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Improving outcomes for teen parents and their children in Massachusetts 2017: an analysis of population changes and service needs

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IMPROVING OUTCOMES FOR TEEN PARENTS AND THEIR CHILDREN IN MASSACHUSETTS 2017: AN ANALYSIS OF POPULATION CHANGES AND SERVICE NEEDS

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DEDICATION

This dissertation is dedicated to all the young women served through the Roca Inc. Young Mother's program, in hopes that they continue to thrive and achieve their goals, and to the memory of Renee Davis.

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ABSTRACT

Background

A substantial decline in the rate of teen births and changes in the population of teen parents have occurred over the past two decades with corresponding shifts in service needs. Past research has found services to teen parents to have initial or preliminary success, with little to no long-term change enacted. A novel service being implemented in Chelsea, Massachusetts has shown promise in dealing with very high risk teen parents.

Question and Specific Aims

A. Has the decline in teen births in Massachusetts come primarily from teens at lower medical and socio-demographic risk resulting in the current cohort of teen mothers constituting a higher risk group?

B. How does the novel approach used by the High-Risk Young Mother's Program at Roca Inc. effectively engage and serve a high-risk population?

C. What lessons can be applied from this approach to services for high-risk teen mothers in other settings?

Methods: Both qualitative and quantitative methodology provided the basis for an in-depth examination of teen parenting services in a time of transition. This investigation examined two cohorts of teen births data in Massachusetts to compare changes in the population of teens giving birth from a time when teen births were high (1999–2003) in Massachusetts to more recently (2009–2013) after a dramatic decline. A case study was then developed of an innovative program that has had success in reaching a higher risk population in order to discern lessons for the field. Research was guided by the PARiHS implementation science theoretical framework in order to understand the barriers and facilitators to organization change tailored to reach this vulnerable population.

Results: Modest changes in the population of teens giving birth in the later cohort indicate a consolidation of risk in certain communities. Teens who gave birth in the more recent cohort were more likely to be Hispanic, more likely to report no prenatal care, less likely to have a father reported on the birth certificate, and more likely to have anemia. The Roca Inc. program involved adaptation and flexibility, adherence to a theory of change, and dedication to serving girls who have experienced trauma.

Implications

Further research is needed to assess the changes in teens giving birth despite overall declines in teen pregnancy nationally. The Roca Inc. program can serve as a model for reaching and successfully serving vulnerable youth and families.

Key words: teen parenting, high-risk young mothers, serving vulnerable populations, program implementation, PARHiS framework

Table of Contents

LIST OF TABLES

LIST OF FIGURES

Introduction

Dramatic changes in the population of teen parents have occurred over the past two decades with corresponding changes in service needs. These changes have spurred ongoing inquiry into the causes of the dramatic decline in teen births, and the resulting potential for the remaining population of teen mothers to be at higher risk for poor outcomes. Services to teen parents often have an initial or preliminary note of success, with little to no long-term change enacted. Novel services being implemented in Chelsea, Massachusetts with a specific high-risk population can serve as a model to be shared with other service providers. The purpose of this dissertation is to examine three specific questions regarding teen pregnancy and birth, as follows:

Question and Specific Aims

This dissertation will answer three questions:

A. Has the decline in teen births in Massachusetts come primarily from teens at lower medical and socio-demographic risk resulting in the current cohort of teen mothers constituting a higher risk group?

B. How does the novel approach used by the High-Risk Young Mother's Program at Roca Inc. effectively engage and serve a high-risk population?

C. What lessons can be applied from this approach to services for high-risk teen mothers in other settings?

This study will inform the field of teen parenting programs regarding changes in

population demographics and produce a case study of a novel program approach offering lessons and strategies for other programs serving this vulnerable population.

The long-term goal for this dissertation is to contribute to the understanding of teen pregnancy, birth and parenthood in 2017 as the dynamics of this public health phenomenon have changed; and to provide the field of teen pregnancy and parenting programs with supportive information about how to better target programming to serve these young families.

The use of both qualitative and quantitative methodology allows for an in-depth examination of this critical public health phenomenon in transition. First, through the use of birth certificate and census data from the Massachusetts Department of Public Health and the US Census Bureau this study examines the changing demographics of teen birth in Massachusetts. Quantitative data analysis demonstrates changes in the population of teens giving birth in Massachusetts. Second, the in-depth case study analysis of Roca Inc.'s High-Risk Young Mother's program reveals novel strategies for reaching vulnerable and hard-to-reach families. Interviews with national and local experts in the field of teen pregnancy and parenting allow for confirmation of key themes and ideas explored in this work. Finally, a framework for sharing best practices from Roca Inc. is presented.

Relevance to Improving the Health of the Public

There has been a 64% reduction in births to adolescent girls nationally from 1991 to 2015,[1,2] and a 73% reduction in births to adolescent girls in Massachusetts from 1991–2015.[2,3] However, there continue to be a significant number of births annually to young women in Massachusetts — 2,402 births to teen girls ages 15–19 in 2014.[3] Teen mothers are embedded in communities which experience negative social outcomes, including high rates of high school dropouts, unemployment, and violence.[3] Across the United States, teen pregnancy accounts for significant negative health and social outcomes for the teen mother and her child/children.[4] Negative outcomes have been widely described in the literature, including the cyclical, generational impact of teen parenting.[5–8] While programs serving teen parents often report "indications of success"[9] or "initial positive results,"[10] few programs demonstrate ongoing long term changes in outcomes for mothers and children.[11,12] In addition, evidence is largely missing in terms of success working with high-risk teen parents. For the purposes of this dissertation, "high-risk teen parents are defined as a subset of teen parents who are experiencing relationship violence, experience mental health issues, use drugs and alcohol, are unable to comply with strict program entry requirements and rules, are runaway and/or homeless, and/or are in the foster care system.[13] Novel strategies to successfully serve these fragile families are needed. The proposition for this dissertation is that the dramatic changes in teen birth rates that have occurred over the past 25 years[14,15] have resulted in a different risk profile among young women who continue to experience pregnancy and birth as adolescents. These young

women require innovative approaches to reach, serve, and retain them in supportive programming that can improve maternal and child outcomes.

Background and Significance

Extensive prior research has shown that adolescent pregnancy and parenting — defined here as a live birth to a woman 15–19[16] — contribute to negative health and social outcomes for adolescent parents, their children, and ultimately communities.[4–6,17,18] Indeed, adolescent pregnancy and parenting has been found to be a significant contributor to ongoing cycles of poverty,[4] lack of education,[4,19] dependence on government support,[18,20] and involvement with the criminal justice system,[4,20] all within the context of disadvantaged communities.[4–6,16–18,21] Prevention of adolescent pregnancy has been identified as a major "winnable battle" by the Centers for Disease Control and Prevention,[22] and great strides have been made across the United States in achieving a reduction in overall teen births.[5,16,18,23–25] There has been a 64% reduction in births to adolescent girls from 1991 to 2015 (the most recent data available).[26] This reduction has been consistent across different race and ethnic groups, regions of the US, and among all age groups of teens.[2] However, of continued concern are the approximately one quarter million young women annually in the U.S. who become pregnant and parent during adolescence.[25] This group of young mothers often lives in communities with prevalent negative social factors, including poor high school graduation rates, high unemployment, and community and interpersonal violence.[25,27–30] It is particularly important for the purposes of this dissertation to understand the pattern and consequences of repeat teen births as this is a primary goal in teen parenting programs.[31,32]

Chapter One: Literature Review

This chapter of the dissertation will examine the existing literature in order to assess current knowledge of the phenomenon of teen parenting, interventions for teen parents, and what gaps currently remain in services for the field of parenting teens. The sections of this literature review are:

Section One: Methodology: a brief description of the methodology used;

Section Two: Recent trends and the current demographics of teen parenting;

Section Three: Antecedents to teen pregnancy and parenting;

Section Four: Current best practices in teen parenting programs;

Section Five: Challenges in evaluation of teen parenting programs sometimes described as "black box" programs[33] — that is — complicated, multi-faceted interventions where it is difficult to isolate and identify key components;

Section Six: Challenges of and approaches to serving hard-to-reach populations;

Section Seven: Implications for this dissertation.

SECTION ONE: Methodology

The methodology for this literature review began with a thorough search of several key databases, including PubMed, Web of Science, and the Cochrane Review. Search parameters included literature from 1990–current, and the inclusion of both published and non-published literature. Non-published literature such as government reports, expert committee findings, and non-profit white papers were found through search engines such as Google Scholar that tend to include non-academic literature. Search terms were

defined broadly so as to begin with a more inclusive selection of res earch.[34] Search terms included: “Adolescent parenting,” “Teen parenting,” “adolescent pregnancy,” “teen pregnancy,” “complex program evaluation,” “qualitative program evaluation,” evaluation of teen pregnancy prevention,” “evaluation of teen parenting services,” and “evaluation of adolescent parenting programs.” Once literature was retrieved, studies were selected for inclusion in this review based on the following key determinants: 1) frequency of citations — thus indicative of their role in the field, 2) salience to this dissertation, 3) methodological rigor, and 4) overall relevance in the field of teen pregnancy, teen parenting, and service delivery to teen parents. Studies were then summarized and collated for thematic similarity and coherence.[34]

SECTION TWO: Recent trends and the current demographics of teen parenting.

While enormous strides have been made in reducing the burden of teen pregnancy both nationally[24] and in Massachusetts,[3] there continue to be a significant number of births to young women annually in Massachusetts — 2,402 births to teen girls ages 15–19 in 2014.[3] Figure one, below, depicts the changes in teen birth rates nationally and in Massachusetts over the past 25 years (see Figure One, below).

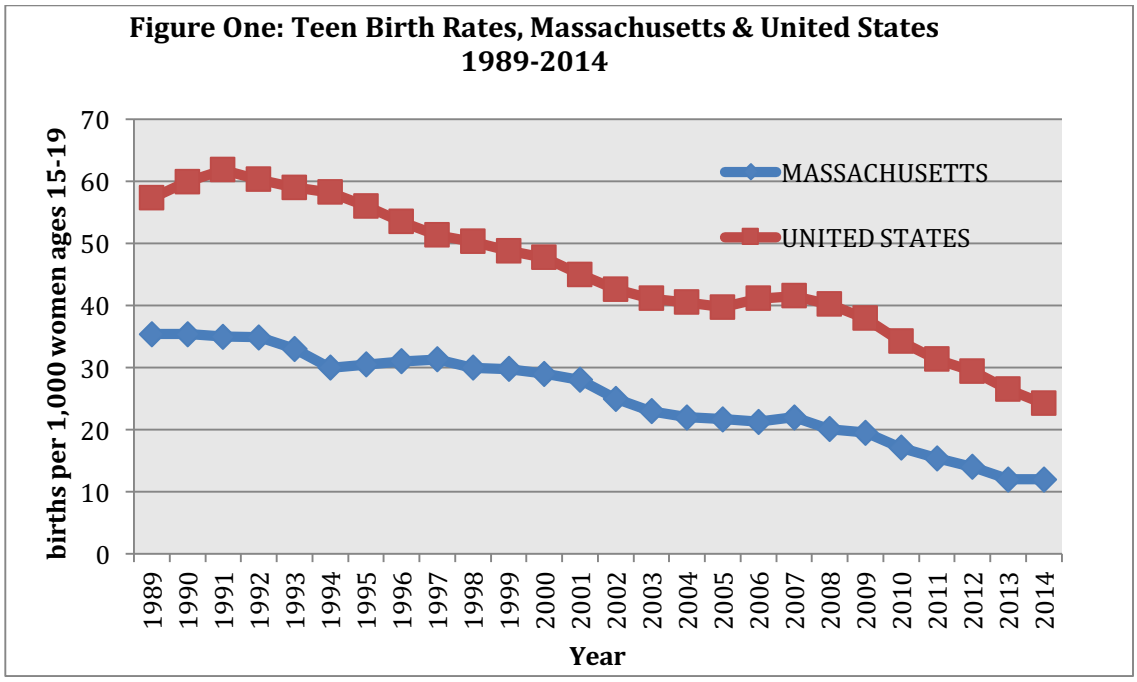

Figure 1 Teen Birth Rates, Massachusetts & United States 1989-2014
Data sources: Massachusetts Department of Public Health[2,3]

Recent data from the Massachusetts Department of Public Health continue to describe an ever-widening gap between well-resourced and low-resourced teen mothers in Massachusetts.[3] Across the US, teen pregnancy accounts for significant negative health and social outcomes not only for the teen herself, but also for her child/children.[4,35] Teen mothers in Massachusetts follow national trends and are less likely to receive adequate prenatal care, more likely to report smoking during pregnancy, more likely to have publicly-financed prenatal care, less likely to report breastfeeding, and more likely to deliver low birth weight babies.[36]

Negative outcomes from teen parenting have been widely described in the literature,

including the associations with generational impact.[5–8] This is of significant public health importance if efforts to further reduce teen pregnancy are to be sustained.[6] Table one (below) describes demographic characteristics for adolescents ages 15–19 giving birth in the US and Massachusetts:

Table 1 Demographic Characteristics of Adolescents (ages 15–19) Giving Birth, US and Massachusetts, 2015.

Demographic Characteristics of Adolescents (ages 15–19) Giving Birth, US and Massachusetts, 2015.		
Characteristic	**US teen births[1,2,27,37]**	**Massachusetts teen births MDPH 2013[3]**
N	229,715	2,402
Rate	22.3 births per 1000 women 15–19	9.4 births per 1000 women ages 15–19
Age	72% of all teen births occurred to 18- to 19-year-olds	75% of teen births occurred to 18 – 19 year olds
Birth Rate (per 1,000 adolescents 15–19 by Race/ethnicity	Hispanic 38 births Non-Hispanic Black 34.9 births Non-Hispanic White 17.3 births	Hispanic 35.7 births Non-Hispanic Black 15.4 births Non-Hispanic White 5.4 births
Nulliparous v. second or higher order birth	17% of births are to mothers with one or more children (repeat teen birth)	12.8% of births are to mothers with one or more children (repeat teen birth)

Data Sources: Massachusetts Department of Public Health, [3] Centers for Disease Control and Prevention[2].

Demographics for teen births in Massachusetts are similar to the United States rates, with several notable exceptions. First, the overall rate of teen births in Massachusetts is less than half the US rate.[3,37] While the Hispanic teen birth rate in Massachusetts is nearly identical to the US Hispanic teen birth rate; Massachusetts rates for non-Hispanic Black and non-Hispanic white teens are less than half the national rates. [3,37] Figure Two below shows the proportion of teen births and all births by race/ethnicity.

Comparison of proportion of births, teen and adult, by Race/Ethnicity, Massachusetts 2013

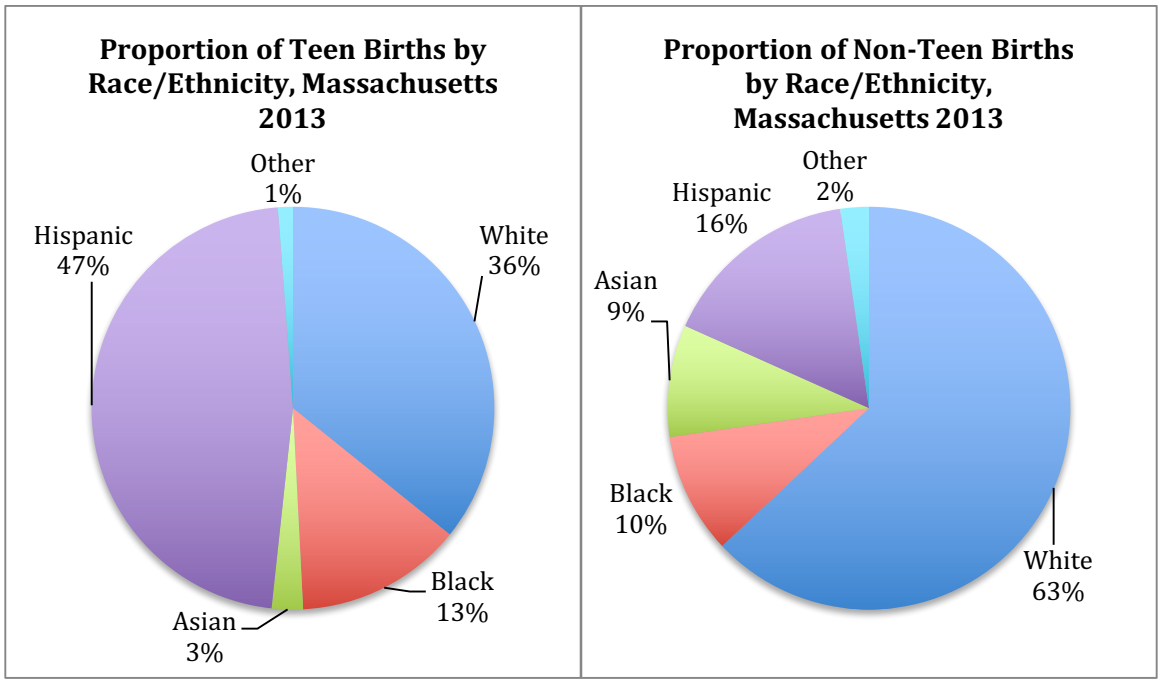

Figure 2 Comparison of proportion of births, teen and adult, by Race/Ethnicity, Massachusetts 2013
Data Sources: Massachusetts Department of Public Health, 2014[3,36,38]

As seen in the data depicted above, Hispanic and non-Hispanic Black teens are disproportionately represented in teen births, compared with their non-Hispanic white and Asian counterparts. While Massachusetts overall enjoys a very low teen birth rate, certain communities are being disproportionately impacted by this phenomenon.

Examining Changes in Cohorts of Teen Parents

Understanding the demographic changes in teen parenting over the past fifteen years is critical to adapting and designing services for those teens that continue to become pregnant, despite overall declines in the teen birth rate.[25,39] Three published papers examine changes in the cohort of teen parents in the literature.[14,19,40] Each of these studies has contributed to the understanding of demographic changes in different cohorts of teen parents over time. These studies are summarized and evaluated collectively here.

In 2001 Smith et al. published a retrospective cohort study based in Scotland examining obstetrical outcomes for two cohorts of women — ages 15–19 and ages 20–29. The purpose of the study was to try to tease out the independent effect of age on birth and other health outcomes for young mothers through the use of hospital discharge data and Scottish mortality records.[19] While Scotland and the United States share little in terms of demographic makeup, the study by Smith provides an informative frame for examining the types of questions being posed by this study.

In 2015 Gunaratne et al. published an analysis of teen births in Chicago neighborhoods, spanning 1999–2009.[40] The purpose of the study was to examine population changes in a decade, with a specific aim to understand the correlation between teen birth changes and "census-based socio-demographic characteristics."[40] The authors used US Census data and teen birth data from the Chicago Health Department in order to perform their analyses.

Also in 2015, Driscoll and Abma published results of a study analyzing trends in socio-demographic factors associated with a high-risk of teen birth.[14] Using multiple cohorts from the National Survey of Family Growth, the authors examined trends in risk factors associated with teen birth. Similar to Gunaratne et al., the goal of the study was to tease out the role of socio-demographic factors in the decline in teen birth rates. Each of the three studies looked at slightly different variables (including demographic description and outcomes), based on the particular data sets they used, and what was available as measured consistently over time.[14,19,40] Table Two below depicts the various variables measures used in the three studies, and illustrates the limited consistency in outcome measures.

Table 2: Comparison of three studies examining changes in teen birth cohorts

Comparison of three studies examining changes in teen birth cohorts			
	Smith (2001)[19]	**Gunaratne (2015)[40]**	**Driscoll & Abma (2015)[14]**
Variables Examined	**(individual)**	**(community-area)**	**(individual)**
Mother's education			X
High school graduation rates		X	
Race/ethnicity		X	X
Teen population		X	
Poverty level in community		X	
Unemployment		X	
Foreign-born		X	
Crowded housing		X	
Living in different homes 1–5 years ago		X	
Stillbirth	X		
Preterm delivery	X		
Emergency caesarian section	X		
Small for gestational age infant	X		
Mother's age at first birth			X

Data Sources: Smith[19], Gunaratne[40], Driscoll & Abma[14].

While each of these studies uses different methodology, mainly different variables measures, different cohorts, and vastly different data sets, each asked a questions central to this research: *how much of the dramatic reductions in teen births could be attributed to changes in behavior versus changes in population*. Each study attributed the changes in teen birth rates to changes in the population cohort, not necessarily a reduction in risky behaviors.[14,19,40]

As noted, the question of how to attribute the remarkable change in teen birth has been widely debated.[39] Smith, Gunaratne, and Driscoll & Abma all seem to argue that while diverse and extensive prevention efforts have taken place, the most significant factors in

reducing births to teens are not, in fact, behavioral but demographic. [14,19,40] Specifically Gunaratne and Driscoll & Abma note that decreases in the concentration of Hispanic teens in an area seem to make up the bulk of the decline in teen birth rates, not behavioral change on behalf of individual teens.[14,19,40] This is of importance to this dissertation as demographic changes in Massachusetts teen births will be explored through the analysis of birth certificate data (see Chapter Four).

In particular, little is known about the characteristics of the population of teen mothers since the teen birth rate has declined. While each of these studies examined trends in cohorts of those at risk for teen birth, they did not specifically seek to describe the current cohort of young mothers – teens that give birth despite the overall declines.

Teen pregnancy has long been studied in public health as a key indicator of community health — that is — teen pregnancy is a sensitive indicator with regard to overall poverty, access to education, and health disparity.[4,18,36] Understanding the antecedents to teen pregnancy (in particular those related to race and poverty) allows for more specific tailoring of public health responses.

SECTION THREE: The antecedents to teen pregnancy and parenting

A wide range of antecedents to teen pregnancy have been identified in the literature.[29,30,41–43] In his sentinel study published in 2002 Kirby identified over 100 antecedents to teen birth.[42] These antecedents range widely and include malleable factors such as access to contraception, and much more environmental factors such as poverty.[42] Kirby notes in this report that in part due to the overwhelming number of antecedents, it is challenging to pinpoint or highlight antecedents that are more predictive than others. In fact, he cautions against attempts to simplify what he describes as a "complex" picture.[42] Significant variations by age, race, ethnic group, and region of the United States persist in teen birth rates.[27,40] Critical to the design and implementation of teen pregnancy prevention programs has been distinguishing between factors that are predictive, and either 1) relatively immutable, such as living in poverty (particularly by modest public health programs) or 2) relatively modifiable and/or able to be successfully addressed in prevention programs.[43–45 46]

In reporting the 2013 birth data for Massachusetts, MDPH undertook more in-depth statistical analysis with multivariate models in order to further describe the socio-demographic characteristics of teen births in Massachusetts over the last several years. MDPH findings are consistent with, though slightly less detailed than the findings on the national level. These detailed demographics in Massachusetts are shown in Table Three:

Table 3 Socio-Demographic Characteristics predictive of high or low teen birth in Massachusetts, 2013[36]

Socio-Demographic Characteristics predictive of high or low teen birth in Massachusetts, 2013[36]	
Factor predictive of high teen birth rate	**Factor predictive of low teen birth rate**
Living in area with high Economic Deprivation (defined as > or = 20% of population living below poverty line)	Living in affluent area
Born in mainland US	Born in US territories or elsewhere
Prefer to speak in English	Prefer to speak language other than English
Race/Ethnicities: Puerto Rican Guatemalan Salvadoran Dominica African American	**Race/Ethnicities**: White Asian
Rural	Suburban, Urban
Transitional suburb with socioeconomic and health challenges	Well-off suburbs

Data Sources: Massachusetts Department of Public Health[36]

Kearney and Levine examine teen birth rates in the United States through an economic perspective, looking at income inequality, poverty, and what they refer to as "social marginalization" as significant factors predicting teen birth.[6,39] Corcoran and Pillai also found poverty to be significant in predicting a second teen birth.[21]

Brindis also notes that despite declines in the teen birth rate, substantial disparities across poverty and race continue.[41] This is in part explained by the differential outcomes for teen pregnancy – poor teens are significantly more likely to give birth whereas more economically advantaged youth are more likely to chose to terminate a pregnancy.[41]

Teen pregnancy prevention has achieved widespread success throughout the United States over the past two decades.[25,41,47,48] There have been significant government investments in teen pregnancy prevention programs.[23,41,49,50] Due to the highly political and controversial nature of teen pregnancy prevention, extensive literature has been produced identifying the causes of reductions — including the major themes of abstinence, increased contraception, as well as more contextual (e.g. programs focused on improving outcomes for youth in school) and social (e.g. programs focused on youth development such as community service) factors.[23,24,41,51,52] Brindis demonstrates that effective policies addressing teen births have been impacted by these political forces, including state and federal level debates over funding priorities.[41]

For over three decades there have been debates about the most effective ways to address teen pregnancy, with corresponding variation in targeted funding for public health efforts.[41] Without agreement on the best strategy to prevent too early adolescent sexual activity there have been multiple, diverse approaches to teen pregnancy prevention. Programs have operated despite a lack of consensus on the causes of teen pregnancy and birth, and are therefore often divergent in their strategies.[53] Brindis presents an extensive analysis of the causes of the dramatic decline in teen birth including what she defines as the two key factors: both reduction in adolescent sexuality activity, and increased adolescent use of contraception.[41] The focus of her analysis is on the "synergistic"[41] policies that brought about increased access to contraception for teens, increased access to comprehensive family life education, and youth development programs.

Repeat teen pregnancies

Of particular interest for this dissertation is the phenomenon of second teen birth — that is — adolescents who have a repeat pregnancy and birth.[14,16] While second teen birth rates have dropped dramatically over the past fifty years,[16] nearly one in five teen births is a repeat teen birth.[16] The percentage of teen births that are a second (or higher order) birth has dropped 41% between 1957 (29% of teen births) and 2014 (17.4% of teen births).[54] The decline in second births has great geographic and demographic variation with repeat births to teens significantly higher in Hispanic (19.5%) and Non-Hispanic Black teens (19.0%) and significantly lower among Non-Hispanic White teens (14.6%) and in Northeastern states, including Massachusetts.[16] Preventing repeat teen births has been a critical component of the success in reducing teen births across the US.[16] Programs focused specifically on impacting second teen births have been extensively studied in the literature.[11] Klerman reviewed 19 programs focused on reducing second teen births, and identified one significant characteristic of interest: the close spacing of second births to teen mothers(inter-pregnancy interval).[11] This is referenced elsewhere in the literature — teens who have a second birth are more likely to have a closely spaced second birth.[11,16] An important finding from this research is the timing of prevention efforts for teens — that is — teens who have had a baby need an intervention immediately. Klerman's analysis references Kirby's 2002 discussion[42] of the over 100 antecedents of primary teen birth, and the limited data on the distinguishing characteristics of second teen birth.[11] Klerman's analysis is considered one of the sentinel pieces of research on teen parenting, and yet relies on two now largely outdated studies. Klerman's analysis does not come to a

robust conclusion on the antecedents of second teen birth, nor the primary drivers of second teen birth.[11]

The literature on teen pregnancy, teen pregnancy prevention, and current teen births generally describe a social phenomenon in transition. Dramatic and consistent declines in overall teen births have been celebrated widely. However, there continue to be births to thousands of teens every year in the United States and in Massachusetts. These teens face substantial hurdles to success across a number of realms — economic, educational, and parenting their children. One hypothesis examined in this dissertation is that due to the dramatic changes in teen birth rates overall, those young women who continue to experience pregnancy and birth as adolescents are in fact different in terms of risk profiles than the earlier cohort of teen mothers. These challenges are often the focus of interventions aimed at teen parents, as are described in the following section.

SECTION FOUR: Current best practices in teen parenting programs

Teen parenting interventions are at the crossroads of public health, medical/clinical care, and social work services.[55–57] Interventions are often both direct care programs and prevention programs – representing a complicated constellation of funding sources, program goals, and provided services.[21,57–59] Services and programs are delivered in community-based health centers, hospitals, community centers, not-for-profits, high schools, and through home-visiting programs with nurses and paraprofessionals.[57,60–64]

Table four, below, describes a sample of risk and protective factors found in the literature, and an example of the corresponding type(s) of strategies and program models used in federally funded proven-effective adolescent pregnancy prevention.[65,66]

Table 4: Summary of Risk and Protective Factors for Adolescent Birth

Summary of Risk and Protective Factors for Adolescent Birth	
Risk Factors	**Proven effective Program model/strategy[65,66]**
Poverty[42]	Youth development programs, e.g., Carrera Model (Children's Aid Society)[67]
Neighborhood[39,42 29,30]	Comprehensive two-generation program, e.g., Harlem Children's Zone [68,69]
Educational achievement[30,42]	Education focused programs, , e.g., Carrera Model (Children's Aid Society),[67] Harlem Children's Zone[68,70]
Mother's age at first birth[42]	Two-generation models[7,71]
Mother's education level[42]	Access to nursery at high school[56,72,73]
Hispanic race/ethnicity[42]	Programs integrating Hispanic culture/language/community, targeted programs[42,74,75]
Previous teen birth[16]	Secondary prevention programs (see pp. 20)[11,21,57,58]
Modifiable Protective Factors	**Proven effective Program model/strategy**
Positive attitude towards school[42]	Carrera Model (Children's Aid Society),[67] Harlem Children's Zone[68]
Engaging in afterschool activities[42]	Carrera Model (Children's Aid Society),[67] Harlem Children's Zone[68]
Positive peer interactions[42]	Peer-led programs, e.g., Safer Choices[46]

Data Sources: See references in table.

The federal government's recent involvement in issues of teen childbearing is first noted in the 1965 work of Daniel Patrick Moynihan, Secretary of Labor under President Johnson.[76] Over the past fifty years the federal government has funded various services aimed at either supporting existing young families and/or working to prevent adolescent births.[9,11,35] As part of the Affordable Care Act of 2010, Health and Human Services was funded by Congress to implement the Pregnancy Assistance Fund (PAF) with a renewed

focus of preventing second births to teen mothers, and increasing positive outcomes such as educational attainment and child development.[59,77] Results from impact evaluation of these programs were published in the fall of 2016; with largely disappointing results.[9,78,79] Four significant issues (called "themes and lessons") were identified by the researchers as crucial components for program implementation: 1) recruitment and retention; 2) staff capacity; 3) barriers to participation; and 4) overarching service needs of the participants.[9]

To understand the range of programs and services made available for teen parents it is first important to address the intended focus of the intervention — that is — to articulate the goals of the PAF teen parenting interventions.[80,81] Given the multiple antecedents to teen pregnancy, high-risk health behaviors, and potential two generational impact, there is rarely consensus on desired process outcomes.[21,80] While this may be expected given the different programs with different desired outcomes, it makes a comprehensive analysis of the wide array of services challenging. The complicated nature of many of the programs also contributes to challenges in effectively evaluating the program outcomes, as described in Section Five of this literature review (see pp. 34).[9,11]

The wide range of desired outcomes, the diversity of intervention sites, and the various disciplines focused on young families have been examined and in some cases synthesized by various researchers over the past two decades. Table Five, below, describes several major evaluation analyses that have been conducted.

Table 5: Published Reviews of Teen Parenting Programs

Published Reviews of Teen Parenting Programs			
Author, Year, Title	**# of programs/ studies included**	**Publication**	**Parent, parenting, and Child Outcomes measured**
Klerman[11] (2004) Another chance: Preventing additional births to teen mothers.	19 studies	National Campaign to Prevent Teen and Unplanned Pregnancy	Second teen birth
Sweet[82] (2004) Is home visiting an effective strategy? A meta-analytic review of home visiting programs for families with young children	60 programs (6 programs focused exclusively on teen parents)	Peer-reviewed, ***Child Development***	Mother's education, dependence on government assistance), abuse prevention
Corcoran & Pillai[21] (2007) Effectiveness of Secondary Pregnancy Prevention Programs: A Meta-Analysis.	16 studies	Peer-reviewed, ***Research on Social Work Practice***	Second teen birth
Barlow, et al.[83] (2011) Individual and group based parenting programs for improving psychosocial outcomes for teenage parents and their children.	4 studies	Peer-reviewed, ***Cochrane Database of Systematic Reviews***	Psychosocial outcomes for teen parents and children
Chrisler & Moore[84] (2012) What Works for Disadvantaged and Adolescent Parent Programs: Lessons from Experimental Evaluations of Social Programs and Interventions for Children	20 programs	Child Trends	**Child**: Health, Behaviors and Development. **Parent**: Reproductive Health, Mental Health and Behaviors, Education, Employment, and Income. **Parenting Outcomes**

Data Sources: See references in table.

In addition to the analyses summarized in Table Five, the United States Department of Health and Human Services Office of Adolescent Health convened an expert panel in 2012.[80] Twenty-two experts in the field produced a report, "What Works for Pregnant and Parenting Teens: Promising Strategies and Existing Gaps in Supporting Pregnant and

Parenting Teens Summary of Expert Panel Workgroup Meetings."[80] The report documents the key findings regarding existing programs for teen parents, as well as the significant gaps in what is both known and needed for this vulnerable population.[80] In addition to the meta-analyses[11,21,83,84] and the "What Works?" expert panel results,[84] programs that focus on providing housing for pregnant and parenting teens (also called 'second-chance' homes) have been reviewed in the literature.[85] Three dominant themes found across these reviews will be examined: (1) Prevention of second births, (2) Best practices in prevention of negative outcomes for teen parents and their children (including home visiting), and (3) Directions for future research.

Prevention of second birth

Klerman produced a thoughtful review of teen parenting programs and their impact on delaying and/or preventing a second teen birth.[11] Each of the other reviews on teen parenting programs refer extensively to her work.[21,82–84] Despite the fact that Klerman's findings were published in 2004 and many of the studies reviewed were from the 1990s, Klerman's report remains the most cited research on teen parenting programs today.[11,80,84] Klerman's report focuses on experimental or quasi-experimental evaluation results from programs focused either exclusively or primarily on teen parents. Despite the myriad outcomes addressed by the programs, her analysis focuses only on the central outcome of second teen birth. The results are far from encouraging — there are problems with both the methodology of the evaluations, the rigor of the evaluations, and program results are quite modest.[11] Klerman's conclusion from the systematic review focuses on future

directions for research, and suggested "best practices" for teen parenting programs. Unfortunately, the analysis has not been replicated or updated.

As previously described, the prevention of a second birth to teen mothers is often the first (and sometimes the only) goal for programs.[11,86] All of the reviews included here refer to this central goal of programs. This is likely due to the fact that measurement of second birth is a concrete, discernable, easy to measure outcome for programs.[19,85,86] This may make measuring second births, as opposed to more complicated program outcomes, appealing to both programs and evaluators with limited resources. In 2007 Corcoran and Pillai published a meta-analysis of 16 teen parenting programs across the United States and their impact on delaying and/or preventing a second teen birth.[21] Corcoran and Pillai report that available programs seem effective in reducing subsequent childbearing.[21] Klerman offers that there are other positive benefits to teen parenting programs, but success in achieving the primary goal of reducing a second teen birth is limited.[11] This may be in part a function of the complexity of delaying early parenting for teens. The earlier a teen has a first birth, the longer the length of time needed to delay or prevent a second or subsequent birth. Most programs follow teens until they are 20 (e.g., no longer "teens"), but some programs only follow teens for the year or two they are enrolled in the program. There is little consensus on how long is "long enough" to delay a second birth to teen parents. The 2011 Cochrane review actually excluded programs where the only goal was prevention of second births and their findings are described in detail below.[83]

Best practices

While the overall lessons from the reviews described here are modest, each review offers a summary of best practices in teen parenting programs, many of which are consistent with one another.[11,21,82,83] Best practices in teen parenting programs are described as: close and sustained relationships with teen parents and staff, effective personnel, an emphasis on family planning, home-visiting components, and a focus on education outcomes.[11] Klerman concludes through her analysis of different programs that: "The most important factor in preventing subsequent pregnancies may be the strength of the relationship between the teenage mother and the individual working with her."[11] This is not a particularly easy finding for other programs to replicate and may prove challenging to implement.

Of note throughout the literature of teen parenting programs is the use of home visiting as an effective strategy.[11,21,82,83] Sweet et al. produced a meta-analysis in 2004 reviewing over 60 studies examining home visiting strategy with a central desired outcome of the reduction of child maltreatment. Six of these studies focused exclusively on providing services to teen parents.[82] These programs are linked by their service delivery mechanism, by their focus on prevention of second pregnancy, and also by the population of interest – families with young children.[82] However, few of the studies Sweet et al. reviewed had robust findings. Sweet's conclusions were vague at best — programs generally seemed to improve most outcomes for parents and children — but effect size was small and limited. Sweet also noted that there was limited information on the cost effectiveness of

the programs.

While many programs rely on home visiting as a strategy,[61–63] the results of multiple studies and one meta-analysis(Sweet, et al., 2004) are far from unequivocal.[10,62,63,82,87] Other reviews have also found that few program evaluations are robust enough to detect a significant difference in treatment (those receiving home visits) and control groups or to deduce conclusions for the field of teen parenting programs.[35] Since the publication of Sweet's meta-analysis there have been many additional evaluation results published on home visiting programs for teens. Some include rigorous evaluation methodology.

Corcoran and Pillai are surprisingly terse in their recommendations for the field of teen parenting programs. Essentially they state that the results of their meta-analysis are consistent with Klerman's work — that is — there is no one successful approach to preventing a second birth to teens and all the evaluated programs have a modest impact on teen parenting outcomes, in particular second births to teen mothers.[21]

In 2011 The Cochrane Review published a meta-analysis of positive parenting programs[83] that is, programs to enhance parenting skills specifically focused on adolescents. It is important to note that this review assessed parenting skills only, and indeed excluded studies where the primary outcome was preventing a second teen birth.

The final analysis included eight studies, and found significant results in several key

areas of parenting, such as improved parent responsiveness to child, improved interactions between child and parent, and improved child developmental outcomes.[83] Thus, there are a set of programs or program components that can successfully improve ***parenting*** outcomes for teen parents.

In 2012 Chrisler and Moore published a review of teen parenting programs for Child Trends, and included 20 rigorously evaluated programs. These programs encompass a range of desired outcomes, including two primary outcomes specifically for children (health outcomes and behavior and development outcomes) and four primary outcomes for teen parents (reproductive health, mental health and behaviors, future state outcomes, including education/employment/and income, and parenting outcomes). Chrisler and Moore also identify lessons learned from these studies that could inform the field of teen parenting programs. Table Six below outlines the outcomes examined, and the results summarized.

Table 6: Chisler and Moore (2012) Outcomes for Teen Parenting Programs[84]

Chisler and Moore (2012) Outcomes for Teen Parenting Programs[84]	
Key Outcomes Examined across studies	**Findings**
Child outcomes: Health (preterm birth, low birth weight, hospitalization, immunization	Impacts on low birth weight are not common. Parent programs can impact immunization of children.
Child Outcomes: Behaviors and Development (such as problem behaviors and cognitive development	Reducing child problem behaviors is possible. Impacts on cognitive development are less common.
Parent Outcomes: Reproductive Health (such as repeat births and use of contraceptives)	Reduction of repeat births is infrequent.
Parent Outcomes: Mental Health and Behaviors (such as mental health and substance use)	Improving parental mental health is not common. Reduction of substance use among parents is not likely.
Parent Outcomes: (Education, Employment, and Income)	Impacts on parent education are not frequent. Impacts on income have not been found. Impacts on employment are not likely.
Parenting Outcomes (such as home environment, parent/child interaction, child expectations, and physical punishment)	Impacts on reduction of physical punishment are not common. Parent education programs can improve the home environment. Improvements of interactions among parents and children are not common. Parent education programs can improve parents' realistic expectations for children.

Data Sources: Chrisler & Moore.[84]

One key finding was the success of programs that used a home-visiting model on outcomes for both children and parents (though measured separately and through different approaches). Programs that focused on teen parenting during the prenatal period were also found to have generally successful results on parent outcomes, such as prevention of a second birth and educational outcomes.[84]

Unlike the previous reviews described above, the "What Works" expert panel focused their findings on concrete suggestions for the field of teen parenting programs and did not only include information gleaned from published research. Experts were convened to first identify a broad definition of "success" in teen parenting programs, including: high school completion, access to housing, healthcare, and other support, prevention of second or subsequent pregnancy, and self-sufficiency as a young adult.

The panel presented results in two primary subsections: "promising practices" and "implementing key components." Promising practices for reaching, engaging, and retaining teens in programs were noted. Throughout this section of the report the central role of program staff was described and highlighted as a key opportunity to reach and retain teen parents in programming. Further, the panel noted the need for engagement activities and program flexibility with the challenging population of teen mothers. The experts made particular note of the difficulties of working with hard-to-reach populations, as described later in this review (see pp. 34). Second, the panel articulated the following key components of successful programs:

-Successfully engage pregnant and parenting teens

-Focus on parent and child education outcomes

-Provide integrated services and referrals

-Provide strong relationships between youth and staff

-Articulate well-defined program goals and successes

-Engage, acknowledge, and/or work with family context

-Have developmentally appropriate expectations and programming

-Hire and retain strong professional staff[80]

What is perhaps surprising about the panel recommendations is their lack of details or specificity. Very few of the recommendations include specific examples from the literature or research, and most seem to rely on Klerman's original guidelines.[11,80] Few of these suggestions appear novel or creative, and it appears little new knowledge was generated through the convening of this group.

Another program model often suggested as a best practice is the so-called "Second Chance Homes" group home model – residential programs for teen mothers and their children. Unfortunately very few rigorous studies have been implemented. These programs are specifically targeted for teen parents who can no longer live at home and/or are not in the foster care system. They are, therefore, aimed at high-risk youth. The modern version of "maternity group homes" are not places that warehouse large groups of young women waiting to deliver their children and then give them up for adoption, but rather typically a small, supportive environment with the expectation that teens will keep their children.[85] There is great variety in the programming in terms of eligibility, length of stay, and program outcomes. There are very few evaluations of so-called "second chance homes, and many are descriptive process evaluations (not randomized control trials, no control groups, etc.). In addition, most program evaluations are focused only on process or implementation and many programs have very small numbers. Andrews & Moore could draw very few conclusions from the existing research.[85]

In 2014 Hudgins et.at. published a study on a decade of summative evaluation on a Second Chance home program for teen mothers in Georgia.[86] While the results of this study are positive and showed improved outcomes for the mothers and children living in Second Chance homes in Georgia, the methodology and small sample size greatly limit the generalizability. Issues with the evaluation methodology for this program will be discussed in Section Six of this literature review.[86] (See pp. 32) As with many of the previously discussed studies, Hudgins et al. found that teen mothers who were able to stay enrolled in the residential program, particularly for a long duration, had better outcomes (child and parent health, child and parent interaction).[86] As has been noted this is essentially selection bias – the participants most able to succeed in the program were selected for, and chose to stay in the program, and succeeded. Again, the generalizability of this project (and therefore its impact on the field) is severely limited by the lack of rigor in the evaluation, including the lack of control group, small sample size, and loss to follow up.[86]

Future directions for research

Klerman contended future research is needed in three areas – to understand more about the population of teen mothers, to understand and update the Kirby "Antecedents" work of 2002,[42] and to increase the effectiveness, rigor, and strength of program evaluations.[11] While some of these research areas have been addressed, the federally convened "What Works?" panel in 2012 repeated many of these suggestions.[80] Included in Klerman's discussion about the need for increased rigor in studies is the high attrition rates of teen parenting programs, and the loss-to-follow up in many studies.[11]

Two significant future research agendas emerge from the meta-analysis conducted by Corcoran and Pillai.[21] First, the authors suggest a need for increased rigor in the methodology used to evaluate programs.[21] Second, as with Klerman before them, the authors make note of the issues many of the studies had with high attrition from the program.[21] Both studies recommend future evaluations using an "intent to treat" model in order to appropriately adjust the effect size of the study.[11,21]

Barlow et al. report primarily on future research implications concerning teen parenting programs. Recommendations for research are both directed at the programs themselves and the evaluations. The challenge of assessing teen parenting programs is compounded by inconsistent time frames for the programs, and inconsistent outcome measurement. Specifically Barlow et al. suggest three additional improvements for research: recruiting a larger sample-size of participants, the inclusion, identification, and stratified analysis of "non-volunteer" parents (e.g., teen parents referred to programs) and the inclusion of process measures in order to fully tease out the impact of the programs. Barlow et al. report that concrete recommendations for programs for teen parents are unable to be gleaned from their review due to the vast heterogeneity of the programs, including their specific outcomes and even the age of the children they target. The final result of the meta-analysis is to suggest an increased focus on research.[83]

Research implications from the Chrisler and Moore include the need to evaluate whether or not health outcomes for parents and children can be impacted through teen parent

education programs, as there was not sufficient data from these studies. Second, programs that looked at both outcomes for parents and children were also missing. Chrisler and Moore also make note of the following needs in research: analyzing the costs of teen parenting programs, cost-benefit analysis for investing in these programs and future savings, more studies that use long-term data, and studies in residential programs for young families. Regarding future research and program implementation directions, the panel noted the surprising lack of knowledge and rigorous evaluation of programs to serve pregnant and parenting teens.[80]

In conclusion, the reviews described here present surprisingly little clear evidence of successful models for teen parenting programs with respect to reducing second births and increasing educational outcomes for teen mothers. Some modest gains are described in the areas of delaying a second birth and increasing the likelihood that a teen mother will finish high school, but many limitations are also mentioned. Perhaps the most consistently repeated theme is that more research, with more rigorous designs are needed. Further information, though limited, can also be gleaned from individual studies that have been conducted on teen parenting programs, as described in the following section.

In addition to the compiled studies and research described above, there have been multiple additional program evaluations of a wide variety of services for adolescent mothers. A sampling of these studies are listed below in Table Seven, with an emphasis on those studies that included generalizable findings for the field of teen parenting programs.

Table 7 Evaluations of Programs Serving Adolescent Mothers

Evaluations of Programs Serving Adolescent Mothers			
Author/Year/ Journal	**Title**	**Study type/N**	**Outcomes/lessons learned for the field**
Akinbami et al.[88] (2001) *Adolescence*	A review of teen-tot programs: Comprehensive clinical care for young parents and their children.	Case studies of four programs, matched with controls N = 1197	Teen tot clinics – comprehensive, clinical care with goal of preventing second birth. Only four studies met inclusion criteria and were able to be reviewed. *Success in delaying second birth. Minimal success in other outcomes for teens or their children.*
Asheer et al.[9] *(*2014) *Journal of Adolescent Health*	Engaging Pregnant and Parenting Teens: Early Challenges and Lessons Learned From the Evaluation of Adolescent Pregnancy Prevention Approaches.	Implementation / Process evaluation N= 1600	Federal evaluation of PAF grantees, two programs were reviewed (1) AIM 4 Teen Moms, in Los Angeles County, California; and (2) Teen Options to Prevent Pregnancy (T.O.P.P.), in Columbus, Ohio. *Four key findings were raised for the field: (1) the critical role of recruitment and retention; (2) the importance of staff capacity; (3) the complicated and extensive barriers to participation teens exhibit; and (4) participants' overarching service needs.*
Barlow et al.[10] (2015) *American Journal of Psychiatry*	Paraprofessional-Delivered Home-Visiting Intervention for American Indian Teen Mothers and Children: 3-Year Outcomes From a Randomized Controlled Trial.	Randomized control trial N= 322	A home-visiting program for American Indian teen parents. Intervention was tailored, and managed attrition well. *Parenting, mother and child outcomes all had success in terms of increasing parenting knowledge, increasing parental locus of control, decreasing depressive symptoms, decreasing maternal drug use, and decreasing children's emotional dysregulation.*
Bensussen-Walls et al.[55] (2001) *Public Health Nursing*.	Teen-focused care versus adult-focused care for the high-risk pregnant adolescent: An outcomes evaluation.	Retrospective matched case-comparison study N=126	Data from 1996–1997 was examined from two cohorts of teens – one group receiving care at a specialized teen-care clinic, and one at an adult clinic. *Outcomes, including missed appointments, enrollment in supplemental Medicaid programs, vaginal deliveries, and higher birth weight infants were more positive for teens and their children who went through the teen-focused clinic.*

Author/Year/ Journal	Title	Study type/N	Outcomes/lessons learned for the field
Bute et al.[89] (2014) *Evaluation and Program Planning*	Implementation of a journal prototype for pregnant and parenting adolescents.	Process evaluation N= 52	Specific process evaluation results were gleaned from the study. *Results found successful included focusing on journaling and a way to include adolescent parents in their own program services*.
Chablani et al.[13] (2011) *Journal of Family Social Work*	Engaging High-Risk Young Mothers Into Effective Programming: The Importance of Relationships and Relentlessness.	Case Study N=81	Published study on Roca model. Includes lessons learned from initial implementation of the Roca High-Risk Young Mother's Program. *Findings included 90% retention rate for high-risk participants in programming designed to support young women and their children*.
Crean et al.[56] (2001) *Evaluation and Program Planning*	School-based child care for children of teen parents: evaluation of an urban program designed to keep young mothers in school.	Matched case control study N=170	Retrospectively examined education records for participants in a program, matched with teen mothers who were not participants. Program specifically screens for participants who can attend school and comply with attendance requirements. *Results were positive on school attendance and graduation rates*.
Lewin[64] (2016) *Journal of Adolescent Health*	Improved contraceptive use by teen mothers in a patient-centered medical home	Case study N=150	Comprehensive program at a community health center. Program focused multiple outcomes. *Increase use of birth control was found among the treatment group*.
Omar[58] (2008) *Joural of Pedicatic and Adolescent Gynecology*	Significant reduction of repeat teen pregnancy in a comprehensive young parent program	Case study N=1386	Comprehensive program at a university health center. Program focused on building relationship with teens. *Reduction in second birth was achieved, no comparison group used, not possible to prove it was the program that caused the reduction in second births*.
Salihu et al. (2011) *Journal of Pediatric and Adolescent Gynecology*	Effectiveness of a Federal Healthy Start Program in Reducing Primary and Repeat Teen Pregnancies: Our Experience over the Decade.	Multi-year ecological model, followed large cohort. N= 3 geographic locations (catchment and two controls)	Intervention for one catchment area included preconception care services, inter-conception care services, including home visits and peer groups. *Reduction in primary teen pregnancy was very good, but repeat teen pregnancy not reduced*.

Data Sources: See references in table.

The individual studies summarized above represent a wide spectrum of public health interventions — some are targeted at specific populations,[10] some are clinic-based,[55,58,64] some are school-based,[56,88] and some are home-based or involve home-visiting.[10] Programs were evaluated using a number of different methodologies — many of which are further discussed in Section Five. While programs often report "indications of success"[9] or initial positive results,[10] very few programs demonstrate ongoing long term changes in outcomes for mothers and children. The results and findings from the individual studies again echo the summary reviews noted earlier: 1) the critical importance of recruitment and retention in program success or challenges and 2) the critical role staff play in supporting teen mothers to succeed in these programs. Asheer et al. note these findings, and include two additional findings of interest: the barriers to participation that many young women face, and the overarching (and overwhelming) needs that participants have who are served in these programs.[9] The other significant theme that surfaces in many of these programs is the highly tailored, specific nature of the setting, services, and activities for teen parents.[10,55,56,64,88] Though limited in generalizability, the findings from these programs suggest that highly tailored and specialized programs can have success (albeit limited) in reaching and retaining young teen mothers, and in effecting positive progress towards program goals, including preventing a second, closely spaced birth, improving education and employment outcomes, and improving outcomes for their children.

Many teen parenting programs have demonstrated initial success (such as re-engagement in school, short-term prevention of a second birth, etc.) at working with teen parents but translational science from the field is missing. Many of the programs described above were unable to offer best practices for the field, due to the extremely limited nature of the evaluations, and due to the highly specialized and specific nature of the services, settings, and program activities. Challenges related to the evaluation of these programs are described in Section Five.

SECTION FIVE: Challenges in evaluation of teen parenting programs

While there is abundant literature describing programs to support teen parents, there has been surprisingly few rigorous evaluation of teen parenting program efforts.[11,83,84,90] Literature on the evaluation of teen parenting programs abounds with numerous limitations, including: developing measureable intended outcomes for diverse programs and addressing the "black box"[33] nature of teen parenting programs – that is – programs are multilayered and complex, and it is exceedingly difficult to tease out the independent impact of program components.[58] Many of the studies described above lament the overall challenges with program evaluation in the field, including:

-Missing information on actual implementation of the program (e.g., process evaluation measures)[21]

-Lack of rigor in evaluation methodology– including methodological problems (such as being unable to acquire a suitable control group) and inability to measure program effects[83,88 21,83]

-High attrition rates that then impact effect size and introduce significant bias[11,21,88]

-Significant challenges in overall quality

Of the significant challenges that surface in the literature in evaluating services for teen parents, most center around the nature of the population being served. The population of teen mothers being studied is by its very nature high-risk, often transient, and often unable to complete traditional programs.[85,86] This in turn contributes to significant challenges for those trying to evaluate these programs – in part due to the enormous difficulty in finding a suitable comparison group. The high-risk, vulnerable nature of the population contributes to evaluation challenges in two primary ways: first, the population vulnerability often dissuades those evaluating the program to spend funds and time assessing impact, when the overall needs are so great. For example, the Second Chance homes program in Georgia planned to do a rigorous implementation evaluation with a randomized control design funded by a federal agency. Due to concerns about the vulnerable population and the great need for services, programs leaders decided not to complete the study.[86] Second, the high-risk and vulnerable nature of the population contributes to high rates of attrition from the program. Many program evaluations discussed in the previous section of this chapter reference the problem with the interpretation of evaluation results due to high program attrition rates. [11,21,88] Put another way, the program may be found to work, but it only works for those who stay with it. This is in fact a significant gap in the literature as it is very hard to follow up on young women who drop out of the program, or do not receive a substantial "dose" of program

services.[86] At least one program in the existing literature makes adherence to the program rules and restrictions a requirement for enrolling in the program and thereby achieving success with this particular group of teen mothers, but dramatically limiting the generalizability of the program results.[56] Much of the literature on teen parenting programs excludes the segment of the population most vulnerable to the very outcomes the programs are seeking to impact — rapid second pregnancy, child maltreatment, and substance abuse.[91,92]

In summary, there are multiple extensive challenges to effectively and comprehensively evaluating teen parenting programs. Despite multiple efforts across different program models there have been few rigorously evaluated programs due to the vulnerability of the population being served, the multiple complicated program models being used, and the inability to secure and retain an appropriate control group.

SECTION SIX: The challenges of and approaches to serving high-risk populations

Throughout this review of the literature on adolescent parenting and programs for adolescent parenting, a dominant theme has emerged regarding the challenges of serving a hard-to-reach population. Klerman, Barlow et al., Corcoran and Pillai, and others all make note of the impact of a challenging population on several dimensions of programming including the length of time needed to form relationships with the population, and high levels of attrition from programs.[11,21,83] Of note in the Department of Health and Human Services "What Works" expert panel findings was the reminder that

pregnant and parenting teens often operate — or survive—outside of the usual service delivery models (e.g., they are not regularly attending school, receiving health care, living at home).[80] The experts went on to state that the current research is particularly lacking in information on how to reach or serve the population of teen parents who are the most vulnerable – runaway and homeless youth, youth who have experienced violence, and youth in the foster care system.[80] Pregnant and parenting young women are often without strong support systems or networks, and therefore have multiple, complicated service needs including basic necessities such as housing and healthcare.[84] Proven strategies designed to support these fragile families and move them into self-sufficiency are limited.[21]

Of particular concern for adolescents who are pregnant and parenting is the presence of multiple additional or compounding risk factors to their health, and their babies' health, including mental health concerns, depression, emotional distress, and substance use.[17,35,72,93]

Two additional subpopulations are of particular concern — youth in foster care and homeless youth.[85] Research in Massachusetts estimated that 30% of pregnant and parenting teens experienced homelessness in 2012.[94] Abuse, neglect, and abandonment are both antecedents to foster care and homelessness, and are often implicated in early sexual activity and pregnancy.[42] Helfrich et al. analyzed national survey data to examine the correlation of substance use, delinquency, teen pregnancy, and involvement with the

child welfare system — and for the first time confirming the multiple risk factors present for many pregnant and parenting teens.[92] Of particular interest for this dissertation is the subset of teen parents who are defined here as "high-risk" — that is — teen parents and young adult parents who are often disengaged from typical service delivery systems, and who are further defined as experiencing one or more of these compounding factors: relationship violence, mental health issues, drug and alcohol use, unable to comply with strict program entry requirements and rules, runaway and/or homeless youth, and/or youth engaged in the foster care system.

SECTION SEVEN: Gaps in the existing literature

While there is extensive literature on teen pregnancy prevention, teen parents, trends around teen pregnancy, and services for teen parents, as noted there remain several significant gaps in the existing literature.

First, there is extremely limited published literature on serving teen mothers at very high-risk. Young mothers who do not qualify for — or do not want or accept traditional maternal and child health services currently offered — are missing in the literature. And yet, the very characteristics that put young people at risk for becoming pregnant and parenting as a teen are those characteristics that make complying with program expectations challenging, if not impossible. For example, homeless teen and teens experiencing domestic violence are at particular risk for second pregnancy.[31] Teen housing programs that require strict rule adherence[86] and school-based programs that require rigorous previous attendance records[56] are just two examples of programs that set

a high bar for admittance. Young parents who are unable to comply with strict program rules and guidelines are shut out of existing services.

Many of the programs evaluated here have restricted criteria for program entry. Teen mothers seeking services are often required to only have one child in order to be eligible for the program.[61,64] Teen mothers seeking services are often required to receive visits in their home from nurses or paraprofessionals.[10] While the national panel convened in 2012 recommended program flexibility as a key component for success,[80] and programs recently evaluated note the urgent need for flexibility and adaptation,[9] there is little evidence in the literature about how precisely programs should build in flexibility and adaptation for this population.

Third, none of the programs evaluated here discuss the proposition of this dissertation — that there are now specific population challenges given the overall drop in teen parenting nationally. Given the dramatic social changes of the past twenty-five years, it is notable that very little attention has been paid to changes in the population of teen parents.[14,27] Research recognizing the needs of current teen parents is lacking.

This dissertation intends to fill in those gaps by examining the following questions:

A. Has the decline in teen births in Massachusetts come primarily from teens at lower medical and socio-demographic risk resulting in the current cohort of teen mothers constituting a higher risk group?

B. How do the novel approaches used by the High-Risk Young Mother's Program at Roca Inc. effectively engage and serve this population?

C. What lessons can be applied from this approach to high-risk teen mothers in other settings?

Chapter Two: the Roca High-Risk Young Mother's Program

Roca, Inc. is a non-profit organization founded in 1988. For the past 29 years Roca has worked with high-risk youth, families, and communities in a variety of different program models and formats. Originally founded in Chelsea, Massachusetts, Roca Inc. now provides services in Greater Boston, including the communities of Chelsea, East Boston, Boston, Everett and Revere. The organization also operates offices in Lynn, Boston, and Springfield, Massachusetts. Roca's mission statement is "To disrupt the cycle of incarceration and poverty by helping young people transform their lives."[95] Over the past decade Roca has strengthened their program evaluation through the additional hiring of staff dedicated to evaluation and the procurement of research software that allows staff and management to carefully monitor program participation, fidelity to the program models, and to track outcomes by program participants. Roca has also refined their service delivery model in order to specifically focus on two populations: young mothers and young adult men who are involved in the criminal justice system. Currently, Roca is a 10.6 million dollar organization with a diverse funding pattern – receiving 19% of their income from government funds, 33% from private grants and contributions, 26.3% from their newly launched "Pay for Success" program, 4.3% from special events, 8.2% from earned revenue, 2% from income from investments, 3.2% from in-kind, and 4% from rental. Pay for Success is a partnership with Third Sector Capital Partners and the state of Massachsuetts.[96] Pay for Success is focused on young men (ages 17–24) in the Greater Boston area and the goal is helping young people in involved in the criminal justice system by reducing recidivism.

Starting in 2006 Roca began using the Efforts to Outcomes (ETO)™ data tracking system, a system that allows for ongoing tracking of program participants through ongoing contact with staff, progress towards behavior change goals, and extensive note-taking by youth workers. Roca is committed to ongoing program evaluation and assessment of outcomes.[95,97] Roca uses ETO™ to record and track participant demographics, attendance at events and programming, case management notes, behavior change goals, achievements and challenges, and program outcomes. ETO™ can be tailored specifically to provide organizations information they need for reports to funding organizations, and more tailored information that the organization wants to examine. Roca also invested in hiring several masters degree level full-time staff dedicated to program assessment and evaluation.[97,98]

The High-Risk Young Mother's program is built on a foundation of several decades of work with teen pregnancy prevention and teen parenting interventions. Roca has operated teen pregnancy prevention programs funded largely through the Massachusetts Department of Public Health since its inception in 1988.[99] Roca has also housed the Harbor Area Healthy Families program funded through the Children's Trust Fund since the early 1990's.[100] Harbor Area Healthy Families is part of the federally funded and rigorously evaluated Healthy Families home visiting program. The Harbor Area Healthy Families program serves over 100 teen mothers annually through home visiting services. The program has strict entry requirements and follows a national evidence-based model of services.[100] Preliminary results from a randomized controlled trial showed evidence of

effectiveness of the Massachusetts Healthy Families program in reducing second births to teens and improving outcomes for children.[100] In the summer of 2016 Roca Inc. made the decision to no longer serve as a Healthy Families site.[1]

The High-Risk Young Mother's program evolved in 2012 from the Healthy Families program and several other youth employment programs Roca was operating at the time.[99] The process by which Roca tailored the program and designed services will be explored further in Chapter Four of this dissertation. The High-Risk Young Mother's program is funded in part through the Massachusetts Pregnant and Parenting Teen Initiative (MPPTI), a program of the Massachusetts Department of Public Health.[101] MPPTI is in turn funded through the Pregnancy Assistance Fund, a competitively procured teen parenting program coordinated at the federal Office of Adolescent Health.[102] Roca is one of five organizations in the state working with teen parents – though the only program focused exclusively on high-risk mothers, and Massachusetts is one of twenty federally funded sites.[101,102]

Population Being Served

Key to understanding the High-Risk Young Mother's Program is to fully understand and articulate the unique needs of the program participants. As noted, the program evolved from a previous Roca program, Harbor Area Healthy Families. While operating Harbor Area Healthy Families program staff and organizational leadership became dismayed by

[1] Details about this program change is beyond the scope of this dissertation.

the restrictions on program participants, including the requirement that they be custodial parents to receive services.[99] Staff and program managers were also concerned that participants had to be willing to accept a home visit immediately in order to be enrolled in the program.[99,100] There were several instances when Roca was found to be "out of compliance" with the Healthy Families program rules, and were told to stop serving certain women.[99] This prompted Roca leadership to begin to explore alternative ways to serve higher risk women – women who could not be served through Healthy Families for a variety of reasons, including: having more than one child, refusing (even initially) to allow home visitors into the home, losing custody of their child to the Department of Children and Families, reaching the age limit (21).[99,100] Roca sought out and received initial funding to begin working with this higher risk group of teen parents, described below.

The High-Risk Young Mother's Program at Roca served 141 young mothers and 160 children in 2016. Recent reports including the 2015 to WK Kellogg Foundation[98] (one of the organizations funding the program) and the Fiscal Year 2016 High-Risk Young Mothers Performance Benchmarks and Outcomes Report[103] produced the following description of participants:

Target Population:

1. young women (ages 16–24)
2. pregnant and/or parenting one or more children
3. unable to participate in traditional, typical programming either due to noncompliance, ineligibility (e.g., having more than one child, being over the age limit of 21, or other barriers)
4. homeless, temporarily housed, and/or unstable housing
5. experiencing or have experienced violence (community, family, interpersonal, relationship)

6. involved with DCF either personally as a client, and/or their children are involved
7. alcohol/other drug using, and/or partnered with someone using alcohol and/or other drugs
8. experienced and/or experiencing trauma
9. uninterested, unwilling, disengaged from services – 'precontemplators'[104]
10. significant mental health concerns
11. disengagement: not enrolled in school, work, or other forms of programming

In order to meet the definition of "high-risk young mother" a client does not need to meet all of the above criteria. The four required characteristics of the High-Risk Young Mother's program are:

- **young woman (ages 16–24)**
- **pregnant and/or parenting one or more children**
- **unable to participate in traditional, typical programming either due to noncompliance, ineligibility (e.g., having more than one child, being "too old"), or other barriers**
- **experiencing multiple additional risk factors, including homelessness, drug and alcohol use, violence, trauma, and mental health issues**

In order to understand the uniqueness of the Roca model, and its focus on high-risk young mothers — when it could in fact be argued that all (or most) teen mothers are "high-risk," Table nine, below, compares entry requirements for the Roca HRYM program to those of the Healthy Families program.

Table 8: Roca High-Risk Young Mother's Entry Requirements v. Health Families Harbor View

Roca High-Risk Young Mother's Entry Requirements v. Health Families Harbor View		
Program Entry Requirement	**Roca High-Risk Young Mother's Program**	**Healthy Families/Harbor View**
Age	13–24	Under 20, child must be under 1, can receive services until child is 3
Parenting status (# of children/ pregnancy status)	Pregnant, parenting, may have multiple children; does not need to be custodial parent	First time parents only (may be pregnant or have one child under 1 year old at enrollment); parent must be custodial parent
Education/ employment	Any level to enter. Program works towards education, self-sufficiency goals	Any level to enter. Program works to achieve graduation
Threshold	Open to undocumented, substance abusing, experiencing domestic violence.	Must be willing to work with home visitor and receive home visitor weekly.

Data Source: ROCA program documents

Program design and model

The Roca HRYM program is built on a theory of change and a closely followed logic model. Metrics that align to the logic model are carefully monitored. Unlike many social service and public health organizations, Roca conceives and then delivers programs that are not just "based on good ideas" but instead are built on a firm foundation of data, knowledge, and expectations.[105] Leadership at Roca work closely with front line staff to ensure that all staff throughout the program understand the key components of the program, the reasoning and logic behind each element, and the way the different components of the program work together and/or are connected to one another. Data are

central to all of this work as is the critically important task of accurate data collection through the ETO software program.[98,105] Staff receive ongoing reminders of the importance of data throughout discussions of the program logic model and theory of change during individual supervision meetings and during weekly program group meetings.

Roca describes the theory of change for both young men and young women as follows:

Roca's theory of change is that young people, when re-engaged through positive and intensive relationships, can change their behaviors and develop life, education, and employment skills to disrupt destructive cycles such as poverty and incarceration.

The core theory behind the HRYM program is the theory of stages of change, or trans-theoretical model.[13,105] This theory of change informs all areas of Roca's work with young people, and is operationalized throughout the HRYM program. The key elements of the theory are that young people move through stages of change for current state (at risk, in harm's way, under stress and in danger) to a place of hopefulness and safety for themselves and their children. Stages are: pre-contemplation, contemplation, planning, action, sustaining, relapse.[13,104]

Staff and Roca leadership have identified three concrete and primary ways this model has become operationalized:

1. The stages of change theory is used to think about and discuss the target population. The program is focused on reaching teen and young adult mothers

who are in the pre-contemplation or contemplation stages. The program is focused on those who are ambivalent about change, or are actually saying "no" to taking any action. Recruitment for program participants is focused on those who are in the first two stages of change.[98,104]

2. The stages of change theory is used to think about and discuss the participants moving throughout the model. Each of the program components are designed to match a specific part of the participant's journey, starting with the design of the low-threshold programming built into recruitment, and including perhaps most importantly, the inevitability of "relapse" into past behaviors.[98]
3. Third, the stages of change theory is also applied to the staff themselves – how must each staff member respond, change, or adapt in order to best support young people as they move through the model? How should participants be progressing through the stages of change?[105]

Program staff regularly engage in discussion regarding the need to understand that people voluntarily make changes only when they are ready, willing, and able to do so. Each component of the program model refers back to this basic foundation.[98] The Roca model also relies on a program logic model – that is – each component of the program has been planned out with expected current state, action, logical consequence to the action, and then results. Throughout the implementation of the program there are checks and balances built in to assess if the planned elements and then expected results is actually occurring.[98] The program logic model is presented on page 51 in Figure Three:

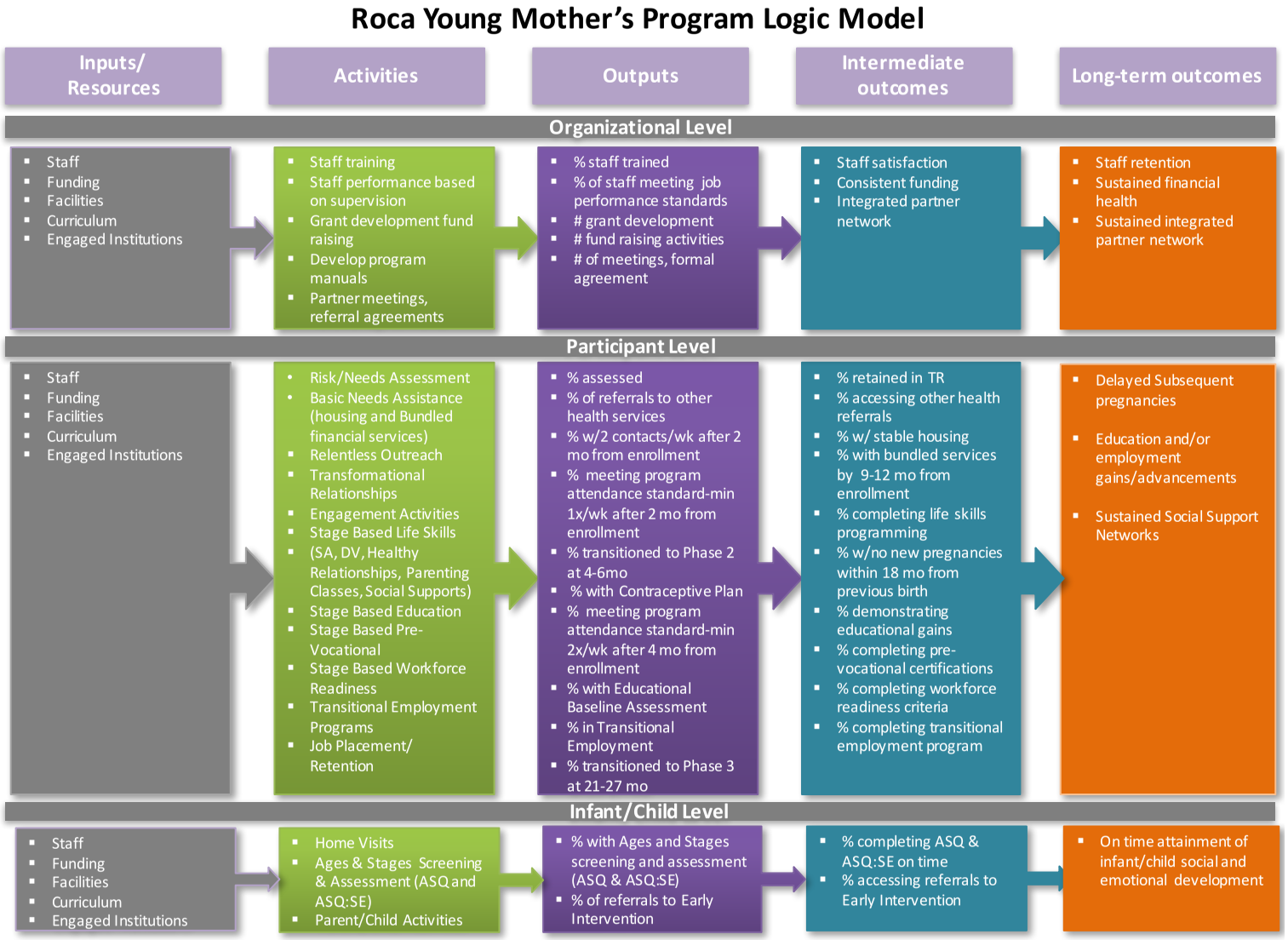

Figure 3 Roca Program Logic Model[98]

Program design and Phases

The after first contact with a program participant is defined as "stage one." During the first phase of the program the focus of the program is on outreach, recruitment (and engagement. Staff are expected to focus completely on engaging young women through relationships (between youth worker and young person) and with Roca. The primary job of the youth worker in this phase of the program is to start to build a transformational relationship and engage the young woman in Roca. Another key component of the model during this time is to have young women begin to "lightly" engage with activities at Roca – this can be anything from enrolling in a HiSET (High School Equivalency test) class to attending a family night dinner (held every Wednesday evening). This component of the model is seen as part of the engagement and relationship building. Roca staff describe this a "think—feel—do" – the theory being that if women start to do things they will start to feel better – less isolated, less alone, less afraid. This commencement of activity is then typically followed by feeling better – and then finally, ultimately, doing better. Program staff and Roca leadership use recruitment activities as a way to correctly identify and secure the target population.[98]

Stage Two: building the transformational relationship

The basis of the Roca model for HRYM is to move young people through the stages of change accompanied by a trusted youth worker. During "Stage Two" of the program the goal is to create relationships between youth workers and participants that facilitate

change. Relationships between staff and youth need to be meaningful enough to support change (i.e., they need to engage with young people in ways that both support and challenge them). Staff are expected to show mindfulness that they are modeling a different way to be in a relationship with these young people. There is also an intentional effort to make other relationships with staff at Roca and the young person. Built on the experience Roca has had with both men's and women's programming, it is urgent that the young person not just feel connected with their one youth worker, but that they start to build a team of support. The logic behind this relationship is that it helps to leverage young people to be in places and spaces they would not otherwise. If participants trust in the youth worker and others who they meet at Roca (other youth workers, teachers, and program managers) they will begin to trust Roca, and they will participate. Experience has shown that youth will be willing to engage more deeply in the program, and commit to making changes when they trust the staff they have built an authentic, deep relationship with.[98]

Stage two programming includes deeper commitment to participation in an ongoing, more structured way. This programming includes:

-Educational offerings such as HiSET and ESL classes, prevocational certification classes, and participation in transitional employment;

-Health offerings such as: health classes, exercise classes, parenting classes, yoga, mindfulness classes, birthing circles, etc. with the goals of having a regular visit with primary care provider and starting on a long-acting, reversible birth control method;

-Benefits and assets participation: enrolling young mothers in all possible public benefits programs;

-Children's offerings: connect children with primary care providers, ensure children receive scheduled immunizations, assess children regularly for developmental milestones, and then conduct facilitated referrals for any needed services (early intervention).

Stage three programming includes ensuring that ultimately young families can be self-sustaining, and therefore issues of basic needs such as housing, employment, education, childcare, and safety are resolved. Once these basic needs are met, stage three programming focuses on more long term goals such as enrollment in community college, and/or training for a more sustainable employment track, and affordable, safe and appropriate housing.

Staffing Pattern and Supervision

In order to successfully execute a program such as the High-Risk Young Mother's Program, effective staffing is critical. Roca staff are trained and supported through ongoing professional development opportunities at the organizational level. These offerings include clinical supervision, group supervision, and training in specific behavioral approaches, such as Cognitive Behavioral Therapy (CBT). Starting in the summer of 2015 Roca became specifically engaged in a process of training all staff across the organization in CBT.[95] Materials were developed specifically to onboard new staff and to train existing staff in this neurocognitive approach.

Roca provides an exemplar case for the purposes of this dissertation. “Exemplar cases” in health services research are cases that offer particularly helpful frameworks, evidence, or direction for the field.[106–108] Through the collection and analysis of program data demonstrating initial success in program outcomes, and through the focus on a popular typically underserved (as demonstrated in the literature, see Chapter One), Roca has provided an exemplar case for the purposes of this research. A close examination of Roca provides an opportunity to understand and record the services being provided, the young women and their children being served, and the lessons for others wishing to serve a High-Risk population. The methodology used to understand the program and assess opportunities for replication are described in Chapter Three.

Chapter Three: Research Design and Methods

The goal of this chapter is to describe the research methodology to answer the following questions:

A. Has the decline in teen births in Massachusetts come primarily from teens at lower medical and socio-demographic risk resulting in the current cohort of teen mothers constituting a higher risk group?

B. How does the novel approach used by the High-Risk Young Mother's Program at Roca Inc. effectively engage and serve high-risk young mothers?

C. What lessons can be applied from Roca's approach to high-risk teen mothers in other settings?

This study is intended to inform the field of teen parenting programs regarding changes in population demographics and describes and analyzes a novel program approach offering lessons and strategies for other programs serving this vulnerable population.

Section One describes the quantitative methodology using birth data from the Massachusetts Department of Public Health to answer the first research question of this study, while **Section Two** of this chapter describes the explanatory case study methodology, which uses Roca program data and qualitative data collected from Roca and key informants to answer the second and third questions.

I. Section One

Understanding the change in demographics of teen parents over the past fifteen years is critical to adapting and designing services for those teens that continue to become pregnant, despite overall declines in the teen birth rate.[25,39,109] As described in Chapter One, there have been several published papers examining changes in the cohort of teen parents.[14,19,40] The methodology for this study was informed by the design and implementation of these earlier studies including the variables examined, the organization of data, and the data sources.[14,19,40]

IA. Overview

Two cohorts of teen mothers have been identified for the purposes of this study – cohort one (teen mothers who gave birth 1999–2003), and cohort two (teen mothers who gave birth 2009–2013). This dissertation examines demographic changes (or lack of changes) among teen mothers (15–19) who gave birth in Massachusetts. These cohorts were selected as they represent distinct, non-overlapping time periods and each represent five years of data to reduce the problem of small numbers in looking at outcomes.[38]

IB. Data Sources

Birth Data

This study uses data from Massachusetts birth certificates from the Massachusetts Department of Public Health to examine the changes in the teen birthing population from 1999–2013. Massachusetts birth certificate data includes key common variables on sociocultural disparities: measures of race/ethnicity, maternal age and education,

ethnicity, maternal place of residence, maternal tobacco use, maternal alcohol use, preferred language and Women, Infants and Children (WIC) use. In addition, data is available to examine birth outcomes including birth weight, premature birth and fetal death. Variables for analysis for this dissertation were selected to provide the basis for an analysis of changes in: demographic characteristics of teen parents, socio-cultural risk profiles, and birth outcomes. Variables were selected and requested from the Massachusetts Department of Public Health via the "Massachusetts Department of Public Health Certificate of Live Birth and Linked Births/Infant Deaths Variable Checklist." Table 9 below describes the variables and sources.

Census Data

This study also uses data from the United States Census (2000) and the American Community Survey (2008–2012) to assess poverty. Table 9 below describes the variables and sources.

Variables & Source

Variables selected for analysis compare maternal risk profiles and infant outcomes from 1999–2003 with 2009–2013. Table 9 below lists all variables and data sources used in this study.

Table 9 Variables and Data Sources

Data variables from Birth Certificate
1) Mother's Demographic description Maternal age at first birth Race/Ethnicity Mother's language Maternal education Maternal nativity
2) Father's Demographic description Paternal age at first birth Race/Ethnicity Paternal education Father's nativity Mean difference in father's and mother's ages
3) Mother's Medical conditions Diabetes(gestational) Diabetes(chronic) Hypertension (gestational) Hypertension (chronic) Anemia
4) Birth outcomes for infants born to teen mothers Low Birth-weight Gestational Age < 37 weeks
5) Sociocultural Risk Factors Parity Maternal smoking Maternal prenatal care: use Maternal prenatal care: payer
Data variables from US Census & Birth Certificate
6) Maternal residence poverty status **Mother's census tract** Percent of population living at or below poverty level Median household income Percent women with children living in poverty

Institutional Review Board (IRB)

Approval for this study was received both through the Boston University/Boston Medical Center Institutional Review Board and the Massachusetts Department of Public Health Institutional Review Board.

IC. Data Ascertainment & Linkage

Data was received from the Massachusetts Department of Public Health via secure disk (a CD). The data included all singleton birth deliveries to women ages 15–19 from 1999 through 2013. Sixteen separate files were initially received. The Massachusetts birth certificate changed during 2011, and therefore there are two files for 2011 – identified here as 2011a and 2011b. Data file 2011a contains 601 cases and data file 2011b contains 2,853 cases. The first file uses the previous data codes, and the second file uses the updated data codes, which were then continued in 2012 and 2013. During the year 2011 hospitals and other reporting entities used the previous data collection system during the months of January and February, and then switched over to the new system entirely for the remainder of 2011. The separate data files were uploaded in SAS, and combined to make cohorts. Cohort one includes births from 1999, 2000, 2001, 2002, and 2003. Cohort two includes births from 2009, 2010, 2011a, 2011b, 2012, and 2013. Cohort one contains 24,860 births and cohort two includes 17,670 births.

Data ascertainment included the following steps:

1) Researchers at MDPH identified all singleton deliveries in Massachusetts to mothers ages 15–19 during the years 1999–2003 and all singleton deliveries to mothers ages 15–

19 during years 2009–2013.

2) MDPH researchers then created SAS files with the variables listed Table 9) for each birth year included descriptive demographic data, mother's medical conditions, birth outcomes, sociocultural risk factors and mother's census tract information.

Data Linkage

In order to examine census tract information without compromising anonymity, data from the US Census was linked by MDPH with birth certificate data. First, a spreadsheet with census tracts (N=1,367) in Massachusetts based on the 2000 census, and census tracts (N=1478) based on the American Community Survey 2012 was developed. For each census tract additional data was listed. This spreadsheet was then sent to MDPH, where researchers attached those variables to each of the teen births using the following process: each birth certificate contains a census tract code. The census tracts were matched with the corresponding information from the variables above. The census tract identifier itself was then removed from the data file, leaving only the corresponding information describing the tract. Given the small number of births in some census tracts data linkage was designed to ensure data security and anonymity.

ID. Analysis plan

Data were loaded into SAS and assessed for missing variables, miscoded variables, misnamed variables, and any other outliers.[110] This researcher worked closely with a SAS data analyst to match pre-and post 2011 birth certificate information including variable

names and concepts.[111,112] Ensuring data consistency across the two time periods was a key goal of the updating of the US birth certificate, and thus many of the variables are highly comparable from pre to post 2011.[113]

Six sets of comparisons were conducted – 1) Mother's demographic characteristics, including age of first birth, race/ethnicity, nativity, language, and education; 2) Father's (if identified on birth certificate) demographic characteristics, including age, race/ethnicity, and education 3) Mother's medical conditions including diabetes, hypertension(both chronic and gestational), and anemia; 4) Outcomes for children born to teen mothers including birth weight, and gestational age; and 5) Sociocultural risk factors including maternal smoking, prenatal care(use and payer), and 6) Maternal residence poverty status (census tract). Descriptive statistics are presented for the two cohorts in Chapter Four. Prevalence estimates of the maternal demographic and medical risks, demographic characteristics of the fathers (including age differences between partners), birth outcomes, and sociocultural risk factors are presented. T-test was used to assess differences in continuous data. Chi-Square test were used to assess differences in categorized data. P values for comparisons between cohort one and cohort two were be compared, using $p < .05$ as significant. These results are presented Chapter Four.

IE. Addressing Data Quality and Missing Variables

Data Quality

Data quality in birth certificate studies is often highly variable.[111,114–116] Massachusetts birth certificate data originates from two worksheets: a parent worksheet that includes demographic information and health behavior information (e.g. smoking), and a provider worksheet that is filled out by designated registrar at the hospital – either a clinician or hospital birth registrar.[116] The provider worksheet contains information about health conditions for both the mother and baby.[116] Variables attained from the birth certificates have different degrees of quality. That is, some variables (e.g., mother's residence) are known for being well documented and recorded, and some (e.g., health issues)are less well recorded.[115] Issues with data quality frequently impact studies reliant on birth certificate data.[114,115] In particular, self-reported and stigmatized behaviors (such as smoking during pregnancy) are known to be underreported.[117]

Missing variables

Addressing missing values in research regarding teen fertility has been discussed in the literature.[118] There are specific considerations to take into account with missing values in birth certificate data, it has been shown that birth certificates that are missing data are more likely to be from mothers and infants at higher risk of negative outomes.[119,120] Best practices in addressing missing data with birth certificates were utilized for this study, including: not eliminating birth certificates where there is data missing,[111] examining data for outliers that may indicate issues in data quality,[121] and assessing missing data based

on whether or not the data were missing at random.[122] Missing data in birth certificate records, especially for teen parents, are likely not random,[118] and instead may reflect a higher level of risk of the mother and child.[20] Two variables were found to have excessive missing data, and were addressed as follows.

Smoking

In 1999–2011, the two variables for smoking were cig_daily_prepreg (number of cigarettes smoked pre-pregnancy) and cig_daily_durpreg (number of cigarettes smoked during pregnancy). A value of 88 was assigned to refusals and 99 was used for unknown.

In 2011 (new)–2013 the two variables for smoking were s_mcond_smoke_num_1 (number of cigarettes smoked three months pre-pregnancy) and s_mcond_smoke_num_2 (number of cigarettes smoked first three months during pregnancy). In the more recent years of 2011–2013, there were many missing values for these two variables.

We defined the mutual smoking variables by the following:
Smoke_pregprg: Any value other than 88, 99 or missing is yes, else no
Smoke_durpreg: Any value other than 88, 99 or missing is yes, else no.
Unfortunately, it is not clear what impact the missing data had on the changes in smoking rates from 1999–2003 to 2009–2013, given that there was very little change in the reported levels of smoking.

Maternal and Paternal Education

Maternal and paternal education is also difficult to interpret as there were significant numbers of missing data for both cohorts on educational outcomes. Once the missing data was discovered, the following steps were taken. Education in 1999–2011 was a variable from the birth certificate labeled "Mother_edu_diploma and Father_edu_diploma. Responses were defined as 0 (none), 1= high school diploma, 2= GED, 8= refused and 9=unknown. For these variables, I created an education variable that determined if the mother/father received a HS degree. If 1 or 2 was indicated above, they were coded to have a HS degree. Zero ("0") was coded to be no, and (8) and (9) was coded to missing since this information is unavailable.

Education in 2011(new birth certificate format)–2013 was S_MEDUC and F_FEDUC. The responses were 1–11 and included the following:

1= 1 – 8TH GRADE OR LESS
2=9TH – 12TH GRADE, NO DIPLOMA
3=HIGH SCHOOL GRADUATE OR GED COMPLETED
4=SOME COLLEGE CREDIT, BUT NO DEGREE
5=CERTIFICATE
6=ASSOCIATE DEGREE
7=BACHELOR'S DEGREE
8=MASTER'S DEGREE
9=DOCTORATE OR PROFESSIONAL DEGREE
10=UNKNOWN
11=REFUSED

Here, I defined a person as having a high school degree if the response above was 3,4,5,6,7,8 or 9. Responses 1 and 2 were coded to be no HS degree. 100 and 11 were

coded to missing since this information is unavailable. Data ascertainment strategies were intended to represent education level as completely as possible.

Results from the quantitative study are provided in Chapter Four of this dissertation. The following section describes the qualitative methodology used.

Section Two

How does the novel approach used by the Roca High-Risk Young Mother's program effectively serve higher-risk teen mothers and their children? What lessons can be applied from this approach to high-risk teen mothers in other settings?

IIA. Overview

Complex health interventions that work with high-risk, vulnerable populations are often difficult to understand and describe.[123–125] Multiple strategies have been undertaken to examine both the workings (and failures) of programs, and also to examine the ways that parts of the programs work together, within one another, interact upon each other, and in turn work with the population.[125] Due to the complex, multi-faceted design of many teen parenting and teen pregnancy initiatives, there have been many research designs utilized, including descriptive case studies, process evaluations, and outcome evaluations. Complex programs require complex examination (i.e., examination that precedes formal outcome evaluation to discover the process and the function of the program).[123] Bonnel et al. contend that in examining complicated, multi-faceted programs the key issue is to understand how the components of the intervention work together and within the intervention.[123] This may be best discovered through qualitative methodology and the development of an explanatory case study.[87,89,126] This dissertation will utilize Yin's explanatory case study research approach with the PARiHS implementation science theoretical framework.[126,127] A case study approach with the PARiHS framework has been used in prior implementation research, allowing researchers to effectively translate

research into practice by highlighting key factors and interactions between factors that impact successful implementation of novel approaches.[127–129]

This section of the chapter discusses the methodology used to develop an explanatory case study based on analysis of existing program data and newly collected qualitative data from the Roca High-Risk Young Mother's program.[126] The description of methodology includes: research design, choice of sample, theoretical framework, overview of information needed, research steps and case study protocol.

IIB. Research Design

The research design for this explanatory case study is based on analysis of existing program data and newly collected qualitative data from the Roca High-Risk Young Mother's program.[126] The value and methods of an explanatory case study has been described in the literature.[126,130] Yin highlights the opportunity presented by an explanatory case study to uncover complicated services, including understanding the relationship between the different services components, and the "real life" context in which the intervention takes place.[126] Baxter and Jack describe the qualitative case study as an opportunity to understand both the program and the context in which it is taking place.[130] The purpose of the development of the case study is to extrapolate information that can be appropriately applied to other settings with high-risk young mothers. The case study analysis in this dissertation utilizes Yin's explanatory case study methodology as the underpinning for the research approach[126] and is guided by the PARiHS framework

for data collection and analysis.[127] The PARiHS framework will be described in Section II X, Theoretical Framework.

IIC. Choice of Case

As discussed in Chapter Two, several factors were taken into consideration in selecting the Roca High-Risk Young Mother's Program as the site or "case" for this research. Yin describes "revelatory cases" as cases that expose previously unknown phenomena.[126,131] A single revelatory case study is ideal in this situation. First, the Roca program is explicitly founded on and held to a theoretical underpinning.[98] Public health programs founded on a theory of change are significantly more likely to impact behavior change than those that are not.[132] Second, Roca has rigorously collected data that indicates initial program success in reaching, retaining, and changing the behavior of enrolled participants.[97,98] These findings were detailed in Chapter Two. Third, the Roca program is specifically targeting a higher risk group of young mothers.[13] This dissertation explores the extent to which the change in teen birth cohorts, more rigorous and responsive programming is needed to meet the service needs of current teen and young adult mothers. Should analysis reveal that there has not been a change in teen birth cohorts, understanding how to reach high-risk teen mothers is still a valuable public health goal. These reasons validate the selection of the Roca High-Risk Young Mother's program as a revelatory case that can be used as a model for other programs.[126]

IID. Theoretical Framework

The Promoting Action on Research Implementation in Health Services (PARiHS) framework is used in the field of implementation science, with a particular focus on successful implementation of evidence based practice.[127,129] The PARiHS framework offers researchers three core elements for understanding complex health interventions: 1) the level and nature of evidence; 2) the context into which the evidence is placed; and 3) the method or the way that the process of implementation is facilitated.[127] The framework will serve two functions in this research — to provide a framework of understanding regarding how Roca was able to successfully implement the High-Risk Young Mother's program specifically to serve very high-risk teen and young adult parents, and to offer critical elements of this process for other organizations interested in implementing the program. The PARiHS framework was used to drive design and data collection in order to carefully understand the key elements of the Roca program, and how to successfully adopt the program in another setting. Given that one of the key elements of this dissertation is to promote the adoption of successful program elements by other public health interventions working with a similar population, the PARiHS framework allows for the development of a singular case study with rich and detailed information. There is also precedent of researchers using PARiHS to understand and guide the implementation of evidence-based practice.[129] The PARiHS framework is depicted in Figure 4, below:

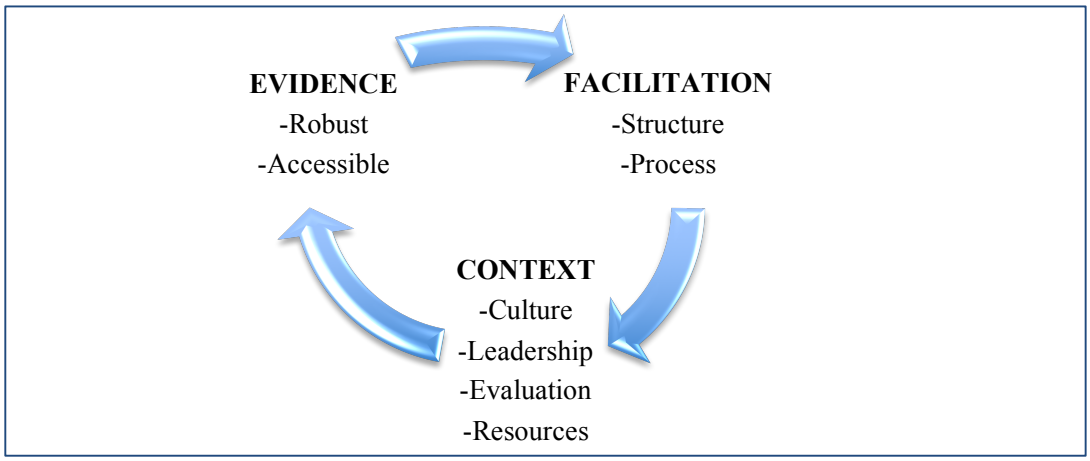

Figure 4 Diagram of the PARiHS Framework[127]

Application of the PARiHS framework provides critical evidence for program implementation. In particular, the framework heightens the role of context (i.e., what were the circumstances surrounding the intervention)? Second, it allows for a deeper understanding of the role of key change makers in an organization, called "facilitators". These elements prepare for successful translation of a program from one setting to another.[127] This explanatory case study, guided by the PARiHS framework, will contribute *description*, *exploration*, and *explanation* of the services Roca is providing to the population of high-risk teen mothers.[133]

Specifically, the PARiHS framework was used to organize general areas of inquiry prior to data collection. Second, PARiHS categories and assessment will be used in Chapter Six: implications from this research.

IIE. Overview of Information Needed

In order to answer the research questions posed by this study: **How does the novel approach used by the Roca High-Risk Young Mother's program effectively serve higher-risk teen mothers and their children?** And **What lessons can be applied from this approach to high-risk teen mothers in other settings?** the following information was collected (described in Table 10):

Table 10: Information Needed

Question One: How do the novel approaches used by the Roca High-Risk Young Mother's program effectively serve higher-risk teen mothers and their children?	
Specific questions	**Data sources**
What are the current conditions and experiences faced by Roca, program staff, participants, and community members influencing the program? *-organization history, vision, objectives, products and services* *-organization business model and strategy, operating principles*	*Observations, interviews with staff, participants, program documents, and key informants (teen pregnancy and parenting experts)*
What is the program theory of change and how is it understood?	*Document review, interviews with staff, interviews with program participants*
Who are the program participants? What are the distinguishing characteristics? *What are the demographics of program participants?*	*Document review, program participant interviews, program observation*
How are program participants recruited? What level of effort is required to find and screen potential participants?	*Document review, staff interviews, program observations*

Table 10, Con't.

Question One: How do the novel approaches used by the Roca High-Risk Young Mother's program effectively serve higher-risk teen mothers and their children?

Specific questions	Data sources
How long has the program been in place, and how "settled" is the program design and staffing pattern?	*Document review, staff interviews*
What are the resources and inputs that go into the program (staffing, partnerships, technology, funds, supplies, space, management)?	*Document review*
What are the activities being delivered? What is the "dose" of services delivered? What is the "dose" of services received? How /Do these differ, and why?	*Document review, staff interviews, participant interview, program observation*
What are the intended short-term, intermediate, and long-term outcomes for the program? What evidence is there of program meeting/not-meeting outcomes?	*Document and program data review*

Question Two: What lessons can be applied from this approach to high-risk teen mothers in other settings?

Specific questions	Data sources
What is the level and nature of the evidence (evidence is defined here as both quantitative and qualitative research, clinical experience, patient experience, and local data/information)that was employed by ROCA in developing their program and can be applied in other settings?[129]	*Document review, staff interviews, participant interview, program observation*
What is the context or environment at Roca in regard to culture, leadership, and evaluation (e.g., decentralized or centralized decision making, relationship between staff and management, management style) that can enable the development of the High Risk Young Mother's Program? How can this be applied to other settings?	*Document review, staff interviews, participant interview, program observation*
Who is the facilitator of the High-Risk Young Mother's program with the appropriate role(s), skills, and knowledge helping individual and the program team, and organization, apply evidence from the program into practice? Can others in different settings be trained to replicate the facilitator's success?	*Document review, staff interviews, participant interview, program observation*

IIF. Research Steps and Case Study Protocol

The first step in developing a case study is to develop a protocol, described below.[126]

Background: Previous research done on this topic has been extensively described in Chapter One. In addition, detailed information regarding the Roca High-Risk Young Mother's Program is available and described extensively in Chapter Two (including preliminary program outcome data). The main case study research questions are:

How does the novel approach used by the Roca High-Risk Young Mother's program effectively serve higher-risk teen mothers and their children?

What lessons can be applied from this approach to high-risk teen mothers in other settings?

Development of change record: In order to be assured of the validity of data collection and analysis, I kept a log of any changes made to the protocol and provide a rationale for changes.

Object of study:

Program: the High-Risk Young Mother's Program at Roca, Inc. located in Chelsea, Massachusetts.

Timeframe: The Roca High-Risk Young Mother's program has been in place since 2011. All available program data for participants through fiscal year 2016 (June 2016) was examined and, as noted above, previously collected program outcome data was reported in Chapter 2 of this dissertation. Participants and staff working and participating in the program during the summer of 2016 were also considered part of the timeframe. Careful

sampling ensured appropriate representation of the different stages of the program — see section on sampling below.

Services: The services examined through this dissertation are those being provided by the Roca High-Risk Young Mother's program to the program participants. Services examined included recruitment, enrollment, and the three stages of the intervention model that young women are intended to move through during their time in the program. Program participants frequently receive additional services outside of the Roca program – e.g., case management from the Department of Child and Family Services, clinical care from medical providers, and behavioral health services from clinical providers. When possible details of these "non-Roca" services were outlined, as they are possible factors to consider in understanding the Roca program. Roca staff often work closely with other service providers including Department of Child and Family Services through ongoing communication and ongoing case consultation.

Data Collection, Sampling, and Sample Size

In order to understand and assess the Roca High-Risk Young Mother's program, the following data was incorporated into the explanatory case study:

1) Program data and archival document review,[134]

2) Purposive sampling of selected key informants including program participants, program staff, and key program stakeholders,[135–137] and

3) On-site observations.[138]

In order to ensure that the case study fully captures the High-Risk Young Mother's Program, it was critical to design a sampling plan that included participants in various stages of the program.

For each of the methods of data collection, I targeted key areas of the overarching research questions to be answered. The first section of the research was focused on as "Novel Approaches" and then further divided into subsections: context, theory of change, target population, recruitment, stages of development, resources/inputs, activities, and outcomes.[139] See Table 10 for additional detail. The second section of the research was conceptualized as "Lessons Learned" from the PARiHS framework, and was further divided into level and nature of evidence, context or environment into which the evidence is placed; method or process of implementation was facilitated.[129]

Program data and archival review. Pertinent program data and archival documents were reviewed from the program, including a sample of reports, findings, proposals, and activity logs. I reviewed case reports, reports to funding agencies, white papers written by and about Roca, and grant applications. I used purposive sampling (i.e., intentionally selected documents that cover the span of the four years the program has been implemented). I selected a variety of documents including reports and applications for funding. Bowen (2009) suggests that reviewing documents can be conducted as part of qualitative research both before and after other methodologies, such as interviews. [134] I also reviewed documentation of the program, including meeting minutes, strategic

planning documents, and internal reports. In order to ensure both depth and breadth of documents being reviewed, I began with a systematic review of applications, reports, and program documents (e.g., activity logs, planning notes) by year of the program's existence. In that way I became familiar with the materials associated with and produced by the program annually. I then selected documents that were complete, and seemed to be representative of the area of inquiry (e.g., proposals, program notes). Program data and archival materials are depicted in Table 11 below:

Table 11: Program Data and Archival Review

Document type, description	**Intended audience**	**# reviewed**
Youth Worker log book: describes staff interactions with youth, includes goal setting, notes, data for import to database	Youth worker, supervisor	7
Quarterly report to MDPH, includes information on services provided, demographics, challenges and successes	MDPH	4
Report to WR Kellogg Foundation: includes annual report on funding used for High-Risk Young Mother's Program	WR Kellogg Program Officer	3
Staff meeting agendas/notes	Program Staff, supervisor	10
Application for additional funding to WR Kellogg Foundation	WR Kellogg selection committee	2
Evaluation database documentation: internal notes about evaluation system, program changes, alterations	Internal, evaluation director	1
Program theory of change, logic model: internal planning and evaluation documents developed and refined by staff at Roca	Staff, supervisor, funding agencies	3
Fiscal Year 2016 High-Risk Young Mothers Performance Benchmarks and Outcomes Report	Staff, funding agencies, potential and current donors	1

The key concepts and themes in the document review are included in Table 12, below:

Table 12: Key Concepts and Themes and Areas of Inquiry: Document Review

Key concepts and themes	**Area of inquiry**
-description of author (role only not name), purpose, and audience of document	Lessons Applied: Method or way process of implementation was facilitated
-themes, descriptions of document (e.g., type of document)	Lessons Applied: level and nature of evidence
-description of program outcomes reported	Novel Approaches: outcomes
-description of program application goals, including theory of change, attendance goals, recruitment strategies	Novel Approaches: theory of change, recruitment, resources/inputs, and activities
-description or note of context of program implementation	Lessons Applied: Context or Environment
-description of level of evidence provided (e.g., collected data, anecdotes, documented observation, etc.)	Lessons Applied: level and nature of evidence
-description of intended audience of document	Lessons Applied: level and nature of evidence & Context and environment
-description of key staff or "facilitators" of the program	Lessons Applied, Method or way process of implementation was facilitated

Interviews with three sets of key informants.

The process of conducting semi-structured interviews, face-to-face, with program facilitators and community leaders, and participant focus groups has been well-established as appropriate for understanding and assessing complex and multidimensional programs.[124,140] Kennedy et al. used key informant interviews to understand the complex phenomenon of homeless youth and sexual risk taking behavior.[141] While interviewing high-risk youth can be challenging, there are steps that can be taken to ensure both valid data collection and comfort for program participants.[142] Perhaps most important was that I

spent many hours at Roca and became a known entity to the young women participating. Through the hours spent conducting program observation and talking with staff, I became a trusted figure in the organization. Thus, I was able to mitigate the concerns typical of a high-risk population.[141]

From May 2016 to September of 2016, I conducted thirty semi-structured interviews with three categories of key informants: staff at the Roca program (8 individual), Roca program participants (8), and external key stakeholders (14). I also conducted one focus group with staff for the program. I used stratified purposive selection in order to interview a sample of participants participating in the different stages of the program. Using the program database located at Roca, and through talking with staff, program participants from stages one, two, and three were selected for recruitment. Interviews were semi-structured, that is, a general question guide was developed but I also used open-ended discussion to allow for authentic discussions. These are described in Table 13, below:

Table 13: Key concepts and themes to be explored with Program Participants

Key concepts and themes	Area of inquiry
-how and why participants became involved with Roca HRYM program	Novel Approaches: recruitment, target population
-quality and characteristics of relationship with their primary case manager/youth worker at Roca	Novel Approaches: resources/inputs
-significant challenges encountered through participating in Roca	Novel Approaches: activities, outcomes
-successes or changes they see in themselves that they believe are a result of participating in Roca	Novel Approaches: outcomes Lessons applied: context or environment
-description of their lives as teen/young mothers	Lessons applied: context or environment
-aspirations they have for the future	Novel Approaches: stages of development, outcomes
-suggestions they have for improvements for Roca HRYM program	Lessons applied: context or environment, method implementation facilitation

Program staff

Eight of the 15 Roca staff who work primarily with the High-Risk Young Mother's program were interviewed. Staff were selected based on their role in program. The key concepts explored are described in Table 14 below.

Table 14: Key concepts and themes with Roca Staff Interviews

Key concepts and themes	**Area of inquiry**
-Description of program goals	Novel Approaches: stages of development, resources/inputs, activities Lessons Applied: context/environment
-Description of "what makes a good youth worker" – self description, self-critique, and/or colleagues	Novel Approaches: resources/inputs
-Description of program successes and challenges	Novel Approaches: context, activities, outcomes Lessons Applied: Context/environment
-Descriptions of participant successes and challenges	Novel Approaches: context, activities, outcomes Lesson Applied: context/ environment
-Program theory of change	Novel Approaches: theory of change
-Examples of program meeting goals and objectives	Novel Approaches: activities, outcomes
-Examples of times program is unable to meet goals and objectives	Novel Approaches: activities, outcomes
-Aspirations for the women they support and work with through the HRYM program	Novel Approaches: theory of change, outcomes, target population
-Reflection on the key findings by Asheer, et al.[9] regarding programs supporting teen parents (see p. 29)	Lesson Applied: context/ environment

Once several interviews had been conducted I then held a focus group with staff of the Roca program to ensure that I was accurately capturing both their thoughts and a representative group of participants. This focus group included specific inquiry about "what am I missing?" for the staff to reflect on. This included the issue of language — all interviews were only conducted in English, thus excluding participants who do not speak

English. The results of the focus group further guided inquiry with additional participants and individual interviews with staff.

Key stakeholders in the field of teen pregnancy and parenting (14)

I conducted semi-structured interviews with fourteen purposively sampled key stakeholders in the field of teen pregnancy and teen parenting. Participants included researchers, staff at national and state organizations focused on teen pregnancy and parenting, and experts in the field who are funders of teen pregnancy and parenting interventions (foundation staff and government employees). The subjects were interviewed in one of three ways: 1) In person, 2) Via Skype or Google-hangout (video interview over computer) or 3) Via phone.

Starting with the literature, I identified key thought leaders in the fields of teen pregnancy and teen parenting programs. I also contacted key funders for the Roca program, including those at the Massachusetts Department of Public Health and the US Department of Health and Human Services who have knowledge about both Roca and best practices in the field of teen pregnancy and parenting. Key concepts explored and themes to be analyzed are shown in Table 15, below:

Table 15: Key Concepts and Themes for Key Informant Interview

Key concepts and themes	Area of inquiry
-Testing of my assumption about teen births and risk cohorts: does the interviewee believe teen mothers today are "generally more at risk" than five years ago, "generally less at risk" than five years ago, or neither? This topic will then be further explored – what are examples and definitions of riskier or less risky behaviors in the population?	Lesson Applied: Context and Environment
-Reflections on key current issues in teen pregnancy and parenting: funding, direction, research, literature, programs, interventions, political, policy	Lesson Applied: Context and Environment, level and nature of evidence
-Description of best practices in teen parenting and pregnancy programs: specifically, are there key programs that rise to the top in terms of effectiveness?	Lesson Applied: Context and Environment, level and nature of evidence
-Examples of program successes in working with teen and young parents	Lesson Applied: Context and Environment, level and nature of evidence
-Discussion of Asheer (2014) et al.[9] findings on PAF services to teen mothers: specifically, ask for reflection on four key issues stated by Asheer (see page 29).	Lesson Applied: Context and Environment, level and nature of evidence
-Examples of challenges working with teen and young parents	Lesson Applied: Context and Environment, level and nature of evidence
-Suggestions of further research needed in the field of teen parenting and pregnancy	Lesson Applied: Context and Environment, level and nature of evidence, method & facilitation

Interview process:

All interviews were recorded. Files were then uploaded to a transcription service and transcripts were made. One interview could not be successfully transcribed due to the accent of the speaker. I made notes about this interview and thus was able to include data from this discussion in this case study. Memos were also taken to record observations, highlight key concepts, and to begin to develop themes and theories. Transcripts and notes were loaded into NVIVO software,[143] a qualitative data analysis software program.

Program observations: I conducted ten one-two hour program observations from May 2016–September of 2016 in order to understand and record the setting of the intervention. Observations were made onsite during program times and when participants were receiving services. I observed the operations of the program at purposively sampled and selected times at the Roca site (101 Park Street, Chelsea, MA) in order to see different components of the program at work (onsite classes, onsite job training, onsite counseling, onsite family dinners and special events).

Observations included observing the children in the daycare setting, watching and participating in Family Night on Wednesday evenings, watching counseling sessions between youth and their workers, observing women participating in classes, observing transportation activities, observing staff meetings and supervisions, and observing the workings of the organization on a "typical day." Program observations are described in Table 16 below.

Table 16: Key Concepts and Themes Direct Program Observations

Key concepts and themes	Area of inquiry
-physical description of the setting(s)	Novel Approaches: context, Lessons applied: context environment
-time of day, week, and season(year)	Novel Approaches: context, resources/inputs
-description of participants (gender, age, clothing, interactions)	Novel Approaches: target population, context
-activities witnessed and description of each	Novel Approaches: activities
-interactions between participants and staff, staff and staff, participants and participants, and interactions with children	Novel Approaches: target population, recruitment, stages of development, resources/inputs
-attitude and affect of those onsite (affect, mood, etc.)	Novel Approaches: activities

Data Analysis

As described previously in this chapter, a detailed plan of data collection through the use of the Yin case study informed by the PARiHS framework was developed prospectively prior to beginning data collection. Specific themes and areas of inquiry were developed and sought after in the various forms of data collection, as described in detail in tables 11–15, based in part on best practices in the process evaluation literature.[123,144] Once collected, data was analyzed using thematic analysis methods with five successive stages.[145] Furman, et al. propose a methodology for qualitative data analysis using stages described as follows:

1) Reading through without coding, making notes and impressions;

2) Open coding with specificity;

3) Wait one week, repeat step two, compare coding between researchers;

4) Develop themes using codes as an initial platform; and

5) Seek alternate explanations in the data.[145]

During stages two and three a code book was developed. Each of the study manuscripts was coded using NVIVO software. Salient quotes that effectively illustrate each point were drawn out and highlighted. Once data was sorted into themes, analysis included testing the assumptions made in the beginning of the study, and comparing different sources of data (data triangulation). The codebook for this study was revised several times as themes emerged, and the original areas of inquiry became less salient to the overall organization of the data.

The literature suggests that identifying enough breadth and depth in qualitative research can be challenging.[130] It is important to reach enough depth and breadth in the interviews to uncover perceptions and begin to understand how the program is operating. It is also important not to allow the data to become too large and repetitive.[146] Interviews and program observations were conducted and analyzed until saturation was reached, without creating redundancy.[146]

An additional researcher also coded manuscripts using the developed code book. I was able to compare notes to assess for validity of the code book, initial concepts, and interpretation of the data.[130] The literature suggests a process of "open coding" – where an initial coding is decided to gather key points, and then broader categories are

developed to elicit coherent themes.[9,145] Findings that emerge were illustrated with relevant quotes or field notes, and were selected on the basis of being particularly illustrative, or capturing an insight.[147]

Once key themes and concepts were discerned from the data, a qualitative case report was produced with a robust understanding of the current program including successes, challenges and limitations, and key findings for other programs serving teen parents. Multiple sources of qualitative data (document review, interviews, and observations) inform the case report. Using multiple sources of data and different perspective (data triangulation) enhances validity.[130]

Ensuring rigor and reliability

There are several approaches to ensuring methodological rigor in qualitative methodology.[130,148] First, data from the three sources (interviews, observations, and document review) was triangulated systematically in order to ensure consistency of findings.[77] Data from all three of these sources was analyzed using a code book, and were linked thematically. In addition, places where data does not agree or match were highlighted and then further explored (e.g., through re-interviewing, asking staff to clarify document findings, etc. Second, a range of perspectives on the program were incorporated in order to allow for a more thorough understanding of the program. Qualitative research can be ensured of rigor through techniques such as the evaluation of credibility, dependability, conformability and transferability.[135] Credibility was achieved

through the use of a well thought out research design (presented here). Dependability was maintained by using the same semi-structured interview guide to collect data, and reviewing key decision points during data analysis for content stability. Confirmability was achieved by working with other researchers who can reach consensus on the interpretation of the findings. I also presented preliminary findings of the case study to program staff in order to confirm or correct impressions on the program, defined as a "member check" and described above. Lastly, transferability was ensured through limited extrapolation from the case study to other programs. That is, generalizations are only be made for similar populations under similar circumstances.[77,149]

Summary

The research methodology to answer the central questions of this dissertation is described in this chapter. Section One describes the quantitative data ascertainment and analysis plan. Second, the case study approach using the PARiHS framework for answering the second and third questions of this dissertation is presented. The qualitative data collection and analysis plan is presented. Chapter Four presents the quantitative results, and Chapter Five presents the qualitative case study.

Chapter Four: manuscript for submission to Journal of Adolescent Health

Leaving the Most Vulnerable Behind: Changes in the Population of Massachusetts Adolescent Mothers: 1999–2013

Implications and Contribution:

With overall declines in US teen births, data suggest a concentration of risk within a subgroup of teen parents.[101] Teen parents are now more likely to be Hispanic, to report anemia during pregnancy, and less likely to access prenatal care. Understanding changes in the population of teen parents is critical to meet the needs of this vulnerable group.[25,39,109]

The U.S. experienced substantial declines (64%) in the rate of teen births — defined here as a live birth to a woman 15–19[16] — between 1991 and 2015. Massachusetts has experienced an even larger decline (73%) in overall teen birth rates in the same period.[101] While the cohort of teen parents has been previously described in the literature, few studies have examined the changes in the risk profile of teen births over time in the US.[14,19,40] Despite the declines nationally there continue to be a significant number of births in 2015 to teen girls ages 15–19 in the U.S. (229,715 births).[2,3] Teen mothers are embedded in communities which experience negative social outcomes, including high rates of high school dropouts, unemployment, and violence,[3] resulting in a complex interaction of factors that may result significant negative health and social outcomes for the teen mother and her child/children.[4]

Negative outcomes have been widely described in the literature, including the cyclical, generational impact of teen parenting.[5–8] Extensive prior research has shown that adolescent pregnancy and parenting contribute to negative health and social outcomes for adolescent parents, their children, and ultimately communities.[4–6,17,18] Adolescent pregnancy and parenting has been found to be a significant contributor to ongoing cycles of poverty,[4] lower educational attainment,[4,19] dependence on government support,[18,20] and involvement with the criminal justice system,[4,20] all within the context of disadvantaged communities.[4–6,16–18,21] Prevention of adolescent pregnancy has been identified as a major "winnable battle" by the Centers for Disease Control and Prevention,[22] and great strides have been made across the United States in achieving a reduction in overall teen births.[5,16,18,23–25]

While programs serving teen parents often report "indications of success"[9] or "initial positive results,"[10] few programs demonstrate ongoing long term changes in outcomes for mothers and children.[11,12] Dramatic changes in teen birth rates that have occurred over the past 25 years[14,15] have raised the possibility that the smaller remaining population of teen mothers involves the most challenging cases not impacted by the larger societal trends and thus requiring innovative approaches to reach, serve, and retain them in supportive programming that can improve maternal and child outcomes.

The hypothesis tested in this study is that [2] teens who became pregnant and continued their pregnancies between 2009–2013 have a higher medical and socio-demographic risk

profile compared to teen who became pregnant and continued their pregnancies during the period 1999–2003

Methods

This investigation examined two cohorts of teen birth data in Massachusetts to compare changes in the population of teens giving birth in Massachusetts from a time when teen births were high 1999–2003) to more recently (2009–2013) after a dramatic decline. Cohort 1 contains 24,860 births and Cohort 2 includes 17,670 births, representing all singleton deliveries in Massachusetts to mothers ages 15–19 during the years 1999–2003 and 2009–2013, respectively. Deidentified data from the birth certificates of teens giving birth in Massachusetts were provided by the Massachusetts Department of Public Health. The Standard Certificate of Live Birth (1989 Revision) is populated by data collected from a Parent Worksheet for Birth Certificates and contains the legal and socio-demographic information on the child's mother and father. Parent worksheets are filled out typically while a mother and child are still hospitalized after delivery. Worksheets are filled out either by parents or providers. Information is typically considered to be highly reliable for certain variables, including those examined here.[150] In 2011 the Massachusetts Department of Public Health adopted the 2003 revision of the U.S. Standard Certificate of Live Birth.[112,113,151] Slight changes were made in the way some variables were operationalized. These changes are described below. These data were matched with information from the US Census Bureau in order to assess the changes in the demographics and risk profile of teen mothers in Massachusetts.

Massachusetts birth certificate variables selected for analysis were grouped within three domains: demographic information that serve as markers of sociocultural disparities; indicators of health risk, and selected birth outcomes in order to compare maternal risk profiles and infant outcomes from 1999–2003 to mothers in 2009–2013.

Comparisons (T tests for continuous variables and Chi-Square tests for categorical variables as appropriate) were made between the two cohorts of teen mothers to understand statistically significant differences between the two groups, and if so, in what direction. P values greater than 0.05) were considered significant.

Approval for this study was received both through the Boston University/Boston Medical Center Institutional Review Board and the Massachusetts Department of Public Health Institutional Review Board.

Results

Maternal and paternal demographic characteristics of the two groups are presented in Table 17.

Table 17 Maternal and Paternal Demographics associated with teen births (15–19), Massachusetts, 1999–2003 and 2009–2013.

	1999–2003		2009–2013		p value
Total N	24857		17667		
Maternal Age (Average & S.D.)	17.9	(1.2)	18.0	(1.1)	<0.0001
	#	%	#	%	
Mother's language					
-English	21665	(87.1%)	15865	(89.8%)	<0.0001
-Other	3195	(12.9%)	1796	(10.2%)	
Maternal education					
-HS Diploma/GED	10457	(99.3%)	8727	(66.8%)	<0.0001
-No HS Diploma/GED	78	(0.7%)	4342	(33.2%)	
Maternal nativity					
-US Born	21078	(84.8%)	15274	(86.5%)	<0.0001
-Other	3779	(15.2%)	2393	(13.6%)	
Paternal mean age (Average & S.D.)	21.4	(4.0)	21.2	(3.9)	<0.0001
Mean age differences (father's age – mother's age) (Average & S.D.)	3.4	(3.8)	2.1	(3.7)	<0.0001
% births, that recorded a father					
Yes	17957	(72.2%)	12174	(68.9%)	
No	6903	(27.8%)	5496	(31.1%)	<0.0001
Paternal education					
-HS Diploma/GED	10513	(97.4%)	7229	(73.7%)	<0.0001
-No HS Diploma/GED	280	(2.6%)	2585	(26.3%)	
Father's nativity					
-US Born	14186	(78.9%)	9877	(66.9%)	<0.0001
-Other	3798	(21.1%)	4889	(33.1%)	
Maternal prenatal care: payer					
-Government	18396	(74.2%)	13446	(76.2%)	<0.0001
-Other	6387	(25.8%)	4196	(23.8%)	

There were few notable changes in maternal and paternal demographics between the two cohorts. There was a slight increase in percent of mothers born in the U.S. and a decline

in the average age difference between mothers and fathers, declining an average of 3.4 years in the early cohort (1999–2003) to 2.1 years in the later cohort (2009–2013). There was a slight increase in unnamed fathers, despite ongoing state efforts to increase fathers being named on birth certificates.

The race and ethnicity makeup of mothers giving birth shifted with an increase in percentage of Hispanic mothers and a decrease in percentage of White mothers making up the later cohort. This is depicted below in Figure 5.

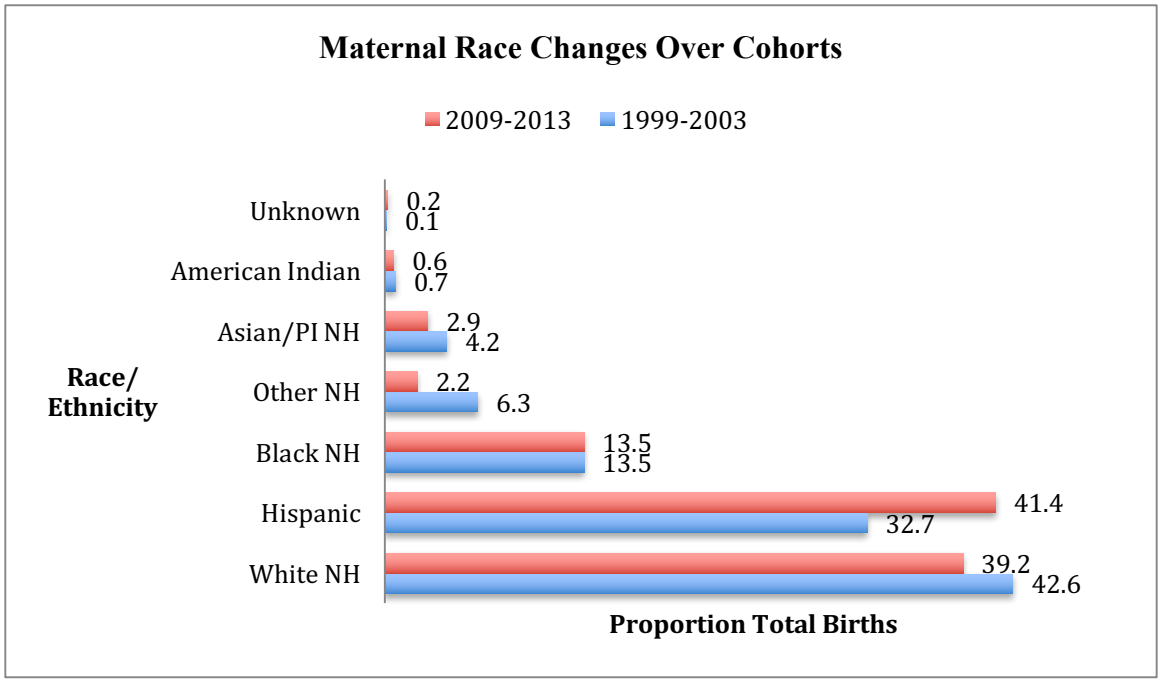

Figure 5: Maternal Race/Ethnicity Changes among teen births (15–19), Massachusetts, 1999–2003 and 2009–2013

While Hispanic fathers of children born to teen mothers made up a significant percentage of total fathers in the early cohort (36.8%) they made up a larger percentage in the second cohort (39.3%).

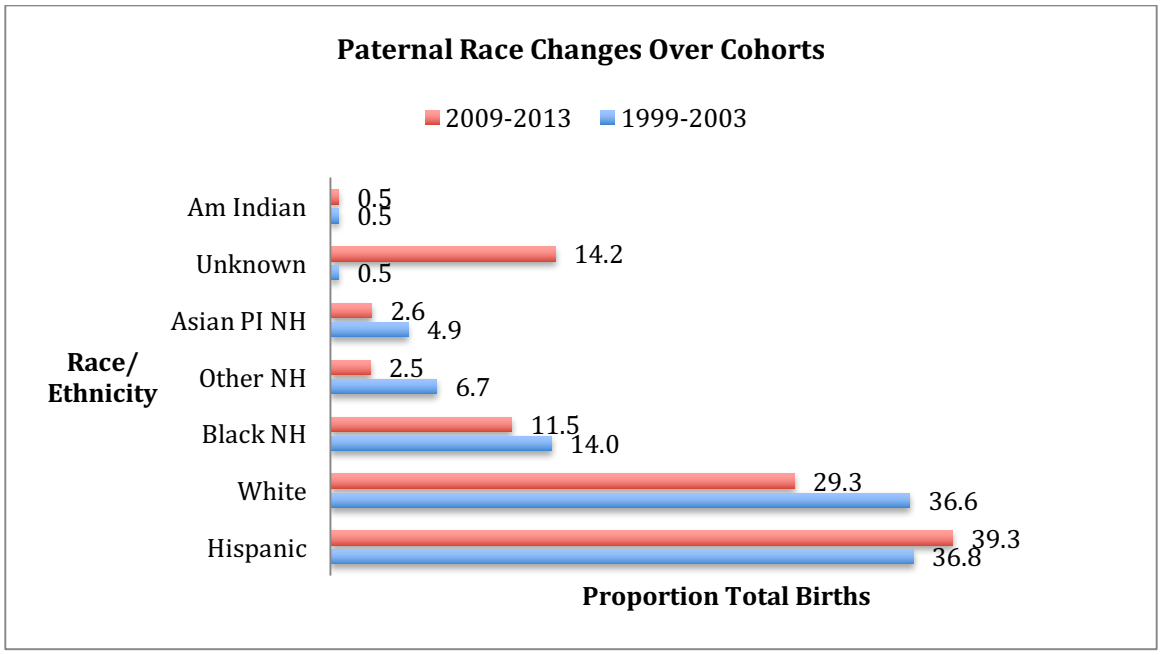

Figure 6: Paternal Race/Ethnicity Changes among teen births (15–19), Massachusetts, 1999–2003 and 2009–2013.

Table 18 Comparison of Maternal Behavioral Characteristics among teen births (15–19), Massachusetts, 1999–2003 and 2009–2013.

	1999–2003		2009–2013		p value
	#	%	#	%	
Parity					
-1	20796	(83.9%)	13429	(86.6%)	<0.0001
-2	3456	(13.9%)	1865	(12.0%)	
-3 (+)	537	(2.2%)	246	(1.3%)	
Maternal smoking (pre-pregnancy)					
-Yes	7758	(31.2%)	3133	(30.8%)	<0.3981
-No	17080	(68.8%)	7003	(69.2%)	
Maternal smoking (During pregnancy)					
-Yes	4561	(18.4%)	1889	(18.3%)	<0.8303
-No	20273	(81.6%)	8451	(81.7%)	
Adequacy of Prenatal Care: Kotelchuck Index[152]					
-0	240	(1.0%)	811	(4.6%)	<0.0001
-1(Inadequate)	5037	(20.3%)	2098	(16.9%)	
-2(Intermediate)	2285	(9.2%)	1516	(8.6%)	
-3(Adequate)	9058	(36.4%)	6624	(37.5%)	
-4(Adequate Plus)	8240	(33.2%)	5729	(32.4%)	

There is also an increase in the number of teen mothers who report receiving no prenatal care (going from 1.0% in the early cohort to 4.6% in the more recent cohort).

Table 19 Mother's Medical Conditions among teen births (15–19), Massachusetts, 1999–2003 and 2009–2013.

	1999–2003		2009–2013		p value
	#	%	#	%	
Diabetes (gestational)					
-Yes	252	(1.0%)	245	(1.4%)	<0.0003
-No	24470	(98.9%)	17360	(98.6%)	
Diabetes (chronic)					
-Yes	82	(0.3%)	71	(0.4%)	<0.2263
-No	24640	(99.7%)	17534	(99.6%)	
Hypertension (gestational)					
-Yes	825	(3.3%)	526	(3.0%)	<0.0439
-No	23897	(96.7%)	17079	(97%)	
Hypertension (chronic)					
-Yes	97	(0.4)	91	(0.5%)	<0.0576
-No	24625	(99.6%)	17514	(99.5%)	
Anemia					
-Yes	1413	(5.7%)	1887	(10.7%)	<0.0001
-No	23309	(94.3%)	15718	(89.3%)	

There were little differences in absolute levels of most medical conditions except anemia, where there was a reported 87% increase among teen mothers in the later cohort.

Table 20 Birth Outcomes for Infants Born to Teen Mothers among teen births (15–19), Massachusetts, 1999–2003 and 2009–2013.

	1999–2003		2009–2013		p value
	#	%	#	%	
Low Birth-weight					
-Yes	2317	(9.4%)	1566	(8.9%)	<0.1072
-No	22469	(90.7%)	16049	(91.1%)	
Gestational Age < 37 weeks					
-Yes	2966	(12.3%)	2014	(12.3%)	<0.9391
-No	21211	(87.7%)	14269	(87.7%)	

There were no significant changes in the two examined birth outcomes for infants of teen mothers over the two cohorts. The percent of low birth-weight infants was similar for both cohorts — 9.4% in the early cohort and 8.9% in the later cohort. There was virtually no change in gestational age prior to 37 weeks (12.3% of births in the early cohort and 12.3% of births in the later cohort).

Discussion

While nearly all results were statistically significant at the P<0.001 level, this is likely due to the large sample sizes, not the magnitude of the actual difference in values.[110] Few changes represented clinically significant substantive differences. The criteria for substantive differences discussed here is defined as changes over 2%. In some cases "no change" was also defined as substantive, as it indicates a lack of progress on health goals. Substantive differences were found in the race/ethnicity of mothers and fathers, record of father on birth certificate, parity, smoking, anemia, and access to prenatal care.

While teen births dropped in all race and ethnic groups across Massachusetts over the past two decades,[3] there has been less of a decline in the Hispanic population, resulting in Hispanics now accounting for 41.4% of all teens giving birth from 2009–2013, despite Hispanics making up only 16% of the school-age population.[109,153] African American teens continue to comprise 13.5% of all teen births. This percentage did not change from 1999–2013 — meaning that births to non-Hispanic white teen mothers constituted less than 40% of teen births in the state.

Declines in fathering by white fathers, and a plateauing among non-Hispanic Black fathers may indicate that prevention messages are meeting some communities effectively and others are not being met. A large increase in the number of unknown race/ethnicity for fathers in the second cohort makes these data challenging to interpret accurately. Changes in parity reflect a positive trend with fewer births in the more recent cohort being second (or higher order) births to teen mothers. Despite overall declines in smoking in Massachusetts during the same time period there has been little progress made among teen mothers who report smoking before and during pregnancy.[154]

Maternal and paternal education data should be interpreted with caution as there were a large number of missing variables for this outcome. There was a significant increase in the number of "unknown" race/ethnicity data for fathers of children born to teen mothers in the second cohort (increasing from .05% in the first cohort to 14.2% in the later cohort. This likely has a significant impact on the interpretation of the race/ethnicity data

findings. When "unknown" race/ethnicity is excluded from analysis the results are more similar to those of the race/ethnicity of teen mothers, with Hispanics making up 45.9% of the population, White/Non-Hispanic making up 34.2%, and Black/Non-Hispanic making up 14.3% of the population.

Two health concerns demonstrated statistically significant change across cohorts and may indicate unmet clinical needs: anemia, and adequate prenatal care. Anemia is a known health concern during adolescent pregnancy.[155,156] The findings in this study demonstrated an 87% increase of anemia during pregnancy from 5.7% of teen mothers in Cohort 1 to 10.7% in Cohort 2. However, reported anemia among all mothers in Massachusetts increased over the time period 1999–2013, suggesting the possibility of changes in reporting.[157] Period prevalence of anemia among all Massachusetts women increased 2.8% (1999–2003) to 6.5% (2009–2013). Regardless, anemia is a known health issue for pregnant adolescents and can be associated with preterm birth or low birth weight. Although we found no significant change in the rates of low birth weight and prematurity over time, this finding suggests a need for increased screening and treatment to support overall health of women.[20,155]

A second finding of concern for public health practitioners confirms a known finding – that teen mothers are often late to prenatal care and often receive inadequate prenatal care. When compared with adult women, adolescent mothers in Massachusetts receive dramatically lower rates of adequate prenatal care. In a state like Massachusetts with

extensive access to care[158], the disparity between adult women receiving at least adequate prenatal care (91.1% of all Massachusetts mothers) and teen mothers receiving at least adequate prenatal care (69.9%) stands out even more starkly. Results from this research show a continued disparity between adult mothers and adolescent mothers with regards to receiving adequate prenatal care. Prenatal care provides a critical opportunity for adolescents to receive services, linkages to community support, and to support their overall physical and emotional health.

Recent studies of trends in adolescent birth have focused on the dramatic declines overall. Little research has been conducted to examine the most recent current trends among young women who become pregnant and give birth during adolescence. Gunaratne et al. found strong correlations between population change in Chicago neighborhoods and birth rates, indicating that demographic changes were responsible for the decrease in certain areas and increases in other areas – verses the prevention efforts enacted. They advocate for a focus in prevention efforts on those neighborhoods with high rates of poverty, high school drop out, Hispanic population.[40] This study provides support for advocates for focused prevention efforts targeting vulnerable communities where less progress has been made. Secondly, this research indicates a need for an increased focus on targeted medical care for teen mothers, particularly regarding access to prenatal care and screening and treatment for anemia.

Limitations

This study is limited in that it only examines data from one state, Massachusetts. However, Massachusetts offers a valuable setting to study access to care due to the overall excellent access to services for all residents.[159] For a state with overall excellent access to experience such low rates of prenatal care for teen mothers may indicate a significant risk for other states with less universal access, and deserves closer study.

There is also a significant amount of missing data for several variables. Missing variables were likely not a major factor in interpreting the changes in the teen birth cohorts in the demographic section. There were a significant number of missing variables/unknown for paternal ethnicity and thus we analyzed paternal demographics only on the birth certificates that had a named father. There were very few missing variables for mother's health conditions and low birth weight for infants in both cohorts. There were more data missing for gestational age <37 weeks. Two variables had considerable data missing, smoking and education.

Conclusion

The significant decline in the numbers of adolescents giving birth has resulted in a concentration of higher risk young mothers. The later cohort of teen mothers does indicate some risks are consolidating into a higher risk profile, including bring more likely to be Hispanic, more likely to report anemia, and a persistent lack of access to

prenatal care. These findings indicate a need for further exploration of issues of prenatal care and anemia for young mothers. This research indicates a need to explore issues for Hispanic youth who may not be currently reached through adolescent pregnancy prevention programs. In addition, further research is needed at the national level, to assess if the changes in teens giving birth despite overall declines observed in Massachusetts are consistent more widely.

Chapter Five: Roca Program and Serving High-Risk Young Mothers

Roca Participant:
Is that good stuff I told you?

Interviewer:
It's great. Your story is really important.

Introduction

In documenting the Roca High-risk Young Mother's Program, qualitative data was collected directly from eight program participants and eight program staff in the form of a series of semi-structured interviews. In addition a focus group was conducted with program staff. Semi-structured interviews were also conducted with key informants in the field of teen parenting and teen pregnancy prevention. Lastly, comprehensive document review and on-site observations were made. A detailed description of the data collected is documented in Chapter Three. The data was transcribed, coded, and analyzed. This chapter describes the findings from those data. Through the triangulation of data, that is using data from multiple different sources, findings were confirmed or in the case of discrepancy, further examined.[130,134]

How do the novel approaches used by the Roca High-risk Young Mother's program effectively serve higher-risk teen mothers and their children?

Research was undertaken in order to articulate the novel approach used by the Roca

High-Risk Young Mother's program in Chelsea, Massachusetts. As noted in Chapter One, programs focusing on teen parents are often successful initially, and then have extensive difficulty maintaining success.[21] Further, programs are limited in scope and ability to serve those at highest risk of negative outcomes (e.g. a second birth while still a teen, failure to complete school, failure for child to meet developmental milestones, etc.).[87] The premise of undertaking this research was to understand the precise mechanism by which youth are being served at Roca, within what context, and with what resources.

This chapter will describe the findings from the qualitative data collected and analyzed:

Section One: No Safe Place: Understanding the Community Context of ROCA

Section Two: Safe Harbor: Roca is more than a program

Section Three: How it works: Roca Program Overview

Section Four: Staffing, Pink Walls, and Car seats: The Program mechanics

Section Five: Vulnerable Young Mothers: Participants and Program Target Population

Section Six: Moving Targets versus Settled Goals: Applying Appropriate Flexibility

Section One: No Safe Place: Understanding the Community Context of Roca

As described in Chapter Two, the Roca, Inc. program for high-risk young mothers is designed to serve women throughout the cities of Chelsea, East Boston, and Everett. These communities experience pervasive economic and social hardships, including environmental racism, a struggling school system, and unmet health needs.[160,161] Section One will explore the specific themes that evolved from the data under the general area of understanding the community context of Roca, including: issues of immigration and legal status, and the multiple complex risks of living in a community like Chelsea, including substance use and gang violence.

Context is described in process evaluation as the "current conditions" in which a program operates, and that may have an influence on the process and outcomes of a program.[139] Key questions explored in understanding the context of the Roca High-Risk Young Mother's program include: *What are the current conditions and experiences faced by Roca, program staff, participants, and community members influencing the program?*

1.1 Chelsea: a City of Immigrants

Roca Inc. operates in an environment of extensive poverty, crime, interpersonal violence, environmental racism, and stress.[162] Chelsea Massachusetts is a community with multiple stressors on both residents and service providers.[160,162,163] Throughout history Chelsea has been welcoming immigrants and providing haven for those fleeing violence in their home countries. Over the past two decades Chelsea has become a true American

melting pot with an extremely diverse population.[163] There has been a dramatic influx of new immigrants from all over Central America, not just the formerly leading sources of immigrants to Chelsea, Puerto Rico and the Dominican Republic.[160] Several key informants talked about the context of immigration—being separated from family of origin, coming to the US alone or with one family member. In fiscal year 2016 39% of the Roca participants in the first two years of the model (e.g., 44 of 114 participants) did not have legal documentation to be in the US.[103] The intersection of violence and immigration was referred to repeatedly by key informants, staff and participants. Several participants interviewed discussed the violence and abuse they had experienced during their journey to the United States. This violence and ongoing fear of deportation was a theme that surfaced throughout the research. For the purposes of understanding the Roca program context, however, it is critical to note the undertones of fear and worry that permeated the program with regards to immigration and lack of documentation for some participants.

1.2 Overwhelming Poverty

Throughout the time of this study Massachusetts has celebrated the success of the dramatic decline in teen pregnancy. Overall the dramatic decline in teen births has reduced the sense of urgency in the community around this issue. Substance abuse and in particular opioid addiction are perhaps seen as more salient concerns.[164] This change in focus and population will be discussed later in this chapter. Throughout interviews with key informants, participants and staff gang violence and substance use were frequent

discussed threats to living in Chelsea. Young women described the community as "dangerous" and "scary." Participants describe Chelsea as an unsafe area to live and try to survive due to the drug trade and gang activity. One participant described her neighborhood: "*Yes it was in Chelsea. I was like, 'it's not a safe environment,' and I was like, 'Okay, I'm going to leave with the baby … You think it's a safe environment, I don't think so.'"* (Participant interview, 2016)

1.3 Multiple Risks in the Community

When asked about the context of their work in Chelsea, many staff at Roca described the harsh conditions of life for the poor in Massachusetts. They described multiple areas of challenges including employment, homelessness, substance abuse, and violence. One staff member described the conditions as such: "*The risk, the challenge, the barriers, the risk factors that are part of their environment in terms of poverty, access to service, trauma, variability in education and trusted adults and a larger circle of support…*" (Staff Interview, 2016)

Key informants in the field of teen pregnancy and teen parenting all identified common themes in discussing the current situation for teen parents in Chelsea, Massachusetts and the United States. All those asked described the challenges of employment/economic opportunity, transportation, and housing. One key informant stated: "*People have to have more than one job to make it…*" (Key Informant, 2016)

Staff at Roca specifically discussed the multiple risks surrounding their community including: immigration status, lack of family support or any other positive support systems, housing, assimilation issues, and education and employment. Staff and key informants described Roca as well suited to address these challenges through explicitly hiring staff from the impacted communities, having language capacity, and having a physical structure able to tolerate the risky community in which the organization exists. The Roca program operates within the context of this challenging environment.

Section Two: A Safe Harbor: Roca is more than a program

Roca has fit into the fabric of Chelsea for nearly three decades.[105] Started as a program originally focused exclusively on teen pregnancy prevention, the organization now serves a much more narrow and defined purpose.[95,97] When asked about the context in which Roca operates, key informants were quick to describe the organization as embedded deeply in the community of Chelsea, and extremely knowledgeable about Chelsea. In fact, Roca was described as ***part of Chelsea*** not a ***provider*** to those in Chelsea. (Key Informant Interview, 2016)

Roca is seen as "more than a program" in a community — more like a place of worship, school, or other institution.[129] Key informants, Roca staff, and Roca participants all described what the program gives them and means to them illustrating that there is a deeper connection and sense of belonging with the Chelsea community and with participants.

2.1. Moving Out of Harm's Way

The interviews, observations, and assessment of the materials provided a clear sense that staff and participants throughout Roca and key informants outside Roca do not consider the High-Risk Young Mother's services to be a "program" – that is – the organization and participants do not define it as a typical service program with a typical enrollment and services period of time, with discreet activities.[165] The intention of the staff and design is that young women will be accompanied on a journey of self-discovery and

change, and through this relationship they will be transformed. The transformation is characterized as movement out of "danger" or "harm's way" and into safety or opportunity. (Document review, 2016) Staff at Roca articulated the philosophy of the program as being ***more than a program***. Specifically, one staff described the services as "a relentless blanket of continuous support" and the development of a social net to those who have been previously disconnected. (Staff Interview, 2016).

2.2 Not Attending, But Belonging

The concept of "more than a program" became operationalized as participants themselves described not something they "***attend***" but a place where they "***belong***." (Participant Interview, 2016) Participants themselves described Roca with often reverential descriptions: "*I still come here because it's very ... I find the joy here. I find a happiness. I have people that care about me*." (Participant Interview, 2016) Another young woman stated: "*You come here, at least see someone smiling*." (Participant Interview, 2016)

Program observation also revealed that the Roca site has become almost a youth center for the young women participating. Young women expressed a sense of "home" and "safety" in the space. They spoke about being able to come and relax – that you can bring your children to the space and not one is going to harass or judge you. One young mother stated: "*I prefer to be here and not be at my house by myself."* (Participant Interview, 2016) Several young women were observed coming to the building not specifically on programming days, but just to sit on the couches outside staff offices, to take advantage

of the air conditioning and/or the heating in the building during the day. (Program observation, 2016) One participant stated: "*I feel like if I come here, nobody's going to bother me. If I need to talk, there's someone here who I can talk to*." (Participant interview, 2016) Staff described the role of Roca in the participants' lives as such: "… *they build community. They build community here with other moms and with us." (*Staff Interview, 2016) Another staff member commented that the feeling of community expands not just to the young people but also to the staff: *"Because so much of their life … We do it here all the time where we call Roca home, 'Oh, I'm going home,' Oh, I don't mean home. Roca is so much home."* (Staff Interview, 2016)

2.3 Building Community

Consensus from experts questioned about what high-risk teen mothers need formed around "*not a program*" that ends, and then returns participants "*back to a community that could care less about them*" (Key Informant Interview, 2016). In this way, the high-risk Young Mother's program is meeting an identified need – providing more than a program. Other experts in serving teen parents described using the Social Ecological Model (SEM)[166] to adopt a more comprehensive approach to serving young women. This more comprehensive approach is echoed in the program's logic model and theory of change and will be described further later in this chapter. A staff member described the interplay between the model and the community building as such: "*I think it's… the model itself that allows, but then also they build community. They build community here with other moms and with us*. (Staff interview, 2016)

Section Three: How it works: Roca Program overview

This section of the chapter will describe findings related to the following components of the Roca High-Risk Young Mother's Program that emerged as themes: The program theory of change, the use of Cognitive Behavioral Therapy, program staff, trust, the Outcomes (aspired and met, both small and significant).

3.1 Program Driven by Explicit Theory of Change

Staff are constantly referring to and utilizing an explicit theory of change. There is extensive documentation of the stated "theory of change," a detailed program logic model with explicit metrics, and through ongoing reporting on those metrics through the Efforts to Outcomes (ETO)™ software. Moreover, staff at Roca describe the program strategy as reflected in the program logic model and consistent with the model as stated on paper. (Document review, 2016)

From reports and other document review, Roca describes the theory of change for both young men and young women as follows:

Roca's theory of change is that young people, when re-engaged through positive and intensive relationships, can change their behaviors and develop life, education, and employment skills to disrupt destructive cycles such as poverty and incarceration. (Document review, 2016)

Staff describe a complex multifaceted approach to serving this population including initial strategies to increase engagement: "*We work with this model of trying to build a relationship by offering the good things such as the activities, field trips, the events that we hold here in Roca, the programming and all that. It takes some time, and constant, how I call it, outreaching, contacting them*." (Staff Interview, 2016)

Staff and program documentation lay out the theory of change as follows: through an intimate, highly accountable relationship, young women will move towards safety and out of harm's way. High-risk young mothers will engage deeply in the organization while accompanied by a trained highly attuned youth worker. (Program observation, Document review, 2016)

Periodically throughout the year staff engage in ongoing training and "reminders" with leadership at Roca. Staff describe this as "*working on the overall model development as relates to high-risk young people and high-risk young moms and training and some of the performance management and ongoing staff development*." (Staff interview, 2016)

This attention to detail with staff is part of the way the theory of change is implemented.

When describing the program's theory of change, staff and key informants were remarkably consistent. The program works through an extensive logic model (see page 61, Chapter Two) that staff is familiar with and on which they have been highly trained.

The idea of the theory of change is that through an ongoing, intimate relationship with youth staff that includes high accountability, young mothers will redefine themselves. This model allows for and indeed predicts and expects failure (defined as "relapse") and welcomes young women back into relationship. Staff understand that the model allows for a development within the context of stages – that is – participants move through stages of the program accompanied by their youth worker.

As described by one staff: *I think they stay, and this is one of the things I really love about the model, because we allow them to stay. We allow them to fail. We allow them to relapse and come back*." (Staff Interview, 2016)

Staff describe the transformation in relationship with the young women through a series of progressive changes. There is extensive documentation of these changes through the youth worker notebooks and use of the Efforts to Outcomes software. One staff described: *"In this phase were going to work on employment, we're going to be a little bit more hands-off, but were still going to be there for you. I think that that's a really beautiful hand-off because I'm sure all of the research, that if we keep them for too long in this intensive phase, it's a bad thing for them. We don't ever let them fly and become independent."* (Staff Interview, 2016)

3.2 Holding Close, then Letting Go

This concept of holding young women initially close, and then allowing them to grow, change and in fact separate from the staff and the program is highly consistent with best practices in the field. One key informant stated: "*An integrated trauma informed care and positive youth development approach is absolutely necessary*." (Key Informant Interview, 2016) Another staff described the process this way: "*How can we ever employ you if you are so dependent on us. To go back to [Youth worker name], I think what she does, she seems to ... In the beginning, she brings them but she talks with them about, 'This is something that I just do in the beginning so that you*[93] *comfortable that you have that relationship.' She really walks them through the process of why she does it in the beginning and then she's like, 'And after this, you have to come here on your own. I want to show you that this is important. This is worth your time, but I can't be your taxi.'"* (Staff Interview, 2016) This comment was in reference to the all-important theme of transportation and the critical role staff play initially in helping young mothers get themselves and their child(ren) to various appointments and meetings.

In reflecting on the program model one key informant very familiar with Roca described Roca in architectural terms: "*Yeah, of course Roca, their general architecture is different. Their intellectual architecture, their core values, and so on, and the program that you're studying is kind of ... grows out of the architecture. You build a house a certain way, and there's certain rooms that are structured a certain way, well the furniture can really only go in certain places. They're very unusual that way…"*(Key Informant Interview, 2016)

Roca's unique capacity to both physically (as noted symbolically in the language of architecture) and theoretically house a program like the Young Mother's Program will be of particular importance in thinking about program replication in Chapter Six.

3.3 "Go do it!" Youth Awareness of the Change Process

Youth participants also seemed cognizant of the program model and theory of change. They reflected on the changes in this way: "*I was working all the time. I was so focused on work that I didn't focus on my GED and all this stuff that were important. Then she'd* (youth worker) *keep trying, and I'm glad she keep trying because I'm here now.*" (Participant Interview, 2016) Another youth stated: "*Then I started coming, and I've been here for a year now. I'm not going to lie, the first six months I was doing stuff, I was kind of participating here, so I would move on, but after the six months, I decided that I really need to get my stuff together.*" (Participant Interview, 2016) Another youth stated: "*At first, I was like, 'They're so annoying.' I thought Roca was so annoying and that they didn't help out but after a while, I'm going to tell you, I didn't want to come to classes but I would push myself. I would be like, 'All right, I'm going to go.' Or I would come to the class and just tell them I have to do something and just leave but after a while I got used to it. When they would tell me, 'Oh this is happening, they're having this class.' I would just come in.* (Participant interview, 2016)

The transformation into self-confidence and self-worth was articulated by another participant: "*What they've been saying, and that's how they got me. My whole life I've*

been told you can't do this, you can't do that. But here it's like, you can do this, you're smart. Go do it. We're not going to let you fall. For me, I've always been brought down and I'm always falling onto the ground and I'm trying to pick myself back up but it's just hard, but then being here is like, you're doing it, you got this, go for it and stop. They give you that push. It's good to have that, especially if you never have it before, to have it from somebody." (Participant Interview 2016) This quote illustrates the ability of the staff to clearly and carefully support a participant in changing their own behavior and then supporting them as they try that new behavior. This is seen in the encouragement provided, and the "push" described by the participant.

Roca's theory of change is further operationalized through the use of cognitive behavioral therapy, as described in the next section.

3.4 Exploration & Implementation of Cognitive Behavioral Therapy

Cognitive Behavioral Therapy is an evidence-based strategy for working with populations to change behaviors.[167] It has been found to be particularly effective with populations who have experienced trauma, and/or hardships during childhood.[167,168] In the summer of 2015 staff and leadership at Roca began discussing using a new, innovative method of behavior change with participants. Through program observations and staff interviews the pathway taken by Roca into incorporating cognitive behavioral therapy (CBT) emerged.

Many innovations at Roca have emerged over time through intentional investigation of new ideas, or new ways of doing things. Individuals and leaders often bring forward new concepts or approaches to be tried within the various programs. CBT first appears in the young mother's program documentation in 2015, referenced as a new approach to addressing mental health concerns and brain development. Through an affiliation with EmPATH, an organization located in Boston, Founder and CEO Molly Baldwin began to investigate the possibility of understanding trauma and violence in the lives of program participants in a new way.[168] What if, Baldwin posited, the damaging impact of violence and poverty during childhood had in fact altered neural pathways, leading to many of the symptoms and signs staff were witnessing among youth and young adult participants? Over the course of the next year program managers and staff worked to develop and integrate the CBT training. (Program observation, document review, 2016)

Staff and program participants expressed excitement about the opportunity to learn a new way of thinking and reacting. Staff expressed optimism that through the use of CBT young women will be able to manage their reactions to life stressors differently, and therefore experience different outcomes. This was particularly noted in regards to young women who experience anger as a reaction to trauma. Many young women themselves were cognizant of the CBT model and identified it specifically as a new tool they had been given to assist them in changing their lives. Reflecting the changes and opportunities the use of CBT brought the organization, one staff member stated: *"To go back and supervision with motivational interviewing, it's not about you, it's about*

them and how do you get them, how do you draw that intrinsic motivation in a way that's not about you because it isn't about you. It's not about me. It's about them. That constant reminder and I think CBT helps a whole lot and drilling on motivational interviewing using those techniques and supervision. (Staff Interview, 2016)

Motivational interviewing was described as an integral part of the CBT process at Roca. Program documentation showed that staff are trained to use motivational interviewing, a technique to assess readiness to change and adapt to new pro-social health behaviors along with CBT.[169]

Other staff commented on the changes that using CBT had provided within the context of program activities: "*I think that life has knocked them down so much that our job collectively is to rebuild and be a part of that change but I mean when they are trying to learn and they come with all this trauma, you're sitting here, you're not listening to anything that I'm saying because there's so much else going on in your mind so if we can like, we're doing the CBT which is the best thing that happened at Roca in my opinion, Roca is great but CBT is amazing because I was a psychology major so I have experience with CBT, I love CBT. So if we can help them come into the classroom ready and prepared to learn, then they're going to get something out of it.*" (Staff Interview, 2016) According to staff interviews, the theory and use of CBT was originally brought to Roca for use by the young men's program. The approach was then modified for the young mother's as noted by staff:

"We are actually just starting because they were trying to modify the CBT from the young male to the young ladies." (Staff interview, 2016) Staff noted that this was still evolving and developing in the program: "*It's a constant reminder, although everybody's well versed in ... CBT, we're getting versed in it, but motivational interviewing and sometimes we forget or they forget because they get frustrated."* (Staff Interview, 2016)

CBT is typically framed in the literature as being "trauma-informed"[167] — recognizing the impact of poverty, violence, and stress on adolescent development.[168] Staff describe CBT as becoming part of their everyday work with participants no matter their precise job description: *"I'm focusing on working with parenting bonding and also I will start eventually doing some CBT coaching once I get all the training and I understand CBT."* (Staff Interview, 2016) CBT is seen by staff as the process by which they operationalize the theory of change — having young women internalize their new way of thinking and doing.

Lastly, staff expressed appreciation for the way CBT allows them to work collectively with their participants in a coordinated way. One staff described it this way: **"***I think what I love is everybody's speaking the same language. Now with CBT, everybody's going to say the same thing. It reinforces. With CBT and motivational interviewing, it's a lot of repetition. That goes back to the whole organization, if not everybody's talking the same way consistently, you get mixed messages. That doesn't happen when all organization is involved in this."* (Staff Interview, 2016)

As seen in the data described above, the staff of the Young Mother's program are truly integral to the program. Their roles and critical importance to the program will be further explained in the following section.

3.5 "We are not Looking for a Typical Social Worker" Program Staff

"I feel just so supported by them. That's why I chose to come here." (Program participant, 2016)

As demonstrated in the literature review in Chapter One, staffing for a program serving teen parents is a critical component of program success. Roca's precise staffing pattern is described in Chapter Two. This section of the chapter described the characteristics, nature, and other crucial details about the staff employed in the Roca program. This section attempts to capture the personality traits and behaviors exhibited by staff that facilitate building trusting relationships with the vulnerable population they are serving. Over the course of this research, a clear picture emerged that staff are forming an intimate, critical relationship with their youth. Several times and across several data sources staff were referred to as "mothers" to the young people. Not only are the staff seen as family, but they are often described as better (more reliable, more stable, more dependable) than the young person's family of origin. Staff are counted on and depended on, and this is in stark contrast to the family of origin who is untrustworthy, and often not present.

One participant contrasted her teacher with her mother: *"I have a teacher. She's wonderful. She cares about me and my health. She gives me time alone whenever I need it. My mom doesn't do that. My mom doesn't even call me. I have people that actually care about me. That's why I try to make my best to actually just be here and do something."* (Participant interview, 2016)

Staff are described by participants as caring, giving and attentive: *"She (youth worker) is nice. She gave me diapers which is my favorite thing. (Laughs). Trust me. My favorite thing in my life is just somebody to bring me diapers. I would be so happy. Diapers are just really expensive. I don't get, from DTA, I don't get a lot of money as a non-citizen mom."* (Participant interview, 2016)

Staff themselves reflected carefully on their roles with the young people they support. *"I'm a youth worker, I'm in the role. I know their back-stories from their previous youth workers. I walk that line of how much I want them to talk about that negative side of their life. Unless it's pertinent and there is some court date coming up. I want them to feel like that's part of them but now, I'm looking at youth from a whole different lens. Even though I know, and maybe you know that I know, but we don't have to get into the DV (domestic violence), the stuff that you did before. Now, we have a new life. We're looking at this path that you chose and you worked hard to get here so let's keep going with that."* (Staff Interview, 2016)

Staff reflected carefully on "what makes a good youth worker" including the qualities and characteristics of relationship between the youth worker and the young person. Staff were self-critical and also talked freely about assets and weaknesses with their colleagues.

One staff recounted her developing a relationship with the young people at the program over time, stating: "*When I started four years ago, none of the girls were ... The participants wouldn't even say hi to me. There was one particular person, I was there about six months, and she finally came up to me and just hugged me. The good thing is that you're grown enough to know that you don't deserve that. I mean, you don't automatically can expect or deserve that kind of relationship. That's something that builds with time."* (Staff Interview, 2016)

In reflecting about the role of youth worker, staff referenced the way this relationship (between staff and youth) is fundamentally different from other relationships youth have experienced: *"We might be a mentor or a mom to them in a way that they never had. The trust factor, transformational relationship, it's okay to not like what they do but still love them and still care about them. They're used to one strike, you're out and that kind of thing. I think that's a big part*." (Staff Interview, 2016) When asked what it takes to be an effective youth worker one staff member referenced her own experiences and development into the role: *"I believe the support* [matters] *because I try to make myself understand because I also have my limitations, and I try to explain that to them, but I feel like it's something that sometimes gets out of hand. I just try to go back to myself, to*

bring back myself, and understand that this is reality." (Staff Interview, 2016) Another staff echoed a similar development in the role with the relationship: *"Stability. You're going to be there, in constancy, no matter what. It's kind of related but a little different than the outreach. Also knowing that the youth worker is slowly building up that confidence, that it's not like I get to see you're going to tell me your story, but there's time and that's in the model. There's allowable time in the model to establish or get that transformation or relationship uprooted and going. I think that's important."* (Staff Interview, 2016) Staff also talked about the need to want to work with this challenged population: *"They need those tools, absolutely. Besides a heart and commitment that you really want to work with these specific kids."* (Staff interview, 2016)

One staff member told a story illustrating the role of staff as "cultural translator" for youth new to the United States: *"We had this young woman give her kid coffee. A lot of us grew up with coffee, including myself. Not as an infant, but certainly as a child. We have to ... What our goal is whenever we can intervene and help them ... First of all, give them information and then help and support them to change a habit, we do that before DCF gets involved. If it's something, again, that the kid isn't in imminent danger."* (Staff Interview, 2016) Although the Roca staff member recognized the young woman's behavior as culturally appropriate in her home community, she also recognized the need to counsel the young woman that it was not seen that way in the US and could in fact lead to problems. Program observations and document review echoed this role of staff as translator and companion to young women on their journey through the program.

Staff were observed throughout program observations as a close-knit team in almost constant communication with each other. Communication between staff was witnessed as texting, using group chat functions on smart phones such as "What's APP" and through constant talking and checking in. The staff, including youth workers, teachers, directors and auxiliary staff are seen constantly checking in about participants, in a nearly endless conversation and barrage of questions, answers, and discussion.

The current staff of the Roca program reflect the population being served. Most of the staff identify as Latina, and speak Spanish fluently. Several of the staff reflect the population directly, as immigrants from Central America. Meetings and discussions between staff are held primarily in Spanish with some English, and occasionally a mix. Staff often switch interchangeably between English and Spanish without pausing. One key informant identified this reflection of the population in the staffing patterns as intentional, deliberate, and key to the programs' success: "*They have a more diverse staff than most and that's by design. Part because they grow from the people they serve, being a great example. They're the rare brave ones.*" (Key Informant Interview, 2016) Staff stated: "*Supportiveness and coming together to work out problems all together is really important. They[staff]'re everything to so many people and when they're not supportive, people[staff] burn out all the time. That's so tough. We're trying to have more check-ins. We're trying to make sure when things happen that we're not just keeping them inside and letting them fester and become a bigger deal. I think [staff] don't make a lot of money here so it's tough to ... They're [staff] feeling strapped for cash and*

feeling there's so much, there's so much anxiety." (Staff Interview, 2016)

In summary, the staff of the program demonstrate a remarkable capacity to build relationships with youth participants that can withstand significant tension and struggle. Throughout the interview process for staffing the program questions are posed to try to elicit how emotionally available staff will be to the participants. Roca leadership stated bluntly: "*This is not a job for a typical social worker*." (Staff Interview, 2016) This staff member went on to state that given the fluid nature of boundaries between Roca staff and participants a typical social worker might be put off or feel concerned about the level of closeness and intimacy expected by staff. Interviews are specifically designed to "screen out" social service workers who would be uncomfortable with the intense nature of the relationships between staff and participants. Staff were very clear that they are expected to have intense, emotional relationships with their participants, and that the supervision and ongoing discussions they have as staff together are intended to support these relationships, not discourage them.

Staff are able to both hold young women close and to allow them to move away simultaneously. Staff are expressive and reflective on their experiences, and are highly trained in behavioral health therapy to support young women receiving services. Another theme that surfaced in relation to Staff and Roca participants was trust and the ability for staff and participants to work together through the context of a trusting relationship.

3.6 Secrets and Stories: Issues around Trust

Trust is a major issue with the girls participating in the Roca program. Due to the nature of the program, it is not surprising that each of the girls mentioned the importance of trust and confidentiality (which they describe as "secrets" and "stories") at Roca. Several girls spoke of not trusting their family. Specifically the theme surfaced that young women are concerned that their families are "talking about them" and sharing secrets and stories about them. Many of the participants spoke about trust issues with their mothers. Several spoke of issues with trusting their friends. They also spoke of not trusting the people they live with – partners, family, extended family, and friends.

In contrast, the young women participants spoke about Roca as a place that is "safe" to talk about your issues – no one is then going to talk about you. This surfaced repeatedly as a strong and important theme for the young women – the safety of talking about what is going on at Roca, in direct contrast to the lack of trust and safety they have in other areas in their lives.

Staff were also reflective on the issue of trust with the young women participants. Staff spoke of "consistency" as a foundation of building trust. One staff member put it this way: *"Consistency. That consistency is throughout the trajectory of the model. Consistency in the transformational relationship because before that, in outreach, because we have to be consistent. This is what makes it different from other people. No matter what you tell me, I'm not leaving. You could tell me to screw off tomorrow; I'm still going to be here. I'm*

still going to do that. I'm going to pursue. All of these kids, I think, they've never been pursued in this way, in a way that's going to be beneficial for them, even if they don't know it at the time." (Staff Interview, 2016)

Staff were also reflective on the way that without trust between the participants and youth worker it was very challenging to build the relationship they believe is part of the process of change for the participants. Several different data collected illuminated the process of building trust between participants and their youth worker. Staff were very clear that without the trust and possible testing of that trust it was going to be impossible for a young mother to make substantial changes in her life. This included specific references to the program model expectation that young mothers test their behavior change process with "relapse" and then reentry into the program. Documentation shows that this process often happens during stage 2 of the program – when young women are moving from action to maintenance, and may experience "relapse" (i.e., moving back into previous patterns of behavior). Several staff described this experience as critical to the trust building process – young women needed the opportunity to test their relationships and strength of those relationships, and then needed the reunification and resolution to move forward with confidence.

Goals and outcomes for young women and their children are a central part of the youth worker's mission, and are described in detail in the following section.

3.7 Meeting Program Goals and Celebrating Participant Success: Program Outcomes (ASPIRED and MET)

As the theme of program outcomes emerged strongly, a purposive review of the Roca program documentation for program outcomes yielded consistent markers for success. Divided into categories for young mothers and for their children, the outcomes are clearly articulated and then measured through the data collection systems. As described in Chapter Two, the Young Mother's program aims to accomplish the following for each young woman: 1) delay subsequent pregnancies, 2) education/employment gains/advances, 3) sustained social network. For the children of the young mothers the singular outcome is achievement of developmental milestones.

These goals are consistent with the literature around teen parenting programs presented in Chapter One, and in discussions with key informant experts across the country. One expert stated: *"If you're more of an epidemiologist or maybe I guess public health related the exposure to the risk of a second birth. I mean the whole point of delaying is to try to get them out of their teens of course*." (Key Informant Interview, 2016) Along with delaying the second birth, another expert reflected on the somewhat difficult role of pursuing both educational and employment outcomes: *"I just wonder if their focus is employment that has a future and they don't have education, how are these kids, young women are either high school graduates, GED, or not even. How are they bridging the gap? What job are they focusing on these women getting if they don't have some kind of credentials?"* (Key Informant Interview, 2016) Staff also discussed the dilemma of what

to aspire for with such a high-risk, low-functioning group: *"I think just the next step, how do we support them to have more of a chance to have a living wage job. How do we help them through that process?"* (Staff Interview, 2016)

Another key informant familiar with Roca reflected on their program outcomes: *"Right now I would say ROCA is the gold standard. They're willing to go out the door. ROCA just gets it done. They find the people, they meet them where they're at."* (Key Informant Interview, 2016)

The program participants talk about the program outcomes, and express pride at their accomplishments. In talking to participants about outcomes achieved, I focused on young women in the third stage of the program. Here is a sample of their comments about what they have achieved through the program:

"I got my high school permit, I got a home, I can find a place to call home. Cause I never had a place to call home, and now I can call a place home." (Program participant, 2016) Another referred to her new home and stability: *"The brand new apartments they built. It's beautiful. I'm beyond thankful. I don't even know what words to say."* (Participant Interview, 2016) Another participant reflected on the achievement of stable housing: *"Yeah, it's better. Now I'm really happy over there. I have my room. I live like that's my house I think sometime. I cook, clean, everything, and it's good for me and for my baby. We are happy there."* (Participant Interview, 2016)

Another participant spoke about her accomplishments obtaining and maintaining her work: *"So I work there, literally almost every day. If I'm lucky, I get one day off. But I don't mind it."* (Participant Interview, 2016)

Roca staff were also reflective on the outcomes achieved by program participants. One staff member focused on teaching stated: *"I think it's those little moments where you see something click for them, that gets me super excited. When they enjoy what they're doing because a lot of them have negative feelings towards learning and they're just coming back from being away from it for a long time so I think if I can make them fall in like with learning again, then I think I'm successful because then they'll do it on their own*." (Staff Interview, 2016) Another staff member reflected on how she knew that participants had begun to internalize their goals in the classroom: *"They'll talk about it, I've seen them talk about things that we've learned in class, outside of class and those are the little things that I'm like, oh yes."* (Staff Interview, 2016)

Another staff member reflected broadly on the outcomes for the program: *"Then we're able to move and it's not so much that we have an agenda, but it is a behavioral change program, so we do have some outcomes as markers that we want to reach. We meet them where they are as well. For example, what we do is education attainment, job attainment. We want spacing, right, reproductive health, so those things come and we ask them, we work with them in partnership because it's implicit that it's a partnership, that you're going to do your piece and I'm going to do my piece, right? In the model, if you do better,*

you feel better, you act better, right? It's meeting them where they are and not setting expectations that are so big and so broad that they can't feel good about a behavior so they can move along the trajectory of the model. Sometimes it's a small thing, like make this change or sign this kid up for something so they can start the process of doing differently and feeling differently. It's not like this agenda where you got to do this and that. So it's really meeting them where they are and getting them attainment, which is important. Sure, we want to track them to finish their GED. It's nothing that they wouldn't want to do themselves according to their behavior change." (Staff Interview, 2016) Staff are trained to think about program participants through the lens of cognitive behavioral therapy – making small adjustments and goals that young women can follow through on and can integrate to become their own.

Program participants were particularly descriptive as well of their many accomplishments. Many participants left high school through dropping out or expulsion. One described her pride at accomplishing her GED: *"Like for my GED, I never thought I would get my GED. I never thought I would because I dropped out a long time ago, 3 or 4 years ago. I started coming to classes and I took my pretest and they showed high grades and that motivated me. When I went to take them, I passed each one of them. It's like that gave me more motivation and that made me feel like I can get stuff done. I just have to try hard."* (Participant interview)

Another participant in the third stage of the program reflected on her accomplishments

and her desire to continue learning: "*I want to take advantage or everything. I didn't like school, but now I really want to go to college. I want to go to Bunker Hill [community college], and I want to be a police officer.*" (Participant Interview, 2106)

Another participant spoke of her many certificates through the workforce readiness programs: *"I got my GED with Roca, I've gotten five certificates. I've gotten four lifting, OSHA, I forget the other one; but I've gotten certificates with them and now I'm planning to go to college*. (Participant Interview, 2016)

Other participants reflected on various accomplishments including stabilizing their housing and "being more responsible." One participant stated: *"It feels so good because before I got my apartment I was in a shelter, so it feels way better. It feels more calm, more peace and I have my own space."* (Participant Interview, 2016) And reflected on her changes and accomplishments: *"ROCA really helped me to be more responsible, like a mother that I am. To go make sure that I go to classes, go to appointments, be more responsible."* (Participant interview, 2016)

As seen in Section Three, the architecture and goals for the Roca Young Mother's program span a wide range of topics including staffing and aspirations for outcomes. In the next section, the mechanics (e.g., structure, resources, and design) of the program will be addressed.

Section Four: Staffing, Pink Walls, and Car Seats: Program mechanics

This section of the Chapter will address the following components of the Roca High-risk Young Mother's Program: recruitment of teen mothers, activities conducted through the program, birth control and pregnancy prevention, and the resources and inputs that make up the program. Each of these components is critical to understanding the successes and challenges of the program and are critical components of the WK Kellogg evaluation framework. Without understanding the precise program mechanics, or how the program is operating, the program underpinnings would remain elusive and challenging to replicate precisely as described in Chapter Six. Further, consistent with the PARiHS framework, the details of the program mechanism are supported by ongoing data collection and evidence used to assess whether or not the services are accomplishing the stated goals. Below, the mechanics are described in detail.

4.1 Reaching the women in need

A critical component of the ROCA program is the identification of program participants and recruitment. Through document review and program observation it was clear that recruitment is an ongoing activity for staff and leadership. There is near constant discussion among staff about reaching new participants, who are the right participants to be reaching, and how to successfully reach them. Staff, participants, and key informants were asked about the process of recruitment.

Staff and key informants spoke importance of recruitment to ensuring that the Young

Mother's program is serving the correct population. One key informant described the recruitment as "relentless" – a common phrase used to describe the work by Roca staff to identify participants: *"While ROCA in their relentless outreach, is still reaching the more visible, traumatized, multi-challenged individuals. "*(Key Informant Interview, 2016) Program staff were observed discussing ways to ensure that the target population was being effectively reached. A common question asked of each other was "who are we not reaching?"

Several participants mentioned the Department of Children and Families (DCF) as a pathway to Roca – either through receiving services themselves (as a foster child) or through having a case with DCF on behalf of their child. One participant stated: "*It's been 4 years ago. I was with DCF for 6 years and while I was moving from [north shore town] to back here in Chelsea, my social worker talked with someone in Roca*." (Participant Interview, 2016)

Another participant mentioned being recruited from her high school: *"She came, she was like, 'Well, I work for Roca, blah, blah, blah. I work with young parents, we do permit class, we do GED class and we have tutoring.' She was just selling the program, I was like keep talking, keep talking. She was selling the program, I was like, I need my license." (Participant Interview, 2016)* This quote illustrates the theme that recruitment is often done by promoting concrete activities offered by the program as a first point of contact.

Other participants recounted their own reluctance to engage with the program. One told of a story about how long her youth worker tried to encourage her to think about coming to Roca: *"I didn't want to come here. My youth worker would go and knock on my door and call me. Like if I wouldn't answer, she would go and knock on my door. She's like, "You have to come here." After a while, I was just like, "Let me just go so she stops doing this."* (Participant Interview, 2016) Staff joked about the multiple attempts to recruit certain high-risk girls to the program, describing multiple contacts, rejection, and trying again to reach uninterested participants. One staff member described the process in the following way: *"We're great with outreach. People go to your house, please will talk to your family, please will talk to your friends and your neighbors. Nowhere else have I ever seen anybody cross that line the way we cross that line. For these marginalized people, these people that nobody else wants to work with that's what it takes. I think that's really important*." (Staff interview, 2016) Thus, the process of outreach and recruitment is described as tailored to the population, and as a critical component of successfully reaching these young women. Another staff also described their work conducting outreach and recruitment as different from the usual approach due to the population: *"I think one of the differentials in thinking about recruitment for very high-risk young people is their idea of — outreach is a little different than recruitment, right? It's sort of like if you just think about traditional recruitment, it's still going to be wrong*." (Staff interview, 2016)

Several other participants spoke about being recruited to come to Roca after leaving

(either voluntarily or involuntarily) other services, including school, foster care, and mental health facilities.

Staff spoke of receiving multiple referrals from these organizations: *"We work with partners, DCF, DTA, we try to keep that communication with them, and also through the board of advisors meeting that we have here. They sometimes, they refer some girls to us. That doesn't happen frequently enough, and this is one of the things that we're trying to improve to get more referrals through the agencies*." (Staff interview, 2016) Staff were transparent in describing the outreach efforts as challenging and draining: *"The most challenging one is outreach, the outreaching. When I go outreaching, it takes in consideration knowing the area and being familiar with the Chelsea area. The more youths you have in the area and the more familiar you are with the population, the better. Again, I go out there, I try to be convincing, and I try asking them, and just if I see them with a child, I just start questioning them about the child. 'Cute baby, this and that. How old?' I introduce myself and try to have that conversation, and then I offer the good things about Roca, what we do. Even if they decline the offered services, I give them my card. I put it in their head because eventually they'll call me with a question. 'You told me you do classes, right? Tell me about that.' Then we started a conversation. Even though they declined."* (Staff interview, 2016) Another staff described the effort required to reach out to a population unwilling to receive services: *"Most of my girls, that's one of the most challenging. My girls are like ... how can I say it? They're not really willing. Most of them, they decline services. They are on this pre-contemplation stage where they*

believe they're okay, they don't need services. They don't trust people, especially because of the trauma background that they have, that they experienced, so they have that trusting factor, that they don't trust." (Staff interview, 2016) This is an example of the challenging reality that correctly reaching the target population requires more effort, more time, and more patience than in a typical youth services program. Another staff described the population as: *"We work for young mothers between 16 and 24 years old that are in high risk and that are not willing to do any changes. They don't want to participate in anything. They are just not willing, they don't see anything wrong in their lives*." (Staff interview, 2016)

4.2 "Hanging Out" Providing Food and Other Activities

The expected activities and stages of the program are explicitly defined in Chapter Two of this dissertation. The description in this chapter, however, presents what was observed, seen in program documentation, and described by program staff and participants, and by key informants. Activities for the program are tailored similarly to the outreach and recruitment described earlier in this chapter – with a constant awareness of the specific needs of the population and the ways to adjust services to meet their particular needs. Activities described by staff and program participants included:

-educational or instruction activities such as GED or ESL classes, different work permit courses, such as food safety, and employment readiness courses

-social activities such as family night, field trips, and "hanging out" at the Roca site

-basic needs supplied, such as the provision of food, diapers, clothes, car-seats

-individual meetings for support: staff prioritize the stabilization of young women during the first phase of the program including ensuring they are receiving all benefits they are eligible to receive (e.g., disability, WIC, etc.)

Program participants commented on the concrete and satisfying nature of "what they receive" from attending Roca: *"We come here, we learn something, we go home happy. We learn something. And food. That's the best part. We eat. It's not like we come here starving and go home starving, we actually eat and go home not starving. It's good for me because I live in a shelter. We don't have food there and if you put your food there, people steal it.* (Participant Interview, 2016)

4.3 Birth Control & Pregnancy Prevention

Unsurprisingly, a theme that emerged quickly during the study period was birth control and pregnancy prevention. Throughout program observations, document review and interviews issues around pregnancy prevention and discussions about pregnancy permeated. The topic surfaced throughout each data source, and was widely and easily discussed by all interviewees.

Within the field of teen pregnancy prevention and teen parenting services preventing a second birth is a constant theme. One key informant stated: *"[We are focused on] ensuring that everybody has access, everybody, to the full range of contraceptive methods within 60 minutes of where they live. We have to start eliminating these contraceptive*

deserts." (Key Informant Interview) In reflecting on Roca's program model one key informant noted the power of Long Acting Reversible Contraception (LARC)s to create good outcomes for teen mothers: *"I think it's spectacular. Taking it to scale and adding in LARCS, oh man! Then you have an intervention that is one of the most promising approaches."* (Key informant, 2016) Many key informants lamented the lack of LARCs or teen–appropriate service availability in other areas of the country and Massachusetts. Key informants and staff at Roca both mentioned the critical moment for teen mothers when they enter into a new relationship and have a new boyfriend as a time of high risk for another birth.

Roca staff were overwhelmingly positive about their discussion on birth control with participants. One staff member stated: *"Implanon© or IUDs, really the long-terms is where we're focused on because we make sure we have that conversation, that we're not against having babies. We're for planning your next pregnancies so that you can have some time and you already have this so now we know what we need to do. If you are in that stable relationship, great, but let's plan it."* (Staff Interview, 2016)

Program participants were slightly less forthcoming about discussing birth control or family planning and this is described in more detail in the next section of this chapter.

4.4 Details: Car Seats and Phone Apps

Understanding the Roca program requires understanding the somewhat minute details of operations, as depicted in Table 21, below.

Table 21: Program Resource and Description

Resource	Description
Partnerships	Partnerships throughout the community, including DCF, the Chelsea police, Department of Transitional Assistance. Advisory group with key members of the community meets quarterly.
Staffing	-Youth staff: the critical members of the program team. Each staff is assigned approximately 20–25 girls -Supervisor: provides supervision, overall program management and reporting -Program manager: designs and implements the schedule of the programming, works with supervisor and management to ensure program compliance and target population -Teachers: GED, ESL, and other courses -Chief Knowledge Officer: provides ongoing vision and training for staff. Monitors program for compliance with strategic plan and logic model.
Technology	ETO database: used regularly for program monitoring -Smart phones: used by staff and management -Texting services: staff are in contact with participants and one another -Apps such as “WHAT”S APP”: allows for real time discreet staff communication
Funding	Public and private contracts, donations
Supplies	-Transportation vehicles -Classroom supplies -Car seats -Clothing -Diapers -Food (for meetings, for family night dinner, and for participants and their children as needed)
Space	-Private meeting space for staff supervision: staff offices are used -Group space: several rooms at Roca provide this -Classroom space: one room has been converted to be used only as a classroom -Safe space for children: nursery/play area with supplies, observation windows, and toys and books for children
Management	-Leadership -Vision -Logic model and strategic planning -Policies to match population -Flexibility

Staff were reflective about the resources and inputs needed to accomplish the program. Transportation was a common theme among staff as being a "key" component to the program. Staff recognize transportation as a critical element to their being able to implement the program. One staff stated: "*Another way that we use transportation also is when they have to receive any special service like they have to go to the TA at the beginning in order to, because it's a good engagement situation too, if you go, you pick them up, in the process you are picking them up and you're taking them to a place they usually talk a lot. It's a very good way of creating the relationship with them, to create trust with us. It's very special too, because not many places offer this and it helps a lot. When I used to be a youth worker that was one of the times that I used to create a better relationship with them, the transformation of the relationship*. (Staff Interview)

During program observations another theme that arose was the use of mobile phone technology, such as applications such as "What's APP". Through the use of these mobile phone applications staff were able to communicate quickly and discretely with one another, identifying participants they were concerned about, including those who had left the building or were not participating in the program as expected. Staff were able to share information and even devise a plan for confronting participants silently and expediently.

Section Five: Vulnerable Young Mothers: Participants and Program Target Population

As described in the section earlier on recruitment, identifying and maintaining a relationship with the correct population of interest for the young mother's program is fundamental. Describing the target population is challenging due to the richness of the data acquired and the multiple facets of the population. Consistent with the PARiHS framework, understanding the way that Roca constantly assesses and monitors the population being served is critical for program replication.

This section of the Chapter will describe findings in the following areas: the family of origin, parenting, pregnancy as change, father of participant's child, school and work, immigration, staff perceptions of participants, learned helplessness and impact of trauma, domestic violence, hopefulness and foster-care/child abuse/involvement with Department of Children and Families. Essentially, this section answers what are the distinguishing characteristics of this population, and how to accurately describe their lives as teen/young mothers? Each sub-theme that emerged during data collection will be described here.

5.1 Overview

The population sought out and served by the Roca young mother's program is a specific, targeted group. Staff and program management are specifically seeking out a profile of young women who have been unable to succeed in other programs or services, and who

bring unique challenges. Staff are aware that the frustrations they often experience with the participants are in fact confirmation that they have reached the correct population. One staff member put it this way: *"Sometimes, like, I can't believe she frickin' did that when she just got an apartment, but then I remind people, yeah, we have the right population."* (Staff Interview, 2016) Another key differential for the program participants is the fact that several of the young mothers do not have custody of their children. Many of the staff mentioned this issue as a key component of the program – that is – the ability to continue to serve mothers who had had their children taken away from them. This was also noted in key informant interviews and document review – both how unique it is for a program to be able to serve parents who don't have custody of their children, and how critically important it is to serve these young mothers.

5.2 Family of Origin

Data were collected that demonstrated the extreme poverty, violence, and fear many of the participants experienced in their family of origin. Staff reflected on the traumatic childhood most of the participants have experienced: "*The trauma. Most of the trauma has to do with back home, abuse, the parents leave them at a young age, and they basically being raised on their own, so surviving in their home country or staying with a relative like an aunt or a grandmother, and it's not the same attention and care that they actually need because their parents are here [in the US]. They leave them back home.* (Staff Interview, 2016) Many staff spoke of the absolute isolation the participants have – having no one to depend on, or return to. Many young women described their stays in

foster care or group homes, and being taken away from their parents or caretakers. Parents were described as non-present, absent, or abusive. One participant described her relationship in this way: *"I don't have my mom's support. She said, 'Yes, come to my house,' but when I'm there she makes me feel so uncomfortable. She makes me, I don't know why, but she has always been really mean with me. She do a lot of stuff to make me to the point that I want to get out of there."* (Participant Interview, 2016)

Many participants described a childhood moving around from foster care, back to their home, and then back out to foster care. Many of the participants described their childhood as lonely and isolated. Many of the staff echoed this theme of the participants being alone without any family support. The theme of immigration was also common among program participants, and highly related to their experiences with their families of origin.

5.3 Violence and Rape: The Price of Coming to the U.S.

As described in understanding the setting and context of the Roca program, Chelsea Massachusetts is a city that attracts many new immigrants.[160] Many of the program participants and staff at the program identify as immigrants to the United States. Their experiences of traveling to the US were a prominent theme when talking about their life stories — both as youth workers and as participants in the program. While not the main focus of this dissertation, the experiences described by this group of young women deserve to be told in another venue. Their tales of transportation to the US often included suffering that was nearly unspeakable for them to recount. One participant spoke about the sexual assault she experienced throughout her journey to the US from Central

America: "*We paid someone to ...To bring me here. But throughout that process, things that didn't …weren't supposed to be ....*" (Participant interview, 2016) Another young woman echoed this story with her own: "*They just didn't, you never expect things happen that way. You never expect nobody to take advantage of you and that happened to me. I didn't but it was hard for me to understand why they did it. From that I got pregnant. That was hard because that was like, it wasn't that I didn't want it. It was just, it happened because those people took advantage of me from that day to now it's been a battle for me. It's like every day just to learn how to live with that pain*" (Participant Interview, 2016)

Along with the harrowing descriptions of the price many of the young participants paid to travel to the United States, observations and document review showed the clear disadvantage girls without paperwork or legal status experience in the program. Staff mention frequently the limited options available to young women who do not have legal status in the US in terms of job opportunities, educational scholarships, and financial support. Staff expressed frustration with the inability to attain program goals for participants who face these structural barriers to success. That is, participants who are in the US without legal documentation face insurmountable barriers to achieving legal status in order to receive benefits or to work. While some of the young mothers are able to attain educational goals, staff expressed intense frustration with the situation for the young women unable to work legally and therefore often dependent on either illegal work

or others for support. Staff described the situation for undocumented young mothers as fraught with risk, including risk of dependency on dangerous or abusive partners.

5.4 Often Loud, and Chaotic: Challenges of Parenting

Multiple observations were made of program participants and their children in both formal interactions (such as parenting classes, family night dinners, etc.) or more informally like observing teen parents with their children in the hallways and classrooms at Roca.

Far from being monolithic, the parenting practices of the teens with their children varied widely. Some of the mothers appeared deeply preoccupied with other issues, often leaving their children in the company of staff or other participants. Many of the mothers appeared to be overwhelmed quickly when their small children "did what?" and resorted to shouting, with anger and threats commonly overheard and observed. Many of the staff echoed this observation noting that the reaction to typical toddler or infant behavior (demanding, whining, crying, etc.) is often disproportion – the young mothers become too angry, too quickly. Some mothers appeared to be much more engaged with their children, responding quickly to their needs.

Repeatedly mothers talked about the goals they have for their children, including "not ending up like me" or achieving other goals. One staff member stated: *"When I get a new participant, they do the intake with their youth worker, then I meet them if they're*

working on their GED or something else, that's one of the things I ask, why are you here? What are you trying to get out of Roca, specifically learning? A lot of them say 'I want to help my kids with their homework.' You don't understand how many times I've heard that one and I want to teach my kids to read and I want to be there for them." (Staff Interview, 2016) This disconnection between what the young mothers hope to achieve with their children and what they are capable of doing given their circumstances often results in involvement with the Department of Children and Families (DCF).

5.5 Dual Generation Foster Care and Department of Children and Families

A frequent theme throughout the data collection was participant involvement with the Department of Children and Families (DCF) both as children and as parents (thus becoming dual generation DCF). Participants spoke about their own involvement as foster children or residents of group homes, or the experiences they had being removed from their families. They also spoke about their experiences with DCF as parents themselves. Many participants complained bitterly about the treatment they had received from DCF, depicting them as cruel, punishing, and unwilling to listen.

Staff referred to the ongoing need to assess their participants for issues of abuse and neglect, and then report accordingly. One staff reflected: "*DCF is one of the systems that they get involved with many times. If the child is in imminent danger, then we had to intervene as we do because we're mandated reporters. If it's something other than that*

like co-sleeping or nutrition, we have the responsibility to help them understand that there is a difference here and it's even better for the child. Just because it's a cultural thing doesn't mean it's a good thing, right? To make them understand that in this system where they're living now, those things could be seen as neglect." (Staff Interview)

Despite the need to report to DCF participants did not refer to staff as part of the DCF system clearly identifying Roca as "different" and "separate" from DCF. Program participants were very matter of fact about being involved with DCF as it is so common in the program. As mentioned earlier, several of the program participants do not currently have custody of their children and yet are able to continue to participate and receive services from ROCA. This is considered a critical component of the program as many of the mothers work in the program to obtain or regain custody of their children. The relationship with the father of the child(ren) is often part of this work.

5.6 Fathers

The issue of fatherhood and the "other" parent of the children of the teen mother participant was raised sporadically throughout data collection and across data sources.

Staff spoke of the ongoing difficulties with securing support from the fathers of the children, and the deep isolation many of the teen mother participants experience. The staff expressed ongoing concern for many of the participants and the ongoing risk they continue to face from involvement with the father of their child – either emotional or physical risk.

Several participants noted that the father of their child or children was significantly older. Several recounted stories of being separated from the father due to the illegality of being underage with a significantly older partner. Participants often complained bitterly about the lack of involvement from the fathers. They spoke of having to explain to their young children why their father was not in the picture, and the exhaustion of being a single parent. One participant stated: ""*I'm like no, they're mine, I'm the one raising them. No one is helping me do it, I'm with them 24/7, like no*." (Participant Interview, 2016) Several participants spoke of being abused by the father of their child as described below.

5.7 Repeated and Ongoing Domestic Violence

Descriptions of abuse and domestic violence were heard from participants, and frequently mentioned by staff. Many participants spoke of a continuum of abuse they had experienced — from violence in their family of origin to domestic violence in their primary romantic relationship. One young woman stated: *"I was also being verbally abused by my mother and then by a lot of other people. I was being through all different types of abuse."* (Participant Interview) Another spoke of the extreme safety measures that had to be taken while she was giving birth due to the threat of violence against her and her child from the father of the child. This participant spoke of the multiple serious injuries she had suffered from her ex-partner, and the ongoing fear she experiences.

Issues of domestic violence did not initially surface in interviews with participants. During a "member check" (a qualitative research strategy to ensure validity in data

collection) I asked staff directly if the themes I was gathering and had gathered to date seemed appropriate. One glaringly missing theme at that time was domestic violence and relationship abuse. Once this surfaced from the staff I made sure to ask participants directly about the issues with domestic violence, and each of them described experiences at length. Staff also described the abuse participants experience. One staff member described the cycle in this way: *"I'm still working with girls that they get into relationships that they believe the boyfriends going to protect them and all that. They end up in this relationship believing that things are going to work out, they just don't recognize [the abuse]. Until, we just keep having conversations and showing ... The work here is trying to get them out of the house at least, to see that there's more out there."* (Staff interview, 2016) Many of the staff discussed the trauma they themselves experienced hearing the stories of ongoing abuse suffered by the young mothers. They described multiple issues working with young mothers experiencing ongoing violence, including their fear of discovering they are working with Roca. Staff described strategies to engage young women and work frequently with the Chelsea police to serve young women experiencing violence.

The participants were open about many difficult subjects, including the experiences they had upon discovering their pregnancy.

5.8 Pregnancy as a Motivator for Change

When asked about their experiences becoming a teen mother, many of the young women described a period of intense introspection and debate. One mother stated: "*I felt like if I had the abortion I was going to go back to the same things I was doing before. Honestly, that's how I felt and then I felt like if I had my (child), I felt like I would actually get my stuff together and not do what I was doing before.*" (Participant Interview, 2016) Another put it this way: "*I wasn't in the right path. I was hanging out with the wrong people, doing drugs, smoking weed. Then I became pregnant and had my daughter, and after that, all that stopped.*" (Participant Interview, 2016)

This does not meet the usual narrative of irresponsible teen parent, and many of the participants continued to experience multiple risk-taking behaviors after the birth of their child. However, the theme of "pregnancy as change" became illuminated through the multiple sources of data that also indicated a kind of sharpening of focus for many of the teen mothers upon the birth of their child.

5.9 I Can't Afford to be in School: The Tension between School and Work

An ongoing theme throughout the data collection was the tension between investing in education or school programs now, versus working. Many of the young women interviewed talked about the reason for dropping out of school being to go into full time or significant part-time work. The mothers talked about the need to earn money, and the trajectory of dropping out of school in order to focus on earning money once they became

parents. Many of the staff recognize this as a developmental issue for the young women – that is – the developmental appropriate instinct of the young women to want to earn money now as opposed to investing in an uncertain future. Staff expressed the challenge of convincing a young mother to take the time to earn her GED or to complete high school instead of going directly into work. Some of the mothers are working multiple part-time jobs as a way to stabilize their fragile family. While common perception may be that young mothers drop out of school after a pregnancy to look after their children, the young women at Roca appear to be largely dropping out to earn money. This presents a challenge to the staff as they try to work with young women to build their self-sufficiency.

5.10 Staff Perception of Participant Manipulation

Another theme that surfaced in program observations, document review and interviews with the staff was the perception by staff that the young mother participants were being manipulative. Several staff referred to this behavior as "survival skills" that the teens had learned during their childhood – that is – the ability to triangulate staff and adults, to be deceptive, and to manipulate people. One staff stated: "*I'll give you an example which has been happening, and we're trying to work with that, when I'm working with a participant, and then the participant tries to ... because she knows she can't get things through you, then she goes to another staff, like an educator. This is why we try to communicate with the educators that you need to communicate with us about when that participant is looking after you because that jeopardizes the relationship. They will go to*

the educator or another staff member if they can't get something from us ... that is also risky, it's risky. I've seen that a lot, and that's something we've been trying to work on." (Staff Interview, 2016) Another staff member described a similar situation: "*Other participants coming to me and asking question or asking me for favors like, 'Oh, my youth worker doesn't want to do this. Would you be able to help me out?' For example, moving and stuff like that because other youth workers have done it, and then the rumors go, and they get, 'You know, you can help me move from my apartment to another apartment.' That's something that we need to clarify …"* (Staff Interview, 2016) Staff were observed discussing different scenarios like this during staff meetings and supervision, and trying to work out policies that protect and support staff and participants. Again, through document review and program observation it was clear that staff believe the patterns of trying to manipulate and "game" the program are not necessarily just deviant behavior, but instead very adaptive for those who have suffered trauma.

5.11 The Impact of Trauma

Trauma and the impact of trauma on the young women participants at Roca emerged quickly as a dominant theme. Program documentation and observation revealed young women who have endured loss, violence, and suffering. Many of the staff recounted harrowing stories from participants escaping violence in their home country, and then experiencing violence and threats in the United States. Staff spoke of needing to design and develop curriculum in classes that were tailored for trauma survivors. This included highly creative ways of teaching reading and math, with a careful eye towards

acknowledging the damaging education many of the participants have endured. Many participants spoke of being told they were "stupid" and "couldn't learn" while in school. Staff described young women arriving at Roca without being able to read, and full of self-doubt of their abilities. Classes were observed to be catered to participants with very low literacy, and to foster a culture of support and reinforcement.

5.12 Hopefulness

Many of the teen mothers expressed great optimism and hopes for their future. When asked, teens had concrete and specific goals for their lives and the lives of their children. One mom stated: "*I want to get my [immigration] papers. I just want my kid to feel better. I want to be better .I just want to have a nice job. I just want to be in one home with my daughter without no one telling me what to do.*" (Participant Interview, 2016) Staff expressed modest goals and hopes for their participants including delaying a further pregnancy, maintaining safe and secure housing, and achieving self-sufficiency. Throughout program observations and document review the sense of optimism was also palpable. Despite often horrific life stories and lived experiences, young mothers were seen as "full of potential" and "funny, creative" in notes and observations. There was a general sense of optimism throughout the program and in documentation about the program — that with the right supports and training, many of the young mothers could go on to successful futures.

Section Six: Moving Targets vs. Settled Goals: Applying Appropriate Flexibility

A key area of inquiry prior to data collection was to understand the flexibility of the program versus the "settled nature" of the program. It is evident in the literature that flexibility with regards to program processes is a crucial adaptive strength for many programs. While this makes evaluation of programs challenging, the evidence that program components need to interact with and on one another, and then change and improve accordingly is strong.[170]

Evidence gathered about the stage of program development for the Roca High-risk Young Mother's program was varied. In some ways the program is clearly strongly and firmly settled into its aims and goals. There is a physical location for the program that is heavily branded within the Roca main offices. Staff and participants are clearly at home and comfortable in their designated area in the building. The ongoing use of data collection and discussion of the data also appears to be confirming the program components. There does seem to be some ongoing discussion about the best approaches to programming. In order to meet the needs of the program participants there is an ongoing attempt to tailor the services offered. While these changes are often subtle, the variety in programming can at times appear haphazard. One staff member described it in this way: *"That's always the tricky part because it's such a growing, moving organization. Especially with the moms. We've only just had our first four-year program. We just had the first piloted people go through that it's difficult. I think as an organization, communication is something that needs to happen a bit better."* (Staff

Interview, 2016)

Program management and staff are clear that the program needs to stay stable in order to be effectively evaluated. Having been in place for several years, the program mechanics are now clearly very settled and organized. The operations appear to run smoothly with transportation, recruitment, family night, and ongoing events running easily and in an organized manner.

The next Chapter of this dissertation specifically examines the data in relation to the PARiHS framework and the opportunity for other public health practitioners and policy makers to learn from the Roca program.

Chapter Six: Lessons for the Field

Introduction

This dissertation sought to answer two central research questions: **A. Has the decline in teen births in Massachusetts come primarily from teens at lower medical and socio-demographic risk resulting in the current cohort of teen mothers constituting a higher risk group? B. How do the novel approaches used by the High-Risk Young Mother's Program at Roca Inc. effectively engage and serve a high-risk population?**

Two sets of analysis were used to answer these research questions. First, Chapter Four reports an analysis of birth certificate data across two cohorts. Second, Chapter Five presents the careful examination of the Roca High-Risk Young Mother's Program. Taken collectively, this research provides key findings for public health practice, policy and research, as well as for the community, and the field of teen pregnancy and parenting.

This chapter of the dissertation builds on the results from Chapters Four and Five to consider:

What lessons can be applied from this approach to services for high-risk teen mothers in other settings? Specifically, this chapter has implications for a) public health practice, b) public health policy, c) public health research, d) communities and community providers. This chapter also includes limitations to this research.

Section One: Implications for Public Health Practice

This section of the chapter will discuss my hypothesis about changes in the population of teen mothers and risk cohorts, and the data analysis from the birth certificate study section of this dissertation. Using the PARiHS framework[127] to guide the inquiry and reporting, this chapter will detail critical evidence for future program implementation using the Roca High Risk Young Mother's program as a exemplar program.

1.1 Changes in population of teen mothers

My initial hypothesis for research examining the cohorts of teen mothers was that there has been a fundamental change in the population. That is, given the dramatic declines in teen pregnancy and birth over the past two decades,[2] teens who continue to become pregnant and parent more recently are at higher medical and socio-demographic risk than the earlier cohort. This hypothesis was tested through a quantitative analysis of teen birth cohorts in Massachusetts, comparing teens who gave birth in an early cohort defined as 1999–2003, and teens who gave birth in a more recent cohort, 2009–2013. In addition, I also conducted one-on-one interviews with key informants throughout the field of teen pregnancy prevention, adolescent health, and teen parenting. Interviewees were from across the country and represented a wide spectrum of fields including public health, social services, academia, and the public sector.

Discussion of Birth Certificate Cohort Findings

While modest, there were notable changes in the population of teen mothers giving birth

over the ten years between the earlier (1999–2003) and later (2009–2013) cohort. Changes included make-up of race and ethnicity for both the mothers giving birth and the fathers of their children, a potential increase in rates of anemia, and persistent lack of access to adequate prenatal care.

Demographic make-up

The demographic makeup of mothers giving birth shifted in terms of race and ethnicity, thus confirming the hypothesis that there has been a consolidation of teen birth within certain race and ethnic communities. That is, while teen births dropped in all race and ethnic groups across Massachusetts over the past two decades,[3] there has been less of a decline in the Hispanic population, resulting in Hispanics now accounting for 41.4% of all teens giving birth from 2009–2013. A plurality of teen births in Massachusetts are now to Hispanic mothers, despite Hispanics making up only 11.2% of the total Massachusetts population, and 16% of the school-age population.[153,171] Interestingly, as well, African American teens continue to comprise 13.5% of all teen births. This percentage did not change from 1999–2013 — meaning that births to white teen mothers decreased from 42.6% of all teen births to 39.2% of all teen births. Both these findings support the idea that the risk of teen birth has consolidated somewhat in communities of color in Massachusetts, with the most significant change in the Hispanic population.

Another finding about race and ethnicity trends that deserves attention is among the fathers of children born to teen mothers. While Hispanic fathers of children born to teen

mothers made up a slightly larger percentage of total fathers in the second cohort (39.3% of the total). This reflects a slight absolute increase in Hispanic fathers, but more significantly a decline in the percentage of white and Black Non-Hispanic fathers. These findings suggest a consolidation of risk and risk-taking behavior in one community. Declines in fathering by white fathers, and a stalled or stopped decline among Black non-Hispanic fathers indicate that prevention messages are meeting some communities effectively and others are not being met. This may suggest a need for "something different" to more effectively reach Hispanic fathers and their partners in terms of prevention and services and will be discussed further in this chapter.

Health Concerns: anemia and adequate prenatal care

Another potentially significant finding in the birth certificate cohort data are around two health concerns: anemia, and adequate prenatal care. Anemia is a known health concern during adolescent pregnancy. The findings in this study demonstrated an 87% increase of anemia during pregnancy from 5.7% of teen mothers experienced anemia in cohort one to 10.7% in cohort two. In order to better understand this finding, comparisons were made between births to teens and all birth an increase of 5 percentage points compared to a reported increase of 3.7 percentage points in the overall population. Preliminary findings indicate an increase in either reporting of or actual cases of anemia among mothers in Massachusetts over the time period 1999–2013.[157] The average report for anemia for all births was 2.8% in 1999–2003, and rose to 6.5% in 2009–2013. Anemia is a known health issue for pregnant adolescents as it can be a cause of preterm birth or low birth

weight, thus this finding may suggest a need for a careful examination of systems of measurement as well as increased screening and treatment.[20,155]

Another result of concern for public health practitioners is not a new discovery but confirms a known finding — that teen mothers are often late to prenatal care and often receive inadequate prenatal care. Results from this research show a continued disparity between adult mothers and adolescent mothers with regards to receiving adequate prenatal care. In a state like Massachusetts with extensive access to care, the disparity between adult women receiving at least adequate prenatal care (91.1% of all Massachusetts mothers) and teen mothers receiving at least adequate prenatal care (69.9%) stands out even more starkly.

Several important findings were discovered through this analysis. Teens who gave birth in the more recent cohort (2009–2013) were more likely to be Hispanic. While there have been dramatic declines in teen birth throughout the past two decades, those declines have been concentrated more among white teens than Black non-Hispanic teens and Hispanic teens. In addition, there were important changes in the population of fathers of teens giving birth. Fathers of teens giving birth more recently (2009–2013) were less likely to be white and more likely to be Hispanic or black non-Hispanic. This finding has important implications for the prevention needs in communities. Lastly, changes in the health indicators for teens giving birth in the more recent cohort are concerning. Teens giving birth more recently (2009–2013) reported a greater increase in anemia during

pregnancy than the population as a whole, and no progress was made in improving adequacy of prenatal care for teens. Massachusetts enjoys high rates of access and usage of prenatal care, making the lack of progress for teen mothers even starker. Further, given that anemia can be successfully treated during pregnancy it may be of particular importance for teen mothers to be seen and receive adequate prenatal care.

1.2 Reflections on the changes in adolescent mother population: Summary and Key Themes

Several important findings for public health practitioners surfaced during key informant interviews. There was general consensus among respondents that due to the overall decline in teen births those who are continuing to become parents as teens are particularly vulnerable youth. There was debate among key informants if this is a shift in the population, or "more of the same."

Some key informants agreed with the hypothesis that due to changes in the population of adolescent mothers, programs need to respond differently. One stated: "*You could argue that the low hanging fruit has been plucked*." (Key Informant Interview, 2016).

Another expert saw little changes in the community and risk environment of youth: "*I'm not sure the environments they live in is that different. The risk, the challenge, the barriers, the risk factors that are part of their environment in terms of poverty, access to service, trauma, variability in education and trusted adults and a larger circle of support,*

I don't know whether those multi-faceted challenges are that different." (Key Informant Interview, 2017)

Reflection on Necessary Changes in Services

Several experts interviewed were part of earlier research examining the needs and services for teen parents (e.g., the federally convened panel on services to teen parents in 2012),[80] and also agreed that considerable research had been done on programs with highly restrictive entry requirements and high expectations of program participants, thus limiting their applicability to participants at highest risk of negative outcomes.

Referring to the need to change existing programs and modify strategies, one expert noted: "*We can't keep doing the same thing we're doing because we've probably reached saturation point with strategies. In particular we need to focus on African American, Latina young women, Native American young women, and women who are living in poverty because that's where the challenges seem to persist*." (Key Informant Interview, 2016) At least one expert disagreed with this premise, stating: "*... the young people look pretty much the same to me*." (Key Informant, 2016) Another expressed the challenges with the remaining population: "*It may be something we don't ordinarily measure, because it's too expensive or difficult. Things could get a good deal more complicated if we're into the psychological holdout here, you know*?" (Key Informant Interview, 2016)

Another stated: *"People have moved ahead and the gap is getting bigger. No one, it is really hard to find data to talk about this [gap]. . I think inequality does have a contribution that people who are stuck behind, get really stuck behind."* (Key Informant Interview)

Experts expressed a range of opinions but all agreed that the declines have been dramatic, and that the remaining population needs additional services in order to be served. Experts described necessary changes in programming to better support teens who have not been served by existing programs, including:

-easier and more flexible entry requirements

-more flexibility in "rules" during program enrollment, insurance that young people can stay in the program to receive the expected services

-allowing young parents to continue receiving services when not in physical custody of their children.

1.3. Using the PARiHS Framework to Understand and Replicate the Roca High-Risk Young Mother's Program

The PARiHS framework provides critical evidence for program implementation. In particular, the framework heightens the role of context (i.e., what were the circumstances surrounding the intervention)? Second, it allows for a deeper understanding of the role of key change makers in an organization, called "facilitators." These elements can help enable the successful translation of a program from one setting to another.[127] The

explanatory case study, guided by the PARiHS framework, is presented in Chapter Five contributing *description*, *exploration*, and *explanation* of the services Roca is providing to the population of high risk teen mothers.[133] Other researchers in the field of complex public health interventions have suggested that the best practice is to examine process information in order to understand the social context, and to maximize generalizability to other programs, settings, and populations.[73,89,139,144]

This chapter utilizes the PARiHS framework to examine critical elements of implementing the Roca High-Risk Young Mother's program for other organizations interested in implementing the program. Each section of the chapter includes key elements from the PARiHS framework to increase the successful replication of the program.

The PARiHS framework posits the following: "The working proposition is that the most successful implementation will occur when evidence is robust and practitioners 'agree' with it, the context is receptive, and where implementation processes are appropriately facilitated by internal and/or external facilitators…" Indeed, all of these conditions were met with the High-Risk Young Mother's program at Roca, and illustrate the necessary components that are key for other programs seeking to implement similar services.

Researchers have noted the depth of detail and navigation necessary for successful program replication.[123] The PARiHS framework, in turn, is built to "to provide a map to enable others to make sense of [the] complexity [of implementation], and the elements

that require attention if implementation is more likely to be successful."[128] In order to apply the PARiHS framework to the Roca High-Risk Young Mother's program it is necessary to consider three elements: evidence, context and facilitation, and to examine the ways these elements interact with one another.

Evidence: using data to constantly improve services

The quality of evidence supporting the Roca High-Risk Young Mother's program is high. Roca staff and funders believe there is strong evidence for the program, in large part because they are constantly collecting the evidence, and using it to make the program even better. By using a state-of-the-art data system, Efforts to Outcomes, and by constantly considering and examining the data, the program is able to make adjustments as needed. ETO reports are tailored and designed to provide Roca with the data they need. Using data to continuously improve programs is considered the gold standard in prevention programs.[121,172] This iterative process is supported by both the context in which the intervention is taking place (the organization) and the facilitators (the management and directors of the organization). An evaluation staff member described the work the organization does to make evaluation and program planning with data an iterative process: "*My perspective on data, and philosophy, is that it should not be a black hole. We need to figure out ways that it's integrated into the daily life of how we work with participants, clients, whatever you want to call them, at the organization you're at, or agency, and get people excited about this data. It's not … I almost hate using the word data because data has such a negative connotation to it …* (Staff

Interview, 2016) Roca has dedicated resources and effort to ensure that program evaluation is a process of improvement and learning, and not a "black hole" from which no one responds. Organization leadership, program managers, and staff are all involved in both data collection and analysis, sharing both the responsibilities and understanding. Data is then applied in real time to make adjustments in programming, staffing, dosage of services, and target population. These adjustments are all made to improve program outcomes. For example, if during a client profile review staff discover that they have a concentrated group of young mothers struggling to make expected educational goals, they will reorganize and reprioritize programming to emphasize educational offerings for the clients during a particular quarter. Through the quarterly review of services and outcomes staff are able to use data to make important adjustments as needed. Roca has proven, through the use of these high impact strategies, evidence of success with their program model. The evidence is sufficient to support the dissemination of results to other programs seeking to understand how to best serve high-risk young mothers.

Key PARiHS Elements for Replication Evidence

Other sites aspiring to implement a Roca-type program should:

-orient staff to the need to create and use evidence to guide program activity

-continuously assess the target population's needs and characteristics

-continuously collect and analyze data to ensure program goals are being met, and/or to make program adjustments and corrections

-invest in in-house data analysts that can work with staff in collecting and interpreting data in "real time" (e.g., monthly).

Context: tolerating risk, supporting growth

The context at Roca is perhaps the most interesting component of the program, and likely the most challenging to replicate for other program serving a fragile vulnerable population. As an organization Roca is dedicated to constantly assessing itself, considering impact, and identifying improvement strategies. As evidenced from multiple data sources, the organization is committed to serving those at the highest risk, and spends a considerable amount of time and energy ensuring the population being served is correct, e.g., those at the highest need.

The context of the organization is also a physical space set up for maximum transparency and safety for staff and participants. The creation of a dedicated space for the teen mothers program (the 'Pink walls' mentioned in Chapter Five) allowed the organization to commit to a semi-drop in space for young women. This allows participants and staff multiple, frequent opportunities to observe one another, to build trust, and to interact. The site has on-site, staffed play room, and classroom space tailored for a high-risk population. The staff are able to support young women in meeting their educational and employment goals while at the same time supporting their parenting efforts.

The context is also an organization that has a long and successful history serving this

population in the City of Chelsea. Through the development of multiple relationships and partnerships Roca has become a part of the Chelsea landscape. Within this city the organization is then able to support those at highest risk. Seemingly trivial aspects of the program are in fact critical to its success, including the high level of tolerance for disruptive or destructive behavior. Instead of causing a participant to be ejected or removed from the program, the organization is set up with staffing patterns, constant communication and support to tolerate a high level of "rule-breaking" by participants. This is largely supported from the top down with a strong embrace of this approach by the leadership.

Key PARiHS Elements for Replication Context

-organization can tolerate high levels of risk through training, support, supervision, and staffing patterns

-real-time staff communication tools (e.g., texting, What's APP)

-physical space is designed for maximum visibility and safety

Facilitators: Leading by Example

There are several key facilitators working in the Roca organization and specifically in the High Risk Young Mother's Program. First and foremost, the organization's founder and CEO, Molly Baldwin, is recognized as a visionary for serving very high-risk youth. She is also known for her dedication to using program data to monitor and adapt services to ensure success for those at high risk. There is an ongoing need to balance the program

stability and adherence to the model, while at the same time adapting to information coming in about the program from evaluation and ongoing process and administrative data. This tension can sometimes be difficult to manage and reconcile, and Baldwin leads her team towards a delicate balance. By setting Roca on a course for constant self-examination and adaptation, Baldwin facilitates the adaption of a program like the Roca High Risk Young Mother's program.

An additional perhaps equally as crucial facilitator in the program is the Chief Knowledge Officer. The selection of a high level, management team staff person who is dedicated to building program logic models, theories of change, and then training staff to adapt and maintain these philosophies is in and of itself unusual. The Chief Knowledge Officer at Roca works very closely with program staff to conduct ongoing assessments quarterly of risk in the population being served, to ensure that the programming is matching the needs of the population, and to review the logic model. The Chief Knowledge Officer is focused on two different programs at Roca, the Young Men's Program and the Young Mother's program, spending slightly less time on the Young Mother's program (which is smaller). The training and assessment of adherence to the program model happens continuously during the program cycles.

In addition to the Founder/CEO, and Chief Knowledge Officer, several of the program staff are also "facilitators." Throughout data collection with the staff at Roca the theme of adherence to the program model, and ongoing assessment of effectiveness surfaced. Even

staff who have not been at Roca for long and are not highly trained or formally educated expressed confidence and knowledge about their approach to the work.

Key PARiHS Elements for Replication Facilitators

-All staff are trained and supported in the logic model, theory of change, and program model. Ongoing quarterly training is provided. Staff are trained in culturally appropriate way, including interpreted into Spanish as needed.

-Leadership demonstrates commitment to accurate program assessment and acceptance of program failures. This is communicated through supervision and training, and thus staff don't try to "hide problems" but instead are encouraged to talk to leadership about how to improve outcomes on a regular basis.

One of the overarching goals of the PARiHS model is to provide details and "a map" for others interested in program replication. The three elements of the Roca High Risk Young Mother's Program (evidence, context, and facilitators) also interact in an important manner. Far from being separate components, the three elements examined here are indeed comingled, and interact with and on one another. First, the evidence is championed by the facilitators. The facilitators demonstrate dedication to understanding the data gleaned from the program – even when it is not positive. An example of the program managing disappointing data results was evident in the work the program did during 2016 with addressing the needs of the children of teen mothers. Results from the program data indicated that children were not reaching the goals laid out for the program.

Program management began an intensive self-study to first identify why the children were not meeting the goals, and then to supplement and change the existing programming in order to meet these needs. This has resulted in a newly formed partnership with the Harvard Center for the Developing Child.[173] These findings (evidence) are then fed by the staff (facilitators) directly into the program, making ongoing adjustment and arrangements as needed. This is all occurring within the highly supportive but also highly accountable context of the Roca organization. The facilitators, or organization leaders, are fearless in their self-examination, which in turn sets a tone and context for the organization to follow suit.

Key Program Components

In reflecting on the Roca program and considering implications for others in the field, several key components surface as highly relevant for others interested in replication.

1. **Target population: ongoing assurance that the "right group" is being reached**

Unlike many programs serving teen parents, Roca is committed to serving those who are identified as being at "highest risk." The goal of the program, both implicit and stated, is to serve those that others are afraid to serve or will not serve. This dedication to the most challenging young women positions Roca as the organization most willing to meet the needs of those vulnerable youth. Given the changes in the population of teen parents, this is a highly relevant and important aspect of the program. Not only is the program

committed to serving those at highest risk, but there are systems in place to consistently ensure that the "right group" is being reached. Ongoing checks and balances on the risk level of participants are completed and monitored. This is different from other programs serving teen mothers in several ways. Often programs serving teen mothers have extensive entry requirements including high expectations for compliance and attendance. Roca does not have these requirements, as their intention is specifically to serve those who cannot be served by other programs.

2. Service delivery model

As noted in Chapter Two, the Roca program model is clearly articulated, and provides a complicated, orderly series of interactions between staff and program participants. As noted earlier in this chapter, the theoretical underpinnings of the program (including the logic model and the use of CBT and motivational interviewing) are constantly discussed by staff. Staff are highly aware not only of their individual job descriptions and expectations, but also how their work with a participant fits with the larger program goals. This is a critical reason the program is able to stay focused on the outcomes for individual participants. Key elements of the service delivery model and logic model are presented in Chapter Two.

3. Dedication to using data and constant program modification

The consistent review of data collected on participants and staff is a critical part of the program model. The program is able to feed information about outcomes and progress for

each participant immediately back into program planning. This is also a monitoring and supervision system for staff and managers in order to ensure that not only are participants making necessary progress to program goals, but staff are meeting performance goals as well. The data collection system used by Roca allows for reports to be developed on both clients and staff. There is an ideal timeline and dosage chart that can be used to check a young woman's progress, and there is a monthly management check list completed by the Program director. These reports are then given to management and supervising staff in order to conduct annual assessments of performance, and periodic checks during the year. Management can assess if specific staff members are meeting their expected targets for contacts with the teen mothers, and if the teen mothers are making expected progress on their goals and outcomes. If management notice that one case worker is not making enough progress with her assigned case load, a closer examination may reveal that she is not making enough contacts, or that she needs additional training and professional development. Because the progress can be assessed at both the staff and client level the management can assess if the lack of progress is due to an issue on the part of the staff person or the clients.

4. High Risk Client support

As previously described, the Roca program is tolerant of multiple risk-taking behaviors exhibited by program participants. In order to properly support these young mothers, their children, and the staff who are inevitably impacted by the behaviors, the organization has built a system of ongoing checks and balances and a high level of safety and threat

assessment. Staff are trained in de-escalation tactics. Conference rooms and counseling rooms are designed with windows for maximum visibility. Staff are constantly checking in with one another through smart phones and application services like "What's App". Classes are taught with trauma-informed services in mind — teachers are committed to serving the high-risk youth through a process of understanding their past experiences in the education system. These small adjustments allow the staff to tolerate a high level of anti-social behavior, while maintaining safety for participants, their children, and program staff. There is a certain level of expectation that problematic behavior likely will — and in fact should — happen if the right population is being served. Roca's goal, then, becomes how to tolerate the behavior, support the participants, and move forward. This is in marked contrast to programs with strict entry rules, adherence rules, and low tolerance for rule violations.

5. Recruiting, Hiring, and Training the "right" people

In order to effectively serve a high-risk population, the field can learn extensively from the Roca program. Many years of experience and adjustment have created a highly adaptive, responsive program with an ability to tolerate a high level of risk in the participants. This stands in stark contrast to many of the previous generation of teen parenting programs, as described in Chapter One. Roca's focus on recruiting, hiring, and training the "right" staff is critical to the program's success. This includes focusing on people who have a great ability to connect with young people, and who do not see themselves in a traditional social worker role. Staff is expected to build a relationship

with each young person they serve, and to develop that relationship carefully. Training and ongoing supervision is tailored to support staff and support these critical relationships.

Section Two: Implications for public health policy

There are many implications from this research for public health policy. First, due to the substantial decline in teen births over the past two decades many may believe that teen pregnancy is no longer a public health priority. Through the framing of teen pregnancy as a "winnable battle" Dr. Tom Freidan and the Centers for Disease Control and Prevention may inadvertently have contributed to the idea that teen pregnancy both can – and will – be solved.[174] Perhaps the danger of this assumption is that it frames teen pregnancy and teen pregnancy prevention as behavioral and therefore modifiable. CDC and Department of Health and Human Services Office of Adolescent Health have collaborated over the past four years to jointly fund and support community-based projects focused on teen pregnancy prevention as a community-wide issue.[175] Modest results from these efforts were reported in a special edition of the *Journal of Adolescent Health* in March of 2017.[176] Many of the adolescent health experts I interviewed in 2016 echoed my concern that without ongoing attention those most vulnerable to becoming parents as teens will continue to do so, while programs continue to target those we have "already reached."

Based on review of the literature supporting teen pregnancy prevention programs and teen parenting programs, key informant interviews, and analysis of the teen birth data for this dissertation, the following recommendations are suggested for public health policy-makers and developers:

2.1 Teen pregnancy is not a battle public health has "won": Continue to focus on communities at highest risk.

As seen in the data from this study, teen pregnancy does continue to exist in Massachusetts, though in markedly smaller numbers than in the past. With this decrease has come a consolidation of risk among Latina young women who continue to experience teen pregnancy at significantly higher rates than their non-Hispanic white, Asian, or Non-Hispanic black peers. Increased efforts to address this disparity must continue. Perhaps the most critical first step is to further investigate the precise demographics including geographic location of these populations. Massachusetts would be well-served by an updated adolescent health needs assessment closely examining those young people who continue to experience sexual risk despite the progress of their peers.

2.2 Framing adolescent pregnancy as an issue of sexual violence

The second policy recommendation to emerge from these findings focuses on the framing of teen pregnancy and parenting as an issue of sexual violence. The concept of "framing" in public health refers to communication or media impact in how an issue is presented, who is responsible for it, and whether or not the public should be concerned.[177] This research suggests that there is a strong correlation between sexual violence and parenting as an adolescent. The theme of sexual violence and the use of sexual violence (including child sexual assault) as a mechanism of control for teen mothers was consistent across interviews with both the teen mothers and the staff that worked with them. While this research did not suggest causation, it is critical to now examine these connections further.

The current "frame" of adolescent sexual health continues to emphasize personal responsibility and individual level strategies.[41,175]

As the field continues to move forward with science-based strategies and policies, it is imperative that the impact of sexual assault and lingering trauma be considered with respect to all programs and policies that impact this vulnerable population. Specifically, all teen pregnancy prevention and teen parenting programs should anticipate high levels of trauma and history of sexual assault, and integrate this reality into all aspects of their programs. This could include trauma screening for all participants, treatment, and creating a standard of practice of trauma-informed care.[178–180]

2.3 Recognizing the price of passage to the US for many teen girls

Immigration and teen parenting in Massachusetts is inextricably linked. With the consolidation of risk into the Latino community (both among teen mothers and the fathers of babies born to teen mothers) issues of immigration and legal status are now more pressing for all those who work with this population. As noted in this research, the prices of passage for many young mothers into the United States was sexual assault. The all too common refrain from the young mothers in this study was a history of "paying" for coming to the US through sexual assault. This is consistent with other research on young women immigrating the US.[181,182] The issues of sexual violence, immigration and teen parenting are interrelated and complex, and should be addressed carefully and in an integrated manner. In particular, prevention programs that focus on the Latina population

in Massachusetts need to address issues of past sexual violence and abuse, and the implications that history may have on a young woman's future sexual health and autonomy.

2.4 The ongoing, intergenerational impact of being involved with the Department of Children and Families (DCF)

While not a new discovery, this research adds to the evidence of the ongoing connection between foster care, losing custody of children, systemic assault and violence, and teen parenting.[183] Frequently through the process of data collection participants spoke of their own involvement with DCF as a child, and their children's involvement with DCF. Public health policy-makers need to continue the focus on pregnancy prevention efforts with adolescents who are in foster care or involved with DCF, as they are a markedly at-risk group. Again, this is a group that has experienced extensive trauma and needs to have trauma-informed and tailored interventions.

2.5 A Moving Target: the need for better evaluation systems

The complex nature of the Roca High Risk Young Mother's program is poorly captured through standard evaluation procedures. The evaluation of complex health programs is best met by equally complex evaluations that take into account the evolving nature of multifaceted programming.[123] Rather than insisting that programs meet evaluation criteria by remaining static and therefore able to be evaluated, the goal of public health should be to adapt and design highly flexible evaluations that can *meet the needs of programs and*

differing community contexts. Instead of trying to fit a complex public health program into randomized controlled trial design, complex multifactorial issues like teen pregnancy and parenting need complex multifactorial evaluations. This may call for further research into evaluation designs, as will be discussed in the next section of this chapter.

Section Three: Implications for Public Health Research

This study also has implications for future public health research. It supports a need for: 1) a continued focus on vulnerable communities, 2) development of interventions for young, immigrant women who experience sexual abuse and trauma, 3) further research into program evaluations using complex health systems approaches.

3.1 Continued focus on vulnerable demographics

Perhaps most important is the need for ongoing, rigorous examination of the vulnerable communities at risk for teen pregnancy. Given the overall decline in teen births it is possible that teen pregnancy and teen parenting programs will lose national or statewide support. This theme was articulated among many key informants who worry that without ongoing attention and research, the focus on teen pregnancy may diminish. The data examined in this study provided some indications of the consolidation of risk factors among those continuing to become pregnant in recent years. Additional inquiry relying on alternate datasets are now needed to examine the relationship between geography, poverty, and teen pregnancy. Further exploration is also needed into the two areas where findings were most concerning: levels of reported anemia, and access to prenatal care. There was also consensus from key informants that while exploring changes in the teen birthing population at the state level was important, it would also be critical to examine trends at the national level using more robust data sets.

3.2 Development of interventions for young, immigrant women who experience sexual abuse and trauma

As noted earlier, a disturbing finding in this research is the pervasiveness of sexual abuse and victimization among young immigrant women. Many of the teen mothers who participated in this study experienced sexual violence either during or as a consequence of their immigration to the United States. Key informants also mentioned the number of young women who have experienced sexual violence and trauma before becoming teen mothers. Specific interventions need to be researched and designed in order to meet the prevention needs of this very vulnerable population. These interventions should be tailored to meet the needs of this population and could include lessons from a variety of existing interventions for trauma survivors, victims of trafficking, and domestic violence.

3.3 Further research into program evaluations using complex health systems approaches.

Complex public health programs like those described in this dissertation require complex evaluations to fully capture the complexities of multifactorial programs. Unlike a clinical study, community-based programs are often required to evolve in real time — that is — to adjust and adapt to their population and needs over time. This creates tension with evaluation strategies that require "settled programs" prior to commencing evaluations.[139] And yet, one of the most important qualities of successful programs is adapting to a changing environment, and meeting the needs of the vulnerable populations they are serving. This conundrum between evaluation requirements and program needs can be

resolved in part by creating alternative strategies for measuring program evolution, success, and challenges.[123–125]

It may be particularly helpful to examine the Roca program through the lens of a complex health system theory — a design that intentionally allows for more fluidity and responsiveness.[125] Complex health systems theory offers an approach to evaluation that begins with examining the interconnectedness of system components. Further, the different components are examined separately. This approach could allow for a more timely and appropriate evaluation of Roca's program, versus the traditional and more static program evaluation models typically proposed. [125,184]

Section Four. Implications for the community

This research has implications for public health practice and research as well as for communities. Similar to the policy suggestions made above, communities need to begin to fully understand the depth of issues and concerns facing teen parents today. Those young women who continue to be at risk of teen pregnancy and continue to become pregnant and parent in 2017 show evidence of being at higher risk that teen parents in the past. Communities that continue to face adolescent pregnancy tend to have considerable other concerns as well, as documented in Chapter One of this dissertation. However, as adolescent pregnancy and parenting are multigenerational issues and have such a dramatic impact on so many other health and social issues, it is worth investing in community-wide strategies for both prevention and services.

Given the level of trauma, violence, and sexual assault that many teen parents have experienced it is critical that communities begin to interpret and recognize adolescent pregnancy as often a marker or indicator of past trauma, instead of seeing teen pregnancy as a moral or individual failure on the part of one young woman. In addition, the issues raised in regards to older male partners/fathers needs to be addressed as well. Without recognizing the long-standing pattern of older father and teen mothers, communities will continue to miss the mark as they address these issues.

Section Five: Limitations

As with any research, this study has limitations. Limitations are identified in both the quantitative data collection and analysis, and the qualitative data collection and analysis.

5.1 Quantitative data limitations

As noted earlier, there is substantial concern about data collected from birth certificates, with evidence of varying quality of data.[111,115] Of particular concern for this study was the substantial missing data.

Missing Values

As discussed in the methodology chapter of this dissertation (Chapter Three), addressing missing values in research regarding teen fertility has been discussed in the literature.[118] There are specific considerations to take into account with missing values in birth certificate data, as it is likely that birth certificates that are missing data are more likely to be from mothers and infants at higher risk of negative outcomes.[119,120] Missing cases were taken out of the denominator for all analyses.

Given the amount of missing information for many of the variables, a separate analysis was done to understand the potential implication for missing data for each variable. A number of variables actually had very limited missing variables — less than 1%. These are listed here:

Variables with less than 1% missing:

- Maternal age
- Maternal race/ethnicity
- Maternal language
- Maternal nativity
- Mothers medical conditions (all)
- Birth Outcome for infants born to teen mothers: low birth weight
- Sociocultural risk factors: Kotelchuck index, prenatal care payer

Variables that had more than 1% missing are listed below, by cohort.

Table 22: Variables with more than 1% missing sample:

	1999–2003	**2009–2013**
	N=24860	N=17670
Mother's Demographics Maternal education	58% missing	26% missing
Birth outcomes for infants born to teen mothers Gestational Age < 37 weeks	2% missing	7% missing
Sociocultural Risk Factors:		
Parity	>.05% missing	43% missing
Maternal smoking (pre-pregnancy)	>.05% missing	43% missing
Maternal smoking (During pregnancy)	>.05% missing	43% missing
Maternal residence poverty status		
All Census Variables	1.3% missing	5% missing

Missing variables were likely not a factor in interpreting the changes in the teen birth cohorts in the demographic section. We analyzed paternal demographics only on the birth

certificates that had a named father, a finding in and of itself. There were very few missing variables for mother's health conditions and low birth weight for infants in both cohorts. There were more data missing for gestational age <37 weeks. Two variables had considerable data missing, smoking and education and therefore both should be interpreted with caution.

Assumption of Independence

One of the assumptions for t-test and chi-square tests are that the samples are independent. Since cohort one and cohort two are spaced at a minimum of six years apart, it is impossible that anyone giving birth in cohort one (and thus counted as a teen mother) would still be considered a teen in cohort two. Even the youngest mother giving birth in cohort one (15 years old in 2003) would not be considered a teen mother in the first year of cohort two (2009, she would then be 21 years old). However, it is possible that a teen mother gave birth more than once during the five-year span (1999–2003, or 2009–2013). Statistically this should be corrected using a repeated measure function, however, given the anonymity of these data we are unable to do so. Both cohorts are large enough and the likelihood of one mother showing up repeatedly within either cohort is uncommon enough that it is unlikely this impacted the analysis.

5.2 Qualitative research limitations

There are known limitations to qualitative data collection and analysis. Steps were taken to ensure reliability and rigor in the data collected for this study, and are detailed in Chapter Three: Methodology. This section will address limitations in the qualitative data component of this dissertation including the presence of the researcher, and the issue of the difficulty of analyzing the volume of data.

Presence of the researcher

It is a known limitation in qualitative research that the presence of a researcher can inadvertently bias or distort subjects actions, responses, and/or appearance.[185] In order to mitigate the impact of my presence as a researcher, I spent many hours at Roca prior to conducting research there. I became known to many of the participants and staff, and was seen as someone not "new" to the organization. Staff appeared to be comfortable sharing both positive and negative comments about their work experiences, thus increasing the likelihood that they were not only reporting positive results to me. After conducting most of the participant interviews I conducted a "member check" with the staff, reporting back to them what I had learned and what participants had told me. Staff expressed surprise and happiness that the participants "clearly trusted you" and opened up to me. It should be noted that all interviews were conducted in English, and thus I was unable to speak to participants who only speak Spanish. My lack of Spanish proficiency excluded those who are not proficient in English, may be more recent arrivals to Chelsea, and may be different from those that I interviewed.

Volume of data

Another known limitation in qualitative research is the overwhelming amount of data that can be collected.[185] With this research there were multiple sources of data and multiple iterations of findings. Given the sheer volume of transcripts and information acquired, it is certainly possible that some findings were overlooked or oversimplified.

Section Six: Conclusions

The research conducted for this dissertation offers several key lessons for a) public health practice, b) public health policy, c) public health research, d) communities and community providers. Through the use of birth certificate data an updated view of the population of teen mothers in Massachusetts is evident. Additional inquiries into the dynamics of the teen birthing population could offer significant implications for teen pregnancy prevention and teen parenting program providers. Second, the in-depth analysis of the Roca High Risk Young Mother's program offers key findings and implications for those seeking to work with this population. The use of the PARiHS framework offers key elements of the program to be replicated, and imply what is needed in order to successfully replicate the program.

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