PREDICTING HOME-VISITING PROGRAM COMPLETION BASED ON MOTHERS' SOCIOECONOMIC CHARACTERISTICS AND PROGRAM PERCEPTIONS

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Patricia M. Malinski

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Examiners: Dr. William Montelpare [redacted]

Dr. Janet Bryanton [redacted]

Dr. Misty Rossiter [redacted]

Dr. Jessie-Lee McIsaac [redacted]

Dr. Pedro Quijón - Chair [redacted]

Date June 19 2018

Abstract

Early childhood home-visiting programs are a widely established practice across North America, which aim to improve child and family outcomes for young families who require extra support. A common issue across all home-visiting programs is poor retention. Over the past few decades, researchers have been investigating various reasons for why a family may enroll in a home-visiting program but not complete it. In Prince Edward Island, the Best Start Program is a province-wide program that also experiences family attrition. The purpose of this study was to use maternal socioeconomic and program perception indicators to predict participation in the Best Start home-visiting program. A descriptive and retrospective, correlational design was used to evaluate maternal participation in the Best Start program from June 2017 to March 2018. Maternal participation was defined as the ratio of completed to expected home visits. Multiple linear regression was used to analyze predictors that were previously collected through a routine parent survey that is administered by the home-visiting program. The results indicated that socioeconomic indicators may predict how many home visits a mother will complete compared to how many are expected. Residing region, Prince County in particular, was associated with higher participation. By analyzing how maternal socioeconomic and program perception factors impact home-visiting participation, these findings provide a greater understanding of potential program participation influencers, as relevant to this particular sample in Prince Edward Island.

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PEI – Prince Edward Island

SAS – Statistical Analysis System

Chapter 1

Introduction

Background

Early childhood home-visiting programs are a widely established practice in Canada. Various program models have been adopted in each Canadian province and territory (Glenton et al., 2013; National Collaborating Centre for Determinants of Health, 2009). This preventative strategy offers personalized support to families and children in need, who are at risk for negative outcomes such as child maltreatment or developmental delay (Betker, MacLeod, Beanlands, Greenwood, & Weir, 2009; Bowers et al., 2018; Daro & Harding, 1999). These programs aim to improve child and family outcomes through parenting support, education, and access to resources during home visits with expectant parents and/or families with newborn children (Osborne, 2016). Although widely adopted, previous studies from both national and international researchers showed mixed outcomes in regard to program effectiveness (Peacock, Konrad, Watson, Nickel, & Muhajarine, 2013; Yonemoto, Dowswell, Nagai, & Mori, 2014). These outcomes generally included improved infant health, infant development, and maternal satisfaction. Such outcomes, however, may depend on the volume of services received (Ammerman et al., 2006).

The Best Start home-visiting program, offered on Prince Edward Island [PEI] through the provincial public health nursing regional offices and an independent family resource centre (i.e. CHANCES),[1] screens each new mother, province-wide, to determine if she would benefit from parental and family support services (CHANCES Family

[1] CHANCES is an acronym that represents: Caring, Helping, And Nurturing Children Every Step.

Centre, n.d.a). If eligible, the mother may participate in regular home visits until her child reaches 3 years of age.

Whereas a large body of literature exists on home-visiting programs, peer-reviewed evidence about Canadian early childhood home-visiting is limited. With mixed findings about their effectiveness, it is important for each individual home-visiting program to demonstrate how its program works, in what context, and for whom (Osborne, 2016). The last program evaluation of the Best Start program on PEI was released in 2006 (Hornick, Bradford, Bertrand, & Boyes, 2006).

According to the Provincial Best Start Coordinator for CHANCES, the program struggles with attrition, with the causes not well understood (R. Ward David, personal communication, August 2017). As such, a thorough investigation of current program participation is required to provide a clear understanding of factors which may influence the number of completed home visits. This information has the potential to inform Best Start program officials about appropriate modifications that will allow for successful program completion and continued parenting support for mothers across the province.

The need for this study was identified during the researchers' previous involvement with CHANCES Family Centre. Through a summer student placement, the primary researcher immersed herself in the culture of the organization and identified the need for current evidence on the Best Start home-visiting program. The previous establishment of relationships between the researchers and CHANCES staff supported the development of this relevant and useful study, which acts as a starting point in understanding the program attrition challenges experienced by the Best Start program.

Relevance to Health Services Research

Health services research relates to scientific inquiry that aims to improve the efficiency and effectiveness of both the healthcare system as well as healthcare professionals (Canadian Institutes of Health Research, 2014). These studies often involve intersectoral collaborations for ultimately exposing both positive and negative consequences of well-intentioned policies (Patrick, Mamdani, Stanbrook, & Kelsall, 2017). A health services research approach has the potential to provide answers to complex problems that not only impact the healthcare system, but which may also influence the health of Canadians.

In response to the increasing problem of chronic disease in Canada, the Public Health Agency of Canada developed the Chronic Disease and Indicator Framework (Betancourt et al., 2017). Maternal and child health risk and protective factors constitute a domain within this framework. Through its screening and registration, the Best Start program identifies and offers programming to families that demonstrate parenting risks. Families' early exposure to parenting support provides a unique opportunity to impact the life course of an entire cohort of young children (Black et al., 2017).

In addition to recognizing parenting risks, the Best Start program has the potential to identify and explicitly addresses family challenges related to the determinants of health. Home visitors from the Best Start program frequently collaborate with other professionals and community agencies to support the family's parenting experience. With strong community awareness when addressing the determinants of health and collaboration with other health-related services, Best Start functions as a part of the greater healthcare system.

A thorough understanding of Best Start participation will help the program by identifying engagement strategies that may encourage more frequent participation in home visits. This has the potential to better serve families in PEI, as it may allow them to gain additional parenting skills and positive family experiences. Taylor and Nies (2013) have previously stated that health services research can utilize the increasingly available databases to provide evidence on specific program activities and outcomes. This proposed study made use of such databases by using previously collected Best Start data to learn which factors influence participation in the Best Start home-visiting program.

Purpose and Research Hypothesis

The purpose of this study was to use maternal socioeconomic, and program perception factors to predict participation in the Best Start home-visiting program delivered by CHANCES, PEI.

The primary research question was to determine which socioeconomic factors and program perception indicators of eligible mothers predicted home visit participation, based on data collected by CHANCES, PEI over a three-year period.

It was hypothesized that socioeconomic characteristics of eligible mothers, in addition to their program perceptions would function as determinants of program participation. For the purposes of this study, program participation referred to the ratio of completed to expected home visits.

Chapter 2

Literature Review

Search Strategy

The following review of related literature examined the state of knowledge with regard to participation and retention in early childhood home-visiting programs. The initial search was limited to peer-reviewed studies and relevant grey literature, those that were conducted in North America, and those written in the English language. These exclusions were chosen because it has previously been considered that different developed countries experience unique outcomes due to differences in government policies and funding for home-visiting and other family programming (Nievar, Van Egeren, & Pollard, 2010). Later targeted searches were expanded to peer-reviewed studies from any developed country.

Ovid Medline, PsychINFO, and CINAHL were searched for this review. Additionally, GoogleScholar searches were done for targeted searches where the original three databases did not yield articles on specific maternal risk factors. Lastly, references derived from the originally retrieved literature were also used. The following search strategy was used for the initial three databases: (mothers OR maternal) AND (socioeconomic factors OR sociodemographic OR mental health OR life change events OR child welfare OR child protective services OR violence) AND (home-visiting program OR home visiting program OR home visit* OR home-visit* OR home nursing OR maternal-child health services OR child health services OR community health nursing OR home care services, hospital-based OR house calls OR professional-family relations) AND (retention OR complet* OR attrition OR refusal to

participate/psychology OR treatment refusal/psychology OR adherence). Further database filters were applied for fetal, infantile, and early childhood age groups. Due to the large amount of literature related to this area of interest, the search was narrowed to the literature most relevant to the proposed study. This included a focus on studies relating to program involvement, rather than solely outcomes. As well, this included a focus on studies that included home-visiting programs that had broad participant outreach and did not focus on a single risk factor.

Early Childhood Home-Visiting Programs

Early childhood home-visiting programs are an early-intervention strategy, which is adopted in most industrialized countries (Council on Child and Adolescent Health [CCHA], 1998). These programs aim to ensure ongoing parental education, social support, and linkage with community resources, before or soon after birth (CCAH, 1998). Home-visiting programs ultimately strive to support positive parenting, reduce toxic stress during critical windows of early child development, and support positive child health outcomes (Folger et al., 2016; Peacock et al., 2013). In 2009, a home-visiting program was operating in each province and territory in Canada, with the exception of Yukon (National Collaborating Centre for Determinants of Health, 2009). Yukon, however, was still operating many public-health programs through a home-visiting model.

History. Home-visiting programs first began in the United States during the 19th century (CCAH, 1998). These services were initially nurse- and social worker-led and provided education and healthcare to mothers and their children in the home (CCAH, 1998). In the late 19th century, funding for public health efforts declined, and home-

visiting programs moved away from universal models towards ones that targeted specific at-risk populations (CCAH, 1998; Sweet & Appelbaum, 2004).

Today, home-visiting programs are led by a variety of home visitors. These range from nurses to community workers (CCAH, 1998; National Collaborating Centre for Determinants of Health, 2009). Community workers can be defined as lay or paraprofessional workers (Duggan et al., 2000; MacMillan, 2000). These workers are typically community members with program-specific training and work under professional supervision (Duggan et al., 2000).

Many North American home-visiting programs have been established since the 90s (National Collaboration Centre for Determinants of Health, 2009; Sama-Miller et al., 2017). As a result, researchers are using the opportunity to conduct studies on already existing programs to gain an understanding of how these programs truly function in the community, rather than in a more structured research setting (Alonso-Marsden et al., 2013; Goyal et al., 2014; O'Brien et al., 2012). Researchers have previously stated that strong program engagement is associated with families experiencing more positive program outcomes (Holland et al., 2014). Throughout related investigations, there are many program components to consider.

Participants. Target populations differ between home-visiting programs. This is because program outreach may be universal, geared towards a targeted group, or geared even more specifically towards a predetermined risk factor (Ammerman et al., 2006; Sweet & Appelbaum, 2004). To engage in the program, the primary caregiver typically completes a screen and if eligible for the program his or her family may begin receiving home-visiting services prenatally or postnatally, depending on the program model

(Duggan et al., 2000; Goyal et al., 2014; Sweet & Appelbaum, 2004). These programs are designed to offer flexible support, which may benefit the target child, mother, and entire family. Home-visiting programs do aim to engage both parents. Traditionally, however, mothers work more closely with the program compared to fathers (Sweet & Appelbaum, 2004).

Through home visiting, mothers and their children receive services in a collaborative manner. Due to the long-term and flexible nature of these programs, mothers have the opportunity to build a relationship with their home visitor (Jack, DiCenso & Lohfield, 2002). Through these relationships, mothers can work with home visitors to identify their parenting goals and work together with the home visitor to achieve them.

Retention. Each home-visiting program varies in its target population, program purpose, intended outcomes, and program providers, who may also be referred to as home visitors (Jack et al., 2002). This variety challenges the ability to synthesize findings of program evaluations or scientific studies (Jack et al., 2002). A small number of meta-analyses, however, have been able to synthesize findings related to home-visiting programs. For example, previous meta-analyses have found home-visiting programs to yield positive yet modest outcomes (Filene, Kaminski, Valle, & Cachat, 2013; Sweet & Appelbaum, 2004). These findings are encouraging for the home-visiting field, but it is also recognized that in order to maximize program impacts, sufficient program participation is required (Ammerman et al., 2006).

Program retention is a major issue that may challenge home-visiting program success (Ammerman et al., 2006; Caldera et al., 2007; O'Brien et al., 2012). Previous

research has used maternal and family demographics and risk factors, the Integrated Theory of Parent Involvement, and the ecological framework to investigate program engagement and retention (Damashek, Doughty, Ware, & Silovsky, 2011; Goyal et al., 2014). Unfortunately, the Canadian literature lacks in empirical evidence on universal early childhood home-visiting participation and attrition. Nevertheless, issues of program retention have been previously expressed by home-visiting stakeholders through the Canadian grey literature (Lilley & Price, 2004; Skrypnek & Lo, 2007).

There is no universal set of factors that increase risk for the attrition in home-visiting programs (Alonso-Marsden et al., 2013; Holland, Xia, Kitzman, Dozier, & Olds, 2014; O'Brien et al., 2012). Reason for this may be attributed to the complexity and variety of home-visiting programs (Jack et al., 2002). Researchers previously focused on quantitative investigations have suggested that maternal education level, low income, child health problems, and/or interrupted relationships with the home visitor act as barriers to home-visiting program completion (Alonso-Marsden et al., 2013; Holland et al., 2014; Jack et al., 2002). Qualitative investigations, on the other hand, have focused on maternal perceptions of program protocol and relationships between the home visitor and mother (Stevens, Ammerman, Putnam, Gannon, & Van Girkel, 2005). For example, one qualitative study found engagement in a nurse-led home-visiting program to be associated with the nurse home visitors' characteristics (O'Brien et al., 2012). A single group of indicators cannot predict the successful completion of all home-visiting programs, but considering multiple factors may help to provide greater insights about this topic (Aston et al., 2015; Stevens, Ammerman, Putnam, Gannon, & Van Girkel, 2005).

Maternal characteristics. Maternal characteristics are an area of interest for researchers and service providers in home-visiting programs. Each home-visiting program targets a specific maternal population within a unique community. Mothers are asked a variety of socioeconomic and psychosocial questions about their childhood and adult life during the Best Start screening process. Focusing on the characteristics with which a mother screens into a home-visiting program provides valuable insights into parenting challenges that the mother may be experiencing. Some of these challenges may influence program participation and completion. Interestingly, while home-visiting programs seek to enable mothers who would benefit from extra support during their child's early years, previous research has observed paradoxical associations where mothers with the greatest risk are more likely to be screened into a home-visiting program, but less likely to complete it (Alonso-Marsden et al., 2013; Goyal et al., 2014). Therefore, it is important to understand the implications of various maternal characteristics, such as age, education, and income, on not only initial engagement but also later program participation.

Age. According to Meadows, Sadler, & Reitmeyer (2000), adolescent mothers are more likely to be impoverished and come from socially disadvantaged backgrounds compared to other adolescents. These mothers are also more likely to experience unique social supports, such as from the grandmother of the baby. Other researchers have also found an age gradient to exist in mothers receiving child-welfare services, where younger mothers were more likely to exhibit risk factors that have the potential to be modified by an early intervention program (Hovdestad, Shields, Williams, & Tonmyr, 2015). For all

younger mothers experiencing greater socioeconomic difficulties, home-visiting programs offer value by providing outreach supports (Goyal et al., 2014).

More closely related to program attrition, previous literature points out that younger mothers demonstrate weaker program engagement. One study found that younger mothers experience higher rates of program attrition (O'Brien et al., 2012). In accordance with this, other researchers have found that older mothers engage in more home visits (Damashek et al., 2011; McGuigan, Katzev, & Pratt, 2013). McGuigan et al. (2003) have previously suggested that this difference in program participation is potentially because younger mothers may require adapted home visit schedules such as evenings or weekends if returning to school. Having an awareness of program participation patterns among different age groups can help local home-visiting programs ensure that resources are targeted towards the age groups that benefit most from increased support.

Education. Maternal education level greatly impacts the life of the mother, as well as that of her family. Education relates to the type of employment that a mother is likely to have, as well as her income (Holland et al., 2014). An advantage to home-visiting programs is that some programs encourage mothers to pursue further formal education (Sweet & Appelbaum, 2004).

Holland et al. (2014) found maternal education to be a significant predictor in home-visiting program attendance patterns. Similarly, O'Brien et al. (2012) found mothers with a higher education level to participate in more home visits. These researchers suggested that education is associated with many other factors related to program attendance such as aptitude, stability of environment, age, and family supports.

Both of these studies, however, investigated the same program model. These studies looked at the Nurse Family Partnership, which is a program model that originated in the United States and involves prenatal and infancy home visits lead by nurses. Other program models that are implemented in different communities may benefit from a further and more applicable understanding about the impact that education has on program attrition.

Income. A mother's source of income may also provide insight into challenges that the mother may experience. The primary source of income may vary greatly among mothers registered in a home-visiting program. For example, a mother may be receiving maternity benefits, which are derived from stable employment prior to her child's birth and indicate a guaranteed employment upon her return from maternity leave (Government of Canada, 2016). Another mother may be less financially secure and receive financial support from family.

A mother struggling financially may experience challenges such as an inability to pay for housing, food, childcare, healthcare, and education (Canadian Observatory of Homelessness, 2017). During times with especially limited resources, home-visiting services may be a welcome support. One particularly helpful aspect of home-visiting services is that for mothers experiencing financial hardships with limited access to reliable transportation, these programs are especially supportive by providing services right in the mother's own home (Nievar et al., 2010).

A meta-analysis by Nievar et al. (2010) has demonstrated that home-visiting, regardless of nurse- or paraprofessional-provided services, is effective for low income families. What the authors also noted to be important was the frequency of home visits.

Nievar et al. (2010) suggested that intensive home-visiting programs, which they defined as those that offer more than three visits per month, had a medium mean effect size. This was more than twice the size in programs that offered three or fewer home visits per month. It is important to ensure that all mothers in need, including those with financial hardship, receive adequate home-visiting services.

The literature, however, demonstrates mixed findings regarding how exactly income influences program participation. Some studies found mothers with lower income to have higher attrition rates (Damashek et al., 2011; Josten et al., 2002). Meanwhile, others found no association between program participation and this maternal factor (Ammerman et al., 2006). Each individual home-visiting program should be aware of any financially-related challenges experienced by their participants, as well as their likelihood of completing their program.

Relationship status. Marital status may refer to a mother being single, in a common-law relationship, married, separated or divorced, or widowed. Limited literature exists on the association between relationship status and program engagement. Of the few studies, one has previously found married mothers to participate in more home visits (O'Brien et al., 2012).

Other researchers found mothers' program desires differ depending on whether or not they lived with the baby's father. Mothers who were living with the father may be married or be in a common-law relationship. For example, Tandon, Parillo, Mercer, Keefer, and Duggan (2008) found mothers who were living with their baby's father to be less likely to want baby care or job training information, compared to mothers living without the father.

A mother's program participation may also be directly impacted by the father. At times it can be the father himself who does not support involvement in the home-visiting program, and so the home visitor may adapt programming to create a more supportive home-visiting space where a strong mother-home visitor relationship can be built (Jack et al., 2002). For times when fathers do wish to engage in visits, resources are available to home visitors for supporting father engagement (Best Start Resource Centre, 2012). It is important for home-visiting programs to be aware of the relationship status of their mothers and to have an understanding of how differing relationship statuses may influence participation. This will help programs to ensure that all mothers are receiving adequate home-visiting services.

Ethnicity. Family ethnicity may also impact home-visiting participation. According to the 2011 Census, PEI experienced the second highest provincial growth rate in Canada (Statistics Canada, 2017). PEI has also experienced high international migration. Recently, particular focus has been placed on Syrian refugee migration, as in 2015/2016 the Atlantic provinces experienced over 1 in 5 immigrants to be Syrian refugees, compared to 1 in 12 in the remainder of Canada (Statistics, Canada, 2017). These reports also come during a time when the province is placing great emphasis on attracting immigrants as part of their *Recruit, Retain, and Repatriate: Population Action Plan* (Government of Prince Edward Island, n.d.). As the province continues to encourage immigration, an understanding of the services used by the immigrant population is necessary. This is especially true because of the "healthy immigrant effect," which stipulates that the health of immigrants is better upon arrival to Canada as compared to Canadian-born individuals, but worsens over time (McDonald & Kennedy,

2004). This important issue impacts both adult and adolescent immigrant populations in Canada (De Maio, 2010; Kwak, 2016).

Researchers have previously observed different participation rates among different ethnic groups (Daro, McCurdy, Falconnier, & Stojanovic, 2003). These researchers also suggested that matching home visitors to program participants of similar parenting status and race/ethnicity might support longer retention of families. As Best Start begins to experience greater participation from immigrant families due to the province's immigrant situation, it is important to understand how these young families choose to participate in the program. A better understanding will help Best Start to ensure that these populations are receiving relevant and effective services.

Program perceptions. Researchers are increasingly investigating maternal factors during the time of actual program participation, rather than just analyzing individual maternal characteristics collected at the beginning of the program period. Maternal program perceptions can help to explain the "active ingredients" that support home-visiting effectiveness (Landy, Jack, Wahoush, Sheen, & MacMillan, 2012). As already demonstrated by this review, a multitude of factors may interact to influence home-visiting engagement. Providing the opportunity for mothers to express factors most relevant to them, rather than researchers choosing what they believe to be most relevant, will help home-visiting programs better understand how mothers engage and how to more effectively support program participation (Hubel, Schreier, Wilcox, Flood, & Hansen, 2017).

The perceived relationship between the mother and home visitor may be one factor that impacts how a mother engages in a home-visiting program. Through a

qualitative case study completed in Ontario, Landy et al. (2012) found that mothers placed importance on feeling respected, not patronized, and not lectured by their nurse home visitors. Heaman, Chalmers, Woodgate, and Brown (2007) found that respect, trust, partnership, support for the family, and a maintenance of boundaries supported an ongoing positive relationship. Recognizing these factors and adapting a program accordingly may help to retain more mothers and support improved program outcomes.

When leading qualitative studies, it is important to develop thoughtful methodology that will allow mothers to express how they truly feel about the program. Researchers have previously expressed that mothers may not critically express their relationship with their home visitor. If this were the case, these studies would be subject to positivity bias (Korfmacher, Green, Spellman, & Thornburg, 2007). The establishment and maintenance of positive relationships between mothers and home visitors is an important aspect of home-visiting programs, and providing mothers the opportunity to share their perceptions in the truest form possible may support the continued delivery and attainment of program benefits, and deserves further investigation (Heaman et al., 2007).

Hubel et al. (2017) found factors such as congruence between family and program goals and the promotion of parenting self-efficacy to improve program engagement. These authors also found logistic challenges, such as hectic maternal schedules, to be a barrier in program engagement. Goyal et el. (2014) previously suggested that mothers may appropriately self-select into high or low program user status. Investigating maternal program perceptions is a way that researchers can acknowledge mothers' empowerment and perhaps better understand why they may choose to engage the way that they do. This understanding can help programs to adapt in ways that encourage strong program

participation. As well, providing mothers the opportunity to communicate and to self-express information about their own involvement in the program may allow researchers and program stakeholders to recognize program engagement facilitators that they otherwise would have not considered.

Description of the Best Start Home-Visiting Program

Home visitors. The Best Start home-visiting program on PEI involves home visitors working closely with parents and infants to achieve the objectives of the program. These particular home visitors are paraprofessionals and are commonly referred to as "Best Start workers." They are trained in the Growing Great Kids Curriculum from Great Kids, Inc. (Healthy Families America, 2015). As noted in the Healthy Families America training guide, the curriculum is designed to support the training of home visitors on trauma-informed practice, emphasize parent-child attachment principles, and inform visitors about ways to support parents in adopting these attachment principles. Best Start workers also receive further routine training for ongoing education of working with specific families.

Each Best Start worker is assigned to a regional department of the program and families typically receive services from the same worker over time. Together, the worker and the family engage in activities that support child growth and development. In addition to this, the worker leads discussions related to child health, safety, nutrition, and language. Through these discussions, Best Start workers assist parents in finding answers to child-related questions, set individualized goals, and connect families with appropriate community resources (CHANCES Family Centre, n.d.b).

Screening process. The Best Start home-visiting program is offered in partnership with Public Health Nursing of Health PEI, the provincial health authority. Public health nurses typically visit all newborns in the province within the first few days following birth. These visits occur in the baby's own home. During these checkup visits, the nurse completes a Best Start screen with the mother (Appendix A). This screen is comprised of 17 true or false questions referring to the mother's psychosocial status. A "true" response for being single, receiving late prenatal care, or considering an abortion during the current pregnancy makes a mother eligible for the Best Start home-visiting program. Additionally, indicating true for two or more questions, or marking seven or more questions as "Unknown" also screens a mother as positive for the program.

If screened positive, the nurse invites the mother to complete an intake form, which contains demographic and psychosocial questions. This is followed by an interview which allows the mother to further elaborate on any vulnerabilities that she may have initially indicated in the screen. After completing the interview, the nurse describes the Best Start program to the mother, explains her eligibility, and asks whether she is interested in participating. If the mother agrees to participate, the nurse forwards the screen and intake form to the Best Start office. Once registered, families participate in weekly, bi-weekly, and monthly home visits during the first, second, and third year of the child's life.

Participants. The Best Start screening protocol is used to assess each mother's risk at the individual level. A screen-based recruitment strategy allows services to be targeted to a select population based on psychosocial risk (Guterman, 1999). Best Start recruitment does not target a specific group of mothers, and so the risk characteristics of

participants vary. Mothers entering a home-visiting program may also have individual and unique intentions for their participation in the program (Tandon et al., 2008).

Program participation. Best Start employs a flexible home-visiting program that caters to the availability and intentions of its participants. Through such a flexible visiting schedule, mothers may appropriately self-regulate their participation into high and low users of the service (Goyal et al., 2014). Program participation has previously been defined as the quantity of intervention received by a family and is considered to be one dimension of program involvement (Korfmacher et al., 2008). This contrasts with the second dimension of program involvement, which is program engagement. Engagement refers to the emotional quality of the family's interaction with the program.

Unfortunately, there is no universal measure used for reporting home-visiting participation (Ammerman et al., 2006; Korfmacher et al., 2008). However, many researchers agree that the sheer quantity of home visits is not a sufficient measure for this dimension. As program participation and effectiveness likely do not have a dose-response relationship, markers such as the duration, concentration, and ratio of home visits have been previously used in studies, in addition to home-visit frequency (Ammerman et al., 2006; Holland et al., 2014; Korfmacher et al., 2008; Raikes et al., 2006).

The Best Start home-visiting program has previously defined successful program completion as participating in 25 home visits during at least 1 year of the program. This criterion was decided based on anecdotal input from home visitors and program managers, who believed that this number and duration of home visits were the minimum required to establish a relationship with the home visitor, identify the mother's needs, and have adequate time to address those needs (R. Ward David, personal communication,

June 2017). Although a child is considered to have sufficiently completed the program after 25 home visits and 1 year of participation, Best Start continues to offer services for the first 3 years of a child's life and recommends this full program completion.

Since there have been no recent investigations of the Best Start program in PEI, patterns of program participation are not easily identified. In order to optimize the financial and human resource investments of the Best Start home-visiting program in PEI, it is worthwhile to investigate the factors that may influence Best Start program participation.

Summary

The adoption of early childhood home-visiting programs has increased in recent decades. The effectiveness of these programs is modest, but positive (Filene et al., 2013; Sweet & Appelbaum, 2004). Differing program objectives, target populations, and home visitors challenge the synthesis and applicability of findings from existing program evaluations and studies. Therefore, each home-visiting program, with its unique program model, should conduct its own evaluations and investigations to yield relevant findings for its local context.

Similar to other home-visiting programs, the Best Start program in PEI has demonstrated concern about attrition rates (Ammerman et al., 2016; Caldera et al., 2007; O'Brien et al., 2012; R. Ward David, personal communication, June 2017). This phenomenon should be better understood if poor participation, as demonstrated by common attrition, limits the effectiveness of the program. Program participation is a specific program measure that requires investigation at the local level.

Fortunately, through program participation, mothers provide a wealth of socioeconomic and program perception information. This information can help Best Start to better understand its participant profile and program engagement patterns. Additionally, it will help Best Start to identify program modifications required for strong participation. Mothers register for Best Start because they express a desire for extra parenting support for the healthy development of their baby and family. Ensuring strong participation will help home visitors to establish strong relationships with families, identify mothers' goals, and work towards meeting these goals in order to ultimately improve parenting and early childhood life trajectories across the province of PEI.

Chapter 3

Methods

Study Design

This study used a retrospective, correlational design based on data collected by the Best Start home-visiting program on PEI. The final data set was derived by linking variables from the CHANCES database and the Best Start Parent Survey (Appendix B). Linkages were created using CHANCES Database File Numbers. Although these were secondary data, this study was a primary analysis of the data. A final data collection for obtaining maternal age was also linked to this dataset.

Sample

The study used a convenience sampling approach in which one hundred and fifty-five parents completed the Best Start Parent Survey in June 2017. The study used information from the completed surveys and relevant information from the CHANCES database.

Inclusion criteria. The sample for this study included mothers from PEI who had been participating in Best Start in June 2017 and who had completed the Best Start Parent Survey. According to CHANCES' current policy for research projects, mothers who sign the CHANCES consent form are eligible as research participants only as long as they are actively participating in the program of interest (Appendix C). In accordance with this policy, the sample included only mothers who remained active program participants as of March 27th, 2018.

Mothers in Best Start were previously determined to be eligible for the program based on screening positive on a screen and assessment for parenting risk factors,

administered by public health nurses. All eligible mothers for this study demonstrated some type of vulnerability and were expected to benefit from additional parenting support.

Exclusion criteria. Mothers who did not complete the June 2017 Best Start Parent Survey, were not the biological mother of the target child, and/or were registered in the program with more than one child at a time were excluded from the study. After taking inclusion and exclusion criteria into account, the sample size for this study was 124.

Procedure

Various maternal socioeconomic, program perception, and program participation indicators were collected at the Queens County Best Start Office in PEI. The data for this study were derived from three data sources: the Best Start Parent Survey, the CHANCES Database, and an independent data collection for maternal age. Socioeconomic and program perception indicators were obtained from the Survey, participation data were obtained from the Database, and maternal age was obtained from the independent collection. Further description of the data sources may be found in Table 1. The independent data collection occurred during a regularly scheduled home visit and was administered by the mothers' regular Best Start workers (Appendix D). This was done at the same time that the home visitors notified the mothers about the current study. The variables were originally designed and collected for either program evaluation or regular program recording purposes. The measurement tools were not designed for research purposes and had not been previously validated.

Table 1

Data Source Descriptions

Best Start Parent Survey (Appendix B): Survey administered to mothers participating in the Best Start program by their home visitors. This source includes variables on mother's demographic and socioeconomic characteristics, in addition to her perceptions about the program. The mothers were able to read and decide to complete the survey between at least two home visits. If the mother chose to complete the survey, she provided it to her home visitor in a sealed envelope, which was then provided to the Best Start Provincial Coordinator for input into a computerized data server. All questions from the Survey were obtained for this study, except for the last open-ended question which asked for "Other comments."
Best Start Database Electronic recording system for Best Start staff. This source includes variables related to Best Start program participation.

The data were stored in an excel file on an encrypted USB stick. This USB was stored in a locked drawer located in the Health Centred Research Clinic, located in the Steel Building at the University of Prince Edward Island. The women were anonymous to the researchers. Anonymity and confidentiality were maintained by not collecting any names during data collection. A file number that was previously assigned by the Best Start program was used to link datasets. After all the data had been collected, the File Number was replaced with a randomly created Identifier Number. During data analysis, the data were stored in a password protected statistical software (Statistical Analysis System® [SAS®] Studio).

Variables. Variables of interest related to maternal socioeconomic status, program perceptions, and program participation. The variables were chosen based on data source availability and discussions with the Provincial Coordinator of the Best Start program on the validity and reliability of each indicator.

Dependent variables. The dependent variable was home-visit participation. Two sets of outcomes were evaluated for this study population: short-term home-visit participation (participation up to June 30th, 2017) and long-term home-visit participation (participation up to March 27th, 2018). Home-visit participation was defined as the ratio of completed home visits to the number of expected visits (Equation 1). This ratio was calculated twice for each mother, in order to produce the two necessary outcomes. This ratio referred to only the home visits that a mother participated in, not those missed or rescheduled. The data for this dependent measure were derived from the CHANCES database.

Equation 1. $$\text{Ratio of completed home visits} = \frac{[\#\ of\ completed\ home\ visits]}{[\#\ of\ expected\ home\ visits]}$$

Best Start mothers participate in a varying schedule depending on their year of program participation. Mothers in their first, second, and third year are expected to participate in weekly, bi-weekly, and monthly home visits, respectively. Equation 1 accounted for each mother's unique number of expected home visits. This was an important feature of the ratio because, although mothers completed the Best Start Parent Survey at a single point in time (June 2017), each mother differed in her program level. The CHANCES database did not provide the exact indicators required for calculating the ratio of completed home visits. Instead, the researcher collected program start- and end-date in order to determine the number of expected home visits for each time point (June 2017 and 2018). Collecting the program end-date allowed the researcher to calculate the number of expected home visits based on the true end-date, rather than based on the time

Table 2

Dependent Variables for Determining the Ratio of Completed Home Visits

Variable	Type	Values
Program Start-date	Interval	Day-month-year numerical
Program End-date	Interval	Day-month-year numerical
Number of Completed Home Visits	Continuous	Frequency

of data collection, if the mother had ended program participation during the collection period. All indicators that were collected for determining the dependent variable may be found in Table 2.

Independent variables. Socioeconomic indicators and program perceptions acted as independent variables, or predictors. This single set of predictors was gathered from a previously completed Best Start Parent Survey. This survey was distributed to mothers participating in Best Start during June 2017. The completed surveys were located in the office of the Best Start Provincial Coordinator. The researcher and Best Start Provincial Coordinator inputted these surveys into a computerized database that already existed for the purpose of Best Start Parent Survey data storage. Survey responses were then accessed from this server. Further description of this data source is included in Table 1. Specific independent variables from the Best Start Parent Survey may be found in Appendix E.

Once collected, most socioeconomic indicators had to be recoded into binary variables for regression analysis. While the Best Start Survey measured relationship status according to being married, single or divorced, or in a common law relationship,

relationship status was dummy coded into a binary variable for statistical purposes of this study. Indication of being married or in a common law relationship was classified as a long-term relationship, as in these cases, it is likely that a mother receives some form of support from her partner. Remaining mothers were classified as single. For the analysis, single status was coded as a base category (0), while long-term relationship was coded as the higher category (1).

Through the Best Start Survey, mothers also indicated whether their highest achieved education was elementary school, junior high school, high school, college or technical school, an undergraduate degree, or a postgraduate degree. For regression analysis purposes, a mother's education status was classified as having either completed or not completed high school. Here, having not completed high school was coded as the base category (0), while having completed high school was coded as the higher category (1). Income was coded as either less than $50,000 (0), or greater than or equal to $50,000 (1). Country of origin was defined as the country in which a mother was born. For this predictor, a mother indicated whether she was born in Canada or in another country. Canada was coded as the baseline category (0), and other countries were coded as the higher category (1).

Data Analysis

This study was a retrospective primary analysis that used data already collected and stored at CHANCES. Descriptive analyses were used to describe the sample and each of the variables. Two sets of multiple linear regression, one set using socioeconomic indicators and the other program perceptions, were used to create two statistical models for each outcome. In total, this was four models. One set of models was for the prediction

of the short-term outcome which measured received-to-expected home visits up to June 30th, 2017. The other set of models was for the prediction of the long-term outcome which measured received to expected home visits up to March 27th, 2018. Both of these sets, meaning four models, were re-run after removing the intercept. Statistical significance was defined as $p < 0.05$.

Upon access to the merged dataset, the variables were examined and appropriately chosen to build a predictive model that met the assumptions of a multiple linear regression analysis. Appropriate indicators for model inclusion were chosen based on either empirical or statistical ($p < 0.25$) importance. These steps helped to limit the survey items that were to be included in the regression analyses, so as to not oversaturate the models. No more than six predictors were included per model, so as to satisfy the sample requirement for testing individual predictors (Tabachnick & Fidell, 2007). Empirical importance was based on previous literature and discussions with the director of the Best Start home-visiting program. Statistical importance was evaluated based on the correlation evaluated between each potential indicator and the outcome of interest. Choosing indicators with a $p < 0.25$ followed a similar cutoff that had been previously used by other researchers who investigated the prediction of home-visiting program enrolment (Goyal et al., 2014). Variables were initially selected for the short-term outcome model. These same variables were later included in the long-term outcome model, as any variables that were classified as statistically important for the long-term outcome had happened to be previously statistically important for the short-term outcome.

Based on findings from previous literature, maternal age was considered empirically important for understanding home-visiting participation (Damashek et al., 2011; O'Brien et al., 2012). This characteristic was the only indicator that did not have a near perfect response rate, as it was gathered during a separate collection period. By being the indicator with the lowest response rate (75%), including maternal age in the multiple regression models would have decreased the models' sample sizes to 93, limited the power of the models, and inhibited interpretations of independent predictors due to small sample size. For this reason, maternal age was omitted from the original statistical models and was instead independently tested in a simple linear regression model as a potential indicator of short- and long-term participation.

In addition to questions about socioeconomic status, the Best Start Survey contained 23 Likert-scale questions which related to mothers' perceptions about the program. Including 23 questions into a statistical model would limit its power. Thus, factor analysis was used to condense these questions into singular constructs. Factors were identified if they achieved an eigenvalue greater than 1.0. This eigenvalue cut-off was meant to ensure that the chosen factors accounted for at least as much variance as what an individual variable would (Yeomans & Golder, 1982). This cut-off was in accordance with the Kaiser-Guttman criterion (Guttman, 1954).

The data included in each statistical model were tested to verify whether or not the assumptions of multiple linear regression were met. These assumptions included linearity, normality of residuals, homoscedasticity, and independence (Institute for Digital Research and Education, 2017). Verifying that all assumptions were met was important to ensure that results would not be misleading. The extent to which each model

explained the variability in each outcome (R^2) was reported. Data analyses were done using SAS® Studio Statistical Software.

Ethical Considerations

As Best Start continues to provide home-visiting services to mothers across the province of PEI, it was important to have a clear understanding of any factors that may impact a mother's program participation. This study posed no risks to participants or their families. Mothers had already provided their information during their involvement with the Best Start program. These mothers were not required to participate in any other way, other than to provide their age to their home visitor upon being informed of this study.

Additionally, these mothers had previously provided a blanket consent that is standard practice for any family that begins participating in any CHANCES' programs or services (Appendix C). This consent would have been completed by mothers during the first home visit of the Best Start program. In this way, mothers provided their permission for their information, which was collected by Best Start, to be used for research purposes. Additional contact for consent was not required for the purposes of this study.

Although mothers had already consented for their information to be used for research purposes, an effort was still made to inform mothers about this particular use of their data. Each mother was still an active participant at the beginning of this study. Thus, an information letter, which described the purpose of this study and its relevance to the reader, was administered to each participant during a regularly scheduled home visit (Appendix D). These letters were distributed by the home visitors themselves, and if mothers had any further questions, they were encouraged to contact the researcher. When these information letters were provided, the mothers were asked to provide their age.

Confidentiality and anonymity remained a priority throughout this study. Confidentiality and anonymity were respected by not collecting any names during data collection, only a File Number created by the CHANCES Database was used. The women were anonymous to the researchers. After all the data had been collected and linked, the File Number was replaced with a randomly created Identifier Number.

All data were collected at the Queens County Best Start office. At this location, data were transferred to an encrypted USB drive. Once all data were collected, the USB drive was stored in a locked drawer located in the Patient-Centred Research Clinic, located in Steel Building at the University of Prince Edward Island. The analysis of this data was conducted on a password protected statistical software (SAS® Studio).

To further respect participant anonymity, no results were reported for sample sizes less than five. Only the researcher and her supervisor, Dr. William Montelpare, had access to these data. The data are stored at the Health Centred Research Clinic where they will remain for a period of 5 years and will then be destroyed by permanently deleting the files from the USB storage mechanism.

As noted, there were no risks involved as part of this study. This study was conducted in a manner that was in accordance with CHANCES Family Centre privacy and confidentiality policies, as well as policies of the UPEI Research Ethics Board. A letter of support for this study from the Provincial Best Start Coordinator may be found in Appendix F. The benefit of this study was that it provided the Best Start program with current information about their program participants, allowing for future opportunities for informed program improvement. Permission for this study was received from the UPEI Research Ethics Board (Appendix G).

Chapter 4

Results

Participant Profile

The total sample size was 124. The average age of mothers at the time of original survey collection was estimated to be 28.1 years (*SD*=5.71) and ranged between 18 and 42 years of age (*n*=93). Approximately 30% of mothers were 24 years or younger. Age was calculated by subtracting a value of 1 from the ages that were collected during March 2018-May 2018, nearly 1 year after the initial survey collection. During this additional data collection, only 75% of mothers had provided their age (Figure 1).

An approximately equal proportion of mothers were in their first and second year of the program at time of survey collection (Table 3). The demographic profile of mother participants is also shown in Table 3. Nearly 60% of mothers resided in Queens County, and over 1 in 10 mothers from across the program originated from a country other than Canada. Approximately 60% of mothers were in a long-term relationship, as indicated by reports of marriage or common-law status. Forty-three percent of participants had completed high school or less, and nearly 60% of participants who chose to provide information on their family income indicated an income of $40,000 or less. Whereas no missing values were recorded for demographic indicators other than age, over 23% of participants indicated that they choose to not provide information regarding their family income.

Predictors

Socioeconomic status. Table 4 presents the set of predictors selected for model inclusion and corresponding correlation coefficients and *p* values. Utilizing a CHANCES

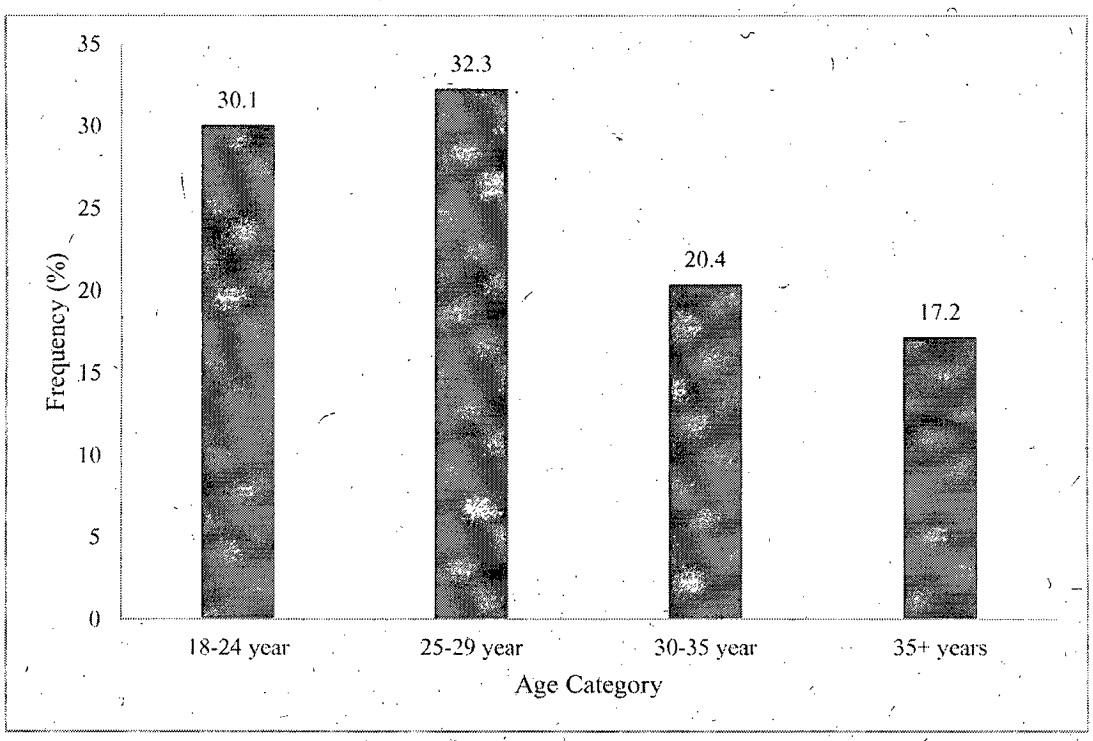

Figure 1. Frequency distribution of maternal age (n=93).

program other than Best Start in the past 6 months prior to data collection was considered a potential predictor of home-visiting based on statistical importance ($p = 0.09$). Geographic region of home dwelling was also considered to be a statistically important predictor for inclusion in the final model ($p < 0.01$). The region of home dwelling refers to the three counties that exist in PEI, as reported in Table 5. Queens County, in which exists the province's capital city, is typically considered to be the most central region in the province, with Prince and Kings County considered to be more rural.

Mothers who participate in Best Start demonstrated varying family structures (Table 3). A mother's relationship status was the third predictor that was statistically important for predicting home-visiting participation ($p = 0.06$). On the other hand,

Table 3

Participant Characteristics

Variable	n	%	% (Cumm.)
Gender			
Female	124	100	-
Program Status			
Year 1	56	45.1	45.1
Year 2	57	46.0	91.1
Year 3	11	8.9	100.0
Region			
Prince	38	30.7	-
Queens	73	58.9	-
Kings	13	10.4	-
Country of Origin			
Canada	110	88.7	-
Other	14	11.3	-
Relationship Status			
Married	30	24.2	-
Single or Divorced	50	40.3	-
Common Law	44	35.5	-
Education (highest achieved)			
Junior High School or less	7	5.6	5.6
High School	46	37.1	42.7
Community/Technical College	46	37.1	79.8
Undergraduate	17	13.7	93.6
Postgraduate	8	6.5	100.0
Income			
<$20,000	33	26.6	26.6
$20,000-$30,000	22	17.7	44.4
$30,000-$40,000	17	13.7	58.1
$40,000-$50,000	8	6.5	64.5
$50,000-$75,000	9	7.3	71.8
$75,000+	6	4.8	76.6
Chose not to answer	29	23.4	100.0

education and country of origin were not statistically important; both demonstrated $p > 0.25$ when testing their correlation with the short-term outcome (0.87 and 0.30, respectively). Although not statistically important, these predictors were considered empirically important for predicting home-visiting participation. For this reason, they

Table 4

Statistical Model Predictors

Statistical Model	Correlation with short-term outcome
Socioeconomic Status Predictors	r value (*p*)
Used other CHANCES programs in past 6 mos.	0.15 (0.09)
Region	-0.30 (<0.01)
Relationship status	0.17 (0.06)
Education level	0.02 (0.87)
Country of Origin	0.09 (0.30)
Program Perception Predictors	
Factor 1: I am successfully parenting	-0.001 (0.99)
Factor 2: I feel respected	0.08 (0.39)
Factor 3: I am learning how to support my child	-0.02 (0.83)

were included in the statistical models predicting participation based on socioeconomic indicators.

Program perceptions. Statistics identifying the correlation between program perception factors and the short-term outcome are reported in Table 4. The chosen program perception indicators were used to create three program perception factors, to be used in regression analysis (Table 6). Descriptive statistics of the select program perception indicators that were used to create the constructs are shown in Table 7. Each indicator was chosen based on achieving a primary factor loading valued greater than or equal to 0.55. As this cut-off was above 0.40, it was considered appropriate (Howard, 2016). The constructs were created by summing the responses of these individual indicators which met the cut-off. The indicator composition of each construct was assessed and an appropriate theme for each construct was created. From this point forward, these constructs will be referred to as factors. The three program perception

Table 5

Descriptive Statistics for Socioeconomic Predictors

Predictor	n	%
Participated in CHANCES programs other than Best Start in past 6 months		
No	44	35.5
Yes	80	64.5
Region		
Prince County	38	30.7
Queens County	73	58.9
Kings County	13	10.4
Relationship status		
Single	50	40.3
Long-term	74	59.7
Education level		
High school or less	7	42.7
Greater than high school	117	57.3
Income		
Below $50,000	80	84.2
$50,000 +	15	15.8
Country of Origin		
Canada	110	88.7
Other	14	11.3

factors were classified as Factor 1: I am successfully parenting; Factor 2: I feel respected; and Factor 3: I am learning how to support my child. Together, the three factors accounted for 82.5% of variation in the program perception data.

The identified factors were created from the sum of their constituents: Factor 1 – I am successfully parenting, was comprised of the following survey questions: I have learned that being a good parent is a reward in itself, I have learned that being a parent is manageable, I have the skills to be a good parent to my child, I am more involved in my child's development, and my child is developing the skills needed to be successful. Factor 2 – I feel respected, was derived from: When I participate in Best Start I feel comfortable,

Table 6

Descriptive Statistics for Program Perception Indicators

Predictor	Possible Range	Observed Range	N	$\bar{x}$	S. D.
Factor 1: I am successfully parenting	0-25	19-25	120	24.01	1.83
Factor 2: I feel respected	0-25	18-25	109	24.29	1.47
Factor 3: I am learning how to support my child	0-15	10-15	120	14.48	1.60

My Best Start Workers talks frequently to me about my child and what he/she is doing in the program, my suggestions and ideas are valued by my Best Start Worker, my Best Start Worker works with me to meet my needs, my Best Start Workers respects my family's cultural and/or religious beliefs. Lastly, Factor 3 – I am learning how to support my child, contained the following items: I have learned that reading frequently to my child is important, my Best Start Workers tells me about other CHANCES programs I can use, and my Best Start Workers tells me about other programs in the community. Cronbach's alpha statistics were calculated for each factor in order to gain further understanding of the program perception indicators that were included in this study's models. The values ranged between 0.78 and 0.91, which indicated strong internal consistency. While this test was done to verify the reliability of the predictors which originally contributed to a non-significant model, the Cronbach's alpha test also demonstrated unidimensionality and supported the notion that analysis of these factors was in fact appropriate.

Table 7

Descriptive Statistics for Program Perceptions from Best Start Survey

Indicator	Response		
	Strongly Agree (%)	Agree (%)	Neither agree nor disagree, or Disagree (%)
I learned that being a good parent is a reward in itself	82.3	16.9	0.8
I learned that being a good parent is manageable	79.0	20.2	0.8
I have the skills to be a good parent	83.6	15.6	0.8
I am more involved in my child's development	77.9	19.7	2.5
I learned that reading frequently to my child is important	87.0	12.2	0.8
My Best Start Worker informs me of other CHANCES programs that I can use	84.3	13.2	2.5
My Best Start Workers informs me of other programs in the community	81.3	17.1	1.6
My Best Start Workers works with me to meet my needs	78.9	20.3	0.8
I believe that my child is developing the skills needed to be successful	83.1	16.9	0.0
My Best Start Worker respects my family's cultural and/or religious beliefs	84.8	13.4	1.8
I feel comfortable	94.3	5.7	0.0
My Best Start Workers talks frequently about my child and what he/she is doing in the program	88.6	10.6	0.8
My suggestions and ideas are valued by my Best Start Worker	87.8	12.2	0.0

Note. Sample sizes ranged from 112-124.

Statistical Models

Ten statistical models were analyzed for the purposes of this study. Multiple linear regression was used to predict the short term- and long-term ratios of completed home visits with socioeconomic indicators and program perceptions. Four models were

built using socioeconomic indicators and program perceptions, and were later computed without the intercept term. Additionally, two regression models were created to predict short- and long-term participation using maternal age. The regression equations from each model are presented in Table 8. These equations were created using each predictor's parameter estimates, which represent the coefficients, or multiples, of each variable included in the regression models. For example, a parameter estimate of 0.05 for programs would indicate that the value for programs is multiplied by 0.05. This indicates a positive correlation where the ratio outcome of program participation increases when the program value increases. Meanwhile, a parameter estimate of -0.08 for region indicates that the region value is multiplied by -0.08. Here, the relationship between predictor and outcome is negative, where participation decreases when the multiple of region increases.

On average, mothers participated in approximately half of expected home visits ($\bar{x}$=0.52). The short-term outcome ratio, measuring participation until June 30th, 2017, ranged from .14 to 1.0. Meanwhile the long-term outcome ratio that measured participation until March 27th, 2018, ranged from .20 to 0.92. No outliers were observed for either outcome.

Four assumptions were expected to be met for the planned multiple regression analysis. These included linearity, multivariate normality, independence, and homogeneity of variance. Normality was not achieved in any model. The results may be biased as a consequence of violations to the aforementioned statistical assumptions and should be interpreted with caution. All predictor variables were transformed using logarithmic, inverse, and square root transformation; however, none of these strategies

Table 8

Regression Model Equations

Model Equations	
Model 1: Socioeconomic indicators – short-term outcome	Short-term ratio = 0.61 + 0.05(programs) - 0.08(region) + 0.04(relationship) + 0.01(education) + 0.03(country)
Model 2: Socioeconomic indicators - long-term outcome	Long-term ratio = 0.60 + 0.04(programs) - 0.06(region) + 0.04(relationship - 0.02(education) + 0.03(country)
Model 3: Program Perceptions – short-term outcome	Short-term ratio = 0.37 - 0.002(factor1) + 0.02(factor2) - 0.01(factor3)
Model 4: Program Perceptions - long-term outcome	Long-term ratio = 0.57 - 0.0(1factor1) + 0.01(factor2) - 0.02(factor3)
Model 5: Maternal age – short-term outcome	Short-term ratio = 0.47 + 0.002(maternal age)
Model 6: Maternal age – long-term outcome	Long-term ratio = 0.48 + 0.002(maternal age)

Note: Refer to Table 6 for Factor Identification.

improved the status of these assumptions.

Socioeconomic predictors appeared to be the best predictors of program participation (Table 9). The overall model for predicting short-term participation was statistically significant ($F = 200.83$; $p < .01$). The overall model that demonstrated a relationship with long-term participation indicated similar significance ($F = 236.21$; $p < .01$). Fourteen percent of variation in the short-term outcome was accounted for by the model, with Prince County being the only independent indicator that significantly contributed to the short-term outcome. Although not reaching $p < 0.05$, having participated in more than 1 CHANCES program in the past 6 months demonstrated $p = 0.08$ for this same model. When predicting long-term participation with socioeconomic indicators, the tested model accounted for 10% of variation in the long-term outcome.

This overall model was significant with an F value of 236.31 ($p < .01$). The only independent indicator that demonstrated significance was the region of Prince County ($p = 0.02$).

Program perceptions were not associated with the ratio of completed to expected home visits. Model 3, which tested short-term participation, demonstrated an F-value of 0.47 ($p = 0.71$). Meanwhile Model 4, which tested long-term participation, demonstrated an F-value of 0.53 ($p = 0.66$). If the overall models had been significant, they would have explained 1.4% and 1.6% of the variance in the short- and long-term outcome, respectively. Within each of these models, no independent indicators demonstrated significant predictive influence (Table 10). Alternative combinations of the predictors were tested, in addition to testing factors that were appropriately weighted by each of their constituents. No alternative combinations produced significant overall models. According to these results, the hypothesis for this study was not fully supported.

In an exploratory attempt to define relationships between variables in this specific cohort, Models 1 through 4 were tested again after removing the intercept (Tables 12-13). Removing the intercept assumes that a mother will demonstrate no program participation (ratio outcome = 0) when predictor values equal 0 (Casella, 1983). In other words, removing the intercept forces the regression line to go through the intercept. In the case of socioeconomic indicators, Model 5 demonstrated that overall program perceptions were significantly associated with the short-term outcome once the intercept was removed (F value = 200.83; $p < 0.01$). The model accounted for 14.2% of the variance that was observed in short-term participation. In terms of individual socioeconomic indicators, the influence of region changed once the model's intercept was removed, as

Table 9

Multiple Regressions Models for Predicting Program Participation using Socioeconomic Indicators

Model	Parameter Estimate	*p*
Model 1. Socioeconomic Indicators – Short-term Outcome		
Used other CHANCES programs in past 6 mos.	0.05	0.08
Region		
Prince County	0.15	<0.01
Queens County	0.06	0.20
Kings County	---[a]	---[a]
Relationship status	0.04	0.18
Education level	0.01	0.88
Country of Origin	0.04	0.42
Model 2. Socioeconomic Indicators – Long-term Outcome		
Used other CHANCES programs in past 6 mos.	0.04	0.16
Region		
Prince County	0.11	0.02
Queens County	0.05	0.22
Kings County	---[a]	---[a]
Relationship status	0.04	0.18
Education level	-0.02	0.74
Country of Origin	0.03	0.43

Note.[a] Kings County acted as a reference category for Region.

each county became significantly associated with the short-term outcome. Removing the intercept when testing the long-term outcome also demonstrated a significant model for socioeconomic indicators ($F = 236.31$; $p < 0.01$). Once again, each region became a significant contributor to the overall model (Table 11).

The model that tested program perceptions for the prediction of short-term participation (Model 7) was also found to be significant with no intercept (F-value = 322.73; $p < 0.01$). This model accounted for 90.7% of the observed variance in the short-

Table 10

Multiple Regressions Models for Predicting Program Participation using Program Perceptions

Model	Parameter Estimate	*p*
Model 3. Program perception indicators – Short-term		
Factor 1: I am successfully parenting	-0.002	0.84
Factor 2: I feel respected	0.02	0.28
Factor 3: I am learning how to support my child	-0.01	0.47
Model 4. Program perception indicators – Long-term		
Factor 1: I am successfully parenting	0.01	0.51
Factor 2: I feel respected	0.01	0.54
Factor 3: I am learning how to support my child	-0.02	0.34

term outcome. When predicting the long-term outcome, Model 8 was also significant ($F = 395.18$; $p < 0.01$). Similar to Model 7, this model accounted for 92.3% of the variance in long-term participation. Factor 2, Feeling respected through the Best Start program, emerged as a significant and independent contributor to the model predicting the short-term outcome. No independent factors, however, emerged as significant contributors when predicting the long-term outcome.

Maternal age was independently tested to predict the short-term outcome ratio, using simple linear regression. This model accounted for 0.01% change in short-term participation and demonstrated an F value of 0.50, but was not significant ($p = 0.48$). Similarly, maternal age accounted for less than 0.01% change in the long-term outcome. This model demonstrated an F value of 0.56 and was also not significant ($p = 0.46$).

Table 11

Multiple Regressions for Predicting Program Participation using Socioeconomic Indicators in Short-term Program Participation – No Intercept

Model	Parameter Estimate	*p*
Model 5. Socioeconomic Indicators–Short-term Outcome		
Used other CHANCES programs in past 6 mos.	0.05	0.08
Region		
Prince County	0.53	<0.001
Queens County	0.44	<0.001
Kings County	0.38	<0.001
Relationship status	0.04	0.18
Education level	0.01	0.42
Country of Origin	0.04	0.88
Model 6. Socioeconomic Indicators–Long-term Outcome		
Used other CHANCES programs in past 6 mos.	0.04	0.16
Region		
Prince County	0.54	<0.01
Queens County	0.48	<0.01
Kings County	0.43	<0.01
Relationship status	0.04	0.18
Education level	0.03	0.43
Country of Origin	-0.02	0.74

Table 12

Multiple Regressions for Predicting Program Participation using Program Perception Indicators– No Intercept

Model	Parameter Estimate	*p*
Model 7. Program perception indicators – Short-term Outcome		
Factor 1: I am successfully parenting	-0.0005	0.97
Factor 2: I feel respected	0.03	0.04
Factor 3: I am learning how to support my child	-0.01	0.11
Model 8. Program perception indicators – Long-term Outcome		
Factor 1: I am successfully parenting	0.01	0.40
Factor 2: I feel respected	0.02	0.11
Factor 3: I am learning how to support my child	-0.01	0.54

Chapter 5

Discussion

The purpose of this study was to use maternal socioeconomic and program perception indicators to predict home-visiting program participation. The study examined maternal socioeconomic indicators and program perceptions as predictors of participation in the Best Start home-visiting program. In this sample, only socioeconomic factors predicted program participation, with region being the only indicator that independently influenced the number of home visits that a mother would complete, compared to what was expected.

Region was associated with program participation in both the short- and long-term. Those who lived in Prince County were more likely to complete more home visits compared to what was expected of them. PEI is a province divided into three geographical counties: Prince, Queens, and Kings Counties. Prince County is populated by 43,730 citizens, while Queens and Kings Counties have total populations of 82,017 and 17,160, respectively (Statistics Canada, 2018a; 2018b; 2018c). Thus, Prince County is a mid-sized region in comparison to the other counties. Although it is a single region, Prince County encompasses the entire western part of the province. The county is diverse, with one part of the region containing the second largest city in the province and considered to be more urban, while the other part is considered to be rural (R. Ward David, personal communication, June 2017).

The reason why residing in Prince County predicted stronger Best Start participation is unclear. In terms of population statistics, the region is neither the largest nor smallest. When comparing the two smallest counties, Prince County had a larger

home-visiting program department compared to Kings County. With small communities, but a strong program presence, perhaps the program is more commonly accepted by the wider community which encouraged family program involvement. Alternatively, differences between home visitors from each county may have also impacted program participation.

It is difficult to gather comprehensive information about community settings. Specific community context is typically not available from commonly available data, such as that from census data (Daro et al., 2007). With the socioeconomic indicators that were collected as part of the Best Start Survey, Prince County did not appear to differ greatly from other counties in this respect. Outside of this study, a current and comprehensive report detailing the different domains of PEI counties is currently not available. Until more information is available at the community level, a greater understanding why provincial regions differ in program participation patterns is not possible.

Daro et al. (2007) previously explained that certain community characteristics, such as community disorganization, can predict greater utilization of family support. Their reasoning was that factors of community distress, such as residents with low education, poor income, unstable income and unstable relationships, might create an environment with additional barriers to seeking out and utilizing voluntary parent services. The nature of home-visiting outreach, however, may be a welcome service that allows families to receive support with minimized barriers for access. Other researchers have described associations between communities with greater socioeconomic deprivation and lower home-visiting enrollment and follow-through (Alonso-Marsden, et

al., 2013; Goyal et al., 2014). In this way, researchers have not only considered individual factors, but also consider wider influences on program participation.

Although not investigated in this study, influencers of program participation other than residential region may be noted. Goyal et al. (2014) used an ecological framework for their cohort study, which lead to a comprehensive analysis in home-visiting participation through evaluations of individual and contextual factors. An ecological study design is an observational study in which data are analyzed at the population or group level (Levin, 2003). Researchers also utilized the 'Integrated Theory of Parent Involvement' which considered the influence of an individual caregiver, neighbourhood, provider, and program factors such as curriculum type and duration, on enrollment and retention in family support services (McCurdy & Daro, 2001). This theory was adopted by Damashek, Doughty, Ware, and Silovsky (2011) who found that program and provider indicators, as well as intimate partner psychological aggression, substance abuse, and depression, all predicted completion of home-visiting services. In this way, researchers demonstrated the importance of considering multiple factors when investigating how a family received support services. These researchers sought a comprehensive understanding of their local home-visiting programs, and in doing so, had investigated multiple levels of factors at the individual, organizational, and/or community levels.

While it is important to develop a comprehensive understanding of participants by understanding their socioeconomic profiles, it is also important to acknowledge that participants are their own individuals who should not simply be defined by their socioeconomic conditions. To consider mothers' own voices and reasonings, analysis of program perceptions was a priority in this study. While no program perceptions appeared

to predict program participation in this particular sample, it was important to acknowledge the existence of parental attitudes and beliefs towards home visit involvement (Hubel, Schreier, Wilcox, Flood, & Hansen, 2017; Tandon et al., 2008).

Mothers' initial intent for utilizing home services, their reasoning, and their behaviours have been considered as likely influencers of participation (McCurdy et al., 2006). While the questions from the Best Start survey did not capture mothers' original intentions or reasons for enrolling in Best Start, they did capture mothers' feelings towards the program. Additionally, the survey indicated what mothers believed they were gaining from the program.

In this study, each mother was at a different stage of the program, which made the results valuable. The process of program entry and concern for attrition exist as a continuum, rather than something that is only relevant during the immediate program entry phase (Chalmers, 1992; Luker & Chalmers, 1990). This is because developing and maintaining participant home-visitor relationships is part of an ongoing process (Chalmers, 1992). Considering participants at all stages is important, and their experiences should be monitored to understand the respect, development of trust, partnership, and feelings of support that they do or do not experience throughout their relationship with their home visitor (Heaman et al., 2007).

When mothers were asked to provide their opinions about the Best Start program and what they were gaining from it, the majority of mothers provided positive feedback. Other researchers also experienced overwhelmingly positive feedback from mothers in home-visiting programs (Landy et al., 2012). These researchers attributed this phenomenon to the possibility that mothers felt satisfaction with the program overall and

did not wish to criticize any specific program components. They also speculated that the mothers had limited experience with home-visiting services, and thus might not have had a comparison for their current experiences. In regard to Best Start, there could be additional reasons why mothers demonstrated positive program perceptions.

Best Start Surveys were administered by home visitors during regularly scheduled visits. Once the visitor explained the Survey to the mother, she was left alone to complete the package. Mothers were assured that once they placed their surveys into an envelope, it would not be seen by anyone other than the program director and research staff. They were also assured that their responses would have no impact on the services that they received. Even so, certain mothers may have felt worried that their responses could be seen by their home visitor or other program staff. This might be a reason why overwhelmingly positive program perceptions were received. Another reason could be that mothers simply thought well about each aspect of the program and felt that they were truly gaining skills and positive experiences from the program. Nevertheless, it is important to consider this acquiescence, which describes instances where individuals demonstrate a tendency to indicate affirmative responses to items in a questionnaire (Messick, 1966).

These questions were not designed for research purposes and the overall survey measure was not validated. Therefore, it is not for certain that the survey questions accurately or reliably captured mothers' perceptions. Particular perceptions that researchers had previously considered important for investigating program engagement, such as initial intent to enrol in the program, the understanding of program expectations and home visit frequency, and the home visitor relationship with other family members,

were not captured in this survey (Jack et al., 2002; Stevens, et al., 2005; Tandon et al., 2008). Nevertheless, observing positive program perceptions from this Parent Survey should be viewed as encouraging because general program-client satisfaction is thought to increase retention and service completion in home-visiting programs (Damashek et al., 2011).

It is interesting that relationship status did not predict home-visiting participation. There is a chance, however, that the full reality and complexities of family relationships, which could influence participation, were not fully recognized and addressed during analysis. In this study, relationship status was classified as either being in a long-term relationship or not at all. This contrasts with the typical "married" and "single" classification, which alludes to family complexity and nonmarital childbearing as negative (Raskin et al., 2016). Researchers have also previously expressed that this traditional classification does not fully capture modern coupling. In fact, Raskin et al. identified two classes of complex families: a relationship in which there is full father support but no legal or residential family ties, and a relationship with less father support and increased ambiguity about his exact role in the child's life. Of all families with children in PEI in 2017, 27% are single-parent families (Department of Health and Wellness, 2018). It is important to maintain awareness and a thorough understanding of the families who access the provincial home-visiting program and how their characteristics change over time. These efforts help to ensure evaluation accuracies and continued program improvement.

It was also surprising that education level was not associated with home visit participation. Researchers previously discussed the potential that contributing factors to

school success may contribute to home visit participation. Factors related to school success may include aptitude, maturity, stable environments, and family support (Holland et al., 2014). Education status may also relate to mothers' intentions for the program, as mothers with low education have previously hoped that their home-visiting program would meet their life-course needs by providing information about continuing education (Tandon et al., 2008). It is not known whether part of this sample of Best Start mothers intended to receive education support from the program. Although Best Start is a flexible program, the program goals do not have a large focus on changing maternal education status. If a portion of this study's sample desired support for furthering education and did not receive as much support as they originally hoped for, mothers may have participated in less home visits over time, compared to how many were expected.

Aside from personal intentions for enrolling in Best Start, mothers may have also differed in their reasons for being referred to the program. As was demonstrated by the Best Start Screen (Appendix A), the vulnerability characteristics that can make a mother eligible for Best Start vary. As well, mothers who indicate the same type of vulnerability may still differ in its severity. By being equipped with copies of the completed Best Start Screen, having the opportunity to develop strong relationships with the mothers, and having time during home visits to better understand family context, Best Start workers are prepared and well equipped to thoroughly understand which vulnerabilities should be addressed and what a mother might benefit from most from the program.

Although mothers in Best Start received approximately half of the number of home visits than were expected of them, the fact that it was not near 100% participation should not be cause for concern. In a recent study, program participants who received at

least 50% of their expected home visits were considered to be a high-dose receiver of home-visiting services (Latimore et al., 2017). In fact, four home visits per month, which is common for certain home-visiting program models, may not be realistic for all mothers (Duggan et al., 2000). Thus, it is important that the voluntary nature of home-visiting programs be recognized. Mothers may self-select into high- and low-user groups based on their perceived needs, and may differ in how they choose to do this (Goyal et al., 2014). For example, a mother may enroll in the program but then regularly cancel appointments. Or, a mother may not be fully present and involved even though she attends each visit (Wagner et al., 2003). In essence, home visit participation studies are attempts to learn about program participation and engagement patterns to better understand how young families choose to be involved in available supports. If a greater understanding is ever reached, the findings may be adopted by program providers in order to improve their research and support positive outcomes.

Strengths

This study demonstrated many strengths. This study involved participants from all three counties and was province-wide. This not only increased the study sample size, but also gave this study provincial relevance. The ratio measurement for program participation was also considered to be a strong indicator of program participation (Korfmacher et al., 2008). Additionally, this study involved close discussion with the Provincial Best Start Coordinator when choosing potential predictors for program participation. This ensured that the indicators were of empirical importance.

The outcome measure is deserving of consideration as it allowed for the comparison of mothers from across all levels of the program (Korfmacher et al., 2008).

There are many ways to measure program participation. These measurements can range from frequency counts to home visit length, to program duration (Korfmacher et al., 2008). This particular ratio outcome in this study, however, was able to better demonstrate how adequately a family received services, in terms of this particular Best Start curriculum.

Throughout this exploratory investigation, a thorough effort was made to use the most appropriate information available. The researcher had the unique opportunity to not only immerse herself in the program of interest, but to also immerse herself in the overall organization that offers the program. This better informed the researcher about the values of the organization, as it offers its continuum of other programs and services to families. Integration within the organization allowed the researcher to interact with the executive director, various program coordinators, supervisors, home visitors, and other staff. These interactions took place over the course of an entire year. They informed the researcher of organizational and program goals and allowed the researcher not only to gather and analyse the most relevant data available, but also to gather it in an accurate and meaningful way. This was further supported after gaining a strong understanding of the organization's database and data recording protocol. Throughout the entire study, all data were handled as more than just numbers. This greater contextual understanding allowed for a thorough and meaningful exploration of data.

Additionally, only two individuals inputted data from the Best Start Parent Survey into the CHANCES Database: the researcher and the Provincial Best Start Coordinator. Close communication was maintained during this data collection, so as to code data in a consistent manner. If not using existing administrative data, other researchers have led

investigations on home-visiting programs by designing the data to be collected and assigning particular research staff to lead the collection (Goyal et al., 2014; Tandon et al., 2008). The limited number of individuals who collected and coded the data, which increased the overall quality of the data.

Limitations

While this study had several strengths, it also had its limitations. This study had a relatively small sample size due to restriction placed by CHANCES criteria. As well, survivor bias resulted from focusing only on the participants who were actively engaged in the program, rather than conducting comparisons with other families who either participated in Best Start but eventually dropped out, or those who screened positive for the program but never registered. As mentioned, the Best Start Survey was not a standardized tool and so the reliability and validity of its indicators were not guaranteed. A lack of comprehensive data was also a limitation of this study, as this study mainly accessed individual-level data.

Accessing all data of interest, while attempting to assess multi-level variables for comprehensive analyses proved to be challenging. This study mainly considered individual-level data because these were the data that were available. Program and provider characteristics were not collected due to lack of available data. The inclusion of region as a predictor was the researcher's attempt to acknowledge a greater community-level influence. Although rich information relating to mothers' mental health, history of abuse, and involvement with child protection services is collected upon program intake, this information is collected by public health nurses who are hired by Health PEI, the provincial health authority. As the data originated from different sources, receiving

ethical approval and adhering to different sets of policies would have required thorough discussion with data stakeholders and a different application to obtain research ethics board approval. This initiative was initially attempted by the researcher, but it was decided that the relationship building, collaboration, and timeframe necessary to pursue these elements were outside of the scope of this project.

Although the program perception indicators did not lead to a model that significantly predicted home-visiting participation, anecdotal recollections by Best Start workers and the coordinator previously demonstrated that an understanding of these factors, as well as the socioeconomic indicators, were important for many individual home-visiting cases. When model intercepts were removed during further explorations of the data, all models predicted participation, and region of residence remained an important factor in these predictions. Although these results may be biased, the sample for this study was unique and a thorough exploration was appropriate. With this in mind, this exploratory analysis was not meant to be generalized to any other samples or populations. This exploration provided further reflection on the factors that might influence a mothers' engagement in Best Start. Future investigations should continue using program perceptions to investigate program participation, but perhaps with a larger sample size and different measurement tools.

Implications

This study was important for several reasons. First, this study presented a current demographic profile of mothers in the Best Start program. This will allow policy makers and other stakeholders to draw comparisons between this unique population and the general population in order to make informed decisions. This current demographic profile

also helps change certain misconceptions about family support programs and services such as Best Start. For example, some may perceive Best Start as a program that mostly services adolescent mothers. Upon learning that the average age of this study sample was 28.1 years of age, one can quickly see that this is not the case. The average age of this sample was lower compared to the provincial average of maternal age at time of childbirth, which was 29.5 years in 2016 (Statistics Canada, 2018d).

The finding that region of residence may influence program participation is also another important consideration. This knowledge provides the Best Start program with an opportunity to look further into the demographic profile of mothers served within each county, as well as into the service provisions that occurs within each county. Perhaps mothers within the counties have different needs or intentions for the program. Communication between counties is encouraged, as helpful strategies for program delivery may prove useful for different regions in the future. This study may also influence future practice, by allowing lessons learned through this study to be used in future evaluation and research efforts.

This research also fostered cross-sectoral relationships. This study was a collaboration between CHANCES Family Centre and the University of Prince Edward Island. With relationships established, future research initiatives may lead to a further understanding of early childhood programs and services provided across the province by CHANCES Family Centre. Lastly, this research was important because it was a stepping stone towards the ultimate goal of supporting early childhood development and health, so as to encourage the development of a healthy and prosperous general population in PEI. Through research initiatives, the Best Start program can better reflect on its current

practices and seek new ways to improve and adapt to its current population. Through Best Start, mothers are supported in their parenting experience, children have the opportunity for health and development risks to be identified early on in life, and families are connected to other community resources. In these ways, Best Start is in a unique position to understand and impact a family's context and early life experiences, which contribute to the unique development and life trajectory of each individual child.

Recommendations

Future research should continue to support the intersectoral relationships that have been formed between CHANCES, researchers, policy makers, and other stakeholders up to the present day. Maintaining these relationships is particularly encouraged for supporting further collection of comprehensive information and data access. Having the opportunity to analyze the most relevant information will contribute to a more comprehensive understanding of the current child population in PEI. It will also more effectively support family and child support initiatives such as the Best Start program.

With a longer timeframe and further collaboration, the rich maternal information that was collected during program screening can be collected from Public Health Nursing. These nurses have the opportunity to sit down with the mothers and engage in rich discussion about a mother's history, gathering much information which was not part of this study. This information includes mental health, abuse, and child welfare information. If this information were to ever be accessed for future research, it is worth noting, however, that some of these additional indicators should still be collected at later stages. For example, while the Public Health Nurse may discuss postpartum depression

with the mother soon after she returns home from the hospital, a mother may be diagnosed with this disorder in later weeks.

Searching through the home-visiting literature demonstrates that there are no gold-standard measurement tools for maternal factors that may influence home-visiting program participation. Nevertheless, future researchers can turn to validated scales and inventories with which previous researchers had positive experiences. Future Best Start researchers and staff should identify specific themes of interest, and then search for particular measurement tools that are related to each theme. For example, cultural competency can be considered a theme of interest. In this study, cultural competency was measured by only two questions in the Best Start Parent Survey. This contrasts with methods that other home-visiting researchers have used. Damashek et al. (2011) used the Client Cultural Competence Inventory, through which information was collected during interviews, and clients rated services by responding to multiple items within four subscales (Switzer, Scholle, Johnson, & Kelleher, 1998).

Within the program itself, future research should continue to investigate family socioeconomic factors and program perceptions in a longitudinal manner, with standardized methods. The Best Start Parent Survey has been administered as an evaluation and reporting tool at different periods, however it is not appropriate for further research purposes because it is not validated. Best Start should continue its admirable efforts for regular survey collection, albeit with higher quality measurement tools that are specifically prepared for research purposes.

Lastly, future research should aim to include data not only from mothers who are active in Best Start, but also those who are no longer active in the program and who

exhibited a potential need for the program but never registered. Such investigations will allow for cross-group comparisons and will hopefully lead to more accurate findings that are relevant and helpful to local groups of interest.

Chapter 6

Summary and Conclusion

This study aimed to predict Best Start home-visiting participation based on maternal characteristics and program perceptions of eligible mothers. It was hypothesized that participation would be a function of such maternal factors. Through multiple linear regression analysis, the findings suggest that maternal socioeconomic factors, and residential region in particular, influence the number of home visits that a mother will complete compared to what may be expected. By analyzing how maternal socioeconomic and program perception factors impact home-visiting participation, these findings provide a greater understanding of potential program participation influencers, as relevant to this particular sample in Prince Edward Island. Although Prince County was associated with greater program participation, the reason for this was not clear. The Best Start program and future researchers are encouraged to further investigate the community and program settings of different program regions, for better understanding of program participation.

Participation was investigated on Best Start participants from across PEI. The researcher's close collaboration with CHANCES Family Centre allowed for relevant data collection and interpretation. Even with these strengths, this study did not find most maternal characteristics to influence home-visiting program participation, many of which had been found to influence participation in previous research. These unexpected findings may have been due to the size and type of sample used, the limited data available, or the use of unvalidated measurement tools.

Home-visiting is an important service which aims to offer accessible support to mothers and families with young children, all of whom are in need. As mothers continue

to receive home-visiting services in PEI, the Best Start program should continue to investigate potential influencers of participation. These future efforts should consider a greater breadth of factors that may impact mothers' decisions to participate and should include information collected in a standardized way using validated tools. Continuing to gain an understanding of how Best Start mothers participate will help the program ensure that relevant and appropriate services are being offered. Through further research collaborations, children in PEI will continue to be supported in early life. This will encourage a healthy and nurturing beginning, which can set young generations on a healthy and prosperous life trajectory and ultimately support future population health.

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Appendix A

BEST START PROGRAM SCREEN

_____ 1. Marital Status: **Single (living together for<2yrs), Separated, or Divorced**

_____ 2. **Your partner has no job.** Mom has a job. Y_____ N_____

_____ 3. **Finances cause you concern/stress** (above the natural adjustment to this baby) or no information regarding source of income.

_____ 4. **Stressful living conditions**-frequent moves, no home, uncertain of where you will be living, overcrowded or unsafe housing

_____ 5. **No phone.**

_____ 6 **Not a high school graduate.**

_____ 7. **Unable to name an emergency contact.** If given, relationship/name_____

_____ 8. **You have used drugs or alcohol excessively**(in past or present)

_____ 9. **Late prenatal care**,(saw Dr after 12th wk of preg.), no Prenatal Care, poor compliance.

_____ 10. **(Was this a planned preg ?) You considered having an abortion during this preg.**

_____ 11. **You have had an abortion in the past.**

_____ 12. **You considered giving this baby up for adoption**

_____ 13. **You are having Marital or family problems**

_____ 14. **You have had psychiatric care**(past or present)-seen by psychiatrist, or hospitalized

_____ 15. **You have been diagnosed with depression/anxiety**-can be self reported

_____ 16. **You have experienced domestic violence either as a child or as an adult**

_____ 17. **You have been arrested/had trouble with the law**

Results: **Negative :** ☐ **Positive:** ☐ **Not Done** ☐ **Why**_____

Scoring: T =True
F = False
U= Unable to ascertain truth value
(i.e., unable to obtain information from chart)

Positive Screen: 1) True score on either #1, #9 or #10
2) Two or more True scores.
3) Seven or more unknowns

PHN _____

Appendix B

CHANCES Family Centre

CHANCES Parent Survey

This survey is for parents/guardians with children who take part in the Best Start Program.

Your opinion is valuable to us! Your answers will help CHANCES determine whether the Best Start Program is working well. Any information you provide will be treated confidentially.

Section A: Information about what CHANCES programs my family has used:

1) How many CHANCES programs have you used in the last 6 months?

□ 1 □ 2 □ 3 □ 4 □ 5 or more

2) What CHANCES programs have you used in the past 6 months? Please check all that apply:

□ Smart Start (childcare program)

□ Smart Play (before & after school program)

□ Best Start (in-home visiting program)

□ Drop-in-Play (parent and child play group)

□ Strong Start (parent and child play group)

□ Parenting Sessions/Workshops

□ Family Parties (Christmas Party, Halloween Party, Summer Picnic)

□ Special Delivery (prenatal classes)

□ Building Incredible Babies (BIB) (postnatal program)

□ Community Kitchens

□ Welcome Here! (program for families new to Canada)

□ Health Clinic/Nurse Practitioner

□ One-on-one support

CHANCES Family Centre

CHANCES Parent Survey

Section B: Information about me:

1) How did you hear about the Best Start Program? (check all the apply)

- □ Word of mouth
- □ Public Health Nursing
- □ School
- □ Child and Family Services
- □CHANCES Brochure
- □ Provincial Childcare Registry
- □ Email
- □ Other Community Agencies: _____
- □ Facebook
- □ CHANCES Website
- □ CHANCES Staff
- □ Other: _____

2) How long have you and your children participated in Best Start?

- □ Less than 6 months
- □ 6-12 months
- □ 2 years
- □ 3 years
- □ More than 3 years

3) My gender is:

- □ Male
- □ Female

4) I live in:

- □ Prince County
- □ Queens County
- □ Kings County

CHANCES Parent Survey

5) I am:

- □ Married
- □ Single
- □ Divorced
- □ Common-law
- □ Widow

6) The number of my children participating in Best Start is:

- □ 1
- □ 2
- □ 3
- □ 4
- □ More than 4

7) The ages of my children participating in Best Start are:

_____ yrs _____ yrs _____ yrs _____ yrs

8) I was born in:

- □ Canada
- □ Other: _____

9) Language spoken in the home:

- □ English
- □ French
- □ Other: _____

CHANCES Family Centre

CHANCES Parent Survey

10) The highest education level I have completed is:

- □ Elementary school
- □ Junior High school
- □ High School
- □ Community College or technical college
- □ Undergraduate university degree
- □ Post graduate degree

11) I am currently (Please choose one that best describes your current situation):

- □ Working more than 30 hours per week
- □ Working part-time
- □ On EI parental leave (ex: maternity leave)
- □ On Income Support
- □ A full-time student

12) My family income is:

- □ less than 20,000
- □ 20,000 – 30,000
- □ 30,000 – 40,000
- □ 40,000 – 50,000
- □ 50,000 – 75,000
- □ 75,000 – 100,000
- □ Choose not to answer

CHANCES Family Centre

CHANCES Parent Survey

Section C: When I participate in Best Start (s):

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	N/A
1. I feel comfortable.	☐	☐	☐	☐	☐	☐
2. My BSW talks frequently to me about my child and what he/she is doing in the program.	☐	☐	☐	☐	☐	☐
3. My BSW has asked my opinion about what programs need to be offered.	☐	☐	☐	☐	☐	☐
4. My suggestions and ideas are considered by my BSW.	☐	☐	☐	☐	☐	☐
5. My suggestions and ideas are valued by my BSW.	☐	☐	☐	☐	☐	☐
6. My BSW helps me to see strengths in myself I didn't know I had.	☐	☐	☐	☐	☐	☐
7. My BSW works with me to meet my needs.	☐	☐	☐	☐	☐	☐
8. My BSW helps me to see that I am a good parent.	☐	☐	☐	☐	☐	☐
9. My BSW respects my family's cultural and/or religious beliefs.	☐	☐	☐	☐	☐	☐
10. My BSW has materials for my child that reflect our cultural background.	☐	☐	☐	☐	☐	☐

CHANCES Family Centre

CHANCES Parent Survey

Section D: When I think about the Best Start Program I believe that:

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	N/A
1. I have learned that being a good parent is a reward in itself.	☐	☐	☐	☐	☐	☐
2. I have learned that being a parent is manageable.	☐	☐	☐	☐	☐	☐
3. I have the skills to be a good parent to my child.	☐	☐	☐	☐	☐	☐
4. I understand my child best.	☐	☐	☐	☐	☐	☐
5. I am more involved in my child's development.	☐	☐	☐	☐	☐	☐
6. I have learned that reading to my child frequently is important.	☐	☐	☐	☐	☐	☐
7. My child is developing the skills needed to be successful.	☐	☐	☐	☐	☐	☐
8. My child will be ready for school when the time comes.	☐	☐	☐	☐	☐	☐
9. I am using strategies that I have learned from Best Start to help me in my parenting.	☐	☐	☐	☐	☐	☐

CHANCES Parent Survey

Section E: When I think about supports and services within my community, I feel that:

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	N/A
1. My BSW tells me about other CHANCES programs I can use.	☐	☐	☐	☐	☐	☐
2. My BSW gives me information about other programs in the community.	☐	☐	☐	☐	☐	☐
3. My BSW encourages me to go to friends and family when I need help or support.	☐	☐	☐	☐	☐	☐
4. I am more comfortable accessing resources in my community because I am involved with the Best Start Program.	☐	☐	☐	☐	☐	☐

Please feel free to share any comments about your experience with the Best Start Program:

_____

_____

_____

_____

_____

_____

_____

Thank you for taking the time to help!

7

Appendix C

BEST START
a program of

BEST START PROGRAM
CONSENT FORM FOR SERVICES AND RESEARCH

Services Offered

It has recently been noted that your family could benefit from the free services offered by the Best Start Program. The types of services available include: support in goal setting, prenatal care, child development and parenting information, and/or referral to other specific services. If you agree to accept our program's support and services, your Best Start Worker will help you explore options to build on your family strengths.

Research and Evaluation

In order to be sure that this program is as useful as possible to every one of our clients we may be conducting research or evaluation of the program's services. We may contract researchers to carry out our research or evaluation. You will not be directly affected in any way by the research or evaluation; however, if you have questions you may contact the Best Start Program directly (see contact information).

All information about you that is collected by the program will be **confidential** both during your involvement with the program, as well as after services have been completed. In terms of Best Start records only the agency staff and possibly contracted researchers will have access to the information collected during service delivery, and the information will only be used to better understand the circumstances of our clients, provide the best support, and examine how effective that support was for you and your family. All information will be collected in accordance with *Freedom of Information and Protection of Privacy Act (FOIP Act)*, and the *Health Information Act (HIA)*. As well, the information will be used only for the purposes of service assessment, delivery and evaluation of the program. You can request access to your personal information from your program.

Also, if you feel the information held by the Best Start Program is inaccurate, you can request that the information be corrected. Be advised that you have the right to file a complaint with the Information and Privacy Commissioner if your request for access to, or correction of, personal information is denied (see contact information).

All agency staff are legally obligated to report any concerns if there are reasonable or

probable grounds to believe that a child's survival, security, or development is endangered, as per the *Child Protection Act.*

Consent

I understand the conditions outlined above, and any questions I had have been answered to my satisfaction. Further, I understand that this consent remains in effect for the duration of services, which I voluntarily receive. My consent will be valid only as long as I am actively involved with the program. Information will not be collected after the date that my involvement with the program ends. I understand that I may refuse consent or any specific condition of my consent at any time by informing my Best Start Worker or the Best Start Coordinator. I understand that refusal of consent for any part of the evaluation will not jeopardize the services that I receive from the Best Start program.

I understand why I have been asked to disclose both my own and my child's identifying information, and am aware of the risks or benefits of consenting, or refusing to consent, to the disclosure of my own and my child's individually identifying information. I **understand that this consent is valid from the time I began my involvement with the program to the time my involvement with the program ends.**

_____ _____

Client's (Parent/Guardian) Signature Date (d\m\y)

_____ _____

Client's (Parent/Guardian) Signature Date (d\m\y)

_____

Witness Signature (worker)

Contact Information

Best Start Provincial Coordinator

Roberta Ward David
110 Mason Rd.
Stratford, PE
C1B 2H7

Telephone: (902) 367-6744
Fax: (902) 892-3351

Best Start Queens and Kings Site Manager

Joyce Cullen Foster
110 Mason Rd.
Stratford, PE
C1B 2H7

Telephone: (902) 367-6744
Fax: (902) 892-3351

Information and Privacy Commissioner of Prince Edward Island

Karen A. Rose
J. Angus MacLean Building
180 Richmond St.
P.O. Box 2000
Charlottetown, PE
C1A 7L3

Telephone: (902) 368-4099
Fax: (902) 368-5947

Appendix D

UNIVERSITY of Prince Edward ISLAND

Letting You Know about a Best Start Research Project - Thank You!
March 2018

Hello,

When you began the Best Start program, you signed a consent form. This provided permission for your information at CHANCES to be used for research. I am writing to tell you about one example of how your information will be used to improve the Best Start program.

I, Patricia Malinski, am a student from the University of Prince Edward Island. I am working on a research project called *Investigating Home Visiting Program Participation based on Mothers' Characteristics and Program Perceptions*. I, along with my supervisor Dr. William J. Montelpare, are working closely with CHANCES Best Start to learn more about Best Start participation.

The purpose of this research is to learn how mothers participate in the program, and which factors influence strong participation. If you are interested, I encourage you to read the **Letter of Information** which gives more detail about this project. You can ask your Best Start Worker for this letter. Reading this information will take approximately 10-15 minutes.

While this study does not require any participation from you, I do request one piece of information. Your age is not currently collected by CHANCES. Age is critical for a complete understanding of program participation, however. **I would greatly appreciate if you would provide me your age at the bottom of this letter.** This is optional, but the information will help make the results of this study much more meaningful.

Thank you again, for helping us make sure that CHANCES Best Start continues to provide supportive services for mothers and their families across Prince Edward Island.

If you decide that you do not want me to use your information for this research, you must let your Best Start Worker know. She will give you a form so that the Provincial Best Start Coordinator does not provide me your information. I will not know who withdraws from this study. If you withdraw, the services that you receive from CHANCES will **not** be impacted. Please give this form back to your Best Start Worker by **April 20th, 2018**. If it is past this date, your information will still be used for the purposes of this project.

If you have any questions, please feel free to contact me at pmalinski@upei.ca . You may also contact Roberta Ward David, the Provincial Best Start Coordinator, at robertawarddavid@chancesfamily.ca or 902-620-2698.

Sincerely,

Patricia Malinski,
Master of Applied Health Services Research Student
pmalinski@upei.ca

My age is: _____ **File number:** _____ **(for Best Start worker only)**

Appendix E

Table E1

Independent Variables derived from the Best Start Parent Survey

Variable	Type	Responses
Number of CHANCES programs used in the last 6 months	Continuous	Frequency
CHANCES programs used in the last 6 months	Categorical	Smart Start, Smart Play, Best Start, Drop-in-Play, Strong Start, Parenting Session/Workshops, Family Parties, Special Delivery, Building Incredible Babies, Community Kitchens, Welcome Here!, Health Clinic/Nurse Practitioner, One-on-One Support
How the mother heard about Best Start	Categorical	Word of Mouth, School, CHANCES Brochure, Email, Facebook, CHANCES Staff, Public Health Nursing, Child and Family Services, Provincial Childcare Registry, Other Community Agencies: _____, CHANCES Website, Other
Length of Best Start participation	Categorical	Less than 6 months, 6-12 months, 2 years, 3 years, More than 3 years
Gender	Categorical	Male, Female
Program region	Categorical	Prince County, Queens County, Kings County
Relationship status	Categorical	Married, Single, Divorced, Common-Law, Widow
Number of children currently participating in Best Start	Continuous	Number

(continued)

Variable	Type	Values
Age of children participating in Best Start	Continuous	Number
Language spoken in the home	Categorical	English, French, Other: _____.
Maternal education	Categorical	Elementary school, Junior high school, High school, Community college or technical college, Undergraduate degree, Postgraduate degree.
Source of income	Categorical	Employed full-time, Employed part-time, Employment insurance, Income support, Student.
Income	Categorical	Less than 20,000, 20,000-30,000, 30,000-40,000, 40,000-50,000, 50,000-75,000, 75,000-100,000, Chose not to answer.
Comfort during participation	Continuous[a]	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Home visitor speaks frequently about child and what she/he is doing in the program	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Home visitor asked mother about what the program should offer	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Mother's suggestions and ideas are considered	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Mother's suggestions and ideas are valued	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A

(continued)

Variable	Type	Values
Home visitor helps the mother to see strengths in herself	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Home visitor works with mother to meet her needs	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Home visitor helps the mother see that she is a good person	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Home visitor respects family's cultural and/or religious beliefs	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Home visitor has child materials that reflect cultural background	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Mother has learned that being a good listener is a reward in itself	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Mother has learned that being a parent is manageable	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Mother believes she has good skills to be a parent	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Mother believes that she understands her child best	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Mother believes that she is more involved in her child's development	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Mother has learned that reading to her child frequently is important	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A

(continued)

Variable	Type	Values
Mother believes that her child is developing the skills needed to be successful	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Mother believes that her child will be ready for school when the time comes	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Mother uses parenting strategies that she has learned from Best Start	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Mother believes that home visitor tells her about other CHANCES programs	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Mother believes that home visitor provides information about other community programs	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Mother perceives home visitor encourages her to go to family and friends when needing help or support	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A
Mother feels more comfortable accessing community resources because of involvement with Best Start	Continuous	Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, N/A

Note[a]. All survey ratings were treated as continuous.

Appendix F

77 Upper Prince Street, Charlottetown, PE C1A 4S6 Tel: 892-8744 Fax: 892-3351

Research Services
University of Prince Edward Island
200 Kelly Building
Charlottetown, PE C1A4P3

February 2nd, 2018

To whom it may concern,

I am the Provincial Best Start Coordinator at CHANCES Inc. and am writing in support of the research project *Investigating Home Visiting Program Participation based on Mother's Characteristics and Program Perceptions.* CHANCES' mission is to contribute to the wellbeing of children from 0-11 years of age and their families, particularly those experiencing additional life challenges. The Best Start Program helps CHANCES meet its mission, as it provides home visiting services to mothers and their families who would benefit from additional supports during a child's first 3 years of life. This research project will help us continue to provide supportive services for vulnerable mothers and their families across Prince Edward Island.

Patricia Malinski worked with our organization during Summer 2017 as a Summer Student. In this role, Patricia created client profile reports as well as contributed to a funding proposal. Due to this positive experience and the many interesting questions that have arisen from Patricia's work, I am pleased to embark with her on this research project for her Master's thesis.

Patricia has met with the CHANCES Research Committee on several occasions to discuss her thesis. I will be Patricia's main point of contact for data access and consultations. In the organization's capacity as a stakeholder, we will support the dissemination of results. We will work with Patricia to share a summary of the results with the Best Start mothers participating in this project. At future CHANCES Research Committee meetings, we will also discuss with Patricia, when appropriate, the findings, implications, and potential strategies for implementing her findings.

I am thrilled to be supporting Patricia with this research project and wish her all the best. If you have any questions, please feel free to contact me.

Sincerely,

[redacted]

Roberta Ward David
Provincial Best Start Coordinator
902-620-2698
robertawarddavid@chancesfamily.ca

Appendix G

UPEI
UNIVERSITY of Prince Edward ISLAND
550 University Avenue
Charlottetown
Prince Edward Island
Canada C1A 4P3

To: Patricia Malinski
Applied Human Sciences

Protocol Number: REB Ref # 6007596

Title: Investigating Home Visiting Program Participation based on Mothers' Characteristics and Program Perceptions

Date Approved: March 23 2018 *(1st amendment)*

End Date: March 13 2019

The amendment of this research proposal has been reviewed and approved by the UPEI Research Ethics Board. Please be advised that the Research Ethics Board currently operates according to the Tri-Council Policy Statement 2: Ethical Conduct for Research Involving Humans (2014) and applicable laws and regulations.

It is your responsibility to ensure that the Ethics Renewal form is forwarded to Research Services prior to the renewal date. The information provided in this form must be current to the time of submission and submitted to Research Services not less than 30 days prior to the anniversary of your approval date. The Ethics Renewal form can be downloaded from the Research Services website (http://www.upei.ca/research/forms).

Any proposed changes to the study must also be submitted on the same form to the UPEI Research Ethics Board for approval.

The Research Ethics Board advises that **IF YOU DO NOT** return the completed Ethics Renewal form prior to the date of renewal:

- Your ethics approval will lapse
- You will be required to stop research activity immediately
- You will not be permitted to restart the study until you reapply for and receive approval to undertake the study again.

Lapse in ethics approval may result in interruption or termination of funding.

Notwithstanding the approval of the REB, the primary responsibility for the ethical conduct of the investigation remains with you.

Sincerely,

[redacted]

Lyndsay E. Moffatt, Ph.D.
Chair, UPEI Research Ethics Board