joining this collaborative and taking on the use of data, these centres increased their insight into their performance. Collecting data and analysing where they were from the project beginning was a large step forward in understanding their systems – a vital step on any improvement journey.

Improvements created in the Early Learning project were a major step towards closing the equity gaps in enrolment and attendance for the populations served by participating centres in Manurewa, which had between 250 and 450 children starting school without prior participation in the year ending March 2012 compared with less than 100 in most other Auckland wards. This area also has high numbers of Māori and Pacific Island children – groups which had prior participation rates of 90.3% and 86.2% respectively compared to 97.9% for European children in 2012 (Mitchell, et al., 2013).

Despite the improved enrolment and attendance ECE centres achieved, further work is required. Only one centre reached the government target of 98% participation. The project shows that it is possible to build the capability of ECE staff to initiate, develop and test changes for improvement.

Limitations

Although we know that improvement in attendance and enrolment numbers across participating centres was achieved, we are unable to reliably delineate the specific contribution of each change idea to the overall improvement in performance due to the theory-based, multi-factor design of the project. However, we have a strong belief that the interaction of multiple ideas led to overall improvement across participating centres. The results are limited by the small number of participating centres. This project included only seven centres. In addition, we did not track data on whether improvements were sustained after the project completed and this is a question in need of further research.

Nonetheless, the Ministry of Education is keen to see the Early Learning project scaled up to include more ECE centres. As a result of the improvement achieved in this pilot project, the Ministry of Education proceeded with a larger collaborative covering 48 ECE centres in December 2015.

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Conclusion

New approaches that engage with communities are needed to achieve full enrolment and attendance capacity at early childhood centres and a national ECE child participation rate of 98%.

Using BTS and the Model for Improvement methodologies enables staff in ECE centres to develop the capability to initiate changes for improvement and understand their effectiveness. The Early Learning project has shown that, using this methodology, ECE staff can make changes that effectively increase enrolment and attendance rates without the need for extra funding. This approach to change can help to raise ECE attendance and enrolment rates at centres situated in low socio-economic areas with high proportions of children from indigenous and ethnic minority groups.

Conflicts of interest

We declare that Ko Awatea received funding from the Ministry of Education for improvement coaching and expertise.

Acknowledgements

We acknowledge the assistance of Patricia Hayward with editing and preparing the manuscript, and of Matt Cope as an improvement advisor.

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